CHINA CLASSIFICATION SOCIETY

RULES FOR CLASSIFICATION OF MOBILE OFFSHORE UNITS

2016

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PART ONE PROVISIONS OF CLASSIFICATION

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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 installations. Classification societies have no commercial interests related to design, building, ownership, operation, management, maintenance or repairs, financing, insurance or chartering of ships and offshore installations.

1.1.1.2 Classification societies work for the safety of ships and offshore installations 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 installations.

1.1.2.2 CCS mainly undertakes classification services, certification surveys and surveys relating to notarial matters for ships, offshore installations, 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

The objectives of CCS are, by furnishing reasonable and reliable technical rules for ships, offshore installations, containers and related industrial products and conducting in an independent, impartial and honest manner classification, certification and technical 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 installations and related industrial products (including containers): development and maintenance of rules, plan approval, surveys and certification;

(2) Statutory services for ships, offshore installations 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 installations , 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 installations, 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

1.2.1.1 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.

1.2.1.2 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 approve the main technical rules developed by CCS for ships and offshore installations;

(3) organize technical analysis and investigation of major accidents of the ships and offshore installations 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 installations, 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 installations 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 installations;

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

CHAPTER 2 SCOPE AND CONDITIONS OF CLASSIFICATION

Section 1 GENERAL PROVISIONS

2.1.1 Principle 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 unit'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 service provided by a classification society to clients in accordance with the rules published by it.

(2) A classed unit is a unit to which a classification certificate is issued by a classification society in accordance with its rules.

(3) A convention unit is a unit holding an international certificate issued according to a relevant international convention.

(4) A non-convention unit is any unit which is not a convention unit.

(5) A mobile offshore unit means a unit designed to be moved from one operating site to another as necessary, referred to as unit.

(6) A self-elevating unit means a unit of which the hull is raised to a predetermined elevation above the sea surface on its movable legs supported on the sea bed, and of which the hull can be lowered to the sea surface with movable legs recovered.

(7) A column-stabilized unit (Semi-submersible unit) means a unit with the upper hull connected to the lower hull or footings by columns. When the unit is being operated in a floating condition, the lower hull or footings will be submerged and partial columns will be above sea surface, and the unit is in the semi-submersible state, or when the unit is being operated in a resting on sea bed condition, the lower hull or footings will be located on the sea bed and partial columns will be above sea surface, and the unit is in the submersible state.

(8) A submersible unit means a unit with its upper hull above sea surface supported by lower hull and some columns, only suitable for operations in shallow waters. Its lower hull is on the sea bed during operation and the upper hull is supported solely by columns.

(9) A surface-type unit means a unit having a ship-type or barge-type displacement hull or hulls for operation in the floating condition:

① A ship-type unit is a surface-type unit having propulsion machinery;

② A barge-type unit is a surface-type unit having no propulsion machinery.

(10)Administration of the flag state means the maritime authority of the country in which the unit is registered, the shorter form of which is Administration;

(11) A self-propelled unit means a unit designed for unassisted sea passages.

(12) A non-self-propelled unit means a unit which is not a self-propelled unit.

(13) A new unit means a unit contracted for construction on or after the date of the Rules enter into force.

(14) An existing unit means a unit which is not a new unit.

(15) Product is a generic term of materials, equipment and systems.

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

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

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

① unavailability of dry-docking facilities;

② unavailability of repair facilities;

③ unavailability of essential materials, equipment or spare parts;

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

⑤ Special considerations of administration of the flag state

(19) A double class unit is one which is classed with two Societies and each Society carries out all surveys in accordance with it own rules and schedules individually.

(20) A dual class unit is one which is classed with two Societies between which there is a written agreement of work sharing.

(21) 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.

(22) Coastal state means the Governmentof the state exercising administrative control over the drilling operations of units.

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 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. Where any "guidelines" are referred to in the rules, the paragraphs related to classification in such "guidelines" constitute requirements of the rules.

2.2.2 Rules development

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 IMO (International Maritime Organization), and unified requirements by IACS (International Association of Classification Societies).

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 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 mobile offshore units.

2.2.4.2 The Rules apply to new units. Except as specified in 2.2.4.3, all units constructed beforethe date of entry into force of the Rules are to continue to comply with the requirementspreviously applicable to them.

For units which have undergone a major modification, the modified and related portions are tocomply with the effective Rules.

