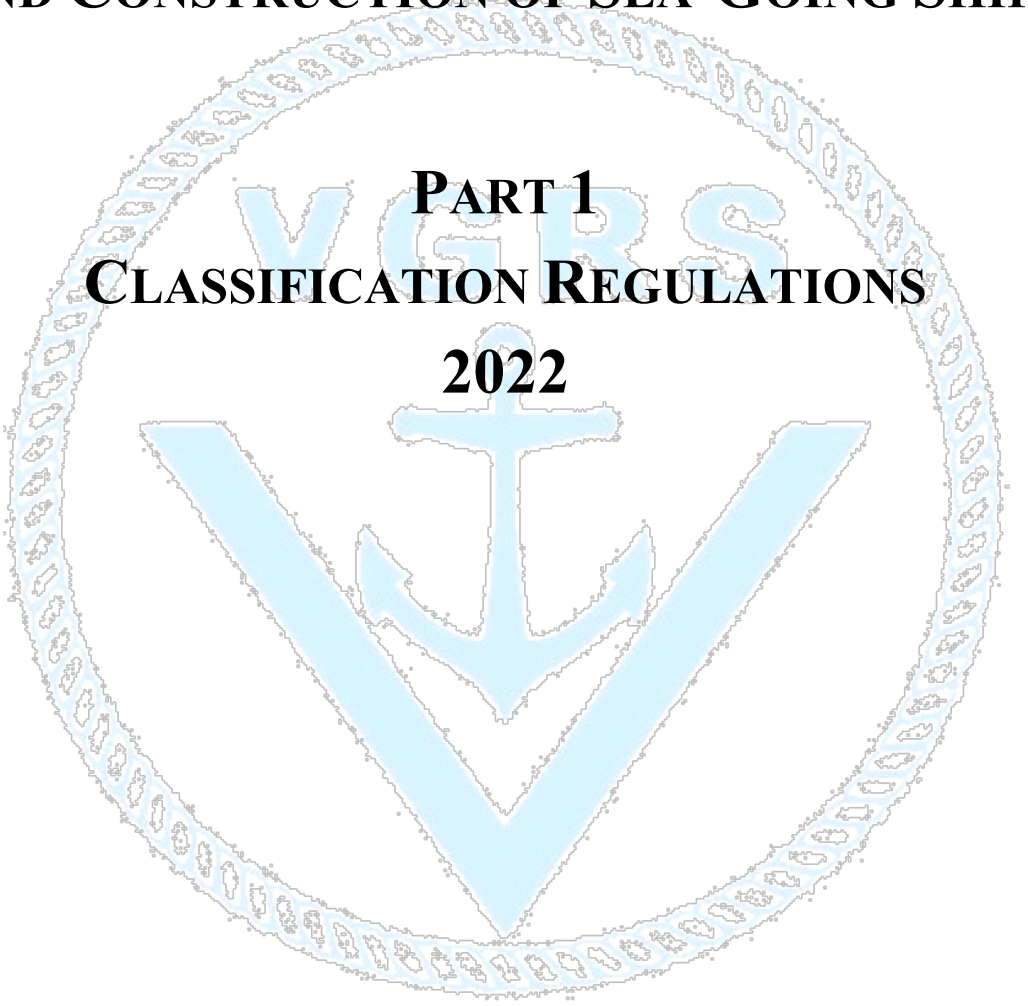
RULES FOR THE CLASSIFICATION AND CONSTRUCTION OF SEA-GOING SHIPS



PART 1
CLASSIFICATION REGULATIONS
2022

RULES FOR THE CLASSIFICATION AND CONSTRUCTION OF SEA-GOING SHIPS

PART 1

CLASSIFICATION REGULATIONS

Part “Classification Regulations”, 2014 of the Rules for the Classification of Sea-going ships was approved by VGRS Director on 23.04.2014 and enters into force on 30.04.2014.

The present part of the rules was considered and accepted by VGRS Technical Committee on 10.04.2014.

RULES FOR THE CLASSIFICATION AND CONSTRUCTION OF SEA-GOING SHIPS
consist of the following, separately edited, Parts:

Part 1 - Classification Regulations
Part 2 - Hull
Part 3 - Hull Equipment
Part 4 - Stability and Subdivision
Part 5 - Fire Protection
Part 6 - Machinery Installations and Refrigerating Plants
Part 7 - Machinery, Boilers and Pressure Vessels
Part 8 - Electrical Equipment and Automation
Part 9 - Materials and Welding

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2.3 If the symbol of class contains additional marks, the corresponding items of hull, machinery and electrical equipment and other equipment are subject to classification survey.
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1 GENERAL

1.1 Scope of Application

1.1.1 Rules for the Classification and Construction of Sea-going Ships, hereinafter referred to as "the Rules" apply, considering limitations in the application of the respective Parts of the Rules, to:

- ships of 24 m in length and above, irrespective of navigation area,
- ships of less than 24 m in length, intended for navigation in unrestricted area,
- oil tankers, chemical tankers and gas carriers, irrespective of their length and navigation area.

1.1.2 The present Part of the Rules applies also to refrigerating plants and boilers.

1.1.3 Upon VGRS' agreement, the Rules may be also applied to classification of ships not mentioned in 1.1.1.

1.1.4 Additional requirements concerning gas tankers are given in the International Code for the Construction and Equipment of Ships Carrying Liquid Gases in Bulk – IGC Code (IMO).

1.1.5 Additional requirements concerning chemical tankers are specified in the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk – IBC Code (IMO).

1.1.6 The requirements concerning high speed craft are specified in the International Code of Safety for High Speed Craft – HSC Code (IMO).

1.1.7 The present Part of the Rules applies both to ships under construction and existing ships.
The ship's age, if referred to in the Rules, means the elapsed period of time determined from the date of build.

1.1.8 Regulations relating to the scope of VGRS' survey, the survey procedures, kind of the issued documents, as well as the procedures of approval of plans and design data are given in General Survey Regulations.

1.2 Definitions

In the present Part, the following definitions have been adopted, they are also applicable to other Parts of the Rules:

Approved service supplier – a firm or a person granted valid VGRS' Certificate of Approval entitling to perform work, measurements, non-destructive tests, etc. within the scope and on conditions specified by VGRS.

Ballast tank – a tank which is being used primarily for water ballast.

Bulk carrier – a ship which is constructed generally with single deck, topside tanks and hopper side tanks in cargo spaces, and is intended primarily to carry dry cargo in bulk.

Chemical tanker – a tanker specially intended or adapted for the carriage of noxious liquid substances.

Classification cycle – a cyclical, generally 5-year period, starting from the date of ship's construction completion or the date of Class Renewal survey completion, equivalent to class validity period and covering all due Periodical Surveys.

Class of a ship – a combination of ship's (hull, machinery, installations, equipment) features determined by the requirements of the relevant Rules and certified with Certificate of Class.

Coating condition – for hard and semi-hard coatings:

- **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 areas under consideration, but less than as defined for poor condition,
- **poor** – condition with general breakdown of coating over 20% or more of areas or hard scale at 10% or more of areas under consideration.

Combination carrier – a ship intended for alternate carriage of oil, chemicals or solid cargoes in bulk.

- **Container ship** – a ship specially equipped with container cell guides and intended for the carriage of containers on the assumption that they are loaded and unloaded vertically.

Corrosion protection system – normally considered either:

- a full hard coating, or
- a full hard coating supplemented by anodes.

Other coating systems may be considered acceptable by VGRS, provided they are applied and maintained in compliance with the manufacturer's specification.

- **Crew of a ship** – a group of persons controlling the ship and ensuring her manoeuvrability and safe operation, together with personnel attending those on board, including passengers.

− **Critical areas** – locations which have been identified from calculations to require monitoring or from the service history of the subject ship, from similar or sister ship (if available), to be sensitive to cracking, buckling or corrosion which would impair the structural integrity of the ship.

Crude oil – any liquid hydrocarbon mixture occurring naturally in the earth whether or not treated to render it suitable for transportation and including:

− crude oil from which certain distillate fractions may have been removed, and

− crude oil to which certain distillate fractions may have been added.

Crude oil tanker – oil tanker intended for the carriage of crude oil.

Date of build – the date of completing Initial Survey for Assignment of Class to a new ship, which shall be the basis for Periodical Surveys requirements, specified in Classification Regulations. Where there is substantial delay between completion of construction survey process and the ship commencing active service, the date of commissioning may be also specified in the Certificate of Class. After modification, the date of build is to remain assigned to the ship. In the case of a complete replacement or addition of a major portion of the ship (e.g. forward section, after section or main cargo section), for each such portion, the date of modification, which shall be the basis for Periodical Surveys requirements, is to be indicated.

Dredger – a ship intended for dredging port areas.

ESP – enhanced hull survey of a ship carried out according to the requirements contained in Publications: 36/P – "Hull Surveys of Oil Tankers", 39/P – "Hull Surveys of Bulk Carriers".

Examination:

− External examination (general) – a visual inspection of structure and pipe systems, without dismantling, to provide a general assessment of their condition and to determine, where necessary, the scope of an additional special examination.

− Internal examination – a visual examination of structure and pipe systems in dismantled condition (partially or wholly) or a visual examination of an arrangement (boilers, pressure vessels) from the inside, aimed at the assessment of their condition and determination, where necessary, the scope of an additional close-up examination.

− Close-up examination – a thorough visual examination of structure and pipe systems being within Surveyor's reach and possible hammer, magnifying glass, etc. testing.

Ferry – a ship intended for regular carriage of means of road and railway transport (with or without cargo), as well as passengers.

Fishing vessel – a ship specially intended and equipped for fishing and for excavating other living resources of the sea.

Floating crane – a ship having usually a pontoon type hull with a jib crane installed on a deck.

Gas tanker – a tanker specially intended for the carriage of liquefied gases and other easy flammable products listed in Chapter 19 of the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC Code).

High speed craft – a craft capable of a maximum speed, in m/s, equal to or exceeding $3,7\ V_{0,1667}$, where V = displacement corresponding to the design waterline, (m_3).

Hopper barge – a ship provided with hold fitted with bottom and side flaps opening for the purpose of discharging the cargo (spoil).

Hydrofoil craft – a craft which is supported above the water surface in non-displacement made by hydrodynamic forces generated by foils.

Noxious liquid substance – any substance of Category A, B, C or D according to Chapter 17 and 18 of the IBC Code, as well as any other liquid substance assessed under the provisions of Appendix I to Annex II of MARPOL 73/78 as falling into Category A, B, C or D.

Oil – petroleum in any form, including crude oil, fuel oil, sludge, oil refuse and refined products (other than petrochemicals which are subject to the provisions of Annex II to MARPOL 73/78 Convention) and, without limiting the generality of the foregoing, includes the substances listed in Appendix I to Annex I of MARPOL 73/78. (Animal and vegetable oil are not treated as oil in the above interpretation.)

Oil tanker – a ship specially intended for the bulk transport of oil, as well as any combination carrier, chemical tanker or gas tanker carrying oil in bulk.

Operation, strength, tightness tests:

− **Operation tests** – close-up examinations of machinery or appliance under working conditions, combined with the measurements of essential operation parameters.

Strength tests:
- **Destructive strength tests** – a load is applied to test samples and increased until the sample is damaged. Parameters of the destructive load are recorded in the test report.
- **Non-destructive strength tests** – a test load specified by VGRS is applied to the tested body. The tested object should not be damaged during testing.
- **Tightness test** – a pressure of the liquid or gas medium is applied to the tested body. Kind of medium, test procedure and pressure value are to be agreed with VGRS.

Passenger – every person on board the ship other than the master and the members of the crew or other persons employed on board in any capacity (special personnel) and a child under one year of age and the personnel that is to be present onboard during sea trials.
Passenger ship – a ship intended for the carriage or carrying more than 12 passengers.
Product carrier – an oil tanker intended for the carriage of oil other than crude oil.
Prompt and Thorough Repair – a permanent repair completed at the time of survey to the satisfaction of the Surveyor, therein removing the need for the imposition of any associated condition of classification.
Protective coatings – usually to be epoxy coating or equivalent. Other coating systems may be considered acceptable as alternatives provided that they are applied and maintained in compliance with the manufacturer's specification.
Soft coatings – coatings which always remain soft and can be damaged by walking, touching, erosion, etc. These coatings are lanolin, vegetable oil and other organic and inorganic substances based products.
Semi - hard coatings – coatings that when drying convert in such a way that they stay flexible and have the ability to prevent corrosion for at least three years.
Hard coatings – coatings which always remain hard, and are usually epoxy coating or equivalent.
Reefer carrier – a ship with refrigerated and isolated holds adapted for the carriage of various perishable goods.
Representative spaces – spaces which are expected to reflect the conditions of other spaces of similar type and service and with similar corrosion protection systems. When selecting representative spaces, account is to be taken of the service and repair history on board and identifiable critical and/or suspect areas.
Rescue ship – a ship intended and equipped for the rescue of life at sea in all weather conditions.
Ro-ro ship – a ship specially intended for the carriage of cargo in units by means of wheeled and caterpillar transport on the assumption that they are loaded and unloaded horizontally.
Rules – Rules for the Classification and Construction of Sea-going Ships, consisting of the following Parts:
- Part 1 – Classification Regulations
- Part 2 – Hull
- Part 3 – Hull Equipment
- Part 4 – Stability and Subdivision
- Part 5 – Fire Protection
- Part 6 – Machinery Installations and Refrigerating Plants
- Part 7 – Machinery, Boilers and Pressure Vessels
- Part 8 – Electrical Equipment and Automation
- Part 9 – Materials and Welding,

as well as Publications" PR" referred to in the Rules.

Ship's length – 96% of the total length on a waterline at 85% of the least moulded depth measured from the top of the keel, or the length from the foreside of the stem to the axis of the rudder stock on that waterline, if that be greater. In ships designed with a rake of keel the waterline on which this length is measured shall be parallel to the designed waterline.
Spaces – separate compartments, including holds and tanks.
Special personnel – all persons who are not passengers or members of the crew or children under one year of age and who are carried on board in connection with the special purpose of that ship or because of special work being carried out aboard that ship, e.g. persons engaged in the processing of living resources of the sea, scientific workers, the personnel of laboratories, workmen, engineering and administrative staff of floating workshops, students and instructors in training ships, etc.
Special purpose ship – a ship which by reason of its function carries on board special equipment and more than 12 special personnel, including passengers. Special purpose ships include the following types:

- ships engaged in research, expeditions and survey,
- ships for training of marine personnel,
- fish factory ships not engaged in catching,
- other ships with design features and modes of operation similar to ships referred to above.

