

# *Polski Rejestr Statków*

## **RULES FOR THE CLASSIFICATION AND CONSTRUCTION OF HIGH SPEED CRAFT**

### **PART I CLASSIFICATION REGULATIONS**

2016  
January



GDAŃSK

**RULES FOR THE CLASSIFICATION AND CONSTRUCTION OF HIGH SPEED CRAFT** developed and issued by Polski Rejestr Statków S.A., hereinafter referred to as PRS, consist of the following parts:

- Part I – Classification Regulations
- Part II – Hull
- Part III – Hull Equipment
- Part IV – Buoyancy, Stability and Subdivision
- Part V – Fire Protection
- Part VI – Machinery Equipment and Installations
- Part VII – Electrical Installations and Control Systems.

As regards materials and welding, the requirements specified in *Part IX – Materials and Welding* of the *Rules for Classification and Construction of Sea-going Ships* apply.

*Part I – Classification Regulations – January 2016* was approved by PRS Executive Board on 20 January 2016 and enters into force on 25 January 2016.

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PRS/OP, 01/2016

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## 1 GENERAL

### 1.1 Application

**1.1.1** The requirements of the *Rules for Classification and Construction of High Speed Craft*, hereinafter referred to as the *Rules*, apply to:

- .1 craft capable of reaching the maximum speed [m/s] of  $3.7 V^{0.1667}$  [m<sup>3</sup>] and above, where  $V$  = volume of displacement corresponding to the design waterline [m<sup>3</sup>];
- .2 cargo craft which do not proceed in the course of their voyage more than 8 hours at operational speed from a place of refuge when fully laden;
- .3 passenger craft which do not proceed in the course of their voyage more than 4 hours at operational speed from a place of refuge.

**1.1.2** The *Rules* apply to both new and existing craft. Wherever the craft age is mentioned in the *Rules*, it is determined as of the date of its construction.

**1.1.3** The requirements of the *Rules* and associated *Publications* apply in the scope specified in detail in the specific provisions of the parts of the *Rules* and *Publications*.

### 1.2 Definitions

For the purpose of the *Rules*, unless expressly provided otherwise, the terms used therein have the meanings defined below.

**B a l l a s t t a n k** – a tank intended primarily for water ballast.

**B a s e p l a n e** – horizontal plane which crosses amidships the top of a flat keel or the intersection of the inner surface of the plating with the bar keel.

**C a r g o c r a f t** – any high-speed craft other than passenger craft or crew boat, and which is capable of maintaining the main functions and safety systems of unaffected spaces, after damage in any one compartment on board.

**C l a s s o f c r a f t** – compliance of the craft construction, workmanship and condition (hull, machinery equipment, installations, other equipment) with the relevant requirements of the *Rules* confirmed by the assignment of symbol of class and the *Certificate of Class* issued to a high speed craft.

**C l a s s i f i c a t i o n c y c l e** – cyclically recurrent period from the initial survey for class assignment on the construction accomplishment or class renewal survey, equal to the class validity period (usually 5 years) covering all the due periodical surveys.

**C l o s e - u p e x a m i n a t i o n** – close-up inspection and thickness measurements which are sufficient to confirm the actual average condition of the structure under the coating.

**C o a t i n g c o n d i t i o n** – is defined as follows:

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

**C r e w S h i p** – high speed craft intended the transport of industrial personnel.

**C r i t i c a l r e g i o n s o f c o n s t r u c t i o n** – regions considered as requiring special control based on either calculations or previous operational experience of the relevant craft, or a number of similar or sister craft (if any) for cracking, buckling or corrosion which may impair the hull construction integrity.

**D a t e o f c o n s t r u c t i o n** – completion date of the initial survey of a new craft to be the base for determining the requirements of periodical surveys. Where a craft is put in service with a considerable delay, the date when the craft was put in service may also be entered in the *Certificate of Class*. For any

craft modification, the date of construction remains unchanged. For instance, in the case of full replacement or extension of a significant part of hull\*, the following applies:

- the "date of construction" of each considerable part of hull if it was stipulated that newer parts of hull are subject to different survey cycles;
- "date of construction" of each considerable part of hull is the base for determining the survey requirements for such parts;
- due date of surveys may be harmonized subject to PRS consideration in each particular case.

**D a t e o f c o n t r a c t f o r c o n s t r u c t i o n** – unless defined otherwise:

- .1** date of contract for the craft construction means the day, when such a contract was concluded by the prospective owner and shipyard. Such a date and structure component numbers (e.g. hull construction number) shall be communicated to PRS by the party requesting class assignment to a newly built craft;
- .2** date of contract for the sister craft construction including those craft whose construction option was finally concluded means the day when such a contract was concluded by the prospective owner and shipyard.

For the purposes of this definition, it is understood that a number of craft constructed following one contract for construction are considered as "sister craft series" if they were built in accordance with the same approved classification documentation. Particular craft may, however, have changes introduced compared to the original design provided that:

- (1) such changes apply to matters not covered by the classification requirements, or
- (2) if such changes apply to matters covered by the classification requirements, they shall be in accordance with the classification requirements in force on the day when a contract for introduction of such changes was concluded by the prospective owner and shipyard, or in the absence of a contract for introduction of such changes they shall be in accordance with the classification requirements in force on the day when such changes were requested to be approved by PRS.

Option craft are considered as belonging to the same sister craft series if the contract for their construction was concluded not later than 1 year after the particular series of craft had been concluded;

- .3** if a contract for construction is later amended by adding subsequent craft (or more craft) or subsequent option craft (or more craft), the date of contract for construction is considered as of the day when such an amendment was signed by the prospective owner and shipyard. Such a contract amendment is considered as a new contract and the provisions specified above in .1 and .2 apply;
- .4** if the contract for construction has been amended to change the type of craft, the "date of contract for construction" for such a modified craft or more craft are considered as of the day when such an amendment to an existing contract, or a new contract, was signed by the prospective owner and shipyard.

**E x a m i n a t i o n :**

- **e x t e r n a l e x a m i n a t i o n ( g e n e r a l )** – visual inspection of structure or machinery, without their dismantling, aiming for general assessment of their condition and to determine the scope of additional special (close-up) examination, where necessary;
- **i n t e r n a l e x a m i n a t i o n** – visual examination of structure or machinery in partially or wholly dismantled condition or a visual examination of arrangements (boilers, pressure vessels) from the inside, aiming for the assessment of their technical condition and for determination of the scope of an additional detailed examination, where necessary;
- **d e t a i l e d e x a m i n a t i o n** – thorough visual examination of construction, machinery or equipment which are usually within the Surveyor's reach.

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\* For instance, the term „significant part of hull” may stand for a complete fore or after part of hull, full cargo space (which may contain cargo holds/tanks or a complete block of deck construction on a passenger craft), and the „extension of a significant part of hull” may also be understood the craft construction changes involving conversion of a single-hull construction into a double-hull construction.

**Force Majeure** – unforeseen inability of PRS to attend to perform the due survey of craft as a result of the governmental restrictions on right of access or movement of PRS personnel; unforeseeable delays in port or inability to discharge cargo due to unusually lengthy periods of severe weather, strikes or civil strife; acts of war; or other force majeure.

**Grounding** – contact, by a craft, with the water bed or a navigation obstacle, reported by the master as marine accident.

**Hydrofoil craft** – craft the hull of which is supported completely clear above the water surface in non-displacement mode by hydrodynamic forces generated on foils.

**Industrial personnel** – all persons who are neither passengers nor special personnel nor crew members and are on board the craft for purpose of operating off-shore installations.

**Length ( $L$ )** – overall length of the underwater watertight envelope of the rigid hull, excluding appendages, at or below the design waterline in the displacement mode with no lift or propulsion machinery active, [m].

**Maximum speed** – speed achieved at the maximum continuous propulsion power for which the craft is certified at maximum operational weight and in smooth water.

**Moulded depth ( $H$ )** – vertical distance measured at the side amidships from the base plane to the upper edge of the uppermost continuous deck beam.

**Operation tests, strength tests, tightness tests:**

- **Operation tests** – external examination of an item of machinery or appliance under working conditions, combined with the measurements of essential operating parameters.
- **Strength tests:**
  - **Destructive strength tests** – strength tests during which representative specimens are subjected to increasing load until they are destructed and the parameters, at which it happened, are recorded.
  - **Non-destructive strength tests** – tested object is subjected to the proof load specified by PRS; the object shall not fail.
- **Tightness tests** – tested object is exposed to a liquid or gaseous medium. The medium type, pressure and testing procedure are subject to PRS consent in each particular case.

**Operational speed** – 90% of maximum speed.

**Passenger** – every person on board the craft other than the master and crew or other persons employed on board in any capacity or children below one year of age.

**Passenger craft** – high-speed craft which carries more than twelve passengers.

**Prompt and thorough repair** – permanent repair completed at the time of survey to the Surveyor's satisfaction, therein eliminating the need for imposing any recommendation.

**Representative spaces** – spaces which are expected to reflect the condition of other spaces of similar type and service and with similar corrosion prevention systems. When selecting representative spaces, account shall be taken of the service and repair history on board and identifiable critical and/or suspect areas.

**Ro-ro craft** – high speed craft intended for the carriage of cargo in units on the assumption that they are loaded and unloaded horizontally.

**Ship crew** – a group of persons controlling the craft and ensuring its manoeuvrability and safe operation, as well as the safety of personnel attending those on board, including passengers.

**Similar stage of construction** – the stage at which construction identifiable with a specific craft begins and assembly of that craft has commenced comprising at least 50 tonnes or one per cent (1%) of the estimated mass of all structural material, whichever is lesser.

**Sister craft** – high speed craft built in accordance with the same classification documentation approved which may, however, contain some minor changes of design with no effect on the classification matters.

**Spaces** – separate compartments, including holds and tanks.

**Special circumstances** – no technical means for craft dry docking or repair; lack of essential materials, equipment or spare parts; delays due to actions taken to avoid adverse weather conditions.

**Special personnel** – all persons who are not passengers or members of the crew but being on board in connection with the special purpose of the craft.

**Subdivision** – craft capability of maintaining buoyancy and stability in accordance with the requirements specified in *Part IV* of the *Rules* after the damage or flooding of a single compartment, or a group of adjacent compartments, located below the bulkhead deck.

**Substantial corrosion** – an extent of corrosion such that assessment of corrosion pattern indicates wastage in excess of 75% of allowable margins, however within acceptable limits.

**Survey** – set of activities relating to a motor boat, its machinery, equipment, fittings etc. consisting in relevant examination, measurements and tests.

**Suspect areas** – locations showing substantial corrosion or considered by the PRS surveyor to be prone to damage or rapid wastage.

**Survey completion** – a survey is considered as complete when all activities, determined in the *Rules* for specific survey, have been performed, the recommended repairs have been made and deficiencies have been rectified so as to ensure the safe departure of a craft to sea and its safe operation. Completion of survey is confirmed by a new temporary certificate or an endorsement of a full-term certificate. The date of survey completion is a date of issuing temporary certificate or endorsement of full-term certificate.

**Symbol of class** – a group of conventional marks and notations, specifying the class of craft, kind of survey during the craft's building and in service, as well as the craft's structural features and operational limitations, if any. Symbol of class consists of the main symbol of class and additional marks.

**Transverse section** – a section which includes all longitudinal members, such as plating, longitudinals and girders at the deck, sides, bottom, inner bottom and longitudinal bulkheads. For transversely framed craft, a transverse section includes adjacent frames with their end connections.

## **2 SCOPE OF SURVEY**

**2.1** Classification survey of high speed craft covers its hull, hull equipment, machinery and electrical equipment as well as the associated systems including other equipment as required in the *Rules*.

**2.2** Stability, subdivision and fire protection are also subject to the classification survey according to the principles specified the *Rules*.