2.2.4.3 If applicable, the requirements in this Part may also apply to the existing units.

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

2.2.5 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 Application of risk assessment technique

2.2.6.1 If the owner or his agent wishes to apply the risk assessment technique in 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 be substituted for the whole or part(s) of the Rules, subject to the satisfactory review of the risk assessment information by CCS.

2.2.7 References in the Rules

2.2.7.1 References to relevant documents in the Rules constitute requirements of the Rules. For references with no date indication, their latest version applies to the Rules.

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 mandatory.

2.3.1.2 The main structure (including equipment) and machinery (including electrical installations) 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 main structure (including equipment) and machinery (including electrical installations) 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 not 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 unit's propulsion and auxiliary machinery have been inspected by CCS, and constructed with plan approval by and under the supervision of CCS and comply with CCS rules;

★ CSM－indicating that the unit's propulsion and auxiliary machinery have not been inspected by CCS, but constructed with plan approval by and under the supervision of CCS and comply with CCS rules;

★ CSM－indicating that the unit's machinery and auxiliary machinery have not 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.

2.3.2 Class 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, unit service, 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 of this Chapter contains a list of class notations for units and such notations may be entered only in English into classification certificates. The list may be divided into the following tables:

A: Type notation: For all units, the type notation is to be added;

B: Service notation: For all units, the service notation is to be added;

C: Special system and facilities notation: If the special system and facilities of units have been designed and constructed in accordance with the relevant rules and guidelines, the appropriate notations may be added respectively;

D: Automation of the engine room and machinery notation: If the automation of the engine room and machinery of units have been designed and constructed in accordance with the relevant rules and guidelines, the appropriate notations may be assigned respectively;

E: Environmental protection notation: Units complying with the relevant requirements of CCS rules may be assigned the appropriate notations respectively;

F: Service restriction notations: Units, the service of which is restricted within a specified sheltered area, are to be added this notation.

2.3.2.6 Other notations

Upon request by the owner and with the consent of the Headquarters of CCS, the class notations other than those specified above may be assigned, provided that relevant requirements are complied with to the satisfaction of CCS.

2.3.3 Characters of classification and class notations

2.3.3 Combination of characters of classification and class notations

2.3.3.1 Class notations are marked after characters of classification. The type notation, service notation and service restriction notation are necessary notations and are to be assigned together with characters of classification.

2.3.3.2 When multiple service notations are assigned, such individual notations are to be separated by the sign “/”, i.e. Drillling Unit / Workover Unit.

2.3.3.3 Every two sets of class notations are to be separated by a semicolon “;”.

2.3.3.4 Unless specifically stated otherwise, class notations are generally arranged in the sequence A–F as shown in clause 2.3.2.5 and filled in classification certification. For instance: For self-elevating drilling units constructed under the supervision by CCS, it is provided with helicopter deck facilities, strengthened for navigations in ice areas with small floating ices, and with restricted services. The characters of classification and class notations are given below:

★CSA Self-elevating Drilling Unit; HELDK; Ice class B; Service Restricted

Class Notations **Table 2.3.2.5**

Class notation	Description		Technical requirements to be complied with
A Type notation			
Self-elevating	Self-elevating	Units defined in 2.1.3.1 (6) of this part	PART ONE to PART SEVEN of the Rules
Column Stabilized (Semi-submersible)	Column stabilized (semi-submersible)	Units defined in 2.1.3.1 (7) of this part	
Submersible	Submersible	Units defined in 2.1.3.1 (8) of this part	
Unit Type	Unit type	Units defined in 2.1.3.1 (9) ① of this part	
Barge Type	Barge type	Units defined in 2.1.3.1 (9) ② of this part	
B Service notation			
Drilling Unit	Drilling units	Units intended mainly for drilling operations for the exploration and exploitation of petroleum, gas or other resources beneath the sea bed	Chapter 1 of PART EIGHT of the Rules
Workover Unit	Workover units	Units intended for workover operations for the exploration and exploitation of petroleum, gas or other resources beneath the sea bed	Chapter 1 of PART EIGHT of the Rules
Accommodation Unit	Accommodation units	Units used for personnel's accommodation, these personnel are engaged in exploration, exploitation and production of petroleum and gas at sea	Chapter 2 of PART EIGHT of the Rules
Crane Unit	Crane units	Units provided with lifting appliances on deck, dedicated to offshore lifting operation, the notation Lifting Appliance is to be added	Chapter 3 of PART EIGHT of the Rules
Installation Maintenance Repair Unit	Installation maintenance repair units	Units provided with lifting appliances on deck, dedicated to serve the offshore installation, maintenance and repair, the notation Lifting Appliance is to be added	Chapter 3 of Part EIGHT of the Rules
Cable Laying Unit	Cable laying units	Units provided with cable laying machinery and other special equipment, dedicate to the offshore cable laying	Chapter 4 of Part EIGHT of the Rules
Pipe Laying Unit	Pipe- laying units	Units provided with pipe laying machinery and other special equipment, dedicate to the offshore pipe laying	Chapter 4 of Part EIGHT of the Rules
Drilling Support Unit	Drilling support units	Units used for supporting the offshore drilling operations	Chapter 5 of Part EIGHT of the Rules
Storage Unit	Storage units	Units used for oil storage	Chapter 6 of Part EIGHT of the Rules
Production Unit	Production units	Units used for offshore oil production and processing	Chapter 6 of Part EIGHT of the Rules

