БЪЛГАРСКИ КОРАБЕН РЕГИСТЪР
BULGARIAN REGISTER OF SHIPPING

Rules
for
Classification and Construction

I - Ship Technology

Part 0 - Classification and Surveys



Varna
2026

Approval and entry into force

Edition 2026 is submitted to the Bulgarian Register of Shipping Technical Committee for review and approval in accordance with the applicable BRS quality procedures.

Upon approval and entry into force, Edition 2026 supersedes Edition 2018. It incorporates the revised classification and survey procedures, while retaining the technical requirements of Edition 2018 except where expressly amended.

Approval resolution and date: To be entered following Technical Committee approval.

Date of entry into force: To be determined by BRS.

Application

Unless expressly stated otherwise, the amendments introduced in Edition 2026 apply to applications for classification submitted on or after its date of entry into force; surveys and technical decisions carried out or taken on or after that date; and vessels already classed with BRS insofar as the amendments concern maintenance, suspension, reinstatement or withdrawal of class.

The technical requirements applicable to construction remain those determined under Section 2, 1.1.1. Any retrospective application is subject to Section 1, 2.5. Applicable statutory requirements and Flag Administration authorizations remain unaffected.

Record of editions

2012	Previous edition identified in the 2018 Rules.
2018	Entry into force on 1 July 2018.
2026	Revised edition submitted for Technical Committee review.

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Section 1

GENERAL TERMS AND CONDITIONS

1. GENERAL

Bulgarian Register of Shipping (BRS) is an independent organization of technical experts.

BRS acts impartially and objectively.

The right of interpretation of their technical Rules rests with BRS alone.

The respective latest version of the General Terms and Conditions as well as the pertinent technical Rules are applicable to all services rendered by BRS, included those rendered within the scope of their statutory functions, even if no separate agreement has from case to case been reached regarding their applicability. Where contractual relations are established between BRS and any persons others than the client, the relevant technical Rules and the provisions of 7.1 to 7.7 below will also apply to such third parties.

2. RESERVATION CLAUSE

2.1 No person or organization other than BRS, or a person expressly authorized by BRS, may issue a certificate, confirmation or statement in the name of BRS.

2.2 The issuance of a certificate or approval by BRS does not relieve the Owner, Shipyard, designer, manufacturer, Manager, Master or any other responsible party of their respective legal, contractual or technical responsibilities.

2.3 No statement may be made that a vessel, product, material, component or installation complies with the BRS Rules unless the relevant approval, survey or certification has been completed and confirmed by BRS.

2.4 Certificates issued by BRS may be suspended, withdrawn, cancelled or invalidated only in accordance with these Rules, the applicable statutory requirements, the terms of the relevant authorization or the conditions stated in the certificate.

2.5 Amendments to the BRS Rules shall apply from their stated date of entry into force. Such amendments shall not retrospectively alter the technical basis upon which an existing vessel or product was approved, except where:

– expressly required by the amended Rules;

– required by an applicable international convention, code, law or Flag Administration;

– necessary as a result of a serious safety concern; or

– agreed between BRS and the Client.

2.6 The application of the BRS Rules shall be without prejudice to the intellectual property rights or other legal rights of third parties.

3. SCOPE AND PERFORMANCE

The kind and scope of services rendered by BRS are based on the relevant agreements concluded, subject to the Rules for Classification and Construction applicable at the time of survey and/or inspection unless otherwise provided by separate express agreements. It is the client's obligation to ensure that the services of BRS can be rendered smoothly and without delay. BRS will, to the extent requested, be granted unrestricted access and the right of inspection.

Any information, drawings, etc. required for performance of the functions and activities of BRS must be made available in due time.

4. CONFIDENTIALITY AND DISCLOSURE OF INFORMATION

4.1 BRS shall treat as confidential the technical documents, reports, commercial information and other non-public information received in connection with its services.

4.2 BRS may disclose information without the prior consent of the Client where such disclosure is:

– required by applicable law, regulation, court order or competent authority;

– required by or provided to a Flag Administration or Port State Control authority;

– necessary for the performance of statutory functions or obligations arising from an authorization granted to BRS;

– necessary for transfer of class or cooperation with another Classification Society or Recognized Organization;

– necessary to protect life, the marine environment or the safety of a vessel; or

– necessary for the investigation of a casualty, detention, suspected fraud or unauthorized use of BRS certificates or identity.

4.3 BRS may publish or make available information concerning:

– the identity and principal particulars of vessels classed by BRS;

– class characters and notations;

– the validity, suspension, reinstatement, withdrawal or expiry of class; and

– the validity and verification status of certificates issued by BRS.

4.4 Disclosure shall be limited to the information necessary for the relevant purpose and shall comply with applicable confidentiality and data-protection requirements.

4.5 BRS may store and process documents and information in electronic systems and may use secure service providers for that purpose, subject to appropriate confidentiality and data-protection measures.

4.6 The Client shall ensure that it is entitled to provide BRS with any personal data, technical documentation or third-party information submitted in connection with the requested services.

5. REMUNERATION

For services rendered by BRS fees are to be paid in accordance with the tariffs of BRS or on the basis of the price quoted in the offer. In addition thereto, BRS will charge any extra expenses incurred in connection with the services rendered (e.g. traveling or other expenses and, where applicable, any value added/ turnover tax).

Additional expenses, which are incurred, for instance, as a result of poor organization on the part of the client or of repetition of tests and for which BRS is not responsible, will be charged separately at the respective current cost rates.

6. PAYMENT OF INVOICES

6.1 The fees for all services rendered by BRS are due for payment 30 days after the date of invoice. On default BRS is - without prejudice to any further rights - entitled to charge interest, to withhold certificates and other documents and/or to suspend or revoke the validity of certificates, subject to Section 2, 2.4, Section 3, 1.4.4 and the applicable statutory authorization. Withdrawal of class for unpaid fees is subject to the formal notice required by Section 2, 2.4.4.

6.2 Any rights of lien or retention in favor of the client, statutory or otherwise are hereby excluded. Likewise excluded are any rights of set-off with client's counter-claims, unless such counter- claim is undisputed or finally adjudicated upon the courts.

7. LIABILITY

7.1 Liability of BRS for defects as to quality shall in the context of a contract for work and services be limited to remedying such defects. In the event this is unsuccessful, the client shall have the right to claim a reduction in the contractual price or to withdraw from the contract.

7.2 Claims of the client for defects as to quality shall become time barred one year after acceptance by the client of the performance by BRS of its obligations, in so far as such defects shall not have been wrongfully concealed by BRS or caused by the willful misconduct of BRS.

7.3 Furthermore, except in case of breach by BRS of an essential contractual obligation, liability of BRS for negligent performance of its obligations towards the client shall be limited to five times the remuneration of the individual obligation to which the breach relates. This limitation of liability shall also apply to claims for damages by the client based on the tortious negligence of BRS. In the event of willful misconduct or gross negligence on the part of BRS, the liability of BRS shall be determined as provided for by law.

7.4 Personal liability of the organs of BRS or persons to whom BRS resorts to perform its obligations is excluded except in case of their willful misconduct or gross negligence.

7.5 The provisions of paragraphs 7.3 and 7.4 above regarding limitation of liability shall not apply to claims for death, personal injury or damage to health.

7.6 The attention of the client is expressly drawn to the fact that it has the possibility of agreeing with BRS that the liability of BRS can be extended beyond what is provided for in these General Terms and Conditions. However, such extension of liability is subject to the client demanding this of BRS, to the insurers of BRS accepting to take on such additional risk and to the client bearing any additional insurance cost associated with such increase in liability.

7.7 Claims for damages which are not claims for defects pursuant to paragraph 7.1 hereof, with the exception of tortious claims and/or claims brought under the law on product liability, shall be time barred one year after acceptance by the client of the performance by BRS of the obligation in question, in so far as there was no willful misconduct on the part of BRS.

8. PLACE OF PERFORMANCE, JURISDICTION - GOVERNING LAW

8.1 The place of performance for all obligations resulting from or in connection with the respective order is Varna, unless otherwise provided.

8.2 The exclusive place of jurisdiction for any legal action against BRS is Varna, provided the client is a merchant in the legal sense.

8.3 Bulgarian law will govern the performance of the order and all claims resulting from or in connection with the order.

9. SEVERABILITY CLAUSE

In the event of individual provisions of the Order or these General Terms and Conditions being or becoming partly or as a whole ineffective, this will not affect the effectiveness of the remaining conditions. In the event of doubts as to the interpretation of the present General Terms and Conditions, the Bulgarian text will be authoritative.

10. DEFINITIONS AND ABBREVIATIONS

For the purpose of these Rules, unless the context requires otherwise:

Administration / Flag Administration means the government of the State whose flag the vessel is entitled to fly, including any duly authorized maritime authority acting on its behalf.

BRS means Bulgarian Register of Shipping.

BRS Head Office means the central office of Bulgarian Register of Shipping responsible for technical review, approval and final decisions concerning classification and statutory services.

BRS Representative means a company or person authorized by BRS to perform specified representative or coordination functions within the scope of a written authorization. A BRS Representative shall not have authority to make final classification decisions unless expressly authorized by BRS Head Office.

BRS Surveyor / Surveyor means a person duly authorized by BRS to carry out surveys, inspections, audits or other technical activities within the scope of the authorization granted.

Owner means the registered owner of the vessel or any other organization or person who has assumed responsibility for the vessel and the obligations associated with its classification.

Manager means the company or person responsible for the technical or operational management of the vessel on behalf of the Owner.

Operator means the Owner, Manager, Bareboat Charterer or any other organization or person responsible for the operation of the vessel, as applicable.

Recognized Organization (RO) means an organization authorized by a Flag Administration to perform statutory surveys, audits, verification or certification on its behalf.

Classification Society means an organization which develops and applies technical rules for the design, construction and survey of ships and other marine units and which assigns and maintains class in accordance with those rules.

Class Certificate means a certificate issued by BRS confirming the class assigned to a vessel, machinery, installation or equipment, subject to the conditions and limitations stated therein.

Condition of Class means a specific requirement imposed by BRS which must be completed by a stated due date in order to maintain class.

Recommendation means a requirement, observation or technical measure recorded by BRS which is to be dealt with within the period or under the conditions specified by BRS. The record shall distinguish a mandatory requirement affecting maintenance of class from an observation for information only. An observation for information only does not, by itself, trigger suspension of class.

Statutory Certificate means a certificate issued under an applicable international convention, code or national requirement by or on behalf of a Flag Administration.

Electronic Certificate means a certificate issued in electronic form and authenticated by a verification method accepted by BRS.

Remote Survey means a survey performed wholly or partly without the physical attendance of a Surveyor on board, using electronic communication, documents, photographs, video, measurements or other evidence accepted by BRS.

11. PROTECTION OF BRS DOCUMENTS AND IDENTITY

11.1 The name, abbreviation, logo, stamps, electronic signatures, certificate forms, approval marks, QR codes and other identifying elements of BRS may be used only with the written authorization of BRS and within the scope of that authorization.

11.2 No person may issue, endorse, alter or fraudulently present as valid any BRS certificate, report, approval or other official document unless duly authorized to do so. This does not prohibit faithful copying or presentation of an authentic document for its intended purpose; a copy shall not be represented as a newly issued original.

11.3 The Owner, Manager and other interested parties shall verify the authenticity and validity of BRS certificates through the verification system designated by BRS or directly with BRS Head Office where there is any doubt.

11.4 Any suspected falsification, unauthorized alteration, misuse or fraudulent presentation of a BRS document shall be reported to BRS without delay.

11.5 BRS may invalidate any document which:

– has been issued or altered without authorization;

– contains materially incorrect or misleading information;

– has been obtained on the basis of false or incomplete information; or

– is used outside its stated scope, validity or conditions.

11.6 BRS may notify the Flag Administration, Port State Control authorities, law-enforcement authorities or other relevant parties of any suspected fraudulent or unauthorized use of BRS documents or identity.

Section 2

CLASSIFICATION

1. GENERAL

1.1 Rules and Regulations

1.1.1 Underlying BRS Rules and regulations

The classification of ships, of other floating units and of any pertinent equipment is based on

– the respective latest edition of the Rules for Classification and Surveys of Bulgarian Register of Shipping (BRS), as well and on

– the Construction Rules relating to the respective ship type or installation, as applicable on the date of conclusion of the contract between shipyard (manufacturer) and shipowners (client). See also 4.1.

The "Construction Rules" cover Rules for materials and welding and any other special Rules published by BRS that may be applicable from case to case 1.

1.1.2 Statutory rules and regulations

National rules and regulations as, for instance, adopted by the respective flag state will as a matter of principle not be affected by the Rules for Classification and Surveys. Various requirements stipulated by international conventions are taken into account in the BRS Rules. See also Section 3, 1.4.

1.1.3 Port State Control (PSC)

1.1.3.1 The Owner, Manager, Bareboat Charterer or any other party responsible for the operation of a ship classed with BRS shall inform BRS without delay, and in any case not later than 24 hours, of:

– any detention of the ship by a Port State Control authority;

– any restriction of operation, prohibition of departure or other measure imposed by a competent authority;

– any PSC deficiency which affects or may affect the class of the ship; and

– any PSC deficiency related to statutory certification issued by BRS.

1.1.3.2 The obligation to inform BRS shall also apply where BRS maintains the class of the ship but one or more statutory certificates have been issued by another Recognized Organization, whenever the deficiencies concerned affect or may affect:

– the hull, machinery, electrical installations or other equipment covered by BRS class;

– the validity or conditions of the BRS Class Certificate; or

– the safe operation, structural integrity or seaworthiness of the ship.

1.1.3.3 The Owner or Manager shall provide BRS with a copy of the PSC inspection report, the detention notice, where applicable, and details of the corrective actions taken or proposed.

1.1.3.4 BRS may require an occasional or extraordinary survey before the vessel resumes service or within a period specified by BRS. The scope of the survey shall be determined by BRS Head Office, taking into account the nature and seriousness of the deficiencies.

1.1.3.5 Failure to notify BRS or to provide the requested information may result in suspension of class.

1.1.4 Statutory certification by another Recognized Organization

1.1.4.1 Where BRS is requested to assign or maintain class while one or more statutory certificates are issued by another Recognized Organization, acceptance of such an arrangement shall be subject to the prior approval of BRS Head Office.

1.1.4.2 BRS reserves the right to refuse or discontinue a Class Only arrangement where, in the opinion of BRS, the separation of classification and statutory certification may affect the effective control of the vessel's technical condition, safety or compliance with the applicable requirements.

1.1.4.3 The Owner or Manager shall provide BRS with:

– copies of all statutory certificates and their supplements;

– the current statutory survey status;

– details of any outstanding deficiencies, conditions, recommendations or exemptions;

– copies of relevant survey and audit reports when requested by BRS; and

– evidence that the issuing organization is duly authorized by the Flag Administration.

1.1.4.4 The Owner or Manager shall immediately inform BRS of:

– the suspension, withdrawal, cancellation or limitation of any statutory certificate;

– any change of the Recognized Organization responsible for statutory certification;

– any condition or deficiency which affects or may affect BRS class; and

– any intention to transfer statutory certification to another organization.

1.1.4.5 BRS may require an occasional or extraordinary survey, additional documentation or corrective action whenever the status of the statutory certification raises concerns regarding the vessel's class, structural integrity, machinery, electrical installations or safe operation.

1.1.4.6 Failure to provide the required information, the absence of valid statutory certification or the existence of unresolved deficiencies affecting class may result in suspension or withdrawal of BRS class.

1.2 Scope

1.2.1 Classification covers the ship's hull and machinery, including all electrical installations. For sailing ships, the rigging is also included.

1.2.2 On application, certain installations - e.g. refrigerating installations - may be classed separately (see 1.2.5).

1.2.3 BRS reserves the right to extend the scope of classification to all equipment and machinery used in the operation of the ship, which by their character and/or arrangement may impair the safety of human life, of the ship and her cargo or of the environment.

1.2.4 Structural systems and equipment determining the ship type are subject to examination within the scope of classification, if the ship type is specified in the form of a notation affixed to the character of classification (cf. 3.3.1.3).

1.2.5 Refrigerating installations

1.2.5.1 For the purpose of the present rules the following are considered to be refrigerating installations:

– Cargo refrigerating installations for the refrigeration of insulated cargo holds,

– container refrigerating installations for the refrigeration of insulated containers, provided that the refrigerating installations are permanently installed and form an integral part of the ship.

The refrigerating installation includes the technical installations required for power supply.

1.2.5.2 Reefer units which can be connected to a container and transported in combination therewith, and containers with or without a reefer unit, are subject to BRS "Regulations for the Construction, Repair and Testing of Freight Containers".

1.3 Class certificate, characters of classification

1.3.1 Assignment of class, issuance of the class certificate, and assignment of the corresponding character of classification and notations thereto are conditional upon proof being furnished of compliance with the BRS Construction Rules in force on the date of placing of the order (see 1.1.1).

1.3.2 BRS reserves the right to add special remarks in the class certificates, as well as information regarding operation of the ship which is of relevance for the vessel's class.

1.4 BRS Register of Ships

1.4.1 Classification data relating to ships and other units classed by BRS shall be maintained in the BRS Register of Ships.

1.4.2 The Register may be maintained and published in electronic or other form determined by BRS and may include, as applicable:

– vessel identification particulars;

– characters of classification and class notations;

– validity and status of class;

– dates of relevant periodical surveys;

– suspension, reinstatement or withdrawal of class; and

– other information considered appropriate by BRS.

1.4.3 The classification data shall be updated following review and acceptance by BRS Head Office of the relevant survey reports and supporting documentation. An automatic suspension takes effect when its prescribed trigger occurs, irrespective of the time at which the Register is updated.

1.4.4 BRS may provide an electronic facility for verification of the vessel's class status and the authenticity of certificates issued by BRS.

1.4.5 Information published in the BRS Register reflects the status recorded by BRS at the time of the latest update. Where confirmation of the current class status is required, an official statement or certificate shall be obtained from BRS Head Office.

1.4.6 Refrigerating installations classed by BRS shall be recorded in the Register with their character of classification and included in the records of ships holding refrigerating installation certificates.

2. VALIDITY OF CLASS

2.1 Period of class The hull, the machinery and any special equipment classed have the same period of class (duration of one class period). The class continues to be valid, provided that the hull and the machinery are subjected to all surveys stipulated and that any repairs required are carried out to the satisfaction of BRS (cf. Sections 3 and 4).

2.2 Prerequisites for validity of class

2.2.1 The class assigned by BRS is valid only subject to the conditions stated in the class certificate (e.g. range of service, freeboard, main engine output). Class assignment is conditional upon the ship, including her machineries, being loaded and operated such as to comply with the design concept, and with the applicable rules and regulations.

This also applies to the distribution of cargo and ballast, if necessary to the securing of cargo, as well as to the operation of the ship in heavy weather.

2.2.2 If the hull and/or machinery are not subjected to the prescribed surveys on their due dates, vessel's class will be suspended for both hull and machinery.

If special shipboard equipment classed is not subjected to the prescribed surveys on their due dates, the class of the special equipment only will be suspended.

2.2.3 Damage, casualty and defects affecting class

2.2.3.1 The Owner or Manager shall inform BRS without delay of any casualty, damage, defect, failure or event which affects or may affect the vessel's class, including:

– grounding, collision or contact damage;

– fire, explosion or flooding;

– structural damage, deformation, cracking or excessive corrosion;

– failure of the main propulsion, steering gear, electrical generating plant or other essential machinery;

– damage affecting watertight or weathertight integrity;

– pollution incidents connected with damage to classed equipment; and

– any other event affecting the seaworthiness or safe operation of the vessel.

2.2.3.2 The initial notification shall include, as far as available, details of the event, the extent of the damage, the vessel's position and intended port of call, photographs and information concerning any temporary measures taken.

2.2.3.3 A survey shall be arranged at the first suitable opportunity and, unless otherwise agreed by BRS, not later than the vessel's arrival at the next port.

2.2.3.4 Subject to the emergency measures permitted by 2.3.5, no permanent repair affecting class shall be commenced without prior agreement with BRS. Temporary repairs may be accepted only for a period and under conditions specified by BRS.

2.2.3.5 Failure to notify BRS, to arrange the required survey or to comply with the repair conditions imposed by BRS may result in suspension of class.

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

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

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

2.2.5 The spare parts stipulated be the Construction Rules to be carried on board must be in a condition ensuring usability.

2.2.6 In exceptional cases, following inspection of hull and machinery, performance of the repairs required for maintenance of the original class may be dispensed with, if owners agree to the class and/or the range of service being restricted, or possibly a higher freeboard being assigned.

2.2.7 Apart from the class certificates any other documentation of significance for classification is to be kept on board and made available to the Surveyor on request, such as

– reports on surveys previously performed

– approved drawings and other documentation handed out to owners together with the class certificates and containing particulars or instructions of significance in respect of the classification requirements (e.g. use of higher-tensile steel; lists of spare parts).

2.2.8 Changes affecting the vessel's class records

The Owner or Manager shall inform BRS without delay of any change concerning:

– the registered Owner;

– the technical or ISM Manager;

– the Bareboat Charterer, where applicable;

– the vessel's name, flag or port of registry;

– the vessel's principal particulars or intended service;

– the organization responsible for statutory certification; or

– any other information recorded in the Class Certificate or BRS Register.

2.2.9 Where a change may affect the basis upon which class was assigned, BRS may require submission of additional documentation, approval, survey or issuance of a revised Class Certificate.

2.2.10 A change of ownership, management, flag or name shall not automatically invalidate class. However, class may be suspended where:

– BRS has not been informed of the change;

– documents or surveys required by BRS has not been provided or completed;

– the vessel is operated under conditions inconsistent with the assigned class; or

– continuation of class is not accepted by BRS following its review of the change.

2.3 Repairs, alterations and conversions

2.3.1 Damage, wear or defects affecting class shall be permanently repaired to the satisfaction of BRS.

2.3.2 Planned repairs, alterations or conversions affecting the hull, machinery, electrical installations or other classed equipment shall be notified to BRS before the work commences.

2.3.3 The repair or conversion procedure, relevant drawings, material specifications and other technical documentation required by BRS shall be submitted for review and approval before implementation.

2.3.4 Repairs, alterations and conversions affecting class shall be carried out under the survey and supervision of BRS to the extent determined by BRS Head Office.

2.3.5 In an emergency, the Master may take such immediate measures as are necessary to protect life, the vessel or the environment. BRS shall be informed as soon as practicable of the circumstances, the measures taken and any further repairs proposed.

2.3.6 Temporary repairs may be accepted for a limited period and subject to operational restrictions or other conditions specified by BRS. Permanent repairs shall be completed within the period prescribed by BRS.

2.3.7 Materials, components, welding procedures, workshops and personnel used for repairs or conversions shall comply with the applicable BRS requirements or with equivalent standards accepted by BRS.

2.3.8 Where repairs, alterations or conversions affecting class have been carried out without notification or survey by BRS, the class may be suspended until the work has been examined and accepted by BRS.

2.3.9 Following a major conversion, BRS may require a new class notation, additional surveys, approval of revised documentation or commencement of a new class period.

2.4 Suspension, reinstatement, withdrawal and reassignment of class

2.4.1 Suspension of class

Subject to an extension or postponement expressly permitted by these Rules and approved in accordance with Section 3, 1.1.13, the class of a vessel shall be suspended:

– when a periodical survey has not been completed within the prescribed survey window;

– when the Class Renewal Survey has not been completed by the expiry date of the Class Certificate, unless an extension has been granted by BRS;

– when a Condition of Class, mandatory recommendation affecting class, repair or other requirement for maintenance of class imposed by BRS has not been completed within the specified time;

– when the vessel is operated outside the service restrictions or other conditions stated in the Class Certificate;

– when damage, alterations or repairs affecting class have not been reported to BRS or surveyed as required; or

– when information or access necessary for the maintenance of class is refused or not provided.

2.4.2 Suspension affecting the ship's hull or machinery class shall apply to both hull and machinery, in accordance with 2.2.2. Where the cause affects only separately classed special equipment and does not affect the ship's class, suspension may be confined to that equipment.

The first two survey-related cases above take effect automatically when the prescribed deadline expires. In the other cases, BRS Head Office shall determine and record the basis and effective date of suspension.

2.4.3 Reinstatement of class

Suspended class may be reinstated after the overdue surveys, repairs, Conditions of Class or other requirements have been satisfactorily completed and accepted by BRS Head Office.

Reinstatement shall normally take effect from the date on which BRS confirms that the requirements for reinstatement have been completed. BRS Head Office shall record the effective date. Reinstatement shall not erase the preceding period of suspension.

2.4.4 Withdrawal of class

The class of a vessel may be withdrawn:

– at the written request of the Owner;

– when the vessel is sold for recycling or declared a total loss;

– when the Owner does not intend to maintain BRS class;

– when the vessel remains continuously suspended for more than six months, unless otherwise accepted by BRS in exceptional circumstances;

– when the Owner repeatedly or seriously fails to comply with the Rules or instructions of BRS;

– when surveys, repairs or corrective actions necessary for reinstatement are refused or cannot be satisfactorily completed; or

– when fees due to BRS remain unpaid after formal notice.

2.4.5 Suspension or withdrawal of class shall be recorded in the BRS Register. The Owner and, where applicable, the Flag Administration and other relevant parties shall be informed.

2.4.6 During suspension the Class Certificate shall not be used as evidence of valid class. Following withdrawal of class, the Class Certificate and any related documents identified by BRS shall cease to be valid and shall be returned to BRS or cancelled as instructed.

2.4.7 Reassignment of class

Following withdrawal of class, BRS may reassign class after completion of a survey having the scope determined by BRS Head Office. The scope shall not be less than that necessary to verify that the vessel complies with the applicable requirements and that all overdue surveys, repairs and Conditions of Class have been satisfactorily dealt with.

2.5 Laid-up ships

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

Apart from this, the regulations of the preceding paragraphs are to be applied.

2.5.2 Upon expiry of the class, a survey substituting the class renewal survey will have to be performed. An entry on the class renewal will be made in the class certificate, with the notation "Laid-up Ship", and published in the Register Book.

2.5.3 At the time of recommissioning a thorough survey of the entire machinery will have to be performed in addition to the outstanding periodical surveys. Depending on the duration of the laying-up period, a sea trial and/or recommissioning trials of specific installations and/or components will have to be carried out.

3. CHARACTERS OF CLASSIFICATION AND NOTATIONS

3.1 General

3.1.1 Within the scope of classification, the characteristic features of hull, machinery and equipment are reflected in the Character of Classification (see 3.2) and Notations affixed to the Character of Classification (see 3.3).

Some examples of class notations and certificate entries as per 1.3.2 are quoted in 3.3.1 (hull), 3.3.2 (machinery) and 3.2.5 (special equipment).

(A list of class notations can be obtained from BRS.)

Yachts and small watercraft: See 6.

3.1.2 Class designation

The following example shows a complete class designation for hull and machinery:

	Characters of Class	Notations
Hull	BR 100A5	Ice 1CONTAINER SHIP
Machinery	BR MC	Ice 1 AUT

3.2 Characters of classification, definitions

3.2.1 Hull

100 A5 The ship's hull fully complies with the requirements of the Construction Rules of BRS or other rules considered to be equivalent.

90 A 3, 80 A 2, 70 A 1 (as examples):

The ship's hull does not comply or no longer fully complies with the requirements of the Construction Rules of BRS; however, the class may be maintained for a shorter period and/or with shorter survey intervals.

The figures 100, 90, etc. indicate the maintenance condition of the ship's hull in relation to the requirements of the Construction Rules, taking into account the permissible corrosion and wear tolerances. The figures 5, 3, etc. indicate the duration of the period of class, in years.

3.2.2 Machinery

MC The machinery and all installations covered by classification comply with the requirements of the Construction Rules of BRS or other rules considered to be equivalent.

A –MC The machinery of non-self-propelled vessels and floating units complies with the requirements of the Construction Rules of BRS or other rules considered to be equivalent.

$\overline{\text{MC}}$, $\overline{\text{A -MC}}$ The machinery does not comply or, no longer fully complies with the requirements of the Construction Rules of BRS, but functional safety and seaworthiness are ensured for the envisaged service.

3.2.3 Survey, supervision of construction

The notations have the following meaning:

BR Hull, machinery and/or special equipment (e.g. refrigerating installation) have been constructed:

– under the supervision of BRS,

– in accordance with the Construction Rules of BRS,

– from materials and components tested under BRS supervision, as applicable

BR Hull, machinery installation or special equipment have been constructed under the supervision of and in accordance with the rules of another recognized classification Society and have later on been classed with BRS.

3.2.4 Subdivision, damage stability

3.2.4.1 General markings

□ For the hull proof of subdivision and damage stability has been furnished.

BR
BR Ships constructed under supervision as stated in 3.2.3 above, and for which proof of subdivision and damage stability has been furnished, one of the two notations shown on the left are assigned

3.2.4.2 Special markings

The proof of damage stability is specified by an additional 5-digit marking shown in Register Book and in the (Appendix to the) Certificate; see 1.3.2.

The first two digits represent the ship type (letter) and the damage stability regulations to be applied (figure), see Table 2.1.

The letter following in the third place indicates whether the deterministic (D) or the probabilistic (P) damage stability assessment method has been applied.

The fourth and fifth digits, i.e. one digit each, specify the procedure applied (see Table 2.2):

– For ships assessed according to the deterministic method the figures define the subdivision status assumed in the damage stability calculation.

– For ships assessed according to the probabilistic method the figures state, in percent, the required survival probability.

Table 2.1

P1---	SOLAS 48	**C2---**	SOLAS Amendments 90/91, Chap. II-1, Reg 25
P2---	SOLAS 60		
P3---	IMO Resolution A.265		
P4---	SOLAS 74	**S1---**	Code of Safety for Dynamically Supported Craft
P5---	SOLAS Amendment 88, Chap.II-1, Reg 8		
P6---	IMO Resolution A.265 simplified	**S2---**	MODU Code
		S3---	IMO Resolution A.469
T1---	Bulk Chemical (BCH) Code	**S4---**	Code of Safety for Special Purpose Ships
T2---	Gas Carrier (GC) Code	**S5---**	IMO Resolution A.673
T3---	MARPOL Convention, Annex 1	**S6---**	Code of Safety for High Speed Craft
T4---	Intern. Bulk Chemical (IBC) Code		
T5---	Intern. Gas Carrier (IGC) Code	**I1---**	Rheinschiffs-Untersuchungsordnung,Chapt.11
		I2---	ADNR
C1---	Intern.Convention on Load Lines (ILLC), Reg. 27	****---**	Other, not precisely defined damage stability regulations

The letters have the following significance: **P -** Passenger ships **C -** Cargo vessels **I -** Inland vessels **T -** Tankers **S -** Special-purpose ships

Table 2.2

--D33	= 3-Comp.-Status, throughout entire ship's length
--D22	= 2-Comp.-Status, throughout entire ship's length
--D21	= 2-Comp.-Status, partial 1-Comp. status for specified compartments (e.g. engine room)
--D20	= 2-Comp.-Status, without damage to specified compartments (e.g. engine room)
--D11	= 1-Comp.-Status, throughout entire ship's length
--D10	= 1-Comp.-Status, without damage to specified compartments (e.g. engine room)
--P72	= required subdivision index 72% (example)

Accordingly, ships which owing to their suitability for different kinds of services have been assigned several type markings are likewise assigned several markings for their damage stability.

3.2.5 Special equipment

3.2.5.1 Cargo refrigerating installations - cargo vessels

KAZ Both in respect of hull and machinery, the cargo refrigerating installation fully complies with the requirements of the Construction Rules of BRS or other rules considered to be equivalent.

$\overline{\text{KAZ}}$ The cargo refrigerating installation does not in all respects comply with the requirements of the Construction Rules of BRS, but functional safety and seaworthiness are ensured for the envisaged service.

3.2.5.2 Cargo refrigerating installations - fishing vessels

RIC Both in respect of hull and machinery, the cargo refrigerating installation fully complies with the requirements of the BRS Construction Rules for Fishing Vessels or other rules considered to be equivalent.

$\overline{\text{RIC}}$ The cargo refrigerating installation does not in all respects comply with the requirements of the Construction Rules of BRS, but functional safety and seaworthiness are ensured for the envisaged service.

3.2.5.3 Diving systems

TAZ The diving system complies with the requirements of the BRS Construction Rules for Diving Systems.

3.3 Notations affixed to the character of classification, entries in the certificate

3.3.1 Hull (design, special dimensioning and/ or equipment)

3.3.1.1 Range of service

3.3.1.1.1 Seagoing ships

Ships complying with the construction rule requirements for a restricted range of service only will have the notations specified below affixed to their character of classification.

M (Restricted International Service)

This range of service is limited, in general, to trade along the coast, provided that the distance to the nearest place of refuge2 and the offshore distance do not exceed 200 nautical miles, as well as to trade in the North Sea and within enclosed seas, such as the Mediterranean, the Black Sea and waters with similar seaway conditions. Trade to Iceland, Spitsbergen and the Azores is exempted.

K (Coastal Service)

This range of service is limited, in general, to trade along the coasts, provided that the distance to the nearest place of refuge3 and the offshore distance do not exceed 50 nautical miles, as well as to trade within enclosed seas, such as the Black Sea and gulfs with similar seaway conditions.Where a permissible distance of less than 50 nautical miles has been fixed for a ship, a relevant distance will be added in brackets behind the Notation K into the class certificate [e.g. K (20)].

W (Sheltered Water Service)

This range of service is limited to trade in shoals, bays, haffs and firths or similar waters, where heavy seas do not occur.

The notations may possibly be assigned on the basis of the seaway conditions prevailing in the respective service area (e.g. official seaway statistics).

3.3.1.1.2 Inland waterway service

I (Inland Waterway Service)

Inland waterways shall comprise:

– All national inland waterways

– All European inland waterways included in trading area “Zone 3” according to ECE Res. No. 34 (Trans/Sec. 3/104 Add. 2) as Danube river and river water system Rhein – Main – Danube

– Waterways / channels in way of Holland ports Amsterdam and Rotterdam included in trading area "Zone 2" according to ECE Res. No. 34

– Other inland waterways with "similar waterway condition as Zone 2 and Zone 3" with wave height ($hB \leq 1{,}2$ m and $hB \leq 0{,}6$ m) respectively with margin 5%.

The ships with determined range of service will be supplemented by indication of respective trading area or river system, e.g. I (Danube - Zone 3).

3.3.1.2 Ice strengthening

Ships and machinery installations, which comply with the requirements of the Construction Rules relating to strengthening for navigation in ice, will have one of the ("Ice Class") notations specified below affixed to the character of classification. Except for notation Ice 0, which on application may be assigned to the hull or the machinery installation only, hull and machinery must always be assigned the same ice class. If the hull is constructed such as to comply with a higher ice class, this will be noted in the appendix to the certificate.

Ice, Ice 0, Ice 1, Ice 2, Ice 3, Ice 4: Hull and machinery have been designed such as to comply with the requirements for navigation in ice, with index 4 representing the highest notation. (Notations Ice 1 to Ice 4 correspond to ice classes IC to IA "Super" of the Finnish/ Swedish Ice Class Rules of 1985.)

Note: With regard to ice strengthening, vessel's hull and machinery comply with the requirements of the Construction Rules (editions until 1986) the ice notations УЛ, Л, Л1, Л2, Л3 and Л4, are replaced by ice notations Ice, Ice 4, Ice 3, Ice 2, Ice 1 and Ice 0 respectively. (In this case the Finish/Swedish ice classes IC to IA "Super"cannot be assigned.)

Ice F Hull and machinery of fishing vessels (in particular those trading in waters around Greenland and Labrador and/or in comparable sea waters) have been designed such as to comply with the relevant requirements of the BRS Rules for Fishing Vessels.

ARC1 to ARC4: Ice-breakers and ice-breaking cargo ships, including their machinery installations, have been designed such as to comply with the requirements of the Construction Rules for navigation in arctic waters.

