

Rules for the Classification of Offshore Units Operating in the Caspian Sea and Similar Areas

Effective from 1 January 2023

Part A

Classification and Surveys

GENERAL TERMS AND CONDITIONS
OF EMIRATES CLASSIFICATION SOCIETY – L.L.C – O.P.C (TASNEEF)
EFFECTIVE AS OF 1 APRIL 2025

DEFINITIONS

Administration	means the government of the state whose flag the Ship is entitled to fly or under whose authority the Ship is authorised to operate in the specific case.
Client	means the interested party and any other party who requires the Services.
Certificate of Classification	means a certificate of classification, issued by a Society and the certificate confirms that the vessel's structure, machinery, and equipment meet the society's specific technical rules and regulations.
Interested Party	means the party, other than the society, having an interest in or responsibility for the Ship, product, plant or system subject to classification or certification (such as the owner of the Ship and his representatives, the Ship builder, the engine builder or the supplier of parts to be tested) who requests the Services or on whose behalf the Services are requested.
Owner	means the registered owner, the Ship owner, the manager or any other party with the responsibility, legally or contractually, to keep the Ship seaworthy or in service, having particular regard to the provisions relating to the maintenance of class laid down in part a, chapter 2 of the rules for the classification of Ships or in the corresponding rules indicated in the specific rules.
Register of Ships	means a register book, also known as a Register of Ships, is a comprehensive record of vessels that are classified by a society.
Rules	means the documents below issued by the Society: a. Rules for the classification of Ships or other special units. b. Complementary rules containing the requirements for certification of products, plants, systems and other or containing the requirements for the assignment of additional class notations. c. Rules for the application of statutory rules, containing the rules to perform the duties delegated by administrations. d. Guides to carry out particular activities connected with Services. e. Any other technical document, as for example rule variations or interpretations.

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Services	means the activities described in Article 1 below, rendered by the Society upon request made by or on behalf of the Interested Party.
Ship	means ships, boats, craft and other special units, as for example offshore structures, floating units and underwater craft.
Society	means Emirates Classification Society LLC OPC and/or its affiliated entities providing the Services.
Surveyor	means technical staff acting on behalf of the society in performing the Services.
UAE	means United Arab Emirates.

ARTICLE 1

- 1.1 The purpose of the Society is, among others, the classification and certification of Ships and the certification of their parts and components.
- 1.2 The Society (a) sets forth and develops Rules; (b) publishes the Register of Ships¹; and (c) issues certificates, statements and reports based on its survey activities.
- 1.3 The Society also takes part in the implementation of national and international rules and standards as delegated by various Governments.
- 1.4 The Society carries out technical assistance activities on request and provides special services outside the scope of classification, which is regulated by these general conditions unless expressly excluded in the particular contract.

ARTICLE 2

- 2.1 The Rules developed by the Society reflect the level of its technical knowledge at the time they are published. Therefore, the Society, though committed, also through its research and development services, to continuous updating, does not guarantee they meet state-of-the-art science and technology at the time of publication or that they meet the Society's or others' subsequent technical developments.
- 2.2 The Interested Party is required to know the Rules on the basis of which the Services are provided. With particular reference to Classification Services, special attention is to be given to the Rules concerning class suspension, withdrawal and reinstatement. In case of doubt or inaccuracy, the Interested Party is to promptly contact the Society for clarification. The Rules for Classification of Ships are published on the Society's website: www.tasneefmaritime.ae
- 2.3 The Society exercises due care and skill:
 - (a) in the selection of its Surveyors; and
 - (b) in the performance of its Services, taking into account the level of its technical knowledge at the time the

Services are performed.

- 2.4 Surveys conducted by the Society include, but are not limited to, visual inspection and non-destructive testing. Unless otherwise required, surveys are conducted through sampling techniques and do not consist of comprehensive verification or monitoring of each component of the Ship or of the items subject to certification. The surveys and checks made by the Society, either on board Ships or with remote techniques, do not necessarily require the constant and continuous presence of the Surveyor. The Society may also commission laboratory testing, underwater inspection and other checks to qualified service suppliers, who will carry out these duties under their responsibility. Survey practices and procedures are selected by the Society based on its experience and knowledge and according to generally accepted technical standards in the sector.

ARTICLE 3

- 3.1 The class assigned to a Ship, like the reports, statements, certificates or any other document or information issued by the Society, reflect the discretionary opinion of the Society concerning compliance, at the time the Service is provided, of the Ship or product subject to certification, with the applicable Rules (given the intended use and within the relevant time frame).
- 3.2 The Society is under no obligation to make statements or provide information about elements or facts which are not part of the specific scope of the Service requested by the Interested Party or on its behalf.
- 3.3 No report, statement, notation on a plan, review, Certificate of Classification, document or information issued or given as part of the Services provided by the Society shall have any legal effect or implication other than a representation that, on the basis of the checks made by the Society, the Ship, structure, materials, equipment, machinery or any other item covered by such document or information meet the Rules. Any such document is issued solely for the use of the Society, its committees and clients or other duly authorised bodies and for no other purpose. Therefore, the Society cannot be held liable for any act made or document issued by other parties on the basis of the statements or information given by the Society. The validity, application, meaning and interpretation of a Certificate of Classification, or any other document or information issued by the Society in connection with its Services, are governed by the Rules of the Society, whom is the sole subject entitled to make such authentic interpretation. Any disagreement on technical matters between the Interested Party and the Surveyor in the carrying out of his functions shall be raised in writing as soon as possible with the Society, which will settle any divergence of opinion or dispute.
- 3.4 The classification of a Ship, or the issuance of a certificate or other document connected with classification or certification and in general with the performance of Services by the Society shall have the validity conferred upon it by the Rules of the Society at the time of the assignment of class or issuance of the certificate; in no case shall it amount to a statement or warranty of seaworthiness, structural integrity, quality or fitness for a particular purpose or service of any Ship, structure, material, equipment or machinery inspected or tested by the Society.
- 3.5 Any document issued by the Society in relation to its activities reflects the condition of the Ship or the subject of certification or other activity at the time of the check.
- 3.6 The Rules, surveys and activities performed by the Society, reports, certificates and other documents issued by

the Society are in no way intended to replace the duties and responsibilities of other parties including, without limitation, Governments, designers, ship builders, manufacturers, repairers, suppliers, contractors or sub-contractors, Owners, operators, charterers, underwriters, sellers or intended buyers of a Ship or other product or system surveyed.

- 3.7 These documents and activities do not relieve such parties from any fulfilment, warranty, responsibility, duty or obligation (also of a contractual nature) expressed or implied or in any case incumbent on them, nor do they confer on such parties any right, claim or cause of action against the Society. With particular regard to the duties of the Owner, the Services undertaken by the Society do not relieve the Owner of his duty to ensure proper maintenance of the Ship and ensure seaworthiness at all times. Likewise, the Rules, surveys performed, reports, certificates and other documents issued by the Society are intended neither to guarantee the buyers of the Ship, its components or any other surveyed or certified item, nor to relieve the seller of the duties arising out of the law or the contract, regarding the quality, commercial value or characteristics of the item which is the subject of transaction.
- 3.8 In no case, therefore, shall the Society assume the obligations incumbent upon the above-mentioned parties, even when it is consulted in connection with matters not covered by its Rules or other documents.
- 3.9 In consideration of the above, and within the limits of liability under Article 5 below, the Interested Party undertakes to relieve and hold harmless the Society from any third party claim, as well as from any liability in relation to the latter concerning the Services rendered, where these are attributable to the Interested Party.
- 3.10 Insofar as they are not expressly provided for in these General Conditions, the duties and responsibilities of the Owner and Interested Parties with respect to the Services rendered by the Society are described in the Rules applicable to the specific Service rendered.

ARTICLE 4

- 4.1 Any request for the Society's Services shall be submitted in writing and signed by or on behalf of the Interested Party. Such a request will be considered irrevocable as soon as received by the Society and shall entail acceptance by the applicant of all relevant requirements of the Rules, including these General Conditions. Upon acceptance of the written request by the Society, a contract between the Society and the Interested Party is entered into, which is regulated by the present General Conditions.
- 4.2 In consideration of the Services rendered by the Society, the Interested Party and the person requesting the service shall be jointly liable for the payment of the relevant fees and costs, even if the service is not concluded for any cause not pertaining to the Society. In the latter case, the Society shall not be held liable for non-fulfilment or partial fulfilment of the Services requested. In the event of non-payment of the invoice within the contractually agreed terms, the Society reserves the right to request, in addition to the full payment of the principal amount due and without the need for further formal notice, also:
- (a) Late payment interest at a rate of 5% per annum, calculated from the due date of the invoice until full payment is received, in accordance with the applicable laws in the United Arab Emirates or the country from where the invoice is issued. Any applicable VAT, taxes, or statutory levies shall be borne by the Client as per the laws

of the respective jurisdiction;

- (b) full reimbursement of any costs incurred for debt recovery, including, but not limited to, legal fees, administrative expenses, and the costs of any extrajudicial actions; and
- (c) any additional amount due as compensation for damages suffered as a result of the delay or non-compliance, where documented.

- 4.3 The contract for the classification of a Ship or for other Services may be terminated and any certificates revoked at the request of one of the parties, subject to at least 30 days' notice to be given in writing. Failure to pay, even in part, the fees due for Services carried out by the Society will entitle the Society to immediately terminate the contract and suspend the Services.
- 4.4 The Society may withhold, suspend or withdraw any certificate, report or service in the event of non-payment of fees due to any member of the Society by the Client in relation to the entire business relationship between any member of the Society and the Client or by any other companies belonging to the same group as the Client. This also applies when the obligation to pay rests with a builder or with the Ship's previous Owner.
- 4.5 For every case of termination or suspension of the contract, the fees for the activities performed until the time of the termination or of the suspension shall be owed to the Society as well as the expenses incurred in view of activities already programmed; this is without prejudice to the right to compensation due to the Society as a consequence of the termination or of the suspension.
- 4.6 With particular reference to Ship classification and certification, unless decided otherwise by the Society, termination of the contract implies that the assignment of class to a Ship is withheld or, if already assigned, that it is suspended or withdrawn; any statutory certificates issued by the Society will be withdrawn in those cases where provided for by agreements between the Society and the flag State.

ARTICLE 5

- 5.1 In providing the Services, as well as other correlated information or advice, the Society, its Surveyors, servants or agents operate with due diligence for the proper execution of the activity. However, considering the nature of the activities performed (see Article 2), it is not possible to guarantee absolute accuracy, correctness and completeness of any information or advice supplied. Express and implied warranties are specifically disclaimed.
- 5.2 Therefore, subject to what provided for in Article 5.3 below, and also in the case of activities carried out by delegation of Governments, neither the Society nor any of its Surveyors will be liable for any loss, damage or expense of whatever nature sustained by any person, in tort or in contract, derived from carrying out the Services.
- 5.3 Notwithstanding the provisions in Article 5.1 above, should any user of the Society's Services prove that he has suffered a loss or damage due to any negligent act or omission of the Society, its Surveyors, servants or agents, then the Society will pay compensation to such person for his proved loss, up to, but not exceeding, five times the amount of the fees charged for the specific Services, information or opinions from which the loss or damage derives or, if no fee has been charged, a maximum of AED5,000 (Arab Emirates Dirhams Five Thousand only).
- 5.4 Where the fees charged are related to a number of Services, the amount of the fees will be apportioned for the purpose of the calculation of the maximum compensation, by reference to the estimated time involved in the

performance of the Service from which the damage or loss derives. Any liability for indirect or consequential loss, damage or expense is specifically excluded. In any case, irrespective of the amount of the fees charged, the maximum damages payable by the Society will not be more than AED 300,000 (Three Hundred Thousand Dirhams). Payment of compensation under this Article will not entail any admission of responsibility and/or liability by the Society and will be made without prejudice to the disclaimer clause contained in Article 5.

- 5.5 Any claim for loss or damage of whatever nature by virtue of the provisions set forth herein shall be made to the Society in writing, within the shorter of the following periods: THREE MONTHS from the date on which the Services were performed or THREE MONTHS from the date on which the damage was discovered. Failure to comply with the above deadline will constitute an absolute bar to the pursuit of such a claim against the Society.

ARTICLE 6

- 6.1 Any dispute, controversy, or claim arising out of or relating to these Rules, the Services of the Society, or the interpretation, breach, or termination thereof, shall first be referred to the parties' senior management for amicable resolution within thirty (30) days of written notice by either party.
- 6.2 If the dispute is not resolved amicably under Article 6.1, it shall be exclusively governed by and construed in accordance with the laws of the Emirate of Abu Dhabi and the applicable federal laws of the United Arab Emirates. The courts of Abu Dhabi shall have exclusive jurisdiction to settle any such dispute.

ARTICLE 7

- 7.1 All plans, specifications, documents and information provided by, issued by, or made known to the Society, in connection with the performance of its Services, will be treated as confidential and will not be made available to any other party other than the Owner without authorisation of the Interested Party, except as provided for or required by any applicable legislation from a competent authority. Information about the status and validity of class and statutory certificates, including transfers, changes, suspensions, withdrawals of class, conditions of class, operating conditions or restrictions issued against classed ships and other related information, as may be required, may be published on the website or released by other means, without the prior consent of the Interested Party.
- 7.2 Information about the status and validity of other certificates and statements may also be published on the website or released by other means, without the prior consent of the Interested Party.
- 7.3 Notwithstanding the general duty of confidentiality owed by the Society to its clients in Article 7.1 above, the Society's clients hereby accept that the Society will participate in the IACS Early Warning System which requires each Classification Society to provide other involved Classification Societies with relevant technical information on serious hull structural and engineering systems failures, as defined in the IACS Early Warning System (but not including any drawings relating to the Ship which may be the specific property of another party), to enable such useful information to be shared and used to facilitate the proper working of the IACS Early Warning System. The Society will provide its clients with written details of such information sent to the involved Classification Societies.
- 7.4 In the event of transfer of class, addition of a second class or withdrawal from a double/dual class, the Interested Party undertakes to provide or to permit the Society to provide the other Classification Society with all building plans and drawings, certificates, documents and information relevant to the classed unit, including its history file,

as the other Classification Society may require for the purpose of classification in compliance with the applicable legislation and relative IACS Procedure. It is the Owner's duty to ensure that, whenever required, the consent of the builder is obtained with regard to the provision of plans and drawings to the new Society, either by way of appropriate stipulation in the building contract or by other agreement.

- 7.5 In the event that the ownership of the Ship, product or system subject to certification is transferred to a new subject, the latter shall have the right to access all pertinent drawings, specifications, documents or information issued by the Society or which have come to the knowledge of the Society while carrying out its Services, even if related to a period prior to transfer of ownership.

ARTICLE 8

- 8.1 The Society shall not be obliged to perform any obligation towards the Client (including, without limitation, obligation to (a) perform, deliver, accept, sell, purchase, pay or receive money to, from or through a person or entity, or (b) engage in any other act) if this would be in violation of, inconsistent with or expose the Society to punitive measures under any United Nations resolutions and/or under any laws, regulations, decrees, ordinances, orders, demands, requests, rules or requirements of EU, United Kingdom, and/or United States of America and which relate to foreign trade controls, export controls, embargoes or international boycotts (applying, without limitation, to the financing, payment, insurance, transportation, delivery or storage of product and/or services) hereinafter referred to as "Trade Sanctions".
- 8.2 Recurring the above circumstances during the performance of the contract, the Society shall be entitled at its sole and absolute discretion:
- (a) to immediately suspend payment or performance of the Services which are the object of the contract until such;
 - (b) time as the Trading Sanctions are in force;
 - (c) to a full disengagement from the obligation affected by the Trading Sanctions, in the event that the inability to fulfill the said obligation persists until the term provided for the fulfilment hereunder, provided that where the relevant obligation relates to payments for activities and/or Services which have already been delivered, the affected payment obligation shall remain only suspended until such time as the Trading Sanctions no longer apply to the payment ; and/or
 - (d) to terminate the contract, without prejudice of the Society's rights pursuant to Article 4.

ARTICLE 9

Should any part of these General Conditions be declared invalid, this will not affect the validity of the remaining provisions.

ARTICLE 10

When the Society provides its Services to a consumer - i.e. a natural person who does not act within the scope of his business or professional activity - the following provisions do not apply Article 3 (as far as the Society is solely entitled to the authentic interpretation of the Rules); Article 4, (as far as the payment of the fees is also due for Services not

concluded due to causes not attributable to the Interested Party); Article 5 (as far as the exclusion of liability is concerned), and Article 6 (as far as the jurisdiction of a Board of Arbitrators based in Abu Dhabi is concerned).

ARTICLE 11

- 11.1 The Society and the Interested Party shall promote safety, protect human health and environment and create safe working conditions for their personnel.
- 11.2 The Interested Party shall guarantee that the working environment in which the Society's Surveyor will be required to work is adequate, safe and in all respect compliant with the applicable legislation and Rules and shall adopt all necessary measures to mitigate and/or control any relevant risk.
- 11.3 Furthermore, in accordance with the applicable legislation and Rules, the Interested Party shall provide the Society with complete and detailed information relevant to any actual or potential specific risk existing in the work areas where the Surveyor will be required to operate and relevant to the performance of the Services as well as with any specific safety measure that the Society's Surveyor is requested to comply with.
- 11.4 The Society reserves not to commence and/or to suspend the Services and/or to terminate the contract, claiming compensation for any damage occurred, if it considers that the safety requirements listed in this Article are not satisfactorily met.

RULES FOR THE CLASSIFICATION OF OFFSHORE UNITS OPERATING IN THE CASPIAN SEA AND SIMILAR AREAS

Part A Classification and Surveys

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Part A
Classification and Surveys

Chapter 1

**PRINCIPLES OF CLASSIFICATION AND CLASS
NOTATIONS**

SECTION 1 GENERAL PRINCIPLES OF CLASSIFICATION

SECTION 2 CLASSIFICATION NOTATIONS

SECTION 1

GENERAL PRINCIPLES OF CLASSIFICATION

1 Principles of classification

1.1 Purpose of the Rules

1.1.1 The Rules published by the Society give the requirements for the assignment and the maintenance of class for offshore units operating in the Caspian Sea and similar areas.

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

Note 1: The general conditions of classification are laid down in the "General Conditions" placed at the beginning of this Part.

1.1.2 The application criteria of the different parts of the present Rules are the following with the exceptions indicated in [1.1.3] and [1.1.4]:

- Part A - Classification and Surveys applies to all units.
- Part B - Hull and Stability, Part C - Machinery, Systems and Fire Protection, Part D - Materials and Welding and Part E - Service Notations apply to seagoing units whose hull is of welded steel construction. Where necessary, the extent of application is more precisely defined in each chapter of these parts of the Rules.
- Part F - Additional Class Notations applies, at the request of the Interested Party, to all units.

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

Note 1: As from 1 January 2007, the statutory requirements of the SOLAS Convention and/or national safety regulations, as applicable, regarding fire protection, detection and extinction (hereinafter referred to as "fire protection statutory requirements") are no longer mandatory for the purpose of classification, except where the Society carries out surveys relevant to fire protection statutory requirements on behalf of the flag Administration. In such cases, fire protection statutory requirements are considered a matter of class and therefore compliance with these requirements is also verified by the Society for classification purposes at class surveys.

In general, only IACS Unified Requirements in force related to fire protection, detection and extinction have been retained as Rule requirements within the scope of classification. Thus, the survey requirements for class surveys (annual, intermediate, class renewal surveys and others) no longer include those related to fire protection statutory requirements.

The above is applicable to all ships (new buildings and ships in service) and therefore the scope of surveys as stipulated in the present Part A has also been reduced accordingly for all units.

1.1.3 For the hull structures of ships contracted for construction on or after 1 April 2006, the Common Structural Rules are to be applied in the following case:

- double hull oil tankers of 150 m length or greater (as defined in Section 1 of the "Common Structural Rules for Double Hull Oil Tankers").

1.1.4 Special consideration may be given in application of Rule requirements relevant to periodical surveys of:

- the hull,
- machinery, including boilers,
- the outside of the ship's bottom and related items, and
- tailshafts,

for commercial ships owned or chartered by Governments, which are used in support of military operations or service. The above special consideration cannot be given in application of hull survey requirements regarding ESP ships.

1.2 General definitions

1.2.1

The following general definitions are used in these Rules:

- Society means Tasneef and/or all the companies in the Tasneef Group which provide the Services
- Rules means these Rules for the Classification of offshore units operating in the Caspian Sea and similar areas and documents issued by the Society serving the same purpose
- Common Structural Rules means the "Common Structural Rules for Bulk Carriers" and the "Common Structural Rules for Double Hull Oil Tankers" adopted by IACS
- Surveyor means technical staff acting on behalf of the Society to perform tasks in relation to classification and survey duties
- Survey means an intervention by the Surveyor for assignment or maintenance of class as defined in Chapter 2, or interventions by the Surveyor within the limits of the tasks delegated by the Administrations
- Administration means the Government of the State whose flag the ship is entitled to fly or the State under whose authority the ship is operating in the specific case
- Interested Party means a party, other than the Society, having responsibility for the classification of the ship, such as the Owner of the ship and his representatives, or the Shipbuilder, or the Engine Builder, or the Supplier of parts to be tested
- QSCS Classification Society means a Classification Society which is subject to verification of compliance with the IACS Quality System Certification Scheme (QSCS)
- Owner means the Registered Owner or the Disponent Owner or the Manager or any other party having the

responsibility to keep the ship seaworthy, having particular regard to the provisions relating to the maintenance of class laid down in Chapter 2

- Approval means the examination and acceptance by the Society of documents, procedures or other items related to classification, verifying solely their compliance with the relevant Rules requirements, or other references where requested
- Type approval means an approval process for verifying compliance with the Rules of a product, a group of products or a system, and considered by the Society as representative of continuous production
- Essential service is intended to mean a service necessary for a ship to proceed at sea, be steered or manoeuvred, or undertake activities connected with its operation, and for the safety of life, as far as class is concerned.

1.3 Meaning of classification, scope and limits

1.3.1 The classification consists of:

- the development of Rules, guides and other documents relevant to the unit, structure, material, equipment, machinery and any other item covered by such documents
- the examination of plans and calculations and the surveys, checks and tests intended to ensure that the unit 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 the above Rules are met
- the periodical, occasional and class renewal surveys performed to verify that the unit in service meets the conditions for maintenance of class (see Ch 2, Sec 2).

1.3.2 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, Shipbuilders, Manufacturers, Repairers, Suppliers, Contractors or Sub-contractors, actual or prospective Owners or Operators, Charterers, Brokers, Cargo-owners and Underwriters. The Society cannot therefore assume the obligations arising from these functions, even when the Society is consulted to answer inquiries concerning matters not covered by its Rules, or other documents.

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 ship, trim, hull vibrations, spare parts including their number, location and fastening arrangements, life-saving appliances, and maintenance equipment, remain therefore the responsibility of those parties, even if these matters may be given consideration for classification according to the type of ship or additional class notation assigned.

The classification-related services and documents performed and issued by the Society do not relieve the parties concerned of their responsibilities or other contractual obli-

gations expressed or implied or of any liability whatsoever, nor do they create any right or claim in relation to the Society with regard to such responsibilities, obligations and liabilities. In particular, the Society does not declare the acceptance or commissioning of a ship or any part of it, this being the exclusive responsibility of the Owner.

1.3.3 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 or heavy load lifting, workshops or welding equipment, except for their effect on the classification-related matters, as declared by the Interested Party, such as fire protection and ship's general strength.

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

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

1.4 Request for services

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

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

1.5 Register of ships

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

2 Rules

2.1 Equivalence

2.1.1 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 of the Society.

2.2 Effective date

2.2.1 The effective date of entry into force of any amendments to the Rules is indicated on the inside front page of each Part of the Rules.

2.2.2 In principle, the applicable Rules for assignment of class to a new ship are those in force at the date when the

contract for construction between the Owner and the shipbuilder is signed (see Note 1).

Note 1:

- a) The date of "contract for construction" of a ship is the date on which the contract to build the ship is signed between the prospective Owner and the shipbuilder. This date and the construction numbers (i.e. hull numbers) of all the ships included are to be declared to the Society by the party applying for the assignment of class to a new building.
- b) The date of "contract for construction" of a series of ships, including specified optional ships for which the option is ultimately exercised, is the date on which the contract to build the series is signed between the prospective Owner and the shipbuilder. For the purpose of this issue, ships built under a single contract for construction are considered a "series of ships" if they are built to the same approved plans for classification purposes. However, ships within a series may have design alterations from the original design provided:
 - 1) such alterations do not affect matters related to classification, or
 - 2) if the alterations are subject to classification requirements, either these alterations comply with the classification requirements in effect on the date on which the alterations are contracted between the prospective Owner and the shipbuilder or, in the absence of the alteration contract, they comply with the classification requirements in effect on the date on which the alterations are submitted to the Society for approval.

The optional ships will be considered part of the same series of sister ships, if the option is exercised not later than one year after the contract to build the series was signed.
- c) If a contract for construction is later amended to include additional ships or additional options, the date of "contract for construction" for such ships is the date on which the amendment to the contract is signed between the prospective Owner and the shipbuilder. The amendment to the contract is to be considered as a "new contract" to which a) and b) above apply.
- d) If a contract for construction is amended to change the ship type, the date of "contract for construction" of this modified ship, or ships, is the date on which the revised contract or new contract is signed between the Owner, or Owners, and the shipbuilder.

2.2.3 Special consideration may be given to applying new or modified rule requirements which entered into force subsequent to the date of the contract, 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.

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

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

2.3 Novel features

2.3.1 The Society may consider the classification of ships 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. The specific limitations may then be indicated on the Certificate of Classification.

2.4 Interpretation

2.4.1 The Society alone is qualified to decide upon the meaning, interpretation and application of the Rules and other classification-related documents. No reference to the Rules or other classification-related documents has any value unless it involves, accompanies or follows the intervention of the Society.

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.

3 Duties of the Interested Parties

3.1 International and national regulations

3.1.1 The classification of a ship does not absolve the Interested Party from compliance with any requirements issued by Administrations and any other applicable international and national regulations for the safety of life at sea and protection of the marine environment.

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

When these requirements are quoted from such International Conventions, they are printed in italic type.

In the event of disputes, the text of the International Conventions will prevail.

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

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

3.1.4 The IACS Unified Interpretations applicable to a ship and its machinery and equipment in accordance with the implementation dates and provisions stated in the Unified

Interpretations themselves will be applied, as appropriate, by the Society when acting as a recognised organisation, authorised by a flag State Administration to act on its behalf, unless the flag Administration provides its own interpretation.

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

3.2 Surveyor's intervention

3.2.1 Surveyors are to be given free access at all times to ships which are classed or being classed, shipyards and works, to carry out their interventions within the scope of assignment or maintenance of class, or within the scope of interventions carried out on behalf of Administrations, when so delegated.

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

3.2.2 Interested Parties are to take the necessary measures for the Surveyors' inspections and testing to be carried out safely. Interested Parties - irrespective of the nature of the service provided by the Surveyors of the Society or others acting on its behalf - assume with respect to such Surveyors all the responsibility of an employer for his workforce such as to meet the provisions of applicable legislation. As a rule, the Surveyor is to be constantly accompanied during surveys by personnel of the Interested Party. Refer also to Ch 2, Sec 2, [2.5] to Ch 2, Sec 2, [2.8].

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

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

3.3 Operation and maintenance of ships

3.3.1 Operation of the ship

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

In particular, it will be assumed that the draught of the ship in operating conditions will not exceed that corresponding

to the freeboard assigned or the maximum approved for the classification, that the ship 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. That the speed and course of the ship are adapted to the prevailing sea and weather conditions according to the normal prudent seamanship and that the ship is operated in accordance with the applicable international and national regulations for the prevention and containment of marine pollution.

3.3.2 Maintenance of the ship

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

3.3.3 Hull inspection and maintenance schemes

Hull inspection and maintenance schemes may be adopted by the Owner as a means for maintaining compliance with classification and statutory requirements between surveys. However, these schemes will not be accepted as an alternative to, or a substitute for, the performance of required classification and/or statutory surveys of the hull by the Surveyors of the Society, or of another duly authorised Society (see Note 1). No information received from the Owner indicates that, where adopted, these schemes have proven to be free from any deficiencies.

Note 1: The Surveyors may be assisted, where appropriate, by service suppliers as defined in the "Rules for the certification of service suppliers.

3.4 Flag and Port State Control inspections

3.4.1 Owner's duties

When a ship is detained further to an inspection by a Port State Authority or the flag Administration, Owners are to:

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

Should the Owners fail to notify the Society of detention of a ship, the Society reserves the right to suspend or withdraw its classification.

Where non-detainable deficiencies are found by the above-mentioned Authorities, Owners are to inform the Society, which may require the ship to be attended by a Surveyor for the purpose of verifying the correction of the reported deficiencies, if deemed necessary.

3.4.2 Co-operation with and assistance to inspecting Authorities

The Society will co-operate during Port State Control inspections by:

- a) liaising with Port State Control Authorities to ensure that Surveyors are called in as appropriate when deficiencies related to class and statutory matters are found;
- b) liaising with Port State Control Officers to ensure uniformity of interpretation of class and statutory requirements;
- c) providing Port State Control Officers, upon request, with background information, extracts from reports pertinent to the inspection, and details of outstanding conditions of class and statutory items;
- d) liaising with the flag State in accordance with any prior agreement, and the Owner's representative and/or Company, in order to ensure that both parties are fully aware of actions being taken that affect safety-related matters of either a class or statutory nature.

Any request received from a Port State to attend on board a ship is dealt with promptly and efficiently by the Society in order to assist in the rectification of reported hardware deficiencies or other discrepancies.

Before attending on the ship, the Society will inform the Company, either directly or through the Owner's representative, of the purpose of the visit.

3.5 Use of measuring equipment and of service suppliers

3.5.1 General

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

The equipment used during tests and inspections in workshops, shipyards and on board ships, 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 individ-

ually identify and calibrate to a recognised national or international standard each piece of such equipment.

3.5.2 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.

3.5.3 Shipboard measuring equipment

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

3.5.4 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.

3.6 Spare parts

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

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

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

3.7 Use of asbestos

3.7.1 New installation of materials which contain asbestos is prohibited.

SECTION 2

CLASSIFICATION NOTATIONS

1 General

1.1 Purpose of the classification notations

1.1.1 The classification notations give the scope according to which the class of the ship 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 ship and other criteria which have been provided by the Interested Party, when applying for classification.

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

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

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

1.1.3 Ships and units, other than those covered in Parts B, C, D, E and F, are to comply with specific Rules published by the Society, which also stipulate the relevant classification notations.

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

1.2 Types of notations assigned

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

- a) main class symbol
- b) construction marks
- c) service notations with additional service features, as applicable
- d) navigation notations
- e) operating area notations (optional)
- f) additional class notations (optional)

The different classification notations and their conditions of assignment are listed in [2] to [6] below, according to their types.

1.2.2 As an example, the classification notations assigned to a ship may be as follows (the kind of notation shown in

brackets does not form part of the classification notation indicated in the Register of Ships and on the Certificate of Classification):

C ? HULL 2 MACH

(main class symbol, construction marks)

oil tanker-ESP-Flash point > 60°C

(service notation and additional service features)

Unrestricted navigation

(navigation notation)

? ICE CLASS ID

(additional class notation).

2 Main class symbol

2.1 Main class symbol

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

2.1.2 The main class symbol C is assigned to ships built in accordance with the requirements of the Rules or other rules recognised as equivalent, and maintained in a condition considered satisfactory by the Society. The period of class (or interval between class renewal surveys) assigned to a ship is maximum 5 years; see Ch 2, Sec 2, [4].

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

Note 1: The symbol C with the 5 year class period is to be understood as being the highest class granted by the Society.

Note 2: The symbol C may be followed by the additional construction feature **light ship** in case of ships or other units having restricted navigation notations and generally having length not greater than 50 m as well as speed greater than 15 knots, whose hull scantlings and outfitting comply with the applicable requirements of Chapters 3 and 6 of the "Rules for the Classification of High Speed Craft", issued separately by the Society.

3 Construction marks

3.1 General

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

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

3.1.2 One of the construction marks defined below is assigned separately to the hull of the ship and its appendages, to the machinery installation, and to some installations for which an additional classification notation (see [6] below) 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.

When the same construction mark is assigned to both hull and machinery, the construction mark is assigned globally to the ship without indication **HULL** and **MACH** after the main class symbol.

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

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

3.2 List of construction marks

3.2.1 The mark ? is assigned to the relevant part of the ship, when it has been surveyed by the Society during its construction in compliance with the new building procedure detailed in Ch 2, Sec 1, [2.1].

3.2.2

The mark 2 is assigned to the relevant part of the ship, when the latter is classed after construction in compliance with the procedure detailed in Ch 2, Sec 1, [3.2] and it was built under the survey of a QSCS Classification Society and was assigned by this Society a class deemed equivalent to that described in the Rules.

This mark is also assigned to a ship:

- a) admitted to class in the course of construction surveyed by another QSCS Classification Society;
- b) for which the procedure detailed in Ch 2, Sec 1, [3.2] does not apply, as it was disclassified from a QSCS Classification Society for a period longer than six months, but which was built according to the Rules and under the survey of a QSCS Classification Society. In this case, the admission to class survey is to confirm that the ship has not undergone conversions or modifications or alterations, which were not approved by a QSCS Classification Society.

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

4 Service notations

4.1 General

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

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

4.1.2 The assignment of any service notation to a new ship is subject to compliance with general Rule requirements laid down in Part B, Part C and Part D of the Rules and, for some service notations, the additional requirements laid down in Part E and in the Common Structural Rules for double hull oil tankers.

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

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

4.1.5 The different service notations which may be assigned to a ship are listed in [4.2] to [4.7], according to the category to which they belong. These service notations are also listed in alphabetical order in Tab 1.

As a rule, notation in [4.2] is only to be assigned to self-propelled units.

4.1.6 The assignment of a service notation does not absolve the Interested Party from compliance with any international and national regulations established by the Administrations. Neither does it waive the requirements in Sec 1, [3.3.1].

Table 1 : List of service notations assigned in accordance with the requirements of these Rules (1/3/2017)

Service notation	Reference for definition	Reference chapter in Part E
Air Cushion Barges (ACB)	[4.7.1]	Part E, Chapter 12
asphalt tanker	[4.2.5]	Part E, Chapter 1
asphalt tanker ESP	[4.2.6]	Part E, Chapter 1
barge	[4.6.1]	Part E, Chapter 8
cable laying ship	[4.5.6]	Part E, Chapter 7
dredger	[4.3.2]	Part E, Chapter 2
escort tug	[4.5.2]	Part E, Chapter 3
fire-fighting ship	[4.5.4]	Part E, Chapter 5
FLS tanker	[4.2.4]	Part E, Chapter 1
hopper dredger	[4.3.2]	Part E, Chapter 2
hopper unit	[4.3.2]	Part E, Chapter 2
IBEEV	[4.4.1]	Part E, Chapter 11
oil recovery ship	[4.5.5]	Part E, Chapter 6
oil tanker ESP	[4.2.2]	Part E, Chapter 1
oil tanker ESP CSR	[4.2.3]	Part E, Chapter 1
pipe laying ship	[4.5.8]	Part E, Chapter 10
pontoon	[4.6.2]	Part E, Chapter 8
research ship	[4.5.7]	Part E, Chapter 9
salvage tug	[4.5.2]	Part E, Chapter 3
special service	[4.8.1]	(1)
split hopper dredger	[4.3.2]	Part E, Chapter 2
split hopper unit	[4.3.2]	Part E, Chapter 2
supply vessel	[4.5.3]	Part E, Chapter 4
tug	[4.5.2]	Part E, Chapter 3
(1) These ships are considered on a case by case basis by the Society according to their type of service.		

4.2 Ships carrying liquid cargo in bulk

4.2.1

The service notations related to self-propelled ships (see Note 1) intended for the carriage of liquid cargo in bulk are listed in [4.2.2] to [4.2.6] below.

Note 1: Self-propelled ships are ships with mechanical means of propulsion not requiring assistance from another ship during normal operation.

4.2.2

oil tanker, for self-propelled ships which are intended primarily to carry in bulk crude oil or other oil products having any flash point, liquid at atmospheric pressure and ambient temperature (or thus maintained by heating).

This notation is to be assigned to tankers of both single and double hull construction, as well as tankers with alternative structural arrangements, provided they are deemed equivalent by the Society.

For oil tankers with integral cargo tanks, the service notation **oil tanker** is always completed by the additional service feature **ESP** (i.e. **oil tanker ESP**), which means that

these ships are submitted to the Enhanced Survey Program as laid down in Ch 4, Sec 2.

Note 1: Oil tankers that do not comply with MARPOL I/19 may be subject to international and/or national regulations requiring phase out under MARPOL I/20 and/or MARPOL I/21.

The service notation may be completed by the following additional service features, as applicable:

- **flash point > 60°C**, where the ship is intended to carry only such type of products, under certain conditions
- **double hull**, when the ship is constructed in accordance with the definition given in Ch 2, Sec 2, [2.2.14]
- **double hull (heavy grades)**, when the ship is constructed in accordance with the definition given in Ch 2, Sec 2, [2.2.16]
- **double hull (independent tanks)**, when the ship is constructed in accordance with the definition given in Ch 2, Sec 2, [2.2.15]
- **product**, where the ship is intended to carry only products other than crude oil.

The additional requirements of Part E, Chapter 1 are applicable to these ships.

4.2.3

The service notation **oil tanker ESP** is always completed by the additional service feature **CSR** for oil tankers built in accordance with the "Common Structural Rules for Double Hull Oil Tankers" (i.e. double hull oil tankers having length L of 150 m or greater, contracted for construction on or after 1 April 2006).

Example: **oil tanker ESP CSR**

The additional requirements of Part E, Chapter 1 are applicable to these ships with the limitations indicated therein.

4.2.4 FLS tanker, for ships specially intended to carry in bulk flammable liquid products other than those covered by the service notations oil tanker ESP, or oil tanker ESP CSR.

The list of products the ship is allowed to carry may be attached to the Certificate of Classification, including, where necessary, the maximum allowable specific gravity and/or temperature.

The service notation may be completed by the additional service feature **flash point > 60°C**, where the ship is intended to carry only such type of products, under certain conditions.

For ships intended to carry only one type of cargo, the service notation may be completed by the additional service feature indicating the type of product carried, e.g. **FLS tanker-acetone**.

The additional requirements of Part E, Chapter 1 are applicable to these ships.

4.2.5

asphalt tanker, for self-propelled ships which are constructed with independent, non-integral cargo tanks, intended to only carry such type of products, under certain conditions. The maximum cargo temperature will be indicated on the Certificate of Classification.

The additional requirements of Part E, Chapter 1 are applicable to these ships.

4.2.6

For asphalt tankers intended to only carry such type of products under certain conditions, but with integral cargo tanks, the service notation **asphalt tanker** is always completed by the additional service feature **ESP** (i.e. **asphalt tanker ESP**), which means that these ships are submitted to the Enhanced Survey Program as laid down in Ch 4, Sec 2. The maximum cargo temperature will be indicated on the Certificate of Classification.

The additional requirements of Part E, Chapter 1 are applicable to these ships.

4.3 Ships for dredging activities

4.3.1 The service notations related to ships specially intended for dredging activities are listed in [4.3.2]. The additional requirements of Part E, Chapter 2 are applicable to these ships.

4.3.2 The following notations are provided:

- a) **dredger**, for ships specially equipped only for dredging activities (excluding carrying dredged material)

- b) **hopper dredger**, for ships specially equipped for dredging activities and carrying spoils or dredged material
- c) **hopper unit**, for ships specially equipped for carrying spoils or dredged material
- d) **split hopper unit**, for ships specially equipped for carrying spoils or dredged material and which open longitudinally, around hinges
- e) **split hopper dredger**, for ships specially equipped for dredging and for carrying spoils or dredged material and which open longitudinally, around hinges.

4.3.3 These ships which are likely to operate at sea within specific limits may, under certain conditions, be granted an operating area notation. For the definition of operating area notation, reference should be made to [5.2].

4.4 IBEEV (Icebreaking Emergency Evacuation Vessel) (M)

4.4.1 The service notation **IBEEV (M)** is assigned to a ship intended to operate in the Caspian Sea in any period of the year, designed to evacuate personnel from offshore oil installations in a hydrocarbon/toxic environment, capable of breaking ice of thickness up to (M) meters as stated in the Class Certificate. The ship is intended to be used exclusively for emergencies and drills.

4.5 Working ships

4.5.1 The service notations related to ships specially intended for different working services are listed in [4.5.2] to [4.5.3] below.

4.5.2 The service notations for ships intended to tow and/or push other ships or units are:

- a) **tug**, for ships specially equipped for towing and/or pushing
- b) **salvage tug**, for ships specially equipped for towing and/or pushing having specific equipment for salvage
- c) **escort tug**, for ships specially equipped for towing and/or pushing having specific equipment for escorting ships or units during navigation.

The additional requirements of Part E, Chapter 3 are applicable to these ships.

These service notations may be completed by the additional service features:

- **barge combined**, when units are designed to be connected with barges and comply with the relevant requirements of Pt E, Ch 3, Sec 3. The barges to which the tug can be connected are specified in an annex to the Certificate of Classification.
- **rescue**, when units are specially equipped for rescue of shipwrecked persons and for their accommodation.

The maximum number of shipwrecked persons for which the unit is designed as well as the ship operational area, where Pt E, Ch 3, Sec 2, [2.10.3] applies, are recorded in the Certificate of Classification of the ship.

The relevant arrangements and equipment are recorded in the ship's status.

4.5.3

The service notation supply vessel is assigned to ships specially intended for the carriage and/or storage of special material and equipment and/or which are used to provide facilities and assistance for the performance of specified activities, such as offshore and underwater activities.

The service notation is to be completed by the additional service feature **oil product**, when the ship is also specially intended to carry oil products having any flash point.

The service notation is to be completed by the additional service feature **chemical product**, when the ship is also specially intended to carry chemical products having any flash point.

The service notation is to be completed by the additional service feature **standby**, when the ship is also specially intended to perform **rescue** and standby services for offshore installations (e.g. **supply vessel - standby**).

The service notation is completed by the additional service feature **rescue**, when the ship is specially equipped for rescue of shipwrecked persons and for their accommodation.

The service notation is completed by the additional service features:

- **anchor handling**, when the ship visibility from the bridge and equipment are specially designed for anchor handling operation
- **anchor handling stab**, when the ship is specially designed and equipped for anchor handling operation and also fulfils specific stability requirements related to this service.

The additional requirements of Part E, Chapter 4 are applicable to these ships.

4.5.4 The service notation **fire-fighting ship** is assigned to ships specially intended and equipped for fighting fire. The additional requirements of Part E, Chapter 5 are applicable to these ships.

The service notation may be completed by the following additional service features, as applicable:

- **1** or **2** or **3**, when the ship complies with the applicable requirements of Pt E, Ch 5, Sec 3
- **E** when the characteristics of the fire-fighting system are not those required for the assignment of the additional service features **1**, **2** or **3**, and when the system is specially considered by the Society
- **water-spraying** when the ship is fitted with a self-protection water-spraying system complying with the applicable requirements of Pt E, Ch 5, Sec 4, [3].

4.5.5 The service notation **oil recovery ship** is assigned to ships specially equipped with fixed installations and/or mobile equipment for the removal of oil from the sea surface and its retention on board, carriage and subsequent unloading. The additional requirements of Part E, Chapter 6 are applicable to these ships.

4.5.6 The service notation **cable laying ship** is assigned to ships specially equipped for the carriage and/or laying, hauling and repair of submarine cables.

The additional requirements of Part E, Chapter 7 are applicable to these ships.

4.5.7 The service notation **research ship** is assigned to ships specially intended for scientific or technological research. The additional requirements of Part E, Chapter 9 are applicable to these ships.

4.5.8 The service notation **pipe laying ship** is assigned to ships specially equipped for the carriage and/or laying, hauling and repair of submarine pipes. The additional requirements of Part E, Chapter 10 are applicable to these ships.

4.6 Non-propelled and assisted propulsion units, sailing ships

4.6.1 Barge

The service notation **barge** is assigned to non-propelled units intended to carry (dry or liquid) cargo inside holds or tanks. The type of cargo may be considered adding an additional service feature, e.g. **barge - oil**, **barge - general cargo**. The additional requirements of Part E, Chapter 8 are applicable to these ships.

This service notation may be completed by the additional service feature **tug combined** when units are designed to be connected with tugs, and comply with the relevant requirements of Pt E, Ch 3, Sec 3. The tugs to which the barge can be connected are specified in an annex to the Certificate of Classification.

4.6.2 Pontoon

The service notation **pontoon** is assigned to non-propelled units intended to carry cargo and/or equipment on deck only. When a crane is permanently fitted on board, the crane is to be certified and the service notation **pontoon - crane** is granted. The additional requirements of Part E, Chapter 8 are applicable to these ships.

4.6.3 Other units

Any non-propelled units other than those covered by the service notations listed above will be assigned the additional service feature **no propulsion**, to be added to their own service notation, e.g. **dredger - no propulsion**.

4.6.4 Assisted propulsion units

Any units having a propulsion system not enabling them to proceed at a speed greater than 7 knots, used for short transit voyages, will be assigned the additional service feature **assisted propulsion** to be added to their own service notation, e.g. **dredger - assisted propulsion**.

4.7 Air Cushion Barges (ACB)

4.7.1 (1/3/2017)

Air cushion Barge is a unit such that the whole or a significant part of its weight can be supported, whether at rest or in motion, by a continuously generated cushion of air dependent for its effectiveness on the proximity of the surface over which the craft operates.

The service notation **ACB** is assigned to air cushion units intended to carry cargo and/or equipment on deck only.

4.8 Miscellaneous units

4.8.1 The service notation **special service** is assigned to ships which, due to the peculiar characteristics of their activity, are not covered by any of the 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 ships engaged in research, expeditions and survey, ships for training of marine personnel, whale and fish factory ships not engaged in catching, ships processing other living resources of the sea, and other ships with design features and modes of operation which may be referred to the same group of ships.

An additional service feature may be specified after the notation (e.g. **special service - training, special service - ship lift,**) to identify the particular service in which the ship is intended to trade. The scope and criteria of classification of such units are indicated in an annex to the Certificate of Classification.

5 Navigation notation “Caspian Sea”

5.1

5.1.1 The navigation notation **Caspian Sea** is assigned to a ship intended to operate in the Caspian Sea in any period of the year.

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

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

5.2 Operating area notations

5.2.1 The operating area notation expresses the specified area of the Caspian Sea where some service units are likely to operate under specific restrictions which are different from normal navigation conditions. This operating area notation is indicated after the navigation notation **Caspian Sea**.

Example: **Caspian Sea - “operating area notation”**

5.2.2 The following operating area notations may be assigned:

- a) notation **specified operating area**, where the specific operating conditions in the Caspian Sea which have been considered by the Society are described in an annex to the Certificate of Classification (i.e. distance

from port of refuge, weather or sea conditions or restrictions of ship navigation by calendar periods)

- b) notation **operation service within ‘x’ miles from shore**, where the operating service is limited to a certain distance from the shore.

6 Additional class notations

6.1 General

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

6.1.2 The assignment of such an additional class notation is subject to the compliance with additional rule requirements, which are detailed in Part F of the Rules.

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

6.1.4 The different additional class notations which may be assigned to a ship are listed in [6.2] to [6.11], according to the category to which they belong. These additional class notations are also listed in alphabetical order in Tab 2.

6.2 Availability of machinery (AVM)

6.2.1 General

The notations dealt with under this heading are relevant to systems and/or arrangements enabling the ship to carry on limited operations when single failure affects propulsion or auxiliary machinery or when an event such as fire or flooding involving machinery spaces affects the availability of the machinery. In compliance with [6.1.3], these notations are assigned a construction mark, as defined in [3].

The requirements for the assignment of these notations are given in Part F, Chapter 1.

6.2.2 AVM-IAPS (Independent alternative propulsion system)

The additional class notation **AVM-IAPS** is assigned to ships which are fitted with an independent propulsion system enabling them to maintain operating conditions with some limitations in power, speed, range and comfort, in the case of any single failure of items relative to the propulsion.

6.2.3 AVM-DPS (Duplicated propulsion system)

The additional class notation **AVM-DPS** or **AVM-DPS-NS** are assigned to ships which are fitted with a duplicated propulsion system enabling them to maintain operating conditions with some limitations in power (but 50% of the main power is to be maintained), speed, range and comfort, in the case of any single failure of items relative to the propulsion. When the duplicated propulsion system is designed for use in conditions other than an emergency, the additional class notation **AVM-DPS-NS** is assigned.

6.2.4 AVM-IPS (Independent propulsion system)

The additional class notation **AVM-IPS** is assigned to ships which are fitted with an independent propulsion system enabling them to maintain operating conditions with some limitations in power (but 50% of the main power is to be

maintained), speed, range and comfort, in the case of any single failure of items relative to the propulsion.

Table 2 : List of additional class notations

Additional class notation	Reference for definition	Reference in Part F	Remarks
AUT-CCS	[6.3.3]	Pt F, Ch 2, Sec 2	(1)
AUT-PORT	[6.3.4]	Pt F, Ch 2, Sec 3	(1)
AUT-UMS	[6.3.2]	Pt F, Ch 2, Sec 1	(1)
AVM-IAPS	[6.2.2]	Pt F, Ch 1, Sec 1	(1)
AVM-DPS or AVM-DPS-NS	[6.2.3]	Pt F, Ch 1, Sec 2	(1)
AVM-IPS	[6.2.4]	Pt F, Ch 1, Sec 3	(1)
BWM-E	[6.11.13]	NA	(4)
BWM-T	[6.11.13]	NA	
CARGOCONTROL	[6.11.7]	Pt F, Ch 10, Sec 7	
CLEAN-AIR	[6.6.3]	Pt F, Ch 5, Sec 3	(3)
CLEAN-SEA	[6.6.2]	Pt F, Ch 5, Sec 4	(3)
COAT-WBT	[6.11.10]	Pt F, Ch 10, Sec 10	
COMF-AIR	[6.5.4]	Pt F, Ch 4, Sec 3	
COMF-NOISE	[6.5.2]	Pt F, Ch 4, Sec 1	
COMF-VIB	[6.5.3]	Pt F, Ch 4, Sec 2	
COVENT	[6.11.6]	Pt F, Ch 10, Sec 6	
DIVINGSUPPORT	[6.11.15]	Pt F, Ch 10, Sec 12	
DMS	[6.11.9]	Pt F, Ch 10, Sec 9	
DYNAPOS	[6.11.4]	Pt F, Ch 10, Sec 4	(1)
FATIGUELIFE (Y)	[6.11.11]	NA	
FIRE	[6.11.19]	Pt F, Ch 10, Sec 14	
FIRE-AS	[6.11.19]	Pt F, Ch 10, Sec 14	
FIRE-MS	[6.11.19]	Pt F, Ch 10, Sec 14	
FIRE-CS	[6.11.19]	Pt F, Ch 10, Sec 14	
GREEN PLUS	[6.6.4] a)	Pt F, Ch 5, Sec 1	
GREEN STAR 3 DESIGN	[6.6.4] b)	Pt F, Ch 5, Sec 2	This cumulative notation supersedes the notations CLEAN-SEA and CLEAN-AIR , when both are assigned
GREEN STAR 3	[6.6.4] c)	Pt F, Ch 5, Sec 2	
HELIDECK	[6.11.17]	Pt F, Ch 10, Sec 13	
HELIDECK-H	[6.11.17]	Pt F, Ch 10, Sec 13	
ICE	[6.7.4]	-	
ICE CLASS IA	[6.7.2]	Part F, Chapter 6	
ICE CLASS IA SUPER	[6.7.2]	Part F, Chapter 6	
ICE CLASS IB	[6.7.2]	Part F, Chapter 6	
ICE CLASS IC	[6.7.2]	Part F, Chapter 6	
ICE CLASS ID	[6.7.3]	Part F, Chapter 6	
INERTGAS-A	[6.11.18]	NA	
INERTGAS-B		NA	
INERTGAS-C		NA	
INWATERSURVEY	[6.11.2]	Pt F, Ch 10, Sec 2	
LOWSOx(N)	[6.6.5]	Pt F, Ch 5, Sec 3	
LSF	[6.11.16]	Pt F, Ch 5, Sec 5	
MANOVR	[6.11.8]	Pt F, Ch 10, Sec 8	
MLCDESIGN	[6.11.14]	Pt F, Ch 10, Sec 11	
(1) A construction mark is added to this notation. (2) This notation may be completed by the specific notations -MIDSHIP and -TRANSFER (see [6.11.5]). (3) When ships are assigned the notations CLEAN-SEA and CLEAN-AIR, the two separate notations are superseded by the cumulative additional class notation GREEN STAR 3 DESIGN (see [6.6.4]). (4) This notation may be completed by the specific features: sequential, flow-through, dilution.			

Additional class notation	Reference for definition	Reference in Part F	Remarks
MON-HULL	[6.4.2]	Pt F, Ch 3, Sec 1	
MON-SHAFT	[6.4.3]	Pt F, Ch 3, Sec 2	
PMA	[6.11.12]	NA	
PMS	[6.10.2]	Pt F, Ch 9, Sec 1	
PMS-CM(PROP)	[6.10.3]	Pt F, Ch 9, Sec 2	
PMS-CM(HVAC)	[6.10.4]	Pt F, Ch 9, Sec 3	
PMS-CM(CARGO)	[6.10.5]	Pt F, Ch 9, Sec 4	
PMS-CM(ELE)	[6.10.6]	Pt F, Ch 9, Sec 5	
PMS-CM(FDS)	[6.10.7]	Pt F, Ch 9, Sec 6	
POLAR CLASS	[6.8.1]	Part F, Chapter 7	
SPM	[6.11.3]	Pt F, Ch 10, Sec 3	
STRENGTHBOTTOM	[6.11.1]	Pt F, Ch 10, Sec 1	
VCS	[6.11.5]	Pt F, Ch 10, Sec 5	(2)
WINTERIZATION (temp)	[6.9.1]	Part F, Chapter 8	
(1) A construction mark is added to this notation. (2) This notation may be completed by the specific notations -MIDSHIP and -TRANSFER (see [6.11.5]). (3) When ships are assigned the notations CLEAN-SEA and CLEAN-AIR, the two separate notations are superseded by the cumulative additional class notation GREEN STAR 3 DESIGN (see [6.6.4]). (4) This notation may be completed by the specific features: sequential, flow-through, dilution.			