Subdivision – capability of a ship to float after damage and flooding of a compartment or group of adjacent compartments and to maintain stability in accordance with the requirements specified in the Rules relevant for the given ship type.

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

Supply vessel – a ship intended for the carriage of service materials and cargo and for assistance in drilling and excavating work at sea.

Survey – a set of activities relating to a ship, its machinery, appliances, etc. realized through carrying out appropriate examinations, measurements and tests.

Survey completion – survey is considered as completed when all activities determined in the Rules and Regulations for specified survey have been carried out, recommended repairs have been finalised and deficiencies have been rectified as to ensure safe departure of ship to the sea and its safe operation. Completion of survey is confirmed by a new interim certificate or endorsement of a full-term certificate. The date of survey completion is a date of issuing interim certificate or endorsement of full-term certificate.

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

Symbol of class of a ship – a group of conventional notes and marks specifying a class assigned to a ship, kind of survey during her building, as well as her structural features and operational limitations important for classification purposes. Symbol of class consists of the main symbol of class and additional marks.

Symbol of refrigerating plants – a group of conventional notes specifying kind of survey during construction of refrigerating plants and indicating their structural features.

Symbol of machinery – a group of conventional notes specifying kind of survey during construction of machinery.

Tanker – a ship specially intended for the carriage of liquid cargoes in bulk.

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

Tug – a ship intended and equipped for towing and pushing.

2 SCOPE OF SURVEY

2.1 Ship's classification covers ship's hull and its equipment, the machinery and electrical equipment, as well as refrigerating plants and boilers, including their systems and other equipment referred to in the Rules.
2.2 Ship's stability, subdivision and fire protection are also included in the scope of survey, according to the principles set forth in the Rules.
2.3 If the symbol of class contains additional marks, the corresponding items of hull, machinery and electrical equipment and other equipment are subject to classification survey.
2.4 During Periodical Surveys, the ship's equipment not covered with classification is subject to VGRS technical survey with respect to the ship's safety within the scope defined by Flag State requirements.

3 CLASS OF A SHIP

3.1 General

3.1.1 At the Owner's request, VGRS may assign a class to a new or existing ship, as well as confirm, renew, withdraw or reinstate class of an existing ship classed with VGRS.
3.1.2 VGRS may suspend or withdraw ship's class for reasons specified in Chapters 6 and 7.
3.1.3 Class of a ship is confirmed by the issue of Certificate of Class. The main symbol of class with additional marks, specified in 3.4, is given in the Certificate of Class. Conditions of class, additional descriptive information or class limitations are given in the Appendix to Certificate of Class.
3.1.4 Class of machinery is confirmed by the issue of Machinery Certificate.
3.1.5 Class of a refrigerating plant is confirmed by the issue of Certificate of Class for Refrigerating Plant.

3.2 Period of Ship's Class Validity

Class of a ship is assigned or renewed, in general, for 5 years. Having regard to the technical condition of the hull, machinery or electrical equipment, VGRS may assign a class to a ship for a shorter period or may shorten the class validity, as a result of the Class Renewal Survey, inserting an appropriate mark in the symbol of class – see 3.4.3.1.

3.3 Main Symbol of Class

3.3.1 Main symbol of class of a ship built under the survey of VGRS or an IACS Society.
3.3.1.1 The main symbol of class of a ship built under VGRS' survey consists of the mark

The following example shows a Class designation for hull and machinery:

	Characters of Classification	Notations
Hull:	**+A5**	**CONTAINER SHIP,** (and additional class notations)
Machinery:	**+MC**	**AUT,** (and additional class notations)

Survey, in result of which the ship is assigned a class with one of the above main symbols, covers at least:
- approval of documentation,
- survey of the manufacture of materials, machinery, installations and equipment,
- survey of building the ship and the main engine and boilers, where fitted,
- survey of mooring and sea trials.

See also 4.2.
3.3.1.2 If a ship has been built under the survey of an IACS Society and/or another class society, VGRS may assign the main symbol of class to an existing ship as in 3.3.1.1, subject to:

The following example shows a Class designation for hull and machinery:

	Characters of Classification	Notations
Hull:	**+.A5**	**CONTAINER SHIP**, (and additional class notations)
Machinery:	**+.MC**	**AUT**, (and additional class notations)

- approval of current technical documentation,
- carrying out Initial Survey within the scope of Class Renewal Survey, including recommendations and conditions of class stated in the ship's classification status issued by the previous Society.

See also 4.3.
If the power of this propulsion enables to obtain a speed of at least 7 knots in still water.
In such a case a note informing of an auxiliary character of the mechanical propulsion will be entered in the Certificate of Class and the Machinery Certificate will be issued.

3.4 Additional Marks in the Symbol of Class
3.4.1 General
3.4.1.1 Additional marks in the symbol of class indicate the ship type, obligatory requirements or limitations relevant to the ship type or its operation ability, as well as additional ship structure or adaptation features.
3.4.1.2 Additional marks are affixed to the symbol of class upon compliance with requirements specified in the respective Part of the Rules.
3.4.1.3 Additional marks in the symbol of class are put after the main symbol of class.
3.4.1.4 VGRS may delete or alter 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.
3.4.1.5 Explanation of some abbreviations associated with additional marks is given in Appendix I.
3.4.2 Additional marks indicating the ship type
3.4.2.1 Cargo ships which comply only with the basic requirements specified in the respective Parts of the Rules, are assigned the following mark affixed to the symbol of class:
3.4.2.1.1 General cargo ship:

GENERAL CARGO SHIP

3.4.2.2 Ship complying with the basic requirements specified for the given type, as well as with the relevant additional requirements, specified in the respective Parts of the Rules, are assigned one of the below given marks affixed to the symbol of class:
3.4.2.2.1 Passenger ship:
PASSENGER SHIP
3.4.2.2.2 Roll on-roll off ship:
RO-RO SHIP
3.4.2.2.3 Ferry:
FERRY
3.4.2.2.4 Bulk carrier:
BULK CARRIER
3.4.2.2.5 Ore carrier:
ORE CARRIER
3.4.2.2.6 Cement carrier:
CEMENT CARRIER
3.4.2.2.7 Crude oil tanker:
CRUDE OIL TANKER
3.4.2.2.8 Product carrier carrying cargoes with an ignition temperature not exceeding 60°C (closed cup test) and with a pressure of vapour (acc. to Reid) below the atmospheric pressure:
PRODUCT CARRIER A
3.4.2.2.9 Product carrier carrying cargo with an ignition temperature above 60 oC (closed cup test):
PRODUCT CARRIER B
3.4.2.2.10 Tanker carrying only specified liquid cargo in bulk (other than oil tanker, product carrier, chemical tanker or gas tanker):
…… TANKER
(in place of dots, type of cargo, e.g. FRESH WATER, OIL TANKER is to be put)
3.4.2.2.11 Gas tanker:
LIQUEFIED GAS TANKER
3.4.2.2.12 Chemical tanker:
CHEMICAL TANKER
3.4.2.2.13 Container ship:
CONTAINER SHIP
3.4.2.2.14 Reefer carrier:
REEFER CARRIER
3.4.2.2.15 Livestock carrier:
LIVESTOCK CARRIER
3.4.2.2.16 Fishing vessel:

FISHING VESSEL

3.4.2.2.17 Fishing cutter:

FISHING CUTTER

3.4.2.2.18 Tug:

TUG

3.4.2.2.19 Supply vessel:

SUPPLY VESSEL

3.4.2.2.20 Rescue vessel:

RESCUE VESSEL

3.4.2.2.21 Fire fighting ship:

FIRE FIGHTING SHIP

3.4.2.2.22 Ship intended for operation in the area of oil spillage:

OIL RECOVERY VESSEL

3.4.2.2.23 Research ship:

RESEARCH SHIP

3.4.2.2.24 Training ship:

TRAINING SHIP

3.4.2.2.25 Floating crane:

FLOATING CRANE

3.4.2.2.26 Dredger:

DREDGER

3.4.2.2.27 Hopper barge:

HOPPER BARGE

3.4.2.2.28 Barge:

BARGE

3.4.2.2.29 Pontoon:

PONTOON

3.4.2.2.30 High speed craft:

HSC

3.4.2.3 Ships complying with the requirements specified for two or more ship types are assigned additional mark in the symbol of class which is a combination of particular marks (e.g. TUG/SUPPLY VESSEL, TUG/OIL RECOVERY VESSEL, FERRY/PASSENGER SHIP, RO–RO/PASSENGER SHIP, ORE/BULK CARRIER).

3.4.2.4 VGRS may assign to the ship another mark indicating the ship type if considers it technically justified. In such case, the additional requirements are to be specified by VGRS in each particular case.

3.4.3 Additional marks indicating obligatory requirements or limitations relevant to the ship type or its operation ability

3.4.3.1 Marks of limited period of class validity is “5” and class period is five(5) years.

If, in result of survey, the classification cycle is to be shortened, the appropriate mark of class validity period is placed in the symbol of class:

<3 – when the classification cycle is shortened to 3 years,

<2 – when the classification cycle is shortened to 2 years,

<1 – when the classification cycle is shortened to 1 year.

3.4.3.2 Enhanced hull survey mark

− All bulk carriers, oil tankers, and combination carriers are assigned the mark:

ESP

affixed to the symbol of class.

3.4.3.3 Restricted service marks

3.4.3.3.1 If a ship has been built with preferences for the given area of navigation, specified in Parts: 2 – Hull, 3 – Hull Equipment, 4 – Stability and Subdivision, 5 – Fire Protection and 6 – Machinery Installations and Refrigerating Plants of the Rules, following marks are affixed to the symbol of class to have the following meaning:

Notation	Service area restriction
K200	This area of service is restricted, in general, to trade along the coast, provided that the distance to the nearest port of refuge as well as the offshore distance do not exceed 200 nautical miles. This applies also to trade in the North Sea and within enclosed seas, such as the Mediterranean, the Black Sea and waters with similar seaway conditions. Trade to Iceland, Spitsbergen and the Azores is exempted.
K50	This area of service is restricted, in general, to trade along the coasts, provided that the distance to the nearest port of refuge as well as the offshore distance do not exceed 50 nautical miles. This applies also to trade within enclosed seas, such as the Baltic Sea and gulfs with similar seaway conditions. Where a permissible distance of less than 50 nautical miles has been fixed for a ship, the relevant distance will be indicated in the Class Certificate, e. g.**K20**
KSW (Sheltered water)	This area of service is restricted to trade in shoals, bays, and firths or similar waters, where heavy seas do not occur.

3.4.3.3.2 For unrestricted service ships, no marks indicating an area of navigation are given.

3.4.3.4 Subdivision mark for passenger ships

All passenger ships are assigned the mark:

[1] or **[2]**

affixed to the symbol of class which indicates that the ship complies with the relevant requirements set forth in Parts: 3 – Hull Equipment, 4 – Stability and Subdivision.

The figures in brackets indicate the number of compartments after the flooding of which a ship should remain afloat in a satisfactory state of equilibrium.

Mark of ships carrying vehicles with petroleum tanks

3.4.3.5 RO-RO and FERRY type passenger ships carrying vehicles with petroleum in tanks are to comply with the requirements specified in Part 5 – Fire Protection and Part 8 – Electrical Equipment and Automation and are assigned the mark:

PET

affixed to the symbol of class.

Additional marks indicating the ship's structure or adaptation features

3.4.4 Subdivision mark for cargo ships

3.4.4.1 A ship for which probability of damage survival has been determined according to Part 4 – Stability and Subdivision is assigned the mark:

[ST]

affixed to the symbol of class.

Ice strengthening Marks

3.4.4.2

If ice strengthening of a ship comply with the relevant requirements contained in Parts: 2 – Hull, 3 – Hull Equipment and 6 – Machinery Installations and Refrigerating Plants, the mark:

Ships, which comply with the requirements of the Construction Rules relating to strengthening for naviga- tion in ice, will have one of the "Ice Class" Notations specified below affixed to the Character of Classifica- tion. Except for Class Notation **E**, which on request may be assigned to the hull or the machinery installa- tion only, hull and machinery shall always be assigned the same ice class. If the hull is constructed such as to comply with a higher ice class, this will be indicated in the class notation as below.

E, E1, E2, E3, E4

Hull and machinery have been designed such as to comply with the requirements for navigation in ice, with index 4 representing the highest notation. Notations **E1** to **E4** correspond to ice classes **IC** to **IA Su- per** of the Finnish-

Swedish Ice Class Rules 2010 (23.11.2010 TRAFI / 31298 / 03.04.01.00 / 2010).

