LIBEROHELLENIC REGISTER

Rules and Regulations

for the Classification and Construction of

Small Crafts and Yachts up to 60 metres

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SECTION 1 Scope of Classification

1.1 Libero Hellenic Register

1.1.1 Libero Hellenic Register hereinafter referred to also as LHR or as "the Society", is a society, the activity of whose Marine Division includes the classification of vessels and floating units.

1.2 Expression of confidence

1.2.1 Classification of a vessel or floating unit by the LHR is the expression of confidence extended by LHR to this vessel or floating unit for a specific service within a certain period of time and with reference to LHR Rules and Regulations.

1.3 Limitation of confidence

1.3.1 The expression of confidence extended by the Society reflects the views of the Society only.

1.4 Expression of opinion

1.4.1 The view of the Society is represented by the issuance of Documents in accordance with the Rules and Regulations of the Society. These Documents reflect the Society's opinion on the condition of the vessel, craft or floating unit at the time of issuance. It is the responsibility of the Owners, or of their representatives, to maintain that condition until the next survey required by the Rules and Regulations.

1.5 Documents

1.5.1 The Society develops Rules and other Documents, publishes Registers and issues Certificates, Attestations and Reports which are the confirmation of its interventions.

1.6 Delegation by Governments

1.6.1 Upon delegation by Governments, LHR may participate in the application, development and interpretation of National or International Regulations or Standards.

SECTION 2 Interpretation

2.1 Exclusivity

2.1.1 The interpretation of all the Documents mentioned in 1.5.1 remains the exclusive prerogative of the Libero Hellenic Register. Any reference to the application of these Documents is permissible only with the consent of LHR.

2.2 Interpretation by another party

2.2.1 Application of the Rules developed by LHR does not infringe possible rights for protection of their products on the part of the manufacturers.

SECTION 3 Liability

3.1 General

3.1.1 In providing services, information or advice neither Libero Hellenic Register (hereinafter referred to as LHR) nor any of its officers, employees or agents warrants the accuracy of any information or advice supplied. Except as set out herein, neither LHR nor any of its officers, employees or agents (on behalf of each of whom LHR has agreed this clause) shall be liable for any loss, damage or expense whatever sustained by any person due to any act, omission or error of whatsoever nature and howsoever caused of LHR, its officers, employees or agents or due to any inaccuracy of whatsoever nature and howsoever caused in any information or advice given in any way whatsoever by or on behalf of LHR, even if held to amount to a breach of warranty.

3.1.2 Nevertheless, if any person, who is party to the agreement pursuant to which LHR provides any service, uses LHR's services or relies on any information or advice given by or on behalf of LHR and suffers loss, damage or expense thereby which is proved to have been due to any negligent act, omission or error of LHR, its officers, employees or agents or any negligent inaccuracy in information or advice given by or on behalf of LHR, then LHR will pay compensation to such person for his proved loss up to but not exceeding the amount of the fee (if any) charged by LHR for that particular service, information or advice.

3.1.3 LHR, its officers, employees or agents (on behalf of each of whom this notice is given) shall be under no liability or responsibility in negligence or otherwise howsoever to any person who is not a party to the agreement with LHR pursuant to which any certificate, statement, data or report is issued in respect of any information or advice expressly or impliedly given by LHR or in respect of any omission or inaccuracy therein or in respect of any act or omission which has been caused or contributed to any certificate, statement, data or report being issued with the information and advice it contains (if any).

3.1.4 Nothing in this document, information, or advice, or any other document, information, or advice provided in connection with or pursuant to the performance by LHR of its services, shall be deemed to relieve any designer, naval architect or engineer, builder, manufacturer, shipyard, supplier, contractor or subcontractor, repairer, ship owner or operator, or any other individual or entity, from any warranty or other contractual obligations expressed or implied, or from any fault whatsoever.

SECTION 4 Application for intervention

4.1 Application

4.1.1 Applications for Society’s interventions shall be submitted in writing.

4.2 Acceptance by the applicant

4.2.1 Applications for interventions presuppose acceptance without reservation of the present general conditions.

SECTION 5 Technical disagreement

5.1 Designation of another Surveyor

5.1.1 In case of disagreement on technical matters between the requesting party and an LHR Surveyor, the matter will be referred for consideration of LHR Technical Commitee, which is to take a decision within 3 days of the date on which the disagreement note was received. If this technical matter is referred for consideration of LHR Head Office, the the requesting party shall submit copies of Surveyor's reports and resolutions of the appropriate authorities of LHR with explanations of the disagreement. The Head Office of LHR has to advise of its final decision, taking in consideration the opinion of Maritime Flag Administration (MFA) (when available) which is binding upon both Parties, within a week of the date on which the relevant documents were received from the requesting party.

5.2 Designation of another Surveyor

5.2.1 Should a technical disagreement arise between the requesting party and an LHR Surveyor, the Society may, at the request of that party, designate another of its Surveyors.

SECTION 6 Fees

6.1 Analysis of the fees

6.1.1 For services rendered by LHR, fees are to be paid in accordance with the scales of LHR. In addition to these fees, LHR will charge for any extra expenses incurred in connection with the services rendered.

6.2 Settlement of the fees

6.2.1 All fees for all services rendered by LHR are due for payment immediately upon receipt of the invoice. Interest may be demanded in case of late payment.

SECTION 7 Jurisdiction

7.1 Governing law

7.1.1 The governing law is the Greek law.

7.2 Disputes

7.2.1 Any dispute shall be submitted to the court of Piraeus or, at the option of LHR, to the court competent for the third party's place of residence.

CHAPTER 2 Classification

Contents

SECTION 1 Principles of Class assignment

1.1 The Rules

1.1.1 The present Rules and Regulations for the Construction and Classification of Small Craft, hereinafter referred to as the Rules, are the basis for the Classification of the afore mentioned vessels by LHR.

1.1.2 The Rules will come into force on 1st July 2024.

1.2 Definitions

1.2.1 Yachts are considered to be either pleasure or commercial yachts.

1.2.2 Pleasure yacths are self-propelled crafts that are engaged exclusively in private use for sport or pleasure and carrying no cargo.

1.2.3 Commercial yachts are self-propelled craft, chartered as motor, sailing, or motor-sailing yachts for pleasure or sport, carrying not more than 12 charter quests/passengers and no cargo.

1.2.4 Small craft are considered to be either yachts or special purpose service craft not greater than 60 meters in length. In the present Rules and Regulations the terms ship and small craft are equivalent.

1.2.5 Yachts greater than 60 meters in length should be considered in conjuction with the Rules for th Construction and Classification of Steel Ships.

1.2.6 Froude number is called the non-dimensional number given by the formula:

$$\mathrm{Fr} = \frac{\mathrm{V}}{\sqrt{\mathrm{gL}}}$$

Where:

V = Maximum velocity of the craft [m/s^2]

L = Length between perpendiculars of the craft [m]

G = Gravitational acceleration = 9.81 [m/s^2]

1.2.7

(a) **Displacement craft** is considered to be craft with Fr ≤ 0,5

(b) **Planing craft** is considered to be craft with Fr > 0,5

(c) **Light displacement craft** is a craft with displacement not exceeding:

$$\Delta = 0{,}04(LB)^{1{,}5}$$

1.2.8 Service craft is any craft within the scope of the Rules other than a yacht.

1.3 Application

1.3.1 The present Rules and Regulations are applied to the following types of vessels:

- Displacement glass reinforced plastic craft up to 60m in length.
- Planing glass reinforced plastic craft up to 36m in length.

- Yachts of overall length, L_{OA}, above 24 metres
- Multi-hull craft
- Light displacement craft
- Displacement service craft of steel or aluminum construction with draught to depth ratio less than or equal to 0,65.
- Wooden sailing yachts up to 36m in length.
- Wooden motor and motor-sailing yachts up to 36m in length.

1.4 Other Documents

1.4.1 Special Rules, Procedures, Circulars, Notes, Guidelines and other Documents developed by LHR should be strictly observed and applied for the purposes of Classification.

1.5 Equivalent standards

1.5.1 The Society is entitled to use for Classification purposes any requirements other than those dictated by the Rules, provided the former lead to equivalent standards of strength, safety and stability.

1.6 The Class

1.6.1 Classification characters and notations are assigned following the satisfactory completion of surveys carried out by the Society's Surveyors and the completion of verification of compliance with the Rules.

1.6.2 Classification characters and notations assigned by the Society, hereinafter referred to also as the Class, indicate the degree of confidence that the ship's hull and machinery deserves for her specific service.

1.6.3 It is the responsibility of the Owner to ensure that any defect, breakdown or damage which could invalidate the vessel's assigned Class is to be reported to the Society without delay.

1.7 Survey reports

1.7.1 Classification characters and notations are assigned or reassigned by the Society after consideration of the surveys reports issued by LHR Surveyor upon satisfactory completion of surveys.

1.8 Rules changes

1.8.1 Whenever necessary LHR may modify the present Rules. Rules changes become applicable to ships the contract of which is signed three months after their publication, unless LHR decides upon an earlier implementation date or it is requested by the party applying for Classification.

1.8.2 The implementation of all changes in the Rules, except those concerning the surveys, to already classed ships is not required unless deemed necessary by the Society or is requested by the party applying for Classification.

1.9 Alternative design and arrangements

1.9.1 Purpose

(a) The purpose of this Section is to provide a methodology for alternative design and arrangements which are limited by the extent to which International Conventions allow. Only chapters containing provisions for Alternative Design and Arrangements may utilise such provisions outlined in this Section. The next concerns yachts with the notation "COMMERCIAL YACHTS".

1.9.2 General

(a) Design and arrangements may deviate from the requirements of L.H.R. "Rules for the Classification and Construction of small crafts and yachts up to 60 metres", provided that the alternative design and arrangements meet the intent of the requirements concerned, the chapter's objectives and functional requirements where provided, and provide an equivalent level of safety to the chapter concerned. Alternative design and arrangements shall be based on the underlying Convention requirements and follow any Administrations's alternative design and arrangement procedures.

(b) When alternative design or arrangements deviate from the prescriptive requirements of L.H.R. "Rules for the Classification and Construction of small crafts and yachts up to 60 metres", an engineering analysis, evaluation and approval of the design and arrangements shall be carried out in accordance with this Section.

1.9.3 Engineering analysis

(a) The engineering analysis shall be prepared and submitted to the Administration, based on the guidelines (SOLAS chapters II-1 and III (MSC.1/Circ.1212) and SOLAS Chapters II-2 (MSC.1/Circ.1002)) and shall include, as a minimum, the elements listed under 'Engineering Analysis Elements' in the relevant chapter.

1.9.4 Evaluation of the alternative design and arrangements

(a) The engineering analysis required in paragraph 1.9.3 shall be evaluated and approved by the L.H.R., taking into account the guidelines (SOLAS chapters II-1 and III (MSC.1/Circ.1212) and SOLAS Chapters II-2 (MSC.1/Circ.1002)).

(b) A copy of the documentation, as approved by the L.H.R., indicating that the alternative design and arrangements comply with this Section, shall be carried onboard the ship.

1.9.5 Exchange of information

(a) The Administration shall communicate to the IMO pertinent information concerning alternative design and arrangements approved by them for circulation to all Contracting Governments.

1.9.6 Re-evaluation due to change of conditions

(a) If the assumptions and operational restrictions that were stipulated in the alternative design and arrangements are changed, the engineering analysis shall be carried out under the changed condition and shall be approved by the L.H.R.

SECTION 2 Small Craft Register and Classification Certificates

2.1 Periodicity of publication

2.1.1 The Society undertakes to list the classed ships in the Small Craft Register which is published annually.

2.2 Draught

2.2.1 The Small Crafts Register gives the Classification characters and notations of a classed ship throughout the period of the Class together with the draught corresponding to her summer freeboard.

2.3 Certificates

2.3.1 Classification Certificates are issued by LHR to the classed ship. They are to be kept on board the ship and are made available on request to the Society's Surveyor.

2.4 Validity of Class

2.4.1 The validity of the assigned Class and of the Classification Certificates depends on compliance with the requirements of Chapter 3 and Chapter 4.

2.5 Existing craft

2.5.1 For ship classed with LHR before the entry into force of the present Rules, the Classification characters and notations assigned at the time of their Classification, will be considered as valid until the expiry of their Classification Certificates.

SECTION 3 Conditions for Classification

3.1 Operating conditions

3.1.1 The requirements set forth in the present Rules apply to craft operated by competent crew in accordance with the environmental, loading and operating conditions upon which Class assignment is based.

3.1.2 Any change of the conditions for which a Class has been assigned is to be reported to the Society without delay.

3.1.3 These Rules are based on the hypothesis that the ships are properly loaded and handled and they don't provide for special loading conditions and/or concentrations of loading. In such cases particulars are to be submitted for consideration and the Society reserves the right to require additional strengthening.

3.2 Exceptions

3.2.1 The Classification does not cover any kind of equipment not described in the Rules and used solely for operational activities. Furthermore, Classification does not cover the ship's structural strength and her integrity during her construction, lifting, launching etc. Vessel's structural strength with regard to construction loads, remains the responsibility of the builder.

3.2.2 Where a craft is to be fitted with sails, the masts, rigging and sail arrangements are left to the judgement and experience of the Owner, the Builders and the Designers, and the Committee can not accept responsibility for them. However the Surveyor is to be satisfied that they are of suitable

materials, properly fitted and in good working order.

3.3 Other Regulations

3.3.1 Governmental Regulations are to be brought to the attention of the Society by the applicant for Classification. These requirements are to be taken into account and moreover, in case of conflict with the present Rules, they take precedence. In any case, LHR reserves the right to call for the necessary adaptations or to refuse or withdraw the Classification.

3.4 Failure to comply with the Rules

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

SECTION 4 Procedure for Classification of Small Craft built or converted under LHR supervision and in accordance with LHR Rules

4.1 Application by the Owner

4.1.1 The application for Classification is to be submitted to LHR in writing by the Owner or by his appointed representative. In case of change of ownership, the new Owner or his appointed representative must immediately inform LHR accordingly declaring also in writing his willingness to maintain the ship in Class.