6.3 Automated machinery systems (AUT)

6.3.1 General

The notations dealt with under this heading are relevant to automated machinery systems installed on board ships.

In compliance with [6.1.3], these notations are assigned a construction mark, as defined in [3].

The requirements for the assignment of these notations are given in Part F, Chapter 2.

6.3.2 Unattended machinery space (AUT-UMS)

The additional class notation **AUT-UMS** is assigned to ships which are fitted with automated installations enabling machinery spaces to remain periodically unattended in all sailing conditions including manoeuvring.

6.3.3 Centralised control station (AUT-CCS)

The additional class notation **AUT-CCS** is assigned to ships which are fitted with machinery installations operated and monitored from a centralised control station.

6.3.4 Automated operation in port (AUT-PORT)

The additional class notation **AUT-PORT** is assigned to ships which are fitted with automated installations enabling the ship's operation in port or at anchor without personnel spe-

cially assigned for the watch-keeping of the machinery in service.

6.4 Monitoring equipment (MON)

6.4.1 General

The notations dealt with under this heading are relevant to hull and tailshaft monitoring equipment installed on board ships.

The requirements for the assignment of these notations are given in Part F, Chapter 3.

6.4.2 Hull stress monitoring (MON-HULL)

The additional class notation **MON-HULL** is assigned to ships which are fitted with equipment continuously monitoring ship's dynamic loads through measurements of motions in waves and stresses/deformations in the hull structure.

6.4.3 Tailshaft monitoring system (MON-SHAFT)

The additional class notation **MON-SHAFT** is assigned to ships which are fitted with a temperature monitoring system for the tailshaft stern tube bearings. The assignment of this notation allows the ship to be granted a reduced scope for complete tailshaft surveys, see Ch 2, Sec 2, [5.5.4].

6.5 Comfort on board ships (COMF)

6.5.1 General

The notations dealt with under this heading are relevant to the assessment of comfort on board ships with regard to the level of noise, vibration and/or air temperature/humidity.

The parameters which are taken into consideration for the evaluation of the comfort such as the level of noise, the

level of vibration and the air temperature and/or humidity will be indicated in the Certificate of Classification.

These parameters are only verified once for all when the ship is classed.

The requirements for the assignment of these notations are given in Part F, Chapter 4.

6.5.2 Comfort with regard to noise (COMF-NOISE)

The additional class notation **COMF-NOISE** is assigned to ships satisfying levels of noise defined in Pt F, Ch 4, Sec 1. The assessment of noise levels is only carried out through design review and sea trials.

The notation is completed by a letter **A**, **B** or **C** which represents the merit level achieved for the assignment of the notation, the merit **A** corresponding to the lowest level of acceptable noise. The notation **COMF-NOISE** is only assigned if at least the merit level **C** is reached.

When the merit levels achieved for the persons spaces (if any) and the crew spaces are different, the notation is completed by the suffix:

- **PAX**, for person spaces, and
- **CREW**, for crew spaces.

6.5.3 Comfort with regard to vibration (COMF-VIB)

The additional class notation **COMF-VIB** is assigned to ships satisfying levels of vibration defined in Pt F, Ch 4, Sec 2. The assessment of vibration levels is only carried out through design review and sea trials.

The notation is completed by a letter **A**, **B** or **C**, which represents the merit level achieved for the assignment of the notation, merit **A** corresponding to the lowest level of vibration. The notation **COMF-VIB** is only assigned if at least merit level **C** is reached.

When the merit levels achieved for the persons spaces (if any) and the crew spaces are different, the notation is completed by the suffix:

- **PAX**, for person spaces, and
- **CREW**, for crew spaces.

6.5.4 Comfort with regard to air temperature/humidity (COMF-AIR)

The additional class notation **COMF-AIR** is assigned to ships fitted with a combined heating-ventilation-air conditioning system (HVAC) satisfying levels of air temperature and humidity defined in Pt F, Ch 4, Sec 3. The assessment of air temperature/humidity levels is only carried out through design review and sea trials in Winter and Summer conditions.

The notation may be completed by one of the letters **W** or **S** when the HVAC system has been satisfactorily tested only in Winter or in Summer conditions respectively.

6.6 Pollution prevention

6.6.1 General

The notations dealt with under this heading are assigned to ships fitted with equipment and arrangements enabling

them to reduce the pollution of the sea and/or air caused by release of solid waste and liquid and/or gaseous effluents.

The requirements for the assignment of these notations are given in Part F, Chapter 15.

6.6.2 Sea pollution prevention (CLEAN-SEA)

The additional class notation **CLEAN-SEA** is assigned to ships provided with construction and procedural means to prevent pollution of the sea. This is achieved by compliance with the applicable requirements of Annex I, Annex II, Annex III, Annex IV and Annex V of MARPOL Convention, relevant to ship's liquid and solid releases, as well as additional requirements related to prevention of sea pollution as follows:

- prevention of accidental pollution by means of location of fuel and lube oil tanks above the double bottom and away from ship sides
- prevention of operational pollution by means of bilge water separation and filtering, holding tanks for treated sewage and grey water
- prevention of transfer of harmful organisms and pathogens in the ballast water
- prevention of pollution by tributyltin by means of TBT free antifouling paints
- prevention of pollution by solid garbage (resulting from the compacting device and incinerators) by means of proper storage of such waste
- ship recycling.

6.6.3 Air pollution prevention (CLEAN-AIR)

The additional class notation **CLEAN-AIR** is assigned to ships provided with construction and procedural means to prevent pollution of the air. This is achieved by compliance with the applicable requirements of Annex VI of MARPOL Convention, as well as additional requirements related to low emissions to the air as follows:

- prevention of air pollution by exhaust gas (particles, CO_x, NO_x, SO_x) by means of low emission engines, use of low sulphur content fuels and incinerators
- use of refrigerants and fixed fire fighting means with zero ozone depleting potential and low global warming potential
- control of release of refrigerants to the atmosphere by means of leak detection and evacuation systems
- recovery of vapours emitted from cargo systems of ships carrying dangerous liquid cargoes in bulk.

Note 1: For ships with the service notation **oil tanker**, **FLS tanker**, excluding those intended for the carriage of products having flash-point > 60°C, the assignment of the notation **VCS** (Vapour Control System) is a prerequisite for the assignment of the notation **CLEAN-AIR**. However, the notation **VCS** may also be assigned as a single notation as described in [6.11.5].

6.6.4 Sea and air pollution prevention (GREEN PLUS - GREEN STAR 3 DESIGN - GREEN STAR 3)

a) GREEN PLUS

The additional class notation **GREEN PLUS** is assigned to ships designed and provided with systems, compo-

nents and procedural means to control and prevent the emission of polluting substances into the sea and the air, in accordance with the requirements in Pt F, Ch 5, Sec 1.

b) **GREEN STAR 3 DESIGN**

When ships are assigned the notations **CLEAN-SEA** and **CLEAN-AIR**, the two separate notations are superseded by the cumulative additional class notation **GREEN STAR 3 DESIGN**.

c) **GREEN STAR 3**

The additional class notation **GREEN STAR 3** is assigned to ships provided with equipment and procedural means to prevent pollution of the sea and of the air. This is achieved by compliance with the applicable requirements of Annexes I to VI of MARPOL Convention, relevant to ship's liquid, solid and gas releases, as well as additional requirements related to prevention of sea and air pollution as follows:

- prevention of accidental pollution by means of on board equipment to combat oil spills;
- prevention of operational pollution by means of procedures, bilge water separation and filtering, holding tanks for treated sewage and grey water, development of an Environmental Management Plan and availability on board of an Environmental Ship Manager, use of refrigerants and fixed fire-fighting means with zero ozone depleting potential and low global warming potential, and use of procedures to control leakage;
- prevention of pollution by tributyltin by means of TBT free antifouling paints;
- prevention of pollution by solid garbage by means of proper storage of such waste;
- ship recycling.

Note 1: For ships with the service notation **oil tanker**, **FLS tanker**, excluding those intended for the carriage of products having flashpoint > 60°C, the assignment of the notation **VCS** (Vapour Control System) is a prerequisite for the assignment of the notation **GREEN STAR 3**. However, the notation **VCS** may also be assigned as a single notation as described in [6.11.5].

6.6.5 LowSOx(N)

The sulphur content of any fuel oil used on board ships is not to exceed the percentage by mass as required by MARPOL 73/78 Annex VI. The class notation **LOW SOx (N)** is assigned to ships that use on board fuel oil having sulphur content (average percentage calculated on a yearly basis) less than 3%. The value N in brackets is the maximum percentage of sulphur content in fuel oils used on board according to ship's procedures.

6.7 Navigation in ice (ICE CLASS)

6.7.1 The notations dealt with under [6.7.2] are relevant to ships strengthened for navigation in ice in accordance with the "Finnish-Swedish Ice Class Rules 2002" as adopted on 20 September 2002 by the Finnish and Swedish authorities and subsequent amendments.

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

These requirements reproduce the provisions of the Finnish-Swedish Ice Class Rules cited above.

6.7.2 The following additional class notations are assigned:

- ICE CLASS IA SUPER**, for navigation in extreme ice conditions
- ICE CLASS IA**, for navigation in severe ice conditions
- ICE CLASS IB**, for navigation in medium ice conditions
- ICE CLASS IC**, for navigation in light ice conditions.

Note 1: Attention is drawn to paragraph 9 of the 1985 Finnish-Swedish Ice Class Rules, where it is stated that these notations are assigned to the maximum permissible draught according to the Tonnage and Loadline Certificates.

Note 2: Attention is drawn to paragraph 2 of the above Rules, where it is stated that the requirements of Finnish-Swedish Ice Class Rules published on 6th April 1971 are still in force for ships whose keel was laid, or at a similar stage of construction, before November 1st 1986.

6.7.3 The additional class notation **ICE CLASS ID** is assigned to ships whose reinforcements for navigation in ice are different from those required for the assignment of the notations defined in [6.7.2], but which comply with the specific requirements detailed in Part F, Chapter 6.

6.7.4 The additional class notation **ICE** is assigned to ships whose reinforcements for navigation in ice are different from those required for the assignment of the notations defined in [6.7.2] and [6.7.3], when this has been specially considered by the Society.

6.8 Navigation in ice (POLAR CLASS)

6.8.1 The following additional class notations are assigned to ships intended for navigation in ice-infested polar waters, except icebreakers:

- **POLAR CLASS PC1**
- **POLAR CLASS PC2**
- **POLAR CLASS PC3**
- **POLAR CLASS PC4**
- **POLAR CLASS PC5**
- **POLAR CLASS PC6**
- **POLAR CLASS PC7**

The requirements for the assignment of these notations are given in Part F, Chapter 7.

6.9 WINTERIZATION (temp)

6.9.1 The additional class notation **WINTERIZATION (temp)** is assigned to ships intended to be operated in a cold climate over long periods.

The value **temp**, in brackets, is the design temperature in °C and is to be taken as the lowest mean daily average air temperature in the area where the ship is intended to operate (see Pt F, Ch 8, Sec 1, [2]).

In order for the **WINTERIZATION (temp)** notation to be granted, the ship is to be assigned the additional class nota-

tion **GREEN PLUS** or equivalent and one of the following class notations:

- **POLAR CLASS**
- **ICE CLASS IA SUPER**
- **ICE CLASS IA**
- **ICE CLASS IB**
- **ICE CLASS IC**

The requirements for the assignment of this notation are given in Part F, Chapter 6.

6.10 Planned maintenance scheme and condition based maintenance (PMS/CBM)

6.10.1 General

The notations dealt with under this item [6.10] are assigned to ships where a Planned Maintenance Scheme (hereinafter denominated PMS) has been implemented according to the requirements given in Part F, Chapter 9.

6.10.2 PMS

Where a Planned Maintenance Scheme is approved by the Society the additional class notation **PMS** is assigned. An implementation survey is to be carried out to confirm the validity of the additional class notation.

The requirements for the assignment of this notation are given in Pt F, Ch 9, Sec 1.

6.10.3 PMS-CM(PROP)

Where a Planned Maintenance Scheme approved by the Society is implemented and Condition Based Maintenance complying with the requirements of Pt F, Ch 9, Sec 2 relevant to the propulsion system is applied, the additional class notation **PMS-CM(PROP)** is assigned.

6.10.4 PMS-CM(HVAC)

Where a Planned Maintenance Scheme approved by the Society is implemented, and Condition Based Maintenance complying with the requirements of Pt F, Ch 9, Sec 3 relevant to the heating, ventilation and air conditioning (HVAC) system is applied, the additional class notation **PMS-CM(HVAC)** is assigned.

6.10.5 PMS-CM(CARGO)

Where a Planned Maintenance Scheme approved by the Society is implemented, and Condition Based Maintenance complying with the requirements of Pt F, Ch 9, Sec 4 relevant to the cargo system is applied, the additional class notation **PMS-CM(CARGO)** is assigned.

6.10.6 PMS-CM(ELE)

Where a Planned Maintenance Scheme approved by the Society is implemented, and Condition Based Maintenance complying with the requirements of Pt F, Ch 9, Sec 5 relevant to electrical switchboards is applied, the additional class notation **PMS-CM(ELE)** is assigned.

6.10.7 PMS-CM(FDS)

Where a Planned Maintenance Scheme approved by the Society is implemented, and Condition Based Maintenance complying with the requirements of Pt F, Ch 9, Sec 6 relevant

to the fire detection system is applied, the additional class notation **PMS-CM(FDS)** is assigned.

6.11 Other additional class notations

6.11.1 Strengthened bottom

The additional class notation **STRENGTHBOTTOM** may be assigned to ships built with specially strengthened bottom structures so as to be able to be loaded and/or unloaded when properly stranded.

The requirements for the assignment of this notation are given in Pt F, Ch 10, Sec 1.

6.11.2 In-water survey

The additional class notation **INWATERSURVEY** may be assigned to ships provided with suitable arrangements to facilitate the in-water surveys as provided in Ch 2, Sec 2, [5.4.4].

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

6.11.3 Single point mooring

The additional class notation **SPM** (Single Point Mooring) may be assigned to ships fitted with a specific mooring installation.

The requirements for the assignment of this notation are given in Pt F, Ch 10, Sec 3.

These requirements reproduce the provisions of "Recommendations for Equipment Employed in the Mooring of Ships at Single Point Mooring" (3rd edition 1993), issued by OCIMF (Oil Companies International Marine Forum).

6.11.4 Dynamic positioning

The additional class notation **DYNAPOS** may be assigned to ships equipped with a dynamic positioning system.

In compliance with [6.1.3], this notation is assigned a construction mark, as defined in [3].

The scope of the notation, including the additional keys for the description of capability of the installation and the requirements for assignment, are given in Pt F, Ch 10, Sec 4.

6.11.5 Vapour control system

The additional class notation **VCS** (Vapour Control System) may be assigned to ships equipped with cargo vapour control systems both in way of midship cargo crossovers and in way of stern cargo manifolds. The notation **-MIDSHIP** is added to the notation where the ship is equipped with cargo vapour control systems only in way of cargo midship crossovers. The notation **-TRANSFER** is added to the notation where, in addition, the ship is fitted with specific arrangements for transferring cargo vapours to another ship.

This notation is assigned only to ships having the service notation **oil tanker** or **FLS tanker**.

The requirements for the assignment of this notation are given in Pt F, Ch 10, Sec 5.

6.11.6 Cofferdam ventilation

The additional class notation **COVENT** (Cofferdam Ventilation) may be assigned to ships having all cofferdams

(including ballast tanks) in the cargo area provided with fixed ventilation systems.

This notation is assigned only to ships having the service notation **oil tanker** or **FLS tanker**.

The requirements for the assignment of this notation are given in Pt F, Ch 10, Sec 6.

6.11.7 Centralised cargo control

The additional class notation **CARGOCONTROL** may be assigned to ships (carrying liquid cargo in bulk) equipped with a centralised system for handling cargo and ballast liquids.

In principle, this notation is assigned only to ships having the service notation **oil tanker** or **FLS tanker**.

The requirements for the assignment of this notation are given in Pt F, Ch 10, Sec 7.

6.11.8 Ship manoeuvrability

The additional class notation **MANOVR** may be assigned to ships complying with manoeuvring capability standards, defined in IMO Resolution MSC.137(76) - "Standards for Ship Manoeuvrability".

The requirements for the assignment of this notation are given in Pt F, Ch 10, Sec 8.

These requirements reproduce the provisions of IMO Resolution MSC.137(76) and are applicable to ships of all rudder and propulsion types, of 100 m in length and over.

6.11.9 Damage stability

The additional class notation **DMS** may be assigned to ships complying with the damage stability requirements given in Pt F, Ch 10, Sec 9.

6.11.10 Protective coatings in water ballast tanks

The additional class notation **COAT-WBT** may be assigned to ships surveyed during construction by the Society, whose water ballast tanks have been provided with protective coatings complying with the requirements for the assignment of this notation given in Pt F, Ch 10, Sec 10.

The notation may be assigned to ships having any service notation.

6.11.11 Fatigue Life

The additional class notation **FATIGUELIFE (Y)** is assigned to ships designed for a fatigue life greater than Y years. In general, Y is to be greater than 20 years; for ships with one of the service notations **oil tanker ESP CSR**, Y is to be greater than 25 years.

The fatigue life is to be calculated in accordance with the applicable criteria defined in the Rules.

For Y greater than 30 years, the strength calculation and construction criteria are to be defined by the Society on a case-by-case basis.

6.11.12 Permanent means of access

The additional class notation **PMA** is assigned to cargo ships that are provided with permanent means of access complying with SOLAS Regulation II-1/3-6, as amended by Resolution MSC 151(78), with the associated "Technical provisions

for means of access for inspections" in IMO Resolution MSC 158(78) and the relevant interpretations in IACS UI SC191.

6.11.13 Ballast water management

The additional class notation **BWM-E** is assigned to ships complying with the "International Convention for the Control and Management of Ship's Ballast Water and Sediments" as adopted by IMO on 13 February 2004, by means of a Ballast Water Exchange system.

The notation is to be completed by one of the following features, as applicable:

- **sequential** when the Ballast Water Exchange system is of sequential type
- **flow-through** when the Ballast Water Exchange system is of flow-through type
- **dilution** when the Ballast Water Exchange system is of dilution type.

Note 1: according to the above Convention, Ballast Water Exchange will be phased out as an acceptable method, depending on the ballast water capacity and date of delivery of the vessel. After phasing out, the only acceptable method will be Ballast Water Treatment. Therefore the class notation BWM-E will be withdrawn when the Ballast Water Exchange is phased out.

The additional class notation **BWM-T** is assigned to ships complying with the "International Convention for the Control and Management of Ship's Ballast Water and Sediments" as adopted by IMO on 13 February 2004, by means of a Ballast Water Treatment system.

6.11.14 Crew Accommodation and Recreational Facilities according to the Marine Labour Convention, 2006 (MLCDESIGN)

The additional class notation **MLCDESIGN** is assigned to ships having crew accommodation and recreational facilities complying with the Marine Labour Convention, 2006 - Title 3 and with the requirements of Pt F, Ch 10, Sec 11.

6.11.15 Ships equipped to support diving operations

The additional class notation **DIVINGSUPPORT** is assigned to ships equipped to support diving operations, which are provided with a diving system.

Diving systems installed on Tasneef classified ships assigned the **DIVINGSUPPORT** notation are to be certified by Tasneef according to the "Rules for the classification of underwater units". Certificates issued by another QSCS Classification Society may be accepted.

The requirements for the assignment of this notation are given in Pt F, Ch 10, Sec 12.

6.11.16 Low Sulphur Fuels (LSF)

The additional class notation **LSF** is assigned to ships for which evidence has been provided to the Society, in accordance with Pt F, Ch 5, Sec 5, that Low Sulphur Fuels (LSF) may be used by some or all on board fuel oil consumers to be recorded in the ship's status, together with the relevant percentage, in weight, of the fuel sulphur content (e.g. 1%, 0,5%, 0.1%).

Upon request, a statement may be issued to ships complying with the requirements of this Section.

It is to be noted that responsibility for ensuring that the ship is suitable for safe operation using the fuels required by the

applicable national or international legislation remains with the operator.

6.11.17 Helicopter facilities

The additional class notation **HELIDECK** may be assigned to ships fitted with helicopter facilities. In particular, the notation **HELIDECK-H** is assigned to ships fitted with helicopter facilities including hangar and refuelling or maintenance facilities, while the notation **HELIDECK** is assigned when the helicopter facilities do not include hangar and refuelling or maintenance facilities.

The requirements for the assignment of these notations are given in Pt F, Ch 10, Sec 13.

6.11.18 Helicopter facilities

The additional class notation **HELIDECK** may be assigned to ships fitted with helicopter facilities. In particular, the notation **HELIDECK-H** is assigned to ships fitted with helicopter facilities including hangar and refuelling or maintenance facilities, while the notation **HELIDECK** is assigned when the helicopter facilities do not include hangar and refuelling or maintenance facilities.

The requirements for the assignment of these notations are given in Pt F, Ch 10, Sec 13.

6.11.19 Fire Protection (FIRE)

The following additional class notations are assigned to ships having enhanced features relevant to fire protection:

- **FIRE**
- **FIRE-AS**
- **FIRE-MS**
- **FIRE-CS**.

The requirements for the assignment of these notations are given in Part F, Ch 10, Sec 14.

7 Other notations

7.1

7.1.1 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.

Part A
Classification and Surveys

Chapter 2

**ASSIGNMENT, MAINTENANCE, SUSPENSION AND
WITHDRAWAL OF CLASS**

SECTION 1	ASSIGNMENT OF CLASS
SECTION 2	MAINTENANCE OF CLASS
SECTION 3	SUSPENSION AND WITHDRAWAL OF CLASS
APPENDIX 1	CMS AND PMS: SURVEYS CARRIED OUT BY THE CHIEF ENGINEER
APPENDIX 2	THICKNESS MEASUREMENTS: EXTENT, DETERMINATION OF LOCATIONS AND ACCEPTANCE CRITERIA
APPENDIX 3	CRITERIA FOR LONGITUDINAL STRENGTH OF THE HULL GIRDER

SECTION 1

ASSIGNMENT OF CLASS

1 General

1.1 Main cases of assignment of class

1.1.1 Assignment of class (1/2/2021)

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

- the completion of the new building, during which a survey has been performed,
- the completion of the new building, during which the survey has been carried out according to IACS Procedural Requirement PR 1B when the Society's class is assigned under double class or dual class regime with another QSCS Classification Society, or
- a survey carried out according to the IACS Procedural Requirement PR 1A, when ships change class from one QSCS Classification Society (see Note 1) to the Society or the Society's class is added to a ship already in class with another QSCS Classification Society, or
- a specific admission to class survey, in cases where a ship is classed with a non-QSCS Classification Society or is not classed at all.

Note 1: The obligations of the Procedural Requirement PR1A apply to QSCS Classification Societies.

1.1.2 Reassignment of class

Reassignment of class is that part of the process of classification consisting in all the steps aimed at issuing a Certificate of Classification to a ship previously classed with the Society but which had the class withdrawn.

Two cases are considered for reassignment of class:

- a) ship in service classed by another QSCS Classification Society,
- b) ship in service not classed by another QSCS Classification Society.

2 New building procedure

2.1 Ships surveyed by the Society during construction

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

2.1.2 The Society:

- approves the plans and documentation submitted as required by the Rules
- proceeds, if required, with the appraisal of the design of materials and equipment used in the construction of the ship and their inspection at works
- carries out surveys or obtains appropriate evidence to satisfy itself that the scantlings and construction meet the rule requirements in relation to the approved drawings
- attends tests and trials provided for in the Rules
- assigns the construction mark ? ; refer to Ch 1, Sec 2, [3.2.1].

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

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

- conduct an overall examination of the parts of the ship covered by the Rules
- examine the construction methods and procedures when required by the Rules
- check selected items covered by the rule requirements
- attend tests and trials where applicable and deemed necessary.

2.1.5 Use of materials, machinery, appliances and items

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

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

The requirements for the selection of materials to be used in the construction of the various parts of a ship, the characteristics of products to be used for such parts and the checks required for their acceptance are to be as stated in Part C and Part D, as applicable, or in other Parts of the Rules or as specified on approved plans. In particular, the testing of products manufactured according to quality assurance procedures approved by the Society and the approval of such procedures are governed by the requirements of Pt D, Ch 1, Sec 1, [3] of the Rules.

2.1.6 Defects or deficiencies and their repair

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

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

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

2.1.7 Equivalence of Rule testing under certain conditions

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

2.1.8 Equivalence of design approval by another QSCS Classification Society under certain conditions

The Society may, at its discretion and subject to conditions and checks deemed appropriate, accept the plans and documentation approved by another QSCS Classification Society, as far as classification is concerned and according to the principle of equivalence of Rules in Ch 1, Sec 1, [2.1]

2.1.9 Interim Certificate of Classification (1/1/2021)

Upon satisfactory completion of the survey during construction, the Surveyor issues to the shipyard an interim Certificate of Classification valid not more than 5 months. This certificate indicates the class notations.

The certificate is issued with a letter where all outstanding conditions of class and significant memoranda are recorded; class notations requested by the shipyard and not assigned due to pending items are clearly indicated together with the relevant pending items.

It is the shipyard's duty to provide the Owner with the interim Certificate of Classification and a copy of the letter.

2.1.10 Certificate of Classification (1/1/2021)

Upon satisfactory review of the survey reports, the Society issues to the shipyard the Certificate of Classification valid for the whole period of class. The certificate indicates the class notations.

The Certificate of Classification may be provided directly to the Owner upon request, subject to written authorisation from the shipyard.

All outstanding conditions of class, significant memoranda and pending items for class notations not assigned are made available in the ship status.

2.2 Other cases

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

2.3 Documentation

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

2.3.2 The design data, calculations and plans to be submitted are listed in the relevant chapters of the Rules.

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

The documentation requested in the various Chapters of the Rules in hard copy may, as an alternative, be submitted in electronic format to be agreed with the Society.

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

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

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

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

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

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

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

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

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

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

2.4 Assignment of Double Class to a ship surveyed during construction by two Societies

2.4.1 Double Class (1/2/2021)

A double class ship is one which is classed by two Societies, where each Society acts independently during construction.

2.4.2 General (1/2/2021)

The requirements from [2.1] to [2.3] apply also for the assignment of the Double Class to a new construction

2.4.3 Survey (1/2/2021)

The surveyor surveys the ship to check that it complies with the requirements of Ch 3, Sec 1, [4.1].

2.5 Assignment of a Dual Class to a ship surveyed during construction by two QSCS Classification Societies and in full compliance with all applicable and relevant IACS Resolutions (IACS PR 1B)

2.5.1 Dual Class (1/2/2021)

A dual class new building is one which is classed during construction by two Societies where each Society acts on behalf of the other Society in accordance with the trilateral agreement adopted by the two Societies and the shipyard. This agreement shall clearly define modalities such as submission of plans, rules to be applied, harmonizing and resolution of plan approval comments between societies.

2.5.2 Basic conditions (1/2/2021)

The Procedural Requirements for assigning dual class are applicable when none of the Societies which carried out the new construction technical review has issued its first Certificate of Classification (see Note 1). Unless stated otherwise, the provisions apply to ships of over 100 GT of whatever type, self-propelled or not, restricted or unrestricted service, except for "inland waterway" ships. Cases concerning ships of 100 GT or less are dealt with by the Society on a case-by-case basis.

Whenever the Societies are requested by a Shipyard/Owner to accept a new building into their class under dual class:

- a) each Society is to share information and records related to new construction such as plan approval including following up and closing of comments imposed, surveys, inspection, witnesses and tests etc., to perform the surveys and verify compliance with the relevant requirements; and
- b) each Society is to issue a certificate of classification for the vessel upon satisfactory completion of new construction survey process.

Note 1: "First Certificate of Classification" means either the Interim Certificate of Classification or full term Certificate of Classification or another document serving the same purpose.

2.5.3 General (1/2/2021)

The requirements from [2.1] to [2.3] are applied in accordance with the trilateral agreement referred to in [2.5.1].

2.5.4 Surveys (1/2/2021)

The surveyor surveys the ship to check that it complies with the requirements of Ch 3, Sec 1, [4.2].

3 Ships classed after construction

3.1 General

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

- classed with a QSCS Classification Society, or
- not classed with a QSCS Classification Society.

3.2 Transfer to the Society's class of a ship in service classed by another QSCS Classification Society (IACS PR 1A)

3.2.1 Documentation to be submitted and design assessment

As a rule, the minimum documentation to be supplied for filing purposes is listed hereinafter. The Society may carry out a design assessment on a case-by-case basis (additional documentation may be requested).

- a) Main plans:
 - 1) general arrangement,
 - 2) capacity plan,
 - 3) hydrostatic curves,
 - 4) loading manual where required.
- b) Hull structure plans:
 - 1) midship section,
 - 2) scantling plan,
 - 3) decks,
 - 4) shell expansion,
 - 5) transverse bulkheads,
 - 6) rudder and rudder stock,
 - 7) hatch covers.
- c) Machinery plans:
 - 1) machinery arrangement,
 - 2) intermediate, thrust and screw shafts,
 - 3) propeller,
 - 4) main engines, propulsion gears and clutch systems (or Manufacturer's make, model and rating information),
 - 5) for steam turbine ships: main boilers, superheaters and economisers (or Manufacturer's make, model and rating information) and steam piping,
 - 6) bilge and ballast piping diagram,
 - 7) wiring diagram,
 - 8) steering gear system piping and arrangements and steering gear (or Manufacturer's make and model information),
 - 9) torsion vibration calculations for ships less than two years old,

- 10) plans for flexible couplings and/or torque limiting shafting devices in the propulsion line shafting (or Manufacturer's make, model and rating information), for ships assigned with one of the ice additional class notations described in Ch 1, Sec 2, [6.7.2],
 - 11) pumping arrangements at the forward and after ends, drainage of cofferdams and pump rooms for oil tankers.
- d) Plans required for ships assigned one of the additional class notations for Automated Machinery Systems:
- 1) instrument and alarm list,
 - 2) fire alarm system,
 - 3) list of automatic safety functions (e.g. slowdowns, shutdowns, etc),
 - 4) function testing plan.

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.

3.2.2 Basic conditions of IACS Procedural Requirement No. 1A (1/1/2021)

This Procedural Requirement is applicable, unless stated otherwise, to ships of over 100 GT of whatever type, self-propelled or not, restricted or unrestricted navigation, except for "inland waterway" ships.

The age of the ship considered in the procedure for transfer of class is the age calculated from the date of delivery to the "Date Request for class was received" in IACS Form G Part A - Survey Status Request.

The obligations of the Procedural Requirement continue to apply when a ship's class is suspended by the losing Society and for 6 months following withdrawal of a ship's class by the losing Society.

Cases concerning ships of 100 GT or less are dealt with by the Society on a case-by-case basis.

Whenever the Society is requested by an Owner to accept a ship in service into class:

- a) the relevant surveys specified in Ch 3, Sec 2, [1.1.2] are to be satisfactorily completed for entry into class;
- b) for ships less than 15 years of age, an Interim Certificate of Classification can be issued only after the Society has completed all overdue surveys and all overdue conditions of class previously issued against the ship as specified to the Owner by the losing Society;
- c) for ships 15 years of age and over, an Interim Certificate of Classification can be issued only after the losing Society has completed all overdue surveys and all overdue conditions of class previously issued against the ship;
- d) any outstanding conditions of class are to be dealt with by their due dates;
- e) the principles given in a), b) and c) above apply to any additional conditions of class issued against the ship arising from surveys which were not included in the initial survey status provided to the Society by the losing Society because the surveys were carried out in close

proximity to the request for transfer of class. If received after the issuance of the Interim Certificate of Classification by the Society and overdue, such additional conditions of class are to be dealt with at the first port of call by the relevant Society depending on the age of the ship;

- f) copies of the plans listed in [3.2.1] are to be provided to the Society as a prerequisite to obtaining a full term Certificate of Classification. If the Owner is unable to provide all of the required plans, the losing Society is to be authorised by the Owner to transfer copies of such of these plans as it may possess directly to and upon request from the Society.

3.2.3 Conditions of IACS Procedural Requirement No. 1A, preventing issue of the Interim Certificate of Classification (1/1/2021)

Prior to issuing an Interim Certificate of Classification, the Society is to obtain:

- a) from the Owner, a written request for transfer of class, containing an authorisation for the Society to obtain the current classification status from the losing Society; and
- b) the current classification survey status from the Headquarters of the losing Society or one of its designated control or management centres.

If the Society does not receive the classification survey status from the losing Society within 3 working days from the request, the Society may utilise the losing Society's survey status information provided by the Owner and, after complying with the other relevant provisions of the Procedural Requirement, issue an Interim Certificate of Classification. In such cases the conditions in [3.2.2] are still applicable (a statement is normally included in the Interim Certificate of Classification for this purpose).

The Society cannot issue an Interim Certificate of Classification, or other documents enabling the ship to trade:

- 1) until all overdue surveys and all overdue conditions of class previously issued against the subject ship, as specified to the Owner by the losing Society, have been completed and rectified either by the Society for ships less than 15 years of age or by the losing Society for ships 15 years of age and above;
- 2) until all relevant surveys specified in Ch 3, Sec 2, [1.1.2] have been satisfactorily completed; when facilities are not available in the first port of survey, an Interim Certificate of Classification may be issued to allow the ship to undertake a direct voyage to a port where facilities are available to complete surveys required in Ch 3, Sec 2, [1.1.2]. In such cases the surveys specified in Ch 3, Sec 2, [1.1.2] are to be carried out to the maximum extent practicable at the first port of survey, but in no case less than the scope of annual hull surveys and machinery surveys as required in Ch 3, Sec 2, [1.1.2] b);
- 3) before giving the opportunity to the flag Administration to provide any further instructions within 3 working days, in compliance with the requirements of Art. 15.4 of EU Directive 94/57/EC as amended.

3.2.4 Limitations of IACS Procedural Requirement No. 1A for the Certificate of Classification (1/1/2021)

The validity of the Interim Certificate of Classification and the subsequent Certificate of Classification is subject to any outstanding conditions of class previously issued against the ship being completed by the due date and as specified by the losing Society. Any outstanding conditions of class with their due dates are stated on the Survey Endorsement Sheets and ship status when the full term Certificate of Classification is issued.

If additional information regarding overdue surveys or conditions of class is received from the losing Society after the Interim Certificate of Classification has been issued, these are to be dealt with at the first port of call by the Society for ships less than 15 years of age or by the losing Society for ships 15 years of age or over. If this is not accomplished, the Interim Certificate of Classification is withdrawn immediately unless the Owner agrees to proceed directly, without further trading, to a suitable port where any overdue surveys or overdue conditions of class are to be carried out by the relevant Society based on the age of the ship.

3.2.5 Surveys

The Surveyor:

- a) checks that the outcome of the design assessment (if any), survey instructions and losing Society's ship status are available,
- b) surveys the ship to check that it complies with the outcome of the design assessment (if any) and with the requirements of Ch 3, Sec 2, [1.1.2].

3.2.6 Interim Certificate of Classification (1/1/2021)

Upon satisfactory completion of the survey for assignment of class, the Surveyor issues to the Owner an interim Certificate of Classification valid not more than 5 months, provided that the conditions in [3.2.2] to [3.2.5] are met. This certificate indicates the class notations.

The certificate is issued with a Survey Endorsement Sheet where all outstanding conditions of class and significant memoranda are recorded; class notations requested by the Owner and not assigned due to pending items are clearly indicated together with the relevant pending items.

3.2.7 Certificate of Classification (1/1/2021)

Upon satisfactory review of the survey reports, the Society issues to the Owner the Certificate of Classification valid for the whole period of class, provided that the conditions in [3.2.2] to [3.2.5] are met. The certificate indicates the class notations.

All outstanding conditions of class, significant memoranda and pending items for class notations not assigned are made available in the ship status.

3.3 Transfer to the Society's class of a ship surveyed during construction by

another QSCS Classification Society at ship's delivery

3.3.1 Documentation to be submitted and design assessment

The requirements of [3.2.1] apply.

3.3.2 Basic conditions of IACS Procedural Requirement No. 1A (1/1/2021)

The Procedural Requirements for transfer of class at ship's delivery (see Note 1) are applicable when the Society which carried out the new construction technical review and surveys (i.e. the losing Society) has issued its first Certificate of Classification (see Note 2). Unless stated otherwise, the provisions apply to ships of over 100 GT of whatever type, self-propelled or not, restricted or unrestricted service, except for "inland waterway" ships. Cases concerning ships of 100 GT or less are dealt with by the Society on a case-by-case basis.

Whenever the Society is requested by an Owner to accept a ship into class at its delivery, the Society immediately notifies the Owner in writing that:

- a) any outstanding conditions of class are to be dealt with by their due dates;
- b) copies of the plans listed in [3.2.1] are to be provided to the Society as a prerequisite to obtaining a full term Certificate of Classification.

If the Owner is unable to provide all of the required plans, the Society requests that the Owner authorises the losing Society to transfer copies of such of these plans as it may possess directly to and upon request from the Society, with the advice that the losing Society will invoice the Society and the Society may, in turn, charge the associated costs to the Owner.

Note 1: "At ship's delivery" means that the new construction survey process is completed and the ship has not departed from the yard.

Note 2: "First Certificate of Classification" means either the Interim Certificate of Classification or full term Certificate of Classification or another document serving the same purpose.

3.3.3 Conditions of IACS Procedural Requirement No. 1A, preventing issue of the Interim Certificate of Classification (1/1/2021)

Prior to issuing an Interim Certificate of Classification on the date of the ship's delivery, the Society is to obtain:

- a) from the Owner, a written request for transfer of class at ship's delivery, containing an authorisation for the Society to obtain a copy of the first Certificate of Classification from the losing Society; and
- b) the first Certificate of Classification from the Headquarters of the losing Society or one of its designated control or management centres or from the attending Surveyor at the builder's yard, including any outstanding conditions of class and information normally contained in the classification status.

If the Society does not receive the above documents from the losing Society on the date of the ship's delivery, the Society may utilise the losing Society's said documents provided by the Owner and, after complying with the other relevant provisions of this Procedural Requirement, issue an Interim Certificate of Classification on the date of the ship's

delivery. In such cases, the conditions in [3.3.2] are still applicable (a statement is normally included in the Interim Certificate of Classification for this purpose).

The Society cannot issue an Interim Certificate of Classification, or other documents enabling the ship to trade:

- 1) until all relevant surveys specified in Ch 3, Sec 2, [1.3.1] have been satisfactorily completed; and
- 2) before giving the opportunity to the flag Administration to provide any further instructions within 3 working days, in compliance with the requirements of Art. 15.4 of EU Directive 94/57/EC as amended.

3.3.4 Limitations of IACS Procedural Requirement No. 1A for the Certificate of Classification (1/1/2021)

The validity of the Interim Certificate of Classification and the subsequent full term Certificate of Classification issued by the Society is subject to any outstanding conditions of class previously issued against the ship being completed by the due dates and as specified by the losing Society. Any outstanding conditions of class with their due dates and information normally contained in the classification status are to be clearly stated on the:

- a) first Certificate of Classification or an attachment to the first Certificate of Classification and/or the Survey Endorsement Sheet available on board
- b) survey status when the full term Certificate of Classification is issued.

3.3.5 Surveys

The Surveyor:

- a) checks that the outcome of the design assessment (if any), survey instructions and the first Certificate of Classification or an attachment to the first Certificate of Classification and/or a class survey record from the losing Society are available,
- b) surveys the ship to check that it complies with the outcome of the design assessment (if any) and with the requirements of Ch 3, Sec 2, [1.3.1].

3.3.6 Interim Certificate of Classification (1/1/2021)

Upon satisfactory completion of the survey for assignment of class, the Surveyor issues to the Owner an Interim Certificate of Classification valid not more than 5 months, provided that the conditions in [3.3.2] to [3.3.5] are met. This certificate indicates the class notations.

The certificate is issued with a Survey Endorsement Sheet where all outstanding conditions of class and significant memoranda are recorded; class notations requested by the Owner and not assigned due to pending items are clearly indicated together with the relevant pending items.

3.3.7 Certificate of Classification (1/1/2021)

Upon satisfactory review of the survey reports, the Society issues to the Owner the Certificate of Classification valid for the whole period of class, provided that the conditions in [3.3.2] to [3.3.5] are met. The certificate indicates the class notations.

All outstanding conditions of class, significant memoranda and pending items for class notations not assigned are made available in the ship status.

3.4 Addition of the Society's class to a ship in service classed by another QSCS Classification Society

3.4.1 Documentation to be submitted and design assessment

The requirements of [3.2.1] apply.

3.4.2 Basic conditions of IACS Procedural Requirement No. 1A (1/1/2021)

This Procedural Requirement is applicable, unless stated otherwise, to ships of over 100 GT of whatever type, self-propelled or not, restricted or unrestricted service, except for "inland waterway" ships.

The obligations of the Procedural Requirement continue to apply when a ship's class is suspended by the losing Society and for 6 months following withdrawal of a ship's class by the losing Society.

Cases concerning ships of 100 GT or less are dealt with by the Society on a case-by-case basis.

Whenever the Society is requested by an Owner to accept a ship in service already classed by another QSCS Classification Society into its class under double or dual class arrangement, the following applies:

- a) the Society only accepts a ship that is free from any overdue surveys or conditions of class;
- b) the Owner is to inform the first Society of his request to the Society;
- c) the Owner is to authorise the first Society to submit to the Society its current classification status and documents as listed in Annex 3 of IACS PR1 Annex - "Content of Vessel's History Report Regarding Class Items" for information and use by the Society in conducting its assignment of class surveys;
- d) when the Owner decides to leave the double or dual class arrangement and prior to withdrawing from the class of either of the Societies, he is to inform the Societies of his intended actions;
- e) when the Owner is advised that one of the Societies involved in double or dual class arrangement is suspending or withdrawing class, he is to inform the remaining Society of the action taken by the other Society without delay;
- f) copies of the plans listed in [3.2.1] are to be provided to the Society as a prerequisite to obtaining a full term Certificate of Classification. If the Owner is unable to provide all of the required plans, the first Society is to be authorised by the Owner to transfer copies of such of these plans as it may possess directly to and upon request from the Society.

3.4.3 Conditions of IACS Procedural Requirement No. 1A, preventing issue of the Interim Certificate of Classification (1/1/2021)

Prior to issuing an Interim Certificate of Classification the Society is to:

- a) obtain from the Owner, a written application for entry into the Society's class, containing an authorisation for

the Society to obtain the current classification status from the first Society;

- b) obtain the first Certificate of Classification from the Headquarters of the first Society or from one of its designated control or management centres or from the attending Surveyor at the yard of the builders, including any outstanding conditions of class and information normally contained in the classification status; and
- c) carry out and satisfactorily complete all relevant surveys specified in Ch 3, Sec 2, [1.1.2].

3.4.4 Limitations of IACS Procedural Requirement No. 1A for the Certificate of Classification (1/1/2021)

The validity of the Interim Certificate of Classification and the subsequent Certificate of Classification is subject to any outstanding conditions of class previously issued against the ship being completed by the due dates and as specified by the first Society. Any outstanding conditions of class with their due dates are stated on the Survey Endorsement Sheets and ship status when the full term Certificate of Classification is issued.

3.4.5 Surveys

The Surveyor:

- a) checks that the outcome of the design assessment (if any), survey instructions and first Society's ship status are available,
- b) surveys the ship to check that it complies with the outcome of the design assessment (if any) and with the requirements of Ch 3, Sec 2, [1.1.2].

3.4.6 Interim Certificate of Classification (1/1/2021)

Upon satisfactory completion of the survey for assignment of class, the Surveyor issues to the Owner an Interim Certificate of Classification valid not more than 5 months, provided that the conditions in [3.4.2] to [3.4.5] are met. This certificate indicates the class notations.

The certificate is issued with a Survey Endorsement Sheet where all outstanding conditions of class and significant memoranda are recorded; class notations requested by the Owner and not assigned due to pending items are clearly indicated together with the relevant pending items.

3.4.7 Certificate of Classification (1/1/2021)

Upon satisfactory review of the survey reports, the Society issues to the Owner the Certificate of Classification valid for the whole period of class, provided that the conditions in [3.4.2] to [3.4.5] are met. The Certificate indicates the class notations.

All outstanding conditions of class, significant memoranda and pending items for class notations not assigned are made available in the ship status.

3.5 Addition of the Society's class to a ship surveyed during construction by

another QSCS Classification Society at the ship's delivery

3.5.1 Documentation to be submitted and design assessment

The requirements of [3.2.1] apply.

3.5.2 Basic conditions of IACS Procedural Requirement No. 1A

The Procedural Requirements for adding class at ship's delivery are applicable when the Society which carried out the new construction technical review and surveys (i.e. the first Society) has issued its first Certificate of Classification (see Note 2 to item [3.3.2]). Unless stated otherwise, the provisions apply to ships of over 100 GT of whatever type, self-propelled or not, restricted or unrestricted service, except for "inland waterway" ships. Cases concerning ships of 100 GT or less are dealt with by the Society on a case-by-case basis.

Whenever the Society is requested by an Owner to accept a ship already classed by another QSCS Classification Society (the first Society) into its class under double or dual class arrangement at ship's delivery, the following applies:

- a) the Owner is to inform the first Society of his request to the Society;
- b) the Owner is to authorise the first Society to submit to the Society its Certificate of Classification;
- c) when the Owner decides to leave the double or dual class arrangement and prior to withdrawing from the class of either of the Societies, he is to inform the Societies of his intended actions;
- d) when the Owner is advised that one of the Societies involved in double or dual class arrangement is suspending or withdrawing class, he is to inform the remaining Society of the action taken by the other Society without delay;
- e) copies of the plans listed in [3.2.1] are to be provided to the Society as a prerequisite to obtaining a full term Certificate of Classification. If the Owner is unable to provide all of the required plans, the Society requests that the Owner authorise the first Society to transfer copies of such of these plans as it may possess directly to and upon request from the Society, with the advice that the first Society will invoice the Society and the Society may, in turn, charge the associated costs to the Owner.

3.5.3 Conditions of IACS Procedural Requirement No. 1A, preventing issue of the Interim Certificate of Classification (1/1/2021)

Prior to issuing an Interim Certificate of Classification on the date of the ship's delivery, the Society is to obtain:

- a) from the Owner, a written request for entry into the Society's class at ship's delivery, containing an authorisation for the Society to obtain a copy of the first Certificate of Classification from the first Society; and
- b) the first Certificate of Classification from the Headquarters of the first Society or one of its designated control or management centres or from the attending Surveyor at the builder's yard, including any outstanding conditions

of class and information normally contained in the classification status.

3.5.4 Limitations of IACS Procedural Requirement No. 1A for the Certificate of Classification

Prior to final entry into its class, the Society is obligated to obtain plans and information in accordance with the requirements of [3.2.1].

3.5.5 Surveys

The Surveyor:

- a) checks that the outcome of the design assessment (if any), survey instructions and the first Certificate of Classification or an attachment to the first Certificate of Classification and/or a class survey record from the first Society are available,
- b) surveys the ship to check that it complies with the outcome of the design assessment (if any) and with the requirements of Ch 3, Sec 2, [1.4.1].

3.5.6 Interim Certificate of Classification (1/1/2021)

Upon satisfactory completion of the survey for assignment of class, the Surveyor issues to the Owner an interim Certificate of Classification valid not more than 5 months, provided that the conditions in [3.5.2] to [3.5.5] are met. This certificate indicates the class notations.

The certificate is issued with a Survey Endorsement Sheet where all outstanding conditions of class and significant memoranda are recorded; class notations requested by the Owner and not assigned due to pending items are clearly indicated together with the relevant pending items.

3.5.7 Certificate of Classification (1/1/2021)

Upon satisfactory review of the survey reports, the Society issues to the Owner the Certificate of Classification valid for the whole period of class, provided that the conditions in [3.5.2] to [3.5.5] are met. The certificate indicates the class notations.

All outstanding conditions of class, significant memoranda and pending items for class notations not assigned are made available in the ship status.

3.6 Ships in service not classed by a QSCS Classification Society

3.6.1 Documentation to be submitted and design assessment

As a rule, the minimum documentation to be supplied is listed hereinafter. The Society will carry out a design assessment before the Interim Certificate of Classification is issued (additional documentation may be requested).

Main plans:

- a) Main plans:
 - 1) general arrangement,
 - 2) capacity plan,
 - 3) loading cases, calculations of still water bending moments, and relevant documents, particulars of

loading calculator and instruction booklet as per the Society's requirements, according to the case,

- 4) stability documentation, as applicable (refer to Part B, Chapter 3).
- b) Hull structure plans:
 - 1) midship section,
 - 2) profile and deck plan,
 - 3) shell expansion,
 - 4) watertight bulkheads,
 - 5) rudder and rudder stock,
 - 6) hatch covers.
- c) Machinery plans:
 - 1) engine room general arrangement,
 - 2) diagram of fuel- (transfer, service), bilge-, ballast-, lubricating oil-, cooling-, steam- and feed-, general service and starting compressed air piping,
 - 3) drawings of shaft line, reduction gear and propeller,
 - 4) drawings of boilers and air receivers,
 - 5) drawings of steering gear,
 - 6) torsional vibration calculations as per conditions laid down in Pt C, Ch 1, Sec 9; such documents are required only for ships less than 2 years old or for older ships the propelling system of which has been modified during the two years preceding the classification.
- d) Electrical installation plans:
 - 1) master plan of power distribution, lighting and emergency power circuits,
 - 2) single line diagram of networks and switchboards,
 - 3) location and arrangement of electrical equipment in hazardous areas.

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.

3.6.2 Surveys

The Surveyor:

- a) checks that the outcome of the design assessment and survey instructions are available,
- b) surveys the ship to check that it complies with the outcome of the design assessment and with the applicable Rules,
- c) attends tests and trials provided for in the Rules.

3.6.3 Interim Certificate of Classification (1/1/2021)

Upon satisfactory completion of the survey for assignment of class, the Surveyor issues to the Owner an Interim Certificate of Classification valid not more than 5 months. This certificate indicates the class notations.

The certificate is issued with a Survey Endorsement Sheet where all outstanding conditions of class and significant memoranda are recorded; class notations requested by the Owner and not assigned due to pending items are clearly indicated together with the relevant pending items.

3.6.4 Certificate of Classification (1/1/2021)

Upon satisfactory review of the survey reports, the Society issues to the Owner the Certificate of Classification valid for the whole period of class. The certificate indicates the class notations.

All outstanding conditions of class, significant memoranda and pending items for class notations not assigned are made available in the ship status.

3.6.5 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 ships of recent construction.

3.6.6 For installations or equipment covered by additional service and/or class notations, the Society will determine the documentation to be submitted.

3.6.7 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.

4 Date of initial classification

4.1 Definitions

4.1.1 Date of build

a) For new construction

For a new building the date of build is the year, month and day at which the new construction survey process is completed.

Where there is a substantial delay between the completion of the construction survey process and the ship commencing active service, the date of commissioning may also be specified.

b) After modifications

After modifications are completed, the "date of build" remains assigned to the ship.

Where a complete replacement or addition of a major portion of the ship (see Note 1) is involved, the following applies:

- 1) the "date of build" associated with each major portion of the ship is indicated on the Certificate of Classification where it has been agreed that the newer structure is on a different survey cycle;
- 2) survey requirements are based on the "date of build" associated with each major portion of the ship;
- 3) survey due dates may be aligned, where appropriate.

Note 1: For example, a major portion of the ship may include a complete forward or after section, a complete main cargo section (which may comprise a complete hold / tank of a cargo ship), or a structural modification of a single hull to a double hull ship.

4.1.2 Date of initial classification for new buildings

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

4.1.3 Date of initial classification for existing ships

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

4.1.4 Period of class

The assigned period of class is never to exceed five (5) years. The 5-year period is granted only upon completion of the new building procedure and, for ships classed after construction, upon satisfactory outcome of a survey with the scope of a renewal survey.

If a ship classed after construction was previously classed with a QSCS Classification Society [3.2], the assigned period of class is never to go beyond the due date of the renewal survey assigned by the previous Society.

5 Reassignment of class

5.1 Ships in service classed by a QSCS Classification Society

5.1.1 Documentation to be submitted and design assessment

The requirements of [3.2.1] apply.

5.1.2 Conditions, Surveys and Certificate of Classification

The requirements of [3.2.2] to [3.2.7] apply.

5.2 Ships in service not classed by a QSCS Classification Society

5.2.1 Design assessment

The Society may carry out a design assessment on a case-by-case basis and, in any case, where a conversion or a significant modification of the ship or an alteration of the ship's class has been carried out since the withdrawal of the Society's class.

5.2.2 Surveys

The Surveyor:

- a) checks that the outcome of the design assessment (if any) and survey instructions are available,
- b) surveys the ship to check that it complies with the outcome of the design assessment (if any) and with the applicable Rules,
- c) attends tests and trials provided for in the Rules.

5.2.3 Interim Certificate of Classification

The requirements of [3.6.3] apply.

5.2.4 Certificate of Classification

The requirements of [3.6.4] apply.