Annex. Approximate correspondence between Ice Classes of the Finnish-Swedish Ice Class Rules (Baltic Ice Classes) and the Ice Classes of other Classification Societies

Classification Society	Ice Class				
Finnish-Swedish Ice Class Rules	**IA Super**	**IA**	**IB**	**IC**	**Category II**
Russian Maritime Register of Shipping (Rules 2007)	Arc 5	Arc 4	Ice 3	Ice 2	Ice 1
Russian Maritime Register of Shipping(Rules 1995)	UL	L1	L2	L3	L4
Russian Maritime Register of Shipping(Rules 1999)	LU5	LU4	LU3	LU2	LU1
American Bureau of Shipping	IA A	IA Ao	IB	IC	D0
Bureau Veritas	IA SUPER	IA	IB	IC	ID
CASPPR, 1972	A	B	C	D	E
China Classification Society	Ice Class B1*	Ice Class B1	Ice Class B2	Ice Class B3	Ice Class B
Det Norske Veritas	ICE-1A* ICE-10	ICE-1A ICE-05	ICE-1B	ICE-1C	ICE-C
Germanischer Lloyd	E4	E3	E2	E1	E
Korean Register of Shipping	ISS	IS1	IS2	IS3	IS4
Lloyd's Register of Shipping	1SS	1A	1B	1C	1D
Nippon Kaiji Kyokai	IA Super	IA	IB	IC	ID
Registro Italiano Navale	IAS	IA	IB	IC	ID
VEGA Register	**E4**	**E3**	**E2**	**E1**	**E**

3.4.4.3 Mark of strengthening for ro-ro cargoes
3.4.4.3.1 Ships having decks strengthened for the carriage of ro-ro cargoes and complying with the relevant requirements contained in Part 2 – Hull are assigned the mark:

SD

affixed to the symbol of class.
3.4.4.3.2 Ships having movable decks complying with the relevant requirements of Part 3 – Hull Equipment are assigned the mark:

MD

affixed to the symbol of class.
3.4.4.4 Mark of ship adaptation for the carriage of containers on deck.
3.4.4.4.1 A ship, other than container ship, complying with the relevant requirements of the carriage of containers on deck, is assigned the mark:

ACC (...)

affixed to the symbol of class.
Design number of twenty foot equivalent units (TEU) is given in brackets.
3.4.4.5 Cargo distribution marks
3.4.4.5.1 Ships intended for the carriage of bulk cargoes and complying with the relevant requirements contained in Part 2 – Hull are assigned the mark:

HC/ALT

for ships on which heavy bulk cargo may be distributed unevenly on the ship's length

HC/E

for ships on which at least one hold may remain empty at loading the ship to the highest load line
affixed to the symbol of class.
3.4.4.5.2 The numbers of holds, which according to the mark HC/E may remain empty, are indicated in Appendix to the Certificate of Class/Interim Certificate of Class.
3.4.4.6 Mark of strengthening in ships lying aground during loading operations

Ships complying with the relevant requirements contained in Part 2 – Hull are assigned the mark:

LAL

affixed to the symbol of class.
The mark means the strengthening of the ship for lying aground during loading operations.
Mark of strengthening for unloading with use of cargo grabs
Ships complying with the relevant requirements contained in Part 2 – Hull are assigned the mark:

CG

affixed to the symbol of class.
The mark means strengthening for performing unloading operations with the use of cargo grabs.
Mark of strengthening for mooring at sea
Ships complying with the relevant requirements contained in Part 2 – Hull are assigned the mark:

MS

affixed to the symbol of class.
The mark means strengthening for mooring to other ships at sea.
Mark of protection against corrosion Ships built according to the relevant requirements contained in Part 2 – Hull are assigned the mark:

PAC

affixed to the symbol of class.
The mark means that the corrosion additions are reduced or omitted.
Mark of adaptation to the survey of underwater part of the hull when ship is afloat
Ships complying with the requirements contained in 5.5.4 of the present Part of the Rules are assigned the mark:

IWS

affixed to the symbol of class.
The mark means that the ship is adapted for performing In -water Bottom Survey.
Segregated ballast mark
Oil tankers and combination carriers complying with the requirements of Part 2 – Hull are assigned the mark:

SBT

affixed to the symbol of class.

Crude oil washing mark

Oil tankers and combination carriers complying with the requirements of Part 6 – Machinery Installations and Refrigerating Plants are assigned the mark:

COW

affixed to the symbol of class.

Mark of a protective location of segregated ballast tanks

Oil tankers, chemical tankers and combination carriers complying with the requirements of Part 2 – Hull are assigned the mark:

PLT

affixed to the symbol of class.

Mark of inert gas system

Oil tankers, chemical tankers and combination carriers complying with the requirements of Part 5 – Fire Protection are assigned the mark:

ING

affixed to the symbol of class.

3.4.4.15 Mark of ships adapted for the carriage of timber

Ships intended or adapted for the carriage of timber and comply ing with the requirements contained in Parts: 3 – Hull Equipment and 4 – Stability and Subdivision are assigned the mark:

TIMBER

affixed to the symbol of class.

3.4.4.16 Mark of fishing equipment

Fishing vessel complying with the relevant Rules requirements may be assigned the mark:

FE

affixed to the symbol of class.

3.4.4.17 Marks of an unattended machinery space and one man bridge operation

3.4.4.17.1 If automatic systems and machinery of a ship comply with the requirements of Part 8 – Electrical Equipment and Automation, such a ship may be assigned the mark:

AUT

affixed to the symbol of class.

The mark is applicable only in the case of machinery spaces being capable of unattended operation during at least 8 consecutive hours.

Inclusion of the mark in the symbol of class means that the scope of automation of machinery affords the possibility of its operation without direct attendance of the crew.

3.4.4.17.2 If the ship's automatic systems comply with the relevant requirements of Part 8 – Electrical Equipment and Automation for the case of one-man bridge operation, the ship may be assigned the mark:

NAV 1

affixed to the symbol of class.

3.5 Symbol of Machinery

3.5.1 Symbol of machinery built under VGRS' survey

If the machinery has been built under the VGRS survey, the following symbol is entered in the Machinery Certificate:

+MC

In such case the survey of machinery covers at least:

- approval of documentation,
- survey of the manufacture of materials and essential equipment,
- survey of building the main engine and boilers,
- survey of assembling machinery, piping systems and equipment on board ship,
- mooring and sea trials.

3.5.2 Symbol of machinery previously classed by another Classification Society.

If the machinery has been classed by another Classification Society and then it has been assigned a class

of VGRS, the following symbol is entered in the Machinery Certificate:

+.MC

In such case the survey of machinery covers at least:

− review of documentation approved by the previous Classification Society,

− verification of certificates, issued by the previous Classification Society, of main engines and essential machinery and equipment,

− survey within the scope defined by VGRS in each particular case,

− mooring trials within the scope defined by VGRS.

3.5.3 Symbol of non-classed machinery

− When the machinery has not been classed by any Classification Society and then it has been assigned a class of VGRS, the following symbol is entered in the Machinery Certificate:

(MC)

In such case the survey of machinery covers at least:

− approval of technical documentation,

− verification of certificates of main engines and essential machinery and equipment issued by the manufacturer,

− survey of machinery within the scope of class renewal,

− mooring and sea trials within the scope defined by VGRS in each particular case.

3.6 Additional Descriptive Information

Other conditions, such as design features, permanent service restrictions or other special features on the basis of which the ship has been assigned a class, not represented by additional marks in the symbol of class, are described in the Appendix to the Certificate of Class/Interim Certificate of Class.

3.7 Automation

Machinery installations which comply with the Rules of VGRS for automated and/or remote-controlled sys- tems, will have the Notations specified below affixed to the Character of Classification.

Notations for machinery with automated and/or remote-controlled systems,

Notation	**Characterization**
AUT	The machinery installation is fitted with equipment for unattended machinery spaces, so that it does not require to be operated and/or maintained for periods of at least 24 hours.
AUT-nh	The period during which attendance to and maintenance of equipment is not required, is less than 24 hours, with **nh** indicating that the machinery space may remain unattended for n hours.
AUT-Z	The machinery installation is operated with the engine control room permanently attended (centralized control) and is equipped with a system for remote control of the main pro- pulsion plant from the bridge or arrangements for manoeuvring from the engine control room.

4 ASSIGNMENTS OF CLASS TO A SHIP

4.1 General

4.1.1 VGRS may assign a class to a new ship or to an existing ship. The condition for assigning class to a ship is submitting, by the Owner, a written request for VGRS class assignment and completion of the Survey for Assignment of Class with positive result.

4.1.2 After completion of the Survey for Assignment of Class, VGRS Branch Office issues Interim Certificate of Class to enable the ship to sail.

4.1.3 Assignment of class is confirmed by the issue of Certificate of Class and an appropriate entry made in the VGRS Register. Assignment of class means that the ship in full measure or to a degree considered by VGRS acceptable complies with the relevant requirements of the Rules.

4.1.4 Where structural details of a ship to be classed with VGRS or her equipment do not comply with the requirements of VGRS Rules and the Owner presents evidence of the ship's or equipment satisfactory behaviour during the ship hitherto operation, VGRS may accept the evidence as technically equivalent.

4.2 Ship Built under VGRS' Survey

A ship built under VGRS' survey is assigned VGRS class after completion, with positive result, of the Initial Survey for Assignment of Class carried out within specified scope.

The scope of the survey of a ship under construction will be each time specified by the relevant VGRS Branch Office on the basis of the Rules, approved technical documentation and the site building conditions.

The scope of the required technical documentation covers ship's data and specification, General Arrangement Plan, Plan of Boilers and documentation specified in particular parts of the Rules.

4.3 Ship with Valid Class Assigned by another Classification Society

4.3.1 An existing ship, assigned class of an IACS Society, may be assigned VGRS class upon completion of the Survey for Assignment of Class to cover:

- all due and overdue surveys, specified in the classification status of the previous Classification Society,
- carrying out all due and outstanding recommendations and conditions of class specified in the classification status of the previous Classification Society,
- surveys specified in 5.11,
- examination of required technical documentation, referred to in 4.3.1.1 to 4.3.1.7, submitted by the Owner.

VGRS Certificate of Class validity cannot exceed the validity of the previous IACS Society Certificate of Class. The dates of Periodical Surveys are to be maintained.

4.3.1.1 Main plans:

- General Arrangement Plan,
- Capacity Plan,
- Hydrostatic Curves,
- Loading Manual, where required,
- Information on Stability and Information on Damage Stability, where required.

4.3.1.2 Hull plans:

- Midship Section,
- Longitudinal Section,
- Scantling Plan for bottom, bow and stern,
- Decks,
- Shell Expansion,
- Transverse Bulkheads,
- Rudder Arrangement,
- Hatch Covers.

4.3.1.3 Machinery plans:

- Machinery Arrangement,
- Fire Control Plan,
- Intermediate, Thrust and Screw Shafts,
- Propeller,

− Main Engines, Propulsion Gears and Clutch Systems (or manufacturer make, model and rating information),
− For steam turbine vessels, Main Boilers, Superheaters and Economizers (or manufacturer make, model and rating information) and Steam Piping,
− Bilge and Ballast Piping Diagram,
− Wiring Diagram (electric balance of a ship, elementary diagram of power distribution circuits, elementary diagram of the main and emergency switchboards),
− Steering Gear Systems Piping and Arrangements and Steering Gear manufacturer make and model information.

4.3.1.4 Torsional Vibration Calculations (for vessels less than two years old)

4.3.1.5 Additional documentation for vessels with ice strengthening:
− Plans for flexible couplings or torque limiting shafting devices in the propulsion line shafting (or manufacturer make, model and rating information).

4.3.1.6 Additional plans required for oil tankers, chemical tankers and gas tankers:
− Plans of cargo pump rooms at the forward and after ends and drainage of cofferdams and pump rooms,
− General Arrangement Plan of cargo piping in tanks and on decks.

4.3.1.7 Additional plans required for unattended engine room:
− instrument and alarm list,
− fire alarm system,
− list of automatic safety functions (e.g. slowdowns, shutdowns, etc.),
− function testing plan.

4.3.1.8 Additionally, submitting of the following documentation is recommended:
− ship's data and specification,
− body lines,
− drawings of superstructures,
− drawings of longitudinal bulkheads.

4.3.2 An existing ship, the class of which has been assigned by non-IACS Society, may be assigned VGRS class after reviewing documentation within the scope specified in 4.3.1.1 to 4.3.1.7 for compliance with the Rules and after completion of the Initial Survey for Assignment of Class carried out within the scope of Class Renewal Survey, determined in 5.4, depending on the ship type and age.
In well-grounded cases, VGRS may accept examinations, measurements or tests surveyed by the previous Classification Society.
VGRS Certificate of Class validity and intervals between Periodical Surveys will date from the time of completion of the Initial Survey for Assignment of Class.

4.4 Ship which Has Not Been Classed Before

VGRS may assign a class to an existing ship which has not been classed before, provided that:
− the Owner supplies technical documentation within the scope specified in 4.3.1.1 to 4.3.1.7 and the documentation is approved by VGRS,
− an Survey for Assignment of Class is carried out within the scope of Class Renewal Survey, specified in 5.4, depending on the ship type and age. VGRS Certificate of Class validity and intervals between Periodical Surveys will date from the time of completion of the Initial Survey for Assignment of Class.

4.5 Ship with Class Withdrawn

In the case of ship with class withdrawn, the condition for class reinstatement is the performance of the Survey for Assignment of Class within the scope determined in each particular case by VGRS, with due regard paid to the reasons of class withdrawal.
VGRS Certificate of Class validity and intervals between Periodical Surveys are determined by VGRS.

5 MAINTENANCE OF SHIP'S CLASS,

INTERVALS BETWEEN SURVEYS AND SURVEYS SCOPE

5.1 General

5.1.1 The conditions for maintaining the ship's class are:

− maintaining the ship – the ship's hull, machinery, installations and equipment in a satisfactory technical condition,

− ship's operation in accordance with conditions specified in Certificate of Class, the manufacturer's instructions and the principles of good seamanship,

− carrying out due Periodical Surveys at scheduled dates,

− carrying out recommendations at scheduled dates,

− carrying out required Occasional Surveys,

− timely payment of fees for survey services.

5.1.2 All ships classed with VGRS are subject, within each classification cycle, to the following Periodical Surveys:

− Annual Survey,

− Intermediate Survey,

− Class Renewal Survey, including bottom and tail shaft surveys.

5.1.3 All ships classed by VGRS are subject to Occasional Surveys in cases specified in 5.10 and 5.12.

5.1.4 VGRS informs the Owner on the dates of due Periodical and Occasional Surveys by a quarterly classification status. Non-receipt of a quarterly classification status does not absolve the Owner from an obligation to submit the ship for survey at the dates specified in the Rules.

5.1.5 The Owner is obliged to properly prepare the hull, machinery and electrical installations, boiler, refrigerating installations and ship equipment for each survey. The Surveyor may refrain from performing a survey if he considers that the ship has not been properly prepared for the survey or a threat to life or health exists.

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

5.1.7 Annual and Intermediate Surveys are to ascertain that a ship complies with the conditions for maintaining the class.

5.1.8 Class Renewal Survey is to ascertain that the ship's hull, machinery and installations comply with the requirements of VGRS Rules and that the ship is able to be operated according to her designation throughout the subsequent 5-year period, provided she is suitably operated and maintained.

5.1.9 Any damage in association with wastage over the allowable limits (including buckling, grooving, detachment or fracture), or extensive areas of wastage over the allowable limits, which affect or, in the opinion of the Surveyor, will affect the ship's structural, watertight or weather tight integrity, are to be promptly and thoroughly repaired. Areas to be considered include:

− side shell frames, their end attachments of adjacent shell plating,

− deck structure and deck plating,

− bottom structure and bottom plating,

− watertight or oil tight bulkheads, or

− hatch covers or hatch coamings.

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

Additionally, when a survey results in the identification of substantial corrosion or structural defects, either of which, in the opinion of the Surveyor, will impair the ship's fitness for continued service, remedial measures are to be implemented before the ship continues its service.