4.2 Submission of plans

4.2.1 Plans and documentation relevant to the Class applied for are to be submitted in triplicate (and/or electronically) by the applicant for examination and approval by the Society. The Society may also request additional information according to the specific nature of the ship to be classed.

4.3 Approval of plans

4.3.1 Copies of the submitted plans and documentation will be returned duly stamped with notifications for alterations, amendments or additions as deemed necessary to meet Rules requirements.

4.4 Deviation from the approved plans

4.4.1 Any deviations from the approved plans and documents are subject to the approval of LHR before work is commenced.

4.5 Materials and equipment

4.5.1 The Society will survey at the manufacturer's work the materials and equipment used in the construction of the ship and for which the present Rules apply.

4.6 Supervision of construction

4.6.1 The Society will also supervise the manufacturing and the assembly of the craft, the installation of the machinery and the electrical plant and will check conformity with the approved plans and with the Rules.

4.7 Tests and trials

4.7.1 The Society will monitor tests and trials required by the Rules.

4.8 Date of Class assignment

4.8.1 Upon satisfactory completion of the surveys, tests and trials, the attending Surveyor prepares his report for the Society. On the basis of this report LHR issues the Classification Certificates. The Class assigned to the ship will be considered granted as of the date of the last survey made during the construction or trials of the ship and will be entered in the Small Craft Register.

4.9 Access of the Surveyor

4.9.1 The applicant should provide all necessary means to ensure free access of the Surveyor to the ship and the workshops where parts requiring approval are manufactured and assembled.

SECTION 5 Procedure for Classification of Small Craft not built or converted under LHR supervision and not in accordance with LHR Rules

5.1 Application by the Owner

5.1.1 The application for Classification is to be submitted to LHR in writing by the Owner or by his appointed representative.

5.2 Surveys and plans required

5.2.1 The Society will determine a programme of surveys, appropriate to the age and condition of the ship and will decide on plans and documents considered necessary for Classification. Unless the Head Office of LHR will decide otherwise, the following plans and documents will be required for the purpose of classification:

Ships previously classed with another recognised organisation will require the following documentation:

A. Main Plans

- General arrangement plan
- Capacity plan
- Hydrostatic curves
- Loading manual (where required)

B. Main Structural Plans

- Midship sections (illustrating transverse and longitudinal members)
- Scantling plan
- Profile and decks plan
- Shell expansion/lamination schedule, as applicable
- Watertight bulkheads plan
- Rudder, stock and tiller
- Mast, derrick posts or crane foundations, if applicable

C. Machinery / Equipment

- Engine room lay-out
- Drawings of shaft line, reduction gear and propeller
- Diagrammatics of fuel, ventilation, bilge, ballast, lubricating oil, cooling, steam and feed, general service and starting compressed air piping.
- Diagrammatics of fire-fighting systems
- Safety plan
- Towing and mooring arrangements
- Sail/rigging plan, indicating loadings (for sailing craft)

D. Electrical Installation

- Power distribution, lighting and emergency power circuits plan
- Single line diagram of networks and switchboards
- Location and arrangement of electrical equipment in hazardous areas

New ships or ships not previously classed with another recognised organisation will require additionally the following documentation:

- Vessel Specifications (Type, Particulars, etc.)
- Lines plan or equivalent
- Watertight doors and framing
- Weathertight doors, framing and sill heights
- Welding schedule
- Hull penetration plans
- Window and framing details

5.2.2 In the case of a ship operating for a long time (generally, for a period greater than 15 years) and whose seaworthiness has been proved accordingly, upon the discretion of the Society consideration

may be given to any exceptional situation justifying an extension for the submission of the plans and documents to a maximum period up to the next Intermediate Survey.

5.3 Date of Class assignment

5.3.1 Upon satisfactory review of the plans and documents and upon satisfactory completion of the program of surveys determined by the Society, the Class of LHR will be granted as of the date of completion of the surveys.

5.4 Class of another recognized Classification Society

5.4.1 If the ship bears the Class of another recognized Classification Society, LHR may dispense with certain inspections pending the next due date assigned by the previous Class.

5.4.2 Where classification is requested of a ship which in parallel keeps her class with an other recognized Classification Society, special consideration will be given as regards the required plans and documents to be submitted and the extent of the class entry survey. In this case the equivalent LHR Class notation is assigned to the ship.

SECTION 6 Classification characters and notations

6.1 Class

6.1.1 Classification symbols

The Classification symbols comprise the following:

- the construction mark,
- the division number,
- the rating letter,
- the equipment symbol,
- the planning craft notation symbol PC,
- the commercial yacht notation symbol COMMERCIAL YACHT,
- the machinery installation symbol,
- the craft type notation,
- the service type notation,
- the service restriction notation.

This information is grouped together on the Certificate and in the Register before any other mark or notation.

6.1.2 The construction mark

The construction mark is assigned to small craft built under the Society's survey, in compliance with the

Rules and to the satisfaction of the Technical Council. The construction mark is assigned to vessels built under the supervision of a recognized Classification Society and letter assigned class with LHR. The list of character symbols that may be used as applicable is as follows:

(a) ✠ This mark will be assigned at the time of classing to a new vessel constructed under LHR's Special Surveys, in compliance with the Rules.

(b) ✠ This mark will be assigned to a vessel built under the supervision of another Classification Society and later assigned class with LHR. For such craft the class notations will be reviewed separately and equivalent notations will be assigned.

(c) Vessels other than those described in items 6.1.2(a) and 6.1.2 (b) will not be assigned a construciton mark when classed with the Society.

6.1.3 The division number

The division number is indicated by the numbers **100** or **90**. Division **100** craft are to meet the Rules requirements for construction and scantlings of the hull and essential components relating to propulsion and safety. Vessels built under the Rules of IACS Class members will be considered to meet the Rules of LHR, provided the satisfactory completion of periodical surveys and no major vessel modifications have taken place.

For existing ships and in the event that some rule requirements are not met although it is deemed possible to enter the craft in the Register, the craft is classed in division **90**, on condition that the craft complies with the applicable strength requirements of the Flag Administration or the applicable requirements of an IACS member Classification Society.

6.1.4 The rating letter

The rating letter is placed after the division number and denotes the degree of confidence the craft deserves. Rating letter A is assigned to craft the condition of which is considered satisfactory by the Society. Rating letter B is assigned to craft complying generally with the Rules requirements, but for which, due to their condition and/or their age, it has been considered necessary to define periodicity of various surveys shorter than those normally granted to ships being assigned the rating A.

6.1.5 The equipment symbol

The equipment symbol **1**, indicates that the anchoring and/or mooring equipment of the craft meet the Rules requirements. Where the equipment does not meet the Rules requirements, but is deemed by the Society to be acceptable for the intended service, the symbol **1** is replaced by the symbol **(1).**

Where the Society considers that it is not called upon to form an opinion on the equipment having regard to the specific operating conditions of the ship the symbol **1** is replaced by **—.**

6.1.6 The planning craft symbol

The planing craft notation symbol **PC** will be assigned to all craft the design of which is in compliance with the relevant requirements of the present Rules.

6.1.7 The machinery installation symbol

The machinery installation symbol **M**, indicates that the ships machinery, boiler and electrical installations meet the applicable requirements of the Rules. The construction mark ✠ is placed before the machinery installation symbol **M** when the propelling and essential auxiliary machinery has been constructed, installed and tested under the Society's Special Survey and in accordance with the Society's Rules and Regulations.

The construction mark ✠ will be placed before the machinery installation symbol **M** when the propelling and essential auxiliary machinery is of an approved standard type and has not been constructed under survey at the maker's works, but has been installed and tested under the LHR's Special Survey and in accordance with the LHR's Rules and Regulations.

The symbol **M** without the construction mark, will be assigned when the propelling and essential auxiliary machinery has neither been constructed nor installed under LHR's Special Survey but the existing machinery, its installation and arrangement, has been tested and found to be acceptable by LHR. This notation is assigned to existing craft in service accepted or transferring into LHR class.

When the arrangements are such that the craft can be operated with the machinery spaces unattended the notation **UMS** is to be assigned. It denotes that the control engineering equipment has been arranged, installed and tested in accordance with the Society's Rules, or is equivalent thereto.

6.1.8 Commercial Yachts

For commercial yachts, the notation symbol COMMERCIAL YACHT may be assigned to a motor or sailing vessel of 24 metres in load line length and over or, if built before 21 July 1968, which is of 150 gross tons and over, carrying not more than 12 charter guests/passengers and no cargo and satisfies the relevant requirements of the present Rules. Sail training vessels are included in this application. Upon onwer's request, a yacht satisfying the above requirements but not engaged in commercial service and carrying no cargo or passengers may request to the Society to be assigned with this notation.

6.2 Craft type notations

6.2.1 The list of craft type notations for which a vessel may be eligible is as follows:

Mono	Notation to be assigned to mono-hull craft other than amphibious air cushion vehicles, hydrofoils and rigid inflatable boats.
Catamaran	Notation to be assigned to all catamarans including low wash and wave piercing catamarans.
Multi	Notation to be assigned to multi-hull craft other than catamarans, swaths and surface effect ships.
Hydrofoil	Notation to be assigned to hydrofoil craft.
RIB	Notation to be assigned to rigid inflatable boats.
SES	Notation to be assigned to surface effect ships.
Swath	Notation to be assigned to small waterplane area twin hull ships.

6.3 Service notations

6.3.1 When considered necessary by the Committee, or when requested by the Owner and agreed by the Committee, a service notation will be appended to the character of classification assigned. This service notation will consist of a combination of the following:

(a) A service type notation, e.g., yacht, passenger ship, RO-RO, fishing vessel, launch, patrol boat, tug, special service, etc. as follows:

YACHT	Notation to be assigned to vessels used for sport or pleasure

PASSENGER SHIP	Notation to be assigned to vessels intended to carry more than twelve passengers
	Passenger ships may be assigned the following additional notations: - **OPEN RO-RO CARGO SPACE** - **CLOSED RO-ROP CARGO SPACE**
PASSENGER FERRY	Notation to be assigned to passenger ships - as defined in the passenger ship definition - the specially equipped to carry complete trains or wheeled vehicles
RO-RO SHIP	Notation to be assigned to vessels specially intended for the carriage of vehicles or loads on wheeled beds by loading and unloading the cargo by Roll on / Roll off (RO/RO).
FISHING VESSEL	Notation to be assigned to vessels used in catching fish, or other living resources of the sea in the capture, but not processing of such.
PATROL CRAFT	Notation to be assigned to vessels which may be operated by the harbour, police, customs, military authorities, seach and rescue or similar organisations.
Notations for specialized vessels or units	
OFFSHORE SUPPLY VESSEL	Notation to be assigned to vessels specially intended for the service to offshore units
TUG	Notation to be assigned to vessels specially intended for towage
BARGE	Notation to be assigned to vessels inteded for to carry solid bulk cargoes in cargo holds
PONTOON	Notation to be assigned to vessels inteded to carry solid cargoes exclusively on weather decks
FLOATING CRANE	Notation to be assigned to vessels intended for lifting operations and specially equipped with lifting equipment
FIRE FIGHTING SHIP	Notation to be assigned to vessels specifically intended and equipped to fight fire
OIL RECOVERY SHIP	Notation to be assigned to vessels inteded and equipped for the recovery of oil form the sea surface.

(b) A special duties notation (not for yachts) and/or

(c) A service restriction notation.

6.3.2 Service restriction notations for small craft will generally be assigned in one of the following forms, but this does not preclude Owners or Builders requesting special consideration for other forms in unusual cases:

(a) Protected waters service

Service in sheltered water adjacent to sand banks, estuaries, reefs, breakwaters or other coastal features and in sheltered water between islands where the range is generally 5 nautical miles or less and the wind force does not exceed 6 Beaufort scale.

(b) Extended protected waters service

Service in protected waters and also for short distances (generally 15 nautical miles or less) beyond protected waters where the wind force does not exceed 6 Beaufort scale.

(c) Specified coastal service

Service along a coast, for a distance from shore generally 20 nautical miles or less, where the wind force does not exceed 6 Beaufort scale, unless some other distance is specified for "coastal service" by the Administration with which the craft is registered, or by the Administration of the coast off which it is operating as applicable, e.g. "Greek Coastal service".

(d) Specified route service

Service between two or more ports or other geographical features which will be indicated in the Register Book, e.g. "Piraeus to Andros service".

(e) Specific operating area service

Service within one or more geographical area(s) which will be indicated in the Register Book, e.g. "Service within the Saronic Gulf".

(f) Yachts with the notation "COMMERCIAL YACHTS" may be characterized as Short Range Yachts if they comply with the following definition:

"Short Range Yacht" means a vessel under 500 gross tons the keel of which was laid or was at a similar stage of construction[1] prior to the 1st August 2005 or a new vessel constructed on or ater that date under 300 gross tons.

- Restricted to operating in forecast or actual wind of a maximum Beaufort Force 4, for a motor yacht, and Beaufort Force 6 for a sailing yacht;
- Within 60 nautical miles of a safe haven. (The Administration may permit operation on specified routes up to 90 nautical miles from a safe haven as appropriate).

6.3.3 For ships carrying more than 12 passengers intended to operate within the territory waters of a Member State of the European Union the following navigation notations may be assigned:

EU-B: For ships engaged on domestic voyages in the course of which it is at no time more than 20 miles from the line of cost, where shipwrecked persons can land, corresponding to the medium tide height.

EU-C: For ships engaged on domestic voyages in sea areas where the probability of exceeding 2.5 m significant wave height is smaller than 10% over a one-year period for all-year around operation, or over a specific restricted period of the year for operation exclusively in such period (e.g. summer period operation), in the course of which is at no time more than 15 miles from a place of refuge, no more than 5 miles from the line of coast, where shipwrecked persons can land, corresponding to the medium tide height.

EU-D: For ships engaged on domestic voyages in sea areas where the probability of exceeding 1,5 m significant wave height is smaller than 10% over a one-year period for all-year around operation, or over a specific restricted period of the year for operation exclusively in such period (e.g. summer

[1] "Similar state of construction" means at a stage which:
1) Construction identifiable with a specific vessel begins; and
2) Assembly of that vessel, comprising at least 1% of the estimated mass of all structural material has commenced.
3) In the case of vessels constructed of FRP or GRP this will be considered as the date when more than 5% of the hull resin and reinforcement has been laid.

period operation), in the course of which is at no time more than 6 miles from a place of refuge, no more than 3 miles from the line of coast, where shipwrecked persons can land, corresponding to the medium tide height.