6 Double or dual class procedure

6.1 Definitions

6.1.1 Double class (1/2/2021)

A double class ship is an existing one which is classed by two Societies, where each one acts independently when the ship is in service.

6.1.2 Dual class (1/2/2021)

A dual class ship is an existing one which is classed by two Societies and

- a) each Society acts on behalf of the other Society in accordance with the bilateral agreement adopted by the

two Societies. This agreement shall clearly define the scope of work of each Society;

- b) each Society is to review whether the work undertaken by other Society on its behalf has been completed as agreed.

6.2 Procedure

6.2.1 The procedure of admission to class of a ship already classed with another QSCS Classification Society under double or dual class arrangement is to be the same as that provided for single class arrangement.

SECTION 2

MAINTENANCE OF CLASS

1 General principles of surveys

1.1 Survey types

1.1.1 Classed ships are submitted to surveys for the maintenance of class. These surveys include the class renewal survey, intermediate and annual survey, bottom survey (either survey in dry condition or in-water survey), tailshaft survey, boiler survey, and surveys for the maintenance of additional class notations, where applicable. Such surveys are carried out at the intervals and under the conditions laid down in this Section. In addition to the above periodical surveys, ships are to be submitted to occasional surveys whenever the circumstances so require; refer to [6].

1.1.2 The different types of periodical surveys are summarised 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 Chapter 3 and Chapter 4 for all ships and for service notations, respectively, while surveys related to additional class notations are given in Chapter 5.

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

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

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

1.2 Change of periodicity, postponement or advance of surveys

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

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 5 and Chapter 4 (1)
Class renewal - machinery	[4]	Ch 3, Sec 5 and Chapter 4 (1)
Annual - hull	[5.2]	Ch 3, Sec 3 and Chapter 4 (1)
Annual - machinery	[5.2]	Ch 3, Sec 3 and Chapter 4 (1)
Intermediate - hull	[5.3]	Ch 3, Sec 4 and Chapter 4 (1)
Intermediate - machinery	[5.3]	Ch 3, Sec 4 and Chapter 4 (1)
Bottom - dry condition	[5.4]	Ch 3, Sec 6
Bottom - in water	[5.4]	Ch 3, Sec 6
Tailshaft - complete	[5.5]	Ch 3, Sec 7
Tailshaft - modified	[5.5]	Ch 3, Sec 7
Boiler - complete	[5.6]	Ch 3, Sec 8
(1) As applicable, according to the service notation assigned to the ship		

1.2.2 (1/1/2021)

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

- a) In the case of a class renewal survey, the Society may, under exceptional circumstances, grant an extension to allow for completion of this survey provided there is documented agreement to such an extension prior to the expiry date of the Certificate of Classification, adequate arrangements have been made for the attendance of the Surveyor at the first port of call and the Society is satisfied that there is technical justification for such an extension. Such an extension will be granted only until arrival at the first port of call after the expiry date of the Certificate of Classification
- b) In the case of annual and intermediate surveys, no postponement is granted. Such surveys are to be completed within their prescribed windows; see [2.1.3]
- c) In the case of all other periodical surveys and conditions of class, extension of class may be granted until the arrival of the ship at the port of destination.

1.3 Extension of scope of survey

1.3.1 The Society and/or its Surveyors may extend the scope of the provisions in Chapter 3 to Chapter 5, which set forth the technical requirements for surveys, whenever and so far as considered necessary, or modify them in the case of special ships or systems.

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

1.4 General procedure of survey

1.4.1 The general procedure of survey consists in:

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

1.4.2 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.

1.4.3 In accordance with the provisions of Ch 1, Sec 1, [3.1.5], the Society will, at the request of the Owner, apply the regulations of Administrations concerning the scope and periodicity of surveys when they differ from those laid down in Part A.

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

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

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

The requirements for the selection of materials to be used in the construction or repair of the various parts of existing ships, the characteristics of products to be used for such parts and the checks required for their acceptance are to be as stated in Part C and Part D, as applicable, or in other Parts of the Rules or as specified on approved plans. In particular, the testing of products manufactured according to quality assurance procedures approved by the Society and the approval of such procedures are governed by the requirements of Pt D, Ch 1, Sec 1, [3].

1.5 Appointment of another Surveyor

1.5.1 In compliance with the provisions of Ch 1, Sec 1, [2.5.1], should a disagreement arise between the Owner and the Surveyor during a survey, the Society may, at the request of the Owner, designate another Surveyor.

2 Definitions and procedures related to surveys

2.1 General

2.1.1 Period of class

Period of class means the period starting either from the date of the initial classification, see Sec 1, [5], 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, mean 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.

Examples:

- Anniversary date: 15th April

The 2000 annual survey can be validly carried out from 16th January 2000 to 15th July 2000. If not completed by 15th July 2000, the annual survey becomes overdue.

- Last bottom survey 20th October 2000 (periodicity 2.5 years, with a maximum interval between successive examinations not exceeding 3 years)

The next bottom survey is to be carried out before 20th October 2003. If not completed by 20th October 2003, the bottom survey becomes overdue.

2.1.5 Conditions of class (1/1/2021)

A condition of class is a requirement to the effect that specific measures, repairs and/or surveys are to be carried out within a specific time limit in order to retain classification. A condition of class is pending until it is cleared. Where it is not cleared by its limit date, the condition of class is overdue.

2.1.6 Memoranda (1/1/2021)

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 conditions of class.

2.1.7 Exceptional circumstances

'Exceptional circumstances' means unavailability of dry-docking facilities; unavailability of repair facilities; unavailability of essential materials, equipment or spare parts; or delays incurred by action taken to avoid severe weather conditions.

2.1.8 Force Majeure

'Force Majeure' means damage to the ship; unforeseen inability of the Society to attend the ship due to government restrictions on right of access or movement of personnel; unforeseeable delays in port or inability to discharge cargo due to unusually lengthy periods of severe weather, strikes or civil strife; acts of war; or other force majeure.

2.2 Terminology related to hull survey

2.2.1 Ballast tanks (1/1/2023)

- a) Ships with the ESP notation:

As far as oil tankers are concerned, a Ballast Tank is a tank which is used primarily for the carriage of salt water ballast.

As far as oil tankers are concerned, a Combined Cargo/Ballast Tank is a tank which is used for the carriage of cargo or ballast water as a routine part of the vessel's operation and will be treated as a Ballast Tank. Cargo tanks in which water ballast might be carried only in exceptional cases according to MARPOL I/18.3 are to be treated as cargo tanks.

- b) Other ships:

A Ballast Tank is a tank that is being used primarily for salt water ballast.

2.2.2 Spaces

Spaces are separate compartments including holds, tanks, cofferdams and void spaces bounding cargo holds, decks and the outer hull.

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 sloped plating in upper and lower side tanks, as well as relevant longitudinals, as applicable for the different ships. For a transversely framed ship, 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 prevention systems. When selecting representative tanks or spaces, account should be taken of the service and repair history on board and identifiable critical structural areas and/or suspect areas.

2.2.7 Substantial corrosion

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

For ships built under the IACS Common Structural Rules, substantial corrosion is an extent of corrosion such that the assessment of the corrosion pattern indicates a gauged (or measured) thickness between $t_{\text{net}} + 0,5\text{mm}$ and t_{net} .

2.2.8 Suspect areas

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

2.2.9 Critical Structural Area

Critical Structural Areas are locations which have been identified from calculations to require monitoring and/or which, from the service history of the subject ship or from similar or sister ships (if available), have been identified as sensitive to cracking, buckling or corrosion which would impair the structural integrity of the ship.

2.2.10 Corrosion Prevention System

A Corrosion Prevention System is normally considered a full hard protective coating.

Hard Protective Coating is usually to be epoxy coating or equivalent. Other coating systems which are neither soft nor semi-hard coatings may be considered acceptable as alternatives provided that they are applied and maintained in compliance with the Manufacturer's specifications.

2.2.11 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.

Note 1: For oil tankers ESP, both single and double hull, reference is made to IACS Recommendation No.87 "Guidelines for Coating Maintenance & Repairs for Ballast Tanks and Combined Cargo / Ballast Tanks on Oil Tankers".

2.2.12 Cargo area (ships carrying liquid cargo in bulk)

The cargo area is that part of the ship 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 ship over the above-mentioned spaces.

2.2.13 Prompt and Thorough Repair (1/1/2021)

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.

2.2.14 Double hull oil tanker

A double hull oil tanker is a ship which is constructed primarily for the carriage of oil (see Note 1) in bulk, which has the cargo tanks protected by a double hull which extends for the entire length of the cargo area, consisting of double sides and double bottom spaces for the carriage of water ballast or spaces other than tanks that carry oil (see Note 1).

Note 1: MARPOL Annex I cargoes. The requirements relevant to these ships given in Ch 4, Sec 4 are also applicable to existing double hull tankers not complying with MARPOL Regulation 13F, but having a U-shaped midship section.

2.2.15 Double hull oil tanker with independent tanks

A double hull oil tanker with independent tanks is a ship which is constructed for the carriage of oil, as per MARPOL Annex I cargoes, in bulk, which is fitted with independent cargo tanks located at distances from the outer shell in accordance with the requirements of MARPOL Annex I Regulation 19, for the entire length of the cargo area.

2.2.16 Double hull oil tanker for heavy grade oils

A double hull oil tanker for heavy grade oils is a ship which is constructed primarily for the carriage of oil (see Note 1) in bulk, which has the cargo tanks dedicated to the carriage of heavy grade oils (see Note 2) protected by a double hull which extends for the entire length of the cargo area, consisting of the following:

- double bottom spaces for the carriage of water ballast or spaces other than tanks that carry oil and
- double side spaces for the carriage of water ballast or spaces other than tanks that carry heavy grade oils.

The capacity of each cargo tank is not to exceed 700 m³.

Note 1: MARPOL Annex I cargoes. The requirements relevant to these ships given in Ch 4, Sec 4 are also applicable to existing double hull tankers not complying with MARPOL Regulation 13F, but having a U-shaped midship section.

Note 2: MARPOL Annex I Regulation 21.2. Heavy grade oil means any of the following:

- crude oils having a density at 15°C higher than 900 kg/m³;
- oils, other than crude oils, having either a density at 15°C higher than 900 kg/m³ or a kinematic viscosity at 50°C higher than 180 mm²/s; or
- bitumen, tar and their emulsions.

2.2.17 Special consideration

Special consideration or specially considered (in connection with close-up surveys and thickness measurements) means sufficient close-up inspection and thickness measurements are to be taken to confirm the actual average condition of the structure under the coating.

2.2.18 Air pipe heads

Air pipe heads installed on exposed decks are those extending above the freeboard deck or superstructure decks.

2.3 Procedural requirements for thickness measurements

2.3.1 Control of the process

When required as per the scope of surveys defined below, thickness measurements are normally to be carried out under the responsibility of the Owner, in the presence of the Surveyor.

The thickness measurements required, if not carried out by the Society itself are to be witnessed by a Surveyor of the Society. The Surveyor is to be on board to the extent necessary to control the process.

This also applies to thickness measurements taken during voyages. The attendance of the Surveyor will be recorded.

Note 1: Also refer to IACS Recommendation no. 77 "Guidelines for the Surveyor on how to control the thickness measurement process".

2.3.2 Survey meeting

Prior to commencement of the intermediate and class renewal surveys, a meeting is to be held between the attending Surveyor(s), the master of the ship or an appropriately qualified representative appointed by the master or Company, the Owner's 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.

Communication with the thickness measurement operator(s) and Owner's representative(s) is to be agreed during the meeting, with respect to the following:

- a) reporting of thickness measurements on a regular basis to the attending Surveyor

b) prompt notification to the Surveyor in the case of following findings:

- 1) excessive and/or extensive corrosion or pitting/grooving of any significance
- 2) structural defects like buckling, fractures and deformed structures
- 3) detached and/or holed structure
- 4) corrosion of welds.

When thickness measurements are taken in association with intermediate or renewal survey, a documented record indicating where and when the meeting took place and who attended (the name of the surveyor(s), the master of the ship or an appropriately qualified representative appointed by the master or Company, the owner's representative(s) and the representative(s) of the thickness measurement firm(s)) is to be maintained.

2.3.3 Thickness measurements and close-up surveys

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

In all cases the extent of the thickness measurements is to be sufficient as to represent the actual average condition.

2.3.4 Approval of thickness measurement firms

Thickness measurements are to be carried out by a firm approved by the Society in accordance with the "Rules for the Certification of Service Suppliers", except that in respect of measurements of **non-ESP** ships less than 500 gross tonnage, the firm need not be so approved.

2.3.5 Monitoring of the thickness measurement process on board

The Surveyor will decide the final extent and location of thickness measurements after overall survey of representative spaces on board.

If the Owner prefers to commence the thickness measurements prior to the overall survey then the Surveyor will advise that the planned extent and locations of thickness measurements are subject to confirmation during the overall survey.

Based on findings, the Surveyor may require additional thickness measurements to be taken.

The Surveyor will direct the gauging operation by selecting locations such that, on average, readings taken represent the condition of the structure for that area.

Thickness measurements taken mainly to evaluate the extent of corrosion which may affect the hull girder strength are to be carried out systematically in all longitudinal structural members that are required to be gauged by the relevant provisions of the Rules.

Where thickness measurements indicate substantial corrosion or wastage in excess of allowable diminution, the Sur-

veyor will direct locations for additional thickness measurements in order to delineate areas of substantial corrosion and to identify structural members for repairs/renewals.

2.3.6 Review and verification

Upon completion of the thickness measurements, the Surveyor will confirm that no further gaugings are needed, or specify additional gaugings.

If, where special consideration is allowed by the Rule requirements, the extent of thickness measurements is reduced, the Surveyor's special consideration will be reported.

If thickness measurements are partly carried out, the extent of the remaining measurements will be reported for the use of the next Surveyor.

2.3.7 Thickness measurement report

A thickness measurement report is to be prepared. The report is to give the location of measurements, the thickness measured and the corresponding original thickness. Furthermore, the report is to include the date when the measurements were carried out, the type of measuring equipment, the names and the qualification of the operators and their signatures.

The report is validated by the Surveyor.

For ships with the **ESP** notation and those ships subject to the requirements of Ch 4, Sec 8, the Surveyor is to review the final thickness measurement report and countersign the cover page.

2.3.8 Acceptance criteria

For acceptance criteria applicable to structural corrosion diminution levels, reference is to be made to:

- App 2,
- "Common Structural Rules for Double Hull Oil Tankers", for ships contracted for construction on or after 1 April 2006 and having the service notation **oil tanker ESP CSR**.

2.3.9 Evaluation of longitudinal strength

The ship's longitudinal strength is to be evaluated by using the thickness of structural members measured, renewed and reinforced, as appropriate, during the class renewal survey carried out after the ship reached 10 years of age in accordance with the criteria for longitudinal strength of the ship's hull girder specified in App 2, [4.3.5] or "Common Structural Rules for Double Hull Oil Tankers", as appropriate.

2.4 Agreement of firms for in-water survey

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

Note 1: The Rules for the certification of service suppliers give details about the certification.

2.5 Conditions for surveys

2.5.1 The Owner is to provide the necessary facilities for the safe execution of the surveys, as per Ch 1, Sec 1, [3.2.2].

- a) In order to enable the attending Surveyors to carry out the survey, provisions for proper and safe access are to be agreed between the Owner and the Society;
- b) in the case of ESP ships, details of the means of access are to be provided in the Survey Planning Questionnaire (see Ch 4, Sec 2, [4.9.3], Ch 4, Sec 3, [6.9.3], Ch 4, Sec 4, [4.9.3], Ch 4, Sec 5, [6.9.3], Ch 4, Sec 9, [4.9.3]);
- c) in cases where the provisions made for safety and required access are judged by the attending Surveyors to be inadequate, the survey of the spaces involved is not to proceed.

2.5.2 Cargo holds, tanks and spaces are to be safe for access, gas-free and properly ventilated. Prior to entering a tank, void or enclosed space, it is to be verified that the atmosphere in that space is free from hazardous gas and contains sufficient oxygen.

2.5.3 In preparation for survey and thickness measurements and to allow for a thorough examination, all spaces are to be cleaned, including removal from surfaces of all loose accumulated corrosion scale. Spaces are to be sufficiently clean and free from water, scale, dirt, oil residues etc. to reveal corrosion, deformation, fractures, damage, or other structural deterioration as well as the condition of the coating. However, those areas of structure whose renewal has already been decided by the Owner need only be cleaned and descaled to the extent necessary to determine the limits of the areas to be renewed.

2.5.4 Sufficient illumination is to be provided to reveal corrosion, deformation, fractures, damage or other structural deterioration.

2.5.5

When examination of associated structure is required, the following applies:

- ceilings in holds and floors in the engine room are to be lifted to the necessary extent for examination of the structure
- cement or other protective sheathing is to be removed when there is any doubt as to the condition of the plating underneath or when adherence to plating is not tight
- in the case of solid ballast spaces, 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 the solid ballast
- in refrigerated cargo spaces the condition of the coating behind the insulation is to be examined at representative locations. The examination may be limited to verification that the protective coating remains effective and that there are no visible structural defects. Where poor coating condition is found, the examination is to be extended as deemed necessary by the Surveyor. The condition of the coating is to be reported. If indents, scratches, etc. are detected during surveys of shell plating from the outside, insulations in way are to be

removed as required by the Surveyor, for further examination of the plating and adjacent frames

- where soft or semi-hard coatings have been applied, safe access is to be provided for the Surveyor to verify the effectiveness of the coating and to carry out an assessment of the conditions of internal structures which may include spot removal of the coating. When safe access cannot be provided, the soft or semi-hard coating is to be removed
- casings, ceilings or linings, and loose insulation, where fitted, are to be removed, as required by the Surveyor, for examination of plating and framing. Compositions on plating are to be examined and sounded, but need not be disturbed if found adhering satisfactorily to the plating.

2.5.6 Surveyors are to always be accompanied by at least one responsible person, assigned by the Owner, experienced in tank and enclosed space inspection. In addition, a backup team of at least two experienced persons is to be stationed at the hatch opening of the tank or space that is being surveyed. The backup team is to continuously observe the work in the tank or space and is to keep life-saving and evacuation equipment ready for use.

2.5.7 A communication system is to be arranged between the survey party in the cargo hold, tank or space being examined, the responsible Officer on deck and, as the case may be, the navigation bridge. The communication arrangements are to be maintained throughout the survey.

2.6 Access to structures

2.6.1 For overall survey, means are to be provided to enable the Surveyor to examine the structure in a safe and practical way.

2.6.2

For close-up survey, one or more of the following means for access, acceptable to the Surveyor, is to be provided:

- permanent staging and passages through structures
- temporary staging and passages through structures
- lifts and moveable platforms
- boats or rafts
- portable ladders
- other equivalent means (see Note 1).

Note 1: For guidance refer to IACS Recommendation No. 91 "Guidelines for Approval / Acceptance of Alternative Means of Access".

2.7 Equipment for surveys

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

- radiography (X or γ rays)
- ultrasonic test
- magnetic particle test
- dye penetrant test.

2.7.2 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.

2.7.3 Explosimeter, oxygen-meter, breathing apparatus, lifelines, riding belts with rope and hook and whistles together with instructions and guidance on their use are to be made available during the survey. A safety checklist is to be provided.

2.7.4 Adequate and safe lighting is to be provided for the safe and efficient conduct of the survey.

2.7.5 Adequate protective clothing (e.g. safety helmet, gloves, safety shoes, etc) is to be made available and used during the survey.

2.8 Surveys at sea and anchorage

2.8.1 Surveys at sea or at anchorage may be accepted provided the Surveyor is given the necessary assistance by the personnel on board. Precautions and procedures for carrying out the survey are to be in accordance with [2.5], [2.6] and [2.7].

2.8.2 A communication system is to be arranged between the survey party in the tank or space and the responsible officer on deck.

This system is also to include the personnel in charge of ballast pump handling if boats or rafts are used.

2.8.3 Surveys of tanks by means of boats or rafts may only be undertaken with the agreement of the Surveyor, who is to take into account the safety arrangements provided, including weather forecasting and ship response under foreseeable conditions and provided the expected rise of water within the tank does not exceed 0,25m.

2.8.4 When rafts or boats are used for close-up survey, the following conditions are to be observed:

- a) only rough duty, inflatable rafts or boats, having satisfactory residual buoyancy and stability even if one chamber is ruptured, are to be used;
- b) the boat or raft is to be tethered to the access ladder and an additional person is to be stationed down the access ladder with a clear view of the boat or raft;
- c) appropriate lifejackets are to be available for all participants;
- d) the surface of water in the tank is to be calm (under all foreseeable conditions the expected rise of water within the tank is to not exceed 0,25 m) and the water level stationary. On no account is the level of the water to be rising while the boat or raft is in use;
- e) the tank, hold or space is to contain clean ballast water only. Even a thin sheen of oil on the water is not acceptable;
- f) at no time is the water level to be allowed to be within 1 m of the deepest under deck web face flat so that the survey team is not isolated from a direct escape route to the tank hatch. Filling to levels above the deck transverses is only to be contemplated if a deck access man-hole is fitted and open in the bay being examined, so that an escape route for the survey party is available at

all times. Other effective means of escape to the deck may be considered;

- g) if the tanks (or spaces) are connected by a common venting system, or inert gas system, the tank in which the boat or raft is to be used is to be isolated to prevent a transfer of gas from other tanks (or spaces).

2.8.5 The requirements of items [2.8.5] to [2.8.7] only apply to ships with the ESP notation.

Rafts or boats alone may be allowed for inspection of the under deck areas for tanks or spaces, if the depth of the webs is 1,5 m or less.

2.8.6 If the depth of the webs is more than 1,5 m, rafts or boats alone may be allowed only:

- a) when the coating of the under deck structure is in GOOD condition and there is no evidence of wastage; or
- b) if a permanent means of access is provided in each bay to allow safe entry and exit.

This means:

- 1) access direct from the deck via a vertical ladder and a small platform fitted approximately 2 m below the deck in each bay; or
- 2) access to deck from a longitudinal permanent platform having ladders to deck at each end of the tank. The platform is, for the full length of the tank, to be arranged level with, or above, the maximum water level needed for rafting of under deck structure. For this purpose, the ullage corresponding to the maximum water level is to be assumed not more than 3m from the deck plate measured at the mid-span of deck transverses and in the middle length of the tank (See Fig 1).

If neither of the above conditions are met, then staging or an "other equivalent means" is to be provided for the survey of the under deck areas.

2.8.7 The use of rafts or boats alone in [2.8.5] and [2.8.6] does not preclude the use of boats or rafts to move about within a tank during a survey.

Note 1: Reference is made to IACS Recommendation 39 - Guidelines for the use of Boats or Rafts for Close-up surveys.

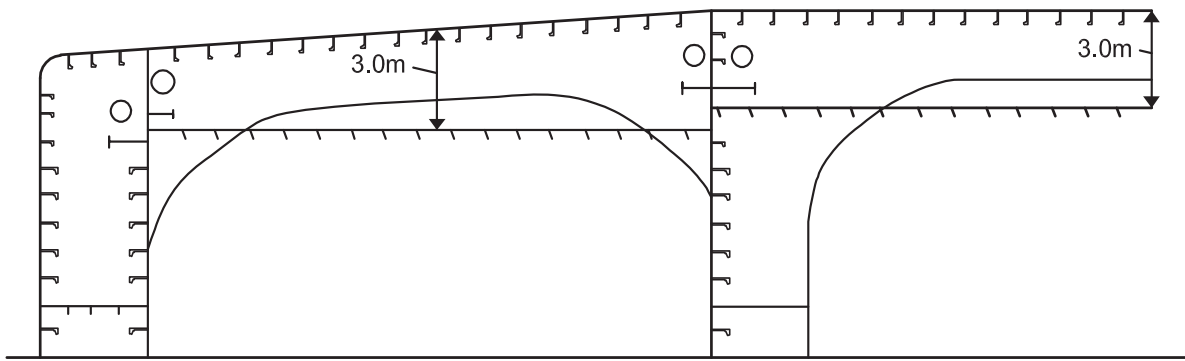
2.9 Repairs and maintenance during voyage

2.9.1

Where repairs to hull, machinery or other equipment, which affect or may affect the class, are to be carried out by a riding crew during a voyage, they are to be planned in advance. A complete repair procedure including the extent of proposed repair and the need for the Surveyor's attendance during the voyage is to be submitted to the Society for approval sufficiently in advance. Failure to notify the Society in advance of the repairs may result in the suspension of class of the ship.

Where, in any emergency circumstance, emergency repairs are to be effected immediately, the repairs are to be documented in the ship's log and submitted thereafter to the Society for use in determining further survey requirements.

Figure 1



2.9.2 The above is not intended to include maintenance to and overhaul of the hull, machinery and equipment in accordance with the Manufacturer's recommended procedures and established marine practice, which does not require the Society's agreement. However, any repair resulting from such maintenance and overhauls which affects or may affect the class is to be noted in the ship's log and submitted to the attending Surveyor for use in determining further survey requirements.

2.10 Prompt and thorough 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 [2.2.13]) repaired. Areas to be considered include, as far as applicable, the following:

- side structure and side plating;
- deck structure and deck plating;
- bottom structure and bottom plating;
- inner bottom structure and inner bottom plating;
- inner side structure and inner side plating;
- longitudinal bulkhead structure and longitudinal bulkhead plating, where fitted;
- transverse watertight or oiltight bulkhead structure and transverse watertight or oiltight bulkheads plating;
- hatch covers and 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 venting piping systems (only for ships subject to Ch 4, Sec 2 and Ch 4, Sec 9).

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.

2.10.2 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 ship continues in service.

2.11 Survey attendance requirements

2.11.1 Attendance by two exclusive Surveyors (1/1/2021)

On ships 20,000 tonnes dwt and above, subject to **ESP**, starting with class renewal survey no.3 all class renewal and intermediate hull surveys are to be carried out by at least two exclusive Surveyors. On bulk carriers 100,000 dwt and above of single side skin construction, the intermediate hull survey between 10 and 15 years of age is to be performed by two exclusive Surveyors.

This requires that at least two exclusive Surveyors attend on board at the same time to perform the required survey. This also applies to surveys carried out during voyages. Where compatible with relevant laws and regulations, on dual class ships, the requirement for two Surveyors may be fulfilled by having one Surveyor attend from each Society.

Though each attending Surveyor is not required to perform all aspects of the stipulated survey, they are required to consult with each other and to do joint overall and close-up surveys to the extent necessary to determine the condition of the vessel. The extent of these surveys will be sufficient for the Surveyors to agree on actions required to complete the survey with respect to renewals, repairs and other conditions of class or conditions of class. Each Surveyor will co-sign the survey report or indicate their concurrence in an equivalent manner.

2.11.2 Surveys witnessed by one Surveyor

The following surveys may be witnessed by a single Surveyor:

- a) thickness measurements in accordance with the procedural requirements given in [2.3];
- b) tank testing in accordance with the applicable Rules for ESP ships;
- c) repairs carried out in association with intermediate and class renewal hull surveys, the extent of which have been agreed upon by the two Surveyors required during the course of the surveys.

2.11.3 Surveyors used to fulfil this requirement are to be qualified for the survey processes involved.

2.11.4 Documentation of attendance on board

The attendance on board of the Surveyors will be documented according to the Society's procedures.

2.12 Procedure for imposing and clearing conditions of class**2.12.1 Reasons for imposing conditions of class (1/1/2021)**

Conditions of class are to be imposed for the following reasons:

- a) repairs and/or renewals related to damage that affect classification (e.g. grounding, structural damage, machinery damage, wastage over the allowable limits, etc.);
- b) supplementary survey requirements;
- c) temporary repairs.

2.12.2 Conditions of class for repairs (1/1/2021)

For repairs not completed at the time of survey, a condition of class is to be imposed. In order to provide adequate information to the Surveyor attending for survey of the repairs, the condition of class is to be sufficiently detailed with identification of items to be repaired. For identification of extensive repairs, reference may be given to the survey report.

2.12.3 Conditions of class with service limitations (1/1/2021)

Conditions of class may require imposing limitations related to navigation and operation that are deemed necessary for continued operation under classification (e.g. loss of anchor and/or chain, etc.).

2.12.4 Issue of conditions of class (1/1/2021)

Conditions of class are to be given in writing with a time limit for completion to the Owner's representatives/Ship's Master, and are to be clearly stated on the Certificate of Classification or an attachment to the Certificate of Classification and/or class survey status or report.

2.12.5 Notification of conditions of class (1/1/2021)

Owners will be notified of these dates and that the vessel's class will be subject to a suspension procedure if the item is not dealt with, or postponed, by the due date (refer to Sec 3, [1.2.11]).

2.12.6 Clearance of conditions of class (1/1/2021)

Clearance of conditions of class is to be supported by a survey report giving details of all associated repairs and/or renewals, or of the supplemental surveys carried out. Repairs carried out are to be reported with identification of:

- a) compartment and location
- b) structural member
- c) repair method
- d) repair extent
- e) NDT/Tests.

2.12.7 Conditions of class partially dealt with (1/1/2021)

Partially dealt with conditions of class are to be supported by a survey report giving details of repairs and/or renewals, or of that part of the supplemental surveys carried out and those parts remaining outstanding.

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 ship and an expiry date, is issued to any classed ship.

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, or when the Society deems it necessary.

3.1.3 The Certificate of Classification or Provisional 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, [2.4], the Society alone is qualified to confirm the class of the ship 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.

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 ship 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 Sec 3, [1.2], 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 (1/1/2021)

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 Class

3.3.1 Purpose of endorsement

The endorsements of class give official evidence of:

- a) class surveys carried out
- b) class validity, and
- c) conditions imposed and/or main items out of service (if any).

3.3.2 Direct endorsement of the Certificate of Classification

The Certificate of Classification is directly endorsed before the vessel sails where an annual, intermediate or class renewal survey is completed, using the appropriate section of the Certificate of Classification.

A section is also available to record postponement of the class renewal survey.

3.3.3 Class Survey Endorsement Sheet

In addition to the direct endorsement of the Certificate of Classification as described in [3.3.2], a Class Survey Endorsement Sheet is issued before the ship sails where any class survey is carried out.

The Class Survey Endorsement Sheet is an attachment to the Certificate of Classification and, as such, it is to be available on board at any time.

3.3.4 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 (1/1/2021)

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

3.4.2 (1/1/2021)

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 Sec 3.

4 Class renewal survey

4.1 General principles

4.1.1 The first class renewal survey is to be completed within 5 years from the date of the initial classification survey and thereafter 5 years from the credited date of the previous class renewal survey. However, consideration may be given by the Society to granting an extension for a maximum of three months after the limit date, in exceptional cir-

cumstances and provided that the ship is attended and the attending Surveyor so recommends. In such cases the next period of class will start from the limit date for the previous class renewal survey before the extension was granted.

4.1.2 For surveys completed within three months before the limit date of the class renewal survey, the next period of class will start from this limit date. For surveys completed more than three months before the limit date, the period of class will start from the survey completion date.

4.1.3 A new period of class is assigned to the ship after the satisfactory completion of the class renewal survey, and a new Certificate of Classification with relevant annexes is issued for the new period of class.

4.1.4 Concurrent crediting to both intermediate survey and class renewal survey for surveys and thickness measurements of spaces is not acceptable.

4.2 Normal system

4.2.1 When the normal system is applied, the class renewal survey may be commenced at the fourth annual survey and continued during the following year with a view to completion by its due date. In this case the survey may be carried out by partial surveys at different times. The number of checks to be performed at each partial survey and the interval between partial surveys are to be agreed by the Society. In general, the first partial survey should include a significant number of thickness measurements, where required by the Rules.

4.2.2 A class renewal survey may be commenced before the fourth annual survey at the request of the Owner. In this case, the survey is to be completed within fifteen months. The conditions for the execution of partial surveys are the same as those referred to in [4.2.1].

4.3 Continuous survey system

4.3.1 The request by the Owner for admission to the continuous survey system will be considered by the Society and agreement depends on the type and age of hull and machinery. This system may apply to the class renewal survey of hull (CHS) and/or machinery (CMS).

4.3.2 The continuous survey system is not applicable to the class renewal survey of the hull of those ships subject to the Enhanced Survey Program (ESP), i.e. ships with the service notation **oil tanker**.

4.3.3 In addition to the ships indicated in [4.3.2], the continuous survey system is not applicable to the class renewal survey of the hull of those ships subject to the requirements of Ch 4, Sec 8, i.e. general dry cargo ships.

This requirement also applies to existing general dry cargo ships. The procedure for the changeover from the continuous survey system to the normal class renewal system for existing ships is laid out in Ch 6, Sec 5.

4.3.4 For ships other than those referred to in [4.3.2] and [4.3.3], the continuous survey system is not applicable to the class renewal survey of the hull of ships over 20 years

old. However, consideration may be given, at the discretion of the Society, to the applicability of the continuous survey

system to the class renewal survey of the hull of ships over 20 years old.

4.3.5 For ships more than 10 years of age, the ballast tanks are to be internally examined twice in each five-year class period, i.e. once within the scope of the intermediate survey and once within the scope of the continuous system for the class renewal survey of hull.

4.3.6 When the continuous survey system is applied, appropriate notations are entered in the Register of Ships.

4.3.7 Ships subject to the continuous survey system are provided with lists of items to be surveyed under this system.

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

- a) the interval between two consecutive surveys of each item is not to exceed five years
- b) the items are to be surveyed in rotation, so far as practicable ensuring that approximately equivalent portions are examined each year
- c) the Society may credit for continuous survey results of inspections carried out before the admission to the continuous survey scheme
- d) each item is to be surveyed at one time, as far as practicable; the Society may, however, allow possible repair work to be carried out within a certain period.
- e) the Surveyor may, at his discretion, extend the inspection to other items, if previous inspections carried out revealed any defects.

4.3.9 For ships under continuous survey, items not included in the continuous survey cycle are to be inspected according to the provisions given in [4.2].

4.3.10 Upon application by the Owner, the Society may agree, subject to certain conditions, that some items of machinery which are included in the continuous survey cycle are examined by the Chief Engineer where the Society is not represented. The Chief Engineer is to be certified for this purpose by the Society and his examination is to be followed by a confirmatory survey carried out by a Surveyor. The conditions for the application of this procedure are given in App 1.

4.3.11 Ships on the continuous survey system are not exempt from other periodical surveys.

4.3.12 A general examination of the ship, as detailed in Ch 3, Sec 3 for annual surveys, is to be carried out at the end of the period of class.

4.3.13 The survey in dry dock may be held at any time within the five-year class period, provided all the requirements of Ch 3, Sec 6, [2] are also complied with.

4.3.14 For laid-up ships, specific requirements given in [8.1] apply.

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

4.4 Planned maintenance scheme (PMS/CBM) for machinery

4.4.1 A planned maintenance scheme may be considered as an alternative to the continuous survey system for machinery and is limited to components and systems covered by it. When such a system approved by the Society is implemented, a survey scheme other than those normally adopted and with intervals different from those of the continuous survey system as detailed in [4.3] may be accepted.

4.4.2 The conditions for approval of the planned maintenance scheme, the determination of survey item intervals and the general scope of surveys are detailed in Pt F, Ch 9, Sec 1.

4.4.3 When the planned maintenance scheme is applied, the notation PMS is entered on the Certificate of Classification and in the Register of Ships. If condition based maintenance is applied as per Pt F, Ch 9, Sec 1, Sec 2, 3, 4, 5 or Pt F, Ch 9, Sec 6, the notation PMS-CM(PROP), PMS-CM(HVAC), PMS-CM(CARGO), PMS-CM(ELE) or PMS-CM(FDS), respectively, as appropriate, is entered on the Certificate of Classification and in the Register of Ships.

4.4.4 The planned maintenance scheme does not supersede the annual surveys and other periodical surveys.

4.4.5 A general examination of the machinery, as detailed in Ch 3, Sec 3 for annual surveys, is to be carried out at the end of the period of class.

4.4.6 The planned maintenance scheme may be discontinued at any time at the discretion of the Society, or at the request of the Owner, and a specific arrangement devised.

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 In the five-year period of class, five annual surveys are to be carried out. The first to fourth annual surveys have a six-month window, i.e. from three months before to three months after each anniversary date, while the fifth annual survey has only a three-month window, i.e. from three months before to the fifth anniversary date.

5.3 Intermediate surveys

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

5.3.2 The intermediate survey is applicable at any period of class to ships with the service notations **oil tanker**, **FLS tanker**.

5.3.3 The intermediate survey is applicable at any period of class to ships other than those indicated in [5.3.2] which are five years old and over.

5.3.4 The internal examination of ballast spaces, overall and/or close-up survey of ballast spaces and cargo holds or tanks, as applicable, carried out at the 2nd or 3rd annual survey are also credited towards the intermediate survey.

5.3.5 Concurrent crediting to both intermediate survey and class renewal survey for surveys and thickness measurements of spaces is not acceptable.

5.4 Bottom survey

5.4.1 Bottom survey means the examination of the outside of the ship's bottom and related items. This examination may be carried out with the ship 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 ship's bottom and related items can be examined in dry dock or on a slipway.

5.4.3 There is to be a minimum of two examinations of the outside of the ship's bottom and related items during each five-year class renewal survey period. One such examination is to be carried out in conjunction with the class renewal survey. In all cases the interval between any two such examinations is not to exceed 36 months. An extension of examination of the ship's bottom of three months beyond the due date may be granted in exceptional circumstances (see [2.1.7]).

Note 1: Attention is drawn to the relevant requirements of Ch 1, Sec 1, [3.1], concerning application of national and international regulations.

5.4.4

Examinations of the outside of ship's bottom and related items of ships are normally to be carried out with the ship in drydock. However, consideration may be given to examination while the ship is afloat as an In-water Survey, subject to the provisions of Ch 3, Sec 6, [3]. For ships with **ESP** notation of 15 years of age and over, such examinations are to be carried out with the ship in drydock.

5.4.5 Means of underwater inspection equivalent to the bottom survey in dry condition may be considered as an alternative by the Society.

The Owner or Operator has to prepare a planned survey program for the underwater inspection of the hull in lieu of dry docking surveys. The program is to be submitted to the Society for review. A copy is to be kept on board and made available to the Surveyor.

5.5 Tailshaft survey

5.5.1 Definition

Tailshaft survey means survey of propeller shafts and tube shafts (hereafter referred to as tailshafts) as well as survey of other propulsion systems.

5.5.2 Tailshaft complete survey

Unless alternative means are provided to ensure their condition, tailshafts are to be sufficiently drawn to permit full examination at the periodicity specified below and summarised in Fig 2, based on the type of shaft and its design, but with a maximum interval between successive examinations not exceeding the periodicity according to items a), b) and c) below by more than six months.

Consideration may be given at the discretion of the Society to any special circumstances justifying an extension of these intervals.

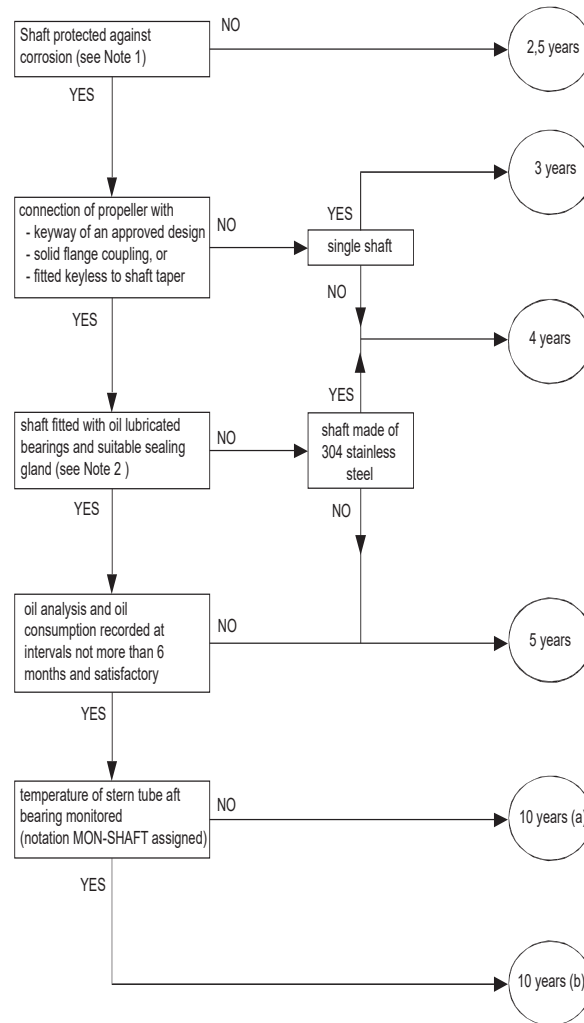
- a) Where the tailshaft is fitted with continuous liners, or approved oil sealing glands, or made of corrosion-resistant material, the periodicity of complete surveys is:
 - 1) 3 years for single shafting arrangements,
 - 2) 4 years for multi-shafting arrangements;
- b) these periodicities may be increased to 5 years in the following cases:
 - 1) where the propeller is fitted keyless to the shaft taper, the shaft is protected from sea water, the design details are approved, and a non-destructive examination of the forward part of the aft shaft taper is performed at each survey by an approved crack-detection method,
 - 2) where the propeller is fitted to a keyed shaft taper the design details of which comply with the applicable requirements in Pt C, Ch 1, Sec 7, 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,
 - 3) where the propeller is fitted to a solid flange coupling at the aft end of the shaft, the shaft and its fittings are not exposed to corrosion and 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;
- c) in all other cases the periodicity of complete surveys is two years and six months (2,5 years).

5.5.3 Tailshaft modified survey

A modified survey of the tailshaft is an alternate way of examination whose scope is given in Ch 3, Sec 7. It may be accepted at alternate five-yearly surveys for tailshafts described in [5.5.2] provided that:

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

Figure 2 : Periodicity of complete survey of tailshaft



(a) : with shaft withdrawn, subject to modified survey at 5 years

(b) : with shaft in place, subject to modified survey at 5 years

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.

5.5.4 Tailshaft Monitoring System (MON-SHAFT)

Where, in addition to the conditions stated in [5.5.3] for modified survey, the additional class notation **MON-SHAFT** is assigned, the tailshaft need not be withdrawn at both the complete and modified survey provided that all condition monitoring data is found to be within permissible limits and the remaining requirements for the respective surveys are complied with.

5.5.5 Other propulsion systems

Driving components serving the same purpose as the tailshaft in other propulsion systems, such as directional propellers, vertical axis propellers, water jet units, dynamic positioning systems and thruster assisted mooring systems,

are to be submitted to periodical surveys at intervals not exceeding five years.

5.5.6 Rotating and Azimuth Thrusters Monitoring System (MON-SHAFT)

Where, in addition to the conditions stated in [5.5.5] for Rotating and Azimuth Thrusters survey, the additional class notation **MON-SHAFT** is assigned, the sealing glands of the system need not be dismantled provided that all condition monitoring data (consumption and analysis of lubricating Oil) is found to be within permissible limits.

The remaining requirements stated in [5.5.5], for the periodical survey, are to be examined according to the provisions of Ch 3, Sec 7,[2.1.2].

5.6 Boiler survey

5.6.1 Water tube boilers used for main propulsion, including reheat boilers, all other boilers for essential service, and boilers for non-essential service having working pressure exceeding 0,35 N/mm² and a heating surface exceeding 4,5 m², are to be surveyed internally. There is to be a minimum of two internal examinations during each 5-year class renewal survey period. In all cases the interval between any two such examinations is not to exceed 36 months.

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

5.6.3 External survey of boilers including test of safety and protective devices and test of safety valves using their relieving gear, is to be carried out annually, within the window of the Annual Survey.

For exhaust gas heated economisers, the safety valves are to be tested by the Chief Engineer at sea within the annual survey window. This test is to be recorded in the log-book for review by the attending Surveyor prior to crediting the Annual Survey of Machinery.

5.6.4 An extension of the internal examination of the boiler up to 3 months beyond the due date can be granted in exceptional circumstances (see Note 1). The extension may be granted by the Society provided a survey is carried out in accordance with the provisions given in Ch 3, Sec 8, [1.1.6].

Note 1: "Exceptional circumstances" means, for example, unavailability of repair facilities, unavailability of essential materials, equipment or spare parts, or delays incurred by action taken to avoid severe weather conditions.

5.7 Links between anniversary dates and annual surveys, 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 annual and intermediate surveys is given in Fig 3.

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 occa-

sional survey of hull, machinery, boilers, refrigerating plants, etc., depending on the part of the ship concerned.

Where defects are found, the Surveyor may extend the scope of the survey as deemed necessary.

6.1.2 (1/1/2021)

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

- updating of classification documents (e.g. change of the Owner, name of the ship, flag)
- damage or suspected damage
- repair or renewal work
- Port State Control inspections
- alterations or conversion
- quality system audits
- postponement of surveys or conditions of class.

6.2 Damage and repair surveys

6.2.1 In the event of damage which affects or may affect the class of the ship, the Owner is to apply to the Society for a survey. Such application is to be made as soon as possible to enable the Surveyor to ascertain the extent of the damage and necessary repairs, if any.

Note 1: Whenever a ship is fitted with an helicopter platform which is made in aluminium or other low melting metal construction which is not made equivalent to steel, and a fire occurred on the said platform or in close proximity, the platform is to be subject to a structural survey to determine its suitability for further use.

6.2.2 If, after sustaining damage, the ship calls at a port where the Society is not represented, the Owner is to notify the Society forthwith, supply all available information regarding the damage and make arrangements for the ship to be surveyed in the nearest port where the Society is represented.

6.2.3 All repairs to hull, machinery and equipment which may be required in order for a ship to retain its class are to be to the satisfaction of the Surveyor.

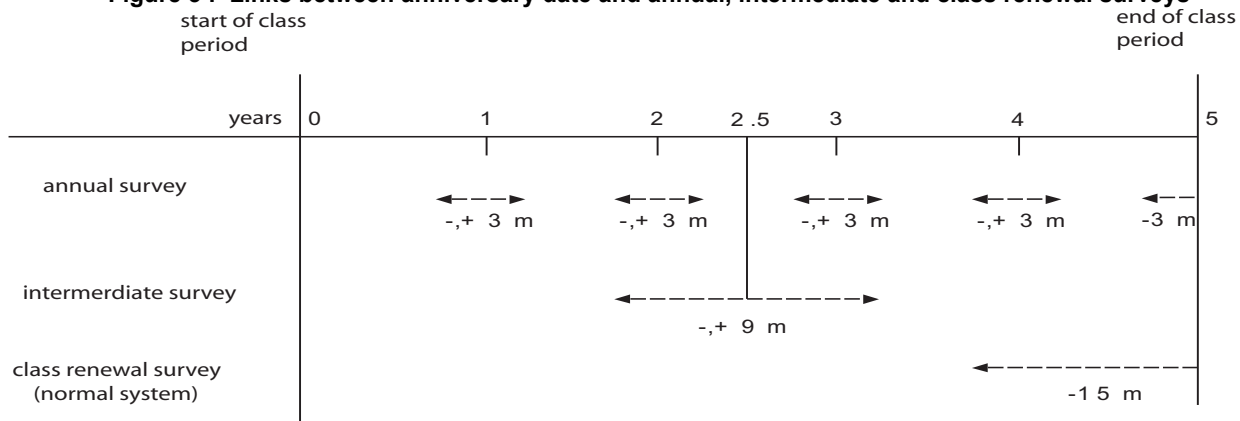
During repairs or maintenance work, the Owner is to arrange so that any damage, defects or non-compliance with the rule requirements are reported to the Surveyor during his survey.

6.2.4 (1/1/2021)

Damages and partial or temporary repairs considered acceptable by the Surveyor for a limited period of time are the subject of an appropriate condition of class.

6.2.5 (1/1/2021)

Damages or repairs required by the Surveyor to be re-examined after a certain period of time are the subject of an appropriate condition of class.

Figure 3 : Links between anniversary date and annual, intermediate and class renewal surveys

6.3 Port State Control survey

6.3.1 An occasional survey is to be requested by the Owner wherever deficiencies are found as a result of a Port State Control inspection, as described in Ch 1, Sec 1, [3.4].

6.4 Conversions, alterations and repairs

6.4.1 Conversions, alterations or repairs of/to structures and arrangements affecting the class are to be carried out in accordance with the requirements of the Society and to its satisfaction. Where necessary, documentation is to be submitted to the Society and/or made available to the attending Surveyor.

6.4.2 Materials and equipment used for conversions, alterations or repairs are generally to meet the requirements of the Rules for new ships built under survey; see Sec 1, [2.1.5].

6.5 Quality System audits

6.5.1 The Society reserves the right to carry out occasional surveys in order to conduct audits either as deemed necessary in pursuance of its internal Quality System or as required by external organisations (e.g. IACS, flag Administrations).

6.5.2 These surveys may also be attended by auditors external to the Society.

6.5.3 The scope of these surveys is determined by the Society.

7 Change of ownership

7.1

7.1.1 In the case of change of ownership, the ship retains its current class with the Society provided that:

- the Society is informed of the change sufficiently in advance to carry out any survey deemed appropriate, and
- the new Owner signs the appropriate request, involving acceptance of the Society's general conditions and

Rules. This request covers inter alia the condition of the ship when changing ownership.

Note 1: The ship'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 ship of which the Society has not been advised by the former or, as the case may be, new Owner.

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

8 Lay-up and re-commissioning

8.1 General principles

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

If the Owner does not notify the Society of the laying-up of the ship or does not implement the lay-up maintenance program, the ship'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 Sec 3.

8.1.2 The lay-up maintenance program provides for a "laying-up survey" to be performed at the beginning of lay-up and subsequent "annual lay-up condition surveys" to be performed in lieu of the normal annual surveys which are no longer required to be carried out as long as the ship 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 re-commissioning of the ship.

8.1.3 Where the ship has an approved lay-up maintenance program and its period of class expires, the period of class is extended until it is re-commissioned, subject to the satisfactory completion of the annual lay-up condition surveys as described in [8.1.2].

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

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

- an occasional survey prior to re-commissioning, the scope of which depends on the duration of the lay-up period
- all periodical surveys which have been postponed in accordance with [8.1.2], taking into account the provisions of [8.1.4].

8.1.6 Where the previous period of class expired before the re-commissioning and was extended as stated in [8.1.3], in addition to the provisions of [8.1.5] a complete class renewal survey is to be carried out prior to re-commissioning. Those items which have been surveyed in compliance with the class renewal survey requirements during the 15 months preceding the re-commissioning may be credited. A

new period of class is assigned from the completion of this class renewal survey.

8.1.7 The principles of intervals or limit dates for surveys to be carried out during the lay-up period, as stated in [8.1.1] to [8.1.6], are summarised in Fig 4.

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

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

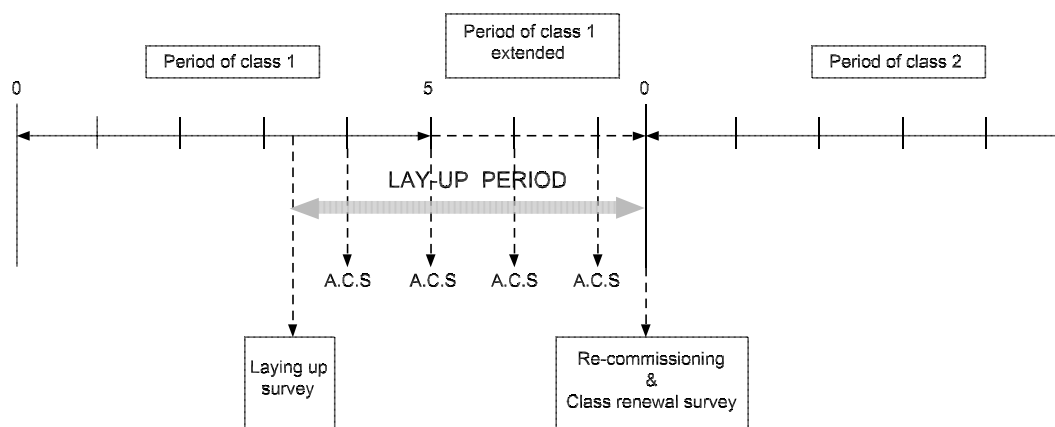
9 Possible safety management system failures

9.1

9.1.1 When deficiencies relating to possible safety management system failures are identified by the Surveyor during a periodical (annual/intermediate/renewal) class survey or occasional class survey, statutory surveys, additional surveys relevant to Port State Control, flag State Inspections or any other occasion, a report is to be completed by the Surveyor so that the Organisation responsible for the issue of the SMC, if other than the Society, is notified.

Reporting and follow-up actions will be performed in accordance with the Society's procedures.

Figure 4 : Survey scheme of a case of a lay-up going beyond the expiry date of the period of class



SECTION 3

SUSPENSION AND WITHDRAWAL OF CLASS

1 General

1.1 Discontinuance of class

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. In the case of withdrawal, a specific notation is entered in the supplement to the Register of Ships, until the ship is deleted from the Register.

1.2 Suspension of class

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

1.2.2 The class is automatically suspended when one or more of the following circumstances occur:

- when a ship 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 ship proceeds to sea 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 ships 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 ship 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. For voyage repairs, reference is to be made to Sec 2, [2.9].

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 ship and the cause of the suspension.

1.2.3 Suspension and reinstatement of class in the case of overdue class renewal survey (1/1/2021)

Owners are to be notified that the 5-year Certificate of Classification expires and classification is automatically suspended from the certificate expiry date in the event that the class renewal survey has not been completed or is not under attendance for completion prior to resuming trading, by the due date.

Classification will be reinstated upon satisfactory completion of the surveys due. Such surveys are to be credited from the date originally due.

Under "exceptional circumstances", as defined in Sec 2, [2.1.7], the Society may grant an extension not exceeding three months to allow for completion of the class renewal survey provided that the ship is attended and the attending Surveyor(s) so recommend(s) after the following have been carried out:

- a) annual survey;
- b) re-examination of conditions of class;
- c) progression of the class renewal survey as far as practicable.