5.1.10 Intervals between Periodical Surveys of a ship built under the VGRS classification survey will date from the classification cycle commencement.
5.1.11 Intervals between Periodical Surveys of ships which have entered VGRS class with a valid class assigned by another Classification Society, ships that have not been classed before and ships with class withdrawn – see 4.3, 4.4 or 4.5.
5.1.12 VGRS 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 this case, new due dates of the examinations, measurements or tests are to be, in general, concurrent with Periodical Surveys.
5.1.13 In well-grounded cases, VGRS' Surveyor may dispense with 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 a good and efficient condition. The Surveyor may limit the scope of surveys in dismantled condition of main engine and generator prime movers after analysis of maintenance records of the given engine. The above does not apply to the main engine fitted in unrestricted service ships.
5.1.14 Thickness measurements of hull structural members required for the given Class Renewal Survey are to be carried out, where practicable, in advance, but not before the Annual Survey preceding Class Renewal Survey.
5.1.15 If, during the survey, the internal examination is to be carried out with the use of the remote survey techniques, they may be used only upon consent and under conditions agreed with VGRS.
5.1.16 Services, which constitute the basis for technical condition assessment of ship by the Surveyor, such as:
− thickness measurements of hull structure,
− non-destructive and destructive tests,
− surveys and tests of fire-extinguisher systems,
as well as:
− all 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, switchboards),
− repairs with use of special processes and procedures (welding, laminating, pulverization, Metalock repair, filling with chemosetting products), shall be performed by subcontractors approved by VGRS.
In well-grounded cases, the Surveyor may, at the Owner's request, agree on performance of services by a firm/person not holding VGRS approval - on a single approval basis, after verifying the firm's/person's ability to perform such services.
Thickness measurements of hull structure are to be verified by the Surveyor.
5.1.17 Where repairs to ship's hull, machinery or essential equipment are to be carried out during a voyage, they are to be performed only upon consent and under conditions agreed with VGRS.
5.1.18 In the case of renewing the coating in ballast tanks, holds and on hull outside bottom plating, the Owner is to submit, to VGRS, the coating manufacturer's application procedure. In case of a routine maintenance work carried out by the ship's crew, submission of an Owner's report is required.
5.1.19 Measuring equipment used to carry out measurements constituting the basis for the assessment of the structure or machinery item technical condition should be calibrated to a recognized national or international standard. Each measuring device should have valid calibration certificate. The Surveyor may accept without confirmation of calibration:
− simple measuring equipment (e.g. rulers, measuring tapes, weld gauges, micrometres), provided they are of standard commercial design, properly maintained and periodically verified by the user,
− equipment fitted on board a ship and used for checking pressure, temperature or rpm, etc., provided their readings are compared with other similar instruments.

5.1.20 Each computer software used for technical calculations while preparing technical documentation and data for evaluation of ship's operation safety is to be previously approved by VGRS.
5.1.21 For oil tankers, bulk carriers and chemical tankers, the scope of Periodical Hull Surveys of which is specified in Publications: 36/P – Hull Surveys of Oil Tankers, 39/P – Hull Surveys of Bulk Carriers and 46/P – Hu ll Surveys of Chemical Tankers, the Owner, prior to the survey, should prepare, based on these Publications and in co-operation with the relevant VGRS Branch Office, the survey programme for class renewal and send it to VGRS Head Office for acceptance.
5.1.22 Gas tankers and chemical tankers intended for the carriage of noxious substances in bulk are to additionally, comply with the survey requirements specified in IMO Resolution A. 746(18), as amended.
5.2 Intervals between Periodical Surveys
5.2.1 Annual Survey
Annual Survey is to be held within 3 months, before and after each anniversary of the assignment of class or the class renewal.
5.2.2 Intermediate Survey
The Intermediate Survey is to 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
5.2.3.1 The Class Renewal Survey is to be held at 5-yearly intervals. In exceptional cases, however, upon VGRS' agreement, a maximum 3 month extension of class beyond the 5th year may be granted – see 6.1.3.1.
5.2.3.2 Regardless of the requirements stated 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.
5.2.3.3 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 started before the fourth Annual Survey, the entire survey is to be completed within 15 months. The new period of class will start from the survey completion date.
5.2.4 Bottom Survey of hull
5.2.4.1 The Bottom Survey of passenger ships engaged on international voyages, hydrofoil craft and ships engaged in ice breaking, as well as ships allowed to sail unaided in winter in non-Arctic seas in extremely heavy and heavy ice conditions (marks: L1A and L1) is to be performed each year at the time of Periodical Survey.
5.2.4.2 The Bottom Survey of ships, other than those mentioned in 5.2.4.1, is to be performed twice within each classification cycle: during Intermediate Survey and Class Renewal Survey. The intervals between consecutive surveys should not exceed 3 years.
5.2.4.3 Depending on VGRS decision, the Bottom Survey of ships, other than those mentioned in 5.2.4.1, assigned the mark of limited period of class validity, is carried out during the first or second Annual Survey.
5.2.4.4 In well-grounded cases, the interval between consecutive Bottom Surveys in dry dock may be, subject to VGRS consent, extended if results of the survey carried out by a diver are satisfactory. The date of the subsequent periodical Bottom Survey will not, in such case, be postponed.
5.2.4.5 The Bottom Survey of passenger ships, due within Annual Survey, may be carried out by divers.
5.2.4.6 The Bottom Survey of non-self-propelled ships, due within Intermediate Survey, may be performed by divers.
5.2.4.7 The Bottom Survey of cargo ships complying with the requirements specified in 5.5.4 for ships assigned an additional mark IWS, due within Intermediate Survey, may be performed by divers.
5.2.4.8 The Bottom Survey of cargo ships not assigned an additional mark IWS in the symbol of class may be performed by divers, subject to acceptance, by VGRS, of the survey programme submitted by the Owner which will confirm the possibility of carrying out survey within the scope specified in 5.5.
5.2.4.9 The Occasional Bottom Survey may be required in the case of ship's grounding or damage.
5.2.4.10 The Owner is obliged to notify VGRS whenever the ship's bottom can be examined in dry dock.

5.3 Scope of Annual and Intermediate Surveys

5.3.1 Hull and Hull Equipment Annual Survey

The scope of the Hull and Hull Equipment Annual Survey covers as follows:

5.3.1.1 Checking classification and statutory documents, as well as ship's documents concerning overhauling and maintenance of oil tanks, holds and hull machinery and equipment by the Owner. In the case any entries are missing, VGRS reserves for itself a right to extend the scope of survey beyond the Annual Survey.

5.3.1.2 External examinations of:

− plating of the above-water part of the hull and weather decks, including marks (load line marks, draught marks, electromagnetic radiation warning marks, etc.),
− collision bulkhead and other watertight bulkheads accessible during survey,
− bulwark, railings and freeing ports,
− cargo doors,
− superstructures and deckhouses,
− hatch coamings and crane columns, together with stiffeners,
− 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, including safe access to the bow, if required,
− emergency towing equipment, if required,
− towing hooks with rigging, fastenings and arches (applicable to tugs).

Where mechanically operated steel covers are fitted, the satisfactory condition of the following is to 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, cleating,
− chain or rope pulleys, guides, guide rails and track wheels,
− stoppers, etc.,
− wires, chains, gypsies, tensioning devices,
− hydraulic system essential to closing and securing,
− safety locks and retaining devices.

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

− wooden covers and portable beams, carriers or sockets for the portable beams and their securing devices,
− steel pontoons, together with close-up examinations of plating,
− tarpaulins,
− cleats, battens and wedges,
− hatch securing bars and their securing devices,
− loading pads/bars and the side plate edge,
− guide plates and chocks,
− compression bars, drainage channels and drain pipes (if any).

5.3.1.3 Examination:

− suspect areas, if specified during Class Renewal Survey,
− ballast tanks, in cases ensuing from the provisions of 5.3.2.4 or 5.4.1.3.

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 examination, extensive corrosion has been found,
− hull structure in the regions where substantial corrosion has been found and specified during Class Renewal Survey or Intermediate Survey,
− ballast tanks, in cases ensuing from 5.3.1.3.
5.3.1.5 Operation tests of:
− the bow, aft 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,
− towing rope release, without loading the hook in its various positions (applicable to tugs).
Random checking is to be made of the satisfactory operation of mechanically operated hatch covers:
· stowage and securing in opened up condition,
· proper fit, locking and efficiency of sealing in closed condition,
· operation tests of hydraulic and power components, wires chains and link drives.
5.3.1.6 Checking the Loading Manual, Loading Instrument and Cargo Securing Manual, where required.
5.3.1.7 Checking the validity of Information on Stability and Information on Damage Stability, where required.
5.3.1.8 Additionally, for single skin bulk carriers of 150 m in length and above, allowed to carry solid bulk cargo of density 1780 kg/m$_3$ and above, where distribution of cargo in holds and/or a vessel's deadweight are restricted – checking that both ship's sides are marked with "a triangle" of proper size, visibility and durability.
5.3.1.9 Additional requirements for hull survey of oil tankers, bulk carriers and chemical tankers are specified in Publications: 36/P – Hull Surveys of Oil Tankers, 39/P – Hull Surveys of Bulk Carriers and 46/P – Hull Surveys of Chemical Tankers.
5.3.1.10 Additionally for passenger ships, checking the currentness of service restrictions list.
5.3.1.11 Additionally for passenger ships, checking helicopter landing platforms, taking into account:
− landing platform deck structure,
− fire-fighting equipment,
− helicopter fuel distribution system, if fitted,
− helicopter shelter, if fitted,
− procedures for helicopter operation, including emergency situations.
5.3.2 Hull and Hull Equipment Intermediate Survey.
Hull Intermediate Survey covers the Annual Survey and additionally the activities mentioned in 5.3.2.1 to 5.3.2.5.
5.3.2.1 Examination of cargo holds, indicated by VGRS – the inner bottom, bulkheads, ship's sides, decks, 'tween decks, structural members, piping in the holds, watertight bulkhead penetrations.
5.3.2.2 Examination of machinery spaces, as well as their casings with closing appliances.
5.3.2.3 External examination of attachment of the bottom and side fittings to the shell.
5.3.2.4 Examination of ballast tanks:
5.3.2.4.1 In ships over 5 years old and up to 10 years of age:
representative ballast tanks, selected by VGRS.
Where in ballast tanks poor coating condition has been ascertained or soft protective coating has been applied or where a protective coating was not applied from the time of construction, the examination is to be extended to other ballast tanks of the same type.
5.3.2.4.2 In ships over 10 years old – all ballast tanks are to be examined.
5.3.2.4.3 If such examinations reveal no visible structural defects, the examination may be limited to verification that the protective hard or semi -hard coating is in a good condition.

5.3.2.4.4 Where in tanks, other than the double bottom tanks, a protective hard or semi-hard coating is found to have deteriorated and it is not renewed, or soft coating was applied, or a protective coating was not applied from the time of construction, maintenance of class is to be made subject to the tanks in question being examined internally at each subsequent Annual Survey.
5.3.2.4.5 If the double bottom tanks are found to be in the condition as specified in 5.3.2.4.4 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.
5.3.2.4.6 At the Owner's request, VGRS may consider waiver of internal examinations at annual intervals for tanks of less than 12m3 in size if they are provided with soft coating.
5.3.2.5 Additional requirements for hull survey of oil tankers, bulk carriers and chemical tankers are specified in Publications: 36/P – Hull Surveys of Oil Tankers, 39/P – Hull Surveys of Bulk Carriers and 46/P – Hull Surveys of Chemical Tankers.
5.3.3 Machinery Installations – Annual Survey
The Annual Survey of Machinery Installations is performed within the following scope:
5.3.3.1 Checking classification documents and ship documents entries concerning overhauling and maintenance of ship's installations and equipment by the Owner. In the case any entries are missing, VGRS reserves for itself the right to extend the scope of survey beyond the Annual Survey.
5.3.3.2 Engine room machinery, installations and equipment
5.3.3.2.1 Main internal combustion engine:
− external examination of M.E. crank case safety devices,
− external examination of the shields of M.E. high pressure fuel pipes,
− operation tests of M.E. 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 M.E. crank-shaft deflection.
5.3.3.2.2 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.
5.3.3.2.3 Main electric propulsion power system:
− operation tests of main generators and motors, electric clutches, distributing devices, control and monitoring consoles,
− checking the high temperature alarm of the electric motors and generators of the electric propulsion plant.
5.3.3.2.4 Generator prime movers, including protective devices – operation tests.
5.3.3.2.5 Pumps with independent drive: cooling water, general use, ballast pumps, fire pumps, oil fuel and lubricating oil pumps – operation tests.
5.3.3.2.6 Bilge system, including high level alarm system – operation tests of the engine room system and, additionally, of holds and chain locker system.
5.3.3.2.7 Compressed air system, including compressors and safety valves – operation tests. Compressed air receivers – external examination.
5.3.3.2.8 Remote closing of the valves on fuel and lubricating oil tanks – operation tests.
5.3.3.2.9 Ventilation systems of engine room, compartments and holds, if required – operation test.
5.3.3.2.10 Marine environmental protection installations – examination of piping systems and tes ts of equipment.
5.3.3.2.11 Operation test of the reverse mechanism of CP propeller, if fitted.