6.3.4 Operational envelope

For craft that are designed in accordance with an operational envelope:

- these crafts are to be operated at reduced speeds and are to seek calmer waters or refuge when the weather conditions deteriorate or are predicted to deteriorate in order that the craft is not exposed to a significant wave height and speed combination which exceeds the limits of the operational envelope.

For craft that are not assigned an operational envelope:

- these crafts are to be operated at reduced speeds and are to seek calmer waters or refuge when the weather conditions deteriorate or are predicted to deteriorate.

All crafts are to be aware of the weather forecast for the proposed and current areas of operation and area of refuge.

SECTION 7 Classification Regulations

7.1 New buildings

7.1.1 Constructional plans of hull, equipment and machinery as detailed in the Rules for ships intended to be classed with LHR are to be submitted for approval before the commencement of works. Any subsequent modification or additions to scantlings, arrangements or equipment shown on the approved plans are also to be submitted for approval.

7.1.2 Materials used in the construction of hull and machinery which are intended to be classed with LHR are to be of good quality free from defects.

7.1.3 New ships intended for Classification are to be built under LHR Special Survey. Construction and qualifying works from the commencement of the work until the completion of the ship have to be supervised by LHR Surveyors who are to be satisfied that the materials, workmanship and arrangements are in accordance with the Rules. Any items found not to be in accordance with the Rules or the approved plans or any material, workmanship or arrangement found to be unsatisfactory, are to be rectified.

7.1.4 When in the construction of a ship new and/or unusual materials or methods are used for which the present Rules are not directly applicable and sufficient experience is not available the vessel may be classed upon special consideration by the Society, which reserves the right to require special tests before and during service.

7.1.5 The date of completion of the Special Survey during construction of ships built under LHR supervision, will be taken as the date of build and will be entered in the Register book.

7.2 Existing craft

7.2.1 Small craft which have not been built under LHR Special Survey but under Special Survey of another recognized Classification Society may be classed with LHR following satisfactory completion of a Special Survey for Classification in accordance with the requirements of LHR Rules and after

approval by the Society.

7.2.2 When classification is desired for a small craft for which the Class has been withdrawn or suspended or is requested for the first time, the Society will determine a survey, appropriate to the age and the seaworthiness of the ship and the circumstances of the case, to be carried out by LHR Surveyors. The last docking survey performed in the context of a statutory surveys programme may be considered as a Special Survey for the purpose of Classification. The craft is classed with LHR following satisfactory completion of the survey in accordance with the present Rules and Regulations.

7.3 Repairs and alterations

7.3.1 Repairs to hull and machinery which may be required in order that the small craft maintain her Class are to be carried out to LHR Surveyor's satisfaction. Concerning repairs effected at a port or location where an LHR Surveyor is not available these repairs must be surveyed by an LHR Surveyor at the earliest opportunity thereafter.

7.3.2 Any alteration to approved scantlings and arrangements of hull, machinery or equipment are to be submitted for approval and modification are to be undertaken to the Surveyors satisfaction.

7.4 Existing small craft - Periodical Surveys

7.4.1 All vessels are to be subjected to periodical surveys to ascertain the condition of their structure, machinery installations and equipment. Periodical surveys will in general belong to one of the following categories:

- Annual Surveys.
- Intermediate Surveys.
- Drydocking Surveys.
- Renewal Surveys.
- Other complete periodical surveys.

7.4.2 Annual Surveys are to be held on all craft within three months before or after each anniversary of the completion, commissioning or Special Survey in accordance with the requirements of CHAPTER 3 and CHAPTER 4.

7.4.3 Intermediate Surveys are to be held on all craft instead of the second or third Annual Survey after completion, commissioning or Special Survey in accordance with the requirements given in CHAPTER 3.

7.4.4 Ships are to be examined in drydock or on a slipway two times in any five-year period, with an interval not exceeding 36 months. One of the two Docking Surveys required in each five year-period should coincide with the Special Survey. The Society may accept an In-water Survey in lieu of the intermediate docking between Special Surveys. Consideration may be given to special circumstances which may justify an extension of the interval. An underwater inspection by a diver may be required for such extensions.

7.4.5 All ships are to be subjected to Special Surveys in accordance with the requirements given in CHAPTER 3 and CHAPTER 4 at five year intervals. The first Special Survey becomes due five years from the date of build or date of Special Survey for Classification. At the discretion of the Society consideration can be given to any exceptional circumstances justifying an extension of the hull

Classification to a maximum of three months beyond the fifth year. If an extension is agreed the next period of hull Classification will start from the due date of the Special Survey before the extension was granted.

7.4.6 Special Surveys may be commenced on the fourth anniversary after completion, commissioning or a previous Special Survey and progressed during the succeeding year with a view to completion by the fifth anniversary.

7.4.7 At the Owner's request the Society may agree that the Special Survey of the hull be carried out on a Continuous Survey basis. In this case all compartments of the hull are to be opened for survey and testing, in rotation, with an interval of five years between consecutive examinations of each part. Approximately one-fifth of the surveyable items are to be surveyed each year and all the requirements of the particular hull Special Survey must be completed at the end of the five year cycle. The intervals of inspection of items concerning fire protection, ballast and double bottom tanks, are to be specially agreed.

7.4.8 Complete surveys of machinery become due at five years intervals the first one five years from the date of build or date of first Classification. Consideration can be given by the Society to any exceptional circumstances justifying an extension of machinery Class to a maximum of three months beyond the fifth year. If an extension is granted to the subsequent period of machinery, Class will start from the due date of complete Special Survey of machinery before the extension was granted. Where the complete survey is completed more than three months before the due date, the new date recorded will be the final date of survey. In all other cases the date recorded will be the fifth anniversary.

7.4.9 In the case it has been agreed by the Society that the survey of the machinery may be carried out on a Continuous Survey basis every item is to be opened for inspection in rotation, so far as is practicable, to ensure that the intervals between consecutive examinations of each item do not exceed five years. Generally one-fifth of the machinery items are to be examined each year.

7.4.10 If any examination during Continuous Survey reveals defects, further parts are to be opened up and examined as considered necessary by the Surveyor, and the defects are to be made good to his satisfaction.

7.4.11 Where condition monitoring equipment is fitted, the Society will be prepared to amend applicable Periodical Survey requirements where details of the equipment are submitted and found satisfactory. Where machinery installations are accepted for this method of survey, an Annual Survey should be held at which time monitored records will be analyzed and machinery examined under working conditions.

7.4.12 On completion of the Special Survey and after submission of the required reports by the Surveyors and approval by the Society, certificates of first entry of Classification signed by the General Technical Director will be issued. At the Owner's request certificates of Class maintenance, following completion of Periodical Surveys of hull and machinery, will also be issued.

7.4.13 Provisional (Interim) certificates are permitted to be issued by the Surveyors so enabling the ship to proceed on her voyage upon satisfactory completion of relevant surveys. Such certificates will embody the Surveyors' recommendations but in all cases are subject to confirmation by the Society.

7.4.14 In the case of a ship previously classed by another recognized Classification Society, LHR may accept the ship to follow the programme of surveys of the previous Class.

7.5 Notice of surveys

7.5.1 Owners will be timely notified by LHR about forthcoming surveys by means of an electronic

message. The omission of such notice, however, does not absolve the Owner from his responsibility to comply with LHR survey requirements for maintenance of Class.

7.6 Suspension, Withdrawal and Reinstatement of Class

7.6.1 Suspension of Class

1. When a ship is operating beyond the limitations defined by its class characters and additional class notations or any other additional conditions as approved, its class will be suspended and its classification certificate will be invalidated.

2. Any damage, defect, failure or grounding that may lead to the invalidation of the assigned class may, if not reported to LHR without inappropriate delay or agreement of LHR prior to foreseen repairs not obtained, lead to suspension of the class and invalidation of the classification certificate

3. The Society reserves the right to suspend the Class of any craft when:

(a) The craft is not subjected to surveys proving the compliance with the Rules at their due date.

(b) The craft has not been rectified in accordance with the Surveyors' recommendations.

(c) Repairs, conversions or alterations which may affect Classification have been done without the approval of the Society.

(d) When any outstanding recommendation or condition of class specified by LHR is overdue, and no extension is granted by LHR

(e) Fees, which are due on account of Classification and other surveys, are not paid.

4. When any small craft proceeds to sea with less freeboard than that approved by the Society, or when the freeboard marks are placed higher on the sides of small craft than the position assigned, the draught is greater than that approved by the Society and the Class will be liable to be suspended.

5. Where a ship has been detained following a Port State Control inspection on two occasions in one year or three occasions in two years, with serious deficiencies found, then the class will be liable to be suspended, at the discretion of LHR, and a corresponding note will be given in the Register of Ships.

7.6.2 Reinstatement of class

1. The class of a ship may be reinstated in any of the following cases:

(a) The class of a ship will be reinstated upon satisfactory completion of the overdue surveys. Such surveys are to be credited as of the original due date. However, the ship has no class from the date of suspension until the reinstatement date;

(b) The class of a ship will be reinstated upon verification that the due or overdue continuous survey items have been satisfactorily dealt with;

(c) The class of a ship will be reinstated upon verification that due or overdue outstanding recommendations have been satisfactorily dealt with.

7.6.3 Withdrawal of class

1. The class of a ship will be withdrawn in any of the following cases:

(d) At the request of the shipowner;

(e) The circumstances leading to suspension of class are not corrected within the time specified;

(f) The class of a ship will be withdrawn immediately when the ship proceeds to sail without having completed recommendations or conditions of class which were required to be dealt with before sailing;

(g) When the class of the ship has been suspended for a period of six (6) months due to overdue annual, intermediate, special surveys or other surveys after construction as required by the Rules and/or overdue outstanding recommendations/conditions of class. A longer suspension period may be granted for ships which are either laid up, awaiting disposition of a casualty or under attendance for reinstatement;

(h) Where hull, equipment or machinery (including electrical installations) is so badly damaged or in other conditions (e.g. sinking, scrapping, etc.) that continuing operation of the ship is confirmed as not possible;

(i) When the payment of survey fees is not made in time.

2. Where a ship has been detained following a Port State Control inspection on two occasions in one year or three occasions in two years, with serious deficiencies found, then the class will also be liable to be withdrawn, at the discretion of LHR, and a corresponding note will be given in the Register of Ships.

7.6.4 Notification and Reporting

The Society is to confirm in writing the withdrawal, suspension and reinstating of the vessel's class to the Owner and to the Flag State.

7.7 Maintenance of class

7.7.1. The ship's hull (including equipment) and machinery (including electric installations) are subject to various surveys in accordance with the requirements of LHR classification rules to ensure that their technical conditions are in compliance with the specifications regarding the assigned class characters and additional class notations or the validity of the certificates. These surveys mainly include special survey, intermediate survey, annual survey, docking survey, propeller shaft and stern tube shaft surveys, boiler survey, continuous survey, occasional survey, alteration or conversion survey, etc.

7.7.2. The ship's hull (including equipment) and machinery (including electric installations) should be well maintained and managed according to the specifications regarding the assigned class characters and additional class notations or the validity of the certificates, including distribution of cargo loading and ballast, manoeuvring speed and course of the ship under bad weather conditions.

7.7.3. The operation of ships should abide by the loading conditions and other prescribed navigation conditions, including those restrictions set out by additional class notations.

7.7.4. Cargo stowage and stacking should be conducted in accordance with the requirements of the loading manual and/or loading instrument and cargo securing manual (including containers and unit cargoes) approved by LHR. If there is any change of the above-mentioned stowage and stacking, the loading manual and/or loading instrument (if any) and cargo securing manual should be changed correspondingly and sent to LHR for approval.

7.7.5. If there are any damages, breakdowns, fractures or groundings and repairs that may affect the assigned class characters and additional class notations or the validity of the certificates, the master should inform LHR without delay, and LHR will assign surveyors to carry out a survey and put forward relevant requirements and recommendations for repair.

7.8 Appeal from Surveyors' recommendations

7.8.1 In case the recommendations of LHR Surveyors are considered to be unnecessary or unreasonable an appeal may be made to the Society.

7.8.2 The Society will carry out re-survey when an appeal on disagreement has been made.

7.8.3 The fees and expenses of the re-survey are to be paid by the party appealing.

CHAPTER 3 Periodical Surveys of Yachts

Contents

Periodical Surveys of Yachts

PART 1, CHAPTER 3

SECTION 1 General

1.1 Frequency of surveys

1.1.1 All yachts classed with LHR are to be subjected to the following periodical surveys:

- Annual Surveys of hull and machinery.
- Intermediate Surveys of hull and machinery.
- Docking Surveys.
- Special Surveys of hull and machinery.
- Propeller Shaft Surveys.
- Boiler Surveys.

1.1.2 Annual Surveys are to be held within three months before or after each anniversary of the Special Survey.

1.1.3 Intermediate Surveys are to be held instead of the second or third Annual Survey.

1.1.4 Docking Surveys are to be held at intervals not exceeding 36 months.

1.1.5 Special Surveys of hull and machinery are to be held at five year intervals.

1.1.6 The frequency of Propeller Shaft Surveys and Boiler Surveys is specified in SECTION 12 and SECTION 13 respectively.

1.2 Definitions

1.2.1 Substantial corrosion, in case of steel and aluminium craft, is an extent of corrosion such that assessment corrosion pattern indicates a wastage in excess of 75% of allowable margins, but within acceptable limits.

1.2.2 Suspect areas are locations showing substantial corrosion and/or are considered by the surveyor to be vulnerable to deterioration and may include:

- For steel hulls, areas of substantial corrosion and/or fatigue cracking.
- For aluminium alloy hulls, areas of fatigue cracking and areas in the vicinity of bimetallic connections.
- For composite hulls, areas subject to impact damage.
- For wood hulls, areas subject to decay as a result of fresh water ingress or poor ventilation.
- For planning craft areas of the bottom structure forward prone to slamming damage.
- For sailing craft, areas subject to high local stresses due to rigging loads and ballast keel attachments.