Note: For navigation in the arctic waters of Canada reference should be made to the requirements of the Canadian "Arctic Shipping Pollution Prevention Regulations", October 1972. BRS issue the "Arctic Pollution Prevention Certificate" required by these Regulations.

3.3.1.3 Ship type/kind of cargo carried

3.3.1.3.1 Ships of a special type, design or construction, or designed to carry defined cargoes, will have a relevant descriptive notation affixed to their characters of classification, as illustrated by the following examples.

Yachts/small watercraft: See 6.

3.3.1.3.2 Dry cargo vessels

CONTAINER SHIP

Ships intended exclusively for the carriage of containers and equipped with the appropriate facilities.

OPEN TOP

Hatchcoverless Container Ships equipped with the appropriate facilities

GENERAL CARGO SHIP

Ships constructed for the carriage of general cargo which will not be carried in containers.

EQUIPPED FOR CARRIAGE OF CONTAINERS

General Cargo Ships carrying containers occasionally or as part cargo only, and equipped with the appropriate facilities.

(The validity of the aforementioned notations affixed to the class character depends on the exclusive use of container stowage and lashing elements approved by BRS and/or tested in accordance with the Society's Rules, as well as on the approval of the container stowage and lashing plan with parts lists.)

MULTI-PURPOSE DRY CARGO SHIP

Ships constructed for the carriage of general and bulk cargo.

BULK CARRIER,

Notation for all ships complying with Part 1 - Seagoing Ships, Chapter 1 - Hull Structures, Section 23, 1. to 5., contracted for new construction before 1 July 2003.

For bulk carriers contracted for new construction on or after July 1st 2003, having a length of 150 m or above and additionally complying with Part 1 - Seagoing Ships, 1 - Hull Structures, Section 23, 6. the following Notations may be assigned, depending on the loading conditions, filling ratios of the cargo holds etc.:

BC-C: for bulk carriers designed to carry dry bulk cargoes of cargo density less than 1,0 t/m3, verified for a loading condition where at maximum draught all cargo holds are homogeneously loaded and 100 % full with a cargo density of 1,0 t/m3.

BC-B: for bulk carriers designed to carry dry bulk cargoes of cargo density up to 3,0 t/m3, verified for a loading condition where at maximum draught all cargo holds are homogeneously loaded at the same filling ratio with a cargo density of 3,0 t/m3.

Additionally, the BC-C loading conditions are to be complied with.

BC-A: for bulk carriers designed to carry dry bulk cargoes of cargo density up to 3,0 t/m3 with specified holds empty at maximum draught, for a loading condition where all loaded cargo holds are homogeneously loaded at the same filling ratio with a cargo density of 3,0 t/m3. Additionally, the BC-B loading conditions are to be complied with.

Those notations can be assigned also for Bulk carriers with $L \geq 90$ m, constructed after 1 January 2008

under IACS Common Structural Rules for Bulk carriers.

Depending on the limitations to be observed during operation as a consequence of the design loading conditions applied during the design phase, the following additional Notations may be assigned:

{no MP} } for bulk carrier Notations BC-A, BC-B and BC-C, when the vessel has not been designed for loading and unloading in multiple ports in accordance with the conditions specified in Part 1 - Seagoing Ships, 1 - Hull Structures, Section 23, 6.

{maximum cargo density … t/m3} for bulk carrier Notations BC-A and BC-B if the maximum cargo density is less than 3,0 t/m3 .

{holds a, b, … may be empty} } for bulk carrier Notations BC-A.

ORE CARRIER

Ships specially designed for the carriage of bulk cargo and ore respectively and strengthened in accordance with the BRS Construction Rules. See also 3.3.1.5.1/2.

3.3.1.3.3 Tankers/liquid cargo

OIL TANKER,

CHEMICAL TANKER,

LIQUEFIED GAS TANKER

Ships constructed for the carriage of liquid cargo and complying with the respective BRS Construction Rules. Suitability for the carriage of defined (dangerous) cargoes and/or compliance with relevant rules will be specially indicated, e.g.:

PRODUCT TANKER,

CHEMICAL TANKER - TYPE 1 (as an example for several designations as used in IMO Codes - cf. Sect. 4). See also 3.3.1.3.9.

3.3.1.3.4 Passenger vessels

PASSENGER SHIP Ships complying with the construction rules and safety regulations in force for the carriage and/or accommodation of passengers (in particular SOLAS).

3.3.1.3.5 Carriage of motor vehicles RO-RO SHIP Ships equipped with ramps and possibly shell doors and strengthened in accordance with the BRS Construction Rules, to enable motor vehicles to enter.

EQUIPPED FOR CARRIAGE OF CARS Ships provided with special equipment for the carriage of (non-loaded) motor vehicles, e.g. floating decks.

CAR FERRY

Ships designed for the transportation of motor vehicles (and possibly also passengers) engaged in the ferry service.

3.3.1.3.6 Fishing vessels

FISHING VESSEL

(possibly with supplementary notations for specification of type): Fishing vessels in accordance with the BRS Construction Rules, Part I, Chapter 8.

3.3.1.3.7 Special-purpose ships

Other types of ships and/or craft which have been specially designed dimensioned and/or equipped for their intended purpose, will have a relevant descriptive notation affixed to their character of classification, such as:

TUG

ICE-BREAKER

SUCTION DREDGER

HYDROFOIL

PILOT BOAT

FLOATING CRANE

RESEARCH VESSEL

SUBMERSIBLE

3.3.1.3.8 Floating docks

The notation affixed to the character of class is

FLOATING DOCK, with indication of the lifting capacity [t].

3.3.1.3.9 Carriage of dangerous cargoes

SOLAS II-2, Reg. 19: Notation in the class certificate assigned to ships equipped for the carriage of dangerous cargoes in accordance with the requirements of the BRS Rules.

3.3.1.3.10 High Speed Craft

HSC-PASSENGER A Notation for craft (up to 450 passengers) meeting the requirements of category A as per IMO-Res. MSC.36(63).

HSC-PASSENGER B Notation for craft (over 450 passengers) meeting the requirements of category B as per IMO Res.MSC.36(63).

HSC-CARGO Notation for ships meeting the structural requirements of IMO Res. MSC.36(63), cargo craft.

Notations for maximum permitted operating conditions expressed in terms of significant wave height are added to the notations HSC-PASSENGER A, HSCPASSENGER B and HSC-CARGO as follows:

3.3.1.3.11 Yachts exceeding 24 m

CMCA Notation for motor and sailing yachts exceeding 24 m in length L, the compliance of which is certified in accordance with "The Code of practice for safety of large commercial sailing & motor vessels".

3.3.1.4 Freeboard with freeboard ... m The ship's hull is dimensioned for a draught of less than the maximum draught permissible according to the Load Line Convention.

3.3.1.5 Special strengthenings

3.3.1.5.1 Heavy cargo

STRENGTHENED FOR HEAVY CARGO

Notation for ships provided with strengthenings recommended by the Society in accordance with the BRS Construction Rules, unless complying with the requirements of the notations "bulk carrier" or "ore carrier" (cf. 3.3.1.3.2).

3.3.1.5.2 Use of grabs

G Notation for ships with inner bottoms strengthened for the use of grabs in accordance with the BRS Construction Rules.

3.3.1.5.3 Deck loads

Data on permissible deck loads or container weights are recorded in the form of entries in the class certificate, as well as in the approved design documentation.

3.3.1.5.4 Strengthenings for collisions

COLL... The hull side structures are specially strengthened to resist collision impacts as stipulated in the BRS Construction Rules. The index added to the notation (e.g. COLL 2) reflects the degree of strengthening provided.

3.3.1.5.5 Inland vessels

ORE The ship has been dimensioned in accordance with the BRS Construction Rules such as to be able to carry ore or similar cargoes of high density.

Where inland vessels are dimensioned for loading and unloading procedures not in line with normal practice, a relevant entry will be made in the class certificate (cf. Construction Rules for Inland Ships, Chapter 1).

3.3.1.6 Enhanced Surveys

ESP ("Enhanced Survey Programme") The ship's hull (cargo area) will be surveyed according to an enhanced survey programme. (Notation for all Oil Tankers, Product Tankers, Chemical Tankers, Bulk Carriers ≥ 500 GRT/GT).

3.3.1.7 In-water surveys

IW The ship's hull is specially equipped for in-water surveys as per BRS Construction Rules for Seagoing ships, Part1, Section 34. See also Section 3, 3.1.7.

3.3.1.8 Bridge design on Seagoing Ships

NAV The bridge is designed in compliance with the Rules.

NAV-O Ocean Area

NAV-OC Ocean Areas and Coastal Waters

3.3.1.9 Dynamic Positioning Systems

DP Notation for ships complying with Rules for "Dynamic Positioning Systems". Depending on the desired system reliability and on the basis of a risk analysis 3 distinctive marks are provided, e.g.:

DP 1 Non-redundant

DP 2 Redundant

DP 3 Redundant, separate compartments

3.3.1.10 Harmony Class

HC (hcnpass/hcncrew) Notation for ships complying with the Rules for Noise and Vibration for Comfort, Cruise Vessels (v ≤ 25 kn)". To allow for a graduation of noise and vibration, 5 harmony criteria numbers (hcn) are introduced: hcn = 1 extraordinary comfort (*****) hcn = 2 excellent comfort (****) hcn = 3 high comfort (***) hcn = 4 moderate comfort (**) hcn = 5 acceptable comfort (*)

Two separate numbers, hcnpassand hcncrew, reflect the level attained for passenger and crew spaces, respectively. For instance HC (2/3) corresponds to and excellent comfort for passengers and high comfort for crew members.

3.3.1.11 Green Passport

Green Passport Notation for passenger ships fulfilling the requirements for Environmental Service Systems.

3.3.1.12 Special equipment and systems

Special systems (e.g. propulsion systems) or equipment covered by classification may be referred to by a notation affixed to the character of classification, such as:

AHTS The ship has been equipped with an approved additional hatchcover tightness system.

EQUIPPED WITH BOW RUDDER

EC ("Equipment Certified")

Characteristic implements and/or equipment have by agreement been constructed in accordance with the rules or regulations of and under supervision by BRS.

(This does not apply to the anchor equipment, which is always covered by classification, or to equipment, such as container lashing elements, which according to 1.2.4 above is also in any case covered by classification.)

3.3.1.13 Material

If ships are constructed of mild steel, this will not be specially indicated. If other materials are employed for the entire hull, this will be indicated in the Ship Register and in the class certificate, e.g.:

HIGHER TENSILE STEEL

ALUMINIUM

GRP

Other materials used for structure parts of the hull will be noted into the Class Certificate (-Annex).

3.3.1.14 Novel designs

EXP Ships, machinery installations or essential parts have been constructed in accordance with a design, for which sufficient experience is not available. BRS will decide at what intervals the required periodical surveys will have to be carried out. Where experience over a prolonged period of time has proved the efficiency of the design, the notation EXP may be canceled.

3.3.1.15 Special analysis and survey procedures

RSD ("Rational Ship Design")

Notation for ships which are subject to special analysis procedures.

The analysis procedures required for the ships hull comprise inter alia the following:

– first principle design procedures by means of e.g. finite element analysis techniques

– additional fatigue strength calculations

– calculation of usage factors and assessment of highly stressed structures

– determination of explicit corrosion margins of structural members

The analysis results will be stored in a data base.

STAR ("System of Traceability and Analysis of Records") The assignment of the notation STAR is only possible in conjunction with the assignment of the notation RSD. The results of surveys will be fed into the data base established within the frame work of RSD and will be analysed and evaluated.

ERS ("Emergency Response Service")

Notation for ships, the geometry and structural data of which are made available in a database to provide the assistance necessary for limiting damages in case of average with the aid of special computer programs.

BMW Notation for ships complying with the "Guidelines on Ballast Water Management". Depending on various handling procedures of the ballast water 3 distinctive marks are provided:

BMW-S Sequential method of exchange

BMW-F Flow through method

BMW-T Biological, chemical or physical treatment method

3.3.2 Machinery (special equipment)

3.3.2.1 Automation

Machinery installations which comply with the Rules of BRS for automated and/or remote-controlled systems, will have the following notations affixed to the character of classification (not applicable if class notations for high-speed craft have been assigned). Other notations for a detailed description are possible.

AUT The machinery installation is fitted with equipment for unattended machinery spaces, so that it does not require to be operated and/ or maintained for periods of at least 24 hours.

AUT-nh The period during which attendance to and maintenance of equipment is not required, is less than 24 hours, with nh indicating that the machinery space may remain unattended for n hours.

AUT-Z The machinery installation is operated with the engine control room permanently attended (centralized control) and is equipped with a system for remote control of the main propulsion plant from the bridge or arrangements for manoeuvring from the engine control room.

RC Fishing vessels: The installation is provided with a system for remote control of the main propulsion plant from the bridge.

3.3.2.2 Inert gas systems

INERT The ship is equipped with an inert gas system in accordance with the BRS

Construction Rules, or with a system recognized as being equivalent in design.

3.3.2.3 Fire fighting

Ships fitted with equipment complying with the BRS Construction Rules for Fire-Fighting Ships will, depending on the size and purpose of the equipment provided, have one of the following notations affixed to the character of classification for the machinery installation:

FF Equipment for fighting fires in the initial stage including only part of the special systems and equipment.

FF1 Equipment for fighting fires in the initial stage and performing rescue operations in the immediate vicinity of the installation on fire.

FF2 Equipment for sustained fighting of large fires and for cooling parts of the installation on fire.

FF3 Corresponding to FF2, but with greater fire-extinguishing capacity and more comprehensive fire-extinguishing equipment.

FF1/2 or FF1/3 Equipment corresponding to FF2 or FF3 and additionally suited for rescue operations as per FF1.

3.3.2.4 Ice strengthening

Ice etc. (As notation affixed to the character of classification for the machinery installation:) See 3.3.1.2.

3.3.2.5 Reliquefaction plants (liquefied-gas tankers)

RI Notation affixed to the character of classification for the machinery installation of ships carrying liquefied gases and equipped with systems for cooling (reliquefaction) of their cargo in accordance with the BRS Construction Rules.

3.3.2.6 Redundant Propulsion and Steering Systems

RP1x% The ship has at least two propulsion machines, which are independent or can be separated from each other. This also applies to the auxiliary systems which are needed to operate the propulsion machines. No redundancy of propeller, shaft line, gearbox and steering system is required.

RP2x% The ship has at least two propulsion systems and two steering systems, each of which are independent or can be separated from each other. This also applies to each of the auxiliary systems which are needed to operate the propulsion and/or steering systems.

RP3x% The ship has at least two propulsion systems and two steering systems, each of which are independent or can be separated from each other and are installed in separate compartments. This also applies to the auxiliary systems which are needed to operate the propulsion and/or steering systems.

The additional index x% denotes what percentage of the main propulsion power of the ship is provided by the redundant ship's propulsion system.

3.3.2.7 Novel designs

EXP See 3.3.1.14.

4. CLASSIFICATION OF NEWBUILDINGS

4.1 Application for classification

4.1.1 An application for classification shall be submitted to BRS by the Shipyard, Owner or another duly authorized applicant using the form or electronic submission method accepted by BRS.

The applicant shall provide complete and accurate information and shall comply with the applicable BRS Rules and any additional requirements communicated by BRS.

4.1.2 Where orders for the production of components are placed with subcontractors, BRS shall be advised accordingly, including the scope of production. The Client shall remain responsible for ensuring compliance with the BRS Rules by the subcontractors.

4.1.3 Where the applicant proposes to use particulars previously approved by BRS for another newbuilding, this shall be expressly stated in the application. Amendments to the Construction Rules introduced in the meantime shall be taken into account.

4.2 Submission and approval of documentation

4.2.1 Construction drawings, calculations, material specifications and other technical documentation required for approval shall be submitted to BRS in electronic form or by other means accepted by BRS, sufficiently in advance of the commencement of the relevant construction or installation work.

Documents shall be submitted in English or Bulgarian and shall contain all information necessary for verification of compliance with the applicable BRS Rules. BRS may require additional information, calculations or supporting documents.

4.2.2 Documents accepted by BRS shall be identified by an approval mark, electronic stamp, digital signature or another verification method designated by BRS. For the purposes of BRS classification, electronic approval shall have the same validity as approval applied to a paper document. Statutory acceptance is subject to the applicable requirements of the Flag Administration.

4.2.3 Approval of drawings or other technical documentation by BRS does not relieve the Shipyard, designer, manufacturer, Owner or other responsible party of responsibility for the accuracy of the information, the design, construction quality or compliance with applicable statutory requirements.

4.2.4 Any modification or deviation from approved documentation which affects or may affect class shall be submitted to BRS for approval before implementation.

4.2.5 BRS may withdraw or revise an approval where it is established that:

– the information submitted was incomplete or inaccurate;

– the approved design has been modified without authorization;

– the applicable assumptions or operating conditions have changed; or

– continued acceptance would affect safety or compliance with the BRS Rules.

4.3 Supervision of construction and trials

4.3.1 General

4.3.1.1 BRS will assess the production facilities and procedures of the shipyard and other manufacturers as to whether they meet the requirements of the Construction Rules. In general, approvals based on such assessments are conditional for acceptance of products subject to testing.

4.3.1.2 Materials, components, appliances and installations subject to inspection are to comply with the relevant rule requirements and be presented for inspection and/or construction supervision by BRS Surveyors, unless otherwise provided as a result of special approvals granted by BRS.

4.3.1.3 For each inspection, an appointment is to be arranged in time with the local BRS representation.

4.3.1.4 In order to enable the Surveyor to fulfilll his duties, he is to be given free access to the ship and the workshop, where parts requiring approval are manufactured, assembled or tested. For performance of the tests required, the shipyard or manufacturers are to give the surveyor every assistance by providing the staff and equipment necessary for such tests.

4.3.2 Supervision of construction

During the phase of construction of a vessel or installation BRS will ensure by surveys and inspections that:

– parts for hull and machinery and/or special equipment requiring approval have been constructed in compliance with the approved drawings and particulars,

– all tests and trials stipulated by the Construction Rules are performed satisfactorily,

– workmanship is in compliance with current engineering standards and/or BRS rule requirements,

– welded parts are produced by qualified welders having undergone tests,

– for components requiring approval test certificates have been presented (the manufacturer will have to ensure that any parts and materials requiring approval will only be delivered and installed, if the appropriate test certificates have been issued; cf. 4.4.1),

– where no individual certificates are required, type-tested appliances and equipment are employed in accordance with rule requirements.

4.3.3 Tests at manufacturers

As far as practicable, machinery and equipment will be subjected to operational trials on the manufacturers' test bed to the scope specified in the Construction Rules. This applies also to engines produced in large series. Where the machinery, equipment or electrical installations are novel in design or have not yet sufficiently proved their efficiency under actual service conditions on board ship, BRS may require performance of a trial under particularly severe conditions.

(For refrigerating installations, see 4.3.5.)

4.3.4 Shipboard trials

Upon completion of the ship and/or the system/ equipment to be classed, all hull, machinery and electrical installations will be subjected to operational trials in the presence of the BRS Surveyor, prior to and during the sea trial. This will comprise, e.g.:

– tightness, operational and load tests of tanks, hatch covers, shell ports, ramps, etc.,

– operational and/or load tests of the machinery and installations (propulsion plant, electrical installations, steering gear, anchor equipment, etc.) of importance for safe operation.

During a final survey, checks will be made to ensure that any deficiencies found, for instance during the sea trial, have been eliminated. Yachts/small watercraft: See 6.

4.3.5 Refrigerating installations

4.3.5.1 Refrigerating machines are to be subjected to operational tests at manufacturers.

4.3.5.2 Fitting of the refrigerating installation will be supervised by the Surveyor, who will examine the workmanship and perform the prescribed tightness and operational tests.

4.3.5.3 Upon completion the entire installation will be subjected to operational trials in accordance with the requirements of the Construction Rules.

4.3.5.4 For refrigerating installations deviating in design from installations in common use, BRS reserves the right to require additional tests to be performed, schedule special survey dates and make special entries in the refrigerating installation certificate and in the Register Book.

4.4 Reports, certificates

4.4.1 Testings of materials, components, machinery, etc. at subcontractor's works will be certified by the Surveyor and/or the local BRS representation.

4.4.2 After completion of the ship or installation the Surveyors will prepare construction reports, on the basis of which BRS will issue the class certificate (cf. 1.3).

5. ADMISSION TO CLASS

5.1 Order and particulars

5.1.1 Order

5.1.1.1 An application for admission to BRS class shall be submitted in writing or electronically by the Owner, Manager or another duly authorized applicant.

The application shall be accompanied by the documents and information required under these Rules and any additional information requested by BRS Head Office.

Yachts and small watercraft: see 6.

5.1.1.2 The applicant shall provide full information concerning:

– the vessel's present and previous class;

– the current class period and survey status;

– all outstanding Conditions of Class, recommendations, memoranda and overdue surveys;

– any suspension or withdrawal of class during the preceding five years; and

– the reason for the proposed transfer to BRS class.

BRS may request any additional information considered necessary for assessing the application.

5.1.2 Particulars - hull and machinery4

– particulars of the type and main dimensions of the ship, building year, building yard, free- board, stability documentation and details of the anchor equipment

– particulars of the type, output and main data, building year and manufacturer of the main engine(s) and of the auxiliary machinery essential for operational safety, the electrical

installations, the inert gas system, the safety arrangements, the steering gear and the wind- lasses

– general arrangement capacity plan, hydrostatic and cross curves, loading manual, where required, midship section, longitudinal and transverse sections, transverse bulkheads, decks, shell expansion, engine and boiler foundations, stem and stern frame, rudder and rudder stock, hatch covers

– machinery arrangement, intermediate, thrust and screw shafts, propeller, main engines, propulsion gears and clutch systems, starting air receivers, main and/or auxiliary boilers and oil fuel burning systems, turbines, superheaters and economisers (or manufacturer make, model and rating information)

– steam and feed-water systems, cooling water and lubricating oil systems, bilge and ballast systems, fuel oil and starting-air systems, air and sounding pipes systems, electrical ar- rangements and wiring diagram steering gear system piping and arrangements and steering gear manufacturer make and model information

– for vessels less than two years old: torsional vibration calculations are to be submitted

– for vessels with ice class notation: drawings for flexible couplings and/or torque limiting shafting devices in the propulsion line shafting (or manufacturer make, model and rating information)

– for tankers: tank bulkheads, loading and unloading facilities, cargo tank venting system and safety devices, pumping arrangements at the forward and after ends of the vessel, drainage of cofferdams and pump rooms

– for unattended machinery spaces, notation (AUT): instrument and alarm list, fire alarm system, list of automatic safety functions (e.g. slowdowns, shutdowns, etc.), function testing plan

– for ships with built-in tanks, the walls of which do not form part of the shell plating: drawings of these tanks, their safety arrangement, as well as their loading and unloading systems.

5.1.3 Particulars - special equipment (refrigerating installations, diving systems) 4

The application for classification for special equipment (refrigerating installations, diving systems) is to be accompanied by particulars in the extent as indicated in the Construction Rules. Results of the trials under working conditions are to be submitted; if an operational trial has not as yet been performed, it will have to be carried out.

5.2 Performance of Admission to class

5.2.1 The drawings and other particulars of relevance to classification are checked for compliance with the applicable BRS Construction Rules and/or equivalent other rules.

5.2.2 For admission to class the extent of the classification survey for the hull and machinery installation respectively her special equipment will be especially determined by BRS depending on the vessel's age and type.

5.2.3 Where the vessel is classed with another recognized Classification Society, BRS shall determine the scope of the admission survey and document review, taking into account:

– the vessel's age, type and condition;

– the status and standing of the previous Classification Society;

– the available class records and approved technical documentation;

– the vessel's survey and casualty history; and

– any outstanding or overdue surveys, Conditions of Class or recommendations.

Unless a Class Renewal Survey is completed and a new class period is assigned in accordance with these Rules, the existing class period and survey due dates shall be retained on transfer. Once class is assigned, the requirements for maintenance of BRS class apply.

5.2.4 The applicant shall arrange for the previous Classification Society to provide BRS with the current class survey status and other class records requested by BRS. Information provided by the Owner may be used for preliminary assessment but shall not, by itself, constitute sufficient evidence of the vessel's class status.

5.2.5 All overdue surveys, Conditions of Class and recommendations affecting the vessel's class shall normally be satisfactorily dealt with before admission to BRS class.

BRS Head Office may accept completion within a specified limited period only where the outstanding matter does not affect the vessel's structural integrity, essential machinery, seaworthiness or safe operation.

5.2.6 Where sufficient class records or technical documentation are not available, BRS may:

– increase the scope of the admission survey;

– require thickness measurements, testing, calculations or submission of additional documentation;

– require the survey to have a scope equivalent to a Class Renewal Survey; or

– decline the application for admission to class.

5.2.7 An Interim Class Certificate may be issued only after satisfactory completion of the surveys and document review required by BRS and upon approval by BRS Head Office. The certificate shall clearly state its period of validity and any conditions or limitations imposed.

5.2.8 A full-term Class Certificate shall be issued only after BRS has received and satisfactorily reviewed the required class records and has confirmed that the vessel complies with the applicable requirements.

6. CLASSIFICATION OF YACHTS AND SMALL WATER CRAFT FROM 6 TO 24 M IN LENGTH

6.1 General requirements

6.1.1 Watercraft built and equipped in accordance with the Construction Rules of BRS - Part 3, "Pleasure Craft" - will be assigned BRS class upon application.

6.1.2 The general requirements as per 1 to 5 are to be applied, as far as applicable to this type of craft, and unless stated otherwise in the following.

6.1.3 Classification covers the hull, the machinery, including the electrical installation, the hull equipment, the closures and if needed the rigging, as defined in the Rules.

Components and equipment not dealt with in the Rules are not subject to examination within the scope of classification. (Responsibility for compliance with any existing flag state regulations rests with the owner).

6.1.4 BRS reserves the right to also classify craft made of materials, for which no special BRS Rules exist, provided that proof of suitability of these materials has been furnished.

6.1.5 Sporting craft and comparable craft, partly or predominantly serving commercial purposes, may additionally be subject to rules having to be observed beyond the BRS Construction Rules.

6.1.6 Watercraft built under BRS construction supervision of a current series5 may be classed, if the application for classification is made prior to commencement of construction, provided the relevant surveys and trials do not give cause for objections.

6.2 Characters of classification and notations

6.2.1 Characters of classification

6.2.1.1 Hull

The character of classification for the hull is

BR 100 A5, if the hull was constructed under supervision by BRS, with additional notations as per 6.2.2.

Apart from this, 3.2 is to be applied.

6.2.1.2 Machinery

For water craft with a total propulsion machinery output of more than 300 kW a class certificate for the machinery (including the electrical installation) will be issued, in addition to the hull certificate.

The character of classification for the machinery is

BR MC Y, if the machinery was manufactured under supervision by BRS.

For water craft with a propulsion machinery output of up to 300 kW, any comments on surveys of the machinery installation will be entered into the hull certificate.

6.2.2 Notations affixed to the character of classification

6.2.2.1 Ranges of service

Water craft meeting the requirements of the Construction Rules for a restricted range of service only will be assigned the following notations affixed to the character of classification characterizing the range of service (I, II, III, IV, V).

The notations may possibly be assigned on the basis of the seaway conditions prevailing in the respective service area (e.g. official seaway statistics).

Range of service I

Unrestricted trade far away from coastlines, during which a vessel entirely left to its own devices has to be in a position to cope with emergency situations for prolonged periods, without relying on outside assistance.

Range of service II

Voyages along the coastline, but restricted to a sea area located at a distance not ex- ceeding 200 nautical miles, measured from the main land6 and / or from off-shore islands situated at a distance not exceeding 400 nautical miles from the main land and/or from another island.

Range of service III

Voyages along the coastline confined to a sea area located at a distance of 20 nautical miles, measured from the main land6, and/or from offshore islands situated at a distance not exceeding 40 nautical miles from the main land and/or from another island.

Range of service IV

Day trips between close ports along the coastline within a relatively protected area. However, voyages are restricted to a sea area located at a distance not exceeding 3 nautical miles, measuring from the main land6, and/or from offshore islands situated at a distance not exceeding 6 nautical miles from the main land and/or from another island.

Range of service V

Trips on inland waterways and lakes. Also included: Day trips off the coastline, confined to shallows and/or sea areas located at a distance not exceeding 0.75 nautical miles, measured from the shore and/or the main land6.

6.2.2.2 Designation of types and use

6.2.2.2.1 In addition to the character of class, water craft will be characterized by notations affixed, describing their type and envisaged use, as shown in the following examples.

6.2.2.2.2 Sporting craft

SAILING YACHT

MOTOR SAILER

MOTOR YACHT

HIGH SPEED MOTOR YACHT

SPECIAL SAILING YACHT SPECIAL MOTOR YACHT

RACING YACHT

Note: The term "special" applies to yachts of unusual shape/dimensions and with special technical equipment, if any. BRS reserves the right of determining whether the Society's Rules are applicable and how they are to be interpreted.

6.2.2.2.3 Yachts for commercial purposes

TRAINING SAILING/MOTOR YACHT

CHARTER SAILING/MOTOR YACHT

These notations are applicable, where the main structural elements comply with the Construction Rules for the type of craft listed under 6.2.2.2.4.

6.2.2.2.4 Watercraft used for commercial purposes or by authorities

Craft complying with the pertinent Construction Rules of BRS, may be assigned the following notations affixed to the character of classification, e.g.:

FISHING VESSEL, see also 3.3.1.3.6

PATROL BOAT

WORK BOAT

6.3 Approval and survey of newbuildings

6.3.1 Regarding applications for classification and the particulars to be submitted, the regulations in 4 apply analogously. The documents to be submitted for approval shall include drawings and calculations of the rigging.

6.3.2 Qualification of the workshop

6.3.2.1 Regarding the processing of metallic materials and the manufacture of machinery installations and components, the materials and welding Rules of BRS apply (see also 4.3.1.1).

6.3.2.2 Regarding facilities, quality control, production procedures and skills of the personnel, workshops producing sporting craft of fibre-reinforced reaction resins and other non-metallic special materials have to be suited for the work carried out by them. This suitability will be certified by a relevant workshop approval. In general apply the BRS Rules for nonmetallic materials.

6.3.3 Construction supervision: see 4.3.2

6.3.4 Trials

The craft having been completed, all equipment of the hull, the machinery and electrical installation and the sailing equipment will be tested in operation during a sea trial, in the BRS Surveyor's presence.

6.3.5 Marking

Water craft constructed in accordance with the BRS Construction Rules will be marked with a label which will continue to be valid as long as the structural conditions remain unchanged. The label is valid only in connection with the pertinent Class Certificate.

(cf.2., Validity of class).

6.4 Admission to class

6.4.1 The general regulations in 5 are, as far as applicable, to be applied analogously, with the following additions to be observed.

6.4.2 Vessels constructed under supervision by a recognized Classification Society are to be presented for survey in drydock. The machinery and electrical installations are to be subjected to an operational trial. BRS will fix the scope of surveys, depending on the vessel's age, maintenance condition, intended use and on the informative value of the documents received.

6.4.3 Vessels not constructed under the supervision of a recognized Classification Society are excluded from classification, if their hulls consist of fibre-reinforced plastic materials or ferro-cement. For other vessels previously not classified, within the scope of classification a complete examination of drawings is required to the extent stipulated for new-buildings. Beyond this, surveys are to be conducted (onshore) for assessment of compliance with the drawings and documentation, as well as trials/function tests to be determined from case to case.

Notes to Section 2

Note 1 For the classification and construction of offshore installations (e.g. diving systems, submersibles, offshore structures) the Rules for Underwater Technology and the Rules for Offshore Installations are applicable.

Note 2 Place of refuge is any naturally or artificially sheltered aquatorium which may be used as a shelter by a ship for safety.

Note 3 Place of refuge is any naturally or artificially sheltered aquatorium which may be used as a shelter by a ship for safety.

Note 4 BRS reserve the right to reduce or increase the scope of particulars depending on recognizing of the previous Classification Society.

Note 5 See special Rules "Series construction supervision of sporting craft made of fibre-reinforced resins and other special materials"

Note 6 Coastline measured at mean high water

Section 3

SURVEYS – GENERAL REQUIREMENTS

1. GENERAL INFORMATION

1.1 Surveys for maintenance of class

1.1.1 For maintenance of the class, the regular (periodical) and extraordinary surveys of hull, machinery, including electrical installation, and any special equipment classed as defined below have to be performed. See also Section 2, 2.2. and Section 4 (additional regulations for special types of ships).

Other surveys performed by BRS - partly in connection with classification - are listed in 1.4 below.

1.1.2 Surveys required for maintenance of the class, e.g. in the case of repairs of, or modifications to any parts subject to classification, are to be agreed with the local BRS representation in due time, so that the measures envisaged may be assessed and supervised, as required.

1.1.3 The Surveyors are to be given access at any time to the ship and/or to the workshops, so that they may perform their duties.

All surveyed areas to be surveyed have to be cleared, cleaned and to be made free from gas, as deemed necessary by the Surveyor. The Class Certificates and other particulars relating to classification are to be made available to the Surveyor on request.

1.1.4 Surveys conducted during a voyage may be agreed and credited to periodical surveys due (e.g. inspection of large holds by boat). The prerequisites, procedures and specific (e.g. weather) conditions to be met will be fixed from case to case. The decision as to feasibility of the survey may only be taken in agreement with the Surveyor.

1.1.5 BRS will inform the owner or operator about the status of class, indicating the last recognized surveys and the next due dates. However, even if not provided with such information, the operator is obliged to have the surveys stipulated by the present Rules performed.

1.1.6 BRS may agree to testing and analysis procedures as a supplement to or equivalent substitute for conventional survey and/or inspection or to carry that out with two Surveyors, if needed.

1.1.7 BRS reserves the right to extend the scope of survey and/or inspection for given reasons, e.g. in the light of special experience gained during operation.

1.1.8 BRS reserves the right to demand surveys to be held between the due dates of regular surveys, if this is necessary (see 2.2).

1.1.9 Surveys in exceptional circumstances

1.1.9.1 Where a vessel is at a location at which attendance by an authorized BRS Surveyor cannot reasonably be arranged, BRS Head Office shall be informed before any alternative survey arrangements are made.

1.1.9.2 Taking into account the nature and urgency of the survey, BRS Head Office may:

– arrange attendance by another authorized BRS Surveyor;

– authorize the use of an external surveyor or technical expert;

– approve a limited remote survey where permitted by the applicable BRS procedures and Flag Administration requirements;

– postpone the survey where permitted by the applicable requirements; or

– impose other conditions considered necessary.

1.1.9.3 The appointment of an external surveyor or technical expert shall require the prior written authorization of BRS Head Office. The authorization shall specify the vessel, the scope of the survey and any applicable limitations.

1.1.9.4 A report issued by an external surveyor or technical expert shall be subject to review and acceptance by BRS Head Office. BRS may require additional evidence, tests or attendance by a BRS Surveyor before crediting the survey.

1.1.9.5 A remote survey shall not be accepted where physical attendance is necessary to verify the condition of the vessel or where the available evidence is insufficient for a reliable technical decision.

1.1.9.6 No external surveyor, technical expert or remotely attending person may issue or endorse a BRS Class Certificate unless expressly authorized by BRS Head Office.

1.1.10 The Owner or Manager is responsible for requesting and arranging the surveys required for maintenance of class sufficiently in advance of their due dates.

1.1.11 Information provided by BRS concerning survey due dates is intended to assist the Owner or Manager and does not relieve them of responsibility for ensuring that all required surveys are completed within the prescribed time.

1.1.12 Submission of a survey request, appointment of a Surveyor, commencement of correspondence or partial completion of a survey shall not extend the due date or survey window.

1.1.13 Any extension, postponement or exceptional arrangement shall be permitted by the applicable provisions of these Rules and any applicable statutory requirements, and shall be valid only when expressly approved in writing by BRS Head Office and shall be subject to the conditions and limitations specified in that approval.