5.3.3.3 Fire protection
Where the scope of survey is not extended by the requirements of the Flag State, the survey is to include:

5.3.3.3.1 Water fire main system, sprinkler system, pressure water-spraying system, water screen system, drenching system – operation tests, including the test of emergency fire pump. Operation tests of pressure water-spraying system, water screen system and drenching system may be replaced by passage test. These systems are to be also hydraulically tested at the interval of 5 years.
5.3.3.3.2 CO2, halon system and other fixed gas fire -extinguishing systems: (The use of halon systems on new ships is not permitted. This applies also to tests of the existing systems during which halon is released into atmosphere).
− external examination of main and local stations,
− external examination of fire-extinguishing agent containers. In the case of insulated containers, the surface under the insulation layer is to be checked locally,
− checking the date of the hydraulic test of high pressure fire-extinguishing agents, required every 10 years for containers up to 20 years of age from the date of manufacture, and every 5 years for older containers.
− The hydraulic test is to be carried out on not less than 10% of containers, but at least one, in the main or local fire station. On the basis of satisfactory result of the hydraulic test carried out on 10% of containers, the remaining containers of the fire station may be certified. Before the hydraulic test, internal examination of a container is to be carried out and the tare of an empty container is to be checked. Reduction of the container tare should be not more than 2%,
− internal examination of low pressure CO2 system containers and halon system containers – for containers over 5 years old, at each emptying. Hydraulic tests of these containers are required depending on the result of internal examination,
− hydraulic test of high pressure and low pressure containers is required after each repair,
− hydraulic test of CO2 installation up to distribution valves and test of distribution pipes, which simultaneously enable air sampling and those passing through accommodation and service spaces, from distribution valves up to protected space – during the second, fourth and each subsequent Class Renewal and after repair,
− checking the passage of fire-extinguishing agent pipes,
− checking the quantity of fire -extinguishing agent in containers. The permissible loss of CO2 is 10% of the required quantity, the permissible loss of halon and other gas fire-extinguishing agents – 5% of the required quantity. The checking is to be carried out annually,
− operation tests of distribution valves and alarm system, including automatic closing of ventilation fans in protected spaces,
− checking the pressure in halon containers and in containers with other gas fire-extinguishing agents.
5.3.3.3.3 Inert gas system:
− external examination and operation test, where practicable,
− hydraulic test of pipes or their wall thickness measurement – every 5 years.
5.3.3.3.4 Foam fire -extinguishing system:
− checking the quantity of foam generating liquid. The permissible loss of foam is 10% of the required quantity,
− checking the date of the due laboratory test of foam generating liquid. It is required that the foam generating liquid should be tested within 3 years from the date of manufacture and subsequently at the interval of 12 months,
− external examination and sea water test (without foam generating liquid).

5.3.3.3.5 Powder fire-extinguishing system:
− checking the quality of fire -extinguishing powder. In the case of powder exchange, the container internal examination is to be carried out,
− internal examination and pipe passage test.
5.3.3.3.6 Operation tests of fire alarm system, including: automatic, manual, warning installations and fire doors closing alarm system.
5.3.3.3.7 Operation tests of remote disconnecting fuel and lubricating oil pumps, oil and fuel separators, as well as boilers and incinerator.

5.3.3.3.8 Operation tests of doors and other closing appliances of openings in fire resisting and fire retarding constructions.
5.3.3.3.9 Checking the condition of fire-walls.
5.3.3.3.10 Verification that the engine room and its machinery are free from contamination by combustible materials (oil leakages, etc.) that may constitute a fire risk.
5.3.3.4 Electrical equipment and automatic systems
5.3.3.4.1 Tests of the main sources of electrical power:
− load test,
− parallel test run, including the test of reverse current or reverse power protection.
5.3.3.4.2 Overload and short circuit protection of generators – checking the settings.
5.3.3.4.3 Emergency sources of electrical power:
− start and operation test of emergency generating set, including test of a second independent means of starting the emergency generating set,
− test of emergency accumulators.
5.3.3.4.4 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.
5.3.3.4.5 Electrical power converting installations supplying essential consumers – tests.
5.3.3.4.6 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.
5.3.3.4.7 Lighting installation of compartments and places important from the point of view of safety and safe navigation of ship and the safety of the people onboard:
− main lighting – external examination,
− emergency lighting – external examination and tests.
5.3.3.4.8 Operation tests of internal communication and electrical signalling:
− electric engine-room telegraph,
− service telephone communication,
− general alarm system.
5.3.3.4.9 Insulation resistance measurement of electric network and electrical equipment.
5.3.3.4.10 External examination of electrical equipment of the voltage over 1000 V.
5.3.3.4.11 External examination of electrical equipment in explosion hazardous spaces and zones.
5.3.3.4.12 Operation tests of main propulsion remote control system.
5.3.3.4.13 Operation tests of main propulsion safety system.
5.3.3.4.14 Operation tests of generating sets automatic control system.
5.3.3.4.15 Operation tests of safety system of engines driving generating sets.
5.3.3.4.16 Operation tests of automation systems of pumps and air compressors, as well as their safety systems.
5.3.3.4.17 Operation tests of remote or automatic control system of bilge installation, including testing of high level alarm system.
5.3.3.4.18 Operation tests of engine room alarm system, including alarm system in the engineer's accommodation.
5.3.3.4.19 External examination of circuits.
5.3.3.5 Additional requirements for oil tankers, gas carriers and chemical tankers:
5.3.3.5.1 External examination of cargo pumps.
5.3.3.5.2 Operation tests of remote control of cargo system and cargo level indicators.
5.3.3.5.3 Verification that cargo system pressure indicators and cargo level indicators are in good condition.
5.3.3.5.4 External examination of electrical equipment and circuits in explosion hazardous spaces on open decks and in pump -room, including the insulation resistance measurements.
5.3.3.5.5 Checking the means for regaining steering capability following its loss due to a failure.
5.3.3.5.6 External examination of pressure and vacuum relief valves of cargo tanks.
5.3.3.5.7 External examination of liquid cargo system, as well as cargo tanks washing, venting, steaming, ballasting and slopping systems.

5.3.3.5.8 External examination and operation tests of ventilation system of pump rooms and spaces intended for inert gas equipment.
5.3.3.5.9 External examination of emergency towing equipment.
5.3.3.6 If found necessary by the Surveyor, piping wall thickness measurements or hydraulic tests are to be carried out.
5.3.4 Machinery Installations – Intermediate Survey
5.3.4.1 Intermediate Survey of Machinery Installations is carried out within the scope of the Annual Survey.
5.4 Scope of Class Renewal Surveys
5.4.1 Hull Class Renewal Survey No. 1 – ships under 5 years old
The Class Renewal Survey No. 1 of hull and its equipment covers Bottom Survey carried out in a dock (see 5.5.1 and 5.5.2) and the activities specified in 5.3.1 and 5.3.2 and, additionally, the activities mentioned below.
5.4.1.1 Close-up examination of all cargo holds, engine room spaces and pump room, if any – the inner bottom, ship's sides, bulkheads, decks, 'tween decks, structural members, piping in the hold, bilge wells and the watertight bulkhead penetrations.
5.4.1.2 Close-up examination of hatch covers (plating and stiffeners).
5.4.1.3 Close-up examination of tanks:
5.4.1.3.1 forepeak and after peak, chain locker,
5.4.1.3.2 all ballast tanks,
5.4.1.3.3 cofferdams and tunnels.
5.4.1.3.4 If, during the examination, no damage to the structure has been found, the examination may be limited to the verification that protective hard or semi-hard coating is maintained in a good condition.
5.4.1.3.5 Where in tanks, other than double bottom tanks, a protective hard or semi-hard coating is found to have deteriorated and it is not renewed, or where soft coating has been applied, or a protective coating was not applied from the time of construction, maintenance of class is to be made subject to the tanks in question being examined internally at each subsequent Annual Survey.
5.4.1.3.6 If the double bottom tanks are found to be in the condition as specified in 5.4.1.3.5 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.
5.4.1.3.7 At the Owner's request, VGRS may consider waiver of internal examinations at annual intervals for tanks of less than 12 m^3 in size if they are provided with soft coating.
5.4.1.4 Close-up examination of bilges in cargo holds and machinery compartment, as well as in cofferdams.
5.4.1.5 Close-up examination of seating's of the main engines, generating sets, auxiliary machinery and boilers.
5.4.1.6 Close-up examination of 'tween decks hatch covers.
5.4.1.7 Close-up examination of masts, their fastenings and standing rigging.
5.4.1.8 Close-up examination of anchors, chain cables, chain slips and stoppers.
5.4.1.9 Close-up examination of bollards, mooring ropes and tow ropes.
5.4.1.10 Tightness tests of the following tanks, including air and sounding pipes:
5.4.1.10.1 ballast tanks.
5.4.1.10.2 ballast holds.
5.4.1.10.3 peaks, irrespective of designation.
5.4.1.10.4 fuel oil tanks and freshwater tanks, selected by the VGRS Surveyor.
The tanks and ballast holds are to be tested with a head of liquid to the top of air pipes or to the top of hatch coamings, respectively.
Tightness test of fuel oil tanks may be done with the use of fuel oil.
Tightness test of bottom tanks may be done afloat, provided that examination is carried out.
5.4.1.11 Checking the operation and tightness of companion hatches and manholes on weather decks, outer doors, ship side doors, skylights and scuttles.

5.4.1.12 Checking the operation of all mechanically operated hatch covers, including:
- their opening and securing in opened up position,
- proper fit, locking and efficiency of sealing in closed position,
- operation tests of hydraulic and power components, wires, chains and link drives.

5.4.1.13 Checking the effectiveness of sealing arrangements of all hatch covers by hose testing or equivalent.
5.4.1.14 Thickness measurement of plating and stiffeners of hatch coamings, hatch closing devices (steel pontoons or hatch covers) on weather decks, if considered necessary by the Surveyor.
5.4.1.15 Additionally, in suspect areas, thickness measurements are to be carried out, with 5 measurements over 1 m_2 of plating and 3 measurements on each stiffener web and flange.
5.4.1.16 Additionally for passenger ships – supervising lightweight test and, if necessary, inclining test.
5.4.1.17 Additionally for tugs – operation test of the towing hook release arrangement at full load mooring test.
5.4.1.18 Additional requirements for hull survey of oil tankers, bulk carriers and chemical tankers are specified in Publications: 36/P – Hull Surveys of Oil Tankers, 39/P – Hull Surveys of Bulk Carriers and 46/P – Hull Surveys of Chemical Tankers.
5.4.2 Hull Class Renewal Survey No. 2 – ships between 5 and 10 years old
The Class Renewal Survey No. 2 of hull and its equipment covers Class Renewal Survey No. 1 activities specified in 5.4.1 and, additionally, the activities given below:
5.4.2.1 Thickness measurement of hull structural members at suspect areas and in one transverse section of deck plating abreast a cargo space within the amidships 0,5 L.
5.4.2.2 Thickness measurement of chain cable links.
5.4.2.3 Close-up examination of tanks:
- representative tanks of fuel oil tanks and fresh water tanks (one of each type selected by VGRS Surveyor).

5.4.2.4 Tightness tests of slop and sludge tanks forming structural part of hull, including air and sounding pipes.
Tightness test of bottom tanks may be done afloat, provided that examination is carried out.
5.4.3 Hull Class Renewal Survey No. 3 – ships between 10 and 15 years old
The Class Renewal Survey No. 3 of hull and its equipment covers the Class Renewal Survey No. 2 activities specified in 5.4.2 and, additionally, the activities mentioned below:
5.4.3.1 Examination of tanks:
- fuel oil tanks situated in and outside the double bottom, selected by VGRS Surveyor,
- fresh water tanks, selected by VGRS Surveyor,
- slop and sludge tanks forming structural part of hull.

5.4.3.2 Tightness test of lubricating oil tanks selected by the VGRS Surveyor, including air and sounding pipes.
5.4.3.3 Cargo tanks on general cargo ships are to be tested with a head of liquid to the hatch coamings or, if it is not practicable, they are to be subjected to other equivalent tightness test.
5.4.3.4 Thickness measurements of hull structural members:
- for ships less than 100 m in length, one transverse section, for other ships, two transverse sections within the amidships 0,5 L, abreast of two different cargo spaces.
- internals in forepeak.

5.4.3.5 Thickness measurements of plating and stiffeners of cargo hold hatch covers and coamings.
5.4.4 Hull Class Renewal Survey No. 4 and the subsequent surveys – ships over 15 years old.
The Class Renewal Survey No. 4 and the subsequent surveys of hull and its equipment cover Class Renewal Survey No. 3 activities, specified in 5.4.3 and, additionally, the activities mentioned below.

5.4.4.1 Thickness measurements of hull structural members:
- for ships less than 100 m in length, at least two transverse sections, for other ships, at least three transverse sections within the amidships 0,5 L, abreast of different cargo spaces.
- internals in afterpeak.
- all exposed main deck plating on full length.

− representative exposed superstructure deck plating,
− lowest strake of all transverse bulkheads, together with internals,
− strakes in way of 'tween decks of all transverse bulkheads, together with internals,
− all wind and water strakes plating,
− all keel plates and, additionally, bottom plates in way of cofferdams, machinery space and aft end of tanks.

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 and 5.4.5.2.

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

5.4.5.1.1 Main internal combustion engines:
− 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 complied with,
− checking the timing chain pre-tension,
− checking the tie rod pre-tension for compliance with the manufacturer's instructions,
− checking the main engine securing to the seating.

5.4.5.1.2 Main and auxiliary steam turbines:
− close-up examination of steam turbine parts,
− checking steam turbine securing to the seating,
− operation tests of manoeuvring 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 the 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, VGRS 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.

5.4.5.1.3 Main electric drive:
− checking the electric motor cooling system and fan switching off alarm (for primary and secondary system).

5.4.5.1.4 Gearings:
− the following parts are to be opened up and examined within the necessary scope to ascertain their technical condition: pinions, gears, shafts, bearings, thrust bearing, disengaging couplings.

5.4.5.1.5 Couplings:
− slipping couplings – 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 – examination. At the subsequent Class Renewal Survey – examination in the dismantled condition.

5.4.5.1.6 Thrust shaft, including its bearings:
− close-up examination of the shaft and bearing,
− measurement of clearance in the bearing,
− checking the bearing securing to the seating.

5.4.5.1.7 Intermediate shafts, including bearings:
- close-up examination of shafts and bearings,
- checking the bearing securing to the seating.

5.4.5.1.8 Propeller shaft and propeller – see 5.6.
5.4.5.1.9 Examination of generators and generator prime movers, in the dismantled condition, and tests.
5.4.5.1.10 Close-up examination of air compressors.
5.4.5.1.11 Air receivers:
- internal examination of the receiver, including the examination of fittings in opened up condition. Where the technical condition of the air receiver cannot be ascertained satisfactorily on the basis of internal examination, VGRS may require the wall thickness measurement or hydraulic test to be carried out. After repair, the receiver is to be also subjected to hydraulic test.

5.4.5.1.12 Operation tests of the following pumps with independent drive: bilge, ballast, general use, fire, cooling water, oil fuel, lubricating oil, boiler supply and circulating water systems. In the case of incorrect operation – internal examination should be carried out.
5.4.5.1.13 Operation tests of steering gear, anchoring arrangements, mooring and towing winches. In the case of incorrect operation – re -adjustment or internal examination should be carried out.
5.4.5.1.14 Piping systems:
- examination of the bilge, overflow, air and sounding pipe systems. Tightness tests of these pipes are to be carried out, together with tightness tests of tanks,
- operation tests of ballast, cooling water, steam, oil fuel, lubricating oil, hydraulic system installations. If there is any doubt as to the technical condition of the pipes, VGRS may require the hydraulic test or wall thickness measurement,
- hydraulic tests of pipes passing through oil fuel tanks, liquid cargo tanks and cargo holds,
- hydraulic tests of heating coils in tanks not subject to examination. In tanks subject to examination, the heating coils are to be tested, depending on their technical condition.

