CHINA CLASSIFICATION SOCIETY

RULES FOR CLASSIFICATION OF OFFSHORE FLOATING INSTALLATION

CCS OFFSHORE ENGINEERING TECHNOLOGY CENTER

MARCH 2020

CONTENTS

CHINA CLASSIFICATION SOCIETY

RULES FOR CLASSIFICATION OF OFFSHORE FLOATING INSTALLATION

PART I RULES FOR CLASSIFICATION

CCS OFFSHORE ENGINEERING TECHNOLOGY CENTER
MARCH 2020

CONTENTS

CHAPTER 1 GENERAL

Section 1 CHINA CLASSIFICATION SOCIETY AND ITS MAIN SERVICES

1.1.1 Classification societies

1.1.1.1 Classification societies are independent and impartial organizations that undertake classification services for ships and offshore installation. Classification societies have no commercial interests related to design, building, ownership, operation, management, maintenance or repairs, financing, insurance or chartering of ships and offshore installation.

1.1.1.2 Classification societies work for the safety of ships and offshore installation and environmental protection, and make a unique contribution to maritime safety and the development of classification rules through technical support, compliance verification and research and development. Classification societies provide classification services, statutory services and other services for clients in accordance with the classification rules published by them.

1.1.1.3 Classification societies furnish reasonable standards – the classification rules, which are generally accepted and recognized, for ships, shipbuilding, marine exploitation and related manufacturing industries as well as insurance, financing and other related sectors, carry out plan approval in ship design and surveys during and after construction so as to ascertain that ships are in compliance with the requirements of the classification rules, and issue classification certificates independently, in accordance with such rules.

1.1.1.4 When authorized by the Government of the flag State, classification societies carry out statutory services in accordance with the requirements of the Government of the flag State with a view to ascertaining the ships' compliance with the requirements of international conventions and/or relevant regulations of the flag State, and issue statutory certificates.

1.1.2 China Classification Society

1.1.2.1 China Classification Society (hereinafter referred to as CCS) is a specialized technical organization, authorized under the relevant laws of China and registered in accordance with the laws for providing classification services and statutory services for ships and offshore installation.

1.1.2.2 CCS mainly undertakes classification services, certification surveys and surveys relating to notarial matters for ships, offshore installation, containers and the related industrial products both at home and abroad, and performs specific services such as statutory services, etc., on behalf of the Chinese Government and the governments of foreign countries or regions when so authorized, and other services approved by the relevant administrations.

1.1.3 Objectives

1.1.3.1 The objectives of CCS are, by furnishing reasonable and reliable technical rules for ships, offshore installation, containers and related industrial products and conducting in an independent, impartial and honest manner classification, certification and technical consultancy services, to provide services for the shipping, marine exploitation and related manufacturing industries as well as marine insurance, for the promotion of safety of life and property on waters and for the protection of marine environment and other environments.

1.1.4 Main services

1.1.4.1 The services of CCS are mainly as follows:

(1) Classification services for ships, offshore installation and related industrial products (including containers): development and maintenance of rules, plan approval, surveys and certification;

(2) Statutory services for ships, offshore installation and related industrial products, when so authorized: development of technical regulations for statutory surveys, plan approval, surveys and certification;

(3) Surveys and certification delegated by other ship survey organizations, surveys related to notarial matters and safety assessment as well as verification surveys and certification of ships and offshore installation , and investigation of major maritime safety accidents;

(4) Verification, surveys and certification of related industrial facilities and products used on land, and surveys and certification delegated by foreign ship survey organizations for marine facilities and products as well as

related industrial facilities and products used on land;

(5) ISM audit and certification;

(6) ISPS audit and certification;

(7) Survey and assessment of ship's technical conditions;

(8) Certification of quality management systems and environmental management systems in accordance with ISO 9000 and ISO 14000 series standards;

(9) Technical research for classification of ships and offshore installation, safety on waters and environmental protection, survey of marine facilities and products as well as related industrial facilities and products used on land, and research on the application of information technology;

(10) Other services.

Section 2 COUNCIL AND COMMITTEES

1.2.1 Council

1.2.2.1 The Council of CCS is composed of the representatives from Government departments concerned, CCS, shipping, shipbuilding, marine exploitation and related manufacturing industries as well as insurance, financing and other related sectors.

1.2.2.2 The Council is entitled to:

(1) develop and update the Articles of Association of CCS;

(2) consider the work report of CCS;

(3) decide on other major issues of CCS.

1.2.2 Technical Committee

1.2.2.1 The Technical Committee of CCS is composed of the persons in charge of technical work from Government departments concerned, CCS, shipping, shipbuilding and marine exploitation industries, design institutes, universities, research institutes and related manufacturing industries. Specialized subcommittees may be set up as appropriate.

1.2.2.2 The Technical Committee is entitled to:

(1) make comments or recommendations on CCS technical policy and development plan for rules and research;

(2) review and approval the main technical rules developed by CCS for ships and offshore installation;

(3) organize technical analysis and investigation of major accidents of the ships and offshore installation classed with CCS;

(4) make recommendations on developing and amending the rules based on experience in application, market demand and development in science and technology;

(5) examine the major research achievements intended to be incorporated into CCS rules for ships and offshore installation, and make recommendations on such incorporation.

1.2.3 Class committee

1.2.3.1 The Class Committee of CCS is composed of the representatives from Government departments concerned, CCS, owners, oil companies, administrations as well as insurance, financing, law and other related sectors.

1.2.3.2 The Class Committee is entitled to:

(1) examine and adopt the working procedure of the Committee and the procedure for CCS classification management;

(2) examine the relevant provisions of CCS for classification of ships and offshore installation and make recommendations on modifications and additions in light of the latest development in science and technology;

(3) accept and confirm the reports submitted by CCS on assignment, suspension, cancel or reinstatement of characters of classification and class notations of ships and offshore installation;

(4) make comments on the certificates and various survey documents of ships and offshore installation.

CHAPTER 2 SCOPE AND CONDITIONS OF CLASSIFICATION

Section 1 GENERAL PROVISIONS

2.1.1 Provisions of classification

2.1.1.1 Classification is a representation by CCS, in accordance with its rules, that the structural strength and integrity of essential parts of the installation's main structure and its appendages, and the reliability and the function of the propulsion and steering systems, power generation and those other features and auxiliary systems which have been built into the unit, identified by various characters and notations, are sufficient for maintaining essential services on board.

2.1.2 Process of classification

2.1.2.1 The process of classification consists of:

(1) the development of rules;

(2) the plan approval and survey during construction to verify compliance with such rules;

(3) the assignment of class and issuance of a classification certificate when such compliance has been verified;

(4) the endorsement or issuance of a classification certificate by survey after construction to verify compliance with such rules; and

(5) the application of information.

2.1.3 Definitions

2.1.3.1 Unless expressly provided otherwise, for the purpose of the Rules:

(1) Classification means the technical services provided by a classification society to the clients in accordance with the rules published by it;

(2) A classed floating installation is a floating installation to which a classification certificate is issued by a classification society in accordance with its rules;

(3) A convention floating installation is a floating installation to which an international certificate is issued in accordance with a relevant international convention;

(4) A non-convention floating installation is any floating installation other than a convention floating installation;

(5) An offshore floating installation is an offshore installation which is designed for oil and gas processing, storage, loading and offloading and for other operational services, afloat on the water surface and moored at an offshore location for a long period;

(6) A barge-type floating installation means a non-self-propelled floating installation with a ship-type hull;

(7) A ship-type floating installation means a self-propelled floating installation with a ship-type hull;

(8) A column-stabilized production unit (semi-submersible production unit) means a unit with the upper hull connected to the lower hull by columns. When the unit is being operated in a floating condition, the lower hull will be submerged and the partial columns will be above the sea surface, and the unit is in the semi-submersible state;

(9) A tension leg platform is an offshore floating platform fixed onto the seabed with a tension leg system which is able to hold the position and restrict movement of the platform under the actions of wind, wave and ocean current. A tension leg platform consists of lower float hull, columns, upper deck on top of the columns or truss-type upper module and tension leg system attached to the seabed;

(10) A deep draft single-spar (SPAR) platform is a deep-draft offshore floating platform, which has a vertical single-spar float hull and is fixed onto the seabed by a number of mooring lines. The floating hull consists of the upper floating hull, middle floating hull and lower floating hull. The upper module on the floating hull is a spatial truss structure, on which production equipment, drilling/workover units, living quarters and offshore support systems are arranged;

(11) Other floating installation mean the floating installation with other structural features;

(12) Administration of the flag state means the maritime authority of the country in which the floating installation is registered, the shorter form of which is Flag Administration;

(13) Administration of the coastal state means the coastal state's authority having jurisdiction over the waters, on which or in the vicinity of which, the floating installation is being operated;

(14) A self-propelled unit means a unit designed for unassisted sea passages;

(15) A non-self-propelled unit means a unit which is not a self-propelled unit;

(16) A new floating installation means a floating installation contracted for construction on or after the date of the Rules' entry into force;

(17) An existing floating installation means a floating installation which is not a new unit;

(18) Product is a generic term of materials, equipment and systems;

(19) The term "rules" is a generic term of the classification rules, special rules, guidelines and computer software released by CCS;

(20) Force Majeure means damage to the unit; unforeseen inability of CCS surveyors to attend the unit due to governmental restrictions on the right of access or movement of personnel; unforeseeable delays of the unit due to unusually lengthy periods of severe weather, strikes or civil strife; acts of war or other cases of force majeure;

(21) Exceptional circumstances mean one or more of the following cases:

① unavailability of dry-docking facilities;

② unavailability of repair facilities;

③ unavailability of required materials, equipment or spare parts;

④ delays incurred by action taken to avoid severe weather conditions.

(22) A double class floating installation is one which is classed with two Societies and each Society carries out all surveys in accordance with its own rules and schedules individually;

(23) A dual class floating installation is one which is classed with two Societies between which there is a written agreement of work sharing;

(24) Conditions of class means the implementation requirements of specific measures, repairs, surveys etc. are to be carried out within a prescribed limit of time in order to retain class;

(25) Crude oil area means crude oil tanks, slop tanks (including production water tanks), crude pump rooms (including ballast pump rooms), cofferdams, ballast tanks and void spaces adjacent to crude oil tanks and slop tanks on a floating installation, as well as the area above the mentioned spaces within the range of full length and breadth of these spaces.

Section 2 RULES FOR CLASSIFICATION

2.2.1 Basis for classification

2.2.1.1 Classification Rules are such provisions that have entire content comprising conditions and scope of classification and supporting technical requirements. The aim of the rules is to ensure the safety and quality to be controlled to an appropriate level, and to be generally acknowledged.

2.2.1.2 Special Rules are such provisions that have special content and will be used in combination with the classification rules.

2.2.1.3 The rules published by CCS are the basis and sole criteria for classification.

2.2.1.4 CCS rules stipulate the scantlings of main structures and essential machinery, the quality of the material used, the standards of structure and machinery manufacturing, requirements for classification and tests as well as maintenance conditions.

2.2.1.5 For those not covered in CCS present rules or the principle requirements therein which need to be further defined in details, or where specific applicability of the rules is needed, or for novel units or equipment or systems, CCS will develop appropriate guidelines to facilitate classification. Reference to the guidelines may facilitate the classification. Where any "guidelines" are referred to in the rules, the paragraphs related to classification in such "guidelines" will constitute requirements of the rules.

2.2.2 Development of the rules

2.2.2.1 The main input for development of the rules is as follows:

(1) experience in application;

(2) relevant scientific theories and research findings;

(3) the applicable part of the relevant conventions, codes and resolutions adopted by International Maritime Organization (IMO), and unified requirements by International Association of Classification Societies (IACS).

2.2.2.2 The drafts of CCS rules or their amendments will be distributed to the Administration, designers, shipbuilders and manufacturers, survey units, owners, research institutes and universities related to units and marine products for comments.

2.2.2.3 The drafts of CCS rules or their amendments are to be further supplemented and improved based on analysis of the expert comments or recommendations from the above-mentioned sources, followed by a final review by CCS Technical Committee or its subcommittee (s), and then issued after being approved and signed by CCS President.

2.2.2.4 Where any part of CCS rules related to the classification needs to be amended, as shown by experience in application, safety aspects covered by investigation of accidents, or due to entry into force of relevant resolutions, codes, etc. of IMO, or upon acceptance of unified requirements adopted by IACS, CCS will directly publish amendments thereto.

2.2.3 Entry into force of the rules

2.2.3.1 Unless stated otherwise, the rules (including their amendments) will generally come into force in 3 months after being published. The effective date will be indicated on the first page of the corresponding PART or on the title page of the publication.

2.2.3.2 Unless stated specially, the rules are applicable to newbuildings and new marine products.

2.2.3.3 With the consent of the unit builder and the owner, the requirements of the new rules may be adopted for the unit under construction; and where the requirements in the new rules are reasonable and practicable, CCS may agree that these requirements be adopted for the unit under construction. In any case, this is to be indicated in the corresponding technical documents.

2.2.3.4 The date of entry into force of the rules is subject only to the date of approval for publishing the rules, not to the date of entry into force of any other statutory requirements.

2.2.4 Application

2.2.4.1 The Rules apply to classed offshore floating installation.

2.2.4.2 The Rules apply to new units. Except as specified in 2.2.4.3, all units constructed before the date of entry into force of the Rules are to continue to comply with the requirements previously applicable to them. For units which have undergone a major modification, the modified and related portions are to comply with the effective Rules.

2.2.4.3 PART ONE of the Rules also applies to the existing units.

2.2.4.4 Materials and welding are to comply with the requirements of CCS Rules for Materials and Welding.

2.2.4.5 For a floating installation equipped with main propulsion plant, the structures, machineries, electrical and automation installation related to the main propulsion system and steering system are to comply with the requirements of the applicable part of CCS Rules for Classification of Sea-going Steel Ships.

2.2.4.6 The classification of lifting appliances on the unit is to comply with the corresponding requirements in CCS Rules for Lifting Appliances of Ships and Offshore Installation.

2.2.4.7 Existing ships or drilling platforms intended to be converted into floating installation are to be constructed in accordance with the provisions in the Rules and to the satisfaction of CCS.

2.2.5 Equivalent and exemption

2.2.5.1 Any unit which embodies structure and features of a novel kind may be exempted from any requirement of CCS rules if the application of which might seriously impede the incorporation of its features or its service, subject to agreement of CCS Headquarters.

2.2.5.2 Any fitting, material, appliance or apparatus, other than that required in CCS rules, may be allowed to be fitted in a unit, if it is satisfied by trial thereof or otherwise that such fitting, material, appliance or apparatus is at least as effective as that required in CCS rules.

2.2.5.3 Equivalence or substitution to those methods of calculation, criteria of evaluation, manufacturing procedures, materials, survey and test requirements specified by CCS rules may be accepted subject to agreement of CCS Headquarters, when relevant tests, theoretical basis or experience in application is provided, or recognized effective standards are available.

2.2.6 Documents cited in the Rules

2.2.6.1 The provisions cited from the relevant documents will become the provisions of the Rules by means of reference. Where the cited document is undated, its latest edition will apply for the purpose of the Rules.

2.2.7Application of risk assessment technique

2.2.7.1 If the owner or his agent wishes to apply the risk assessment technique in the design, construction or operation of the whole unit or a certain system or element thereof, the risk control plan adopted in the risk assessment may substitute the whole or part (s) of the Rules, subject to the satisfactory review of the risk assessment information by CCS.

Section 3 CHARACTERS OF CLASSIFICATION AND CLASS NOTATIONS

2.3.1 Characters of classification

2.3.1.1 Characters of classification are indicative of main features of the unit and are mandatory.

2.3.1.2 The hull/main structure (including equipment) and machinery (including electrical installation) of a unit that comply with CCS rules, guidelines or equivalent provisions will be assigned the appropriate characters of classification and class notations by CCS.

2.3.1.3 The hull/main structure (including equipment) and machinery (including electrical installation) of a unit that are classed with CCS will be assigned one of the following characters of classification as appropriate according to different conditions:

★CSA

or

★CSA

or

★CSA

★CSM

or

★CSA

★CSM

or

★CSA

★CSM

The meanings of the characters of classification are:

★CSA——indicating that the unit's main structure and essential auxiliary equipment have been inspected by CCS, and constructed with plan approval by and under the supervision of CCS and comply with CCS rules.

★CSA——indicating that the unit's main structure and essential auxiliary equipment have been inspected by CCS, and constructed not with plan approval by and not under the supervision of CCS, and that they have been found upon classification survey by CCS to be in compliance with CCS rules.

★CSM——indicating that the propulsion machinery of floating installation and auxiliary machinery for important purposes are inspected by CCS, and the turbine and electrical equipment of floating installation are inspected by CCS for plan approval under construction, and comply with CCS specifications.

★CSM——indicating that the propulsion machinery of floating installation and auxiliary machinery for important purposes are not inspected by CCS, but the turbine and electrical equipment of floating installation are inspected by CCS for plan approval under construction, and comply with CCS specifications.

★CSM——indicating that the turbine and electrical equipment of floating installation are not inspected by CCS for plan approval under construction, but have been classified by CCS and considered to comply with CCS specifications.

2.3.2 Additional notations

2.3.2.1 Class notations indicate different features of a unit in sequence, and will be appended to the characters of classification. Class notations may be divided into necessary notations and optional ones.

2.3.2.2 At the request of the owner and upon plan approval and surveys by CCS, optional class notation (s) will be assigned by CCS if it is satisfied that the relevant requirements of CCS rules are complied with.

2.3.2.3 One or one group class notations may be assigned to indicate unit type, special system and facilities, automation of the engine room and machinery, environmental protection, service restriction or other meanings.

2.3.2.4 At the request of the owner, CCS will assign the appropriate class notations to the units constructed in accordance with the relevant rules published by CCS or other acceptable standards.

2.3.2.5 Table 2.3.2.5 is a list of additional notations for floating installation, which can be filled in English only in the classification certificate. The table can be divided into the following categories:

A: Additional notations for floating installation type: All floating installation shall be filled with additional signs for floating installation structure type;

B: Additional notations for floating installation function: All floating installation shall be equipped with additional signs for floating installation function;

C: Additional notations for special equipment and systems: Special systems and facilities on floating installation are designed and built according to relevant specifications and guidelines, and corresponding additional signs can be granted respectively;

D: Additional notations for automatic control: Automatic control and remote control on floating installation are designed and built according to relevant specifications and guidelines, and corresponding additional signs can be granted respectively;

E: Additional notations for environmental protection: floating installation conforming to the relevant provisions of CCS specifications can be granted with corresponding additional notations;

F: Additional notations for special performance: floating installation have special performance design in structure, and corresponding additional signs can be granted respectively;

G: Additional notations for special inspection: Alternative inspection methods or special inspection requirements can be granted with corresponding additional signs respectively;

H: Additional notations for operation area: For floating installation operating in a predetermined area, additional notations for operation area shall be added.

Table 2.3.2.5 Additional Notations

Additional notations	Specification		Meet the technical requirements
A Additional notations for floating installation type			
B Additional notations for floating installation function			
FPSO	Floating production, storage and export device		Applicable requirements of Parts One to Eight of the Rules.
FSO	Floating storage and export device		Applicable requirements of Parts One to Eight of the Rules.
FPU	Floating production and export device		Applicable requirements of Parts One to Eight of the Rules.
FSB	Floating support base		Applicable requirements of Parts One to Eight of the Rules.
MFI	Offshore fishery culture device	Device for offshore fishery culture	Corresponding requirements of *Guidelines for Inspection of Offshore Fishery and Aquaculture Facilities*
MLI	Offshore leisure travel device	Devices for offshore leisure, tourism and related services	Applicable requirements of Parts One to Eight of the Rules, and the special functional requirements of the device will be given special consideration according to the specific circumstances
C Additional notations for special equipment and systems			
PM-TA	Propeller assisted positioning and mooring system	This sign shall be added to floating installation with propeller assisted positioning and mooring system when the control system of propeller meets the requirements	Chapter 6 of Part Nine of the Rules
PM-V	Positioning and mooring system There are other offshore structures nearby	This sign shall be added when there are other offshore structures near the floating installation with positioning and mooring system and the distance between the floating installation and other offshore structures nearby meets the distance requirement	Chapter 6 of Part Nine of the Rules

Additional notations	Specification		Meet the technical requirements
DP-N	Dynamic positioning system	... If the dynamic positioning system is the only positioning method for floating installation, this sign shall be added.	Chapter 9 of Part Eight of *Rules for Classification of Mobile Offshore Units*
PMA	Inspection channel	This notation may be granted to devices with inspection channels meeting the technical requirements of the Rules	Section 4 of Chapter 2 of Part Two of the Rules
IGS	Inert gas System	This notation can be granted to the floating installation equipped with an inert gas system	Chapter 10 of Part Eight of the Rules
Loading computer	Loading instrument	Granted floating installation equipped with approved loading instruments, suffixed with one or more OA, S, I and D signs, which have the following meanings: OA: The loading instrument has the ability to calculate the optimal trim optimization curve under various loading conditions and automatically generate the best energy-saving loading scheme; ...	Appendix 1 and Appendix of Chapter 2 of Part Two of *Rules for Classification of Sea-Going Steel Ships* and Application Guide of Automatic Loading Instrument
Risers	Riser system	This notation can be granted for production/export/input/injection riser systems	*Guidelines for Inspection of Marine Riser Systems*
SPS	Subsea production system	This notation can be granted to subsea production systems and subsea equipment	*Guidelines for Certification Issuing of Subsea Production Systems*
D Additional notations for automatic control			
E Additional notations for environmental protection			
NEC (II)	NO_X Emission control	This notation can be granted if it meets the Class II standard of Article 13 of MARPOL Annex VI	Section 3 of Chapter 8 of Part Eight *Rules for Classification of Sea-Going Steel Ships*
NEC (III)		This notation can be granted if it meets the Class III standard of Article 13 of MARPOL Annex VI	
SEC (I)	SO_X Emission control	This notation may be granted when the sulfur content of all fuels used on floating installation does not exceed 1.0% (m/m) or equivalent measures are adopted	Section 3 of Chapter 8 of Part Eight *Rules for Classification of Sea-Going Steel Ships*
SEC (II)		This notation may be granted when the sulfur content of all fuels used on floating installation does not exceed 0.5% (m/m) or equivalent measures are adopted	

Additional notations	Specification		Meet the technical requirements
SEC (III)		This notation may be granted when the sulfur content of all fuels used on floating installation does not exceed 0.1% (m/m) or equivalent measures are adopted	
F Additional notations for special performance			
Ice Class B1*	Sailing in the sea covered with ice in recent years	Ships can sail under severe ice conditions without the assistance of icebreakers. This notation can be granted if the maximum and minimum ice class draft at bow, midship and stern and the required minimum power of main engine are indicated in the classification certificate	Chapter 4 of Part Two and Chapter 14 of Part Three of *Rules for Classification of Sea-Going Steel Ships*
Ice Class B1		Ships can sail under severe ice conditions, with the assistance of icebreakers when necessary. This notation can be granted if the maximum and minimum ice class draft at bow, midship and stern and the required minimum power of main engine are indicated in the classification certificate	
Ice Class B2		Ships can sail under moderate ice conditions, with the assistance of icebreakers when necessary. This notation can be granted if the maximum and minimum ice class draft at bow, midship and stern and the required minimum power of main engine are indicated in the classification certificate	
Ice Class B3		Ships can sail under mild ice conditions, with the assistance of icebreakers when necessary. This notation can be granted if the maximum and minimum ice class draft at bow, midship and stern and the required minimum power of main engine are indicated in the classification certificate	
Ice Class B		Ships can sail under slight ice conditions, with the assistance of icebreakers when necessary	
DSA	Calculation check	This notation can be granted for design verification by CCS direct calculation method	Chapter 7 of Part Two of the Rules
G Additional notations for special inspection			

2.3.2.6 Other additional notations

Additional notations other than those specified above can be granted upon the application of the owner and with the consent of CCS headquarters, provided that they should meet the corresponding requirements and are satisfactory to CCS.

2.3.3 Characters of classification and class notations

2.3.3.1 The characters of classification and class notations (where applicable) are to be entered into the classification certificates in the sequence required in 2.3.2.5. Groups of class notations are separated by ";", for instance:

For a barge type floating production, storage and offloading unit constructed under the survey of CCS and provided with inert gas protection system, in-water survey notation, crude oil washing system, lifting appliances, helicopter deck facilities and mooring system, operating in China NanHai EnPing area, and of which continuous survey of hull structure and machinery installation is adopted, its characters of classification and class notations are given as below:

★ CSA FPSO; Barge type; PM; HELDK; CHS; CMS; COW; Lifting Appliance; IWS; IGS; China NanHai EnPing XXXX

Section 4 APPLICATION AND FEES

2.4.1 Application

2.4.1.1 Applicants requesting services from CCS are to submit a written application or a completed application form to the Headquarters of CCS or one of its local branches or the organizations designated by CCS, and/or sign a contract/agreement with CCS.

2.4.1.2 In the application or contract/agreement, the responsibilities of both parties, characters of classification and class notations, and the main parameters of the floating installation are to be clearly specified and in addition, the applicants are to commit that they hold no objection to the boarding onto the unit or access to the manufacturer/builder by the representatives of third-party independent audit organizations (including auditors of approved certifying body (ACB) and IACS observers) and EU Commission (EC) for vertical contract audit.

2.4.1.3 Applicants are to submit plans and technical documents necessary for the requested services.

2.4.1.4 The unit designers or owners or their agents or unit builders are to submit the application of plan approval for new units to the Headquarters of CCS or the plan approval organizations designated by CCS. For the construction surveys of floating installation, the unit builders may submit the application directly to the organizations executing the surveys.

2.4.1.5 For plan approval and initial survey of existing floating installation, the owners or their agents are to submit applications to the Headquarters of CCS or the organizations executing the surveys.

2.4.1.6 For plan approval and surveys of associated products, the manufacturers are to submit applications to the Headquarters of CCS or the organizations designated by CCS for plan approval and surveys of products.

2.4.1.7 CCS has established an occupational health and safety management system to assure the occupational health and safety of CCS surveyors. The applicants' request for classification and statutory survey services from CCS represents respect of CCS's occupational health and safety management system, and the applicants are to commit to provide safe survey conditions in compliance with the regulations of the country of the surveyors' nationality and the country of the survey organization and/or the safety technical requirements stipulated by the administration of the region where the survey site is located or equivalent technical standards①, including permanent or temporary means of access and facilities for survey, compartment environment and safety protection, to CCS surveyors for their access to the units of which related survey services have been requested. CCS surveyors will confirm the safety of survey conditions with the applicants or their designated responsible persons before performing certain survey activities.

2.4.2 Fees

2.4.2.1 Applicants are to pay survey fees, traffic fees and other necessary expenses in accordance with CCS Provisions of Survey Fees and/or the contract/agreement.

2.4.2.2 For any service provided beyond the contract/agreement or any service provided anew due to the reasons on the part of the party receiving such service, CCS has the right to charge additional fees from the applicant.

Section 5 SUBMISSION AND EXAMINATION OF PLANS

2.5.1 General requirements

2.5.1.1 For new units of which the plan approval is requested, the applicant is to provide the appropriate "date of contract for construction".

2.5.1.2 Definition of "date of contract for construction"

(1) The "date of contract for construction" of a floating installation is the date on which the contract to build the unit is signed between the prospective owner and the builder. This date and the construction numbers (i.e. main structure numbers) of all the floating installation included in the contract are to be declared to CCS by the party applying for assignment of class to a new building.

(2) The "date of contract for construction" of a series of floating installation (including specified optional units for which the option is ultimately exercised) is the date on which the contract to build the series is signed between the builder and the prospective owner.

For the purpose of this requirement, units constructed under a single contract for construction are considered a "series of units" if they are built according to the same approved plans for classification purposes. However, units within a series may have design alterations from the original design provided:

① such alterations do not affect matters related to classification; or

② If the alterations are subject to classification requirements, these alterations are to comply with the classification requirements in effect on the date on which the alterations are contracted between the prospective owner and the unit builder, or, in the absence of an alteration contract, comply with the classification requirements in effect on the date on which the alterations are submitted to CCS for approval.

The operational units will be considered part of the same series of units if the option is exercised not later than one year after the contract to build the series was signed.

(3) If a contract for construction is amended later to include additional units or additional operations, the "date of contract for construction" for such units is the date on which the amendment to the contract is signed between the perspective owner and the unit builder. Such amendment to the contract is to be considered as a "new contract" to which (1) and (2) above apply.

(4) If a contract for construction is amended to change the unit type, the "date of contract for construction" of this modified unit, or units, is the date on which the revised contract or new contract is signed between the owner, or owners, and the unit builder.

2.5.2 Examination of plans and documents

2.5.2.1 Prior to commencement of construction, the applicant is to the application together with the plans and documents in quadruplicate according to the relevant requirements of the Rules to a plan approval unit designated by CCS for examination. Where the plans will be submitted in batches, at least the necessary main structure plans and documents are to be submitted first.

Copies of the plans to be submitted for approval for a series of units or units to be additionally constructed within one year in accordance with the approved main structure plans may be reduced or such submission exempted according to the specific conditions.

2.5.2.2 The unit's list of survey and test items, as well as the technical documents such as welding procedure, welding specifications, NDT diagrams, tightness test diagrams, installation procedure of machinery, inclining test program, mooring test and sea trial program, etc., are to be submitted to CCS attending surveyors for examination.

2.5.2.3 Necessary scantlings and relevant data as required by the Rules are to be indicated on the plans and documents submitted for examination.

2.5.2.4 The term "approval" means that the plans or documents have been examined and found in compliance with CCS rules. The approval of plans and documents by CCS covers only the items as required by CCS rules,

excluding any items not required by CCS rules. Where CCS undertakes statutory surveys at the same time, the "approval" by CCS is also to cover the items related to the statutory requirements.

2.5.2.5 The plans and documents deemed to comply with the Rules upon examination, are to be stamped with APPROVED seal. The approval conditions and restrictions may be written on the plans and documents, or stated in the plan approval letters with appropriate notes added on the plans and documents.

2.5.2.6 Where any substantial modifications or additions have been made to the approved plans and documents, the applicants are to submit such modifications or additions to the original plan approval location(s) for reexamination.

2.5.3 Validity of approved plans

2.5.3.1 The approved plans are only valid for construction in the designated unit builder with the construction project No. or within the number of units to be constructed as specified in the application for plan approval or the contract/agreement.

2.5.3.2 The approved plans of the unit will be invalid automatically in one of the following cases:

(1) After four years since the date of approval of the plans;

(2) The entry into force of the rules of CCS (including amendments), or the laws and decrees of the Administration and the international conventions, codes and the amendments thereto accepted by it affects the validity of the plans approved, but the plans have not been revised accordingly and resubmitted for approval;

(3) The construction of the unit(s) with the project number or within the number as specified in the application for plan approval has been completed;

(4) The approved unit builder or construction project number has been changed, or the number of units constructed is exceeded;

(5) The unit is not constructed under the supervision of CCS.

2.5.3.3 Where the statutory requirements of the flag state or the entry into force of the international conventions, codes accepted by it and the amendments thereto affect the validity of the approved plans, the approved statutory plans of the unit will be invalid automatically.

Section 6 IN-PRINCIPLE EXAMINATION OF NEW DESIGN

2.6.1 General requirements

2.6.1.1 For new floating installation for which an application for plan approval of new design is submitted, the applicants are to submit the plans and documents listed in 2.6.2 to 2.6.6 to CCS for in-principle examination when the date of construction contract has not been determined by the applicants or the construction contract is absent.

2.6.1.2 In-principle examination means that the plans or documents have been examined and found in compliance with CCS rules in principle. The approval of plans and documents by CCS only means these plans and documents comply with the main principle requirements of CCS rules and may not comply with all requirements of CCS rules.

2.6.1.3 The plans and documents deemed to comply with the requirements of in-principle approval upon in-principle examination are to be stamped with APPROVED seal. The in-principle approval conditions and restrictions may be indicated on the plans and documents, or stated in the plan approval letters with appropriate notes added on the plans and documents.

2.6.2 Plans and documents to be submitted for structures and outfittings:

(1) Instruction books of the hulls and equipment of floating installation;

(2) General layout;

(3) Information of environmental conditions;

(4) Total longitudinal strength design report;

(5) Basic structure plan;

(6) Main transverse cross-section plan;

(7) Shell expansion plan;

(8) Engine room construction plan;

(9) Accommodation plan;

(10) Plan of crane pedestal and its supporting structure;

(11) Construction plan and structural strength design report of flare tower;

(12) Construction plan and structural strength design report of helicopter deck;

(13) Structural design report of oil and gas process module;

(14) Structural design report of hull connected to a single point;

(15) Fatigue design report of special structures;

(16) Plan and strength calculations of ice strengthened structures (where there are ice strengthening requirements);

(17) Layout and design report of anchor and mooring arrangements

(18) Oiltight and watertight bulkhead plan;

(19) Layout of doors and openings to hazardous spaces;

(20) Stability and loading manual;

(21) Freeboard calculations;

(22) Lines plan and offset table;

(23) Frame lines plan;

(24) Capacity plan.