Offshore Support Unit	Offshore support units	Units used for supporting the offshore operations (except for the above-mentioned units)	Applicable requirements specified from Part ONE to Part SEVEN of the Rules. Special features of the units will be separately considered as per special circumstances
C Special systems and facilities notation			
DP-N	Dynamic positioning systems	Units fitted with dynamic positioning system may be assigned the following notations: DP-1: capable of keeping the position and heading of the unit under specified environmental conditions and in addition, independent, concentrated manual control of the unit's position and automatic heading control are to be fitted. DP-2: capable of automatically keeping the position and heading of the unit when single failure (excluding loss of a cabin or cabins) appears under specified environmental conditions and in specified operating fields. DP-3: capable of automatically keeping the position and heading of the unit when any failure (including entire loss of a cabin caused by fire or flood) appears under specified environmental conditions and in specified operating fields	Chapter 9 of PART EIGHT of the Rules
DRILL	Drilling plants	Units provided with drilling plants may be assigned this notation	Guidelines for Certification of Drilling Plants
Thruster	Thrusters	Units provided with thrusters for the purpose of auxiliary operation/thrusting may be assigned this notation	Applicable requirements of PART THREE and Chapter 15, PART EIGHT of Rules for Classification of Sea-going Steel Ships
HELDK	Helicopter deck	Units provided with areas and structures for takeoff and landing of helicopters, and storage, fire protection and oil supply facilities for helicopters, may be assigned this notation	Chapter 10 of PART EIGHT of the Rules
Oil Storage Tank	Oil storage tanks	Units provided with oil storage tanks may be assigned this notation	PART SIX of Rules for Construction and Surveys of Fixed Units in Shallow Sea
PROCESS	Oil gas process system	Units provided with oil gas water process system may be assigned this notation	RULES FOR OFFSHORE OIL AND GAS PROCESS SYSTEM
PM	Position mooring system	Column-stabilized units or surface-type units provided with positional mooring system are to be added this notation	Chapter 8, PART EIGHT of the Rules
PM-TA	Thruster assisted position mooring system	Column-stabilized units or surface-type units provided with thruster assisted positional mooring system are to be added this notation	Chapter 8, PART EIGHT of the Rules

Ice Class B1*	Navigation in extreme ice conditions	Navigation in extreme ice conditions, not requiring ice breaker assistance. Maximum and minimum ice class draughts fore, amidships and aft, and minimum required main engine output to be stated in classification certificate	Chapter 4, PART TWO and Chapter 14, PART THREE of Rules for Classification of Sea-going Steel Ships
Ice Class B1	Navigation in severe ice conditions	Navigation in severe ice conditions and if necessary, with ice breaker assistance. Maximum and minimum ice class draughts fore, amidships and aft, and minimum required main engine output to be stated in classification certificate	Chapter 4, PART TWO and Chapter 14, PART THREE of Rules for Classification of Sea-going Steel Ships
Ice Class B2	Navigation in intermediate ice conditions	Normal navigation in intermediate ice conditions and if needed, with ice breaker assistance. Maximum and minimum ice class draughts fore, amidships and aft, and minimum required main engine output to be stated in classification certificate	Chapter 4, PART TWO and Chapter 14, PART THREE of Rules for Classification of Sea-going Steel Ships
Ice Class B3	Navigation in light ice conditions	Normal navigation in light ice conditions and if needed, with ice breaker assistance. Maximum and minimum ice class draughts fore, amidships and aft, and minimum required main engine output to be stated in classification certificate	Chapter 4, PART TWO and Chapter 14, PART THREE of Rules for Classification of Sea-going Steel Ships
Ice Class B	Navigation in floating ice condition	Floating ice condition	Chapter 4, PART TWO of Rules for Classification of Sea-going Steel Ships
On Bottom Strengthened	On bottom strengthened	Column-stabilized units intended to operate on seabed are to be added this notation	Chapter 5, PART TWO of the Rules
IWS	In-water survey	Units suitable for in-water surveys in lieu of examinations of the outside of their bottom and related items in dry dock may be assigned this notation	Chapter 7, PART EIGHT of the Rules
Loading Computer	Loading computers	Units provided with approved loading computers are to be assigned this notation, with one or more of suffixes S, I and D being added thereafter. Meanings of the suffixes are as follows: S: Capable of calculating and checking hull strength under various loading conditions I: Capable of calculating and checking intact stability D: Capable of calculating and checking damage stability Note: S, I and D may be applied separately or combined	Appendix 1 and Appendix 2, Chapter 2, PART ONE of Rules for Classification of Sea-going Steel Ships
Lifting Appliance	Lifting appliances	Marine lifting appliances. Crane units and installation maintenance repair units are to be added this notation. Other units may be assigned this notation	Rules for Lifting Appliances of Ships and Offshore Installations