5.4.5.1.15 Examination of ventilation ducts passing through watertight bulkheads and fire-resisting bulkheads.
5.4.5.1.16 External and internal examination of the structure of tanks not forming structural part of the ship's hull, and examination of their fittings.
5.4.5.1.17 Heat exchangers:
- internal examination,
- hydraulic test required depending on the result of the examination and after repair.

5.4.5.1.18 Operation tests of generator reverse-power, overload and undervoltage protection.
5.4.5.1.19 Operation tests of economizers associated with engine room systems.
5.4.5.1.20 Close-up examination of cables and the cable penetrations in watertight and fire-resisting bulkheads.

5.4.5.1.21 Close-up examination of lightning and earthing protection.
5.4.5.1.22 Checking the set point value of sensors of the engine-room automation systems.
5.4.5.1.23 Operation test of temperature, pressure, fuel viscosity control systems (when the sea trials of the ship are carried out).
5.4.5.1.24 Control instruments and gauges – the following are to be checked:
- condition of the instrument – based on examination,
- correctness of indications (on boilers and pressure vessels – by means of a control manometer and in other cases by comparing the indications of two parallel instruments).

5.4.5.1.25 Operation test of oily-water separating equipment and oil filtering equipment – checking the automatic and manual control.
5.4.5.1.26 Checking the high level alarm of the bilge water retention tank.
5.4.5.1.27 Survey of cargo installations on oil tankers, chemical tankers and gas carriers within the scope determined by VGRS
5.4.5.2 In the case of significant repairs of main propulsion, auxiliary machinery or steering gear, a sea trial may be required.

5.5 Scope of Ship's Bottom Periodical Surveys

5.5.1 The ship's Bottom Periodical Survey covers the following:

5.5.1.1 bottom and side plating up to the maximum draught waterline, keel, stem, stern frame, shaft brackets, rudder trunk, bow and aft thruster tunnel, Kort nozzle, stabilizer recesses, bilge keels, the anode corrosion protection,

5.5.1.2 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,

5.5.1.3 bottom and side sea chests – at the interval of 5 years,

5.5.1.4 bottom and side fittings, survey 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.

5.5.1.5 rudder blade,

5.5.1.6 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,

5.5.1.7 bow and aft thruster propeller,

5.5.1.8 propeller, the measurement of clearances and wear down of the propeller shaft stern tube bearing and checking the stern tube sealing tightness – see 5.6,

5.5.1.9 other equipment connected with ship's manoeuvring, steering and system of roll stabilization.

5.5.2 Thickness measurements

At the ship's Bottom Survey to be included in the Class Renewal Survey, the thickness measurement of shell plating appropriate to the age and type of ship, as specified in 5.4, is to be made. If, during the Bottom Survey, excessive corrosion or damage has been found, thickness measurements of these regions are to be carried out to the satisfaction of the Surveyor, to facilitate the technical assessment.

5.5.3 In-water Bottom Survey

5.5.3.1 The In-water Survey is carried out by divers approved by VGRS in the following way:

– Visual examination of underwater part of hull is performed by the divers engaged by the Owners,

- Visual examination performed by divers is monitored by VGRS Surveyor,
- Final assessment of technical condition of underwater part of hull is made by VGRS Surveyor.

5.5.3.2 The In-water Survey is to provide the information normally obtained from a dock survey, so far as applicable (see 5.5.1). Where the above requirements cannot be complied with or if the In-water Survey reveals extensive corrosion, or damage affecting the ship's class has been found, the ship is to be drydocked.

5.5.3.3 To ensure safe work of the diver and the proper assessment of the ship's bottom technical condition, the Owner is obliged to properly prepare the ship for the In-water Survey, i.e. the hull below the waterline is to be clean, arrangements are to be provided for measuring the rudder shaft bearing clearances and propeller shaft wear down, the hull is to be marked with the use of ropes that would enable determining the diver's position and localization of damage (if any).

5.5.4 Requirements for assigning an additional mark IWS, affixed to the symbol of class, enabling performance of In-water Bottom Survey:

5.5.4.1 The underwater part of the hull is to be effectively protected against corrosion for a period of 5 years and is to 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 localization of damage (if any).

5.5.4.2 The design of sea chests is to be such as to provide the possibility of their underwater opening and cleaning.

5.5.4.3 Provision is to be made for the possibility to blank off all openings at inlets and outlets for the purpose of maintenance or replacing a valve.

5.5.4.4 Arrangements are to be provided for measuring the rudder and propeller shaft bearing clearances and wear down and for checking the stern tube sealing tightness.

5.5.4.5 Liners on rudder axles and pintles, as well as bearing bushes in a rudder and sternframe are to have permanent marks permitting to detect any relative movement between them.

5.5.4.6 The requirements concerning the additional equipment, such as bow or stern thrusters, stabilizers, etc. will be specified separately in each particular case.
5.5.4.7 A ship is to be provided with a set of drawings or colour photographs showing the hull marking system, details of the rudder bearing clearances measurements, a drawing showing all overboard openings and means of their blanking off, etc. – providing information and instructions for divers. The scope of such documentation is to be agreed with VGRS.

5.6 Periodical Surveys of Propeller Shaft and Propeller
5.6.1 Depending on intervals between surveys and other conditions, propeller shafts are subject to Complete, Modified or Partial Surveys.
5.6.2 Complete Survey of Propeller Shaft
5.6.2.1 Propeller shaft is to be drawn to permit carrying out the survey within the scope specified in 5.6.2.2.3.
5.6.2.2 Propeller shaft is submitted to Complete Surveys at the interval of 5 years, provided that:
5.6.2.2.1 the propeller shaft is fitted with a continuous liner or approved oil sealing glands, or is made of corrosion resistant material,
5.6.2.2.2 the shaft structural elements comply with the requirements of the Rules,
5.6.2.2.3 during each Complete Survey the shaft is subjected to:
− non-destructive examination 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 keyless 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 aft stern tube bearing,
− examinations of bearings,
− examinations of oil sealing glands, if fitted, and test,
− checking the Chief Engineer statement confirming proper service of the shafting system.
5.6.2.3 In all other cases, the interval between consecutive Complete Surveys is 2.5 years (±6 months).
5.6.3 Modified Survey of Propeller Shaft
5.6.3.1 Modified Survey may be carried out instead of Complete Survey, in each 5-year cycle, provided that:
5.6.3.1.1 the propeller shaft is fitted with oil sealing glands of an approved type and oil lubricated bearings, and its structural elements comply with the requirements of the Rules,
5.6.3.1.2 the shaft and its fittings are not exposed to corrosion,
5.6.3.1.3 type of sealing makes it possible to fit new oil sealing glands without removal of the propeller (except in the case of keyed propeller),

5.6.3.1.4 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,
5.6.3.1.5 reliable measurement of shaft wear down/clearance in aft stern tube bearings is possible,
5.6.3.1.6 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,
5.6.3.1.7 the place of taking reliable samples for lubricating oil analysis has been defined.
5.6.3.2 The scope of Modified Survey covers:
5.6.3.2.1 measurement of shaft wear down/clearance in aft stern tube bearings,
5.6.3.2.2 examination of accessible parts of the shaft after removing oil sealing glands,
5.6.3.2.3 checking the tightness of oil sealing glands,
5.6.3.2.4 for keyed propellers, performance of a non-destructive examination, by an approved crack detection method, of about one-third of the length of the taper from the large end, for which dismantling of the propeller will be required,

5.6.3.2.5 checking the Chief Engineer statement confirming proper service of the system, taking into account checking records on the oil consumption and bearing temperature,
5.6.3.2.6 checking records of the stern tube lubricating oil analysis carried out regularly at intervals of 6 months by a laboratory recognized by VGRS or the manufacturer, by an appropriate method. Oil samples should be taken under service conditions, i.e. with a rotating shaft and the system at service temperature. The samples are to be taken from the same agreed and identified position in the system. These samples, unless supervised by a surveyor, are to be collected and identified by the Chief Engineer.
5.6.3.3 In each case of non-compliance with the above requirements for Modified Survey, Complete Survey is to be performed.
5.6.4 Partial Survey of Propeller Shaft
5.6.4.1 For propeller shafts fitted with oil sealing glands, for which 5-year survey is required, VGRS may consider, upon application by the Owner, a prolongation of the intervals between surveys, provided the Partial Survey is performed within the scope specified in 5.6.4.2. The prolongation should not exceed 3 years.
5.6.4.2 The scope of Partial Survey covers:
5.6.4.2.1 checking the Chief Engineer statement confirming proper service of the system,
5.6.4.2.2 examination of oil sealing glands,
5.6.4.2.3 measurement of shaft wear down/clearance in aft stern tube bearings,
5.6.4.2.4 carrying out non-destructive examinations of accessible part of the shaft by an approved crack detection method.
5.6.4.3 In each case of non-compliance with the above requirements for Partial Survey, Complete Survey is to be performed.
5.6.5 Propeller Survey
5.6.5.1 Propeller Survey is carried out during the Bottom Survey.
5.6.5.2 The survey covers, as follows:
5.6.5.2.1 external examination,
5.6.5.2.2 in the case of the propeller dismantling, close-up examination of the shaft taper and propeller boss surface,
5.6.5.2.3 examination of the propeller fastening to the shaft. For CP propellers – tightness test of the propeller boss and the blade sealing, and 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 to be periodically surveyed:
5.7.1.1 steam boilers used for main propulsion,
5.7.1.2 auxiliary steam boilers,
5.7.1.3 all other steam boilers having working pressure exceeding 0.35 MPa and a heating surface exceeding 4.5 m_2,
5.7.1.4 thermal oil boilers.
5.7.2 External surveys of all kinds of boilers are to be carried out annually at the time of the ship's Periodical Survey.
5.7.3 Internal surveys of steam and thermal oil boilers are to be carried out at the time of the ship's Periodical Survey, twice within 5-year classification cycle, however, the intervals between successive internal surveys are not to exceed 3 years.
5.7.4 Thermal oil boilers are subject, during the Class Renewal Survey, 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:
examination of the boiler fastenings,
examination of the boiler casing and insulation,
external examination of the boiler fittings,
functional test while in operation.
During the test, operation of the following items is to be checked:
− boiler and steam superheater safety valves

***Note**: 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, VGRS 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 logbook. The record book should be presented to VGRS surveyor ate the nearest survey.*

- 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 automatic system,
- boiler safety system,
- boiler alarm system.

5.7.6 The external survey of thermal oil heater covers:
- external examination,
- operation tests of safety valves,
- checking the operation of alarm and safety systems of limit temperature of thermal oil and exhaust gases,
- checking the correctness of pressure gauges indications,
- operation tests of the valves remote control,
- operation test of the arrangements for emergency discharge of thermal oil from installation and remote stopping the circulating 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 are to 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, examination of the boiler mountings, in a dismantled condition, is to be carried out.

5.7.7.2 If, upon examination, there is any doubt as to the condition of the boiler, VGRS may require that additional thickness measurement of boiler parts, partial or complete removing of insulation or hydraulic test should be carried out.

5.7.7.3 On repair of the essential parts of the boiler, hydraulic test to a pressure 1.25 the working pressure is to be performed.

5.7.7.4 On repair of the boiler mountings, hydraulic pressure test to a pressure specified in Part 6 – Machinery Installations and Refrigerating Plants is to be performed.

5.7.8 The internal survey of thermal oil heater is carried out within the scope of the applicable requirements given in 5.7.7.

5.7.9 If, in result of Periodical or Occasional Survey, repair of the boiler is necessary, it should be surveyed by the Surveyor and performed according to VGRS approved procedure. After repair, the boiler is to be subjected to hydraulic test, as specified in 5.7.7.3.

5.8 Periodical Surveys of Cargo Stowage and Lashing Equipment

Cargo stowage and lashing equipment, carried on board ships and the equipment intended for the carriage of timber on weather deck, if any part of timber volume is taken into account in calculation of cross curves of stability, covered with the requirements of Part 3 – Hull Equipment, are subject to Periodical Surveys at intervals and within the scope specified below.

5.8.1 5-year survey is carried out at the ship's Class Renewal Survey.

5.8.2 5-year survey covers:

5.8.2.1 Checking the entries made by the person responsible for the ship's cargo stowage and lashing equipment according to the provisions given in the Cargo Securing Manual.

5.8.2.2 Verification that the equipment provided on ship has appropriate valid documents issued by VGRS, certificates, test certificates (of manufacturers or laboratories recognized by VGRS).

5.8.2.3 Examination of: lashing (rope, chain, rod), twistlocks and bridge fittings, spreaders, stretchers, tensioners, cellular guides, foundations and posts, stowage bottom plates, stowage cones, stacking cones. 1% of fittings of each kind, but not less than 10 pcs, is to be subjected to special examination.
5.8.2.4 Measurements of lashing, twistlocks and bridge fittings, spreaders, stretchers, tensioners, cellular guides, stowage bottom plates, etc.
5.8.2.5 At least 0.5% of the fittings is to be subjected to test load – 1.1 of the working load, depending on special examination and measurements or if loss of strength is supposed to occur due to corrosion and wear or in the case where the equipment condition cannot be satisfactorily ascertained based on external examination.

