HINSIB

Horizon International Naval Surveying & Inspection Bureau

Rules and Regulation for the Classification of Ship

AUTHORIZED BY: QM ISSUE DATE: 02/01/18 ISSUE 1

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HINSIB | RULES & REGULATION FOR THE CLASSIFICATION OF SHIPS

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INTRODUCTION

Horizon International Naval Surveying and Inspection Bureau (H.I.N.S.I.B.) was founded in 1981 in Tegucigalpa, Honduras. The Bureau was the first nationally recognized organization to perform surveys on behalf of Honduras. H.I.N.S.I.B. was the prime candidate due to the increasing number of smaller tonnage vessels being registered in Honduras which required a surveying organization that could provide quality and personalized service at a competitive fee structure.

Since that time, H.I.N.S.I.B. has established a worldwide network of over 200 inspectors distributed among every major port of the world and has consequently received surveying authority from the governments of Honduras, Costa Rica and the Bolivia.

The Surveyors appointed by H.I.N.S.I.B. to perform surveys on its behalf must meet H.I.N.S.I.B.'s strict guidelines. H.I.N.S.I.B. Surveyors must have a broad knowledge of many aspects of the marine industry. They must have knowledge of naval architecture, marine engineering, hull structures, safety equipment and machinery. Many of H.I.N.S.I.B.'s Surveyors are authorized to perform surveys on behalf of other societies and/or have specific knowledge of specialized vessel types such as LPT's and MODU's. For unique surveys, H.I.N.S.I.B. sends Surveyors with expertise in the particular vessel type.

Rules & Regulations for Classification of Ships

Ship's Classification can be regarded as the implementation of published Rules and Regulations which will provide for:

1. Ship's structural strength and watertight integrity as required of all essential parts of the Hull.

2. The safety and reliability of the essential machinery and steering systems.

3. The effectiveness of other features and auxiliary systems which have been built into the vessel in order to establish and maintain basic conditions onboard whereby appropriate cargoes and personnel can be safely carried while the vessel proceeds to sea, lays at anchor or is moored in harbor.

Horizon International Naval Surveying and Inspection Bureau (H.I.N.S.I.B.) maintains these regulations by way of periodical visits by their surveyors to the vessel, as explained in the Regulations, in order to ascertain that the vessel complies with these Rules and Regulations.

If the vessel sustains a significant defect, or damage or grounding occurs between visits by the Surveyors, the Owners, Operators or Charterers are obliged to inform H.I.N.S.I.B. or their agents without delay. Modifications to the vessel must receive prior approval by H.I.N.S.I.B. in case it affects the class of the vessel.

A vessel is said to be in class when the Rules and Regulations which pertain to it have, in the opinion of the H.I.N.S.I.B. Surveyors, been complied with, or when special dispensation from compliance has been granted by H.I.N.S.I.B. Headquarters or Surveyors.

It should be noted in general that classification Rules and Regulations do not pertain to such matters as ship stability, life saving appliances or pollution prevention arrangements. They also do not protect personnel onboard from dangers connected with their own actions or movements around the vessel. This is because the handling of these aspects is the prerogative of the National Authority with which the vessel is flagged. A majority of these Authorities, however, have delegated such responsibility to the Classification Societies who undertake such inspections/surveys in accordance with agreed procedures.

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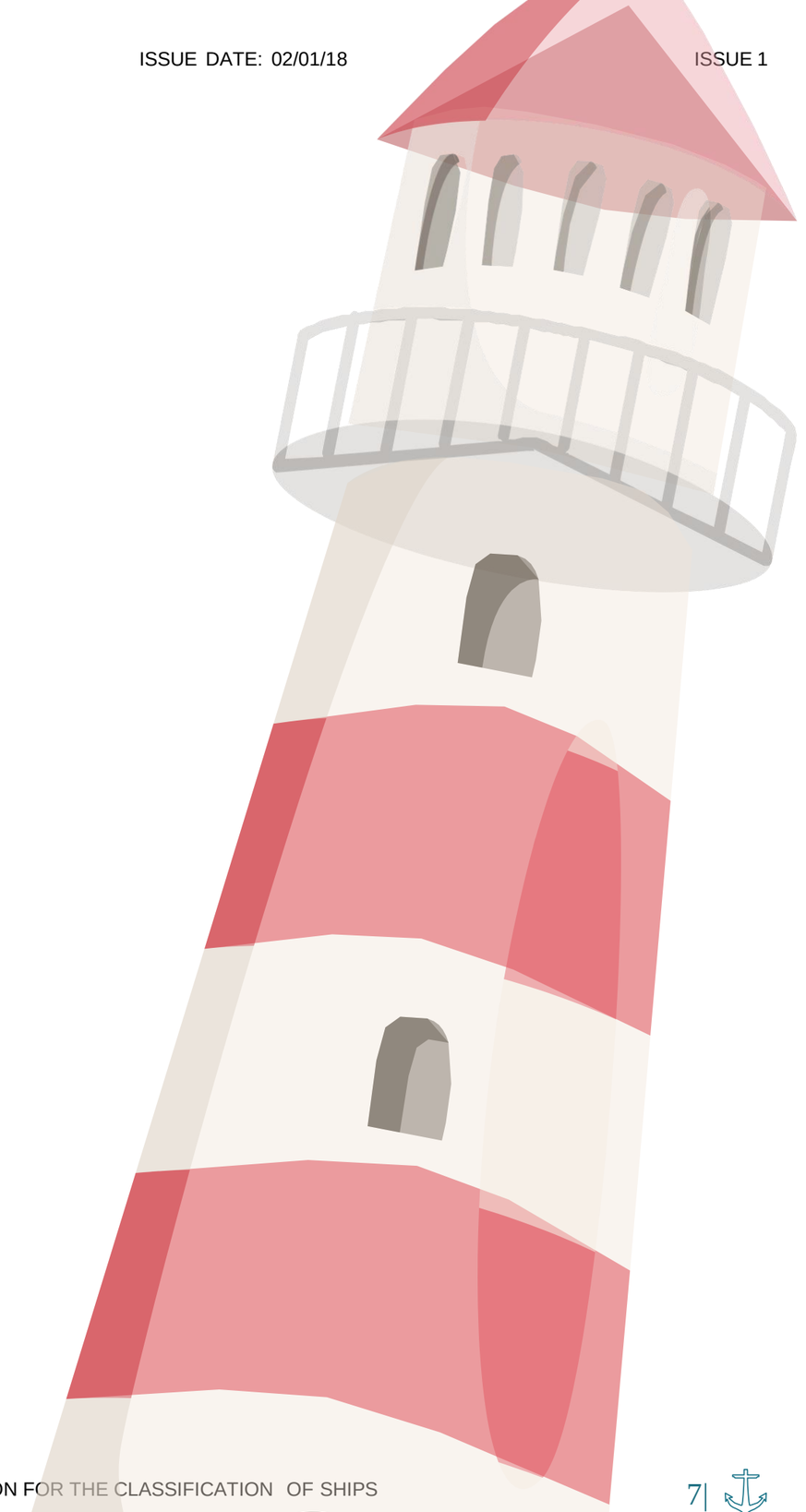

CHAPTER 1
CLASSIFICATION OF STEEL SHIPS

1.1 GENERAL

1.1.1.
Steel ships surveyed in accordance with these Rules for the Classification of Steel Ships (hereby referred to as "the Rules") published by the Horizon International Naval Surveying and Inspection Bureau (hereby referred to as H.I.N.S.I.B.) are to be assigned a class, with any class restriction(s), and to be continually classed so long as they are found or repaired to maintain a fit and efficient condition and in accordance with the Rules.

1.1.2.
Classification is to be conditional upon compliance with the Rules of both hull and machinery (i.e. main, auxiliary, boilers, all essential machinery and electrical).

1.1.3.
The stability of the vessel must meet the requirements of Flag Administration or International Conventions.

1.1.4.
These Rules have been drawn together to classify existing ships previously built under special survey by a major Classification Society.

1.1.5.
Any damage, defect, grounding or breakdown that could invalidate the conditions for which class has been assigned must be reported to H.I.N.S.I.B. (hereby referred to as H.I.N.S.I.B. (HQ)) without delay.

1.1.6.
Loading conditions and any other preparations required to permit a ship, with a notation specifying some service limitations, to undertake a sea voyage from one service area to another, are to be in accordance with arrangements agreed by H.I.N.S.I.B. prior to the voyage.

1.1.7.
The Rules are drawn up with the understanding that vessels will be properly loaded and operated. They do not, unless stated as a class notation, provide for special distribution or concentration of loading. Exceptional loading of vessel that may require additional strengthening of vessel must be brought to the attention of H.I.N.S.I.B.

1.2 SYMBOL MARKS & NOTATIONS

1.2.1. Classification Symbol

1) The symbol † is to be assigned to the ship's hull that in all aspects complies with the Rules.

2) The symbol • is to be assigned to the ship's machinery, including propelling and essential auxiliary.

3) The symbol § is to be assigned to ships with automatic and remote control.

4) The symbol ‡ is to be assigned to ships with unattended machinery space.

5) The symbol ¥ is to be assigned to ship's refrigerating machinery including hold insulation and working condition that complies with the Rules.

1.2.2. Surveying Symbols

≅ This symbol, when affixed to the Classification symbol, means the hull and machinery of the vessel have been surveyed during construction by another recognized Classification Survey. No surveying symbols are to be assigned to the hull and machinery of any vessel not having been surveyed during construction of any recognized Classification Society.

1.2.3. Equipment Symbol

The letter 'E' is an assigned symbol reflecting the size of equipment (i.e. anchors, chain cable).

1.2.4. Service Notations

1) The service notations listed below are to be assigned a vessel designed for a particular nature of service.

OIL TANKER	REEFER CARRIERS	BARGE
CHEMICAL CARRIER	TIMBER CARRIERS	FISHING VESSEL
ORE CARRIER	LIQUIFIED GAS CARRIERS	FLOATING CRANE
BULK CARRIER	DREDGER	CONTAINER CARRIER
TUG		

2) When the arrangements and scantlings have been approved by H.I.N.S.I.B. for vessels carrying oil having a flash point about 60 degrees C (closed up test), or other liquid cargoes in bulk, the service notation is to be suitably modified to show the nature of the cargo.

3) Where vessels are specifically reinforced for the carriage of heavy density cargoes and/or for special arrangements, they are to be distinguished with an additional notation describing which cargo hold may be empty, and if required, what kind of cargo is intended to be carried.

4) General dry cargo vessels do not have a service notation.

1.2.5. Service Restrictions

Service restrictions, as listed below, are assigned to vessels intended to operate in specific limits.

COASTING WATERS: Is assigned to a vessel and units operating at a maximum distance from shore that enables them to put in at a port or sheltered anchorage, within about six hours sailing time, or operating in a geographical area where the sea conditions associated with the navigation duration are deemed equivalent by H.I.N.S.I.B. (HQ). In the latter case, the geographical area is added to the navigation notation.

SMOOTHWATER SERVICE AND HARBOR SERVICE: The owner is requested to forward details to H.I.N.S.I.B. (HQ).

These service restrictions are attached to service notation of hull, if applicable. No service restriction is applicable to ocean going vessels.

1.2.6. Symbols and Notations

1) For Hull:

Classification Symbol
Surveying Symbol
Equipment Symbol
Service Symbol
Service Restrictions

2) For Machinery and Refrigeration Machinery:

Classification Symbol
Survey Symbol

1.2.7. ESP Notation

The notation ESP is placed after the service notation BULK CARRIER, BULK-ORE CARRIER and ORE CARRIER, when as a general rule, such ships are single deck ships of single or double skin construction with double bottom, hopper side tanks and/or top side tanks fitted below the upper deck.

The notation ESP is placed after the service notation OIL TANKER, and such ships are submitted to an Enhanced Survey Program. When such ships are intended for the storage of liquid hydrocarbons, H.I.N.S.I.B. (HQ) may complete service notation OIL TANKER or FLOATING STORAGE.

1.3 APPLICATION FOR CLASSIFICATION

1.3.1. Application for Classification is to be made in writing by the Owner.

1) The previous Class Society Status, as well as any outstanding conditions of Class, is to be submitted with the application.