2.6.3 Plans and documents to be submitted for oil, gas and water process systems

For the plans and documents to be submitted for oil, gas and water process systems, see the requirements in Section 2, Chapter 2 of CCS Rules for Classification of Offshore Oil and Gas Process System.

2.6.4 Plans and documents to be submitted for utility machinery installation

(1) Layouts of engine rooms and boiler rooms;

(2) Bilge and ballast piping system plan;

(3) Air, sounding and overflow piping plan;

(4) Engine room ventilation piping system plan;

(5) Crude oil piping system plan;

(6) Bilge piping system plans of crude pump rooms and cofferdams;

(7) Crude oil heating piping plan;

(8) Vent system (including purging and gas-freeing system) layout;

(9) Specifications of machinery installation.

The material, size, type, design pressure and design temperature, etc. of pipes, valves, attachments, etc., are to be indicated on the plans; where the aforementioned information is not available and calculations are not attached, necessary standard calculations are to be attached to the plans.

2.6.5 Plans and documents to be submitted for electrical and automation

(1) Electrical load estimations of the main and emergency sources of electrical power;

(2) Single line diagrams of the main switchboard;

(3) Electrical specifications.

2.6.6 Plans and documents to be submitted for fire and explosion prevention

(1) Fire-resisting division plan;

(2) Hazardous area classification plan;

(3) Escape route plan;

(4) Explosion prevention design report.

Section 7 CLASSIFICATION SURVEYS

2.7.1General requirements

2.7.1.1 Unit and product designers are to establish an appropriate quality assurance system for ensuring the design quality of units and products.

2.7.1.2 Unit builders and manufacturers are to establish an appropriate quality assurance system for ensuring the construction and manufacturing quality of units and products. They are also to provide a list of their suppliers and general documentation (e.g. brief introduction of and information on quality management system of the builders and manufacturers).

2.7.1.3 Suppliers providing essential services to the unit, such as measurements, tests or maintenance of safety systems and equipment, the results of which will be used by CCS as the basis for survey, are subject to approval by CCS (see Section 8 of this Chapter). Otherwise such services are to be performed in the presence of the surveyor.

2.7.2 Assessment and examination prior to commencement of construction

2.7.2.1 Prior to commencement of construction of the unit, CCS will send its surveyors to assess the capacity of the unit builders and manufacturers, and/or carry out an examination prior to commencement of construction.

2.7.3 Surveys

2.7.3.1 For the products such as materials, equipment and systems required by the Rules, the products are to be applied to CCS Headquarters or CCS designated product plan approval unit and survey unit for inspection in accordance with Chapter 3 of this PART.

2.7.3.2 For the units intended to be classed with CCS, initial classification surveys by CCS are to be requested in accordance with the relevant requirements of Chapters 4 and 5 of this PART.

2.7.3.3 For maintaining the validity of classification, surveys after construction by CCS are to be requested in accordance with Chapter 5 of this PART.

Section 8 STATUTORY SERVICES

2.8.1 General requirements

2.8.1.1 Upon the authorization by the Government of the flag State, and at the request of the owner or unit designer or builder or upon the contract/agreement with them, CCS will undertake a part of or all the statutory services for units.

2.8.1.2 When so authorized, CCS will issue/endorse appropriate statutory certificates and/or reports, upon completion of plan approval, surveys during and after construction, and confirmation that the classed portions of the units are in compliance with CCS classification rules and the relevant statutory requirements.

2.8.1.3 For units applying for being classed with CCS, where statutory services for such units or the assessment of relevant statutory requirements is authorized to be performed at meanwhile, CCS will carry out the classification services in conjunction with the statutory services or assessment of statutory requirements.

2.8.1.4 For units subjected to both classification and statutory services by CCS, where the classification certificate is invalidated and this will affect the conditions for issuance of the relevant statutory certificates, the relevant statutory certificates or documents of compliance (e.g. for safety and load lines) will be invalidated simultaneously.

2.8.2 Basis for statutory services

2.8.2.1 Floating installation are to comply with the relevant statutory requirements by the Administration of the waters on which the units are to operate.

2.8.2.2 The statutory requirements for convention floating installation include the applicable international conventions or codes and the amendments thereto, mainly including:

--International Convention on Load Lines, 1966 (referred to as "Load Lines Convention");

--International Convention for the Safety of Life at Sea, 1974 and amendments thereto (where applicable) (referred to as "Convention for the Safety of Life of at Sea");

--International Convention on Tonnage Measurement of Ships, 1969 (referred to as "Tonnage Measurement Convention");

--International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (referred to as "Convention on Pollution Prevention");

-- International Convention on the Control of Harmful Ant-fouling Systems on Ships, 2001 (referred to as "Anti-fouling Convention");

--International Convention for the Control and Management of Ship's Ballast Water and Sediments, 2004 (where applicable) (referred to as "Ballast Water Convention");

--International Regulations for Preventing Collisions at Sea, 1972 (referred to as "Regulations for Preventing Collisions");

--Code for the Construction and Equipment Safety of Mobile Offshore Drilling Units, 2009.

2.8.2.3 The non-convention units are to comply with the statutory requirements of the Administration. If there are no relevant provisions specified by the Administration, CCS will apply the applicable parts of the international conventions and the code mentioned in 2.8.2.1 as the basis for statutory services.

2.8.2.4 The applicable statutory requirements are to be clearly specified in the application form or contract/agreement.

2.8.3 Responsibilities of the parties concerned

2.8.3.1 The right to interpret the statutory requirements rests with the Administration of the flag State.

2.8.3.2 The Administration of the flag State is responsible for the equivalence and exemption covered by the statutory requirements.

2.8.3.3 When the statutory services are being carried out, CCS will not be reliable for any modification costs of any unit or any loss caused by traceability of the statutory requirements of the Administration of the flag State to the existing units.

2.8.4 Assessment of compliance with statutory requirements at the request of the client

2.8.4.1 At the request of or upon a contract/agreement with the client, CCS may carry out the assessment of the relevant statutory requirements which are not authorized by the flag Administration, or the compliance of which is voluntarily requested by the client.

2.8.4.2 When assessment of statutory requirements is applied for by the client, CCS will issue appropriate documents of compliance and/or reports, upon completion of plan approval, surveys during and after construction, and confirmation that the classed portions of the unit are in compliance with CCS classification rules and the relevant statutory requirements.

2.8.4.3 According to the statutory requirements as requested by the client, CCS will issue appropriate documents of compliance and/or reports, the acceptability of which to the flag Administration is, however, not warranted by CCS.

2.8.4.4 Paragraphs 2.8.1.3, 2.8.1.4 and 2.8.3.3 of this Section also apply to the assessment of statutory requirements.

2.8.5 Statutory certificates and documents

2.8.5.1 Upon satisfactory statutory surveys of the unit, CCS surveyors are to issue or approve the corresponding statutory certificates and documents according to the authorized contents, e.g.:
(1) Safety Certificate of Offshore Floating installation;
(2) International Load Line Certificate;
(3) International Tonnage Certificate (1969);
(4) International Oil Pollution Prevention Certificate;
(5) International Sewage Pollution Prevention Certificate;
(6) International Air Pollution Prevention Certificate;
(7) Statement of Garbage Pollution Prevention from Units;
(8) Survey Book and Test Certificate of Lifting Devices;
(9) International Anti-fouling System Certificate/Statement of Compliance;
(10) Documents for intact stability;
(11) Documents for damage stability;
(12) Other certificates or documents.

Section 9 APPROVAL OF SUPPLIERS

2.9.1 General requirements

2.9.1.1 Services provided by suppliers on behalf of the owner to CCS, such as measurements, tests or maintenance of safety systems and equipment, the results of which will be used by CCS surveyors as the basis for surveys, are subject to approval by CCS as evidence for their capabilities to provide the approved services.

2.9.1.2 Where such services provided by suppliers influence CCS to make decisions for issuing of statutory certificates, the suppliers are to be approved by CCS. In addition, CCS may accept the suppliers recognized by the flag Administration or an organization authorized by it.

2.9.1.3 Suppliers do not act on behalf of CCS and are to be responsible for the services provided by them and the results thereof.

2.9.2 Requirements for approval

2.9.2.1 Any supplier applying for approval is to meet the following conditions:

(1) sufficient competent technicians, operators, inspectors and supervisors are available for providing approved services;

(2) necessary and appropriate equipment and facilities are in place;

(3) an effective and documented quality assurance system has been established and is being maintained.

2.9.2.2 The scope and procedure of approval of suppliers are to be in compliance with the requirements of Appendix 8 “Procedural Requirements for Approval of Service Suppliers” of Chapter 5 of PART ONE of Rules for Classification of Sea-going Steel Ships.

2.9.3 List of approved suppliers

2.9.3.1 CCS publishes and maintains a list of suppliers approved by CCS.

Section 10 ASSIGNMENT, MAINTENANCE, SUSPENSION, CANCELLATION AND REINSTATEMENT OF CLASS

2.10.1 Assignment and maintenance of class

2.10.1.1 Where the hull/main structure (including equipment) and machinery (including electrical installation) of the unit are found in compliance with the relevant provisions of CCS rules after plan approval and surveys, the characters of classification and corresponding class notations will be assigned, and the classification certificate will be issued by CCS.

2.10.1.2 The hull/main structure (including equipment) and machinery (including electrical installation) of the unit are to be well maintained and managed in accordance with the provisions for the assigned characters of classification and class notations, or for the valid certificates, including stores loading and ballast distribution as well as the requirements for operation under severe weather conditions.

2.10.1.3 The floating installation in service are to observe the service conditions as restricted in the loading manual and in the class notation, so as to ensure that the loading conditions and environmental conditions, which are the basis for classification, are not exceeded during operation.

2.10.1.4 The CCS class assigned to a floating installation which is found to comply with the Rules upon surveys after construction will continue to be valid, and CCS will endorse or renew the classification certificate.

2.10.1.5 Where the data in the loading manual and/or loading computer (if fitted) of the units have been modified for certain reasons, appropriate changes are to be made in the loading manual and/or loading computer and submitted for approval by CCS.

2.10.1.6 In case of any damage, failure, fracture or grounding and repair that may affect the validity of the assigned characters of class and class notations or certificates, the operator is to report this to CCS in time; CCS will carry out related assessment and/or surveys and raise requirements and comments.

2.10.1.7 CCS reserves the right to perform unscheduled surveys of the unit when CCS has reasonable cause to believe that the requirements of the Rules for various surveys are not being fully complied with. The notice for arranging an unscheduled survey will be sent in writing by CCS to the owner who is to promptly arrange the survey and has the obligation to pay the related expenses.

2.10.2 Suspension and cancellation of class of a floating installation

2.10.2.1 Suspension of class

(1) When a floating installation is operating beyond the service limitations defined by its characters of classification and class notations or any other additional condition as approved, its class will be suspended and its classification certificate invalidated.

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

(3) One of the following cases will lead to suspension of the class and invalidation of the classification certificate, unless the unit is attended by the surveyor for completion of the overdue surveys:

① when any outstanding recommendation or condition of class specified by CCS is overdue, and no extension is granted by CCS;

② when continuous survey item(s) due or overdue at the time of annual survey have not been dealt with, and no extension is granted by CCS;

③ when surveys after construction other than the annual, intermediate or special surveys are overdue, and no extension is granted by CCS;

④ when repairs of any damage, defect or failure have not been completed and surveyed as specified;

⑤ the owner fails to arrange the unscheduled surveys referred to in 2.10.1.7 above.

(4) One of the following cases will lead to automatic suspension of the class and invalidation of the classification certificate:

① when an annual survey has not been completed within 3 months of the due date of the annual survey, until the unit is under attendance for completion of the annual survey;

② when an intermediate survey has not been completed within 3 months of the due date of the third annual survey in each special 5-year period, unless the unit is under attendance for completion of the intermediate survey;

③ when a special survey has not been completed within the period of time specified by CCS and no extension is granted by CCS, unless the unit has been under attendance for completion of the special survey by the due date (prior to resuming operation) .

a. Under "exceptional circumstances", CCS may grant an extension not exceeding 3 months to allow for completion of the special survey, provided that the unit is attended and the attending surveyor so recommends upon satisfactory survey to the following extent:

(a) annual survey;

(b) re-check of outstanding recommendations/conditions of class;

(c) progression of the special survey as far as possible;

(d) where the docking survey is due prior to the date of the extension, an underwater examination is to be carried out by an approved diving company. Such underwater examination may be dispensed with in the case of extension of docking survey not exceeding 36 months provided that the unit is without any outstanding recommendation/condition of class regarding underwater parts.

b. In case that class certificate will expire when the unit is expected to be at sea, an extension to allow for completion of special survey may be granted provided that there is documented agreement to such an extension prior to the expiry of the certificate, and provided that positive arrangements have been made for attendance of the surveyor at the first port of call, and provided that CCS is satisfied that there is technical justification for such an extension. However, if owing to "exceptional circumstances" the special survey cannot be completed at the first port of call, the subparagraph a. above may be followed, but the total period of extension is in no case to be longer than 3 months after the original due date of the special survey.

(5) If, due to circumstances reasonably beyond the owner's or CCS control, the unit is not in a port where the overdue surveys can be completed at the expiry of the periods allowed above, CCS may allow the unit to be towed to a designated port at which the survey will be completed, at the request of the owner and provided that:

① relevant records are examined;

② upon review of the unit's history and survey at the present port, the attending surveyor is satisfied that the unit is in condition to sail or being towed for single trip to a designated port, and this is to be confirmed by the Headquarters of CCS. Where there is an unforeseen inability of CCS to attend the unit at the present port, the manager is to confirm that the unit is in condition to sail to the designated port;

③ the due and/overdue surveys and examination of the outstanding recommendations/conditions of class are carried out by CCS at the first port of arrival.

Such overdue surveys are to be performed according to the survey requirements applicable at the original due date and not to the requirements corresponding to the unit's age. The due date of the next surveys is to be calculated as that of the original corresponding surveys.

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

(6) For a floating installation with dual classes, when one Society takes actions to suspend the class of the unit due to technical reasons, this Society is to inform the other Society, within five working days, of the reasons for the actions taken and all related information. The other Society, upon receipt of such information, is also to suspend the class of the same unit, unless he can demonstrate that such suspension is incorrect.

(7) Where a floating installation has been laid up prior to the due date of surveys in accordance with the requirements of CCS rules, its class will not be suspended when the surveys are overdue. However, if the lay-up occurs after the surveys have become overdue and its class has been suspended, the class of the unit will be suspended till the time when the overdue survey items are completed.

(8) Where a floating installation is intended to sail from its lay-up location to the repair yard at a single trip when any periodical survey is overdue, the suspension of class may be paused temporarily and the unit may be allowed to sail from its lay-up location to the repair yard at a single trip, provided that the flag Administration agrees such sail and CCS is satisfied with the conditions of the unit upon survey. The extent of such survey is to be determined based on the overdue survey and the time of lay-up. In such cases, a short-term classification certificate indicating the conditions for navigation may be issued. This provision does not apply to the floating installation of which the classes have already been suspended prior to the lay-up.

(9) Where a floating installation is intended to be transited from its lay-up location to the scrapping yard at a single trip when any periodical survey is overdue, the suspension of class may be paused temporarily and the unit allowed to be transited from its lay-up location to the scrapping yard at a single trip. In such cases, a short-term classification certificate indicating the conditions for transition may be issued if the attending surveyor is satisfied that the unit is suitable for the intended transition.

2.10.2.2 Cancellation of class of a floating installation:

The class of a floating installation will be cancelled in any one of the following cases:

① at the request of the owner;

② the circumstances leading to suspension of class are not corrected within the time specified;

③ the class of a unit will be cancelled immediately when the unit proceeds to sea without having completed the outstanding recommendations or conditions of class which were required to be dealt with before leaving the port;

④ when class has been suspended for a period of six months due to overdue annual, intermediate, special surveys or other surveys after construction as required by the Rules and/or overdue outstanding recommendations/conditions of class. A longer suspension period may be granted for units which are either laid up, awaiting disposition of a casualty or under attendance for reinstatement;

⑤ where the hull/main structure (including equipment) and machinery (including electrical installation) of the floating installation is so badly damaged or in other conditions such as sinking, scrapping, etc., that continuing operation of the unit is confirmed as not possible;

⑥ when the payment of survey fees is not made on time.

2.10.2.3 For units not in operation, a longer period of class suspension rather than cancellation may be granted.

2.10.2.4 If survey requirements related to maintenance of class notations are not carried out in any case of suspending or cancelling class stated above, the suspension or cancellation is to be limited to those class notations only.

2.10.2.5 Notification of suspension or cancellation of class of floating installation

(1) Cancellation of class of a floating installation will be notified accordingly in CCS Register of Ships or its supplements;

(2) When the class of a floating installation is suspended or cancelled, CCS will sent written notification to the owner and the Administration of the flag State, and make an announcement on CCS website available to the underwriters and other interested parties concerned.

2.10.3 Reinstatement of class of a floating installation

2.10.3.1 The class of a floating installation may be reinstated in any one of the following cases:

(1) Class will be reinstated subject to satisfactory completion of overdue surveys. Such overdue surveys are to be performed according to the survey requirements applicable at the original due date and not to the requirements corresponding to the unit's age. The due date of the next relevant surveys is to be calculated as that of the original corresponding surveys. However, the unit is disclassed from the date of suspension until the date on which class is reinstated;

(2) Class will be reinstated upon verification that the due or overdue continuous survey items have been satisfactorily dealt with;

(3) Class will be reinstated upon verification that the due or overdue outstanding recommendations have been satisfactorily dealt with.

2.10.3.2 When the class of a floating installation is reinstated, CCS will send written notification to the owner and the Administration of the flag State, and make an announcement on CCS website available to the underwriters and other interested parties concerned.

2.10.3.3 For a floating installation with dual classes, one Society, when making the decision to reinstate the class of the unit, is to notify the other Society of the reinstatement.

Section 11 CERTIFICATES AND REPORTS

2.11.1 Certificates

2.11.1.1 A classification certificate indicates only that the items covered by it, as verified during plan approval and classification surveys, are in compliance with CCS rules and fit for their intended purposes.

2.11.1.2 The equipment record attached is a part of the classification certificate.

2.11.1.3 Classification certificates and the related reports are issued by CCS independently.

2.11.1.4 The classification certificate is to contain the terms and conditions agreed between both parties.

2.11.2 Duration and validity of certificates

2.11.2.1 The period of validity of classification certificates of floating installation is in general not to exceed 5 years.

2.11.2.2 The period of validity of interim classification certificates of floating installation is in general not to exceed 5 months.

2.11.2.3 The period of validity of classification certificates is to be harmonized with that of the statutory certificates of the floating installation as possible.

2.11.2.4 When the special survey is completed within three months before the expiry date of the existing certificate, the new classification certificate is to be valid to a date not exceeding five years from the date of expiry of the original certificate.

2.11.3 Issue and endorsement of classification certificates

2.11.3.1 After the classification inspection is completed, the authorized personnel of the inspection unit shall issue the classification certificate, which shall be reviewed by the competent department of CCS headquarters and submitted to the classification committee for approval, and the final classification of floating installation shall be confirmed by the president of CCS or the authorized personnel of CCS headquarters.

2.11.3.2 Upon issue of an interim classification certificate, the survey unit is to submit the interim classification certificate together with the records, reports and other technical documents to the competent department of CCS Headquarters for review and then submitted by the competent department to the Class Committee for approval. Upon approval by the Committee, a classification certificate will be issued by the President of CCS or his authorized person(s).

2.11.3.3 The classification certificate is to be endorsed by the surveyor as required after completion of the surveys after construction as specified in Chapter 5 of this PART.

2.11.3.4 After the special inspection is completed, the authorized personnel of the inspection unit shall issue a new classification certificate.

2.11.3.5 Upon completion of the special survey, the survey unit is to submit a report and other technical documents to the competent department of CCS Headquarters or another designated survey unit for review, and upon satisfactory review a new classification certificate will issued by the President of CCS or his authorized person.

2.11.3.6 Notwithstanding the provision of 2.11.2.1, CCS may, when applying 2.11.3.5, determine a period of validity less than five years for the classification certificate and/or take any other necessary restrictive measure (e.g. service restrictions being noted on the newly issued classification certificate), based on a comprehensive consideration of the available information on other aspects of safe operation of the unit such as safety inspections

by the flag/coastal state, safety management of the unit company, etc. Where the period of validity is shortened, it is to be harmonized with the intervals between classification/statutory surveys as far as practicable and regular reports are to be sent to the Class Committee.

Section 12 REGISTER OF UNITS AND LISTS OF APPROVED MARINE PRODUCTS

2.12.1 Register of Units

2.12.1.1 CCS will enter main characteristic particulars and details of all floating installation classed with CCS after they are assigned characters of classification and class notations, into the Register of Ships periodically published by CCS to provide information to the parties related to the floating installation, such as the builders, owners, underwriters and charterers.

2.12.1.2 Subsequently, in case changes concerning units or their characteristic particulars are made, CCS will publish renewed editions of the Register of Ships or supplements thereto in time.

2.12.2 Lists of Approved Marine Products

2.12.2.1 CCS will enter the names, main characteristic particulars and details of related products as well as the detailed information on their manufacturers in respect to those manufacturers and plants and their main products approved by CCS into the Lists of Approved Marine Products periodically published by CCS to provide information to unit designing institutes, builders, owners, traders and exporters.

2.12.2.2 Subsequently, in case changes concerning performance of the approved products are made or their scope is extended, CCS will publish renewed Lists f Approved Marine Products or supplements thereto in time.

Section 13 AUDIT

2.13.1 Vertical contract audit

2.13.1.1 The owners, unit builders and marine product manufacturers concerned are to assist the representatives from a third-party independent audit organization (including ACB auditor(s), IACS observer(s)) and representative(s) of EU Commission who are accompanied by CCS representative(s), in their vertical contract audit of CCS so as to facilitate their work to carry out the audit smoothly.

2.13.1.2 When the auditor(s) or representative(s) request access to relevant information during the audit, the owners, unit builders and manufacturers concerned are to make such information available to them provided that it is ensured that they will not in any form reproduce such information or transmit it to any other party.

Section 14 AVAILABILITY AND DISCLOSURE OF INFORMATION

2.14.1 Availability of information

2.14.1.1 The party who makes any information available to CCS as required for classification of the unit is to be responsible for the truthfulness, timeliness and completeness of such information.

2.14.2 Disclosure of information

2.14.2.1 CCS will not disclose any information obtained for classification of the unit to any other party not specified in the contract and Table 2.14.2.2, except in the following cases:

(1) when the class of a floating installation is transferred from CCS to another member society of IACS, the relevant class information together with survey reports are to be made available to that society;

(2) as required by IACS, the updated data related to the Register of Ships, the data of class suspension and survey status, and the information on failure incidents of units are to be communicated to IACS;

(3) the owners and operators of floating installation are to authorize CCS to permit the representatives from a third-party independent audit organization (including ACB auditor(s), IACS observer(s)) and representative(s) of EU Commission to have access to the certificates, survey reports, documents and other information related to the units classed with CCS during the audit or evaluation of CCS;

(4) the flag State has special legal provisions for the disclosure, or the court having jurisdiction or the owner agrees in writing to the disclosure.

2.14.2.2 The concerned parties who are entitled to have access to such information are given in Table 2.14.2.2.

Information available to parties concerned Table 2.14.2.2

Types of information	Information accessible				
	Owner	Flag State	Port/Coastal State	Insurance Company*	Builder
1. CCS regular documents					
* Rules/Regulations and Instructions (class and statutory requirements)	1	1	1	1	1
* Instructions to Surveyors		1			
* Quality Manual	1	1	1	1	1
* Register of Ships	1	1	1	1	1
2. Unit-related information					
A. New constructed unit					
* Approved drawings	6	1			7
* Formal letter of approval	1				7
* Certificate of essential equipment	2				7
B. Unit in service					
* Classification service for floating installation					
--Dates for all classification surveys (month/year)	7	1	1	1	
--Expiry date of classification certificate	7	7**	1	1	
--Certificate/report	7	1	6	5	
--Overdue survey	7	7**	1	1	
--Classification conditions/contents of outstanding recommendation	7	1	1	5	

--Overdue classification conditions/contents of outstanding recommendation	7	1	1	1	
--Condition assessment report	7	3	3	3	
* Statutory services					
--Due date of statutory survey	7	7**	1	1	
-- Expiry date of statutory certificate	7	7**	1	1	
--Registered statutory outstanding recommendation	7	7**	1	5***	
--Overdue statutory outstanding recommendation	7	7**	1	1***	
3 Other information					
* Correspondences between CCS and builders and/or owner	6	6		5&6	
* CCS quality system audit	4	4	4	4	
* Class transfer report	7	7	1	7	
* Class withdrawal information	7	7	1	7	

Notes:
* = Insurance Company refers to the Insurance Association Limited, the subject and machinery underwriters
** = If specified in the Agreement
*** =Unless prevented by agreement with the flag State
1. Available upon request
2. Obtained from the unit builder when the unit is delivered
3. Available when embarking and visiting the unit
4. Survey results provided upon request
5. When accepted by owner or through special terms in insurance contract
6. When accepted by owner or unit builder (as applicable)
7. Automatically available

2.14.2.3 Notwithstanding the general liability of confidentiality owed by CCS to its clients is in accordance with its Rules, CCS's clients hereby accept that CCS will participate in IACS' Early Warning System which requires each IACS Member and Associate to provide its fellow IACS Members and Associates with relevant technical information on serious failures of main structure and mechanical systems, as defined in the IACS' Early Warning System (but not including any drawings related to the unit which may be the specific property of another party), to enable such useful information to be shared and utilized to facilitate the proper operation of IACS's Early Warning System. CCS will provide its clients with written details of such information upon sending the same to IACS Members and Associates.

Section 15 LIABILITY, DISAGREEMENT AND ARBITRATION

2.15.1 Liability of each party

2.15.1.1 CCS rules are the basis for the design, manufacturing and testing of units and related products, but not the sole basis for the design. The rules can neither replace the control of technological process and quality by builders or manufacturers, nor diminish their liability in this respect or absolve them therefrom.

2.15.1.2 CCS rules do not cover every piece of structure or item of equipment on board a unit, nor do they cover operation elements, or activities which fall outside the scope of classification and include such items as design and manufacturing processes, choice of type and power of machinery and certain equipment, number and qualification of crew or operating personnel, form and cargo-carrying capacity of the unit and maneuvering performance, cargo securing, main structure and equipment vibrations, noises, spare parts, life-saving appliances and maintenance equipment.

2.15.1.3 CCS will not be liable for any loss of any result of only applying CCS rules by any third party, but not subject to plan approval or surveys by CCS.

2.15.1.4 The classification of units undertaken by CCS is carried out on the basis that the designers, builders, owners, manufacturers, sellers, suppliers, repairers, operators and other parties fulfill their respective responsibilities. The contents of any reports, documents and certificates issued by CCS do not mean to diminish any liability of any party mentioned above or absolve it therefrom.

2.15.1.5 Any survey-related documents issued by CCS only reflect the status at the time when the survey is carried out.

2.15.1.6 The classification certificate (with characters of classification and class notations thereon) is only an attestation that the unit is in compliance with the applicable CCS classification rules and/or other standards agreed in writing between CCS and the applicant for CCS service. If the unit is not in compliance with such rules or standards, CCS has the right to withhold, suspend or withdraw the characters of classification and class notations.

2.15.1.7 Except as required by CCS rules, CCS will make no representations beyond the relevant reports, statements, plan approval, survey, certification or other services. The application of the information supplied by CCS in documents other than classification certificates and reports is at the discretion of the users, and CCS is not liable for the results of such actions.

2.15.1.8 CCS is to provide services based on the contract only, in no case is CCS to be liable for any loss of any party who has no direct contractual relations with CCS.

2.15.1.9 The owner and/or the unit builder is to promptly feed back to the manufacturer and CCS any problem revealed in operation of marine products so as to facilitate improvement by the manufacturer.

2.15.1.10 CCS' omission or failure to carry out or observe any stipulation, condition, or obligation to be performed under the contract will not give rise to any claim against CCS or be deemed to be a breach of contract if the omission or failure arises from causes beyond CCS' reasonable control.

2.15.2 Disagreement

2.15.2.1 The right of interpretations on the rules published by CCS rests solely with CCS Headquarters. CCS rules are translated by CCS into English. In case of any different understanding to the English version, the currently effective Chinese version of the rules is to be considered as solely authoritative.

2.15.2.2 Where there is disagreement between the surveyor and the interested party during survey, which affects the project schedule, the latter is to promptly appeal in writing to the unit which the surveyor serves. Where the handling the appeal by the unit is not considered satisfactory by the interested party, it may appeal in writing to CCS Headquarters along with the detailed background materials. The Headquarters will decide on the matter, and this ruling will be final.

2.15.2.3 The costs arising from any examinations carried out by CCS Headquarters on request are to be assumed by the appellant, except for those cases in which the appeal proves justified.

2.15.3 Arbitration

2.15.3.1 CCS will be liable only for the loss or damage resulting directly from its negligent act. In no event is CCS to be liable for any indirect or consequential losses or damages.

2.15.3.2 Notwithstanding the previous paragraph, CCS will be liable for the loss or damage due to negligent act judicially arbitrated exclusively to CCS or its employees, agents or other parties acting on behalf of CCS. And in no case is the amount of this liability to exceed five times the fee(s) charged by CCS in respect of the service(s) in question or 2,000,000 RMB in maximum. CCS liability for the loss or damage is specially excluded when such loss or damage arises out of an act:

(1) by an employee of CCS acting outside the terms or scope of his/her employment; or

(2) by any agent or other party acting on behalf of CCS, when such act exceeds the authority granted in writing by CCS to such agent or party.

2.15.3.3 Any claim for any loss or damage set forth above is to be made in writing within six months of the date on which the damage was first discovered or the loss was incurred; failure to do so will be deemed as an absolute waiver of the right to claim.

2.15.3.4 Unless otherwise agreed with CCS, any dispute of whatsoever nature arising from or in connection with the Rules or the service(s) provided in accordance with the Rules is to be referred to China Maritime Arbitration

Commission and arbitrated in accordance with its arbitration rules effective at the time of request for arbitration. The arbitration award is to be final and binding upon both interested parties.

2.15.4 Applicable laws

2.15.4.1 The laws of the People's Republic of China are to apply.

CHAPTER 3 INSPECTIONS OF PRODUCTS

Section 1 GENERAL PROVISIONS

3.1.1General requirements

3.1.1.1 Inspections of products are part of the unit survey, including inspections of products to be classed, delegated inspections of statutory products and entrusted inspections of other products. These inspections are to confirm that the products are in compliance with the requirements of the rules for classification or statutory requirements or the requirements of the entrusting party.

3.1.1.2 The products intended for classed units are to be inspected in accordance with Chapter 3, PART ONE of the Rules for Classification of Sea-going Steel Ships, the relevant requirements of the Rules and CCS Rules for Materials and Welding.

3.1.1.3 Delegated inspections of statutory products are to comply with the requirements of the Administration and international conventions/codes.

3.1.1.4 Entrusted inspections of products are to comply with the product standards specified by the entrusting party.

3.1.1.5 For products required by the rules, appropriate standards may be accepted as alternative requirements. In any case, however, the equipment, components and systems are to be subject to design evaluation, inspections during manufacturing, testing and functional tests for confirming that the standards are not lower than those specified in the rules.

3.1.1.6 Where no technical requirements are specified for any products covered by CCS rules, the products may be designed, manufactured and tested according to the applicable standards determined by the manufacturer. The inspection of such products is to generally include:

(1) drawings and information;

(2) conditions for use on board the unit;

(3) requirements for materials and welding;

(4) inspection and test items.

3.1.2 Definitions

3.1.2.1 For the purpose of inspection of related products specified in the Rules, the terms and definitions used are as follows:

(1) Product inspection is a process to assess compliance of the products through design evaluation, inspections and tests of final products as well as the inspections and tests carried out during the manufacturing process. Product inspection includes single-piece/single-batch inspection, design approval, type approval and works approval.

(2) Single-piece/single-batch inspection means the inspection of products piece by piece or batch by batch carried out by a CCS surveyor for the purpose of issuing appropriate marine product certificates.

(3) Design approval is a process to verify the design of the products, based on which CCS permits the products to be designed and used for intended purposes under specific conditions. Design approval generally comprises examination of plans and prototype/type test (as applicable).

(4) Type approval is a process used by CCS to verify, through design evaluation and manufacturing evaluation of products, that the manufacturers have the capability of continuously manufacturing products that comply with the requirements of CCS rules or other acceptable standards. By the degree of trustworthiness of the product quality assurance system verified through manufacturing evaluation, type approval is divided into two modes, namely type approval A and type approval B.