MSER	Full life cycle management service for structure safety	Safety database of the unit stability and structural strength shall be established since the design phase based on the previously signed service agreement between the Owners and CCS; during operation, real-time update would be performed based on the data of unit reinstallation, survey and maintenance. CCS shall provide the technical support service of life cycle of the unit structure safety supported by the evaluation of unit structure state and dynamic state or continuous safety and emergency response.	Evaluation on Structure State and Dynamic State of Mobile Offshore Unit Structure and Guidance for Emergency Response Services
D Automation of the engine room and machinery notation			
AUT-0	Machinery spaces periodically unattended	Main propulsion machinery remotely controlled from BCS, machinery space including CCS periodically unattended	PART SIX of the Rules
MCC	Central control of machinery spaces	Units with this notation are to be provided with CCS and LCS. When machinery and electrical equipment are in normal operation, CCS is to be constantly attended by watch-keepers	PART SIX of the Rules
IGS	Inert gas systems	Units provided with inert gas systems	Chapter 4, PART SIX of Rules for Classification of Sea-going Steel Ships
CMS	Continuous machinery surveys	Where continuous survey system for machinery is adopted in lieu of special survey and items required in special survey are to be surveyed in regular rotation with uniform annual share within the five-year class period, this notation may be assigned	Chapter 5, PART ONE of Rules for Classification of Sea-going Steel Ships
PMS	Planned maintenance scheme (PMS) for machinery	This notation may be assigned to units for which CCS-approved PMS is adopted as an alternative to special or continuous (if adopted) survey of machinery and electrical installations	Appendix 16, Chapter 5, PART ONE of Rules for Classification of Sea-going Steel Ships
BRC	Remote control from bridge	Main propulsion machinery remotely controlled from BCS, machinery spaces constantly attended by watch-keepers.	Section 3, Chapter 4, PART SEVEN of Rules for Classification of Sea-going Steel Ships
E Environmental protection notation			
AFS	Anti-fouling system	This notation may be assigned to units, of which anti-fouling system is not to contain any organic compounds acting as biocides	Section 7, Chapter 1, PART TWO of the Rules

PSPC	Protective coating	Ships of which specific spaces comply with IMO Performance Standard for Protective Coatings may be assigned this notation, with one or more of suffixes B, C, D and V being added thereafter. Meanings of the suffixes are as follows: B: protective coatings applied in dedicated seawater ballast tanks of all types of ships; C: protective coatings applied in cargo oil tank spaces of crude oil tankers; D: protective coatings applied in double-side skin spaces; V: protective coatings applied in void spaces of bulk carriers and oil tankers. Note: B, C, D and V can operate both separately and together.	PSPC(B) and PSPC(D) are to comply with the requirements of IMO resolution MSC.215(82); PSPC(C) is to comply with the requirements of IMO resolution MSC.288(87); PSPC(V) is to comply with the requirements of IMO resolution MSC.244(83)
Clean	Clean	This notation may be assigned to units complying with relevant requirements for pollution-preventing structures, equipment and operational procedures in CCS rules, in addition to statutory requirements for pollution prevention	Section 2, Chapter 8, PART EIGHT of Rules for Classification of Sea-going Steel Ships and relevant regulations and standards
FTP	Fuel oil tank protection	This notation may be assigned to ships having an aggregate oil fuel capacity of not less than 600 m^3, with oil fuel tanks being located as required	Section 3, Chapter 8, PART EIGHT of Rules for Classification of Sea-going Steel Ships
GWC	Gray water control	This notation may be assigned to units having control of drainage from laundry, bathroom, galley, accommodation and fitted with a grey water holding tank of required capacity, high level alarm and a sewage disposal system with required processing capacity	
NEC(II)	NO_X emission control	In compliance with standards of Tier II in Annex VI to MARPOL	
NEC(III)		In compliance with standards of Tier III in Annex VI to MARPOL	
SEC(I)	SOX emission control	This notation may be assigned to units with sulphur content of all oil fuels used on board being less than 1.0% m/m or equivalent means are used	
SEC(II)		This notation may be assigned to units with sulphur content of all oil fuels used on board being less than 0.5% m/m or equivalent means are used	