2) For HULL

-General Arrangement
-Midship Section
-Profile & Deck Plan
-Watertight Bulkheads
-Shell Expansion
-Hatch Covers
-Capacity Plan
-Rudder Span & Rudderstock

For MACHINERY

-Engine Room Arrangement
-Diagrams of Fuel (Transfer, Service) Bilge, Ballast, Lube Oil, Cooling)
-Drawings of any Boilers and Air Receivers
-Diagram of Fire Fighting Systems
-Drawings of any Boilers and Air Receivers
-Drawings of Line Shaft, Reduction Gear and Propeller
-Torisonal Vibration Calculations for Vessel less than (2) years old and for older ships if the Propelling System has been modified during the two years preceding the Classification.

For ELECTRICAL

-Master Plans of Power Distribution, Lighting and Emergency Power Circuits
-Single Line Diagram of Network and Switchboards
-Location and Arrangement of Electrical Equipment in Hazardous Areas.

1.3.2. Classification of Ships Not Built Under Survey

1.4 SURVEY OF STEEL SHIPS

1.4.1. Survey Requirements

All vessels classed with H.I.N.S.I.B. are subject to the following Periodical Surveys:

1) Annual Survey
2) Bottom Survey
3) Intermediate Survey
4) Hull Special Survey
5) Engine Special Survey
6) Tail Shaft Survey
7) Boiler Survey

The content of survey requirements are detailed in Chapter 2.

1.4.2. Classification of Ships NOT Built Under Survey

Ships that are not built under survey, but submitted for Classification, are to be subjected to a Classification Survey of Ships Not Built Under Survey (see paragraph 1.3.2.).

1.4.3. Class Renewal Survey (Special Survey)

The Class Renewal Survey is to be subjected to survey at the fixed intervals not exceeding five years (refer to Table 1 on page 9).

No. 1 - for ships up to 5 years old;
No. 2 - for ships between 5-10 years old;
No. 3 - for ships between 10-15 years old;
No. 4 - for ships between 15-20 years old;
No. 5 - for ships over 20 years old.

1.4.4. Commencement of Class Renewal Survey

The Class Renewal Survey may be commenced at the 4th Annual Survey and progressed during the succeeding year with a view to completion by the 5th anniversary year.

1) The thickness determination is to be dealt with in advance of the Class /Renewal Surveys. The thickness determination is not to be held before the 4th Annual Survey. However, the thickness determination may not be dealt with, so far as practically, in connection with the 4th Annual Survey.

1.4.5. Premature Class Renewal Survey

1) If a Class Renewal Survey is completed prematurely but three months prior to the due date, the due date of the next Class Renewal is based upon a date not exceeding five years from the due date of the original Class Renewal Survey.

2) When a Class Renewal Survey is commenced more than three months prior to the 4th Annual Survey, the survey will be completed within 15 months, if it is to be credited to the Class Renewal Survey. The due date of a Class Renewal Survey is based upon a date not exceeding five years from the date of completion of Class Renewal Survey.

1.4.6. Extension of Class Renewal Survey

1) When a vessel's Class Renewal Survey becomes overdue, a written request from owner to H.I.N.S.I.B. (HQ) should be sent requesting an extension of no more than three (3) months. Such an extension is, however, only to be granted for allowing the vessel to complete its voyage to the port in which it is to be surveyed. Before any extension can be granted, it may be necessary for a general examination to be carried out by surveyors as instructed from H.I.N.S.I.B. (HQ).

2) If a Class Renewal Survey is completed after the due date, the new assigned Class Renewal date will be five years from the original Class Renewal date.

1.4.6. Continuous Class Renewal Survey (CSH & CSM)

1) When a vessel's Class Renewal Survey of both hull and machinery can be adopted, after reviewing the proposal, 20% of both hull and machinery items can be dealt with annually, and the survey will be completed in five years. This, however, does not apply to bulk carriers, gas carriers, similar types of vessels and cargo ships greater than 20 years old, whereby the Class Renewal Surveys are carried out in a five year period. If the CSM & CSH are completed within a five year period, but within three (3) months prior to the due date, the Class Renewal is completed beyond the five year period, the completion date is assigned with the original due date of the cycle. The continuous system can also be applied to vessel's electrical systems and refrigerated cargo machinery.

2) All hull items, except thickness measurements, are covered by Hull Continuous Survey System (CSH). The thickness measurements for a vessel that adopts a CSH System conducted before the 4th Annual Survey, cannot be credited for the Class Renewal.

3) On account of the limits imposed for the hull, or upon Owner's request, the Survey System can be changed from CS to normal subject to:

For changeover made at the end of the term, a complete Special Survey is to be carried out. The CS Items Surveyed within the last 15 months prior to the end of the term, subject to the Surveyor's satisfaction, are credited towards the Special Survey. Additionally, a Bottom Survey in dry-dock is also carried out, if not done within the past 15 months, as required above. The Continuous Survey List is withdrawn and should be replaced by a list of the items to be examined at Special Survey. The notation "Continuous Survey" is replaced by "Normal" on the Class Certificates.

For changeover made during the term, all CS items of which the surveys were carried out prior to the 4th Annual Survey are surveyed immediately. In addition, a complete Special Survey is carried out at the end of the term, including a Bottom Survey in dry-dock. However, the items surveyed within the last 15 months prior to the date of the end of the Classification term can be credited toward the Special Survey, provided they were inspected within the scope of the Special Survey. The Continuous Survey List is withdrawn and should be replaced by a list of the items to be examined at Spe- cial Survey. The notation "Continuous Survey" is replaced by "Normal" on the Class Certificates.

1.4.8. Confirmatory Survey

Where certain units of machinery are opened up and examined by the Chief Engineer as normal maintenance at port where no Surveyors are available or at sea, the machinery parts that may be examined by the Chief Engineer are:

Main Engine: Cylinder, covers, piston, connecting rods and bearings, main bearings and crank pins to be determined upon application.
Auxiliaries: Auxiliary diesel engine.

Chief Engineers will keep records of any Confirmatory Survey, present a copy to the H.I.N.S.I.B. Surveyor, and also retain any used parts for presentation to the Surveyor. If deemed necessary by the Surveyor, the individual unit may be inspected again.

1.4.9. Annual Surveys

1) Annual Surveys are to be carried out within three (3) months either way of each Anniversary Date after the date of build or the assigned date of a previous Class Renewal date.

2) The Anniversary Date is to be changed if the Annual Survey is completed before the period specified in 1.4.9.1. of this paragraph.

2.1. The new anniversary Date is to be amended by endorsement to a date, which is not three (3) months later than the date on which the survey was completed.

2.2 The subsequent Annual Survey is to be completed at the intervals prescribed as above using the new Anniversary Date.

2.3. The expiry date for a Class Renewal Survey may remain unchanged provided one or more Annual Surveys, as appropriate, are carried out so that the maximum intervals between the surveys prescribed are not exceeded (Refer to Table I).

1.4.10. Intermediate Surveys

Intermediate Surveys are required in 2.4., 2.9.5., and 2.10.5. of Chapter 2 are to be carried out at every second or third Annual Survey after the assigned Class Renewal date. The parts for examination for an Intermediate Survey are in addition to Annual requirements and may be dealt with either at or between the second or third Annual Survey. (Also, refer to Table I).

TABLE I
Links between term of Class, Special, Intermediate, and Annual Surveys

Date of Start of Years Term	0	1	2	3	4	5	Date of Start of Term
Annual Survey		-,+3M		-,+3M	-,+3M	-,+3M	
Intermediate Survey				-,+6M			
Special Survey		-15M					

1.4.11. Bottom Survey

1) Survey Intervals
At least two Bottom Surveys are to be carried out within a five-year period. In all cases, the maximum intervals between the two Bottom Surveys are not to exceed 36 months.

2) In Water Surveys in lieu of Docking Survey
An In-Water Survey carried out by approved divers can be considered as an alternative to dry docking, but only can be credited every other Bottom Survey.

3) Bottom Survey at Class Renewal Survey
The following requirements apply to Oil Tankers and Bulk Carriers:

1. A Dry Docking Survey is to be part of the Class Renewal Survey.

2. An In-Water Survey not conducted with the Class Renewal Survey may be carried out with vessel afloat. For vessels 15 years old or over, special consideration should be obtained from H.I.N.S.I.B. (HQ).

3. If a Dry Docking Survey is not completed in conjunction with the Class Renewal Survey or if the 36 months maximum interval referred to in 1.4.11.1 of this paragraph is not complied with, it will place the class of the vessel in jeopardy.

4) The following requirements apply to vessels other than Oil Tankers and Bulk Carriers:

4.1. A Dry Docking Survey is to be part of the Class Renewal Survey.

4.2 The Class Renewal Survey and Docking Survey may be carried out separately if the surveys are carried out at facilities, which possess the capabilities necessary to properly conduct the examination, and testing required.

1.4.12. Propeller Shafts & Tube Surveys

1. Survey Intervals
The Propeller Shafts and Tube Surveys are to be carried out as per Table II and associated notes.

TABLE II

LUBRICATING SYSTEM OF SHAFT	WATER LUBRICATION		OIL LUBRICATION
SHAFT ARRANGEMENT DESCRIPTION	SINGLE	MULTI SCREW	
1. Arrangements other than these below	2,5		
2. Design details are approved and shafts are protected from Salt Water and 3. Continuous liner, or continuous cladding or GRP coating between liners.	3	4	5 (a)
4. Same as (2) & (3) plus satisfactory service record and the reduced stress connection in propeller assembly has been approved.	5	--	5 (a), (b), (c)
5. Same as (2) plus (4) with oil seal. 6. Same as (2), (5) with keyless			
7. Same as (2),(5),(6) with approved monitoring System.			5 (a), (b), (d)

Notes for Table II:

Notwithstanding the requirements in Table II, Ordinary Surveys may be extended for not more than 6 months when requested by owner on the basis of approval by H.I.N.S.I.B. (HQ). However, this extension may be granted only once in an interval between Ordinary Surveys.

a = An extension of 1 year may be considered when requested by owner on the basis of satisfactory service record and on examination as stipulated in Table II of this part at the end of the above mentioned five year interval.

b = A special further extension of 1 year may be given subject to an examination as stipulated in II of the part.

c = The shaft may be subjected to a Modified Survey at intervals of five years, alter nately, less than the scope of a Modified Survey the shaft may be subjected to a Partial Survey for extension of the interval between complete examinations (not to exceed 1.5 times the normal interval).

d = The shaft may be subjected to a Partial Survey at intervals of five years.

Notes:

1. Not withstanding the requirements in Table II. Upon written request from Owner to H.I.N.S.I.B., and after the following surveys are performed, the Tail Shaft Survey may be postponed a maximum of 6 months:

- Examination of Machinery Log Book;
- Verification of free revolution of shaft.

For sea water lubricated type:

-Verification of stuffing box leakage and tightening reserve.

For grease lubricated type:

-Verification of grease consumption and tightness of forward glad.

For oil lubricated type:

- Verification of oil consumption and oil analysis results, tightness of forwardN gland.

For Oil Lubricated Shafts Only:

After six months postponement, the same examination as listed above is required to grant a final 6 months extension (total 12 months beyond due date).

2. The shaft may be subjected to a Modified Survey at intervals of five years, alternately, less than the scope of a Modified Survey, the shaft may be subjected to a Partial Tail Shaft Survey for extension of the intervals between complete examinations (not to exceed 1.5 times the normal interval).

3. The shaft may be subjected to a Partial Survey at intervals of five years alternately.

1.4.13. Boiler Surveys and Thermal Oil Heater Surveys

All steam boilers or thermal oil heaters with working pressure exceeding 3.5 bars and with heating surface exceeding 4.5 m2, are to be surveyed internally and externally at intervals not exceeding two and a half years.

Note 1: For vessels eight years and older with single main propulsion boiler, the intervals of complete survey are to be specially considered.

Note 2: When requested by owners, subject to a general examination under working conditions and testing of safety valves, an extension may be granted, but cannot exceed 6 months from the due date.

1.5 OCCASIONAL SURVEYS

This survey is any survey which does not become due periodically. Depending on the part of the vessel concerned, the survey may be defined as an Occasional Survey of Hull, Machinery (including electrical installations, automation systems, fire-fighting systems, boilers, refrigerating plants, etc.)

Occasional Surveys may be required for various reasons among which some of the most common are the following:

1) Damage or suspected damage;
2) Repair or renewal work;
3) Alterations or conversions;
4) Damage inspections and issue of damage report;
5) Checks that replace in port those due at a Periodical Survey for the purpose of occasionally granting a postponement of the latter when it becomes due;
6) Special extension of the class at the expiry of a period of class;
7) Decommissioning of a ship after being laid-up;
8) Inspection that may be required by H.I.N.S.I.B. (HQ) apart from the normal Periodical Surveys.