**2.3** If the craft's symbol of class contains additional marks, their corresponding hull components, machinery and electrical equipment and installations are subject to classification surveys.

**2.4** Craft equipment not covered by periodical classification surveys are subject to PRS technical survey in respect of the Flag State requirements and/or the possible hazard to the craft safety.

## **3 CLASS OF CRAFT**

### **3.1 General**

**3.1.1** At the Owner's request, PRS may assign a class to a new or an existing craft, as well as to confirm, renew, withdraw or reinstate class of an existing craft classed with PRS.



**3.1.2** PRS may suspend or withdraw the class of craft for reasons specified in Chapters 6 and 7, respectively.

**3.1.3** Class of a craft is confirmed by the *Certificate of Class*.

**3.1.4** In the *Certificate of Class*, the main symbol of class with additional marks, as specified in 3.4, is entered.

## **3.2 Period of Craft Class Validity**

**3.2.1** Class of a craft is assigned or renewed, in general, for 5 years.

**3.2.2** In justified cases, PRS may extend the craft's class validity (see 6.1.3.1 and 6.3).

## **3.3 Main Symbol of Class**

### **3.3.1 Main Symbol of Class of Craft Built under PRS Survey**

**3.3.1.1** New craft built under PRS survey, upon completion of the Initial Survey for Assignment of Class (see sub-chapter 4.2), is given the following main symbol of class:

\* HSC

### **3.3.2 Main Symbol of Class of Craft Built under Survey of Other Accredited Classification Society**

**3.3.2.1** Existing craft, built under the survey of other Classification Society, to whom, upon completion of the Initial Survey for Assignment of Class (see 4.3), PRS class has been assigned, is given the following main symbol of class:

HSC

### **3.3.3 Main Symbol of Class of Craft Built without Survey of Accredited Classification Society**

**3.3.3.1** Craft built without the survey of an accredited Classification Society, to whom, upon completion of the initial survey for assignment of class (see 4.4), PRS class has been assigned, is given the following main symbol of class:

(HSC)

## **3.4 Additional Marks in Symbol of Class**

### **3.4.1 General**

**3.4.1.1** Additional marks in the symbol of class indicate the type of craft, obligatory requirements or limitations relevant to the type of craft or its operation ability, as well as additional craft structure or adaptation features.

**3.4.1.2** Additional marks are affixed to the symbol of class upon fulfilment of the requirements specified in the relevant Parts of the *Rules*.

**3.4.1.3** Additional marks in the symbol of class are put after the main symbol of class in order ensuing from 3.4.2, 3.4.3 and 3.4.4.

**3.4.1.4** PRS may alter or delete the additional mark in the symbol of class in the case of modification of conditions, upon which the mark has been affixed or at the Owner's request.

### **3.4.2 Additional Marks Indicating Type of Craft**

**3.4.2.1** Craft who fulfil the basic requirements, specified for the given type, as well as with the relevant additional requirements, specified in particular Parts of the *Rules*, is assigned one of the below-stated marks, affixed to the symbol of class:

3.4.2.1.1 Passenger craft<sup>1</sup>:

**PASSENGER**

3.4.2.1.2 Craft intended for the transport of industrial personnel:

**CREW BOAT**

3.4.2.1.3 Hydrofoil craft:

**HYDROFOIL**

3.4.2.1.4 Ro-ro craft:

**RO-RO**

3.4.2.2 Craft in compliance with the requirements for two or more types of craft is assigned a compound mark containing individual marks, affixed to the symbol of class (e.g. **CREW BOAT/RO-RO**).

3.4.2.3 PRS may assign a craft with a different mark indicating the craft type if considers it technically justified. In that case, additional requirements will be specified by PRS in each particular case.

**3.4.3 Additional Marks Indicating Obligatory Requirements or Limitations Relevant to Craft Type or its Operation Ability**

**3.4.3.1 Mark of High Speed Passenger Craft**

Passenger craft is assigned one of the below listed marks affixed to the symbol of class:

**CATEGORY A**

- .1 craft operating on a route where it has been demonstrated to the satisfaction of the flag and port States that there is a high probability that in the event of an evacuation at any point of the route, all passengers and crew can be rescued safely within the least of:
  - the time to prevent persons in survival craft from exposure causing hypothermia in the worst intended conditions,
  - the time appropriate with respect to environmental conditions and geographical features of the route, or
  - 4 hours, and
- .2 craft carrying not more than 450 passengers.

**CATEGORY B**

any high-speed passenger craft other than a CATEGORY A craft, with machinery and safety systems so arranged that, in the event of any essential machinery and safety systems in any one compartment being disabled, the craft retains the ability of navigating safely.

**3.4.3.2 Restricted Service Marks**

3.4.3.2.1 If a craft has been built with preferences for the particular area of navigation, specified in the following *Parts* of the *Rules*: *II – Hull*, *III – Hull Equipment*, *IV – Buoyancy, Stability and Subdivision*, *V – Fire Protection* and *VI – Machinery Installations*, marks **I**, **II** or **III** are affixed to the symbol of class to have the following meaning:

- I** – navigation on open seas up to 200 nautical miles from the port of refuge and with an allowable distance between two ports of refuge up to 400 nautical miles and navigation on enclosed seas;
- II** – navigation on open seas up to 50 nautical miles from the port of refuge and with an allowable distance between two ports of refuge up to 100 nautical miles and navigation on enclosed seas, within the limits determined for each case and specified in the *Certificate of Class*, as well as navigation on the Baltic Sea;

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<sup>1</sup> For the purposes of these Rules, every craft other than passenger craft is considered as cargo craft.

**III** – navigation on the open and enclosed seas up to 20 nautical miles from the coast line, within the limits determined in each particular case and entered in the *Certificate of Class*.

### **3.4.4 Additional Marks Indicating Craft Structure or Adaptation Features**

#### **3.4.4.1 Ice Strengthening Marks (Ice Class), applicable to displacement cruising only**

**3.4.4.1.1** If ice strengthening of a craft not less than 24 m in length fulfils the relevant requirements specified in *Part II – Hull*, mark:

**(L4)**

is affixed to the symbol of class which means that the craft is allowed to sail unaided occasionally in fine ice pieces of coastal areas of non-Arctic seas.

**3.4.4.1.2** If ice strengthening of a craft less than 24 m in length fulfils the relevant requirements specified in *Part II – Hull*, mark:

**Lm1**

is affixed to the symbol of class which means that the craft is allowed to sail following an ice-breaker or unaided in fine ice pieces.

**3.4.4.1.3** If ice strengthening of a craft less than 24 m in length fulfils the relevant requirements specified in *Part II – Hull*, mark:

**Lm2**

is affixed to the symbol of class which means that the craft is allowed to sail unaided occasionally in fine ice pieces.

**3.4.4.1.4** If a craft is constructed with no ice strengthenings, no ice class marks are affixed in the symbol of class.

#### **3.4.4.2 Mark of Adaptation to Survey of Underwater Part of Hull when Craft is Afloat**

If a craft fulfils the relevant requirements specified in 5.5.3, mark:

**IWS**

is affixed to the symbol of class which means that the craft is adapted for performing In-water Bottom Survey.

## **4 ASSIGNMENT OF CLASS TO CRAFT**

### **4.1 General**

**4.1.1** PRS may assign a class to a new craft or to an existing craft. The condition for assigning class to a craft is the Owner's written request for PRS class assignment, submitting the required technical documentation and satisfactory result of the Initial Survey for the Assignment of Class.

**4.1.2** After the Initial Survey for Assignment of Class has been accomplished, PRS Branch Office issues the *Temporary Certificate of Class* to enable the craft to sail. The results of the Initial Survey are subject to PRS Head Office verification.

**4.1.3** Assignment of class is confirmed by the issue of the *Certificate of Class* and an appropriate entry is made in PRS *Register*. Assignment of class means that the craft, in full measure or to a degree considered by PRS acceptable, fulfils the relevant requirements of the *Rules*.

**4.1.4** Where structural details of a craft to be classed with PRS or its equipment do not fulfil the requirements of PRS *Rules* and the Owner presents evidence of the craft or equipment satisfactory behaviour during the craft service to date, PRS may accept the evidence as technically equivalent.

## 4.2 Craft Built under PRS Survey

**4.2.1** New craft built under PRS survey may be assigned PRS class after satisfactory completion of the following activities:

- technical documentation approval within the scope required in particular *Parts* of the *Rules*,
- survey of the manufacture of the main propulsion (main engines, gears, clutches, shaft lines, propellers, thrusters and, where fitted, main boilers or main generator sets),
- survey of the manufacture of other machinery and equipment, materials and components required in particular *Parts* of the *Rules*,
- survey during the construction of hull,
- survey of the installation of machinery, equipment and systems required in particular *Parts* of the *Rules*,
- survey of dock trials and sea trials.

The scope of the required technical documentation to be forwarded to PRS, in addition to the above mentioned documentation to be submitted for approval, also covers:

- documentation submitted for reference such as Technical Specification, General Arrangement Plan, Tanks Plan to which PRS can make critical comments;
- workshop documentation which to be agreed on with the PRS Branch Office concerned; the scope of such documentation is each time specified by this Branch Office.

Detailed scope of inspections related to the above mentioned surveys is determined by PRS Branch Office concerned with the particular craft survey based on the *Rules*, approved documentation and taking account of the local conditions of construction. All the surveys together constitute the initial survey of craft.

The *Certificate of class* validity period starts as of the date of initial survey completion.

## 4.3 Existing Craft

**4.3.1** For the purpose of PRS class assignment to an existing craft of less than 100 gross tonnage, the requirements specified in sub-chapters 4.3, 4.4 and 4.5 of *Part I – Classification Regulations* of the *Rules for Classification and Construction of Small Sea-going Ships* apply.

**4.3.2** For the purpose of PRS class assignment to an existing craft of 100 gross tonnage and above, the requirements specified in sub-chapters 4.3, 4.4 and 4.5 of *Part I – Classification Regulations* of the *Rules for Classification and Construction of Sea-going Ships* apply.

## 5 MAINTENANCE OF CLASS – SURVEY DATES AND SCOPES

### 5.1 General Provisions

#### 5.1.1 Provisions for Survey

**5.1.1.1** Conditions for class maintenance are the following:

- craft, i.e. its hull, machinery and equipment, kept in good order,
- craft operation in accordance with the conditions specified in the *Certificate of Class*, manufacturers' guidelines and good seamanship,
- periodical surveys performed in due dates,
- retroactive requirements specified in the *Supplements* to the particular parts of the *Rules* fulfilled in due dates,
- relevant guidelines followed by due dates,
- occasional surveys performed,
- survey payments made by due dates.

Craft Owner takes responsibility for the fulfilment of the above conditions and the relevant requirements specified in the *Rules*.

**5.1.1.2** During each classification cycle, all craft classed with PRS are subject to the following periodical surveys:

- annual survey,
- intermediate survey,

- class renewal survey,
- bottom survey,
- propeller survey,
- survey of pressure vessels (if any).

**5.1.1.3** All craft classed with PRS are subject to occasional surveys in the cases specified in 5.12 and 5.13.

**5.1.1.4** PRS notifies the Owner on the dates of due periodical and occasional surveys by a craft survey status. Non-receipt of a craft survey status does not absolve the Owner from an obligation to submit the craft for survey at the dates specified in the *Rules*.

**5.1.1.5** Class renewal survey aims to ensure that the craft hull and its equipment, machinery and installations fulfil the requirements of the *Rules*, and to ensure that the craft is fit for its intended purpose for the subsequent 5-year period, subject to proper maintenance and operation.

A survey planning meeting shall be held prior to the commencement of the survey.

**5.1.1.6** Annual and Intermediate Surveys shall ascertain that the craft hull and its equipment, machinery and installations are in a satisfactory technical condition.