1.2 Selection of Surveyors

On principle, the acting Surveyors will be chosen by BRS. However, the operator of a ship and/or an installation classed is free to have any findings of surveys or decisions which he deems to be doubtful checked by other BRS Surveyors upon his request.

1.3 Documentation and confirmation of class

1.3.1 The findings of each survey, including any Condition of Class, recommendation, limitation or requirement upon which maintenance of class depends, shall be recorded in the relevant survey report and, where applicable, in the Class Certificate.

1.3.2 By signing a survey report, certificate endorsement or other survey document, the Surveyor confirms only the examinations, tests and findings personally witnessed or verified during the survey.

1.3.3 All survey reports and supporting documents shall be submitted to BRS Head Office for review and acceptance.

1.3.4 Any confirmation, endorsement or interim document issued by an attending Surveyor shall remain subject to review and final acceptance by BRS Head Office.

1.3.5 Final Class Certificates and other documents confirming the class status of a vessel shall be issued by BRS Head Office. A Surveyor or BRS Representative may issue such documents only when expressly authorized by BRS Head Office for the particular case or category of documents.

1.3.6 BRS certificates may be issued in paper or electronic form. For classification purposes, electronic certificates, electronic signatures and electronic verification methods approved by BRS shall have the same validity as the corresponding paper documents. Statutory electronic certificates and their authentication shall additionally comply with the requirements of the Flag Administration.

1.3.7 The validity and authenticity of a BRS certificate may be verified through the electronic verification system designated by BRS, including by means of a unique verification number or QR code. A QR code alone is not proof of authenticity; it shall lead to the BRS-designated verification facility or otherwise enable verification by BRS.

1.3.8 Where repairs are provisional or an outstanding matter does not require immediate permanent repair, class may be confirmed for a limited period and subject to conditions specified by BRS.

Cancellation of a limitation shall also be recorded in the Class Certificate or its associated electronic record.

1.3.9 No alteration, correction or reissuance of a BRS certificate or other official class document is permitted without authorization from BRS Head Office. Faithful copies for legitimate use are permitted in accordance with Section 1, 11.2.

1.3.10 The Register shall record the relevant Class Renewal, Annual, Intermediate, Continuous Class Renewal, bottom and propeller shaft surveys. Records of periodical repeat tests on steam boilers and thermal oil heaters of seagoing ships shall be entered in special Test Certificates kept on board. For inland vessels, see Section 4, 7.1.5.

1.4 Surveys in accordance with flag state regulations

1.4.1 Where surveys are required on account of international conventions and of corresponding laws/ official ordinances of a flag state, BRS will undertake them on application, or by official order, acting on behalf of the authorities concerned, based on the respective provisions; this includes surveys according to:

– the International Convention on Load Lines

– the International Convention for the Safety of Life at Sea (SOLAS)

– the International Convention for the Prevention of Pollution from Ships (MARPOL)

– the IMO Codes, e.g. on Chemical and Gas Tankers

– the related Conventions of the International Labour Office (ILO).

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

1.4.2 BRS will also undertake on request other surveys and checks stipulated by additional regulations and requirements of the flag state. Such surveys are subject to agreements made in each individual case and/ or to the regulations of the country concerned.

1.4.3 All activities as outlined in 1.4.1 and 1.4.2 and, where applicable, issuance of relevant certificates are likewise subject to the general conditions of Section 1.

1.4.4 Effect of suspension or withdrawal of class on statutory certification

1.4.4.1 Where the class of a vessel is suspended, withdrawn or otherwise ceases to be valid, BRS shall assess the effect on any statutory certificates issued by BRS on behalf of the Flag Administration.

1.4.4.2 BRS shall inform the Flag Administration without delay and shall suspend, withdraw, invalidate or otherwise deal with the statutory certificates in accordance with:

– the applicable international conventions;

– the requirements and instructions of the Flag Administration; and

– the terms of the authorization granted to BRS.

1.4.4.3 Where the validity of a statutory certificate depends upon the vessel maintaining valid class, the certificate shall cease to be valid when class is suspended, withdrawn or otherwise ceases to be valid, unless otherwise instructed or accepted by the Flag Administration within the authority permitted by the applicable international conventions and national requirements.

1.4.4.4 Reinstatement or reassignment of class shall not automatically reinstate the validity of any statutory certificate. Such a certificate may be reinstated, revalidated or reissued only after completion of the required surveys and with the agreement of the Flag Administration, where required.

1.4.4.5 The Owner or Manager shall comply with any instructions issued by BRS or the Flag Administration concerning the surrender, cancellation, endorsement, revalidation or reissuance of the affected statutory certificates.

1.4.5 Where an onboard computer system having Longitudinal strength computation capability, which is required by the Rules ,is provided on a new ship on newly installed on an existing Ship, the system is to be certified and approved by BRS in respect of Longitudinal strength and stability calculation program.

2. SURVEYS FOR MAINTENANCE OF CLASS – DEFINITIONS, DUE DATES

2.1 Periodical surveys

2.1.1 Annual surveys (seagoing ships)

2.1.1.1 For seagoing ships, annual surveys are to be conducted for the hull and the machinery, including the electrical plant, and, where applicable, for special equipment classed, at intervals of 12 months, as from the date of commencement of the class period indicated in the certificate (see 3.1.1).

2.1.1.2 Survey period (time window): The survey has to be carried out within ± 3 months, counted from each anniversary date of the commencement of the current class period.

For ships with accommodations for more than 12 passengers, the annual survey has to be carried out by no later than the due date entered.

2.1.2 Intermediate surveys

Extended annual surveys are referred to as intermediate surveys, see 3.1.2 and 4.2.2, respectively. The intermediate survey falls due nominally, 2.5 years after commissioning and each class renewal and may in the case of seagoing ships be carried out on the occasion of the second or third annual survey.

Refrigerating installations: See Section 3, 4.

Special ship types see Section 4.

2.1.3 Class renewal surveys

2.1.3.1 Class renewal surveys are to be carried out for the ship's hull, machinery, including the electrical plant, and, for any special equipment classed, at the intervals indicated by the character of classification for the hull. See 3.1.3 and Section 4, Special Ship Types.

For avoiding loss of class, in exceptional cases extension of the class period by 3 months at the most may be granted by BRS upon application.

2.1.3.2 A class renewal may be carried out in several parts. The whole survey period must not exceed 15 months and the class renewal survey must have been completed by the end of the class period.

2.1.3.3 The periodical surveys and inspections of propulsion systems and machinery as per 2.1.4 and 2.1.5 form an integral part of the surveys required for class renewal, unless otherwise specified in the following.

2.1.3.4 Class renewals for the hull are numbered in the sequence I, II, III, etc. Class renewal IV and subsequent ones shall include at least the scope of class renewal III and any additional requirements specified for the applicable age or renewal number. (See 3.1.3.2 below.) A survey planned meeting to be held before the survey.

2.1.3.5 The new period of class will commence:

– with the following day, after which the previous class expires, providing that the class renewal survey has been completed within 3 months preceding that date. This applies also to a granted extension of the class period by 3 months at the most.

– with the date on which the surveys for class renewal were completed, if this is the case more than 3 months before expiry of the previous class.

– For laid-up vessels new period of class start from expiry date of class certificates.

2.1.3.6 Continuous class renewal surveys

2.1.3.6.1 At owner's application, the surveys required for class renewal may be split, according to a schedule to be agreed, such as to extend over the entire period of class so that abt. 20% of all surveys required for class renewal will be completed every year.

This means that all areas subject to survey as defined by BRS Head Office are to be surveyed at least once per class period, unless closer intervals are prescribed elsewhere. The period between two subsequent surveys of each area must not exceed 5 years.

Exception for hulls of oil tankers/product carriers, chemical tankers and bulk carriers with class notation "ESP". See Section 4, 1.4.1.5, 3.4.1.6 and 5.4.1.3.

2.1.3.6.2 Continuous class renewal may be applied for separately for the hull, the machinery, and the special equipment.

2.1.3.6.3 Regarding the duration of the period of class and due dates of surveys, the requirements as per 2.1.3.1 and 2.1.3.5 continue to be applicable.

2.1.3.6.4 At the end of a period of class, for the purpose of class renewal, a final survey will be performed, during which the Surveyor will satisfy himself as to whether all areas required to be surveyed have in fact been surveyed throughout, with satisfactory results. If there are special reasons, the Surveyor may inspect individual parts again.

2.1.3.6.5 Ships surveyed subject to the continuous class renewal system are not exempted from other periodical surveys (such as annual and intermediate surveys) prescribed.

2.1.3.7 Continuous class renewal surveys based on planned maintenance systems

2.1.3.7.1 On owners' application, an optimized continuous class renewal system may be agreed on as outlined below for ships the machinery of which is maintained with the aid of an approved, computer-assisted maintenance system.

2.1.3.7.2 Owners will introduce a preventive maintenance system (Planned Maintenance System) comprising at least the survey scopes/systems as covered by the normal continuous class renewal system.

2.1.3.7.3 This maintenance system will have to be approved by Bulgarian Register of Shipping, to this effect, owners will submit the following documentation, in English or Bulgarian:

– detailed description of the system, indicating the information flows

– list of components/systems to be covered by the optimized continuous class renewal system (Inventory Content)

– indication of intervals for each of the maintenance measures in general

– list of maintenance intervals (TBO) and of the expected lifetime (LT) of the main and auxiliary machinery components essential for operation, taking into account manufacturers' recommendations and specific operational requirements

– list of instructions (Maintenance Procedures) underlying the maintenance concept.

– maintenance documentation (reports containing important operational information, com ponent condition, offset sheets, measures carried out)

– documentation on the maintenance strategy applied prior to filing of the application.

2.1.3.7.4 Within the scope of a shipboard survey the BRS Surveyor will have to confirm that:

– the current maintenance system complies with the approved documentation

– the current maintenance system takes into account, without reservation, the specific service conditions

– the maintenance documentation permits conclusions to be drawn as to be construction condition and operability of the machinery

– the personnel in charge of operation of the machinery is properly qualified and holds the necessary qualification certificates.

2.1.3.8 Machinery or technical installations which are subject to a Condition Monitoring System are surveyed to the scope and at intervals agreed with BRS from case to case, and may be included in the continuous class renewal lists.

2.1.3.9 Class Extension

Seagoing Ships see 2.1.3.1 and Inland Vessels see Section 4, 7.

2.1.4 Periodical surveys of propeller shafts and tube shafts, propellers, vane wheels and other systems

For maintenance of the Class, periodical surveys and tests of propeller shafts and tube shafts, propellers, vane wheels and other systems of seagoing ships are to be carried out. The scope of surveys and tests unless specifically restricted is defined in 3.1.4.

For inland waterway vessels, see Section 4, 7.

2.1.4.1 Propeller shafts and tube shafts

The following surveys are applicable:

– normal survey

– modified survey

– partial survey

2.1.4.1.1 Normal survey

2.1.4.1.1.1 Where the propeller shafts and tube shafts are fitted with continuous liners or approved oil sealing glands, or are made of corrosion resistant materials, the interval of survey is to be:

– 3 years for single shafting arrangement

– 4 years for multi-shafting arrangement

The interval of drawing may be raised to:

– 5 years for single shafting arrangement

– 5 years for multi-shafting arrangement at the most, in any of the following three cases:

– where

– the design details are approved

– the propeller is fitted to a keyed shaft taper

– the shaft is protected from seawater

– a non-destructive examination is made at each survey by an approved crack- detection method 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, or

– where

– the design details are approved

– the propeller is fitted to a solid flange coupling at the aft end of the shaft

– the shaft and its fittings are not exposed tocorrosion

– a non-destructive examination is made at each survey by an approved crack detection method of the after flange fillet area of the shaft, or

– where

– the design details are approved

– the propeller is fitted keyless to the shaft taper

– the shaft is protected from seawater

– a non-destructive examination is made at each survey by an approved crack detection method of the forward part of the aft shaft taper

In all other cases the nominal interval of survey is to be 2,5 years with an admissible time window of ± 6 months.

2.1.4.1.1.2 Propeller shafts and tube shafts are to be sufficiently drawn to permit entire examination. For further details see 3.1.4.1.1.1.

For oil lubricated arrangement, the shaft need not be drawn at the occasion of the normal survey, provided that all exposed areas of the after shaft area as described in 2.1.4.1.1.1 are examined by an approved crack-detection method

– where

– the clearances and wear down of the bearings

– the records of lubricating oil analysis, oil consumption and bearing temperature

– the visible shaft areas are examined and found satisfactory. Lubricating oil and bearing temperature controls are to be performed as specified in 2.1.4.1.2.2. For further details see 3.1.4.1.1.2. Where any doubt exists regarding the findings of the above, the shaft is to be sufficiently drawn to permit an entire examination.

2.1.4.1.2 Modified survey

2.1.4.1.2.1 For single and multi-shafting arrangements a modified survey may be accepted instead of the normal survey at alternate 5 yearly survey intervals, at the most, subject to:

– the design details are approved

– the shaft is fitted with oil lubricated bearings and oil sealing glands

– the shaft and its fittings are not exposed to corrosion

– new oil seals may be fitted without removal of the propeller (except in the case of keyed propeller)

and provided that the clearances of the aft bearing are found in order and the lube oil and the oil sealing arrangements have proved effective in any of the following three cases:

– where the propeller is keyed on the shaft taper and suitable crack-prevention measures are taken, or

– where the propeller is fitted to a solid flange coupling at the end of the shaft, or

– where the propeller is fitted keyless to the shaft taper

The maximum interval between two successive normal surveys is not to exceed 10 years.

2.1.4.1.2.2 The shaft is to be sufficiently drawn to permit examination of the aft bearing contact area of the shaft. For further details see 3.1.4.1.2.1.

Drawing of the shaft to expose the aft bearing contact area of the shaft may not be required where a lubricating oil analysis is carried out regularly at intervals not exceeding 6 months, and the oil consumption and bearing temperature are recorded and considered to be within permissible limits. The documentation on lubricating oil analysis is to be available on board and be checked. Each analysis should include the minimum parameters:

– water content

– chloride content

– content of bearing metal particles

– oil aging (resistance to oxidation)

Oil samples should be taken under service conditions. For further details see 3.1.4.1.2.2. Where any doubt exists regarding the findings of the above, the shaft is to be sufficiently drawn to permit an examination according to 3.1.4.1.2.1.

2.1.4.1.3 Partial survey

2.1.4.1.3.1 Upon request by the Owner for shafts where the modified survey is applicable and

– a prolonged service fatigue life of seals is expected due to the appropriate combination of materials and controlled pressures in way of seals consideration may be given to a prolongation of the 5-yearly interval between normal surveys, provided a partial survey is performed.

In no case must the interval between normal surveys exceed 1,5 times the due interval.

2.1.4.1.3.2 The partial survey consists of checking the oil sealing glands and the clearance of the bearings.

For keyed propellers, the propeller is to be dismantled to expose the forward part of the taper and a nondestructive examination by an approved crack detection method is to be performed.

For further details see 3.1.4.1.3.

2.1.4.2 Propellers

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

2.1.4.3 Vane wheels

Vane wheels are to be examined in dismounted condition in intervals of nominally 2,5 years with an admissible time window of ± 6 months.

2.1.4.4 Other systems

Other systems for main propulsion purposes, such as rudder and steering propellers, pod propulsion systems, pump jet units, etc., are subject to the same survey intervals as propeller shafts and tube shafts.

2.1.5 Periodical surveys and tests of individual machinery items

2.1.5.1 The periodical surveys of individual machinery items or installations listed below are to be carried out in addition to those prescribed in 2.1.3 and 3.1.3.3, for maintenance of class.

For inland vessels, see Section 4,7.

2.1.5.2 Steam boilers

2.1.5.2.1 Steam boilers are to be subjected to the following examinations and tests at regular 1 intervals . The term 'steam boilers' includes exhaust gas boilers in the exhaust gas pipe system of combustion engines and hot water boilers with outlet temperatures exceeding 120 °C (except where they are heated by steam or liquids).

2.1.5.2.2 External inspection

Boilers are to be subjected at annual intervals to an external inspection in accordance with the BRS inspection programme.

For the external inspection a time window of ± 3 months is admissible.

2.1.5.2.3 Internal inspection

Steam boilers are to be subjected to an internal survey twice in every 5-year class period. The first internal survey has to be carried out on the occasion of the 2nd but not later than the 3rd regular annual survey. The maximum interval between internal surveys should not exceed 3 years. For ships with one main boiler only, internal inspections are to be performed every 2.5 years until 10 years after commissioning and every year thereafter. Boiler installations with only one main boiler and one auxiliary boiler powerful enough to operate the propulsion plant in an emergency (take-home boiler), count as multi-boiler plants. Extension of inspection can be granted by BRS up to 3 months.

2.1.5.3 Thermal oil plants

2.1.5.3.1 External inspection

Thermal oil plants are to be subjected to an external inspection once a year. Proof of continued usability of the thermal oil shall be furnished yearly by a competent testing agency (see 3.1.5.3).

For the external inspection a time window of ± 3 months is admissible.

2.1.5.3.2 Internal inspection

An internal inspection, including a tightness test of the whole plant, is to be performed at intervals of 5 years, counting from commencement of initial operation, and possibly in connection with a class renewal survey.

2.1.5.4 Steam pipes

2.1.5.4.1 Steam pipes are to be examined regularly every 5 years, possibly in connection with a class renewal survey. Starting from class renewal II, the steam pipes are to be examined as to their internal and, where advisable, as to their external condition as well, employing non-destructive testing methods, where necessary. See 3.1.5.4.

2.1.5.4.2 Steam pipes with service temperatures exceeding 500°C are to be examined for expansion at 5-year intervals, starting from class renewal II, at the latest.

2.1.5.5 Pressure vessels

2.1.5.5.1 Pressure vessels which are subject to survey by BRS according to the Construction Rules, are to be examined internally and externally every 5 years, possibly in connection with a class renewal survey.

2.1.5.5.2 Pressure vessels having a product of pressure by cubic capacity of $p \times l \leq 200$ (p in bar) are to be surveyed on the occasion of checking of the pertinent piping system.

2.1.5.5.3 Periodical tests of CO2 cylinders and other gas cylinders for fire-extinguishing purposes are to be carried out at intervals not exceeding 10 years. At least 10% of the gas cylinders and bottles provided are to be subjected to an internal inspection and hydrostatic test. Halon containers of existing fixed Halon fire extinguishing systems are exempted from this requirement.

Irrespective thereof, on the occasion of recharging CO2 cylinders, Halon containers and other gas cylinders are to be tested, if the last test dates back 10 years or more.

2.1.5.5.4 Low pressure CO2 bulk storage containers are subject to internal survey if the content has been released and the container is more than 5 years old but not more frequently than once within five years.

2.1.5.5.5 In the cases of vessels for powder extinguishing agents, periodical pressure tests may be dispensed with, provided that their internal inspection does not reveal any deficiencies.

2.1.5.5.6 Receivers in hydraulic or pneumatic control systems are to be examined during maintenance and repairs at the system; air receivers with a product of pressure by cubic capacity $p \times l \geq 1000$ are to be subjected to an internal inspection at least once during each class period and/or at intervals not exceeding 5 years.

2.1.5.5.7 The intervals between surveys as referred to may be reduced, depending on the findings.

2.1.5.6 Automation equipment

2.1.5.6.1 For confirmation of the class notation, machinery having been assigned the notations AUT, AUT-nh, AUT-Z or RC is to be inspected in accordance with BRS programmes AUT 3 and AUT 4, respectively.

2.1.5.6.2 AUT 3: This (non-recurring) survey is to be carried out 6 months after commissioning of the ship and/or in the case of retrofitting, major conversions or repairs of the automation equipment, 6 months after the initial survey and extraordinary survey after conversion, respectively. It serves the purpose of confirmation of the relevant notation, following a trial phase.

2.1.5.6.3 AUT 4: In the case of seagoing as well as inland waterway vessels, this survey is to be performed nominally every 2.5 years, preferably during each class renewal and intermediate survey, and on ships equipped for more than 12 passengers, annually.

Any deviating intervals as stipulated by the flag state are to be observed.

The first due date will be counted as from the date of commissioning of the ship and/or of its retrofitting.

2.1.5.7 Inert gas systems

Inert gas installations of the cargo tank area of tankers are to be checked annually as to their operability. Tankers with the class notation INERT are to be surveyed in accordance with BRS programme INERT 4, at intervals of nominally 2.5 years, preferably on the occasion of each class renewal and intermediate survey. (See Section 4, 1 to 4).

2.1.6 Bottom surveys

2.1.6.1 Bottom surveys serve the purpose of periodical checking of the underwater hull, of the openings and closures in the shell related to the machinery, and of externally arranged components of the steering and propulsion system. See 3.1.4 and 3.1.6.

2.1.6.2 Seagoing ships carrying the character of class 100 A5 are within a 5-year class period to be twice subjected to a bottom survey. The first bottom survey has to be carried out on the occasion of the 2nd or by no later than the 3rd regular annual survey.

As a matter of principle, class renewals include a bottom survey, which is then accepted as the 2nd regular bottom survey.

The maximum interval between two successive bottom surveys is not to exceed 36 months in any case. The following bottom survey is then to be held latest after 24 months.

2.1.6.3 Seagoing ships having a character of classification other than 100 A 5 are to be subjected to bottom surveys at intervals corresponding to half the respective period of class.

2.1.6.4 Seagoing ships with accommodations for more than 12 passengers are to be presented for bottom survey at intervals of 1 year.

2.1.6.5 It is expected that also for each drydocking in addition to those stipulated by the classification requirements a Surveyor will be called to attend.

2.1.6.6 The surveys may be carried out on the occasion of a scheduled intermediate survey (cf. 2.1.2) and for ships referred to in 2.1.6.4, on the occasion of the annual survey.

2.1.6.7 If a bottom survey is intended to be credited to a class renewal, all checkings of hull and machinery prescribed for the respective class renewal and requiring drydocking will have to be carried out.

A bottom survey for class renewal may be carried out up to 15 months before completion of the class renewal. For container vessel (see 2.1.8)

2.1.6.8 For inland waterway vessels see Section 4,7.

2.1.7 In-water surveys (seagoing ships)

2.1.7.1 For ships assigned the class notation IW, an in-water survey performed with the assistance of an approved diving firm may be recognized as a substitute for every second periodical drydocking survey, provided, however, that this survey is not part of a class renewal. See 3.1.7.

2.1.7.2 On request an in-water survey in lieu of every second periodical drydocking survey may also be carried out for ships without the class notation IW with the assistance of an approved diving firm. The relevant permission will be endorsed in the annex to the class certificate.

2.1.7.3 For Passenger vessels with notation IW, two bottom inspections for 5 years with interval not more than 36 months are required. Remaining bottom inspections may be carried out as IW survey.

2.1.7.4 Special considerations should be given to vessels of 15 years of age or over prior to permission being granted to carry out an in-water survey in lieu of drydocking survey.

2.1.8 Extended dry-dock interval /EDDI/

2.1.8.1 The EDDI applies to Container vessels. It also applies to General cargo and Multi purpose dry cargo vessels, excluding single skin construction in cargo area.

2.1.8.2 The EDDI for 7.5 years is limited from the delivery of the vessel to the age of 15 years

2.1.8.3 At the 7.5years interval it is possible to perform the first two forthcoming bottom surveys as IW survey. The third bottom survey at 7.5years has to be performed in Dry dock. The interval is independence whether the bottom survey will be performed at an Intermediate or Renewal survey.

2.1.8.4 The Owner has the possibility to join the EDDI from delivery of the vessel, or between the years to an age 10 years.

2.1.8.5 Requirements for EDDI

– Class notation IW for hull

– Planned Hull and Machinery system

– Flag approval of EDDI

2.2 Non-periodical surveys

2.2.1 Damage and repair surveys

2.2.1.1 Damage and repair surveys fall due whenever the ship's hull, machinery or electrical installations and/ or some special equipment classed have suffered a damage, which might affect the validity of the class, or if damage may be assumed in consequence of an average or some other event (see 3.3.1 and Section 2, 2.2).

2.2.2 Voyage Repairs and Maintenance

Subject to the emergency measures permitted by Section 2, 2.3.5, where repairs to hull, machinery or equipment, which affect or may affect classification, 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 Surveyor´s attendance during the voyage is to be submitted to and

agreed upon by the Surveyor reasonably in advance. Failure to notify the Classification Society, in advance of the repairs, may result in suspension of the vessel's class.

The above is not intended to include maintenance and overhaul to hull, machinery and equipment in accordance with the recommended manufacturer´s procedures and established marine practice and which does not require the Classification Society's approval, however, any repair as a result of such maintenance and overhauls which affects or may affect classification is to be noted in the ship's log and submitted to the attending Surveyor for use in determining further survey requirements.

2.2.3 Conversion surveys

In the case of conversions of a ship's hull or machinery, surveys are to be conducted in accordance with the relevant approved particulars, as in the case of new-buildings (cf. Section 2, 2.3).

2.2.4 Extraordinary Surveys

BRS reserves the right to require Extraordinary Surveys to be held independently of any regular surveys. Such surveys may become necessary for examining a vessel's technical condition and are understood to form a part of the Society's Quality Assurance System.

2.3 Special equipment

Periodical surveys and checkings of special equipment covered by the class, such as diving installations, firefighting installations, incinerators or sea-water desalination systems, are to be carried out in accordance with the respective programmes fixed or to be fixed by BRS for such special equipment characteristic of a particular type of ship.

Refrigerating installations: See 4.

Diving installations: See 5.

Lifting appliances: See "Preliminary Rules for the Classification of Lifting Appliances".

2.4 Additional Safety Measures

2.4.1 For all concerned ships the strength of the small hatches and their securing devices fitted on the exposed fore deck, are to comply with additional requirements 2 for these structures.

The strength requirements to resist sea forces of items, such as air and ventilator pipes and their closing appliances, and the securing of windlasses located within the forward quarter length, are to comply with additional requirements3 for fore deck fittings and equipment.

3. PERFORMANCE AND SCOPE OF SURVEYS

3.1 Periodical Surveys

3.1.1 Annual surveys

3.1.1.1 General

3.1.1.1.1 Unless a drydocking survey is due, annual surveys as per 2.1.1 may be carried out with the ship afloat.

3.1.1.1.2 The following applies to seagoing ships in general. Section 4 for special ship types is to e observed.

3.1.1.1.3 For ships with accommodations for more than 12 passengers, the annual surveys must always include a bottom survey.

3.1.1.2 Hull, equipment

3.1.1.2.1 The main structural elements of the hull are to be subjected to a general visual inspection, as far as accessible, on the occasion of the annual survey. Cargo holds and engine rooms are to be surveyed at random, depending on the ship type and the age and condition of the ship. The ship is to be surveyed in unloaded condition, wherever possible. In the case of suspected damages affecting the class, the Surveyor is entitled to carry out further investigations.

3.1.1.2.2 The hatches, bulkhead doors, ramps, bow visors, bow, side and stern doors, etc., of all ships have to be surveyed at each opportunity arising, but at least once a year, regarding the tightness and operability of all closures. In additionally to be inspected thoroughly as follows:

– all hinges and hydraulic cylinders

– all securing elements of locking devices and stoppers.

3.1.1.2.3 The steering gear and the anchor equipment are to be checked for visible damages. For operability, see 3.1.1.3.

3.1.1.2.4 On ships equipped for carriage of containers, the annual survey shall include random checks of

– condition and origin/identity of (loose) lashing/securing elements, against documentation on board (approved container stowage plan)

– condition of container supports welded into the ship's structure or the hatch covers.

3.1.1.2.5 For seawater ballast tanks, in the case of substantial corrosion 4 damages, annual surveys may be required (see 3.1.2.2).

3.1.1.2.6 Passenger vessels: in addition to the annual surveys prescribed for all seagoing ships and the surveys to be conducted during drydocking, all closures on the weather deck, the watertight bulkheads, including all closures, all bow visors, bow, side and stern doors, fire doors and similar closures, the escapes and any cross-flooding arrangements are to be checked every year as to their general condition and operability.

3.1.1.3 Machinery

The machinery, including the electrical equipment, will be subjected to the following surveys and operational checks:

– general inspection of the machinery and boiler rooms, with special regard to the propul-

sion system, the auxiliary engines, fire and explosion sources, and checking of emergency exits as to their free passage

– external inspection of boilers, pressure vessels with their appliances and safety devices

– inspection and checking of the remote control, quick-closing/stopping devices of pumps, valves, ventilators, etc.

– random checking of the remote control and automatic equipment

– inspection and checking of the main and auxiliary steering gear, including their appliances and control systems

– checking of all communication systems between bridge and machinery, boiler and steering gear rooms

– inspection of the bilge system, including remote control actuators and bilge filling level monitor

– checking of the main and emergency power supply systems, including the switch-gear and other electrical installations

– survey of explosion-proof installations

– checking of further permanently installed installations to the Surveyor's discretion, e.g. provision cooling plant, air conditioning, incenerating plant, etc.

3.1.1.4 Fire extinguishing and fire alarm systems

The following is subject to inspection/testing:

– fire main system, including hoses and nozzles

– gas fire extinguishing system

– dry powder fire extinguishing system

– foam fire extinguishing system

– sprinkler system, including water mist sprinkler system

– drencher system

– any other fixed fire extinguishing system

– portable fire extinguishers, mobile fire extinguishers, including portable foam applicator units

– fire detection and alarm systems

– emergency stop for ventilating fans, boiler forced draft fans, fuel transfer pumps, fuel oil purifiers, thermal oil pumps

– quick-closing fuel valves

– fire closures (fire dampers, engine room skylights etc.)

– fire man's outfits

– fire fighting systems of ships with the class notation FF1, FF2 or FF3.

Note5

At least 20 % of the available fire hoses and nozzles are to be included in the testing of the fire main system.

CO2-gas and Halon cylinders of fixed gas fire extinguishing systems are subject to level checks every 2 years. These checks may be performed by ship's staff, provided that the results are recorded and an entry is made into the ship's log.

In the event of loss of more than 10 % of CO2, respectively more than 5 % Halon, recharging is to be arranged for. Periodical testing see Section 3, 2.1.5.5.3.

Fixed fire extinguishing systems,such as gas-, foam-, dry powder, water spray or water mist fire extinguishing systems are subject to maintenance by approved or acknowledged specialists every 2 years.

On the occasion of these inspections all CO2 hose assemblies must be subjected to a visual check. All

CO2 hose assemblies made of synthetic rubber must be replaced by type approved CO2 hoses not later than 10 years from the date of manufacture.

Portable fire extinguishers and mobile fire extinguishers are subject to inspection by a competent person every year. Maintenance shall be carried out as appropriate in accordance with the manufacturers' instructions. Each extinguisher is to be provided with a label showing the date of inspection and name and signature of the competent person. Fire extinguishers and associated gas cylinders if any are subject to pressure testing every 10 years. A protocol of the inspections and maintenance carried out is to be kept onboard.

Foam concentrate for fixed foam fire extinguishing systems is to be examined not later than 3 years after filling into the system, and yearly thereafter. The examination is to be performed by the manufacturers or by an independent laboratory. Reports are to be presented to the surveyor. Manufacturers' certificates stating the properties of the foam concentrate shall be available onboard for reference of the surveyor.

The foam concentrate for the portable foam applicators is to be renewed on the occasion of every class renewal.

3.1.1.5 Bridge control stand

On the occasion of the annual survey or during the prescribed annual survey of the safety equipment onboard ships assigned the class notation NAV-O or NAV-OC, an operational trial of the relevant equipment is to be performed.

3.1.2 Intermediate surveys

3.1.2.1 General

3.1.2.1.1 Intermediate surveys are to be performed to the extent of annual surveys. Additionally, the following requirements are to be observed.

3.1.2.1.2 The requirements listed below apply to seagoing ships in general. Section 4 for special ship types is to be observed.

3.1.2.2 Ballast tanks

3.1.2.2.1 In ships aged 5 to 10 years, selected sea-water ballast tanks are to be examined for corrosion damages and/or damages to their coatings. Depending on the survey result, and in particular

in the case of poor 6 coating condition, if soft coating7 has been applied, or when built the tanks were not provided with effective corrosion protection, the survey is to be extended to additional tanks of the same type.

3.1.2.2.2 If the coating in seawater ballast tanks except the double bottom tanks is found to be in poor6 condition, but is not renewed, if soft coating7 has been applied, or if when built, the tanks were not provided with effective corrosion protection, or if corrosion respectively other defects are found, maintenance of class is to be subject to the tanks in question being examined at annual intervals, and thickness measurements carried out as considered necessary. Also in case of double bottom tanks, annual surveys may have to be carried out.

3.1.2.2.3 In ships aged 10 years and over, during the intermediate survey, all seawater ballast tanks are to be examined for damages to the hull structural elements and to the coating, if applicable the procedure as outlined in 3.1.2.2.2 shall be followed. Also in case of double bottom tanks, annual surveys may have to be carried out.

3.1.2.2.4 If coating is to be renewed totally or partly, only approved coating is applicable in case of a repair. The whole working procedure including the surface preparation has to be documented.

3.1.2.3 Cargo holds

Depending on the ship's age and on the cargo carried, selected cargo holds are to be closely examined in accordance with the Surveyor's instructions in order to ensure that the condition of all important structural elements may be ascertained. For vessels over 10 years of age, other than Dry cargo ships, selected cargo spaces to be examined.

3.1.2.4 Bow visors and bow side and stern doors

Visors and doors are to be thoroughly inspected. Apart from checkings of their general condition and operability, crack tests are to be carried out at:

– all hinges and the pertinent hydraulic cylinders in way of their securing points,

– all securing elements of the locking devices and stoppers.

Essentially, the crack tests will cover:

– main joining welds and their interfacial areas both on the vessel´s hull and on the visor and/ or doors

– highly stressed areas in way of the centres of rotation of the hinges, at the Surveyor´s discretion

– highly stressed areas of the locking devices and their stoppers, at the Surveyor´s discretion

– repair weldings.

For crack detection the dye penetrant method or the magnaflux method are to be employed, and a test protocol is to be prepared.

Bow, side and stern doors with a clear opening of less than 12 m2 are to be checked as per the surveyor´s instructions for the operability and unobjectionable technical condition.

3.1.2.5 Elastic mounting of deck houses

Elastic mountings of deckhouses have to be thoroughly checked for the general condition and operability of:

– the spring elements (possibly prestressing of screwed connections)

– the insulations

– the securing devices to prevent shifting and lifting

– the pipe and cable connections to the hull.

If damages are suspected, mountings not easily accessible are to be unmounted and examined in detail.

3.1.2.6 Machinery and electrical installations

3.1.2.6.1 The following measurements are to be performed and/or proved to have been performed by up-to-date protocols:

– crank web deflection, main engine(s)

– crank web deflection, auxiliary diesel(s) (where relevant)

– axial thrust bearing clearance of shafting system(s)

– axial thrust bearing clearance of main and auxiliary turbine rotors

– insulation resistance of generators and essential electrical motors, including cabling and switchgear.

3.1.2.6.2 Additionally, the following system components are to be subjected to operation tests:

– emergency generating set, including emergency switchboard

– emergency bilge valve

– bilge, ventilation and monitoring systems for the carriage of dangerous goods

– drainage facilities of starting-air and control-air receivers

– general operational test of the machinery and electrical installations for furnishing proof of unrestricted operability, as indicated by the Surveyor.

3.1.2.6.3 Automation equipment: In case a survey is due, the automation equipment is to be checked according to 3.1.5.6.

3.1.3 Class renewal surveys

3.1.3.1 General

3.1.3.1.1 In addition to the surveys and checks to be carried out as outlined in 3.1.1 and 3.1.2, on the occasion of class renewals, the following regulations are to be observed.

3.1.3.1.2 The requirements listed below apply to seagoing ships in general. Section 4 for special ship types is to be observed.