1.6 CERTIFICATE OF CLASS

1.6.1. Full Term Certificate of Class

1. When the first entry reports of existing ships is completed and has been submitted for Classification, received from the Surveyors, and approved by the Legal and Operation Department, a Final certificate of Class, endorsed by H.I.N.S.I.B. (HQ)'s Authorized Signature, will be issued to the owner.

2. The validity of the Full Term Certificate of Class is limited to five years.

1.6.2. Interim Certificate of Class

1. Upon completion of a Classification Entry Survey, when the vessel, in the surveyor's opinion, is considered to be in a fit and efficient condition and eligible to be classed, the Surveyor may issue an Interim Certificate of Class, where it is recommended to the Legal and Operation Department that the vessel is eligible to be classed.

2. The validity of any Interim Certificate is limited to five months.

1.7 WITHDRAWAL OF CLASS

In any of the following cases, the class of a vessel is liable to be withheld; or if already granted, may be withdrawn.

1) The wording, symbols or marks on the certificate is altered, defaced or obliterated.

2) Any damage or casualty is sustained to the hull or machinery to such an extent as effecting her class and the damage so sustained went unreported to H.I.N.S.I.B. (HQ); or went unreported or not repaired to surveyor's satisfaction.

3) The structure or arrangements of the hull, equipment and machinery have been altered without approval from H.I.N.S.I.B. (HQ).

4) If a Class Renewal Survey is overdue, the class is to be withdrawn without fur ther notice.

5) The loading of the vessel exceeds the Load Line assigned by the convention or the freeboard marks have been placed higher on the ship's sides than the position assigned by the convention.

6) The applicant fails to pay any survey fees and expenses.

7) The applicant fails to fulfill H.I.N.S.I.B. requirements.

8) The owner so requests.

9) In other cases as deemed necessary by H.I.N.S.I.B.

1.8 RECLASSIFICATION

When a Reclassification is requested by an Owner on a previously H.I.N.S.I.B. classed vessel, Special Survey instruction from H.I.N.S.I.B. (HQ) will be forwarded to the Surveyor where the vessel is being classed reinstated. If at that time all surveys, repairs, etc. are carried out to the satisfaction of the surveyors, H.I.N.S.I.B. (HQ) will be prepared to reinstate class.

1.9 SURVEY FEES AND EXPENSES

Survey fees are charged as per H.I.N.S.I.B.'s Master Tariff, and expenses incurred are to be promptly paid by the owner or his representative. In default of such payments, the issuance of documents will be withheld.

CHAPTER 2
SURVEY REQUIREMENTS FOR STEEL SHIPS

2.1 SURVEYING

2.1.1. General

1. The Surveyors are to have free access at all times to enable them to carry out surveys called for and Classification Certificates made available.

2. It is the Owner's responsibility, or his representatives, to apply in sufficient time without waiting for notification on up-coming surveys or any damages/ alterations which may affect the fitness of the vessel for both hull and machinery class.

3. If there is any disagreement arising between an Owner and a Surveyor regarding a survey, an appeal in writing for re-survey or explanation may be made to H.I.N.S.I.B. (HQ).

2.1.2. Definitions (all ships)

1. Annual Survey: At every Annual Survey, the vessel is to be examined as per Section 2.3 and can be held three months either side of the assigned date, also refer to Table I (page 10 of Chapter 1).

2. Intermediate Survey: At every Intermediate Survey, the vessel is to be examined as per Section 2.4 and can be held six months either side of the assigned date, also refer to Table I (Page 10 of Chapter 1).

3. Special Survey: At every Special Survey, the vessel is to be examined as per Section 2.5 and any Extension Survey can only be requested in writing to H.I.N.S.I.B. (HQ).

4. Bottom Survey: At every Bottom Survey, the ship is to be examined as per paragraph 2.6 and any extension of survey can only be requested in writing to H.I.N.S.I.B. (HQ).

5. Tail Shaft Survey: At every Tail Shaft Survey, the ship is to be examined as paragraph 2.7 and any extension of survey can only be requested in writing to H.I.N.S.I.B. (HQ).

6. Boiler Survey: At every survey, the boiler is to be examined as per paragraph 2.8, and any extension of the survey will run concurrent.

7. Surveys Relating to Oil Tankers, Cargo Tank Area: These required surveys, as per paragraph 2.9 apply to vessels with the notation OIL TANKER and non-propelled OIL TANKER FLOATING STORAGE.

8. Surveys Relating to Bulk and Pre Carriers, Cargo Area: These required surveys, as per paragraph 2.10, apply to vessels with the notation BULK CARRIER, ORE CARRIER or BULK-ORE CARRIER.

9. Surveys Relating to Chemical Tanker or Product Tanker, Cargo Area: These required surveys, as per paragraph 2.11, apply to vessels with notations CHEMICAL TANKER or PRODUCT TANKER.

10. Surveys of Inert Gas Installations: These required surveys, as per paragraph 2.12, apply to vessels with notations OIL TANKER or PRODUCT TANKER which are fitted with IGS Systems.

11. Overall Type Surveys: These surveys are intended to report on the overall condition of the hull structure and to determine the extent of further close-up survey.

12. Close-up Surveys: These are surveys where the full details of structural compartments are within the close visual inspection range of the Surveyor.

2.1.2. Procedures for Thickness Determination

1. When required, as per scope of surveys defined hereafter, Thickness Measurements are to be carried out under the supervision of the Surveyor. However, the Surveyor may accept measurements not carried out under this supervision. The Surveyor can verify the measurements for accuracy.

2. The Thickness Measurements are to be performed by a qualified company. In the case of having the service notation of ESP, the qualified company must also be certified by a major Classification Society.

3. Thickness Measurement Report is to be prepared. The report is to give the location of readings, thickness measured, as well as corresponding original thickness. Furthermore, the report is to give the date the measurements were taken, type of measuring equipment, names of personnel and their qualifications, and has to be signed by the operator. The Surveyor should then:

- Review the Thickness Measurements Report;
- Indicate the readings verified as per 2.1.3.1.;
- Stamp and sign report for acceptance.

2.2 SURVEY LIMITS

A surveyable item becomes due from the first fixed day required by the Rules. A survey is overdue when it has not been completed on the last day fixed by the Rules; except when the vessel is at sea and the survey becomes overdue when the vessel arrives at a port that has an H.I.N.S.I.B. representative or when specific agreement with H.I.N.S.I.B. (HQ) has been arranged. (Please refer to Table I, Chapter 1, Page 10.)

2.3.ANNUAL SURVEYS (All Ships)

2.3.1. General

At each Annual Survey, the general condition of the hull and equipment is to be examined so far as can be seen and placed in satisfactory condition. Attention being paid to the following items:

-Side shell plating above the waterline, cargo ports and visual parts of the rudder;
-All decks;
-Bulwarks, guard railing & freeing ports;
-Ventilators, air pipes and overflow pipes;
-Closing appliances of superstructures, engine casing, skylights, miscellaneous hatches and ladders on exposed decks;
-Anchoring and mooring equipment and working test of windlass;
-General examination of accessible cargo holds, especially in areas damaged by cargo handling;
-General examination of Engine Room;
-Watertight doors and closing appliances to be operated both locally and remotely;
-Watertight bulkheads and penetrations to be examined as far as practicable;
-Fire protection and fire fighting arrangements including operational tests as far as practicable. Confirmation as far as practicable that no significant changes have been made to the arrangements of structural fire protection is also to be carried out;
-Confirmation of the availability on board of loading guidance facilities, checking the operation of loading calculator, if available.

2.3.2. Hatchcovers and Coamings

It is to be confirmed that no unapproved changes have been made to the hatch covers, hatch coamings and their securing and sealing devices since the last survey. Where mechanically operated steel covers are fitted, the satisfactory condition of the following is to be confirmed:

-Hatch covers;
-Tightness devices of longitudinal, transverse and intermediate cross junctions (gaskets, gasket lips, compression bars and drainage channels);
-Clamping devices, retaining bars, cleating;
-Chain or rope pulleys;
-Guides;
-Guide rails and track wheels;
-Stoppers, etc.
-Wires, chains, gypsies, tensioning devices;
-Hydraulic system essential to closing and securing;
-Safety locks and retaining devices.

Where portable covers, wooden or steel pontoons are fitted, the satisfactory condition of the following is to be confirmed:

-Wooden covers and portable beams, carriers or sockets for the portable beams and their securing devices;
-Steel pontoons;
-Tarpaulins;
-Cleats, battens and wedges;
-Hatch securing bars and securing devices;
-Loading bars/pads and the side plate edge;
-Guide plates and chocks;
-Compression bars, drainage channels and drain pipes (if any).

If considered necessary by the Surveyor, the effectiveness of sealing arrangements of all hatch covers is to be determined.

2.3.3. Saltwater Ballast Tanks

To be in compliance for Special Survey or for Intermediate Survey, saltwater ballast tanks may be subject to internal examination. If deemed necessary, gauging may also be required.

2.3.4. Machinery and Fire Fighting Equipment

1. Each Machinery and Electrical Plant Survey shall consist of:

-A general examination of propelling machinery and essential auxiliary machinery is to be carried out.

-Machinery and boiler spaces with particular attention to the fire and explosion hazards; and also emergency escape routes are to be generally examined.

-All main and auxiliary steering machinery, including their associated equipment and control systems, are to be examined and tested under working conditions.

-All means of communications between the navigational bridge and the machinery control position, as well as the bridge and the alternate steering position, if fitted, are to be tested.

-Bilge pumping system and bilge wells, including operation of pumps, remote reach rods, and level alarms, where fitted.

-External examination of all pressure vessels and their appurtenances, including safety devices, foundations, controls, easing gear, high pressure and steam escape piping, insulation and gauges.

-Electrical machinery, emergency sources of electrical power switchgear and other electrical equipment are to be generally examined and tested, as far as practicable.

-Confirmation as far as practicable of the operation of all emergency sources of power is to be made and if they are automatic, also in the automatic mode.

-Where automatic and/or remote controls are fitted for essential machinery, they are to be tested to demonstrate that they are in good working condition.

2 Each Fire Fighting Equipment Survey shall consist of:

-Confirmation that fire control plans are posted.

-Examination and testing of manual and/or automatic fire doors, if applicable.

-Examination and testing of the fire and/or smoke detection system.

-Examination of the fire main, all fire pumps including emergency to be tested and found to operate to two different fire hydrants (one forward and one aft). Determination that two hoses not coming from the same hydrant can reach source of fire.

-Confirmation that fire hoses, hydrants, nozzles, applicators, spanners are in good order.

-External examination of CO2/Halon receivers.

-Examination of fixed fire extinguishing system control piping installation, checking for proper maintenance and servicing, including date of last system test.

-Confirmation that semi-portable and portable fire extinguishers are in their stowed positions, checking servicing dates.

-Confirmation that remote stops for fans and machinery and shutting off fuel in machinery spaces are in an operating condition.

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

-Confirmation that foam concentrates are periodically tested (twice during a five year period), either by manufacturer or agent.

-Confirmation that the fireman’s outfits are complete and in satisfactory condition.

2.4 INTERMEDIATE SURVEYS (All Ships)

2.4.1. At each Intermediate Survey, in addition to all the requirements for Annual Surveys (2.3), the following additional requirements are to be complied with:

2.4.2. The Intermediate Survey of all ships consists of an Internal Examination of one or more cargo holds, ballast tanks or other compartments, as considered necessary by the Surveyor.

2.4.3. For ships of five years of age and older, but less than 10 years, and in addition to 2.4.2., an Internal Examination of representative water ballast tanks is to be carried out.

1. When such examination reveals no visible structural defects, the examination may be limited to the verification that the protective coating remains efficient.
2. Where significant coating breakdowns and corrosion or other defects are found, the examination is to be extended to other ballast spaces of similar types.

3. In ballast tanks where a coating is found to have deteriorated and it is not renewed, then re-examination of those spaces should be made on an annual basis. If extensive corrosion is found, gauging may be required at this time.

2.4.4. For ships over 10 years of age, in addition to requirements of 2.4.3., Internal Examination of all ballast tanks is to be carried out:

1. If such inspections reveal no visible structural defects, the examination may be limited to verification that the coating remains efficient.