**5.1.1.7** Annual, Intermediate or Class Renewal Survey may be considered complete if an appropriate survey of the craft hull and machinery has been held within the scope defined in 5.3 to 5.9. PRS may extend the scope of surveys, depending on the craft age, technical condition, as well as the type of equipment and structure.

**5.1.1.8** After completion of Periodical Survey, PRS Branch Office endorses the *Certificate of Class* or issues the *Temporary Certificate of Class* to enable the craft to sail. The results of Periodical Survey are subject to verification by PRS Head Office.

**5.1.1.9** Intervals between Periodical Surveys of a craft built under PRS classification survey will date from the classification cycle commencement.

**5.1.1.10** Intervals between Periodical Surveys of ships which have entered PRS class with a valid class assigned by other Classification Society, ships that have not been classed before and ships with class withdrawn are set by PRS.

**5.1.1.11** PRS may shorten the intervals between examinations, measurements or tests of hull members, particular items of machinery, installations and equipment if it is found necessary due to their technical or service conditions. In that case, new due dates of the examinations, measurements or tests will, in general, be concurrent with Periodical Surveys.

**5.1.1.12** In justified cases, PRS surveyor may waive a survey of particular items of machinery in dismantled condition or limit the scope of survey if external examinations, measurements and operation tests prove that the machinery item is in good and efficient condition. The surveyor may also limit the scope of surveys in dismantled condition of the main engine and generator prime movers after the analysis of the particular engine maintenance records.

**5.1.1.13** Any damage in connection with wear-out over the allowable limits (including buckling, grooving, detachment or fracture), or extensive areas of corrosion diminution over the allowable limits, which affect or, in the opinion of PRS surveyor, will affect the craft structural, watertight or weathertight integrity, shall be promptly and thoroughly repaired.

Special attention shall be paid to:

- side shell frames, their end attachments and adjoining shell plating,
- main and upper deck structure and plating with the adjoining structural members,
- bottom structure and bottom plating with the adjoining structural members,
- watertight and oiltight bulkheads,
- hatch covers and hatch coamings,

- welded joints at penetrations of air pipes through the deck plating,
- air pipe heads installed on weather decks, including flame screens on vents to all bunker tanks,
- fans, including their closing devices, if any.

If the extent of damage detected in port is such that thorough repair is impossible in that port, PRS may permit, on the Owner's request, the craft to proceed directly to the port or shipyard where adequate repair is practicable. In that case, discharging of cargo and/or carrying out temporary repairs allowing for such a voyage may be required.

**5.1.1.14** If the structure damage mentioned in paragraph 5.1.1.13 above is isolated and its extent is local, therefore such damage does not affect the craft structural integrity, PRS surveyor may accept a provisional repair to retrieve the structure watertight or weathertight integrity and impose a recommendation for a limited time period.

**5.1.1.15** Remote inspection techniques may be used to facilitate the required internal examinations, including close-up examinations and gaugings required with close-up examinations.

Proposals for use of remote inspection techniques shall be submitted to PRS for approval in advance of the survey.

Where such techniques are applied, confirmatory close-up surveys are performed by PRS Surveyor at selected locations.

Application of remote inspection techniques may be restricted or limited where there is an indication of abnormal deterioration or damage to the structure.

**5.1.1.16** Services, which constitute the basis for the craft technical condition assessment by PRS, such as:

- general examination of the underwater part of hull by diver;
- thickness measurements of hull structure;
- non-destructive and destructive tests;
- surveys and tests of fire-extinguishing systems;

as well as all repairs which affect the craft technical condition, such as:

- hull structure repairs;
- renovations of machinery and equipment (such as: main engines, main gear, shafts, main and emergency generating sets, boilers and pressure vessels, anchoring equipment and steering gear, propellers, compressors, fire, bilge and water ballast pumps, main and emergency switchboards);

shall be performed by service suppliers approved by PRS (see *Publication No. 51/P – Procedural Requirements for Service Suppliers*).

In justified cases, PRS Surveyor may, at the Owner's request, permit performance of such services by a service supplier not holding PRS approval – on a single approval basis – after verifying the service supplier's ability to perform such services.

All the above-mentioned activities, performed by a service supplier, are subject to the verification by PRS Surveyor.

Hull structure thickness measurements and the examination, by diver, of the underwater part of hull shall be performed in the presence of PRS Surveyor.

**5.1.1.17** Each measurement constituting the basis for the assessment of the structure, machinery or equipment technical condition shall be performed with measuring devices provided with valid verification certificates issued by the authorized body, in accordance with the relevant requirements (standards or technical specifications) and according to the appropriate schedule. Each measuring device shall have valid verification certificate and shall be identifiable (by e.g. serial number or factory identification number).

PRS surveyor may, however, accept the following without confirmation of verification:

- simple measuring equipment (e.g. rulers, measuring tapes, weld gauges, micrometers, etc.), provided they are used according to their intended purpose, are properly maintained and periodically verified by the user;
- equipment fitted on board ship and used for checking pressure, temperature or rpm, etc., provided its readings are compared against the readings of equivalent measuring devices (type, accuracy, scale).

**5.1.1.18** In the case of repairs to the coating in ballast tanks, holds and on hull outside bottom plating, the Owner is obliged to submit, to PRS, document confirming that the coating was applied in accordance with the manufacturer's recommendations. In the case of a routine maintenance work performed by the craft crew, submission of an Owner's report is required.

**5.1.1.19** Each computer software used for calculations while preparing technical documentation and data for evaluation of the ship's operation safety shall have been previously approved by PRS according to *Publication No. 14/P – Principles of Approval of Computer Programs*.

**5.1.1.20** In the case of commercial craft – owned or chartered by Governments – which are utilized in support of military operations or service, PRS may in each particular case consider departures from the requirements specified in this Chapter.

## **5.1.2 Preparation for Survey**

**5.1.2.1** The Owner is obliged to properly prepare the hull, machinery and electrical installations, as well as the ship equipment for each survey. The Surveyor may refrain from performing a survey if he/she considers that the craft has not been properly prepared for the survey or a threat to life or health exists.

If, during the survey, permanent means of access to the craft structure are not available, then alternative means of access shall be applied in accordance with the requirements specified in *Publication No. 27/I – Guidelines for Approval/Acceptance of Alternative Means of Access*.

If, during the survey, entering a confined space is necessary, then the requirements contained in *Publication No. 28/I – Requirements for Safe Entry to Confined Spaces*.

**5.1.2.2** Where soft or semi-hard coatings have been applied, safe access shall be provided to verify the effectiveness of the coating and to perform an assessment of the conditions of the internal structure which may include spot removal of the coating. When safe access cannot be provided, the soft or semi-hard coating shall be removed.

**5.1.2.3** Casings, ceilings or linings, and loose insulation, where fitted, shall be removed, as required by PRS Surveyor, for examination of plating and framing. Compositions on plating shall be examined and sounded, but need not be disturbed if found adhering satisfactorily to the plating.

## **5.1.3 Requirements for Thickness Measurements**

**5.1.3.1** Thickness measurements of the hull structural elements, if not performed by PRS itself, shall be witnessed by PRS Surveyor and his presence shall be recorded in each particular case. PRS Surveyor shall be on board, while gaugings are being taken, to the extent necessary to control the process. Thickness measurements shall be performed by the TM Companies approved by PRS in accordance with *Publication – 51/P Requirements for Service Suppliers*, except that in respect of measurements of non-ESP ships less than 500 GT and all fishing vessels, the TM Companies need not be so approved. Prior to commencement of the intermediate or class renewal survey, a survey planning meeting shall be held between the attending PRS Surveyor(s), the Owner's Representative in attendance, the TM company representative and the master of the ship or an appropriately qualified representative appointed by the master or Company, so as to ensure the safe and efficient execution of the surveys and thickness measurements, if any, to be performed onboard. During the meeting, communication between involved parties shall be agreed with respect to the following:

- reporting of thickness measurements on regular basis to the attending PRS Surveyor(s),
- immediate notification to the surveyor in case of following findings:
  - excessive and/or extensive corrosion or pitting/grooving,
  - structural defects like buckling, fractures and deformed structures,
  - detached and/or holed structure,
  - corrosion of welds.

When thickness measurements are taken in association with Intermediate or Class Renewal Survey, a documented record indicating where and when the meeting took place and who attended shall be maintained.

**5.1.3.2** PRS Surveyor shall decide final extent and location of thickness measurements after overall survey of representative spaces onboard. In the case when the Owner prefers to commence the thickness measurements prior to the overall survey then the Surveyor shall advise of that the planned extent and locations of thickness measurements are subject to confirmation during the overall survey. Based on findings, the Surveyor may require that additional thickness measurements have to be taken. The Surveyor shall direct the gauging operation by selecting locations such that readings taken represent, on average, the condition of the structure for that area. Thickness measurements taken mainly to evaluate the extent of corrosion, which may affect the hull girder strength, shall be performed in a systematic manner of all longitudinal structural members that are required by the relevant *Rules* to be gauged. Where thickness measurements indicate substantial corrosion or wastage in excess of allowable diminution, the surveyor shall direct locations for additional thickness measurements in order to delineate areas of substantial corrosion and to identify structural members for repairs/renewals. Thickness measurements of structures in areas where close-up surveys are required shall be performed simultaneously with close-up surveys.

**5.1.3.3** Upon completion of the thickness measurements, Surveyor shall confirm that no further gaugings are needed, or specify additional gaugings. If, where special consideration is allowed by the *Rules*, the extent of thickness measurements is reduced, the Surveyor special consideration shall be reported. Where thickness measurements are partly performed, the extent of remaining thickness measurements shall be reported for the use of the next surveyor.

**5.1.3.4** At any survey, i.e. Class Renewal, Intermediate, Annual or other surveys, having the scope of the foregoing ones, structure thickness measurements, in areas where close-up examination is required, shall be performed in parallel with close-up examination.

**5.1.3.5** Surveys and thickness measurements of spaces once credited towards Class Renewal Survey cannot be credited towards Intermediate Survey and respectively credited towards Intermediate Survey cannot be credited towards Class Renewal Survey.

## **5.2 Intervals between Periodical Surveys**

### **5.2.1 Annual Survey**

Annual Survey shall be held within 3 months, before and after each anniversary of the assignment of class or the class renewal.

### **5.2.2 Intermediate Survey**

Intermediate Survey shall be held at either the second or third Annual Survey. Parts of the Intermediate Survey, which are additional to the requirements of the Annual Survey, may be surveyed either at or between the second and third Annual Survey.

### **5.2.3 Class Renewal Survey**

- .1** Class Renewal Survey shall be held at 5-yearly intervals. In exceptional cases, however, upon PRS agreement, a maximum 3-month extension of class beyond the 5th year may be granted – see 6.1.3.1.
- .2** Regardless of the requirements specified in 5.2.3.1, where the Class Renewal Survey is completed within 3 months before and after the expiry date of class validity, the validity of the new *Certificate of Class* will be not longer than 5 years from the expiry date of the previous *Certificate*.

For surveys completed more than 3 months before the expiry date of class validity, the period of class will start from the survey completion date. Where the ship has been laid up or has been out of service for a considerable period because of a major repair or modification and the Owner elects to only perform the overdue surveys, the next period of class will start class renewal survey. If the Owner elects to perform the next due class renewal survey, the period of class will start from the survey completion date.



- .3 The Class Renewal Survey may be commenced at the fourth Annual Survey and be progressed so as to be completed by the fifth anniversary date.  
When the Class Renewal Survey starts before the fourth Annual Survey, the entire survey shall be completed within 15 months. In that case, new period of class starts from the survey completion date.

#### **5.2.4 Bottom Survey of Hull**

- .1 Bottom Survey of hull shall be performed each year at the time of Periodical Survey.  
.2 Bottom Survey of hull shall be performed in dry dock.  
.3 Unless the Bottom Survey is credited towards the Class Renewal Survey, the Bottom Survey performed by a diver may be accepted provided that the requirements specified in 5.5.3.4 or 5.5.3.5 are fulfilled.  
.4 Occasional Bottom Survey may be required in case of craft grounding.  
.5 Owner is obliged to notify PRS whenever the craft bottom can be examined in dry dock.