5.9 Continuous Surveys

5.9.1 Continuous Survey consists in planned spreading of a part of the surveys required for class renewal over a 5-year period. The other part of the surveys is performed within the scope defined for each Periodical Survey.
5.9.2 At the written request of the Owner, Continuous Survey may cover the new ship's hull – except the hull of oil tankers, bulk carriers, chemical tankers and gas tankers or combination carriers – as well as machinery installations and refrigerating plants, taken as a whole or separately. VGRS may accept the surveys and continue the Continuous Survey carried out by an IACS Society if the ship has been assigned VGRS class. The Continuous Survey of hull may be applied to the ship of age up to 15 years.
5.9.3 During each 5-year classification cycle, all items are to be surveyed and tested, if required, at regular intervals. The interval between consecutive surveys of particular items is not to exceed 5 years. In wellgrounded cases (e.g. on the basis of the manufacturer's instructions), VGRS may determine other survey intervals.
5.9.4 Planning of surveys, within the Continuous Survey, is left to the Owner's discretion. It is recommended that the tests and examinations be carried out during Periodical Surveys and be distributed, so far as practicable, over successive annual periods.
5.9.5 The Surveyor may extend the scope of the hull survey if the carried out examinations revealed serious defects.
5.9.6 VGRS may withdraw agreement for Continuous Survey system if the ship's technical condition has worsened or particular items, covered with Continuous Survey, have not been submitted to survey at their due dates. In the case the Continuous Survey has been dropped, carrying out survey within the scope of Class Renewal Survey will be necessary.
5.9.7 In ships assigned with the mark of an unattended machinery space in the symbol of class or provided with additional descriptive information concerning the scope of automation, VGRS may, at the Owner's request, carry out the survey of automatic systems of machinery on the basis of the "Manual for Service and Testing of Automatic Systems", approved for the given ship.
The approved copy of the Manual is to be at all times available on board the ship.
5.9.8 VGRS may accept the surveys of machinery carried out at the Continuous Survey by the Ship's Chief Engineer, provided that:
5.9.8.1 The Chief Engineer holds the first class marine engineer licence or an equivalent.
5.9.8.2 He has been employed as Chief Engineer for at least 1 year.
5.9.8.3 The survey is carried out at sea or in port in which VGRS has no representative.
5.9.8.4 The survey performed by the Chief Engineer is verified on board by the VGRS Surveyor.
5.9.8.5 The Chief Engineer submits, for the purpose of the survey verification, a report on the carried out survey. The report is to contain the following particulars:

- name and particulars of the surveyed item,
- description of its technical condition, list of parts replaced and repaired, including the repair methods and the test results,
- date and place of survey,
- full name of the Chief Engineer, No. and the date of issue of Chief Engineer Licence. In addition to the above-mentioned report, the Chief Engineer submits the following:
- records made in the engineer's log book concerning the performed survey,
- parts dismantled due to an excessive wear or defects,
- certificates of newly fitted parts.

5.9.8.6 VGRS' Surveyor, during survey verification, carries out examinations and tests, within the necessary scope.
5.9.8.7 Not more than 50% of Continuous Survey items is surveyed by the Chief Engineer during a 5-year cycle.
5.9.8.8 Machinery items surveyed by the Chief Engineer during a 5-year cycle are submitted, during the next cycle, for the VGRS survey.
5.9.9 The Chief Engineer is not authorized to carry out, within Continuous Survey, the surveys of pressure vessels, main gears and couplings.

5.10 Occasional Surveys

5.10.1 Occasional Surveys of a ship or her respective machinery, arrangements, installations or equipment are held upon request in all cases except Initial Surveys for Class Assignment and Periodical Surveys or surveys resulting from Continuous Survey. Occasional Survey may be held at the Owner's or Underwriter's request or may be consequent upon VGRS, PSC or Flag State verification of correctness of performed classification activities. The scope of Occasional Surveys and their procedure will be determined by VGRS, 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.
5.10.2 Survey after damage
5.10.2.1 One of Occasional Surveys is a survey after damage to which a ship is to be submitted in the case of damage sustained by the ship's hull, machinery, arrangements, installations, equipment or outfit covered by the requirements of the Rules and subject to technical supervision of VGRS, as well as in the case of ship's grounding.The Owner is obliged to report damage or the ship's grounding to VGRS as soon as possible.
5.10.2.2 The survey after damage is to be carried out at a port where the damage occurred or at the first port the ship calls after the damage or grounding. The aim of the survey is 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 reinstating the ship's class.
5.10.3 Survey of voyage repairs
Repairs to hull, machinery or equipment, which affect or may affect the ship's class, planned by the Owner to be carried out during a voyage, are to be agreed in advance with VGRS. The survey programme should cover the object of repair, the repair extent and procedure, the repair performer, as well as the need, if any, for the Surveyor's attendance during the voyage.
Failure to agree, in advance, the repairs may result in suspension of the ship's class.
The above does not apply to maintenance and overhaul to hull, machinery and equipment in accordance with the manufacturer's recommended procedures and established marine practice.
Any repairs made during the voyage, which affect or may affect the ship's class, are to be noted in the ship's log and submitted, as soon as possible, to the VGRS for the purpose of determining the scope of survey connected with the ship's class.

5.11 Survey for Assignment of Class to Ship with a Valid Class of an IACS Society

Irrespective of the previous Classification Society's records indicating that all surveys, referred to in 4.3.1, are up-to-date, the scope of the Survey for Assignment of Class, carried out by VGRS, covers at least:
5.11.1 Hull Survey
− For each ship the survey within the scope of Annual Survey.
− Additionally for ships between 5 and 10 years old, examinations of the respective number of representative ballast spaces.
− Additionally for ships over 10 years old, examinations of the respective number of representative cargo holds of bulk carriers or cargo tanks of tankers.
− Dock survey within the scope as specified in. 5.5.1 and 5.5.2. VGRS may not require conducting the dock survey if such survey has been carried out by the previous Classification Society and VGRS considers the survey scope and procedure conforming to VGRS Rules and practice.
5.11.2 Machinery Survey
A general examination of all essential machinery and electrical equipment is to be held and additionally:
− the adjustment of all boiler*), economizer and steam generator safety valves is to be verified and oil fuel burning equipment examined under working conditions,

− all pressure vessels are to be identified with the submitted plans or certificates,
− insulation resistance, generator circuit breakers, preference tripping relays and generator prime mover governors are to be tested and paralleling and load sharing be provided:
− navigation lights and indicators are to be examined working and alternative source of supply verified,
− bilge pumping and oil fuel burning installations, emergency fire pump and remote controls for oil valves, oil fuel pumps, lubricating oil pumps and forced draught fans are to be examined and tested under working conditions,
− for ships with ice strengthening marks, recirculating and ice clearing arrangements are to be verified as conforming to Rule requirements,
− the main and all auxiliary machinery necessary for operation of the ship at sea, together with essential controls and steering gear are to be tested under working conditions. Alternative means of steering are to be tested. A short sea trial should be held if the ship has been laid up for a long period,
− test of main engine starting arrangements,
− in the case of oil tankers, the cargo oil system and electrical installation in way of dangerous spaces are to be checked for compliance with Rule requirements. Where intrinsically safe equipment is installed, the Surveyors are to satisfy themselves that such equipment has been approved by a recognized authority. The safety devices, alarms and essential instruments of inert gas system are to be verified and the plant generally examined to ensure that it does not constitute a hazard to the ship.

5.12 Audit

On VGRS classed ships, audits for determining conformity of VGRS performed processes with the quality system provisions, may be required. Upon VGRS' consent, external auditors may participate in the audits. At VGRS' request, the Owner is obliged to
submit the ship for auditing within the scope, at a date and place agreed with VGRS.

6 SUSPENSION OF SHIP'S CLASS

6.1 Reasons of Ship's Class Suspension

6.1.1 Damage to a ship

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

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

The ship's class is automatically suspended from the time of damage or grounding until the After Damage Survey. In well-grounded cases, on the basis of the After-Damage Survey results, VGRS may decide that the ship's class will not be automatically suspended.

6.1.2 Transgression of service conditions specified in the Certificate of Class

The Owner is obliged to inform VGRS on every transgressing the service conditions specified in the Certificate of Class and VGRS will make a decision on further proceedings. Until the decision is made, the ship's class will be automatically suspended.

6.1.3 Suspension of class in the case of overdue Periodical Surveys

6.1.3.1 Class Renewal Survey

The ship's class is automatically suspended in the case when the Class Renewal Survey has not been completed by the due date. The class will be reinstated upon satisfactory completion of the due surveys. The vessel is disclassed from the date of suspension until the issue of a new Interim Certificate of Class.

At the Owner's request, VGRS may grant an extension of class validity for a maximum of 3 months:

6.1.3.1.1 when the ship is attended and the attending Surveyor so recommends, and a survey within the scope of at least Annual Survey has been carried out. Such an extension shall not exceed 3 months,

6.1.3.1.2 if the Certificate of Class expires when the ship is at sea, provided that:

- there is a documented VGRS' consent to such an extension prior to the expiry date of the Certificate,
- positive arrangements have been made for attendance of the Surveyor at the first port of call,
- VGRS is satisfied that there is technical justification for such an extension.

6.1.3.2 Annual Survey

The Certificate of Class becomes invalid and the ship's class is automatically suspended if the Annual Survey is not completed, and the Certificate of Class is not validly endorsed within 3 months from the due date of the Annual Survey.

The Certificate of Class validity will be reinstated upon satisfactory completion of the due survey. The vessel will be disclassed 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 ship's class is automatically suspended if the Intermediate Survey is not completed, and the Certificate of Class is not validly endorsed within 3 months from the due date of the third Annual Survey.

The Certificate of Class validity will be reinstated upon satisfactory completion of the due survey. The ship will be disclassed from the date of class suspension until the validity of the Certificate of Class is endorsed.

6.1.3.4 Continuous Survey items

The ship's class is automatically suspended if the Continuous Survey items are not dealt with at the due dates or postponed by agreement with VGRS. The postponement is not to exceed 3 months from the due date of the item survey.

The Certificate of Class validity will be reinstated upon satisfactory completion of the due survey. The ship will be disclassed from the date of class suspension until the survey completion.

6.1.4 Suspension of class in the case of overdue recommendations

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

The Certificate of Class validity will be reinstated upon VGRS verification that the overdue recommendations have been satisfactorily dealt with. The ship will be disclassed from the date of class suspension until the recommendations are dealt with.

6.1.5 Planned voyage repairs carried out without prior agreement with VGRS.

The ship's class is automatically suspended if planned voyage repairs have not been carried out according to the procedure defined in 5.10.3.

The Certificate of Class validity may be reinstated upon Occasional Survey carried out within the scope specified by VGRS.

6.1.6 Owner's financial overdue

If the Owner has not paid VGRS for its services connected with the ship supervision at the agreed date, the ship's class will be suspended. Notice of VGRS' intent to suspend the class will be sent to the Owner one month in advance. VGRS class will be reinstated automatically after settlement of payments.

6.2 Dual Classed Ships

6.2.1 The request for a dual classed ship survey should be submitted by the Owner to both Classification Societies simultaneously.

6.2.2 VGRS notifies the other Society of receiving the Owner's request for carrying out the ship survey.

6.2.3 Survey carried out by VGRS is performed also on behalf of the other Society, unless the cooperation agreement requires otherwise.

6.2.4 When a decision is made by VGRS to suspend the ship's class, VGRS will advise the other Society of the reasons for such action and the full circumstances within five working days.

6.2.5 When a decision for the ships' class suspension, for technical reasons, is made by the other Society, VGRS will also suspend the ship's class, unless it can otherwise document that such suspension is incorrect.

6.3 Notification to Owners and Flag States

VGRS will confirm the suspension of class and reinstating of the ship's class by separate letters to the Owner and to the Flag State.

For ships constructed on or after 1 July 1998 in accordance with the provisions of SOLAS Reg. II-1/3-1, the suspension of class will cause an immediate invalidation of statutory certificates.

6.4 Possibility of Postponement of Class Validity due to Force Majeure

If, due to circumstances reasonably beyond the owner's or VGRS's control, limited to such cases as:

− damage to the vessel,

− unforeseen inability of VGRS to attend the vessel due to the governmental restrictions on right of access or movement of personnel,

− unforeseeable delays in port of inability to discharge cargo due to unusually lengthy periods of severe weather, strikes, civil strife, acts of war, or other cases of force majeure,

The ship is not in a port where the overdue surveys can be completed at the expiry of the periods allowed above, VGRS may allow the vessel to sail in class, directly to an agreed discharge port and, if necessary, hence, in ballast, to an agreed port at which the survey will be completed, provided:

6.4.1 The overdue surveys are carried out to the extent practicable at the first port of call, and

6.4.2

VGRS is satisfied that the vessel is fit to sail and that the owner is acting in good faith.

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

7 WITHDRAWAL OF SHIP'S CLASS AND WITHDRAWAL OF THE SHIP FROM VGRS REGISTER

7.1 Decision on Withdrawal of the Ship from VGRS Register

Decision on ship's withdrawal from VGRS Register is consequent upon the ship's class withdrawal for reasons specified in 7.2.

7.2 Reasons of Ship's Class Withdrawal

7.2.1 When alterations to hull, superstructures and deckhouses, machinery, equipment and installations, covered by the requirements of VGRS Rules, have been introduced without the prior agreement with VGRS.

7.2.2 Suspension of class for a period exceeding 6 months

At the Owner's request, VGRS may grant a longer suspension period when the vessel is not trading as in the events of awaiting VGRS decision in case of a casualty or attendance for reinstatement.

7.2.3 After the ship has sunk.

7.2.4 After the ship has been transmitted for scrapping.

7.2.5 At the written request of the Owner for the ship withdrawal from VGRS Register.

7.3 Notification to Owners and Flag States

VGRS will confirm the withdrawal of the ship's class and the ship's deletion from VGRS Register by separate letters to the Owner and to the Flag State.

For ships constructed on or after 1 July 1998 in accordance with the provisions of SOLAS Reg. II-1.3-1 the deletion of the ship from VGRS Register will cause an immediate invalidation of statutory certificates.

8 LAY-UP AND RECOMMISSIONING OF A SHIP

8.1 At the Owner's request, a ship may be laid-up, while maintaining her class. The request should include:

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

8.2 A ship is laid-up upon conducting survey within the scope agreed with VGRS in each particular case.

8.3 During laying-up period, the ship is subject to surveys within the scope ensuing from para. 8.1, carried out at intervals of Periodical Surveys.

8.4 For a laid-up ship, Periodical Surveys, specified in 5.1.2, are automatically postponed until the due survey for the ship's recommissioning.

8.5 A ship is recommissioned at the Owner's request, upon conducting survey within the scope agreed with VGRS in each particular case.

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

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

9 CLASSIFICATION REGULATIONS FOR REFRIGERATING PLANTS

9.1 General

9.1.1 On a special application, VGRS may assign a class to:

9.1.1.1 refrigerating plants intended for generating and maintaining the required temperatures in refrigerated cargo chambers of cargo ships,

9.1.1.2 refrigerating plants intended for generating and maintaining the required temperatures in cargo chambers designed for cold treatment (cooling, freezing) of sea products and supplying the cold necessary for all production processes in fishing factory ships.