1.2.3 **Coating condition**, in case of steel craft, is defined as follows:

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

SECTION 2 Annual Surveys of hull and machinery

2.1 Survey requirements

2.1.1 Annual Surveys are normally visual inspections to ascertain the general condition of the hull, equipment and related piping. A more thorough annual survey may be specified for particular structures, machinery installations or equipment due to consequences of failure or age.

2.2 Parts to be examined

2.2.1 In addition to 2.1.1 the following items are to be examined, placed in satisfactory condition and reported upon:

~ Coatings including deck connections, stiffeners, stays, pads, chocks and brackets.

~ Hatches fitted with portable covers, wood or steel, portable beams, carriers and securing devices, steel pontoons, tarpaulins, cleat battens, wedges.

~ Hatches fitted with mechanically operated steel covers including cover plating, stiffeners, cross joints, gaskets, cleats and dogs. Exposed steel hatch covers are to be examined to confirm structural integrity and capability of maintaining weathertightness. Where significant wastage of hatch covers is noted, thickness gauging is to be carried out and renewals made as necessary. Proper operation and functioning of hatch cover and securing arrangements to be confirmed.

~ Hatchways, manholes, and scuttles in weather and superstructure decks.

~ Machinery castings, fidley covers, companionways and deckhouses protecting openings in weather or enclosed superstructure decks.

~ Portlights together with deadcovers.

~ Ventilators, air pipes together with flame screens, scuppers and discharges, serving spaces on or below the weather deck.

~ Watertight bulkheads, bulkhead penetrations, end bulkheads of enclosed superstructures, and the operation of any doors in same.

~ Weathertight doors and closing appliances for all of the above, including stiffening, dogs, hinges and gaskets. Proper operation of weathertight doors and closing appliances to be confirmed

~ Freeing ports together with bars, shutters and hinges.

~ Protection of the passengers: guard rails, lifelines, gangways, and deck houses accommodating crew and guests.

~ Anchoring and mooring equipment.

~ Structural areas of the hull particularly susceptible to corrosion, including spaces used for salt water ballast, as accessible. For those vessels constructed of aluminum particular attention to be given to those areas adjacent to dissimilar metals which are in close proximity. Thickness gauging may be required.

~ For those vessels constructed of reinforced plastic the deck to hull connection, and superstructure and deckhouse connections to the deck are to be examined.

2.2.2 The machinery and electrical installation are to be generally examined, so far as can been seen.

2.2.3 The following parts should be examined:

- Main propulsion system and essential auxiliary machinery.
- Main propulsion gear-tooth contact is to be examined at the time of the first Annual Survey or after replacement gears have been placed in service.
- All accessible parts of the steering arrangements including their associated equipment and control systems.
- Anchor windlass.
- Bilge pumping arrangements and the corresponding level alarms, on yachts assigned the **UMS** notation.
- Boilers and other pressure vessels, where fitted, including their safety devices.
- Electrical machinery and the emergency sources of electrical power.
- Fire detection and extinguishing arrangements.
- All remote centralized or automatic control systems, on yachts assigned the **UMS** notation.
- Fire and high water level alarms in machinery spaces, where fitted.

SECTION 3 Intermediate Surveys of hull and machinery

3.1 Parts to be examined

3.1.1 In addition to the requirements of SECTION 2, examination of salt water ballast tanks, fore and aft peak spaces and machinery spaces is to be carried out.

3.1.2 Where tanks or other spaces used for salt water ballast tanks are not effectively coated for corrosion control, they are to be selectively examined. At least, three such unprotected spaces should be internally examined, including one peak tank, if in this category, thickness gauged if required and dealt with as deemed necessary by the Surveyor. If significant corrosion is found, the rest of the unprotected spaces used for salt-water ballast are to be internally examined.

3.1.3 Where tanks or other spaces used for salt water are fully protected, the effectiveness of the corrosion control arrangements is to be examined.

3.1.4 The steering gear arrangement is to be examined. In addition, the various parts of the auxiliary/ emergency steering gear are to be assembled and examined in order to verify their good condition.

3.1.5 The anchoring and mooring equipment, as far as accessible, are to be examined. For all yachts of ten years of age and over the anchors should be partially lowered and raised using the windlass.

3.1.6 In sailing yachts, the mast, spars and standing and running rigging are to be examined, in place from the deck to ascertain that their condition is satisfactory.

SECTION 4 Docking Surveys

4.1 Survey requirements

4.1.1 During Docking Survey the yacht is to be placed on blocks of sufficient height and with the necessary staging to permit the examination of the outside of the hull, rudder and underwater fittings.

4.2 Parts to be examined

4.2.1 All openings to the sea from scuppers or discharges, together with valves and fastenings are to be examined.

4.2.2 The sternbush, the propeller and the sea connection fastenings are to be examined. In addition, the clearance in the sternbush or the efficiency of the oil gland is to be verified.

4.2.3 For vessels constructed of aluminium underwater plating which is in proximity to dissimilar metal is to be examined internally and externally as far as practicable.

4.2.4 Non-metallic expansion pieces in the main sea-water cooling system are to be examined externally and internally.

4.2.5 For composite hulls the gelcoat or other protective finish is to be examined for surface cracking, blistering or other damage which may impair the efficiency of the protection to the underlying laminate.

4.2.6 For wood hulls the condition of any caulking or sheathing is to be examined as applicable. The condition of external fastenings may require to be confirmed by removal at the discretion of the Surveyor.

4.2.7 For sailing or auxiliary yachts fitted with external ballast, the attachment of bilge or centreline ballast keels is to be examined.

4.2.8 The clearances in the rudder bearings and pintles are to be measured. Where considered necessary by the Surveyor rudders are to be lifted for examination of the stock. The securing of rudder couplings and/or pintle fastenings is to be confirmed.

4.2.9 Where applicable, attention is to be given to the connection and/or intersection of the cross- deck structure to the hulls of multi hull craft.

4.2.10 Where water jet units are fitted, the impeller, hull ducting, grating, nozzle steering and reversing arrangements are to be examined as far as is practicable.

4.2.11 Where transom mounted propulsion units are fitted, the steering arrangements and any flexible transom seals are to be examined.

4.2.12 Special attention is to be given to the hull in way of underwater fittings such as transverse thrusters, stabilisers, etc.

SECTION 5 In-water Surveys

5.1 Survey requirements

5.1.1 The Society may accept an In-water Survey in lieu of the intermediate docking between Special Surveys required in a five year period on vessels where suitable protection is applied to the underwater portion of the hull.

5.1.2 The In-water Survey is to provide the information normally obtained from a Docking Survey, so far as is practicable. Proposals for In-water Surveys are to be submitted in advance of the survey so that satisfactory arrangements can be agreed with the Society.

5.1.3 The In-water Survey is to be carried out with the ship at a suitable draught in sheltered water. The in-water visibility is to be good and the hull below waterline is to be clean. The Society is to be satisfied with the methods of localization of the divers on the plating.

5.1.4 The In-water Survey is to be carried out by:

(a) A Surveyor who is a skilled diver and trained to carry out In- water Surveys, or

(b) Professional diver(s) under surveillance of a Surveyor. The diver(s) have to be employed by a firm recognized by the Society.

5.1.5 For the method described above the Surveyor shall be satisfied with the method of pictorial representation, and a good two way communication between the Surveyor and divers is to be provided.

5.1.6 If the In-water Survey reveals damage or deterioration that requires early attention, the Surveyor may require that the ship be drydocked in order that a detailed survey be undertaken and the necessary repairs carried out.

5.1.7 Detailed plans of the hull and hull attachments below the waterline are to be available on board, that is:

- all shell openings,
- stem,
- rudder and fittings,
- sternpost,
- propeller, including the means used for identifying each blade,
- anodes, including securing arrangements,
- bilge keels,
- welded seams and butts,
- identification marks and system will be supplied to facilitate the In-water Survey, in particular the position of transverse watertight bulkheads and corresponding markings on the hull.

The plans submitted shall include all the necessary instructions to facilitate the divers' work, especially for the taking of clearance measurements.

5.1.8 It is advisable that both the Surveyor and the divers be provided with photographs - preferably in colour and with the scale specified - of main hull parts and attachments below the waterline: rudder and rudder pintles, shell openings, including main inlets and discharges and tailshaft stern tube sealing arrangements.

5.1.9 The above plans and information will be submitted to the Society for examination together with the Owner's application for In-water Survey.

5.1.10 Approval of firms for In-water Surveys

Before carrying out the In-water Surveys referred to in these Rules, the firm concerned is to be approved by the Society. To receive approval the firm is to supply a detailed file on its in-water activities, personnel employed, equipment used and on their experience in marine repair work. The file is to include also the qualifications of each diver and technician and to specify their role in the team as well as their experience in the repair work they undertake. The continued approval of the firm will depend on its original standards and ability being maintained. Any changes in the information originally supplied are to be reported to the Society.

SECTION 6 Special Survey No. 1 for yachts five years old - Hull requirements

6.1 General

6.1.1 A Docking Survey in accordance with the requirements of is to be carried out.

6.2 Preparation

6.2.1 The interior of the yacht is to be opened out by removal of lining, ceiling/cabin sole, portable tanks and ballast, etc., as may be required by the Surveyor to satisfy himself as to the condition of all parts of the structure.

6.2.2 In yachts having a single bottom, a sufficient amount of close ceiling is to be lifted all fore and aft on each side from the bottom and bilges to permit the structure below to be examined.

6.2.3 For yachts having a double bottom a sufficient amount of ceiling is to be removed from the bilges and inner bottom in order to enable the examination of the structure below. If the structure is found in good condition the removal of the remainder of ceiling may be dispensed with.

6.2.4 The anchors are to be placed in proper position for examination.

6.2.5 The chain locker is to be cleaned internally and the chain cables are to be ranged for inspection.

6.2.6 The outside part of the hull is to be cleaned for its examination.

6.2.7 In wood yachts, where the planking is sheathed with metal, such portions are to be removed as may be required by the Surveyor. If sheathed with reinforced plastic or similar material, the sheathing is to be examined in order to ensure that it is adhering satisfactorily and that there is no possibility of water seepage occurring along plank edges.

6.3 External examination

6.3.1 The requirements of Annual, Intermediate and Docking Surveys are to be complied with.

6.3.2 Decks are examined, with particular attention being given to the areas where high stress concentrations or increased corrosion are likely to arise, such as hatch corners and other discontinuities. Deck erections such as hatch coamings, deckhouses and superstructures are examined. Worn out, worm-eaten or rotten parts of wooden decks are to be renewed to the Surveyors discretion. The same applies to wood-sheathed steel decks, the sheathing of which may be removed in places to ascertain the condition of plating underneath.

6.3.3 Wood decks or sheathering are to be examined and the caulking is to be tested and re- caulked as necessary. If decay or rot is found or the wood is excessively worn, the wood is to be renewed.

6.3.4 Anchors, chain cables and windlasses are to be examined and checked. Worn out lengths of chain cables over than 12% from its nominal diameter are to be renewed.

6.3.5 In sailing yachts the masts, spars, and standing and running rigging are to be examined. Where possible, masts are to be unshipped for survey, failing for which the mast wedges are to be removed, the mast examined aloft and special care taken to ascertain that the masts are sound. The whole of the standing rigging, including rigging screws, bolts, pins and fittings, is to be dismantled as considered necessary by the Surveyor. The sails are to be laid out so that they can be properly examined.

6.3.6 In case of composite yachts, the hull to deck joint together with any joints between the deck and deckhouses or superstructures are to be examined. Also, the structure in way of the bolted attachment of fittings including guardrail stanchions, windlass, shaft brackets, fendering, mooring bitts, mast steps, rigging

chainplates etc. is to be examined.

6.4 Internal examination

6.4.1 All integral tanks, except when they are intended to contain oil fuel, fresh water or lubricating oil, are to be examined internally.

6.4.2 Double bottom tanks, peak tanks, deep tanks and other integral or independent tanks which are intended to contain sea water or fresh water are to be filled to overflow level for testing.

6.4.3 All tanks which are intended to contain liquids other than water, such as fuel oil tanks, when they cannot be filled with water, are to be filled to the top of the tank, for testing. If water can be used, the tanks are to be filled to overflow level.

6.4.4 Independent tanks containing fuel or lubricating oil need not be tested, if after an external examination the Surveyor considers their condition satisfactory.

6.4.5 Attention is to be given to the condition of the structure under wood decks.

6.4.6 In case of composite yachts the bonded attachments of frames, floors, bulkheads, sterntubes, engine bearers and integral tank boundaries are to be examined.

6.5 Thickness measurements

6.5.1 In steel yachts, areas considered suspect by the Surveyor, throughout the vessel should be gauged.

6.5.2 Any parts of the structure which are found materially reduced in scantlings are to be made good. Attention is required in way of discontinuities of the structure. Surfaces are to be recoated as necessary.

6.5.3 In case of aluminium vessels, the Surveyor may require to measure the thickness of the material in any portion of the structure where signs of deterioration are evident or may normally be found. Any parts of the structure which are found defective or excessively reduced in scantlings are to be made good by materials of the approved scantlings and quality.

SECTION 7 Special Survey No. 2 for yachts ten years old - Hull requirements

7.1 General

7.1.1 The requirements of SECTION 6 are to be complied with.

7.2 Preparation

7.2.1 In addition to the requirements specified in 6.2 the following are to be complied with:

- In yachts having a double bottom a sufficient amount of ceiling in the holds and other spaces is to be removed from the bilges and inner bottom to enable the examination of the spaces below.
- In yachts having a single bottom, the limber boards and ceiling equal to not less than three strakes, all fore and aft on each side are to be removed, one such strake being taken from the bilges. If the Surveyor considers it necessary the whole of the ceiling and limber boards are to be removed.

7.3 Examination and testing

7.3.1 The requirements specified in 6.3, 6.4, and 6.5 are to be complied with.

7.3.2 When the ship is more than five and not more than ten years old, one integral fresh water tank is to be examined internally. The other tanks may be examined externally from all accessible boundaries.