3.1.3.1.3 The class renewal survey is as a rule to be held when the ship is in drydock or on a slipway, unless a drydocking survey has been carried out within the admissible period (see 2.1.6.7). The ship is to be placed on blocks of sufficient height so that the keel, the bottom plating and the rudder can be examined.

3.1.3.2 Hull, equipment

3.1.3.2.1 Class Renewal I (Age of ship up to 5 years)

3.1.3.2.1.1 Hull,general

At the surveyor's discretion, the survey on principle covers all spaces and hull structural elements, particularly those areas which from experience are known to be exposed to fatigue and corrosion, such as cargo holds, tanks, hatch structure, bow visors, bow, side and stern doors, engine foundations, ends of superstructures. All cargo spaces, tweendecks, pump rooms, tunnels, cofferdams, machinery space, void spaces to be internally examined.(see also 3.1.2.4)

3.1.3.2.1.2 Preparations

The cargo holds, the bilges and the tanks are to be cleared, cleaned and - if necessary - freed from gas at the Surveyor's discretion so that all structural parts, such as frames, floor plates, stringers, shell plating, decks, deck beams, bulkheads, inner bottom, etc. may be examined. Tanks for fuel/ lubricating oil and feed water: See 3.1.3.2.1.3. The soft coating in ballast tanks(if applied) to be removed partly in order to provide safe access to the internal structures.

Where ships have no double bottom, it is left to the Surveyor's discretion to have portions of the bottom ceiling of each watertight compartment removed on either side of the ship, especially near the centre-line girder and in way of the bilge pipes and sounding pipes, so that the bottom structure below may be examined.

Where ships have a double bottom, the ceiling is to be removed at several points, at the Surveyor's discretion.

If deemed necessary by the Surveyor, defective cement and asphalt covering is to be removed. The steel work is to be examined before painting or before the cement or other coverings are renewed.

3.1.3.2.1.3 Tanks

The seawater ballast tanks are to be inspected, if applicable the procedure as outlined in 3.1.2.2.2 shall be followed.

Fuel oil, lubricating oil and feed water tanks need not be emptied, if their tightness can be verified by an external examination while they are completely filled and there is no reason for doubt as to their unobjectionable condition. However, fore peak and after peak are in any case subject to internal examinations at each Class Renewal Surveys, see also Table 3.1.

3.1.3.2.1.4 Tightness tests

Each compartment of the double bottom and all tanks, the boundary bulkheads of which form part of the main structure of the ship, are to be subjected to a pressure test. Fuel, lubricating oil and feed water tanks may be tested by filling with the respective liquid.Pressure for test according to standards. The test pressure applied is to correspond to a head of water up to the top of hatch cargo tanks or up to

the top of overflow/air pipe of a tank, whichever is higher. The tightness of pipe tunnels outside the inner bottom and void spaces can be tested by air pressure. Testing of other tanks by air pressure has to be agreed with the Surveyor case by case. The over- pressure shall not exceed 0.2 bars

3.1.3.2.1.5 Thickness measurement

If the Surveyor has reason to suspect premature inadmissible corrosion, he may requires the rust to be removed from parts of structures and thickness measurements to be performed.

Table 3.1 Minimum Requirements for internal examination at Hull Class Renewal Surveys of structural fuel oil, lube oil and fresh water tanks

Class Renewal Survey [No.] and ship's age [years]				
Tank [1, 2]	**I. age ≤ 5**	**II. 5 < age ≤ 10**	**III. 10 < age ≤ 15**	**IV. and subsequent, age > 15**
Fuel oil bunker tanks				
– Engine room	None	None	One	One
– Cargo area	None	One	Two [3]	Half, minimum two [3]
Lube oil	None	None	None	One
Fresh water	None	One	All	All

1 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

2 Fore peak tanks and after peak tanks are subject to internal examination at each Class Renewal Survey

3 One deep tank is to be included, if fitted

Table 3.1A Air pipe head internal examination requirements (applicable for automatic air pipe heads installed on exposed decks of all ships except passenger ships)

Special survey I (Ships 5 years old)	**Special survey II (Ships 10 years old)**	**Special survey III (Ships 15 years old) and subsequent**
(1) Two air pipe heads (one port and one starboard) on exposed decks in the forward 0,25L. (2) Two air pipe heads (one port and one starboard) on the exposed decks ,serving spaces aft of 0,25L.	(1) All air pipe heads on exposed decks in the forward 0,25L. (2) At least 20% of air pipe heads on exposed decks ,serving spaces aft of 0,25L.	All air pipe head on exposed decks.

3.1.3.2.1.6 Repair, equipment, deck openings, etc. The Class Renewal Survey also covers other parts essential for the operation and safety of ship, such as ruder and steering gear, watertight doors, sluice valves, air pipes and sounding pipes including their heads, gas-freeing and safety arrangements of cargo tanks, life-boat davits, skylights, companionways, hatches, scuppers and water drain valves and pipes, fire protecting arrangements, masts, anchors, anchor chains and hawsers. Visors and doors, if any are to be checked acc. to 3.1.2.4 Elastic mountings of deck houses, if any are to be checked acc. to 3.1.2.5. For trials of the steering gear and possible dismounting of the ruder, see 3.1.1.3 and 3.1.6.3

3.1.3.2.1.7 Engine room

The Engine room structure is to be examined. 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 engine bulkheads

in way of tank tops and bilge wells. Where wastage is evident or suspected, thickness measurements are to be carried out.

3.1.3.2.1.8 Container ships

For ships equipped of the carriage of containers during the Renewal survey inspections are:

– checking for cracks and deformations of the supporting elements/weld-in elements/ in the inner bottom and hatch covers, of supporting stanchions arranged on deck, if any and of the entire hatch covers

– checking of condition and operability of supports and stoppers of hatch covers

– survey of guide rails and supporting frames if fitted/connection to hull, deformations/

– random check of the loose stowage and lashing elements, comparison with the certification on board

3.1.3.2.1.9 Loading instrument and loading manual

Where applicable for the vessels, the satisfactory operation test of the approved Lading computer system during the Renewal survey to be carried out on the base of approved test conditions/at least 3 test conditions with results not more 5% deviation from approved figures/ The load must be checked in details, step by step. Where necessary for the vessel, the Surveyor has to check that approved Loading Manual is on board.

3.1.3.2.2 Class Renewal II /Age of ship 5 to 10 years/

3.1.3.2.2.1 The requirements of Renewal class II are indicated to those of Class Renewal I and additionally bellow requirements have to be observed

3.1.3.2.2.2 The structural parts being ceilings and insulation are to examined as required by the Surveyor

3.1.3.2.2.3 All tanks to be examined internally. Lubricating oil and fresh water tanks to be subject at least to random check examinations as required by Surveyor, see Table 3.1.

3.1.3.2.2.4 The chain cables are to be examined in ranged position for wear and damages in full length. The main diameter of the links of anchor chains to measured – 3 lings per length.

3.1.3.2.2.5 For thickness measurements see 3.2.

3.1.3.2.3 Class Renewal III and subsequent ones /Age of ship over 10 years/

3.1.3.2.3.1 For Class Renewal III ,IV, V etc. all requirement for Class Renewal II are to be complied with and additionally bellow requirements are to observed

3.1.3.2.3.2 Ceilings and insulation of holds are to be removed where necessary, to enable the condition of the bottom structure and the inner bottom surface of shell plating or the Tank tops to be assessed. For Class Renewal IV and after RS the ceilings in cargo hold to be completely removed and tank top plating is to be examined carefully.

3.1.3.2.3.3 The wall lining underneath windows in the outer shell is to be lifted as required by the Surveyor and structure may be examined.

3.1.3.2.3.4 All tanks are to be examined internally. The fuel, lubricating oil and fresh water tanks are to be examined internally and tested to the max working overpressure at the Surveyor's discretion, see 3.1.3.2.1.3.and Table 3.1. In case of ballast tanks the procedure as outlined in 3.1.2.2.2 shall be followed, if applicable.

3.1.3.2.3.5 Cargo tanks of Dry Cargo vessels are to be tested by filling with water up to the edge of tank hatch or by air pressure 0.2bar, if not possible.

3.1.3.2.3.6 The ruder body is to be examined. The connection to the ruder stock and if filled, to the pintle and pertinent securing devices are to be inspected, clearance measured and if deemed necessary dismantled and check of bearings for corrosion.

3.1.3.2.3.7 The weight of the anchors to checked.

3.1.3.3 Machinery including electrical installation

3.1.3.3.1 General Except for individual machinery items as listed in 3.1.5 the scope of all Class Renewal surveys for the machinery installation, including electrical equipment are identical. If CMS are applied see also 2.1.3.6.

3.1.3.3.2 Surveys requiring Dry –docking While the ship is in Dry dock the sea inlet and discharge valves are to be examined and as a their condition to be opened up and overhauled once within class period. Bow thrusters and position equipment are to be generally examined and tested in operation. For propellers, propeller and stern tube shafts, vine wheels see 3.1.4.

3.1.3.3.3 Propulsion system

3.1.3.3.3.1 Inspections of the propulsion system are to mainly cover:

– intermediate shafts and bearings, including thrust bearings

– gearings

– mechanical and flexible couplings

– turning gear, and

– the main propulsion engines (see 3.1.3.3.4, 3.1.3.3.5) and auxiliary engines (see 3.1.3.3.6).

For electrically driven propellers, see 3.1.3.3.8.

3.1.3.3.3.2 Spring elements made of rubber - with or without plies of fabric and under shear load, of rubber ring clutches and other rubber couplings, are to be renewed, if required on account of negative inspection results.

3.1.3.3.4 Main propulsion engines

The components listed below are to be inspected and, where deemed necessary by the Surveyor, checked in unmounted condition:

– cylinders, cylinder covers, pistons, piston rods and bolts, crossheads, crankshaft and all bearings

– camshaft, with drive and bearings

– tie rod, frame, foundation and fastening elements

– injection system, attached pumps and compressors, superchargers, suction and exhaust lines, charging air coolers, filters, monitoring, control, protective and safety equipment, starting, reversing and manoeuvring equipment. Note

In the case of medium-speed diesel engines, unmounting and replacement of main and crank bearings may be postponed until the service life limits have been reached. The acceptable intervals between overhauls are determined by BRS Head Office.

3.1.3.3.5 Main propulsion turbines

On the occasion of each class renewal the vibration behaviour of the main propulsion turbines is to be proved, possibly by regular checks during operation. Depending on the result obtained and as required by the Surveyor, the turbine casings will have to be opened up.

The safety equipment of the turbines is to be tested.

3.1.3.3.6 Auxiliary engines

For all essential auxiliary engines, the survey scope is identical to that applying to main engines. A reduction in the scope of survey may be agreed to upon examination of the maintenance protocols.

3.1.3.3.7 Auxiliary machinery, equipment and pipings

The following machinery components are - where deemed necessary by the Surveyor - to be inspected and tested in the unmounted condition:

– all pumps of the essential systems

– air compressors, including safety equipment

– separators, filters and valves

– coolers, preheaters (cf. 3.1.5.5)

– main and auxiliary steering gear

– anchor and other windlasses, including their drives

– pipings, pipe connections, compensators and hoses

– emergency drain valves and bilge piping systems

– tank filling level indicators

– installations preventing the ingress of water into open spaces

– freshwater distillation plant – oil purifier and sewage systems and

– additional systems and components, where deemed necessary by the Surveyor.

3.1.3.3.8 Electrical installations

3.1.3.3.8.1 If the ship is propelled by electric machinery, the propulsion motors, the propulsion generators, exciters, particularly the windings of these machines, and their ventilating systems are to

be examined and tested. Checking of the electric switch gear for operability is to also cover the protective, safety and interlocking devices. The electric cables and their connections are to be inspected. The insulation resistance of all electric machinery and equipment is to be tested.

3.1.3.3.8.2 Dynamic positioning systems according to Section 2, 3.3.1.9, including electrical control systems, is to be subjected to operational tests.

3.1.3.3.8.3 The electrical equipment, including the generators, the motors of the essential auxiliary machinery, the switch gear, including its protective and interlocking devices, as well as the cable network, is to be inspected externally. The insulation resistance is to be measured.

3.1.3.3.8.4 Electrical installations, including machinery and equipment, located in spaces in which there is a risk of inflammable gas or steam air mixtures accumulating, are to be checked as to the explosion protection provided.

3.1.3.3.9 Pipes in tanks

Where pipes lead through tanks, they are to be examined and, if required by the Surveyor, subjected to hydraulic tests, if for such tanks an internal examination is required by 3.1.3.2. Depending on the results obtained, thickness measurements are to be performed.

3.1.3.3.10 Fire extinguishing and fire alarm systems

3.1.3.3.10.1 General requirements

Proof is to be furnished to the Surveyor of the entire fire extinguishing equipment being ready for operation. Details/trials as per 3.1.1.4.

Emergency exits/escapes are to be inspected.

CO2 cylinders and halone bottles: see 3.1.5.5 and for due dates, 2.1.5.5.

On the occasion of every class renewal survey all CO2 hose assemblies must be subjected to a visual check. All CO2 hose assemblies made of synthetic rubber must be replaced by type approved CO2 hose assemblies not later than 10 years from the date of manufacture.

3.1.3.3.10.2 Fire-fighting ships

The fire-fighting and life-saving equipment aboard ships with notations FF 1, FF 2 or FF 3 affixed to their character of classification for the machinery installation are to be inspected and tested. (Positioning equipment: See 3.1.3.3.2, 3.1.3.3.8)

3.1.3.3.11 Automation equipment: See 3.1.5.6.

3.1.3.3.12 Dangerous goods

In ships carrying the class notation SOLAS II-2, Reg. 19 the equipment for the carriage of dangerous goods, e.g., special fire fighting, alarm, ventilation and explosion protection equipment is to be surveyed as required.(see Section 2, 3.3.1.3.9)

3.1.3.3.13 Spare parts

Spare parts are to be checked for completeness as per the Rule requirements and/or according to the lists approved by BRS and kept in the ship's files, as well as for their operability.

3.1.3.3.14 Trials

Upon completion of the surveys for class renewal, the surveyor must be satisfied that the entire machinery installation, including the electrical machinery and equipment and the steering gear, is operable without any restrictions. In case of doubt, this may have to be proved by trials and/or operational tests.

3.1.4 Periodical surveys of propeller shafts and tube shafts, propellers, vane wheels and other systems

The periodical surveys and tests of propeller shafts and tube shafts, propellers, vane wheels and other systems defined in 2.1.4 are to be performed as follows.

3.1.4.1 Propeller shafts and tube shafts

3.1.4.1.1 Normal survey

The prerequisites are defined in 2.1.4.1.1. It is distinguished between:

– survey with drawing of the shaft

– survey without drawing of the shaft

3.1.4.1.1.1 Survey with drawing of the shaft

The scope of normal survey consists in the following:

– dismantling of propeller and key, where fitted, visual inspection of all parts of the shaft especially the cone, the keyway, the bearing contact areas of the shaft, the bearings, and the thread of the propeller nut, or the fillet of the flange, examination of the propeller fit

– non-destructive examination by an approved crack-detection method of the aft end of the cylindrical part of the shaft and of about one third of the length of the taper from the large end and of the area of the keyway, or the fillet of the flange in case of a solid flange coupling

– examination of the bearing clearances and/or| wear down before dismantling and after reassembling of the shaft with recording of the values measured

– overhaul of the shaft sealing glands according to manufacturer's instructions (sealing rings, liners, etc.)

3.1.4.1.1.2 Survey without drawing of the shaft

Where the prerequisites as defined in 2.1.4.1.1.2 apply, for oil lubricating arrangement the scope of normal survey without drawing of the shaft consists in the following:

– examination of all accessible parts of the shaft including the propeller connection to the shaft

– non-destructive examination by an approved crack-detection method of the aft end of the cylindrical part of the shaft and of about one third of the length of the taper from the large end and of the area of the keyway for keyed propellers, or of the forward part of the aft shaft taper for keyless propellers, or of the after fillet flange area of the shaft for solid flange coupling propellers.

The area to be examined is to be sufficiently exposed, if necessary by shifting of the propeller shaft or backing-off of the propeller

– examination of the bearing clearances, respectively wear down of the aft bearing

– overhaul of the shaft sealing glands according to manufacturer's instructions (sealing rings, liners, etc.)

– examination of the records of all regularly carried out lubricating oil analyses

– examination of the records of the oil consumption and the bearing temperatures

Where doubts exist regarding the findings, the shaft is to be drawn to permit an entire examination.

3.1.4.1.2 Modified survey

The prerequisites are defined in 2.1.4.1.2. It is distinguished between:

– survey with exposing the aft bearing contact area of the shaft

– survey without exposing the aft bearing contact area of the shaft

3.1.4.1.2.1 Survey with exposing the aft bearing contact area of the shaft

The scope of the modified survey consists in the following:

– drawing the shaft to expose the aft bearing contact area of the shaft

– examination of the forward bearing as far as possible and of all accessible parts of the shaft including the propeller connection to the shaft

– examination and overhaul of the oil sealing glands according to manufacturer's instructions (sealing rings, liners, etc.)

– examination of the bearing clearances and/or wear down of the shaft with recording of the values measured

– examination of the lubricating oil analysis and consumption to be within permissible limits

– for keyed propellers, performing a nondestructive examination by an approved crack detection method of about one third of the length of the taper from the large end, for which dismantling of the propeller is required, examination of the propeller fit

Where doubts exist regarding the findings, the shaft is to be further dismantled, respectively drawn.

3.1.4.1.2.2 Survey without exposing the aft bearing contact area of the shaft

Where the prerequisites as defined in 2.1.4.1.2.2 apply, the scope of the modified survey without exposing the aft bearing contact area of the shaft consists in the following:

– examination and overhaul of the oil sealing glands according to manufacturer's instructions (sealing rings, liners, etc.)

– examination of the bearing clearances and/or wear down of the shaft with recording of the values measured

– for keyed propellers, performing a nondestructive examination by an approved crack-detection method of about one third of the length of the taper from the large end, for which dismantling of the propeller is required, examination of the propeller fit

In addition to this the survey shall include the following:

– examination of the records of all regularly carried out lubricating oil analyses

– examination of the records of the oil consumption and the bearing temperatures

Where doubts exist regarding the findings, the shaft is to be further dismantled, respectively drawn.

3.1.4.1.3 Partial survey

The prerequisites are defined in 2.1.4.1.3. The partial survey consists in the following:

– checking of the oil sealing for leakages

– examination of the bearing clearances and/or wear down of the shaft with recording of the values measured

– examination of the records of the lubricating oil analysis

– examination of the records of the oil consumption and the bearing temperatures

Where the propeller is fitted to a keyed shaft taper, in addition:

– dismantling of the propeller and examination of propeller fit

– non-destructive examination by an approved crack-detection method of the aft end of the cylindrical part of the shaft and of about one third of the length of the taper from the large end and of the area of keyway are to be performed.

Where doubts exist regarding the findings, the shaft is to be further dismantled, respectively drawn.

3.1.4.2 Propellers

Propellers are to be examined visually on the occasion of each propeller shaft or tube shaft survey.

Damages, such as cracks, deformation, cavitation effects, etc. are to be reported and repaired at the Surveyor’s discretion.

Controllable pitch propellers are to be checked for oil leakages. The function of the controllable pitch propellers has to be tested. The maintenance according to manufacturer’s instructions has to be checked.

3.1.4.3 Vane wheels

The scope of surveys is to be agreed with BRS Head Office.

3.1.4.4 Other systems

As far as practicable, the gearing and control elements of rudder and steering propellers are to be examined through inspection openings. For other systems such as pod propulsion systems, pump jet units, etc. the scope of survey is to be agreed with BRS Head Office. The maintenance according to manufacturer’s instructions is to be checked. A function test is to be carried out.

3.1.5 Periodical surveys and tests of individual machinery items

3.1.5.1 The periodical surveys and tests of individual machinery items defined in 2.1.5 are to be performed as outlined below.

3.1.5.2 Steam Boilers

3.1.5.2.1 External inspection

The operability and general condition of the entire boiler, including its valves and fittings, pumps, pipings, insulations, foundation, control and regulation systems, and its protective and safety equipment, are to be examined.

3.1.5.2.2 Internal inspection

Where deemed necessary by the Surveyor, the boiler is to be cleaned on the water and flue gas sides, and, if required, its outside surfaces are to be exposed as well, so that all walls subject to pressure may be examined.

Where the design of the boiler does not permit an adequate internal inspection, hydraulic tests may be required. It is left to the Surveyor's discretion to have the internal inspection supplemented by hydraulic tests, if required on account of the condition of the boiler.

Where there are doubts concerning the thickness of the boiler walls, it is to be ascertained by means of a recognized gauging method. On the basis of the result of such inspection the allowable working pressure at which the boiler may be operated in future is to be decided on.

The hydraulic pressure test is to be carried out to a test pressure of 1.3 times the allowable working pressure. Only after repair of major damages the test pressure shall be 1.5 times the maximum allowable working pressure. If the maximum allowable working pressure is less than 2 bar, then the pressure should be at least 1 bar more than the maximum allowable working pressure. In no case the test pressure should exceed the test pressure applied during the first inspection of the boiler after completion.

3.1.5.2.3 Beyond the above periodical inspections the Surveyor may at his own discretion require hydraulic tests or extraordinary surveys to be performed, e.g. following repairs and maintenance work.

3.1.5.3 Thermal oil plants

3.1.5.3.1 External inspection

Thermal oil plants are to be subjected to functional tests, while in operation. In detail, the following items are to be examined:

– the entire thermal oil plant for leakages

– the condition of the insulation

– the functioning of the indication, control and safety equipment

– the remote controls for the shut-off and discharge valves

– the leakage monitors for the heaters

– the emergency switch-off devices (oil firing, pumps)

– the safety switch-off devices for the oil burner

– lighting, emergency lighting and labelling.

Reference is to be made to the test reports on the annual checks to be performed by an appropriate testing institution for continued use of the thermal oil. This is to be confirmed in the report.

3.1.5.3.2 Internal inspection

During the internal inspection the heating surfaces and, where appropriate, the combustion chamber, are to be examined for contamination, corrosion, deformations and leakages.

As a rule, tightness tests are to be carried out to the admissible working pressure. Following repairs and renewals of plant components exposed to pressure, a pressure test is to be carried out to 1.5 times the admissible working pressure.

3.1.5.4 Steam pipes/heating coils

3.1.5.4.1 Steam pipes with steam temperatures of up to 350 °C and with outside diameters of more than 75 mm, are to be examined at random. Examinations of the internal condition of the pipelines, especially of pipe bends, or additional more detailed examinations may be required. Instead of the internal inspection, a hydraulic test may be effected to a pressure equal to 1.5 times the design pressure, but not exceeding that of the prescribed test pressure for the pertinent boiler plant.

3.1.5.4.2 In the case of steam pipes with steam temperatures exceeding 350 °C (at least two) selected individual parts of pipes are to be dismounted from each piping system (main steam pipe and auxiliary steam pipes of each service group) having an outside diameter exceeding 32 mm. Approximately 10% of the welding seams at bends, flanges or tee-branches are to be subjected to an inspection for cracks by recognized nondestructive test methods.

Before being used again, removed screws of flanged joints are to be inspected for their general condition and cracks and renewed, if necessary.

3.1.5.4.3 Steam pipes designed to resist steam temperatures exceeding 500 °C and welded piping systems are to be examined as follows:

Flanged pipes in accordance with 3.1.5.4.2; however, the inspection for cracks has to cover at least 20% of the welded seams.

If internal examination of welded piping systems through the inspection holes appears to be inadequate or if their reliable assessment is not possible even by ultrasonic testing or an equivalent examination method, it may be necessary to cut out certain parts of pipes. At least 20 % of the welding seams are to be inspected for cracks.

Removed screws of flanged joints, see above 3.1.5.4.2.

3.1.5.4.4 Heating coils in oil tanks and vessels are to be subjected to a pressure test to 1.5 times the allowable working pressure.

The same applies to heating coils in cargo tanks.

3.1.5.5 Pressure vessels

3.1.5.5.1 Subject to 2.1.5.5, pressure vessels are to be inspected internally and externally.

3.1.5.5.2 Supplementary tests

Where pressure vessels cannot be satisfactorily examined internally and where their unobjectionable condition cannot be clearly recognized during the internal inspection, recognized non-destructive test methods are to be applied and/or hydraulic pressure tests are to be carried out.

The hydraulic pressure test is to be carried out at a test pressure of 1.5 times the allowable working pressure. If the maximum allowable working pressure is less than 2 bar, then the test pressure should be at least 1 bar more than the maximum allowable working pressure. Pressure vessels manufactured in accordance with DIN Standard 4810 are, subject to that Standard, to be tested to 1.3 times the admissible working pressure. The test pressure must in no case exceed the initial test pressure.

3.1.5.5.3 CO2 low-pressure fire-extinguishing systems and halone tanks

The surfaces are to be checked for corrosion at the Surveyor's discretion.

Insulated vessels are to be exposed at some selected points, such as to offer a general impression of the vessel's external condition.

Following a hydraulic pressure test, the vessels and/or bottles are to be carefully dried. See also 2.1.5.5.4.

3.1.5.6 Automation equipment

The monitoring equipment and the automated functions of the machinery installation are to be subjected to operational trials under service conditions in port; the bridge remote control equipment of the propulsion system will be examined as required.

For details, see survey programme AUT 4.

3.1.6 Drydocking surveys (Seagoing ships)

3.1.6.1 General

For the survey the ship is to be placed on sufficiently high and secure blocks, so that all necessary examinations can be carried out. It may be necessary to clean the bottom and outer shell and/or remove rust from some areas.

3.1.6.2 Hull (bottom survey)

3.1.6.2.1 The survey covers an examination of the bottom and side plates of the shell plating, including any attachments, of the rudder, the scuppers and water drain pipes, including their closures.

3.1.6.2.2 For intermediate surveys of tankers and bulk carriers , to be carried out in the form of dry-docking surveys, see respectively Section 4, 1 to 4 and Section 4, 5.3.

3.1.6.3 Steering gear

The rudder, rudder couplings and bearings, as well as stocks and pintles, are to be surveyed in mounted condition, the rudder clearance is to be measured and documented. The steering gear is to be subjected to an operational trial.If considered necessary in view of the inspection results, the rudder or parts of the steering gear will have to be unmounted.

Bow thrusters are to be inspected externally (see. 2.1.4.4).

3.1.6.4 Machinery and propulsion systems

3.1.6.4.1 For propellers, propeller shaft(s), stern tube: see 3.1.4.2.

3.1.6.4.2 Sea and discharge valves - including those of special equipment, if any - are to be opened up and checked as to their condition during each drydocking survey.

3.1.7 In-water surveys (For Seagoing Ships with Class Notation IW, for every second periodical dry-docking survey)

3.1.7.1 Approvals

3.1.7.1.1 The diving firm assisting in in-water surveys must be approved by BRS for this purpose.

3.1.7.1.2 Validity of an approval granted will depend on the continued qualification for satisfactorily carrying out the work required. The approval will have to be renewed after a period not exceeding 5 years.

3.1.7.2 Performance of survey

3.1.7.2.1 Unless accessible from outside with the aid of the vessel's trim and/or heel, underwater parts are to be surveyed and/or relevant maintenance work is to be carried out with assistance by a diver whose performance is controlled by a Surveyor, using an underwater camera with monitor, communication and recording systems.

3.1.7.2.2 Surveys of the underwater body are to be carried out in sufficiently clear and calm waters.

The ship should be in light ship condition.

The shell sides below the water-line and the bottom must be free from fouling.

3.1.7.2.3 The underwater pictures on the surface monitor screen must offer reliable technical information such as to enable the Surveyor to judge the parts and/ or the areas surveyed.

3.1.7.2.4 Documentation suited for reproduction (video recording with sound) is to be made available to BRS.

3.1.7.3 Additional examinations

3.1.7.3.1 Where, for instance, grounding is assumed to have taken place, the Surveyor may demand individual parts of the underwater body to be additionally inspected from inside.

3.1.7.3.2 If during the underwater survey damages are found which can be assessed reliably only in dry-dock or require immediate repair, the vessel is to be dry-docked.

3.2 Thickness measurements and corrosion tolerances

3.2.1 General

3.2.1.1 The thicknesses of structural elements are checked by measurements, in order to assess whether or not the values stipulated in the Construction Rules are observed, taking into account the admissible tolerances. Unless severe corrosion has occurred owing to particular service conditions, thickness measurements will not be required until Class Renewal II (see 3.1.2.2 and 3.1.3.2.1.5).

3.2.1.2 Thickness measurements are to be carried out in accordance with recognized methods, by authorized personnel or companies (see 3.2.2). Rust and contamination are to be removed from the components to be examined. The Surveyor is entitled to require check measurements or more detailed measurements to be performed in his presence. This requires the Surveyor to be on board while the gauging is taken, to the extent necessary to control the process.

The scope of thickness measurement as well as the reporting shall be fixed in a survey planning meeting between the surveyor(s), representatives of the owner and the approved thickness measurement operator/firm.

3.2.2 Authorization

3.2.2.1 The personnel or the company entrusted with thickness measurements (as well as the procedure for documentation) must be approved by BRS for this purpose.

3.2.2.2 Validity of an approval granted will depend on the continued qualification. The approval will have to be renewed after a period not exceeding 3 years.

3.2.3 Scope of measurements

3.2.3.1 Main hull structural elements:

In Class Renewal II and all subsequent ones the plate thicknesses of the main hull (essential longitudinal and transverse) structural elements are to be checked by measurements. The number of measurements depends on the vessel's maintenance condition and is left to the Surveyor's discretion. In case the overall condition is satisfactory or if the thicknesses are found to still be adequate, the measurements may be confined to the longitudinal hull structural elements in way of hull cross sections, depending on the age of ship (see Table 3.2).

3.2.3.2 The extent of the thickness measurements may be reduced/extended, respectivelly if the Surveyor deemed necessary/where found "suspect area" or substantial corrosion/.

3.2.3.3 Seawater ballast tanks: In the case of major corrosion damages, the structural elements of seawater ballast tanks are to be checked by thickness measurements (see 3.1.2.2).

3.2.3.4 Where special reasons exist, the Surveyor may demand thickness measurements to be carried out already on the occasion of Class Renewal I, also outside the area of 0.5 L amidships (cf. 3.1.3.2.1.5). The same applies in the case of conversion or repair of a ship.

3.2.3.5 In order to be used as a basis for class renewal, thickness measurements should, as far as practicable, be carried out already on the occasion of the fourth annual survey.

Table 3.2 Class Renewal Surveys (Hull) Minimum Requirements for Thickness Measurements

Class renewal survey [No.] and ship's age [years]			
I. age ≤ 5	**II. 5 < age ≤ 10**	**III. 10 < age ≤ 15**	**IV. and subsequent, age > 15**
Suspect Areas throughout the vessel			
	One transverse section abreast a cargo space within the amidships 0,5 L.	Two transverse sections in way of cargo spaces within the amidships 0,5 L.	Three transverse sections in way of cargo spaces within the amidships 0,5 L.
		All cargo hold hatchcovers and coamings (plating and stiffeners).	
		All exposed main deck plating within 0,5 L amidships.	All exposed main deck plating full length.
		All wind- and water strakes within 0,5 L amidships.	All wind- and water strakes full length.
		Internals in forepeak tank.	Internals in forepeak and after peak tanks.
		Lowest strake and strakes in way of tween decks of selected trans-verse bulkheads in cargo spaces together with internals in way.	Lowest strake and strakes in way of tween decks of all transverse bulkheads in cargo spaces together with internals in way.
			Representative exposed super-structure deck plating (poop, bridge, and forcastle deck).
			All keel plates full length. Also, additional bottom plates in way of cofferdams, machinery space and aft ends of tanks.
			Plating of sea chests. Shell plating in way of overboard discharges as considered necessary by the Surveyor.

3.2.3.6 Equipment

In Class Renewal II and all subsequent Class Renewals the cross sectional areas of the anchor chain cables and the weights of the anchors are to be determined. The cross sectional area of the anchor chain cables is to be determined by measuring approx. 3 typical links per length (27.5 m), at the ends of the links in way of the maximum wear.

3.2.3.7 For additional details on thickness measurements for special ship types, see Section 4.

3.2.4 Corrosion and wear tolerances

3.2.4.1 Where thickness measurements according to 3.2.3 result in corrosion and wear values exceeding those stated in the following, the respective hull structural elements will have to be renewed. The values indicated are to be considered as guidance values.

Where reduced material thicknesses were admitted for the newbuilding (effective system of corrosion protection), the permissible corrosion allowances are to be based on the unreduced rule thicknesses.

3.2.4.2 Longitudinal strength:

Maximum permissible reduction of midship section modulus: 10 %.

3.2.4.3 Local strength:

Maximum permissible large-surface reduction of plate thickness and web thickness of profiles: tk for t ≤ 11.5 mm: tk = 1.5 mm for t > 11.5 mm: tk = 0.09 t + 0.45 mm, max. 3.0 mm t = plate and/or web thickness in [mm], as stipulated in the BRS Construction Rules.

Maximum permissible locally limited reduction of thickness: 0.2 t.

In ballast tanks in way of 1.5 m below the weather deck, if the weather deck is the tank deck: tk = 2.5 mm.

In cargo oil tanks in way of 1.5 m below the weather deck, if the weather deck is the tank deck, and for horizontal structural elements in cargo oil and fuel tanks: tk = 2.0 mm.

In dry cells, such as fore-to-aft passageways of container ships and comparable spaces, and for hatch covers of dry cargo holds, the maximum permissible large-surface reduction is 1.0 mm.

3.2.4.4 Anchor equipment

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

Maximum permissible reduction in weight of anchors: 10 %.

3.2.4.5 High-speed vessels

3.2.4.5.1 For high-speed (seagoing) crafts as defined in the BRS Rules the following corrosion and wear tolerances apply. See also Section 2, 3.3.1.3.10.

3.2.4.5.2 Longitudinal strength:

Maximum permissible reduction of midship section modulus: 10 %.

3.2.4.5.3 Local strength

Maximum permissible large-surface reduction of plate thickness and web thickness of profiles: tk for t ≤ 10.5 mm: t k = 0.5 mm for t > 10.5 mm: tk = 0.03 t + 0.2 mm, max. 1.0 mm

Tank bottoms: tk = 1.0 mm

Maximum permissible locally limited reduction of thickness: 0.1 t.

3.2.4.5.4 For anchor chain cables the maximum permissible reduction of the mean diameter of chain links is 10 %.

3.3 Additional requirements for General Dry Cargo ships

3.3.1 The following additional requirements refer to the hull structure and piping systems of all self propelled general dry cargo ships carrying solid cargoes other than:

– bulk carriers subject to ESP surveys 8

– dedicated container carriers

– dedicated forest product carriers (no timber or log carriers)

– ro-ro cargo ships

– refrigerated cargo ship

– dedicated wood chip carriers

– dedicated cement carriers

– livestock carriers

– deck cargo ships

_ general cargo ships of double-skin construction

3.3.2 The additional survey requirements 9 apply to surveys of hull structure and piping systems in way of cargo holds, cofferdams, pipe tunnels and void spaces within the cargo area and all ballast tanks. The requirements are additional to the classification requirements applicable to the remainder of the ship.

3.3.3 The requirements contain the minimum extent of examination, thickness measurements and tank testing. The survey is to be extended when substantial corrosion and/or structural defects are found and will include additional close-up survey where deemed necessary by the Surveyor. The extent of the survey may be reduced provided there is no structural diminution and the coating is found in good condition10.

3.3.4 Unless otherwise regulated in the following requirements of 3.3 the applicable provisions of this Section shall be observed.

3.3.5 Annual surveys

3.3.5.1 The survey is to ensure that the hull, hatch covers, coamings and piping are maintained in satisfactory condition, as stipulated in 3.1.1

3.3.5.2 In addition, suspect areas 11 identified at previous Class Renewal or Intermediate Surveys shall be overall and close-up surveyed. Thickness measurements shall be taken of the areas of substantial corrosion and the number of thickness measurements shall be increased to determine the extent of substantial corrosion.