In the case where dry-docking is due prior to the end of the class extension, an underwater examination is to be carried out by an approved diving company. An underwater examination by an approved company may be dispensed with in the case of an extension of the dry-docking survey not exceeding 36 months provided the ship is without outstanding conditions of class regarding underwater parts.

If the Certificate of Classification will expire when the ship is expected to be at sea, an extension to allow for completion of the class renewal survey may be granted provided that there is documented agreement to such an extension prior to the expiry date of the certificate, that satisfactory arrangements have been made for attendance of the Surveyor at the first port of call, and that the Society is satisfied that there is technical justification for such an extension. Such an extension is to be granted only until arrival at the first port of call after the expiry date of the certificate. However, if owing to "exceptional circumstances" the class renewal survey cannot be completed at the first port of call, the procedure given above in the event of "exceptional circumstances" may be followed, but the total period of extension is in no case to be longer than three months after the original due date of the class renewal survey.

1.2.4 Suspension and reinstatement of class in the case of overdue intermediate survey

Owners are to be notified that the Certificate of Classification becomes invalid, and classification is automatically suspended, if the intermediate survey has not been completed within three (3) months of the due date of the third annual survey in each periodical survey cycle, unless the ship is under attendance for completion of the intermediate survey.

Classification will be reinstated upon satisfactory completion of the surveys due. Such surveys are to be credited from the date originally due.

1.2.5 Suspension and reinstatement of class in the case of overdue annual survey

Owners are to be notified that the Certificate of Classification becomes invalid, and classification is automatically suspended, if the annual survey has not been completed within three (3) months of the due date of the annual survey, unless the ship is under attendance for completion of the annual survey.

Classification will be reinstated upon satisfactory completion of the surveys due. Such surveys are to be credited from the date originally due.

1.2.6 Suspension of class in the case of overdue continuous survey item(s)

Continuous survey item(s) due or overdue at the time of the annual survey is (are) to be dealt with. The ship's class will be subject to a suspension procedure if the item(s) is (are) not surveyed, or postponed by agreement.

1.2.7 Other cases of suspension of class

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

- when one or more surveys are not held by their limit dates -see Sec 2, [2.1.4]- or the dates stipulated by the Society also taking into account any extensions granted in accordance with the provisions of Part A
- when, due to reported defects, the Society considers that a ship 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 where the Owner fails to subject the ship to the occasional survey as per the requirement in Sec 2, [6.2.1]).

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.

1.2.8 Laid-up ships

Ships laid-up in accordance with the requirements indicated in Sec 2, [8.1.1] prior to surveys becoming overdue need not be suspended when surveys addressed above become overdue. However, ships which are laid-up after being suspended as a result of surveys going overdue, remain suspended until the overdue surveys are completed.

1.2.9 Voyage to demolition

When it is intended to take a ship on a demolition voyage with any periodical survey overdue, the ship's class suspension may be held in abeyance and consideration may be given to allowing the ship to proceed on a single direct ballast voyage from the lay-up or final discharge port to the demolition yard. In such cases a short-term Certificate of Classification with conditions for the voyage noted may be issued provided the attending Surveyor finds the ship in satisfactory condition to proceed on the intended voyage.

1.2.10 Force Majeure (1/1/2021)

If, due to circumstances beyond the Owner's or the Society's control, as defined in Sec 2, [2.1.8], the ship is not in a port where the overdue surveys can be completed at the expiry of the periods allowed above, the Society may allow the ship to sail, in class, directly to an agreed discharge port, and if necessary, from there, in ballast, to an agreed port at which the survey will be completed, provided the Society:

- examines the ship's records;
- carries out the due and/or overdue surveys and examination of conditions of class at the first port of call when there is unforeseen inability of the Society to attend the ship in the present port, and
- has satisfied itself that the ship is in condition to sail for one trip to a discharge port and subsequent ballast voyage to a repair facility if necessary. (Where there is unforeseen inability of the Society to attend the ship in the present port, the Master is to confirm that his ship is in condition to sail to the nearest port of call.)

If class has already been automatically suspended in such cases, it may be reinstated subject to the conditions prescribed in this item.

1.2.11 Single voyage for repair of laid-up ships (1/1/2021)

When a ship is intended for a single voyage from laid-up position to a repair yard or another place of lay-up with any periodical survey overdue, the ship's class suspension may be held in abeyance and consideration may be given to allowing the ship to proceed on a single direct ballast voyage from the site of lay-up to a repair yard or another place of lay-up, upon agreement with the Flag Administration, provided the Society finds the ship in satisfactory condition after surveys, the extent of which are to be based on surveys overdue and duration of lay-up. A short-term Class Certificate with conditions for the intended voyage may be issued. This is not applicable to ships whose class was already suspended prior to being laid-up.

1.2.12 Suspension and reinstatement of class in the case of overdue conditions of class (1/1/2021)

Each condition of class will be assigned a due date for completion. Owners will be notified of these dates and that the ship's class will be subject to a suspension procedure if the item is not dealt with, or postponed by agreement, by the due date.

Classification will be reinstated upon verification that the overdue condition of class has been satisfactorily dealt with.

1.3 Withdrawal of class

1.3.1

The Society will withdraw the class of a ship 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 of the date of suspension. However, the Society may withdraw the class of the ship before the end of the six-month period where it deems it appropriate. A longer suspension may be granted at the Society's discretion when the ship is not trading as in cases of lay-up, awaiting disposition in the case of a casualty or attendance for reinstatement.
- when the ship is reported as a constructive total loss
- when the ship is lost
- when the ship is reported scrapped.

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

1.3.2 When the withdrawal of class of a ship comes into effect, the Society will:

- forward the Owner written notice
- delete the ship from the Register of Ships
- notify the flag Administration
- make the information available to the Underwriters, at their request.

1.4 Suspension/withdrawal of additional class notations

1.4.1 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 ships which are assigned with more than one service notation.

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

APPENDIX 1

CMS AND PMS: SURVEYS CARRIED OUT BY THE CHIEF ENGINEER

1 Documentation

1.1

1.1.1 The basic conditions for the acknowledgment of surveys carried out by Chief Engineers are specified hereafter. Consideration may be given to other conditions on a case by case basis.

1.1.2 The Chief Engineer must be a permanent employee of the Company. When the Company applies for the appointment of a Chief Engineer with the Society for the first time, he must have been working in this position for a reasonable period of time or have possessed the recognition of the Society for another Company by which he was employed.

He must hold a certificate of competency as provided by STCW 95 Convention for the power of the main propulsive installation of the ship. He must have at least three years of seagoing experience as Senior Engineer Officer on ships of the type (motor or steam ship) for which the authorisation is requested. The authorisation may be given for both the propelling systems.

1.1.3 The Owner is to submit a written application to the Society requesting the authorisation of a Chief Engineer together with his curriculum vitae, providing in particular:

- name(s) and surname
- date of birth
- professional certificates with date of issue
- appointment date in the Company and, if applicable, reference to preceeding authorisation(s) obtained from the Society when employed in other Companies (number, date, period)
- list of the different appointments since the acquisition of the certificate, specifying the names of ships with their types of propulsion, the period of each appointment and the rank in each appointment
- technical training and courses.

The Owner is to keep the Society informed about any changes concerning the Chief Engineers employed with his Company due to resignations, alternations, etc.

1.1.4 If the application for the recognition of the Chief Engineer is accepted, the Society sends a "Letter of authorisation" to the Owner, who will arrange to forward it to the Chief Engineer in question. This letter allows him to carry out the survey of the machinery items when the CMS system or PMS system, as applicable, is implemented on board ships, in accordance with the requirements indicated in [2.1.1] and [2.1.2], respectively.

The Owner is also to provide the Chief Engineer with a copy of this Appendix, enabling him to familiarise himself with the conditions, scope and limits of his interventions.

The authorisation ceases to be valid when the Chief Engineer leaves the Company.

2 Limits of the interventions

2.1

2.1.1 For ships where the CMS is implemented, the following items of the class renewal survey for machinery cannot be inspected by the Chief Engineer:

- pressure vessels (except class 2 and 3 heat exchangers)
- main and auxiliary turbines
- main reduction gears
- crankshafts, with associated main bearings and bottom end connecting rod bearings, of main propulsion internal combustion engines. However, bottom end connecting rod bearings of diesel engines having trunk pistons may be inspected by the Chief Engineer when the complete associated cylinder is inspected in the course of the engine maintenance program
- turbochargers of main propulsion internal combustion engines
- intermediate shafting and associated bearings
- steering gear system, including pumps.

Generally, within a 10-year cycle comprising two consecutive class cycles, all the items surveyed under CMS are to be inspected once by the Society's Surveyors.

The attention of Chief Engineers is drawn to the fact that surveys performed by them in ports which are under the jurisdiction of an office of the Society or during very short voyages between ports where Surveyors of the Society are available will not be credited.

2.1.2 For ships where the PMS is implemented, the following items can be surveyed by the Chief Engineer if they are subjected to a Condition Based Maintenance (CBM) program as per Pt F, Ch 9, Sec 1, [6]:

- main and auxiliary turbines
- crankshafts and associated bearings,
- turbochargers of main propulsion internal combustion engines,
- intermediate shafting and associated bearings

Moreover, in such case the confirmatory survey is to include the checks indicated in [5.1.4].

2.1.3 In no case may the surveys of tailshafts and boilers, which are items not included in the scope of the class renewal survey, be carried out by the Chief Engineer.

3 Procedure for carrying out surveys

3.1 General

3.1.1 As regards the procedure for carrying out surveys, the Owner is to inform the Chief Engineer that surveys are to be conducted in accordance with the Rules of the Society and, specifically, the requirements for class renewal surveys related to machinery and systems contained in Ch 3, Sec 5, [3].

It is the responsibility of the ship's Captain and Chief Engineer to decide the date and place for the survey of each component in order to avoid possible accidents (fire included) in the event of damage to the unit(s) remaining in service.

Some guidelines for the Chief Engineer relevant to the dismantling and inspections of main components of the machinery installation are given below.

The items and/or machinery which, as a result of the surveys, are replaced due to wear, damage or defects, are to be kept on board until they are inspected by a Surveyor of the Society.

3.2 Main diesel engines

3.2.1 The following items are to be surveyed as indicated:

- the top and bottom halves of the main bearings are to be removed and inspected, and the clearances are to be taken, recorded and compared with the limits recommended by the engine builder
- the top and bottom halves of crankpin bearings are to be examined, and the clearances are to be taken, recorded and compared with the limits recommended by the engine builder
- crankpins, journals and webs are to be examined for crack detection, mainly at the fillets and in the vicinity of the lubricating oil holes
- crankshaft deflections are to be taken and recorded at regular intervals, enabling verification of the trend when they are taken in the presence of the Society's Surveyor. This operation is to be effected bearing in mind that during the readings the journals are to be steady on their bearings
- other parts exposed to wear or operating incidents are to be carefully examined and the results recorded. In particular, the wear of liners is to be measured and recorded.

3.3 Auxiliary diesel engines

3.3.1 The survey generally consists in the complete dismantling of the engine and a careful examination of those

items most liable to be exposed to wear or operating incidents. In particular:

- crankshaft deflections and wear of cylinder liners are to be measured
- the crankshaft is to be checked by means of dye penetrant in way of fillets and lubricating oil holes
- all top halves of the main bearings together with at least two bottom halves are to be dismantled
- crankcase explosion relief valves, if fitted, are to be checked.

3.4 Reciprocating compressors

3.4.1 The survey is to include:

- the dismantling of pistons and valves for inspection
- the examination and testing of the nest of cooler tubes
- the verification of safety relief valves after reassembling.

3.5 Coolers, condensers, heaters

3.5.1 The survey is to include:

- the dismantling of the covers
- the examination of the nest of tubes
- the testing of the nest of tubes, if necessary.

3.6 Electrical switchboard

3.6.1 The survey is to include:

- the cleaning of the switchboard
- the verification of the connection assemblies, locking device tightening and busbar tightening
- the examination of the condition of the circuit-breakers, switches and fuses
- the verification of the contacts and screens
- the checking of the measuring instruments, which are to be re-calibrated or replaced, if inaccurate
- the megger test.

3.7 a.c. and d.c. generators

3.7.1 The survey is to include:

- the removal of protection plates and brush carriers
- the cleaning of field coils and armature windings
- the verification of proper contact of brushes, which are to be renewed if excessively worn
- the verification of commutators and sliprings
- the measurement of air gap clearances
- the checking of journals and bearings
- the megger test.

3.8 Other items (pumps, electric motors, etc.)

3.8.1 The survey is generally to include the complete dismantling for inspection of the main parts exposed to wear or operating incidents, such as bearings, casings, impellers and rotors.

4 Records of surveys carried out

4.1

4.1.1 The surveys carried out by the Chief Engineer are to be recorded in the engine/machinery log-book and a survey report is to be prepared for each item surveyed.

The report is generally to be drawn up in English; however, for ships trading in specific restricted areas the use of the language of the country concerned will be accepted.

The report may be provided in hard copy or using a computerised recording system.

4.1.2 The report is to indicate the following information:

- identification data:
 - name of ship and register number
 - name of Chief Engineer and reference of the Society's authorisation
 - date and place (port or voyage leg) of the survey
 - reference of the item in the CMS or PMS list, and description of the item
- inspection conducted:
 - the type of inspection carried out: visual external examination, internal examination after dismantling, overhaul
 - readings performed, when applicable: clearances, measurements, working pressure, or other working parameters of the equipment
 - inspection findings: corrosion, fractures, pieces of equipment worn out, broken or missing
- maintenance and repairs carried out and parts replaced
- results of tests performed after the inspection, such as working test, pressure test.

For sake of completeness, other documentation such as sketches, photos, measurement reports may be attached to the report.

The report is to be signed by the Chief Engineer.

5 Confirmatory survey

5.1

5.1.1 A confirmatory survey, to be carried out by a Surveyor of the Society, is to be requested according to the following principle:

- for ships under the CMS, within a reasonably short time from the date of the surveys carried out by the Chief

Engineer, and, in any case, in the first port which is under the jurisdiction of an Office of the Society;

- for ships under the PMS, at the next annual survey (see Pt F, Ch 12, Sec 1, [4.2]).

5.1.2 The Surveyor is to be supplied with a copy of this survey report and also shown the engine log-book.

5.1.3 The Surveyor carries out an external examination of the relevant items and parts replaced and, if applicable, attends running tests. If doubts arise, the Surveyor may request dismantling as deemed necessary.

5.1.4 If the persons on board are authorised to survey the main engine crankshaft and bearings (see [2.1.2]), the Surveyor performs the following:

- check of condition monitoring records (see Pt F, Ch 12, Sec 1, [6])
- check of crankshaft deflection readings
- check of bearing clearances (where possible)
- checks for signs of wiped or broken white metal in the crankcase or filters
- check of the witness marks of shrink fits of crankshafts
- check of the bedplate structure (inside and outside)
- check that the condition of crankpins, journals and associated bearings is duly recorded.

5.1.5 Where the confirmatory survey is performed with an abnormal delay, the inspection is to be more extensive and, if necessary, the due surveys are to be completely repeated.

5.1.6 The date of the execution of the surveys will be assumed to be the date of the confirmatory survey.

6 Suspension of the Chief Engineer's authorisation

6.1

6.1.1 Where the condition of the items surveyed by the Chief Engineer as specified in his reports does not correspond to the findings of the attending Surveyor, the Society may suspend the validity of the Chief Engineer's authorisation.

APPENDIX 2

THICKNESS MEASUREMENTS: EXTENT, DETERMINATION OF LOCATIONS AND ACCEPTANCE CRITERIA

1 General

1.1 Aim of the Appendix

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 ship's structure.

1.1.2 The 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.

1.1.3 It is to be noted that this Appendix also takes into account specific requirements for thickness measurements relevant to close-up surveys of ships which are subject to the Enhanced Survey Program (ESP).

1.1.4 This App 2 does not apply to ships having the notation oil tanker ESP CSR; for these ships Section 12 of the "Common Structural Rules for Double Hull Oil Tankers" applies.

1.2 Scope of the Appendix

1.2.1 Separate Articles below provide the following information:

- references to rule requirements and some additional information on the extent of the thickness measurements to be performed during surveys according to types of ships and related surveys (see [2])
- locations of the measurements for the main parts of the ship (see [3])
- how to analyse the results of thickness measurements (see [4]).

Tables and sketches are also given to detail the above points according to the types of ships.

2 Rule requirements for the extent of measurements

2.1 General

2.1.1 For the maintenance of class, thickness measurements may be required during annual, intermediate and class renewal surveys.

Tab 1 gives the references to the requirements for minimum thickness measurements indicated in Chapter 3 and Chapter 4 for each service notation and related to the different types of surveys.

Some additional explanations are also given about the wording used in the Rules as well as the general principles of the required thickness measurements during class renewal surveys.

2.2 Class renewal survey: all ships except those submitted to ESP

2.2.1 The thickness measurements required by the Rules 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 ship
- measurements of suspect areas as defined in Sec 2, [2.2.8]
- additional measurements on areas determined as affected by substantial corrosion as defined in Sec 2, [2.2.7].

2.3 Class renewal survey: ships submitted to ESP or equivalent

2.3.1 The thickness measurements required by the Rules consist of:

- systematic thickness measurements in order to assess the overall and local strength of the ship
- thickness measurements as indicated in the program of close-up survey
- measurements of elements considered as suspect areas as defined in Sec 2, [2.2.8]
- additional measurements on areas determined as affected by substantial corrosion as defined in Sec 2, [2.2.7].

2.3.2 For the determination of close-up surveys and relevant thickness measurements as well as the areas considered as suspect areas, reference is to be made to the

relevant Sections of Chapter 4 according to the different service notations of the ships subject to ESP.

Table 1 : References to Rule requirements related to thickness measurements

SERVICE NOTATION	TYPE OF SURVEY		
	CLASS RENEWAL	INTERMEDIATE	ANNUAL
all service notations except those in other rows	Ch 3, Sec 5, [2.5] and Ch 3, Sec 5, Tab 2: systematic measurements and suspect areas Where substantial corrosion is found, the extent of thickness measurements may be increased to the Surveyor's satisfaction, using Ch 3, Sec 5, Tab 3 as guidance	Ch 3, Sec 4, Tab 1 : thickness measurements to be taken if deemed necessary by the Surveyor Where substantial corrosion is found, the extent of thickness measurements may be increased to the Surveyor's satisfaction, using Ch 3, Sec 5, Tab 3 as guidance	Ch 3, Sec 3, [2.4.1]: areas of substantial corrosion identified at previous surveys Where substantial corrosion is found, the extent of thickness measurements may be increased to the Surveyor's satisfaction, using Ch 3, Sec 5, Tab 3 as guidance
oil tanker ESP	Ch 4, Sec 3, [6.1] and Ch 4, Sec 3, [6.4] : planning and general requirements Ch 4, Sec 3, Tab 2 : measurements of elements subjected to close-up survey Ch 4, Sec 3, Tab 3 : extent of systematic thickness measurements Ch 4, Sec 3, Tab 4 to Ch 4, Sec 3, Tab 7, according to the different locations, where substantial corrosion is found	Ch 4, Sec 3, Tab 1 for both cargo and salt ballast tanks Ch 4, Sec 3, Tab 4 to Ch 4, Sec 3, Tab 7, according to the different locations, where substantial corrosion is found	Ch 4, Sec 3, [2.3.2] limited to salt ballast tanks and when deemed necessary by the Surveyor Ch 4, Sec 3, Tab 4 to Ch 4, Sec 3, Tab 7, according to the different locations, where substantial corrosion is found
oil tanker ESP double hull	Ch 4, Sec 2, [4.1] and Ch 4, Sec 2, [4.4]: planning and general requirements Ch 4, Sec 2, Tab 2: measurements of elements subjected to close-up survey Ch 4, Sec 2, Tab 3: extent of systematic thickness measurements Ch 4, Sec 2, Tab 4 to Ch 4, Sec 2, Tab 8, according to the different locations, where substantial corrosion is found	Ch 4, Sec 2, Tab 1 for both cargo and salt ballast tanks Ch 4, Sec 2, Tab 4 to Ch 4, Sec 2, Tab 8, according to the different locations, where substantial corrosion is found	Ch 4, Sec 2, [2.3.2] limited to salt ballast tanks and when deemed necessary by the Surveyor Ch 4, Sec 2, Tab 4 to Ch 4, Sec 2, Tab 8, according to the different locations, where substantial corrosion is found

3 Number and locations of measurements

3.1 General

3.1.1 Considering the extent of thickness measurements as required by the Rules and indicated in [2] above, the locations of the points to be measured are given here for the most important items of the structure. Thus the number of points can be estimated.

3.2 Locations of points

3.2.1 Tab 2 provides explanations and/or interpretations for the application of those requirements indicated in the Rules which refer to both systematic thickness measurements related to the calculation of global hull girder strength and specific measurements connected to close-up surveys.

Figures are also given to facilitate the explanations and/or interpretations given in the table. These figures show typical arrangements of cargo ships, bulk carriers and oil tankers. Due to the various designs of the other ship types, figures

are not given to cover all the different cases. However, the figures provided here may be used as guidance for ships other than those illustrated.

4 Acceptance criteria for thickness measurements

4.1 General

4.1.1 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.

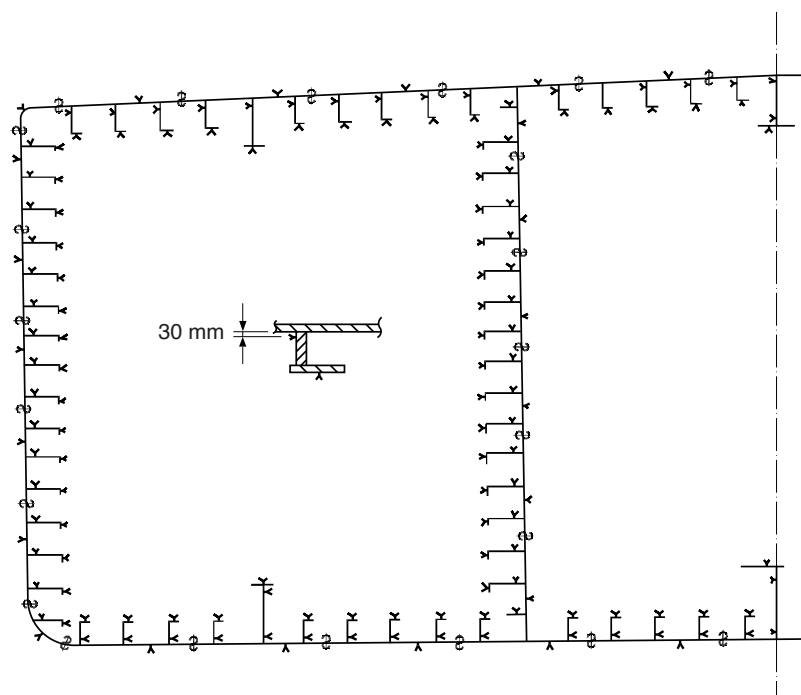
Only for criteria related to an item (see [4.3.4] b), the Society may establish a list of renewal thicknesses tailored to

the different structural items. In such a case these thicknesses are used in lieu of the minimum thicknesses calculated from the percentage of wastage.

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

A) SYSTEMATIC MEASUREMENTS		
ITEM	INTERPRETATION	FIGURE
Selected plates on deck, tank top, bottom, double bottom and wind-and-water	"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 and bottom plates and wind-and-water strakes	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 Sec 2, [2.2.5]	Fig 1 for oil tankers For other ship types, see [3.2.1]
Cargo hold hatch covers and coamings		Fig 4 for ships fitted with hold hatch covers and coamings
Bulkheads on ships other than oil tankers (for these ships refer to B) CLOSE-UP SURVEYS AND RELATED MEASUREMENTS)	"Selected bulkheads" means at least 50% of the bulkheads	
Selected internal structure such as floors and longitudinals, transverse frames, web frames, deck beams, 'tweendecks, 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	
One section of deck plating for the full beam of the ship within the cargo area for oil tankers	Two single points on each deck plate (to be taken either at each 1/4 extremity of plate or at representative areas of average corrosion) in the transverse section concerned	No figure

B) CLOSE-UP SURVEYS AND RELATED MEASUREMENTS (for oil tankers)		
ITEM	INTERPRETATION	FIGURE
Web frame ring (for oil tankers)	Refer to the definition given in Ch 4, Sec 3, Tab 2 and Ch 4, Sec 5, Tab 2. "Adjacent structural members" means plating and stiffeners of deck, bottom, double bottom, sides and longitudinal bulkheads in the vicinity of the web frame ring	Extent of areas is shown as (1) in Ch 4, Sec 3, Fig 1 Locations of points are given in Fig 2
Deck transverse	This is the upper part of the web frame ring including the adjacent structural members (see meaning given above).	Extent of areas is shown as (2) in Ch 4, Sec 3, Fig 1 Locations of points are given in Fig 2
Deck and bottom transverses (for oil tankers)	Refer to the definition given in Ch 4, Sec 3, Tab 2	Extent of areas is shown as (2) and (5) in Ch 4, Sec 3, Fig 1 Locations of points are given in Fig 2
Transverse bulkhead	"Complete" means the whole bulkhead including stringers and stiffeners and adjacent structural members as defined above	Extent of areas is shown as (3) in Ch 4, Sec 3, Fig 1
	"Lower part" means lower part of bulkhead up to 1/4 of ship's depth or 2 metres above the lower stringer, whichever is the greater (stringers, stiffeners and adjacent structural members included)	Extent of areas is shown as (4) in Ch 4, Sec 3, Fig 1

Figure 1 : Transverse section of an oil tanker

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

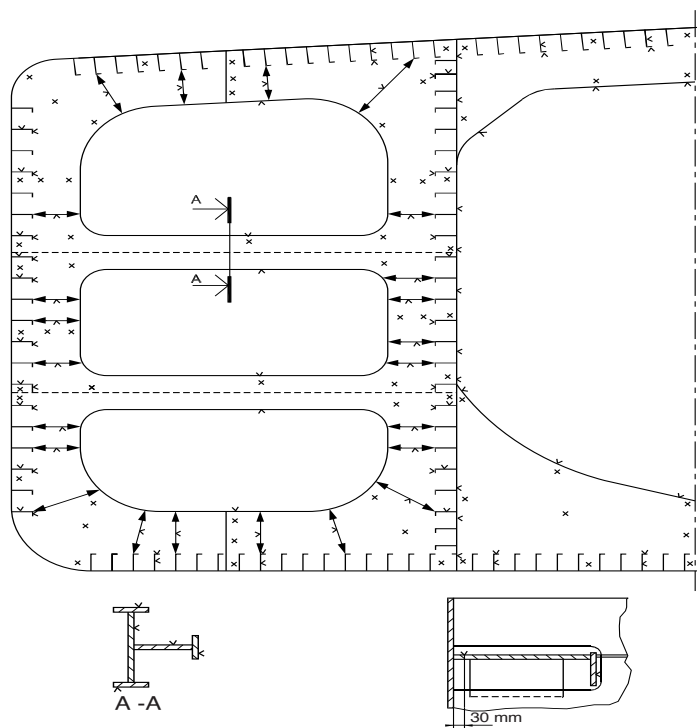
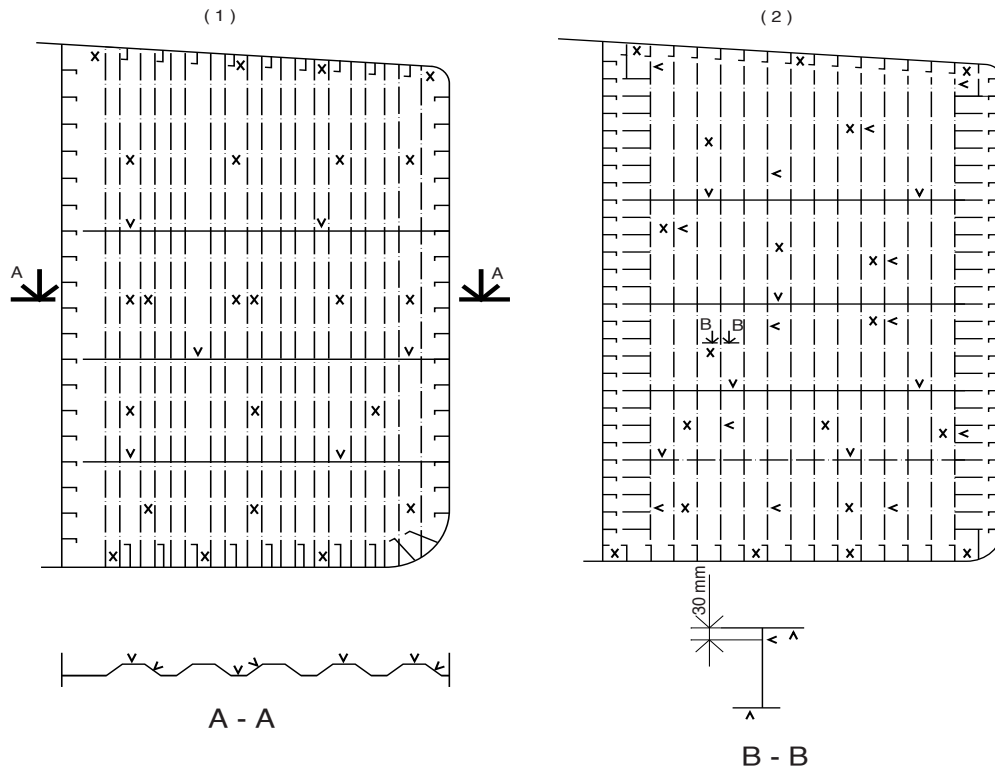
Figure 2 : Locations of measurements on web frame rings and longitudinal elements of oil tankers

Figure 3 : Locations of measurements on transverse bulkheads of oil tankers

(1) : Corrugated bulkhead

(2) : Plane bulkhead

Measurements are to be taken in a similar way on the centre tank bulkheads

Measurements are to cover the different thicknesses of strakes over the height of the bulkhead

Measurements are to be taken of the adjacent structural members

4.1.2 In cases where the ship has some structural elements with reduced wear margins (e.g. due to ship 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.

4.1.3 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 ship. Should advice be needed to support his decision, the Surveyor may refer to the relevant technical office of the Society.

4.2 Criteria

4.2.1 The acceptance criteria for the minimum thicknesses are divided into:

- criteria on local and global strength, given in [4.3]
- criteria on buckling strength, given in [4.4]
- criteria on pitting, given in [4.5].

4.2.2 Each measured structural item is to be checked against the following criteria, as far as applicable. Where any of the criteria are not met, reinforcements, repairs and renewals are to be carried out as appropriate.

4.3 Local and global strength criteria

4.3.1 Local and global strength criteria are given for the following ship types:

- oil tankers.

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

4.3.2 For the evaluation of the ship longitudinal strength, it is a prerequisite that fillet welding between longitudinal members and deck, side and bottom plating is maintained effective so as to keep continuity of hull structures.

4.3.3 Each structural item to be assessed is illustrated in a typical transverse section (see Figure 6 for oil tankers).

These structural items are also listed in appropriate tables grouped according to their position and contribution to the local or global strength of the ship and separately for ships contracted for construction either before or on/after 1 June 2000 (Table .. for oil tankers contracted for construction on/after 1 June 2000, Tab 6 for oil tankers contracted for construction before 1 June 2000).

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

- a) 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])
- b) an item, which is meant as an individual element such as a plate, a stiffener, a web, 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
- c) a group of items, which is meant as a set of elements of the same nature (plates, longitudinals, girders) contributing either to the longitudinal global strength of the ship in a given zone or to the global strength of other primary transverse elements not contributing to the ship longitudinal strength, e. g. bulkheads, hatch covers, web frames
- d) a zone, which is meant as all and only longitudinal elements contributing to the longitudinal strength of the ship; in this regard, the three main zones are defined as deck zone, neutral axis zone and bottom zone. This criterion takes into consideration the average condition of all groups of items belonging to the same zone.

4.3.5 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 criteria defined above, in the following order:

- a) assessment of isolated areas (column 1 in all tables). If the criterion is not met, the wasted part of the item is to be dealt with as necessary.
- b) assessment of items (column 2 in all tables). 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.

Example: to report the average value for each aft/forward deck plate, the criteria given in [4.3.5] b) are to be

met. Some isolated areas may be accepted according to the criteria given in [4.3.5] a).

- c) assessment of groups of items (column 3 in Tab 5, Tab 7 and Tab 5). If the criterion is not met, a sufficient number of elements are to be renewed in order to obtain an increased average thickness satisfying the considered criterion of the group (generally the elements to be renewed are those most wasted). As an example, for the assessment of the group "deck plates" all deck plates are measured and an average thickness of each of them is estimated. Then the average of all these values is to satisfy the criteria given for this group.
- d) assessment of zones (column 4 in in Tab 5, Tab 7 and Tab 5). In principle, the criterion of the zone is met when all groups of items belonging to the zone meet their own criteria (see c) above). However, a greater diminution than those given in column 3 may be accepted for one group of items if, considering the other groups of items belonging to the same zone, the overall diminution of the zone does not exceed the criterion given for it in column 4.

Example: The deck zone consists of two groups of items:

- deck plating, which has an average diminution of 12% (criterion 10%)
- deck longitudinals, which has an average diminution of 4% (criterion 10%)

Even though the deck plating group exceeds its acceptance criterion, the average diminution of the zone, which can be very roughly estimated at 8%, is acceptable and thus the deck plating group can be accepted as it is.

- e) assessment of zones (column 3 in Tab 6, Tab 8 and Tab 6, applicable to ships of 65 m in length and upwards). In principle, the criterion of the zone is met when the average diminution of all items belonging to the zone meets the criterion given for it in column 3.

Example: The deck zone consists of two groups of items:

- deck plating, which has an average diminution of 12%
- deck longitudinals, which have an average diminution of 4%.

The average diminution of the zone, which can be very roughly estimated at 8%, is acceptable.

The hull girder strength assessment is to be performed in accordance with the criteria specified in App 3.

Table 3 : Buckling strength criterion

L > 120 m

ITEMS		RATIO	MATERIAL (R_{eH})					
			235		315		355 and 390	
			(1)	(2)	(1)	(2)	(1)	(2)
Bottom and deck plates		s / t	56,0	65,0	51,0	60,0	49,0	55,0
Longitudinals	flat bar web	h_w / t_w	20,0	20,0	18,0	19,0	17,5	18,0
Flanged longitudinals / girders	web	h_w / t_w	56,0	65,0	51,0	60,0	49,0	55,0
Flanged longitudinals / girders	symmetrical flange	b_f / t_f	34,0	40,0	30,0	38,0	29,0	36,0
Flanged longitudinals / girders	asymmetrical flange	b_f / t_f	17,0	20,0	15,0	19,0	14,5	18,0
Symbols: R_{eH} : minimum yield stress of the material, in N/mm ² ; h_w : web height, in mm; t_w : web thickness, in mm; s : longitudinal spacing, in mm; b_f : flange breadth, in mm; t : actual plate thickness, in mm; t_f : flange thickness, in mm;								
(1) Applicable to ships contracted for construction on or after 1 June 2000								
(2) Applicable to ships contracted for construction before 1 June 2000								

4.3.6 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 ships having a length greater than 90 metres. However, they may also be used for smaller ships and for structure outside the cargo area according to the following principles:

- for ships 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.

4.4 Buckling strength criterion

4.4.1 This criterion is applicable to ships having a length greater than 120 metres.

In addition to the evaluation of structural elements according to [4.3] above, the structural items contributing to the longitudinal strength of the ship, such as deck and bottom plating, deck and bottom girders, etc., are also to be assessed with regard to their buckling strength. The values shown in Tab 3 are not to be exceeded.

Note 1: The minimum thickness will be specially considered for ships built with excess hull girder section modulus.

4.5 Pitting

4.5.1 The maximum acceptable depth for isolated pits is 35% of the as-built thickness.

4.5.2 For areas with different pitting intensity, the intensity diagrams shown in Fig 4 are to be used to identify the percentage of affected areas.

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 4.

Table 4 : Pitting intensity and corresponding maximum acceptable average depth of pitting

PITTING INTENSITY (%)	MAXIMUM ACCEPTABLE 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

4.5.3 In addition, the thickness outside the pits in the area considered is to be assessed according to [4.3] and [4.4] above.

Note 1: Application of filler material (plastic or epoxy compounds) is recommended as a means to stop or reduce the corrosion pro-

cess, 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.

Figure 4 : Pitting intensity diagrams (from 1% to 50% intensity)

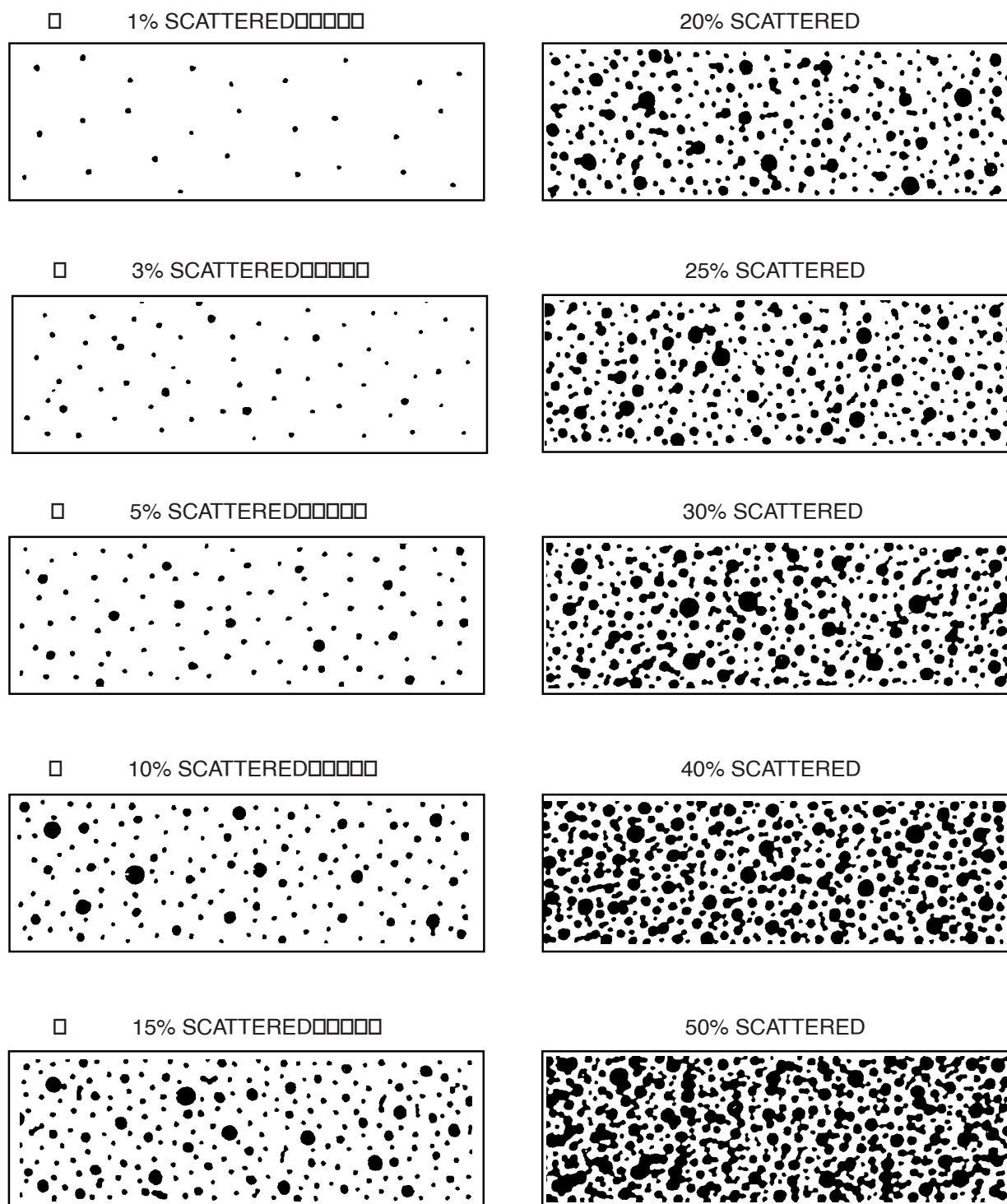


Figure 5 : Oil tanker: layout of items to be assessed

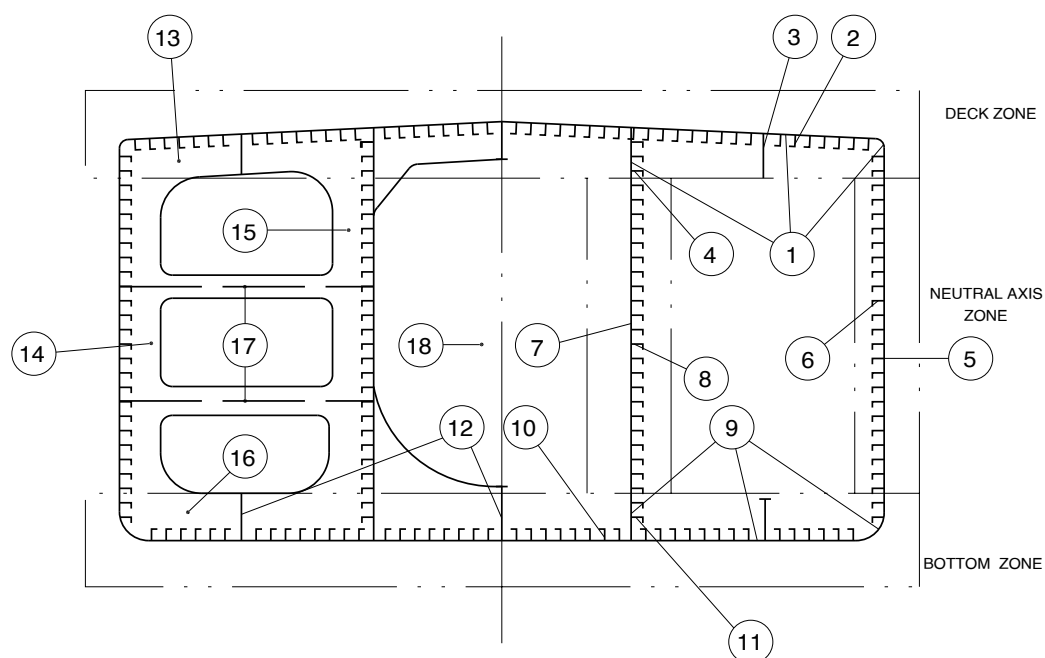


Table 5 : Local and global acceptance criteria for oil tankers (given in % of wastage)(for ships contracted for construction on/after 1 June 2000)

Group of items	Description of items	1 Isolated area	2 Item	3 Group	4 Zone
ITEMS CONTRIBUTING TO THE LONGITUDINAL STRENGTH (TRANSVERSE SECTION)					
DECK ZONE (1)		-	-	-	10
1	Deck plating, deck stringer, sheer strake and longitudinal bulkhead upper strake (2)	25	20	10	-
2	Deck and sheer strake longitudinals	-	-	10	-
	web	25	20	-	-
	flange	20	15	-	-
3	Deck longitudinal girders	-	-	10	-
	web	25	20	-	-
	flange	20	15	-	-
4	Longitudinals connected to long. bulkhead upper strake (2)	-	-	10	-
	web	25	20	-	-
	flange	20	15	-	-
NEUTRAL AXIS ZONE (1)		-	-	-	15
5	Side shell plating (2)	25	20	15	-
6	Side shell longitudinals and stringers (2)	-	-	15	-
	web	25	20	-	-
	flange	20	15	-	-
7	Longitudinal bulkhead plating	25	20	15	-
8	Longitudinal bulkhead longitudinals and stringers	-	-	15	-
	web	25	20	-	-
	flange	20	15	-	-
(1) Each zone is to be evaluated separately. (2) For double hull oil tankers, the structural elements of the inner skin (plating, longitudinals, girders, bulkheads) are to be included in the corresponding elements of the outer skin. (3) Including swash bulkheads, forward and aft peak bulkheads.					

Group of items	Description of items	1 Isolated area	2 Item	3 Group	4 Zone
BOTTOM ZONE (1)		-	-	-	10
9	Bilge and bottom strakes, longitudinal bulkhead lower strake and keel plate (2)	25	20	10	-
10	Bilge and bottom longitudinals (2)	-	-	10	-
	web	25	20	-	-
	flange	20	15	-	-
11	Longitudinals connected to longitud. bulkhead lower strake	-	-	10	-
	web	25	20	-	-
	flange	20	15	-	-
12	Bottom girders	-	-	10	-
	web	25	20	-	-
	flange	20	15	-	-
OTHER ITEMS					
13	Deck transverse web frame				
	web	25	20	-	-
	flange	20	15	-	-
	brackets / stiffeners	25	20	-	-
14	Side shell web frame				
	web	25	20	-	-
	flange	20	15	-	-
	brackets / stiffeners	25	20	-	-
15	Longitudinal bulkhead web frame				
	web	25	20	-	-
	flange	20	15	-	-
	brackets / stiffeners	25	20	-	-
16	Bottom transverse web frame				
	web	25	20	-	-
	flange	20	15	-	-
	brackets / stiffeners	25	20	-	-
17	Cross tie				
	web	25	15	-	-
	flange	20	15	-	-
	brackets / stiffeners	20	15	-	-
18	Transverse bulkheads (3)				
	plating	25	20	15	-
	stringer web	25	20	-	-
	stringer flange	20	15	-	-
	stiffener web	30	20	-	-
	stiffener flange	25	15	-	-
(1) Each zone is to be evaluated separately. (2) For double hull oil tankers, the structural elements of the inner skin (plating, longitudinals, girders, bulkheads) are to be included in the corresponding elements of the outer skin. (3) Including swash bulkheads, forward and aft peak bulkheads.					

**Table 6 : Local and global acceptance criteria for oil tankers (given in % of wastage)
(for ships contracted for construction before 1 June 2000)**

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	Deck plating, deck stringer, sheer strake and longitudinal bulkhead upper strake (2)	25	20	-
2	Deck and sheer strake longitudinals, web and flange	25	20	-
3	Deck longitudinal girders, web and flange	25	20	-
4	Longitudinals connected to long. bulkhead upper strake (2) web and flange	25	20	-
NEUTRAL AXIS ZONE (1)		-	-	-
5	Side shell plating (2)	25	20	-
6	Side shell longitudinals and stringers (2) web and flange	25	20	-
7	Longitudinal bulkhead plating	25	20	-
8	Longitudinal bulkhead longitudinals and stringers, web and flange	25	20	-
BOTTOM ZONE (1)		-	-	10
9	Bilge and bottom strakes, longitudinal bulkhead lower strake and keel plate (2)	25	20	-
10	Bilge and bottom longitudinals (2) web and flange	25	20	-
11	Longitudinals connected to longitud. bulkhead lower strake, web and flange	25	20	-
12	Bottom girders, web and flange	25	20	-
OTHER ITEMS				
13	Deck transverse web frame web and flange brackets / stiffeners	25	20	-
		25	20	-
14	Side shell web frame web and flange brackets / stiffeners	25	20	-
		25	20	-
15	Longitudinal bulkhead web frame web and flange brackets / stiffeners	25	20	-
		25	20	-
16	Bottom transverse web frame web and flange brackets / stiffeners	25	20	-
		25	20	-
17	Cross tie web and flange brackets / stiffeners	25	20	-
		25	20	-
18	Transverse bulkheads (3) plating	25	20	-
	stringer web and flange	25	20	-
	stiffener web and flange	25	20	-
(1) Each zone is to be evaluated separately. (2) For double hull oil tankers, the structural elements of the inner skin (plating, longitudinals, girders, bulkheads) are to be included in the corresponding elements of the outer skin. (3) Including swash bulkheads, forward and aft peak bulkheads.				

APPENDIX 3

CRITERIA FOR LONGITUDINAL STRENGTH OF THE HULL GIRDER

1 General

1.1

1.1.1 These criteria are to be used for the evaluation of longitudinal strength of the ship's hull girder as required by Sec 2, [2.3.9].

In order for the evaluation of the ship's longitudinal strength to be recognised as valid, fillet welding between longitudinal internal members and hull envelopes is to be in sound condition so as to keep integrity of longitudinal internal members with hull envelopes.

Items [1.1.2] and [6] only apply to oil tankers.

1.1.2 On oil tankers, both for single and double hull construction, of 130 m in length and upwards and of over 10 years of age, the longitudinal strength of the ship's hull girder is to be evaluated in compliance with the requirements of this App 3 on the basis of the thickness measured, renewed or reinforced, as appropriate, during the class renewal survey.

The condition of the hull girder for longitudinal strength evaluation is to be determined in accordance with the methods specified in [6].

2 Calculation of transverse sectional areas of deck and bottom flanges of hull girder

2.1

2.1.1 The transverse sectional areas of deck zones and bottom zones (as defined in App 2, [4.3.4]) of the ship's hull girder are to be calculated by using the thickness measured, renewed or reinforced, as appropriate, during the class renewal survey.

2.1.2 If the diminution of sectional areas of either deck or bottom zones exceeds 10 % of their respective as-built area (i.e. original sectional area when the ship was built), either of the following measures is to be taken:

- a) renewal or reinforcement of the deck or bottom zones so that the actual sectional area is not less than 90% of the as-built area; or
- b) calculation of the actual section moduli (Z_{act}) of the transverse section of the ship's hull girder by applying the calculation method specified in [4], using the thickness measured, renewed or reinforced, as appropriate, during the class renewal survey.

3 Requirements for transverse section modulus of hull girder

3.1

3.1.1 The actual section moduli (Z_{act}) of the transverse section of the ship's hull girder calculated in accordance with [2.1.2]b) above is not to be less than 90% of the required section modulus Z_R or $Z_{R,MIN}$ for new buildings specified in Pt B, Ch 6, Sec 2, [4.2], whichever is the greater, provided that in no case is Z_{act} less than the diminution limit of the minimum section modulus (Z_{MC}) as specified in [5].

4 Calculation criteria of section moduli of midship section of hull girder

4.1

4.1.1 When calculating the transverse section modulus of the ship's hull girder, the sectional area of all continuous longitudinal strength members is to be taken into account.

4.1.2 Large openings, i.e. openings exceeding 2,5m in length or 1,2m in breadth and scallops, where scallop welding is applied, are always to be deducted from the sectional areas used in the section modulus calculation.

4.1.3 Smaller openings (manholes, lightening holes, single scallops in way of seams, etc.) need not be deducted provided that the sum of their breadths or shadow area breadths in one transverse section does not reduce the section modulus at deck or bottom by more than 3% and provided that the height of lightening holes, draining holes and single scallops in longitudinals or longitudinal girders does not exceed 25% of the web depth, for scallops of maximum 75mm.

4.1.4 A deduction-free sum of smaller opening breadths in one transverse section in the bottom or deck area of $0,06(B - S_b)$ (where B = breadth of ship, S_b = total breadth of large openings) may be considered equivalent to the above reduction in section modulus.

4.1.5 The shadow area is to be obtained by drawing two tangent lines with an opening angle of 30° .

4.1.6 The deck modulus is related to the moulded deck line at side.

4.1.7 The bottom modulus is related to the base line.

4.1.8 Continuous trunks and longitudinal hatch coamings are to be included in the longitudinal sectional area provided they are effectively supported by longitudinal bulkheads or deep girders. The deck modulus is then to be calculated by dividing the moment of inertia by the following distance, provided this is greater than the distance to the deck line at side:

$$y_L = y(0,9 + 0,2x/B)$$

where:

y : distance from neutral axis to top of continuous strength member,

x : distance from top of continuous strength member to centreline of the ship.

x and y to be measured to the point giving the largest value of y_L .

4.1.9 Longitudinal girders between multi-hatchways are to be considered by means of special calculations.

5 Diminution limit of minimum longitudinal strength of ships in service

5.1

5.1.1 The diminution limit of the minimum section modulus Z_{mc} , in cm^3 , of ships in service is given by the following formula:

$$Z_{mc} = cL^2B(C_b + 0,7)k$$

where:

L : length of ships. L is the distance, in meters, on the summer load waterline from the fore side of stem to the after side of the rudder post, or the centre of the rudder stock if there is no rudder post. L is not to be less than 96%, and need not be greater than 97%, of the extreme length on the summer load waterline. In ships with unusual stern and bow arrangement the length L may be specially considered.

B : greatest moulded breadth in metres.

C_b : moulded block coefficient at draught d corresponding to summer load waterline, based on L and B . C_b is not to be taken less than 0.60, according to the formula:

$$C_b = \frac{\text{moulded displacement (m}^3\text{) at draught } d}{LBd}$$

c : 0,9 c_n (the value of C_n is given in Tab 1)

k : material factor, e.g:

$k = 1$ for mild steel with yield stress of 235 N/mm² and over;

$k = 0,78$ for high tensile steel with yield stress of 315 N/mm² and over,

$k = 0,72$ for high tensile steel with yield stress of 355 N/mm² and over.

5.1.2 Scantlings of all continuous longitudinal members of the ship's hull girder based on the section modulus requirement in [5.1.1] above are to be maintained within 0,4 L amidships. However, in special cases, based on consideration of the type of ship, hull form and loading conditions, the scantlings may be gradually reduced towards the end of 0,4 L part, bearing in mind the desire not to inhibit the ship's loading flexibility.

5.1.3 However, the above standard may not be applicable to ships of unusual type or design, e.g. for ships of unusual main proportions and/or weight distributions.

6 Oil tankers - Sampling method of thickness measurements for longitudinal strength evaluation and repair methods

6.1 Extent of longitudinal strength evaluation

6.1.1 Longitudinal strength is to be evaluated within 0,4L amidships for the extent of the hull girder length that contains tanks therein and within 0,5L amidships for adjacent tanks which may extend beyond 0,4L amidships, where tanks means ballast tanks and cargo tanks.