SECTION 8 Special Survey No. 3 for yachts fifteen years old - Hull requirements

8.1 General

8.1.1 The requirements of SECTION 6 and SECTION 7 are to be complied with.

8.2 Preparation

8.2.1 In addition to the requirements of 6.2 and 7.2 the following are to be complied with:

~ The steelwork is to be cleaned and the rust removed.

~ If the Surveyor is satisfied, after removal of portions of the ceiling in the holds, that the steelwork is in good condition, free from rust and coated the removal of the whole may be dispensed with.

~ All double bottom and other tanks are to be cleaned as necessary to permit their internal examination, where this is required.

~ Portions of wood sheathing, or other covering, on steel decks are to be removed, as considered necessary by the Surveyor, in order to ascertain the condition of the plating.

~ The rudder is to be unshipped for examination.

~ On all yachts with a ballast keel, fastenings are to be drawn for examination.

8.2.2 In wood yachts fastenings as may be required by the Surveyor are to be drawn for examination.

8.3 Examination and testing

8.3.1 The requirements specified in 6.3, 6.4, 6.5, and 7.3 are to be complied with.

8.3.2 Integral tanks which are used exclusively for fresh water are to be examined internally.

8.3.3 The rudder stock and structure in way of the trunk is to be examined.

8.3.4 For steel yachts, in addition to the thickness measurements required by 6.5 any exposed deck plating and the steel plating in way of the waterline are to be measured. The gauging is to be done in at least four places on each side of the yacht.

SECTION 9 Special Survey No. 4 for yachts twenty years old and every Special Survey thereafter - Hull requirements

9.1 General

9.1.1 The requirements of SECTION 6, SECTION 7 and SECTION 8 are to be complied with.

9.2 Examination and testing

9.2.1 The requirements specified in 6.3, 6.4, 6.5, 7.3 and 8.3 are to be complied with.

9.2.2 All paint and rust are to be entirely removed before the plates are gauged by the Surveyor.

9.2.3 A minimum of two selected integral oil fuel tanks are to be examined internally. The other tanks may be examined externally from all accessible boundaries.

9.2.4 Integral tanks which are used for lubrication oil need not be examined internally subject to external examination of all accessible boundaries.

9.2.5 Independent tanks which are used for fresh water, oil fuel or lubricating oil need not be examined internally subject to external examination of all accessible boundaries.

9.2.6 For steel yachts, in addition to the thickness measurements required by 6.5, the following measurements should be taken:

- the shell plating and deck plating are to be gauged over the full length of the yacht.
- 2 transverse sections of deck and shell plating within 0,5*L* amidships.
- Areas where the coatings are found to be other than in GOOD Condition structure in way of integral sanitary tanks.

SECTION 10 Machinery Surveys

10.1 Annual, Intermediate and Docking Surveys

10.1.1 For Annual, Intermediate and Docking Surveys see SECTION 2, SECTION 3 and SECTION 4 respectively.

10.2 Special Surveys of machinery

10.2.1 At each Special Survey the following should be carried out:

- All openings to the sea, including sanitary and other overboard discharges, together with the valves connected therewith, are to be examined internally and externally while the vessel is in dry dock; and the fastenings to the shell plating are to be renewed when considered necessary by the Surveyor. For those vessels constructed of aluminum insulating material in joints of shell connections between dissimilar metals is to be examined and renewed if necessary.
- Pumps and pumping arrangements, including valves, piping and strainers are to be examined. The Surveyor is to be satisfied with the operation of the bilge system, including an internal examination of the emergency bilge suction valve. Other systems are to be tested as considered necessary.
- Shafts (except the propeller shaft), thrust bearings, and lineshaft bearings are to be opened for examination.
- The foundations of main and auxiliary machinery are to be examined.
- Heat exchangers and other unfired pressure vessels with design pressures over 6.9 bar (7kgf/cm^2, 100 psi) are to be examined, opened out or thickness gauged and pressure tested as considered necessary, and associated relief valves proven operable. Evaporators that operate with a vacuum on the shell need not be opened, but may be accepted on basis of satisfactory external examination and operational test or review of operating records.
- Examination of the steering machinery is to be carried out, including an operational test and checking

of relief-valve settings. Further, a hydrostatic check of the steering system to the relief valve setting is to be conducted using the installed power units. The machinery may be required to the opened for further examination as considered necessary by the Surveyor.

- Reduction gearing is to be opened and examined as considered necessary by the Surveyor in order to confirm the condition of the gears, pinions, shafts, bearings and lubrication system. Alternative means of ascertaining the condition of epicyclical gearing will be specially considered.
- An examination of the fire extinguishing installation is to be made in order that the Surveyor may satisfy himself as to its efficient state.
- Examination of anchor windlass including operational check and test of the brakes.

10.2.2 Internal-combustion Engines

- In addition to the foregoing applicable requirements, cylinders, cylinder heads, valves and valve gear, fuel pumps, scavenging pumps, and superchargers, pistons, crossheads, connecting rods, crankshafts, clutch, reversing gear, and compressors, intercoolers, and such other parts of the main and auxiliary machinery as are considered necessary are to be opened out for examination. Tie rods are to be retensioned as necessary, engine entablature bolting checked for tightness, and crankshaft deflections of low-speed-type engines measured. Parts which have been examined within the previous twelve months need not be examined again, except in special circumstances. Special consideration as to the intervals for requiring Special Surveys may be given for main engines with bores 300 mm or under provided that the engine is maintained under a manufacturer's scheduled maintenance program. The records of the program, including lubrication servicing, are to be made available to the Surveyor. Periodical overhauls, required by the manufacturer's scheduled maintenance program, are to be witnessed by the Surveyor and will be accepted for completion of the cycle.
- Air reservoirs are to be examined and their relief valves proven operable. If air reservoirs cannot be examined internally they are to be gauged by nondestructive means or hydrostatically tested.
- Essential components of the engine fuel oil system including fuel oil service pumps, separators and heaters are to be examined.

SECTION 11 Electrical Equipment

11.1 Annual, Intermediate and Docking Surveys

11.1.1 For Annual, Intermediate and Docking Surveys see SECTION 2, SECTION 3 and SECTION 4 respectively.

11.2 Special Survey requirements - Electrical main propulsion apparatus

11.2.1 The windings of generators and motors are to be thoroughly examined and found or made dry and clean; particular attention is to be paid to the ends of all windings of stators and rotors. After the windings have been cleaned and found dry, they are to be varnished, if necessary, with a standard insulating varnish applied preferably by spraying.

11.2.2 All air ducts in stator coils and the ventilating holes in rotors and retaining rings of alternators are to be carefully examined and found or made clear and clean.

11.2.3 All cable runs are to be examined and found or placed in good condition as to supports, etc., and the ground connections of protective coverings or sheath found substantial and effective. Particular

attention is also to be paid to high-potential bus insulators, which are to be free from dust or oil in order to prevent creepage to ground.

11.2.4 The insulation resistance of each propulsion unit is to be measured and found equal to the requirements noted above for auxiliary generators and motors. In order to further evaluate these insulation-resistance readings, it is recommended that a separate log be kept of insulation-resistance measurements taken frequently at regularly scheduled intervals. Humidity, ambient temperature, and condition of the machine are also to be noted. Any large and abrupt decrease in insulation resistance, when compared with those recorded in the log, is to be further investigated and corrected.

11.2.5 Alternately, a log of insulation resistance values is to be made at the beginning of the survey and insulation's resistance is to be measured again at the end of the survey; a comparison is to be made between the measured value and the log made at the beginning of the survey. Any large or abrupt decrease in insulation resistance is to be further investigated and corrected.

11.3 Special Survey requirements - Auxiliary apparatus

11.3.1 Fittings and connections on main switchboards and distribution panels are to be examined, and care is to be taken to see that no circuits are overfused.

11.3.2 Cables are to be examined as far as practicable without undue disturbance of fixtures.

11.3.3 All generators are to be run under load, either separately or in parallel; switches and circuit breakers are to be tested.

11.3.4 All equipment and circuits are to be inspected for possible development of physical changes or deterioration. The insulation resistance of the circuits is to be measured between conductors and ground and these values compared with those previously measured. Any large and abrupt decrease in insulation resistance to be further investigated and either restored to normal or renewed as indicated by the conditions found.

11.3.5 Where electrical auxiliaries are used for vital purposes, the generators and motors are to be examined and their prime movers opened for inspection. The insulation resistance of each generator and motors is to be measured with all circuits of different voltages above ground being tested separately.

This test is to be made with direct current potential to ground as follows:

500 volts DC for units 550 volts AC (phase to phase) or lower and also for DC fields.

The direct current potential is to be applied for at least 30 seconds and the minimum insulation resistance is to be of the order to one-half to one megaohm.

SECTION 12 Propeller Shaft Surveys

12.1 Frequency of surveys

12.1.1 At five year intervals the following items of the shafts are to be surveyed:

- Keyed propeller shafts fitted with continuous liners or approved oil glands, or made of approved corrosion-resistant materials, when the keyway complies with LHR Rules.
- Keyless propeller shafts fitted with approved oil glands or made of approved corrosion- resistant materials.

- Shafts having solid coupling flanges at the aft end fitted with approved oil glands or made of approved corrosion-resistant materials.
- Controllable pitch propeller shafts.
- Directional propeller shafts.

12.1.2 Water jet units for main propulsion purposes are also to be surveyed at five year intervals, provided the impeller shafts are made of approved corrosion-resistant materials or have approved equivalent arrangements. Impeller, casing, shaft bearing and shaft seal are to be examined.

12.1.3 All other shafts are to be surveyed at 2 ½ year intervals.

12.2 Tapered tailshaft survey details

12.2.1 The survey for shafts with water-lubricated bearings consists of removing the propeller and drawing in and examining the shaft in its entirety, and during each survey, the shaft is to be examined by a surface crack-detection method (such as magnetic particle or dye penetrant) all around the shaft from the after edge of the liner for one-third of the length of the taper, including forward end of keyway (if fitted).

12.2.2 The survey for shafts with oil-lubricated bearings may be conducted as described above. Alternatively, at the discretion of the Surveyor, and on the basis of satisfactory service record, lubricating oil analysis records, bearing wear-down, and the condition of the inboard and outboard seal assemblies, the survey may consist of removing the propeller to expose the forward end of the taper, and examination by a surface crack-detection method (such as magnetic particle or dye penetrate) all around the shaft of the forward portion of the taper section, including end of keyway (if fitted).

12.3 Flanged tailshaft survey details

12.3.1 The survey for shafts with water-lubricated bearings where the propeller is fitted to the shaft by means of a coupling flange, is to consist of withdrawing the shaft in its entirety.

12.3.2 The survey for shafts of oil-lubricated bearings where the propeller is fitted to the shaft by means of a coupling flange, including for controllable-pitch propellers, may be effected as described above. Alternatively, at the discretion of the Surveyor the survey may consist of the verification of a satisfactory oil analysis, stern bearing weardown, shaft seal effectiveness, and for Controllable Pitch propellers a blade seal leak and pitching function test.

12.3.3 Whenever the coupling bolts of any type of flange-connected shaft are removed or flange radius made accessible in connection with overhaul or repairs, the coupling bolts or flange radius are to be examined by means of a surface crack detection method.

12.3.4 Controllable-pitch propellers are to be surveyed along with the tailshaft. The propeller is to be function tested, examined for leaks and opened out as deemed necessary by the attending Surveyor.

12.4 Modified Survey

12.4.1 A Modified Survey may be accepted at alternate five-yearly surveys for shafts described in 10.1.1 provided they are fitted with oil lubricated bearings and approved oil glands, and also for those in 12.1.1.

12.4.2 The Modified Survey is to consist of the partial withdrawal of the shaft, sufficient to ascertain the condition of the stern bearing and shaft in way. For keyless propellers or shafts with a solid flange

connection to the propeller a visual examination to confirm the good condition of the sealing arrangements is to be made. The oil glands are to be capable of being replaced without removal of the propeller. The forward bearing and all accessible parts including the propeller connection to the shaft are to be examined as far as possible. Wear down is to be measured and found satisfactory. Where a controllable pitch propeller is fitted, at least one of the blades is to be dismantled complete for examination of the working parts and the control gear.

12.4.3 For keyed propellers, the after end of the cylindrical part of the shaft and forward one third of the shaft cone is to be examined by a magnetic particle crack detection method, for which dismantling of the propeller and removal of the key will be required.

12.5 Partial Survey

12.5.1 For shafts where the Modified Survey is applicable, upon application by the Owner, the Committee will be prepared to give consideration to postponement of the survey for a maximum period of half the specified cycle provided a Partial Survey is held.

12.5.2 The Partial Survey is to consist of the propeller being backed off in any keyed shaft and the top half of the cone examined by an efficient crack detection method for which removal of the key will be required. Oil gland and seals are to be examined and dealt with as necessary. Weardown is to be measured and found satisfactory. Propeller and fastenings are to be examined.

12.5.3 The Committee will be prepared to give consideration to the circumstances of any special case upon application by the Owner.

12.6 Allowable bearing weardown

12.5.4 Water-lubricated Bearings Other than Rubber

Where the propelling machinery is located amidships, the after stern tube bearing is to be rebushed when it has worn down to:

- 6 mm clearance in the case of shafts 200 mm or less in diameter,
- 8 mm clearance where the diameter is above 200 but not more than 305 mm ,and
- 9 mm clearance where the shaft exceeds 305 mm in diameter.

In cases where machinery is located aft, the maximum clearance is to be 20% less than the foregoing.

12.5.5 Water-lubricated Rubber Bearings

Water-lubricated rubber bearings are to be rebushed when any water groove is half of the original depth, or whenever the clearance exceeds the limits as given above for wood bearings, whichever occurs first.

12.5.6 Oil-lubricated Bearings

Oil-lubricated bearings are to be rebushed when the weardown exceeds the manufacturer's recommendations.

SECTION 13 Boilers

13.1 Frequency of surveys

13.1.1 All boilers, super heaters, economizers, together with boiler used exclusively for non-essential services having a working pressure exceeding 3,4 bar (≈3,5 kg/cm^2) and a heating surface exceeding

4.65 m^2 are to be surveyed at two year intervals and generally examined externally at the time of the Annual Survey of the ship.