### **5.3 Scope of Annual and Intermediate Surveys**

#### **5.3.1 Hull and Hull Equipment Annual Survey**

Hull and Hull Equipment Annual Survey covers the following:

##### **5.3.1.1 Checking:**

- validity of classification and statutory documents, as well as the craft documents entries concerning overhauling and maintenance of oil tanks, holds and hull machinery and equipment by the Owner. Where any entries are missing, PRS reserves for itself a right to extend the scope of survey beyond the Annual Survey,
- validity of *Stability Booklet* and *Subdivision Booklet*, where required,
- checking that any new equipment containing asbestos has not been fitted on board since the latest survey.

##### **5.3.1.2 General examinations of:**

- plating of the above-water part of the hull and weather decks, including marks (load line marks, draught marks, ship's identification number, electromagnetic radiation warning marks, etc.),
- collision bulkhead,
- other watertight bulkheads, if accessible during survey,
- ballast tanks, in cases subject to the provisions of sub-paragraphs .4 and .5 of paragraph 5.3.2.4 and paragraph 5.4.1.1.
- bulwark, railings and freeing ports,
- superstructures and deckhouses,
- hatch coamings and crane columns together with stiffeners, if any,
- openings and manholes on weather decks,
- outer doors, ship side doors, skylights and scuttles,
- ventilator coamings,
- heads of air pipes, closing devices of sounding pipes and fuel supply pipes,
- closing appliances of inlets and outlets of ventilating ducts in outer superstructures,
- passageways and escape routes.

Where mechanically operated steel covers are fitted, the satisfactory condition of the following shall be checked:

- hatch covers and tightness devices of longitudinal, transverse and intermediate cross junctions (gaskets, gasket lips, compression bars, drainage channels),
- clamping devices, retaining bars, wedges, 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.

#### **5.3.1.3** Close-up examination of:

- suspect areas, if identified during the Class Renewal Survey.

#### **5.3.1.4** Thickness measurements of:

- the plating of the above-water part of the hull, decks, hatch coamings, cargo hatches in the regions where, during survey, substantial corrosion has been found,
- hull structure in the regions where substantial corrosion has been found and specified during previous surveys,
- ballast tanks, as deemed necessary by attending PRS Surveyor, in cases resulting from 5.3.1.3.

#### **5.3.1.5** Operation tests of:

- bow, stern and side cargo doors and ramps,
- bulkhead doors,
- main and emergency steering gear,
- anchoring equipment (the windlass test may be performed at port),
- mooring equipment.

Random checking of the satisfactory operation of mechanically operated hatch covers shall be made in respect of:

- stowage and securing in opened up condition,
- proper fit, locking and effective sealing in closed condition,
- operation tests of hydraulic and power components, wires, chains and link drives.

### **5.3.2 Hull and Hull Equipment Intermediate Survey**

Hull Intermediate Survey covers the Bottom Survey of hull according to 5.2.4, the activities to be performed within Annual Survey and additionally the activities mentioned in 5.3.2.1 to 5.3.2.5.

**5.3.2.1** General examination of selected cargo holds, indicated by PRS – the inner bottom, bulkheads, ship's sides, decks, 'tweendecks, structural members, piping in the holds, watertight bulkhead penetrations.

**5.3.2.2** General examination of machinery spaces, as well as their casings with closing appliances.

**5.3.2.3** General examination of the attachment of bottom and side fittings to the shell.

**5.3.2.4** General examination of ballast tanks:

- .1** In ships over 5 years old and up to 10 years of age, representative ballast tanks, selected by PRS, shall be examined.

Where, in ballast tanks, poor coating condition has been found or soft or semi-hard protective coating has been applied or where a protective coating has not been applied since the time of construction, the examination shall be extended to other ballast tanks of the same type.

- .2** In ships over 10 years of age – all ballast tanks shall be examined.
- .3** Where the survey has revealed no visible structural defects, they may be limited to verification that the corrosion prevention system remains effective.
- .4** Where in tanks, other than the double bottom tanks, a protective hard coating is found to be in POOR condition and has not been renewed, or semi-hard or soft coating was applied, or a protective coating was not applied from the time of construction, maintenance of class shall be made subject to the tanks in question being examined internally at each subsequent Annual Survey.
- .5** Where the double bottom tanks are found to be in the condition, as specified in .4, or a protective coating was not applied from the time of construction, maintenance of class may be subject to the tanks in question being examined internally at each subsequent Annual Survey.

### **5.3.3 Machinery Installations – Annual Survey**

Annual Survey of Machinery Installations covers the following:

**5.3.3.1** Checking classification documents and entries in the ship documents concerning overhauling and maintenance of ship's machinery installations and equipment performed by the Owner. Where any entries are missing, PRS reserves the right to extend the scope of survey beyond that of the Annual Survey.

### 5.3.3.2 Engine Room Machinery, Machinery Installations and Systems

- .1 Main internal combustion engine:
  - external examination of ME crank case safety devices,
  - external examination of ME high pressure fuel pipelines' jacketed piping system and checking the operation of oil leakage alarm,
  - operation tests of ME safety system,
  - tests of manoeuvring gear and starting arrangements, including the test of restoring normal operation of propulsion machinery after one of the essential mechanisms becomes inoperative, as well as the test of bringing into operation the ship machinery from the dead ship condition without external aid,
  - ~~measurement of ME crankshaft deflection.~~
- .2 Main turbine:
  - operation tests of the ahead and astern manoeuvring valves, quick-closing valves, servomotors and the speed governors (simulated tests are accepted),
  - checking the operation of indicator of axial clearance in the turbine thrust bearing,
  - checking the operation of the temperature indicator of the turbine journal bearings.
- .3 Main electric propulsion power system:
  - operation tests of main generators and motors, electric clutches, distributing devices, control and monitoring consoles,
  - checking the operation of the temperature indicator of the turbine journal bearings.
- .4 Generator prime movers, including protective devices – operation tests. Additionally, in the case of internal combustion engines, external examination of high pressure fuel pipelines' jacketed piping system and checking the operation of oil leakage alarm. This requirement also applies to internal combustion engines driving other machinery.
- .5 Pumps with independent drive: cooling water, general use, ballast pumps, fire pumps, oil fuel and lubricating oil pumps – operation tests.
- .6 Bilge system, including high level alarm system – operation tests of the engine room system and, additionally, of cargo holds, conveyor tunnels and chain locker system.
- .7 Compressed air system, including compressors and safety valves – operation tests. Compressed air receivers – external examination.
- .8 Remote closing of the valves on fuel and lubricating oil tanks – operation tests.
- .9 Ventilation systems of engine room, compartments and holds, if required – operation test.
- .10 Marine environmental protection installations – external examination of piping systems and tests of equipment.
- .11 Operation test of the reverse mechanism of CP propeller – if fitted.
- .12 Checking the insulation of surfaces with temperatures above 220° C which may be impinged as a result of fuel pipe failure.
- .13 Checking whether oil fuel pipes are screened or otherwise effectively protected to avoid oil spray or oil leakage onto the sources of ignition.

### 5.3.3.3 Fire Protection

Annual Survey of fire protection shall cover at least the following:

- .1 Fire safety documentation:
  - verification that *Fire Control Plan, Fire Protection Systems and Appliances Maintenance Plan, Training Manual, Fire Safety Operational Booklet* are available onboard.
- .2 Water fire-extinguishing systems: water fire main system, sprinkler system, water-spraying/water-fog fire extinguishing system and water screen system:
  - external examination of system components;
  - operation test of water fire main system;
  - operation test of components of other systems;
  - operation test (simulation) of other systems.
- .3 CO<sub>2</sub>, halon, aerosol and other gas fire-extinguishing systems:
  - external examination of system components;

- operation test of system components;
- checking the quantity of fire-extinguishing medium;
- operation test (simulation) of system.
- .4** Foam fire-extinguishing systems:
  - external examination of system components;
  - operation test of system components;
  - checking the quantity and quality of fire-extinguishing medium;
  - operation test (simulation) of system.
- .5** Dry powder fire-extinguishing systems:
  - external examination of system components;
  - pressure test of system components;
  - operation test of system components;
  - checking the quantity and quality of fire-extinguishing powder;
  - operation test (simulation) of system.
- .6** Inert gas system (on oil tankers and liquefied gas carriers):
  - external examination of system components;
  - operation test of system components.
- .7** Fire detection and fire alarm system:
  - external examination of system components;
  - operation test of system components;
  - operation test (simulation) of system.
- .8** Hydrocarbon gas detection system:
  - external examination of system components;
  - operation test of system components.
- .9** Ventilating systems, closing arrangements in fire resisting divisions:
  - examinations of ventilation systems and closing arrangements;
  - operation test of remote stopping of fans and closing of fire dampers;
- .10** Installations of technical gases for welding (oxygen, acetylene):
  - examination of compartments for the storage of cylinders;
  - examination and operation test of system components;
  - operation test of ventilation in compartment.
- .11** Liquefied gas installation for the domestic purposes:
  - external examination of system components;
  - operation test of system components;
  - operation test of ventilation in compartment with gas receivers.
- .12** Fire doors:
  - operation test of remote and local closing of fire doors;
  - operation test of systems signalling open/closed position of the fire doors.
- .13** Fire resisting divisions and arrangements:
  - external examinations of arrangements and fire resisting divisions.
- .14** Escape routes:
  - examination of escape routes (internal and external) leading to life boats' and liferafts' embarkation areas;
  - examination of marking and lighting of escape routes, emergency exits and embarkation areas.
- .15** Low lighting system of escape routes (for passenger craft):
  - external examination of photo-luminescent tapes/other lighting elements and markings on escape routes leading to the embarkation areas.
- .16** Breathing apparatus and emergency escape breathing devices (EEBD):
  - checking the validity of device inspection including validity of cylinder's air examination, required every 2 years;
  - checking the condition of breathing apparatus masks and air control valves;
  - operation test of air charging system (with compressor) of air cylinders.
- .17** Portable and mobile fire-extinguishing foam sets:

- checking validity of examination performed by an approved service supplier;
- checking the technical condition of selected extinguishers.

Detailed guidelines for annual surveys of fire protection systems are provided in *Publication 29/I*.

#### **5.3.3.4 Electrical Equipment and Control Systems**

- .1** Tests of the main sources of electric power:
  - load test,
  - parallel test run, including the test of reverse current or reverse power protection.
- .2** Overload and short circuit protection of generators – checking the settings.
- .3** Emergency sources of electric power:
  - start-up and operation test of emergency generating set, including test of a second independent means of starting the emergency generating set,
  - test of emergency accumulators.
- .4** Distributing devices: main and emergency switchboard, navigation lanterns switchboard, battery charging facilities, together with battery room ventilation, control and monitoring consoles, shore connection installations, section and terminal switchboards – external examination and tests.
- .5** Electric power converting installations supplying essential consumers – tests.
- .6** Electric drive of essential machinery, together with control and monitoring devices of pumps, air compressors, anchoring arrangements, mooring and towing winches, steering gear, fans, watertight doors – operation tests.
- .7** Lighting installation of compartments and places important from the point of view of safety and safe navigation of craft and the safety of the people on board:
  - main lighting – external examination,
  - emergency lighting – external examination and tests.
- .8** Operation tests of internal communication and electrical signalling arrangements:
  - electric engine-room telegraph,
  - service telephone communication,
  - general alarm system.
- .9** ~~Insulation resistance measurement of electric network and electrical equipment.~~
- .10** External examination of electrical equipment of the voltage over 1000 V.
- .11** External examination of electrical equipment in explosion hazardous spaces and zones.
- .12** Operation tests of main propulsion remote control system.
- .13** Operation tests of main propulsion safety system.
- .14** Operation tests of generating set automatic control system.
- .15** Operation tests of safety system of engines driving generating sets.
- .16** Operation tests of automatic control systems of pumps and air compressors, as well as their safety systems.
- .17** Operation tests of remote or automatic control system of bilge installation, including testing of high level alarm system.
- .18** Operation tests of engine room alarm system, including alarm system in the engineer's accommodation.
- .19** External examination of circuits.