(5) Works approval is a process used by CCS to verify the manufacturing conditions and capability of the product manufacturers through review of manufacturers' documents, approval test and audit of product manufacturing process.

(6) Manufacturer's documentation refers to the Statement of Facts or certificate issued by the manufacturer, which serves as certification to the results of internal inspection conducted by the manufacturer itself and for which the manufacturer performs the associated responsibilities independently.

(7) Equivalent documentation means the certificates, reports and other documents, which are not issued in the name of CCS but is stamped by CCS and endorsed by CCS surveyor, used to evidence that the related products have passed the inspection satisfactorily according to CCS requirements.

3.1.3 Certification and inspection of products

3.1.3.1 For classed products and products for delegated statutory inspections other than the oil and gas process facilities, the certification and inspections, including design approval, type approval, works approval and asbestos-free approval, are to comply with the requirements of Chapter 3, PART ONE of the Rules for Classification of Sea-going Steel Ships.

3.1.3.2 For certification of classed products and products for delegated statutory inspections, other than the oil and gas process facilities, the following requirements are to be complied with:

(1) Certification of classed products is to comply with the requirements in Annex 1 of this Chapter;

(2) Certification of products for delegated statutory inspections is to comply with the requirements of the Administration, in absence of which Appendix 2 of this Chapter may be referred to;

(3) Certification of lifting appliances is to comply with the relevant requirements of the Administration, in absence of which Appendix 3 of this Chapter may be referred to.

3.1.3.3 Products involving classification requirements in Appendix 2 are also to meet the relevant classification requirements.

3.1.4 Certification and inspection of products of oil and gas process facilities

3.1.4.1 Certification and inspection of products of oil and gas process facilities are to meet the relevant provisions of CCS Rules for Classification of Offshore Oil and Gas Process System.

Appendix 1 List of Certification Requirements for Classed Products onboard the Units

No.	Product Name	Document		Approval mode				Remarks
		C/E	W	DA	TA-B	TA-A	WA	
1	**Structure metal material**							
1.1	Plate	X	—	—	—	—	X	
1.2	Section	X	—	—	—	—	X	
1.3	Casting	X	—	—	—	—	X	
1.4	Forging	X	—	—	—	—	X	
2	**Anchoring and mooring equipment**							
2.1	Anchor chains and fittings	X	—	—	—	—	X	
2.2	Anchors and accessories	X	—	—	—	—	X	
2.3	Chain stopper	X	—	O	O	O	—	
2.4	Windlass	X	—	X	O	O	—	
2.5	Winch	X	—	X	O	O	—	
2.6	Towing and mooring ropes (fiber rope and steel wire)	X	—	—	—	—	X	
2.7	Single point mooring arrangement	X	—	X	O	O	—	
3	**Outfitting**							
3.1	Hatch cover	X	—	O	O	O	—	
3.2	Hydraulic device	X	—	O	O	O	—	
3.3	Side scuttle and deadlight	X	—	—	O	O	—	
3.4	Window glass	O	X	—	—	—	X	Works Approval Certificate to be provided for W
3.5	Towing hook	X	—	X	O	O	—	
3.6	Towing winch	X	—	X	O	O	—	
3.7	Bow, stern and side doors	X	—	O	O	O	—	
3.8	Watertight door	X	—	O	O	O	—	
3.9	Weathertight door	X	—	O	O	O	—	
3.10	Mobile access for inspection purpose	O	X	—	X	—	—	Type Approval Certificate to be provided for W
4	**Rudder and steering gear**							
4.1	Rudder blade	X	—	—	—	—	—	
4.2	Rudder stock and pin	X	—	—	—	—	X	
4.3	Rudder bearing	X	—	—	—	—	X	
4.4	Rudder tiller	X	—	—	—	—	X	
4.5	Tiller connecting bolt	X	—	—	—	—	X	
4.6	Steering gear	X	—	X	O	O	—	
4.7	Rudder angle indicator	O	X	—	X	O	—	Type Approval Certificate to be

No.	Product Name	Document		Approval mode				Remarks
		C/E	W	DA	TA-B	TA-A	WA	
								provided for W
4.8	Steering control system	X	—	—	X	—	—	
4.9	Steering gear electric control and alarm system	X	—	—	X	—	—	
5	**Pump and piping**							
5.1	Valves (valves of 50mm in diameter and above for piping of Classes I and II, valves of 300mm in diameter and above for piping of Class III; cargo (crude) oil valves, safety valves, storm valves, sea valves, outboard valves and pressure vacuum valves)	X	—	O	X	O	—	
5.2	Piping of Classes I and II	X	—	—	—	—	X	
5.3	Piping of Class III	O	X	—	—	—	X	Works Approval Certificate to be provided for W
	Valves and fittings other than those under 5.1	O	X	—	X	O	—	Type Approval Certificate to be provided for W
5.4	Pump	X	—	—	X	O	—	
5.5	Mechanical pipe joint	O	X	—	X	O	—	Type Approval Certificate to be provided for W
5.6	Air pipe closing appliance	O	X	—	X	O	—	Type Approval Certificate to be provided for W
5.7	Hydraulic cylinder, hydraulic motor, hydraulic pump	X	—	O	O	O	—	
6	**Boiler and pressure vessel**							
6.1	Boiler (including hot oil boiler)	X	—	—	—	—	X	
6.2	Boiler burner	—	X	X	O	O	—	
6.3	Economizer	X	—	—	X	—	—	
6.4	Steam heated steam generator (over 0.35 MPa)	X	—	O	X	O	—	
6.5	Thermal oil and thermal water units (for service of propulsion machinery)	X	—	—	X	—	—	
6.6	Automatic control and safety devices (pressure control, temperature control, water level control and safety valves)	X	—	—	O	O	—	
6.7	Safety membrane	—	X	—	—	—	X	Works Approval Certificate to be provided for W
6.8	Safety valve	X	—	—	X	—	—	
6.9	Air receivers (P≥0.7MPa or V≥0.25m^3)	X	—	—	—	—	X	

No.	Product Name	Document		Approval mode				Remarks
		C/E	W	DA	TA-B	TA-A	WA	
6.10	Air receivers (P＜0.7MPa and 0.1m^3～0.25m^3)	O	X	—	—	—	X	Works Approval Certificate to be provided for W
6.11	Pressure vessels (P≥0.7MPa or V≥0.25m^3)	X	—	—	—	—	X	
6.12	Pressure vessels (P ＜ 0.7MPa and 0.1m^3～0.25m^3)	O	X	—	—	—	X	Works Approval Certificate to be provided for W
7	**Machinery**							
7.1	Gas turbine	X	—	—	X	O	—	
7.2	Steam turbine	X	—	—	X	O	—	
7.3a	Diesel engine (in batches)	X	—	—	X	O	—	Engines of a cylinder diameter of below 300mm
.1	Entablature	X	—	—	—	—	X	
.2	crankshaft	X	—	—	—	—	X	
.3	Cylinder liner	X	—	—	—	—	X	
.4	Heat exchanger	X	—	—	X	O	—	
.5	Connecting rod	X	—	—	—	—	X	
.6	Fuel injection pipe	O	X	—	X	—	—	Welded structure subject to NDT, Type Approval Certificate to be provided for W
.7	Supercharger	X	—	X	O	O	—	
7.3b	Diesel engine (single unit)	X	—	X	O	O	—	Engines of a cylinder diameter of 300mm and above
.1	Bedplate	X	—	—	—	—	X	
.2	Entablature	X	—	—	—	—	X	
.3	Explosion-proof door	O	X	O	X	O	—	Type Approval Certificate to be provided for W
.4	Cylinder liner	X	—	—	—	—	X	
.5	Crankshaft	X	—	—	—	—	X	
.6	Connecting rod	X	—	—	—	—	X	
.7	Crosshead	X	—	—	—	—	X	Engines of a cylinder diameter of over 400mm
.8	Cylinder cover	X	—	—	—	—	X	
.9	Tie bolt	X	—	—	—	—	X	
.10	Connecting rod upper/lower bolts	X	—	—	—	—	X	
.11	Main foundation bolt	X	—	—	—	—	X	
.12	Cylinder cover bolt	X	—	—	—	—	X	
.13	Air cooler	X	—	—	X	O	—	

No.	Product Name	Document		Approval mode				Remarks
		C/E	W	DA	TA-B	TA-A	WA	
.14	Fuel injection pipe	O	X	—	X	—	—	Welded structure subject to NDT, Type Approval Certificate to be provided for W
.15	Fuel injector	O	X	O	O	O	—	
.16	High pressure fuel pump	O	X	O	X	O	—	Type Approval Certificate to be provided for W
.17	Supercharger	X	—	X	O	O	—	
.18	Oil mist detector	O	X	—	X	—	—	Type Approval Certificate to be provided for W
.19	Piston	X	—	—	—	—	X	
.20	Speed regulator	O	X	O	X	O	—	Type Approval Certificate to be provided for W
7.4a	Gearbox (100kW and over)	X	—	O	X	O	—	
7.4b	Gearbox (below 100kW)	X	—	O	O	O	—	
7.5	Heat exchanger	X	—	X	O	O	—	
7.6	Blower	X	—	X	O	O	—	
7.7	Air compressor	X	—	X	O	O	—	
7.8	Oil separator	X	—	X	O	O	—	
7.9	Stern tube enclosure	O	X	O	X	O	—	Type Approval Certificate to be provided for W
7.10	Oil feed unit	X	—	—	—	—	—	
8	**Electrical equipment and automation**							
8.1	Generating sets (50kVA and above)	X	—	—	O	O	—	
8.2a	Generators (50kVA and over)	X	—	—	X	O	—	
8.2b	Generators (under 50kVA)	O	X	—	X	O	—	Type Approval Certificate to be provided for W
8.3	Emergency generating set (50kVA and over)	X	—	—	O	O	—	
8.4	Emergency switchboard	X	—	—	—	—	—	
8.5	Main switchboard	X	—	—	—	—	—	
8.6	Engine room central operating console	X	—	—	—	—	—	
8.7	Central operating console in bridge or central control room	X	—	—	—	—	—	
8.8a	Transformers (50kVA and over)	X	—	O	X	O	—	
8.8b	Transformer (under 50kVA)	O	X	—	X	O	—	Type Approval Certificate to be provided for W

No.	Product Name	Document		Approval mode				Remarks
		C/E	W	DA	TA-B	TA-A	WA	
8.9	Storage battery	O	X	—	X	O	O	Type Approval Certificate to be provided for W
8.10a	Explosion-proof switch and connection box	O	X	—	X	O	—	Type Approval Certificate to be provided for W
8.10b	Explosion-proof light	O	X	—	X	O	—	Type Approval Certificate to be provided for W
8.11	Power, control and communication cables and wires	X	—	—	—	—	X	
8.12	Bus duct	X	—	—	—	—	—	
8.13	Motor (50kW and above)	X	—	—	X	O	—	To be considered otherwise for especially extra large or special motors.
	Motor (under 50kW)	O	X	—	X	—	—	Type Approval Certificate to be provided for W
8.14	Explosion-proof motor	X	—	—	X	O	—	
8.15a	Electrical control box (associated with essential equipment)	X	—	—	—	—	—	
8.15b	Boiler control and alarm box/cabinet	X	—	—	—	—	—	
8.15c	Windlass control and alarm box/cabinet	X	—	—	—	—	—	
8.15d	Main/auxiliary engine (at engine) control and alarm box/cabinet	X	—	—	—	—	—	
8.15e	Oil-water separator control and alarm box/cabinet	X	—	—	—	—	—	
8.15f	Sewage treatment system control and alarm box/cabinet	X	—	—	—	—	—	
8.16	Battery charging and discharging boards	X	—	—	—	—	—	
8.17	Main engine remote control system (including sensors)	X	—	—	X	O	—	
8.18a	Safety system (including sensors)	O	X	—	X	O	—	Type Approval Certificate to be provided for W
8.18b	Monitoring and alarm system	O	X	—	X	O	—	Type Approval Certificate to be provided for W
8.19	Engine telegraph	O	X	—	X	O	—	Type Approval Certificate to be provided for W
8.20	Level measuring system (including sensors)	—	X	—	X	O	O	Type Approval Certificate to be

No.	Product Name	Document		Approval mode				Remarks
		C/E	W	DA	TA-B	TA-A	WA	
								provided for W
8.21	Temperature monitoring system (including sensors)	—	X	—	X	O	O	Type Approval Certificate to be provided for W
8.22	Electric meter	O	X	—	X	O	—	Type Approval Certificate to be provided for W
8.23	Circuit breaker (for main switches)	X	—	—	X	O	—	
	Circuit breaker (for branch distribution switches)	—	X	—	X	O	—	Type Approval Certificate to be provided for W
8.24	Uninterrupted power supply (UPS)	O	X	—	X	O	—	Type Approval Certificate to be provided for W
8.25	Additional emergency light	X	—	—	X	O	—	
8.26	Generator overload protection	—	X	—	X	O	—	Type Approval Certificate to be provided for W
8.27	Automatic parallel operation arrangement of generating sets	—	X	—	X	O	—	Type Approval Certificate to be provided for W
8.28	Distribution box	X	—	—	—	—	—	
8.29	Isolating switch	—	X	—	X	—	—	Type Approval Certificate to be provided for W
8.30	Alarm for flood into compartment (including sensors)	X	—	—	X	O	—	
8.31	Contactor	—	X	—	X	O	—	Type Approval Certificate to be provided for W
8.32	Insulation monitor	—	X	—	X	O	—	Type Approval Certificate to be provided for W
8.33	Engineer’s call bell	X	—	—	X	O	—	
8.34	Soft start system	—	X	—	X	O	—	Type Approval Certificate to be provided for W
8.35	Propeller speed indicator	—	X	—	O	—	—	
8.36	Fuse	O	X	—	X	O	—	Type Approval Certificate to be provided for W
8.37	Lighting fixture	—	X	—	X	O	—	Type Approval Certificate to be provided for W
8.38	Combined visual and audible alarm panel (box)	X	—	—	—	—	—	

No.	Product Name	Document		Approval mode				Remarks
		C/E	W	DA	TA-B	TA-A	WA	
8.39	Low location lighting	—	X	—	X	O	—	Type Approval Certificate to be provided for W
8.40	Master controller	X	—	—	—	—	—	
8.41	Relay and accessories	—	X	—	O	O	—	
8.42	Fixed flammable gas detection and alarm system	X	—	—	X	—	—	
8.43	Power conversion device (charging generator, etc.)	X	—	—	X	O	—	
8.44	Composite start-up monitor screen/cabinet	X	—	—	—	—	—	
8.45	Automatic start-up device of generator	X	—	—	—	O	—	
8.46	Temperature transmitter	—	X	—	X	O	—	Type Approval Certificate to be provided for W
8.47	Pressure transmitter	—	X	—	X	O	—	Type Approval Certificate to be provided for W
8.48	Level transmitter	—	X	—	X	O	—	Type Approval Certificate to be provided for W
8.49	Dynamic positioning control system	X	—	—	X	O	—	
8.50	Variable frequency control device (VFD)	X	—	X	O	O	X	
9	**Shafting and thruster**							
9.1	Thrust shaft	X	—	—	—	—	X	
9.2	Intermediate shaft and bearing	X	—	—	—	—	X	
9.3	Sterntube shaft, propeller shaft	X	—	—	—	—	X	
9.4	Stern tube	X	—	—	—	—	X	
9.5	Stern tube bearing	X	—	—	—	—	X	
9.6	Propeller	X	—	—	—	—	X	
9.7	Z propulsion arrangement; water jet propulsion arrangement	X	—	O	O	O	—	
9.8a	Non-elastic coupling	X	—	—	—	—	—	
9.8b	Elastic coupling	X	—	X	O	O	—	
9.9	Shafting connecting bolt	X	—	—	—	—	X	
9.10	Other thrusters	X	—	—	O	O	—	
9.11	Adjustable pitch propeller	X	—	X	O	O	—	
10	**Welding consumables**							
10.1	Electrode	O	X	—	—	—	X	Works Approval Certificate to be provided for W

No.	Product Name	Document		Approval mode				Remarks
		C/E	W	DA	TA-B	TA-A	WA	
10.2	Wire	O	X	—	—	—	X	Works Approval Certificate to be provided for W
10.3	Flux	O	X	—	—	—	X	Works Approval Certificate to be provided for W
11	**Corrosion resistant means**							
11.1	Paint	O	X	—	—	—	X	Works Approval Certificate to be provided for W
11.2	Anti-fouling primer	O	X	—	—	—	X	Works Approval Certificate to be provided for W
11.3	Shop primer	O	X	—	—	—	X	Works Approval Certificate to be provided for W
11.4	Anodic shielding paint	O	X	—	—	—	X	Works Approval Certificate to be provided for W
11.5	Cathodic protection system (e.g. impressed current generator)	X	—	X	O	O	—	
11.6	Sacrificial anode	X	—	—	—	—	—	
12	**Nonmetallic materials**							
12.1	Resin and fiber for fiber-reinforced plastics	O	X	—	—	—	X	Works Approval Certificate to be provided for W
12.2	Plastic pipe	O	X	—	—	—	X	Works Approval Certificate to be provided for W
12.3	Resin	O	X	—	—	—	X	Works Approval Certificate to be provided for W
12.4	Rubber	O	X	—	—	—	X	Works Approval Certificate to be provided for W
12.5	Synthetic (bearing) material	O	X	—	—	—	X	Works Approval Certificate to be provided for W
13	**Miscellaneous**							
13.1	Turret device	X	—	O	O	O	—	
13.2	Offloading cargo hose	O	X	—	X	O	—	Type Approval Certificate to be provided for W
13.3	Crude oil export facilities	X	—	O	O	O	—	
13.4	Loading computer (as applicable)	—	X	X	O	—	—	
13.5	Anti-oil-splashing belt	X	—	—	O	O	—	

No.	Product Name	Document		Approval mode				Remarks
		C/E	W	DA	TA-B	TA-A	WA	
13.6	Spark arrester	X	—	—	X	O	—	
13.7	Flexible hose component	X	—	—	X	O	—	
13.8	Elastic damper	X	—	—	X	O	—	

Symbols:

1) C-Marine Products Certificates; E-Equivalent documentation; W-Manufacturer's document; X-Applicable; O-Optional.

2) DA-Design approval; TA-B-Type approval B; TA-A-Type approval A; WA-Works approval.

3) The works approval of components and parts means the approval of the manufacturer of their blanks.

Appendix 2 List of Certification Requirements for Statutory Products onboard Floating installation

No.	Product Name	Document		Approval mode				Remarks
		C/E	W	DA	TA-B	TA-A	WA	
1	**Fire-proof material and equipment***							
1.1	Fire-proof material	X	—	—	—	—	X	
1.2	Fire door or window	X	—	—	X	—	—	
1.3	Fire damper or strip	X	—	—	X	—	—	
1.4	Deck covering	O	X	—	—	—	X	Works Approval Certificate to be provided for W
1.5	Penetration on deck or bulkhead	O	X	—	X	—	—	Type Approval Certificate to be provided for W
1.6	Low flame spread material	O	X	—	—	—	X	Works Approval Certificate to be provided for W
1.7	Cable stuffing	O	X	—	X	—	—	Type Approval Certificate to be provided for W
1.8	Class A deck	O	X	—	X	O	—	Type Approval Certificate to be provided for W
1.9	Class A bulkhead	O	X	—	X	O	—	Type Approval Certificate to be provided for W
1.10	Class B bulkhead	X	—	—	X	O	—	
1.11	Class B ceiling	X	—	—	X	O	—	
2	**Fire-extinguishing system and equipment***							
2.1	Fixed fire-extinguishing system	X	—	O	X	O	—	
2.2	Fire-extinguishing medium (foam)	O	X	—	—	—	X	Works Approval Certificate to be provided for W
2.3	Fire extinguishers (using foam, dry powder, gas or other media)	X	—	—	X	O	—	
2.4	Fire hoses (using foam or dry powder)	O	X	—	X	O	—	Type Approval Certificate to be provided for W
2.5	Nozzle, monitor, foam applicator, foam monitor, dry powder applicator and dry powder monitor	X	—	—	X	O	—	
2.6	Fireman's outfit	—	—		—	—		Certificates of components to be provided
.1	Breathing apparatus	X	—	—	X	O	—	
.2	Protective clothing	X	—	—	X	O	—	

No.	Product Name	Document		Approval mode				Remarks
		C/E	W	DA	TA-B	TA-A	WA	
.3	Fire-proof lifeline	O	X	—	X	O	—	Type Approval Certificate to be provided for W
2.7	Emergency escape breathing apparatus	X	—	—	X	O	—	
2.8	Spraying nozzles (including open and closed types)	O	X	—	X	O	—	Type Approval Certificate to be provided for W
2.9	Fixed local water-based fire-extinguishing arrangement	X	—	—	X	O	—	
2.10	Portable foam applicator	X	—	—	X	O	—	
2.11	Fire pump, emergency fire pump	X	—	—	X	O	—	
2.12	Inert gas system	X	—	—	X	—	—	
.1	Inert gas generator	X	—	—	X	—	—	
.2	Blower	X	—	X	O	O	—	
2.13	High speed venting valve	X	—	—	X	O	—	
2.14	Flame arresting device	X	—	—	X	O	—	
2.15	Bulkhead gearing device (penetrations)	X	—	—	X	O	—	
3	**Fire and gas detection and alarm system***							
3.1	Fire detector	O	X	—	X	O	—	Type Approval Certificate to be provided for W
3.2	Flammable vapors and H_2S gas detector	—	X	—	X	O	—	Type Approval Certificate to be provided for W
3.3	Fire detection and alarm device	X	—	—	X	O	—	
3.4	Flammable vapors and H_2S gas alarm system	X	—	—	X	O	—	
3.5	Light signs of escape route	O	X	—	X	O	—	Type Approval Certificate to be provided for W
3.6	Alarm system for release of extinguishing media	X	—	X	—	O	—	
3.7	Portable flammable gas detector	—	X	—	—	—	—	
4	**Life-saving appliances and arrangements**							
4.1	Lifeboats	X	—	—	X	O	—	
4.2	Rescue boats (including fast rescue boats)	X	—	—	X	O	—	
4.3	Life rafts (including rigid and inflatable types)	X	—	—	X	O	—	
4.4	Launching arrangement (including launching rack, winch, pullet, release gear and fall)	X	—	—	X	O	—	
4.5	Float-free arrangement	X	—	—	X	O	—	

No.	Product Name	Document		Approval mode				Remarks
		C/E	W	DA	TA-B	TA-A	WA	
4.6	Immersion suits, anti-exposure suits	X	—	—	X	O	—	
4.7	Lifejacket	X	—	—	X	O	—	
4.8	Lifebuoy	X	—	—	X	O	—	
4.9	Self-igniting light (for lifejacket and lifebuoy)	X	—	—	X	O	—	
4.10	Thermal protective aid	—	X	—	X	O	—	Type Approval Certificate to be provided for W
4.11	Distress flare	X	—	—	X	O	—	
4.12	Line-throwing appliance	X	—	—	X	O	—	
4.13	Marine evacuation system	X	—	—	X	O	—	
4.14	Embarkation ladder	X	—	—	—	—	—	
5	**Environmental protection equipment and material**							
5.1	15ppm bilge oily water separator	X	—	—	X	O	—	
5.2	15ppm bilge alarm system	X	—	—	X	O	—	
5.3	Oil/water interface detector	X	—	—	X	O	—	
5.4	Oil discharge monitoring and control system, including oil content meter	X	—	—	X	O	—	
5.5	Crude oil washing machine	X	—	—	X	O	—	
5.6	Sewage treatment plant	X	—	—	X	O	—	
5.7	Macerator and chlorinator	X	—	—	X	O	—	
5.8	Incinerator	X	—	—	X	O	—	
5.9	Devices for processing and recording after discharge	X	—	—	X	O	—	
5.10	NO_X emission of diesel engines of over 130kW	X	—	—	X	—	—	EIAPP certificate to be provided
6	**Communication, navigation and signaling equipment**							
6.1	Two-way VHF radio telephone system	X	—	—	X	O	—	
6.2	Rescue locator (SART, etc.)	X	—	—	X	O	—	
6.3	Public address system	X	—	—	—	—	—	
6.4	NAVTEX receiver	X	—	—	X	O	—	
6.5	INMARSAT ship-ground receiving station	X	—	—	X	O	—	
6.6	Emergency position-indicating radio beacon (EPIRB)	X	—	—	X	O	—	
6.7	MF/HF radio installation	X	—	—	X	O	—	
6.8	Global Positioning System (GPS)	X	—	—	X	O	—	
6.9	Navigation and signal lights	O	X	—	X	O	—	Type Approval Certificate to be provided for W
6.9a	Navigation light control panel	X	—	—	X	O	—	

No.	Product Name	Document		Approval mode				Remarks
		C/E	W	DA	TA-B	TA-A	WA	
6.10	Audible signal generator	O	X	—	X	O	—	Type Approval Certificate to be provided for W
6.10a	Hornpipe	X	—	—	X	O	—	
6.10b	Hornpipe control panel	X	—	—	X	O	—	
6.11	VHF radio installation	X	—	—	X	O	—	
6.12	Magnetic compass (including azimuth finder)	X	—	—	X	O	—	
6.13	Electric compass (including azimuth finder and compass repeater)	X	—	—	X	O	—	
6.14	Radar (including automatic plotting and tracking)	X	—	—	X	O	—	
6.15	Speed and distance measuring devices	X	—	—	X	O	—	
6.16	Sound reception system	X	—	—	X	O	—	
6.17	Daylight signal lamp	X	—	—	X	O	—	
6.18	Sounding device	X	—	—	X	O	—	
6.19	Automatic Identification System (AIS)	X	—	—	X	O	—	
6.20	Thruster speed and direction indicator (operational mode)	O	X	—	O	—	—	
6.21	Sound-powered telephone	X	—	—	X	O	—	
6.22	Electronic chart display and information system (ECDIS)	X	—	—	X	O	—	
6.23	Rate-of-turn indicator	—	X	—	X	O	—	Type Approval Certificate to be provided for W
6.24	Voyage data recorder (VDR)	X	—	—	X	O	—	
6.25	Integrated bridge system (IBS)	—	X	—	X	—	—	Type Approval Certificate to be provided for W
6.26	Integrated navigation system (INS)	—	X	—	X	—	—	Type Approval Certificate to be provided for W
6.27	Security alert system of floating installation	X	—	—	X	—	—	
6.28	General emergency alarm system	X	—	—	X	—	—	
6.29	Navigation control system (including steering instrument and automatic rudder)	X	—	—	X	—	—	
6.30	VHF telephone for special purpose (communication between the unit and aircraft)	X	—	—	X	—	—	
6.31	Remote identification and tracking system	X	—	—	X	—	—	
6.32	Ship clock (primary and secondary	X	—	—	X	—	—	

No.	Product Name	Document		Approval mode				Remarks
		C/E	W	DA	TA-B	TA-A	WA	
	clocks)							
6.33	Pilot transfer arrangement	X	—	—	—	—	—	
6.34	Bridge Navigational Watch Alarm System (BNWAS)	X	—	—	X	O	—	
6.35	Night vision goggles	O	X	—	X	O	—	Type Approval Certificate to be provided for W
6.36	Navigation aiding light	X	—	—	X	O	—	
6.37	Helicopter deck boundary light	X	—	—	X	O	—	
6.38	Helicopter deck light	X	—	—	X	O	—	
6.39	Aviation obstruction light	X	—	—	X	O	—	
7	**Towing arrangement***							
7.1	Towing eye plate/column	X	—	X	O	—	—	
7.2	Towing bridle/link	X	—	—	—	—	X	
7.3	Deltoid plate	X	—	—	—	—	X	
7.4	Mooring bridle	X	—	—	—	—	X	
7.5	Connecting shackle	X	—	—	—	—	X	
7.6	Cable chock	X	—	O	O	O	—	
7.7	Tow rope recovery device	O	X	O	O	O	—	
7.8	Recovery line	O	X	—	—	—	X	Works Approval Certificate to be provided for W
7.9	Emergency towing arrangement	X	—	X	O	O	—	
8	**Miscellaneous**							
8.1	Securing devices	X	—	—	X	O	—	
8.2	Deep-fat cooking equipment	X	—	—	X	O	—	
8.3	Lifting basket	O	X	—	X	O	—	Type Approval Certificate to be provided for W
8.4	Quick disconnect device	X	—	—	—	—	X	
8.5	Mooring tension measuring device	X	—	—	—	—	X	
8.6	Distance measuring device	X	—	—	—	—	X	

Notes: * means the products are products to be classed as required in the rules and in compliance with the relevant classification conditions.

Symbols:

1) C-Marine Products Certificates; E-Equivalent documentation; W-Manufacturer's document; X-Applicable; O-Optional.

2) DA-Design approval; TA-B-Type approval B; TA-A-Type approval A; WA-Works approval.

Appendix 3 List of Requirements for Certification and Inspection of Lifting Appliances

No.	Product Name	Document		Approval mode				Remarks
		C/E	W	DA	TA-B	TA-A	WA	
1	**Lifting appliances**							
1.1	Crane	X	—	O	O	O	—	
1.2	Derrick column	X	—	O	O	O	—	
1.3	Winches (including cargo winch, lifting winch and rotating winch)	X	—	O	O	O	—	
1.4	Rigging	X	—	—	—	—	X	
1.5	Moving parts (including block and shackle)	X	—	—	—	—	X	

Symbols:

1) C-Marine Products Certificates; E-Equivalent documentation; W-Manufacturer's document; X-Applicable; O-Optional.

2) DA-Design approval; TA-B-Type approval B; TA-A-Type approval A; WA-Works approval.

CHAPTER 4 SURVEYS DURING CONSTRUCTION

Section 1 GENERAL PROVISIONS

4.1.1 Application for survey

4.1.1.1 When applying for surveys by CCS during construction of a floating installation, the applicant is to submit a written application to the Headquarters or a local unit of CCS, prior to the commencement of construction.

4.1.2 Assessment of unit builder

4.1.2.1 When a builder for the first time applies for building a floating installation to be classed with CCS or a novel unit to be classed with CCS, the surveyor is to carry out evaluation of the production capacity of the builder, including production locations and facilities and the quality assurance system of the builder, general qualification of the construction personnel and subcontractors, and to carry out assessment of the fitness and effectiveness of the unit to be built.

4.1.3 Examination prior to commencement of construction

4.1.3.1 Prior to the commencement of construction, the surveyor is to examine and confirm the preparations by the builder for construction and surveys, e.g. plan of preparations for construction, building/welding procedure, qualifications of welders/NDT personnel, list of certification requirements for marine products, welding specifications, NDT diagrams, tightness testing diagrams, list of survey/test items, relevant materials (including steel plates, welding consumables), construction tolerance standards, subcontractors (if applicable) and technical documents required before the commencement of construction, such as drawings. Individual items, which will not affect the commencement of construction, may be examined and confirmed before the appropriate stage of construction at the discretion of the surveyor.

4.1.4 Check of other test/survey documents

4.1.4.1 The surveyor is to review or confirm the relevant documents provided by the builder in preparations for the building the unit, e.g. field tests and technical documents such as installation technology of machinery (excluding reasonable alignment of shafting) , programs of inclining test, mooring test and sea trial, etc.

4.1.4.2 The surveyor is to confirm that the measurement and test equipment used for safety systems, etc. is furnished with valid certificates, and that both the operators of such equipment and company personnel on whose service results the surveys are based have recognized qualification certificates or qualification certificates approved by or acceptable to CCS.

Section 2 SURVEYS AND TESTS

4.2.1 General requirements

4.2.1.1 The surveyor is to carry out surveys according to approved plans and confirm the actions taken by the unit builder to implement the plans, and feed different opinions of the unit builder on the implementation of approved plans and associated comments back to the plan approval department in time.

4.2.1.2 The unit builder is to prepare, as required by the rules, lists of certified products for the unit intended to be built, according to Appendices 1 to 3 of Chapter 3 of this PART and the relevant requirements of CCS Rules for Classification of Offshore Oil and Gas Process System, and submit the lists to the attending surveyor for confirmation.

4.2.1.3 New installation of materials containing asbestos is to be prohibited for all units since 1 January 2011.

4.2.2 Survey and test items

4.2.2.1 The main/hull structure survey and test items[①]:

(1) The surveyor is to confirm that the materials of the unit's structures (metals, castings, forgings, welding consumables and nonmetallic materials), mooring and anchoring equipment and systems are furnished with the certificates or documents required by the rules;

① For ship type floating installation, the survey of the hull structure portions in the ship area may be performed in accordance with Appendix 1 "Survey of the Hull of New Constructed Ships", Chapter 4, PART ONE of CCS Rules for Classification of Sea-going Steel Ships.