13.2 Parts to be examined

13.2.1 At each survey the boilers, super heaters and economizers are to be examined internally (water-steam side) and externally (fire side).

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

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

13.2.4 When considered necessary by the Surveyor, the boilers and super heaters are to be subjected to hydrostatic pressure test.

SECTION 14 Additional Survey Requirements for sailing commercial yachts

14.1 General

14.1.1 The following additional requirements apply for sailing vessels with the notation of "COMMERCIAL YACHTS".

14.1.2 The condition of the rig shall be monitored in accordance with a Maintenance Manual and a planned maintenance schedule. The schedule shall include, in particular, regular monitoring of all the gear associated with safe work aloft and on the bowsprit.

14.2 Masts and Spars and Standing Rigging

14.2.1 The Maintenance Manual provided by the mast manufacturer shall be reviewed and approved by L.H.R..

14.2.2 A physical survey on the rig stepping procedure and the rig behavior during sea trials is to be carried out by or on behalf of L.H.R..

14.2.3 Annual surveys on the vessel shall include reviewing records and history of rig maintenance measures against the specifications provided by the maintenance manual.

CHAPTER 4 Periodical Surveys of service craft

Contents

Periodical Surveys of service craft

PART 1, CHAPTER 4

SECTION 1 General

1.1 Frequency of surveys

1.1.1 All vessels classed with LHR are to be subjected to the following periodical surveys:

- Annual Surveys of hull and machinery.
- Intermediate Surveys of hull and machinery.
- Docking Surveys.
- Special Surveys of hull and machinery.
- Propeller Shaft Surveys.
- Boiler Surveys.

1.1.2 Annual Surveys are to be held within three months before or after each anniversary of the Special Survey.

1.1.3 Intermediate Surveys are to be held instead of the second or third Annual Survey.

1.1.4 Docking Surveys are to be held at intervals not exceeding 36 months.

1.1.5 Special Surveys of hull and machinery are to be held at five year intervals.

1.1.6 The frequency of Propeller Shaft Surveys and Boiler Surveys is specified in SECTION 12 and SECTION 13 respectively.

1.2 Definitions

1.2.1 **Substantial corrosion,** in case of steel and aluminium craft, is an extent of corrosion such that assessment corrosion pattern indicates a wastage in excess of 75% of allowable margins, but within acceptable limits.

1.2.2 **Suspect areas** are locations showing substantial corrosion and/or are considered by the surveyor to be vulnerable to deterioration and may include:

- For steel hulls, areas of substantial corrosion and/or fatigue cracking.
- For aluminium alloy hulls, areas of fatigue cracking and areas in the vicinity of bimetallic connections.
- For composite hulls, areas subject to impact damage.
- For wood hulls, areas subject to decay as a result of fresh water ingress or poor ventilation.
- For planning craft areas of the bottom structure forward prone to slamming damage.
- For sailing craft, areas subject to high local stresses due to rigging loads and ballast keel attachments.

1.2.3 **Coating condition**, in case of steel craft, is defined as follows:

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

at 10% or more of areas under consideration.

SECTION 2 Annual Surveys of hull and machinery

2.1 Survey requirements

2.1.1 Annual Surveys are normally visual inspections to ascertain the general condition of the vessel or relevant item. A more thorough annual survey may be specified for particular structures, machinery installations or equipment due to consequences of failure or age.

2.2 Parts to be examined

2.2.1 In addition to 2.1.1 the following items are to be examined, placed in satisfactory condition and reported upon:

~ Coamings including deck connections, stiffeners, stays, pads, chocks and brackets.

~ Hatches fitted with portable covers, wood or steel, portable beams, carriers and securing devices, steel pontoons, tarpaulins, cleat battens, wedges.

~ Hatches fitted with mechanically operated steel covers including cover plating, stiffeners, cross joints, gaskets, cleats and dogs. Exposed steel hatch covers are to be examined to confirm structural integrity and capability of maintaining weathertightness. Where significant westage of hatch covers is noted, thickness gauging is to be carried out and renewals made as necessary. Proper operation and functioning of hatch cover and securing arrangements to be confirmed.

~ Hatchways, manholes, and scuttles in weather and superstructure decks.

~ Machinery castings, fidley covers, companionways and deckhouses protecting openings in weather or enclosed superstructure decks.

~ Portlights together with deadcovers.

~ Ventilators, air pipes together with flame screens, scuppers and discharges, serving spaces on or below the weather deck.

~ Watertight bulkheads, bulkhead penetrations, end bulkheads of enclosed superstructures, and the operation of any doors in same.

~ Weathertight doors and closing appliances for all of the above, including stiffening, dogs, hinges and gaskets. Proper operation of weathertight doors and closing appliances to be confirmed

~ Freeing ports together with bars, shutters and hinges.

~ Protection of the crew: guard rails, lifelines, gangways, and deck houses accomodating crew and guests.

~ Anchoring and mooring equipment.

~ Structural areas of the hull particularly susceptible to corrosion, including spaces used for salt water ballast, as accessible. For those vessels constructed of aluminium particular attention to be given to those areas adjacent to dissimilar metals which are in close proximity. Thickness gauging may be required.

~ For those vessels constructed of reinforced plastic the deck to hull connection, and superstructure and deckhouse connections to the deck are to be examined.

2.2.2 The machinery and electrical installation are to be generally examined, so far as can been seen.

2.2.3 The following parts should be examined:

~ Main propulsion system and essential auxiliary machinery.

~ Main propulsion gear-tooth contact is to be examined at the time of the first Annual Survey or after replacement gears have been placed in service.

~ All accessible parts of the steering arrangements including their associated equipment and control systems.

~ Anchor windlass.

~ Bilge pumping arrangements and the corresponding level alarms, where fitted.

~ Boilers and other pressure vessels, where fitted, including their safety devices.

~ Electrical machinery and the emergency sources of electrical power.

~ Fire detection and extinguishing arrangements.

~ All remote centralized or automatic control systems.

~ Fire and high water level alarms in machinery spaces, where fitted.

SECTION 3 Intermediate Surveys of hull and machinery

3.1 Parts to be examined

3.1.1 In addition to the requirements of SECTION 2, examination of salt water ballast tanks, fore and aft peak spaces and machinery spaces is to be carried out.

3.1.2 The steering gear arrangement is to be examined. In addition, the various parts of the auxiliary/ emergency steering gear are to be assembled and examined in order to verify their good condition.

3.1.3 The anchoring and mooring equipment, as far as accessible, are to be examined. For all vessels of ten years of age and over the anchors should be partially lowered and raised using the windlass.

3.1.4 The electrical generating sets are to be examined under working conditions.

3.1.5 Representative internal spaces including fore and aft peak spaces, bilges, etc. are to be generally examined. These spaces should include all suspect areas.

3.2 Additional requirements for steel vessels

3.2.1 For steel craft a general examination of salt water ballast tanks, integral sanitary tanks and bilges is to be carried out as required below. If such inspections reveal no visible structural defects then the examination may be limited to a verification that the protective coating remains in GOOD condition. When considered necessary by the Surveyor thickness measurement of the structure is to be carried out. Where the protective coating is found to be other than in GOOD condition, and it has not been repaired, maintenance of class will be subject to the spaces in question being internally examined and gauged as necessary at Annual Surveys.

- For all craft over five years of age and up to 10 years of age, representative salt water ballast

tanks, integral sanitary tanks and bilges are to be generally examined. Where the protective coating is found to be other than in GOOD condition or other defects are found, the examination is to be extended to other spaces of the same type.

- For steel craft over 10 years of age all salt water ballast tanks, integral sanitary tanks and bilges are to be generally examined.

SECTION 4 Docking Surveys

4.1 Survey requirements

4.1.1 During Docking Survey the vessel is to be placed on blocks of sufficient height and with the necessary staging to permit the examination of the outside of the hull, rudder and underwater fittings.

4.2 Parts to be examined

4.2.1 During each Docking Survey the following requirements are to be complied with:

~ The shell plating is to be examined for excessive corrosion, or deterioration due to chafing or contact with the ground and for any undue unfairness or buckling. Special attention is to be paid to bilge keels. Important plate unfairness or other deterioration which do not necessitate immediate repairs are to be recorded.

~ Sea chests and their gratings, sea connections and overboards discharge valves and cocks and their fastenings to the hull or sea chests are to be examined. Valves and cocks need not be opened up more than once in a period of five years unless considered necessary by the Surveyor.

~ Anchors, chain cables are to be examined and checked. Worn out chain lengths are to be removed. This operation need not to be carried out more than once in a five year period unless considered necessary by the Surveyor.

~ Visible parts of rudder, rudder pintles, rudder shaft and couplings and stern frame are to be examined. If considered necessary by the Surveyor, the rudder is to be lifted or the inspection plates removed for the examination of pintles. The clearances in the rudder bearings are to be ascertained and recorded.

~ Visible parts of propeller and stern bush are to be examined. The clearances in the stern bush and the efficiency of the oil gland if any are to be ascertained and recorded. For controllable pitch propellers the Surveyor is to be satisfied with the fastenings and tightness of hub and blade sealing. Dismantling need not be carried out unless considered necessary.

~ Visible parts of side thrusters are to be examined.

4.2.2 For vessels constructed of aluminium underwater plating which is in proximity to dissimilar metal is to be examined internally and externally as far as practicable.

4.2.3 Non-metallic expansion pieces in the main sea-water cooling system are to be examined externally and internally.

4.2.4 For composite hulls the gelcoat or other protective finish is to be examined for surface cracking, blistering or other damage which may impair the efficiency of the protection to the underlying laminate.

4.2.5 For wooden hulls the condition of any caulking or sheathing is to be examined as applicable. The

condition of external fastenings may require to be confirmed by removal at the discretion of the Surveyor.

4.2.6 Where applicable, attention is to be given to the connection and/or intersection of the cross- deck structure to the hulls of multi hull craft.

4.2.7 Where water jet units are fitted, the impeller, hull ducting, grating, nozzle steering and reversing arrangements are to be examined as far as is practicable.

4.2.8 Where transom mounted propulsion units are fitted, the steering arrangements and any flexible transom seals are to be examined.

4.2.9 Special attention is to be given to the hull in way of underwater fittings such as transverse thrusters, stabilisers, etc.

4.2.10 For hydrofoil or foil assisted craft the attachment of foils is to be examined.

SECTION 5 In-water Surveys

5.1 Survey requirements

5.1.1 The Society may accept an In-water Survey in lieu of the intermediate docking between Special Surveys required in a five year period on vessels where suitable protection is applied to the underwater portion of the hull.

5.1.2 The In-water Survey is to provide the information normally obtained from a Docking Survey, so far as is practicable. Proposals for In-water Surveys are to be submitted in advance of the survey so that satisfactory arrangements can be agreed with the Society.

5.1.3 The In-water Survey is to be carried out with the ship at a suitable draught in sheltered water. The in-water visibility is to be good and the hull below waterline is to be clean. The Society is to be satisfied with the methods of localization of the divers on the plating.

5.1.4 The In-water Survey is to be carried out by:

(a) A Surveyor who is a skilled diver and trained to carry out In- water Surveys, or

(b) Professional diver(s) under surveillance of a Surveyor. The diver(s) have to be employed by a firm recognized by the Society.

5.1.5 For the method described above the Surveyor shall be satisfied with the method of pictorial representation, and a good two way communication between the Surveyor and divers is to be provided.

5.1.6 If the In-water Survey reveals damage or deterioration that requires early attention, the Surveyor may require that the ship be drydocked in order that a detailed survey be undertaken and the necessary repairs carried out.

5.1.7 Detailed plans of the hull and hull attachments below the waterline are to be available on board, that is:

~ all shell openings,

~ stem,

~ rudder and fittings,

~ sternpost,

~ propeller, including the means used for identifying each blade,

~ anodes, including securing arrangements,

~ bilge keels,

~ welded seams and butts,

~ identification marks and system will be supplied to facilitate the In-water Survey, in particular the position of transverse watertight bulkheads and corresponding markings on the hull.

The plans submitted shall include all the necessary instructions to facilitate the divers' work, especially for the taking of clearance measurements.

5.1.8 It is advisable that both the Surveyor and the divers be provided with photographs - preferably in colour and with the scale specified - of main hull parts and attachments below the waterline: rudder and rudder pintles, shell openings, including main inlets and discharges and tailshaft stern tube sealing arrangements.

5.1.9 The above plans and information will be submitted to the Society for examination together with the Owner's application for In-water Survey.

5.1.10 Approval of firms for In-water Surveys

Before carrying out the In-water Surveys referred to in these Rules, the firm concerned is to be approved by the Society. To receive approval the firm is to supply a detailed file on its in-water activities, personnel employed, equipment used and on their experience in marine repair work. The file is to include also the qualifications of each diver and technician and to specify their role in the team as well as their experience in the repair work they undertake. The continued approval of the firm will depend on its original standards and ability being maintained. Any changes in the information originally supplied are to be reported to the Society.

SECTION 6 Special Survey No.1 for ships five years old

6.1 General

A Docking Survey in accordance with the requirements of SECTION 4 is to be carried out.

6.2 Preparation

6.2.1 The holds, tween decks, peak tanks, deep tanks, engine and boiler spaces and other spaces, are to be cleared and cleaned as necessary and the bilges and limbers all fore and aft are to be cleaned and prepared for examination. Platform plates in engine and boiler spaces are to be lifted as may be necessary for the examination of the structure below. Where necessary, close and spar ceiling, lining and pipe casings are to be removed for examination of the structure.

6.2.2 In ships having a single bottom, a sufficient amount of close ceiling is to be lifted all fore and aft on each side from the bottom and bilges to permit the structure below to be examined.

6.2.3 In ships having a double bottom, a sufficient amount of ceiling is to be removed from the bilges and inner bottom to enable the condition of the plating to be ascertained. If it is found that the plating is clean and in good condition and free from rust, the removal of the remainder of ceiling may be dispensed with. The Surveyor may waive the removal of heavy reinforced compositions if there is no evidence of leakages, cracking or other faults in the composition.