3.3.5.3 For General Dry Cargo Ships over 10 years of age, an overall survey of a representative forward and aft cargo hold and their associated tween deck spaces shall be carried out. Where this level of survey reveals substantial corrosion or the need for remedial measures, the survey shall be extended as deemed necessary by the Surveyor.

3.3.5.4 For General Dry Cargo ships over 15 years of age, an overall survey of all cargo holds and tween deck spaces and a close up examination of minimum 25 % of frames to establish the condition of the lower one-third of the shell frames, adjacent shell plating and lower frame connections in a forward lower and one other selected lower cargo hold shall be carried out. Where this level of survey reveals substantial corrosion or the need for remedial measures, the survey shall be extended, as deemed necessary by the Surveyor. Where the protective coating in cargo holds is found to be in good condition, the extent of the close-up surveys may be specially considered. All piping and penetrations in cargo holds, included overboard piping, shall be examined.

3.3.6 Intermediate Surveys

3.3.6.1 In addition to the surveys and checks listed in 3.3.5 and as stipulated in 3.1.2, the following requirements are to be observed. For bottom surveys see also 2.1.6.

3.3.6.2 An overall survey of one representative forward and one representative aft cargo hold and their associated tween deck spaces for ships aged 5 to 10 years shall be carried out. For ships aged 10 to 15 years, an overall survey of all cargo holds and tween deck spaces shall be performed. For seawater ballast tanks see also 3.1.2.2.

3.3.6.3 In case of ships exceeding 15 years of age the intermediate survey shall be to the same extent as the previous Class Renewal Survey according to 3.1.3 and 3.3.7. However, testing of ballast tanks and cargo holds used for ballast water as well as the maximum permissible reduction of the mean diameter of chain links and weight of anchors is not required unless deemed necessary by Surveyor.

3.3.7 Class Renewal Surveys

3.3.7.1 In addition to the surveys and checks listed in 3.3.6 above and as stipulated in 3.1.3, the following requirements are to be observed. For dry-docking see also 3.1.3.1.3.

3.3.7.2 An overall survey of all tanks and spaces, excluding fuel oil, lube oil and fresh water tanks, shall be carried out at each Class Renewal Survey see also Table 3.1 Each Class Renewal Survey shall include a close-up examination of sufficient extent to establish the condition of the shell frames and their end attachments in all cargo holds and salt water ballast tanks as indicated in Table 3.3. For seawater ballast tanks see also 3.1.3.2.

3.3.7.3 The minimum requirements for additional thickness measurements at the Class Renewal Survey as per Table 3.2 are given in Table 3.4. Thickness measurements to determine both general and local level of corrosion in the shell frames and their end attachments in all cargo holds and salt water ballast tanks, as well as on the transverse bulkhead plating shall be carried out. The thickness measurement may be dispensed with provided the Surveyor is satisfied by the close-up examination, that there is no structural diminution, and the protective coating where applied remains efficient and in good condition 8. The Surveyor may extend the thickness measurements as deemed necessary.

Table 3.3 Class Renewal Surveys of General Dry Cargo Ships (Hull) Minimum Additional Requirements for Close-up Surveys Class

Class Renewal survey [No.] and ship's age [years]			
I. age ≤ 5	**II. 5 < age ≤ 10**	**III. 10 < age ≤ 15**	**IV. and subsequent, age >15**
Selected shell transverse frames in one forward and one aft cargo hold and associated tween deck spaces	Selected shell transverse frames in all cargo holds and associated tween deck spaces	All shell frames in the forward lower cargo hold and 25 % of frames in each of the remain-ing cargo holds, and tween deck spaces including upper and lower end attachments and adjacent shell plating	All shell frames in all cargo holds and tween deck spaces including upper and lower end attachments and adjacent shell plating
One selected cargo hold transverse bulkhead including bulkhead plating, stiffeners and girders	One traverse bulkhead in each cargo hold including bulkhead plating, stiffe-ners and girders	All cargo hold transverse bulkheads including bulk-head plating, stiffeners and girders	
	Forward and aft trans-verse bulkhead in one side ballast tank including stiffening system	All transverse bulkheads in ballast tanks including stiffening system	
All cargo hold hatch covers and coamings (plating and stiffeners)			
	One transverse web frame or watertight transverse bulkhead with associated plating and framing in two representative water ballast tanks of each type (i.e. topside, hopper side or double bottom tank)	All transverse web frames or watertight transverse bulkheads with associated plating and framing in each water ballast tank (i.e. topside, hopper side or double bottom tank)	Other items: As for class renewal survey No. III
	Selected areas of all deck plating and under deck structure inside line of hatch openings between all cargo hold hatches Selected areas of inner bottom plating	All deck plating inside line of hatch openings between cargo hold hatches All areas of inner bottom plating	
Note: Close-up survey of cargo hold transverse bulkheads to be carried out at the following levels: *– immediately above the inner bottom and immediately above the tween decks, as applicable* *– mid-height of the bulkheads for holds without tween decks* *– immediately below the main deck plating and tween deck plating*			

When thickness measurements indicate substantial corrosion, the number of thickness measurements shall be increased to determine the extent of substantial corrosion. Transverse sections shall be chosen where the largest reductions are suspected to occur or are revealed from deck plating measurements.

3.3.7.4 All boundaries of salt water ballast tanks and deep water tanks used for salt water ballast within the cargo area length shall be pressure tested. For fuel oil tanks, only the representative tanks shall be tested. The Surveyor may extend the tank testing as deemed necessary. Tanks are to be tested with a head of liquid to the top of the air pipes for ballast tanks, deep tanks or fuel oil tanks. For tightness and pressure tests see also 3.1.3.2.1.4

3.3.8 For single hold Dry cargo ships examination of water ingress system and alarm to be carried out during the Annual, Intermediate and Renewal surveys

3.4 Extraordinary surveys

3.4.1 Damage and repair surveys

3.4.1.1 Where damage has occurred to the ship's hull, machinery, including the electrical plant, the automatic/ remote-control systems, etc., the damaged parts are to be made accessible for

inspection in such a way that the kind and extent of the damage can be thoroughly examined and ascertained (see also Section 2, 2.2.3).

In the case of grounding, drydocking is required or, alternatively, an in-water survey.

3.4.1.2 The repair measures are to be agreed with the Surveyor such as to render possible confirmation of the class without reservation upon completion of the repairs. In general, a confirmation of class with recommendations, e.g. in the case of a preliminary repair ("emergency repair"), requires to be approved by BRS Head Office.

3.4.1.3 Surveys conducted in the course of repairs are to be based on the latest technical knowledge and instructions by BRS. In exceptional cases advice is to be obtained from BRS Head Office, in particular where doubts exist as to the cause of damage.

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

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

3.4.1.5 Regarding the materials employed and certificates required, the requirements for newbuildings are applicable (cf. Section 2, 2.3).

3.4.1.6 Regarding damages or excessive wastage beyond allowable limits that affect the vessel's class, see Section 2, 2.2.4.

Table 3.4 Class Renewal Surveys of General Dry Cargo Ships (Hull) Minimum Additional Requirements for Thickness Measurements

<table>
<tr><th colspan="4">Class Renewal survey [No.] and ship's age [years]</th></tr>
<tr><th>I. age ≤ 5</th><th>II. 5 < age ≤ 10</th><th>III. 10 < age ≤ 15</th><th>IV. and subsequent, age >15</th></tr>
<tr><td rowspan="4"></td><td colspan="3">Measurement for general assessment and recording of corrosion pattern of those structural members subject to close up survey according to Table 3.3</td></tr>
<tr><td></td><td>All exposed main deck plating within the cargo length area</td><td>All exposed main deck plating full length</td></tr>
<tr><td></td><td>All wind and water strakes within the cargo length area

Selected wind and water strakes outside the cargo length area</td><td>All wind and water strakes full length port and starboard</td></tr>
<tr><td></td><td></td><td>Each bottom plate including lower turn of the bilge

Duct keel or pipe tunnel plating and internals</td></tr>
</table>

4. REFRIGERATING INSTALLATIONS

4.1 General, definitions

4.1.1 Kind of surveys

4.1.1.1 In order to maintain their class, refrigerating installations with BRS class have to be subjected to the following surveys:

– annual survey; see 4.2.1

– intermediate survey, nominally, at mid-time between class renewal surveys; see 4.2.2

– class renewal survey every five years; see 4.2.3

– continuous class renewal survey where, on shipowner's request and with the Society's consent, the surveys required shall be spread over the period of class; see 4.2.4

– damage survey where the refrigerating installation is defective or where the ship's hull or parts of the machinery have been damaged such that the operability of the refrigerating installation might be affected; see 4.3.1

– conversion surveys; see 4.3.3.

4.1.1.2 BRS reserves the right to carry out extraordinary surveys or to demand trials between the due dates of regular surveys, if considered necessary. Such surveys may be credited to the regular surveys referred to above.

4.1.1.3 For ascertaining the operability of the installation concerned for a defined purpose, in addition to the surveys for maintenance of the class, on application, the following - likewise extraordinary - surveys and tests will be conducted:

– surveys in the port of loading; see 4.3.4.1

– safety surveys; see 4.3.4.2

– specially agreed surveys (e.g., for confirmation of class in the case of sale of the ship); see 4.3.4.3

– refrigerating tests; see 4.3.2.

4.1.2 Survey instructions

4.1.2.1 The Society's local representative is to be informed in due time about prescribed surveys or intended repairs or alterations, so that all work may be suitably supervised.

4.1.2.2 The results of each survey - with the exception of loading port surveys - as well as any special recommendations, on which maintenance of class has been made conditional, will be entered in the refrigerating installation certificate. The character of classification, month and year of the commencement of the class period, as well as month and year of the last annual survey (and/or last intermediate survey, or last class renewal survey), will be stated in the Register Book.

4.1.2.3 Any deficiencies and/or damages ascertained (also during surveys as per 4.1.1.3) may entail restrictions of class and/or are to be followed up within the scope of classification.

4.1.2.4 The reports prepared by the Surveyors will be checked by BRS Head Office. The results of surveys carried out will be published in the Register Book, upon acceptance.

4.1.2.5 Where defects are repaired provisionally only, or where the Surveyor does not consider immediate repairs or replacements to be necessary, the class of the refrigerating installation may be confirmed for a limited period or for one voyage by making a corresponding entry in the certificate of classification. Upon withdrawal of such restrictions, a relevant note is to also be entered in the certificate of classification.

4.1.2.6 If a refrigerating installation has to be surveyed in a port where, or near which, there is no Surveyor to BRS, the procedure outlined in 1.1.9 will be applicable.

4.2 Regular surveys, procedures

4.2.1 Annual surveys

4.2.1.1 The refrigerating machinery is to be checked in operation. During this check, the delivery and discharge temperatures at the air coolers and at the brine coolers respectively, the temperatures of the refrigerated cargo spaces, or refrigerated cargo containers, of the ambient air, the cooling water inlet and outlet, the refrigerant in the condenser and evaporator will be determined.

4.2.1.2 The entire plant for the power supply, including the part of the electrical plant necessary for operation of the refrigerating installation, is to be inspected externally. The Surveyor is to obtain the information required on the condition of the installation from the operating data records for the refrigerating and machinery installation and is then to decide whether individual machines will have to be opened up for inspection (see also 4.2.3.4).

4.2.1.3 Insulation resistance measurements are to be carried out at the electrical plant. Any measurement protocols prepared on board may be considered.

4.2.1.4 All pressure vessels, including valves, fittings and safety devices, are to be inspected externally.

If ammonia is used as refrigerant, the covers of one or more heat exchangers are to be taken off for inspection of the tube plates. Depending on the inspection result, the Surveyor may require further parts of the installation to be opened up for inspection.

4.2.1.5 The refrigerant and brine pipes and their insulation are to be examined externally, and the pipes are to be tested for tightness during operation.

4.2.1.6 In the refrigerated cargo spaces, the air coolers, the brine grids and direct expansion evaporators respectively, as well as circulating fans, are to be inspected during operation.

4.2.1.7 The defrosting devices are to be externally inspected. Where necessary, proof is to be furnished of their proper functioning.

4.2.1.8 Bilge coverings are to be opened up. Bilges are to be checked as to their perfect condition. The drains of the upper spaces with their closing devices, the bilge pipes and their suction strums, as well as the sounding pipes, are to be inspected. Hatches, doors, pipelines, thermometer tubes with their connections and fastenings, as well as watertight doors and air ducts, are to be checked. Cemented parts where brine might seep into the bilges are to be inspected with particular care.

4.2.1.9 The insulations of all refrigerated cargospaces, apparatus and pipings are to be checked as to whether they are free from damages and dry, especially at positions where moisture may collect, e.g. in the bottom insulation underneath the hatches, underneath stringers and below decks.

After repairs of the hold insulation, the Surveyor has to satisfy himself that no cooling air enters the insulation.

4.2.1.10 The proper operation of dehydrators, thermometers and remote indicating thermometers is to be checked.

The proper operation of air duct couplings for connecting refrigerated containers to the ship's own refrigerated installation has to be checked. Also, it is to be ascertained whether the air ducts are free from defects.

The results of checks conducted on board may be considered.

4.2.1.11 The spare parts are to be checked as to their completeness and proper condition.

4.2.2 Intermediate surveys

4.2.2.1 As against the procedure outlined in 4.2.1, starting with the 2nd class period, the second or third annual survey within a class period will as an intermediate survey be extended in scope as follows:

4.2.2.2 Parts of compressors subject to wear, such as cylinders, pistons, piston rods, glands, bearings as well as parts of auxiliaries, such as shafts, impellers and diffusors of centrifugal pumps, etc., are to be inspected at random, unless the Surveyor considers a thorough examination to be necessary. The driving motors of compressors are to be inspected. Also, parts necessary for operation of the driving motors are included (see also 4.2.3.4).

4.2.2.3 At the Surveyor's discretion, the end covers of some heat exchangers are to be removed for inspection of the tube plates and tubes.

4.2.3 Class renewal surveys

4.2.3.1 The class period of the refrigerating installation should coincide with that of the hull and the machinery. Apart from the surveys as detailed in 4.2.1 and 4.2.2, the following tests and inspections are to be carried out:

– examination of all parts of compressors and driving motors subject to wear, at the Surveyor's discretion (cf. 4.2.3.4)

– inspection of the primary installation for power supply of the refrigerating installation, as well as of the electrical installation

– inspection of the sea inlet and discharge valves for cooling water supply to the installation (possibly, within the scope of classification of the ship)

– internal inspection of the pressure vessels, as far as possible. The end covers of all heat exchangers are to be removed - cf. 4.2.2.3

– tightness tests on condensers, evaporators, refrigerant and brine pipes. Pipe coils (air coolers) in the primary/secondary refrigerating system are to be inspected, removed at the

Surveyor's discretion and/or subjected to a hydraulic pressure test.

4.2.3.2 In the case of new installations the above-mentioned tightness tests, as well as the removal of parts of the piping insulation and dismounting of pipe coils, may be dispensed with at the time of the first class renewal survey, at the Surveyor's discretion.

4.2.3.3 Hydraulic pressure tests on pressure vessels are to be carried out for the first time 10 years after initial operation, and subsequently, on the occasion of each class renewal. In the case of pressure vessels operated with refrigerants in closed circuit, the periodical hydraulic pressure tests may be dispensed with. (For surveys after repairs, see 4.3.1).

4.2.3.4 Where screw compressors or semi-hermetic piston compressors are fitted, for which manufacturers have prescribed fixed intervals for maintenance or replacements, BRS may on application agree to differing intervals between surveys, provided that the compressors are equipped with reliable working-hour meters and that a sufficient number of units ready for installation or of complete rotor runner sets is available on board.

A supplementary sheet or the Appendix to the Refrigerating Installation Certificate contains more detailed information as to whether such surveys will be accepted.

4.2.3.5 Spare parts

Spare parts are to be checked for completeness as per the Rule requirements and/or according to the lists approved by BRS and kept in ship's files, as well as for their operability.

4.2.4 Continuous class renewal surveys

4.2.4.1 If application of the continuous class renewal system has been agreed upon, it is to be ensured that the intervals between successive inspections of the same parts of the refrigerating installation do not exceed the periods normally allowed for maintenance of the class. In particular, the surveys according to 4.2.1 are to be conducted annually.

4.2.4.2 Prior to expiry of the period of classification, a final survey of the installation is to be conducted, even if all parts have already been surveyed during this period. If deemed necessary by the Surveyor, individual parts may be re-inspected.

4.2.4.3 Refrigerating machinery to which a trend diagnosis system is applied is to be surveyed to the scope and at the intervals to be specifically agreed with BRS.

4.3 Extraordinary surveys and inspections

4.3.1 Damage surveys

4.3.1.1 In case of damage the refrigerating installation is to be made accessible for inspection in such a way as to enable the damage to be thoroughly examined for assessment of its kind and extent.

4.3.1.2 Following repair, the installation is to be subjected to a trial in the presence of the Surveyor, who will enter a relevant note in the Class Certificate.

4.3.2 Refrigeration tests for ships in service

If there are any doubts in respect of the capacity of the installation or the quality of the insulation, the Society reserves the right to require an additional test in the form of a refrigeration test. Also, a refrigeration test may be carried out on application.

4.3.3 Conversion surveys

In the case of conversion of the refrigerating installation or of equipment essential for operation of the refrigerating installation, like for newbuildings, surveys are to be performed in accordance with approved particulars.

4.3.4 Other extraordinary surveys

4.3.4.1 Loading port survey

4.3.4.1.1 Where the owner or any other interested party applies for a loading port survey to be carried out prior to taking over refrigerated cargo, this will be performed as stated below. The certificate on such survey documents the present condition of the installation. No relevant entry will be made in the Register Book.

4.3.4.1.2 Where no Surveyor to Bulgarian Register of Shipping is available at the loading port, the loading port survey may be conducted at one of the preceding ports of call. If no Surveyor to Bulgarian Register of Shipping is available there either, the survey report submitted by an expert or, failing that, a survey report signed by two of the ship's engineers may be accepted.

4.3.4.1.3 The loading port survey is to be carried out as follows:

– the refrigerated spaces, scuppers and bilges in the refrigerated cargo spaces are to be clean and dry, the cargo space ceilings and battens have to be in order, and the insulation and other fixtures are to be free from defects

– the bilge pipes, sounding and drain pipes of the refrigerated cargo spaces are to be in good condition and effective

– the Surveyor has to check whether the entire refrigerating installation operates unobjectionably, and to record the temperatures in the cargo spaces or refrigerated cargo containers

– the refrigerated cargo spaces and air ducts are to be free of odour, so that no unfavorable effects upon the cargo to be loaded are to be expected

– the proper operation of air duct couplings for connecting refrigerated containers to the ship's own refrigerating installation is to be checked, as is the intactness of the air ducts. If refrigerated cargo containers are coupled to the air ducts during the onboard survey, the tight sealing effect of the couplings is also to be checked.

4.3.4.2 Technical safety surveys

4.3.4.2.1 On application, BRS will perform technical safety surveys in accordance with approved particulars and, if appropriate, pressure tests on essential components (e.g. apparatus and vessels under refrigerant pressure) of refrigerating installations for provisions, air conditioning etc.

4.3.4.2.2 On application the Society will also carry out the required periodical surveys of the pressure vessels and apparatus exposed to refrigerant pressure, mentioned above.

4.3.4.3 Specially agreed surveys

4.3.4.3.1 Where surveys are required on account of (national) official ordinances, international conventions or other provisions, BRS will perform these on application by or on behalf of operators, in accordance with the relevant regulations.

4.3.4.3.2 Also, upon special agreement, Bulgarian Register of Shipping carry out condition surveys on the occasion of change of ownership.

4.3.5 All activities as outlined in 4.3.1 to 4.3.4 are likewise subject to the general conditions of Section 1 of the Rules for Classification and Surveys.

5. DIVING SYSTEMS

See BRS Construction Rules for Diving Systems.

6. TOWING GEAR

For towing gear inspection see BRS Rules Part 1 “Hull structures”

Notes to Section 3

Note 1 More extensive regulations of the country, where the ship is registered, may have to be observed.

Note 2 Additional requirements see UR S 26 of IACS

Note 3 Additional requirements see UR S 27 of IACS

Note 4 "Substantial Corrosion" is an extent of corrosion such that assessment of corrosion pattern indicate a wastage in excess of 75% of allowable margins, but within acceptable limits.

Note 5 More extensive regulations of the Flag State Administration regarding other inspection intervals / performance of the tests should be observed.

Note 6 Poor: General breakdown of coating over 20 % or more of areas, or hard scale at 10 % or more of areas under consideration.

Note 7 soft coating" means: Solvent-free coating on base of wool grease, grease, mineral oils and / or wax that remains soft so that it wears off when touched.

Note 8 Requirements see UR Z 10.2 of IACS

Note 9 For the additional survey requirements see UR Z 7.1 of IACS

Note 10 Good condition: Condition with only minor spot rusting

Note 11 Suspect Areas: Locations showing substantial corrosion and/or considered by the Surveyor to be prone to rapid wastage.

Section 4

SURVEYS – SPECIAL SHIP TYPES

1. OIL TANKERS

1.1 General Requirements

1.1.1 Application

1.1.1.1 The following instructions refer to oil tankers and product carriers as defined by the BRS Construction Rules, Chapter 1, Section 24, i.e., also to ships intended for the alternative carriage of dry cargo or oil.

1.1.1.2 For the hull structure and piping systems in way of cargo tanks, pump rooms, cofferdams, pipe tunnels, void spaces within the cargo area, and for all ballast tanks of ships with the class notation "ESP", additional surveys are required, as defined in the following.

1.1.1.3 Unless otherwise stated in the following, the arrangements per Section 3 apply.

1.1.2 Extent of surveys

1.1.2.1 The surveys are to cover all installations, outfit and equipment related to the carriage and handling of oil cargo. They also cover the surveys required by the SOLAS regulations 1 for oil tankers. The protective equipment and the safety equipment required by the SOLAS regulations for protection of the personnel as well as other equipment and outfit, which are no class requirement items, are not covered by the present Rules for Classification and Surveys. These items will, however, be included in the surveys, if compliance with the requirements of an Administration has to be certified.

1.1.2.2 Hull

The following requirements under 1.2 to 1.4 define the minimum extent of examinations. The surveys are to be extended where substantial corrosion and/or structural defects are found, and will include an additional close-up survey (close visual inspection range, preferably within reach of hand) where deemed necessary by the Surveyor.

1.1.2.3 Repairs

Necessary repairs, see Section 2, 2.2.4.

1.1.3 Documents to be carried on board

The owner is to supply and maintain on board documentation as specified under 1.1.3.1 and 1.1.3.2 which should be readily available for the surveyor.The documentation is to be kept on board for the life time of the ship.

1.1.3.1 Survey Report File:

A Survey Report File is to be part of the documentation on board consisting of:

– Reports on structural surveys

– Executive Hull Summary 2 2

– Thickness measurements reports

The Survey Report File is to be available also in the Owners management office.

1.1.3.2 Supporting Documents:

– Main structural plan of cargo and ballast tanks

– Previous repair history 2

– Cargo and ballast history 2

– Extent of use of inert gas plant and tank cleaning procedures 2

– Inspections by ship's personnel with reference to

– structural deterioration in general

– leakage in bulkheads and piping

– condition of coating or corrosion protection 2

– Survey Programme as required under 1.6 till the completion of next Class Renewal Survey

– Any other information that will help to identify Suspect Areas requiring inspection.

1.1.4 Access to Structures

1.1.4.1 Regarding accessibility to spaces, absence of gases, removal of residual cargo and rust, and in respect of lighting, the ship is to be prepared such as to enable it to be duly examined without any risk.

Where "soft coating"3 has been applied, it may be necessary to remove this coating, at least partially.

1.1.4.2 For close-up surveys in cargo and salt water ballast tanks, one or more of the following means for access, acceptable to the Surveyor, is to be provided:

– permanent or temporary staging

– passages through structures

– lifts and moveable platforms, cherry pickers

– boats or rafts

– other equivalent means.

1.1.5 Survey at Sea

Upon prior agreement with the owner, BRS may carry out surveys at sea or at anchorage, provided the Surveyor is given the necessary assistance, including safety equipment, by the personnel on board. See also Section 3, 1.1.4. 2

1.1.6 Survey Programme

For class renewal a special survey programme (planning document) has to be prepared. In the case of oil tankers exceeding 20.000 tdw this survey plan is to be prepared by the owner on the basis of the documentation elaborated on the occasion of the intermediate survey. The program is to be agreed with BRS Head Office in due time prior to commencement of the class renewal survey.

For oil tankers up to 20.000 tdw the survey program is to be prepared when starting the class renewal survey.For oil tankers more than 10 years of age ESP from last RS/2SS/ to be apply for Intermediate Survey.

1.2 Annual Surveys

1.2.1 General, scope

1.2.1.1 In addition to the surveys as stipulated in Section 3, 3. 1.1 the following installations, structural elements, items of equipment and outfit, including facilities for handling and carriage of the oil cargo as stated below in 1.2.2 to 1.2.8, are to be surveyed in order to ensure that they are maintained in satisfactory condition.

Prior to inspection, the Surveyor shall examine the documentation required to be kept on board for this type of vessel, as a basis for the survey (see 1.1.3).

1.2.1.2 The annual survey is to ensure that the cargo handling installations and pertinent safety equipment are in good working order. The surveys are preferably to be carried out during loading or discharging operations.

For the aforementioned surveys normally access to cargo holds or other spaces within the cargo area necessitating gas-freeing is not required, unless checking of the equipment for correct functioning is not possible otherwise.

1.2.2 Installations on the weather deck

1.2.2.1 On the weather deck the following equipment, if fitted, will have to be surveyed and/or checked:

– cargo tank hatches, including sealings and covers

– cargo tank pressure/vacuum relief valves and flame arresters

– air pipe heads/flame arresters of bunker and oily ballast/slop tanks and the like

– cargo, crude oil washing, bunkering, ballast and cargo tank vent line systems, including remotely controlled valves and safety equipment

– cargo tank gauging systems

– for electrical equipment, see 1.2.4

– for fire-extinguishing equipment, see 1.2.5

– emergency towing appliances for oil tankers exceeding to 20.000 tdw

– safe access to tanker bow

1.2.2.2 The cargo handling installations (including spool pieces of the loading and unloading systems, spray shields and drip trays, cargo hoses, etc.) arranged on the weather deck, possibly in the fore or aft area, are to be visually examined.

1.2.3 Pump rooms and pipe tunnels

Equipment in pump rooms and other enclosed spaces serving cargo handling operations, including pipe tunnels if fitted, is to be checked, in particular as to leakages and potential sources of danger (explosion protection), e.g.:

– condition of bulkheads and bulkhead penetrations (cracks, leakages)

– all piping systems including pressure gauges

– cargo bilge, ballast and stripping pumps for leakages, as far as practicable

– electrical and mechanical remote control and emergency stopping equipment (see also 1.2.4)

– ventilation systems.

1.2.4 Electrical installations

In gas-dangerous spaces and zones the electrical equipment, including cables and their supports is to be visually examined, particularly regarding explosion protection.

1.2.5 Fire-extinguishing systems

The survey of the fire-extinguishing systems covers

– external inspection of all systems for the cargo tank area, including the pump room

– checking of the foam fire extinguishing and/ or water spraying system on deck. (See Section 3, 3.1.1.4.)

1.2.6 Inert gas systems

A survey of the inert gas system covers:

– external checking of important system components for wear and corrosion

– external checking of piping, fittings and safety equipment, including operational test of the blowers

– checking of the soot blowers as to interlocking

– checking of the alarm, recording and safety equipment.

BRS-Form F 111 is to be used for the survey.

1.2.7 Ballast tanks

Sea water ballast tanks shall be surveyed, within annual surveys, as a consequence of findings on the occasion of an intermediate or class renewal survey; see 1.3.3.3 and Section 3, 3.1.2.2.

Regarding the renewal of the coating see Section 3, 3.1.2.2.4.

In case of oil tankers exceeding 15 years of age all ballast tanks adjacent to a cargo or fuel oil tank with heating coils are to be examined internally.

If considered necessary by the surveyor, thickness measurements are to be carried out, which may have to be extended if substantial corrosion is found.

1.2.8 Miscellaneous

On the occasion of the annual survey also the following items are to be checked:

– special arrangements related to damage control, e.g. sliding bulkhead doors in accordance with the approved damage control plan (Also for tankers of less than 100 m in length)

– cargo sample stowage spaces

– gas detection instruments

– cargo information, safety instructions. (See 1.1.3.2).

1.3 Intermediate Surveys

1.3.1 General

1.3.1.1 In addition to the surveys and checks listed in item 1.2 above, on the occasion of the second or the third annual survey the checks mentioned below will be carried out. If deemed necessary by the Surveyor, functional test, pressure test or thickness measurements are to be carried out in addition to the survey.

1.3.1.2 For oil tankers exceeding 10 years of age the intermediate survey is to be carried out in drydock. For oil tankers of 15 years of age or less, BRS may agree to a bottom in-water survey according to Section 3, 3.1.7.

1.3.1.3 In case of ships exceeding 10 years of age the intermediate survey is to be enhanced to the scope of the previous class renewal survey according to 1.1.6 and 1.4. Pressure testing of ballast and cargo tanks is not required unless deemed necessary by the attending Surveyor. For double hull oil tankers see Table 4.0.

1.3.2 Installations in the cargo area

1.3.2.1 Irrespective of the vessel's age the condition of the loading/unloading, tank cleaning, bunkering, ballast, steam and venting systems, as well as of the ventilation and ventilator heads is to be checked. In cases of doubt pressure tests and/or wall thickness measurements may be demanded.

Table 4.0 Intermediate Surveys (Hull) of Double Hull Oil Tankers. Minimum Requirements for Overall and Close-up survey and Thickness Measurements

<table>
<tr><th colspan="3">Ship's age [years]</th></tr>
<tr><th>5 < age ≤ 10</th><th>10 < age ≤ 15</th><th>age > 15</th></tr>
<tr><td>Overall survey of representative water ballast tanks, selected by the attending surveyor (the selection is to include fore and aft peak tanks and three other tanks)</td><td>Overall survey of all water ballast tanks, including combined cargo/ballast tanks where fitted</td><td rowspan="5">As for the previous Class Renewal Survey</td></tr>
<tr><td rowspan="4"></td><td>Overall survey of at least two representative cargo tanks</td></tr>
<tr><td>Close-up survey in water ballast tanks of:
– all web frames[1] in one complete tank (see Note)
– the knuckle area and the upper part (5 metres approximately) of one web frame in each remaining ballast tank[3]
– one transverse bulkhead[2] in each complete tank (see Note)</td></tr>
<tr><td>Close-up survey in two cargo tanks (or two combined cargo/ballast tanks, where fitted):
– the extent of survey should be based on the records of the previous Class Renewal Survey and repair history of the tanks.</td></tr>
<tr><td>Thickness measurements of those areas found to be suspect areas at the previous Class Renewal Survey</td><td>Thickness measurements of those areas found to be suspect areas at the previous Class Renewal Survey</td></tr>
<tr><td colspan="3">[1], [2] and [3] are areas to be subjected to close-up surveys and thickness measurements.
1 Web frame means vertical web in side tank, hopper web in hopper tank, floor in double bottom tank and deck transverse in double deck tank (where fitted), including adjacent structural members. In fore and aft peak tanks web frame means a complete transverse web frame ring including adjacent structural members.
2 Transverse bulkhead complete in ballast tanks, including girder system and adjacent structural members, such as longitudinal bulkheads, girders in double bottom tanks, inner bottom plating, hopper side, inner hull longitudinal bulkhead, connecting brackets..
3 The knuckle area and the upper part (5 metres approximately), 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.
Note
Complete ballast tank: means double bottom tank plus double side tank plus double deck tank as applicable, even if these tanks are separate.</td></tr>
</table>

Cargo tank high velocity vent and pressure/vacuum valves are to be function tested, and if deemed necessary by the Surveyor, to be opened up and re-adjusted.

1.3.2.2 Beyond this, the following is to be checked:

– drainage of cargo tank vent lines

– bonding devices of all piping systems and cargo tanks built-in independent from the hull

– cargo hoses (repeat test, if needed).

1.3.3 Ballast tanks

1.3.3.1 Vessels 5 to 10 years of age:

All ballast tanks are to be examined by the surveyor.If such inspections reveal no visible structural defects, the examination may be limited to verifying whether the protective coating continues to be effective.

In sea water ballast tanks, if a protective coating is found in poor condition 4 and it is not renewed, if soft coating3 has been applied, if a protective coating was not applied from the time of construction or if corrosion respectively other defects are found, maintenance of the class is to be subject to the tanks in question being examined at annual intervals, and thickness measurements carried out as considered necessary.

Regarding the renewal of coating see also Section 3, 3.1.2.2.4.

1.3.3.2 Vessels more than 10 years of age:

For inspection of ballast tanks (see 1.3.3.1)

1.3.3.3 For double hull Oil tankers (see Table 4.0)

1.3.4 Thickness measurements

Thickness measurements are to be carried out in areas found to be suspect during the previous class renewal survey. For tankers over 10 years of age, see 1.3.1.3

Where substantial corrosion is found, the extent of the thickness measurements is to be increased.

Authorization for thickness measurements see Section 3, 3.2.2.

1.3.4.1 For double hull Oil tankers, see Table 4.0

1.3.5 Electrical installations

1.3.5.1 Irrespective of the vessel's age, electrical equipment and cables in gas-dangerous spaces, such as pump rooms and spaces adjacent to cargo tanks, are to be inspected. Insulation measurements are to be carried out (only in gas-free or inerted condition). Any measurement protocols kept on board may be considered.

1.3.5.2 Beyond this, in gas-dangerous areas the following checks are to be made:

– protective earthing of system components (spot checks)

– integrity of certified safe-type equipment

– damages to outer sheet of cables

– function testing of pressurized equipment and of associated alarms.

1.3.6 Inert gas systems

The survey is to be carried out according to BRS program

See Section 3, 2.1.5.7.

1.4 Class Renewal Surveys

1.4.1 General requirements

1.4.1.1 In addition to the class renewal surveys of the ship's hull, the machinery plant and electrical installation, according to Section 3, 3.1.3, the structural elements, equipment and outfit including the cargo system and pertinent safety devices listed in 1.3.3 for intermediate survey, are to be subjected to thorough examination and testing for proper functioning at the Surveyor's discretion.

It is to be verified that the relevant instructions, documentation and information material, such as cargo handling plans, cargo tank loading limit information etc. are kept on board (see 1.1.3).

1.4.1.2 The class renewal survey of cargo handling installations and related control, alarm and safety devices cannot normally be carried out during loading or discharging operations and is preferably to be carried out with the ship in gas-free condition.

1.4.1.3 Spaces and areas serving cargo handling operations (e.g. cargo control rooms and pump rooms), are to be examined with respect to their general condition and possible sources of danger. All accessible gas tight bulkhead penetrations including gastight shaft sealings are to be visually examined.

1.4.1.4 Regarding planning/survey program, see 1.1.6.

1.4.1.5 For class renewal surveys of oil tankers (hull), the "Continuous Class Renewal" procedure described in Section 3, 2.1.3.6 is excluded.

1.4.1.6 The class renewal survey is to be held when the ship is in drydock or on a slipway, unless a dry-docking survey has been carried out within the admissible period (see Section 3, 2.1.6.7). The ship is to be placed on blocks of sufficient height so that the keel, the bottom plating and the rudder can be examined.

1.4.2 Hull in the cargo area

1.4.2.1 General requirements

1.4.2.1.1 All cargo tanks, sea water ballast tanks including double bottom tanks, pipe tunnels, cofferdams and void spaces bounding cargo holds, decks and outer hull are to examined. This examination is to be supplemented by thickness measurements and tank testing as deemed necessary to ensure that the structural integrity continues to be given.