2. In ballast tanks where a coating is found to have deteriorated and is not renewed, the re-examination of these spaces is to be conducted on an annual basis and gaugings are to be carried out, if necessary.

3. For vessels 10 years old and older, double bottom ballast spaces in way of cargo holds are to be tested.

2.4.5. The scope of the Intermediate Survey of cargo areas and relevant equipment of ships with notations of OIL TANKERS, BULK CARRIERS, BULK-ORE CARRIERS, ORE CARRIERS, CHEMICAL or PRODUCT TANKER will be dealt with in Sections 2.9, 2.10 and 2.11.

2.5 SPECIAL SURVEYS (All Ships)

2.5.1. All Annual Survey requirements, together with the following, are to be complied with:

1. The examination is to be sufficient to discover substantial corrosion, significant deformation, fractures, damages, or other structural deterioration. The close ceiling in holds of single bottom ships is to be lifted to such an extent that at least two strakes on each side (one strake being at the bilge) and all portable hatches in hold and flooring plates in machinery and boiler spaces are to be removed for examination of the structure below. Where a double bottom is fitted,a sufficient ceiling is to be lifted from the inner bottom to enable the Surveyors to satisfy themselves as to the condition of the tank top plating, and if necessary, all ceiling is to be removed for ascertaining the condition.

The cement or other composition or the inner surface of the bottom plating is to be carefully examined. The removal of this covering may be dispensed with provided that it is tested by beating or chipping and found sound and adhering to steel work.

2. The extent of the Internal Examination and testing of tanks is given in Table III. A Major Survey is to include:

-Close-up Surveys to the extent as deemed necessary by the Supervisor.

-See Table III Below-

TABLE III

INTERNAL EXAMINATION AND PRESSURE TEST OF TANKS AND SPACES AT SPECIAL SURVEY

TANKS & SPACES	KIND OF SURVEY	No. OF SPECIAL SURVEY No. 1 EX	No. 1 T	No. 2 EX	No. 2 T	No. 3 EX	No. 3 T	No. 4 & 5 EX	No. 4 & 5 T
DOUBLE BOTTOM	FW	‡*1	--	‡*1	¥	‡	¥	‡	¥
WATER	SW	‡	¥*5	‡	¥*5	‡	‡	‡	‡
TANKS DEEP TANKS	FW	‡*1	¥	‡*1	§	‡	‡	‡	‡
(TOP Side & BILGE HOPPER TANKS)	SW	‡	‡	‡	‡	‡	‡	‡	‡
FUEL DOUBLE BOTTOM		--	--	‡*1	¥	‡	‡*1	--	‡
OIL DEEP TANKS (TOP SIDE, BILGE,									
TANKS HOPPER TANKS INCLUDED		--	--	‡*1	¥	‡*1	¥	‡	‡
PEAK WATER		‡	§	‡	§	‡	‡	‡	‡
TANKS OIL		‡	§	‡	§	‡	§	‡	‡
LUBRICATING OIL TANK		--	--	--	--	¥	¥	‡	‡
CARGO HOLDS		‡	--	‡	--	‡	--	‡	--
BALLAST/CARGO HOLDS		‡	‡	‡	‡	‡	‡	‡	‡
CARGO OIL TANKS		‡	‡*2	‡	‡*3	‡	‡*4	‡	‡*4
CARGO LIQUID TANK (OIL TANKERS NOT INCLUDED)		‡	§	‡	§	‡	‡	‡	‡
COFFERDAMS, VOID SPACES, CHAIN LOCKERS, RUDDER TRUNK, FCLE SPACE, POOP SPACE, PUMP ROOM, ETC.		‡	--	‡	--	‡	--	‡	--

NOTES:

1. Abbreviation EX - Internal Examination; T = Pressure Test
2. Tanks may be pressure tested afloat provided their internal inspection is also carried out afloat.
3. Bilge water/oil tanks are categorized as ‘Sea Water Tanks’.
4. Generally the pressure testing is to correspond to a water level to the hatches from ballast/cargo holds and cargo tanks, or the top of the air pipes for ballast, fuel, lube oil, fresh water tanks, etc…
5. Notations:

‡	=	To be carried out.
¥	=	May be dispensed with subject to external inspection to the Surve yor’s satisfaction.
§	=	May be dispensed with subject to Internal and External Inspections to the Surveyor’s satisfaction.
--	=	Not required.
*1	=	At least one selected tank to be examined.
*2	=	Cargo tank boundaries facing ballast tanks, void spaces, pipe tunnels, fuel oil tanks, pump rooms, or cofferdams to be tested.
*3	=	All cargo tank bulkheads which form the boundaries of segregated cargo spaces to be tested in addition to *2.
*4	=	All remaining cargo tank bulkheads to be tested in addition to *2.
*5	=	For bulk carriers, all boundaries of ballast tanks and deep tanks to be pressure tested.

3. Ballast tanks other than double bottom tanks, to which protective coatings were not applied at the time of the new construction or for which coatings are found no longer effective and they are not renewed, the maintenance of class to be made subject to the space in question being internally examined at Annual Intervals. Where extensive wastage is found, thickness gaugings are to be carried out.

4. Decks, casing and superstructures are to be examined especially in corners of openings and other discontinuities in way of strength decks and top sides. Wood deck or sheathing is to be examined and sections removed to ascertain the condition of the plating if found adhering closely to the plating.

5. The Thickness Measurements of structure members in any location are to be recorded at the discretion of the Surveyor and in accordance with the requirements laid down in Table IV.

6. Anchors and cables are to be verified and chain lockers examined.

7. The bilge pumping system is to be tested to Surveyor’s satisfaction.

8. Hatch covers and comings are to be examined as follows:

- A thorough inspection of the items listed in 2.3.2. Is to be carried out.

-Random checking of the satisfactory operation of mechanically operated hatch covers is to be made.

-Including -

1. Stowage and securing in open condition.
2. Proper fit and efficiency of sealing in closed position.
3. Operation testing of hydraulic and power compartment, wires, chains and link drives.

-The effectiveness of sealing arrangement of all hatch covers by hose testing or equivalent is to be checked.

2.5.2. Special Survey No. 2 Hull

All items specified in 2.5.1. together with the following items are to be dealt with:

1. A sufficient amount of ceiling in the cargo holds is to be lifted from bilges and the inner bottom to enable Surveyors to determine as to the condition of the structure in bilges, the inner bottom plating, pillor feet, the lower end plating of bulkheads.

   In ships of single bottom, the close ceiling in the cargo hold is to be lifted to such an extent that at least 3 strakes on each side (one strake being at bilge) and all portable hatches in holds and floor plating in machinery and boiler rooms are to be removed for examination of the structure below. However, in either case, the whole of the ceiling may be lifted for examination of the structure below if considered necessary by the Surveyor.

2. The requirements with regard to Internal Examination, Thickness Measurements and tank pressure testing are same as Tables III and IV.

3. Chain cables are to be ranged, examined and gauged. Length of chain to be in accordance with requirements and when any shot of cable is 12% (0.88) below requirement, it is to be renewed.

2.5.3. Special Survey No. 3 Hull

All item specified in 2.5.2, together with the following items, are to be dealt with:

1. A sufficient amount of ceiling and lining in the holds and floor plates in machinery spaces are to be removed as deemed necessary. Vessel is to be tho roughly cleaned of rust and scale to explore for examination of the framing and plating together with discharges, scuppers, air and sounding pipes and the structure is to be examined.

2. Wood sheathing and deck composition on steel decks are to be removed as deemed necessary by the Surveyor and exposed plating examined. Cement chocks on the ship's side at bilge and decks are to be examined and portions removed so that the condition of the steel plating can be ascertained.

3. The lining in way of side scuttles is to be removed as required by the Surveyor and shell plating examined.

4. The requirements with regard to Internal Examination, thickness examination, and tank pressure as per Table III and IV.

2.5.4. Special Survey No. 4 & 5 - Hull

In addition to all items specified in 2.5.3, the requirements with regard to Internal Examination, Thickness Measurement and tank pressure testing as per Table III and Table VIII.

2.5.5. Special Survey - Machinery & Electrical Equipment

1. Internal Combustion Engines

The Surveyor is to satisfy himself with the condition of cylinders, covers, valves and valve gears, pistons, piston rods, crossheads, guides, connecting rods, crankshafts, bedplate, entabletures, crankcase door fastenings and explosion relief flowers, superchargers and their intercoolers, filters and/or separators and safety devices, fuel injection pumps and fittings, camshaft drives and balancer units, torisonal vibration dampers or deturners, flexible couplings, clutches, reverse gears, attached pumps and cooling arrangements are to be examined.

Holding down bolts and chocks and crankshaft deflection are to be measured and, if necessary, placed in good order.

2. Steam Turbines

Steam turbines used as main and auxiliary engines are to be examined as follows:

-Steam turbine blades, rotors, stop valves, shaft glands, thrust adjusting bearings together with oil drains and sealing pipes are to be examined.
-Exhaust steam turbines, gears, clutches and electric motors are to be opened up and examined. Cone ends of internal driving shafts are to be examined.
-For main steam pipes, a selected section is to be removed and examined when they are 12 years old and henceforth at each class Special Survey. Sufficient lagging to be removed for examination and hydraulically tested to twice the wor king pressure. When considered necessary by the Surveyor, the thickness of pipes is to be ascertained, and if necessary, working pressure is to be reduced as necessary.
-Condensers are to be examined and attested.
-Safety devices are to be tested.

3. Essential Auxiliaries and Piping Systems

All essential pumps, which will include, main and auxiliary fresh, salt and LO pumps, stand by pumps, fire, bilge, general service. Ballast pumps are all to be opened up for examination.

-Intermediate shafting which will include shaft bearings are to be examined to Surveyor's satisfaction.
-Thrust bearing to be opened, collar and pads examined and clearances checked and are to be adjusted if found necessary.

-Steering machinery including auxiliary arrangements is to be examined and operationally tested. The machinery may be opened up if deemed necessary by the Surveyor.
-Holding down bolts and chocks to be checked for complete tightness.

-Air receiver for essential services, together with all mounting, valves and safety devices are to be opened up for examination. If internal examination is not practical, they are to be hydraulically tested to at least 1.2 times the working pres sure. Safety valve setting is to be to the Surveyor's satisfaction.

-Fuel tanks which do not form part of the ship's structure together with fittings are to be examined and to be tested if considered necessary by Surveyor.

-All main and auxiliary coolers, including fresh water, lube oil and scavenger, coolers, end covers to be removed and complete coolers to be examined.

-Windlass to be examined, by opening selected bearings, also examination of brakes and gears.

-The Bilge System to be examined by opening of selected valves, cocks, strainers for examination and system to be tested.

-All air compressors for essential services are to be opened up and examined, checked for setting and capacity.

-Evaporators are to be opened up and examined. Safety valves also opened up and examined, checked for setting and capacity.

-Main and auxiliary engines are to be tested under working conditions.

-Pumping arrangements:
-Condition of ballast/bilge piping;
-Working test of ballast/bilge piping;
-Operational test of all ballast valves and rods.
-Engine room remote control quick closing valves are to be examined and tested in working condition from remote control.
-Feed pumps, burning pumps, and boiler water circulating pumps for boilers are to be opened up for examination.

4. The survey is to consist of examination of the electrical installation with regard to fire and explosion hazards. The survey is also to include testing of correct functioning of equipment covered by the rules.

-Switchboards to be examined.
-Cables.
-Circuit Breakers.
-Emergency source of power.
-Testing of circuit breakers for overload and reverse current, if D.C. system.
-Navigation alarm panel on navigational bridge.
-Insulation resistance readings to be recorded for power, light, circuit, internal communications, switchboards, section board, distribution boards, generators and motors, to be carried out as follows; in a clean dry machine the following equation gives the insulation reading that should be expected.

$$\text{Megohms} = \frac{\text{rated voltage}}{\frac{\text{rating in KV.A.}}{100}} + 1000$$

and it should be in the order of ½ to 1 Megohm.

- Lighting and power circuit readings should not be less than:
- up to 5 A load - 2 megohms;
- up to 10 A load - 1 megohm;
- up to 25 A load - 400,000 ohms;
- up to 50 A load - 250,000 ohms;
- up to 100 A load - 100,000 ohms;
- up to 200 A load - 50,000 ohms;
- and over 200 A load - 25,000 ohms.