(2) The surveyor is to inspect the structures and equipment of the unit to ensure that the materials, scantlings, construction, arrangement and installation are in accordance with the approved plans, diagrams, specifications, calculations and other technical documents, and that the workmanship is in all aspects satisfactory;

(3) Where any scantling, material or poor material, building work, arrangement, procedure, device or equipment is found not to comply with the approved plans, diagrams, specifications or calculations, the surveyor is to require rectification thereof;

(4) For the purpose of construction survey, the surveyor is to control and inspect the main stages, and inspect the scantlings, welding quality and welding specifications of the big fold process and essential structures;

(5) Compartment structures are to be inspected to confirm integrity of the main structure of the unit;

(6) Compartment bulkheads, including transverse and longitudinal ones, are to be subject to structural test, or leak test or hose test or other alternative test;

(7) Hatches and openings together with their closing means, including operation test of remote controls, are to be inspected and tested;

(8) The modules, flare tower and helideck structures are to be inspected (if applicable);

(9) The supporting structures of essential structures/equipment such as modules, flare tower, helideck, crane, mooring and positioning arrangements, export and towing facilities are to be inspected (if applicable);

(10) The fire-prevention, fire-fighting and fire-detection arrangement and systems are to be inspected and tested after installation;

(11) The steering gear, anchoring and mooring equipment are to be inspected and tested upon completion of their installation. The test of the main steering gear and rudder stock and the test of auxiliary steering gear are to respectively comply with 13.1.5.2 and 13.1.5.3 of PART THREE of CCS Rules for Classification of Sea-going Steel Ships;

(12) The rudder centerline and propulsion shafting centerline are to be confirmed;

(13) The unit’s main dimensions, load line marks, draft scale and other marks are to be confirmed;

(14) Inclining test is to be attended, including inspection of the unit’s conditions before the test and assessment after the test. The unit’s lightweight and center of gravity are to be confirmed;

(15) Items related to class notations are to be inspected and tested, including confirming that the materials, equipment, devices and systems required by the rules are in accordance with the approved plans, calculations and other technical documents, that they are furnished with the certificates required by rules and that the workmanship is in all aspects satisfactory;

(16) Mooring tests and sea trials are to be attended;

(17) Other items to be inspected and tested as considered necessary by CCS.

4.2.2.2 General machinery survey and test items:

(1) The surveyor is to confirm that the machineries, equipment, devices and systems as required by the rules are all furnished with the certificates or documents required by the rules;

(2) The surveyor is to inspect the machineries, equipment, devices and systems to ensure that their arrangement, installation and workmanship are in all respects in accordance with the approved plans, diagrams, specifications, calculations and other technical documents;

(3) The surveyor is to attend the inspection and test of the manufacturing and installation of piping, including strength test in the workshop and tightness test after installation on board the unit;

(4) The pump and piping systems, such as those of fuel oil, lubricating oil, cooling, heating, bilge, ballasting, fire-fighting, ventilation, measurement, venting, crude oil, stripping, inert gas, export systems etc., are to be inspected and function tested after installation;

(5) Machineries, equipment, devices and systems, such as main engines, propulsion shafting, propellers, gearboxes, generating sets, boilers, pressure vessels, steering gear, windlasses, air compressors, heat exchangers, sea valves, overboard discharge valves, etc., are to be inspected and function tested after installation;

(6) The control and remote control systems of main and auxiliary engines and other auxiliary machinery and devices are to be inspected and function tested after installation;

(7) The remotely controlled means of closing, such as emergency closing means of fuel oil tanks, closing of ventilation systems and openings, are to be inspected and function tested after installation;

(8) Equipment, devices and systems required by class notations are to be inspected and function tested after installation;

(9) The surveyor is to attend the mooring tests and sea trials;

(10) The arrangement of fire pumps and fire mains is to be inspected and separate operation of each fire pump (including emergency fire pumps) is to be checked to ensure necessary pressure for fire mains in any place of the unit;

(11) Fixed fire-extinguishing systems, special arrangement of machinery and boiler spaces, mechanical ventilation and exhaust fans, and the operation of remotely controlled stop devices are to be inspected;

(12) Other items to be inspected and tested as considered necessary by CCS.

4.2.2.3 Survey and test items for electrical installation:

(1) The surveyor is to confirm that the electrical installation and systems as required by the rules are all furnished with product certificates or documents required by the rules;

(2) The surveyor is to inspect the electrical installation such as generators, motors, cables, main and emergency switchboards to ensure that their arrangement, installation and workmanship are in all respects in accordance with the approved plans, diagrams, specifications, calculations and other technical documents;

(3) Electrical installation such as generators, motors, cables, main and emergency switchboards are to be inspected and tested after installation;

(4) The steering systems including emergency steering system are to be inspected and tested;

(5) Internal communication systems and alarm systems on board the unit are to be inspected and tested;

(6) Emergency sources of power including temporary emergency power supply are to be inspected and tested;

(7) Inspections and tests of equipment, devices and systems as required by class notations, such as inspection of mechanical automatic control systems and remote control systems—control, safety and alarm systems of the main and auxiliary engines, other auxiliary machinery and boilers, inspection of dynamic positioning system, failure mode and effect analysis (FMEA) test and function test, are to be carried out after installation;

(8) Grounding method and inspection of portable equipment and inspection of the grounding of aluminum structures are to be carried out;

(9) The surveyor is to attend the mooring tests and sea trials;

(10) Other items to be inspected and tested as considered necessary by CCS.

4.2.2.4 Survey and test items for oil, gas and water process system:

Surveys and tests are to be performed in accordance with the relevant requirements of CCS Rules for Classification of Offshore Oil and Gas Process System.

4.2.2.5 Survey and test items for protection against fire and explosion:

(1) General arrangement and hazardous areas of the unit are to be inspected for compliance with design plans;

(2) The surveyor is to confirm that the fire resistant materials of structures, fire and explosion prevention equipment and systems required by the rules are furnished with product certificates or documents required by the rules;

(3)Means of escape and escape routes are to be inspected;

(4) The arrangement and technical requirements of ventilation systems as well as the fire dampers are to be checked;

(5) The fire integrity and insulation of fire divisions including fire walls and fire decks are to be inspected;

(6) Fire control plans and their display are to be inspected;

(7) The layout and ventilation of the fire extinguisher room are to be inspected;

(8) Fixed fire-extinguishing systems are to be inspected and tested;

(9) Firefighting appliances, fireman's outfits and emergency escape breathing apparatuses are to be inspected;

(10) Fire detection and alarm systems are to be inspected and tested;

(11) Flammable and toxic gases detection and alarm systems are to be inspected and tested;

(12) Explosion-proof equipment in hazardous areas is to be inspected and tested after installation;

(13) Emergency shutdown system is to be inspected and tested;

(14) Inert gas system is to be inspected and tested;

(15) Other items to be inspected and tested as considered necessary by CCS.

4.2.2.6 Survey and test items for class notations (where applicable)

Surveys and tests are to be performed in compliance with the applicable rules, guidelines or guidance notes listed in Table 2.3.2.5 of this PART.

4.2.3 Requirements for tests

4.2.3.1 The tightness test of compartments is to be in accordance with the relevant requirements in Section 3 of this Chapter.

4.2.3.2 Tightness test of machineries, boilers, pressure vessels and piping systems is to be carried out after installation. The duration of test is general to be not less than 3 to 5 minutes, with the test pressure as required in PART FIVE of the Rules.

4.2.3.3 Inclining test

(1) The inclining tests for all floating installation are to be carried out after completion of construction to determine the stability particulars which will be provided to the operators so that they can promptly and conveniently obtain the related stability information of the unit under various operational conditions. The conditions, requirements and results evaluation of the inclining test are to be in accordance with the requirements of Section 1, Chapter 2, PART THREE of the Rules or the requirements stipulated by the Administration.

4.2.3.4 Mooring tests and sea trials are to be carried out according to the approved test program.

Section 3 TIGHTNESS TESTING OF COMPARTMENTS

4.3.1 General requirements

4.3.1.1 The requirements in this Section apply to the following compartments and structures:

(1) Gravity tanks①;

(2) Watertight or weathertight structures.

4.3.1.2 The purpose of various tests required by this Section is to verify the watertightness of liquid tanks and watertight boundaries of a floating installation under construction or a floating installation which has undergone any major alteration or repair②, the adequacy of liquid tank structures and the weathertightness integrity of the unit's structures/outfittings.

4.3.1.3 Testing of structures not listed in Table 4.3.4.1 will be specially considered.

4.3.2 Definitions

4.3.2.1 For the purpose of this Section:

① Gravity tanks mean the liquid tanks having a vapor pressure of not more than 70 kPa.
② Major repair refers to the repairs that affect structural integrity.

(1) Structural test is a hydrostatic test or hydropneumatic test carried out to demonstrate the adequacy of liquid tank structures.

(2) Leak test is the test to verify the tightness of boundaries. Unless stated otherwise, this test may be a hydrostatic test/hydropneumatic test, air test or hose test.

(3) Hydrostatic test (leak test and structural test) is a test during which a given space is filled with liquid to the specified pressure head.

(4) Hydropneumatic test (leak test and structural test) is a test during which the space is partially filled with liquid and a pneumatic pressure is applied on the liquid surface.

(5) Hose test (leak test) is a test to verify the tightness of joints through water jetting.

(6) Air test (leak test) is a test to verify the tightness by air pressure differential and leak detection means, which includes air tests of liquid tanks and joints, such as compressed air test and vacuum test.

(7) Compressed air test of fillet welds (leak test) means the air test of T-joint fillet welds with leak-indicating methods.

(8) Vacuum test (leak test) is a test method with leak-indicating methods and used for fillet welds or butt welds, during which a vacuum box is placed on the welded joint and a desired vacuum level is established inside the box to detect any leak.

(9) Ultrasonic test (leak test) is a test method to verify the tightness of joints using ultrasonic waves.

(10) Penetrant test (leak test) is a test method to verify that no continuous leak occurs to the boundaries of compartments by using low-surface-tension liquid. This test is only applicable to full penetration fillet welds or butt welds.

4.3.3 Test methods

4.3.3.1 General requirements:

Tightness test of compartments is to be carried out in the presence of the surveyor when the installation of all doors, windows, covers and all penetrations including pipe connection fittings is approaching the completion stage and before any ceiling panel is installed or cement is applied in the joints. The specific test requirements are given in 4.3.4 and Table 4.3.4.1. The time to apply the coating and requirements on safe access to the joints are given in 4.3.5, 4.3.6 and Table 4.3.4.2.

4.3.3.2 Structural test

(1) Type and time of test

① The detailed requirements of structural test are given in Table 4.3.4.1. The structural test may be hydrostatic test in accordance with 4.3.4.1, and where the hydrostatic test is unable to be performed due to restrictions of actual conditions (e.g. dock strength, liquid density, etc.), the hydropneumatic test specified in 4.3.4.2 may be accepted as an equivalent method.

② If the results of leak test are satisfactory, the structural test for verification of adequacy of structure design may be carried out with the floating installation in floating condition.

(2) Number of structural tests

① For identical structures of each floating installation (i.e. liquid tanks verified by the attending surveyor to have identical structural design, construction and construction process), at least one tank is to be subject to structural test and the remaining subject to air test.

However, if the structural adequacy of liquid tanks of a unit has been verified through structural test required by Table 4.3.4.1, other tanks of other floating installation of the same series (i.e. sister floating installation constructed by the same builder), which have the same construction as that of the tested tanks, may be exempted from such structural test, but the watertightness of all boundaries of the tanks of the units being exempted from the said test is to be verified through leak test and a thorough examination. For sister floating installation having an age of several years after construction of the last unit of the series is completed, abovementioned exemption needs to be reconsidered. In any case, at least one liquid tank of each floating installation is to be subject to structural

test for verification of structural adequacy.

② Structural test may be waived for watertight boundaries of non-liquid-tank spaces (except for chain lockers), however, the watertightness of all boundaries of such spaces exempted from structural test is to be verified through leak test and through examination.

③ After structural test of the first liquid tank is completed, the remaining tanks may also be subject to structural test, where necessary.

④ The liquid tanks to be structural tested are to be so selected that all representative structural members will be subject to the expected tensile and compression tests.

4.3.3.3 Leak test

(1) For leak test specified in Table 4.3.4.1, the hose test, liquid tank air test, compressed air test of fillet welds and vacuum test described in 4.3.4.3 to 4.3.4.6, or their combinations, may be accepted. Hydrostatic test or hydropneumatic test may also be accepted as the means of leak test, provided that the requirements of 4.3.5 and 4.3.6 are to be complied with. For items with note 3 in Table 4.3.41, hose test may also be accepted.

(2) Air test of joints may be performed in separate construction stages, provided that all works which may affect the tightness of joints have been completed prior to the test. Also see 4.3.5.1 (application of final coating), 4.3.6 (safe access to joints) and Table 4.3.4.2.

4.3.4 Test requirements

4.3.4.1 Hydrostatic test

(1) Unless use of other liquids is approved otherwise, hydrostatic test is to be carried out using freshwater or seawater (whichever is suitable for the tested space) at the test pressure specified in Table 4.3.4.1.

(2) Special consideration is to be given to the test pressure head for hydrostatic test of high-density liquid cargo tanks using freshwater or seawater.

4.3.4.2 Hydropneumatic test

(1) An approved hydropneumatic test is an approved test combining liquid pressure head and air pressure, which is to simulate, as far as practicable, the actual loading of the tank. The requirements and recommendations in 4.3.4.4 with regard to air test of liquid tanks also apply to hydropneumatic test.

4.3.4.3 Hose test

(1) During hose test, the minimum pressure at the hose nozzle is to be at least equal to $2 \cdot 10^5$Pa, and the nozzle diameter is to be not less than 12mm at a maximum distance of 1.5m from the connection.

(2) Where hose test is not practicable due to the possibility of insulation of mechanical and electrical installation or damage to outfittings caused by such test, careful visual inspection of the welded joints may be accepted as an alternative to the hose test, with the support of tests similar to dyed penetrant test or ultrasonic leak test or equivalent test, when deemed necessary.

4.3.4.4 Air test on liquid tanks

(1) All welded joints of boundaries, connectors for installation and penetrations including pipe connection fittings are to be examined at a pressure differential which is above the atmospheric pressure and not less than $0.15 \cdot 10^5$Pa following the approved procedure. Means of leak indication are to be available during the examination.

(2) It is recommended that the pressure inside a liquid tank be raised to $0.20 \cdot 10^5$Pa and this pressure level be kept for more than one hour to allow the pressure to equalize，and in the meanwhile, at least one person be designated to be on watch near the liquid tank until the tank internal pressure is reduced to the test pressure.

(3) A U-tube filled with water up to the height corresponding to the test pressure is to be fitted. The U-tube is to have a cross section larger than that of the air supply pipe. In addition to the U-tube, the test pressure is also to be verified by means of one master pressure gauge or by other approved means.

4.3.4.5 Compressed air test on fillet welds

In this air test, compressed air is filled from one end of the fillet weld and the pressure at the other end of the weld

is measured by a pressure gauge. The arrangement of pressure gauges is to be such that each end of all welds in the tested area can be verified at an air pressure of at least $0.15 \cdot 10^5$Pa.

Remark: When leak test of partial penetration welds is required and the area of weld root is large enough (i.e. 6~8mm), compressed air test may be applied in the same way as that for fillet welds.

4.3.4.6 Vacuum test

In this test, a vacuum box (vacuum tester) together with an air nozzle, pressure gauge, testing window and leak indicator is placed on the welded joint. Then the air inside the box is removed with an air extracting pump to establish a vacuum level of $0.20 \cdot 10^5$~$0.26 \cdot 10^5$Pa inside the box.

4.3.4.7 Ultrasonic test

For this test, an ultrasonic transmitter is arranged inside a tank and an ultrasonic wave receiver is arranged outside the tank. Where the receiver detects sound waves from certain locations, it indicates that leak exists in these locations of the tank.

4.3.4.8 Penetrant test

Butt welds are tested by applying low surface tension liquid on one side of the tank. If liquid has not been detected on the other side of the boundary within a specified period of time, it indicates that there is no leak at the tank boundary.

4.3.4.9 Other test methods

Acceptance of other test methods may be considered by CCS, but the applicant is to submit detailed information of these test methods prior to tests.

4.3.5 Application of coating

4.3.5.1 Final coating

(1) For butt welds produced by means of automatic welding, the final coating may be applied at any time before leak test of the boundaries of the space is completed.

(2) For other types of welded joints, the final coating is to be applied after leak test of the welded joints is completed. See also Table 4.3.4.2.

(3) The surveyor may require leak test to be conducted before final coating is applied on automatically welded butt joints.

4.3.5.2 Temporary coating

(1) Any temporary coating that might conceal defects or leaks is to be applied at the time specified for the application of final coating. This requirement does not apply to shop primer.

4.3.6 Safe access to joints

For the purpose of leak test, safe access for examination of all welded joints is to be provided. See also Table 4.3.4.2.

Test Requirements for Liquid Tanks and Boundaries Table 4.3.4.1

No.	Liquid tanks and boundaries to be tested	Type of test	Test pressure head or pressure	Remark
1	Double bottom tanks	Leak test and structural test[*1]	The greater of the following: Head of water up to the top of overflow pipe, 2.4m head of water above the highest point of tank[*2], or head of water up to bulkhead deck	
2	Double bottom empty tanks	See Regulation 11, Chapter II-1 of SOLAS [*5,7]		
3	Double side liquid	Leak test and	The greater of the following:	

	tanks	structural test [*1]	Head of water up to the top of overflow pipe, 2.4m head of water above the highest point of tank[*2], or head of water up to bulkhead deck	
4	Double side empty tanks	See Regulation 11, Chapter II-1 of SOLAS [*5,7]		
5	Deep tanks other than the spaces listed in the Table	Leak test and structural test [*1]	The greater of the following: Head of water up to the top of overflow pipe, or 2.4m head of water above the highest point of tank[*2]	
6	Cargo oil tanks	Leak test and structural test [*1]	The greater of the following: Head of water up to the top of overflow pipe, or 2.4m head of water above the highest point of tank[*2], or head of water up to the top of tank[*2] plus the set pressure of relief valve	
7	Fore peak and after peak used as tank	Leak test and structural test [*1]	The greater of the following: Head of water up to the top of overflow pipe, or 2.4m head of water above the highest point of tank[*2]	After peak tank is to be tested after installation of stern tube.
8	a. Fore peak used as empty tank	See Regulation 11, Chapter II-1 of SOLAS [*5,7]		
	b. After peak used as empty tank	Leak test	See 4.3.4.4~4.3.4.6 (if applicable)	After peak tank is to be tested after installation of stern tube.
9	Cofferdams	Leak test	See 4.3.4.4~4.3.4.6 (if applicable)	
10	a. Watertight bulkheads	Leak test	See 4.3.4.3~4.3.4.6 (if applicable)[*5]	
	b. Superstructure end bulkheads	Leak test	See 4.3.4.3~4.3.4.6 (if applicable)	
11	Watertight doors below freeboard or bulkhead deck	Leak test [*4,6]	See 4.3.4.3~4.3.4.6 (if applicable)	
12	Double-plate rudder blade	Leak test	See 4.3.4.4~4.3.4.6 (if applicable))	
13	Shaft tunnels outside deep tank areas	Leak test [*3]	See 4.3.4.3~4.3.4.6 (if applicable)	
14	Weathertight hatch covers and their closing means	Leak test [*3,6]	See 4.3.4.3~4.3.4.6 (if applicable)	Except for hatch covers sealed with canvas and strips.
15	Chain locker	Leak test and structural test	Head of water up to the top of spurling pipe	
16	Independent tanks	Leak test and structural test [*1]	The greater of the following: Head of water up to the top of overflow pipe, or	

			0.9m head of water above the highest point of tank*	
17	Ballast ducts	Leak test and structural test *1	The greater of the following: The maximum pressure of ballast pump, or set pressure of the safety valve	

Notes:

*1 With the agreement of CCS, for identical structures of each floating installation (i.e. structures of identical design and construction process), at least one tank is to be subject to structural test and the remaining subject to air test. However, if the structural adequacy of liquid tanks of a unit has been verified through structural test, other tanks of other floating installation of the same series (i.e. sister floating installation constructed by the same builder), which have the same construction as that of the tested tanks, may be exempted from such structural test, but the watertightness of all boundaries of the tanks of the units being exempted from the said test is to be verified through leak test and a thorough examination. In any case, at least one liquid tank of each floating installation is to be subject to structural test for verification of structural adequacy (see 4.3.3.3.2 (1)).

*2 The top of tank means the deck forming the top of the tank other than any hatch.

*3 Hose test may be accepted as a test method. See 4.3.2.1.

*4 Where the watertightness of watertight doors has not been verified through type test, water filling test is to be carried out for the watertight spaces.

*5 Where hose test is not practical, the test methods listed in 4.3.4.4 to 4.3.4.9 plus careful visual inspection may be accepted as an alternative to the hose test, provided that the adequacy of these alternative tests is to be verified.

*6 The test methods listed in 4.3.4.7 to 4.3.4.9 may be accepted as an alternative to the hose test, provided that the adequacy of these alternative tests is to be verified.

*7 With the agreement of CCS, if the watertightness of all boundaries of a compartment or a tank have been confirmed through proper tests and the structural strength of the boundaries has been guaranteed, the structural test may be waived.

Requirements on Application of Safe Access, Coating, Leak Test of Welded Joints of Different Types Table 4.3.4.2

Type of welded joint		Leak test	Coating*1		Safe access*2	
			Before leak test	After leak test and before structural test	Leak test	Structural test
Butt weld	Automatic	Not required	Allowed	Not applicable	Not required	Not required
	Manual or semi-automatic	Required	Not allowed	Allowed	Required	Not required
Fillet weld	Boundaries, including penetrations	Required	Not allowed	Allowed	Required	Not required

Notes:

*1 Coating means internal paint (liquid tank, cargo tank coating) and external paint (on shell plating/deck) as applicable and does not refer to shop primer;

*2 Temporary means of access for execution of leak test.

Section 4 NON-DESTRUCTIVE TESTING OF STRUCTURAL WELDS

4.4.1 General requirements

4.4.1.1 For non-destructive test (NDT) of unit structures, radiographic, ultrasonic, magnetic particle or penetration testing will be selected for different locations respectively, other methods, if used, are to be subject to agreement

by CCS.

4.4.1.2 The provisions in this Section apply to the NDT of welds, casting and forging for steel, aluminum and copper and their alloy products. NDT of other metallic materials are to be agreed with CCS.

4.4.2 Category of testing

4.4.2.1 Category of weld testing is to be determined based on factors such as failure consequence and complexities of joints. Generally, it may be determined according to the types of components as indicated in Table 4.4.2.1.

Category of Testing Table 4.4.2.1

Category of testing	Category of structure
I	Special
II	Primary
III	Secondary

4.4.2.2 The weld connection between two components of different categories is to be assigned an inspection category according to the highest of the jointed components. For stiffened plates, unless otherwise specified, the weld connection of the stiffener, stringer and girder web to the plate may be inspected according to inspection category III.

4.4.2.3 Fatigue critical details within category primary and secondary structures are to be inspected according to the requirements in category I.

4.4.2.4 Welds in fatigue critical areas not accessible for survey during operation are to be inspected according to the requirements in category I.

4.4.3 Time of inspection

4.4.3.1 NDT of welds is to be conducted after all welds or post weld heat treatments have been completed and the welded pieces have been cooled to ambient temperature. The timing of delay described in 4.4.3.2 to 4.4.3.4 is to be started from the time when the welded piece is cooled to ambient temperature.

4.4.3.2 For high strength steels with yield strength less than 420 N/mm^2, the testing is to be started 24 hours after the welding or post weld heat treatment has been completed. For normal strength base metals less than 100mm in thickness, delayed-time inspection may not be considered.

4.4.3.3 For quenched and tempered steels having yield strength greater than or equal to $420N/mm^2$, the NDT of welds is generally to be started 48 hours after the welding or heat treatment has been completed.

4.4.3.4 Where the thickness of base metal exceeds 100mm, the time delayed for inspection is to be determined appropriately considering the temperatures of operation, thickness of the member and structural restrictions. It is recommended that this time delay be no less than 72 hours.

4.4.4 Extent of NDT

4.4.4.1 The category and extent of weld inspections are to be based on the types, level and direction of design stress, the importance of the influence of the members on overall structural integrity and redundancy of the members, as well as accessibility for in-service survey. In addition, when the extent and location of the inspections are determined, the positions of sections, manual welding or automatic welding, starts and stops of the welds are to be considered in addition to the abovementioned design factors.

4.4.4.2 The category and extent of NDT are to be clearly indicated on the plans.

4.4.4.3 Unless otherwise agreed, NDT is normally carried out to an extent not less than those specified in Table 4.4.4 and required in this Section.

4.4.4.4 For nondestructive testing of ship parts of ship-type floating installation, the provisions in Table 4.4.4 shall be replaced by the following provisions:

(1) For the hull strength deck and outer plate within 0.6L in the ship, the number of films taken can be calculated according to the following formula:

$$n=0.16k\,(i+0.1W_T)+0.04W_L$$

Where, n - the number of films taken within 0.6L in the ship, Zhang;

k - average width of 0.6L inner plate line in the ship, m, which can be calculated as follows:

$$k=\frac{\text{Perimeter of ship at cross section (except opening)}}{\text{Number of plate rows seen in cross section}}$$

i——Total number of intersections between longitudinal butt joints and transverse butt joints within 0.6L amidships;

W_T——Total length of transverse butt joints within 0.6L amidships, in meter;

W_L——Total length of longitudinal butt joints for joining of hull sections within 0.6L amidships, in meter.

The density of RT films is to be reduced progressively as the grade of steel material decreases from higher level to lower level. For grades of steel materials, refer to the relevant requirements in Chapter 1, PART TWO of CCS Rules for Classification of Sea-going Steel Ships.

The films are to be arranged in parallel to the transverse butt joint in areas where the longitudinal butt joints intersect with the transverse ones.

(2) For strength decks and outer plating of the hull outside the range of 0.6L amidships, the required number of radiographic films is to be approximately 10% to 20% of the number of films for areas specified in (1) of this part, and examination by ultrasonic test at an appropriate ratio may be allowed.

The density of examination for critical areas (e.g. coffin plate, fore post and stern post areas, fore part portions subject to wave impact and ice-strengthened parts, etc.) is to be greater than that for other areas.

(3) The NDT requirements for butt welded joints of ship bottom, sides and deck longitudinals are as follows: in areas within 0.4L amidships, one joint out of every ten joints is to be subject to UT, and in areas outside the range of 0.4L amidships, one joint out of every twenty joints is to be subject to UT. Random RT of butt joints may be performed where necessary.

(4) Except for the hull structures described in (1) to (3) above, the welded joints in the following critical locations are also to be subject to random NDT by appropriate method:

① Full penetration fillet welds of hull structures required by the rules, such as:

a. Connections of bulkheads with decks, bottom plating and paneling of the top stool or lower stool;

b. Connection between the main engine bedplate and web plate;

c. Connections of rudder arm and propeller shaft bracket to the hull structure;

d. Connections of rudder sealing plates to rudder castings;

e. Welds of reinforcing members which are welded onto strength decks, sheer strake and bottom plating within 0.6L amidships and have an opening of greater than 300mm.

② Butt welds of inner bottom plating, other continuous decks and bulkheads and their continuous longitudinals;

③ At least 50% of the total length of welded joints in the critical locations determined by direct calculation of structural strength or fatigue strength evaluation;

④ Other force-bearing welds which are deemed important, withstand high stress or exert serious effects in the event of failure;

⑤ Cross intersections of welded joints on liquid cargo tank bulkheads;

⑥ Surface crack inspection is to be performed on the circumferential joints of liquid cargo tanks and the length to be inspected is to be at least 10% of the total length of the circumferential joint of the tank;

⑦ The welded joints of the strength deck/bottom longitudinal within the regional length of the module

respectively with the vertical stiffeners of the transverse bulkhead are to be subject to surface crack inspection. The length to be inspected is to be at least 20% of the total length of the welded joint.

4.4.4.5 For welds that are examined for only a given percentage, the welded joints to be inspected are to be selected taking into account their importance of to the structural integrity, i.e. the relatively important members and node welds are to be covered in the inspection. In addition, the welded joints selected for NDT are to be sufficiently representative, and the lower the extent of NDT is, the more prudent the selection of areas to be inspected is to be.

4.4.4.6 Where it is deemed appropriate, ultrasonic test may be replaced by radiographic test, and vice versa. Where the defects displayed by ultrasonic test are obscure or illegible, an additional radiographic test is to be performed.

4.4.4.7 The NDT is to cover the starts and stops of automatically welded joints.。

4.4.4.8 The ultrasonic test of welds should include the examination of the areas adjacent to the welds for laminations and the scanning for transverse defects in the welds and base material.

4.4.4.9 The plates which are subject to significant tensile stresses in the thickness direction in way of cross joints, are to be ultrasonically tested after welding to ensure that plates are free of lamellar tearing. Where Z-direction steel plates are used, the examination may be reduced to 2% to 5% coverage.

4.4.4.10 Where defects which are not allowed to exist have been identified within the welds through NDT and it is believed that these defects are likely to propagate, the inspection along the direction of propagation (on one end or both ends) is to be extended to the location adjacent to qualified welds.

4.4.4.11 Increase of extent of inspection

(1) For welds that are examined for only a given percentage, if severe defects (i.e. planar defects, cracks or excessive slag inclusion) occur repeatedly, all welds made with the same welding procedure during this period are to be subject to 100% inspection;

(2) For welds that are examined for only a given percentage, regardless of what NDT method is adopted, if the weekly defect rate, including all types of defects, exceeds 5%, the inspection extent is to be expanded for all welds made with the same welding procedure during this period:

① Where the defect rate exceeds 10%, the inspection extent is to be expanded to 100%;

② Where the defect rate does not exceed 10% (magnetic particle inspection exceeding 1%), the inspection extent is to be doubled; and if the defect rate of the extended inspection still exceeds 5%, the inspection extent is to be expanded to 100%.

Note: Defect rate means the ratio of defect length to the length of welds inspected with the same NDT method. When defect rate is calculated, the tested length of welds after repairs is not included.

4.4.4.12 Reduction of extent of inspection

(1) The extent of inspection may be reduced appropriately (upon approval by CCS surveyors), based on the experience and documented records of similar joints, provided that the defect rate for UT or RT is less than 2.0% and that for MT is less than 0.2% during the latest examination of "welds in the length of 100m". "The latest examination of welds in the length of 100m" is to be constantly updated every week. If the defect rate exceeds the limits given above, the extent of NDT is to be reinstated to the normal and it may not be reduced;

(2) A possible reduction in the extent of NDT is to be considered for each welding method and each production area respectively.

Minimum NDT Extent of Structural Weld Table 4.4.4

Category of structure	Category of test	Type of connection	Visual inspection	RT①	UT②	MT③
Special	I	Butt weld	100	10～20	100	100
		Cross/T, full penetration weld	100	-	100	100
		Cross/T, fillet weld/deep penetration weld	100	-	-	100

Primary	II	Butt weld	100	2～5	20⑤	20⑤
		Cross/T, full penetration weld	100	-	20⑤	20④⑤
		Cross/T, fillet weld/deep penetration weld	100	-	-	20④
Secondary	III	Butt weld	100	-	2～5	2～5
		Cross/T, full penetration weld	100	-	2～5	2～5
		Cross/T, fillet weld/deep penetration weld	100	-	-	0～5

Notes:

① With agreement, part or all of the tests may be replaced by UT;

② For plates of 8mm in thickness and below, UT should not be performed and RT is to carried out instead;

③ For non-ferromagnetic materials, liquid penetrant test is adopted;

④ For welded joints on the main structure without high residual stresses, 2%~5% inspection ratio is acceptable;

⑤ The extent of inspection of welds of pipe nodes is to be increased to 100% UT and MT;

⑥ RT, UT and MT mean radiographic test, ultrasonic test and magnetic particle testing respectively.

4.4.5 Acceptance criteria for weld testing

4.4.5.1 The quality of weld surface and interior quality of welds for special structural members (category of test I) and primary structural members (category of test II) of a floating installation are in general to comply with the relevant requirements for quality Class B in ISO5817-2003, and the general structural members (category of test III) are to comply with the relevant requirements for quality Class C. The quality of weld surface and interior quality of welds for ship portion of a ship type floating installation are to comply with the relevant requirements of CCS rules for ships. Use of other standards is to be approved by CCS.

Section 5 DOCUMENTATION

4.5.1 Reports

4.5.1.1 The unit builder is to submit the reports and records related to inspection, test and measurement for the unit to the surveyor and the owner.

4.5.1.2 The surveyor is to attend the inspection and testing of the specified items, review the relevant inspection, testing, measuring reports and records submitted by the unit builder, and then issue to the applicants various survey reports, records, date and appropriate certificates for the unit's main structure and equipment, machinery, electrical installation in the format specified by the Headquarters of CCS and report the same to the Headquarters.