The examination is to be sufficiently thorough for revealing substantial corrosion, significant deformations, fractures, damages or other structural deteriorations.

Regarding anticipated thickness measurements, see also holds is to be determined based on the records of ballast Section 3, 3.2.3.5.

1.4.2.1.2 Cargo piping on deck, including Crude Oil Washing piping, and Cargo and Ballast piping within the above spaces are to be examined and tested to working conditions to ensure their continued satisfactory condition.

Special attention is to be given to ballast piping in cargo tanks and cargo piping in ballast tanks and void spaces.

1.4.2.1.3 The survey extent of combined ballast/cargo holds is to be determined based on the records of ballast history, the corrosion protection system provided, and the extent of corrosion found (see 1.1.3.).

1.4.2.2 Surveys

1.4.2.2.1 An overall survey of all tanks and spaces, excluding fuel oil, lubricating oil and fresh water tanks, according to available information is to be carried out.

For fuel oil, lubricating oil and feed water tanks, the necessity for the overall survey is to be determined based on the ship's age, see also Table 3.1.

1.4.2.2.2 Close-up surveys are to be carried out at least according to the requirements shown in Table 4.1, depending on the age of the vessel. For double hull oil tankers see Table 4.2.

The surveyor may extend the close-up survey as deemed necessary taking into account the maintenance of the tanks under survey and the condition of the corrosion protection system, and also in the following cases:

– in particular, tanks having structural arrangements or details which have suffered defects in similar tanks or on similar ships according to available information.

– tanks which have structures approved with reduced scantlings due to an approved corrosion control system.

For areas in tanks where coatings are found to be in a good condition, the extent of close-up surveys according to Table 4.1 may be specially considered by the surveyor.

Table 4.1 Class renewal Surveys (Hull) of Oil Tankers, Ore/Oil Ships etc. Minimum Requirements for Close-up Surveys

Class Renewal Survey [No.] and ship's age [years]			
I. age ≤5	**II. 5 <age ≤10**	**III. 10 <age ≤15**	**IV. and subsequent, age >15**
One complete transverse web frame ring including adjacent structural members in a ballast wing tank, if any, or a cargo wing tank used primarily for water ballast.	All complete transverse web frame rings including adjacent structural members in a ballast wing tank, if any, or a cargo wing tank used primarily for water ballast.	All complete transverse web frame rings including adjacent structural members in all ballast tanks and in a cargo wing tank.	As for class renewal survey No. III Additional transverse frames as deemed necessary by the Surveyor.
One deck transverse including adjacent deck structural members in a cargo tank.	One deck transverse including adjacent deck structural members in each of the remaining ballast tanks, if any.	A minimum of 30 % of all complete transverse web frame rings including adjacent structural members in each remaining cargo wing tank [1]	
	One deck transverse including adjacent deck structure in a cargo wing tank and in two cargo centre tanks.	A minimum of 30 % of deck and bottom transverses adjacent structural members in each cargo centre tank [1]	

Table 4.1 (continued)

		Additional complete transverse web frame rings as considered necessary by the Surveyor.	
Lower part of the girder system, including adjacent structural members, of one transverse bulkhead in one ballast tank, one cargo wing tank and one cargo centre tank.	Both transverse bulkheads complete - including girder system and adjacent members- in a ballast wing tank, if any, or a cargo wing tank used primarily for water ballast. One transverse bulkhead lower part - including girder system and adjacent structural members - in each of the remaining ballast tanks, one cargo wing tank and two cargo centre tanks.	All transverse bulkheads complete - including girder system and adjacent members- in all cargo and ballast tanks.	Bulkheads: As for class renewal survey No. III.
[1] The 30 % value is to be rounded up to the next whole integer			

1.4.2.2.3 Tank protection

Where provided, the condition of coating or corrosion protection of ballast tanks is to be examined. Detail procedure (possible change to annual intervals) as under 1.3.3.1, regardless of age.

1.4.2.3 Thickness measurements

1.4.2.3.1 The minimum requirements for thickness measurements on the occasion of class renewal surveys are stated in Table 4.3. Extended measurements may be required, e. g. for areas with substantial corrosion and/or as specified in the survey programme (see 1.1.6). Thickness measurements should be witnessed by the Surveyor to the necessary extent.

1.4.2.3.2 For areas in spaces where coatings are found to be in a good condition, the extent of thickness measurements according to Table 4.3 may be specially considered by the surveyor.

Table 4.2 Class renewal Surveys (Hull) of Double Hull Oil Tankers Minimum Requirements for Close-up Surveys

Class Renewal Survey [No.] and ship's age [years]			
I. age ≤5	**II. 5 <age ≤10**	**III. 10 <age ≤15**	**IV. and subsequent, age >15**
One web frame 1 (means a 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 means a complete transverse web frame ring including adjacent structural members) in a ballast tank2	All web frames as defined in I. The knuckle area 4 and the upper part (5 metres approximately) of one web frame in each remaining ballast tank including adjacent structural members.	All web frames 1as defined in I. but in all ballast tanks.	As for Class Renewal Survey No. III. Additional transverse areas as deemed necessary by the Society Surveyor.

Table 4.2 (continued)

One deck transverse 1, (including adjacent deck structural members, or external structure on deck in way of the tank, where applicable) in a cargo oil tank.	One deck transverse 1as defined in I. but in two cargo oil tanks.	All web frames 1(including deck transverses, longitudinal bulk-head vertical girder and cross ties, where fitted, including adjacent structural members), including deck transverse and cross ties, if fitted, in a cargo oil tank. One web frame 1 (including etc., as above) including deck transverses and cross ties, if fitted, in each remaining cargo oil tank.	
One transverse bulkhead 1 (in ballast tanks, including adjacent structural members, such as longitudinal bulkheads, girders in double bottom tanks, inner bottom plating, hopper side, connecting brackets) in a complete ballast tank. 2 .	One transverse bulkhead 1 as defined in I. but in each ballast tank 2	All transverse bulkheads, in all cargo oil tanks1 (complete in cargo tanks, including girder system, adjacent structural members, such as longitudinal bulkheads, and internal structure of lower and upper stools, where fitted) and ballast tanks (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).	
One transverse bulkhead 1 (lower part in cargo tank, including girder system, adjacent structural members, such as longitudinal bulkheads, and internal structure of lower stool, where fitted) in a cargo oil centre tank and in a cargo oil wing tank 3 .	One transverse bulkhead 1as defined in I. but in two cargo oil centre tanks and in a cargo oil wing tank 3 .		
1 These areas are to be subjected to close-up surveys and thickness measurements. 2 Complete ballast tank means double bottom tank plus double side tank plus double deck tank, even if these tanks are separate. 3 Where no centre cargo tanks are fitted, transverse bulkheads in wing tanks are to be surveyed. 4 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			

Table 4.3 Class Renewal Surveys (Hull) of Oil Tankers, Ore/Oil Ships etc. Minimum Requrements for Thickness Measurements

Class renewal survey No.			
I. age ≤ 5 y.	**II. 5 < age ≤ 10 y.**	**III. 10 < age ≤ 15 y.**	**IV. and subsequent, age > 15 y.**
One section of deck plating for the full beam of the ship within the cargo area (in way of a ballast tank, if any, or a cargo tank used primarily for water ballast)	Within the cargo area: a) Each deck plate b) Three transverse sections 1)	Within the cargo area: a) Each deck plate b) Three transverse sections 1)	Within the cargo area: a) Each deck plate b) Three transverse sections 1) c) Each bottom plate
Measurements of structural members subject to close-up survey according to Table 4.1 or 4.2, for general assessment and recording of corrosion pattern			

Table 4.3 (continued)

Suspect areas	
	Selected wind and water strakes outside the cargo area
	All wind and water strakes within the cargo area
1) A "transverse section" includes all longitudinal structural members, i.e. plating and longitudinal stiffeners and girders.	

Table 4.4 Class Renewal Surveys (Hull) of Oil Tankers, Ore/Oil Ships, Double Hull Oil Tankers etc. Minimum Requrements for Tank Testing

<table>
<tr><th colspan="4">Class renewal survey No.</th></tr>
<tr><th>I. age ≤ 5 y.</th><th>II. 5 < age ≤ 10 y.</th><th>III. 10 < age ≤ 15 y.</th><th>IV. and subsequent, age > 15 y.</th></tr>
<tr><td colspan="4"></td></tr>
<tr><td colspan="4">All ballast tank boundaries</td></tr>
<tr><td>Cargo tank boundaries facing void spaces, pipe tunnels, representative fuel oil tanks, pump rooms or cofferdams</td><td colspan="3">All cargo tank bulkheads which form the boundaries of segregated cargoes</td></tr>
</table>

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

In cases where three sections are to be measured, at least one is to include a ballast tank within 0,5 L amidship.

1.4.2.3.4 Regarding thickness measurements, see also Section 3, 3.2. For oil tankers, exceeding 10 years of age and 130 m in length L, the longitudinal strength is to be evaluated using the actual thickness measurements. The maximum allowable diminution of midship section modulus should be calculated using specific criteria4.

1.4.2.4 Tank testing

1.4.2.4.1 The minimum requirements for tank testing are given in Table 4.4. The surveyor may require tank testing to be extended as deemed necessary.

1.4.2.4.2 Regarding pressure heads and testing with air pressure, see Section 3, 3.1.3.2.1.4.

1.4.3 Cargo area equipment

1.4.3.1 Cargo and ballast piping systems, including valves and fittings, are to be internally inspected for corrosion as deemed necessary by the Surveyor. Subsequently, a pressure test is to be carried out.

1.4.3.2 Cargo, stripping and ballast pumps are to be examined and checked. Pressure relief valves of pumps are to be function tested.

1.4.3.3 Cargo tank high velocity vent and pressure/ vacuum valves are to be overhauled, adjusted by makers/recognized firm and tested under supervision of a Surveyor.

1.4.3.4 Tank venting systems are to be examined; flame arresters are to be opened as far as necessary, and cleaned.

1.4.3.5 Cargo tank heating systems are to be examined and pressure-tested to 1.5 times the operating pressure. (See Section 3, 3.1.5.4.4.)

1.4.3.6 The bilge systems of pump rooms and cofferdams are to be inspected and tested.

1.4.3.7 All ventilation systems in the cargo area including portable fans are to be examined and function-tested.

1.4.3.8 The following equipment is to be function-tested:

– level indicators of cargo tanks

– liquid level alarms – overflow controls

– pressure and temperature alarms

– remote-control systems of cargo pumps

– sampling arrangements of cargo tanks, if fitted

– for inert gas systems see 1.3.5.

1.4.4 Electrical installations

In addition to the inspection and testings as per 1.3.5 the protection devices of electric motors are to be tested.

2. OIL RECOVERY VESSELS

2.1 General Requirements

2.1.1 Application

2.1.1.1 The following instructions refer to oil recovery vessels as defined by the BRS Construction Rules, Chapter 9.

2.1.1.2 Unless otherwise stated in the following, the arrangements as per Sections 3 and 4.1 apply.

2.1.2 Extent of surveys

2.1.2.1 The surveys are to cover installations, outfit and equipment for:

– Operation in oil covered waters

– Recovering oil floating on the water

– The carriage and handling of oil cargo.

They also cover the surveys required by the SOLAS regulations1 for oil tankers.

The protective equipment and the safety equipment required by the SOLAS regulations for protection of the personnel as well as other equipment and outfit, which are no class requirement items, are not covered by the present Rules for Classification and Surveys. These items will, however, be included in the surveys, if compliance with the requirements of an Administration has to be certified.

2.1.2.2 Hull

The following requirements under 2.2 to 2.4 define the minimum extent of examinations. The surveys are to be extended where substantial corrosion and/or structural defects are found, and will include an additional close-up survey (close visual inspection range, preferably within reach of hand) where deemed necessary by the Surveyor.

2.1.3 Documents to be carried on board

In addition to the documents specified in 1.1.3 the following information is to be readily available for the Surveyor's use in connection with the survey:

– Operations- and equipment manual.

– Maintenance records for the gas detection and alarm system and any information that will help to identify suspect areas requiring inspection.

2.1.4 Access to structures

2.1.4.1 Regarding accessibility to spaces, absence of gases, removal of residual cargo and rust, and in respect of lighting, the ship is to be prepared such as to enable it to be duly examined without any risk.

2.1.4.2 For close-up surveys in cargo and salt water ballast tanks, one or more of the following means for access, acceptable to the Surveyor, is to be provided:

– Permanent or temporary staging

– Passages through structures

– Lifts and moveable platforms

– Boats or rafts

– Other equivalent means

2.1.5 Survey at sea

Upon prior agreement with the owner, BRS may carry out surveys at sea or at anchorage, provided the Surveyor is given the necessary assistance, including safety equipment, by the personnel on board. See also Section 3, 1.1.4.

2.2 Annual Surveys

2.2.1 General, scope

2.2.1.1 In addition to the surveys as stipulated in Section 3, 3. 1.1 the following installations, structural elements, items of equipment and outfit, including facilities for handling and carriage of the oil cargo, are to be surveyed in order to ensure that they are maintained in satisfactory condition.

Prior to inspection, the Surveyor shall examine the documentation required to be kept on board for this type of vessel, as a basis for the survey (see 2.1.3).

2.2.1.2 The annual survey is to ensure that the equipment for operation in oil-covered waters and for oil recovery as well as the cargo handling installations and pertinent safety equipment are in good working order.

For the aforementioned surveys normally access to cargo holds or other spaces within the cargo area necessitating gas-freeing is not required, unless checking of the equipment for correct functioning is not possible otherwise.

2.2.2 Installations on the weather deck

On the weather deck the oil recovery equipment will have to be surveyed and/or checked in addition to the items specified in 1.2.2.

2.2.3 Pump rooms

Equipment in pump rooms and other enclosed spaces used during oil recovery and cargo handling operations is to be checked, in particular as to leakages and potential sources of danger (explosion protection), e.g.:

– Equipment according to 1.2.3

– Equipment for the recovery of oil (separation plants) and the associated pumping and piping arrangements.

2.2.4 Electrical installations

In gas-dangerous spaces and zones the electrical equipment, including cables and their supports is to be visually examined, particularly regarding explosion protection.

2.2.5 Fire-extinguishing systems

The scope of survey of the fire-extinguishing systems is as specified in 1.2.5.

2.2.6 Equipment for Operation in oil-covered Waters

The following equipment for operation in oil-covered waters is to be visually examined and to be checked:

– Air locks

– Arrangements for effecting the closures necessary for explosion protection

– Ventilation system for pressurizing accommodation and machinery spaces.

– Vapour detection and alarm systems and portable gas detection equipment.

2.2.7 Ballast tanks

In the case of Seawater ballast tanks the procesure as outlined in 1.2.7 shall be followed, if applicable.

2.2.8 Miscellaneous

See 1.2.8

2.3 Intermediate Surveys

2.3.1 General

In addition to the surveys and checks listed in item 2 above, on the occasion of the second or the third annual survey the checks mentioned below will be carried out. If deemed necessary by the Surveyor, apart from the survey a functional test will be performed.

2.3.2 Installations in the cargo area

2.3.2.1 Irrespective of the vessel's age the condition of the loading/unloading, oil recovery, tank cleaning, bunkering, ballast, steam and venting systems, as well as of the ventilation and ventilator heads is to be checked. In cases of doubt pressure tests and/or wall thickness measurements may be demanded.

Cargo tank high velocity vent valves and pressure/ vacuum valves are to be function tested, and if deemed necessary by the Surveyor, to be opened up and readjusted.

2.3.2.2 In the case of oil recovery vessels, beyond this, the following are to be checked:

– drainage of cargo tank vent lines

– bonding devices of all piping systems and independent cargo tanks

– cargo hoses (repeat test, if needed)

– sea inlet discharge valves

– for appliances with pressurized enclosures, see 2.3.5.

2.3.3 Ballast and cargo tanks

For the scope of the surveys refer to 1.3.3.

2.3.4 Thickness measurements

Thickness measurements are to be carried out in sections found to be suspect on occasion of the previous class renewal survey.

In case of substantial corrosion the extent of the thickness measurements is to be increased.

2.3.5 Electrical installations

For the scope of the surveys refer to 1.3.5.

2.4 Class Renewal Surveys

2.4.1 General requirements

2.4.1.1 In addition to the class renewal surveys of the ship's hull, the machinery plant and electrical installation, the cargo system, the oil recovery system, and the pertinent safety devices listed in 2.3.2 for intermediate survey are to be subjected to thorough examination and testing for proper functioning at the surveyor's discretion.

It is to be verified that the relevant instructions, documentation and information material, such as cargo handling plans, cargo tank loading limit information etc. are kept on board (see 2.1.3).

2.4.1.2 The class renewal survey of cargo handling installations and related control, alarm and safety devices cannot normally be carried out during loading or discharging operations and is preferably to be carried out with the ship in gas-free condition.

2.4.1.3 Spaces and areas used in connection with cargo handling (e.g. cargo control rooms and pump rooms), are to be examined with respect to their general condition and possible sources of

danger. All accessible gas tight bulkhead penetrations including gastight shaft sealings are to be visually examined.

2.4.1.4 Drydocking: See Section 3, 3.1.3.1.3 and 1.4.1.6.

2.4.1.5 The equipment for operation of the vessel in oil-covered waters has to be subjected to thorough surveys and operational tests.

2.4.2 Hull

2.4.2.1 General requirements

2.4.2.1.1 All cargo tanks, sea water ballast tanks including double bottom tanks, pipe tunnels, cofferdams and void spaces bounding cargo holds, decks and outer hull are to be examined. This examination is to be supplemented by thickness measurements and tank testing as deemed necessary to ensure that the structural integrity continues to be given.

The examination is to be sufficiently thorough for revealing substantial corrosion, significant deformations, fractures, damages or other structural deteriorations.

Regarding anticipated thickness measurements, see also Section 3, 3.2.3.5.

2.4.2.1.2 All piping systems within the above spaces are to be examined and tested under working conditions to ensure their continued satisfactory condition. Special attention is to be given to ballast piping in cargo tanks and cargo piping in ballast tanks and void spaces.

2.4.2.1.3 The survey extent of combined ballast/cargo holds is to be evaluated based on the records of ballast history (see 2.1.3).

2.4.2.2 Surveys

2.4.2.2.1 An overall survey of all tanks and spaces is to be carried out.

2.4.2.2.2 The scope of Close-up surveys is to be established based on the requirements shown in Section 4.1,Table 4.1 or Table 4.2 depending on following items:

– Age of the vessel

– Operation of the vessel during the last period of class

The surveyor may extend the close-up survey as deemed necessary taking into account the maintenance of the tanks under survey and the condition of the corrosion protection system, and also in the following cases:

– In particular, tanks having structural arrangements or details which have suffered defects in similar tanks or on similar ships according to available information.

– Tanks which have structures approved with reduced scantlings due to an approved corrosion control system.

2.4.2.2.3 Corrosion protection

Where provided, the condition of coating or corrosion protection of ballast tanks is to be examined. Detail procedure (possible change to annual intervals) as under Section 3, 3.1.2.2 and 1.3.3.1 (2nd paragraph).

2.4.2.3 Thickness measurements

2.4.2.3.1 The scope of thickness measurements shall be established based on the requirements shown in Section 4.1,Table 4.3, depending on following items:

– Age of the vessel

– Operation of the vessel during the last period of class

– Results of the close-up surveys according to 2.4.2.2.2.

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

In cases where three sections are to be measured, at least one should include a ballast tank within 0,5 L amidship.

2.4.2.3.3 Regarding thickness measurements, see also Section 3, 3.2.

2.4.2.4 Tank testing

2.4.2.4.1 The scope of tank testing shall be established based on the requirements shown in Section 4.1, Table 4.4, depending on following items:

– Age of the vessel

– Operation of the vessel during the last period of class

– Results of the close-up surveys according to 2.4.2.2.2

– Results of the thickness measurements according to 2.4.2.3.

2.4.2.4.2 Regarding pressure heads and testing with air pressure, see Section 3, 3.1.3.2.1.4.

2.4.3 Cargo area equipment

2.4.3.1 Cargo, oil recovery and ballast piping systems, including valves and fittings, are to be internally inspected for corrosion as deemed necessary by the Surveyor. Subsequently, a pressure test is to be carried out.

2.4.3.2 Cargo, stripping, oil recovery, and ballast pumps are to be examined and checked. Pressure relief valves of pumps are to be function tested.

2.4.3.3 Cargo tank high velocity vent and pressure/ vacuum valves are to be overhauled, adjusted by makers/recognized firms and tested under supervision of a Surveyor.

2.4.3.4 Tank venting systems are to be examined; flame arresters are to be opened as far as necessary, and cleaned.

2.4.3.5 Cargo tank heating systems are to be examined and pressure-tested to 1.5 times the operating pressure. (See Section 3, 3.1.5.4.4.)

2.4.3.6 The bilge systems of pump rooms are to be inspected and tested.

2.4.3.7 All ventilation systems in the cargo area including portable fans are to be examined and function-tested.

2.4.3.8 The following equipment is to be function-tested:

– Level indicators of cargo tanks

– Liquid level alarms

– Overflow controls

– Pressure and temperature alarms

– Remote-control systems of cargo pumps

– Sampling arrangements of cargo tanks, if fitted

2.4.4 Equipment for Operation in oil-covered Waters

The equipment for operation in oil-covered waters and the pertinent safety equipment have to be subject to thorough surveys and operational tests.

2.4.5 Electrical installations

In addition to the inspection and testings as per 2.3.5 the protection devices of electric motors are to be tested.

3. CHEMICAL TANKERS

3.1 General requirements

3.1.1 Range of application

3.1.1.1 The following arrangements relate to chemical tankers as defined in the BRS Construction Rules for Seagoing Ships, Chapter 7.

3.1.1.2 Unless otherwise stipulated in the following, the requirements of Section 3 apply.

3.1.1.3 In the case of chemical tankers also qualified as oil or product carriers additionally sub-section 1. is to be observed.

3.1.2 Scope of Surveys

3.1.2.1 The surveys are to cover all installations, outfit and equipment related to the carriage and handling of chemicals. They also cover the surveys required by the IMO Codes for Chemical Tankers.5

The protective equipment and the safety equipment required by the Codes for protection of the personnel as well as other equipment and outfit which are no class requirement items are not covered by the present Rules for Classification and Surveys. These items will, however, be included in the surveys, if compliance with the requirements of an Administration has to be certified. (See also the Rules, Chapter 7, Section 1).

Reference should be made to the procedures stated in the IBC Code regarding the authorization of recognized institutions, surveys and issuance, validity and extension of certificates. The "Certificate of Fitness" required for chemical tankers is issued either by the Administration of the vessel's flag

state on the basis of BRS certificates or, if BRS is authorized by the respective flag state, by the Society itself.

3.1.2.2 Hull

The following defines the minimum extent of examinations. The surveys shall be extended where substantial corrosion and/or structural defects are found, and will include an additional close-up survey (close visual inspection range, preferably within reach of hand) where deemed necessary by the Surveyor.

3.1.2.3 Repairs

Necessary repairs, see Section 2, 2.2.4.

3.1.3 Documents to be carried on board

The owner should supply and maintain on board documentation as specified under 3.1.3.1 and 3.1.3.2 which should be readily available for the surveyor. The documentation should be kept on board for the life time of the ship.

3.1.3.1 Survey Report File:

– Reports on structural surveys 2

– Executive Hull Summary 2

– Thickness measurements reports

The Survey Report File shall be available also in the Owners management office.

3.1.3.2 Supporting Documents

– Main structural plan of cargo and ballast tanks

– List of substances permitted to be carried (Annex I to "Certificate of Fitness")

– Previous repair history 2

– Cargo and ballast history 2

– Extent of use of inert gas plant and tank cleaning procedures 2

– Inspections by ship's personnel with reference to

– structural deterioration in general

– leakage in bulkheads and piping

– condition of coating or corrosion protection 2

– Survey Programme as required under 3.1.6 until the completion of the next Class Renewal Survey

– Any other information that will help to identify Suspect Areas requiring inspection.

3.1.4 Access to structures

3.1.4.1 The ship's spaces are to be made accessible, adequately lighted, freed from gas and cleaned, so that they may be properly examined without risk.

Where "soft coating"3 has been applied, it may be necessary to remove this coating, at least partially.

3.1.4.2 For close-up surveys in cargo and salt water ballast tanks, one or more of the following means for access, acceptable to the Surveyor, is to be provided:

– permanent or temporary staging

– passages through structures

– lifts and moveable platforms

– boats or rafts

– other equivalent means.

3.1.5 Survey at Sea

Upon prior agreement with the owner, BRS may carry out surveys at sea or at anchorage, provided the Surveyor is given the necessary assistance, including safety equipment, by the personnel on board. See also Section 3, 1.1.4.

3.1.6 Survey Programme2

For class renewal a special survey program (planning document) has to be prepared. In the case of chemical tankers exceeding 20.000 tdw this survey plan is to be prepared by the owner on the basis of the documentation elaborated on the occasion of the intermediate survey. The program is to be agreed with BRS Head Office in due time prior to commencement of the class renewal survey. For chemical tankers up to 20.000 tdw the survey program is to be prepared when starting the class renewal survey.

For Chemical tankers more then 10 years of age ESP from last RS/2SS/ to be apply for Intermediate Survey.

3.2 Annual Surveys

3.2.1 General

3.2.1.1 In addition to the surveys as stipulated in Section 3, 3.1.1, the following installations, items of equipment and outfit as listed in 3.2.2 to 3.2.10 below are to be checked as to their perfect maintenance condition.

3.2.1.2 The annual survey is to ensure that the cargo handling installations and pertinent safety equipment are in good working order.

The surveys are preferably to be carried out during loading or discharging operations.

Access to cargo tanks or other spaces within the cargo area, necessitating gas-freeing will normally not be required unless necessary for checking items of equipment and installations for correct functioning.

3.2.2 Installations on the weather deck

3.2.2.1 On the weather deck the following equipment, if fitted, is to be surveyed and/or examined:

– cargo tank hatches, including sealings, covers and coamings

– tank gauging devices, level alarms and overflow controls with automatic closing valves

– pressure/vacuum relief valves and flame arresters of the cargo tank venting arrangements as well as devices for measuring the cargo tank vapour pressure

– flame arresters on vents to all bunker, oily ballast and oily slop tanks sampling devices of cargo cooling or heating installations as well as temperature measuring devices and temperature alarm systems

– pump discharge pressure gauges and the distinctive marking of pumps, valves and cargo piping.

– wheelhouse doors and wheelhouse windows, deckhouse and superstructure windows facing the cargo area (closing condition).

– electrical installations, see 3.2.4

– for fire-extinguishing systems, see 3.2.5.

3.2.2.2 The cargo handling installations (including spool pieces of the loading and unloading system, spray shields and drip trays, cargo hoses, etc.) arranged on the weather deck, possibly in the fore or aft area, are to be visually examined.

3.2.3 Pump rooms and pipe tunnels

Equipment in pump rooms and other enclosed spaces serving cargo handling operations, including pipe tunnels if fitted, is to be checked, in particular as to leakages and potential sources of danger (explosion protection), e.g.:

– condition of bulkheads and bulkhead penetrations (cracks, leakages)

– all piping systems including pressure gauges

– cargo bilge, ballast and stripping pumps for leakages, as far as practicable

– electrical and mechanical remote control and emergency stopping equipment (see also 3.2.4)

– ventilation systems

– rescue arrangements

– for fire-extinguishing systems, see 3.2.5.

3.2.4 Electrical installations

In gas-dangerous spaces and zones, the electrical equipment, including cables and their supports, is to be visually examined, particularly regarding explosion protection.

3.2.5 Fire extinguishing systems

The survey of the fire-extinguishing systems covers:

– external inspection of all systems for the cargo tank area

– checking of the foam fire-extinguishing and/ or water-spraying system on deck.

(See Section 3, 3.1.1.4)

3.2.6 Inert gas systems

The arrangements for inertising of cargo tanks and spaces surrounding cargo tanks and for padding of cargo tanks by filling with inert gas or dry air are to be examined as to their operability.

3.2.7 Ballast tanks

Sea water ballast tanks shall be surveyed, within annual surveys, as a consequence of findings on the occasion of an intermediate or class renewal survey; see Section 3, 3.1.2.2.

Regarding the renewal of coating see Section 3, 3.1.2.2.4.

In case of chemical tankers exceeding 15 years of age all sea water ballast tanks adjacent to a cargo or fuel oil tank with heating coils are to be examined internally.

If considered necessary by the Surveyor, thickness measurements are to be carried out, which are to be extended if substantial corrosion is found.

3.2.8 Miscellaneous

On the occasion of the annual survey also the following items, if fitted, are to be checked:

– special arrangements related to damage control (e.g. sliding bulkhead doors) in accordance with the approved damage control plan (also for tankers of less than 100 m in length)

– cargo sample stowage space

– gas detection instruments

– cargo information, safety instructions, etc., see 3.1.3.

3.2.9 Offshore supply vessels

Onboard supply vessels equipped for the carriage of dangerous or corrosive substances (class notation "Equipped for the carriage of chemicals in bulk"), the equipment employed for cargo handling and monitoring (piping, pumps, valves, safety equipment) is to be surveyed.

As far as accessible, spaces employed for storage are to be subjected to a general condition survey.

3.2.10 Waste chemical incinerator ships

Where severely corrosive wastes have been carried, in addition to the aforementioned surveys, inspections of all cargo tanks and of the cargo piping system are to be carried out for assessment of corrosion and possible damages to the coating. Analogously to Section 3, 3.2. thickness measurements are to be carried out.

3.3 Intermediate Surveys

3.3.1 General

3.3.1.1 In addition to the surveys and checks listed in 3.2 above, on the occasion of the second or third annual survey the checks listed below are to be per-formed. If deemed necessary by the Surveyor, functional test, pressure tests or thickness measurements are to be carried out in addition to the survey.

3.3.1.2 For chemical tankers exceeding 15 years of age the intermediate survey is to be carried out in drydock. For chemical tankers of 15 years of age or less, BRS may agree to a bottom in-water survey according to Section 3, 3.1.7.

3.3.1.3 In case of ships exceeding 10 years of age the intermediate survey is to enhanced to the scope of the preceding class survey according to 3.1.6 and 3.4. Testing of ballast and cargo tanks is not required unless deemed necessary by the attending Surveyor.

3.3.2 Installations in the cargo area

Irrespective of the vessel´s age, all important piping systems in the cargo area are to be examined, e.g.:

– cargo, tank-cleaning, bunkering, ballast and steam pipings (if considered necessary by the surveyor, pressure testing or thickness measurements may be required

– provisions for drainage of cargo tank vent lines

– cargo tank high velocity vent and pressure/ vacuum valves are to be function tested, and if deemed necessary by the Surveyor, to be opened up and re-adjusted.

– bonding devices of all piping systems and cargo tanks built-in independent from the hull

– cargo hoses (repeat test, if needed)

– cargo cooling systems

– tank heating systems

– spare parts for mechanical ventilation systems

3.3.3 Ballast and cargo tanks

3.3.3.1 Vessels 5 to 10 years of age:

For tanks used for sea water ballast, an overall survey of representative spaces selected by the Surveyor is to be carried out. If such inspections reveal no visible structural defects, the examination may be limited to verifying whether the protective coating continues to be effective.

In the case of seawater ballast tanks the procedure as outlined in 1.3.3.1 (2nd paragraph) shall be followed, if applicable.

Regarding the renewal of coating see also Section 3, 3.1.2.2.4.

3.3.3.2 Vessels more than 10 years of age: For Intermediate survey see 3.3.1.3. For vessels more than 15 years of age overall and close up surveys, thickness measurement of Lower part of ballast and cargo tanks are to be carried out.

3.3.4 Thickness measurements

Thickness measurements shall be carried out in areas found to be suspect during the previous class renewal survey. For vessels more than 10 years of age see 3.3.1.3.

Where substantial corrosion is found, the extent of the thickness measurements should be increased.

Authorization for thickness measurements see Section 3, 3.2.2.

3.3.5 Electrical installations

Irrespective of the vessel's age, the electrical equipment in gas-dangerous spaces and zones is to be examined with respect to the following:

– protective earthing (spot checks)

– integrity of certified safe-type equipment

– damages to outer sheet of cables

– function testing of pressurized equipment, and of associated alarms

– isolation resistance of circuits (only in gas-free or inerted condition). If proper test reports are available on board, the readings made by the crew may be accepted.

3.3.6 Inert gas systems

For ships with the class notation INERT, a survey according to BRS programme INERT 4 is to be carried out.

3.3.7 Offshore supply vessels

Onboard supply vessels equipped for the carriage of dangerous or corrosive substances, all tanks employed for the storage of such substances, including piping and fittings, have to be thoroughly examined for corrosion and possible damages to their coatings, where provided. The thickness measurements in these areas are to be conducted analogously to those of chemical tankers.

3.4 Class renewal surveys

3.4.1 General requirements

3.4.1.1 In addition to the class renewal surveys of the ship's hull, the machinery plant and electrical installation as required by Section 3, 3.1.3 to 3.1.6, the structural elements, equipment and outfit including the cargo system and pertinent safety devices listed in 3.3 for intermediate survey are to be subjected to thorough examination and testing for proper functioning, at the Surveyor's discretion.

It is to be ensured that the relevant instructions and information material, such as cargo handling plans, cargo tank loading limit information, etc. are kept on board (see 3.1.3).

3.4.1.2 The class renewal survey of cargo handling installations and pertinent control, alarm and safety devices cannot normally be carried out during loading or discharging operations and is preferably to be carried out with the ship in gas-free condition.

3.4.1.3 Spaces and areas serving cargo handling operations (e.g. cargo control rooms and pump rooms) are to be examined with respect to their general condition and possible sources of danger. All accessible gas-tight bulkhead penetrations, including gas-tight shaft seals, are to be visually examined.

3.4.1.4 Regarding planning/survey programme, see 3.1.6. Regarding the surveys see 3.4.2.

3.4.1.5 The class renewal survey is to be held when the ship is in drydock or on a slipway, unless a drydocking survey has been carried out within the admissible period (see Section 3, 2.1.6.7). The ship is to be placed on blocks of sufficient height so that the keel, the bottom plating and the rudder can be examined.

3.4.1.6 For class renewal surveys of chemical tankers (hull), the "Continuous Class Renewal" procedure described in Section 3, 2.1.3.6 is excluded.

3.4.2 Hull

3.4.2.1 General requirements

3.4.2.1.1 All cargo tanks, sea water ballast tanks including double bottom tanks, pipe tunnels, cofferdams and void spaces bounding cargo holds, decks and outer hull are to examined. The examination is to be sufficiently thorough for revealing substantial corrosion, significant deformations, fractures, damages or other structural deteriorations.

The examination is to be supplemented by thickness measurements and tank testing as deemed necessary to ensure that the structural integrity continues to be given.

Regarding anticipated thickness measurements, see also Section 3, 3.2.3.5.

3.4.2.1.2 All piping systems on deck within the above spaces are to be examined and tested under working conditions to ensure their continued satisfactory condition.

Special attention is to be given to ballast piping in cargo tanks and cargo piping in ballast tanks and void spaces.

3.4.2.1.3 The survey extent of combined ballast/cargo holds is to be evaluated based on the records of ballast history, the corrosion protection system provided, and the extent of corrosion found, see 3.1.3.

3.4.2.2 Surveys

3.4.2.2.1 An overall survey of all tanks and spaces within the cargo area (excluding fuel oil, lubricating oil and fresh water tanks), as well as of the deck(s) and the shell is to be carried out, see 3.4.2.1.1.

The survey of stainless steel tanks is to be carried out as an overall survey and can be supplemented by a close-up survey as deemed necessary by the Surveyor. For fuel oil, lubricating oil and fresh water tanks the necessity for an overall survey is to be determined based on the ship's age.

3.4.2.2.2 Depending on the design and age of the ship, in general, close-up surveys shall be carried out at least according to the requirements shown in Table 4.5 and Table 4.6.