- Testing of Emergency Stops of all oil transfer systems, boiler and engine room ventilation is to be carried out.

2.6 BOTTOM SURVEYS

2.6.1 General

At each Docking Survey, the following requirements are to be complied with:

1. The vessel is to be placed on docks of sufficient height and with the necessary staging, then cleaned to allow the examination of bottom and side plating, stern frame, rudder, as well as steering fins, shaft brackets and other appendages, if fitted. Special attention to be given to the bilge keel connection to hull.

2. Sea inlets and overboard discharge valves below the water lines are to be examined. Valves, cocks together with their fastenings to the hull are to be examined. Dismantling of them may be dispensed at the discretion of the Surveyor, if last survey interval does not exceed five years.

3. Rudder pintles, gudgeons are to be examined. The lifting or removal of the rudder may be dispensed provided that the Surveyor is satisfied with the bearing clearances.

4. Survey in place for the propeller shaft and stern tube shaft is to be carried out as per paragraph 2.7.4.

2.6.2. In-Water Surveys

1. An In-Water Survey is to provide similar information normally obtained from a Docking Survey, and proposals for an In-Water Survey are to be submitted in advance of the survey being required by H.I.N.S.I.B. (HQ).

2. An In-Water Survey must be held in sheltered water of a suitable draught with good, clear visibility. Ship plating being examined should be clean.

3. An In-Water Survey may be carried out by:

-Neither a Surveyor suitably qualified as a skilled diver and trained to carry out In-Water Surveys, or
-Professional divers under surveillance of a Surveyor and employed by a recognized diving company.

4. If professional divers are used in an In-Water Survey, the Surveyor shall be satisfied as to the method of pictorial system (i.e. stills, video), and also a satisfactory two-way communications between divers and Surveyor is to be established.

5. The Surveyor may require that the vessel be dry docked if the In-Water Survey reveals damage or wastage that may require early attention.

6. It is advisable that the following plans are available to both divers and Surveyor when an In-Water Survey is called for:

-All Shell Openings
-Stern and Stern Frame
-Rudder and Fittings
-Stern Post
-Propeller
-Anodes
-Bilge Keels
-Welded Seams and Butts

7. It is advisable that the position of watertight bulkheads be marked on bottom of vessel during In-Water Survey for identification purposes.

8. During the In-Water Survey, rudder pintle clearance should be checked. Tailshaft clearances for weardown should also be checked.

2.7 TAILSHAFT SURVEYS

2.7.1. Complete Survey

Consists of removing the propeller and exposing for examination of the following parts, as applicable:

-Exposed Parts
-Cone both keyed and keyless. Keyless cones to be crack detected by either dye penetrant or magnetic particle systems.
-Shaft Bearing Surfaces.
-Sealing Glands
-Threaded End and Nut
-Working part and control of controllable pitch propellers. Clearances are to be measured before and after the survey and recorded.

2.7.2. Partial Survey

Are applicable for single and multi-shafting arrangements where the propeller is keyed to the shaft and;

-Shaft is fitted with oil lubricated bearings and oil sealing glands, and
-Shaft is protected from seawater.
-Consideration may be given upon application by the Owner to a prolongation of the intervals between complete surveys provided a partial survey is carried out.

The scope of the survey is identical to that of survey in place (see 2.7.4) plus a non-destructive examination in way of the forward part of the aft shaft cone, if the propeller is pushed up on the cone by means of a fitted key. The record for Monitoring System of Stern Tube Bearing, and Oil Seal Devices is checked, if a five year extension is applied for.

2.7.3. Modified Survey

Are applicable for single and multi-shaft arrangement where:

-Propeller is fitted to a solid flange coupling at the after end of the shaft.
-The shaft is fitted with oil lubricated and oil seal glands, and
-The shaft is protected from sea water.
-New oil seals may be fitted without removal of propeller, or
-The shaft is fitted keyless to the shaft taper.
-The shaft is fitted with oil lubricated and oil seal glands, and
-The shaft is protected from sea water, and
-New oil seals may be fitted without removal of propeller.

The modified survey consists of dismantling the forward shaft coupling and oil sealing glands, drawing the shaft to expose the lift bearing contact area of the shaft, examining the forward bearing as far as possible and all accessible parts of the shaft, including the propeller connection of the shaft, performing a non-destructive examination on the aft-ter part of the shaft. In the case of solid flange couplings or the forward parts of the aft shaft taper in the case of keyless propellers. In the later case, backing off the propeller from the cone may be necessary.

2.7.4. Survey in Place

The scope of survey of propeller shafts and tube shafts in place consists of:

-Checking the clearances of the stern tube shaft.
-Checking the tightness of oil sealing arrangement.
-Examination of the propeller.
-In the case of controllable pitch propellers, it should be determined that the pitch control device is functioning properly at the discretion of the Surveyor.

2.7.5. Extension Surveys

An extension survey in compliance with Table II, Notes a and b consists of:

1. Propeller shafts exposed in the Engine Room are to be examined.

2. The record of the weardown at after end of the stern tube bearing (or the after end of the shaft bracket bearing, if any) is to be examined.

3. Stern tube sealing devices (and the shaft bracket sealing devices, if any) are to be confirmed.

4. For a further extension, the following additional items are to be dealt with:

-Lubrication oil analysis is to be performed and results submitted.
-An External Examination of outboard sealing devices and a measurement of wear down.

2.8 BOLIER SURVEYS

2.8.1. Annual Surveys

Both Main and Auxiliary Boilers will be externally examined annually under operation and all valve fittings, safety valves, foundations, controls, insulation and gaugings.

For thermal heaters, in addition to the above, an analysis of quality of oil is to be submitted to the satisfaction of the Surveyor.

2.8.2. Complete Surveys

At each survey, boilers, thermal oil heaters, superheaters, economizers are to be examined, both internally and externally.

All boiler mounting including main stops, auxiliary steam stops, check valves, gauge valves, scum and blow down valves to be completely opened up for examination.

In fire and water tube boilers, furnace to be examined, including firebricks and fittings. Steam and water drums in water tube and steam and water drum in fire tubes are to be examined internally. In case the dimensions of boiler plate, tubes and stays are required to be ascertained, a recognized and non-destructive examination is to be carried out and allowable working pressure may be reduced by local Surveyor or H.I.N.S.I.B. (HQ). If repairs have been carried out or if Surveyor deems necessary, it may be required that a hydraulic test be held.

Test pressure prior to the 12th year
p=1.25 pa if pa≠40
p=1.25 pa+2 if pa>40

after the 12th year
p=1.15 pa

‘p’ and ‘pa’ measured in bars, being the working pressure.

Upon completion of Internal Examination, the boilers to be examined under operating conditions and all safety valves tested.

2.9 SURVEYS RELATED TO OIL TANKERS CARGO TANK AREA

2.9.1. General

1. The requirements of this section apply to all propelled vessels having a service notation of OIL TANKER. These rules may also, after consideration by H.I.N.S.I.B. (HQ), apply to non-propelled oil tankers with a service notation of OIL TANKER/ FLOATING STORAGE/NP.

2. The requirements in this chapter apply to all hull structures and piping systems in way of cargo tanks, ballast tanks, pump rooms, cofferdams, pipe tunnels and void spaces within the vessel's cargo area.

3. These requirements contain the minimum extent of examination, thickness determination and tank testing. The survey may be extended if considered necessary when extensive corrosion and/or structural damage are found and include further close-up surveys, when necessary.

2.9.2. Documentation

The following documentation must be retained onboard and be made available for attending Surveyor.

1. Survey Report File to contain the following:

-Reports on Structural Surveys;
-Full Condition Evaluation Report (additional to Special Survey);
-Audio Gauging Report(s).

This report file is also to be maintained in the appropriate manager's office.

2. The following additional information is also to be retained onboard:

-Main structural plans of cargo and ballast tanks,
-Previous repair list,
-Cargo and ballast history (Oil Record Booklet),
-Extent of use of inert gas system and tank cleaning procedures,
-Inspections carried out by ship's personnel to;
-Structural deterioration in general,
-Leakages in bulkheads and piping,
-Condition of coastings or corrosion protection, if any.

2.9.3. Reporting and Evaluation of Survey

The information collected on the structural condition of the vessel during a Special Survey will be evaluated for acceptability by H.I.N.S.I.B. (HQ), who in turn will issue an Evaluation Report which is to be placed onboard attached to the Hull Certificate for future reference.

2.9.4. Annual Survey

The survey requirements of chapter 2.3 are to be complied, plus the following items:

1. Weather Decks

-Examination of cargo tank openings, including gaskets, covers, coamings, and screens;
-Examination of flame screens on all bunker, oily ballast and oily slop tanks;
-Examination of cargo, crude oil washing, bunker and vent pipe systems, including vent masts and headers;
-Examination of electrical systems in dangerous zones.

2. Cargo Pump Rooms

Examination of all bulkheads for signs of oil leakage or fractures, and in particular the sealing arrangements of all penetrations of bulkheads.

-Examination of all electrical equipment is in good order and well maintained;
-Confirmation that potential sources of ignition close by the pump room are eliminated (i.e. loose gear, excessive product in bilge, excessive vapors);
-Examination as far as practical of operation of all cargo, bilge, ballast and stripping pumps;
-Examination of all remote stops/shutdowns;
-Examination of pump room ventilation, including screens and dampers.

3. Fire Fighting Systems (in cargo areas)

-External Examination of piping and shut off valves of cargo tank and cargo pump room fixed fire extinguishing systems.
-Examination of Deck Foam System and Deck Water Spray System to ensure they are in good order.

2.9.5. Intermediate Survey

1. On Weather Decks, an examination of cargo crude oil washing, bunkers, ballast systems and vent pipe systems, as well as vent mast and headers is to be carried out. If there is any doubt regarding the condition of the piping, a request can be made for the piping to be pressure tested, thickness measured or both.

2. For Vessels Over 5 Years and Up to 10 Years of Age

-For Overall Survey of ballast tanks, an Overall Survey of representative tanks selected by the Surveyors is to be carried out. If such inspections reveal no visible structural defects, the examination may be limited to a verification that the Corrosion Prevention System remains effective.

-Where poor coating conditions, corrosion or other defects are found in ballast tanks, or where the coating has not been applied at time of construction, the examination is to be extended to other ballast tanks of the same type.

-For ballast tanks where a coating is in poor condition and not renewed, or when a coating was not applied, the tanks in question are to be examined on an annual basis. Thickness Measurements are to be carried out as deemed necessary by the Surveyor.

3. Overall Survey - For Vessels Exceeding 10 Years of Age

-An Overall Survey of at least two representative cargo tanks is to be carried out.
-An Overall Survey of all ballast tanks and combined cargo/ballast tanks is to be carried out. If such surveys reveal no visible structural defects, the survey may be limited to a verification that the corrosion prevention system remains effective.

4. Extent of Close Up Surveys

-A Close Up Survey of ballast tanks is to be carried out to the same extent as in the preceding Special Survey.
-At least two combined cargo/ballast tanks after 2nd Special Survey. The extent of the survey is to be based on the record of the previous Special Survey and repair history of the tanks.
-Additionally, at least one cargo tank after 3rd Special Survey. The extent of the survey is to be based on the record of the previous Special Survey and repair history of the tank.
-The extent of the Close Up Survey may be extended at the Surveyor's discretion.

5. Thickness Determination

The minimum requirements for thickness determination are to be carried out for areas found to be suspect at previous Special Survey Table VI should be used as guidance.

6. Electrical Equipment in Cargo Area

A general examination of cable, switchboards, explosion proof lights, fixtures, improperly installed wiring. Non-approved lighting and fixtures located in dangerous zones to be dealt with to the Surveyors satisfaction, If for any reason the previous recorded insulation resistance readings were marginal, or if conditions are deemed necessary, verification measures may be required. The measurements should not be attempted until the vessel is in a gas free or in inerted condition and should be carried out within an acceptable time period.

2.9.6. General Scope of Survey

1. In preparation of the Special Survey, the program of thickness determination of survey requirements should be discussed in advance of the Special Survey. The thickness determination is not to be held before the confirmation of term survey.

2. All cargo tanks, ballast tanks, pump rooms, pipe tunnels, cofferdams and void tanks bounding cargo tanks/decks and outer hull are to be examined and examination is to be supplemented by thickness determination and testing as deemed necessary to ensure that the structural integrity remains effective. The examination is to be sufficient to discover substantial corrosion, significant deformation, fractures, damages or other structural deterioration.