4.5.1.3 The unit builder is to submit the as-built construction drawings referred to in 4.5.2.2 of this Section to the surveyor for confirming compliance with 4.5.2.1.

4.5.2 Documents and information

4.5.2.1 The as-built construction documents such as relevant drawings, diagrams and tables, specifications and calculations are to be in compliance with the actual conditions of the unit.

4.5.2.2 At least one set of the following as-built construction drawings is to be maintained on board the unit and in the shore-based management respectively:

(1) Main drawings

① General layout

② Capacity plan

③ Hydrostatic curves

④ Loading manual

⑤ Fire control plan

⑥ Hazardous area classification plan

(2) Unit structural plans

① Basic structural plan

② Main section plan

③ Deck structural plan

④ Shell expansion plan

⑤ Basic structural plans for modules

⑥ Plan of supporting structures of positioning mooring system

⑦ Rudder and rudder stock plan (where applicable)

⑧ Hatch cover plans of crude oil tank

(3) Bilge, fire-fighting and ballast piping diagrams

(4) Crude oil piping diagrams

4.5.2.3 The following as-built construction documents and information are to be maintained on board the unit and in its owner company and/or in the shore-based management respectively:

(1) Technical information of the unit

① Specifications, calculations and relevant diagrams of the float hull and equipment of the unit

② Unit's operation manual or other guidelines

③ Stability information

④ Unit construction specifications, etc.

(2) Certificates of the unit and its equipment including installation and systems, classification certificates, survey reports and records, and other specific certificates.

4.5.2.4 In general, the date of completion for construction surveys is to be recorded as that for construction. Other important dates for the unit, e.g. the date of signing the construction contract, the date of commencement of construction, the date of keel laying, the date of launching and the date of delivery are also to be recorded.

4.5.2.5 The documents and information stated in 4.5.2.2, 4.5.2.3 and 4.5.2.4 above and subsequent documents and information related to them are to be kept by all parties concerned, such as the unit, the owner or manager of the unit, during the lifetime of the unit.

4.5.2.6 CCS is to maintain the drawings and documentation referred to in 4.5.2.1 to 4.5.2.4 that are related to the classification management of a floating installation at least during the period in which the unit remains classed with CCS.

CHAPTER 5 INSPECTION AFTER CONSTRUCTION

Section 1 GENERAL PROVISIONS

5.1.1 General requirements

5.1.1.1 For the purpose of maintaining the validity of certificates, units which have been classed with CCS are to be subject to various surveys as specified in Section 2 of this Chapter, as appropriate. Such surveys may be extended by CCS surveyors at the professional judgment, and the owner is to provide appropriate survey conditions and make arrangements accordingly and has the obligation to pay the expenses related to extending the surveys.

5.1.1.2 If any damage or defect affecting the validity of certificates is found during any of the surveys, the surveyor is to inform the owner or his representative of the recommendations in time when he deems it necessary. When such recommendations are not dealt with, the surveyor is to report this to the Headquarters of CCS immediately.

5.1.1.3 It is the responsibility of the owner to apply to CCS for all surveys necessary for the maintenance of the validity of certificates and to make preparations and take safety precautions for surveys in accordance with the requirements of the Rules.

5.1.2 Reclassification

5.1.2.1 When reclassification is desired for a unit for which the class previously assigned by CCS has been cancelled, CCS will carry out a survey appropriate to the age of the unit and the specific conditions of the original class. If the unit is found to be in good conditions and in compliance with CCS rules during the survey, CCS will reinstate the original class or assign other class as appropriate. The date of any reclassification will be recorded in the Register of Ships or the supplements thereto.

5.1.3 Damage and repair surveys

5.1.3.1 Any damage to the structure, equipment or machinery (including electrical installation) of the floating installation to be classed, which may affect the classification, is to be reported to CCS without delay. CCS will appoint the surveyor(s) to board the unit in time to carry out damage surveys at a suitable port which the unit arrives or at a suitable operating location, to an extent considered by the surveyor(s) necessary for ascertaining the extent and cause of the damage.

5.1.3.2 Any repair of the structure, equipment or machinery (including electrical installation) of the floating installation to be classed is to be carried out in the presence of CCS surveyors. If repairs are carried out at a place where services of a CCS surveyor are not available, CCS is to be informed in time by the owner/managing company.

5.1.4 Alteration and modification surveys

5.1.4.1 Plans and particulars of any proposed alteration or modification to the approved scantlings or arrangement of the structure, equipment machinery (including electrical installation) of the floating installation to be classed are to be submitted to CCS for approval. Such alterations or modifications and related items are in general to comply with the provisions of the currently effective CCS rules or at least the requirements of the previously applicable rules.

5.1.4.2 Alterations or modifications of a major character, if any, are to comply with the relevant provisions of Section 14 of this Chapter.

5.1.5 Definitions

5.1.5.1 For the purpose of this Chapter, the following definitions apply to all units:

(1) A ballast tank is a tank which is used specially for the carriage of seawater ballast;

(2) Spaces are independent compartments, including crude oil tanks, liquid tanks, cofferdams and voids paces adjoining crude oil tanks, deck and outer shell;

(3) A transverse section include all longitudinal members such as plating, longitudinal and girders at the deck, side shell, bottom, inner bottom and longitudinal bulkhead (also including hopper side plating where applicable). For transversely framed units, a transverse section includes the adjacent frames and their end connections in way

of the transverse sections;

(4) Representative spaces are those which are expected to reflect the conditions of other spaces of similar type and service and with similar corrosion protection systems. When representative spaces are being selected, consideration is to be given to the service and repair history and identifiable critical and/or suspect areas;

(5) Suspect areas are locations showing substantial corrosion and/or are considered by the surveyor to be prone to rapid wastage;

(6) Substantial corrosion is an extent of corrosion such that assessment of corrosion pattern indicates wastage in excess of 75% of the allowable margins, but within acceptable limits;

(7) A corrosion prevention system is normally considered a full hard protective coating. For the purpose of this Chapter, a full hard protective coating is usually to be epoxy resin coating or equivalent coating. Other coating systems may be considered acceptable as alternatives provided that they are applied and maintained in accordance with the manufacturer's specifications;

(8) A prompt and thorough repair is a permanent repair completed at the time of the survey to the satisfaction of the surveyor, therein removing the need for imposition of any associated condition of class;

(9) Air pipes heads on exposed decks are those extending above the freeboard deck or superstructure decks;

(10) An overall survey is a survey intended to report on the overall condition of the main structure and determine the extent of additional close-up surveys;

(11) A close-up survey is a survey where the details of structural components are within the close visual inspection range of the surveyor (i.e. within the reach of hand);

(12) Special consideration or specially considered (in connection with close-up survey and thickness measurement) means sufficient close-up inspection and thickness measurement are to be performed at least to confirm the actual average condition of the structure under the protection of coating;

(13) Coating condition:

GOOD: Condition with only minor spot rusting;

FAIR: Condition with local breakdown at the edges of stiffeners and weld connections and/or light rusting over 20% or more of areas under consideration, but less than that 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.

(14) Extensive corrosion is an extent of corrosion consisting of hard and/or loose scale, including pitting, over 70% or more of the areas under consideration, accompanied by evidence of thickness diminution;

(15) A double hull floating installation is a floating installation fitted with crude oil tanks that are constructed with a double hull protection, which covers the entire crude oil area and consists of the double side tanks and double bottom spaces used for holding ballast water or as void spaces.

(16) Dry and wet alternate strake means the area between the light and load waterlines of a ship type floating installation and each strake of the side shell plating above and below the said area. These strakes may vary along the length of the floating installation due to trimming of the unit.

5.1.6 Preparations for survey

5.1.6.1 Conditions for survey

(1) The owner is to provide necessary facilities for a safe execution of the survey;

(2) Tanks and spaces are to be safe for access. Tanks and spaces are to be free of hazardous gases and properly ventilated. Prior to entry into a tank, void or enclosed space, it is to be verified that the atmosphere in that space is free from hazardous gas and contains sufficient oxygen;

(3) In preparation for survey, thickness measurement and a thorough examination, all spaces are to be cleaned by the owner, including removal from surfaces of all loose accumulated corrosion scale, water, dirt, oil residues, etc., so as to reveal corrosion, deformation, cracks, damages or other structural defects, as well as the conditions of the coating. However, those areas of structure whose renewal has already been decided by the owner need only be

cleaned and descaled to the extent necessary to determine the limits of the renewed areas;

(4) Adequate illumination is to be provided to reveal corrosion, deformation, cracks, damages, or other structural defects, as well as the conditions of the coating;

(5) Where soft coating is used, a safe access is to be provided to the surveyor to allow him/her to confirm the effectiveness of the coating and assess the conditions of the internal structures (where possible, including the portions with coating spalling). If a safe access cannot be provided, the soft coating is to be removed.

5.1.6.2 Means of access to structures

(1) For surveys, including overall survey, of a floating installation, appropriate means are to be provided to enable the surveyor to examine the main structure in a safe and reliable way;

(2) For survey of cargo holds and seawater ballast tanks of all floating installation, one or more of the following means of access, acceptable to the surveyor, is to be provided:

① permanent scaffold and passage to structures;

② temporary scaffold and passage to structures;

③ lifts and movable platforms;

④ boats or rafts;

⑤ portable ladders;

⑥ Other equivalent means.

5.1.6.3 Equipment for survey

(1) Thickness measurement is normally to be carried out by means of ultrasonic test equipment, the accuracy of which is to be proven to be satisfactory to the surveyor. Thickness measurement is to be carried out by a firm approved by CCS;

(2) One or more of the following fracture detection procedure may be required if deemed necessary by the surveyor:

① radiographic equipment;

② ultrasonic test equipment;

③ magnetic particle equipment;

④ dye penetrant.

5.1.6.4 Survey of floating installation at sea or at anchorage

(1) For survey of floating installation at sea or at anchorage, necessary precautions procedures required for the survey are to be in accordance with 5.1.6.1, 5.1.6.2 and 5.1.6.3;

(2) A communication system is to be arranged such that channels of effective communication between the survey personnel working in the tank and the responsible officer on the deck can be established. This communication system is also to include the personnel in charge of ballast pump operation if small boats or rafts are used;

(3) When small boats or rafts are used for the survey, all personnel on the boats or rafts are to wear appropriate lifejackets. A safety checklist is to be provided;

(4) Surveys of liquid tanks or applicable crude oil tanks by means of small boats or rafts may only be undertaken with the agreement of the surveyor, who is to take into account the safety arrangements provided, including weather forecasting and unit response under foreseeable conditions and provided that the expected rise of water level inside the tank does not exceed 0.25m.

5.1.7 Document management on unit

5.1.7.1 General requirements

The plans and data, certificates, reports, records, operating manual, construction specifications, loading manual,

stability information and other guidelines related to the unit are to be kept onboard

5.1.7.2 Review of documents on unit

(1) Prior to the survey, the surveyor is to check the completeness and contents of the documents on board the unit and use these documents as the basis for the survey.

5.1.8 Procedure for thickness measurement

5.1.8.1 General requirements

(1) Thickness measurement is to be carried out by a thickness measurement firm approved by CCS under the control of the attending surveyors throughout the whole course;

(2) Prior to thickness measurement, the thickness measurement firm generally reaches an agreement with the parties concerned on the plan and the following matters:

① reporting of thickness measurements on a regular basis;

② prompt notification to the surveyor in case of findings such as:

a. excessive corrosion and substantial corrosion or pitting and grooving of any significance;

b. Structural defects such as buckling, fractures and deformed structures;

c. detached and/or holed structures;

d. corrosion of welds.

(3) Thickness measurement of structural members in areas where close-up surveys are required are to be carried out simultaneously with the close-up surveys;

(4) In all cases the extent of thickness measurement is to be sufficient to represent the actual average condition.

5.1.8.2 Positions and number of measuring points

Positions and number of measuring points are to be determined based on the unit's age and related structural components and in accordance with the applicable provisions of this Chapter.

5.1.8.3 Reporting

(1) A thickness measurement report is to be prepared and signed by the personnel executing the thickness measurement. The report is to give the locations of measurement, the thickness measured and the corresponding original thickness, the date on which the measurement is carried out, the type of measuring equipment, names and qualifications of measurement operators;

(2) The surveyor is to review the final thickness measurement report and countersign the cover page. 5.1.8.4 Monitoring of thickness measurement process

(1) The surveyor is to decide the final extent and locations of thickness measurement after an overall survey of the spaces on board the unit;

(2) In case the owner prefers to commence the thickness measurement prior to the overall survey, the surveyor is to require that the planned extent and locations of thickness measurement be confirmed during the overall survey and if necessary, the surveyor may require additional thickness measurements to be taken;

(3) The surveyor is to direct the gauging operation by selecting locations such that the readings taken represent, on average, the condition of the structure in that area;

(4) Thickness measurement is mainly used to evaluate the effect of the extent of corrosion of the main structure on the overall strength, therefore, thickness measurement is to be carried out in a systematic manner to ensure that all special and primary structural members are gauged as required;

(5) Where thickness measurements indicate substantial corrosion or wastage in excess of allowable diminution, the surveyor is to require additional thickness measurements to be carried out to characterize the areas of substantial corrosion and determine the structural members for repairs/renewal.

5.1.8.5 Review and verification

(1) Upon completion of thickness measurement, the surveyor is to confirm that the extent and locations of thickness measurement are adequate and may require additional thickness measurement when necessary;

(2) Any reduction of the extent of thickness measurement after special consideration by the surveyor is to be described in the corresponding report;

(3) If thickness measurement is carried out in separate stages, the extent of the remaining measurements is to be reported for use by the surveyors performing the subsequent surveys.

5.1.9 Repairs

5.1.9.1 Any damage in association with structural wastage beyond the allowable limits (including buckling, grooving, detachment or fracture) or wastage beyond the allowable limits in extensive areas, which affects, or in the opinion of the surveyor, will affect the unit's structural, watertight or weathertight integrity, is to be promptly and thoroughly repaired (see 5.1.5.1 (8) of this Chapter).

(1) For ship type floating installation, the areas under consideration include:

① side structures and side plating;

② deck structures and deck plating;

③ bottom structure and bottom plating;

④ watertight or oiltight bulkheads;

⑤ ventilators and air pipes.

5.1.9.2 If it is difficult to complete the repair of aforementioned defects on the spot where the defects are found, with the consent of CCS, the unit may be allowed to proceed to a repair yard with adequate repair capacity and facilities for completing the repairs, provided that safety is guaranteed. This may require transit and unloading and/or temporary repairs for the intended voyage.

5.1.9.3 Where the damage of structures mentioned in 5.1.9.1 (1) above occurs locally and will not affect the structural integrity of the unit or has been dealt with properly as confirmed through strength calculations and evaluation, the surveyor may consider and allow appropriate temporary repairs for ensuring the watertight or weathertight integrity, and raise the outstanding recommendations/conditions of class with specific requirements on the timeline, as appropriate.

5.1.9.4 Where the surveyor is in the opinion that the corrosion or structural defects identified during the survey will affect the unit's transit safety, proper remedial measures are to be taken before transit of the unit.

5.1.9.5 If any repair of the structure, machinery installation or equipment, which will or may affect the class of a floating installation, is carried out by the operator during operation and transit of the unit, advance plan is to be made for such repair. The repair procedure is to include the scope of repair and any need of surveys by the surveyor during operation or transit of the unit, and is to be submitted to CCS for approval at a reasonable time in advance. Failure to notify CCS in advance may lead to suspension of the unit's class.

5.1.10 Thickness measurement and close-up survey

5.1.10.1 In any kind of surveys, i.e. special, intermediate, annual or other surveys covering the scopes of these surveys, thickness measurement of structures in the areas where close-up surveys are required, is to be carried out simultaneously with the close-up surveys.

5.1.11 Owner's main structure inspection and maintenance schemes

5.1.11.1 CCS encourages the owners of floating installation to implement main structure inspection and maintenance schemes as a means for maintaining compliance with the classification and statutory requirements between two surveys. However, these schemes are not to be accepted as an alternative to, or a substitute for, the performance of required classification and/or statutory surveys of the unit by CCS surveyors.

5.1.12 Attendance for survey of units detained by the port State

5.1.12.1 The owner is to notify CCS on all occasions when the Administration has found deficiencies affecting the validity of the classification of statutory certificate of a floating installation classed with CCS, so that CCS surveyor may board the unit to perform surveys for the purpose of assessing and insuring the correction, if

necessary, of the reported deficiencies or other matters that may affect the validity of unit's classification and/or the statutory certificates issued by CCS.

5.1.12.2 If CCS is not notified by the owner of the detention of a unit, CCS reserves the right to suspend or cancel the class of the unit or invalidate the related statutory certificate(s).

5.1.13 Attendance at the request of port State

5.1.13.1 In cooperation with the port State, CCS surveyor will board the unit when so requested by the port State, and upon request by the owner, carry out a survey in order to facilitate the rectification of any reported deficiency or other discrepancies that affect or may affect classification of the unit.

5.1.13.2 CCS will, where required by the port State/Administration, also provide relevant background information (e.g. conditions of class, due dates of surveys, expiry dates of certificates, etc.) to the inspectors of the port State/Administration.

5.1.14 Unit's safety management system

5.1.14.1 If during any survey CCS surveyor finds evidence that the unit's safety management system is not in effective operation or that the requirements of ISM Code are not satisfied, CCS will communicate this to the competent Administration or the organization which issued the Safety Management Certificate on behalf of the Administration for their consideration and action.

Section 2 TYPES AND PERIODS OF SURVEYS

5.2.1 Annual surveys

5.2.1.1 Annual surveys are to be carried out on all units within 3 months before or after each anniversary date from the date of the initial classification survey or the date of completion of the last special survey. The surveys are to be carried out according to the relevant requirements of Section 4 to Section 8 of this Chapter.

5.2.2 Intermediate surveys

5.2.2.1 Intermediate surveys are to be carried out on all units either at the 2nd or 3rd annual survey. This intermediate survey replaces one annual survey. Those items which are additional to the requirements of the annual surveys may be surveyed at or between the 2nd and 3rd annual survey. The surveys are to be carried out according to the relevant requirements of Section 4 to Section 8 of this Chapter.

5.2.3 Surveys of the outside of the unit's bottom and related items

5.2.3.1 Examinations of the outside of the unit's bottom and related items may be carried out with the unit in a dry dock or on a slipway or with the unit afloat. The examinations in a dry dock or on a slipway are considered as docking surveys and the examinations with the unit afloat as in-water surveys.

5.2.3.2 At least two examinations of the outside of the unit's bottom and related items are to be carried out during each five-year special survey period. One of such examinations is to be carried out simultaneously in conjunction with the special survey. In all cases, the interval between any two examinations is not to exceed 36 months. In exceptional cases①, docking surveys may be permitted to be performed within the 3-month extension after these surveys are due. The surveys are to be carried out according to the relevant requirements of Section 9 of this Chapter.

5.2.3.3 CCS may shorten the interval between docking surveys depending on the specific condition of the underwater portion of the main structure and the interval between special surveys.

5.2.3.4 Examinations of the outside of the unit's bottom and related items are generally to be carried out in a dry dock. However, for units of 15 years and less in age, in-water surveys in lieu of docking surveys may be considered. CCS may shorten the interval of in-water surveys or cancel the in-water surveys in lieu of docking surveys depending on the specific conditions of the underwater portion of the structure. In-water surveys are to be carried out according to the relevant requirements of Section 9 of this Chapter.

5.2.3.5 When an in-water survey in lieu of a docking survey is requested by the owner for a unit having an age of more than 15 years, CCS will give special consideration as to whether the request will be accepted depending on the specific conditions of the unit and the status of the last survey.

① See the definition in 2.1.3.1 (21), Chapter 2 of this PART.

5.2.4 Special surveys

5.2.4.1 All units are to be subject to special surveys at an interval of 5 years to renew the classification certificate. The first special survey is to be completed within 5 years from the date of the initial classification survey and thereafter within 5 years from the credited date of the previous special survey. For floating installation with classification certificate having a valid period less than 5 years, the interval of special surveys may be shortened.

5.2.4.2 The special survey may be commenced at the annual survey prior to its expiry date and completed by its expiry date. When the special survey is commenced before the annual survey prior to its expiry date, the entire special survey is to be completed within 15 months from the date of commencement of the special survey. Only in this case can be items executed at the start of the special survey be credited as an integral part of the special survey.

5.2.4.3 When the owner is not able to arrange the special survey by its expiry date in exception circumstances and upon owner's request, an extension may be granted in accordance with Section 10, Chapter 2 of this PART, provided that a written application is received before the expiry date.

5.2.4.4 For surveys completed more than 3 months before the expiry date of the special survey, the date of the next special survey for class is to start from the survey completion date. For surveys completed within 3 months before the expiry date of the special survey, the date of the next special survey for class is to start from the expiry date of the special survey. For surveys completed after the expiry date of the special survey, the date of the next special survey for class is also to start from the expiry date of the special survey.

5.2.4.5 Concurrent crediting to both intermediate survey and special survey for surveys and thickness measurements of spaces is not acceptable.

5.2.4.6 The special surveys are to be carried out according to the relevant requirements of Section 4 to Section 8 of this Chapter.

5.2.5 Propeller shaft and sterntube shaft surveys

5.2.5.1 The propeller shaft and sterntube shaft surveys to be carried out and the interval between the surveys are to be in accordance with the requirements of Section 10 of this Chapter.

5.2.6 Boiler surveys

5.2.6.1 The boiler surveys to be carried out and the interval between the surveys are to be in accordance with the requirements of Section 11 of this Chapter.

5.2.7 Continuous surveys

5.2.7.1 Continuous survey system for the unit's structures

(1) Continuous survey system for the unit's structures is an alternative survey system for special survey;

(2) The overall survey of structures to meet the requirements of the unit's structure special survey may be carried out on the basis of continuous survey system, upon request of the owner and with agreement of CCS[①];

(3) When the continuous survey system is adopted, all the requirements of special survey of structures are to be satisfied by the end of the five-year special survey period;

(4) During each survey cycle, all items are to be surveyed (and tested, where required) in regular rotation, as far as possible, with uniform annual share within the five-year special survey period;

(5) The owner has the right to determine the sequence in which the individual items of the structure are intended to be surveyed. However, the sequence in each survey cycle is to be linked with that of the previous one in such a way that the interval between consecutive examinations (in two cycles) of each item will not exceed five years. The docking survey may be performed at any time within the five-year class survey period provided that the relevant requirements of Section 9 of this Chapter are complied with. For a floating installation of more than 10 years in age, the ballast tanks are to be internally examined twice in each five-year class survey period, i.e. once within the extent of the intermediate survey and the other within the scope of the continuous survey system in lieu of special surveys of the structures;

① Floating installation for which a continuous survey system is adopted are not to be excluded from the scope of other scheduled surveys.

(6) The surveyor may extend the inspection at his discretion if defects have been found during the inspection;

(7) The agreement for surveys to be carried out on the basis of continuous survey system may be withdrawn at the discretion of CCS.

5.2.7.2 Continuous survey system for machinery

(1) At the request of the owner and with the consent of CCS, all examination and test items of the special survey of the equipment of oil, gas and water process system, general machineries and electrical installation may be carried out on a continuous survey basis;

(2) When continuous survey system is adopted, the various items for special survey of the equipment of oil, gas and water process system, general machineries and electrical installation are to be annually examined in rotation, as far as possible, with uniform annual share within the special survey period (5 years);

(3) The longest interval between consecutive examinations of each item is not to exceed five years. All items to be inspected are to be submitted to the surveyors for examination after opening and cleaning, as in the special survey. However, if defects have been found during the examination, CCS surveyor may require further dismantling and inspection of the item in question. Control, alarm and safety systems are in general to be checked only by operation test or simulation test;

(4) At the request of the owner, the working staff authorized by CCS may be permitted to perform the examination of such survey items as authorized by CCS. After the examination, all examined items and related information are to be recorded into the continuous survey report and this report is to be submitted at the time of next survey of the unit;

(5) CCS or the owner may, in view of the conditions of the implementation of continuous survey system, terminate the continuous survey system and apply special surveys instead.

5.2.7.3 For continuous surveys in lieu of special surveys, a copy of the continuous survey program, together with the records of surveys, is to be kept on board the unit and the certificate is to be endorsed accordingly.

5.2.7.4 For a floating installation for which continuous survey system is implemented, the annual surveys and intermediate surveys are to be performed as normal.

5.2.8 Survey of planned maintenance system (PMS) for machinery

5.2.8.1 For the equipment of oil, gas and water process system, general machinery and electrical installation which are subject to planned maintenance, with the consent of CCS, planned machinery maintenance system surveys may be introduced to replace the special and continuous surveys, (see CCS Rules for Offshore Oil and Gas Process System and Appendix 16, Chapter 5, PART ONE of CCS Rules for Classification of Sea-going Steel Ships for details) provided that:

(1) a maintenance plan for all machineries, installation and equipment on board the unit is prepared and approved by CCS;

(2) crew members implementing the plan are to follow the approved maintenance plan, carry out and record the maintenance activities as planned;

(3) crew members implementing the plan are to hold qualification certificates issued by CCS or equivalent training records;

(4) the records for implementing the planned maintenance are to be examined once every year to confirm that the plan is well implemented.

5.2.8.2 When the records of planned maintenance are found to be not in full compliance with the requirements of surveys after construction, the planned maintenance system for machinery will be cancelled, and then special or continuous surveys will be applied.

5.2.9 Lay-up surveys

5.2.9.1 General requirements

(1) The owner is to inform CCS in writing of the lay-up of any floating installation classed with CCS;

(2) For laid-up floating installation, the class may be maintained provided that:

① lay-up survey is requested at the beginning of the lay-up period;

② annual survey of the lay-up conditions is carried out during the lay-up period;

③ survey for resuming service is requested at the end of the lay-up period.

(3) Where a lay-up maintenance scheme agreed by CCS is available for a floating installation being laid up for a period beyond the due date of the special class survey, all surveys after construction which fall due during the lay-up will then be held in abeyance until the unit is reactivated for service, subject to satisfactory completion of the annual lay-up condition survey described in (2) ② above;

(4) At the request of the owner, part or all of the surveys after construction may be carried out for a laid-up unit, with particular consideration being given to the extent and date of the surveys. Such surveys may be taken into account for determining the extent of a reactivation survey and/or determining the due date of the next survey of the same type after construction.

5.2.9.2 Survey at the beginning of lay-up period

(1) The purpose of the survey performed at the beginning of the lay-up period is to confirm compliance of the safety condition, maintenance means, lay-up location and mooring arrangement of the unit with the lay-up maintenance scheme agreed by CCS;

(2) Upon satisfactory completion of the survey at the beginning of lay-up period, the lay-up report is to be issued and the classification certificate endorsed to effect that the unit is laid up.

5.2.9.3 Annual lay-up condition surveys

(1) During the lay-up period, annual lay-up surveys are to be carried out in lieu of the normal annual class survey, so as to determine whether the unit remains in compliance with the lay-up maintenance scheme. The extent of such surveys is to include checking whether the lay-up arrangement has been changed, and whether the unit maintenance and testing have been carried out in accordance with the maintenance requirements and recorded in the log of the laid-up unit;

(2) During the lay-up period, the manned floating installation is to comply with the requirements for fire prevention. This requirement may only apply to machinery areas and areas with high fire risks, provided that the floating installation is ballasted and the crude oil area is in clean and gas-freed state;

(3) Upon satisfactory annual lay-up condition survey, the classification certificate is to be endorsed.

5.2.9.4 Reactivation surveys

(1) The owner is to inform CCS of the termination of the lay-up period and apply for the following surveys prior to reactivation of the unit:

① an occasional survey, the extent of which depends on the duration of the lay-up period and the surveys carried out during the lay-up period;

② all other surveys after construction that are being held in abeyance according to 5.2.9.1 (3), taking into account the requirements of 5.2.9.1 (4).

(2) Where the date of reactivation is beyond the original due date of the special survey which is held in abeyance according to 5.2.9.1 (3), and where surveys have been carried out according to 5.2.9.1 (4), a complete special survey is to be carried out prior to the reactivation of the unit. Those items which have been surveyed in compliance with the special class survey requirements within 15 months preceding the reactivation may be credited;

(3) Upon satisfactory completion of the survey, the classification certificate is to be re-issued.

5.2.10 Initial classification surveys

5.2.10.1 The initial classification survey of a unit requesting to be classed with CCS is the examination of compliance, which is carried out prior to initial assignment of CCS class and issuance of classification certificate to the unit, to verify compliance of its documentation, the design, configuration, technical condition and management of its structure and equipment with CCS classification rules and regulations and other technical requirements recognized by CCS.

5.2.10.2 The initial classification survey of existing floating installation and the units constructed not under the supervision of CCS is to be carried out in accordance with the relevant requirements of Section 12 of this Chapter.

5.2.10.3 The initial classification survey of new-buildings is to be carried out in accordance with the relevant requirements of Chapter 4 of this PART.

5.2.11 Occasional surveys

5.2.11.1 An occasional survey is any survey that is not a periodical survey. The survey may be defined as an occasional survey of the structure, oil and gas process system, general machinery, boilers, electrical installation, automatic and remote control systems, etc., depending on the part of the unit concerned.

5.2.11.2 An occasional survey is to be requested by the owner or his agent in any of the following cases:

(1) change of the unit's name, port of registry, flag and owner or operator;

(2) damage which affects the class of the unit and its equipment;

(3) port State government/administration control inspections;

(4) any repair or alteration or conversion which affects class;

(5) postponement of surveys or recommendations.

5.2.11.3 An occasional survey may be general or partial as appropriate and is to ensure that repairs and any renewal have been effectively carried out and that the unit and its equipment remain fit for the intended service.

5.2.11.4 Upon completion of an occasional survey, the classification certificate of the unit is to be endorsed accordingly.

Section 3 TRACEABILITY REQUIREMENTS FOR EXISTING FLOATING INSTALLATION

5.3.1 General requirements

5.3.1.1 This Section applies to existing motor ship type floating installation.

5.3.1.2 The requirements on traceability of existing motor ship type floating installation are given in Section3, Chapter 5, PART ONE of CCS Rules for Classification of Sea-going Steel Ships.

Section 4 STRUCTURE AND EQUIPMENT SURVEY

5.4.1 General requirements

5.4.1.1 This Section applies to surveys of the structures of all floating installation, including equipment.

5.4.1.2 Where statutory certificates of the unit have been issued or endorsed by the Administration, CCS will perform an overall survey of the items related to the certificates as appropriate to confirm compliance with the Rule. The extent of survey will be determined according to the specific conditions.

5.4.1.3 The provisions in this Section cover the minimum extent of examinations, thickness measurement and tests of liquid tanks. Where any substantial corrosion and/or structural defect have been detected, the extent of survey is to be expanded and include necessary close-up surveys.

5.4.1.4 For floating installation chartered or owned by the government for military purpose, special consideration may be given to the application of the requirements in this Section.

5.4.1.5 Risk based inspection (RBI) may be accepted as an alternative to the appropriate periodical survey provided that RBI is proven to be able to achieve the effects equivalent to those of the related periodical survey.

5.4.1.6 For motor ship type floating installation, the corresponding requirements in Chapter 5, PART ONE of CCS Rules for Classification of Sea-going Steel Ships are to be complied with.

5.4.2 Annual surveys

5.4.2.1 General requirements for all units

(1) The purpose of annual surveys is to verify as far as practicable that the structures, hatch covers, hatch coaming, closing arrangements, equipment and piping systems are kept in good conditions. The interval between annual surveys is specified in Section 2 of this Chapter;

(2) During an annual survey, an overall examination of the exposed deck, outer plating of structures above the waterline, special structural members, hatch covers, hatch coaming and watertight penetrations is to be carried out to confirm their satisfactory conditions;

(3) Annual surveys are to be carried out in conjunction with the statutory annual surveys as far as practicable.

5.4.2.2 Extent of the surveys for all units

(1) Structure

① an overall examination of visible structures and their closing arrangements is to be carried out;

② the anchoring (examining, as far as practicable, the anchors, anchor chains, and windlass including its foundation and associated equipment such as prime mover, shafting, anchor chain wheel, brakes and chain stoppers, etc.) and mooring equipment is to be examined as far as can be seen. Where the temporary anchoring equipment forms part of the position mooring system, this part of position mooring system is also to be examined as far as practicable;

③ the collision bulkheads (if applicable) and other watertight bulkheads and valves operable from above the bulkhead deck are to be examined as far as can be seen;

④ all watertight doors in watertight bulkheads are to be examined and tested (locally and remotely), and the arrangements for closing openings in the shell plating below the freeboard deck are to be examined;

⑤ each bilge pump is to be examined and the bilge pumping system for each watertight compartment is to be confirmed satisfactory;

⑥ during inspection of internal spaces, the means of access to crude oil spaces and other void spaces are to be examined as far as possible;

⑦ it is to be confirmed that no materials containing asbestos has been installed onboard the unit since the last survey.