The surveyor may extend the close-up survey as deemed necessary taking into account the maintenance of the tanks under surveys and the condition of the corrosion protection system, and also in the following cases:

– in particular, tanks having structural arrangements or details which have suffered defects in similar tanks or on similar ships according to available information.

– tanks which have structures approved with reduced scantlings due to an approved corro sion control system.

– stainless steel tanks: see above

– pipes: see 3.4.2.3.5

For areas in tanks where coating and/or lining are found to be in a good condition, or where the tanks are made of stainless steel, the extent of close-up surveys according to Table 4.5 may be specially considered by the surveyor.

3.4.2.2.3 Corrosion protection

Coating and/or corrosion protection equipment, if fitted, are to be examined for their general condition and functioning. Detailed procedure (possible change to annual surveys), see Section 3, 3.1.2.2 and 1.3.3.1 (2nd paragraph).

Table 4.5 Class Renewal Surveys (Hull) of Chemical Tankers Minimum Requirements for Close-up Surveys

Class renewal survey No.			
I. age ≤ 5 y.	**II. 5 < age ≤ 10 y.**	**III. 10 < age ≤15 y.**	**IV. and subsequent, age > 15 y.**
Structural members of one transverse section 1) in a ballast wing tank or a ballast double hull tank (side and bottom tank, even though these tanks are separate) One deck transverse 2) in a cargo tank, or on deck	All plating and internal structure, in a ballast wing tank or ballast double hull tank (side and bottom tank) Deck structure also externally One deck transverse in each remaining ballast tank, or on deck One deck transverse, each, - in a cargo wing tank, - in two cargo center tanks, or corresponding transverse on deck	All plating and internal structure, in all ballast tanks (Deck structure also externally) All plating and internal structure, in a cargo wing tank Structural members of one transverse section 1) in each remaining cargo tank	
One transverse bulkhead (lower part), including adjacent structural members, - in a ballast tank - in a cargo wing tank - in a cargo center tank	Both transverse bulkheads (complete), including adjacent struct. members, in a ballast wing tank or double hull tank (side and double hull tank) One transverse bulkhead (lower part), including adjacent struct. members, - in each remaining ballast tank - in a cargo wing tank - in two cargo center tanks	All transverse bulkheads (complete), including adjacent structural members, in all cargo tanks	
1) Complete transverse web frame ring, where provided, including adjacent struct. members 2) Deck transverse girder, including adjacent deck plating and struct. members			

3.4.2.3 Thickness measurements

3.4.2.3.1 The minimum requirements for thickness measurements on the occasion of class renewal surveys are stated in Table 4.6, depending on the ship's age.

Extended measurements may be required, e.g. for areas with substantial corrosion, and/or according to the statements in the survey programme, see 3.1.6. The thickness measurements should be witnessed by the Surveyor to the necessary extent.

3.4.2.3.2 For areas in spaces where coating and/or lining are found to be in good condition , or where the cargo tanks are made of stainless steel, the extent of thickness measurements according to Table 4.6 may be specially considered by the surveyor.

3.4.2.3.3 The selected transverse sections should include all continuous longitudinal structural elements. The sections are to be chosen where the largest reductions are suspected to occur or are revealed from deck plating measurements.

Table 4.6 Class Renewal Surveys (Hull) of Chemical Tankers Minimum Requirements for Thickness Measurements

<table>
<tr><th colspan="4">Class renewal survey No.</th></tr>
<tr><th>I. age ≤ 5 y.</th><th>II. 5 < age ≤ 10 y.</th><th>III. 10 < age ≤ 15 y.</th><th>IV. and subsequent, age > 15 y.</th></tr>
<tr><td>One section of deck plating for the full beam of the ship within the cargo area (preferably in way of a ballast tank, if any, or a cargo tank used primarily for water ballast)</td><td>Within the cargo area: a) Each deck plate b) Three transverse sections</td><td>Within the cargo area: a) Each deck plate b) Three transverse sections</td><td>Within the cargo area: a) Each deck plate b) Three transverse sections c) Each bottom plate</td></tr>
<tr><td colspan="4">Measurements of structural members subject to close-up survey according to Table 4.5, for general assessment and recording of corrosion pattern</td></tr>
<tr><td colspan="4">Suspect areas</td></tr>
<tr><td></td><td colspan="3">Selected wind and water strakes, outside the cargo area</td></tr>
<tr><td colspan="2"></td><td colspan="2">All wind and water strakes within the cargo area</td></tr>
</table>

3.4.2.3.4 Three sections are to be measured. At least one is to include a ballast tank within 0,5 L amidships.

3.4.2.3.5 For chemical tankers exceeding 10 years of age, selected cargo pipes outside cargo tanks and ballast pipes passing through tanks are to be subjected to random thickness measurements, and selected pipe lengths opened for inspection if deemed necessary.

3.4.2.3.6 Regarding thickness measurements, see also Section 3, 3.2. For chemical tankers, which are also qualified as oil or product tankers, see also 1.4.2.3.4.

3.4.2.4 Pressure tests

3.4.2.4.1 In general, pressure tests are to be carried out in line with Table 4.7. Depending on the design and use of the tanks, the surveyor may accept deviations (e.g. correctly documented recent pressure tests of cargo tanks carried out by the crew) or require additional tests to be carried out.

3.4.2.4.2 For the pressure heads, see Section 3, 3.1.3.2.1.4.

3.4.2.4.3 For chemical tankers exceeding 10 years of age, selected cargo pipes outside cargo tanks and ballast pipes passing through cargo tanks are to be pressure tested to the maximum working pressure.

3.4.3 Cargo area equipment

3.4.3.1 Cargo and ballast piping systems, including valves and fittings, are to be internally inspected for corrosion, as deemed necessary by the Surveyor. Subsequently, a pressure test is to be carried out.

Table 4.7 Class Renewal Surveys (Hull) of Chemical Tankers Minimum Requirements for Tank Testing

<table>
<tr><th colspan="4">Class renewal survey No.</th></tr>
<tr><th>I. age ≤ 5 y.</th><th>II. 5 < age ≤ 10 y.</th><th>III. 10 < age ≤ 15 y.</th><th>IV. and subsequent, age > 15 y.</th></tr>
<tr><td colspan="4">Cargo tank boundaries facing void spaces, pipe tunnels, representative fuel oil tanks, pump rooms or cofferdams</td></tr>
<tr><td></td><td>All cargo tank bulkheads which form the boundaries of segregated cargoes</td><td colspan="2">All remaining cargo tank boundaries</td></tr>
<tr><td colspan="4">All ballast tank boundaries</td></tr>
</table>

3.4.3.2 Cargo, stripping and ballast pumps are to be examined and checked. Pressure-relief valves of pumps are to be function-tested.

3.4.3.3 Cargo tank high velocity vent and pressure/ vacuum valves are to be overhauled, adjusted by makers/recognized firm and tested under supervision of a Surveyor.

3.4.3.4 Tank venting systems are to be examined; flame arresters are to be opened as far as necessary, and cleaned.

3.4.3.5 Cargo tank heating systems are to be examined and pressure-tested to 1.5 times the operating pressure. (Cf. Section 3, 3.1.5.4.4).

3.4.3.6 All ventilation systems in the cargo area, including portable fans, are to be examined and function-tested.

3.4.3.7 The following equipment is to be function-tested:

– level indicators of cargo tanks

– liquid level alarms

– overflow controls

– pressure and temperature alarms

– remote-control systems of cargo pumps

– bilge systems of pump rooms and cofferdams

– sampling arrangements of cargo tanks, if fitted

– inert gas systems, if the survey is due (cf. 3.3.5)

– bilge systems of pump rooms.

3.4.4 Electrical installations

In addition to the inspections and testings as per 3.3.4, the protection devices of electric motors are to be tested.

4. LIQUEFIED GAS TANKERS

4.1 General requirements

4.1.1 The following arrangements relate to liquefied gas tankers as defined in the BRS Construction Rules for Seagoing Ships, Chapter 6.

4.1.2 Unless otherwise stipulated in the following, the requirements in Section 3 apply.

4.1.3 The surveys are to cover all installations, outfit and equipment related to the carriage and handling of liquefied gases. They also cover the surveys required by the IMO Codes for Liquefied Gas Tankers.6

The fire protection equipment and the safety equipment required by the Codes for protection of the personnel as well as other equipment and outfit which are no class required by the Codes for protection of the personnel as well as other equipment and outfit which are no class requirement items are not covered by the present Rules for Classification and Surveys. These items will, however, be included in the surveys, if compliance with the requirements of an Administration has to be certified.

4.1.4 The ship's spaces and tanks are to be made accessible, adequately lighted, freed from gas and cleaned, so that they may be properly examined without risk.

4.1.5 For ships of special design, the survey intervals and procedures will be specially considered.

4.2 Annual surveys

4.2.1 General

4.2.1.1 In addition to the surveys as per Section 3, 3.1.1, the components, equipment and outfit as listed below in 4.2.2 to 4.2.9 are to be examined as to whether they are in unobjectionable maintenance condition.

4.2.1.2 The annual survey is to ensure that the cargo handling installations and pertinent safety equipment are in good working order. The annual survey is preferably to be carried out during a loading or discharging operation. Access to cargo tanks or inertised cargo holds, necessitating gas-freeing/aerating will normally not be required unless deemed necessary by the Surveyor in specific cases.

4.2.1.3 The second annual survey during each period of class, or the third at the latest will be carried out in the form of an "intermediate survey" in accordance with a programme covering a wider scope; see 4.3.

4.2.1.4 Spaces and areas used in connection with cargo handling (e.g. cargo control rooms, air-locks, compressor rooms), are to be examined with respect to their general condition and maintenance. All accessible gas-tight bulkhead penetrations, including tight shaft sealings, are to be visually examined.

4.2.2 Cargo handling systems

4.2.2.1 The cargo and process pipings, expansion joints, cargo hoses and machinery, such as heat exchangers, vapourizers, pumps, compressors are to be visually examined.

4.2.2.2 The availability of the required spool pieces for piping separation is to be verified.

4.2.2.3 The log books are to be examined with regard to correct functioning of the cargo containment and cargo handling systems. The running hours per day of the reliquefaction plant or the boil-off rate and the inert gas consumption are to be considered.

4.2.2.4 It is to be ensured that the relevant instructions and information material, such as cargo handling plans, cargo tank loading limit information, cooling-down procedures, etc. are on board.

4.2.3 Cargo containment venting systems

4.2.3.1 Venting systems for the cargo tanks, inter barrier spaces (in case of Type A tanks, cargo holds) are to be visually examined. It is to be verified that the cargo tank relief valves are sealed and that the certificate containing details on opening/closing pressures of the relief valves is on board.

4.2.3.2 Protection screens and flame arresters, if fitted, are to be examined for corrosion and cleanliness.

4.2.4 Instrumentation and safety systems

4.2.4.1 The monitoring and control equipment for pressure, temperature and liquid levels is to be verified as to its good working order, by one or several of the following methods:

– Visual external examination

– Comparison of read-outs of different indicators

– Comparison of read-outs with the data of the cargo actually handled

– Examination of repair and maintenance records with reference to the cargo plant repair and maintenance manual.

4.2.4.2 Emergency shut-down valves at shore connections and tanks are to be tested without flow in the pipe lines. It is to be verified that operation of the emergency shut-down system will cause the cargo pumps and compressors to stop.

4.2.4.3 The fixed and portable gas detection equipment, including indicators and alarms, is to be tested for correct functioning.

4.2.5 Electrical installations

In gas-dangerous spaces and zones the electrical equipment, including the cables and their supports, is to be visually examined, particularly regarding explosion protection.

4.2.6 Ventilation systems

Ventilation systems for all spaces in the cargo area, including cargo pump rooms, cargo compressor rooms, electric motor rooms, cargo control rooms and other spaces used for cargo handling operations are to be examined as to their satisfactory operating condition.

4.2.7 Inert gas and dry air systems

Inert gas/dry air systems, including the means for prevention of back-flow of cargo vapour to gas-safe spaces are to be checked as to their satisfactory operating condition.

4.2.8 Fire-fighting systems

All systems in the cargo tank area, including the compressor room, are to be checked visually. See also Section 3, 3.1.1.4.

4.2.9 Miscellaneous

The following items of equipment are to be inspected for their condition and correct functioning:

– means for ensuring gas-tightness of the wheelhouse windows and doors, windows in end bulkheads of superstructures and deckhouses facing the cargo area or stern loading/unloading arrangements, and closing devices of all air intakes and openings into accommodations, service and control stations.

– sealing arrangements for tanks or tank domes penetrating decks or tank covers.

– drip trays or insulation for deck protection against cargo leakage.

– arrangements for heating of hull structural elements, if any. Access to heated cofferdams, etc. is normally not required.

– electric bonding of cargo piping systems.

– arrangements for the use of boil-off gas as fuel, including alarm and safety systems.

4.3 Intermediate surveys

4.3.1 General

4.3.1.1 In addition to the surveys and checks as stipulated in 4.2 irrespective of the vessel´s age, unless expressly stated otherwise, the checks mentioned below are to be carried out on the occasion of the second or third annual survey.

The intermediate survey supplements the preceding annual survey by testing of the cargo handling installations, with pertinent automatic controls, alarm and safety systems, for their correct functioning.

4.3.1.2 For some of the surveys and checks to be carried out within the scope of the intermediate survey, the ship is required to be in gas-free condition. They may be carried out on the occasion of drydocking.

4.3.2 Cargo systems, tanks

Bonding of tanks and pipes is to be controlled.

4.3.2.1 It is to be checked whether the ship's cargo hoses are of approved type and in satisfactory condition.

At intervals not exceeding 2.5 years, the cargo hoses are to be subjected to pressure and conductivity tests.

4.3.2.2 Weather deck

The piping systems essential for operation of the ship, e.g. cargo transfer, bunker and ballast lines, are to be examined. Cf. 3.3.3.

4.3.2.3 On ships of 10 years of age and over, which have carried products other than those listed in the IMO-Certificate of Fitness, two selected cargo tanks, if of the integral type, and selected double bottom or ballast spaces, if any, are to be internally inspected.

The piping system in the cargo tanks is to be examined.

4.3.3 Cargo containment venting systems

4.3.3.1 The drainage arrangements of the venting systems are to be examined.

4.3.3.2 If the cargo tanks are equipped with relief valves with non-metallic membranes in the main or pilot valves, such membranes are to be replaced by new ones and the valves are to be adjusted, function-tested, and sealed.

These measures need not be taken simultaneously with the intermediate survey, provided that the non-metallic membranes are renewed at intervals not exceeding 3 years.

4.3.4 Instrumentation and safety systems

4.3.4.1 The alarm, control and safety systems of the cargo installation are to be visually examined and tested by varying pressure, temperature and liquid level, as far as practicable, and comparisons are to be drawn, using test instruments. Simulated testing may be accepted for sensors which are not accessible or for sensors located within cargo tanks or inertised cargo holds. This test is to include testing of alarm and safety functions.

4.3.4.2 The gas detection equipment, including indicators and alarms, is to be tested for correct functioning. The piping of the gas detection system is to be visually inspected for corrosion and damages. The tightness and integrity of the suction lines between suction points and analyzing units is to be verified as far as possible.

4.3.4.3 On ships having arrangements for the use of boil-off gases as fuel, the safety, control, alarm and shut-down systems are to be checked. The extent of the checks will be determined from case to case.

4.3.5 Electrical installations

Electrical equipment in gas-dangerous spaces and zones is to be examined in respect of the following:

– protective earthing (spot checks)

– integrity of certified safe-type equipment

– damage to outer sheath of cables

– function-testing of pressurized equipment and associated alarms

– testing of systems for de-energizing non-certified safe electrical equipment located in spaces protected by air-locks, such as electric motor rooms, cargo control rooms, etc.

– checking of insulation resistance of circuits. Relevant measurements are only to be made when the ship is in gas-free or inertised condition. If proper test reports are available on board, readings made by the crew may be accepted.

– when the ship is in gas-free condition, it is to be verified that the cargo tanks are electrically bonded to the hull.

4.3.6 Inert gas system

The inert gas installation is to be tested in accordance with BRS programme.

4.4 Class renewal surveys

4.4.1 General requirements

In addition to the surveys and inspections referred to in 4.3 and in Section 3, 3.1.3, the examinations and tests as mentioned in 4.4.2 to 4.4.8 below are to be performed.

4.4.2 Cargo containment system

4.4.2.1 Surveys

4.4.2.1.1 All cargo tanks are to be inspected internally. Where applicable, inspections performed between the class renewals may be recognized.

4.4.2.1.2 As far as practicable, the outer surface of uninsulated cargo tanks or the outer surface of cargo tank insulations, including vapour or protective cover if any, is to be examined, as are areas in way of supports, keys and anti-flotation chocks. Partial removal of insulation may be required in order to verify the condition of the tank or the insulation itself, if found necessary by the Surveyor. Where, e.g. in the case of membrane-type cargo tanks, the insulation arrangement is such, that it cannot be examined, the surrounding structures of wing tanks, double bottom tanks and cofferdams are to be examined for cold spots when the cargo tanks are in cold condition. This examination may be dispensed with if the log book, together with the monitoring instruments, gives sufficient evidence of the integrity of the insulation system.

4.4.2.2 Non-destructive tests

4.4.2.2.1 Thickness measurements of the cargo tanks may be required, if deemed necessary by the Surveyor.

4.4.2.2.2 Non-destructive testing of the main structural members, tank shell and highly stressed parts, including welded connections is to supplement cargo tank inspection as far as deemed necessary by the Surveyor. The following items are inter alia considered as highly stressed parts:

– cargo tank supports and longitudinal and transverse securing devices

– y-connections between tank shell and longitudinal bulkhead of lobe tanks

– web frames or stiffening rings

– swash bulkheads and their fixations

– dome and sump connections to tank shell

– foundations for pumps, towers, ladders, etc.

– pipe connections.

4.4.2.2.3 For independent Type B tanks, the extent of non-destructive testing is defined in a programme specially prepared for the particular cargo tank design.

4.4.2.3 Thightness tests

4.4.2.3.1 The tightness of all cargo tanks is to be verified by an appropriate procedure. Provided that the effectiveness of the ship's gas detection equipment has been confirmed, it will be acceptable to utilize this equipment for the tightness test of independent tanks below deck during the first process of filling of the cargo tanks subsequent to the class renewal survey. Where applicable, inspections performed between the class renewals may be recognized.

4.4.2.3.2 Where the findings of checks according to 4.4.2.1 to 4.4.2.3.1 or an examination of the log book raise doubts as to the structural integrity of a cargo tank, a hydrostatic or hydropneumatic test is to be carried out. For integral tanks and for independent Type A and B tanks, the test pressure at the top of tank is to correspond to the MARVS (maximum allowable relief valve setting) of the tank. For independent Type C tanks, the test pressure at the top of tank is not to be less than 1.25 times the MARVS.

4.4.2.4 Extended tests

At intervals of 10 years and on the occasion of class renewal surveys Nos. II, IV, VI, etc., all independent Type C tanks are to be either:

– hydrostatically or hydropneumatically tested to a pressure at upper edge of tank of 1.25 times MARVS and thereafter, nondestructively, in accordance with 4.4.2.2.2/ 4.4.2.2.3

or

– subjected to a thorough, systematically planned non-destructive testing procedure. These tests are to be carried out in accordance with a programme specially prepared for the particular tank design.

If a special programme does not exist, the following applies with regard to non-destructive testing:

Testing shall be concentrated on the detection of surface cracks in welded connections in highly stressed areas, as listed in 4.4.2.2.2.

At least 10 % of the length of the welded connections in each of the above mentioned areas are to be tested. This testing is to be carried out internally and externally, as far as practicable.

Insulation is to be removed as necessary for the required non-destructive testing.

4.4.2.5 Tank supporting structures and insulation, secondary barrier

4.4.2.5.1 As far as practicable, all hold spaces and hull insulation (if provided), secondary barriers and tank supporting structures are to be visually examined. The secondary barrier of all tanks is to be checked for its effectiveness by means of a pressure/vacuum test, a visual examination or some other acceptable method.

4.4.2.5.2 For membrane and semi-membrane tank systems inspection and testing as per 4.4.2.5.1 are to be carried out in accordance with programmes specially prepared in accordance with an approved method for the actual tank system.

4.4.2.6 Pressure and vacuum relief valves

4.4.2.6.1 The pressure relief valves for the cargo tanks are to be opened for examination, adjusted, function-tested and sealed. The requirements of 4.3.3.2 regarding replacement of non-metallic membranes apply. The following tolerances apply regarding the set pressures of the cargo tank pressure relief valves:

Set pressure	Tolerance
0 bar to 1,5 bar	± 10%
1.5 bar to 3,0bar	± 6%
≥ 3.0 bar	± 3%

4.4.2.6.2 Pressure/vacuum relief valves, rupture discs and other pressure relief devices for inter-barrier spaces and hold spaces are to be examined, opened and tested if necessary, depending on their design.

4.4.2.7 Electric bonding

It is to be verified that the cargo tanks are electrically bonded to the hull.

4.4.3 Piping systems

4.4.3.1 The cargo, liquid nitrogen and process piping systems, including their valves and actuators, compensators etc., are to be opened for examination as deemed necessary by the Surveyor. Insulation is to be removed as deemed necessary to ascertain the external condition of the pipes. At the Surveyor's discretion welded seams at branches and bends are to be subjected to nondestructive random crack tests. If the visual examination raises doubts as to the integrity of the pipelines, the pipeline is to be pressure-tested to 1.25 times the MARVS. After reassembly the complete piping system is to be tested for leaks.

4.4.3.2 The pressure relief valves in the piping systems are to be function-tested. A random selection of valves is to be opened for examination and adjusted.

4.4.3.3 Cargo pumps, booster pumps and gas compressors are to be inspected and tested.

4.4.4 Reliquefaction installation

4.4.4.1 The parts of the compressors subject to wear, such as cylinders, pistons, connecting rods, glands, bearings, auxiliary machinery components, such as the shafts, rotors and diffusers of centrifugal pumps, etc., are to be examined.

4.4.4.2 The drives of the compressors, including those components which are required for operation of the drives, are to be inspected.

4.4.4.3 All covers of the heat exchangers are to be dismounted for inspection of the pipe plates and pipes. After renewal of pipes or pipe plates, if necessary, pressure and tightness tests are to be conducted. If only a few pipes have been exchanged, a tightness test may be sufficient.

4.4.4.4 The safety equipment (pressure relief valves, rupture discs) is to be checked.

4.4.5 Process pressure vessels

At class renewal surveys Nos. II, IV, VI, etc. all process pressure vessels are to be tested pneumatically at a pressure equal to 1.1 times the working pressure, unless the result of the survey requires a hydraulic pressure test to 1.5 times the working pressure.

4.4.6 Equipment for the use as fuel of gases evaporated from the LNG cargo

4.4.6.1 The gas conditioning plant is to be inspected externally.

4.4.6.2 The pipe or duct enclosing the gas fuel line is to be inspected for leaks. The ventilation system of that pipe or duct as well as the inertising equipment of a double-wall piping system are to be checked for their operability. Heat exchangers are to be visually examined internally.

4.4.6.3 Safety devices

See 4.3.4

4.4.7 Electrical installation

In addition to the visual examinations and tests as per 4.2.5, the protection devices of electric motors are to be tested.

4.4.8 Miscellaneous

4.4.8.1 Drainage systems for removal of water or cargo from inter-barrier spaces and hold spaces are to be examined and tested where necessary.

4.4.8.2 All gas-tight bulkheads are to be inspected. The effectiveness of gas-tight shaft sealings is to be verified.

4.4.8.3 It is to be checked whether the spare parts stipulated are kept on board.

4.4.8.4 Any installations for heating of hull structures are to be examined for correct functioning.

5. BULK CARRIERS

5.1 General Requirements

5.1.1 Application

5.1.1.1 The following requirements refer to the steel structure and related piping systems of all self-propelled bulk carriers, in way of cargo holds, cofferdams, pipe tunnels and void spaces within the cargo area, and to all ballast tanks. For ESP vessels ESP to be applied.

5.1.1.2 Unless otherwise stated in the following, the arrangements as per Section 3 apply.

5.1.1.3 For bulk carriers also designed for the carriage of crude oil, sub-section 1. will have to be observed as well.

5.1.2 Extent of surveys

The following defines the minimum extent of examinations. The surveys are to be extended where substantial corrosion and/or structural defects are found, and will include an additional close-up survey (close visual inspection range, preferably within reach of hand) where deemed necessary by the Surveyor.

5.1.2.1 Repairs

Necessary repairs, see Section 2, 2.2.4.

5.1.3 Documents to be carried on board

The owner should supply and maintain on board documentation as specified under 5.1.3.1 and 5.1.3.2 which should be readily available for the surveyor. The documentation should be kept on board for the life time of the ship.

5.1.3.1 Survey Report File:

A Survey Report File is to be part of the documentation on board consisting of:

– Reports on structural surveys

– Executive Hull Summary

– Thickness measurements reports

The Survey Report File is to be available also in the Owners management office.

5.1.3.2 Supporting Documents:

– Main structural plan of cargo holds and ballast tanks

– Previous repair history

– Cargo and ballast history 2

– Inspections by ship's personnel with reference to 2

– structural deterioration in general

– leakage in bulkheads and piping

– condition of coating or corrosion protection

– Survey Programme as required under 5.1.6 2 until such time as the Class Renewal Survey has been completed

– Any other information that will help to identify Suspect Areas requiring inspection.

5.1.4 Access to Structures

5.1.4.1 Regarding accessibility to spaces, absence of gases, removal of residual cargo and rust, and in respect of lighting, the ship is to be prepared such as to enable it to be duly examined without any risk. Where "soft coating" 3 has been applied, it may be necessary to remove this coating, at least partially.

5.1.4.2 For close-up surveys in cargo holds and sea water ballast tanks, 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, e.g. ladders and passages through structures

– lifts and moveable platforms – other equivalent means.

5.1.5 Survey at Sea

Upon prior agreement with the owner, BRS may carry out surveys at sea or at anchorage, provided the Surveyor is given the necessary assistance by the personnel on board. See also Section 3, 1.1.4.

5.1.6 Survey Programme

For class renewal a special survey programme (planning document) has to be prepared. In the case of bulk carriers exceeding 20.000 tdw this survey plan is to be prepared by the owner on the basis of the documentation elaborated on the occasion of the intermediate survey. The programme is to be agreed with BRS Head Office in due time prior to commencement of the class renewal survey. For bulk carriers up to 20.000 tdw the survey programme is to be prepared when starting the class renewal survey.

For Bulk carriers more 10 years of age applies ESP from last Renewal survey during the Intermediate Survey.

5.1.7 Additional Safety Measures

5.1.7.1 For bulk carriers of 150 m in length and above, a strength calculation of the internal structure of the double bottom and hold No. 1 and of the corrugated transverse bulkhead between holds No. 1 and 2 have to be carried out for the flooding condition, where:

– the foremost hold is bounded by the side shell only for ships which were contracted for construction prior to 1 July 1998.

– the foremost hold is double skin construction of less than 760 mm breadth, the keel of which were laid, or which were a similar stage of construction, before 1 July 1999.

This applies to bulk carriers, in the foremost cargo hold, intended to carry solid bulk cargoes having a density of 1,78 t/m3, or above, with single deck, topside tanks, hopper tanks.

5.1.7.2 The due date for the strength calculation depends on the age of the vessel. Compliance is required:

– for ships which were 20 years of age or more on 1 July 1998, by the due date of the first intermediate, or the due date of the first Class Renewal Survey to be held after 1 July 1998, whichever comes first

– for ships which were 15 years of age or more but less than 20 years of age on 1 July 1998, by the due date of the first Class Renewal Survey to be held after 1 July 1998, but not later than 1 July 2002

– for ships which were 10 years of age or more but less than 15 years of age on July 1 1998 by the due date of the first intermediate, or the due date of the first Class Renewal Survey to be held after the date on which the ship reaches 15 years of age but not later than the date on which the ship reaches 17 years of age

– for ships which were 5 years of age or more but less than 10 years of age on July 1 1998 by the due date, after 1 July 2003, of the first intermediate, or the due date of the Class Renewal Survey after the date on which the ship reaches 10 years of age, whichever occurs first

– for ships which were less than 5 years of age on 1 July 1998, by the date on which the ship reaches 10 years of age

Completion, prior to 1 July 2003, of an intermediate or Class Renewal Survey with a due date after 1 July 2003, cannot be used to postpone compliance. However, completion prior to 1 July 2003 of an intermediate survey the window for which straddles 1 July 2003 can be accepted.

In connection with this strength calculation additional thickness measurements have to be taken of the aforementioned structures. Repairs and strengthening required are to be approved by BRS. Strength calculations are to be performed at all subsequent Class Renewal Surveys.

5.1.7.3 The requirements 5.1.7.1 and 5.1.7.2 are to be applied in conjunction with the damage stability requirements as specified in SOLAS Reg. XII/4.2 to 4.6.

5.1.7.4 For bulk carriers of 150 m in length and above of single side skin construction, i.e. bulk carriers where one or more cargo holds are bound by the side shell only or by two watertight boundaries, one of which is the side shell, which are:

– less than 760 mm apart in bulk carriers, the keels of which are laid or which are at a similar stage of construction before 1 January 2000

– less than 1000 mm apart in bulk carriers, the keels of which are laid or which are at a similar stage of construction on or after 1 January 2000, but not complying with SOLAS Reg. XII/ 4.2 to 4.6 an approved permanent means of detecting the presence of water in the cargo holds in excess of the small amounts which may be normally expected in the bilge wells is to be provided in addition to the bilge well high water level alarm required by SOLAS XII Reg. 9.

5.1.7.5 Bulk carriers which were not built in accordance with the particular requirements 7 for evaluation of the scantlings of hatch covers and hatch coamings of cargo holds, and are fitted with steel hatch cover, securing devices and stoppers for cargo hold hatchways within 0,25 L of the fore perpendicular, except pontoon type hatch covers are to comply with the additional requirements 8 for cargo hatch covers securing arrangements in accordance with the following schedule:

– for ships which will be 15 years of age or more on 1 January 2004 by the due date of the first intermediate or Class Renewal Survey after that date

– for ships which will be 10 years of age or more on 1 January 2004 by the due date of the first Class Renewal Survey after that date

– for ships which will be less than 10 years of age on 1 January 2004 by the date on which the ship reaches 10 years of age.

Completion prior to 1 January 2004 of an intermediate or Class Renewal Survey with a due date after 1 January 2004 cannot be used to postpone compliance. However, completion prior to 1 January 2004 of an intermediate survey the window for which straddles 1 January 2004 can be accepted.

Panel hatch covers are to be secured by appropriate devices, such as bolts, wedges or similar, suitably spaced alongside the coamings and between cover elements.

5.1.7.6 Bulk carriers which were not built in accordance with the particular requirements 9 for side structures in single side bulk carriers are to be assessed for compliance. Steel renewal, reinforcement or coating for the web and flanges of the side frames and brackets, were required, is to be carried out in accordance with the following schedule:

– for ships which will be 15 years of age or more on 1 January 2004 by the due date of the first intermediate or Class Renewal Survey after that date

– for ships which will be 10 years of age or more on 1 January 2004 by the due date of the first Class Renewal Survey after that date

– for ships which will be less than 10 years of age or more on 1 January 2004 by the date on which the ship reaches 10 years of age.

Completion prior to 1 January 2004 of an intermediate or Class Renewal Survey with a due date after 1 January 2004 cannot be used to postpone compliance. However, completion prior to 1 January 2004 of an intermediate survey the window for which straddles 1 January 2004 can be accepted.

Where bulk carriers are reinforced to comply with an ice class Notation, the intermediate frames will not be included when considering compliance with the requirements10. In connection with this, additional thickness measurements and strength calculations have to be performed for the aforementioned structures. Repairs and strengthening required are to be approved by BRS. Strength calculations are also to be performed at all subsequent Class Renewal Surveys.

5.2 Annual surveys

5.2.1 General

The survey is to ensure that the hull, hatch covers, coamings and piping are maintained in satisfactory condition, see also Section 3, 3.1.1.2. Prior to inspection, the Surveyor shall examine the documentation required to be kept on board for this type of vessel, as a basis for the survey, see 5.1.3.

5.2.2 Hatch covers, coamings

5.2.2.1 For mechanically operated steel covers, the satisfactory condition of all structural elements, guides, clamping and retaining devices and of the tensioning/ moving system including the hydraulic installation shall be checked, including stoppers acc. to URS.

In case of portable hatch covers and wooden or steel pontoon-type covers, correspondingly, the condition of all fixed and loose load bearing and securing elements and of the devices ensuring watertight integrity of the vessel shall be examined.

5.2.2.2 The hatch cover plating and the hatch coamings including stiffeners are to be close-up surveyed.

5.2.2.3 Random checking of the operation of the hatch covers is to be carried out, in order to ascertain the satisfactory stowage in open condition, proper fit and efficiency of sealing in closed condition, and safe functioning of hydraulic and power components and connecting elements.

5.2.2.4 The Surveyor shall check whether since the last survey any unapproved changes or repairs have been made to the hatch covers, hatch coamings and the securing and sealing devices.

5.2.3 Cargo holds

5.2.3.1 For bulk carriers up to 10 years of age, an overall survey of a representative forward and aft cargo hold is to be carried out. Where this level of survey reveals the need for remedial measures, the survey is to be extended to all cargo holds (overall survey, general condition).

5.2.3.2 For bulk carriers over 10 years of ageup to 15 years of age the following is required:

– overall survey of all cargo holds /single skin BC/

-- two selected cargo holds /for double skin hull BC/

– close-up examination of sufficient extent (minimum 25 % of frames) to establish the condition of the lower one-third of the shell frames, adjacent shell plating and lower frame connections, in the forward cargo hold/single skin BC/. Where this survey reveals the need for remedial measures, the survey is to be extended to include a close-up survey of all the shell frames and adjacent shell plating of that cargo hold as well as close-up survey of sufficient extent of all remaining cargo holds.

– thickness measurements, where considered necessary by the Surveyor. If the measure ments indicate substantial corrosion, the extent of measurements is to be increased.

-- where a coating applied to a cargo hold in accordance with new building requirements is in acceptable condition or where the cargo hold is coated or recoated to an extent corresponding to new building requirements, this may be taken into account when fixing the extent of close-up surveys and thickness measurements. Prior to coating or recoating of the cargo holds the existing scantlings of structural members are required to be ascertained by thickness measurements.

5.2.3.3 For bulk carriers over 15 years of age, a close-up survey of one more selected cargo hold is to be carried out, in addition to the surveys indicated in 5.2.3.2 and with the same extent. Consequent measures in case of damages, and thickness measurements: See 5.2.3.2. For double skin BC an overall surveys of all cargo holds to be carried out. .

5.2.3.4 Extent of additional annual survey for the foremost cargo hold of ships of 150 m in length and upwards, over 5 years of age, and subject to SOLAS XII/9.1

5.2.3.4.1 For bulk carriers of 5 to 15 years of age:

– An overall survey of the foremost cargo hold, including close-up survey of sufficient extent, minimum 25 % of frames, is to be carried out to establish the condition of:

– shell frames including their upper and lower end attachments, adjacent shell plating, and transverse bulkheads

– areas found suspect at the previous Class Renewal Survey

– Where considered necessary by the surveyor as a result of the overall and close-up survey as described above, the survey is to be extended to include a Close-up Survey of all of the shell frames and adjacent shell plating of the cargo hold.

5.2.3.4.2 For bulk carriers exceeding 15 years of age:

An overall survey of the foremost cargo hold, including close-up survey is to be carried out to establish the condition of:

– all shell frames including their upper and lower end attachments, adjacent shell plating, and transverse bulkheads

– areas found suspect at the previous Class Renewal Survey

5.2.3.4.3 Thickness measurement is to be carried out to an extent sufficient to determine both general and local corrosion levels at areas subject to close-up survey, as described in 5.2.3.4.1 and 5.2.3.4.2 above.