3. Piping systems within the above tanks and spaces are to be examined and operationally tested under working conditions to ensure that the condition remains satisfactory. Special attention is to be given to ballast piping in cargo oil tanks and cargo oil pipes in ballast tanks and void spaces.

4. The survey extent of the combined ballast/cargo oil tanks is to be evaluated based on the records of ballast history and extent of the corrosion prevention systems provided.

5. Where provided, the condition of coating or corrosion protection of cargo tanks is to be examined. For tanks used for salt water ballast, excluding double bottom tanks, where a protective coating is found in poor condition and is not renewed, or when a coating has not been applied, the tanks are to be examined at annual intervals. Thickness determination is to be carried out as deemed necessary by the Surveyor.

2.9.8. Extent of Overall and Close-Up Surveys

1. The Overall Survey of all tanks and spaces is to be carried out in a Special Survey.

2. The minimum requirements for a Close-Up Survey are given in Table VIa.

3. The Surveyor may extend the Close-Up Survey, as deemed necessary, taking into account the maintenance of the tank under survey, the condition of the corrosion protection system and also in the following cases:

-In particular, tanks having structural arrangements or details which have suffered defects in similar tanks,

-In tanks which have structures accepted with reduced scantlings.

4. For areas in tanks where coatings are found to be in good condition, the extent of Close-Up Survey according to Table IVa may be especially considered by H.I.N.S.I.B. (HQ).

2.9.9. Extent of Thickness Determination

1. The requirements of thickness determination at Special Survey are given in Table VIb.

2. Provisions for extended measurements for area with substantial corrosion and/or considered by the Surveyor to be prone to rapid wastage are given in Tables V and VI.

3. The Surveyor may further extend the Thickness Measurements as deemed necessary.

4. For areas in tanks where coatings are found to be in good condition, the extent of the Thickness Measurement according to Table VIb may be specially considered by H.I.N.S.I.B. (HQ).

5. Transverse section should be chosen where the largest reductions are suspected to occur or are revealed from deck plating measurements.

6. In cases where two or three sections are to be measured, at least one should include a ballast tank within 0.5L amidship.

2.9.10. Extent of Tank Testing

1. The requirements of tank testing at Special Survey are given in Table VIc.

2. The Surveyor may extend the tank testing as deemed necessary.

3. Generally, the pressure should correspond to a water level to the top of access hatches for cargo tanks or top of air pipes for ballast tanks, if this gives the higher pressure.

4. Tightness of pipe tunnel and void spaces may be confirmed by an air test.

2.9.11. Essential Auxiliary and Piping System in Cargo Tank Area

1. Cargo, ballast and stripping piping are to be opened up for examination as deemed necessary.

2. The pressure relief valves are to be opened up for examination, adjusted and resealed.

3. Venting system and flame screens are to be examined and opened up if deemed necessary.

4. When level gauging in tank is fitted, function test is to be made.

5. Cargo, ballast, stripping pumps, including their prime movers are to be examined as required by 2.5.5 for Special Survey of machinery.

6. Crude oil washing (when fitted) piping, pumps, valves and deck mounted washing machines are to be examined and tested for signs of leakage, and anchoring devices for crude oil washing piping are to be checked, as deemed necessary.

2.10 SURVEYS RELATED TO BULK AND ORE CARRIERS - CARGO AREAS

2.10.1. Application

1. The requirements of this section apply to all propelled ships having notation BULK CARRIERS, ORE CARRIER, or ORE/BULK CARRIER.

2. These requirements apply to surveys of hull structure and piping systems in the cargo holds, ballast tanks, cofferdams, pipe tunnels and void spaces in the cargo areas.

3. These requirements contain the minimum extent of examination, thickness determination and tank testing. The survey should be extended when substantial corrosion and/or structural defects are found and include an additional Close-Up Survey when necessary.

2.10.2. Documentation

Please refer to paragraph 2.9.2. for details.

2.10.3. Reporting and Evaluation of Survey

Please refer to paragraph 2.9.3 for details.

2.10.4. Annual Survey

1. Hatch Cover and Coamings

2. Cargo Holds

1) For bulk carriers over 10 years of age, an Overall Survey of a representative forward and after cargo hold is to be carried out. Where this level of survey reveals the need for remedial measures, the survey is to be extended to Internal Examination of other cargo holds.

2) For bulk carriers over 15 years of age, an Overall Survey of all cargo tanks is to be carried out. A Close-Up Survey of sufficient extent is to be conducted to establish the condition of the lower region of the shell frames and their end attachments in a forward hold. Where the level of survey reveals the need for remedial measures, the survey is to be extended to include a Close-Up Survey of all cargo holds.

3) Ballast Tanks

1) In compliance with 2.10.13 for Special Survey, or 2.10.8 for Intermediate Survey, Salt Water ballast tanks may be subject to Internal Examination and gaugings may be required if deemed necessary.

2.10.5. Intermediate Survey

1. Cargo Holds

1) An Overall Survey of all cargo holds, including a Close-Up Survey of sufficient extent, is to be carried out to establish the condition of:

-Shell plating and their end attachments and transverse bulkheads in the forward cargo hold and one other selected cargo hold.
-Areas found suspect at the previous Special Survey.

2) Where considered necessary by the Survey, as a result of the Overall and Close-Up Survey described in paragraph 2.10.5.2., the survey is to be extended to include a Close-Up Survey of sufficient extent of the representative cargo holds.

2. Ballast Tanks

1) For ships of five years of age and over but less than 10, an Overall Survey of representative salt water ballast tanks is to be carried out.
When examination reveals no visible structural defects, the examination may be limited to the verification that the protective coating remains efficient. Where poor condition, corrosion or other defects are found in Salt Water Ballast Tanks or where a protective coating was not applied from the time of construction, the examination is to be extended to other ballast tanks of similar type; and where these conditions exist in tanks other than double bottom tanks, these tanks should be re-examined a annual intervals. When extensive corrosion is found, gauging may be required at this time.

2) For ships 10 years and over, an Overall Survey of all water ballast spaces is to be carried out. Where such an examination reveals no visible structural defects, the examination may be limited to verification that the protective coating remains efficient. Remaining comments of paragraph 2.9.5.2 apply regarding ballast tanks, including double bottom tanks.

3) In addition to 4.1 and 4.2 above, areas found suspect at previous Special Survey are to be Overall and Close-Up Surveyed.

2.10.6. Extent of Thickness Measurements

1. Thickness Measurements are to be carried out to an extent sufficient to determine both general and local corrosion levels at areas subject to Close-Up Survey, as described in paragraphs 2.10.5.2, 2.10.5.3 and 2.10.4.

2. The thickness determination may be dispensed with provided that the Surveyor is satisfied by the Close-Up Survey, that there is NO structural diminution and the protective coating, where fitted, remains effective.

2.10.7. Extent of Tank Testing

1. For ships more than five years old, at least two top wing tanks are to be tested.

2. For ships more than 10 years old, all top wing tanks and double bottom tanks in way of cargo holds are to be tested.

2.10.8. Confirmation of Term Survey

1. In addition to requirements of 2.10 for the Annual Survey, for ships between 5 and 10 years old, at least two top wing tanks are to be Overall Surveyed and tested.

2. For ships more than 10 years old, all top wing tanks (or side ballast tanks) are to be surveyed and tested.

2.10.9. Special Survey

1. It is recommended that a Special Survey in Dry Dock (as per section 2.6) program is to be worked out in advance of the Special Survey by Owner in cooperation with H.I.N.S.I.B. (HQ).

2. The Survey Program should include conditions for survey, access to structures and equipment for surveys, taking into account the minimum requirements of Tables VIIa and VIb for Close-Up Surveys and thickness determination, and requirements for tank testing as described in 2.9.10.

3. The Survey Program should take into account the information included in the documentation onboard, as described in 2.9.2.

2.10.10. General Scope

1. In preparation for the Special Survey, the program of thickness determination and surveys should be dealt with in advance of the Special Survey. The thickness determination should not be held before the Confirmation of Term Survey, and no more than 15 months before the Special Survey.

2. The Special Survey shall include, in addition to the requirements of Annual Survey, examination, tests and checks of sufficient extent to consider that hull and related piping are in an acceptable condition; and that the new term of class can be assigned, subject to proper maintenance and operation, and to periodical surveys being carried out at the due dates.

3. Cargo holds, salt water ballast tanks (including double tanks, piping tunnels, cofferdams, and void spaces bounding cargo holds), decks and outer hull are to be examined; and this examination is to be supplemented by thickness determination as deemed necessary, with regard to the structural integrity.

4. Piping systems within the above spaces are to be examined for tightness and satisfactory condition.

5. The survey extent of combined ballast/cargo holds is to be evaluated, based on the records of ballast history.

6. The survey extent of ballast tanks converted to void spaces should be specially considered in relation to the requirements for ballast tanks.

7. Please refer to 2.9.5.2.

2.10.11. Hatch Covers and Coamings

1. Please refer to 2.5.1.8.

2. In addition to 2.10.11.1 above, thickness determination of the hatch covers and coaming plating and stiffeners are to be carried out as per Table VIIb.

2.10.12. Extent of Overall and Close-Up Surveys

1. An Ove00rall Survey of all tanks and spaces is to be carried out at each Special Survey.

2. Each Special Survey is to be included in a Close-Up Examination of sufficient extent to establish the condition of the shell framing and their end attachments in all cargo holds and salt water ballast tanks as indicated in Table VIIa.

2.10.13. Extent of Thickness Determination

1. The requirements for thickness determination at Special Survey are given in Table VIIb.

2. Representative thickness determination is determined both general and local levels of corrosion in the shell frames and their end attachments in all cargo holds and salt water ballast tanks is to be carried out. Thickness determination may be dispensed with if the Surveyor is satisfied by the Close-Up Examination and there is no structural diminution and the protective coating, where applied, remains satisfactory.

3. The Surveyor may extend the thickness determination as deemed necessary.

4. For areas in spaces where coatings are found to be in good condition, the extent of the thickness determination according to Table VIIb may be specially considered by H.I.N.S.I.B. (HQ).

5. Transverse sections should be chosen where largest reductions are expected to occur or are revealed from deck plating measurements.

2.10.14. Extent of Tank Testing

1. All boundaries of salt water ballast tanks, fuel oil double bottom tanks, deep tanks and cargo holds, used for salt water ballast within the cargo hold length are to be pressure tested by filling with water or fuel oil.

2. Generally the pressure should correspond to a water level to the top of hatch for ballast/cargo holds or top of air pipes for ballast tanks or fuel tanks, if this gives a higher pressure.

2.11 SURVEYS RELATED TO CHEMICAL TANKER OR PRODUCT TANK-CARGO AREA

2.11.1. General

The requirements of this section apply to all ships having service notation CHEMICAL TANKER or PRODUCT TANKER.

2.11.2. Annual Survey

1. In addition to the surveys, as stipulated in 2.3.1, the following installations, items of equipment and outfit are to be checked as to their perfect maintenance condition.

1) On weather deck within cargo area, the following equipment, if fitted, has to be surveyed.

-Cargo tank hatches, including sealings and covers;
-Tank gauging devices, level alarms and overflow controls with automatic closing valves;
-Pressure/vacuum relief valves and flame arresters of cargo tank venting arrangements, as well as devices for measuring the cargo tank vapor pressure;
-Sample devices of cargo cooling or heating installations as well as temperature measuring devices and temperature alarm systems;
-Pump discharge pressure gaugings and the distinctive marking of pumps, valves and cargo piping;
-Wheelhouse doors and wheelhouse windows, deckhouses and superstructure windows facing the cargo area (closed condition).

2) Cargo handling installations (including spool pieces of loading and unloading system, spray shields and drip traps, cargo hoses, etc.) arranged on the weather deck, possibly in the fore and aft area, are to be visually examined.

3) In cargo pump rooms and other enclosed spaces entered during cargo handling operations, the following are to be surveyed:

-Remote operation of bilge system;
-Rescue arrangement;
-Ventilation systems;
-Fire extinguishing systems.

4) In gas dangerous spaces and zones, the electrical equipment, including cables and their supports, is to be visually examined, particularly regarding explosion protection.

5) The survey of Fire Fighting Systems covers:

-External inspection of all systems for the cargo tanks area and pump rooms;

-Checking of the foam fire extinguishers and/or water spraying system on deck;
-All other fire fighting systems.