(2) Loadlines-general requirements:

① an overall examination is to be carried to confirm that the strength of the main structure remains in compliance with the rules;

② the positions of deck line and load line are to be checked, and if necessary, the deck/load lines are to be re-marked and re-painted;

③ it is to be checked that no alterations affecting the calculations determining the position of load lines have been made to the structure or superstructures;

④ the superstructure end bulkheads and the openings on such bulkheads, together with their closing arrangements are to be examined;

⑤ the weathertight securing arrangements of hatchways and other openings on the freeboard and superstructure decks are to be examined;

⑥ the ventilators and air pipes, including their coamings and closing arrangements, are to be examined, and in particular, the weld connections between air pipes and deck plating as well as the external portion of all air pipe heads on exposed decks are to be examined;

⑦ the watertight integrity of the closing arrangement of any side openings below freeboard deck are to be examined;

⑧ the scuppers, water inlets and discharge outlets are to be examined;

⑨ the side scuttles and deadlights are to be examined;

⑩ the bulwarks, including the locations of side discharge openings, are to be examined, with particular attention to any side discharge openings fitted with shutters;

⑪ the guardrails, gangways, walkways and other means provided for protection of the crew and for access to and from the living quarters and working spaces;

⑫ the means provided to minimize water flooding through the spurling pipes and chain lockers are to be examined, if applicable.

(3) Loadlines-protection of cargo hatches (if applicable):

① it is to be confirmed that no unapproved changes have been made to the hatch covers, hatch coamings and their securing and sealing arrangements since the last survey;

② the exposed hatch covers are to be examined to ensure their structural integrity for maintaining weathertightness. Where excessive areas of wastage and/or substantial corrosion of steel hatch covers are found, thickness measurement is to be carried out to determine the extent and scope of the wastage or corrosion, and renewal or repair is required when the wastage exceeds the allowable limits;

(4) Exposed deck

① the crude oil cargo hatches, including the stuffing, hatch covers, hatch coamings and flameproof wire gauzes, are to be examined;

② the pressure/vacuum valves and flameproof wire gauzes of crude oil tank vent system and auxiliary vent system are to be examined;

③ the flameproof wire gauzes fitted on the vent piping of all fuel oil tanks, including oily ballast water tanks and slop tanks, are to be examined;

④ the crude oil, crude oil washing, fuel oil, ballast and ventilation systems together with their fire-proof panels, as well as the facilities on the decks in crude oil area including gas collecting masts and pipes, are to be examined;

⑤ modularized structures are to examined.

(5) Crude pump rooms and pipe tunnels (if any)

① it is to be confirmed that no potential fire source (e.g. loose gear, combustible materials, etc.) exists in crude pump rooms and other adjacent areas, there are no signs of harmful leaks and that the access stairways are in good conditions;

② the pump room bulkheads are to be examined for signs of leaks or cracks, with special attention to the conditions of sealing arrangements at the bulkhead penetrations;

③ all piping systems inside the pump rooms are to be examined as far as practicable;

④ the pressure gauges and level indicating system fitted on crude oil piping and export piping are to be examined to ensure they are in good conditions;

⑤ examinations are to be carried out, as far as practicable, to confirm whether there is excessive leak at the shaft seals of crude oil pumps, ballast pumps and stripping pumps located inside the pump rooms, whether the operating actions of electrical and mechanical remote control and shutoff devices are normal, whether the bilge water system in pump rooms operates properly and whether the pump base is intact and in good conditions;

⑥ the pump room ventilation system, including the integrity of ventilation ducts, the operation of air dampers and the cleaning of screens, is to be examined;

⑦ the temperature sensing devices for bulkhead sealing and alarming of the pump rooms, together with their audible and visual alarms, are to be examined to confirm that they are in good conditions (if applicable);

⑧ it is to be confirmed that the level monitoring and alarm devices of bilge water in the pump rooms are in good conditions (if applicable).

(6) The special structural areas are to be carefully examined, with particular attention during the first survey of those areas which have been subjected to severe meteorological conditions (e.g. strong typhoon), and NDT is to be performed if necessary. Structural areas, including but not limited to the following areas, are to be examined as far as practicable:

① module foundation and its reinforcements;

② structures supporting and adjacent to the position mooring areas;

③ members connecting the flare arm/tower with the main structure;

④foundation of crude export equipment and its reinforcements;

⑤ crane pedestal and structures which extend to the main structure;

⑥ connections between helideck and the main structure, etc.

(7) Other equipment

① if applicable, steering gears such as the main and auxiliary steering gears, including their accessory equipment and control systems, are to be examined and tested. Inclusion of the records of such gears in the unit's log is also to be confirmed as appropriate;

② the catwalks or passageways for safe access to the fore part of the unit are to be examined;

③ it is to be confirmed that the dedicated ballast tank is provided with corrosion protection system for maintaining its proper conditions;

④ as applicable, the towing and emergency towing arrangements are to be examined as far as practicable to confirm that they are in good working conditions.

(8) Ballast tanks:

① ballast tanks are to be examined as required by the results of the special survey and intermediate survey. Where it is considered necessary by the surveyor or extensive areas of corrosion have been found, thickness measurement is to be carried out. If the results of thickness measurement indicate a substantial corrosion, the extent of thickness measurement is to be expanded. The extended thickness measurements are to be carried out before the survey is completed.

② suspect areas of the structure are to be subject to an overall examination, including an overall survey and close-up survey of the suspect areas identified during previous examinations. Thickness measurement is to be performed when necessary. If the results of thickness measurement indicate a substantial corrosion, the extent of thickness measurement is to be expanded in order to determine the coverage of such substantial corrosion. 5.3.5.2 (4) of this Chapter may be used as guidance to the thickness measurement expansion. These expanded thickness measurements are to be carried out before the annual survey is completed.

③ thickness measurement for areas with substantial corrosion, which have been identified through the previous examinations, is to be carried out. A prompt and thorough repair is to be required for the parts that exceed the allowable limits.

(9) Stability information and loading manual:

① the approved stability information and loading manual are to be checked;

② the loading computer, which serves as a supplement to stability information, is to be checked against the approved loading computer calculation and testing report to confirm that it is in proper operating conditions. In addition, whether the user instruction manual of the loading computer is kept on board the unit is to be checked (if applicable).

5.4.2.3 Additional extent of survey for ship type floating installation:

In addition to the applicable survey items specified in 5.4.2.2, the critical load transfer points, such as the connections of hopper tank sloping plates to side longitudinals/horizontal girders in the crude oil area, the toe of large bracket of crude oil tank and other structures, are to be examined as far as practicable.

5.4.2.4 Additional extent of survey for column-stabilized floating installation

In addition to the applicable survey items specified in 5.4.2.2, the columns, diagonal and horizontal braces together with the upper hull supporting structure as accessible above the waterline are to be surveyed.

5.4.2.5 The conditions of class or outstanding recommendations raised during previous surveys and/or the restrictions imposed by the Administration are to be addressed and closed out as specified.

5.4.2.6 CCS may require an examination of the major structural components including NDT of critical areas at the time of the first annual survey after completion of the construction of column-stabilized floating installation, when CCS deems such examination necessary. The extent of the examination is to be agreed by CCS with the owner/operator prior to commencement of the survey.

5.4.3 Intermediate surveys

5.4.3.1 General requirements

(1) For the interval of intermediate surveys, see the relevant provisions in Section 2 of this Chapter;

(2) Intermediate surveys are to be carried out in conjunction with the statutory intermediate surveys or docking surveys as far as practicable;

(3) In addition to the applicable survey items specified in 5.4.2.2 to 5.4.2.5 of this Section, intermediate surveys are also to include the items specified in 5.4.3.4 to 5.4.3.6 of this Section based on the unit's age and these item are to be confirmed satisfactory.

5.4.3.2 Partial slipping and hauling tests of temporary anchoring equipment are to be carried out using the windlass.

5.4.3.3 The crude oil piping, crude oil washing piping, fuel oil piping, ballast piping, steam piping, ventilation duct system as well as the vent masts and headers on exposed decks are to be examined as far as practicable. If certain piping systems are found to be suspicious during the examination, pressure test or thickness measurement of such piping systems, or the combination of both, may be required. Special attention is to be paid to repairs such as those involving welding of collar plates.

5.4.3.4 Floating installation of 5~10 years in age:

(1) For ship type floating installation, all ballast tanks are to be examined. Thickness measurement and test are to be carried out when deemed necessary by the surveyor to ensure its structural integrity; for double hull floating installation, representative seawater ballast tanks may be selected for overall examination. For column-stabilized floating installation, the representative ballast tanks of the lower hull and those connected to seawater compartments, and if applicable, at least two ballast tanks in the columns or the upper hull, are to be examined. Where no significant structural defect has been found during the examination, the examination may be conducted only to verity that the hard protective coating is kept in GOOD condition.

(2) Where a POOR technical condition of the coating, corrosion or any other defect has been found in the ballast tank, or protective coating was not applied at the time of construction, such examination is to be extended to ballast tanks of the same type.

(3) Ballast tanks, in any of the following cases, are to be examined once every other year in the forthcoming period:

① hard protective coating was not applied at the time of construction;

② soft coating was applied;

③ substantial corrosion has been found in the tank;

④ the hard protective coating has been found not in "GOOD" condition and the coating has not been repaired to the satisfaction of the surveyor.

(4) In addition to the requirements above, the suspect areas identified during previous surveys are to be examined.

5.4.3.5 Floating installation of 10~15 years in age:

(1) The requirements of 5.4.3.4 of this Section are to be complied with;

(2) All ballast tanks and crude oil/ballast dual-purpose tanks are to be fully examined. Where no significant structural defect has been found during the examination, the examination may be conducted only to verify the hard protective coating is kept in GOOD condition;

(3) At least two representative crude oil tanks are to be selected for an overall examination;

(4) Machinery and boiler spaces, including tank top, tank bottom and cofferdams, seawater suctions and side discharge openings are to be subject to an overall examination.

5.4.3.6 Floating installation of an age over 15 years:

(1) The requirements of 5.4.3.5 of this Section are to be complied with;

(2) One crude oil tank is to be close-up surveyed. Where the protective coating is found to be in GOOD condition, special consideration is to be given to the extent of close-up survey.

5.4.3.7 When extensive corrosion has been found, thickness measurement may be required. Parts exceeding the allowable limits of wastage are to be renewed.

5.4.4 Special surveys

5.4.4.1 General requirements

(1) For the interval between special surveys, see the relevant provision in Section 2 of this Chapter;

(2) Special surveys are to be carried out in conjunction with the statutory renewal surveys as far as practicable. A meeting on survey program is to be held prior to commencement of the special survey.

5.4.4.2 General provisions on the extent of survey for all floating installation

(1) In addition to the applicable items specified in 5.4.2.2 to 5.4.2.5 of this Section, special surveys are also to include examinations, tests and checks carried out to a sufficient extent to ensure that the main structure and the related piping systems required by 5.4.4.2 (3) are in satisfactory conditions being maintained and operated properly, and fit for the intended purposes for the next five-year class period with the periodical surveys being carried out at the due dates;

(2) The examinations of the structure are to be supplemented by thickness measurement and tests as required in 5.4.5 and 5.4.4.5 to ensure the structural integrity remains effective. The examinations are to be adequate to discover substantial corrosion, significant deformation, cracks, damages or other structural defects that may occur;

(3) All crude oil piping installed on decks, including crude oil washing piping as well as the crude oil pipes and ballast pipes inside the abovementioned tanks and spaces, is to be examined and operationally tested at the working pressure to confirm that its tightness and technical state are in satisfactory conditions. Special attention is to be paid to the conditions of the ballast piping in crude oil tanks and the crude oil piping in ballast tanks and empty tanks. When such piping including its valves and attachments are disassembled during repair, the surveyor is to be notified and may perform internal examination of these items;

(4) Dry docking survey is a part of special survey. The overall examination, close-up survey and thickness measurement (if applicable) of the portions of crude oil tanks and ballast tanks below the light waterline, if not performed, are to be carried out in accordance with the applicable requirements for special survey. However, a docking survey completed within 15 months before the due date of the special survey may be accepted as a survey carried out at the same time with the special survey.

5.4.4.3 Protection of liquid tanks:

(1) The conditions of crude oil tank corrosion protection system (if fitted) are to be examined;

(2) Ballast tanks, in any one of the following cases, are to be examined at a one-year interval in the forthcoming period and subject to thickness measurement as deemed necessary by the surveyor:

① hard protective coating was not applied at the time of construction;

② soft coating was applied;

③ substantial corrosion has been found in the tank;

④ the hard protective coating has been found not in GOOD condition and the coating has not been repaired to the satisfaction of the surveyor.

5.4.4.4 The extent of overall examination and close-up survey:

(1) All liquid tanks and spaces are to be examined overall during each special survey;

(2) The minimum requirements for close-up survey during special surveys are to be:

① the minimum close-up survey requirements specified in Table 5.4.4.4 (2) ① for floating installation;

② the minimum close-up survey requirements specified in Table 5.4.4.4 (2) ② for double hull floating installation.

(3) The surveyor, as deemed necessary, may extend the close-up surveys considering the conditions of the tanks' maintenance and corrosion protection system at the time of the survey as well as the following cases:

① in particular, the liquid tanks with structural arrangements or components which have sustained defects in similar tanks or on similar floating installation, according to the available information;

② liquid tanks which employ approved structures of reduced dimensions in consideration that an approved corrosion control system is provided inside the tank.

(4) If the internal hard protective coating of the tanks is found to be in GOOD condition, special consideration may be given to the close-up survey requirements specified in Table 5.4.4.4 (2) ① or Table 5.4.4.4 (2) ②.

5.4.4.5 The extent of tightness test of liquid tanks

(1) For the minimum requirements for tightness test of liquid tanks, see the requirements in Table 5.4.4.5(1);

(2) The surveyor, where deemed necessary, may extend the tightness test of liquid tanks;

(3) The boundaries of ballast tanks are to be tested to a liquid head up to the top of the air pipe;

(4) The boundaries of crude oil tanks are to be tested to a liquid head up to the highest point that the liquid may rise to under various service conditions;

(5) For double hull floating installation, tightness test of liquid tanks may be waived provided that the results of the internal examination of double bottom tanks and other spaces not designed to hold liquids and the results of the examination of inner bottom plating are considered satisfactory;

(6) Where the internal examination of liquid tanks is performed with the unit afloat, the tests of liquid tanks may be carried out with the unit afloat;

(7) Hydraulic tests may be specially considered provided that the results of the external examination of tank boundaries is satisfactory, and as confirmed from the statement by the unit's director, the relevant pressure tests have been carried out as required, with satisfactory results. The surveyor may, where deemed necessary, expand the extent of tests;

(8) Where it is difficult to conduct hydraulic test for certain tanks, gas tightness test may be carried out in place of the hydraulic test;

(9) If the shell plating or bulkhead plating or any tank boundary needs repair, the tests are to be carried out after the repair is completed.

Minimum Requirements for Close-up Survey at Special Surveys of Floating installation

Table 5.4.4.4 (2) ①

The first special survey Age≤5 years	The second special survey 5 years <age≤10 years	The third special survey 10 years <age≤15 years	The fourth special survey Age>15 years
(A) one complete transverse circumferential frame (inside one side ballast tank, if fitted, or inside one side crude oil tank mainly used for water ballasting) (B) one deck web beam (inside one crude oil tank) (D) one transverse bulkhead (inside one ballast tank) (D) one transverse bulkhead (inside one side crude oil tank) (D) one transverse bulkhead (inside one central crude oil tank)	(A) All complete transverse circumferential frames (inside one side ballast tank, if fitted, or inside one side crude oil tank mainly used for water ballasting) (B) one deck web beam (inside each of the remaining ballast tanks, if fitted) (B) one deck web beam (inside one side crude oil tank) (B) one deck web beam (inside two central crude oil tanks) (C) two transverse bulkheads (inside one side ballast tank, if fitted, or inside one side crude oil tank mainly used for water ballasting) (D) one transverse bulkhead (inside each of the remaining ballast tanks) (D) one transverse bulkhead (inside one side crude oil tank) (D) one transverse bulkhead (inside two central crude oil tanks)	(A) all complete transverse circumferential frames (inside all ballast tanks) (A) all complete transverse circumferential frames (inside one side crude oil tank) (A) at least 30% of all complete transverse circumferential frames ① (inside each of the remaining side crude oil tanks) (C) all transverse bulkheads (inside all crude oil and ballast tanks) (E) at least 30% of deck and bottom transverses, including adjacent structural members (inside each central crude oil tank) (F) portions as deemed necessary by the surveyor	Same as the third special survey; additional transverse members to be included if deemed necessary by CCS surveyor

Notes:

A) Complete transverse circumferential frame, including the adjacent structural members;

B) Deck web beam, including the adjacent structural members;

C) Complete transverse bulkhead, including the longitudinal system and adjacent structural members;

D) Lower part of transverse bulkhead, including the longitudinal system and adjacent structural members;

E) Deck and bottom transverse frame, including the adjacent structural members;

F) Additional complete transverse circumferential frame.

5.4.4.6 Miscellaneous

(1) Crude oil tanks, in which substantial corrosion has been found and corrective actions have not been taken, are to be subject to examination during the annual survey and intermediate survey, and thickness measurement if necessary;

(2) The structures in special areas are to be subject to examination and NDT;

(3) Hatch covers and coamings are to be examined according to the following requirements:

① items listed in 5.4.2.2 (3);

② all mechanically operated hatch covers are to be examined to confirm whether they are in good operating conditions, including:

a. stowage and securing when the covers are open;

b. accurate positioning and effectiveness of sealing arrangements when the covers are closed;

c. operation test of the hydraulic system, power components, steel cables, chains and drive connections.

③ the effectiveness of the sealing arrangements of all hatch covers is to be examined through hose test or equivalent methods.

(4) Masts and cable stabilizing arrangements (if provided) are to be examined;

(5) Temporary anchoring system

① the attachments to anchors, anchor brackets, anchor chains and their guide devices are to be examined;

② all other attachments to all anchoring arrangements and anchor chains are to be cleaned and examined. During examination of anchor chains, special attention is to be paid to the conditions of its frictional wastage, cracking, torsion deformation, loosening and detachment of link stud; during examination of steel cable, special attention is to be paid to the conditions of its frictional wastage, corrosion, flattening and broken wires;

③ the conditions of corrosion, frictional wastage, bending and loosening of pin cotter of connecting shackles are to be examined;

④ all Kenter shackles which have been used for more than four years are to be disassembled and examined through magnetic particle inspection. Connecting shackles of other types are to be partially or wholly disassembled and examined as appropriate;

⑤ anchor chains are to be measured during the second and subsequent special surveys. Any chain link, where it has been found that the average diameter[①] of the parts with maximum wear has been reduced by 12% or more of the diameter specified in the rules, is to be renewed;

⑥ the chain locker, chain end fixing means, hawse pipe, chain stopper and windlass are to be examined and the pumping arrangements of the chain locker are to be tested.

(6) It is to be confirmed that the self-repair items, which affect the unit's class and are implemented by the unit crew, comply with the provisions of the rules, and that the repair technique and other respects are satisfactory and in compliance with the intended services of the unit;

(7) engine room structures are to be examined and special attention is to be paid to tank top, outer plating of tank top, brackets connected to the frame and tank top, and the room bulkheads at the tank top and bilge wells. In addition, attention is to be paid to seawater suction inlet, seawater cooling line, overboard discharge valves and the shell plating connected to the valves. Items with wastage or of suspect are to be subjected to thickness measurement, and are to be renewed or repaired when the wastage exceeds the allowable limits.

[①] Average diameter means half of the sum of the minimum diameter measured upon a cross section of the chain link plus the diameter measured from the direction vertical to this cross section.

Minimum Requirements for Close-up Survey at Special Surveys of Double Hull Floating installation

Table 5.4.4.4 (2) ②

<table>
<tr><th>The first special survey Age≤5 years</th><th>The second special survey
5 years <age≤10 years</th><th>The third special survey
10 years <age≤15 years</th><th>The fourth special survey
Age>15 years</th></tr>
<tr><td>One web frame (1) (inside one ballast tank (see note 1))</td><td>All web frames (1) (inside one ballast tank (see note 1))
The hull knuckle area and its upper part (approximately 5m) of one web frame (inside each of the remaining ballast tanks (6))</td><td>All web frames (1) (inside all ballast tank s)</td><td rowspan="5">The same as special survey for units of 10~15years in age.
Additional transverse members to be included, if deemed necessary by CCS</td></tr>
<tr><td>One deck web beam (inside one crude oil tank (2))</td><td>One deck web beam (inside two crude oil tanks (2))</td><td>All web frames (7) (inside one crude oil tank), including deck web beams and transverse props (if fitted); one web frame (7) (inside each of the remaining crude oil tanks), including deck web beams and struts (if fitted)</td></tr>
<tr><td>One transverse bulkhead (4) (inside one ballast tank (see note 1))</td><td>One transverse bulkhead (4) (inside each ballast tank (see note 1))</td><td rowspan="2">All transverse bulkheads (inside all crude oil tanks (3) and ballast tanks (4))</td></tr>
<tr><td>One transverse bulkhead (5) (inside one central crude oil tank)
One transverse bulkhead (5) (inside one side crude oil tank (see note 2))</td><td>One transverse bulkhead (5) (inside two central crude oil tanks)
One transverse bulkhead (5) (inside one side crude oil tank (see note 2))</td></tr>
</table>

(1), (2), (3), (4), (5), (6) and (7) in Fig. 5.4.4.4 (2) ② are the areas subject to close-up surveys and thickness measurement for floating installation:

(1) The web frame in a ballast tank means the vertical web member inside a side tank, the web member inside a bottom side tank, the floor inside a double bottom tank and deck web beam inside a double deck tank (if fitted), including adjacent members. The web frame inside the fore peak tank and after peak tank means a complete transverse circumferential web frame, including the adjacent members.

(2) Deck web beam includes the adjacent structural members of the deck (or the external structure on the liquid tank deck, if applicable)

(3) The complete transverse bulkhead inside a crude oil tank, including girder system, adjacent members (such as longitudinal bulkhead) and the internal members of the upper and lower stools (if fitted)

(4) The complete transverse bulkhead inside a ballast tank, including girder system, adjacent members (such as longitudinal bulkhead, the girder inside a double bottom tank, tank top plating, the side of a bottom side tank and connecting bracket)

(5) The lower portion of transverse bulkhead inside a crude oil tank, including the girder system, adjacent members (such as longitudinal bulkhead) and the internal members of the lower stool (if fitted)

(6) The main structure knuckle area and its upper portion (approximately 5m), including the adjacent members. The main structure knuckle area means the web frame area within 2m range at the connections between the hopper sloping plating and the inner hull bulkhead and tank top plating

(7) The web frame inside a crude oil tank means the deck web beam, the vertical web member of the longitudinal bulkhead and strut (if fitted), including the adjacent members

Notes:

1: Ballast tanks mean the double bottom tanks plus double side tanks plus double deck tanks (whichever are applicable), even if they are separated.

2: Where centerline oil tank is not provided (e.g. centerline bulkhead is provided instead), the transverse bulkhead inside the side crude oil tank is to be surveyed.

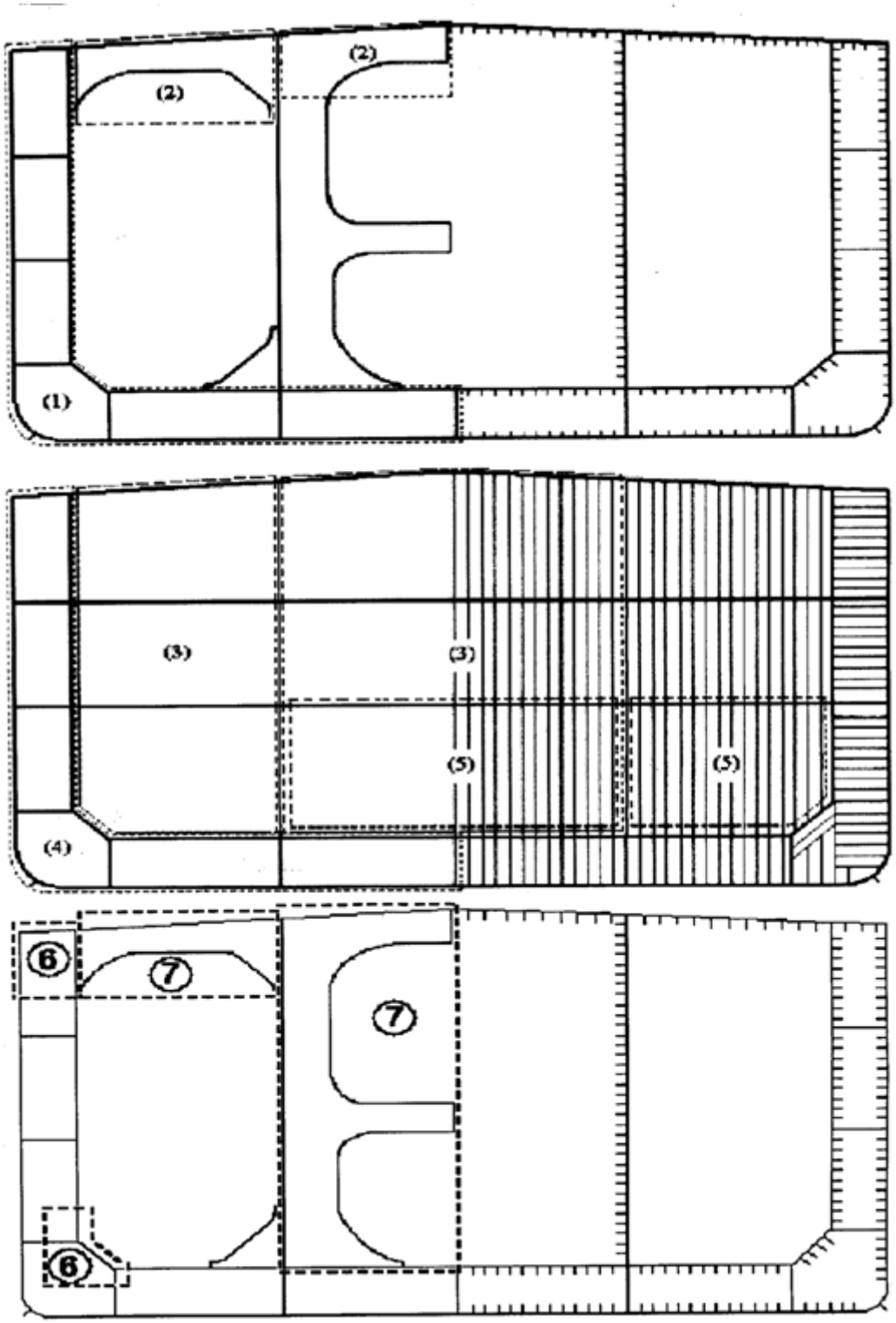

Fig. 5.4.4.4 (2) ② Double Hull Tanker Areas (1) to (7) Required to be Subject to Close-up Surveys

Minimum Requirements for Liquid Tank Tests at Special Surveys of Floating installation Table 5.4.4.5 (1)

The first special survey Age≤5years	The second special survey and subsequent special surveys Age>5years
1. Boundaries of all ballast tanks 2. Boundaries of crude oil tanks facing ballast tanks, void compartments, pipe tunnels, pump rooms or cofferdams	1. Boundaries of all ballast tanks 2. Bulkheads of all crude oil tanks

5.4.4.7 Column-stabilized floating installation

The surveys of column-stabilized floating installation are also to include examination of the following items:

Connections of columns and diagonals to the upper hull and lower hull or piece hull are to be examined. Joints of main supporting structures, diagonals, braces and horizontals, together with gussets and brackets are to be examined. In addition, the internal continuation or back-up structures for the abovementioned items are also to be examined. NDT of suspect areas may be required.

5.4.4.8 Examination of towing/emergency towing arrangements (if provided):

(1) It is to be confirmed that the towing point, short towing line, towing connections, recovery device, chafing gear and marker buoy are in good and effective conditions;

(2) The wear of the short towing line, recovery device and chafing gear is to be within an allowable extent;

(3) The fairleader is to be normally maintained as required.

5.4.4.9 Crude export installation are to be examined to confirm they are readily available and are being properly maintained.

5.4.4.10 The heads of air pipes with automatic means of closing are to be overall examined (both externally and internally) in compliance with the requirements in Table 5.4.4.10. For designs where the inner parts cannot be properly examined from outside, the head is to be removed from the air pipe. Particular attention is to be paid to the conditions of zinc coating on the heads of air pipes constructed of zinc galvanized steel.

Survey Requirements for Automatic Air Pipe Heads at Special Surveys Table 5.4.4.10

The first special survey Age≤5 years	The second special survey 5 years<Age≤10 years	The third special survey Age>10 years
(1) Two air pipe heads, one port and one starboard, located on the exposed decks in the forward 0.25L, preferably the air pipe heads serving ballast tanks; (2) Two air pipe heads, one port and one starboard, located on the exposed decks, serving spaces aft of 0.25L, preferably the air pipe heads serving ballast tanks; (3) The selected air pipe heads are to be examined by the attending surveyor; (4) According to the results of this examination, the surveyor may require the examination of other heads located on the exposed decks	(1) All air pipe heads located on the exposed decks in the forward 0.25L; (2) At least 20% of air pipe heads on the exposed decks serving spaces aft of 0.25L, preferably the air pipe heads serving ballast tanks; (3) The selected air pipe heads are to be examined by the attending surveyor; (4) According to the results of this examination, the surveyor may require the examination of other heads located on the exposed decks	(1) All air pipe heads located on the exposed decks. Examination of the air pipe heads may be waived provided that there is substantiated evidence that they have been renewed within the previous five years.
Note: For floating installation other than those of surface type, automatic air pipes are to be examined according to the applicable requirements in the Table.		

5.4.5 Thickness measurement and NDT of the main structure

5.4.5.1 General requirements

(1) Where substantial corrosion is found in any area of the main structure or any doubt exists regarding its thickness at each annual, intermediate or special survey, thickness measurement is to be carried out;

(2) All crucial joints are to be examined by NDT at each special survey;

(3) Thickness measurement may be carried out at the commencement of the special survey, or the thickness measurement report prepared within 15 months before the due date of the special survey may be taken as the thickness measurement report of the special survey.

5.4.5.2 Thickness measurement

(1) The minimum requirements for thickness measurement for all types of floating installation at special surveys are given respectively in Tables 5.4.5.2 (1) ① and ②;

(2) The most representative locations liable to the most severe corrosion are to be selected for thickness measurement.

(3) Where the internal protective coating of the tank is maintained in the GOOD condition, the thickness measurement requirements specified in Tables 5.4.5.2 (1) ① and ② may be specially considered;

(4) The plating in way of substantial corrosion area is to be measured by five-point pattern over each $1m^2$, structural components by three-point pattern over each $1m^2$, and the extent of corrosion is to be determined by averaging the measured values;

(5) The surveyor may further extend the thickness measurement as deemed necessary;

(6) The transverse sections of areas with maximum dimensional reduction for suspect structures or the areas with maximum dimensional reduction as indicated by the deck thickness measurements are to be selected for thickness measurement;

(7) Where two or three transverse sections need to be measured, at least one transverse section is to be located at a ballast tank with the range of 0.5L amidships;

(8) For motor ship type floating installation which have a ship length of 130m and above (refer to the current edition of International Convention on Load Line for the definition of length of ship) and an age of more than 10 years, where necessary, the evaluation of total longitudinal strength is to be performed in accordance with 5.6.1.3, Chapter 5, PART ONE of CCS Rules for Classification of Sea-going Steel Ships, and the samples for thickness measurement are to be taken in accordance with the provisions in Attachment 3, Appendix 2, Chapter 5, PART ONE of CCS Rules for Classification of Sea-going Steel Ships;

(9) Thickness measurement is normally to be carried out by a firm approved by CCS. Ultrasonic test equipment may be used for the measurement and the accuracy of the equipment is to be proven to be satisfactory to the surveyor as required. The measurement operator is to hold a qualification certificate acceptable to CCS;

(10) Thickness measurement is normally to be carried out under the supervision of the surveyor to assure correctness of the measurements. The surveyor may also accept the results of thickness measurements not witnessed by him, but he is to sample such measurement results to ascertain the accuracy of the measurements if he deems it necessary;

(11) The record of thickness measurement is to give the locations of measurement, the thickness measured, the type of measuring equipment, the date of measurement, and is to be signed by the operator and the surveyor.