The minimum requirement for thickness measurements are areas found to be suspect areas at the previous Class Renewal Survey.

Where substantial corrosion is found, the extent of thickness measurements shall be increased.

5.2.3.4.4 The thickness measurement may be dispensed with provided the surveyor is satisfied by the close-up survey, that there is no structural diminution and the protective coating where fitted remains effective.

5.2.34.5 Where the protective coating in the foremost cargo hold is found to be in good condition, the extent of close-up surveys and thickness measurements may be specially considered.

5.2.4 Ballast tanks

Sea water ballast tanks shall be surveyed, within annual surveys, as a consequence of findings on the occasion of an intermediate or Class Renewal Survey, see Section 3, 3.1.2.2.

When considered necessary by the Surveyor, thickness measurements are to be carried out. If these measurements indicate substantial corrosion, the extent of thickness measurements is to be increased.

5.3 Intermediate Surveys

5.3.1 General

5.3.1.1 In addition to the surveys and checks listed in 5.2 above, on the occasion of the second or third annual survey the checks listed below are to be performed. If deemed necessary by the Surveyor, functional test, pressure tests or thickness measurements are to be carried out in addition to the survey.

5.3.1.2 For bulk carriers exceeding 15 ears of age the intermediate survey is to be carried out in drydock. For bulk carriers of 15 years of age or less, BRS may agree to a bottom in-water survey according to Section 3, 3.1.7.

5.3.1.3 In case of ships exceeding 10 years of age the intermediate survey is to be enhanced to the scope of the preceding Class Renewal Survey according to 5.1.6 and 5.4. Pressure testing of ballast and cargo tanks is not required unless deemed necessary by the Surveyor.

5.3.2 Cargo holds

5.3.2.1 Vessels over 5 and up to 10 years of age

5.3.2.1.1 The survey shall include:

– an overall survey of all cargo holds of sufficient extent to establish the general condition of the structure

– Close-up survey of a least 25% of shell frames including their end attachments and adjacent shell plating, over the entire height, in the forward cargo hold and one other selected cargo hold

– Close-up survey of the transverse bulkheads in the cargo holds mentioned above

– Close-up survey of suspect areas 11 identified by the previous class renewal survey

– Regarding coating see 5.2.3.2d above.

5.3.2.1.2 Where considered necessary by the surveyor as a result of the overall and close-up survey as described in 5.3.2.1.1, the survey is to be extended to include a close-up survey of all of the

shell frames and adjacent shell plating of that cargo hold, as well as a close-up survey of sufficient extent of all remaining cargo holds.

5.3.2.2 Vessels over 10 years of age

For Intermediate survey BC more than 10 years of age see 5.3.1 and Table 4.10.

5.3.3 Ballast tanks

5.3.3.1 Vessels over 5 and up to 10 years of age:

For spaces used for sea water ballast, an overall survey of representative spaces selected by the Surveyor is to be carried out, includes FT and AFT and other WBT.

Where the coating is found to be in poor condition4, where corrosion or other defects are found in sea water ballast spaces or where a protective coating was not applied from the time of construction, the examination is to be extended to other ballast spaces of the same type. See Section 3, 3.1.2.2.1. For areas with extensive corrosion thickness measurements are required to be carried out.

5.3.3.2 Vessels more than 10 years of age

For Intermediate survey of single BC see 5.3.1.3.

5.3.3.3 For double skin bulk carriers see Table 4.10.

5.3.4 Extent of thickness measurements

5.3.4.1 Thickness measurements are to be carried out to an extent sufficient to determine both general and local corrosion levels in areas subject to close-up survey. As a minimum, thickness measurements are to be carried out in areas defined as suspect at the previous class renewal survey.

Where substantial corrosion is found, the extent of thickness measurements shall be increased.

5.3.4.2 The thickness measurements may be dispensed with provided the Surveyor is satisfied by the close-up survey that there is no structural diminution and the protective coating where fitted remains effective. For vessels exceeding 10 years of age see also 5.3.1.3.

5.3.4.3 For double skin BC see Table 4.10.

5.4 Class Renewal Surveys

5.4.1 General requirements, scope

5.4.1.1 In order to ensure that the hull and related piping are in satisfactory condition and fit for the new period of class, the following surveys are to be carried out, in addition to the annual and intermediate surveys outlined in 5.2 and 5.3, and the surveys prescribed in Section 3, 3.1.3-1.5 for all types of ships.

5.4.1.2 Regarding planning/survey programme, see 5.1.6. Regarding anticipated thickness measurements,see also Section 3, 3.2.3.5.

5.4.1.3 For class renewal surveys of bulk carriers (hull), the "Continuous Class Renewal" procedure described in Sect. 3, 2.1.3.6 is excluded.

5.4.1.4 Drydocking: See Section 3, 3.1.3.1.3

Table 4.8 Class Renewal Surveys of Ships Single Skin Bulk Carriers (Hull) Minimum Requirements for Close-up Surveys

Class Renewal Survey [No.] and ship's age [years]			
I. age ≤ 5	**II. 5 < age ≤ 10**	**III. 10 < age ≤ 15**	**IV. and subsequent, age > 15**
25% of shell frames in the forward cargo hold at representative positions. Selected frames in remaining cargo holds.	All shell frames in the forward cargo hold and 25% of shell frames in each of the remaining cargo holds, including upper and Lower end attachments and adjacent shell plating. For cape Size Bulk Carriers: All shell frames in the forward cargo hold and 50% of shell frames in each of the remaining cargo holds, including upper and lower end attachments and adjacent shell plating.	All shell frames in the forward and one other selected cargo hold and 50% of frames in each of the remaining cargo holds, including upper and lower end attachments and adjacent shell plating.	All shell frames in all cargo holds, including upper and lower end attachments and adjacent shell plating.
One transverse web with associated plating and longitudinals in two representative water ballast tanks of each type	One transverse web with associated plating and longitudinals in each water ballast tank.	All transverse webs with associated plating and longitudinals in each water ballast tank.	Other items: As for Class Renewal Survey No. III

Table 4.8 (continued)

Two selected cargo hold transverse bulkheads, including internal structure of upper and lower stools, where fitted. [1]	Forward and aft transverse bulkhead in one side shell ballast tank, including stiffening system.	All transverse bulkheads in ballast tanks including stiffening system.	
	All cargo hold transverse bulkheads, including internal structure of upper and lower stools, where fitted. [1]		
All cargo hold hatch covers and coamings (plating and stiffeners).			
	All deck plating and under deck structure inside line of hatch openings between all cargo hold hatches.		
[1] For bulk carriers as per Section 4, 5.1.7. one of these bulkheads has to be the aft transverse bulkhead of the foremost cargo hold.			

Table 4.9 Class Renewal Surveys of Single Skin and Double Skin Bulk Carriers (Hull) Minimum Requirements for Thickness Measurements

<table>
<tr><th colspan="4">Class Renewal Survey [No.] and ship's age [years]</th></tr>
<tr><th>I. age ≤ 5</th><th>II. 5 < age ≤ 10</th><th>III. 10 < age ≤ 15</th><th>IV. and subsequent, age > 15</th></tr>
<tr><td colspan="4">Suspect Areas</td></tr>
<tr><td rowspan="8"></td><td>Within the cargo length area:
- two transverse sections of deck plating outside line of cargo hatch openings</td><td>Within the cargo length area:
- each deck plate outside line of cargo hatch openings
- 2 transverse sections, one in amidship area, outside line of cargo hatch openings</td><td>Within the cargo length area:
- each deck plate outside line of cargo hatch openings
- 3 transverse sections, one in amidship area, outside line of cargo hatch openings
- each bottom plate</td></tr>
<tr><td>Wind and water strakes in way of the transverse sections indicated above</td><td>All wind and water strakes within the cargo length area</td><td rowspan="2">All wind and water strakes full length</td></tr>
<tr><td colspan="2">Selected wind and water strakes outside the cargo length area</td></tr>
<tr><td colspan="2">Measurement, for general assessment and recording of corrosion pattern, of the structural members subject to close-up survey according to Table 4.8 or 4.11</td><td rowspan="5">Other items:
As for Class Renewal Survey No. III</td></tr>
<tr><td>Selected cargo hold hatch covers and coamings (plating and stiffeners)</td><td>All cargo hold hatch covers and coamings (plating and stiffeners)</td></tr>
<tr><td>Selected areas of deck plating inside line of openings between cargo hold hatches</td><td>All deck plating inside line of openings between cargo hold hatches</td></tr>
<tr><td></td><td>Additional measurements of the aft bulkhead of cargo hold No. 1 for ships as per 5.1.7.1 and 5.1.7.2</td></tr>
<tr><td colspan="2">Additional measurements of side shell frames and brackets for ships as per 5.1.7.6.</td></tr>
</table>

Table 4.10 Intermediate Survey of Double Skin Bulk Carriers (Hull) Minimum Requirements of Overall Close-up Surveys

<table>
<tr><th colspan="3">Ships age [years]</th></tr>
<tr><th>5 < age < 10</th><th>10 < age < 15</th><th>age >15</th></tr>
<tr><td>Overall survey of representative ballast tanks selected by the attending surveyor (the selection is to include fore and aft peak tanks and number of other tanks ,taking into account the total number and type of ballast tanks)</td><td rowspan="4">The requirements of the previous Class Renewal Survey</td><td rowspan="4">The requirements of the previous Class Renewal Survey</td></tr>
<tr><td>Overall and close-up survey of suspect areas identified at previous (intermediate or Class Renewal) surveys</td></tr>
<tr><td>Overall survey of all cargo holds</td></tr>
<tr><td>Thickness measurements to an extent sufficient to determine both general and local corrosion levels at areas subject to close-up survey at suspect areas indentified at previous surveys</td></tr>
</table>

Table 4.11 Class Renewal Surveys of Double Skin Bulk Carriers (Hull) Minimum Requirements for Close-up Surveys

Class Renewal Survey [No.] and ship's age [years]			
I. age < 5	**II. 5 < age < 10**	**III. 10 < age < 15**	**IV. and subsequent,age >15**
One transverse web with associated plating and longitudinals in two representative ballast tanks of each type (This is to include the foremost top-side and double side ballast tanks on either side.)[1]	One transverse web with associated plating and longitudinals as applicable in each ballast tank[1]	All transverse webs with associated plating and longitudinals as applicable in each ballast tank[1]	
	Forward and aft transverse bulkheads including stiffening system in a transverse section including topside ,hopper side and double side ballast tanks[1]	All transverse bulkheads including stiffening system in each ballast tank[1]	
	25 % of ordinary transverse web frames ,in the foremost double side tanks[2]	25 % of ordinary transverse web frames in all double side tanks[2]	All ordinary transverse web frames in all double side tanks[2]
			Areas[3-5] as for Class Renewal Survey No. III

Table 4.11 (continued)

Two selected cargo hold transverse bulkheads ,including internal structure of upper and lower stools ,where fitted[3]	One transverse bulkhead in each cargo hold, including internal structure of upper and lower stools ,where fitted[3]	All cargo hold transverse bulkheads ,including internal structure of upper and lower stools ,where fitted[3]
All cargo hold hatch covers and coamings (platings and stiffeners)[4]		
	All deck plating and under deck structure inside line of hatch openings between all cargo hold hatches[5]	

[1 – 5] Are areas to be subjected to close-up surveys and thickness measurements

[1] Transverse web frame or watertight transverse bulkhead in topside ,hopper side and double side and double bottom ballast tanks.
In fore and aft peak tanks transverse web frame means a complete transverse web frame ring including adjacent structural members.

[2] Ordinary transverse frame in double side tanks

[3] Cargo hold transverse bulkheads plating ,stiffeners and girders

[4] Cargo hold hatch covers and coamings

[5] Deck plating inside line of hatch openings between cargo hold hatches

Note

Close-up survey of transverse bulkheads to be carried out at four levels:

- immediately above the inner bottom and immediately above the line of gussets (if fitted) and shedders for ships without lower stool
- immediately above and below the lower stool shelf plate (for those ships fitted with lower stools), and immediately above the line of the shedder plates
- about mid-height of the bulkhead
  immediately below the upper deck plating and immediately adjacent to the upper wing tank, and immediately below the upper stool shelf plate for those ships fitted with upper stools ,or immediately below the topside tanks

5.4.2 Hull, general

5.4.2.1 All cargo holds, sea water ballast tanks including double bottom tanks, pipe tunnels, cofferdams and void spaces bounding cargo holds, decks and outer hull are to be examined. This

examination is to be supplemented by thickness measurements and tank testing as deemed necessary to ensure that the structural integrity continues to be given.

The examination is to be sufficiently thorough for revealing substantial corrosion, significant deformations, fractures, damages or other structural deteriorations.

For coating see 5.2.3.4 above.

5.4.2.2 All piping systems within the above spaces are to be examined and tested under working conditions to ensure their continued satisfactory condition.

5.4.2.3 The survey extent of combined ballast/cargo holds is to be evaluated based on the records of ballast history, the kind and extent of corrosion protection system provided, and the extent of corrosion found.

5.4.2.4 The survey extent of ballast tanks converted into void spaces will be specially considered in relation to the requirements for ballast tanks.

5.4.2.5 Extent of close-up surveys and thickness measurements: see 5.4.3, 5.4.4 and 5.4.5 below.

5.4.3 Hatch covers, coamings

The survey of hatch covers and coamings shall include the following:

– a thorough inspection of the items listed in 5.2.2

– checking of the satisfactory operation of mechanically operated hatch covers, including:

– stowage and securing in open condition;

– condition of sealing, proper fit in closed condition;

– operational testing of hydraulic and power components (wires, chains, and link drives)

– checking of the effectiveness of sealing arrangements of all hatch covers by hose testing or equivalent

– thickness measurement of the hatch cover and coaming plating and stiffeners as given in Table 4.9

5.4.4 Cargo holds, ballast tanks

5.4.4.1 An overall survey of all tanks and spaces (excluding fuel oil, lubricating oil and fresh water tanks) is to be carried out.

For fuel oil, lubricating oil and fresh water tanks the necessity for an overall survey is to be determined based on the ship´s age, see also Table 3.1.

5.4.4.2 The class renewal survey is to include a close-up examination of sufficient extent to establish the condition of the shell frames and their lower and upper end attachments in all cargo holds and of the stiffening structures in sea water ballast tanks as indicated in Table 4.8 and Table 4.11.

5.4.4.3 Tank protection: The condition of coating or corrosion protection of ballast tanks, where provided, is to be examined. The statements under 5.3.3.1 apply to class renewal surveys of bulk carriers,regardless of age.

5.4.5 Thickness measurements

5.4.5.1 The minimum requirements for thickness measurements on the occasion of class renewal surveys are stated in Table 4.9, depending on the ship's age.

Representative thickness measurements to determine both general and local levels of corrosion in the shell frames and their end attachments in all cargo holds, of the stiffening structure in sea water ballast tanks and on the transverse bulkhead plating are to be carried out.

5.4.5.2 The extent of thickness measurements may be reduced, in comparison with those stated in Table 4.9, provided during the close-up examination the Surveyor satisfies himself that there is no structural diminution, and the protective coating where applied continues to be effective.

5.4.5.3 The Surveyor may extend the thickness measurement as deemed necessary. This applies especially to areas with substantial corrosion and to areas defined as suspect in the inspection programme (see 5.1.6). The thickness measurements should be witnessed by the Surveyor to the necessary extent.

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

5.4.5.5 Regarding thickness measurements, see also Section 3, 3.2. For bulk carriers designed also for the carriage of crude oil, see also 1.4.2.3.4.

5.4.6 Tank testing

5.4.6.1 All boundaries of sea water ballast tanks and deep tanks within the cargo hold area, and of cargo holds used for sea water ballast, are to be pressure-tested by filling with water.

5.4.6.2 Representative fuel oil, lubricating oil and fresh water tanks as selected by the Surveyor are to be tested. The tightness of fuel oil, lubricating oil and fresh water tanks may be confirmed by filling with oil, water or air pressure test. The air pressure must not exceed 0.2 bar gauge pressure.

5.4.6.3 The pressure should correspond to a water level to the top of hatches for ballast/cargo holds or to the top of air pipes for ballast tanks or fuel oil, lubricating oil or fresh water tanks, whichever pressure is higher. See also Section 3, 3.1.3.2.1.4.

6. FISHING VESSELS

The Rules for Classification and Surveys of Fishing Vessels are contained in Part A of the Construction Rules. See Rules for Classification and Construction, Part 1 - Seagoing Ships, Chapter 8.

7. INLAND VESSELS

7.1 General requirements

7.1.1 The following regulations relate to inland vessels as defined in the BRS Construction Rules (Part 2); see also Section 2, 3.3.1.1.2 of the present Classification Rules.

7.1.2 Unless otherwise stated in the following, the regulations in Section 3 (in particular 3, 1. and 3, 3.) apply, as far as of relevance for inland vessels.

7.1.3 In the case of inland vessels annual surveys are required for steam boilers only (see 7.3.4.7).

7.1.4 As a matter of principle, the class period for hull and machinery is identical. However, surveys and inspections performed in accordance with items 7.3 and 7.4 respectively may be recognized for the class renewal, even if conducted more than 15 months before the date of expiry of the class.

7.1.5 Records on the periodical inspections of steam boilers, thermal oil heaters, pressure vessels and piping systems are entered into special inspection certificates to be kept on board.

7.2 Intermediate surveys

7.2.1 General

Intermediate surveys will be carried out normally every 2.5 years, but not later than 3 years, after commissioning and each class renewal.

The survey may be effected with the ship afloat (however, cf. 7.2.4) and will in general cover an external check of the main hull elements and of all components which are of significance for the vessel's safety such as the steering gear, the machinery, including the electrical installation, and pressure vessels with their safety devices.

7.2.2 Machinery installations, general

7.2.2.1 The following items are to be checked:

– main and auxiliary machinery, with accessories

– electrical machinery and pertinent switch gear, including cables.

7.2.2.2 The automation equipment is to be checked in accordance with the programme fixed by BRS (AUT 4).

7.2.2.3 For internal surveys of steam boilers, see 7.3.4.7.

7.2.2.4 Steering gear

The steering gear is to be function-tested.

7.2.3 Machinery installations, safety systems (tankers)

On tankers the following installations and equipment are to be checked:

– electrical equipment, in particular electrical installations in areas of explosion hazard, in which ignitable gas mixtures or water vapours may accumulate

– level/overfill alarms

– level indicators

– tank venting systems

– flame arresters

– pipings, valves and fittings, pumps

– pump room equipment, including ventilation system

– fire-extinguishing equipment.

7.2.4 Drydocking

Intermediate surveys have to be carried out in drydock

– if the vessel's shell is riveted,

– if the vessel's age exceeds 20 years and if required by the Surveyor.

7.3 Class renewal surveys

7.3.1 Hull, general

7.3.1.1 The class renewal survey will be held while the ship is in drydock or on the slipway. The ship has to be placed on blocks of sufficient height so as to allow the keel, bottom plating, rudder, propeller and propeller shaft to be inspected.

7.3.1.2 The survey will cover all structural elements of the ship and all component parts essential for her operation and safety, such as steering gear, watertight doors, hatchways, capstans and windlasses, anchors, cables and hawsers, as well as fire protection installations.

7.3.1.3 In order to render possible inspection of all inner structural elements, such as frames, floor plates, stringers, shell plating, decks, deck beams, bulkheads, ceiling, inner bottom, the cargo holds and all cargo tanks are to be emptied and cleaned and - where necessary -freed of gas. Service tanks (fuel, lubricating-oil and fresh-water tanks) need not be emptied if their tightness, while completely filled, is proved by means of an external inspection.

7.3.1.4 If there is good reason, the Surveyor may require the rust to be removed from selected areas of the ship's structure and have the thickness of the shell plating, of the built-in tanks, the walls of which do not form part of the shell plating, of the decks and bulkheads measured by the recognized test methods (e.g. ultrasonic measurements). Defective coverings (e.g. cement and asphalt) must be removed in accordance with the Surveyor's instructions. Prior to renewing paintwork or coverings, the ship's steelwork concerned is to be inspected.

7.3.1.5 On the occasion of each survey, at least one bottom ceiling strake on either side of the centre keelson and one strake each of the bottom and bilge ceiling at the ship's side will have to be removed in each compartment over their entire length in order to allow the inner surface of the bottom plates to be inspected. At every third survey, at least one third of the ceiling will have to be removed at the Surveyor's discretion.

7.3.2 Hull, tankers

7.3.2.1 On tankers which - as can be proved - have exclusively carried cargo not causing corrosion, the cargo tanks shall be inspected at every other class renewal only, provided that it may be assumed on the basis of random checks that the component parts are still in satisfactory condition, and provided that no objections will result from the pressure tests as per 7.3.2.2.

7.3.2.2 During each class renewal, the cofferdams of tankers are to be hydrostatically tested to the test pressure as defined in Chapter 1 of the Construction Rules for steel Inland Waterway Vessels.

At every other class renewal, the cargo tanks of tankers are to be tested by water and/or air pressure, to the test pressure stated in the Rules. Where substances are carried which cause corrosion in connection with water, the kind of testing is to be specified.

7.3.2.3 At every class renewal, tanks of tankers carrying acids and lyes will be subjected to an internal examination and, at every other class renewal, to a hydrostatic pressure test. The test pressure to be fixed in accordance with the Construction Rules depends on the density of the cargo.

7.3.2.4 Tanks for the carriage of pressurized liquefied gases are to be tested like pressure vessels. Deviating therefrom, cargo tanks need to be subjected to an internal inspection on the occasion of every other class renewal only, if in these tanks only gases or gas mixtures have been carried, which have no corrosive effect upon their walls, and if random checks suggest that the tanks are in satisfactory condition.

7.3.3 Tankers, piping systems

Cargo pipings, including valves and fittings, pumps as well as gas-freeing and safety equipment are to be surveyed.

At each class renewal, the loading and discharge pipes of tankers are to be tested to 1.2 times the allowable working pressure.

7.3.4 Machinery

7.3.4.1 The class renewal survey includes the surveys and checks mentioned in 7.2.

7.3.4.2 The main and auxiliary machinery, including the electric generators, may also be inspected on the occasion of overhaul work of the machinery plant. The survey dates will be fixed by BRS, taking into account the intervals between repairs as recommended by the engine manufacturers.

Where, owing to service periods, intervals between repairs of main propulsion engines exceed a period of class, an inspection is to be provided for, permitting the condition of engine components subject to wear to be assessed. The inspection will also cover the couplings, gears and adjacent shafts and bearings.

7.3.4.3 Electrical installations

7.3.4.3.1 The electrical installation in the engine room, in the compartments and on deck will be checked, including cables, wires, distributors, etc. The windings of the electric generators and motors for essential auxiliary machinery will be checked for their condition, as will be parts subject to wear, such as collectors, slip rings and carbon brushes.

7.3.4.3.2 On tankers, the electrical installations and equipment are to be checked for compliance with the relevant explosion protection requirements.

7.3.4.4 The automation equipment is to be checked in accordance with the programme fixed by BRS (AUT 4). Cf. Section 3, 3.1.5.6.

7.3.4.5 All pressure vessels will be surveyed internally and externally during each class renewal12. For pressure vessels, which cannot be properly inspected internally or the condition of which cannot be ascertained during the internal inspection, either a nondestructive testing method is to be applied or an additional hydrostatic test is to be performed.

The hydrostatic test will be conducted to 1.5 times the maximum allowable working pressure. Pressure tanks according to DIN 4810 are to be tested to a test pressure of 5.2 and 7.8 bar respectively, depending on their pressure stage, i.e. 4 or 6 bar. In no case must the test pressure exceed the initial test pressure.

7.3.4.6 Supply steam pipings and cargo heating equipment, such as steam heating coils in oil bunkers/ vessels and cargo tanks will be surveyed and subjected to a hydrostatic test to 1.5 times the maximum allowable working pressure. Random checks of the inner condition of the pipings, in particular of the pipe bends, may likewise be demanded, or additional examinations may be required.

7.3.4.7 Boiler installations

For inspections of steam boilers, see Section 3, 2.1.5.2 and 3.1.5.2.

External inspections are to be carried out annually and internal inspections on the occasion of each intermediate survey and class renewal.

7.3.4.8 Thermal oil plants

Thermal oil plants are to be subjected to periodical surveys.

External inspections are to be performed on the occasion of each intermediate and class renewal survey. Proof of continued usability of the thermal oil shall be furnished annually by a competent testing institution.

Internal inspections, including a tightness test of the whole plant, are to be performed at intervals of 5 years, counting from the commencement of initial operation and possibility in connection with a class renewal survey.

For extent of survey see Section 3, 3.1.5.3.

7.4 Periodical surveys of propeller and tube shafts

7.4.1 Survey intervals

7.4.1.1 Propeller and tube shafts are to be drawn for inspection at intervals of 5 years (SW). For exception, see 7.4.1.2.

7.4.1.2 Propeller and tube shafts:

– mechanically grease-lubricated or

– with oil sealing glands and oil-lubricated bearings or

– made of corrosion-resistant material may be subjected to a modified survey (SWM) at intervals of 5 years, unless the survey results require drawing of the shafts.

7.4.1.3 Omnidirectional propellers for main propulsion purposes are subject to the same survey intervals as propeller and tube shafts.

7.4.1.4 Within the scope of complete or modified surveys of the propeller shaft, the remote and local control gear of controllable-pitch propellers is to be surveyed at the Surveyor's discretion.

7.4.1.5 The aforementioned surveys may be carried out with a time window of ± 6 months, independent of the other surveys for class renewal (see 7.1.4).

7.4.2 Scope of surveys

7.4.2.1 Survey of the drawn shaft (SW)

As far as applicable, the survey of the drawn shaft covers:

– the shaft in its entirety, especially the cone, the keyway and thread, or the fillet of the flange

– checking for true running

– non-destructive examination of the aft part of the shaft by approved crack detection methods

– examination of the oil sealing glands and the chrome steel liner

– examination of the contact surfaces and liners of the shaft

– examination of the stern tube bearing

– examination of the propeller (fit and general condition)

– examination of the bearing clearances before and after the survey.

The gearing and control elements of omnidirectional propellers for main propulsion purposes are to be exposed for the survey.

7.4.2.2 Modified Survey (SWM)

As far as applicable, the scope of the modified survey covers:

– all accessible parts of the shaft, including the propeller connection to the shaft

– checking for true running

– the propeller

– checking of the oil sealing glands

– measurement of the clearances of the stern tube bearings

– non-destructive examination of the aft part of the shaft by approved crack detection methods.

The modified survey (SWM) also applies to omnidirectional propellers as per 7.4.2.1, if their gearing and control elements can be surveyed through inspection openings.

7.5 Class extension surveys

7.5.1 On owners' special application, following surveys of hull and machinery afloat, BRS may within two periods of class, extend the class by no more than 12 months in total, provided that the surveys show that hull and machinery are in unobjectionable condition.

In that case, the last survey in drydock must not date back more than 5 years, counting from the date of the respective class renewal survey.

With ships of over 20 years of age or the hull structural elements of which are riveted, the last survey in drydock must not date back more than 3 years.

7.6 Damage and repair surveys

Every damage affecting the safety of the ship or her machinery or endangering her cargo must be reported to BRS and be inspected by a Surveyor prior to commencement of repair work.

See also Sections 2.2. and 3, 1.1.2 and 2.2.1.

7.7 Conversion and modification surveys

All conversions and modifications of component parts covered by the Society's Construction Rules must be carried out under the Society's supervision. Conversion drawings will have to be submitted to the Society and approved prior to commencement of work.

Hull and machinery components and parts of the equipment may have to be replaced if, subject to the Society's Rules, they are inadequate in dimensions and size for the converted or modified ship. The Society may, however, grant exemptions (cf. Sections 2, 2 and 3.1)

8. FLOATING DOCKS

8.1 General

8.1.1 For floating docks subject to classification by BRS, unless otherwise agreed, class renewal surveys are to be conducted at intervals of 5 years.

8.1.2 Floating docks which are not classified may on application be subjected to a condition survey, e.g. prior to sale or conversion.

8.1.3 If classification is intended, the procedure to be followed regarding documents to be submitted and the scope of surveys for classification is analogous to that outlined in Section 2, 5. Structural plans of the essential structural elements of the dock structure and particulars on their machinery and equipment are to be submitted for approval.

8.2 Class renewal surveys

8.2.1 Dock structure

8.2.1.1 For class renewal, the dock structure should be immersed as little as possible; the structural elements above the waterline will be inspected both, internally and externally, and the watertight compartments internally, at the Surveyor's discretion. Particular attention is to be paid to the pipings arranged inside the compartments, including their valves; these, as well as the inlet and outlet valves, are to be checked for tightness and operability.

8.2.1.2 The partition bulkheads of the watertight compartments are to be checked for tightness and tested by compressed air (max. 0.2 bar). The compartments to be tested will be selected by the Surveyor, depending on the age and general condition of the dock; however, at least every other compartment is to be tested.

8.2.1.3 If only every other compartment is pressure-tested, on the occasion of a trial docking also the tightness of the safety deck is to be tested.

8.2.1.4 Thickness measurements at parts of the dock structure are to be carried out on the occasion of every other class renewal, and/or the Surveyor may require them to be carried out, if he suspects an inadmissible degree of corrosion.

8.2.1.5 Drydockings or bottom surveys with the dock in inclined position will be confined to particular cases (averages, leakages, etc.) upon agreement between owners/operators and BRS.

8.2.2 Machinery equipment

The machinery equipment for operation of the dock, including the electrical equipment, is to be surveyed and checked analogously to the procedure outlined in Sections 3, 3.1.3.3 and 3.1.5, as far as applicable.

8.2.3 Equipment

The equipment required for operation of the dock, e.g. bilge and keel blocks and - if fitted - their drives, warping capstans, cranes, bridge connections, shore connections and the dock mooring equipment are to be covered by the condition survey. Changes introduced since the last class renewal are to be documented.

8.3 Annual Surveys to determined General condition of Hull and Machinery.

9. YACHTS AND SMALL WATERCRAFT

9.1 General remarks. Kinds of surveys

9.1.1 Regarding the surveys necessary for maintenance of class, on principle, the requirements of Section 3, and in particular, of 3.1, apply.

The following kinds of surveys are prescribed for watercraft as defined in Section 2, 6.

9.1.2 For sporting craft with total engine outputs exceeding 300 kW, and for watercraft employed for commercial purposes and/or by authorities: Intermediate surveys of the hull, the machinery installation including the electrical installation, the rigging and the closures, according to 9.2.1.

The intermediate survey is due 2,5 years after assignment or renewal of class, with a time window of ± 6 months being allowed.

9.1.3 For all types of watercraft: Class renewal surveys according to 9.2.2, 5 years after assignment of class or last class renewal. The time window is as for seagoing ships, see Section 3, 2.1.3 (i.e. the survey may be started 15 months before, and must be finished at the date of expiry of the class period).

9.1.4 Damage surveys are required if the hull, machinery, electrical installation or rigging have suffered a damage, if a damage is suspected in consequence of some other event, or if deteriorations affecting the vessel's class have been ascertained.

9.1.5 For bottom surveys (drydocking or placing onshore), see also Section 3, 2.1.6.7.

9.1.6 Other surveys

9.1.6.1 Upon special agreement, BRS may undertake condition surveys and supervise repairs of watercraft constructed under the Society's supervision.

The surveys and findings will be certified informally.

9.1.6.2 Expertises are prepared only by order of a court and provided that BRS's principle of impartiality is not affected.

9.1.6.3 Where surveys are required by official directives or similar provisions of an Administration, BRS will perform these on application and/or on behalf of the authorities, in accordance with their instructions.

9.2 Performance and scope of surveys

9.2.1 Intermediate surveys

The survey is to be conducted on shore. To this effect, the vessel is to be stacked at a height enabling its keel and bottom to be thoroughly examined.

The surveys/inspections will have to cover:

– the hull structural areas, including the foundations

– masts and rigging, including fastening devices for eye plates

– watertight closures, such as hatches, skylights, air and sounding pipes, scuppers, discharge lines, doors, etc., including their sealings and locking devices.

– rudder and steering gear, including measurement of bearing clearances

– main and auxiliary machinery with pertinent components

– electrical installation, including pertinent machinery, switchboards and cabling

– propeller, including fastening/securing devices

– external inspection of the entire propeller shaft system(s) in place, including measurement of bearing clearances

– sea valves and all inlet and outlet shell openings.

9.2.2 Class renewal surveys

The class renewal survey is to be carried out on shore. To this effect, the vessel is to be stacked at a height enabling its keel and bottom to be thoroughly examined. In addition to the surveys required in 9.2.1 above, the surveys/inspections will have to include:

– internal inspection of fresh water, ballast and fuel tanks

– pressure tests of tanks carrying water

– hose testing of all watertight closures

– inspection of anchors, chain cables, hawses

– inspection of bilge and ballast lines, including pertinent pumps, with operational trials

– unmounting of sea valves in the light of findings obtained during external inspection, in accordance with the Surveyor's instructions

– drawing of propeller shaft in accordance with the Surveyor's instructions, where necessary in view of findings obtained by external inspection

– unmounting of individual components of the machinery in accordance with the Surveyor's instructions, where required on account of this findings

– partial or complete disassembly of main engines (with a total output, exceeding 300 kW), in accordance with the Surveyor's instructions, taking into account provable service times between overhauls and maintenance work performed.

– operational trials of the entire machinery and electrical installation, with the ship afloat.

9.3 Thickness measurements and Corrosion/ Wear tolerances

9.3.1 In the case of aged steel ships thickness measurements are to be conducted at the hull structural elements in accordance with the Surveyor's instructions. The scope of measurements depends on the vessel's age and maintenance condition.

9.3.2 Parts damaged or worn to such an extent as to no longer comply with the requirements of BRS are to be repaired or replaced.

9.3.3 Components with thicknesses of less than 90% of those stipulated are to be renewed.

9.3.4 Anchors are to be replaced, if their weights have been reduced by more than 10% compared with the rule weight.

Chain-link cables are to be renewed, if the prescribed cross-section of the chain links has been reduced by more than 12 %. See also Section 3, 3.2.4.4.

10. SUBMERSIBLES

Regarding the required surveys for maintenance of the class see the Rules.

Notes to Section 4

Note 1 "International Convention for the Safety of Life at Sea" (1974) and Amendments

Note 2 Applicable in conjunction with Class Notation "ESP", see Section 2, 3.3.1.6

Note 3 "Soft coating" means: Solvent-free coating on base of wool grease, grease, mineral oil and/or wax that remains soft so that it wears off when touched.

Note 4 Poor: General breakdown of coating over 20 % or more of areas, or hard scale at 10 % or more of areas under consideration

Note 5 "Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk" (BCH Code) for ships the keels of which were laid on or after 12.4.1972, and with some limitations, also for ships built before that date; "International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk" (IBC Code) for ships, the keels of which were laid on or after 1.7.1986. The IBC Code is also part of MARPOL Convention (Annex II), and of SOLAS Convention 1974 (Chapter VII).

Note 6 "Code for the Construction and Equipment of Ships Carrying Liquified Gases in Bulk" (GC Code) for ships ordered after 31.10.1976, but before 1.7.1986; "Code for Existing Ships Carrying Liquified Gases in Bulk" for ships ordered before 31.10.1976; "International Code for the

Construction and Equipment of Ships Carrying Liquified Gases in Bulk" (IGC Code) for ships the keel of which is laid on or after 1.7.1986. The IGC-Code is part of SOLAS Convention 1974 (Chapter VII).

Note 7 For requirements see UR S 21 of IACS

Note 8 For requirements see UR S 30 of IACS

Note 9 For requirements see UR S 12 of IACS

Note 10 For requirements see UR S 31of IACS

Note 11 Suspect areas: Locations showing Substantial Corrosion and/ or considered by the Surveyor to be prone to rapid wastage.

Note 12 Regulations of national authorities may have to be observed.