6) The following items, if fitted, are to be checked:

-Special arrangements related to damage control(e.g. sliding bulkhead doors) in accordance with the approved damage control plan (also for tankers of less than 100m in length);
-Cargo sample stowage paces.
-Gas detection instruments;
-Cargo information and safety instructions.

2.11.3. Intermediate Surveys

In addition to the surveys as stipulated in 2.11.2 above, the checks listed below are to be performed if deemed necessary by the Surveyors. A functional test is to be carried out in addition to the survey.

1. In the case of chemical tankers aged 20 years or over, at least two selected cargo tanks are to be internally inspected for corrosion and possible damages to their coatings and structural equipment, such as pipings, valves and fittings, instrumentation, etc. is to be inspected.

2. Seawater ballast tanks, see 2.9.5.2. and 2.9.5.3.

3. All important piping systems in the cargo area are to be examined, e.g.:

-Cargo tank cleaning, bunkering, ballast and steam piping.
-Provisions for drawing of cargo tank vent lines.
-Bonding devices of all piping systems and independent cargo tanks.
-Cargo cooling systems.
-Cargo hoses.
-Tank heating systems.
-Shore parts for mechanical ventilation systems.

4. The electrical equipment in gas dangerous spaces or zones is to be surveyed with respect to the following:

-Protective grounding (spot check).
-Integrity of certified safety equipment.
-Damages to the outer covering of cables.
-Function testing of pressurized equipment, and of associated alarms.
-Testing insulation resistance of circuits only when the ship is gas free or inerted condition. If proper tests have been made by the crew, reports of the readings may be accepted.

2.11.4. Confirmation of Term Survey

In addition to the requirements of 2.11.2, the confirmation of Term Survey for ships of more than five years old, consists of:

-An Overall Survey and testing of all ballast tanks as deemed necessary;

-An Overall Survey and testing of at least one center and one wing cargo tank.

The Surveyor may require Thickness Measurements to be taken depending on the evolution noted in the wear and tear since the previous special intermediate surveys.

2.11.5. Special Survey

1. A Special Survey Program in dry dock should be worked out in advance of the Special Survey by the owners in cooperation with H.I.N.S.I.B. (HQ).

2. The Survey Program is to include conditions for survey, access to structures and equipment for surveys, taken into account the minimum requirements of Tables VIIa, b, and VIc for surveys and tank testing.

3. In addition to the requirements of Special Survey of ship's hull, where applicable, as required in 2.5.1, 2.5.2, 2.5.3 and 2.5.4, the following items are to be surveyed.

-The Internal Examination and pressure testing of all tanks and spaces are to be carried out according to Table III.

-The requirements for thickness determination as per Table VIIIb.

-Cargo and Ballast Piping Systems, including valves and fittings, are to be internally inspected for corrosion as deemed necessary by the Surveyor. Subsequently a pressure test is to be carried out.

-Cargo stripping and ballast pumps are to be examined. Pressure relief valves of pumps are to be function - tested.

-Pressure vacuum valves of cargo tanks are to be function tested and are to be opened up and adjusted, if deemed necessary by the Surveyor.

-Tank venting systems are to be examined. Flame arresters are to be opened up as far as necessary and cleaned.

-Cargo tank heating systems are to be examined and pressure tested to 1.5 times the operating pressure.

-The bilge systems of pump rooms are to be examined and tested.

-All ventilation systems in the cargo areas, including portable fans are to be examined and functionally tested.

4. The following equipment is to be functionally tested:

-Level indicators of cargo tanks;
-Liquid level alarms;
-Overflow controls;
-Pressure and temperature alarms;
-Remote control systems of cargo pumps;
-Sampling arrangements for cargo tanks, if fitted;
-Inert gas systems.

2.11.6. Extent of Thickness Measurements

1. The requirements for the thickness determination at Special Survey are given in Table VIb.

2. The Surveyor may further extend the thickness determination as deemed necessary.

3. For areas in tanks where coatings are found to be in a good condition, the extent of the Thickness Determination, according to Table VIb, may be specially considered by H.I.N.S.I.B. (HQ).

4. Transverse sections should be chosen where the largest reductions are suspected to occur or are revealed from deck plating measurements.

5. In cases where two or three sections are to be measured, at least one should include a ballast tank within 0.5 L amidship.

2.11.7. Electrical Equipment

The condition of the wires in regards to damage of outer sheet and corrosion of metal braidary is to be ascertained.

2.12 SURVEYS OF INERT GAS SYSTEMS

The requirements of this section apply to all inert gas installations fitted onboard ships having the service notation OIL TANKER, CHEMICAL TANKER or PRODUCT TANKER or noted by additional class notation IGS.

2.12.1. Annual Survey

At each Annual Survey, the inert Gas System is to be generally examined as far as can be seen and placed in satisfactory condition as necessary. The survey is to include the following items:

1. External examination of all components and piping, including scrubbers, fans, cooling water pumps, compressors, washing equipment, valves, steam pipes and screens.

2. Confirmation of proper operation of inert gas blowers.

3. Observation of the operation of the scrubber room ventilation system.

4. Deck seals or double block and bleed assembles and non-return valves are to be examined externally and proven in operation. Automatic filling and draining of deck seals, operation of non-return and double block and bleed assemblies and the water seal are to be checked.

5. Verification of the operation of all remotely operated or automatically controlled valves and in particular flue gas isolating valves.

6. Verification of the operation of the interlocking features of soot blowers.

7. Verification of the automatic operation of gas pressure regulatory valves.

8. Once completion of general repair work, a tightness test and a functional test are to be performed.

9. Verification of the operation of the following alarms and safety devices using simulated conditions where necessary.

1) Flue Gas System

.1 Low water pressure or low water flow rate to the flue gas scrubber.
.2 High water level in the value gas scrubber.
.3 High gas temperature at inert gas blower discharge.
.4 Failure of inert gas blowers.
.5 Oxygen content in excess of 8% by volume.

.6Failure of the power supply to the automatic control system for the gas regulatory valve and to the oxygen content and gas pressure indicating devices.
.7Low water level in the water seal.
.8Gas pressure less than 100 mm water gauge.
.9High gas pressure.
.10Accuracy of fixed and portable oxygen measuring equipment by means of a calibration gas.

2) Gas Generating System:

.1Low water pressure or low water flow rate to the flue gas scrubber.
.2High gas temperature.
.3High gas pressure.
.4Oxygen content in excess of 7% by volume.
.5Insufficient fuel oil supply.
.6Failure of the power supply to the generator.
.7Failure of power supply to the automatic control system for the generator.
.8Accuracy of fixed and portable oxygen measuring equipment by means of a calibration gas.

10. The Survey is to examine the permanent records to check the operation and maintenance of the system. Consideration may be given by the survey for the crediting of certain items that have been properly documented and recorded.

11.Additional requirements for separate inert gas generator:

1)Automatic combustion control system is to be examined and tested as necessary.

2) Combustion chamber and mountings are to be examined internally and externally.

3) Forced draft fans are to be examined.

4)Fuel oil service pumps are to be examined.

12. Additional requirements for inert gas stored in bottles:

1)Bottes are to be examined internally and externally. If they cannot be examined internally they are to be gauged. When considered necessary by the Surveyor, they are to be hydrostatically tested to at least 1.2 times the working pressure. Relief valves are to be proven operable.

2) Where an alkali (or other) scrubber is fitted in the system, the scrubber, circulating pump, valves and piping are to be examined internally and externally.

2.12.2. Special Survey

At each class renewal survey of inert gas system, in addition to the requirements for the Annual Survey, the following are to be complied with:

1.All valves, including valves at boiler uptakes, air seal valves at uptakes, scrubber isolating valves, fan inlet and outlet isolating valves, main isolating valves, recirculating valves (if fitted), pressure/vacuum breakers and cargo tank isolating valves are to be examined.

2. Scubbers are to be examined.

3. Fans (blowers) including casing drain valves are to be examined.

4. Fans (blowers) drives, either electric motor or steam turbine are to be examined.

5. Bellow expansion pieces are to be examined.

6. Sea water pumps, valves and strainers for scrubbers and water seals together with piping connections at scrubbers, water seals, shell plating and the remaining of the sea water piping are to be examined.

7. Stand pipes, where fitted, for purging in each cargo tank are to be examined.

8.Deck seals or double block and bleed assemblies and non-return valve are to be examined internally and externally.

9.The Special Survey may be commenced at 4th Annual Survey and be progressed during the succeeding year with a view to completion by the 5th anniversary date. The Flue Gas System is to be presented for survey within three months before the due date of the Special Survey. The requirements for survey to qualify for the commencement of the Special Survey are to be no less than those of an Annual Survey as outlined.

TABLE IV

ALL SHIPS - REQUIREMENTS FOR THICKNESS MEASUREMENTS AT SPECIAL SURVEY

Special Survey Age≤5 Years	Special Survey 5 Years<Age≤10 Years	Special Survey 10 Years<Age≤15 Years	Special Survey Age>15 Years
1. Main structural parts plates and stiffeners showing signs of wear and tear.	1. Main structural parts plates and stiffeners showing signs of wear and tear. 2. Within the cargo length area of 0.5 L amidships: -selected deck plates -1 transverse section -selected tank top plates -selected bottom plates -selected wind and water strakes. 3. Outside the cargo length area or 0.5 L amidships; -selected deck plating -selected wind and water strakes -selected bottom plates. 4. The two first cargo hold hatch covers and coamings (plates and stiffeners). 5. Collision bulkhead, forward machinery spaces bulkhead, aft peak bulkhead.	1. Main structural parts plates and stiffeners showing signs of wear and tear. 2. Within the cargo length area of 0.5 L amidships: -selected deck plates 2 transverse sections -selected tank top plates -selected bottom plates -selected wind and water strakes. 3. Outside the cargo length area or 0.5 L amidships: -selected deck plating -selected wind and water strakes -selected bottom plates. 4. All cargo hold hatch covers and coamings (plates and stiffeners). 5. Collision bulkhead, fwd machinery space bulkhead, selected cargo hold bulkheads (transverse and longitudinal), (plates and stiffeners). 6. Selected internal structures such as floors and longitudinals, transverse frames, web frames, deck beams, tween deck girders, etc.	1. Main structural parts plates and stiffeners showing signs of wear and tear. 2. Within the cargo length area of 0.5 L amidships: -each deck plate -3 transverse sections -each tank top plate -each bottom plate -all wind and water strakes. 3. Outside the cargo length area or 0.5 L amidships: -each deck plating -all wind and water strakes -each bottom plate 4. All cargo hold hatch covers and coamings (plates and stiffeners). 5. All transverse and longitudinal bulkheads (plates and stiffeners). 6. Selected internal structures as for ships 10<age≤15 years, number of measurements can be increased as the Surveyor finds it necessary.

TABLE Va

REQUIREMENTS FOR THE EXTENT OF THICKNESS MEASUREMENTS AT AREAS OF SUBSTANTIAL CORROSION. PERIODICAL SURVEY OF SHIPS WITH THE SERVICE NOTATION OIL TANKER, PRODUCT TANKER & CHEMICAL TANKER WITHIN THE CARGO AREA

Bottom Structure

STRUCTURAL MEMBER	EXTENT OF MEASUREMENT	PATTERN OF MEASUREMENT
1. Bottom Plating	Minimum of three bays across tank, including aft bay. Measurements around and under all bell mouths.	Five-point pattern for each panel between longitudinals and webs.
2. Bottom longitudinals	Minimum of three longitudinals in each bay where bottom plating measured.	Three measurements in line across flange and three measurements on vertical web.
3, Bottom girders and brackets	At fore and aft transverse bulkhead bracket toes and in center of tanks.	Vertical line of single measurements on web plating with one measurement between each panel stiffener, or a minimum of three measurements. Two measurements across face flat. Five-point pattern on girder/bulkhead brackets.
4. Bottom transverse webs.	Three webs in bays where bottom plating measured, with measurements at both ends and middle.	Five-point pattern over 2 square meter area. Single measurements on face flat.
5. Panel stiffening.	Where fitted.	Single measurements.