6.2.4 Where holds are insulated for the purpose of carrying refrigerated cargoes and the hull in way of the insulation was examined by LHR Surveyors at the time such insulation was fitted, it will be

sufficient to remove the limbers and hatches to enable the framing and plating in way to be examined. In other cases, additional insulation is to be removed as necessary to satisfy the Surveyor as to the condition of the structure.

6.2.5 The steelwork is to be exposed and cleaned as may be required for its proper examination by the Surveyor.

6.2.6 In wooden craft, where the planking is sheathed with metal, such portions are to be removed as may required by the Surveyor. If sheathed with reinforced plastic or similar material,the sheathing is to be examined in order to ensure that it is adhering satisfactorily and that there is no possibility of water seepage occurring along plank edges.

6.3 External examination

6.3.1 The external examination consists of:

~ a general examination of the hull and hull equipment as detailed under 2.1 and 2.2 for the Annual hull Survey and

~ in addition, the inspections listed below in 6.3.2, 6.3.3, 6.3.4, 6.3.5, 6.3.6, 6.3.7 and 6.3.8.

6.3.2 Decks are examined, with particular attention being given to the areas where high stress concentrations or increased corrosion are likely to arise, such as hatch corners and other discontinuities. Deck erections such as hatch coamings, deckhouses and superstructures are examined. Worn out, worm-eaten or rotten parts of wooden decks are to be renewed to the Surveyors discretion. The same applies to wood-sheathed steel decks, the sheathing of which may be removed in places to ascertain the condition of plating underneath.

6.3.3 Anchors, chain cables and windlasses are to be examined and checked. Worn out lengths of chain cables over than 12% from its nominal diameter are to be renewed.

6.3.4 Masts and standing rigging are to be examined.

6.3.5 Wood decks or sheathering are to be examined and the caulking is to be tested and re- caulked as necessary. If decay or rot is found or the wood is excessively worn, the wood is to be renewed.

6.3.6 Anchors, chain cables and windlasses are to be examined and checked. Worn out lengths of chain cables over than 12% from its nominal diameter are to be renewed.

6.3.7 In case of composite vessels, the hull to deck joint together with any joints between the deck and deckhouses or superstructures are to be examined. Also, the structure in way of the bolted attachment of fittings including guardrail stanchions, windlass, shaft brackets, fendering, mooring bitts, mast steps, rigging chainplates etc. is to be examined.

6.3.8 In aluminium vessels the structure in way of bimetallic connections is to be examined and the efficiency of the insulation arrangements confirmed.

6.4 Internal examination

6.4.1 Holds, tweendecks, peak tanks, deep tanks and other tanks which are integral with the ship's structure, except when they are intended to contain oil fuel, fresh water or lubricating oil, are to be examined internally.

6.4.2 In case of composite craft the bonded attachments of frames, floors, bulkheads, sterntubes, engine bearers and integral tank boundaries are to be examined.

6.4.3 Attention is to be given to the condition of the structure under wood decks.

6.4.4 In aluminium vessels the structure in way of bimetallic connections is to be examined and the efficiency of the insulation arrangements confirmed.

6.5 Tank testing

6.5.1 Double bottom tanks, peak tanks, deep tanks and other integral or independent tanks which are intended to contain sea water or fresh water are to be filled to overflow level for testing.

6.5.2 All tanks which are intended to contain liquids other than water, such as fuel oil tanks, when they cannot be filled with water, are to be filled to the top of the tank, for testing. If water can be used, the tanks are to be filled to overflow level.

6.5.3 Independent tanks in the engine room containing fuel or lubricating oil need not be tested, if after an external examination the Surveyor considers their condition satisfactory.

6.5.4 For integral tanks which are intended to contain liquid cargoes such as edible oil the Surveyor may waive the requirement specified in 6.5.2 subject to a satisfactory internal examination.

6.6 Thickness measurements in steel and aluminium vessels

6.6.1 In steel craft, areas considered suspect by the Surveyor, throughout the vessel should be gauged.

6.6.2 Any parts of the structure which are found materially reduced in scantlings are to be made good. Attention is required in way of discontinuities of the structure. Surfaces are to be recoated as necessary.

6.6.3 In case of aluminium vessels, the Surveyor may require to measure the thickness of the material in any portion of the structure where signs of deterioration are evident or may normally be found. Any parts of the structure which are found defective or excessively reduced in scantlings are to be made good by materials of the approved scantlings and quality.

SECTION 7 Special Survey No.2 for craft ten years old - Hull requirements

7.1 General

7.1.1 The requirements of SECTION 6 are to be complied with.

7.2 Preparation

7.2.1 In addition to the requirements specified in 6.2 the following are to be complied with:

~ A sufficient amount of ceiling in the holds and other spaces is to be removed from the bilges and inner bottom to enable the condition of the structure in the bilges, the inner bottom plating, pillar feet and the bottom plating of bulkheads and tunnel sides to be examined. If the Surveyor considers it necessary, the whole of the ceiling is to be removed.

~ In ships having a single bottom, the limber boards and ceiling equal to not less than three strakes, all fore and aft on each side are to be removed, one such strake being taken from the bilges. Where the ceiling is fitted in hatches, the whole of the hatches and at least one strake of ceiling in the bilges are to be removed. If the Surveyor considers it necessary the whole of the ceiling and limber boards are to be removed.

~ The chain locker is to be cleaned internally. The chain cables are to be ranged for inspection.

The anchors are to be cleaned and placed in an accessible position for inspection.

7.3 Examination and testing

7.3.1 The requirements specified in 6.3, 6.4 and 6.5 are to be complied with.

7.3.2 When the ship is more than five and not more than ten years old, one integral fresh water tank is to be examined internally. The other tanks may be examined externally from all accessible boundaries.

7.4 Thickness measurements in steel vessels

7.4.1 Thickness measurements of the following structural items are required as a minimum:

~ Suspect areas throughout the vessel.

~ One transverse section of deck plating abreast a cargo space within the 0,5L amidships:

SECTION 8 Special Survey No.3 for craft fifteen years old - Hull requirements

8.1 General

8.1.1 The requirements of SECTION 6 and SECTION 7 are to be complied with.

8.2 Preparation

8.2.1 In addition to the requirements of 6.2 and 7.2 the following are to be complied with:

~ The steelwork is to be cleaned and the rust removed.

~ Casings of air, sounding, steam and other pipes, spar ceiling and lining in way of the side scuttles are to be removed, as required by the Surveyor.

~ If the Surveyor is satisfied, after removal of portions of the ceiling in the holds, that the steelwork is in good condition, free from rust and coated the removal of the whole may be dispensed with.

~ All double bottom and other tanks are to be cleaned as necessary to permit their internal examination, where this is required.

~ Portions of the cement chocks on the ship's sides at bilges and decks are to be removed, as considered necessary by the Surveyor, so that the condition of the shell plating and adjacent steelwork can be ascertained.

~ Portions of wood sheathing, or other covering, on steel decks are to be removed, as considered necessary by the Surveyor, in order to ascertain the condition of the plating.

~ Where the holds are insulated for the purpose of carrying refrigerated cargoes, the limbers and hatches are to be lifted and sufficient insulation is to be removed in each of the chambers to enable the Surveyor to satisfy himself of the condition of the framing and plating.

~ All mast wedging is to be removed for inspection.

~ Attention is to be given by the Surveyor to the parts of the ship's structure in way of the boilers. Attention is also to be paid to the possibility of local wastage and grooving, e.g. at the shell plating along the heel of framing members.

8.3 Examination and testing

8.3.1 The requirements specified in 6.3, 6.4, 6.5 and 7.3 are to be complied with.

8.3.2 Integral tanks which are used exclusively for fresh water are to be examined internally.

8.3.3 The rudder stock and structure in way of the trunk is to be examined.

8.4 Thickness measurements in steel vessels

8.4.1 Thickness measurements of the following structural items are required as a minimum:

~ Suspect areas throughout the vessel.

~ Two transverse sections of deck plating abreast of two different cargo spaces within the 0,5L amidships.

~ Internals in forepeak tank.

~ All cargo hold hatch covers and coamings (plating and stiffeners).

SECTION 9 Special Survey No. 4 for craft twenty years old and every Special Survey thereafter - Hull requirements

9.1 General

9.1.1 The requirements of SECTION 6 , SECTION 7 and SECTION 8 are to be complied with.

9.2 Examination and testing

9.2.1 The requirements specified in 6.3, 6.4, 6.5, 7.3 and 8.3 are to be complied with.

(a) A minimum of two selected integral oil fuel tanks are to be examined internally. The other tanks may be examined externally from all accessible boundaries.

(b) Integral tanks which are used for lubrication oil need not be examined internally subject to external examination of all accessible boundaries.

(c) Independent tanks which are used for fresh water, oil fuel or lubricating oil need not be examined internally subject to external examination of all accessible boundaries.

(d) For ships over twenty years old, all tanks are to be examined internally, but in those ships operating on a Continuous Survey basis and fitted with nested deep tanks comprising six or more adjoining tanks, such tanks need not all be examined internally provided that at each year of the survey cycle one selected tank from each nest is found from internal examination to be in good condition.

(e) For ships over twenty years old, integral tanks which are used exclusively for oil fuel are to be

examined internally.

9.3 Thickness measurements in steel vessels

9.3.1 Thickness measurements of the following structural items are required as a minimum:

~ Suspect areas throughout the vessel.

~ Three transverse sections in way of cargo spaces within the 0,5L amidships.

~ Internals in forepeak and afterpeak tanks.

~ All cargo hold hatch covers and coamings (plating and stiffeners).

~ All exposed main deck plating full length.

~ Representative exposed superstructure deck plating (poop, bridge and forecastle deck).

~ Lowest strake and strakes in way of tween decks of all transverse bulkheads in cargo spaces together with internals in way.

~ All wind-and-water strakes, port and starboard full length.

~ All keel plates full length. Also, additional bottom plates in way of cofferdams, machinery space, and aft end of tanks.

9.3.2 All paint and rust are to be entirely removed before the plates are gauged by the Surveyor and the actual thicknesses are to be reported in detail to the Society. Where gauged plates are renewed, the thicknesses of adjacent plates in the same strake are to be reported.

9.3.3 The thickness of bottom plating in way of cement is to be ascertained unless the Surveyor, after making an internal and external examination, is entirely satisfied that this is unnecessary. Selected portions of the cement are to be removed from the bottom and bilge, if required by the Surveyor.

9.3.4 Where the holds are insulated for the purpose of carrying refrigerated cargoes, the limbers and hatches are to be lifted and sufficient additional insulation is to be removed in each of the chambers to enable the Surveyor to satisfy himself of the condition of the steel structure and to enable the thickness of the shell plating to be ascertained as required above.

SECTION 10 Machinery Surveys

10.1 General

10.1.1 In this Section, survey requirements for the machinery and related systems are given. Additional requirements applicable to several machinery subsystems are also given in the following Section of this Chapter.

10.2 Annual Survey

10.2.1 The Surveyor is to satisfy himself as to the efficient condition of the following:

~ The general condition of the machinery and boiler spaces with particular attention being given to the existence of any fire and explosion hazards. Emergency escape routes are to be checked to ensure that they are free of obstruction.

~ The bilge pumping systems and bilge wells, including operation of extended spindles and level alarms where fitted.

~ Bilge level detection and alarm systems on ships assigned a **UMS** notation.

~ Satisfactory operation of the bilge pumps is to be proven.

~ Boilers, other pressure vessels including safety devices, foundations, controls and relieving gear.

~ The main auxiliary and emergency electrical machinery, the switchgear and other electrical equipment are to be generally examined under operating conditions so far as is practicable. Earth bonding straps are to be examined where fitted.

~ The Surveyor is to examine and test in operation all main and auxiliary steering arrangements including their associated equipment and control systems, and verify that log book entries have been made in accordance with statutory requirements where applicable.

~ All means of communication between the navigating bridge and the machinery control positions, as well as the bridge and the alternative steering position.

~ Inert gas plant overboard discharges through the shell, in so far as is practicable.

10.2.2 The fire protection systems and arrangements are to be examined and are to include:

~ Verification, so far as is practicable, that no significant changes have been made to the arrangement of structural fire protection.

~ Verification of the operation of manual and/or automatic doors where fitted.

~ Verification that fire control plans are properly posted.

~ Examination, so far as is possible, and testing as feasible, of the fire and/or smoke detection system(s).

~ Examination of fire main system, and confirmation that each fire pump, including the emergency fire pump can be operated separately so that the two required powerful jets of water can be produced simultaneously from different hydrants.

~ Verification that fire hoses, nozzles, applicators and spanners are in good working condition and situated at their respective locations.

~ Examination of fixed fire-fighting systems controls, piping, instructions and marking, checking for evidence of proper maintenance and servicing, including date of last systems tests.

~ Verification that all portable and semi-portable fire extinguishers are in their stowed positions, checking for evidence of proper maintenance and servicing, conducting random checks for evidence of discharged containers.

~ Verification, so far as is practicable, that the remote control for stopping fans and machinery and shutting off fuel supplies in machinery spaces are in good working order.

~ Examination of the closing arrangements of ventilators, funnel annular spaces, skylights, doorways and tunnels where applicable.

~ Verification that the firemens' outfits are complete and in good condition and properly stored.

Surveys carried out by the National Authority of the country in which the ship is registered may be accepted, at the discretion of the Surveyor, as meeting these requirements.

10.2.3 Additional requirements for **oil tankers**

The Surveyor is to satisfy himself as to the efficient condition of the following:

~ Cargo tank openings including gaskets, covers, coamings and screens.

~ Cargo tank pressure/vacuum valves and flame screens.

~ Flame screens on vents to all bunker, oily ballast and oily slop tanks and void spaces, so far as is practicable.

~ Cargo, crude oil washing, bunker, ballast and vent piping systems, including vent masts and headers.

~ Verification that no potential sources of ignition such as loose gear, excessive products in the bilges, excessive vapours, combustible materials, etc., are present in or near the cargo pump room and that access ladders are in good condition.

~ Pump room bulkheads for signs of leakage or fractures, and in particular, the sealing arrangements of all penetrations in these bulkheads.