9.1.2 A refrigerating plant which has been built under VGRS' survey, refrigerating plant whose class has been previously assigned by another Classification Society, or which has not been classed before, may be assigned VGRS class, provided the results of the Survey for Assignment of Class to a refrigerating plant are satisfactory.

9.1.3 A refrigerating plant with a valid class of an IACS Society may be accepted for classification, provided it is submitted to Survey for Assignment of Class within the scope of the due survey. If the results of the survey are satisfactory, VGRS may assign a class to a refrigerating plant for the period of validity of the Certificate of Class available.

9.1.4 When submitting, for classification, a refrigerating plant with a class of another Classification Society, the following documents are to be presented:

9.1.4.1 the last Certificate of Class for Refrigerating Plant,

9.1.4.2 all available reports made by Surveyors to Classification Society concerning surveys dating from the last Class Renewal Survey, as well as the following plans approved by the previous Society:

- general arrangement plan of the refrigerating plant,
- diagrams of the refrigerating plant.

If the Owner cannot submit the complete, above listed, documentation or parts thereof, equivalent information allowing assignment of class to the refrigerating plant is to be agreed upon and delivered to VGRS.

9.1.5 When a refrigerating plant with no class assigned before is submitted for classification, plans and design data within the scope agreed with VGRS in each particular case are to be submitted for approval.

9.2 Class of a Refrigerating Plant

9.2.1 General requirements

9.2.1.1 Assignment or renewal of class means that the refrigerating plant in full measure or to a degree considered acceptable by VGRS, complies with the relevant requirements of the Rules.

9.2.1.2 Assignment of class to a refrigerating plant is confirmed by the issue of a Certificate of Class for Refrigerating Plant and an appropriate entry made in the Register.

9.2.1.3 Class assigned to a refrigerating plant may be withdrawn in cases specified in Chapter 7 or suspended in cases specified in Chapter 6.

9.2.1.4 The class of a refrigerating plant may, at the Owner's request, be reinstated after carrying out an Occasional Survey. The scope of the survey is specified by VGRS in each particular case.

9.2.1.5 A refrigerating plant may, at the Owner's request, be laid-up, surveys during the laying-up period are to be carried out. The kind and scope of surveys is specified by VGRS in each particular case.

9.2.2 Symbol of class of a refrigerating plant

9.2.2.1 Symbol of class of a refrigerating plant, which has been built under VGRS survey or under the survey of an IACS Society, consists of the mark + and the mark RM:

+RM

9.2.2.2 If a refrigerating plant has been built under the survey of another Classification Society, which is non-IACS Society and has been subsequently assigned the VGRS class, it receives the following symbol of class: **RM**

9.2.2.3 If a refrigerating plant has not been built under the survey of any Classification Society and later has been assigned the VGRS class, the symbol of class is put in brackets:

(RM)

If a plant is intended for cooling or freezing the sea products, for processing purposes of fishing factory ships and complies with the relevant requirements of Part 6 – Machinery Installations and Refrigerating Plants, the plant is assigned the mark:

F

put after the symbol of class.

9.2.3 Additional descriptive notations
Additional descriptive notations may be put in the Certificate of Class for Refrigerating Plant if they are deemed necessary by VGRS for defining the purpose or design features of the plant.
9.2.4 Alteration of marks in the symbol of class
VGRS may delete or alter a distinguishing mark in the symbol of class in the case of any modification of the requirements on the basis of which the mark has been assigned.
9.3 Classification Surveys of Refrigerating Plants
9.3.1 Survey for Assignment of Class
The aim of Survey for Assignment of Class is to confirm that the refrigerating plant initially submitted for VGRS classification is fit to be assigned a class.
The scope of the survey will be in each particular case determined by the relevant VGRS Branch Office, depending on the age and the technical condition of the whole refrigerating plant, as well as its various items of machinery and installations (see 9.1.3).
9.3.2 Periodical Surveys
9.3.2.1 Annual Survey aims at ascertaining that the refrigerating plant meets, to a sufficient degree, the requirements for maintaining a class, as well as at checking the operation of various items of machinery and appliances covered by the Rules.
9.3.2.2 Class Renewal Survey aims at ascertaining that the refrigerating plant complies with the Rules and is fit for service during the subsequent 5 years.
9.3.3 Intervals between Periodical Surveys
− With respect to intervals between Periodical Surveys of refrigerating plants, the provisions of 5.2.1 to 5.2.3 apply.
9.3.4 Continuous Survey
9.3.4.1 A Continuous Survey may be applied to a refrigerating plant in accordance with the provisions of 5.9.
9.3.4.2 Chief Engineer is authorized to perform surveys of automation systems, as well as of the following items of the classed refrigerating plant, provided their operation may be substituted by that of another appropriate machinery:
− piston compressors,
− cooling agent (brine) pumps,
− cooling water pumps,
− heat exchangers.
9.4 Extent of Periodical Surveys
9.4.1 Annual Survey for Class Maintenance:
− checking the Logbook of the Refrigerating Cargo Installation,
− testing the refrigerating plant under working conditions,
− examination and tests of compressors, refrigerant pumps, cooling agent pumps, cooling water pumps, defrosting system, hydraulic system of freezers,
− external examination of heat exchangers, liquid separators, driers, filters, pressure vessels,
− side covers in" shell-and-tube" condensers and evaporators of ammonia installation are to be examined at random,
− examination, including checking the tightness of fittings and pipelines of refrigerant, cooling agent, cooling water, defrosting system, freezer hydraulic system,
− operation test of air cooler fans of holds and freezer tunnels, in their full capacity,
− operation test of freezing and cooling apparatus installed in fishing vessels,
− operation test of control and automatic systems of refrigerating plant installation,
− examination of the refrigerating system protective devices: valves and discs, as well as operation test of the emergency discharge of refrigerant overboard,
− examination of lining, insulation, hatch covers, doors, ventilation ducts, bilge wells and bilges and other equipment in refrigerating cargo spaces,
− checking the thermometers, temperature measuring systems in refrigerated cargo spaces and on the refrigerating plant installations,
− operation test of water screens and sprinkling system in machinery spaces and ammonia installation

refrigerant store rooms,
− operation test of emergency ventilation of refrigerating machinery space,
− operation test of sources of electrical power for the refrigerating plants, distributing devices, control and monitoring consoles, including checking the condition of electric motors,
− operation test of emergency lighting of refrigerating machinery space,
− operation test of signalling and protective devices,
− insulation resistance test of all electric circuits, as well as electric machinery and devices which affect the safety of cargo.
Where, in result of the performed surveys or checking the records in the Log Book of the Refrigerating Cargo Installation, the plant output or the condition of thermal insulation of refrigerated cargo chamber is found unsatisfactory, VGRS has the right to carry out the test of the plant output, thermal insulation test or both tests.
9.4.2 Class Renewal Survey
Class Renewal Survey covers all survey activities specified in 9.3.1 and additionally:
− examination of all reciprocating compressors, refrigerant pumps, cooling agent pumps, cooling water pumps, defrosting system, freezer hydraulic system. Examination of screw compressors is to be carried out according to the manufacturer's recommendations,
− examination of sources of electrical power, distributing devices, cables, electric motors, control and monitoring consoles,
− examination of all side covers, tube plates, tubes of condensers and ”shell-and-tube” evaporators,
− checking the condition of shell, connections and fittings of heat exchangers, liquid separators, driers, filters and pressure vessels, especially underneath the insulation,
− checking the condition of fans, ducts of emergency ventilation of refrigerating machinery space,
− checking the condition of all protective devices: valves, discs, dismantling and the workshop operation test – if required by VGRS,
− checking the condition of lining, insulation of the floor, decks, bulkheads, sides, cantilevers, coamings, ducts in refrigerated cargo chambers, with a partial dismantling if required by VGRS,
− checking the condition of control instruments and gauges of the refrigerant, cooling agent, cooling water systems, as well as freezer hydraulic system on the basis of their examination, correctness of the instruments and gauges indications is to be checked by comparing indications of two parallel instruments or by means of a portable control instrument,
− strength and tightness pressure tests, according to the applicable requirements of Part 6 – Machinery Installations and Refrigerating Plants and Part 7 – Machinery, Boilers and Pressure Vessels, of the following:
− heat exchangers, pressure vessels, pipelines and fittings of refrigerant system – 10 years from their installation, thereafter at interval of 5 years,
− heat exchangers, pipelines and fittings of coolant (brine) system – 10 years from the date of installation, thereafter at interval of 5 years,
− heat exchangers, pipelines and fittings of cooling water system – 10 years from the date of installation, thereafter at interval of 5 years.
In well justified cases, VGRS may depart from strength tests or limit them if examinations and operation tests prove that the given arrangement is in a good and efficient condition.

9.5 Occasional Surveys
9.5.1 Occasional Surveys are carried out when a refrigerating plant is submitted for examination in all cases other than Initial Surveys for Class Assignment and Periodical Surveys or surveys resulting from Continuous Survey. The scope of the surveys and their procedure are specified by the relevant VGRS Branch Office, depending on the purpose of the survey, the age and technical condition of the refrigerating plant.
9.5.2 Occasional Surveys may be carried out at the request of the Owner or Underwriter, within the required scope.
9.5.3 One of Occasional Surveys is Survey after Damage, notification VGRS of damage is the Owner’s responsibility.

9.5.3.1 Survey After Damage is to be held in the case when damage to a refrigerating plant or its various mechanisms, installations or elements, covered by the requirements of the Rules and subject to VGRS' survey, has been reported.
9.5.3.2 The survey should be performed at a port where the damage occurred or at the first port the ship calls at after damage of the refrigerating plant.
9.5.3.3 The aim of the survey is to assess the extent of damage, to agree the scope of work required to eliminate the consequences of damage and to determine the possibility and conditions for maintaining the class of the refrigerating plant or ship if the plant is surveyed for the safety only.

9.6 Survey before Cargo Loading or Unloading

9.6.1 Survey of a refrigerating plant before loading or unloading the cargo may be carried out on a special application by the Owner or other Party concerned, at the Owner's consent.
9.6.2 The scope of the survey covers the following:

- checking the refrigerating system under working conditions, including the temperature measurement in refrigerated cargo spaces,
- checking the generating sets and electrical equipment serving the refrigerating plant,
- checking the condition of the equipment of the refrigerated cargo spaces.

10 SURVEY OF NON-CLASSED REFRIGERATING PLANTS

10.1 General

10.1.1 Technical survey in respect of ensuring the ship's safety covers the following non-classed refrigerating plants installed on board the ships classed by VGRS:

10.1.1.1.1 refrigerating units operating with refrigerants of group II or III, specified in Part 6 – Machinery Installations and Refrigerating Plants,

10.1.1.1.2 refrigerating units operating with refrigerant of group I, with compressors, for which

$$47d \cdot s \cdot n \cdot i \varepsilon \quad 100 \text{ , } [m_3/h]$$

for each compressor,

where:

- d – piston diameter, in m,
- s – piston stroke, in m,
- n – revolutions per minute,
- i – number of cylinders,

or if the amount of the refrigerant in a plant exceeds 300 kg (in the case of refrigerating systems consisting of a number of independent units, the amount of refrigerant is to be calculated according to the amount of the refrigerant in one refrigerating unit only),

10.1.1.1.3 refrigerating units, specified in 10.1.1.1.2, which have pipeline connection with the main classed or non-classed unit, irrespective of the amount of the refrigerant necessary for their independent operation.

10.1.2 The requirements of 10.1.1 apply to all ships entering VGRS class. The basis for the survey is request for class assignment in VGRS.

10.2 Surveys of a Refrigerating Plant

10.2.1 Initial Survey

Initial Survey of a refrigerating plant with respect to safety, performed for the assignment of class to a ship, aims at ascertaining that a plant, submitted to VGRS for classification for the first time, complies with the requirements set forth in Part 6 – Machinery Installations and Refrigerating Plants for non-classed refrigerating plants.

The scope of the required documentation and the scope of survey will be each time specified by VGRS, depending on the age and technical condition of a refrigerating plant and its equipment.

10.2.2 Periodical Surveys

Surveys of a non-classed refrigerating plant are carried out at intervals coincident with Periodical Surveys of the ship, within the scope given in 10.3.

10.2.3 Occasional Surveys

Occasional Surveys are performed according to the principles given in 9.5.

10.3 Extent of Periodical Surveys

10.3.1 Annual Survey:

- operation test of working and emergency ventilation of refrigerating machinery space and refrigerant store rooms,
- checking the emergency exits of refrigerating machinery space,
- operation test of water screens installations for the refrigerant of group II,
- verification and, as far as practicable, operation test of the safety valves of compressors, pressure vessels, heat exchangers,
- verification and, as far as practicable, operation test of the refrigerant emergency discharge overboard,
- operation test of emergency switching off of compressors for the refrigerant of group II,
- operation test of emergency switching off of electric power supply of a refrigerating plant operating on the refrigerant of group II,
- operation test of alarm system of refrigerating machinery space and refrigerated cargo chamber,
- examination of manometers and checking the correctness of manometer indications on compressors, pressure vessels and heat exchangers, by means of control manometer,
- checking the storage of refrigerant stock,
- verification of certificates and the marking of the portable refrigerant cylinders,
- checking personal protection equipment and its arrangement for the refrigerant of group II.

10.3.2 The scope of 5-year survey carried out at the Class Renewal Survey of a ship, covers, in addition to the scope given in 10.3.1, the following:
− strength tests of refrigerating apparatus at a pressure specified in Part 6 – Machinery Installations and Refrigerating Plants, Chapter 18, para.18.17 – 10 years from the date of build, thereafter at 5-yearly intervals,
− tightness test of the whole refrigerating system at a pressure specified in Part 6 – Machinery Installations and Refrigerating Plants, Chapter 18, para.18.17 – at interval of 5 years.
The foregoing tests refer to both the refrigerating apparatus and the whole refrigerating system exposed to the pressure of the refrigerants of group I, II or III.
VGRS may depart from strength tests if examinations and operation tests of particular appliances prove that they are in a good and efficient condition.

APPENDIX 1.

Explanation of some abbreviations associated with Additional marks in the symbol of class

Abbreviation	Definition
ESP	enhanced survey programme
PET	petroleum tank
SD	strengthened deck
MD	movable deck
HC	heavy cargo
LAL	lying aground during loading
CG	cargo grabs
IWS	in-water survey
PAC	protection against corrosion
SBT	segregated ballast tank
COW	crude oil washing
PLT	protective location tank
ING	inert gas
FE	fishing equipment
MS	mooring at sea