Minimum Requirements for Thickness Measurement at Special Surveys of Ship Type Floating installation
Table 5.4.5.2 (1) ①

The first special survey Age≤5 years	The second special survey 5 years <age≤10 years	The third special survey 10 years <age≤15 years	The fourth special survey and subsequent special surveys Age>15 years
1 One deck cross section of the full ship breadth within the crude oil area (at one ballast tank, if fitted; or inside one crude oil tank mainly used for water ballasting) (see note 1). 2 Measuring points of structural members subject to close-up survey as listed in Tables 5.4.4.3 (2) ① and ② of this section. 3 Suspect areas.	1 In crude oil area: a) Each deck plate; b) One transverse section. 2 Bulkhead plate of moon pool boundary. 3 Measuring points of structural members subject to close-up survey as listed in Tables 5.4.4.3 (2) ① and ② of this section. 4 Suspect areas. 5 Dry-wet alternate side strake selected outside the crude oil area.	1 In crude oil area: a) Each deck plate; b) Two transverse sections (see note 2); c) All dry-wet alternate side strakes. 2 Bulkhead plate of moon pool boundary. 3 Measuring points of structural members subject to close-up survey as listed in Tables 5.4.4.3 (2) ① and ② of this section. 4 Suspect areas. 5 Dry-wet alternate side strake selected outside the crude oil area.	1 In crude oil area: a) Each deck plate; b) Three transverse sections (see note 2); c) Each bottom plate. 2 Bulkhead plate of moon pool boundary. 3 Measuring points of structural members subject to close-up survey as listed in Tables 5.4.4.3 (2) ① and ② of this section. 4 Suspect areas. 5 All dry-wet alternate side strakes within the full length.

Notes:

1 The descriptions in brackets do not apply to double hull tankers.

2 For double hull floating installation, at least one cross section is to be located within the area of 0.5L amidships and contained inside one ballast tank.

Minimum Requirements for Thickness Measurements at Special Surveys of Column-stabilized Floating installation Table 5.4.5.2 (1) ②

The first special survey Age≤5 years	The second special survey 5 years <age≤10 years	The third special survey 10 years <age≤15 years	The fourth special survey and subsequent special surveys Age>15 years
(1) Suspect areas; (2) Main and special components of significant wastage in splash zone; (3) One deck cross section of the full ship breadth within the crude oil area (at one ballast tank, if fitted; or inside one crude oil tank mainly used for water ballasting)	(1) Suspect areas; (2) Representative thickness measurements of columns and braces in splash zone and in the range of at least 3m above the lower hull or footing; (3) Main and special components of significant wastage; (4) The lower hull or column portions liable to wear by anchor chain or anchor line (when deemed necessary); (5) In crude oil area: a) Each deck plate; b) One transverse section. (6) Dry-wet alternate side strake selected outside the crude oil area.	(1) Suspect areas; (2) One column or brace selected out of each two columns and two braces, one transverse section of the hull plate and frame in splash zone and in the range of at least 3m above the lower hull or footing (when deemed necessary); (3) Representative thickness measurements of main and special components; (4) Hull plate of the lower hull or column which sustains significant wastage at the anchor chain or anchor line; (5) One transverse section of the hull plate and deck plate of the left and right lower hulls located between one group of columns; (6) Internal frame of chain locker (when deemed necessary); (7) In crude oil area: a) Each deck plate; b) Two transverse sections (see note 2); c) All dry-wet alternate side strakes. (8) Dry-wet alternate side strake selected outside the crude oil area.	(1) Suspect areas; (2) Fifty percent of the columns and braces, one transverse section of the hull plate and frame in splash zone and in the range of at least 3m above the lower hull or footing (when deemed necessary); (3) Extensive thickness measurements of the main and special components; (4) Hull plate of the lower hull or column which sustains significant wastage at the anchor chain or anchor line; (5) One transverse section of the hull plate and deck plate of the left and right lower hulls located between one group of columns; (6) Internal frame of chain locker (when deemed necessary); (7) In crude oil area: a) Each deck plate; b) Three transverse sections (see note 2); c) Each bottom plate. (8) All dry-wet alternate side strakes within the full length.

Section 5 SURVEYS OF GENERAL MACHINERY INSTALLATION

5.5.1 General requirements

5.5.1.1 This Section applies to surveys of general machinery installation and systems for all floating installation. Surveys of oil, gas and water process equipment are specified in Section 6 of this Chapter; surveys of propeller shaft and sterntube shaft are specified in Section 10 of this Chapter; and surveys of boilers and thermal oil heaters are specified in Section 11 of this Chapter.

5.5.1.2 The purpose of surveys of general machinery installation and systems is to confirm that machinery installation and systems are properly maintained, in good and effective conditions and fit for their intended purposes. Surveys for machinery installation and systems are normally to be carried out in conjunction with the corresponding main structure surveys.

5.5.1.3 The owner of the unit is to make appropriate preparations for different types of surveys in advance, including cleaning and illumination of spaces, providing safe access to survey items, safety facilities and sufficient information, instructions, diagrams and lists as necessary.

5.5.1.4 Where some items have been surveyed by the Administration, CCS will arrange an overall survey for the items related to the certificates as appropriate to confirm compliance with the Rules. The extent of survey may be determined according to the specific conditions.

5.5.2 Annual surveys

5.5.2.1 For the interval of annual surveys, see the relevant provisions in Section 2 of this Chapter.

5.5.2.2 Annual surveys are to be carried out in conjunction with the statutory annual survey.

5.5.2.3 The purpose of annual surveys is to confirm that the general conditions of relevant machinery installation and systems and that they have been properly maintained since the last survey and are fit for their intended purposes.

5.5.2.4 General machinery installation survey items:

(1) Confirm that sufficient consideration has been given to the moving parts, hot surfaces and other hazard conditions for the installation and protection of machineries, boilers and other pressure vessels and their associated piping and accessories to minimize the safety risks faced by the crew on board the unit;

(2) Confirm that the propulsion machinery is still able to maintain or reinstate normal operation even in the event of failure of any crucial auxiliary engine;

(3) Confirm that means have been provided to bring the machinery back to operation from the dead ship state without external assistance;

(4) Confirm that an overall examination of the machineries, boilers, all steam, hydraulic, pneumatic and other systems, together with their accessories, has been carried out to ascertain that they are maintained in good working conditions, with particular concern on the preventative measures against fire, explosion and other hazards;

(5) Examine and test the operating conditions of the main and auxiliary steering gears, including their associated equipment and control systems;

(6) Confirm that various alarm devices required for hydraulically, electrically and electrohydraulically operated steering gears operate satisfactorily, and that the refilling device of the hydraulically operated steering gear is kept in good conditions;

(7) Examine the operation of the main engine and auxiliary engines necessary for the unit’s safety, where appropriate, including the arrangements to remotely operate the main engine from the navigation bridge and to operate the main engine and other auxiliary engines from the engine control room;

(8) Confirm that the ventilation system in general machinery spaces operate properly;

(9) Examine the arrangement of periodically unattended machinery spaces, especially the random tests of alarm, automatic and shutdown functions;

(10) As far as practicable, confirm that the structural fire protection has not been altered, examine all manual and automatic fire doors to verify their operational functions, test the closing means of all ventilation system inlets/outlets, and test the means of stopping the power ventilators from a location outside the service space;

(11) Confirm that the escape routes of the accommodation space, machinery space and other spaces are satisfactory;

(12) Perform visual inspection of all expansion joints in the seawater system;

(13) Confirm that no unapproved changes have been made to the structures of machinery spaces and boiler spaces;

(14) Confirm that the doors of machinery spaces and boiler spaces are in good and effective conditions, and that the escape routes of these spaces are kept free of obstructions;

(15) Confirm that the main propulsion plant, including main propulsion machinery, gear unit and shafting, and dynamic positioning system have been maintained in accordance with the rules and are in good working conditions;

(16) Confirm that the pumping system and piping system serving the main propulsion plant and dynamic positioning system are properly maintained and in good working conditions;

(17) Confirm that generator prime mover and other auxiliary machinery, including the associated pumping and piping systems, are in good working conditions;

(18) Confirm that the essential safety and protective devices, including safety valves of boilers, exhaust gas boilers, economizers, steam heaters, steam generators, boilers not used for propulsion service (with a pressure higher than 0.35MPa and an area of heated surface greater than 4.5m^2), thermal oil and hot water heaters, pressure relief valves of pressure vessels (with a pressure higher than 0.7MPa), safety devices and emergency cutoff devices for oil fuel systems and burning units, etc., are in good working conditions, and that the safety means for all moving parts and hot surfaces are in good and effective conditions;

(19) Examine the bilge systems and bilge wells of machinery spaces and boiler spaces, including the operation of bilge pumps and level alarms, as far as practicable;

(20) Confirm that initial starting devices are effective;

(21) Confirm that the means of communication between the navigation bridge/central control station and the machinery spaces, steering gear room, emergency steering positions (if provided) and the emergency fire control room are effective;

(22) Confirm that the ballast systems are properly maintained and in good conditions;

(23) Confirm as far as practicable, that all piping systems inside crude pump room and other pump rooms are in good conditions;

(24) Perform an overall examination of the crude oil pumps, bilge pumps, ballast pumps and stripping pumps, and as far as practicable, confirm the conditions of their shaft seals, remote control means of bilge systems of the crude pump room and the integrity of pump seats;

(25) Perform an overall examination of the vent systems of crude oil tanks and slop tanks, including the breather valves;

(26) Perform an external examination of crude oil washing system and hot water washing system;

(27) Confirm that the self-repair items executed by the unit's crew during voyage are in good working conditions;

(28) Confirm that the outstanding recommendations and remaining items from previous surveys have been dealt with as required.

5.5.2.5 Additional survey items for units with class notation of inert gas system (IGS)

(1) For units with class notation of inert gas system (IGS), an examination and/or test of the following items are to be carried out to confirm that the system is in good working conditions:

① carry out visual inspection of all piping, vent pipes on cargo area decks and discharge pipes in the shell plating to confirm that there is no sign of gas or effluent leakage;

② confirm the proper operation of two insert gas blowers;

③ confirm the proper operation of scrubber room ventilation system;

④ confirm the proper automatic filling and draining operations of deck water seals;

⑤ confirm the proper operation of all remotely operated or automatically controlled valves, including the flue gas isolating valves;

⑥ confirm proper operation of the interlocking device of soot blowers;

⑦ confirm that the inert gas pressure regulating valve is able to close automatically when the inert gas blowers are being stopped;

⑧ Examine/test, as far as practicable, the following safety devices and alarms of the inert gas system under simulated conditions where necessary:

a. high oxygen content of gas in the inert gas main;

b. low gas pressure in the inert gas main;

c. low pressure of water supply to the deck water seal;

d. high temperature of gas in the inert gas main;

e. low water pressure or low water flow rate of scrubber;

f. accuracy of portable and fixed oxygen detector by means of calibration gas;

g. high water level in the scrubber;

h. failure of inert gas blowers;

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

j. high gas pressure in the inert gas main.

⑨ confirm the proper operation of the inert gas system.

5.5.2.6 Additional survey items for units with class notations of machinery control and automation

For units with class notations of machinery control and automation, an overall examination or function test of the following items is to be carried out, as far as practicable, to confirm that they are in good working conditions:

(1) function test of alarm indicators;

(2) check the functions of control systems of the main and auxiliary engines:

① automatic control of main engines;

② automatic control of main and auxiliary boilers;

③ automatic start and control of emergency generators;

④ automatic start and changeover of standby pumps for essential pumps serving the main engines;

⑤ function test of engine room bilge level detection and alarm system and the start of pumps.

(3) functions of extended alarm and communication between the navigation bridge and the engineers' accommodation space;

(4) check the functions of fixed fire detection and alarm systems;

(5) function test of the repaired items of the automatic and remote control systems of other essential machineries is to be performed during the annual survey;

(6) check the complete operation records of the engine room control system since the last survey. In case of any malfunction or function failure, corrective measures are to be taken.

5.5.2.7 For units with other class notations of machinery installation such as the propeller shaft condition monitoring system and diesel engine lube oil condition monitoring system, etc., an overall examination is to be carried out according to their respective requirements specified in the rules, to confirm that they are in good and effective working conditions.

5.5.3 Intermediate surveys

5.5.3.1 For the interval of intermediate surveys, see the relevant provisions in Section 2 of this Chapter.

5.5.3.2 In addition to the applicable requirements specified in this Section for annual surveys, the following additional items are to be covered in the intermediate surveys:

(1) the prime movers of driving generators are to be operationally tested under working conditions to verify that they are in good working conditions;

(2) the bilge water suctions in machinery spaces and boiler spaces and overboard discharge valves are to be examined;

(3) an overall examination of windlass and a partial load test through slipping and hauling anchors are to be carried out.

5.5.4 Special surveys

5.5.4.1 For the interval of special surveys, see the relevant provisions in Section 2 of this Chapter.

5.5.4.2 Conditions for survey

(1) The owner is to provide necessary conditions and safety facilities for the survey, such as disassembling or opening and cleaning, safe access to and illumination for survey items, etc.;

(2) The purpose of special surveys is to confirm, through examination, test and check of sufficient items, that the machinery installation have been properly maintained and are fit for the intended purposes of the next five-year period.

5.5.4.3 General machinery installation survey and test items:

(1) The items of intermediate surveys specified in 5.5.3.2 of this Chapter;

(2) The applicable items specified in 5.9.2.1 of this Chapter. The items of survey in dry dock completed within 15 months before the due date of a special survey may be accepted as the survey items being executed simultaneously at this special survey;

(3) All shafts (excluding propeller shaft, sterntube shaft, directional propeller and water jet propulsion arrangements) and bearings of the main propulsion system are to be examined. The lower half of the bearings generally needs not be disassembled for examination if axial alignment and wear of the bearings are found in order;

(4) All gear units are to be opened up and examined to confirm the working conditions of the main gears, auxiliary gears, shafts, bearings, thrust bearings and lubricating system. Conventional gear units of 1,120kW and below and all epicyclical gear units need not be disassembled for examination provided that satisfactory operating records are provided by the owner;

(5) Auxiliary engines, air compressors and their intercoolers, filters, oil-water separators and the associated safety devices are to be examined;

(6) All pumps and associated components serving the propulsion and dynamic positioning arrangements are to be disassembled and examined;

(7) Steering gears, including the main and auxiliary steering gears, are to be examined. The pressure relief valves of the steering system are to be tested and their set values checked;

(8) Examinations of windlasses, including operation test, are to be carried out. Windlasses, their brakes and foundations are to be examined. Safety devices are to be tested;

(9) The anchor bolts and gaskets of the main and auxiliary engines, gearboxes, thrust seats and intermediate bearing seats are to be examined;

(10) All heat exchangers (including intercoolers) and pressure vessels with a working pressure of 0.7MPa and over, together with the associated attachments and valves, are to be opened up and examined, and where corrosion or damage is found, pressure tested to determine the working pressure. Their relief valves are to be checked in service conditions. Where it is difficult to open up certain small heat exchangers and pressure vessels with a working pressure of 0.7MPa and over, an alternative hydraulic test to 1.25 times the working pressure may be accepted;

(11) Valves, cocks and strainers of bilge systems together with associated pipelines are to be tested at the working pressure;

(12) Connection and blanking arrangements of fuel oil, lube oil, cooling water, water feed and ballast systems are to be examined or tested and if necessary opened up for examination;

(13) Fuel oil tanks not forming part of the main structure of the unit are to be examined and may be pressure tested if deemed necessary by the surveyor. If fuel oil tanks are found satisfactory during the external examination, the internal examination of such tanks may be waived for units less than 10 years of age.

5.5.4.4 Additional survey items for units with class notations of machinery control and automation

In addition to 5.5.2.7, an overall examination of the following items is to be carried out to confirm that they are in good working conditions:

(1) Simulated function test of automated system of main propulsion machinery:

① main control system (including automatic control of start, operation, stop and reversing of main propulsion machinery, remote control of engine room centralized control room and navigation bridge);

② control system changeover and communication;

③ safety system;

④ alarm system;

⑤ overriding control system;

⑥ automatic start of standby machinery;

⑦ confirmation of changeover to manual control in case of failure of remote control system;

⑧ function test of control, safety and alarm systems when power (electrical, hydraulic or pneumatic) is restored after a power failure.

(2) Simulated function test of boiler automated system;

① safety system for burning (including automatic stop of fuel supply pump, automatic start and stop of water feed pump, scavenging, temperature automatic control, etc.);

② monitoring and alarm systems;

③ manual control devices.

(3) Automatic controls and alarms of power generating system (including automatic start, switch-in, parallel operation, load distribution and shutoff of standby generating sets).

(4) Simulated function test of other essential machineries:

① function test of control, safety and alarm systems (including alarm indicators, display screens) is to be carried out as far as practicable;

② components (elements, valves, actuators, instruments, etc.) of automatic and remote control systems are to be visually examined and if necessary, disassembled, examined and tested.

(5) Function test of remote controls of suction valves and discharge valves below the waterline.

(6) Check the recorded information of the fault recorder and review the log book entries regarding the use of automatic and remote control equipment to confirm the operational reliability of all systems.

5.5.4.5 Additional survey items for units with class notations of inert gas system (IGS)

In addition to 5.5.2.6, the following items are to be examined and/or tested to confirm that they are in good conditions:

(1) inert gas generator and scrubber are to be disassembled for examination if any sign of gas or effluent leakage is found;

(2) inert gas distribution piping and shutoff valves together with interlocking device of soot blowers are to be disassembled for examination if any abnormality is found;

(3) deck water seal and non-return valve are to be dismantled for examination;

(4) water cooling system including discharge pipe and overboard discharge pipes of the scrubber are to be examined, and the valves are to be disassembled for examination;

(5) all automatic closing arrangements and alarms are to be function tested;

(6) integrity of the inert gas system is to be examined under working conditions;

(7) upon request by the owner, a system of continuous surveys may be may be undertaken whereby the special survey requirements are carried out in regular rotation, i.e. every mechanical item of the inert gas system is to be opened up and examined, as far as practicable, at the specified interval (normally five years). The interval between consecutive examinations of each item is not to exceed five years. Surveys are to be arranged annually for about a fifth of all items. If any defect is found during the survey, related components and parts are to be opened up and examined. Such defects are to be dealt with to the satisfaction of the surveyor;

(8) the entire system is to be examined under working conditions.

5.5.4.6 Diesel engines

For diesel engines, the following components are to be disassembled and examined:

(1) cylinder liners, cylinder covers, valves and their transmitting device, pistons, piston rods, crossheads, guides, connecting rods, crankshaft and all bearings, crankcase, bedplates, frames and entablatures, crankcase door fasteners and explosion relief devices, scavenge relief valves, scavenging pumps and blowers, superchargers and their intercooler, fuel oil pumps and fittings, camshafts and their transmitting gear together with balance weights, torsional vibration dampers or detuners, elastic couplings, clutches, reversing mechanism, attached pumps and cooling arrangements;

(2) selected portion of pipes in the starting air system is to be removed for internal examination and acoustic test. If lube oil accumulation is found in the pipe, in addition to steam blowing, the portions of pipes adjacent to the main starting valve and air discharge pipe of air compressor are to be removed for examination;

(3) test of engine operation and test of initial starting arrangement are to be carried out;

(4) The survey of diesel engines with cylinder diameter of 300mm or below may be carried out according to the manufacturer’s scheduled maintenance program, provided that the engines are maintained under the program. The records of the program, including lubrication servicing, are to be make available to the surveyor. Periodical overhauls, required by the manufacturer’s scheduled maintenance program, are to be witnessed on site by the surveyor.

5.5.4.7 Gas turbines

For gas turbines, the following parts are to be disassembled and examined:

(1) impellers or blades and rotors of gas turbines, casing and rotors of air compressors, combustion chambers, intercoolers, fuel gas and air piping, starting and reversing arrangements;

(2) gas turbines may be opened and maintained in accordance with the manufacturer's recommendations. The owner is to submit the maintenance programs for combustion chamber, hot gas paths and other items of each type of gas turbine at the specified service interval;

(3) For gas turbines in continuous service, the hot gas path of at least one gas turbine, including the rotor, fixed blade (nozzle ring), combustion chamber, air inlet volute casing, air exhaust volute casing, air control valve and protective apparatus, etc., is to be examined during each survey period (normally five years). Other parts and associated equipment, if any obvious change has been made to them as shown in comparison with previous records available, are to be opened up for examination;

(4) examination of air blower sections may be carried out in conjunction with other items provided that no defect of supercharger air inducer or inducer blade has been found through the visual inspection via the air inlet end during the examination of hot gas path;

(5) during each survey period (normally five years), at least one auxiliary gas turbine, including its protective devices (if applicable), is to be required to be examined and operationally tested according to the manufacturer's recommendations based on the actual operation hours and conditions;

(6) where any auxiliary gas turbine has been moved from the unit to another location for internal examination, it is to be examined by the surveyor when it is re-installed onto the unit to confirm that the reinstallation is satisfactory in all aspects;

(7) upon completion of reassembly/reinstallation of all fuel oil piping and lube oil piping, the gas turbines and their exhaust systems are to be tightness checked under full load operating conditions. The shielding and double wall pipe of fuel oil piping system are to be examined;

(8) cylinders, pistons, end covers, valves and valve gear, pumps and fittings, synchronous control mechanisms, cooling system, explosion prevention devices including bypass arrangements of the free piston fuel gas generators are to be dismantled and examined;

(9) air compressors including casings and rotors, combustion chambers, burners, intercoolers, heat exchangers, fuel gas and air piping of combustion gas generator are to be dismantled and examined.

Section 6 SURVEYS OF OIL, GAS AND WATER PROCESS EQUIPMENT

5.6.1 General requirements

5.6.1.1 Surveys of oil, gas and water process equipment are to be carried out in accordance with the relevant provisions in CCS Rules for Classification of Offshore Oil and Gas Process System.

Section 7 SURVEYS OF ELECTRICAL INSTALLATION

5.7.1 General requirements

5.7.1.1 This Section applies to various surveys of electrical installation for all floating installation.

5.7.1.2 Where some electrical installation have been surveyed and tested by the Administration at the time of the surveys, CCS will carry out an overall examination of the items related to the certificates as appropriate to confirm compliance with the Rules. The extent of surveys is to be determined as appropriate according to the specific conditions.

5.7.1.3 For floating installation chartered or owned by the government for military purpose, special consideration may be given to the application of relevant requirements in this Section.

5.7.2 Annual surveys

5.7.2.1 For the interval of annual surveys, see the relevant provisions in Section 2 of this Chapter.

5.7.2.2 Annual surveys are to be carried out in conjunction with the statutory annual surveys as far as practicable.

5.7.2.3 Survey items

(1) Confirm that the means of communication between the central control room or the navigation bridge (if provided) and all machinery control stations and the rudder angle indicator operate properly;

(2) Confirm that for floating installation provided with emergency steering positions, the arrangements to transmit heading information to the emergency steering positions and the arrangements (if provided) to provide visual compass readings operate properly;

(3) Confirm that the main engine telegraph, the secondary means of communication between the central control room or the navigation bridge and machinery spaces and the means of communication with any other machinery control positions operate properly;

(4) Confirm that the engineer's alarm is clearly audible in the engineer's accommodation;

(5) Confirm that the motors driving the generators and essential machineries together with the controls are in normal conditions. Where possible, such confirmation is to be carried out under operating conditions;

(6) Satisfactory operation of the main and emergency sources of electrical power, and the emergency electrical installation essential to the unit's safety, including the starting device of the emergency source of power, are to be verified. Where these power sources are provided with automatic power supply, the test is to be carried out in automatic mode;

(7) The propulsion motors, generators, cables and all ancillary equipment and controls of electric propulsion plant and auxiliary propulsion unit for position mooring are to be examined and the insulation resistance of these items is to be measured;

(8) Failure indicators and alarms of electrical installation essential to the unit's safety are to be examined and tested;

(9) Navigation lights are to be tested under working conditions to verify correct indication and alarm on failures of power supply or navigation lights;

(10) Emergency lighting, temporary emergency lighting, additional lighting, general alarm and public address system are to be tested as far as practicable;

(11) Electrical installation, including the main electrical power source, main and emergency lighting systems and cables, are to be visually inspected under working conditions as far as practicable;

(12) An overall examination is to be carried out to confirm whether precautions against electric shock, fire and other electrical hazards are in place, for instance, the bonding straps and grounding devices for electrostatic control (if provided) are to be examined;

(13) Confirm that no potential fire sources exit in hazardous spaces, and that all electrical installation within hazardous areas are suitable for service in such areas, in good conditions and being properly maintained;

(14) Confirm the conditions of the self-repair items executed by the unit's crew during operation/transition;

(15) Class conditions or outstanding recommendations raised during previous surveys and/or restrictions imposed by the Administration are to be eliminated as specified.

5.7.3 Intermediate surveys

5.7.3.1 For the interval of intermediate surveys, see the relevant provisions in Section 2 of this Chapter.

5.7.3.2 Intermediate surveys are to be carried out in conjunction with the statutory intermediate surveys as far as practicable.

5.7.3.3 Survey items

(1) Applicable survey items specified in 5.7.2.3 of this Section;

(2) Generators are to be operationally tested under working conditions to verify that they are in good working conditions;

(3) Electrical equipment in hazardous areas or circuits passing through hazardous areas are to be examined to verify that there are no danger, defect, improperly installed or unapproved equipment and deadend circuit;

(4) Insulation resistance of the electrical circuits in hazardous areas (such as crude pump rooms and spaces adjacent to crude oil tanks) is to be measured. However, where proper measurement records are kept, consideration is to be given to accepting recent readings.

5.7.4 Special surveys

5.7.4.1 For the interval of special surveys, see the relevant provisions in Section 2 of this Chapter.

5.7.4.2 Special surveys are to be carried out in conjunction with the statutory renewal surveys as far as practicable.

5.7.4.3 Conditions for survey: the owner is to provide necessary conditions and safety facilities for the survey, e.g. disassembling or opening and cleaning, safe access to and illumination for survey items.

5.7.4.4 survey and test items

(1) The items in 5.7.3.3 of this Section applicable to the unit;

(2) The items in 5.9.2 of this Section applicable to the unit. However, a dry docking survey may be considered to coincide with the special survey when it is completed within 15 months prior to the due date of the special survey;

(3) Insulation resistance of electrical installation and circuits are to be measured;

(4) Attachments to the main and emergency switchboards and distribution boards are to be examined, and overcurrent protective devices and fuses are to be inspected to verify that they provide suitable protection for their respective circuits;

(5) Air circuit breakers of generators are to be tested to verify satisfactory operation and delay of the protective devices;

(6) All cables are to be examined to verify that there are no loosening clamps and protective casings;

(7) Motors for essential services together with their auxiliary control and operating mechanisms are to be examined and where deemed necessary, to be operationally tested under working conditions. All generators and steering motors are to be examined and tested under working conditions and where deemed necessary, a full load test may be carried out;

(8) Where the transformers of essential power supply are of wet type, the owner is to submit the liquid sample to an authoritative institution for testing of its breakdown voltage, acidity and moisture. The report of test results is to be submitted to the surveyor;

(9) Automatic and remote control systems

① All mechanical, hydraulic and pneumatic control actuators and their power systems are to be examined and if deemed necessary by the surveyor, to be tested;

② The insulation resistance of the windings of electrically controlled motors or actuators is to be measured, with all circuits of different voltages being tested separately to the satisfaction of the surveyor. See (3) of this paragraph;

③ Control systems for unattended machinery spaces are to be operationally tested in the dock at reduced power of the propulsion engine to ensure the proper performance of all automatic functions, alarms and safety systems.

Section 8 SURVEYS OF FIRE AND EXPLOSION PREVENTION EQUIPMENT

5.8.1 General requirements

5.8.1.1 This section applies to surveys of fire and explosion prevention equipment for all units.

5.8.1.2 Where some fire and explosion prevention equipment have been surveyed and tested by the Administration at the time of the surveys, CCS will carry out an overall examination of the items related to the certificates as appropriate to confirm compliance with the Rules. The extent of surveys is to be determined as appropriate according to the specific conditions.

5.8.1.3 For floating installation chartered or owned by the government for military purpose, special consideration

may be given to the application of relevant requirements in this Section.

5.8.2 Annual survey

5.8.2.1 For the interval of annual surveys, see the relevant provisions in Section 2 of this Chapter.

5.8.2.2 Annual surveys are to be carried out in conjunction with the statutory annual surveys as far as practicable.

5.8.2.3 The surveyor is to carry out an examination of the following items to confirm that they are in effective conditions:

(1) Check that no major changes have been made to the arrangement of structural fire protection;

(2) Check the technical conditions and integrity of fire walls/bulkheads, decks and penetrations. Fire doors and fire dampers are to be examined and operationally tested;

(3) Examine the fire control room and fire extinguishing medium stations/rooms to check that fire control plan is posted and stored as specified;

(4) Examine the functions of automatic fire detection and alarm system, manual alarm buttons and the flammable gas detection and alarm system (including portable flammable gas detectors);

(5) Examine the water firefighting systems including the automatic spray system (if provided) to confirm that each fire pump (including emergency fire pump) and its associated piping are effective, to ensure that two different fire hydrants at arbitrary locations on the unit can provide two water jets while the required pressure is still maintained in the fire main;

(6) Confirm that fire hoses, water nozzles, foam nozzles, water mist nozzles, portable and wheeled fire extinguishers are in good working conditions, being properly maintained and placed at their respective designated locations;

(7) Examine the provision and stored location of international shore connections;

(8) Examine the controllers, pipelines, operating valves, nozzles, marks and instructions of the fixed fire extinguishing systems (including pressure water spray fire extinguishing system, CO_2 fire extinguishing system, foam fire extinguishing system, etc.). Check the maintenance status and last test date as entered in routine maintenance record book, and the date of pressure test of the pipelines in high-pressure CO_2 fire extinguishing system;

(9) Check the quantity of medium of fixed fire extinguishing systems and the pressure of expellant gas (if applicable). For fixed fire extinguishing systems, the effective condition of the medium is to be ascertained. High-pressure CO_2 bottles are to be weighed every two years;

(10) Examine the fire extinguishing systems of spaces containing paints and/or inflammable liquids and deep-fat cooking equipment within accommodation and service spaces;

(11) Examine the helideck fire extinguishing facilities;

(12) Examine, as far as practicable, the remote shutdown devices of the motors of ventilators, oil pumps, etc., and the remote closing appliances of oil supply lines in machinery spaces;

(13) Examine the closing appliances of ventilators, funnel space, skylights, doorways and shaft tunnels (if applicable). Fire dampers are to be operationally tested;

(14) Examine the integrity and effectiveness of windows, scuttles and securing arrangements facing hazardous areas. Windows protected by water curtain are to be subjected to water spraying test for observing their effectiveness;

(15) Check the integrity, completeness and good condition of fireman’s outfit and emergency breathing apparatus;

(16) Check if there has been any change to the scope of hazardous areas;

(17) Examine the protection system against gas ingress into safe areas and less hazardous areas for confirming its effective conditions;

(18) Examine the protection system against gas escape from enclosed or semi-enclosed hazardous areas to ensure its effective conditions;

(19) Examine the emergency shutdown system to ensure its effective conditions;

(20) Verify that automatic shutdown and alarm devices operate reliably;

(21) Alarms and interlocks associated with pressurized explosion-safe equipment or spaces are to be tested for correct operation;

(22) Check the gangways including means of escape to confirm that they are in good conditions, free from obstructions and clearly marked;

(23) Examine the ventilation, directly-fired vessels and diesel engines in hazardous areas;

(24) Examine the electrical installation, cables, controls, explosion-proof equipment and appliances in hazardous areas (e.g. crude pump room and areas above the crude oil area) and adjacent spaces to confirm that there is no incorrectly installed or unapproved equipment, deadend circuit, etc.;

(25) Confirm that inside cargo pump rooms, there are no signs of leakage of all bulkheads, potential fire sources, or loosened machinery. Confirm that the bilge water in cargo pump rooms does not contain excessive cargo or excessive cargo vapor and combustible substances, and that the stairways are in good conditions;

(26) Class conditions or outstanding recommendations provided at previous surveys and/or restrictions imposed by the Administration are to be eliminated as specified.

5.8.3 Intermediate surveys

5.8.3.1 For the interval of intermediate surveys, see the relevant provisions in Section 2 of this Chapter.

5.8.3.2 Intermediate surveys are to be carried out in conjunction with the statutory intermediate surveys as far as practicable.

5.8.3.3 In addition to the applicable items specified in 5.8.2 of this Section for intermediate surveys, the following items are to be examined:

(1) Check the weighing records of high-pressure CO_2 bottles;

(2) Test the pipelines of fixed fire extinguishing system for free passage;

(3) Check the pressure for opening and closing safety valves of the low-pressure CO_2 system;

(4) Select an appropriate number of water spray system nozzles for water spray test;

(5) Chemical analysis of foam concentrates.