6.2 Sampling method of thickness measurement

6.2.1 Pursuant to the requirements of Ch 4, Sec 3, [6.4], for single hull oil tanker or Ch 4, Sec 4, [4.4] for double hull oil tankers, transverse sections are to be chosen such that thickness measurements can be taken for as many different tanks in corrosive environments as possible, e.g. ballast tanks sharing a common plane boundary with cargo tanks fitted with heating coils, other ballast tanks, cargo tanks permitted to be filled with sea water and other cargo tanks. Ballast tanks sharing a common plane boundary with cargo tanks fitted with heating coils and cargo tanks permitted to be filled with sea water are to be selected where present.

6.2.2 The minimum number of transverse sections to be sampled is to be in accordance with Ch 4, Sec 3, Tab 3 for single hull oil tankers or Ch 4, Sec 4, Tab 3 for double hull oil tankers. The transverse sections are to be located where the largest thickness reductions are suspected to occur or are revealed from deck and bottom plating measurements prescribed in [6.2.3] and are to be clear of areas which have been locally renewed or reinforced.

Table 1 : Values of C_n

	$L < 90$	$90 \leq L < 300$	$300 \leq L \leq 350$	$350 < L \leq 500$
C_n	$(118 - 0,36L) \cdot L/1000$	$10,75 - [(300 - L)/100]^{1,5}$	10,75	$10,75 - [(L - 350)/150]^{1,5}$

6.2.3 At least two points are to be measured on each deck plate and/or bottom shell plate required to be measured within the cargo area in accordance with the requirements of Ch 4, Sec 3, Tab 3 for single hull oil tankers or Ch 4, Sec 4, Tab 3 for double hull oil tankers.

6.2.4 Within 0,1D (where D is the ship's moulded depth) of the deck and bottom at each transverse section to be measured in accordance with the requirements of Ch 4, Sec 3, Tab 3 for single hull oil tankers or Ch 4, Sec 4, Tab 3 for double hull oil tankers, every longitudinal and girder is to be measured on the web and face plate, and every plate is to be measured at one point between longitudinals.

6.2.5 For longitudinal members other than those specified in [6.2.4] to be measured at each transverse section in accordance with the requirements of Ch 4, Sec 3, Tab 3 for single hull oil tankers or Ch 4, Sec 4, Tab 3 for double hull oil tankers, every longitudinal and girder is to be measured on the web and face plate, and every plate is to be measured at least in one point per strake.

6.2.6 The thickness of each component is to be determined by averaging all of the measurements taken in way of the transverse section on each component.

6.3 Additional measurements where the longitudinal strength is deficient

6.3.1 Where one or more of the transverse sections are found to be deficient in respect of the longitudinal strength requirements given in this App 3, the number of transverse sections for thickness measurement is to be increased such that each tank within the 0,5L amidships region has been sampled. Tank spaces that are partially within, but extend beyond, the 0,5L region are to be sampled.

6.3.2 Additional thickness measurements are also to be performed on one transverse section forward and one aft of each repaired area to the extent necessary to ensure that the areas bordering the repaired section also comply with the requirements of Ch 4, Sec 3 for single hull oil tankers or Ch 4, Sec 4 for double hull oil tankers.

6.4 Effective repair methods

6.4.1 The extent of renewal or reinforcement carried out to comply with this App 3 is to be in accordance with [6.4.2].

6.4.2 The minimum continuous length of a renewed or reinforced structural member is to be not less than twice the spacing of the primary members in way. In addition, the thickness diminution in way of the butt-joint of each joining member forward and aft of the replaced member (plates, stiffeners, girder webs and flanges, etc.) is not to be within the substantial corrosion range (75% of the allowable diminution associated with each particular member). Where differences in thickness at the butt-joint exceed 15% of the lower thickness, a transition taper is to be provided.

6.4.3 Alternative repair methods involving the fitting of straps or structural member modification are subject to special consideration. When considered, the fitting of straps is to be limited to the following conditions:

- to restore and/or increase longitudinal strength;
- the thickness diminution of the deck or bottom plating to be reinforced is not within the substantial corrosion range (75% of the allowable diminution associated with the deck plating);
- the alignment and arrangement, including the termination of the straps, are in accordance with a standard recognised by the Society;
- the straps are continuous over the entire 0,5L amidships length; and
- continuous fillet welding and full penetration welds are used for butt welding and, depending on the width of the strap, for slot welds. The welding procedures applied are acceptable to the Society.

6.4.4 The existing structure, adjacent to replacement areas and in conjunction with the fitted straps, etc., is to be capable of withstanding the applied loads, taking into account the buckling resistance and the condition of welds between the longitudinal members and hull envelope plating.

Part A
Classification and Surveys

Chapter 3

SCOPE OF SURVEYS (all ships)

SECTION 1	SURVEY FOR NEW CONSTRUCTION
SECTION 2	SURVEY FOR ASSIGNMENT OF CLASS OF A SHIP IN SERVICE
SECTION 3	ANNUAL SURVEY
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APPENDIX 1	CLASS REQUIREMENTS AND SURVEYS OF LAID-UP SHIPS

SECTION 1

SURVEY FOR NEW CONSTRUCTION

1 Hull

1.1 General

1.1.1 Scope

The scope of this Section includes the following main activities:

- a) Examination of the parts of the ship covered by classification Rules and by applicable statutory regulations for hull construction, to obtain appropriate evidence that they have been built in compliance with the Rules and regulations, taking account of the relevant approved drawings.
- b) Appraisal of the manufacturing, construction, control and qualification procedures, including welding consumables, weld procedures, weld connections and assemblies, with indication of relevant approval tests.
- c) Witnessing inspections and tests as required in the classification Rules used for ship construction including materials, welding and assembling, with specification of the items to be examined and/or tested, the methods (e.g. by hydrostatic, hose or leak testing, non-destructive examination, verification of geometry) and who is to carry out such inspections and tests.

Appraisal of materials and equipment used for ship construction and their inspection at works is not included in this Section. Details of requirements for hull and machinery steel forgings and castings and for normal and higher strength hull structural steel are given in Pt D, Ch 2, Sec 3, Pt D, Ch 2, Sec 4 and Pt D, Ch 2, Sec 1, [2] respectively. Acceptance of these items is verified through the survey process carried out at the Manufacturer's works and the issuing of the appropriate certificates.

1.2 Definitions

1.2.1 Hull structure

The hull structure (see Note 1) is defined as follows:

- a) hull envelope including all internal and external structures,
- b) superstructures, deckhouses and casings,
- c) welded foundations, e.g. main engine seatings,
- d) hatch coamings, bulwarks,
- e) all penetrations fitted and welded into bulkheads, decks and shell,

f) the fittings of all connections to decks, bulkheads and shell, such as air pipes and ship side valves - all items of ILLC 1966, as amended,

g) welded attachments to shell, decks and primary members, e.g. crane pedestals, bitts and bollards, but only as regards their interaction on the hull structure.

Note 1: A glossary of hull terms and hull survey terms can be found in IACS Recommendation 82.

1.2.2 Documents

Reference to documents also includes electronic transmission or storage.

1.2.3 Survey methods

The survey methods which the Surveyor is directly involved in are as follows:

- a) Patrol is defined as the act of checking on an independent and unscheduled basis that the applicable processes, activities and associated documentation of the shipbuilding functions identified in Tab 1 continue to conform to classification and statutory requirements.
- b) Review is defined as the act of examining documents in order to determine traceability and identification, and to confirm that processes continue to conform to classification and statutory requirements.
- c) Witness is defined as the attendance at scheduled inspections in accordance with the agreed Inspection and Test Plans or equivalent to the extent necessary to check compliance with the survey requirements.

1.3 Application

1.3.1 Classification items

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

- a) those defined in SOLAS I/3
- b) high speed craft as defined in I/1.3.1 of the 2000 High Speed Craft Code
- c) Mobile Offshore Drilling Units as defined in I/1.2.1 of the MODU Code.

1.3.2 Statutory items

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

1.3.3 Equipment, fittings and appendages

This Section does not cover the manufacture of equipment, fittings and appendages regardless of whether they are made inside or outside the shipyard, examples being as follows:

- a) hatch covers,
- b) doors and ramps integral with the shell and bulkheads,
- c) rudders and rudder stock,
- d) all forgings and castings integral to the hull.

Evidence of acceptance is to be provided by accompanying documentation from the Surveyor at the Manufacturer's and verified at the shipyard.

1.3.4 Installation, welding and testing

This Section applies to the installation in the ship, welding and testing of:

- a) the items listed in [1.3.3] above
- b) equipment forming part of the watertight and weather-tight integrity of the ship.

1.3.5 Location of construction

This Section applies to the hull structures and coating constructed:

- a) at the shipbuilder's facilities,
- b) by subcontractors at the shipbuilder's facilities,
- c) by subcontractors at their own facilities or at other remote locations.

1.4 Personnel

1.4.1 Qualification and monitoring of exclusive Surveyors

The Society's Surveyors are to confirm through patrol, review and witness, as defined in [1.2.3], that ships are built using approved plans in accordance with the relevant Rules and statutory requirements. The Surveyors are to be qualified to be able to carry out their tasks, and procedures are to be in place to ensure that their activities are monitored.

1.5 Survey of the hull structure

1.5.1 Surveyable items

Tab 1 provides a list of surveyable items for the hull structure and coating covered by this Section, including:

- a) description of the shipbuilding functions;
- b) classification and statutory survey requirements;
- c) survey method required for classification;
- d) relevant Society Rule and statutory requirement references;
- e) documentation to be available for the Surveyor during construction. The shipbuilder is to provide the Surveyors with access to documentation required by the Society; this includes documentation retained by the shipbuilder or other third parties. The list of documents approved or

reviewed by the Society for the specific new construction is as follows:

- 1) plans and supporting documents,
- 2) examination and testing plans,
- 3) NDE plans,
- 4) welding consumable details,
- 5) welding procedure specifications,
- 6) welding plan or details,
- 7) welders' qualification records,
- 8) NDE operators' qualification records;
- f) documents to be inserted into the ship construction file. Refer to [1.10] for details;
- g) a list of specific activities which are relevant to the ship-building functions. This list is not exhaustive and can be modified to reflect the construction facilities or specific ship type.

1.5.2 Materials and equipment supplied

During the construction process as required, evidence is also to be made available by the shipbuilder to the Surveyor to prove that the materials and equipment supplied to the ship have been built or manufactured under survey relevant to the classification Rules and statutory requirements.

1.6 Review of the shipyard

1.6.1 Review of the construction facilities

The Society is to familiarise itself with the yard's production facilities, management processes and safety for consideration in terms of compliance with the requirements of Tab 1 (see Note 1) prior to any steelwork or construction taking place in the following circumstances:

- a) where the Society has no, or no recent, experience of the construction facilities - typically after a one year lapse - or when significant new infrastructure has been added,
- b) where there has been significant management or personnel restructuring having an impact on the ship construction process, or
- c) where the shipbuilder contracts to construct a ship of a different type or substantially different in design.

Note 1: Reference is made to [1.11] - Shipyard review record, as an example.

1.7 Newbuilding survey planning

1.7.1 Kick-off meeting

Prior to commencement of surveys for any newbuilding project, the Society is to discuss with the shipbuilder at a kick-off meeting the items listed in Tab 1. The purpose of the meeting is to agree how the list of specific activities shown in Tab 1 is to be addressed. The meeting is to take into account the shipbuilder's construction facilities and ship type, including the list of proposed subcontractors. A record of the meeting is to be made, based on the contents of Tab 1. Tab 1 itself can be used as the record with comments made in the appropriate column. If the Society has appointed a Surveyor for a specific newbuilding project then this Surveyor is to attend the kick-off meeting. The

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

1.7.2 Specific Administration and statutory requirements

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

1.7.3 Construction progress records

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

1.7.4 Fabrication quality standard

Shipbuilding quality standards for the hull structure during new construction are to be reviewed and agreed during the kick-off meeting. Structural fabrication is to be carried out in accordance with IACS Recommendation 47, "Shipbuilding and Repair Quality Standard", or a recognised 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 the Rules and under survey of the Society.

1.7.5 Other attendees at the kick-off meeting

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

1.7.6 Special cases of kick-off meeting

In the event of series ship production, consideration may be given to waiving the requirement for a kick-off meeting for the second and subsequent ships provided any changes are documented as required in [1.7.1].

1.8 Examination and test plan for newbuilding activities

1.8.1 Plans to be provided

The shipbuilder is to provide plans of the items which are intended to be examined and tested. These plans need not

be submitted for approval and examination at the time of the kick-off meeting. They are to include:

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

1.8.2 Submittal of plans to the Surveyors

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

1.9 Proof of the consistency of surveys

1.9.1 Evidence for survey planning and activities

Inspection and test records, checklists etc are to be kept in order to provide evidence that the Society's Surveyors have complied with the requirements of the newbuilding survey planning and duly participated in the relevant activities shown in the shipbuilder's examination and test plans.

1.10 Ship Construction File

1.10.1 Document provider

The shipbuilder is to deliver documents for the Ship Construction File. In the event that items have been provided by another Party such as the Shipowner, and where separate arrangements have been made for document delivery excluding the shipbuilder, that Party has the responsibility.

The Ship Construction File is to be reviewed for content in accordance with the requirements of [1.10.2].

1.10.2 Contents of the Ship Construction File

It is recognised that the purpose of documents held in the Ship Construction File on board the ship is to facilitate surveys and repairs and maintenance, and, therefore, in addition to those listed in Tab 1, such documents are to include, but not be limited to, the following:

- a) 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;
- b) manuals required for classification and statutory requirements, e.g. loading and stability, bow doors, inner doors, side shell doors and stern doors - opera-

tions and maintenance manuals (Pt B, Ch 9, Sec 5 and Pt B, Ch 9, Sec 6);

- c) ship structure access manual, as applicable;
- d) copies of certificates of forgings and castings welded into the hull (Pt D, Ch 2, Sec 3 and Pt D, Ch 2, Sec 4);
- e) details of equipment forming part of the watertight and weathertight integrity of the ship;
- f) tank testing plan including details of the test requirements (Pt B, Ch 12, Sec 3);
- g) corrosion protection specifications (Pt B, Ch 11, Sec 1);
- h) details for the in-water survey, if applicable, information for divers, clearance measurement instructions etc, tank and compartment boundaries;
- i) docking plan and details of all penetrations normally examined at dry-docking;
- j) Coating Technical File, for ships subject to compliance with the IMO Performance Standard for Protective Coat-

ings (PSPC), as a class requirement under the IACS Common Structural Rules.

1.11 Shipyard review record

1.11.1 Contents of the shipyard review record

The shipyard review record is to contain the following information, for which the Society form "Shipyard review record" is to be filled in as appropriate:

- a) name and location of shipyard
- b) details of any management systems
- c) construction facilities
- d) shipyard control of qualified welders
- e) features of construction procedure
- f) quality control system
- g) measures for safety and health
- h) control system of non-destructive examination (NDE)
- i) quality control on production line.

Table 1 : New construction survey activities (1/2/2021)

No.	Shipbuilding quality control function	Survey Requirements for Classification	Survey Method required for Classification	Society Rule reference	Statutory requirements and relevant reference	Documentation available to Surveyor during construction	Documentation for Ship Construction File	Specific activities	Society proposals for the project
1	Welding:								
1.1	Welding consumables	Approved by Society separately at the Manufacturer's	Review approval status and patrol, verify storage, handling and treatment in accordance with Manufacturer's requirements	Pt D, Ch 5, Sec 2		Consumable specification and approval status	Not required	Identify consumables against approved list	
								Verify temporary and permanent storage facilities	E.g. kept dry, covered, where applicable heated
								Verify traceability	E.g. random batch number checking
1.2	Welder qualification	Qualified welders	Review of welder certification and patrol	Guide for Welding		Shipyard's records with individual's identification	Not required	Verify welder qualification standard, e.g. class or recognised standard approval	
								Verify welder approved for weld position	
								Verify validity of qualification certificate	

No.	Shipbuilding quality control function	Survey Requirements for Classification	Survey Method required for Classification	Society Rule reference	Statutory requirements and relevant reference	Documentation available to Surveyor during construction	Documentation for Ship Construction File	Specific activities	Society proposals for the project
1.3	Welding - mechanical properties (welding procedures)	All weld joint configurations, positions and materials to be covered by weld procedures approved by the Society or by another QSCS Classification Society available	Review and patrol	Pt D, Ch 5, Sec 4		Approved weld procedure specification and welding plan relevant to the ship project or process	Not required	Verify procedures are available at relevant workstations	
		The Society witnesses all new weld procedure qualification tests carried out in the shipyard whenever the Society is surveying in the shipyard	Witness					Verify weld procedure records have been approved and cover all weld processes and positions in accordance with classification or recognised standards and are available for the Surveyor's reference	
1.3a	Welding equipment	Correctly calibrated and maintained	Patrol and review			Ship-builder's maintenance and calibration records	Not required	Verify condition of machinery and equipment	
								Verify machines are calibrated by appropriate staff	

No.	Shipbuilding quality control function	Survey Requirements for Classification	Survey Method required for Classification	Society Rule reference	Statutory requirements and relevant reference	Documentation available to Surveyor during construction	Documentation for Ship Construction File	Specific activities	Society proposals for the project
1.3a Cont'd	Welding equipment							Verify calibration carried out in accordance with Manufacturer's recommendations	
								Verify calibration in accordance with maintenance schedule	
1.3b	Welding environment	Satisfactory environment	Patrol	Guide for welding			Not required	Verify welding areas clean, dry, well lit	
								Confirm relevant measures taken for any pre- or post- heat treatment, drying of surfaces prior to welding	
								Confirm shielding gases, fluxes protected	
1.3c	Welding supervision	Sufficient number of skilled supervisors	Patrol	- Guide for welding - Rules for carrying out non-destructive examinations of welding				Verify supervision is effective	

No.	Shipbuilding quality control function	Survey Requirements for Classification	Survey Method required for Classification	Society Rule reference	Statutory requirements and relevant reference	Documentation available to Surveyor during construction	Documentation for Ship Construction File	Specific activities	Society proposals for the project
1.4	Welding- surface discontinuities	Substantially free from significant indications, satisfactory profile and size	Visual examination, surface detection techniques, review of documents and patrol of operator	- Guide for welding - Rules for carrying out non-destructive examinations of welding		Ship-builder's and recognised standards and Rules as applicable, welding and NDE plans, NDE reports, operator qualifications	Not required	Identify workstations where NDE is carried out, e.g. panel line butt welds, castings into hull structure	
								Verify NDE carried out in accordance with approved plans where applicable	
								Verify suitability of NDE methods	
								Verify operators suitably qualified, particularly where sub-contractors have been employed	
								Verify NDE is carried out according to the acceptable process	
								Review NDE records	

No.	Shipbuilding quality control function	Survey Requirements for Classification	Survey Method required for Classification	Society Rule reference	Statutory requirements and relevant reference	Documentation available to Surveyor during construction	Documentation for Ship Construction File	Specific activities	Society proposals for the project
1.5	Welding - embedded discontinuities	NDE is to be carried out by qualified operators capable of ensuring that welds are substantially free from significant indications	Radiography and ultrasonic testing, review of documents and patrol of operator, examination of films	- Guide for Welding - Rules for carrying out non-destructive examinations of welding		Ship-builder's and recognised standards and Rules as applicable, welding and NDE plans, NDE reports, operator qualifications	Not required	Identify workstations where NDE is carried out, e.g. panel line butt welds, castings into hull structure	
								Verify NDE carried out in accordance with approved plans, where applicable	
								Verify suitability of NDE methods	
								Verify operators suitably qualified, particularly where sub-contractors have been employed	
								Verify that records have been completed and in accordance with recognised standards, e.g. IQI and sensitivity recorded	

No.	Shipbuilding quality control function	Survey Requirements for Classification	Survey Method required for Classification	Society Rule reference	Statutory requirements and relevant reference	Documentation available to Surveyor during construction	Documentation for Ship Construction File	Specific activities	Society proposals for the project
1.5 Cont'd	Welding - embedded discontinuities							Verify that reports and radiographs have been evaluated correctly by the ship-builder. Systematic review of radiographs carried out by the Surveyor	
								Verify equipment calibration is satisfactory and in accordance with Manufacturer's and recognised standards and requirements	
								Verify NDE is carried out according to the acceptable process	

No.	Shipbuilding quality control function	Survey Requirements for Classification	Survey Method required for Classification	Society Rule reference	Statutory requirements and relevant reference	Documentation available to Surveyor during construction	Documentation for Ship Construction File	Specific activities	Society proposals for the project
2	Steel preparation and fit up:								
2.1	Surface preparation, marking and cutting	Traceability and acceptability of material, check of steel plates and profiles, material type, scantling identification, testing marks	Patrol	Guide for welding		Material certificates, ship-builder's marking/cutting production documents at the work stage - documents retained at the facility	Not required	Verify stockyard storage satisfactory	
								Verify material traceability, e.g. stamping identification against material certification, archiving of records	
								Verify transfer marking after treatment line	
								Verify standard of shot-blasting and priming	
								Verify suitability of primer	
								Verify that steel grades can be identified	

No.	Shipbuilding quality control function	Survey Requirements for Classification	Survey Method required for Classification	Society Rule reference	Statutory requirements and relevant reference	Documentation available to Surveyor during construction	Documentation for Ship Construction File	Specific activities	Society proposals for the project
2.1 Cont'd	Surface preparation, marking and cutting							Verify machinery is adjusted to stay within the Society's or Manufacturer's recommendations	
								Verify accuracy of marking and cutting	
								Verify storage of piece parts	
2.2	Straightening	Maintain material properties. Acceptance of forming method against improper deformations	Patrol and review	Guide for welding		Recognised standards, approved procedures	Not required	Verify that straightening processes are approved for the grade and type of steel, e.g. thermo mechanical control process (tmcp), Z plate	
								Verify that plates and sections are within recognised tolerances	

No.	Shipbuilding quality control function	Survey Requirements for Classification	Survey Method required for Classification	Society Rule reference	Statutory requirements and relevant reference	Documentation available to Surveyor during construction	Documentation for Ship Construction File	Specific activities	Society proposals for the project
2.3	Forming	Maintain material properties. Acceptance of forming method against improper deformations	Patrol	Guide for welding		Ship-builder's procedure for hot forming	Not required	Verify that temperature control is exercised by the operator	
								Verify that suitable methods of temperature control are available when forming special steels and materials	
								Verify that forming processes are acceptable	
2.4	Conformity with alignment/fit-up/gap criteria	Check alignment/fit-up/gap against reference standards	Patrol	Guide for welding		Ship-builder's and recognised standards and Rules as applicable	Not required	Verify the processes to ensure satisfactory fit-up and alignment at all workstations	
								Verify that edge preparations are re-instated where lost during fitting operations	
								Verify remedial procedures are in place to compensate for wide gaps and alignment deviations	

No.	Shipbuilding quality control function	Survey Requirements for Classification	Survey Method required for Classification	Society Rule reference	Statutory requirements and relevant reference	Documentation available to Surveyor during construction	Documentation for Ship Construction File	Specific activities	Society proposals for the project
2.5	Conformity for critical areas with alignment/fit-up or weld configuration	Check alignment/fit-up/gap against approved drawings	Patrol and review	Guide for welding		Ship-builder's and recognised standards and Rules as applicable, approved plan or standard, builder's records	Approved plans of critical areas, if applicable	Verify that the information relevant to the latest approved drawings is available at the workstations	
								Verify the processes to ensure satisfactory fit-up and alignment at all workstations	
								Verify that edge preparations are re-instated where lost during fitting operations	
								Verify remedial procedures are in place to compensate for wide gaps and alignment deviations	

No.	Shipbuilding quality control function	Survey Requirements for Classification	Survey Method required for Classification	Society Rule reference	Statutory requirements and relevant reference	Documentation available to Surveyor during construction	Documentation for Ship Construction File	Specific activities	Society proposals for the project
3	Steelwork process, e.g. sub-assembly, block, grand and mega block assembly, pre-erection and erection, closing plates	Compliance with approved drawings, visual examination of welding and material, check of alignment and deformations	Patrol of the process and witness of the completed item	Guide for welding		Approved plans, ship-builder's inspection records, ship-builder's and recognised standards and Rules as applicable, construction plan (steel-work sub-division)		Verify that the information relevant to the latest approved drawings is available at the workstations	
								Verify that correct weld sizes have been adopted	
								Verify operation of the welding processes at the different work stages is satisfactory	

No.	Shipbuilding quality control function	Survey Requirements for Classification	Survey Method required for Classification	Society Rule reference	Statutory requirements and relevant reference	Documentation available to Surveyor during construction	Documentation for Ship Construction File	Specific activities	Society proposals for the project
3 Cont'd	Steelwork process, e.g. sub-assembly, block, grand and mega block assembly, pre-erection and erection, closing plates							Verify that the information relevant to the latest approved drawings is available at the workstations	
								Verify that piece parts are identifiable	
								Verify that fit-ups are within recognised tolerances	
								Verify that correct welding requirements specified in reference 1 of this table have been adopted	
								Verify processes for closing plates are acceptable	
								Confirm that steelwork is in accordance with the approved plan	

No.	Shipbuilding quality control function	Survey Requirements for Classification	Survey Method required for Classification	Society Rule reference	Statutory requirements and relevant reference	Documentation available to Surveyor during construction	Documentation for Ship Construction File	Specific activities	Society proposals for the project
4	Remedial work and alteration	Welding, check against deformation, alignment	Review records and witness	Guide for welding		Permanent record of shipyard surveyable item		Verify that records have been maintained of significant deviations from the approved plans, for situations such as mis-cut openings, re-routing outfit items	
								Verify that all deviations brought to the attention of the Society by the ship-builder are acceptable	
5	Tightness testing, including leak and hose testing, hydropneumatic testing	Absence of leaks	Patrol of the process and witness of the test	Pt B, Ch 12, Sec 3	Reg. II-1/14 of SOLAS as amended	Approved tank testing plan, ship-builder's inspection records	Approved tank testing plan	Confirm that tank testing is carried out in accordance with the approved plan	
								Confirm the methods used to carry out leak testing	

No.	Shipbuilding quality control function	Survey Requirements for Classification	Survey Method required for Classification	Society Rule reference	Statutory requirements and relevant reference	Documentation available to Surveyor during construction	Documentation for Ship Construction File	Specific activities	Society proposals for the project
5 Cont'd	Tightness testing, including leak and hose testing, hydropneumatic testing							Confirm that correct test pressures maintained for leak, hose and hydro and hydropneumatic testing are satisfactory	
								Verify that adequate records of the tank testing have been maintained	
6	Structural testing	Structural adequacy of the design	Witness testing	Pt B, Ch 12, Sec 3	Reg. II-1/14 of SOLAS as amended	Approved tank testing plan, ship-builder's inspection records	Approved tank testing plan	Confirm that tank testing is carried out in accordance with the approved plan	
								Confirm that correct test pressures maintained for testing are satisfactory	
								Verify that adequate records of the tank testing have been maintained	

No.	Shipbuilding quality control function	Survey Requirements for Classification	Survey Method required for Classification	Society Rule reference	Statutory requirements and relevant reference	Documentation available to Surveyor during construction	Documentation for Ship Construction File	Specific activities	Society proposals for the project
7	Corrosion protection systems, e.g. coatings, cathodic protection, impressed current, except for coating system subject to PSPC	Salt water ballast tanks with boundaries formed by the hull envelope are to have an efficient protective coating. Safety aspects of cathodic systems to be dealt with separately.	Review and report on builder's & Manufacturer's documentation	Pt B, Ch 11, Sec 1	Reg. II-1/3-2 of SOLAS as amended	Manufacturer's and builder's specification	Corrosion protection specifications	Verify that applied coatings are approved and review records of application	
								Verify that adequate records have been maintained and copied to the ship construction file	
	Application Antifouling Systems		Review		AFS Convention	Painting specification	Paint specification and Mfg declaration	Verify that adequate records have been maintained and copied to the ship construction file	
7.1	Application of protective coatings for dedicated seawater ballast tanks in all types of ships and double-side skin spaces of bulk carriers subject to PSPC	Monitor implementation of the coating inspection requirements	Patrolling and review	UI SC223. PR34	Reg. II-1/3-2 of SOLAS as amended	Coating standard	Coating technical file	Verify that applied coatings are approved and review records of application in accordance with Chapter 7 of Annex to MSC.215(82).	
8	Installation, welding and testing of the following:								

No.	Shipbuilding quality control function	Survey Requirements for Classification	Survey Method required for Classification	Society Rule reference	Statutory requirements and relevant reference	Documentation available to Surveyor during construction	Documentation for Ship Construction File	Specific activities	Society proposals for the project
8.1	Hatch covers	Tightness and securing	Witness	Pt B, Ch 12, Sec 3	Reg. 13-14-15 and 16 of ILLC '66	Approved tank testing plan, ship-builder's inspection records	Details required, structural drawings	Confirm leak test of hatch covers	
								Confirm operation and securing test	
8.2	Doors and ramps integral with the shell and bulkheads	Tightness and securing	Witness	Pt B, Ch 12, Sec 3	Reg. II-1/18 of SOLAS as amended; Reg. 12 and 21 of ILLC '66	Approved tank testing plan, ship-builder's inspection records	Details required	Confirm leak test	
	Doors and ramps integral with the shell and bulkheads							Confirm operation and securing test	
								Confirm safety device operation	
								Ensure correct maintenance logs/manuals supplied with the ship construction file	

No.	Shipbuilding quality control function	Survey Requirements for Classification	Survey Method required for Classification	Society Rule reference	Statutory requirements and relevant reference	Documentation available to Surveyor during construction	Documentation for Ship Construction File	Specific activities	Society proposals for the project
8.3	Rudders	Fitting	Witness	Pt B, Ch 12, Sec 3		Approved plan, ship-builder's inspection records	Details required, structural drawings	Confirm alignment and mounting and fitting up to the connection to the tiller	
								Confirm function test	
								Verify fitting of pintles and all securing bolts	
								Verify all fit-up records including all clearances maintained and placed into ship construction file	

No.	Shipbuilding quality control function	Survey Requirements for Classification	Survey Method required for Classification	Society Rule reference	Statutory requirements and relevant reference	Documentation available to Surveyor during construction	Documentation for Ship Construction File	Specific activities	Society proposals for the project
8.4	Forgings and castings	Compliance with approved drawings, visual examination of welding and material, check alignment and deformations	Patrol of the process and witness of the completed item	Pt D, Ch 2, Sec 3 and Pt D, Ch 2, Sec 4		Approved plans, ship-builder's inspection records, ship-builder's and recognised standards and Rules as applicable, construction plan (steel-work sub-division)	Copies of certificates of forgings and castings	Verify castings and forgings against material certificate	
								Verify that correct welding and fit-up requirements specified in reference 1, 2.4 and 2.5 of this table have been adopted	
								Verify that material certificates are included in the ship construction file	
8.5	Appendages							Verify that correct welding and fit-up requirements specified in reference 1, 2.4 and 2.5 of this table have been adopted	

No.	Shipbuilding quality control function	Survey Requirements for Classification	Survey Method required for Classification	Society Rule reference	Statutory requirements and relevant reference	Documentation available to Surveyor during construction	Documentation for Ship Construction File	Specific activities	Society proposals for the project
8.6	Equipment forming the watertight and weather-tight integrity of the ship, e.g. overboard discharges, air pipes, ventilators	Tightness and securing	Witness		Reg. II-1/19 of SOLAS as amended; Reg. 17-18-19-20-22-23 of ILLC '66	Approved tank testing plan, ship-builder's inspection records	Details required	Verify that correct welding and fit-up requirements specified in reference 1, 2.4 and 2.5 of this table have been adopted	
								Verify compliance with Load line Convention 1966 as amended - i.e. all fittings in accordance with the record of freeboard assignment	
				Pt C, Ch 1, Sec 10				Verify air pipes, vents etc. closing devices are approved type	
								Verify material certificates for overboard discharges, where applicable	
								Verify record of freeboard assignment and all material certificates included in the ship construction file	

No.	Shipbuilding quality control function	Survey Requirements for Classification	Survey Method required for Classification	Society Rule reference	Statutory requirements and relevant reference	Documentation available to Surveyor during construction	Documentation for Ship Construction File	Specific activities	Society proposals for the project
9	Freeboard marks and draught marks	Within allowable tolerances and in accordance with the freeboard assignment	Witness		Reg. 4- 5- 6- 7 and 8 of ILLC '66		Details required	Verify freeboard marks in accordance with load line assignment	
								Verify draught marks in accordance with the agreed tolerances specified by the builder unless more onerous flag State requirements	
10	Principal dimensions	Within allowable tolerances	Review and witness	Guide for welding		Details required		Verify principal dimensions in accordance with recognised standards	
								Verify dimensions included in ship construction file	
11	Safety Construction certification	No outstanding imperfections or defects	Witness		Reg. 10 of SOLAS as amended			Verify that Administration requirements have been incorporated into the hull structure	

2 Requirements for Tankers subject to SOLAS Chapter II-1 Part A-1 Regulation 3-10

2.1 Examination and test plan for newbuilding activities

2.1.1 Plans to be provided (1/2/2021)

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

- a) a set of requirements, including specifying the extent and scope of the construction survey(s) and identifying areas that need special attention during the survey(s), to ensure compliance of construction with mandatory ship construction standards including:
 - 1) Types of surveys (visual, non-destructive examination, etc.) depending on location, materials, welding, casting, coatings, etc.
 - 2) Establishment of a construction survey schedule for all assembly stages from the kick-off meeting, through all major construction phases, up to delivery.
 - 3) Inspection/survey plan, including provisions for critical areas identified during design approval.
 - 4) Inspection criteria for acceptance.
 - 5) Interaction with shipyard, including notification and documentation of survey results.
 - 6) Correction procedures to remedy construction defects.
 - 7) List of items that would require scheduling or formal surveys.
 - 8) Determination and documentation of areas that need special attention throughout ship's life, including criteria used in making the determination.
- b) a description of the requirements for all types of testing during survey, including test criteria.

2.2 Design Transparency

2.2.1 (1/2/2021)

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

2.3 Ship Construction File (SCF)

2.3.1 Classification items (1/2/2021)

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

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

- a) The following design specific information is to be included in the Ship Construction File (SCF):
 - 1) Areas requiring special attention throughout the ship's life. (including critical structural areas).
 - 2) All design parameters limiting the operation of a ship.
 - 3) Any alternatives to the rules, including structural details and equivalency calculations.
 - 4) "As built" drawings and information which are verified to incorporate all alterations approved by the recognized organization or flag State during the construction process including scantling details, material details, location of butts and seams, cross section details and locations of all partial and full penetration welds.
 - 5) Net (renewal) scantlings for all the structural constituent parts, as built scantlings and voluntary addition thicknesses.
 - 6) Minimum hull girder section modulus along the length of the ship which has to be maintained throughout the ship's life, including cross section details such as the value of the area of the deck zone and bottom zone, the renewal value for the neutral axis zone.
 - 7) A listing of materials used for the construction of the hull structure, and provisions for documenting changes to any of the above during the ship's service life.
 - 8) Copies of testing certificates of forgings and castings welded into the hull (Pt D, Ch 5, Sec 4).
 - 9) Details of equipment forming part of the watertight and weather tight integrity of the ship.
 - 10) Tank testing plan including details of the test requirements (Pt B, Ch 12, Sec 3).
 - 11) Details for the in-water survey, when applicable, information for divers, clearances measurements instructions etc., tank and compartment boundaries.
 - 12) Docking plan and details of all penetrations normally examined at dry-dock.
 - 13) Coating Technical File, for ships subject to compliance with the IMO Performance Standard for Protective Coatings (PSPC2).
- b) Refer to Tab 2 for details of information to be further included. This information has to be kept on board the ship and/or ashore and updated as appropriate throughout the ship's life in order to facilitate safe operation, maintenance, survey, repair and emergency measure.
- c) It is to be noted that parts of the content of the SCF may be subject to various degrees of restricted access and that such documentation may be appropriately kept ashore.
- d) The SCF has to include the list of documents constituting the SCF and all information listed in Tab 2, which is required for a ship's safe operation, maintenance, sur-

vey, repair and in emergency situations. Details of specific information that is not considered to be critical to safety might be included directly or by reference to other documents.

- e) When developing an SCF, all of the columns in Tab 2 of this Appendix have to be reviewed to ensure that all necessary information has been provided.
- f) It may be possible to provide information listed in the annex under more than one Tier II (see Note 1) functional requirement as a single item within the SCF, for example, the Coating Technical File required by the PSPC (see Note 2) is relevant for both "Coating life" and "Survey during construction".

Note 1: Tier II items means the functional requirements included in the International Goal-based Ship Construction Standards for

Bulk Carriers and Oil Tankers (GBS), adopted by IMO Res. MSC 287(87).

Note 2: Performance standard for protective coatings for dedicated seawater ballast tanks in all types of ships and double-side skin spaces of bulk carriers, adopted by IMO Res. MSC 215(82), as amended and Performance standard for protective coatings for cargo oil tanks of crude oil tankers, adopted by IMO Res. MSC 288(87), as amended.

- g) The SCF has to remain with the ship and, in addition, be available to its classification society and flag State throughout the ship's life. Where information not considered necessary to be on board is stored ashore, procedures to access this information should be specified in the onboard SCF. The intellectual property provisions within the SCF should be duly complied with.
- h) The SCF should be updated throughout the ship's life at any major event, including, but not limited to, substantial repair and conversion, or any modification to the ship structure.

Table 2 : List of Information to be Included in the Ship Construction File (SCF) (1/2/2021)

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

Tier II Items		Information to be included	Further explanation of the content	Example documents	Normal storage location
3.1	General design	• applied Rule (date and revision)	• applied design method alternative to Rule and subject structure(s)	• SCF-specific	on board ship
		• applied alternative to Rule		• capacity plan	on board ship
3.2	Deformation and failure modes	• calculating conditions and results	• allowable loading pattern	• loading manual	on board ship
		• assumed loading conditions	• maximum allowable hull girder bending moment and shear force	• trim and stability booklet	on board ship
3.3	Ultimate strength	• operational restrictions due to structural strength	• maximum allowable cargo density or storage factor	• loading instrument instruction manual	on board ship
				• operations and maintenance manuals	on board ship
				• strength calculation	on shore archive

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

Tier II Items		Information to be included	Further explanation of the content	Example documents	Normal storage location
3.4	Safety margins	strength calculation results	bulky output of strength calculation	areas prone to yielding and/or buckling	on board ship
			plan showing highly stressed areas (e.g. critical structural areas) prone to yielding and/or buckling		
		gross hull girder section modulus			
		minimum hull girder section modulus along the length of the ship to be maintained throughout the ship's life, including cross section details such as the value of the area of the deck zone and bottom zone, the renewal value for the neutral axis zone		general arrangement plan	on board ship
		gross scantlings of structural constituent parts	structural drawings	key construction plans	on board ship
		net scantlings of structural constituent parts, as built scantlings and voluntary addition thicknesses	rudder and stern frame		on board ship
			structural details of typical members	rudder and rudder stock plans	on board ship
				structural details	on board ship
				yard plans	on shore archive
				dangerous area plan	on board ship

Notes:

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

Tier II Items		Information to be included	Further explanation of the content	Example documents	Normal storage location
3.4 cont.		hull form	hull form information indicated in key construction plans	lines plan	on shore archive
			hull form data stored within an onboard computer necessary for trim and stability and longitudinal strength calculations	or	
				equivalent	on board ship
4	Fatigue life	applied Rule (date and revision)	applied design method alternative to Rule and subject structures	SCF-specific	on board ship
		applied alternative to Rule			
		calculating conditions and results	assumed loading conditions and rates	structural details	on board ship
		assumed loading conditions			
		fatigue life calculation results	bulky output of fatigue life calculation	fatigue life calculation results	on shore archive
			plan showing areas (e.g. critical structural areas) prone to fatigue	areas prone to fatigue	on board ship
5	Residual strength	applied Rule (date and revision)		SCF-specific	on board ship
6	Protection against corrosion				
Notes:					
(1) "SCF-specific" means documents to be developed especially to meet the requirements of the GBS guidelines (MSC.1/Circ.1343).					
(2) "Key construction plans" means plans such as midship section, main O.T. and W.T. transverse bulkheads, construction profiles/plans, shell expansions, forward and aft sections in cargo tank (or hold) region, engine-room construction, forward construction and stern construction drawings.					
(3) "Yard plans" means a full set of structural drawings, which include scantling information of all structural members.					
(4) "Hull form" means a graphical or numerical representation of the geometry of the hull. Examples would include the graphical description provided by a lines plan and the numerical description provided by the hull form data stored within an onboard computer.					
(5) "Lines plan" means a special drawing which is dedicated to show the entire hull form of a ship.					
(6) "Equivalent (to Lines plan)" means a set of information of hull form to be indicated in key construction plans for SCF purposes. Sufficient information should be included in the drawings to provide the geometric definition to facilitate the repair of any part of the hull structure.					
(7) "Normal storage location" means a standard location where each SCF information item should be stored. However, those items listed as being on board in the table above should be on board as a minimum to ensure that they are transferred with the ship on a change of owner.					
(8) "Shore archive" is to be operated in accordance with applicable international standards.					

Tier II Items		Information to be included	Further explanation of the content	Example documents	Normal storage location
6.1	Coating life	coated areas and target coating life and other measures for corrosion protection in holds, cargo and ballast tanks, other structure-integrated deep tanks and void spaces	plans showing areas (e.g. critical structural areas) prone to excessive corrosion	SCF-specific	on board ship
6.2	Corrosion addition			Coating Technical File required by PSPC (Performance standard for protective coatings for dedicated seawater ballast tanks in all types of ships and double-side skin spaces of bulk carriers, adopted by IMO Resolution MSC.215(82), as amended and Performance standard for protective coatings for cargo oil tanks of crude oil tankers, adopted by IMO Resolution MSC.288(87), as amended)	on board ship

Notes:

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

Tier II Items		Information to be included	Further explanation of the content	Example documents	Normal storage location
6.2 cont.		specification for coating and other measures for corrosion protection in holds, cargo and ballast tanks, other structure-integrated deep tanks and void spaces		areas prone to excessive corrosion	on board ship
		gross scantlings of structural constituent parts		key construction plans	on board ship
		net scantlings of structural constituent parts, as built scantlings and voluntary addition thicknesses			
7	Structural redundancy	applied Rule (date and revision)		SCF-specific	on board ship
8	Watertight and weathertight integrity	applied Rule (date and revision)		SCF-specific	on board ship
		key factors for watertight and weathertight integrity	details of equipment forming part of the watertight and weathertight integrity	structural details of hatch covers, doors and other closings integral with the shell and bulkheads	on board ship
9	Human element considerations	list of ergonomic design principles applied to ship structure design to enhance safety during operations, inspections and maintenance of ship		SCF-specific	on board ship

Notes:

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

Tier II Items		Information to be included	Further explanation of the content	Example documents	Normal storage location
10	Design transparency	• applied Rule (date and revision)		• intellectual property provisions	on board ship
		• applicable industry standards for design transparency and IP protection			
		• reference to part of SCF information kept ashore		• summary, location and access procedure for part of SCF information on shore	on board ship
CONSTRUCTION					
11	Construction quality procedure	• applied construction quality standard	• recognized national or international construction quality standard	• SCF-specific	on board ship
12	Survey during construction	• survey regime applied during construction (to include all owner and class scheduled inspections during construction)	• applied Rules (date and revision)	• SCF-specific	on board ship
			• copies of certificates of forgings and castings welded into the hull	• tank testing plan	on board ship
		• information on non-destructive examination		• non destructive testing plan	on board ship
				• Coating Technical File required by PSPC	on board ship
IN-SERVICE CONSIDERATIONS					
Notes:					
(1) "SCF-specific" means documents to be developed especially to meet the requirements of the GBS guidelines (MSC.1/Circ.1343).					
(2) "Key construction plans" means plans such as midship section, main O.T. and W.T. transverse bulkheads, construction profiles/plans, shell expansions, forward and aft sections in cargo tank (or hold) region, engine-room construction, forward construction and stern construction drawings.					
(3) "Yard plans" means a full set of structural drawings, which include scantling information of all structural members.					
(4) "Hull form" means a graphical or numerical representation of the geometry of the hull. Examples would include the graphical description provided by a lines plan and the numerical description provided by the hull form data stored within an onboard computer.					
(5) "Lines plan" means a special drawing which is dedicated to show the entire hull form of a ship.					
(6) "Equivalent (to Lines plan)" means a set of information of hull form to be indicated in key construction plans for SCF purposes. Sufficient information should be included in the drawings to provide the geometric definition to facilitate the repair of any part of the hull structure.					
(7) "Normal storage location" means a standard location where each SCF information item should be stored. However, those items listed as being on board in the table above should be on board as a minimum to ensure that they are transferred with the ship on a change of owner.					
(8) "Shore archive" is to be operated in accordance with applicable international standards.					

Tier II Items		Information to be included	Further explanation of the content	Example documents	Normal storage location
13	Survey and maintenance	• maintenance plans specific to the structure of the ship where higher attention is called for	• plan showing highly stressed areas (e.g. critical structural areas) prone to yielding, buckling, fatigue and/or excessive corrosion	• SCF-specific	on board ship
				• operation and maintenance manuals (e.g. hatch covers and doors)	on board ship
		• preparations for survey	• arrangement and details of all penetrations normally examined at dry-docking	• docking plan	on board ship
		• gross hull girder section modulus	• details for dry-docking	• dangerous plan	on board ship
		• minimum hull girder section modulus along the length of the ship to be maintained throughout the ship's life, including cross section details such as the value of the area of the deck zone and bottom zone, the renewal value for the neutral axis zone	• details for in-water survey	• Ship Structure Access Manual	on board ship
				• Means of access to other structure-integrated deep tanks	on board ship
				• Coating Technical File required by PSPC	on board ship
		• gross scantlings of structural constituent parts		• key construction plans	on board ships

Notes:

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

Tier II Items		Information to be included	Further explanation of the content	Example documents	Normal storage location
13 cont.		net scantlings of structural constituent parts, as built scantlings and voluntary addition thicknesses		rudder and rudder stock	on board ships
				structural details	on board ships
				yard plans	on shore archive
		hull form	hull form information indicated in key construction plans	lines plans	on shore archive
				or equivalent	on board ships
14	Structural accessibility	means of access to holds, cargo and ballast tanks and other structure-integrated deep tanks	plans showing arrangement and details of means of access	Ship Structure Access Manual	on board ships
				means of access to other structure-integrated deep tanks	on board ships

RECYCLING CONSIDERATIONS

15	Recycling	identification of all materials that were used in construction and may need special handling due to	list of materials used for the construction of the hull structure	SCF-specific	on board ship
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Notes:

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

2.3.2 (1/2/2021)

The SCF is to be reviewed (see Note 1), at the time of new building, in accordance with the requirements of items [2.3.1] a) and [2.3.1] b) and the normal storage location is to be distinguished.

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

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

Note 1:

"Review" means the examination of the SCF that is carried out by the surveyor, at the end of the newbuilding process, in order to confirm that:

- drawings and documents required under the item [2.3], plus
- the possible additional drawings/documents provided by the shipyard, as per the Ship Constructional File (SCF) list of drawings/documents

are present in the copies of the SCF stored on board and in the ashore archive.

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

3 Machinery and systems

3.1 General

3.1.1 Scope (1/2/2021)

The scope of this article [3] includes the following main activities:

- a) Examination of the parts of the ship covered by classification Rules and by applicable delegated statutory regulations for machinery construction, to obtain appropriate evidence that they have been built in compliance with the Rules and regulations, taking account of the relevant approved drawings.
- b) Appraisal of the manufacturing, construction, control and qualification procedures, including welding consumables, weld procedures, weld connections and assemblies, with indication of relevant approval tests (e.g for piping systems).
- c) Witnessing inspections and tests as required in the classification Rules for machinery and systems including materials, welding and assembly, the inspection and testing methods (e.g. by hydrostatic, leak testing, non-destructive examination, verification of geometry) and by whom.

Appraisal of materials and equipment used for machinery and systems and their inspection at works is not included in this Article [3]. Details of requirements for machinery and systems and equipment are given in:

- Part C, Chapter 1 for machinery equipment and piping systems,
- Part C, Chapter 2 for electrical systems,
- Part C, Chapter 3 for automation systems,
- Part D for materials and welding,
- Part B for anchoring and mooring system,
- Part E requirements for the specific Service Notations,
- Part F requirements for the Additional Class Notations.

3.2 Definitions

3.2.1 Machinery (1/2/2021)

The Machinery components are generally defined as follows:

- a) Main and auxiliary engines, turbines and boilers
- b) Reduction gears, main thrust, intermediate shafts, tail-shafts and propellers
- c) Main and auxiliary systems for steering
- d) Pumps and other machinery items
- e) Systems in machinery spaces and in cargo areas
- f) Electrical equipment and installations
- g) Fire protection, detection and extinction (limited to the items covered by Classification, see Note 1 in Ch 1, Sec 1, [1.1.2])
- h) Automation systems
- i) Machinery system for mooring and anchoring
- j) Machinery systems required by specific Service Notation

- k) Machinery systems required by specific Additional Class Notations.

3.2.2 Documents (1/2/2021)

Reference to documents also includes electronic transmission or storage.

3.2.3 Survey methods (1/2/2021)

The survey methods involving the Surveyor directly are as follows:

- a) Patrol is defined as the act of checking on an independent and unscheduled basis that the applicable processes, activities and associated documentation of the shipbuilding functions continue to conform to classification and delegated statutory requirements.
- b) Review is defined as the act of examining documents in order to determine traceability and identification, and to confirm that processes continue to conform to classification and delegated statutory requirements.
- c) Witness is defined as the attendance at scheduled inspections and tests in accordance with the agreed Inspection and Test Plans or equivalent to the extent necessary to check compliance with the survey requirements.

3.3 Application

3.3.1 Classification items (1/2/2021)

This Article [3] covers the survey of all new construction of steel ships intended for classification and for international voyages except for:

- a) those defined in SOLAS I/3
- b) high speed craft as defined in I/1.3.1 of the 2000 High Speed Craft Code
- c) Mobile Offshore Drilling Units as defined in I/1.2.1 of the MODU Code.

3.3.2 Delegated statutory items (1/2/2021)

This Article [3] covers all delegated statutory items relevant to the machinery items, i.e. SOLAS Safety Construction.

3.3.3 Location of construction (1/2/2021)

This Article [2] applies to the machinery items, as defined in [3.2.1] whether constructed and/or installed:

- a) at the shipbuilder's facilities
- b) by subcontractors/suppliers at the shipbuilder's facilities
- c) by subcontractors/suppliers at their own facilities or at other remote locations
- d) by machinery item manufacturers at the shipbuilder's facilities
- e) by machinery item manufacturers at their own facilities or at other remote locations.

3.4 Personnel

3.4.1 Qualification and monitoring of exclusive Surveyors (1/2/2021)

The Society's Surveyors are to confirm through patrol, review and witness, as defined in [3.2.3], that machinery items are built and installed using approved plans in

accordance with the relevant Rules and delegated statutory requirements. The Surveyors are to be qualified to be able to carry out their tasks, and procedures are to be in place to ensure that their activities are monitored.

3.5 Survey of Machinery installations

3.5.1 Surveyable items (1/2/2021)

The items of machinery to undergo survey during their:

a) construction/manufacturing

b) installation on board the new ship

are those covered by the pertinent Parts of the Rules, as defined in [3.1.1], and delegated statutory requirements.

3.5.2 Materials and equipment supplied (1/2/2021)

During the construction and installation processes as required, evidence is also to be made available by the shipbuilder to the Surveyor to prove that the materials and equipment supplied to the ship have been built or manufactured under survey relevant to the classification Rules and delegated statutory requirements.

Evidence that no material containing asbestos has been installed on board is to be provided to the Surveyor.

3.6 New building survey planning

3.6.1 Kick-off meeting (1/2/2021)

Prior to commencement of surveys for any machinery installation, the Society is to discuss with the shipbuilder at a kick-off meeting referred to in [1.7.1] the items related to the building and/or installation activities of machinery as per item [3.2.1] as applicable. The purpose of the meeting is to agree on how the list of specific activities is to be addressed. The meeting is to take into account the shipbuilder's construction facilities and ship type, including the list of proposed manufacturers, subcontractors and suppliers. A record of the meeting is to be made. If the Society has appointed a Surveyor for a specific newbuilding project or for the task of machinery installation surveillance, then this Surveyor is to attend the kick-off meeting. The shipbuilder is to be asked 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 such investigation. Whenever an investigation is undertaken, the builder is to be requested, in principle, to agree to suspend relevant construction activities if warranted by the severity of the problem.

3.6.2 Delegated statutory requirements (1/2/2021)

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

3.6.3 Construction progress records (1/2/2021)

The shipyard shall be requested to advise of any changes to the activities agreed at the kick-off meeting and these are to be documented. For instance, if the shipbuilder chooses to use or change manufacturers of machinery items, subcontractors for machinery items, supplier of machinery items, or to incorporate any modifications necessitated by changes in production, in inspection methods, in rules and regula-

tions, in structural modifications, or in the event where increased inspection requirements are deemed necessary as a result of a substantial non-conformance, or otherwise.

3.6.4 Fabrication quality standard (1/2/2021)

The quality standard of shipbuilding, manufacturers of machinery items, subcontractors for machinery items, supplier of machinery items, for the machinery installations during new constructions are to be reviewed and agreed during the kick-off meeting. Machinery items should be manufactured and installed according to applicable IACS Recommendations, or 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 the Rules and under survey of the Society.