**5.3.3.5** If found necessary by the Surveyor, piping wall thickness measurements or hydraulic tests shall be performed.

#### **5.3.4 Machinery Installations – Intermediate Survey**

**5.3.4.1** Intermediate Survey of Machinery Installations covers activities as defined for the Annual Survey.

### **5.4 Scope of Class Renewal Surveys**

#### **5.4.1 I Class Renewal Survey of Hull (Age ≤ 5 years)**

I Class Renewal Survey of hull and its equipment covers Bottom Survey performed in dry dock (see 5.5.1 and 5.5.2), the activities specified in 5.3.1 and 5.3.2 as well as, additionally, the activities specified below.

**5.4.1.1** General examination of:

- .1 all cargo holds,
- .2 engine room spaces,
- .3 inner bottom compartments (if any),
- .4 side shell plating,
- .5 bulkheads,
- .6 watertight bulkhead penetrations,
- .7 decks and tweendecks (if any),
- .8 tweendeck hatch covers (if any),
- .9 piping,
- .10 bilge wells,
- .11 bilges in cargo holds and engine compartment, and also in cofferdams,
- .12 seatings of main engines, generating sets, auxiliary machinery and boilers,
- .13 masts, their fixing arrangements and standing rigging,
- .14 anchors, chain cables, chain slips and stoppers,
- .15 bollards, mooring ropes and tow ropes,
- .16 tanks:
  - forepeak and afterpeak,
  - chain lockers,
  - all ballast tanks,
  - cofferdams and tunnels.

If, during the examination, no damage to the structure has been found, the examination may be limited to verification that the corrosion prevention system remains effective.

Where in ballast tanks, other than double bottom tanks, a hard protective coating is found in POOR condition and is not renewed, or where soft or semi-hard coating has been applied, or where a protective coating has not been applied since the time of construction, the tanks in question shall be subject to internal examination at annual intervals. Thickness measurements shall be performed if deemed necessary by PRS Surveyor.

If double bottom tanks are found to be in the condition, as specified above or where a protective coating has not been applied since the time of construction, the tanks in question may be subjected to internal examination at annual intervals.

**5.4.1.2** Internal examination of four, selected by PRS Surveyor, automatic air pipe heads, located on the exposed decks, preferably air pipes serving ballast tanks:

- two heads (one on each side) located in the forward 0.25 *L*,
- two heads (one on each side) located aft of forward 0.25 *L*.

It is recommended that the above mentioned heads be those of ballast tank air pipes.

Depending on the results of this inspection, PRS Surveyor may require the inspection of other air pipe heads located on the exposed decks. This requirement does not apply to passenger ships.

**5.4.1.3** Close-up examinations:

- .1 hatch covers (plating and stiffeners),
- .2 hatch coamings (plating and stiffeners),
- .3 suspect areas.

**5.4.1.4** Operation tests:

- .1 checking the operation and tightness of companion hatches and manholes on weather decks, outer doors, ship side doors, skylights and scuttles,
- .2 checking the effectiveness of sealing arrangements of all hatch covers by hose tests or an equivalent method,
- .3 checking the operation of all mechanically operated hatch covers, including:
  - stowage and securing in opened up position,
  - proper fit, locking and effectiveness of sealing in closed position,
  - operation tests of hydraulic and power components, wires, chains and link drives.

**5.4.1.5** Boundaries of double bottom tanks, deep tanks, ballast tanks, peak tanks, and other tanks, including holds adapted for the carriage of water ballast (i.e. boundaries of all tanks which form parts of the hull structure), shall be tested with a head of liquid to the top of air pipes or to near the top of hatches for ballast/cargo holds. Boundaries of fuel oil, lube oil and fresh water tanks shall be tested with a head of liquid to highest point that liquid will rise under service conditions. Tank testing of fuel oil, lube oil and fresh water tanks may be waived by PRS Surveyor, subject to satisfactory external examination of the tanks' boundaries and confirmation from the Master stating that the tank testing has been performed in accordance with the above mentioned requirements with satisfactory results.

**5.4.1.6** Thickness measurements of plating and stiffeners of hatch coamings, hatch closing devices (steel pontoons or hatch covers) on weather decks shall be taken if deemed necessary by PRS Surveyor. Thickness measurements of areas of substantial corrosion identified during previous surveys shall be taken. Thickness measurements may be extended as deemed necessary by PRS Surveyor.

Where thickness measurements indicate substantial corrosion, the extent of thickness measurements shall be increased to determine areas of substantial corrosion. In that case, 5 measurements over 1 m<sup>2</sup> of plating and 3 measurements on each stiffener web and flange shall be taken. These extended thickness measurements shall be performed before the survey is credited as complete.

#### **5.4.2 II Hull Class Renewal Survey (5 < Age ≤ 10 years)**

II Class Renewal Survey of hull and its equipment covers activities of I Class Renewal Survey, specified in sub-chapter 5.4.1 and, additionally, the activities specified below.

**5.4.2.1** General examination:

- .1 one fuel oil tank chosen by PRS Surveyor,
- .2 one fresh water tank chosen by PRS Surveyor.

**5.4.2.2** Internal examination of automatic air pipe heads located on the exposed decks:

- all heads in the forward 0.25 *L*, and
- at least 20% of heads serving spaces aft of 0.25 *L*, chosen by PRS surveyor, preferably heads serving ballast tanks.

Depending on the results of the inspection, PRS Surveyor may require inspection of other heads located on the exposed decks.

**5.4.2.3** Thickness measurements of:

- .1 hull structural members in suspect areas,
- .2 one transverse section of deck plating in way of cargo space within the amidships 0.5*L*,
- .3 chain cable links.

#### **5.4.3 III Hull Class Renewal Survey (10 < Age ≤ 15 years)**

III Class Renewal Survey of hull and its equipment covers activities of II Class Renewal Survey specified in 5.4.2 and, additionally, the activities mentioned below.

**5.4.3.1** General examination:

- .1 all fresh water tanks;
- .2 all slope and sludge tanks forming part of the ship's structure.

**5.4.3.2** Internal examination of all automatic air pipe heads located on the exposed decks. Exemption may be considered for air pipe heads where there is evidence that they were replaced no more than five years before.

This requirement does not apply to passenger craft.

**5.4.3.3** Thickness measurements:

- .1 plating and stiffeners of cargo hold hatch covers and coamings;
- .2 stiffeners in forepeak and afterpeak;
- .3 one transverse section within the amidships 0.5 *L*, in way of cargo space (instead of the requirement specified in 5.4.2.3.2).

#### 5.4.4 IV Hull Class Renewal Survey and Subsequent Surveys (Age > 15 years)

IV Class Renewal Survey and the subsequent surveys of hull and its equipment cover activities of III Class Renewal Survey, specified in sub-chapter 5.4.3, and additionally, the activities mentioned below.

##### 5.4.4.1 General examination:

- .1 half of the number of fuel oil tanks, however at least two, chosen by PRS Surveyor;
- .2 lubricating oil tank, chosen by PRS Surveyor.

##### 5.4.4.2 Thickness measurements of:

- .1 all plating throughout exposed main deck;
- .2 representative exposed superstructure deck plating (poop, bridge and forecastle deck);
- .3 the lowest strake of all transverse bulkheads, together with stiffeners;
- .4 the lowest strakes, together with stiffeners, in way of each 'tweendeck – this applies to every transverse bulkhead in cargo space;
- .5 all strakes of wind and water plating;
- .6 throughout all keel plates and, additionally, bottom plates in way of cofferdams, machinery spaces and aft end of tanks;
- .7 plating of sea chests as well as bottom shell plating in way of overboard discharge as considered necessary by PRS Surveyor;
- .8 at least one more transverse section within the amidships 0.5L.

#### 5.4.5 Machinery Installations – Class Renewal Survey

Class Renewal Survey of machinery installations covers the Annual Survey and, additionally, the activities specified in 5.4.5.1, 5.4.5.2, 5.4.5.3 and 5.4.5.4.

5.4.5.1 Machinery installations shall be subjected to visual examinations, measured and tested within such scope as is necessary for the proper assessment of their technical condition.

- .1 Main internal combustion engine:
  - close-up examination of parts essential for the proper operation of the engine,
  - close-up examination of machinery driven by the main engine and the engine fittings,
  - testing of crank case safety valves,
  - close-up examination of turbochargers,
  - close-up examination of vibration damper and verification that the manufacturer's service requirements are fulfilled,
  - checking the timing chain pre-tension,
  - checking the tie rod pre-tension for compliance with the manufacturer's instructions,
  - measurement of crankshaft deflection,
  - checking the main engine securing to the seating.
- .2 Main and auxiliary steam turbines:
  - close-up examination of steam turbine parts,
  - checking steam turbine securing to the seating,
  - operation tests of machinery arrangements – the ahead and astern manoeuvring valves, quick closing valve and servomotors, as well as speed governor,
  - hydraulic test of manoeuvring valves – at 10-yearly intervals.

If steam turbines are of a type which has proved to be reliable in operation and are fitted with rotor position indicators and vibration indicators of an approved type, as well as measuring equipment of steam pressure at proper locations along the steam flow, PRS may limit the Class Renewal Survey No. 1 to examination of rotor bearings, thrust bearings and flexible couplings, provided the Surveyor is satisfied from operation service records and proper trials, subsequent to the survey, that operation of the turbine and its technical condition are satisfactory. Such limitation of the survey is not applicable to the subsequent surveys for class renewal.

The opening of the turbine casing may be postponed on the basis of the Owner's request, technically justified and technical and operating documentation prepared by the manufacturer.



- .3** Main electric drive:
  - checking the electric motor cooling system and fan switching off alarm (for primary and secondary systems).
- .4** Gear boxes:
 

The following parts shall be opened up and examined within the necessary scope to ascertain their technical condition: pinions, gears, shafts, bearings, thrust bearing, disengaging couplings.
- .5** Couplings:
  - internal examination, including the dismantling of the cover, to assess the coupling elastic elements,
  - rubber couplings – 5 years from the date of the coupling installation or rubber element exchange – internal examination. At the subsequent Class Renewal Surveys – internal examination in the dismantled condition.
- .6** Thrust shaft, inclusive of bearings:
  - close-up examination of the shaft and bearings,
  - thrust bearing clearance measurement,
  - checking of bearing securing to the seating.
- .7** Intermediate shafts, inclusive of bearings:
  - close-up examination of shafts and bearings,
  - checking of bearing securing to the seating.
- .8** Propeller shaft and propeller – see 5.6.
- .9** Internal examination of generators and generator prime movers, in the dismantled condition, and tests.
- .10** Close-up examination of air compressors.
- .11** Air receivers.
 