TABLE Vb

REQUIREMENTS FOR THE EXTENT OF THICKNESS MEASUREMENTS AT AREAS OF SUBSTANTIAL CORROSION. PERIODICAL SURVEY OF SHIPS WITH THE SERVICE NOTATION OIL TANKER, PRODUCT TANKER & CHEMICAL TANKER WITHIN THE CARGO AREA

Deck Structure

STRUCTURAL MEMBER	EXTENT OF MEASUREMENT	PATTERN OF MEASUREMENT
1. Deck Plating	Two bands across tank	Minimum of three measurements per plate per band.
2. Deck Longitudinals	Minimum of three longitudinals in each of two bays.	Three measurements in line vertically on webs, and two measurements on flange (if fitted).
3. Deck girders and brackets	At fore and aft transverse bulkhead bracket toes and in center of tanks.	Vertical line of single measurements on web plating with one measurement between each panel stiffener, or a minimum of three measurements. Two measurements across face flat. Five-point pattern on girder/bulkhead brackets.
4. Deck transverse webs.	Minimum of two webs with measurements at middle and both ends of span.	Five-point pattern over 2 square meter area. Single measurements on face flat.
5. Panel stiffening.	Where available.	Single measurements.

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TABLE Vc

REQUIREMENTS FOR THE EXTENT OF THICKNESS MEASUREMENTS AT AREAS OF SUBSTANTIAL CORROSION. PERIODICAL SURVEY OF SHIPS WITH THE SERVICE NOTATION OIL TANKER, PRODUCT TANKER & CHEMICAL TANKER WITHIN THE CARGO AREA

Shell and Longitudinal Bulkheads

STRUCTURAL MEMBER	EXTENT OF MEASUREMENT	PATTERN OF MEASUREMENT
1. Deckhead and bottom strakes, and strakes in way of stringer platforms.	Plating between each pair of longitudinals in a minimum of three bays	Single Measurement
2. All other strakes	Plating between every third pair of longitudinals in same three bays	Single Measurement
3, Longitudinals - deckhead and bottom strakes	Each longitudinal in same three bays	Three measurements across web and one measurement on flange
4. Longitudinals - all others	Every third longitudinal in same three bays	Three measurements across web and one measurement on flange
5. Longitudinals - bracket	Minimum of three at top, middle and bottom of tank in same three bays.	Five-point pattern over area of bracket.
6. Web frames and cross ties	Three webs with minimum of three locations on each web, including in way of cross tie connections.	Five-point pattern over about two square meter area, plus single measurements on web frame and cross tie face flats.

TABLE Vd

REQUIREMENTS FOR THE EXTENT OF THICKNESS MEASUREMENTS AT AREAS OF SUBSTANTIAL CORROSION. PERIODICAL SURVEY OF SHIPS WITH THE SERVICE NOTATION OIL TANKER, PRODUCT TANKER & CHEMICAL TANKER WITHIN THE CARGO AREA

Transverse Bulkheads and Swash Bulkheads

STRUCTURAL MEMBER	EXTENT OF MEASUREMENT	PATTERN OF MEASUREMENT
1. Deckhead and bottom strakes, and strakes in way of stringer platforms.	Plating between each pair of stiffeners at three locations - approx. ¼, □, and ¾ width of tank.	Five-point pattern between stiffeners over 1 meter length.
2. All other strakes	Plating between pair of stiffeners at middle location.	Single Measurement
3. Strakes in corrugated bulkheads	Plating for each change of scantling at center of panel and at flange or fabricated connection.	Five-point pattern over about one square meter of plating.
4. Stiffeners	Minimum of three typical stiffeners.	For web, five-point pattern over span between bracket connections (two measurements across web at each bracket connection, and one at center of span). For flange, single measurements at each bracket toe and at center of span.
5. Brackets	Minimum of three at op, middle and bottom of tank.	Five-point pattern over area of bracket.
6. Deep webs and girders.	Measurements at toe of bracket and center of span.	For web, five-point pattern over one square meter area. Three measurements across face flat.
7. Stringer platforms	All stringers with measurements at both ends and middle.	Five-point pattern over one square meter area plus single measurements near bracket toes and on face flats

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TABLE VIa

REQUIREMENTS FOR CLOSE-UP SURVEY AT PERIODICAL SURVEYS OF SHIPS WITH SERVICE NOTATION OIL TANKER, PRODUCT TANKER & CHEMICAL TANKER

AGE#5	5<AGE#10	10<AGE#15	AGE>15
1	2	3	4
(A) ONE WEB FRAME RING - in a ballast wing tank, if any, or a cargo wing tank used primarily for water ballast. (B) ONE DECK TRANSVERSE - in a cargo tank. (D) ONE TRANSVERSE BULKHEAD - in a ballast tank. (D) ONE TRANSVERSE BULKHEAD - in a cargo wing tank. (D) ONE TRANSVERSE BULKHEAD - in a cargo center tank.	(A) ALL WEB FRAME RINGS - in a ballast wing tank, if any, or a cargo wing tank used primarily for water ballast. (B) ONE DECK TRANSVERSE - in each of the remaining ballast tanks, if any. (B) ONE DECK TRANSVERSE - in a cargo wing tank. (B) ONE DECK TRANSVERSE - in two cargo center tanks. (C) BOTH TRANSVERSE BULKHEADS - in a wing ballast tank, if any, or a cargo wing tank used primarily for water ballast. (D) ONE TRANSVERSE BULKHEAD - in each remaining ballast tank. (D) ONE TRANSVERSE BULKHEAD - in a cargo wing tank. (D) ONE TRANSVERSE BULKHEAD - in two center tanks.	(A) ALL WEB FRAME RINGS - in all ballast tanks. (A) ALL WEB FRAME RINGS - in a cargo wing tank. (A) ONE WEB FRAME RING - in each remaining cargo wing tank. (C) ALL TRANSVERSE BULKHEADS - in all cargo and ballast tanks. (E) ONE DECK AND BOTTOM TRANSVERSE - in each cargo center tank. (F) As considered necessary by HTO.	As for ships referred to in Column 3. Additional transverses include as deemed necessary by HTO.

(A) Complete transverse web frame ring including adjacent structural members.
(B) Deck transverse including adjacent deck structural members.
(C) Transverse bulkhead complete - including girder system and adjacent members.
(D) Transverse bulkhead lower part - including girder system and adjacent and structural members.
(E) Deck and bottom transverse including adjacent structural members.
(F) Additional complete transverse web ring.

TABLE VIb

REQUIREMENTS FOR THICKNESS MEASUREMENTS AT PERIODICAL SURVEYS OF SHIPS WITH SERVICE NOTATION OIL TANKER, PRODUCT TANKER & CHEMICAL TANKER

AGE#5	5<AGE#10	10<AGE#15	AGE>15
1	2	3	4
1. One section of deck plating for the full beam of the ship within the cargo area (in way of a ballast tank, if any, or a cargo tank used primarily for water ballast).	1. Within the cargo area: 1) Each deck plate 2) One transverse section.	1. Within the cargo area: 1) Each deck plate; 2) Two transverse sections.	1. Within the cargo area: 1) Each deck plate 2) Three transverse sections 3) Each bottom plate.
2. Measurements of structural members subject to close-up survey according to Annex 1, for general assessment and recording of corrosion pattern.	2. Measurements of structural members subject to close-up survey according to Annex 1, for general assessment and recording of corrosion pattern.	2 Measurements of structural members subject to close-up survey according to Annex 1, for general assessment and recording of corrosion pattern.	2. Measurements of structural members subject to close-up survey according to Annex 1, for general assessment and recording of corrosion pattern.
3. Suspect Areas	3. Suspect Areas 4. Selected wind and water strakes outside the cargo area.	3. Suspect Areas 4. Selected wind and water strakes outside the cargo area. 5. All wind and water strakes within the cargo area.	3. Suspect Areas 4. Selected wind and water strakes outside the cargo area. 5. All wind and water strakes within the cargo area.

TABLE VIc

REQUIREMENTS FOR TANK PRESSURE TESTING AT PERIODICAL SURVEYS OF SHIPS WITH SERVICE NOTATION OF OIL TANKER, PRODUCT TANKER AND CHEMICAL TANKER

AGE#5	5<AGE#10	10<AGE#15	AGE>15
1. Cargo tank boundaries facing ballast tanks, void spaces, pipe tunnels, fuel oil tanks, pump-rooms or cofferdams. 2. Representative Tanks for fresh water, fuel oil and lubrication oil.	1. Cargo tank boundaries facing ballast tanks, void spaces, pipe tunnels, fuel oil tanks, pump-rooms or cofferdams. 2. All cargo tank bulkheads which form the boundaries of segregated cargoes. 3. Representative Tanks for fresh water, fuel oil and lubrication oil.	1. Cargo tank boundaries facing ballast tanks, void spaces, pipe tunnels, fuel oil tanks, pump-rooms or cofferdams. 2 All remaining cargo tank bulkheads. 3. Representative Tanks for fresh water, fuel oil and lubrication oil.	1. Cargo tank boundaries facing ballast tanks, void spaces, pipe tunnels, fuel oil tanks, pump-rooms or cofferdams. 2. All remaining cargo tank bulkheads. 3. All fresh water, fuel oil and lubrication oil tanks.

TABLE VIIa

REQUIREMENTS FOR CLOSE-UP SURVEY AT PERIODICAL SURVEYS OF SHIPS WITH SERVICE NOTATION OF BULK CARRIER, ORE CARRIER, BULK & ORE CARRIER

AGE≤5	5<AGE≤10	10<AGE≤15	AGE>15
1	2	3	4
(A) - 25% of frames in the forward cargo hold at representative positions. (A) - Selected frames in remaining cargo holds. (B) - One transverse web with associated plating and longitudinals in two representative water ballast tanks of each type (i.e. topside, hopper side or side tank). (C) - Two selected cargo hold transverse bulkheads	(A) - 25% of frames in the forward cargo hold at representative positions. (A) - Selected frames in remaining cargo holds. (B) - One transverse web with associated plating and longitudinals in each water ballast tank (i.e. topside, hopper side or side tank. (B) - Forward and aft transverse bulkhead in one side ballast tank, including stiffening system. (C) - One transverse bulkhead in each cargo hold. (D) - Selected cargo hold hatch covers and coamings. (E) - Selected areas of deck plating inside line of hatch openings between cargo hold hatches.	(A) - 25% of frames in the forward cargo holds. (B) - All transverse webs with associated plating and longitudinals in each water ballast tank (i.e. topside, hopper side or side tank. (C) - All transverse bulkheads in ballast tanks, including stiffening system. (C) - All cargo hold transverse bulkheads. (D) - All cargo hold hatch covers and coamings. (E) - All deck plating inside line of hatch openings between cargo hold hatches.	(A) - All frames in all cargo holds. Points (B) to (D) referred to in Column 3.

(A) - Cargo hold transverse frames.
(B) - Transverse web or watertight transverse bulkhead in water ballast tanks.
(C) - Cargo hold transverse bulkheads, platings, stiffeners and girders.
(D) - Cargo hold hatch cover and coamings
(E) - Deck plating inside line of hatch openings between cargo hold hatches.

TABLE VIIb

REQUIREMENTS FOR THICKNESS MEASUREMENTS AT PERIODICAL SURVEYS OF SHIPS WITH SERVICE NOTATION OF BULK CARRIER, ORE CARRIER, BULK & ORE CARRIER

AGE≤5	5<AGE≤10	10<AGE≤15	AGE>15
1	2	3	4
1. Suspect Areas	1. Suspect Areas. 2. Within the cargo length area. .1 Two transverse sections of deck plating outside line of cargo hatch opening. 3. Measurement for general assessment and recording of corrosion pattern, of those structural members subject to close-up survey according to Annex 1. 4. Selected cargo hold hatch covers and coamings (plating and stiffeners). 5. Selected areas of deck plating inside line of openings between cargo hold hatches. 6. All wind and water strakes within the cargo length area.	1. Suspect Areas 2. Within the cargo length area. .1 Each deck plate outside line of cargo hatch openings. .2 Two transverse sections, one of which should be in the amidship area, outside line of cargo hatch openings. 3. Measurement for general assessment and recording of corrosion pattern, of those structural members subject to close-up survey according to Annex 1. 4. All cargo hold hatch covers and coamings (plating and stiffeners). 5. All deck plating inside line of openings between cargo hold hatches. 6. All wind and water strakes within the cargo length area. 7. Selected wind and water strakes outside the cargo length area.	1. Suspect Areas 2. Within the cargo length area. .1 Each deck plate outside line of cargo hatch openings. .2 Two transverse sections, one of which should be in the amidship area, outside line of cargo hatch openings. .3 Each bottom plate. 3. Points 3 to 7 referred to in Column 3.

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