3.6.5 Other attendees at the kick-off meeting (1/2/2021)

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

3.6.6 Special cases of kick-off meeting (1/2/2021)

In the event of series ship production, consideration may be given to waiving the requirement for a kick-off meeting for the second and subsequent ships provided any changes are documented as required in [3.6.1] and in [3.6.3].

3.7 Examination and test plan for newbuilding activities

3.7.1 Plans to be provided (1/2/2021)

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

- a) list of machinery components to be fitted on board including the machinery arrangement plans, comprehensive of:
 - 1) proposals for the examination of piping steelwork, including booklets of typical arrangements, completed with the list of the materials and fittings;
 - 2) proposals for the examination of electric systems fittings, including booklets of typical arrangements, completed with the list of the materials and devices;
 - 3) proposal for the examination of propulsion system(s) arrangement and associated fittings;
 - 4) proposal for the examination of steering system(s) arrangement and associated fittings;
 - 5) proposal for the examination of the machinery systems arrangement, as referred in Pt C, Ch 1, Sec 08, and associated fittings
 - 6) proposal for the examination of automation system(s) arrangement and associated fittings (if any);
 - 7) proposal for the examination of anchoring and mooring arrangements and associated fittings,
 - 8) proposal for the examination of cargo system(s) arrangement and associated fittings (if any);

- 9) proposal for the examination of Additional class Notation machinery systems arrangement and associated fittings (if any);
- b) proposal for non destructive examination of piping steelwork, and in general for all systems requiring welding for their manufacture or installation ;
- c) proposals for testing of machinery components after their manufacture or installation on board;
- d) any other proposals specific to the ship type or to the delegated statutory requirements.

3.7.2 Submittal of plans to the Surveyors (1/2/2021)

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

3.8 Proof of the consistency of surveys

3.8.1 Evidence for survey planning and activities (1/2/2021)

Inspection and test records, checklists etc are to be kept in order to provide evidence that the Society's Surveyors have complied with the requirements of the newbuilding survey planning and duly participated in the relevant activities shown in the shipbuilder's examination and test plans.

3.9 Inspection and tests of machinery components

3.9.1 Inspection and tests at workshop (1/2/2021)

Inspection and testing of machinery components, at the workshop, shall be carried out according to the provisions of the applicable classification Rules and delegated statutory regulations.

3.9.2 Inspection and tests at dock and sea trials (1/2/2021)

Inspection and testing of machinery components during sea trials are to be carried out according to the provisions of the applicable classification Rules and delegated statutory regulations. The following Parts of the Rules are applicable:

- a) main propulsion systems, including but not limited to propeller shafting line: Pt C, Ch 1, Sec 13
- b) auxiliary systems for propulsion and other services systems: Pt C, Ch 1, Sec 13
- c) main and auxiliary systems for steering: Pt C, Ch 1, Sec 13
- d) main and auxiliary piping systems: Pt C, Ch 1, Sec 13 and Pt C, Ch 1, Sec 08
- e) main, emergency and auxiliary electrical system for primary, secondary and emergency systems: Pt C, Ch 2, Sec 15
- f) automation systems: Pt C, Ch 3, Sec 5 and Pt C, Ch 3, Sec 6
- g) machinery system for mooring and anchoring: Pt B, Ch 12, Sec 3
- h) machinery systems required for specific Service Notations: Part E

- i) machinery systems required for specific Additional Class Notations: Part F.

In addition, where batteries are used for essential and emergency services, it is to be verified that a schedule document, detailing:

- type and manufacturer's type designation
- voltage and ampere-hour rating
- location
- equipment and/or system(s) served
- maintenance/replacement cycle dates
- date(s) of last maintenance and/or replacement
- for replacement batteries in storage, the date of manufacture and shelf-life has been prepared. The document is to be reviewed for compliance with the on-board arrangements.

4 Assignment of double or dual class for New Construction

4.1 Assignment of double class for New Construction

4.1.1 (1/2/2021)

Whenever it is requested by the Shipyard/Owner to survey a new building under double class provisions of [1], [2] and [3] apply.

4.2 Assignment of dual class for New Construction

4.2.1 (1/2/2021)

Whenever it is requested by the Shipyard/Owner to survey a new building under dual class:

- a) review and approval of plans, as appropriate, for the newbuilding are to be performed in accordance with the trilateral agreement referred to in Ch 2, Sec 1, [2.5.1];
- b) in application of the requirement of [1], [2] and [3], survey during fabrication, construction and testing of the vessel are to be performed in accordance with the trilateral agreement referred to in Ch 2, Sec 1, [2.5.1], and/or the bilateral agreement adopted by the two Societies, if any, clearly defining the scope of work of each Society.

SECTION 2

SURVEY FOR ASSIGNMENT OF CLASS OF A SHIP IN SERVICE

1 Surveys required by IACS Procedural Requirement PR1A

1.1 Transfer to the Society's class of a ship in service classed by another QSCS Classification Society

1.1.1 General (1/1/2021)

Surveys for assignment of class may be credited as periodical surveys for maintenance of class, provided that the losing Society is a QSCS Classification Society as defined in Ch 2, Sec 1, [1.1.1]. In this case, all conditions of class due for compliance at that periodical survey are to be complied with.

1.1.2 Surveys

Notwithstanding the records indicating that all surveys are up-to-date, a survey for assignment of class is held by the Society, the extent of which is based on the age of the ship and the losing Society's class status as follows:

a) Hull:

- 1) for ships less than 5 years of age the survey takes the form of an annual survey;
- 2) additionally, for ships between 5 and 10 years of age the survey includes inspection of a representative number of ballast spaces;
- 3) additionally, for ships of 10 years of age and above but less than 20 years of age, the survey includes inspection of a representative number of cargo spaces;
- 4) for ships provided with the Additional Service Feature "ESP" which are 15 years of age and above but less than 20 years of age, the survey has the scope of a class renewal survey or an intermediate survey, whichever is due next;
- 5) for all ships which are 20 years of age and above, the survey has the scope of a class renewal survey (this is also applicable to ships having their hull under continuous survey);
- 6) in the context of applying items 4) and 5) above, if dry-docking of the ship is not due at the time of transfer, consideration can be given to carrying out an underwater examination in lieu of dry-docking.
- 7) in the context of applying items 1) to 6) above, as applicable:

- if the class entry survey is to be credited as a periodical survey for maintenance of class, consideration may be given by the Society to the acceptance of thickness measurements taken by the losing society provided they were carried out within the applicable survey window of the periodical survey in question;
- if the class entry survey is not to be credited as a periodical survey for maintenance of class, consideration may be given by the Society to the acceptance of thickness measurements taken by the losing society provided they were carried out within 15 months prior to completion of the class entry survey when it is within the scope of a Class Renewal Survey, or within 18 months prior to completion of the class entry survey when it is within the scope of an Intermediate Survey.

In both cases, the thickness measurements are to be reviewed by the Society for compliance with the applicable survey requirements, and confirmatory gaugings are to be taken to the satisfaction of the Society.

- 8) in the context of applying 3) to 6) above, as applicable, tank testing for ships over 15 years of age is not required to be carried out unless the survey is credited as a periodical survey for maintenance of class;
- 9) in the context of applying 1) to 6) above, as applicable, compliance with IACS Unified Requirements that demand fulfillment at the forthcoming due periodical surveys (such as S26 and S27) is not required unless the survey is credited as a periodical survey for maintenance of class.

b) Machinery:

A general examination of all essential machinery is held and includes the following:

- 1) examination under working conditions of fuel oil burning equipment of boilers, economisers and steam/steam generators. The adjustment of safety valves of this equipment is to be verified by checking the records on the ship;
- 2) all pressure vessels;
- 3) insulation resistance, generator circuit-breakers, preference tripping relays and generator prime mover governors are to be tested and paralleling and load sharing to be proved (Note 1);
- 4) in all cases, navigating lights and indicators are to be examined and their working and alternative sources of power verified;

- 5) bilge pumps, emergency fire pumps and remote control for oil valves, fuel oil pumps, lubricating oil pumps and forced draught fans are to be examined under working conditions;
- 6) recirculating and ice clearing arrangements, if any;
- 7) the main and all auxiliary machinery necessary for operation of the ship at sea together with essential controls and steering gear is to be tested under working conditions. Alternative means of steering are to be tested. A short sea trial is to be held at the Surveyor's discretion if the ship has been laid up for a long period;
- 8) initial start arrangements are to be verified;
- 9) in the case of oil tankers, the cargo oil system and electrical installation in way of hazardous spaces are to be checked for compliance with the Society's Rule requirements. Where intrinsically safe equipment is installed, the Surveyor is to satisfy himself that a recognised authority has approved such equipment. The safety devices, alarms and essential instruments of the inert gas system are to be verified and the plant generally examined to ensure that it does not constitute a hazard to the ship (Note 1).

Note 1: For the transfer of class or adding class at ship's delivery, items listed in 3) and 9) may be verified by reviewing the ship's records.

1.2 Addition of the Society's class to a ship in service classed by another QSCS Classification Society

1.2.1 General (1/1/2021)

Surveys for assignment of class may be credited as periodical surveys for maintenance of class provided that the losing Society is a QSCS Classification Society as defined in Ch 2, Sec 1, [1.1.1]. In this case, all conditions of class due for compliance at that periodical survey are to be complied with.

1.2.2 Surveys for double class ships

The requirements of [1.1.2] apply.

1.2.3 Surveys for dual class ships

Notwithstanding the records indicating that all surveys are up-to-date, a survey for assignment of class is held by the Society, the extent of which is that of an annual survey as a minimum.

1.3 Transfer to the Society's class of a ship surveyed during construction by another QSCS Classification Society at ship's delivery

1.3.1 General

A survey for assignment of class at ship's delivery is to be held by the Society, the extent of which is that of an annual survey as minimum.

1.4 Addition of the Society's class to a ship surveyed during construction by another QSCS Classification Society at ship's delivery

1.4.1 General

A survey for adding the Society's class at ship's delivery is to be held by the Society, the extent of which is that of an annual survey as minimum.

1.5 Ships of less than 100 gross tonnage

1.5.1 Surveys and documentation

For ships of less than 100 gross tonnage, special consideration will be given to the scope of surveys and documentation to be supplied.

1.6 Ships in service not classed with a QSCS Classification Society or not classed at all

1.6.1 General

In this case, the class of the ship will be assigned upon a preliminary review of the documentation listed in [1.6.3] and subsequent satisfactory completion of the surveys, the extent and scope of which are given below.

1.6.2 Surveys

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 ship 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 ship is provided with.

1.6.3 Documentation

As a general rule, the documentation to be supplied to the Society is not less than the following

- a) Main plans:
 - 1) general arrangement,
 - 2) capacity plan,
 - 3) loading cases, calculations of still water bending moments, and relevant documents, particulars of loading calculator and instruction booklet as per the Society's requirements, according to the case,
 - 4) stability documentation, as applicable (refer to Part B, Chapter 3).
- b) Hull structure plans:
 - 1) midship section,
 - 2) profile and deck plan,
 - 3) shell expansion,
 - 4) watertight bulkheads,
 - 5) rudder and rudder stock,
 - 6) hatch covers.

c) Machinery plans:

- 1) engine room general arrangement,
- 2) diagram of fuel- (transfer, service), bilge-, ballast-, lubricating oil-, cooling-, steam- and feed-, general service and starting compressed air piping,
- 3) drawings of shaft line, reduction gear and propeller,
- 4) drawings of boilers and air receivers,
- 5) drawings of steering gear,
- 6) torsional vibration calculations as per conditions laid down in Pt C, Ch 1, Sec 9; such documents are required only for ships less than 2 years old or for older ships the propelling system of which has been modified during the two years preceding the classification,

d) Electrical installation plans:

- 1) master plan of power distribution, lighting and emergency power circuits,
- 2) single line diagram of networks and switchboards,
- 3) location and arrangement of electrical equipment in hazardous areas.

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.

1.6.4 Equivalence criterion

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 ships of recent construction.

1.6.5 Additional service and/or class notations

For installations or equipment covered by additional service and/or class notations, the Society will determine the documentation to be submitted.

1.6.6 Other documentation

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.

1.7 Reassignment of class**1.7.1 Conditions for reassignment**

At the request of the Owner, a ship which was previously classed with the Society, subsequently withdrawn from class and has not been classed since may have the class reassigned subject to an admission to class survey. If applicable and appropriate, account may be taken of any periodical surveys held in the former period of class with the Society.

SECTION 3 ANNUAL SURVEY

1 General

1.1

1.1.1 The requirements of this Section apply to annual surveys of all ships. The specific requirements for annual surveys related to service notations and additional class notations assigned to ships are addressed in Chapter 4 and Chapter 5, respectively.

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

1.1.3 Owners are reminded that, in compliance with the requirements in Ch 2, Sec 2, [6.4], any modification to the ship's hull, equipment and machinery affecting its classification is to be made known to the Society.

2 Hull

2.1 Scope

2.1.1 The survey is to consist of an examination for the purpose of ensuring, as far as practicable, that the hull, hatch covers, hatch coamings, closing appliances, equipment and related piping are maintained in a satisfactory condition.

2.2 Hull and hull equipment

2.2.1

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

- outer shell plating above the waterline, relevant shell doors and accessible parts of the rudder(s)
- plating of freeboard deck and exposed decks, superstructures, with their openings and means of closure
- openings on exposed decks, with their coamings and their means of closure and securing arrangements (for cargo hatchways see [2.3])
- sidescuttles and deadlights, garbage chutes and other openings with their means of closure
- bulwarks, guard rails, freeing ports, gangways and life-lines, ladders

- scuppers and sanitary discharges, valves on discharge lines and their controls
- the means provided to minimise water ingress through the spurling pipes and chain lockers
- the arrangements for closing openings in the shell plating below the freeboard deck
- ventilators, air pipes, overflow pipes and gas vent pipes, with their means of closure and flame screens, where required
- all automatic air pipe heads installed on exposed decks (see Note 2). This requirement is not applicable to living quarter barges
- the special requirements for ships permitted to sail with type "A" or type "B-minus" freeboards
- freeboard marks on the ship's sides
- deck equipment such as lifeboat davit foundations, bollards, fairleads, hawse pipes, etc., masts and associated rigging, including lightning conductors
- equipment of chain cables for anchors, windlass, mooring lines and mooring winches, where required
- confirmation that the towing and mooring equipment is properly marked with any restriction associated with its safe operation (for ships built after 1/1/2007)
- deck fittings, their pedestals, if any, and the hull structures associated with towing and mooring
- watertight bulkheads, their watertight doors and associated local and remote controls, and their watertight penetrations
- main and auxiliary steering arrangements, including their associated equipment and control systems, and manoeuvring gear
- accessible cargo holds, in particular in areas likely to be damaged by cargo handling
- confirmation that the drainage from enclosed cargo spaces situated on the freeboard deck is satisfactory
- engine room and other dry spaces
- where fitted, helicopter deck and its supporting structure, safety net and arrangements for the prevention of sliding
- availability of loading manual or, where required, electronic loading instrument, including standard test
- availability of approved stability documentation.
- accuracy of the shipboard computer for stability calculations (see Note 3).

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

Note 2: Air pipe heads installed on exposed decks are those extending above the freeboard deck or superstructure decks.

Note 3: It is the responsibility of the ship's Master to check the accuracy of the shipboard computer for stability calculations at

each annual survey by applying at least one approved test condition (see Pt B, Ch 11, Sec 2, [4.5]). If a Surveyor of the Society is not present for the computer check, a copy of the test condition results obtained by the computer check is to be retained on board as documentation of satisfactory testing for the Surveyor's verification. The testing procedure is to be carried out in accordance with Pt B, Ch 11, Sec 2, [4.5.9]

2.3 Suspect areas

2.3.1 Suspect areas identified at previous surveys are to be examined. Thickness measurements are to be taken of the areas of substantial corrosion and the extent of thickness measurements is to be increased to determine the extension of areas of substantial corrosion. Sec 5, Tab 2 may be used as guidance for these additional thickness measurements. These extended thickness measurements are to be carried out before the annual survey is credited as completed.

Note 1: These requirements are not applicable to cargo tanks of oil tankers and double hull oil tankers, surveyed in accordance with the requirements given in Ch 4, Sec 3, Ch 4, Sec 4 and Ch 4, Sec 5, respectively.

2.4 Ballast tanks

2.4.1 Examination of ballast tanks when required as a consequence of the results of the class renewal survey and intermediate survey is to be carried out. When considered necessary by the Surveyor, or where extensive corrosion exists, thickness measurement is to be carried out. If the results of these thickness measurements indicate that substantial corrosion is found, then the extent of thickness measurements is to be increased to determine the extension of areas of substantial corrosion. Sec 5, Tab 2 may be used as guidance for these additional measurements. These extended thickness measurements are to be carried out before the annual survey is credited as completed.

2.5 Additional requirements for single hold cargo ships (see Note 1 to [1.1.1] of Ch 4, Sec 8)

2.5.1 For ships complying with the requirements of SOLAS II-1/23-3 (effective from 1 January 2007 to 31 December 2008) and II-1/25 (effective from 1 January 2009) for hold water level detectors (see Note 1), the annual survey is to include an examination and a test, at random, of the water ingress detection system and of their alarms.

Note 1: This survey requirement is to be fulfilled at annual surveys carried out after the ship has been made compliant with the requirements of SOLAS regulations II-1/23-3 or II-1/25, as applicable (see above) and commenced on or after 1 July 2007.

3 Machinery and systems

3.1 General machinery installations

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

- general examination of machinery and boiler spaces with particular attention to the fire and explosion hazards

- general examination of the machinery, steam, hydraulic, pneumatic and other systems and their associated fittings, for confirmation of their proper maintenance
- testing of the means of communication and order transmission between the navigating bridge and the machinery control positions and other control stations
- confirmation that the rudder angle indicator on the bridge is in working order
- examination, as far as practicable, of the bilge pumping systems and bilge wells, including operation of the pumps, remote reach rods and level alarms, where fitted
- visual examination of the condition of any expansion joints in sea water systems
- external examination of pressure vessels other than boilers and their appurtenances, including safety devices, foundations, controls, relieving gear, high pressure piping, insulation and gauges
- visual examination of:
 - mechanical components used for cooling and maintaining an ambient temperature lower than 45°C (see Pt C, Ch 2, Sec 2, [1.2.2])
 - anti-icing arrangements
 - de-icing arrangements
 - anti-freezing arrangements
- examination of valves for:
 - correct marking of relevant areas or equipment to be heated and
 - the indication of closed/open position.

3.1.2 When the ship is equipped with thruster installations, the annual survey is to include:

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

3.2 Boilers

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

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

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

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

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

3.3 Electrical machinery and equipment

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

- general examination, visually and in operation, as feasible, of the electrical installations for power and lighting, in particular main and emergency generators, electric motors, batteries, switchboards, switchgears, cables and circuit protective devices, indicators of electrical insulation and automatic starting, where provided, of emergency sources of power
- checking, as far as practicable, the operation of emergency sources of power and, where they are automatic, also including the automatic mode.
- checking, that the distribution switchboards for de-icing equipment are provided with the indication of the device in service.
- the electrical cables for heating systems are to be examined for correct fastening.

3.3.2 The survey is also to cover electrical components used for cooling and maintaining an ambient temperature lower than 45°C (see Pt C, Ch 2, Sec 2, [1.2.2]).

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

The survey of an automated installation covered by an additional class notation is detailed in Chapter 5.

3.4 Fire protection, detection and extinction

3.4.1 The survey of fire prevention includes:

- the examination, as far as practicable, and testing, as feasible and at random, of the fire and/or smoke detection systems
- the examination of arrangements for gaseous fuel for domestic purposes, such as movable cooking appliances.

3.4.2 The survey requirements for fixed low pressure CO₂ fire-extinguishing systems fitted on board include the external examination of receivers of CO₂ and their accessories and the removal of insulation for insulated CO₂ containers

3.5 Special Equipment

3.5.1 It is to be verified that:

- a sufficient quantity of protective clothing, safety lines, hand tools and crampons for shoes and similar equipment for de-icing purpose is available on board, and
- this equipment is kept in storage facilities and at locations adequately protected against the accretion of ice.

SECTION 4

INTERMEDIATE SURVEY

1 General

1.1

1.1.1 The requirements of this Section apply to intermediate surveys of all ships. The specific requirements for intermediate surveys related to service notations and additional class notations assigned to ships are addressed in Chapter 4 and Chapter 5, respectively.

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

1.1.3 A survey-planning meeting is to be held prior to the commencement of the survey.

2 Hull

2.1

2.1.1 The scope of the intermediate survey includes the following requirements:

a) for ships between 5 and 10 years of age, a general, internal examination of representative ballast tanks. If

there is no hard protective coating, or soft or semi-hard coating, or poor coating condition, the examination is to be extended to other ballast spaces of the same type;

b) for ships over 10 years of age, a general, internal examination of all ballast tanks.

If considered necessary by the Surveyor, thickness measurements may be required.

2.1.2 If such examinations reveal no visible structural defects, the examination may be limited to verification that the corrosion prevention system remains effective.

2.1.3 For ballast tanks, excluding double bottom ballast tanks, if there is no hard protective coating, or soft or semi-hard coating, or poor coating condition and it is not renewed, the tanks in question are to be internally examined at annual surveys.

2.1.4 When such conditions are found in double bottom ballast tanks, the tanks in question may be internally examined at annual surveys.

2.1.5

In the case of ships over 10 years of age, other than ships engaged in the carriage of dry cargoes only or ships subject to the requirements of Ch 4 Sec 2, an internal examination of selected cargo spaces is to be carried out.

Table 1 : Intermediate survey of hull (all ships)

ITEM	Age of ship (in years at time of intermediate survey)		
	5 < age ≤ 10	10 < age ≤ 15	age > 15
SALT WATER BALLAST SPACES	Representative spaces internally examined Thickness measurements, if considered necessary by the Surveyor See (1) (2) (3)	All spaces internally examined Thickness measurements, if considered necessary by the Surveyor See (1) (3)	
CARGO TANKS (non-ESP tankers)			Selected cargo tanks internally examined
(1) If such examinations reveal no visible structural defects, the examination may be limited to verification that the corrosion prevention system remains effective. (2) If there is no hard protective coating, or soft coating, or poor coating condition, the examination is to be extended to other ballast spaces of the same type. (3) For spaces used for water ballast, excluding double bottom tanks, if there is no hard protective coating, or soft coating, or poor coating condition and it is not renewed, the spaces in question are to be internally examined at annual surveys. When such conditions are found in water ballast double bottom tanks, the spaces in question may be internally examined at annual surveys. Note 1: Due attention is also to be given to fuel oil piping passing through ballast tanks, which is to be pressure tested should doubts arise.			

SECTION 5

CLASS RENEWAL SURVEY

1 General

1.1

1.1.1 The requirements of this Section apply to class renewal surveys of all ships. The specific requirements for class renewal surveys related to service notations and additional class notations assigned to ships are addressed in Chapter 4 and Chapter 5, respectively.

1.1.2 The class renewal survey is to include examination, tests and checks to show that the hull structures, main and auxiliary machinery, systems, equipment and related piping, as required in [2.2.7], are in satisfactory condition or restored to such condition as to allow the ship to operate for the new period of class to be assigned, provided that the ship 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 [2.5.1] and [2.2.7], 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.

1.1.3 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, [2.5] to Ch 2, Sec 2, [2.7] are to be met.

1.1.4 When the ship is under the continuous survey system for machinery and/or hull, the scope of the class renewal survey as described in this Section is carried out on a continuous basis over the period of class according to the procedure laid down in Ch 2, Sec 2, [4.3].

When the machinery installation is surveyed under the Planned Maintenance System, a specific program of survey replaces the scope of the class renewal survey of machinery and systems as laid down in [3] below, according to the procedure laid down in Ch 2, Sec 2, [4.4].

1.1.5 A survey-planning meeting is to be held prior to the commencement of the survey.

2 Hull and hull equipment

2.1 Bottom survey

2.1.1 The class renewal survey is to include a bottom survey as laid down in Sec 6, [1.1.1].

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 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
- deck fittings, their pedestals, if any, and the hull structures associated with towing and mooring, with disassembly where applicable and as deemed necessary.

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

Ventilators, air pipes, overflow pipes and gas vent pipes, with their means of closure and flame screens, are to be opened up as necessary for the internal examination.

2.2.4 Automatic air pipe heads are to be completely examined (both internally and externally) as indicated in Tab 4.

For designs where the inner parts cannot be properly inspected from outside, this is to include removal of the head from the air pipe. Particular attention is to be paid to the condition of the zinc coating in heads constructed from galvanised steel.

2.2.5 The anchors and chain cables are to be ranged and examined, and the required complement and condition verified. The chain locker, holdfasts, hawse pipes and chain stoppers are to be examined and pumping arrangements of the chain locker tested. At class renewal surveys of ships more than 5 years of age, chain cables are to be gauged and renewed in cases where their mean diameter is worn below the limits allowed.

2.2.6 The accuracy of the shipboard computer for stability calculations is to be checked by applying all approved test loading conditions. The testing procedure is to be carried out in accordance with Pt B, Ch 11, Sec 2, [4.5.9].

2.2.7 All bilge and ballast piping systems are to be examined and operationally tested to working pressure to the attending Surveyor's satisfaction to ensure that tightness and condition remain satisfactory.

2.3 Holds and other dry compartments

2.3.1 All spaces including holds and their 'tweendecks where fitted, double bottom, deep, ballast, peak and cargo tanks, pump rooms, pipe tunnels, duct keels, machinery spaces, dry spaces, cofferdams and voids are to be internally examined, including the plating and framing, bilges and drain wells, sounding, venting, pumping and drainage arrangements. Internal examination of fuel oil, lube oil and fresh water tanks is to be carried out in accordance with Tab 5.

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 also to be given to the sea suction, sea water cooling pipes and overboard discharge valves and their connections to the shell plating. Where wastage is evident or suspected, thickness measurements are to be carried out, and renewals or repairs effected when wastage exceeds allowable limits.

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

2.3.3 Chain lockers are to be internally examined, while the anchor chains are ranged as required for the bottom survey in dry condition (see [2.2.5]). 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 for cargo and water ballast tanks and Tab 5 for fuel oil, lubricating oil and fresh water tanks, according to the age of the ship.

This internal examination is to ascertain the condition of the structure, bilges and drain wells, sounding, venting, pump-

ing 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 wastage is evident or suspected, thickness measurements are to be carried out, and renewals or repairs effected when wastage exceeds allowable limits.

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

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

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

2.4.2 Where provided, the condition of corrosion prevention systems of ballast tanks is to be examined. 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 has not been applied since the time of construction, the tanks in question are to be examined at annual surveys. 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 has not been applied since the time of construction, the tanks in question may be examined at annual surveys. When considered necessary by the Surveyor, or where extensive corrosion exists, thickness measurements are to be carried out.

2.4.3 Boundaries of double bottom, deep, ballast, peak and other 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.

2.4.4 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 to 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 confirmation from the Master that pressure testing has been carried out according to the requirements with satisfactory results. The Surveyor may extend the testing as deemed necessary.

Table 1 : Requirements for internal examination of cargo and ballast structural tanks at class renewal survey

Type and use of structural tanks	Age of ship (in years at time of class renewal survey)			
	age ≤ 5	5 < age ≤ 10	10 < age ≤ 15	age > 15
Peaks (all uses)	all	all	all	all
Salt water ballast tanks (all types)	all	all	all	all
Cargo tanks	all	all	all	all
Note 1: Independent non-structural tanks are to be surveyed according to [3.5.9].				
Note 2: 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.				

2.4.5 Other testing procedures, in particular those specified in Pt B, Ch 12, Sec 3, [2] for the initial survey during construction, may be accepted.

For integral tanks which are intended to contain liquid cargoes such as edible oil, the Surveyor may waive the requirement specified in [2.4.4] subject to a satisfactory internal examination.

2.5 Thickness measurements

2.5.1 Thickness measurements are to be carried out according to the procedure detailed in Ch 2, Sec 2, [2.3].

The extent of thickness measurements is detailed in Tab 2, according to the age of the ship.

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. Tab 3 may be used as guidance for these additional thickness measurements. These extended thickness measurements are to be carried out before the survey is credited as completed.

2.5.2 When the structure is protected with hard coating and the coating is found to be in good condition, as defined in Ch 2, Sec 2, [2.2.11], the Surveyor may specially consider the extent of thickness measurements in the corresponding areas. Other effective protective arrangements may also be considered.

Table 2 : Requirements for thickness measurements at class renewal survey

Age of ship (in years at time of class renewal survey) (1) (2)			
age ≤ 5	5 < age ≤ 10	10 < age ≤ 15 (4)	age > 15
Suspect areas	Suspect areas	Suspect areas	Suspect areas
	One transverse section of deck plating in way of a cargo space within 0,5 L amidship	Two transverse sections within 0,5 L amidship in way of two different cargo spaces (3)	A minimum of three transverse sections in way of cargo spaces within 0,5 L amidship (3)
		Internals in forepeak and after peak tanks	Internals in forepeak and after peak tanks
		All cargo hold hatch covers and coamings (plating and stiffeners)	All cargo hold hatch covers and coamings (plating and stiffeners)
			All exposed main deck plating full length
			Representative exposed superstructure deck plating (poop, bridge, and fore-castle deck)
			Lowest strake and strakes in way of tween decks of all transverse bulk-heads in cargo spaces together with internals in way
			All wind and water strakes, port and starboard, full length
			All keel plates full length. Also, additional bottom plates in way of cofferdams, machinery space, and aft end of tanks
			Plating of seachests. Shell plating in way of overboard discharges as considered necessary by the attending Surveyor
(1) Thickness measurement 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. (2) Thickness measurements of internals may be specially considered by the Surveyor if the hard protective coating is in GOOD condition. (3) For ships less than 100 metres in length, the number of transverse sections required at the class renewal survey for ships 10 < age ≤ 15 may be reduced to one, and the number of transverse sections required at subsequent class renewal surveys may be reduced to two (4) For ships more than 100 metres in length, at the class renewal surveys for ships 10 < age ≤ 15, thickness measurements of exposed deck plating within 0,5 L amidship may be required.			

Table 3 : 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 4 : Survey requirements for automatic air pipe heads at class renewal surveys

Age of ship (in years at time of class renewal survey due date)		
age ≤ 5	5 < age ≤ 10	age >10
- Two air pipe heads, one port and one starboard, located on the exposed decks in the forward 0,25 L, preferably air pipes serving ballast tanks. - Two air pipe heads, one port and one starboard, on the exposed decks, serving spaces aft of 0,25 L, preferably air pipes serving ballast tanks.	- All air pipe heads located on the exposed decks in the forward 0,25 L. - At least 20% of air pipe heads on the exposed decks serving spaces aft of 0,25 L, preferably air pipes serving ballast tanks.	- All air pipe heads located on the exposed decks.
See (1) and (2)	See (1) and (2)	See (3)
(1) The selection of air pipe heads to be inspected is left to the attending Surveyor. (2) According to the results of this inspection, the Surveyor may require the inspection of other heads located on the exposed decks. (3) Exemption may be considered for air pipe heads where there is substantiated evidence of replacement within the previous five years.		

Table 5 : Requirements for internal examination of fuel oil, lubricating oil and fresh water tanks at class renewal survey

Type and use of structural tanks	Age of ship (in years at time of class renewal survey)			
	age ≤ 5	5 < age ≤ 10	10 < age ≤ 15	age > 15
Fuel oil - diesel oil tanks (engine room)	none	none	one	one
Fuel oil - diesel oil tanks (cargo length area)	none	one	two	half, minimum two
Lubricating oil tanks	none	none	none	one
Fresh water tanks	none	one	all	all
Note 1: These requirements apply to tanks of integral (structural) type. Note 2: 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. Note 3: Peak tanks (all uses) are subject to internal examination at each class renewal survey. Note 4: At class renewal survey no. 3 and subsequent (ships older than 10 years), one deep tank for fuel oil in the cargo length area is to be included, if fitted.				

3 Machinery and systems

3.1 General

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

Note 1: Attention is drawn to the requirement Ch 2, Sec 2, [2.5.1] regarding safe execution of surveys, in particular as regards health hazards related to asbestos.

3.1.2 Machinery verification runs

As part of the renewal survey of machinery, a dock trial (or functional tests) is to be carried out to attending Surveyors'

satisfaction to confirm satisfactory operation of main and auxiliary machinery. If significant repairs are carried out to main or auxiliary machinery or steering gear, consideration should be given to a sea trial to attending Surveyors' satisfaction.

3.2 Main and auxiliary engines and turbines

3.2.1 General

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

3.2.2 Internal combustion engines

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

3.2.3 Electric propulsion

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

3.2.4 Thruster installations

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

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

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

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

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

3.4 Pumps and other machinery items

3.4.1 General

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

3.4.2 Items to be surveyed

- a) Air compressors with their intercoolers, filters and/or oil separators and safety devices
- b) Heat exchangers, ventilation fans for boilers and other equipment used for essential services
- c) Piston pumps and centrifugal pumps for sea water, bilge and salt water ballast
- d) Screw pumps, gear pumps and centrifugal pumps other than those listed in c) above (opening up is not required)
- e) Mechanical components used for cooling and maintaining an ambient temperature lower than 45°C (see Pt C, Ch 2, Sec 2, [1.2.2]).

3.5 Systems in machinery spaces

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

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

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

3.5.4 Compressed air receivers and other pressure vessels for essential services are to be cleaned internally and examined internally and externally. Where the above receivers or vessels cannot be examined internally, they are to be hydrostatically tested to 1,5 times the working pressure. Their fittings, valves and safety devices are to be opened up, as deemed necessary by the Surveyor, for visual inspection and pressure tested as appropriate.

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

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

3.5.7 The examination and hydrostatic test of steel pipes for main steam machinery, and steel pipes for auxiliary

steam machinery having internal diameter 75 mm and over, are to be carried out on a number of pipes selected by the Surveyor after the lagging in way is removed.

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

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

3.5.10 When the ship is equipped with a refrigerating plant (whether or not covered by an additional class notation), the class renewal survey is to include:

- examination and test at the design pressure of the parts of the plant under pressure
- for refrigerating machinery spaces using ammonia as refrigerant:
 - examination of valves and pumps of the bilge system to the same extent as indicated in [3.4]
 - examination and test of the electrical equipment to the same extent as indicated in [3.6.10]
 - test of the gas detection system.

3.6 Electrical equipment and installations

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

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

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

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

3.6.5 The motors and starters concerning essential services together with associated control and switchgear, including electrical components used for cooling and maintaining an ambient temperature lower than 45°C (see Pt C, Ch 2, Sec 2, [1.2.2]), are to be examined and, if considered nec-

essary by the Surveyor, checked, as far as practicable, under working conditions.

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

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

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

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

3.6.10 A general examination of the electrical equipment in areas where there may be flammable gas or vapour and/or combustible dust is to be carried out to ensure that the integrity of the electrical equipment of a safety type has not been impaired owing to corrosion, missing bolts, etc., and that there is not an excessive build-up of dust on or in dust-protected electrical equipment. Cable runs are to be examined for sheath and armouring defects, where practicable, and to ensure that the means of supporting the cables are in satisfactory condition. The proper condition of bonding straps for the control of static electricity is to be checked. Alarms and interlocks associated with pressurised equipment or spaces are to be tested for correct operation.

Note 1: Owners are reminded that maintenance, repairs or renewal of certified electrical equipment of a safe type remains their responsibility or that of their representatives.

3.7 Controls

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

3.8 Fire protection, detection and extinction

3.8.1 The class renewal survey of fire prevention arrangements consists of the test of the fire and/or smoke detection and alarm systems.

3.8.2 The survey requirements for fixed low pressure CO₂ fire-extinguishing systems fitted on board are the following.

Receivers of CO₂ fixed fire-extinguishing systems are to be externally examined together with all stationary fittings and devices. In addition CO₂ containers are to be internally inspected if the content has been released and the container is older than five years. Depending upon the result of the internal examination, the Surveyor may require the container to be hydrostatically tested.

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

SECTION 6

BOTTOM SURVEY

1 General

1.1

1.1.1 The bottom survey may be carried out in dry condition, such as in dry dock or on a slipway, or through an in-water survey.

The conditions for acceptance of a bottom in-water survey in lieu of a bottom survey in dry condition are laid down in Ch 2, Sec 2, [5.4.4], [5.4.5] and [3].

2 Bottom survey in dry condition

2.1 General requirements

2.1.1 When a ship is in dry condition, it is to be placed on blocks of sufficient height and with the necessary staging to permit the examination of elements such as shell plating including bottom and bow plating, stern frame and rudder, sea chests and valves, propeller, etc.

2.1.2 The outer shell plating is to be visually examined for excessive corrosion, or deterioration due to chafing or contact with the ground or for any undue deformation or buckling. Due attention is to be given to the plating of end structures (stem and sternframe), and to the connection between the bilge strakes and the bilge keels. Significant plate unevenness or other deterioration which does not necessitate immediate repairs is to be recorded.

2.1.3 Sea chests and their gratings, sea connections and overboard discharge valves and cocks and their fastenings to the hull or sea chests are to be examined. Valves and cocks need not be opened up more than once in a class renewal survey period unless considered necessary by the Surveyor.

2.1.4 Visible parts of the propeller(s), stern bush(es), propeller shaft boss, brackets and tightness system(s) are to be examined. The clearances of the propeller shaft(s) (or wear down gauge) are to be checked and recorded. For controllable pitch propellers, the Surveyor is to be satisfied with the fastenings and tightness of hub and blade sealing.

Visible parts of other propulsion systems and propellers for steering purposes are also to be examined.

Dismantling is to be carried out, if considered necessary, notably where leakages are detected.

2.1.5 Visible parts of the rudder(s), rudder pintles, rudder stock and couplings as well as the sternframe are to be examined. If considered necessary by the Surveyor, the rudder(s) is (are) to be lifted or the inspection plates removed for the examination of pintles.

The clearances in the rudder bearings and the rudder lowering are to be checked and recorded.

Where applicable, a pressure test of the rudder may be required as deemed necessary by the Surveyor.

3 Bottom in-water survey

3.1 General

3.1.1 An in-water survey may normally be carried out if the ship has been granted the additional class notation **INWATERSURVEY** as defined in Ch 1, Sec 2, [6.11.2]. Upon application by the Owner and in special circumstances, the Society may also authorise such bottom in-water survey for ships not assigned with the additional class notation **INWATERSURVEY**.

3.1.2 The bottom in-water survey is to provide the information normally obtained from a bottom survey carried out in dry condition. Special consideration is to be given to ascertaining rudder bearing clearances and stern bush clearances of oil stern bearings based on a review of the operating history, on board testing and stern oil sample reports. These considerations are to be included in the proposals for in-water survey, which are to be submitted in advance of the survey so that satisfactory arrangements can be agreed on with the Society.

3.1.3

The in-water survey is to be carried out with the ship in sheltered water and preferably with weak tidal streams and currents. The in-water visibility and the cleanliness of the hull below the waterline are to be good enough to permit a meaningful examination which allows the Surveyor and diver to determine the condition of the plating, appendages and welding.

The Society is to be satisfied with the methods of orientation of the divers on the plating, which should make use where necessary of permanent markings on the plating at selected points.

The equipment and the procedure for observing and reporting the survey are to be discussed with the parties involved prior to the in-water survey, and suitable time is to be allowed to permit the diving company to test all equipment beforehand.

3.1.4 The in-water survey is to be carried out by one or more professional divers in the presence of a Surveyor. The diver(s) is (are) to be employed by a firm agreed by the Society. For the agreement of such firms, refer to Ch 2, Sec 2, [2.4].

3.1.5 The Surveyor is to be satisfied with the method of pictorial representation, and good two-way communication between the Surveyor and the divers is to be provided.

3.1.6 If the in-water survey reveals damage or deterioration that requires early attention, the Surveyor may require the ship to be drydocked in order for a detailed survey to be undertaken and the necessary repairs carried out.

SECTION 7

TAILSHAFT SURVEY

1 Survey of tailshafts

1.1 General

1.1.1 The different types of surveys to which tailshafts may be subjected and the intervals at which they are to be carried out are given in Ch 2, Sec 2, [5.5]. These surveys are:

- complete survey
- modified survey

The requirements to be complied with at each survey are listed below.

1.2 Complete survey

1.2.1 The complete survey of tailshafts 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. The crack detection test of the aft flange fillet area may be dispensed with for the solid flange couplings fitted at the end of the shaft; see also Ch 2, Sec 2, [5.5.2] b)
- 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 (prior to and after the survey) and their recording

1.2.2 Where the notation **MON-SHAFT** has been assigned as specified in Ch 2, Sec 2, [5.5.4], the tailshaft need not be withdrawn at the complete survey and items b) and d) of [1.2.1] need not be covered provided that all condition monitoring data (bearing temperature, consumption and analysis of lubricating oil) is 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 entirely to his satisfaction, the shaft is to be withdrawn.

1.3 Modified survey

1.3.1 A modified survey may be carried out for those tailshafts which fulfil the conditions described in Ch 2, Sec 2, [5.5.3], where the periodicity of this type of survey is also shown.

1.3.2 The modified survey for all types of shafts consists of the following:

- check of oil sealing glands in place
- measurements of wear 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.

1.3.3 Where the Surveyor considers that the data presented is not entirely to his satisfaction, further dismantling may be required, including withdrawal of the tailshaft.

2 Periodical survey of other propulsion systems

2.1 Rotating and azimuth thrusters

2.1.1 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.

For keyless or flange mounted propellers, alternative means to removal of the propeller for examination of the shaft cone, such as pressure testing of the hub and hub gland, may be adopted at alternate surveys;

- 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.

2.1.2 Where the notation MON-SHAFT has been assigned as specified in Ch 2, Sec 2, [5.5.6], the sealing glands of the Rotating and Azimuth Thrusters need not be dismantled at the periodical survey provided that all condition monitoring data (consumption and analysis of lubricating Oil) is found to be within permissible limits.

The remaining requirements for the periodical survey are to be complied with as follows:

- a) Propeller and its mounting
 - 1) for propeller fitted to a keyed shaft taper, the design details of which comply with the applicable requirements in Pt C, Ch 1, Sec 7 (independently from the system operating hours), examination of the following items, as applicable:
 - exposed parts;
 - cone and keyway to be checked by an appropriate crack detection method;
 - threaded end and nut;
 - 2) propeller fitted keyless to the shaft taper: examination of the following items, as applicable:
 - exposed parts.

When the system reaches the limit of 25.000 operating hours or its multiple (e.g. 50.000, 75.000, etc..) a non-destructive examination of the forward part of the aft shaft taper is to be performed.

- 3) propeller is fitted to a solid flange coupling at the aft end of the shaft examination of the following items, as applicable:

- exposed parts.

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

- b) Orientation device

Where the Surveyor considers that the results of visual examination and oil analysis data are not entirely to his satisfaction, dismantling of the internal parts may be required.

2.2 Vertical axis propellers

2.2.1 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 ship
- 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.

2.3 Pump jet systems

2.3.1 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.

SECTION 8

BOILER SURVEY

1 Steam boilers

1.1

1.1.1 Steam boilers, superheaters and economisers are to be examined internally and externally with the periodicity given in Ch 2, Sec 2, [5.6]. To this end, boilers are to be emptied and suitably prepared for the examination, and the water-steam side and fire side are to be cleaned and cleared of soot. Where necessary, the external surfaces are to be made accessible for inspection by removal of insulation and lining.

The internal examination is to be made on both the water-steam side and fire side.

Review of the following records since the last boiler survey is to be carried out as part of the survey:

- Operation
- Maintenance
- Repair history
- Feed water chemistry.

1.1.2 Subject to the results of this visual examination, the Surveyor may require:

- non-destructive tests for detection of possible defects in critical areas of plating and shells, pipes and stays
- thickness measurements of plating and shells, furnaces, pipes and stays.

If appropriate, a new working pressure may be fixed by the Society.

When situated inside boiler combustion chambers, steam pipes of cylindrical boilers are to be examined at their ends, and if deemed necessary by the Surveyor, a sample pipe is to be removed for examination.

1.1.3 If the internal examination is not carried out for practicable reasons, the parts subject to pressure are to be submitted to a hydraulic test.

1.1.4 Boiler supports and securing arrangements (fixed and sliding seating, chocks, rolling stays, if any, etc.) are to be examined.

Boiler accessories and mountings (such as valves and studs, water level indicators, safety valves) are to be externally and (as needed) internally examined.

Forced circulation pumps of fired steam generators are, wherever possible, to be opened up.

Fuel supply pipes between pumps and burners, fuel tank valves, pipes and deck control gear are to be examined.

1.1.5 Upon completion of the internal survey, the boiler is to be examined under steam and fuel oil burners and safety devices checked under working conditions.

The boiler safety valves and their relieving gear are to be examined and tested to verify satisfactory operation. However, for exhaust gas heated economisers, if steam cannot be raised at port, the safety valves may be set by the Chief Engineer at sea, and the results recorded in the log-book for review by the Society.

1.1.6 When an extension of the interval of the boiler survey is granted based on Ch 2, Sec 2, [5.6.4], the following is to be satisfactorily carried out:

- a) External examination of the boiler
- b) Boiler safety valve relieving gear (easing gear) is to be examined and operationally tested
- c) Boiler protective devices operationally tested
- d) Review of the following records since the last boiler survey:
 - Operation
 - Maintenance
 - Repair history
 - Feed water chemistry.

1.1.7 In addition to the other requirements of [1.1.1] (internal examination), in exhaust gas heated economisers of the shell type all accessible welded joints are to be subjected to a visual examination for cracking. Non-destructive testing may be required for this purpose

2 Thermal oil heaters

2.1

2.1.1 Thermal oil heaters are to be internally and externally examined. The heater tubes are to be visually examined, and the tightness of the installation (including flange connections, valves and pumps) is to be checked through a test at the working pressure.

2.1.2 Thermal oil heater supports and securing arrangements are to be examined.

Heater accessories and mountings are to be externally and (as needed) internally examined.

Forced circulation pumps are, wherever possible, to be opened up.

Fuel supply pipes between pumps and burners, fuel tank valves, pipes and deck control gear are to be examined.

2.1.3 The following safety devices and instrumentation are to be examined and tested:

- thermal fluid temperature safety device and control
- thermal fluid flow meter
- device for low thermal fluid level in the expansion tank
- other regulation and safety systems.

2.1.4 Where repairs and/or renewal of components exposed to pressure are performed, a pressure test is to be carried out to 1,5 times the working pressure

2.1.5 Upon completion of the survey, the thermal oil heater is to be examined under working conditions, with particular attention to safety devices and controls of the plant.

APPENDIX 1

CLASS REQUIREMENTS AND SURVEYS OF LAID-UP SHIPS

1 General

1.1

1.1.1 In order to maintain its class during a normal operation period, a ship 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 ship 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 ship 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

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 ship 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 ship, 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
- low pressure CO₂ fire-extinguishing systems, if fitted, are to be tested regularly and readily available.

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 oil and chemical tankers.

All flammable materials, sludge, etc. are to be removed from the ship'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

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 ship, 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. It is advisable to provide an impressed current cathodic protection system where the quantity of corrosive waste discharge is particularly high. When such systems are provided they are to be serviced and checked at regular intervals. 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 sea 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, if necessary, repaired prior to filling.

3.3.4 The bilge and tank top in engine rooms are to be cleaned and kept dry.

Hull sea 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, reciprocating 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 Main turbines

Turbines are to be kept dry.

All steam inlets are to be sealed.

Expansion arrangements (sliding feet) are to be suitably greased.

Electric heaters are to be put inside the turbines. Heat drying is to be made in open circuit, all valves shut and gland closing devices withdrawn.

Turbines are to be turned weekly, the lubricating oil system being put in service. The shaft line is to be stopped after turning an integer number of revolutions plus one quarter of a revolution.

3.5.4 Reduction gears

For large reduction gears, a fan activating the circulation of hot air in closed circuit with air hoses is to be fitted (intake at lower part of casing and discharge at upper part).

3.5.5 Auxiliary turbine-driven machinery

Stators are to be drained and kept dry.

Shaft sealing glands are to be lubricated.

Lubricating oil is to be analysed and renewed when deemed necessary. Prior to oil renewal, the oil casings are to be cleaned.

Exhaust steam pipes are to be kept dry.

Stuffing boxes are to be dismantled.

Turbines are to be turned weekly an integer number of revolutions plus one quarter of a revolution.

3.5.6 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.

3.5.7 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.

3.5.8 Piping

Pipes not in use are to be drained and kept dry.

3.5.9 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.

Sea 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.

3.5.10 Shaft lines

Shaft lines are to be coated with grease.

Shaft bearing cooling pipes are to be drained.

For sea water lubricated propeller shafts, the packing gland of the engine room stuffing box is to be tightened.

For oil lubricated sterntubes, 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 200000 Ω and general insulation is to be not less than 50000 Ω . Local electric heating may be necessary to improve the level of insulation, particularly in the generators/alternators and large motors.

A megger 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.

3.8.4 Boilers may also be preserved sealed with inert gas (nitrogen), provided that cocks and valves are tight and the installation allows an internal pressure of at least 0,05 bar to be maintained to prevent air penetration. Regular checks of the overpressure are to be carried out and results recorded in the log-book.

3.9 Automation equipment

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 open sea, 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 ship/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 ships 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 Ships should normally be moored singly. However, when several ships are moored together, the following provisions are to be made:

- ships are to be moored bow to stern
- ships are to be of approximately the same size
- the number of ships 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.

- a) Mooring site:
 - geographical area (to be specified on a map)
 - characteristics of the sea bottom
 - water depth
 - preferential angular sectors (effects of wind / tide / current) indicated according to statistical studies
 - wave characteristics (amplitude, periods)
- b) Geometry of mooring arrangements:
 - ship's position and direction
 - shore anchorage
 - diagram showing mooring equipment (fore and aft)
 - angle between chain cables and ship's centreline
- c) 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 inspected by the Society. When the ship 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 ship 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 ship has been placed in lay-up is entered on the Certificate of Classification, which is subsequently to be kept on board.

5.2 Annual lay-up condition survey

5.2.1 As described in Ch 2, Sec 2, [8], an annual lay-up condition survey is to be performed in lieu of the normal annual class surveys. The purpose of this survey is 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 ship parts that are not covered by class are reactivated in satisfactory operational condition.

5.3.2 (1/1/2021)

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 conditions of class 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:

- 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 blades of turbines through the inspection doors
- 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. A megger 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:

- fire detectors and alarms
- low pressure CO₂ fire-extinguishing systems, if fitted.

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 ship.

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 and tests, sea trials are to be performed in the presence of a Surveyor of the Society.

The sea 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 the Certificate of Classification.

Part A
Classification and Surveys

Chapter 4

**SCOPE OF SURVEYS IN RESPECT OF THE
DIFFERENT SERVICES OF SHIPS**

SECTION 1	GENERAL
SECTION 2	DOUBLE HULL OIL TANKERS
SECTION 3	OTHER SERVICE NOTATIONS
APPENDIX 1	SURVEY REPORTING PRINCIPLES FOR SHIPS SUBJECT TO ENHANCED SURVEY PROGRAM

SECTION 1

GENERAL

1 General

1.1

1.1.1 The purpose of this Chapter is to give details on the scope of surveys of certain ships 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 Chapter 3, which gives general requirements for surveys applicable to all types of ships: this is indicated in each Section of this Chapter. These surveys are to be carried out at intervals as described in Ch 2, Sec 2, concurrently with the surveys of the same type, i.e. ordinary, intermediate or class renewal surveys, detailed in Chapter 3.

1.1.3

Where specific requirements are given in this Chapter for the class renewal survey, they are additional to the applicable requirements for the ordinary survey.

2 Service notations subject to additional surveys

2.1

2.1.1 The specific requirements detailed in this Chapter are linked to the service notation(s) assigned to the ship at the request of the Owner. Where a ship has more than one service notation, the specific requirements linked to each one are applicable, insofar as they are not contradictory (in such 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 Section or Article they are specified.

Table 1 : Service notations for which specific requirements are applicable (1/3/2017)

Service notation assigned	Section or Article applicable in this Chapter	Type of surveys affected by these specific requirements	Remarks
asphalt tanker	Sec 3, [12]	ordinary survey intermediate survey class renewal survey	Not subject to enhanced survey program
asphalt tanker ESP oil tanker ESP oil tanker ESP CSR	Sec 2 and Sec 3 (as applicable)	ordinary survey intermediate survey class renewal survey	Subject to enhanced survey program
FLS tanker	Sec 3, [2]	ordinary survey intermediate survey class renewal survey	
dredger hopper dredger hopper unit split hopper unit split hopper dredger	Sec 3, [3]	ordinary survey class renewal survey	
tug salvage tug escort tug	Sec 3, [4]	ordinary survey class renewal survey	
supply vessel	Sec 3, [5]	ordinary survey intermediate survey class renewal survey	
fire-fighting ship	Sec 3, [6]	ordinary survey class renewal survey	
oil recovery ship	Sec 3, [7]	ordinary survey class renewal survey	
cable laying ship	Sec 3, [8]	ordinary survey class renewal survey	
pipe laying ship	Sec 3, [9]	ordinary survey class renewal survey	

Service notation assigned	Section or Article applicable in this Chapter	Type of surveys affected by these specific requirements	Remarks
research ship	Sec 3, [10]	ordinary survey class renewal survey	
IBEEV	Sec 3, [11]	ordinary survey class renewal survey	
Air Cushion Barges (ACB)	Sec 3, [13]	ordinary survey class renewal survey	

SECTION 2

DOUBLE HULL OIL TANKERS

1 General

1.1 Application

1.1.1 The requirements of this Section apply to all self-propelled ships which have been assigned one of the following service notations .

- oil tanker ESP - double hull
- oil tanker ESP CSR.

1.1.2 The requirements for hull surveys apply to the surveys of the hull structure and piping systems in way of cargo tanks, pump rooms, cofferdams, pipe tunnels and void spaces within the cargo area and all salt water ballast tanks. They are additional to the requirements applicable to the remainder of the ship, given in Chapter 3 according to the relevant surveys.