Internal examination of the receiver, including the examination of fittings in opened up condition. Where the air receiver technical condition cannot be assessed satisfactorily based on the internal examination, PRS may require the wall thickness measurement or hydraulic test to be performed. After the has been repaired, it shall be also subjected to hydraulic test.
- .12** Operation tests of the following pumps with independent drive: bilge, ballast, general use, cooling water, fuel oil, lubricating oil, boiler supply and circulating water systems. In case of incorrect operation – internal examination shall be performed.
- .13** Operation tests of steering gear, anchoring arrangements and mooring winches. In case of incorrect operation, re-adjustment or internal examination shall be performed. For tugs, bollard pull test shall be performed after the repair or exchange of an essential towing arrangement.
- .14** Piping systems:
  - general examination of the bilge, overflow, air and sounding pipe systems. Tightness tests of these pipes shall be performed, together with tightness tests of tanks,
  - operation tests of ballast, cooling water, steam, fuel oil, lubricating oil, hydraulic system installations. In case of any doubt as to the piping technical condition, PRS may require the hydraulic test or wall thickness measurement to be performed,
  - hydraulic tests of pipes passing through fuel oil tanks, liquid cargo tanks and cargo holds,
  - hydraulic tests of heating coils in tanks not subject to internal examination. In tanks subject to examination, the heating coils shall be tested, depending on their technical condition.
- .15** External examination of ventilation ducts passing through watertight bulkheads and fire divisions.
- .16** External and internal examination of the structure of tanks not forming structural part of the ship's hull, and their fittings.
- .17** Heat exchangers:
  - internal examination,
  - hydraulic test required, depending on the result of the examination and after repair.
- .18** Operation tests of generator reverse-power, overload and undervoltage protection.
- .19** Operation tests of economizers associated with engine room systems.
- .20** Close-up examination of cables and the cable penetrations in watertight bulkheads and fire divisions.

- .21 Close-up examination of lightning and earthing protection.
- .22 Checking the set point value of sensors of the engine-room control systems.
- .23 Operation test of temperature, pressure, fuel viscosity control systems (when the sea trials of the ship are performed).
- .24 Control instruments and gauges – the following shall be checked:
  - instrument condition – based on examination,
  - accuracy of indications (on boilers and pressure vessels – by means of control manometer and in other cases by comparing the indications of two parallel instruments).
- .25 Operation test of oily-water separating equipment and oil filtering equipment – checking the automatic and manual control.
- .26 Checking the high level alarm of the bilge water retention tank.
- .27 Measurement of electric network and electrical equipment insulation resistance.

**5.4.5.2** Dock trial shall be performed to confirm satisfactory operation of main and auxiliary machinery. In case of significant repairs to main propulsion, auxiliary machinery or steering gear, consideration shall be given to perform sea trials.

### **5.4.5.3 Fire Protection**

Class Renewal Survey of the fire protection covers the scope of Annual Survey and the following additional activities:

- .1 Water fire-extinguishing systems: water fire main system, sprinkler system, water-spraying/water-fog fire extinguishing system and water screen system:
  - internal examination of system components;
  - hydraulic test of system components.
- .2 CO<sub>2</sub>, halon, aerosol and other gas fire-extinguishing systems:
  - internal examination of system components;
  - hydraulic test of system components.
- .3 Foam fire-extinguishing systems:
  - internal examination of system components;
  - tightness test of system components.
- .4 Dry powder fire-extinguishing systems:
  - internal examination of system components;
  - hydraulic test of system components;
  - tightness test of system components.
- .5 Inert gas system (on oil tankers and liquefied gas carriers):
  - internal examination of system components,
  - hydraulic test of system components.
- .6 Installations of technical gases for welding (oxygen, acetylene):
  - hydraulic test of system components;
  - examination of gas pressure reducer.
- .7 Liquefied gas installation for the domestic purposes:
  - hydraulic test of system components;
  - examination of gas pressure reducer.
- .8 Low lighting system of escape routes (for passenger ships):
  - examination of the luminance of low lighting system.
- .9 Breathing apparatus and emergency escape breathing devices (EEBD):
  - hydraulic test of apparatus' steel cylinders.

Detailed guidelines concerning Class Renewal Surveys of fire protection systems are provided in *Publication No. 29/I*.

#### **5.4.5.4 Additional Requirements for Ships with Dual Fuel Internal Combustion Engines**

**5.4.5.4.1** Examination of gastight bulkheads with cable and shaft sealing etc. Special attention shall be paid to bulkheads in the spaces containing electrical motors and/or compressors. Shaft sealings shall be checked for lubrication and possible overheating.

**5.4.5.4.2** Internal examination of:

- gas tanks safety/relief valves,
- tank room or secondary barrier space P/V valves and relief hatches, as relevant,
- gas handling machinery and equipment,
- auxiliary systems and equipment for gas installations.

**5.4.5.4.3** Testing of:

- gas tanks high level alarm,
- gas tanks safety relief valves,
- tank room or secondary barrier space P/V valves and relief hatches, as relevant,
- gas handling machinery and equipment,
- auxiliary systems and equipment for gas installations.

#### **5.5 Scope of Ship Bottom Periodical Surveys**

**5.5.1** Ship's Bottom Periodical Survey in dry dock covers the following:

- .1** general examination of bottom and side plating up to the maximum draught waterline, keel, stem, stern frame, shaft brackets, rudder trunk, Kort nozzle, stabilizer recesses, bilge keels, the anode corrosion protection;
- .2** close-up examination of drain plugs of ballast and fresh water tanks – at the interval of 5 years; drain plugs of fuel and lubricating oil tanks, as well as cofferdams – only when the plug is screwed out;
- .3** internal examination of bottom and side sea chests – at the interval of 5 years;
- .4** bottom and side fittings; internal examination in the opened up condition – every 5 years. Where bottom and side fittings are not fitted directly to bottom chest, sea chest or shell plating, the connecting pipes between chests or shell plating and fittings are subject to close-up examination in dismantled condition;
- .5** general examination of rudder blade;
- .6** measurement of clearances in bearings of rudder arrangements and external examination when putting the rudder from side to side. Depending on the results of the clearance measurement in the bearings and external examination, dismantling of rudder blade or part of its suspension arrangements may be required;
- .7** general examination of bow and aft thruster propeller tunnels;
- .8** general examination of propeller, as well as measurement of clearances and wear down of the propeller shaft stern tube bearing and checking the stern tube sealing tightness (see 5.6);
- .9** general examination and measurement of other equipment related to craft propulsion, manoeuvring, steering and roll stabilizing system (such as directional propellers, vertical axis propellers, water jet units) with focus on the condition of gear housing, propeller blades, bolt locking, other fastening arrangements and sealing arrangements;
- .10** general examination and measurements of other arrangements associated with the craft movement, steering and roll stabilizing.

#### **5.5.2 Thickness Measurements of Bottom Shell Plating**

At the ship's Bottom Survey to be held in the Class Renewal Survey, the thickness measurement of shell plating appropriate to the age and type of ship, as specified in 5.4, shall be made. If, during any other Bottom Survey, excessive corrosion or damage has been found, thickness measurements of areas, indicated by PRS Surveyor, shall be performed.

#### **5.5.3 In-water Bottom Survey**

**5.5.3.1** In-water Bottom Survey is performed by PRS divers. In justified cases, PRS may agree that In-water Bottom Survey being performed in accordance with the following procedure:

- .1 general examination of the underwater part of hull is performed by divers engaged by the Owner;
- .2 these divers have been approved by PRS;
- .3 examination performed by divers is being monitored by PRS Surveyor;
- .4 final assessment of the technical condition of underwater part of hull is made by PRS Surveyor.

**5.5.3.2** In-water bottom survey shall provide information normally obtained from a dock survey (see 5.5.1 and 5.5.2), so far as practicable. If the in-water bottom survey reveals extensive corrosion or damage affecting the ship's class, the ship shall be dry-docked.

**5.5.3.3** To enable the diver to perform examination of the underwater part of the hull, the Owner is obliged to properly prepare the ship for the in-water survey, i.e.:

- provide arrangements for measuring the rudder shaft bearing clearances and propeller shaft wear, measuring the rudder shaft bearing clearances and propeller shaft wear is not required to in-water surveys which shall not be credited instead of dry-docking survey and to in water surveys of passenger ships performed during annual surveys;
- provide the means to enable the diver to determine his own position and location of the possible damage.

To ensure the working diver's safety, the in-water survey shall be performed in sheltered water and preferably with weak tidal streams and currents.

The water visibility and the cleanliness of the hull below the waterline shall be sufficient to enable PRS Surveyor and diver to perform meaningful examination and determine the condition of the plating, appendages and welds.

**5.5.3.4** Requirements for In-water Bottom Survey, instead of Dry Docking Survey, of a ship with **IWS** mark, affixed to the symbol of class:

- .1 The underwater part of the hull shall be effectively protected against corrosion for a period of 5 years and shall be provided, where necessary, with permanent markings at selected points on the plating that would enable determining the diver's position on the plating and location of damage (if any).
- .2 The design of sea chests shall be such as to provide the possibility of their underwater opening and cleaning.
- .3 Provision shall be made for the possibility to blank off all openings at inlets and outlets for the purpose of maintenance or replacing a valve.
- .4 Provision shall be made for measuring the rudder and propeller shaft bearing clearances or wear and also for checking the stern tube sealing tightness.
- .5 Liners on rudder axles and pintles, as well as bearing bushes in a rudder and sternframe shall have permanent marks permitting to detect any relative movement between them.
- .6 The requirements for the additional equipment, such as bow or stern thrusters, stabilizers, etc. will be specified separately in each particular case.
- .7 A craft shall be provided with a set of drawings or colour photographs showing the hull marking system, details of the rudder bearing clearances measurements, a drawing which shows all overboard openings and means of their blanking off, etc. – providing information and instructions for divers. The scope of such documentation is subject to PRS acceptance in each particular case.

**5.5.3.5** In-water Bottom Survey, instead of Dry Docking Survey, of a ship without additional **IWS** mark affixed to the symbol of class, in the cases specified in sub-chapter 5.2.4, is performed at the Owner's request, subject to PRS consent following the review of the Survey Programme enclosed to the Owner's request.

The Survey Programme shall include the following information:

- .1 Statement that neither ship grounding nor damage to the bottom structure and the associated equipment have occurred and no failure of the rudder arrangement and shaft line has been observed since the latest Dry Docking Survey;

- .2 Statement that technical documentation within the following scope, as a minimum, is available on board: plan of shell expansion below the waterline, plan of bottom tanks, plan of openings under water and their closing appliances, plan of anodes, plan of rudder arrangement, plan of propeller shaft line sealing, drawing of propeller;
- .3 Statement that the survey will be performed in water of proper visibility and the ship's hull below the waterline will be properly cleaned and marked to enable the diver to determine his position and locate the possible damage;
- .4 Information on the possibility and method of measuring clearances/wear-down in rudder bearings and checking the stern tube sealing tightness;
- .5 Information about the diver's company which will perform in-water bottom examination if the examination shall not be performed by PRS divers-surveyors;
- .6 Classification reports and measurement records if the latest Bottom Survey in dry dock and propeller shaft survey has not been performed by PRS.

## **5.6 Periodical Surveys of Propeller Shaft and Propeller**

### **5.6.1 General**

**5.6.1.1** Depending on intervals between surveys and other conditions, propeller shafts are subject to Complete, Partial or Modified Surveys.

**5.6.1.2** During each In-water Bottom Survey, external examination of the propeller, as well as the measurement of clearances/wear-down of the propeller shaft in the stern tube and checking the stern tube sealing glands tightness shall be performed.

### **5.6.2 Complete Survey of Propeller Shaft**

**5.6.2.1** Complete Survey is performed after drawing the propeller shaft from the tube. The interval between consecutive Complete Surveys is 2.5 years ( $\pm 6$  months).

**5.6.2.2** Where:

- .1 the propeller shaft is fitted with a continuous liner or type-approved oil sealing glands or is made of corrosion resistant material,
- .2 the shaft structural components fulfil the requirements of the *Rules*,
- .3 Complete Survey has been performed within the scope specified in 5.6.2.3,

the intervals between Complete Surveys may be extended up to 5 years.

**5.6.2.3** The scope of Complete Survey covers:

- checking the Chief Engineer's statement confirming proper service of the shafting system;
- non-destructive tests by an approved crack detection method:
  - for propellers fitted to a keyed shaft taper – on not less than one third of the taper length, starting from its large end (from the shaft liner, if applied);
  - for propellers fitted without key to the shaft taper – on the forward part of the taper starting from its large end;
  - for propellers fitted to a solid flange coupling at the end of the shaft – on the flange fillet area of the shaft;
- measurements of wear-down/clearances in the aft stern tube bearing;
- close-up examination of bearings;
- close-up examination of oil sealing glands, if fitted, and tightness test.