5.8.4 Special surveys

5.8.4.1 For the interval of special surveys, see the relevant provisions in Section 2 of this Chapter.

5.8.4.2 Special surveys are to be carried out in conjunction with the statutory renewal surveys as far as practicable.

5.8.4.3 In addition to the applicable items specified in 5.8.3 of this Section for special surveys, the following items are to be examined:

(1) Performance test of each fire pump (including emergency fire pump);

(2) Disassembling and examination of inert gas generator, scrubber tower, fans, deck water seals and cooling water pumps;

(3) Hazardous areas:

Enclosed hazardous spaces such as those above the crude pump room and crude oil areas are to be examined. The effectiveness of doors and closing appliances in boundary bulkheads of enclosed hazardous spaces are to be verified. Lighting, electrical fixtures and instrumentation are to be examined, proven satisfactory and verified as explosion-proof. Ventilation systems for enclosed hazardous spaces, including the ducts, fans and air inlet/outlet locations, are to be examined, tested and proven satisfactory. Ventilation alarm system is also to be proven satisfactory. Electrical motors, including closed-loop ventilating systems for large DC motors, are to be examined. Automatic power cutoff in case of ventilation failure is to be proven satisfactory. Piping systems of various machinery installation and other systems located in hazardous areas are to be checked for leakage, corrosion and safe operation of valves, and to be tested when required by the surveyor;

(4) Remote shutdown arrangements

The remote shutdown arrangements of crude oil and fuel oil transfer pumps, ventilation equipment and oil tank outlet valves to be capable of being remotely closed are to be proven satisfactory. Emergency switches of all electrical installation including the main and emergency generators are to be proven satisfactory. Alarm and communication systems and lighting in vital locations such as escape routes and embarkation stations are to be proven satisfactory.

Section 9 SURVEYS OF THE OUTSIDE OF THE UNIT'S BOTTOM AND RELATED ITEMS

5.9.1 General requirements

5.9.1.1 Examinations of the outside of the unit's bottom and related items may be carried out with the unit in dry dock or on a slipway, or carried out in the form of an in-water survey. The conditions for accepting in-water survey in lieu of docking survey are given in 5.2.3, Section 2 of this Chapter.

5.9.1.2 The interval between examinations of the outside of the unit's bottom and related items is to be in accordance with the provisions in Section 2 of this Chapter.

5.9.2 Extent of survey for the outside of the unit's bottom

5.9.2.1 All units

(1) When a unit is in dry dock or on a slipway, it is to be placed on blocks of sufficient height and with necessary staging to permit examination of elements such as side shell plating, including bottom and bow plating, stern frame and rudder, sea valves and chests, propeller, etc.;

(2) The side shell plating is to be examined for excessive corrosion, or defects arising from wear, grounding and any abnormal indentation or buckling, with particular attention to the connections of bilge strake and bilge keel. Important shell plating indentations or other defects which do not require immediate repair are to be recorded;

(3) Sea valves and gratings, sea chests, overboard discharge valves, seawater cocks and ancillary facilities of the hull or sea valves are to be examined;

(4) Propeller, visible parts of rudders, rudder pins, rubber shaft as well as flanges and sternpost are to be examined. Where deemed necessary by the surveyor, the rudder blade is to be lifted or the inspection plate of rudder pin is to be removed to allow inspection of rudder pins. The clearance of rudder bearing is to be verified and recorded. The limit values for rubber bearing wear clearance are given in Appendix 4, Chapter 5, PART ONE of CCS Rules for Classification of Sea-going Steel Ships. The surveyor may, as deemed definitely necessary, require the rudders to be pressure tested, as far as practicable;

(5) The visible parts of side thrusters are to be examined;

(6) During docking repair of motor-driven floating installation, mooring test is to be carried out to confirm that the main and auxiliary engines operate properly. In case of any major repair of the main and auxiliary engines or steering gears, sea trial of the unit is to be considered;

(7) Structures connected to a single point are to be examined and if necessary, examined through NDT;

(8) The external cathodic protection systems and coatings are to be examined;

(9) Anti-fouling system and in-water survey class notation (if applicable) are to be examined.

5.9.2.2 Column-stabilized units

(1) External surfaces of the upper hull or the floating installation, footing, lower hull, columns, brace and their connections, and propulsion unit (as applicable) are to be selectively cleaned and examined;

(2) The columns, upper/lower hulls, braces and other critical joints or suspect areas found by the surveyor are to be examined through NDT.

5.9.3 In-water survey

5.9.3.1 General requirements

(1) For units with in-water survey (IWS) class notation, the in-water survey may be carried out to examine the underwater portions of the main structure and machinery in addition to the provisions of 5.2.3 of this Chapter. The specific requirements for in-water surveys are given in Chapter 5, PART NINE of the Rules;

(2) At the request of the owner and under particular ambient conditions, CCS may agree that in-water survey be carried out for units with in-water survey class notation to replace the docking survey described in 5.9.2 of this Section.

5.9.3.2 Conditions for in-water surveys

(1)In principle, there are no overdue repair items for the underwater portions of shell plating, rudder, propeller an propeller shaft, unless considered by CCS that such repairs are practicable when the floating installation is afloat;

(2) The in-water survey is to be carried out with the unit in sheltered calm water or good environment for survey such as steady current (including tidal current). The in-water visibility is to be good and the main structure below the waterline is to be clean enough to allow the surveyor and divers to determine the conditions of the plating, appendages and welds; the means of positioning on the main plating used by the divers are to be satisfactory to CCS surveyor and if necessary, the permanent marks on the main plating are to be used for selection of the positioning points;

(3) The equipment and procedure for observing and reporting the survey are to be discussed with the parties involved prior to the in-water survey, and suitable time is to be allowed to permit the diving company to test all equipment beforehand;

(4) The in-water survey is to be carried out by one or more qualified divers under surveillance of a CCS surveyor. The divers are to be employed by a firm approved as a service supplier by CCS. Effective two-way communication between the surveyor and divers is to be provided.

5.9.3.3 Extent of survey and survey report

(1) The in-water survey is to provide the same information of the unit’s bottom as that normally obtained from a docking survey. The extent of in-water survey is to be the same as the survey items listed in 5.9.2 as far as practicable. Special consideration may be given to ascertaining rudder bearing clearance and stern bush clearance of oil stern bearings based on a review of the operating history, onboard testing and stern oil sample analysis. These considerations are to be included in the proposals for in-water survey which are to be submitted by the owner in advance of the survey so that satisfactory arrangements can be confirmed by and agreed with CCS;

(2) Upon completion of an in-water survey, a detailed report together with a video tape and photos showing the main parts under survey are to be submitted by the diving firm to the surveyor;

(3) If the in-water survey reveals any damage or deterioration that requires early attention, the surveyor is to require that the floating installation be dry docked for a detailed survey and necessary repairs.

Section 10 SURVEYS OF PROPELLER SHAFTS AND STERNTUBE SHAFTS

5.10.1 General requirements

5.10.1.1 Propeller shafts and sterntube shafts are to be surveyed in accordance with the relevant provisions in Section 12, Chapter 5, PART ONE of CCS Rules for Classification of Sea-going Steel Ships. Due to less running hours of sterntube shafts of floating installation, the interval between sterntube shaft surveys may be extended as appropriate to the satisfaction of the surveyor and based on:

(1) satisfactory diver's external examination of the sterntube bearing and outboard sealed areas including weardown check as far as possible;

(2) internal examination of the stern shaft seal area in engine room(s);

(3) confirmation of satisfactory lubricating oil records (good oil loss rate, free from unacceptable contamination);

(4) examination or replacement of shaft seal elements in accordance with seal manufacturer's recommendations.

Section 11 BOILER SURVEYS

5.11.1 General requirements

5.11.1.1 Boiler surveys are to be carried out in accordance with the relevant provisions in Section 13, Chapter 5, PART ONE of CCS Rules for Classification of Sea-going Steel Ships.

Section 12 INITIAL CLASSIFICATION INSPECTION OF FLOATING INSTALLATION CONSTRUCTED WITHOUT CCS INSPECTION

5.12.1 General provisions

5.12.1.1 The initial classification surveys of floating installation constructed not under the supervision of CCS includes:

(1) initial classification surveys of floating installation which are under construction;

(2) initial classification surveys of floating installation after construction.

5.12.1.2 The initial classification surveys specified in this Section include surveys related to class notations.

5.12.1.3 Whenever CCS is requested by an owner to accept the transfer of class for a floating installation and the losing Society is the one accepted by CCS. CCS is to immediately notify the owner in writing that:

(1) the relevant surveys specified in 5.12.3.1 are required to be satisfactorily complete for entry into class;

(2) for units less than 15 years of age, an interim certificate of class can be issued only after CCS has completed:

① all overdue surveys, and

② all overdue conditions of class previously issued by the losing Society.

(3) for units 15 years of age and over, an interim certificate of class can be issued only after confirmation by CCS that the losing Society has completed:

① all overdue surveys, and

② all overdue conditions of class previously issued by the original Society.

(4) any outstanding recommendations/conditions of class are to be dealt with by their due dates;

(5) the principles given in item (1)~(3) above also apply to any additional recommendations/conditions of class issued against the unit arising from surveys which were not included in the initial survey status provided by the losing Society because the surveys were carried out in close proximity to the request for transfer of class. Such additional recommendations/conditions of class if received after the issuance of the interim certificate of class issued by CCS and which are overdue are to be dealt with at the first port of call by the relevant Society depending on the age of the unit;

(6) CCS shall obtain the drawing documents specified in this section as necessary conditions for the final classification of floating installation.

5.12.1.4 If found satisfactory at the survey, load lines will be marked in accordance with Section 2, Chapter 3, PART THREE of the Rules.

5.12.2 Initial classification surveys of floating installation under construction

5.12.2.1 Initial classification surveys which have been surveyed by the Societies accepted by CCS:

(1) All plans, calculations and other technical documentation (approved by the losing Society according to its rules) are to be submitted to CCS for check. The construction of floating installation may, in general, continue in accordance with the approved plans;

(2) In addition to the normal items for newbuildings, the following items are to be checked (unless they have been checked and accordingly recorded by the losing Society):

① The builder is to submit record of the checked or confirmed items for review;

② The surveyor is to carry out an overall survey of all compartments, spaces and installation that have been inspected and confirm that materials, scantlings, workmanship and arrangement are in accordance with the approved plans;

③ The information on the attended inspections and tests of compartments is to be accepted when such information is confirmed authentic. When some of the compartments are to be tested again, e.g. function tests during transit test and in particular the inspection and testing of ballast tanks, the new tests are to be attended;

④ NDT records are to be checked and if necessary, sampled. Any NDT is to comply with the provisions of the rules;

⑤ Manufacturing and testing of materials used for construction (including forgings and castings), anchors and anchor chains are to comply with the requirements of the standards acceptable to CCS;

⑥ The main propulsion machinery (if applicable) and essential auxiliary machineries are to be manufactured, installed and tested in accordance with CCS rules or the standards acceptable to CCS;

⑦ The anchors and anchor chains, if they have not been delivered to the builder, are to be inspected and certified in accordance with CCS rules;

⑧ All outstanding recommendations are to be completed.

5.12.2.2 Initial classification surveys of floating installation which have been surveyed by other Societies:

(1) All plans, calculations and other technical documents for construction are to be submitted to CCS for examination and approval. Where any change has been made to the originally approved plans as a result of the examination, the construction is to be changed in accordance with the re-approved plans;

(2) In principle, the surveys are to be carried out in accordance with the same requirements as those specified in 5.12.2.1 of this Section and if necessary, the completed items may be sampled.

5.12.3 Initial classification surveys of floating installation after construction

5.12.3.1 Initial classification surveys of floating installation surveyed by an IACS Member Society

(1) Initial classification surveys of floating installation to which certificates have been issued by an IACS Member Society:

① When applying for an initial classification survey, as a prerequisite for issuance of a long-term classification certificate by CCS, the owner is to submit at least one cope of each of the plans, calculations and other technical documents to CCS for check, including at least the following:

a. Main drawings

(a) Instructions of the floating hull and equipment of the floating installation;

(b) General layout;

(c) Environmental conditions information;

(d) Capacity plan;

(e) Hydrostatic curve chart;

(f) Operation manual and loading manual (if required).

b. Drawings of main structure

(a) Main transverse section;

(b) Plans of basic structures, including longitudinal section, decks, inner bottom structure, superstructure and deckhouse structure;

(c) Transverse bulkhead plan;

(d) Shell expansion plan;

(e) Rudder and rudder stock (if applicable);

(f) Hatch covers plan;

(g) For column-stabilized floating installation, also including plans of columns, footings or lower hull, diagonal and bracing structures (h);

(i) Construction booklet.

c. Machinery drawings

(a) Engine room layout;

(b) Bilge and ballast water piping diagrams;

(c) Cable layout;

(d) For self-propelled units, also including:

a) Intermediate shaft, thrust shaft and propeller shaft;

b) Propeller;

c) Main engine, propulsion machinery and clutch systems (or manufacturer, model and specifications);

d) Steering gear piping system and arrangement, manufacturer and model;

e) Torsional vibration calculations for shafting, to be submitted for floating installation less than two years of age;

f) Elastic coupling of propulsion shafting and/or shaft torque limiter (or manufacturer, model and specifications) for floating installation with ice class notation;

(e) Pump room layout;

(f) Fore and aft pump suctions layout, cofferdam and pump rooms water discharge plan;

(g) Arrangement of crude oil piping in tanks and on decks;

(h) Vent system layout;

(i) For periodically unattended engine rooms, drawings of the following items are additionally required:

a) Measuring instruments and alarms specifications;

b) Fire alarm signal devices;

c) Automatic safety function (e.g. slowing down, closing, etc.);

d) Functional tests.

d. Drawings of electrical installation

(a) Power system plan;

(b) Explosion-proof equipment layout and equipment specifications;

(c) For floating installation with the class notation of periodically unattended machinery spaces, drawings of the following items are additionally required:

a) Measuring instruments and alarms specifications;

b) Fire alarm signal devices;

c) Automatic safety function (e.g. slow down, closing, etc.);

d) Functional tests.

e. Fire and explosion prevention

(a) Fire control plan;

(b) Classification of hazardous areas

(c) Fixed fire extinguishing system piping and instrument diagrams;

(d) Inert gas system plan (if applicable);

(e) Fire detection and alarm system plan;

(f) Flammable gas detection and alarm system plan;

f. Any other documents required by the Administration

(a) Safety plan;

(b) Stability information;

(c) Damage stability calculations (if applicable);

(d) Damage control plan (if applicable);

(e) Arrangement of fixed fire extinguishing system;

(f) Arrangement of oil pollution prevention system

g. Plans and information related to special features of the floating installation (if applicable);

h. Freeboard calculations

② Where drawings and documents cannot be submitted according to the requirements of ① above, it is recommended that the owner authorize the losing Society to transfer copies of such drawings and documents as it may possess directly to CCS. CCS may accept other relevant technical information as an equivalent alternative;

③ Where the stability (including intact stability and damage stability) information, the operational manual and loading manual (if applicable) have been approved by the Administration or a duly authorized organization and compliance of the arrangement on board the floating installation with the approved information has been confirmed by CCS, CCS may accept the approved information as the basis for assigning class or issuing certificates;

④ In addition to the items corresponding to the unit's age and losing class status, the extent of surveys is to include the following:

a. Structures

(a) For floating installation of less than 5 years, an annual survey is to be carried out;

(b) For floating installation of more than 5 years but less than 10 years, an inspection of 20% representative ballast tanks is to be carried out in addition to the requirements of (a) above;

(c) For floating installation of more than 10 years but less than 20 years, an inspection of 20% representative crude oil tanks is to be carried out in addition to the requirements of (a) above;

(d) For floating installation of 20 years and over, the requirements for special surveys are to be complied with, and this provision also applies to floating installation under continuous structure survey;

(e) For floating installation converted from oil tankers, if the transfer of class is exercised within 20 years from the time of conversion into floating installation, annual surveys, plus additional surveys of 20% ballast tanks and 20% crude oil tanks, are to be carried out, and if the transfer of class is exercised after 20 years from the time of conversion into floating installation, special surveys are to be carried out;

(f) If a dry-docking is not due at the time of transfer of class, and subject to consent of CCS Headquarters, an underwater examination may be carried out in lieu of dry-docking required in (d) and (e). For floating installation over 25 years of age, however, an underwater examination in lieu of dry-docking is not to be considered;

(g) In the context of applying items (a) to (f) above, as applicable,

-if the class entry survey is to be credited as a periodical survey for maintenance of class, consideration may be given by CCS to the acceptance of thickness measurements taken by the losing Society, provided that they were carried out within the applicable survey window of the special survey in question; or

-if the class entry survey is not to be credited as a periodical survey for maintenance of class, consideration may be given by CCS to the acceptance of thickness measurements taken by the losing Society, provided that they were carried out within 15 months prior to completion of the class entry survey when it is in the extent of a special survey, within 18 months prior to completion of the class entry survey when it is in the extent of an intermediate survey;

In both cases, at the request of the owner and approved by CCS Headquarters, the thickness measurements are to be reviewed by CCS for compliance with the applicable survey requirements, and confirmatory gauging are to be taken to the satisfaction of CCS.

(h) Where applicable, during execution of items (c) to (f) above, if class entry survey is not to be credited as a periodical survey for maintenance of class, tests of liquid tanks are not to be credited as part of the class entry survey for floating installation of more than 15 years; if class entry survey is to be credited as a periodical survey for maintenance of class, consideration may be given by CCS to the acceptance of the result of tank tests carried out by the losing Society, provided that they were carried out within the applicable survey window of CCS periodical survey;

(i) Where applicable, during execution of items (a) to (f) above, where class entry survey is not to be credited as a periodical surveys for maintenance of class, the items required to be credited as a periodical surveys in compliance with the rules (such as 5.3.5, Section 3 of this Chapter) do not have to be considered part of the class entry.

b. Machinery (including electrical installation)

An overall examination of all essential machinery is to be carried out and is generally to include:

(a) examination under working conditions of boilers, economizers, steam heaters and steam generators. Confirmation of safety valve calibration records kept on board the floating installation;

(b) verification of compliance of all pressure vessels with the submitted plans and certificates;

(c) insulation resistance, generator circuit fuses, preference tripping relays and speed controllers of generator prime movers are to be tested, and parallel operation test and load sharing test are to be carried out;

(d) in any case, the working conditions of navigation lights and indicators, and the power supply of the main and emergency sources of power are to be examined;

(e) bilge water system, fuel oil burning installation, together with the remote controls of the fuel oil valves of emergency fire pumps, fuel oil pumps, lube oil pumps and forced draught fans are to be examined and tested under working conditions;

(f) compliance of recirculating and ice-clearing arrangements with class notations (if there are ice class requirements) is to be verified;

(g) the main and auxiliary machineries necessary for navigation of self-propelled floating installation, together with the main controls and steering gears, are to be function tested. The auxiliary means of steering is to be tested. A short sea trial is to be performed at the surveyor's discretion if the floating installation has been laid up for a long period;

(h) initial start arrangements are to be verified;

(i) cargo oil systems and electrical installation in hazardous areas are to be checked for compliance with the rules. Where fail-safe equipment is installed, the surveyor is to verify that such equipment has been approved by the IACS Member Society or its duly authorized organization. Safety devices, alarm and essential arrangements of the inert gas system are to be examined to confirm that they are in good working conditions, and the systems are to be generally examined to ensure that they do not constitute any hazard to the floating installation.

c. Fire and explosion prevention

(a) An overall examination of fire extinguishing systems is to be carried out;

(b) an overall examination of the adequacy and technical condition of explosion-proof equipment is to be carried out;

(c) Alarms for fire and flammable gas detection systems are to be tested.

d. When repair and survey facilities are not available at the first port of initial classification survey (also referred to as "survey for transfer of class") described in 5.12.3.1 (1), the survey may be carried out stepwise and CCS may allow the floating installation to undertake a direct single voyage to a port where such facilities are available to complete all surveys required. Such surveys are to be carried out by CCS or the losing Society, to the maximum extent practicable at the first port of survey, but in no case less than the extent of annual structure survey and the additional machinery surveys required in 5.12.3.1 (1) ④ b.

e. The surveys for transfer of class may be carried out in conjunction with the required periodical surveys after construction. Where such surveys are not carried out in conjunction with periodical classification surveys related, the conditions of class which not overdue and required to be completed in conjunction with the periodical surveys need not be completed at surveys for transfer of class.

f. After the surveys stated in 5.12.3.1 (1) ①~④ of this Section, the interval between the surveys may be corresponding to that of the losing Society.

g. Requirements for floating installation of double class or dual class:

(a) For double class floating installation, the extent of survey is to be in accordance with 5.12.3.1 (1) ① and ④;

(b) For dual class floating installation, the extent of survey is to be at least in accordance with that of annual surveys.

(2) Initial classification surveys of floating installation without certificates issued by IACS Member Society:

① Submission of plans and information, examination and survey items is to be in accordance with the provisions in 5.12.3.1 (1) of this Section;

② The owner is to submit records and reports related to surveys, tests and measurements during construction as well as the certificates, test information, etc. of main marine products;

③ The surveyors are to examine the main structural dimensions to confirm compliance with the relevant provisions of the Rules;

④ If necessary, test and/or survey for confirmation is to be carried out.

5.12.3.2 Initial classification surveys of floating installation which have been surveyed by other Societies:

(1) This subsection applies to the floating installation which have not been constructed under CCS rules and have not been classed with CCS or IACS Member Societies;

(2) Floating installation are in general to comply with the requirements of the present rules of CCS, at least with CCS rules effective during the construction;

(3) For floating installation, the plans and information are generally to be submitted in accordance with the requirements of CCS rules for construction of floating installation. Where the plans related to quality control during the construction of floating installation cannot be submitted, the methods to evaluate and verify the related structures or equipment are to be provided, accepted by CCS through evaluation and verified during classification surveys, in which case the submission of related plans may be waived. In any case, at least the drawings, information, calculations and technical documents listed in 5.12.3.1 (1) ①of this Section are to be made available to CCS;

(4) In addition to the scope of special survey required by CCS rules for floating installation of the same type and age, including docking surveys, propeller shaft and sterntube shaft surveys, boiler surveys, surveys of oil and water process system and inert gas system, the initial classification surreys are also to cover the following items:

① thickness measurement of the main structure to be carried out according to the requirements which are not less than the minimum requirements for thickness measurement of the fourth special survey;

② further survey items required by CCS based on a review of the condition examination, operation history and repair history of the floating installation, including NDT at a certain proportion of critical welds of the main structure and the inspection scope extended as appropriate, etc.;

③ review of the records of examinations, tests and measurements during the construction of the floating installation, including the materials used, construction methods, test methods, criteria and extent of NDT of structural welds, records of mooring test and sea trial, marine product certificates, and necessary verification of these items during surveys;

④ verification of related structures or equipment by acceptable methods as described in 5.12.3.2 (3).

Section 13 INSPECTION OF EQUIPMENT WITH ADDITIONAL NOTATIONS

5.13.1 General requirements

5.13.1.1 This Section applies to surveys of equipment covered by the class notations specified in 2.3.2.5 of Chapter 2 of this PART on categories C, D and E.

5.13.1.2 The surveys of the equipment covered by class notations are to be in accordance with the Rules or other applicable CCS rules or guidelines. See 2.3.2.5 of Chapter 2 of this PART.

5.13.1.3 The surveys of the equipment covered by the following class notations are to be in accordance with the requirements of this Section:

(1) Helicopter deck (HELDK);

(2) Position mooring system (PM).

5.13.2 Helicopter deck

5.13.2.1 Annual surveys

(1) Helicopter deck and its supporting structures, securing arrangements, safety net, visual aids, etc. are to be generally examined;

(2) Gangways including means of escape are to be in good conditions, free from obstructions and clearly marked;

(3) Fire hoses, nozzles, foam applicators, portable and wheeled fire extinguishers are to be examined, maintained in good working conditions and stowed in their respective specified locations;

(4) All refueling facilities including earthing device, emergency shutdown devices and fuel spillage draining facilities, etc. are to be generally examined and maintained in good and effective conditions.

5.13.2.2 Special surveys

In addition to the items required by 5.13.2.1, the applicable items in 5.5.4, 5.7.4 and 5.8.4 of this Chapter are to be surveyed.

5.13.3 Position mooring system

5.13.3.1 A program for periodical surveys of position mooring system is to be developed by the owner, submitted to CCS for review and made available on board.

5.13.3.2 Annual survey items

The components of the mooring system are to be generally examined in rotation at each annual survey according to the survey program. Annual surveys are to be capable of determining as far as practicable the general condition of wastage, corrosion, deterioration, etc. of the mooring system components, including anchor chains, cables, fittings, connections, fairleads and windlasses. The surveyor is to be satisfied that all components and equipment are maintained in good conditions. Particular attention is to be paid to the following chains or cables:

(1) Cable or chain in the vicinity of winches or windlasses;

(2) Cable or chain in contact with guide equipment such as fairleads, rollers, bends and chain/cable stoppers;

(3) Cable or chain in way of the splash zone;

(4) Connecting links and sockets.

5.13.3.3 Special inspection items of positioning and mooring system shall be agreed upon by the owner and CCS on the basis of comprehensive consideration of mooring system design and current situation. The inspection items can refer to the inspection items of the positioning and mooring system of the mobile unit appropriately.

(1) Windlasses and their driving gears are to be examined and tested;

(2) All mooring components are to be completely cleaned and examined. The chains are to be checked for wastage, corrosion, fracture, twists, loose or detached cable studs; mooring cables are to be checked for wastage, corrosion, flattening and broken wires;

(3) Joining shackles are to be checked for corrosion, wastage, bending and loose stud;

(4) All Kenter joining shackles over 4 years in service are to be disassembled and examined by magnetic particle inspection or by other inspection method that is agreed by CCS and meets the requirements of examination. Joining shackles of other types are to be partially or wholly disassembled for inspection, as appropriate;

(5) Links significantly worn at end and accounting for approximately 5% of all lines are to be selected for measurement of mean diameter. The survey may require increasing the number of links to be measured based on the results of visual inspection, and the selected links are to be evenly distributed in the working length of the chain as far as practicable. The chain links are to be renewed in cases where it is found that the links have been so far worn that their mean diameter is 5% or more below the original required nominal size;

(6) For armored or sheathed mooring wires, the armor and sheath are to be examined, with attention to the conditions of fractures, tears and wastage of the sheath;

(7) An overall examination of mooring wire sockets and connections is to be carried out, with special attention to the conditions of wastage and corrosion of the mooring cable in the vicinity of sockets;

(8) For in-water surveys, an in-water survey plan (including details on cleaning of mooring components, extent and methods of examination) is to be submitted to CCS for approval. The approval status of equipment, deep diving submersible and other appropriate tools used for in-water survey is to be confirmed by the surveyor. The divers carrying out in-water surveys are to hold an appropriate qualification certificate and the companies engaged in in-water surveys are to be approved by CCS. In-water surveys are to be carried out under the supervision of the surveyor.

Section 14 OTHER SURVEYS

5.14.1 Surveys of alterations, repairs and modifications of a major character

5.14.1.1 General requirements

(1) This paragraph applies to surveys of repairs, alterations and modifications which substantially change one or more of the following characteristics of the existing floating installation (hereinafter referred to as major conversions):

① Main dimensions of a floating installation;

② Intended purpose of a floating installation;

③ Level of subdivision of a floating installation;

④ Other major conversions in the opinion of the Administration.

5.14.1.2 Surveys

(1) Plans and documents of a floating installation subject to a major conversion are to be submitted to CCS for approval. The floating installation's structures, including the original structures and the altered structures, are to comply with the requirements of currently effective rules. The structural strength of the altered floating installation is to be evaluated in accordance with the currently effective rules;

(2) Grades of the materials used for the alteration are in general to be the same as or equivalent to those indicated in the approved plans;

(3) Welds are to be tightness tested and where the tightness test is impracticable or will affect the performance of fittings and equipment, visual inspections or inspections by other equivalent means are to be carried out and in addition, certain essential welds are to be subject to NDT in accordance with the requirements of CCS rules;

(4) CCS will carry out overall or local surveys and tests of the altered floating installation as appropriate to ensure that the materials used and workmanship are satisfactory in all aspects and that the floating installation is fit for the intended purpose, and if applicable, the load lines are to be marked in accordance with the requirements in Section 2, Chapter 3, PART THREE;

(5) New certificates will be issued for altered floating installation according to their new dimensions and intended purposes. The period of validity of new certificates is to be based on the survey status and is in general to be corresponding to that of the existing certificates. Where new characters of classification and class notation(s) are

intended to be assigned to a converted floating installation, the period of validity of new certificates may start from the completion date of survey;

(6) Inclining tests are in general to be carried out for floating installation which have undergone a major conversion. The inclining test may be dispensed with upon approval by the Administration;

(7) Ship type floating installation which have undergone a major conversion and are equipped with propulsion plants are in general to be subject to sea trials, unless the following conditions are satisfied:

① the main propulsion system has not been changed;

② the steering system has not been changed;

③ the main dimensions and shape lines have not been changed;

④ the draught has not been increased.

5.14.2 Occasional surveys

5.14.2.1 General requirements

(1) For any occasional survey covered by 5.2.11 of this Chapter, the owner or operator of the floating installation is to make an application to CCS;

(2) If the owner or operator of the floating installation, in respect to any damage or repairs of the installation, directly applies for any related periodical survey specified in the Rules, a separate application for an occasional survey needs not be made;

(3) When applying for an occasional survey, the relevant requirements of this paragraph and in addition, of Section 2 of this chapter, are to be complied with;

(4) Where any defect is found during the occasional survey, the surveyor may extend the survey as deemed necessary.

5.14.2.2 Damage surveys

(1) In the event of any sea or machinery damage which affects or may affect the class of the floating installation, the owner is to promptly apply to CCS for a survey so as to enable the surveyor to ascertain the extent of the damage and necessary repairs;

(2) The damage survey is to be carried out so far as necessary for fully revealing the causes and extent of the damage, generally covering damaged items and/or damage locations as well as adjacent/associated compartments, machinery and equipment;

(3) Any damage which affects the class of the floating installation is to be repaired according to relevant rules and with respect to the scope and extent of the damage. The scope and plan of repairs are to be such as to ensure that the condition of the unit will be so recovered that its class may be reinstated or maintained. The damage survey covers in general any damaged item affecting the class;

(4) If any damaged item, which cannot be repaired immediately and thoroughly, is considered to be not affecting the safety of the floating installation upon assessment by CCS at the request of the owner, such item may not be subject to repair for a limited period of time or may be subject to a local or suitable temporary repair plan, provided that appropriate operational restrictions in writing are signed.

5.14.2.3 Repair surveys

(1) Any repair which affects the class of the floating installation is to be subject to supervision by the surveyor to ensure that any defects will be removed, the original technical condition restored and no major change made to the structure and characteristics of the installation;

(2) For any repair which affects the class of the floating installation, the owner or operator of the floating installation is to apply to CCS for survey. During any periodical survey specified in the Rules, the surveyor is to be informed of the repairs which affect the class of the floating installation, if any;

(3) The repair survey is to check the defect or damage, require repairs, confirm repair plan and carry out supervision or repairs to ensure that the repairs will be completed in compliance with the rules. Supervision of repairs may consist of review of repair procedures, inspections and tests;

(4) Compliance of temporary repair items with the requirements for safety, reliability and restricted service is to be ensured;

(5) After completion of the repair survey, a survey report stating the nature of repairs, confirming the technical condition and making other necessary recommendations, is to be signed.

5.14.2.4 Port State/Administration inspections

(1) Where defects are found as a result of a Port State/Administration inspection, the owner is to promptly report this to CCS and apply for an occasional survey to confirm such defects;

(2) The defects, which are related to the classification certificate or statutory certificates issued by CCS as authorized, are to be rectified and/or necessary repair work is to be carried out within the due time.

5.14.2.5 Surveys for change of the floating installation's name, port of registry, owner or operator and flag

(1) Where the floating installation's name, port of registry, owner or operator and flag is to be changed, the owner is to inform CCS of the relevant information as far as practicable in advance and apply for an occasional survey;

(2) When the owner of the floating installation is changed, any information related to the class of the floating installation is not to be provided or confirmed to any third party, unless the requesting party formally signs a written document and is authorized by the present owner.

(3) Survey requirements:

① The survey for the change of a floating installation's name or port of registry is in general to check the floating installation's names or ports of registry in relevant documents and certificates and make appropriate changes and upon confirmation of such changes, modify the classification certificate or issue a new classification certificate with the changed name or port of registry of the floating installation and issue a survey report accordingly;

② When the owner of a floating installation is changed, the exiting class of the installation may be maintained provided that the new owner makes an application to CCS and accepts CCS rules and conditions of class (if any);

③ The survey for the change of a floating installation's flag is to confirm the installation's new certificate of nationality and check the floating installation and its relevant documents and certificates in respect of changes to the flag State, etc. Such surveys are in general to be carried out in conjunction with the statutory surveys.