1.1.3 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.

1.1.4 When, in any survey, thickness measurements are required:

- the procedure detailed in Ch 2, Sec 2, [2.3] is to be applied
- the thickness measurement company is to be part of the survey planning meeting held prior to commencing the survey.

1.1.5 For machinery surveys, the requirements given in Sec 3 apply.

1.2 Documentation on board

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

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

- reports of structural surveys
- hull condition evaluation report (summarising the results of class renewal surveys)
- thickness measurement reports.

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

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

- survey program, as required in [4.1], until such time as the class renewal survey or the intermediate survey, as applicable, has been completed
- main structural plans of cargo tanks/holds and ballast tanks
- previous repair history
- cargo and ballast history
- extent of use of inert gas system and tank cleaning procedures
- ship's personnel reports on:
 - structural deterioration/defects in general
 - leakage in bulkheads and piping systems
 - condition of coatings or corrosion prevention systems, if any
- any other information that may help to identify critical structural areas and/or suspect areas requiring inspection.

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

1.3 Reporting and evaluation of surveys

1.3.1 The data and information on the structural condition of the ship collected during survey are evaluated for acceptability and structural integrity of the ship's cargo area.

1.3.2 In the case of oil tankers of 130 m in length and upwards (as defined in the International Convention on Load Lines in force), the ship's longitudinal strength is to be evaluated by using the thickness of structural members measured, renewed and reinforced, as appropriate, during the class renewal survey carried out after the ship reached 10 years of age in accordance with the criteria for longitudinal strength of the ship's hull girder for oil tankers specified in Ch 2, App 3.

The final result of evaluation of the ship's longitudinal strength required above, after renewal or reinforcement work of structural members, if carried out as a result of initial evaluation, is to be reported as a part of the condition evaluation report.

1.3.3 For ships subject to the requirements of this Section, the surveys of hull structure and piping systems are reported in conformance to the Survey Reporting Principles laid down in App 1.

1.3.4 A hull condition evaluation report (summarising the results of class renewal surveys) is issued by the Society to the Owner, who is to place it on board the ship for refer-

ence at future surveys. The hull condition evaluation report is endorsed by the Society.

2 Annual survey - Hull items

2.1 Hull and weather decks

2.1.1 The survey is to include:

- examination of the hull plating and its closing appliances as far as can be seen
- examination of watertight penetrations as far as practicable.

2.1.2 The survey is to include:

- examination of cargo tank openings, including gaskets, covers, coamings and flame screens
- examination of cargo tank pressure/vacuum valves and flame screens
- examination of flame screens on vents to all bunker tanks
- examination of cargo, crude oil washing, bunker and vent piping systems, including vent masts and headers
- confirmation that wheelhouse doors and windows, side scuttles and windows in superstructure and deckhouse ends facing the cargo area are in satisfactory condition.

2.2 Cargo pump rooms and pipe tunnels

2.2.1 The survey is to include:

- examination of all pump room bulkheads and pipe tunnels (if any) for signs of oil leakage or fractures and, in particular, the sealing arrangements of penetrations in these bulkheads
- examination of the condition of all piping systems in cargo pump rooms and pipe tunnels (if any)
- examination of the bilge and ballast arrangements.

2.3 Ballast tanks

2.3.1

Ballast tanks are to be internally examined when required as a consequence of the results of the class renewal survey or the intermediate survey (see Note 1), in cases where:

- a hard protective coating has not been applied since the time of construction, or
- a soft or semi-hard coating has been applied, or
- substantial corrosion is found within the tank, or
- the hard protective coating is found to be in less than good condition and the hard protective coating is not repaired to the satisfaction of the Surveyor.

Note 1: The requirements related to the protective coating condition are to apply to ballast tanks whose coating condition will be assessed at the forthcoming class renewal survey and intermediate survey on or after 1 July 2006. For the assessment of the coating condition, reference is to be made to IACS Recommendation No.87 "Guidelines for Coating Maintenance & Repairs for Ballast Tanks and Combined Cargo / Ballast Tanks on Oil Tankers".

2.3.2 When considered necessary by the Surveyor, or where extensive corrosion exists, thickness measurements are to be carried out and if the results indicate that substantial corrosion is present, the extent of the measurements is to be increased in accordance with Tab 4 to Tab 8.

These extended thickness measurements are to be carried out before the survey is credited as completed.

Suspect areas identified at previous surveys are to be examined. Areas of substantial corrosion identified at previous surveys are to be subjected to thickness measurements.

2.3.3

Confirmation is to be given that the corrosion prevention system fitted to dedicated ballast water tanks when appropriate is maintained.

2.4 Emergency towing arrangement

2.4.1 The Owner or his representative is to declare to the attending Surveyor that no significant alterations have been made, without prior approval from the Society, to the equipment and arrangements fitted on board in accordance with the provisions given in Pt B, Ch 10, Sec 4, [4].

2.4.2 The survey is to include:

- an examination, as far as practicable, of the emergency towing arrangement
- confirmation that the aft towing arrangement is pre-rigged and forward chafing gear is secured to the strong-point
- confirmation of the proper functioning of the light, where it is provided, on the pick-up gear marker buoy.

2.5 Means of access

2.5.1

Confirmation is to be given, when appropriate and as far as is practicable when internal spaces are examined, that the means of access to cargo and other spaces remain in good condition.

2.6 Safe access to bow

2.6.1

The access to bow arrangement is to be examined, as applicable.

3 Intermediate survey - Hull items

3.1 Weather decks

3.1.1 The survey is to include:

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

3.2 General

3.2.1 The survey extent is dependent on the age of the vessel as specified in [3.3] to [3.5] and shown in Tab 1.

3.3 Ships between 5 and 10 years of age

3.3.1 For tanks used for water ballast, an overall survey of representative tanks selected by the Surveyor is to be carried out. If such inspections reveal no visible structural defects, the examination may be limited to verification that the hard protective coating remains in good condition.

3.3.2 A ballast tank is to be examined at subsequent annual surveys (see Note 1) where:

- a hard protective coating has not been applied since the time of construction, or
- a soft or semi-hard coating has been applied, or
- substantial corrosion is found within the tank, or
- the hard protective coating is found to be in less than good condition and the hard protective coating is not repaired to the satisfaction of the Surveyor.

Note 1: The requirements related to the protective coating condition are to apply to ballast tanks whose coating condition will be assessed at the forthcoming class renewal survey and intermediate survey on or after 1 July 2006. For the assessment of the coating condition, reference is to be made to IACS Recommendation No.87 "Guidelines for Coating Maintenance & Repairs for Ballast Tanks and Combined Cargo / Ballast Tanks on Oil Tankers".

3.3.3 In addition to the requirements above, suspect areas identified at previous surveys are to be examined.

3.4 Ships between 10 and 15 years of age

3.4.1 The requirements of the intermediate survey are to be to the same extent as the previous class renewal survey as required in [4]. However, pressure testing of cargo and

ballast tanks and the provisions for longitudinal strength of the hull girder as given in Ch 2, App 3, [6] are not required unless deemed necessary by the attending Surveyor.

3.4.2 In application of [3.4.1], the intermediate survey may be commenced at the second annual survey and be progressed during the succeeding year with a view to completion at the third annual survey in lieu of application of Ch 2, Sec 2, [4.2.1].

3.4.3 In application of [3.4.1], an underwater survey may be considered in lieu of the requirements of [4.2.5].

3.5 Ships exceeding 15 years of age

3.5.1 The requirements of the intermediate survey are to be to the same extent as the previous class renewal survey as required in [4]. However, pressure testing of cargo and ballast tanks and the provisions for longitudinal strength of the hull girder as given in Ch 2, App 3, [6] are not required unless deemed necessary by the attending Surveyor.

3.5.2 In application of [3.5.1], the intermediate survey may be commenced at the second annual survey and be progressed during the succeeding year with a view to completion at the third annual survey in lieu of application of Ch 2, Sec 2, [4.2.1].

3.5.3 In application of [3.5.1], a bottom survey in dry condition is to be part of the intermediate survey. The overall and close-up surveys and thickness measurements, as applicable, of the lower portions of the cargo tanks and ballast tanks (see Note 1) are to be carried out in accordance with the applicable requirements for intermediate surveys, if not already performed.

Note 1: Lower portions of the cargo and ballast tanks are considered to be the parts below the light ballast waterline.

Table 1 : Intermediate survey of cargo and water ballast tanks for double hull oil tankers

Age of ship (in years at time of intermediate survey due date)		
5 < age ≤ 10	10 < age ≤ 15	age > 15
Examination of representative ballast tanks selected by the Surveyor See (1) and (2)	See [3.4]	See [3.5]
Examination of suspect areas identified at previous surveys	See [3.4]	See [3.5]
(1) When considered necessary by the Surveyor, thickness measurement and testing are to be carried out to ensure that the structural integrity remains effective (2) A ballast tank is to be examined at subsequent annual surveys (see Note 1) where: - a hard protective coating has not been applied since the time of construction, or - a soft coating has been applied, or - substantial corrosion is found within the tank, or - the hard protective coating is found to be in less than good condition and the protective coating is not repaired to the satisfaction of the Surveyor. Note 2: The requirements related to the protective coating condition are to apply to the ballast tanks whose coating condition will be assessed at the forthcoming class renewal survey and intermediate survey on or after 1 July 2006. For the assessment of the coating condition, reference is to be made to IACS Recommendation No.87 "Guidelines for Coating Maintenance & Repairs for Ballast Tanks and Combined Cargo / Ballast Tanks on Oil Tankers".		

4 Class renewal survey - Hull items

4.1 Survey program and preparation for hull survey

4.1.1 The Owner, in co-operation with the Society, is to work out a specific survey program prior to the commencement of any part of:

- the class renewal survey
- the intermediate survey for double hull oil tankers over 10 years of age.

Prior to the development of the survey program, the Survey Planning Questionnaire is to be completed by the Owner based on the information set out in [4.9], and forwarded to the Society.

The survey program is to be in a written format, based on the information in [4.8]. The survey is not to commence until the survey program has been agreed. The survey program at intermediate surveys may consist of the survey program at the previous class renewal survey supplemented by the condition evaluation report of that class renewal survey and later relevant survey reports.

The survey program is to be worked out taking into account any amendments to the survey requirements implemented after the last class renewal survey carried out.

4.1.2 In developing the survey program, the following documentation is to be collected and consulted with a view to selecting tanks, areas and structural elements to be examined:

- a) survey status and basic ship information;
- b) documentation on board, as described in [1.2.2] and [1.2.3]
- c) main structural plans of cargo and ballast tanks (scantling drawings), including information regarding use of high tensile steels (HTS);
- d) Executive Hull Summary (or Conditional Evaluation Report);
- e) relevant previous damage and repair history;
- f) relevant previous survey and inspection reports from both the recognised organisation and the Owner;
- g) cargo and ballast history for the last 3 years, including carriage of cargo under heated conditions;
- h) details of the inert gas plant and tank cleaning procedures;
- i) information and other relevant data regarding conversion or modification of the ship's cargo and ballast tanks since the time of construction;
- j) description and history of the coating and corrosion protection system (including previous class notations), if any;
- k) inspections by the Owner's personnel during the last 3 years with reference to structural deterioration in general, leakages in tank boundaries and piping, and condition of the coating and corrosion protection system, if any;

- l) information regarding the relevant maintenance level during operation including Port State Control reports of inspection containing hull related deficiencies, Safety Management System non-conformities relating to hull maintenance, including the associated corrective action(s); and
- m) any other information that will help identify suspect areas and critical structural areas.

4.1.3 The submitted survey program is to take account of and comply with at least the requirements for close-up surveys, thickness measurements and tank testing given in Tab 2, Tab 3 and [4.5], respectively. In addition, the survey program is to include at least:

- a) basic ship information and particulars;
- b) main structural plans (scantling drawings), including information regarding use of high tensile steels (HTS);
- c) plan of tanks
- d) list of tanks with information on use, corrosion prevention and condition of coating;
- e) conditions for survey (e.g. information regarding tank cleaning, gas freeing, ventilation, lighting etc);
- f) provisions and methods for access to structures;
- g) equipment for surveys;
- h) nomination of tanks and areas for close-up survey (see [4.3]);
- i) nomination of sections for thickness measurement (see [4.4]);
- j) nomination of tanks for tank testing (see [4.5]);
- k) identification of the thickness measurement company;
- l) damage experience related to the ship in question;
- m) critical structural areas and suspect areas, where relevant.

4.1.4 The survey program is also to include the maximum acceptable structural corrosion diminution levels applicable to the ship. The Society will advise the Owner of this information.

4.1.5 In addition, the survey program is to include proposals on how to conduct surveys and tests in a safe and practical way, including the means of providing access to structures for close-up survey, thickness measurements and tank testing. All other provisions described in Ch 2, Sec 2, [2.3], Ch 2, Sec 2, [2.5], Ch 2, Sec 2, [2.6], Ch 2, Sec 2, [2.7] and Ch 2, Sec 2, [2.8] regarding procedures for thickness measurements, conditions for survey, access to structures, equipment for survey and survey at sea or at anchorage, respectively, are also to be complied with.

4.1.6 Survey Planning Meeting Proper preparation and close co-operation between the attending Surveyor(s) and the Owner's representatives on board prior to and during the survey are an essential part in the safe and efficient conduct of the survey. During the survey on board safety meetings are to be held regularly.

Prior to the commencement of any part of the renewal and intermediate survey, a survey planning meeting is to be held between the attending Surveyor(s), the Owner's representa-

tive in attendance, the thickness measurement company representative, where involved, and the Master of the ship or an appropriately qualified representative appointed by the Master or Company for the purpose of ascertaining that all the arrangements envisaged in the survey program are in place, so as to ensure the safe and efficient conduct of the survey work to be carried out. Refer also to Ch 2, Sec 2, [2.3.1].

The following is an indicative list of items that are to be addressed in the meeting:

- a) schedule of the ship (i.e. the voyage, docking and undocking manoeuvres, periods alongside, cargo and ballast operations etc);
- b) provisions and arrangements for thickness measurements (i.e. access, cleaning/de-scaling, illumination, ventilation, personal safety);
- c) extent of the thickness measurements;
- d) acceptance criteria (refer to the list of minimum thicknesses);
- e) extent of close-up survey and thickness measurement considering the coating condition and suspect areas/areas of substantial corrosion;
- f) execution of thickness measurements;
- g) taking representative readings in general and where uneven corrosion/pitting is found;
- h) mapping of areas of substantial corrosion; and
- i) communication between the attending Surveyor(s), the thickness measurement company operator(s) and the Owner's Representative(s) concerning findings.

4.2 Scope of survey

4.2.1 In addition to the requirements of annual surveys, the class renewal survey is to include examination, tests and checks of sufficient extent to ensure that the hull and related piping, as required in [4.6.1], are in satisfactory condition and are fit for their 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.

4.2.2 All cargo tanks, ballast tanks, including double bottom tanks, pump rooms, pipe tunnels, cofferdams and void spaces bounding cargo tanks, decks and outer hull are to be examined, and this examination is to be supplemented by thickness measurement and testing required in [4.4] and [4.5], respectively, to ensure that the structural integrity remains effective. The aim of the examination is to discover substantial corrosion, significant deformation, fractures, damage or other structural deterioration that may be present.

4.2.3 The survey extent of ballast tanks converted to void spaces will be specially considered by the Society in relation to the requirements for ballast tanks.

4.2.4 Where provided, the condition of the corrosion prevention system of cargo tanks is to be examined.

A ballast tank is to be examined at subsequent annual surveys (see Note 1) where:

- a) a hard protective coating has not been applied since the time of construction, or
- b) a soft or semi-hard coating has been applied, or
- c) substantial corrosion is found within the tank, or
- d) the hard protective coating is found to be in less than good condition and the hard protective coating is not repaired to the satisfaction of the Surveyor.

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

Note 1: The requirements related to the protective coating condition are to apply to the ballast tanks whose coating condition will be assessed at the forthcoming class renewal survey and intermediate survey on or after 1 July 2006. For the assessment of the coating condition, reference is to be made to IACS Recommendation No.87 "Guidelines for Coating Maintenance & Repairs for Ballast Tanks and Combined Cargo / Ballast Tanks on Oil Tankers".

4.2.5 The class renewal survey is to include a bottom survey in dry condition as laid down in Ch 3, Sec 6, [2.2.1].

The overall and close-up surveys and thickness measurements, as applicable, of the lower portions of the cargo tanks and ballast tanks (see Note 1) are to be carried out in accordance with the applicable requirements for class renewal surveys, if not already performed.

Note 1: Lower portions of the cargo and ballast tanks are considered to be the parts below the light ballast waterline.

4.3 Overall and close-up surveys

4.3.1 Each class renewal survey is to include an overall survey of all tanks and spaces.

4.3.2 The minimum requirements for close-up surveys at class renewal surveys are given in Tab 2.

4.3.3 The Surveyor may extend the close-up survey as deemed necessary, taking into account the maintenance of the tanks under survey, the condition of the corrosion prevention system and also in the following cases:

- where tanks have structural arrangements or details which have suffered defects in similar spaces or on similar ships according to available information
- where tanks have structures approved with reduced scantlings due to an approved corrosion control system.

4.3.4 For areas in tanks where hard protective coatings are found to be in good condition, as defined in Ch 2, Sec 2, [2.2.11], the extent of close-up surveys required according to Tab 2 may be specially considered.

4.4 Thickness measurements

4.4.1 The minimum requirements for thickness measurements at class renewal survey are given in Tab 3.

4.4.2 Provisions for extended measurements for areas with substantial corrosion are given in Tab 4 to Tab 8 and as may be additionally specified in the survey program as required in [4.1].

These extended thickness measurements are to be carried out before the survey is credited as completed. Suspect Areas identified at previous surveys are to be examined.

Areas of substantial corrosion identified at previous surveys are to be subjected to thickness measurements.

Table 2 : Requirements for close-up survey at class renewal survey of double hull oil tankers

Age of ship (in years at time of class renewal survey)			
age ≤ 5	5 < age ≤ 10	10 < age ≤ 15	age > 15
One web frame (1) (see Note 1), in a ballast tank (see Note 2)	All web frames (1) (see Note 1), in a ballast tank (see Note 2) The knuckle area and the upper part (approximately 5 metres) of one web frame in each remaining ballast tank (6) (see Note 1)	All web frames (1) (see Note 1), in all ballast tanks	As for class renewal survey for age from 10 to 15 years Additional transverse areas as deemed necessary by the Society
One deck transverse, in a cargo oil tank (2) (see Note 1)	One deck transverse, in two cargo oil tanks (2) (see Note 1)	All web frames (7 (see Note 1)), including deck transverse and cross ties, if fitted, in a cargo oil tank One web frame (7) (see Note 1), including deck transverse and cross ties, if fitted, in each remaining cargo oil tank	
One transverse bulkhead (4) (see Note 1), in a ballast tank (see Note 2)	One transverse bulkhead (4) (see Note 1), in each ballast tank (see Note 2)	All transverse bulkheads, in all cargo oil (3) (see Note 1) and ballast (4) (see Note 1) tanks	
One transverse bulkhead (5) (see Note 1) in a cargo oil centre tank One transverse bulkhead (5) (see Note 1), in a cargo oil wing tank (see Note 3)	One transverse bulkhead (5) (see Note 1), in two cargo oil centre tanks One transverse bulkhead (5) (see Note 1), in a cargo oil wing tank (see Note 3)		
Note 1: (1), (2), (3), (4), (5), (6) and (7) are areas to be subjected to close-up surveys and thickness measurements according to Tab 3 (see Fig 1 and Fig 2) (1) : "Web frame" in a ballast tank means vertical web in side tank, hopper web in hopper tank, floor in double bottom tank and deck transverse in double deck tank (where fitted), including adjacent structural members. In fore and aft peak tanks, "web frame" means a complete transverse web frame ring including adjacent structural members (2) : Deck transverse, including adjacent deck structural members (or external structure on deck in way of the tank, where applicable) (3) : Transverse bulkhead complete in cargo tanks, including girder system, adjacent structural members (such as longitudinal bulkheads) and internal structure of lower and upper stools, where fitted (4) : Transverse bulkhead complete in ballast tanks, including girder system and adjacent structural members, such as longitudinal bulkheads, girders in double bottom tanks, inner bottom plating, hopper side, connecting brackets (5) : Transverse bulkhead lower part in cargo tank, including girder system, adjacent structural members (such as longitudinal bulkheads) and internal structure of lower stool, where fitted (6) : The knuckle area and the upper part (approximately 5 metres), including adjacent structural members. Knuckle area is the area of the web frame around the connections of the slope hopper plating to the inner hull bulkhead and the inner bottom plating, up to 2 metres from the corners both on the bulkhead and the double bottom (7) : Web frame in a cargo oil tank means deck transverse, longitudinal bulkhead vertical girder and cross ties, where fitted, including adjacent structural members Note 2: Ballast tank: means double bottom tank plus double side tank plus double deck tank, as applicable, even if these tanks are separate Note 3: Where no centre cargo tanks are fitted (as in the case of centre longitudinal bulkhead), transverse bulkheads in wing tanks are to be surveyed.			

Table 3 : Requirements for thickness measurements at class renewal survey of double hull oil tankers (1/1/2023)

Age of ship (in years at time of class renewal survey)			
age ≤ 5	5 < age ≤ 10	10 < age ≤ 15	age > 15
	Within the cargo area: • each deck plate • one transverse section (1)	Within the cargo area: • each deck plate • two transverse sections (1) (2) • all wind and water strakes	Within the cargo area: • each deck plate • three transverse sections (1) (2) • each bottom plate
	Selected wind and water strakes outside the cargo area	Selected wind and water strakes outside the cargo area	All wind and water strakes, full length
	Measurements, for general assessment and recording of corrosion pattern, of those structural members subject to close-up Survey according to Tab 2	Measurements, for general assessment and recording of corrosion pattern, of those structural members subject to close-up Survey according to Tab 2	Measurements, for general assessment and recording of corrosion pattern, of those structural members subject to close-up Survey according to Tab 2
Suspect areas	Suspect areas	Suspect areas	Suspect areas
(1) transverse sections are to be chosen where the largest reductions are suspected to occur or are revealed from deck plating measurements (2) at least one section should be within 0,5L amidships			

Table 4 : Requirements for extent of thickness measurements at those areas of substantial corrosion on double hull oil tankers within the cargo area length

BOTTOM, INNER BOTTOM AND HOPPER STRUCTURE		
Structural member	Extent of measurement	Pattern of measurement
Bottom, inner bottom and hopper structure plating	Minimum of three bays across double bottom tank, including aft bay Measurements around and under all suction bell mouths	5-point pattern for each panel between longitudinals and floors
Bottom, inner bottom and hopper structure longitudinals	Minimum of three longitudinals in each bay where bottom plating measured	Three measurements in line across flange and three measurements on vertical web
Bottom girders, including the watertight ones	At fore and aft watertight floors and in centre of tanks	Vertical line of single measurements on girder plating with one measurement between each panel stiffener, or a minimum of three measurements
Bottom floors, including the watertight ones	Three floors in bays where bottom plating measured, with measurements at both ends and middle	5-point pattern over two square metre area
Hopper structure web frame ring	Three floors in bays where bottom plating measured	5-point pattern over one square metre of plating. Single measurements on flange
Hopper structure transverse watertight bulkhead or swash bulkhead	• lower 1/3 of bulkhead	• 5-point pattern over one square metre of plating
	• upper 2/3 of bulkhead	• 5-point pattern over two square metre of plating
	• stiffeners (minimum of three)	• For web, 5-point pattern over span (two measurements across web at each end and one at centre of span). For flange, single measurements at each end and centre of span
Panel stiffening	Where applicable	Single measurements

Table 5 : Requirements for extent of thickness measurements at those areas of substantial corrosion on double hull oil tankers within the cargo area length

DECK STRUCTURE		
Structural member	Extent of measurement	Pattern of measurement
Deck plating	Two transverse bands across tank	Minimum of three measurements per plate per band
Deck longitudinals	Every third longitudinal in each of two bands with a minimum of one longitudinal	Three measurements in line vertically on webs and two measurements on flange (if fitted)
Deck girders and brackets (usually in cargo tanks only)	At fore and aft transverse bulkhead, bracket toes and in centre of tanks	Vertical line of single measurements on web plating with one measurement between each panel stiffener, or a minimum of three measurements. Two measurements across flange. 5-point pattern on girder/bulkhead brackets
Deck transverse webs	Minimum of two webs, with measurements at both ends and middle of span	5-point pattern over one square metre area. Single measurements on flange
Vertical web and transverse bulkhead in wing ballast tank (two metres from deck)	Minimum of two webs, and both transverse bulkheads	5-point pattern over one square metre area
Panel stiffening	Where applicable	Single measurements

Table 6 : Requirements for extent of thickness measurements at those areas of substantial corrosion on double hull oil tankers within the cargo area length

STRUCTURE IN WING BALLAST TANKS		
Structural member	Extent of measurement	Pattern of measurement
Side shell and longitudinal bulkhead plating: - upper strake and strakes in way of horizontal girders - all other strakes	- Plating between each pair of longitudinals in a minimum of three bays (along the tank) - Plating between every third pair of longitudinals in same three bays	- Single measurement - Single measurement
Side shell and longitudinal bulkhead longitudinals on: - upper strake - all other strakes	- Each longitudinal in same three bays - Every third longitudinal in same three bays	3 measurements across web and 1 measurement on flange
Longitudinals - brackets	Minimum of three at top, middle and bottom of tank in same three bays	5-point pattern over area of bracket
Vertical web and transverse bulkheads (excluding deckhead area): - strakes in way of horizontal girders - other strakes	- Minimum of two webs and both transverse bulkheads - Minimum of two webs and both transverse bulkheads	5-point pattern over approx. two square metre area - two measurements between each pair of vertical stiffeners
Horizontal girders	Plating on each girder in a minimum of three bays	Two measurements between each pair of longitudinal girder stiffeners
Panel stiffening	Where applicable	Single measurements

Table 7 : Requirements for extent of thickness measurements at those areas of substantial corrosion on double hull oil tankers within the cargo area length

LONGITUDINAL BULKHEADS IN CARGO TANKS		
Structural member	Extent of measurement	Pattern of measurement
Deckhead and bottom strakes, and strakes in way of the horizontal stringers of transverse bulkheads	Plating between each pair of longitudinals in a minimum of three bays	Single measurement
All other strakes	Plating between every third pair of longitudinals in same three bays	Single measurement
Longitudinals on deckhead and bottom strakes	Each longitudinal in same three bays	Three measurements across web and one measurement on flange
All other longitudinals	Every third longitudinal in same three bays	Three measurements across web and one measurement on flange
Longitudinals - brackets	Minimum of three at top, middle and bottom of tank in same three bays	5-point pattern over area of bracket
Web frames and cross ties	Three webs with minimum of three locations on each web, including in way of cross tie connections	5-point pattern over approximately two square metre area of webs, plus single measurements on flanges of web frame and cross ties
Lower end brackets (opposite side of web frame)	Minimum of three brackets	5-point pattern over approximately two square metre area of brackets, plus single measurements on bracket flanges

Table 8 : Requirements for extent of thickness measurements at those areas of substantial corrosion on double hull oil tankers within the cargo area length

TRANSVERSE WATERTIGHT AND SWASH BULKHEADS IN CARGO TANKS		
Structural member	Extent of measurement	Pattern of measurement
Upper and lower stool, where fitted	- Transverse band within 25mm of welded connection to inner bottom/deck plating - Transverse band within 25mm of welded connection to shelf plate	5-point pattern between stiffeners over one metre length
Deckhead and bottom strakes, and strakes in way of horizontal stringers	Plating between pair of stiffeners at three locations : approximately 1/4, 1/2 and 3/4 width of tank	5-point pattern between stiffeners over one metre length
All other strakes	Plating between pair of stiffeners at middle location	Single measurement
Strakes in corrugated bulkheads	Plating for each change of scantling at centre of panel and at flange of fabricated connection	5-point pattern over about one square metre of plating
Stiffeners	Minimum of three typical stiffeners	For web, 5-point pattern over span between bracket connections (two measurements across web at each bracket connection and one at centre of span). For flange, single measurements at each bracket toe and at centre of span
Brackets	Minimum of three at top, middle and bottom of tank	5-point pattern over area of bracket
Horizontal stringers	All stringers with measurements at both ends and middle	5-point pattern over one square metre area, plus single measurements near bracket toes and on flanges

4.4.3 The Surveyor may further extend the thickness measurements as deemed necessary.

4.4.4 When pitting is found on bottom plating and its intensity is 20% or more, thickness measurements are to be extended in order to determine the actual plate thickness out of the pits and the depth of the pits. Where the wastage is in the substantial corrosion range or the average depth of pitting is 1/3 or more of the actual plate thickness, the pitted plate is to be considered as a substantially corroded area.

4.4.5 For areas in tanks where hard protective coatings are found to be in good condition as defined in Ch 2, Sec 2, [2.2.11], the extent of thickness measurements according to Tab 3 may be specially considered.

4.4.6 Transverse sections are to be chosen where the largest reductions are suspected to occur or are revealed from deck plating measurements.

4.4.7 In cases where two or three sections are to be measured, at least one is to include a ballast tank within 0,5L amidships.

In the case of oil tankers of 130 m in length and upwards (as defined in the International Convention on Load Lines in force) and more than 10 years of age, for the evaluation of the ship's longitudinal strength as required in [1.3.2], the sampling method of thickness measurements is given in Ch 2, App 3, [6].

4.5 Tank testing

4.5.1 The requirements for tank testing at class renewal survey are given in Tab 9.

4.5.2 The Surveyor may extend the tank testing as deemed necessary.

4.5.3 Boundaries of ballast tanks are to be tested with a head of liquid to the top of air pipes.

4.5.4 Boundaries of cargo tanks are to be tested to the highest point that liquid will rise to under service conditions.

4.5.5 The testing of double bottom tanks and other spaces not designed for the carriage of liquid may be omitted, provided a satisfactory internal examination is carried out together with an examination of the tank top.

4.6 Cargo area and cargo pump rooms

4.6.1 Cargo piping on deck, including crude oil washing (COW) piping, and cargo and ballast piping within the cargo area are to be examined and operationally tested to working pressure to the attending Surveyor's satisfaction to ensure that their tightness and condition remain satisfactory. Where provided, special attention is to be given to any ballast piping in cargo tanks and any cargo piping in ballast tanks and void spaces.

Surveyors are to be advised on all occasions when this piping, including valves and fittings, is opened during repair periods and can be examined internally.

The Surveyor may require dismantling and/or thickness measurements of piping. A hydraulic test is to be carried out in the event of repair or dismantling of cargo, crude oil washing, or ballast piping, or where doubts arise.

4.6.2 All safety valves on cargo piping and of cargo tanks are to be dismantled for examination, adjusted and, as applicable, resealed.

4.6.3 All cargo pump room boundaries are to be generally examined. All gas-tight shaft sealing devices are to be examined. The bottom of cargo pump rooms is to be presented clean for the examination of stripping devices and gutters.

4.7 Emergency towing arrangement

4.7.1 The survey is to include:

- an examination of the emergency towing arrangement
- confirmation that the arrangement is readily available with aft towing arrangement pre-rigged and forward chafing gear secured to the strong-point
- an examination of the pick-up gear, towing pennant and chafing gear over the full length for possible deterioration. Where the pennant line is stored in a watertight condition and can be confirmed as being maintained, consideration may be given to waiving the requirement to examine the pennant line over the full length
- an examination of the strong-points, fairleads and pedestal roller together with their attachments to the hull structure.

Table 9 : Requirements for tank testing at class renewal survey of double hull oil tankers

Age of ship (in years at time of class renewal survey)	
age $\leq$ 5	age $>$ 5
All ballast tank boundaries	All ballast tank boundaries
Cargo tank boundaries facing ballast tanks, void spaces, pipe tunnels, pump rooms or cofferdams	All cargo tank bulkheads

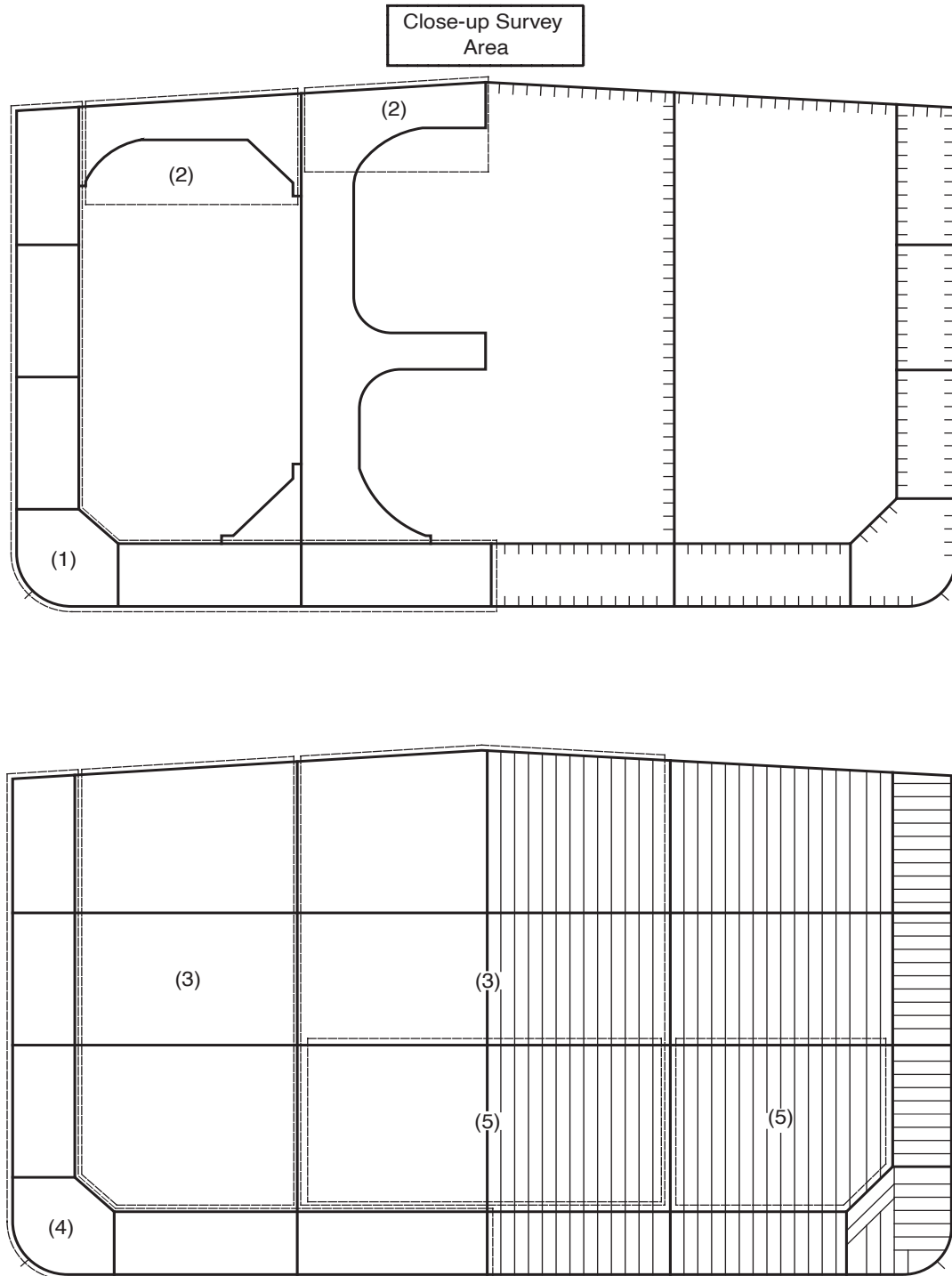
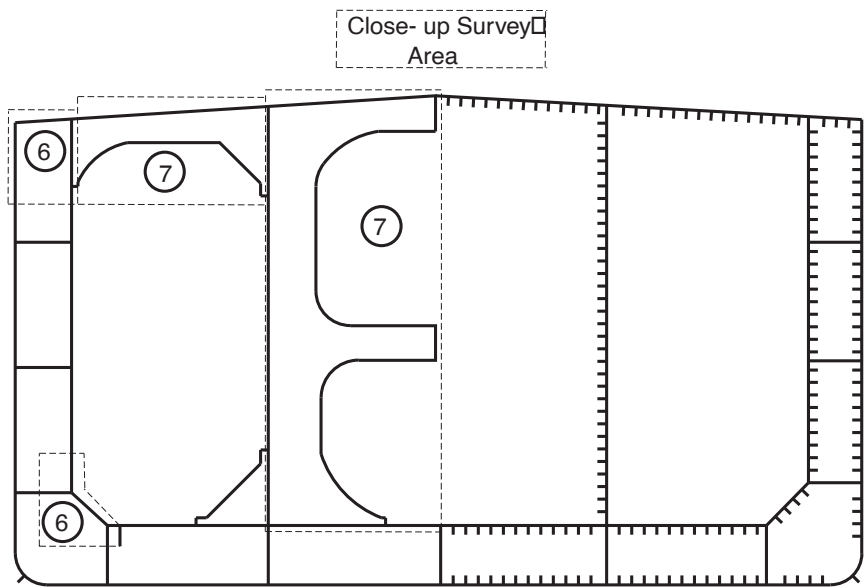
Figure 1 : Close-up survey requirements for double hull tankers, areas (1) to (5)

Figure 2 : Close-up survey requirements for double hull tankers, areas (6) and (7)



4.8 Survey Program

4.8.1 Basic information and particulars

Basic information and particulars of the ship are indicated in Tab 10.

Table 10 : Basic information and particulars

Name of ship:	
IMO number:	
Flag State:	
Port of registry:	
Gross tonnage:	
Deadweight (metric tonnes):	
Length between perpendiculars (m):	
Shipbuilder:	
Hull number:	
Classification Society:	
Register Number:	
Date of build:	
Owner:	
Thickness measurement company:	
Any other information which may be useful	

4.8.2 Scope

The present survey program covers the minimum extent of overall surveys, close-up surveys, thickness measurements and pressure testing within the cargo area, of cargo tanks and ballast tanks, including fore and aft peak tanks, required by the Rules.

The arrangements and safety aspects of the survey are to be acceptable to the attending Surveyor(s).

4.8.3 Documentation

All documents used in the development of the survey program are to be available on board during the survey as required in [1.2].

4.8.4 Arrangement of tanks and spaces

This section of the survey program is to provide information (either in the form of plans or text) on the arrangement of tanks and spaces that fall within the scope of the survey.

4.8.5 List of tanks and spaces with information on their use, extent of coatings and corrosion protection system

This section of the survey program is to indicate any changes relating to (and is to update) the information on the use of the tanks of the ship, the extent of coatings and the corrosion protective system provided in the Survey Planning Questionnaire referred to in [4.9].

4.8.6 Conditions for survey

This section of the survey program is to provide information on the conditions for survey, e.g. information regarding cargo tank cleaning, gas freeing, ventilation, lighting, etc.

4.8.7 Provisions and methods of access to structures

This section of the survey program is to indicate any changes relating to (and is to update) the information on the provisions and methods of access to structures provided in the Survey Planning Questionnaire referred to in [4.9].

4.8.8 List of equipment for survey

This section of the survey program is to identify and list the equipment that will be made available for carrying out the survey and the required thickness measurements.

4.8.9 Survey requirements

a) Overall survey

This section of the survey program is to identify and list the spaces that are to undergo an overall survey for the ship in accordance with [4.3.1].

b) Close-up survey

This section of the survey program is to identify and list the hull structures that are to undergo a close-up survey for the ship in accordance with [4.3.2].

4.8.10 Identification of tanks for tank testing

This section of the survey program is to identify and list the tanks that are to undergo tank testing for the ship in accordance with [4.5].

4.8.11 Identification of areas and sections for thickness measurements

This section of the survey program is to identify and list the areas and sections where thickness measurements are to be taken in accordance with [4.4.1].

4.8.12 Minimum thickness of hull structures

This section of the survey program is to specify the minimum thickness for hull structures of the ship that are subject to the Rule requirements (indicate either (a) or preferably (b), if such information is available):

a) determined from the attached wastage allowance table and the original thickness according to the hull structure plans of the ship (see Note 1);

b) given in the Tab 11:

Note 1: The wastage allowance tables are to be attached to the survey program.

Table 11 : As-built and minimum thickness for hull structures

Area or location	Original as-built thickness (mm)	Minimum thickness (mm)	Substantial corrosion thickness (mm)
Deck			
Plating			
Longitudinals			
Longitudinal girders			
Bottom			
Plating			
Longitudinals			
Longitudinal girders			
Ship side			
Plating			
Longitudinals			
Longitudinal girders			

Area or location	Original as-built thickness (mm)	Minimum thickness (mm)	Substantial corrosion thickness (mm)
Longitudinal bulkhead			
Plating			
Longitudinals			
Longitudinal girders			
Inner bottom			
Plating			
Longitudinals			
Longitudinal girders			
Transverse bulkheads			
Plating			
Stiffeners			
Transverse web frames, floors and stringers			
Plating			
Flanges			
Stiffeners			
Cross-ties			
Flanges			
Webs			

4.8.13 Thickness measurement company

This section of the survey program is to identify changes, if any, relating to the information on the thickness measurement company provided in the Survey Planning Questionnaire referred to in [4.9].

4.8.14 Damage experience related to the ship

This section of the survey program, using Tab 12, is to provide details of the hull damage for at least the last three years in way of the cargo and ballast tanks and void spaces within the cargo area. This damage is subject to survey.

Table 12 : Hull damage sorted by location for the ship concerned and for sister or similar ships (if available) in the case of design related damage

Tank or space number or area	Possible cause, if known	Description of the damage	Location	Repair	Date of repair

4.8.15 Areas identified with substantial corrosion from previous surveys

This section of the survey program is to identify and list the areas of substantial corrosion from previous surveys.

4.8.16 Critical structural areas and suspect areas

This section of the survey program is to identify and list the critical structural areas and the suspect areas, if such information is available.

4.8.17 Other relevant comments and information

This section of the survey program is to provide any other comments and information relevant to the survey.

4.8.18 Appendices to be provided

The following appendices are to be attached to the survey program:

a) Appendix 1 - List of plans

This appendix is to identify and list the main structural plans of cargo and ballast tanks (scantling drawings), including information regarding use of high tensile steel (HTS), as required in item 2 of the list in [4.1.3].

b) Appendix 2 - Survey Planning Questionnaire

The Survey Planning Questionnaire (refer to [4.9]), which has been submitted by the Owner.

c) Appendix 3 - Other documentation

This part of the survey program is to identify and list any other documentation that forms part of the plan.

4.8.19 Date and signature

The survey program is to be completed with the following wording:

Prepared by the owner in co-operation with the Society for compliance with [4.1.3] of Pt A, Ch 4, Sec 4 of the Rules.

Date:..... (name and signature of authorised Owner's representative)

Date:..... (name and signature of authorised representative of the Society)

4.9 Survey Planning Questionnaire

4.9.1 General

The following information will enable the Owner in co-operation with the Society to develop a survey program complying with the requirements given in [4.8]. It is essential that, when completing the present questionnaire, the Owner provides up-to-date information. The present questionnaire, when completed, is to provide all information and material required in [4.8].

4.9.2 Particulars

The particulars of the ship are indicated in Tab 13.

4.9.3 Information on access provision for close-up surveys and thickness measurement

The Owner is to indicate, in Tab 14, the means of access to the structures subject to close-up survey and thickness measurement. A close-up survey is an examination where the details of structural components are within the close visual inspection range of the attending Surveyor, i.e. normally within reach of hand.

4.9.4 History of cargo

The Owner is to provide history of cargo with H₂S content or heated cargo for the last three years together with indication as to whether cargo was heated and, where available, Material Safety Data Sheets (MSDS) (see Note 1)

Note 1: Refer to IMO Resolution MSC 150(77) on Recommendation for material safety data sheets for MARPOL Annex I cargoes and marine fuel oils.

4.9.5 Owner's inspections

Using a format similar to that of Tab 15 (which is given as an example), the Owner is to provide details of the results of their inspections for the last 3 years on all cargo and ballast tanks and void spaces within the cargo area, including peak tanks.

4.9.6 Reports of Port State Control inspections

The Owner is to provide a list of any reports of Port State Control inspections containing hull structural related deficiencies and relevant information on rectification of the deficiencies.

4.9.7 Safety Management System

The Owner is to provide a list of any non-conformities related to hull maintenance, including the associated corrective actions.

4.9.8 Approved thickness measurement company

The Owner is to provide the name and address of the approved thickness measurement company.

4.9.9 Date and signature

The Survey Planning Questionnaire is to be completed with the date, the name of the Owner's representative responsible for filling in the document and his signature.

4.9.10 Availability of the form

An example of the "Survey Planning Questionnaire" form to be filled in by the Owner is available on the Society website or may be supplied upon request; application may be made to: flt@tasneef.ae.

Table 13 : Particulars of the ship

Name of ship:	
IMO number:	
Flag State:	
Port of registry:	
Gross tonnage:	
Deadweight (metric tonnes):	
Classification Society:	
Register Number:	
Date of build:	
Owner:	

Table 14 : Means of access to hull structures

Tank No.	Structure	C (Cargo)/B (Ballast)	Temporary staging	Rafts	Ladders	Direct access	Other means (please specify)
Peaks	Fore Peak						
	Aft Peak						
Wing Tanks	Under deck						
	Side shell						
	Bottom transverse						
	Longitudinal						
	Transverse						
Centre Tanks	Under deck						
	Bottom transverse						
	Transverse						

Table 15 : Owner's inspection report

Tank No. / Other spaces	Corrosion protection (1)	Coating extent (2)	Coating condition (3)	Structural deterioration (4)	Tank damage his- tory (5)
Cargo centre tanks					
Cargo wing tanks					
Slop tanks					
Ballast tanks					
Aft peak					
Fore peak					
Miscellaneous spaces:					
Note 1: Indicate tanks which are used for oil/ballast. (1) HC=hard coating; SC=soft coating; SH=semi-hard coating; NP=no protection (2) U=upper part; M=middle part; L=lower part; C=complete (3) G=good; F=fair; P=poor; RC=recoated (during the last three years) (4) N=no findings recorded; Y=findings recorded, description of findings is to be attached to the questionnaire (5) DR=damage and repair; L=leakages; CV= conversion (description is to be attached to this questionnaire)					

SECTION 3

OTHER SERVICE NOTATIONS

1 General

1.1

1.1.1

The requirements of this Section are applicable to ships to be assigned one of the following service notations, and given in the Articles specified below:

- **FLS tanker**, in [2]
- dredging units, i.e. ships with the service notations **dredger**, **hopper dredger**, **hopper unit**, **split hopper unit**, **split hopper dredger**, in [3]
- **tug**, **salvage tug**, **escort tug**, in [4]
- **supply vessel**, in [5]
- **fire-fighting ship**, in [6]
- **oil recovery ship**, in [7]
- **cable laying ship**, in [8]
- **pipe laying ship**, in [9]
- **research ship**, in [10]
- **IBEEV**, in [11]
- **asphalt tanker**, in [12]
- **Air Cushion Barges (ACB)**, in [13].

1.1.2 These requirements are additional to those given in Chapter 3, according to the relevant surveys.

2 FLS tanker

2.1 Annual survey - Hull items

2.1.1 Weather decks

The survey is to include:

- examination of cargo tank openings, including gaskets, covers, coamings and screens
- examination of cargo tank pressure/vacuum valves and flame screens
- examination of flame screens on vents to all bunker, oily ballast and oily slop tanks
- examination of cargo, bunker, ballast and vent piping systems, including remote control valves, safety valves and various safety devices, as well as vent masts and headers
- confirmation that wheelhouse doors and windows, sidescuttles and windows in superstructure and deckhouse ends facing the cargo area are in satisfactory condition
- confirmation that pumps, valves and pipelines are identified and distinctively marked.

2.1.2 Cargo pump rooms and pipe tunnels

The survey is to include:

- examination of all pump room bulkheads and pipe tunnels (if any) for signs of chemical cargo leakage or fractures and, in particular, the sealing arrangements of penetrations in pump room bulkheads
- examination of the condition of all piping systems, in cargo pump rooms and pipe tunnels (if any)
- examination of the bilge and ballast arrangements and confirmation that pumps and pipelines are identified.

2.2 Annual survey - Cargo machinery items

2.2.1 Cargo area and cargo pump rooms

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

The survey is to include:

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

2.2.2 Instrumentation and safety devices

The survey is to include the following items, as far as required or fitted:

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

2.2.3 Inert gas system

If an inert gas system such as that installed on board oil tankers is fitted, the requirements given in Sec 3, [3.3] are to be complied with.

2.3 Intermediate survey - Hull items

2.3.1 The survey is to include:

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

2.4 Intermediate survey - Cargo machinery items

2.4.1 Electrical equipment in dangerous zones

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

The electrical insulation resistance of the electrical equipment and circuits terminating in or passing through the dangerous zones is to be tested; however, in cases where a proper record of testing is maintained, consideration may be given to accepting recent test readings effected by the ship's personnel.

2.4.2 Cargo heating system

The satisfactory condition of the cargo heating system is to be verified.

2.4.3 Inert gas system

For ships over 10 years old at the time of the intermediate survey due date, if an inert gas system such as that installed on board oil tankers is fitted, the requirements given in Sec 3, [5.2] for intermediate survey of oil tankers are to be complied with.

2.5 Class renewal survey - Hull items

2.5.1 Piping

Piping for cargo, ballast, stripping and venting systems is to be examined to the Surveyor's satisfaction. Dismantling and/or thickness measurements of these items may be required. A hydraulic test is to be carried out in the event of repair or dismantling of cargo or ballast piping, or where doubts arise.

Vent line drainage arrangements are to be examined.

It is to be verified that cargo piping is electrically bonded to the hull.

2.5.2 Safety valves

All safety valves on cargo piping and of cargo tanks are to be dismantled for examination, adjusted and, as applicable, resealed.

2.5.3 Cargo pump rooms

All cargo pump room boundaries are to be generally examined. All gas-tight shaft sealing devices are to be examined. The bottom of cargo pump rooms is to be presented clean for the examination of stripping devices and gutters.

2.6 Class renewal survey - Cargo machinery items

2.6.1 Pumps

Ballast and stripping pumps are to be internally examined and prime movers checked. A working test is to be carried out.

Maintenance records of cargo pumps are to be made available to the Surveyor.

2.6.2 Washing system

Where a washing system is fitted, piping, pumps, valves and deck-mounted washing machines are to be examined and tested for signs of leakage, and anchoring devices of deck-mounted washing machines are to be checked to the Surveyor's satisfaction.

2.6.3 Cargo heating system

The apparent satisfactory condition of the cargo heating system such as clamping, external condition of piping is to be verified and, if deemed necessary by the Surveyor, the system is to be pressure tested.

2.6.4 Remote controls

An operating test of the emergency remote control of pumps and valves and of automatic closing valves is to be carried out.

2.6.5 Electrical equipment in dangerous zones

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

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

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

2.6.6 Inert gas system

If an inert gas system such as that installed on board oil tankers is fitted, the requirements given Sec 3, [5.2] for intermediate survey and in Sec 3, [7.2] for class renewal survey of oil tankers are to be complied with.

3 Dredging units

3.1 Annual survey

3.1.1 The survey is to include the following items, as far as required or fitted, according to the service notation of the ship:

- for **split hopper unit, split hopper dredger**, visual examination, as far as practicable, of superstructure hinges and blocks, deck hinges, hydraulic jacks and associated piping systems and alarms
- 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.

3.2 Class renewal survey

3.2.1 The survey is to include the following items, as far as required or fitted, according to the service notation of the ship:

- for **hopper dredger, hopper unit**, 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 **split hopper unit, split hopper dredger**, 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
- 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.

4 Tug, salvage tug, escort tug

4.1 Annual survey

4.1.1 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.

4.1.2 In addition to [6.1.1] above, for **salvage tug**, the availability and satisfactory condition of specific equipment as required in Pt E, Ch 14, Sec 2, [3] is to be verified.

4.1.3 For **tug - barge combined**, an examination of the accessible parts of the connection system is to be carried out.

4.2 Class renewal survey

4.2.1 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.

4.2.2 In addition to [6.2.1] above, for salvage tug, the survey is to include:

- a check and working test of specific equipment as required in Pt E, Ch 14, Sec 2, [3]
- checking of the satisfactory condition of the towing line(s).

4.2.3 For **tug - barge combined**, a visual examination of components of the connection system is to be carried out, completed by thickness measurements and non-destructive tests as deemed necessary by the Surveyor. A connection/disconnection test is to be carried out, including a check of related remote control, safety and alarm devices.

5 Supply vessel

5.1 Supply vessel - Oil product or supply vessel - Chemical product

5.1.1 General

The additional survey items for annual survey, intermediate survey and class renewal survey are applicable only to ships having the service notation supply vessel assigned the additional service features oil product or chemical product.

5.1.2 Annual survey - Hull items

- a) Weather decks

The survey is to include:

- examination of cargo tank openings, including gaskets, covers, coamings and screens
- examination of cargo tank pressure/vacuum valves and flame screens
- examination of flame screens on vents to all bunker, oily ballast and oily slop tanks
- examination of cargo, bunker, ballast and vent piping systems, including remote control valves, safety valves and various safety devices, as well as vent masts and headers
- confirmation that wheelhouse doors and windows, sidescuttles and windows in superstructure and deckhouse ends facing the cargo area are in satisfactory condition
- confirmation that pumps, valves and pipelines are identified and distinctively marked

b) Cargo pump rooms and pipe tunnels

The survey is to include:

- examination of all pump room bulkheads and pipe tunnels (if any) for signs of oil or chemical product leakage or fractures and, in particular, the sealing arrangements of penetrations in pump room bulkheads
- examination of the condition of all piping systems, in cargo pump rooms and pipe tunnels (if any)
- examination of the bilge and ballast arrangements and confirmation that pumps and pipelines are identified.