### **5.6.3 Partial Survey of Propeller Shaft**

**5.6.3.1** For propeller shafts for which intervals between Complete Surveys were extended up to 5 years (see 5.6.2.2), at the Owner's request, PRS may consider prolongation of intervals between Complete Surveys, provided the Partial Survey is performed within the scope specified in 5.6.3.2. In no case, shall the prolongation exceed 2.5 years ( $\pm 6$  months).

**5.6.3.2** The scope of Partial Survey covers:

- .1 checking the Chief Engineer's statement confirming proper service of the system;
- .2 verification of records in the *Engine Log Book*;
- .3 external examination of oil sealing glands, if any, and checking lubricating oil analysis records;
- .4 checking the shaft wear/clearance in the aft stern tube bearings;
- .5 for propeller fitted to a keyed shaft taper, non-destructive tests of the shaft ends by an approved crack detection method.

**5.6.3.3** Where Partial Survey, within the scope specified above, cannot be accomplished, Complete Survey shall be performed.

#### **5.6.4 Modified Survey of Propeller Shaft**

**5.6.4.1** Where:

- .1 the propeller shaft is fitted with oil sealing glands of an approved type and oil lubricated bearings, and its structural elements fulfil the requirements of the *Rules*;
  - .2 the shaft and its fittings are not exposed to corrosion;
  - .3 the type of sealing makes allows to fit new oil sealing glands without removal of the propeller (except in the case of keyed propeller);
  - .4 the propeller is fitted to the shaft by one of the following methods:
    - to the taper with a key;
    - to the taper without key;
    - to a solid flange coupling;
  - .5 reliable measurement of shaft wear/clearance in the aft stern tube bearings is possible;
  - .6 recording of shaft stern tube bearing temperature during shaft operation is ensured by two replaceable temperature detectors fitted in the lower part of the bearing at one third of its length from the aft end, possibly close to the bearing surface;
  - .7 the point of reliable sampling for lubricating oil analysis has been determined,
- instead of Complete Survey, in 5-year cycle, Modified Survey may be performed.

**5.6.4.2** The scope of Modified Survey covers:

- .1 checking the Chief Engineer statement confirming proper service of the system, taking into account the oil consumption and bearing temperature records;
- .2 checking the records of the stern tube lubricating oil analysis performed, by an appropriate method, regularly at intervals of 6 months by a laboratory approved by PRS or the manufacturer. Oil samples shall be taken under service conditions, i.e. with the shaft rotating and the system at service temperature. The samples shall be taken from the same, agreed and identified, position in the system. They shall be collected and described by the Chief Engineer;
- .3 measurement of shaft wear/clearance in the aft stern tube bearings;
- .4 examination of the aft bearing contact area of the shaft after removing glands and adequate drawing the shaft. Where a lubrication oil analysis is performed regularly at intervals not exceeding 6 months and the oil consumption and bearing temperature are recorded and considered to be within permissible limits, drawing of the shaft to expose that aft bearing contact area is not required;
- .5 examination of the forward bearing as far as possible and all accessible parts of the shaft including the propeller connection to the shaft;
- .6 for keyed propellers, a non-destructive testing, by an approved crack detection method, of about one-third of the length of the taper from the large end, for which dismantling of the propeller will be required;
- .7 checking the tightness of oil sealing glands.

**5.6.4.3** In each case of non-compliance with the above requirements for Modified Survey, Complete Survey shall be performed.

#### **5.6.5 Propeller Survey**

**5.6.5.1** Propeller Survey is performed during the Bottom Survey.

**5.6.5.2** The survey covers:

- .1 external examination;
- .2 in the case of the propeller dismantling – close-up examination of the shaft taper and non-destructive testing of the shaft ends, as well as close-up examination of the propeller boss;
- .3 external examination of the arrangements fixing propeller to the shaft.

For controllable pitch (CP) propellers – tightness test of the propeller boss and the blade sealing, as well as checking the correctness of the CP propeller pitch change. The dismantling of CP propeller is not required unless considered necessary by the Surveyor.

## **5.7 Periodical Surveys of Boilers**

**5.7.1** The following boilers are subject to periodical surveys:

- steam boilers used for main propulsion,
- auxiliary steam boilers,
- all other steam boilers having working pressure exceeding 0.35 MPa or a heating surface exceeding 4.5 m<sup>2</sup>,
- thermal oil boilers.

**5.7.2** External surveys of all kinds of boilers shall be performed at annual intervals at the time of the ship Periodical Survey. External survey shall be performed after the internal survey and hydraulic test, if performed.

**5.7.3** Internal surveys of steam and thermal oil boilers shall be performed twice within 5-year classification cycle; however, the intervals between successive internal surveys shall not exceed 3 years. In exceptional circumstances, PRS may grant an extension of the internal examination of the boiler up to 3 months beyond the due date. This extension may be granted after carrying out, with positive result, external survey of the boiler.

**5.7.4** Thermal oil boilers are, during the Class Renewal Survey, subject to tightness and strength tests with a pressure equal to 1.25 the working pressure.

**5.7.5** The external survey of steam boiler covers:

- external examination of the boiler fixing arrangements,
- external examination of the boiler casing and insulation,
- external examination of the boiler fittings,
- functional test while in operation,
- review of the records (operation, maintenance, repair history, feedwater chemistry), since the latest boiler survey.

During the test, operation of the following items shall be checked:

- boiler and steam superheater safety valves\*
- boiler supply and circulating water system,
- boiler blow-off and skimming system,
- water level indicators,
- pressure gauges,
- remote control of the main steam valve and safety valves,
- fuel supply system,
- boiler control system,
- boiler safety system,
- boiler alarm system.

**5.7.6** The external survey of thermal oil heater covers:

- external examination,

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\* Where the setting of safety valves can be done during sea trial only and provision for such a trial, on the survey completion, has not been made, PRS Surveyor may authorize the ship's Chief Engineer to set and seal utilization boiler safety valves, as well as to enter appropriate record in the engineer's log book. The record is to be presented to PRS Surveyor at the nearest survey.

- operation tests of safety valves,
- checking the operation of alarm and safety systems of limit temperature of thermal oil and exhaust gases,
- checking indication accuracy of the pressure gauges,
- operation tests of the valves' remote control,
- operation test of the arrangements for emergency discharge of thermal oil from the installation and remote stopping the circulation pumps.



### **5.7.7 Internal Survey of Steam Boiler**

**5.7.7.1** For the purpose of the internal survey, both sides, water and combustion, of the boiler shall be sufficiently clean to enable a proper assessment of the examined parts (water and steam drums, boiler furnace, combustion chambers and furnaces, tubes, stays and stay-bolts, steam superheaters and economizers).

At the Boiler Survey, internal examination of the boiler fittings in dismantled condition shall be performed.

**5.7.7.2** If, upon the survey, there is any doubt as to the technical condition of the boiler, PRS may require that additional thickness measurement of boiler parts, partial or complete removing of insulation or hydraulic test be performed.

**5.7.7.3** After the repair of boiler essential parts, hydraulic test to a pressure equal 1.25 the working pressure shall be performed.

**5.7.7.4** After the repair of boiler fittings, hydraulic test to a pressure specified in *Part VI – Machinery Installations and Refrigerating Plants* shall be performed.

**5.7.8** Internal survey of thermal oil heater is performed within the scope of the relevant requirements specified in 5.7.7.

**5.7.9** If, during the Periodical or Occasional Survey, damages that require repair of the boiler are detected, the repair shall be performed under the Surveyor's supervision in accordance with the PRS-approved repair procedure. After repair, the boiler shall be tested in accordance with 5.7.7.3.

### **5.8 Continuous Surveys and Other Alternative Survey Systems**

**5.8.1** Instead of direct survey, PRS may accept – at the Owner's written request – Continuous Survey or another alternative survey system for particular components of the craft hull, machinery installations and refrigerating plants, as well as control systems.

**5.8.2** Continuous Survey of the ship hull, machinery installations, refrigerating plants and automatic systems, as well as surveys of the ship's hull in Consolidated Supervision System and the survey of machinery installations, refrigerating plants and control systems in Planned Maintenance Scheme shall be performed at the time of Annual Survey.

**5.8.3** Owner's hull inspection and maintenance schemes are encouraged as a means to maintain compliance with classification and statutory requirements between surveys. These schemes, however, are not accepted as an alternative to, or a substitute for the required hull classification/statutory surveys performed by PRS Surveyor.

**5.8.4** Continuous Survey of Hull (CHS), as well as Consolidated Supervision System of Hull (CSS) are performed in accordance with the requirements of *Publication No. 54/P – Alternative Hull Survey Arrangements*.

**5.8.5** Continuous Survey of Machinery (CMS), as well as Planned Maintenance Scheme (PMS) of machinery are performed in accordance with the requirements of *Publication No. 2/P – Alternative Survey Arrangements for Machinery*.

### **5.9 Occasional Surveys**

#### **5.9.1 General**

Occasional Surveys of a ship or the ship's machinery, arrangements, installations or equipment are held upon request in all cases not covered by Initial Surveys for Class Assignment and Periodical Surveys or surveys resulting from Continuous Survey. Occasional Survey may be held at the Owner or Underwriter's request or may be consequent upon PRS, PSC or Flag State verification of the performed classification activities correctness (see 5.11).

The scope of Occasional Surveys and their procedure will be determined by PRS, depending on the purpose of the survey, age and technical condition of the ship. Performance of the survey resulting from classification activities verification may be the condition for class maintenance.

## **5.9.2 Survey After Damage**

**5.9.2.1** One of Occasional Surveys is a Survey After Damage to which a craft shall be submitted in the case of ship's grounding, damage sustained by the craft hull, machinery, arrangements, installations, equipment or outfit covered by the requirements of the *Rules* and subject to PRS technical survey.

The burden of immediate report on the craft damage to PRS lies on the Owner.

**5.9.2.2** Survey After Damage shall be performed at a port where the damage occurred or at the first port the ship calls after the damage or grounding.

This survey aims to assess the extent of damage, specify the scope of work required to eliminate the consequences of damage and to determine the possibility and conditions for maintenance or reinstatement of the craft class.

If the craft is in a port where repairs connected with damage cannot be made, at the Owner's request, after analysis of the case, PRS may allow the craft to undertake a single trip directly to the port or shipyard, where the specified repairs will be possible.

In that case, discharging of cargo and/or temporary repairs to allow the craft to undertake such a trip may be required.

## **5.10 Audit**

On PRS classed craft, audits for determining conformity of PRS performed processes with the quality management system provisions, may be required.

Subject to PRS consent, external auditors may participate in the audits.

At PRS request, the Owner is obliged to submit the craft for auditing within the scope, at a date and place agreed with PRS.

# **6 SUSPENSION OF CRAFT CLASS**

## **6.1 Reasons for Ship Craft Suspension**

### **6.1.1 Damage to Craft**

The Owner is obliged to notify PRS of each case of craft grounding and every damage sustained by the ship hull, machinery, installations or equipment covered by the requirements of the *Rules*, as well as to agree with PRS the date of After Damage Survey and the procedure for:

- determining the extent of damage,
- determining the scope and date of repair.

The craft class is automatically suspended from the time of damage occurrence until completion of After Damage Survey confirming elimination of class suspension reasons.

In justified cases, after receiving notification from the Owner and its review, PRS may decide that the ship class will not be suspended.

### **6.1.2 Transgression of Service Conditions Specified in *Certificate of Class***

The Owner is obliged to inform PRS on every transgression the service conditions specified in the *Certificate of Class* and PRS will make a decision on further proceedings. The transgression of service conditions, without PRS agreement, causes the craft class automatic suspension until completion of the occasional survey.