~ Pump room ventilation system,ducting,dampers and screens.

~ Piping and cutout valves of cargo tank and cargo pump room fixed fire-fighting system.

~ Deck foam system and deck sprinkler system.

~ Electrical equipment in dangerous zones.

~ Piping systems in the cargo pump room so far as is practicable.

~ Cargo, bilge, ballast and stripping pumps for excessive gland seal leakage, and electrical and mechanical remote operating and shutdown devices, as well as pump room bilge system.

~ Verification that installed pressure gauges on cargo discharge lines and level indicator systems are operational.

10.2.4 Special requirements for inert gas systems where fitted:

~ External examination of the condition of all piping and components for signs of corrosion or gas leakage/effluent leakage.

~ Verification of the proper operation of both inert gas blowers.

~ Checking the scrubber room ventilation system.

~ Checking so far as is practicable, of the deck water seal for automatic filling and draining and checking for presence of water carry-over. Checking the operation of the non-return valve.

~ Testing of all remotely operated or automatically controlled valves including the flue gas isolating valve(s).

~ Checking the interlocking features of soot blowers.

~ Checking that the gas pressure regulating valve automatically closes when the inert gas blowers are secured.

~ Checking so far as is practicable the following alarms and safety devices of the inert gas system

using simulated conditions where necessary:

- high oxygen content of gas in the inert gas main,
- low gas pressure in the inert gas main,
- low pressure in the supply to the deck water seal,
- high temperature of gas in the inert gas main,
- low water pressure to the scrubber,
- accuracy of portable and fixed oxygen measuring equipment by means of calibration gas

10.3 Intermediate Survey

10.3.1 Additional requirements for **oil tankers** over 5 years of age but not more than 10 years:

~ Examination of cargo, crude oil washing, bunker, ballast, steam and vent piping on the weather decks, as well as vent mast and headers. If upon examination there is any doubt as to the condition of the piping, the piping may be required to be pressure tested, gauged, or both.

10.3.2 Additional requirements for **oil tankers** over 10 years of age:

~ Machinery and boiler spaces including tank tops, bilges and cofferdams, sea suctions and overboards are to be generally examined. Particular attention is to be given to the propulsion system and fire and explosion hazards. It is to be confirmed that emergency escape routes are unobstructed.

~ It is to be ascertained that the routine surveys of boilers and other pressure vessels have been carried out as determined by statutory requirements and/or the Rules and the safety devices have been tested.

10.4 Special Survey of machinery

10.4.1 When the vessel is in drydock all openings to the sea including sanitary and overboard discharges with the valves and cocks and their fastenings in the machinery and pump room spaces are to be examined.

10.4.2 The Surveyor is to satisfy himself concerning the efficient condition of the following:

~ Shafts thrust blocks, shaft line and bearings.

~ Reduction gears, pinions, wheels with their shafts' bearings and clutch arrangements.

~ Auxiliary engines, air compressors, oil separators, coolers, filters and all pumps and components used for essential services.

~ Main and emergency steering arrangements.

~ Windlass and mooring winches.

~ Holding down bolts and chocks of main engines and diesel generators.

~ Evaporators and their safety devices.

~ Air receivers, their mountings, valves and safety devices are to be cleaned internally and thoroughly examined. In case internal examination of air receivers is impracticable they are to be hydraulically tested at 1,5 times the working pressure.

~ The bilge system including valves, cocks, strainers, emergency bilge suction valve, pumps, remote reachrods and level alarms, if fitted, are to be opened up, examined and tested under working conditions.

~ The oil fuel, feed, lubricating oil, cooking water and ballast systems and blanking arrangements to deep tanks which may carry cargoes, liquid or dry, as well as pressure filters, heaters, coolers and their safety devices used for essential services are to be examined and tested as considered necessary by the Surveyor.

~ Fuel tanks not forming part of the ship's structure are to be examined externally one at the first survey and internally and externally at each Special Survey thereafter and tested to the pressure specified for new tanks. Mountings, fittings and remote controls are also to be examined.

~ Automatic and remote controls if fitted for essential machinery are to be tested under working conditions.

10.4.3 Additional requirements for tankers

For tankers in addition to the preceding requirements, the following are to be complied with:

~ Cargo, bilge, ballast and stripping pumps in cargo pump rooms are to be opened up as considered necessary by the Surveyor and examined including pump foundations.

~ Electrical and mechanical remote operating and shutdown devices in cargo pump rooms are to be tested in operation.

~ All electrical equipment and cables in dangerous spaces are to be examined to verify that they are in good order.

~ Insulation resistance of the electrical circuits in dangerous spaces is to be tested and adjusted if it is found not to comply with the relevant requirements.

SECTION 11 Internal combustion engines

11.1 General

11.1.1 The requirements of SECTION 6 are to be complied with.

11.2 Special Survey requirements

11.2.1 The following parts are to be opened up and examined:

Cylinders, covers, valves and valve gears, fuel pumps and fittings, scavenge blowers and their driving devices, turbochargers, pistons, piston rod crossheads, guides, connecting rods, crankshafts and all bearings, crankcase fastening and explosion relief devices, camshafts and their driving gears, attached pumps and coolers, vibration dampers, balancers and couplings to the shafting.

11.2.2 Crankshaft alignment is also to be checked and rectified if necessary.

SECTION 12 Electrical equipment

12.1 Annual Survey

12.1.1 The Surveyor is to satisfy himself as to the efficient condition of the following:

~ The main auxiliary and emergency electrical machinery, the switchgear and other electrical equipment are to be generally examined under operating conditions so far as is practicable. Earth bonding straps are to be examined where fitted.

12.2 Intermediate Survey

12.2.1 For **oil tankers** over 5 years of age but not more than 10 years:

~ General examination of the electrical equipment and cables in dangerous zones such as cargo pump rooms, and areas adjacent to cargo tanks for defective explosion-proof lights and fixtures, improperly installed wiring, non-approved lighting and fixtures and dead end wiring and a testing of the insulation resistance of the circuits. In cases where a proper record of testing is maintained, consideration may be given to accepting recent readings. If any of the readings are marginal or if the condition of the cables, fixtures or equipment appears defective in any way, verification measurements may be required. These measurements are not to be attempted until the ship is in a gas free condition and are to be carried out within an acceptable time period.

12.3 Special Survey requirements

12.3.1 The following requirements are to be complied with:

~ The fittings on switchboards, section boards and distribution boards are to be examined. Overcurrent protective devices and fuses are to be inspected to verify that they provide suitable protection for their respective circuits.

~ The electric cables are to be examined as far as is practicable without undue disturbance of fixtures.

~ All generators are to be run under loaded condition, either separately or in parallel, and the performance of speed governors, generator circuit breakers and their associated relays are to be checked as far as is practicable.

~ The insulation resistance of generators, switchboards, motors, heaters, lighting fittings and cables is to be tested and adjusted as necessary.

~ The emergency source of power and its associated equipment are to be tested to demonstrate that the whole system is in good working order, and if they are automatic, in the automatic mode.

~ Navigation light indicators and all the means of communication between the navigating bridge and the machinery control positions as well as the bridge and the alternative steering position, if fitted, are to be tested to ascertain that they function satisfactorily. Where considered necessary by the Surveyor, emergency stopping means of motors for fuel oil pumps, ventilating fans and similar loads, interlocking devices for safety operation of electrical equipment, and motors and their control gears for essential services are to be tested to ascertain that they are in good working order.

SECTION 13 Inert gas systems

13.1 Frequency of surveys

13.1.1 Inert gas systems installed on board ships intended for the carriage of oil or liquid chemicals in

bulk are to be surveyed annually in accordance with the requirements of 6.2.5. A Special Survey of the inert gas system in accordance with the following requirements is to be held at intervals not exceeding five years. The survey of inert gas systems, when fitted, consists of:

~ general examination of the installation in operation condition,

~ external examination of the condition of all piping and components for signs of corrosion or gas leakage/effluent leakage,

~ confirmation of the proper operation of inert gas blowers,

~ observation of the operation of the scrubber room ventilation system,

~ checking of deck water seal for automatic filling and draining and checking for presence of water carry-over and checking the condition of the non-return valve,

~ examination of the operation of all remotely operated or automatically controlled valves and, in particular, the flue gas isolating valve(s),

~ observation of a test of the interlocking feature of soot blowers,

~ observation that the gas pressure regulating valve automatically closes when the inert gas blowers are secured,

~ checking, as far as is practicable, the following alarms and safety devices of the inert gas system using simulated conditions where necessary:

o high oxygen content of gas in the inert gas main,

o low gas pressure in the inert gas main,

o low pressure in the supply to the deck water seal,

o high temperature of gas in the inert gas main,

o low water pressure to the scrubber,

o accuracy of portable and fixed oxygen measuring equipment by means of calibration gas,

o high water level in the scrubber,

o failure of the inert gas blowers,

o failure of the power supply to the automatic control system for the gas regulating valve and to the instrumentation for continuous indication and permanent recording of pressure and oxygen content in the inert gas main,

o high pressure of gas in the inert gas main.

13.1.2 When at the request of an Owner it has been agreed by the Society that the complete survey of the inert gas systems may be carried out on the Continuous Survey basis, the various items of machinery are to be opened for survey in rotation, so far as is practicable to ensure that the interval between consecutive examinations of each item will not exceed five years. In general, approximately one-fifth of the machinery is to be examined each year.

13.1.3 If any examination during Continuous Survey reveals defects, further parts are to be opened up and examined as considered necessary by the Surveyor and the defects are to be made good to his satisfaction.

SECTION 14 Boilers

14.1 Frequency of surveys

14.1.1 All boilers economizers, steam receivers, steam heated steam generators, thermal oil and hot water units intended for essential services, together with boilers used exclusively for non-essential services having a working pressure exceeding 3,4 bar and a heating surface exceeding 4,65 m^2 are to be surveyed at intervals not exceeding 2 ½ years and generally examined externally at the time of the Annual Survey of the ship.

14.2 Examination and testing

14.2.1 During the surveys described in 13.1 the boilers, superheaters, economizers and air heaters are to be examined internally and externally and where considered necessary, the pressure parts are to be tested by hydraulic pressure and the thicknesses of plates and tubes and sizes of stays are to be ascertained to determine a safe working pressure.

The principal mountings on boilers, superheaters and economizers are to be opened up and examined, and the safety valves are to be set under steam to a pressure not greater than the approved design pressures of the respective parts. As a working tolerance, the setting is acceptable provided that the valves lift at not more than 103% of the approved design pressure. The remaining mountings are to be examined externally and if considered necessary by the Surveyor, are to be opened up for internal examination. Collision chocks, rolling stays and boiler stools are to be examined and maintained in an efficient condition.

14.2.2 In fired boilers employing forced circulation, the pumps used for this service are to be opened and examined at each Boiler Survey.

14.2.3 The fuel oil burning system is to be examined under working conditions and a general examination made of fuel tank valves, pipes, deck control gear and oil discharge pipes between pumps and burners.

14.2.4 During surveys of cylindrical boilers fitted with smoke tube superheaters, the saturated steam pipes are to be examined as detailed in this section.

SECTION 15 Propeller Shaft Surveys

15.1 Frequency of Surveys

15.1.1 At five year intervals the following items of the shafts are to be surveyed:

~ Keyed propeller shafts fitted with continuous liners or intermittent liners in conjunction with approved plastic coating, or approved oil glands, or made of approved corrosion-resistant materials, when the keyway complies with LHR Rules.

~ Keyless propeller shafts fitted with approved oil glands or made of approved corrosion- resistant materials.

~ Shafts having solid coupling flanges at the aft end fitted with approved oil glands or made of approved corrosion-resistant materials.

~ Controllable pitch propeller shafts.

~ Directional propeller shafts.

15.1.2 Water jet units for main propulsion purposes are also to be surveyed at five year intervals, provided the impeller shafts are made of approved corrosion-resistant materials or have approved equivalent arrangements. Impeller, casing , shaft bearing and shaft seal are to be examined.

15.1.3 All other shafts are to be surveyed at 2 ½ year intervals.

15.1.4 Upon the request of the Owner, for shafts described in 15.1.1 an extension of one year may be given by the Society provided that inboard and outboard seal assemblies were examined externally and found to be in good condition and oil sample analysis gave satisfactory results. Last taken clearances are to be considered and taken into account.

15.1.5 In case of water lubricated bearings and at owners request, an extension of up to 12 months may be given, provided that the service records are satisfactory and an external examination of the shaft assemblies, including a bearing wear down check, has been carried out with satisfactory results.

15.1.6 The Society will be prepared to give consideration to the circumstances of any special case upon application by the Owner.

15.2 Modified Survey

15.2.1 For shafts described in 15.1.1 a Modified Survey may be accepted at alternate five year intervals, provided they are fitted with oil lubricated bearings and approved oil glands.

15.2.2 The Modified Survey consists of a partial withdrawal of the shaft, sufficient to ascertain the condition of the stern bearing and shaft in way. For keyless propellers or shafts with a solid flange connection to the propeller, a visual examination to confirm the good condition of the sealing arrangements is to be made. The oil glands are to be capable of being replaced without removal of the propeller. The forward bearing and all accessible parts including the propeller connection to the shaft are to be examined as far as possible. Wear-down is to be measured and found satisfactory. Where a controllable pitch propeller is fitted at least one of the blades is to be dismantled for examination of the working parts and the control gear, followed by a function test after the assembling.

15.2.3 For keyed propellers, the after end of the cylindrical part of the shaft and forward one third of the shaft cone is to be examined by a magnetic particle crack detection method, for which dismantling of the propeller and removal of the key will be required.

15.3 Partial Survey

15.3.1 For shafts where the Modified Survey is applicable, upon application by the Owner, the Society will be prepared to give consideration to postponement of the survey for a maximum period of half the specified cycle provided a Partial Survey is held.

15.3.2 The Partial Survey is to consist of the propeller being backed off in any keyed shaft and the top half of the cone examined by an efficient crack detection method for which removal of the key will be required. Oil gland and seals are to be examined and dealt with as necessary. Wear-down is to be measured and found satisfactory. Propeller and fastenings are to be examined.

Periodical Surveys of service craft

PART 1, CHAPTER 4