5.1.3 Annual survey - Cargo machinery items

a) Cargo area and cargo pump rooms

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

The survey is to include:

- confirmation that potential sources of ignition in or near the cargo pump rooms, such as loose gear, excessive product in bilge, excessive vapours, combustible materials, etc., are eliminated and that access ladders are in satisfactory condition
- examination, as far as practicable, of cargo, bilge, ballast and stripping pumps for excessive gland seal leakage, verification of proper operation of electrical and mechanical remote operating and shutdown devices and operation of pump room bilge system, and checking that pump foundations are intact
- confirmation that the ventilation system, including portable equipment, if any, of all spaces in the cargo area (including cargo pump rooms) is operational, ducting is intact and screens are clean
- confirmation that electrical equipment in dangerous zones, cargo pump rooms and other spaces is in sat-

isfactory condition and has been properly maintained

- confirmation that the remote operation of the cargo pump room bilge system, if fitted, is satisfactory
- examination of the cargo heating system
- examination of the cargo-transfer arrangement and confirmation that the ship's cargo hoses are suitable for their intended purpose and in satisfactory condition.

b) The survey is to include the following items, as far as required or fitted:

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

5.1.4 Intermediate survey - Hull items

The survey is to include:

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

5.1.5 Intermediate survey - Cargo machinery items

a) Electrical equipment in dangerous zones

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

The electrical insulation resistance of the electrical equipment and circuits terminating in or passing through the dangerous zones is to be tested; however, in cases where a proper record of testing is maintained, consideration may be given to accepting recent test readings effected by the ship's personnel.

b) Cargo heating system

The satisfactory condition of the cargo heating system is to be verified.

5.1.6 Class renewal survey - Hull items

a) Piping

Piping for cargo, ballast, stripping and venting systems is to be examined to the Surveyor's satisfaction. Dismantling and/or thickness measurements of these items

may be required. A hydraulic test is to be carried out in the event of repair or dismantling of cargo or ballast piping, or where doubts arise.

Vent line drainage arrangements are to be examined.

It is to be verified that cargo piping is electrically bonded to the hull.

b) Safety valves

All safety valves on cargo piping and of cargo tanks are to be dismantled for examination, adjusted and, as applicable, resealed.

c) Cargo pump rooms

All cargo pump room boundaries are to be generally examined. All gas-tight shaft sealing devices are to be examined. The bottom of cargo pump rooms is to be presented clean for the examination of stripping devices and gutters.

5.1.7 Class renewal survey - Cargo machinery items

a) Pumps

Ballast and stripping pumps are to be internally examined and prime movers checked. A working test is to be carried out.

Maintenance records of cargo pumps are to be made available to the Surveyor.

b) Cargo heating system

The apparent satisfactory condition of the cargo heating system such as clamping, external condition of piping is to be verified and, if deemed necessary by the Surveyor, the system is to be pressure tested.

c) Remote controls

An operating test of the emergency remote control of pumps and valves and of automatic closing valves is to be carried out.

d) Electrical equipment in dangerous zones

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

The electrical insulation resistance of the electrical equipment and circuits terminating in or passing through the dangerous zones is to be tested; however, in cases where a proper record of testing is maintained, consideration may be given to accepting recent test readings effected by the ship's personnel.

5.2 Supply vessel - Anchor handling or supply vessel - Anchor handling stab

5.2.1 General

The additional survey items for annual survey and class renewal survey are applicable only to ships having the service notation **supply vessel** assigned the additional service features **anchor handling** or **anchor handling stab**.

5.2.2 Annual Survey

The survey is to include:

- a) a general external examination of the anchor handling winch and foundations, as fitted
- b) a function test of the winch, to the extent deemed necessary by the Surveyor.

The Manufacturer's recommendations are to be taken into account.

5.2.3 Class renewal survey

In addition to the requirements in [5.2.2], a function test of emergency release systems is to be carried out.

6 Fire-fighting ship

6.1 Annual survey

6.1.1 Ship's fire protection

The survey is to include:

- general examination of arrangements for structural fire protection
- ships equipped with a self-protection water-spraying system: general examination of all parts, as far as practicable and visible, of self-protection water-spraying system, and of scuppers and freeing ports for water drainage from deck surfaces
- ships not equipped with a self-protection water-spraying system: general examination of steel deadlights and shutters.

6.1.2 Water monitor system

The survey is to include:

- general examination of all parts of the water monitor system (pumps, piping system, valves and other fittings)
- checking for proper operation of the system, including local manual control
- general examination of foundations of water monitors and check of local manual control.

6.1.3 Fixed and portable foam systems

The survey is to include:

- general examination of the systems
- confirmation that the foam concentrates are periodically tested, either by the Manufacturer or by an organisation agreed by him
- general examination of foundations of foam monitors and check of local manual control
- for fixed foam systems, reference is to be made to Ch 3, Sec 3, [3.4.2] e).

6.1.4 Machinery installations, control room and other devices

The survey is to include:

- general examination of spaces containing auxiliary machinery for fire-fighting systems, particular attention being paid to arrangements, piping systems and instru-

ments; check of tools and of pressure vessels and their fittings, if any

- general examination of the control station and check of all communication and remote control means, of ventilation system
- general examination of sea suction of fire-fighting systems, of relevant remote and local control and of piping systems, including the relevant protection against corrosion
- general external examination of electrical installations for fire-fighting systems, with particular regard to the alarms and searchlights,
- checking of other fire-fighting arrangements
- checking of firemen's outfits, confirmation that they are stored in the appropriate locations, and checking of air compressor and other equipment.

6.2 Class renewal survey

6.2.1 The survey is to include:

- complete test of water fire-extinguishing systems, including the internal examination, as required by the Surveyor, of the relevant pumps
- partial test, at the Surveyor's discretion, of fixed foam fire-extinguishing systems
- test of self-protection fixed water-spraying systems, putting into operation the spray nozzles, including the internal examination, as required by the Surveyor, of the relevant pumps
- examination and test of prime movers of machinery relevant to fire-fighting systems and of the air compressor for refilling of air bottles of breathing apparatuses
- examination and test of the electrical generating plant supplying power to fire-fighting systems and searchlights
- test of searchlights.

7 Oil recovery ship

7.1 Annual survey

7.1.1 The survey is to include:

- confirmation of the availability of the operating manual
- examination of cargo tank openings, including gaskets, covers, coamings and screens
- general examination of cargo, ballast and vent piping systems, including control, gauging, alarm and safety devices
- general examination of the cargo pump room, as regards ventilation systems, condition of pumps and piping systems, and signs of any oil leakage
- confirmation that electrical equipment in dangerous areas, cargo pump rooms and other spaces, if fitted, is in satisfactory condition; the Owner or his representative is to declare to the attending Surveyor that this equipment has been properly maintained
- confirmation of the availability and satisfactory condition of the fixed cargo gas detection system, including

related alarms, portable gas detection equipment, and oil flash point measurement equipment.

If any inert gas system is fitted, the requirements for the annual survey of such installations given in Sec 3, [3.3] are applicable.

7.2 Class renewal survey

7.2.1 Piping

Cargo, ballast, stripping and vent piping is to be examined to the Surveyor's satisfaction. Dismantling and/or thickness measurements may be required. Tightness or working tests are to be carried out. A hydraulic or hydropneumatic test is to be carried out in the event of repair or dismantling of cargo or ballast piping, or where doubts arise.

Vent line drainage arrangements are to be examined.

It is to be verified that cargo piping is electrically bonded to the hull.

7.2.2 Safety valves

Safety valves on cargo piping and of cargo tanks are to be dismantled for examination, adjusted and, as applicable, resealed.

7.2.3 Pumps

Ballast and stripping pumps are to be internally examined and prime movers checked. A working test is to be carried out.

Maintenance records of cargo pumps are to be made available to the Surveyor.

7.2.4 Cargo pump rooms

Cargo pump room boundaries are to be generally examined. Gas-tight shaft sealing devices are to be examined. The bottom of cargo pump rooms is to be presented clean for the examination of stripping devices and gutters.

7.2.5 Electrical equipment in dangerous zones

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

An insulation test of circuits is to be carried out; however, where a proper record of testing is maintained, consideration may be given to accepting recent readings effected by the ship's personnel.

7.2.6 Instrumentation and safety devices

The fixed cargo gas detection system, including related alarms, portable gas detection equipment, and oil flash-point measurement equipment, is to be tested.

7.2.7 Inert gas system

If any inert gas system is fitted, the requirements for the class renewal survey of such installations given in Sec 3, [7.2] are applicable.

8 Cable laying ship

8.1 Annual survey

8.1.1 The survey is to include a general examination of sheaves, drums and tensioners for damage, cracks or wastage. The connections of these appliances to the structure are also to be checked.

8.2 Class renewal survey

8.2.1 The equipment mentioned in [10.1.1] is to be dismantled, to the extent deemed necessary by the Surveyor, in order to check its condition. Clearances of sheaves and cable drum axles are to be ascertained.

9 Pipe laying ship

9.1 Annual survey

9.1.1 The survey is to include:

- general examination of the pipe laying and anchoring equipment for damage, cracks or wastage; the connections of these appliances to the structure are also to be checked
- general examination of areas subject to damage, cracks or wastage of the weather deck in way of the working area and pipe storage area.

The annual survey of dynamic positioning equipment is to be carried out in accordance with the requirements of Ch 5, Sec 11, [5.1].

9.2 Class renewal survey

9.2.1 The equipment mentioned in [12.1.1] is to be dismantled, to the extent deemed necessary by the Surveyor, in order to check its condition. Tests are to be carried out to verify the proper operation of all machinery and equipment intended for pipe laying and anchoring equipment.

The renewal survey of dynamic positioning equipment is to be carried out in accordance with the requirements of Ch 5, Sec 11, [5.2].

10 Research ship

10.1 Annual and Class renewal survey

10.1.1 The survey is to include the examination, to the extent deemed necessary by the Surveyor, of the equipment and arrangements on the basis of which the service notation has been assigned.

11 IBEEV

11.1 Annual survey - Hull items

11.1.1 The survey is to include:

- Examination of the structural arrangements of the airlocks, including their passive fire protection;

- Examination of the structural arrangements for the protection of the windows and side scuttles during the navigation across to the fired areas;
- Confirmation that the structural arrangements for the protection of the windows and side scuttles are operable;
- Confirmation that wheelhouse doors and windows, sidescuttles and windows in superstructure and deckhouse ends in satisfactory condition, including their gas tightness;
- Confirmation that wheelhouse visibility, all around 360°, is not impaired;
- Confirmation that the means to remote release the mooring system from wheelhouse are maintained in operable condition.

11.2 Annual survey - Machinery items

11.2.1 The survey is to include:

- Confirmation that the gastight dampers of all ventilation ducts are operable and their tightness is not impaired;
- Confirmation that devices, used to shut down the fans and dampers in case of gas detection, are maintained and operating;
- External examination of self supporting air system(s), intended for the air supply of:
 - the engine room(s)
 - the airlock(s)
 - the accommodation(s)
 - the wheelhouse(s)
- Working test of the air self supporting system(s);
- Verification the date last re-charging of air bottles/vessels of the air self supporting system(s);
- Confirmation that the system(s) and device(s), intended for the automatic stop the engines in case of overspeed due to the hydrocarbons suction, are operational;
- Confirmation that the required fixed H₂S detection system(s) is(are) in satisfactory condition and has been properly maintained;
- Confirmation that the required fixed flammable gas detection system(s) is(are) in satisfactory condition and has been properly maintained;
- Confirmation that the required fixed O₂ detection system(s) is(are) in satisfactory condition and has been properly maintained;
- Confirmation that the required fixed CO₂ detection system(s) is(are) in satisfactory condition and has been properly maintained;
- Confirmation that the required fixed smoke detection system(s) is(are) in satisfactory condition and has been properly maintained;
- Test of each gas detection systems;
- Test of the smoke detection system;
- Confirmation that the means to remote control the propulsion are maintained and operable from wheelhouse(s);

- Confirmation that the monitoring systems for the following system are in satisfactory condition and has been properly maintained:
 - ventilation damper control/status;
 - ventilation fan control/status;
 - combustion air status;
 - concentration of CO₂ and O₂ in evacuees' spaces;
 - concentration of CO₂ and O₂ in breathing air system room;
 - electrically operated valves.
- Verification that the emergency source for the monitoring system (24 V DC) is in satisfactory condition and has been properly maintained;
- Confirmation that electrical equipment in dangerous zones, ventilation ducts and other spaces is in satisfactory condition and has been properly maintained;
- Confirmation that the earth detection system, where fitted, is in satisfactory condition and has been properly maintained;
- Confirmation that the internal and external emergency lights are maintained and in suitable working condition;
- Confirmation the Low Location Lighting system is maintained and in suitable working condition;
- Confirmation that the heating facilities of Wheelhouse and machinery spaces are maintained and in fully operational conditions.

11.3 Class renewal survey

11.3.1 In addition to the requirements of annual surveys, the class renewal survey is to include examination, tests and checks of sufficient extent to ensure that the hull items and machinery items, related to the additional service notation, are in satisfactory condition and are fit for their intended purpose for the new period of class to be assigned.

11.3.2 Renewal survey - Hull items

The survey is to include:

- Examination of the structures of the strengthened areas of the hull for the navigation in ice environment;
- Thickness measurements: additional systematic thickness measurements are required in the areas where strengthening for navigation in ice environment;
- Sea Chests: during the bottom survey in dry condition which is to be carried out concurrently with the class renewal survey (see Ch 3, Sec 6), the specific arrangements related to sea chests protected against ice blocking, such as heating coil and cooling water discharge piping, are to be checked.

11.3.3 Renewal survey - Machinery items

The survey is to include:

- The compressed self supporting air system(s) together with its valves, fittings and safety devices is to be examined, as considered necessary by the Surveyor;
- Compressed air receivers and other pressure vessels for self supporting air system(s) are to be cleaned internally

and examined internally and externally. Where the above receivers or vessels cannot be examined internally, they are to be hydrostatically tested to 1,5 times the working pressure. Their fittings, valves and safety devices are to be opened up, as deemed necessary by the Surveyor, for visual inspection and pressure tested as appropriate;

- The emergency source(s) of electrical power of monitoring system(s), 24 V DC, their automatic arrangements and associated circuits are to be tested;
- A general examination of the electrical equipment and cables in dangerous zones such as cargo pump rooms and areas adjacent to cargo tanks is to be carried out for defective and non-certified safe type electrical equipment, non-approved lighting and fixtures, and improperly installed or defective or dead-end wiring.

12 Asphalt tanker

12.1 Annual survey - Hull items

12.1.1 Weather decks

The survey is to include:

- examination of cargo tank openings, including gaskets, covers, coamings and screens
- examination of cargo tank pressure/vacuum valves and flame screens
- examination of flame screens on vents to all bunker tanks
- examination of cargo, bunker, ballast and vent piping systems, including remote control valves, safety valves and various safety devices
- confirmation that wheelhouse doors and windows, sidescuttles and windows in superstructure and deck-house ends facing the cargo area are in satisfactory condition
- confirmation that pumps, valves and pipelines are identified and distinctively marked.

12.1.2 Cargo pump rooms and pipe tunnels

The survey is to include:

- examination of all pump room bulkheads and pipe tunnels (if any) for signs of cargo leakage or fractures and, in particular, the sealing arrangements of penetrations in pump room bulkheads
- examination of the condition of all piping systems, in cargo pump rooms and pipe tunnels (if any)
- examination of the bilge and ballast arrangements and confirmation that pumps and pipelines are identified.

12.1.3 Independent cargo tanks

The survey is to include, as far as practicable, the general external examination of the structure surrounding the independent cargo tanks for damage, cracks or wastage, including the thermal isolating material and elements supporting and/or securing the cargo tanks.

12.2 Annual survey - Cargo machinery items

12.2.1 Cargo area and cargo pump rooms

The survey is to include:

- a) confirmation that potential sources of ignition in or near the cargo pump rooms, such as loose gear, excessive product in bilge, excessive vapours, combustible materials, are eliminated and that access ladders are in satisfactory condition
- b) examination, as far as practicable, of cargo, bilge, ballast and stripping pumps for excessive gland seal leakage, verification of proper operation of electrical and mechanical remote operating and shutdown devices and operation of the pump room bilge system, and checking that pump foundations are intact
- c) confirmation that the ventilation system, including portable equipment, if any, of all spaces in the cargo area (including cargo pump room) is operational, ducting is intact and screens are clean
- d) confirmation that electrical equipment in cargo pump rooms and other spaces is in satisfactory condition and has been properly maintained
- e) confirmation that the remote operation of the cargo pump room bilge system is satisfactory
- f) examination of the cargo heating system
- g) examination of the cargo-transfer arrangement and confirmation that any hoses are suitable for their intended purpose and, where appropriate, type approved or marked with the date of testing.

12.2.2 Instrumentation and safety devices

The survey is to include the following items, as far as required or fitted:

- a) examination of cargo tank gauging devices
- b) confirmation that installed pressure gauges on cargo discharge lines are properly operational
- c) confirmation that devices provided for measuring the temperature of the cargo, if any, operate satisfactorily.

12.3 Intermediate survey - Hull items

12.3.1

The survey is to include:

- a) examination of weather decks,
- b) examination, as far as applicable, of cargo, stripping, bunker, ballast, steam and vent piping systems. If upon examination there is any doubt as to the condition of the piping, pressure testing, thickness measurement or both may be required.

12.4 Class renewal survey - Hull items

12.4.1 Piping

Piping for cargo, ballast, stripping and venting systems is to be examined to the Surveyor's satisfaction. Dismantling and/or thickness measurements of these items may be

required. A hydraulic test is to be carried out in the event of repair or dismantling of cargo or ballast piping, or where doubts arise.

12.4.2 Safety valves

All safety valves on cargo piping and of cargo tanks are to be dismantled for examination, adjusted and, as applicable, resealed.

12.4.3 Cargo pump rooms

All cargo pump room boundaries are to be generally examined. All gas-tight shaft sealing devices are to be examined. The bottom of cargo pump rooms is to be presented clean for the examination of stripping devices and gutters.

12.4.4 Independent cargo tanks

The survey is to include the internal examination of the independent cargo tanks and external examination of the structure surrounding the independent cargo tanks for damage, cracks or wastage, including the thermal isolating material and elements supporting and/or securing the cargo tanks.

12.5 Class renewal survey - Cargo machinery items

12.5.1 Pumps

Ballast and stripping pumps are to be internally examined and prime movers checked. A working test is to be carried out.

Maintenance records of cargo pumps are to be made available to the Surveyor.

12.5.2 Cargo heating system

The apparent satisfactory condition of the cargo heating system such as clamping and piping is to be verified and, if deemed necessary by the Surveyor, the system is to be pressure tested.

13 ACB

13.1 Annual survey - Hull items

13.1.1 (1/3/2017)

The survey is to include:

- a) Examination of the structural arrangements of the airlocks;
- b) Examination of skirts and relevant connections to the hull;
- c) Examination of the structural arrangements for the protection of the windows and side scuttles during the navigation across to the fired areas;
- d) Confirmation that the structural arrangements for the protection of the windows and side scuttles are operable;
- e) Confirmation that wheelhouse doors and windows, sidescuttles and windows in superstructure and deckhouse ends in satisfactory condition.

13.2 Annual survey - Machinery items

13.2.1 (1/3/2017)

The survey is to include:

- a) confirmation that lifting fans are maintained and operating;
- b) confirmation that the gastight dampers of all ventilation ducts are operable and their tightness is not impaired;
- c) confirmation that devices, used to shut down the fans and dampers are maintained and operating;
- d) external examination of self-supporting air system(s) intended for the air supply of:
 - the engine room(s)
 - the airlock(s)
 - the accommodation(s)
 - the wheelhouse(s)
- e) external examination of:
 - air propulsion propellers
 - lifting fans
- f) working test of the air self-supporting system(s);
- g) confirmation that the system(s) and device(s), intended for the automatic stop the engines in case of overspeed due to the hydrocarbons suction, are operational;
- h) confirmation that the means to remote control the propulsion are maintained and operable from wheelhouse (s).

13.3 Class renewal survey

13.3.1 (1/3/2017)

In addition to the requirements of annual surveys, the class renewal survey is to include examination, tests and checks of sufficient extent to ensure that the hull items and machinery items, related to the additional service notation, are in satisfactory condition and are fit for their intended purpose for the new period of class to be assigned.

Maintenance records of cargo pumps are to be made available to the Surveyor.

13.3.2 Renewal survey - Hull items (1/3/2017)

The survey is to include:

- a) examination of the structures of the strengthened areas of the hull;
- b) thickness measurements: additional systematic thickness measurements are required in the areas where strengthening for navigation in ice environment;
- c) Sea Chests (where applicable): during the bottom survey in dry condition which is to be carried out concurrently with the class renewal survey (see Ch 3, Sec 6), the specific arrangements related to sea chests protected against ice blocking, such as heating coil and cooling water discharge piping, are to be checked.

13.3.3 Renewal survey - Machinery items (1/3/2017)

The survey is to include:

- a) the compressed self-supporting air system(s) together with its valves, fittings and safety devices is to be examined, as considered necessary by the Surveyor;
- b) compressed air receivers and other pressure vessels for Self-supporting air system(s) are to be cleaned internally and examined internally and externally. Where the above receivers or vessels cannot be examined internally, they are to be hydrostatically tested to 1,5 times the working pressure. Their fittings, valves and safety devices are to be opened up, as deemed necessary by the Surveyor, for visual inspection and pressure tested as appropriate;
- c) the emergency source(s) of electrical power of monitoring system(s), 24 V DC, their automatic arrangements and associated circuits are to be tested;
- d) a general examination of the electrical equipment and cables in dangerous zones and areas adjacent to cargo tanks is to be carried out for defective and non-certified safe type electrical equipment, non-approved lighting and fixtures, and improperly installed or defective or dead-end wiring
- e) working test of the air self-supporting system(s);
- f) confirmation that the system(s) and device(s), intended for the automatic stop the engines in case of overspeed due to the hydrocarbons suction, are operational;
- g) confirmation that the means to remote control the propulsion are maintained and operable from wheelhouse (s).

APPENDIX 1

SURVEY REPORTING PRINCIPLES FOR SHIPS SUBJECT TO ENHANCED SURVEY PROGRAM

1 Survey reporting principles

1.1 General

1.1.1 As a principle, for ships subject to the requirements of Sec 2, Sec 3, Sec 4, Sec 5 and Sec 9, the report for surveys of hull structure and piping systems, as relevant for the survey, is to include the content indicated in this Appendix.

1.2 Issue of a survey report

1.2.1 (1/1/2021)

A survey report is to be issued in the following cases:

- a) In connection with commencement, continuation and / or completion of periodical hull surveys, i.e. annual, intermediate and class renewal surveys, as relevant
- b) When structural damage / defects have been found
- c) When repairs, renewals or modifications have been carried out
- d) When condition of class has been imposed or deleted.

1.3 Purpose of reporting

1.3.1 (1/1/2021)

The purpose of reporting is to provide:

- a) Evidence that prescribed surveys have been carried out in accordance with applicable classification Rules
- b) Documentation of surveys carried out with findings, repairs carried out and conditions of class imposed or deleted
- c) Survey records, including actions taken, which are to form an auditable documentary trail. Survey reports are to be kept in the survey report file required to be on board
- d) Information for planning of future surveys
- e) Information which may be used as input for maintenance of classification Rules and instructions.

1.4 Surveys split between different stations

1.4.1 When a survey is split between different survey stations, a report is to be made for each portion of the survey. A list of items surveyed, relevant findings and an indication of whether the item has been credited are to be made available to the next attending Surveyor, prior to continuing or completing the survey. Thickness measurement and tank

testing carried out are also to be listed for the use of the next Surveyors.

1.5 Identification of spaces and areas

1.5.1 The following spaces, locations, structures and systems, as applicable, are to be identified:

- a) the compartments where an overall survey has been carried out;
- b) the locations, in each ballast tank and cargo hold including hatch covers and coamings, where a close-up survey has been carried out, together with information of the means of access used (see Note 1);
- c) the locations, in each ballast tank and cargo hold including hatch covers and coamings, where thickness measurements have been carried out (see Note 1);

Note 1: As a minimum, the identification of locations of close-up survey and thickness measurements is to include a description of individual structural members corresponding to the extent of requirements stipulated in the pertinent Section of this Chapter based on the type of periodical survey and the ship's age. Where only partial survey is required owing to the ship's age, the identification is to include the location within each ballast tank or cargo hold by reference to frame numbers.

- d) the structures subject to special consideration for those areas in ballast tanks or cargo holds where protective coating is found to be in good condition and the extent of close-up survey and / or thickness measurement has been specially considered;
- e) the tanks subjected to tank testing;
- f) the piping systems on deck, including cargo and crude oil washing (COW) piping and cargo and ballast piping within cargo and ballast tanks and/or holds, as applicable, pipe tunnels, cofferdams and void spaces where:
 - 1) examination including internal examination of piping with valves and fittings and thickness measurement, as relevant, has been carried out;
 - 2) an operational test to working pressure has been carried out.

1.6 Items surveyed

1.6.1 The following items of the survey are to be reported:

- a) type, extent and condition of protective coating in each tank, as relevant (rated good, fair or poor);

- b) structural condition of each compartment with information on the identified findings, as relevant, such as:
 - 1) corrosion with description of location, type and extent
 - 2) areas with substantial corrosion
 - 3) cracks / fractures with description of location and extent
 - 4) buckling with description of location and extent
 - 5) indents with description of location and extent
- c) compartments where no structural damage / defects have been found

The report may be supplemented by sketches and/or photos.

1.7 Thickness measurement report

1.7.1 The thickness measurement report is to be verified and signed by the Surveyor controlling the measurements on board.

1.8 Longitudinal strength

1.8.1 For oil tankers of both single and double hull construction of 130 m in length and upwards and over 10 years of age, for which the longitudinal strength of the hull girder is to be evaluated, the following data is to be included, as relevant:

- a) measured and as-built transverse sectional areas of deck and bottom flanges
- b) diminution of transverse sectional areas of deck and bottom flanges
- c) details of renewals or reinforcements carried out, as relevant (as per [1.10.1]).

1.9 List of required repairs

1.9.1 Whenever the attending Surveyor is of the opinion that repairs are required, each item to be repaired is to be identified in a numbered list.

1.10 List of repairs carried out

1.10.1 Whenever repairs are carried out, details of the repairs effected are to be reported by making specific reference to the relevant items in the numbered list. Repairs carried out are to be reported with identification of:

- a) compartment
- b) structural member
- c) repair method (i.e. renewal or modification) including:
 - steel grades and scantlings (if different from the original),
 - sketches/photos, as appropriate,
- d) repair extent
- e) NDT / Tests.

1.11 List of repairs not completed

1.11.1 (1/1/2021)

For repairs not completed at the time of survey, a condition of class is to be imposed with a specific time limit for the repairs. In order to provide correct and proper information to the Surveyor attending for survey of the repairs, the condition of class is to be sufficiently detailed with identification of each item to be repaired. For identification of extensive repairs, reference may be made to the survey report.

SCOPE OF SURVEYS RELATED TO ADDITIONAL CLASS NOTATIONS

SECTION 1	GENERAL
SECTION 2	AVAILABILITY OF MACHINERY
SECTION 3	AUTOMATED MACHINERY SYSTEMS
SECTION 4	MONITORING EQUIPMENT
SECTION 5	POLLUTION PREVENTION
SECTION 6	ARRANGEMENTS FOR NAVIGATION IN ICE - ICE CLASS AND POLAR CLASS
SECTION 7	WINTERISATION (TEMP)
SECTION 8	OTHER NOTATIONS

SECTION 1

GENERAL

1 General

1.1

1.1.1 The purpose of this Chapter is to give details on the scope of surveys of specific equipment and systems fitted on board the ship, which are covered by an additional class notation. Unless otherwise specified in Ch 1, Sec 2, [6], 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 Chapter 3 and Chapter 4. These surveys are to be carried out at intervals as described in Ch 2, Sec 2, 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] occurs.

1.1.4 Where specific requirements are given in this Chapter for the class renewal survey, they are additional to the applicable requirements for the annual survey.

1.1.5 For the assignment of the additional class notations, ships are to be submitted to an admission to class survey as described in Ch 2, Sec 1, [2] and Ch 2, Sec 1, [3] for new and existing installations, respectively, as applicable.

2 Additional class notations subject to additional surveys

2.1

2.1.1 The specific requirements detailed in this Chapter are linked to the additional class notation(s) assigned to the ship. Where a ship 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.

2.1.2 Tab 1 indicates which additional class notations are subject to specific requirements, and in which Section and/or Article they are specified.

Table 1 : Additional class notations for which specific survey requirements are applicable

Additional class notation	Section or Article applicable in this Chapter	Type of surveys affected by these specific requirements	Remarks
Availability of machinery: AVM-IAPS AVM-DPS AVM-IPS	Sec 2	annual survey class renewal survey	
Automated machinery systems: AUT-UMS AUT-CCS AUT-PORT	Sec 3	annual survey class renewal survey	
Monitoring equipment: MON-HULL MON-SHAFT	Sec 4	annual survey class renewal survey tailshaft survey	
Pollution prevention CLEAN-SEA CLEAN-AIR GREEN PLUS GREEN STAR 3 GREEN STAR 3 DESIGN LOWSOx (N)	Sec 5	annual survey class renewal survey	
Navigation in ice environment ICE CLASS POLAR CLASS	Sec 6	class renewal survey	

Additional class notation	Section or Article applicable in this Chapter	Type of surveys affected by these specific requirements	Remarks
PMS PMS-CM(PROP) PMS-CM(HVAC) PMS-CM(CARGO) PMS-CM(ELE) PMS-CM(FDS)	See Remarks	See Remarks	The scope and periodicity of surveys are stipulated by specific requirements given in Part F, Chapter 9
WINTERIZATION	Sec 7	annual survey	
Other notations STRENGTHBOTTOM SPM DYNAPOS VCS COVENT CARGOCONTROL COAT-WBT DIVINGSUPPORT	Sec 8	As applicable in accordance with the related Articles in Sec 8	

SECTION 2

AVAILABILITY OF MACHINERY

1 General

1.1

1.1.1 The requirements of this Section apply to ships which have been assigned one of the following additional class notations related to availability of machinery, as described in Ch 1, Sec 2, [6.2]:

AVM-IAPS

AVM-DPS or **AVM-DPS-NS**

AVM-IPS.

2 Annual survey

2.1

2.1.1 At each annual survey the Owner or his representative is to declare to the attending Surveyor that no modifications have been made to the systems affecting the notations without prior approval by the Society.

3 Class renewal survey

3.1

3.1.1 At each class renewal survey a test is to be conducted in order to ascertain that the systems affecting the notations operate satisfactorily. This test is usually to be carried out during sea trials.

SECTION 3

AUTOMATED MACHINERY SYSTEMS

1 General

1.1

1.1.1 The requirements of this Section apply to ships which have been assigned one of the following additional class notations related to automated machinery systems, as described in Ch 1, Sec 2, [6.3]:

AUT-UMS

AUT-CCS

AUT-PORT

2 Annual survey

2.1

2.1.1 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.

2.1.2 The annual 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.

3 Class renewal survey

3.1

3.1.1 The requirements given in [2] for annual 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 sea trials.

SECTION 4

MONITORING EQUIPMENT

1 General

1.1 Application

1.1.1 The requirements of this Section apply to ships which have been assigned one of the following additional class notations related to hull and tailshaft monitoring equipment, as described in Ch 1, Sec 2, [6.4]:

MON-HULL

MON-SHAFT

2 MON-HULL

2.1 Annual and class renewal survey

2.1.1 The Owner or his representative is to declare to the attending Surveyor that the hull monitoring equipment has been recently calibrated using a reference loading case.

3 MON-SHAFT

3.1 Tailshaft survey

3.1.1 When the records of the tailshaft bearing temperature readings are checked and doubts arise, the Surveyor may require the verification of the accuracy of the gauging devices.

3.2 Rotating and Azimuth Thrusters survey

3.2.1 When records of Operating hours are checked and doubts arise regarding the precision of the operating hour counter(s), the Surveyor may require the verification of the system.

SECTION 5

POLLUTION PREVENTION

1 General

1.1 Application

1.1.1 The requirements of this Section apply to ships which have been assigned one of the following additional class notations related to pollution prevention systems, as described in Ch 1, Sec 2, [6.6]:

CLEAN-SEA

CLEAN-AIR

GREEN PLUS

GREEN STAR 3

GREEN STAR 3 DESIGN

LOW SOx (N)

1.1.2 When the GREEN STAR 3 DESIGN notation is assigned, the survey requirements of [2] and [3] are to be complied with.

2 CLEAN-SEA

2.1 Annual and class renewal survey

2.1.1 The survey is, as far as applicable, to include:

a) Certificates and documents

- confirmation that the IOPP certificate is valid
- confirmation that the "International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk" or the "International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk" (ICOF CHE Certificate), as applicable, is valid
- confirmation that the "International Sewage Pollution Prevention Certificate" (ISPP Certificate) is valid
- confirmation that the "International Anti Fouling System Certificate" (AFS Certificate) or statement of compliance is valid
- confirmation that an approved SOPE Plan or SMPE Plan, as applicable, is available on board
- verification of the proper updating of the sewage record book
- confirmation that an approved Garbage Management Plan is available on board and verification of the proper updating of the garbage record book
- confirmation that the Ship Environmental Management Plan is available on board
- verification that an officer, defined as Ship Environmental Manager, is in service on board
- confirmation that the special list or manifest or a detailed stowage plan related to the harmful substances carried is available on board

b) for oily wastes

- check of the compliance of the bilge system with the approved drawings (no bypasses for overboard discharge)
- verification that a periodical calibration of the bilge water filtering equipment has been carried out when required by the Manufacturer's instructions or, in the absence of specific indications, at least every 6 months and that documents reporting the last calibration are available on board
- verification that the Oil Systems log-book is duly filled in (at least every week)
- verification that the overflow system and high level alarm, or overflow system and flow alarm in the overflow main, or two high level alarms (90% and 95%), installed on fuel oil and lubricating oil tanks with volume >10m³ are well maintained and in good working condition
- verification that each fixed container or enclosed deck area provided with fuel or lubricating oil tank vents, overflows and fill pipe connection on the weather and/or superstructure decks is well maintained and in good working condition

c) for sewage

- confirmation of the proper operation of the sewage treatment plant
- verification of the satisfactory condition of the standard sewage discharge connection
- verification that high level alarms for sewage holding tanks are well maintained and in good working condition

d) for grey water (only for living quarter barge)

- verification that the grey water record book is duly filled in (grey water discharge into the sea is to be performed at a distance of more than 4 nautical miles from the nearest land)
- verification that high level alarms for grey water holding tanks are well maintained and in good working condition

e) for garbage

- verification of the effective application of the Ship Environmental Management Plan
- verification of proper location of placards for garbage discharge
- confirmation of the proper operation of the garbage treatment plant fitted on board
- verification that the garbage record book is properly filled in
- only for living quarter barge, verification that the total quantity of wastes landed for recycling (Wr) is over the minimum limit fixed by **CLEAN SEA** regula-

tion and of corrective actions undertaken if the minimum limit has not been reached

- f) for harmful substances carried in packaged form
 - verification, to the Surveyor's satisfaction, that the harmful substances are properly stowed as specified in the above documentation
- g) for ship recycling
 - verification that the Green Passport is available on board and verification, to the Surveyor's satisfaction, of proper updating, where the ship has undergone modification work affecting the Green Passport.

3 CLEAN-AIR

3.1 Annual and class renewal survey

3.1.1 The survey is, as far as applicable, to include:

- a) Certificates and documents
 - confirmation that the Ship Environmental Management Plan is available on board.
 - confirmation that the "Engine International Air Pollution Prevention Certificates " (EIAPP Certificate or Document of Compliance) are available on board as applicable
 - confirmation that the engine technical file and record book are available on board and properly updated
 - verification that the **VCS** notation is still granted to the ship (this item applies to ships classed with one or more of the following service notations: **oil tanker - FLS tanker**)
 - verification of the records kept on board of the purchase orders and sulphur content check of the fuel and of the management of fuels when fuels with different sulphur contents are used
 - confirmation that the Manufacturer's operating manuals for incinerators are available on board
- b) for emissions of ozone depleting substances
 - verification of the availability of the operating manual detailing the procedures to be followed to minimise the risk of releasing ozone depleting substances in all the operative and emergency conditions
 - verification of the annual consumption figures of refrigerants and of corrective actions undertaken if the 10% limit has been exceeded
- c) for emissions of nitrogen oxides (NOx)
 - verification of the proper operation of the devices to control NOx emissions
 - verification that engine parameters are as specified in the engine technical file
 - verification of replacements of engine components with those specified in the engine technical file
- d) for emissions of sulphur exhaust (SOx)
 - examination of the exhaust gas cleaning system, where fitted, based on the Manufacturer's maintenance instructions

- e) for emissions from incinerators
 - examination of the incinerators in working conditions, including monitoring and control devices.

4 GREEN PLUS

4.1 Annual and class renewal survey

4.1.1 The survey is, as far as practicable, to include the checks required in [2] and [3] and, in addition, the following:

- a) verification that the marine growth prevention systems are well maintained and in good working condition;
- b) verification required by [2.1.1] d) for all ships;
- c) verification that all the additional systems and components involved in the ship's environmental index calculation (see Pt F, Ch 5, Sec 1, Tab 2 and Pt F, Ch 5, Sec 1, [7], if any) are well maintained and in good working condition;
- d) verification that all the additional procedural means involved in the ship's environmental index calculation (see Pt F, Ch 5, Sec 1, Tab 2 and Pt F, Ch 5, Sec 1, [7], if any) are followed and documented by appropriate recording;
- e) verification that adequate training on environmental issues is planned, carried out and documented for all the persons on board having influence on the environmental behaviour of the ship.

5 GREEN STAR 3

5.1 Annual and class renewal survey

5.1.1 The survey is, as far as applicable, to include:

- a) Certificates and documents
 - confirmation that the IOPP certificate is valid
 - confirmation that the "International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk" or the "International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk" (ICOF CHE Certificate), as applicable, is valid
 - confirmation that the "International Sewage Pollution Prevention Certificate" (ISPP Certificate) is valid
 - confirmation that the "International Anti Fouling System Certificate" (AFS Certificate) or statement of compliance is valid (Antifouling systems applied on existing ships and not in compliance with IMO Res./MEPC.102(48) are to be removed or sealed the next time the ship is in dry dock).
 - confirmation that the "Engine International Air Pollution Prevention Certificates" (EIAPP Certificate or Document of Compliance) are available on board as applicable
 - confirmation that the engine technical file and record book are available on board and properly updated

- confirmation that an approved SOPE Plan or SMPE Plan, as applicable, is available on board and that the ship is enrolled in Tasneef Emergency Response Service
 - verification that the VCS notation is still granted to the ship (this item applies to ships classed with one or more of the following service notations: oil tanker - FLS tanker)
 - verification of the records kept on board of the purchase orders and sulphur content check of the fuel and of the management of fuels when fuels with different sulphur contents are used
 - confirmation that the Manufacturer's operating manuals for incinerators are available on board
 - verification of the proper updating of the sewage record book
 - confirmation that an approved Garbage Management Plan is available on board and verification of the proper updating of the garbage record book
 - confirmation that the Ship Environmental Management Plan is available on board.
 - verification that an officer, defined as Environmental Ship Manager, is in service on board.
 - confirmation that the special list or manifest or detailed stowage plan related to the harmful substances carried is available on board
- b) for oily wastes
- check of the compliance of the bilge system with the approved drawings (no bypasses for overboard discharge)
 - verification that a periodical calibration of the bilge water filtering equipment has been carried out when required by the Manufacturer's instructions or, in the absence of specific indications, at least every 6 months and that documents reporting the last calibration are available on board
 - verification that the emergency equipment for accidental spillage of oil, listed in the SOPE Plan, is on board and in good condition and that the crew is confident with such equipment
 - verification that the Oil Systems log book is duly filled in (at least every week)
 - verification that the overflow system and high level alarm, or overflow system and flow alarm in the overflow main, or two high level alarms (90% and 95%), installed on fuel oil and lubricating oil tanks with volume >10m³ are well maintained and in good working condition
 - verification that each fixed container or enclosed deck area provided with fuel or lubricating oil tank vents, overflows and fill pipe connection on the weather and/or superstructure decks is well maintained and in good working condition
- c) for sewage
- confirmation of the proper operation of the sewage treatment plant
 - verification of the satisfactory condition of the standard sewage discharge connection
 - verification that high level alarms of sewage holding tanks are well maintained and in good working condition
- d) for grey water (only for living quarter barge)
- verification that the grey water record book is duly filled in (grey water discharge into the sea is to be performed at a distance of more than 4 nautical miles from the nearest land)
 - verification that high level alarms for grey water holding tanks are well maintained and in good working condition
- e) for garbage
- verification of the effective application of the Ship Environmental Management Plan
 - verification of proper location of placards for garbage discharge
 - confirmation of the proper operation of the garbage treatment plant fitted on board
 - only for for living quarter barge, verification that the total quantity of wastes landed for recycling (Wr) is over the minimum limit fixed by **GREEN STAR 3** regulation and of corrective actions undertaken if the minimum limit has not been reached
- f) for harmful substances carried in packaged form
- verification, to the Surveyor's satisfaction, that the harmful substances are properly stowed as specified in the above documentation
- g) for emissions of ozone depleting substances
- verification of the availability of the operating manual detailing the procedures to be followed to minimise the risk of releasing ozone depleting substances in all the operative and emergency conditions
 - verification of the annual consumption figures of refrigerants and of corrective actions undertaken if the allowable limit has been exceeded
- h) for emissions of nitrogen oxides (NOx)
- verification of the proper operation of the devices to control NOx emissions
 - verification that engine parameters are as specified in the engine technical file
 - verification of replacements of engine components with those specified in the engine technical file
 - examination of the incinerators in working conditions, including monitoring and control devices
- i) for emissions of sulphur exhaust (SOx)
- examination of the exhaust gas cleaning system, where fitted, based on the Manufacturer's maintenance instructions.

6 LOW SOx (N)

6.1 Annual and class renewal survey

6.1.1 The survey is to include:

- confirmation that the IAPP certificate is valid
- confirmation that detailed plans of systems and equipment to limit SOx emission in the SOx emission control areas are available on board
- confirmation that the Ship SOx Environmental Management Plan is available on board.

SECTION 6

ARRANGEMENTS FOR NAVIGATION IN ICE - ICE CLASS AND POLAR CLASS

1 General

1.1

1.1.1 The requirements of this Section apply to ships which have been assigned one of the following additional class notations related to navigation in an ice environment, as described in Ch 1, Sec 2, [6.7] (ICE CLASS) and Ch 1, Sec 2, [6.8] (POLAR CLASS):

Class notations for navigation in ice (ICE CLASS):

- ICE CLASS IA SUPER
- ICE CLASS IA
- ICE CLASS IB
- ICE CLASS IC
- ICE CLASS ID
- ICE

Class notations for navigation in ice (POLAR CLASS):

- POLAR CLASS PC1
- POLAR CLASS PC2
- POLAR CLASS PC3
- POLAR CLASS PC4
- POLAR CLASS PC5
- POLAR CLASS PC6
- POLAR CLASS PC7

2 Class renewal survey

2.1 Thickness measurements

2.1.1 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 Part F, Chapter 6 (ICE CLASS) or Part F, Chapter 7 (POLAR CLASS), as per Tab 1.

Table 1

Age of ship (in years at time of class renewal survey)		
age ≤ 5	5 < age ≤ 10	age > 10
	selected plates	all plates
		selected internal frames, stiffeners and stringers

2.2 Sea chests

2.2.1 During the bottom survey in dry condition which is to be carried out concurrently with the class renewal survey (see Ch 3, Sec 5, [2.1]), the specific arrangements related to sea chests protected against ice blocking, such as heating coil and cooling water discharge piping, are to be checked.

SECTION 7

WINTERISATION (TEMP)

1 General

1.1

1.1.1 The requirements of this Section apply to ships which have been assigned the additional class notation WINTERISATION (temp), as described in Ch 1, Sec 2, [6.9.1].

2 Annual survey

2.1 Anti-icing and de-icing arrangements

2.1.1 The anti-icing and de-icing arrangements for the following items are to be examined:

- mooring equipment
- crane for ship with service notation **PONTOON CRANE**
- anchor chain

2.2 Electrical installation

2.2.1 The ice search light on wheelhouse top is to be tested.

SECTION 8

OTHER NOTATIONS

1 General

1.1

1.1.1 The requirements of this Section apply to ships which have been assigned one of the following additional class notations described in Ch 1, Sec 2, [6.11]:

STRENGTHBOTTOM

SPM

DYNAPOS

VCS

COVENT

CARGOCONTROL

COAT-WBT

DIVINGSUPPORT.

2 STRENGTHBOTTOM

2.1 Dry-docking survey

2.1.1 The reinforced area of bottom plating and internal associated structures are to be visually examined for possible deformations, fractures or other damage. If deemed necessary, thickness measurements may be required.

3 SPM

3.1 Annual survey

3.1.1 The Owner or his representative is to declare to the attending Surveyor that no significant alterations have been made without the prior approval of the Society.

3.1.2 The annual survey is to include:

- a general examination of all components of the installation (bow chain stoppers, bow fairleads, pedestal roller fairleads, winches and capstans) to verify their satisfactory condition
- an examination of the hull structures supporting and adjacent to the installation to verify that no deformations or fractures have developed.

3.2 Class renewal survey

3.2.1 The class renewal survey is to include:

- a close-up examination of all components of the installation (bow chain stoppers, bow fairleads, pedestal roller fairleads, winches and capstans) to verify their satisfactory condition

- a close-up examination of the hull structures supporting and adjacent to the installation to verify that no deformations or fractures have developed.

Where deemed necessary by the Surveyor, non-destructive tests for measuring thickness deterioration or checking for fractures or other defects may be required.

4 DYNAPOS

4.1 Annual survey

4.1.1 The program of the annual survey may be previously agreed with the Society.

The Owner or his representative is to declare to the attending Surveyor that no significant alterations have been made without the prior approval of the Society.

4.1.2 The annual survey is to include:

- an examination of the log-books to verify the proper operation of 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
- general examination of visible parts of thrust units, including their prime movers
- general examination of the electrical power system and switchboards
- general examination of control, monitoring and alarm devices
- running test of the installation, including random test by simulation of different alarms and relevant backup systems and switching modes.

4.2 Class renewal survey

4.2.1 In general, the class renewal survey consists of the checks detailed in [4.2.3] to [4.2.6]. However, a specific program of the class renewal survey prepared by the Owner and taking into account the maintenance procedures of the Manufacturers of the system is to be submitted to the Society prior to the survey.

4.2.2 The Owner is to confirm that any modification to the software is fully documented and properly recorded.

4.2.3 Prime movers of thrust units, electrical installations and electric power generators are to be surveyed and tested to the same extent as required in Ch 3, Sec 5, [3] for similar equipment for the class renewal survey of machinery.

4.2.4 During the bottom survey in dry condition which is to be carried out concurrently with the class renewal survey (see Ch 3, Sec 5, [2.1]), the thrust units are to be generally examined.

Other checks are to be carried out, such as taking clearances, examination of the orientation device or variable pitch system, if any, verifying tightness devices, examination of results of lube oil analysis for detection of possible deterioration of internal gears and bearings. Dismantling of internal parts may be required if the above examinations are not satisfactory.

4.2.5 Sensors and position reference systems are to be tested to check their accuracy. Failure of sensors is to be simulated in order to check the related alarm system and switching logic. Switch over to the different reference systems is to be checked.

4.2.6 An operational test of the installation is to be performed, including:

- test of each thrust unit at different loads, pitches and speeds, and check of monitoring devices
- test of the thrust controls in the different available modes (automatic, semi-automatic, manual), and the switch over between the different modes
- test of the different alarms and safety systems, using simulated conditions as necessary
- test of power supply failure and verification of intended functioning in such cases
- final test to verify the capacity of the system to keep the ship in the intended position and maintain the heading, with related alarm and monitoring devices. The accuracy of the system is to be checked and compared with previous results for evaluation of drift
- test of the power management system.

5 VCS

5.1 Annual survey

5.1.1 The Owner or his representative is to declare to the attending Surveyor that no significant modifications have been made without the prior approval of the Society.

5.1.2 The annual survey is to include:

- an examination of the instruction manual to verify the layout of the complete system and confirm the correspondence to the actual system fitted on board
- a general examination of components of the system such as vapour piping (including manifold and hoses), cargo tank gauging equipment, cargo tank level alarms, vapour pressure alarms and vapour balancing, if any, to verify their satisfactory condition.

5.2 Class renewal survey

5.2.1 The requirements given in [5.1] for annual survey are to be complied with. Additionally, the following is to be carried out:

- a pressure test of the vapour piping, including manifold and hoses
- a check and test of the instrumentation (cargo tank gauging equipment, cargo tank level alarms, vapour pressure alarms)
- an inspection and test of the vapour balancing equipment, if any
- a running test of the system.

6 COVENT

6.1 Annual survey

6.1.1 The Owner or his representative is to declare to the attending Surveyor that no significant modifications have been made without the prior approval of the Society.

6.1.2 The annual survey is to include a general examination of components of the system such as ventilation piping and fans.

6.2 Class renewal survey

6.2.1 The requirements given in [6.1] for annual survey are to be complied with. Additionally, the following is to be carried out:

- an inspection of the components of the system to the same extent as required in Ch 3, Sec 5, [3] for similar equipment for the class renewal survey of machinery
- a running test of the system.

7 CARGOCONTROL

7.1 Annual survey

7.1.1 The Owner or his representative is to declare to the attending Surveyor that no significant modifications have been made without the prior approval of the Society.

7.1.2 The annual survey is to include:

- a general examination of the items of equipment regarding remote control of operations and gauging/alarms provided for all those parameters that are required to be kept under control to verify their satisfactory condition
- a running test which may be also performed by a spot check method.

7.2 Class renewal survey

7.2.1 The requirements given in [7.1] for annual survey are to be complied with. Additionally, the following is to be carried out:

- a check and test of the instrumentation fitted to the components of the system
- an overall running test of the system.

8 COAT-WBT

8.1 General

8.1.1 For the additional class notation COAT-WBT to be retained during the lifetime of the ship, the protective coatings are to be checked by the Society during the examination of the water ballast tanks at class surveys and their condition is to be assessed as GOOD, as per the definition given in Ch 2, Sec 2, [2.2.11].

The scope of the coating examination during intermediate and class renewal surveys is laid down in [8.2].

In addition, the Owner is to notify the Society of any damage to the protective coatings, as laid down in [8.3].

8.2 Intermediate and class renewal surveys

8.2.1 The protective coatings of all water ballast tanks subject to examination at intermediate and class renewal surveys are to be checked.

8.2.2 In addition, where any remarks or damage to the protective coatings have been recorded, the relevant areas inside water ballast tanks are also to be examined.

8.2.3 When the coating is found to be in less than GOOD condition, as defined in Ch 2, Sec 2, [2.2.11], the Owner is to carry out those repairs as required by the attending Surveyor to restore the coating condition to GOOD at the intermediate or class renewal surveys. Failure to carry out the above repairs will result in suspension of the additional class notation COAT-WBT.

8.3 Coating damage and repairs

8.3.1 The Owner is to keep records and inform the attending Surveyor at the first subsequent attendance on board about any damage to the protective coatings which has been found and left for further inspection or already repaired since the date of first classification or last intermediate or class renewal survey, as applicable. However, where the nature and/or extent of damage to the coating is significant, the Owner is to inform the Society for the attendance of a Surveyor before repairs are carried out.

8.3.2 Coating is to be repaired in accordance with the paint Manufacturer's recommendations.

The attending Surveyor is to check that damage to the coating has been properly repaired according to the technical specifications and that it has been restored to GOOD condition; this may be done during the intermediate or class renewal survey, or during an occasional survey, upon the Owner's request or subject to the decision of the Society.

9 DIVINGSUPPORT

9.1 Annual survey

9.1.1 The Owner or his representative is to declare to the attending Surveyor that no significant alterations have been made without the prior approval of the Society.

9.1.2 The annual survey is to include:

- a) a general examination of all components of the diving system arrangements and installation to verify their satisfactory condition
- b) an examination of the hull structures supporting and adjacent to the diving system arrangements and installation to verify that no deformations or fractures have developed
- c) a functional test of electrical systems and communication systems.

9.2 Class renewal survey

9.2.1 The class renewal survey is to include:

- a) a close-up examination of all components of the diving system arrangements and installation to verify their satisfactory condition
- b) a close-up examination of the hull structures supporting and adjacent to the diving system arrangements and installation to verify that no deformations or fractures have developed
- c) checking the ship's capability to maintain its position during diving operations
- d) a functional test of electrical systems and communication systems and measurement of insulation resistance.

Where deemed necessary by the Surveyor, non-destructive tests for measuring thickness deterioration or checking for fractures or other defects may be required.

10 FIRE

10.1 General

10.1.1

For the maintenance of the class notations FIRE, FIRE-AS, FIRE-MS and FIRE-CS as described in Ch 1, Sec 2 [6.11.19] the following applies:

- a) Chapter I of the SOLAS Convention as amended, as far as types, periodicity and scope of surveys are concerned;
- b) IMO Resolution A.997(25) "Survey guidelines under the harmonised system of survey and certification, 2007" as amended, as far as fire protection survey requirements are concerned;
- c) The "Rules for Fire Protection, Detection and Extinction for the Issue and Maintenance of Statutory Certificates other than SOLAS Certificates", as appropriate for the specific systems to be surveyed.