### **6.1.3 Suspension of Class in Case of Overdue Periodical Surveys**

#### **6.1.3.1 Class Renewal Survey**

The craft class is automatically suspended where Class Renewal Survey has not been completed by the due date.

The class is reinstated upon satisfactory completion of the due survey.

The survey to be performed shall be based upon the survey requirements at the original date due and not on the age of the ship when the survey is performed. Such survey shall be credited as of the date originally due.

The ship is disclassified from the date of suspension until the issue of a new *Temporary Certificate of Class*.

**6.1.3.1.1** In "exceptional circumstances", as defined in 1.2, PRS may grant an extension not exceeding 3 months to allow for completion of the Class Renewal Survey, provided that the craft has been attended for commencement of the Class Renewal Survey and the attending Surveyor(s) so recommend(s) after the following has been performed:

- annual survey,
- re-examination of the issued Recommendations,
- progression of the Class Renewal Survey, as far as practicable.

Where dry-docking is due prior to the end of the class extension, an underwater examination shall be performed by an approved diver. An underwater examination by an approved diver may be waived in the case of extension of dry-docking survey not exceeding 36 months interval, provided the craft is without outstanding Recommendations regarding underwater parts.

**6.1.3.1.2** If the *Certificate of Class* expires when the craft is expected to be at sea, an extension to allow for completion of the Class Renewal Survey may be granted, provided that:

- there is a documented PRS consent to such an extension prior to the expiry date of the certificate,
- arrangements have been made for the attendance of Surveyor at the first port of call,
- PRS finds that such an extension is technically reasonable.

Such an extension may be granted only until the craft arrival at the first port of call after the *Certificate* expiry date.

However, if owing to the „exceptional circumstances“, as defined in 1.2, the Class Renewal Survey cannot be completed at the first port of call, PRS may apply the requirements specified in paragraph 6.1.3.1.1 to be followed, but the total period of extension in no case shall be longer than three months after the original due date of the Class Renewal Survey.

The extension of statutory certificates validity will be subject to conditions specified by the Administration.

### **6.1.3.2 Annual Survey**

The *Certificate of Class* becomes invalid and the craft class is automatically suspended if the Annual Survey has not been completed within 3 months of the due date of the Annual Survey, unless the craft is under attendance for completion of the Annual Survey.

The *Certificate of Class* validity will be reinstated upon satisfactory completion of the due survey. The survey to be performed shall be based upon the survey requirements at the original date due and not on the age of the craft when the survey is performed. Such survey shall be credited as of the date originally due.

The craft will be disclassified from the date of class suspension until the validity of the *Certificate of Class* is endorsed.

### **6.1.3.3 Intermediate Survey**

The *Certificate of Class* becomes invalid and the craft class is automatically suspended if the Intermediate Survey has not been completed within 3 months of the due date of the third Annual Survey, unless the craft is under attendance for completion of the Intermediate Survey.

The *Certificate of Class* validity will be reinstated upon satisfactory completion of the due survey. The survey to be performed shall be based upon the survey requirements at the original date due and not on the age of the craft when the survey is performed. Such survey shall be credited as of the date originally due.

The craft is disclassified from the date of class suspension until the validity of the *Certificate of Class* is endorsed.

#### **6.1.3.4 Bottom Survey of Hull, Tailshaft Survey (if any), Boiler and Pressure Vessels Survey (if any)**

The *Certificate of Class* becomes invalid and the craft class is subject to suspension if the bottom survey of hull, tailshaft survey (if any) or boiler and pressure vessels survey (if any) are not completed by the due date.

The *Certificate of Class* validity is reinstated upon satisfactory completion of the due survey. The surveys to be performed shall be based upon the survey requirements at the original date due and not on the age of the ship when the survey is being performed.

The ship is disclassified from the date of class suspension until the validity of the *Certificate of Class* is endorsed.

#### **6.1.3.5 Continuous Survey and other Alternative Survey Systems**

All due and overdue surveys of the craft hull, machinery installations, refrigerating plants and automatic systems in Continuous Survey, as well as all surveys of the craft hull in Consolidated Supervision System and the surveys of machinery installations, refrigerating plants and automatic systems in the Planned Maintenance Scheme shall be performed at the time of Annual Survey. The craft class may be suspended if the surveys are not dealt with or are not postponed at the Owner's request – subject to PRS consent in each particular case. The postponement shall not exceed 3 months.

In the case of Class suspension, the *Certificate of Class* validity is reinstated upon satisfactory completion of the specified surveys.

The craft is disclassified from the date of class suspension until the surveys are complete.

#### **6.1.4 Suspension of Class in Case of Overdue Recommendations**

Each recommendation is assigned a due date for completion.

Owners are notified by PRS of these dates and that the craft class will be subject to suspension if the item is not dealt with, or postponed – subject to PRS consent in each particular case – by the due date.

The *Certificate of Class* validity is reinstated upon PRS verification that the overdue recommendations have been satisfactorily dealt with.

The craft is disclassified from the date of class suspension until the recommendations are dealt with.

#### **6.1.5 Planned Voyage Repairs Performed without Prior Agreement with PRS**

The craft class is automatically suspended if the planned voyage repairs have not been performed without prior agreement with PRS.

The *Certificate of Class* validity may be reinstated upon Occasional Survey performed within the scope specified by PRS.

#### **6.1.6 Owner's Financial Overdues**

If the Owner has not paid for PRS services connected with the craft survey at the agreed date, the craft class is suspended. Notice of PRS intent to suspend the class will be sent to the Owner one month in advance. The class will be reinstated automatically after the payments have been settled.

#### **6.1.7 Non-compliance with Retroactive Requirements by Specified Dates**

Each retroactive requirement set forth in Supplements to particular Parts of the *Rules*, shall be fulfilled at the dates specified in these Supplements.

PRS notifies the Owner of these dates.

The craft class is suspended if retroactive requirements are not fulfilled by the due dates.

The craft is disclassified from the date of class suspension until the date when retroactive requirements are fulfilled.

The *Certificate of Class* validity is reinstated upon verification, by PRS, that retroactive requirements have been fulfilled.

#### **6.1.8 Change of Craft Owner/Operator**

To maintain class validity, a written notice of the intended change of the craft Owner/Operator shall be submitted to PRS.

On the receipt of such notice, PRS will specify the need and scope of the required survey and the necessary changes to be made in the relevant documents.

## **6.2 Notifying Owners and Flag States**

PRS communicates the suspension of class and reinstatement of the ship's class by separate letters to the Owner and to the Flag State (where PRS performs the survey on behalf of the Flag State).

## **6.3 Possibility of Postponement of Class Validity due to Force Majeure**

If, due to circumstances reasonably beyond the Owner's or PRS control, force majeure, as defined to in 1.2, the ship is not in a port, shipyard or other place where the overdue surveys can be completed at the expiry of the periods allowed above, PRS may, at the Owner's request, allow the craft to sail, maintaining the class validity, directly to an agreed port at which the survey will be completed, provided that PRS:

- .1 examines the ship records;
- .2 performs the due and/or overdue surveys and examination of recommendations at the first port of call when there is an unforeseen inability of PRS to attend the craft in the present port, and
- .3 is satisfied that the craft is fit to sail (where there is unforeseen inability of PRS to attend the craft in the present port, the master shall confirm that his craft is in condition to sail to the nearest port of call).

The surveys to be performed shall be based upon the survey requirements at the original date due and not on the age of the craft when the survey is performed.

## **6.4 Possibility of Temporary Reinstatement of Class Validity for Craft Scrapping**

When the craft is intended for a demolition voyage with any periodical survey overdue, the craft class suspension may be held in abeyance and PRS may consider to allow the craft to proceed on a single ballast voyage from the laid up or final discharge port to the demolition yard. In such cases *Temporary Certificate of Class* with conditions for the voyage noted may be issued provided the PRS attending Surveyor finds the craft in satisfactory condition to proceed for the intended voyage.

# **7 WITHDRAWAL OF SHIP CLASS AND WITHDRAWAL OF SHIP FROM PRS REGISTER**

## **7.1 Reasons for Ship Class Withdrawal**

**7.1.1** Introduction of alterations to the hull, superstructures and deckhouses, machinery, equipment and installations, covered by the requirements of the *Rules*, without the prior PRS consent.

**7.1.2** Suspension of class for a period exceeding 6 months.

At the Owner's request, PRS may grant a longer suspension period when the craft is not engaged in voyages as in the event of awaiting PRS decision in case of a casualty or attendance for class reinstatement.

**7.1.3** Ship loss.

**7.1.4** The craft has been transferred for scrapping.

**7.1.5** Written request by the Owner for the craft withdrawal from PRS *Register*.

## **7.2 Withdrawal of Ship from PRS Register**

Withdrawal from PRS Register is consequent upon the craft class withdrawal for reasons specified in 7.1.

## **7.3 Notifying Owners and Flag States**

PRS communicates the withdrawal of the ship's class and the ship's deletion from PRS *Register* by separate letters to the Owner and to the Flag State (where PRS performs the survey on behalf of the Flag State).

## 8 LAY-UP AND RECOMMISSIONING OF CRAFT

**8.1** At the Owner's request, a craft may be laid-up, while maintaining her class. However, craft which are laid-up after being suspended as a result of surveys going overdue, remain suspended until the overdue surveys are complete. The request shall include:

- the planned lay-up period,
- craft lay-up location (quay, roadstead, etc.),
- a list of machinery (e.g. boilers, generating sets, bilge pumps, etc. – identification numbers shall also be provided) that will be kept in service during the ship lay-up period,
- a list of craft crew.

**8.2** Craft is laid-up after the survey has been performed within the scope agreed with PRS in each particular case.

**8.3** During the laying-up period, the craft is subject to laid-up confirmation surveys performed within 3 months, before and after each anniversary of the assignment of the laid-up status to the craft.

**8.4** For a laid-up craft, other surveys, as specified in 5.1.2, periodical surveys – until the survey for craft recommissioning.

**8.5** Craft is recommissioned after the survey has been performed within the scope agreed with PRS in each particular case.

The survey covers at least all due and overdue Periodical Surveys and recommendations.

Depending on the length of the laying-up period, dock trials of particular installations or their parts or sea trials may be required.

**8.6** When a craft is intended for a single voyage from laid-up position to repair yard with any periodical survey overdue, the craft class suspension may be held in abeyance and consideration may be given to allow the craft to proceed on a single direct ballast voyage from the site of lay up to the repair yard, upon agreement with the Flag Administration, provided PRS finds the craft in satisfactory condition after surveys, the extent of which shall be based on surveys overdue and the lay-up duration. A *Temporary Certificate of Class* with conditions for the intended voyage may be issued. This does not apply to ships whose class was already suspended prior to being laid-up.

### Annex 1

#### EXPLANATION OF SOME ABBREVIATIONS ASSOCIATED WITH ADDITIONAL MARKS IN THE SYMBOL OF CLASS

Abbreviation	English definition	Polish definition
IWS	in water survey	przeгляд na wodzie
CHS	continuous survey of hull	nadzór stały kadłuba
CMS	continuous survey of machinery	nadzór stały urządzeń maszynowych
CSS	consolidated supervision system	skonsolidowany system nadzoru
PMS	planned maintenance scheme	system planowego utrzymania urządzeń

**List of amendments effective as of 25 January 2016**

<i>Item</i>	<i>Title/Subject</i>	<i>Source</i>
<a href="#">5.3.3.2.1</a>	Removed: measurement of ME crankshaft deflection	PRS
<a href="#">5.3.3.4.9</a>	Removed: Insulation resistance measurement of electric network and electrical equipment	PRS
<a href="#">5.4.5.1.1</a>	Added: measurement of crankshaft deflection	PRS
<a href="#">5.4.5.1.27</a>	Added: Measurement of electric network and electrical equipment insulation resistance	PRS

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