SEC(III)		This notation may be assigned to units with sulphur content of all oil fuels used on board being less than 0.5% m/m or equivalent means are used	
RSC	Refrigeration system control	This notation may be assigned to units, of which all refrigerants used are to have an Ozone Depleting Potential (ODP) rating of zero and a Global Warming Potential (GWP) of less than 2000	
COMF(NOISE N)	Comfort (noise N)	Units, of which noise in related compartments is controlled at the specified level, may be assigned this notation, with suffixes N1 or 2 or 3 indicating different comfort levels, where 1 represents the highest comfort level	Chapter 16, PART EIGHT of Rules for Classification of Sea-going Steel Ships
COMF(VIB N)	Comfort (vibration N)	Units, of which vibration in related compartments is controlled at the specified level, may be assigned this notation, with suffixes N1 or 2 or 3 indicating different comfort levels, where 1 represents the highest comfort level	Chapter 16, PART EIGHT of Rules for Classification of Sea-going Steel Ships
F Service restriction notation			
Service Restricted	Service restricted	Units restricted to operate in sheltered areas, with the design wind velocity of normal working condition less than 36 m/s, but no less than 25.8 m/s, is to be added this notation. In addition, the restricted operating conditions of unit are specified in the operation manual	Chapter 2, PART TWO and Chapter 2, PART THREE of the Rules

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 The responsibilities of both parties, characters of classificationand class notations, particulars of the unit, etc., are to be clearly specifiedin the application or contract/agreement, undertaking that the applicant will have no objection that the representative(s) of third-party independent audit organizations, e.g. representative(s) of an Accredited CertificationBody (ACB), IACS observer(s), etc., and the representative(s) of the European Commission (EC) may visit onboard or a manufacturer or a shipyard to carry out a 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 for plan approval for new units to the Headquarters of CCS or the plan approval organizations designated by CCS. For the construction surveys of units, the unit builders may submit the application directly to the organizations executing the surveys.

2.4.1.5 For plan approval and initial surveys of existing units, 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 the plan approval and surveys of products.

2.4.1.7 CCS has established an Occupational Health and Safety Management System for the purpose of guaranteeing the occupational health and safety of Surveyors. An application for any classificationor statutory survey service by CCS means that the applicant respects this system of CCS and that he is committed to provide conditions for the safety of CCS Surveyors entering the facilities related to the requested survey service in accordance with the national requirements of the State of nationality of the Surveyor and the State where the survey unit is located and/or the technical safety requirements developed by the local competent authorities or equivalent technical standards[1], including permanent or temporary means of access and facilities for inspections, compartment environment and safety precautions. CCS Surveyors will confirm the safety of surveyconditions with the applicant and persons designated by him prior to performing specific surveys.

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 unit 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 units included in the contract are to be declared to CCS by the party applying for the assignment of class to a new building.

(2) The date of "contract for construction" of a series of units, 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 prospective owner and the builder.

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 the alteration contract, comply with the classification requirements in effect on the date on which the alterations are submitted to CCS for approval.

The optional 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 options, the "date of contract for construction" for such units is the date on which the amendment to the contract is signed between the prospective owner and the unit builder. The amendment to the contract is to be considered as a "new contract" to which (1) and (2) above apply.

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[1] See CCS Guidelines for clients for safety of survey

(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 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 submit 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 structural 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, installation procedure of machinery (excluding reasonable alignment of shafting), inclination testing program, and mooring test and sea trial program, 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.

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 to cover the items related to the statutory requirements.

2.5.2.5 The plans and documentsas 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 being 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.

2.5.2.7 In addition to the plans and documents submitted in accordance with the relevant parts of the rules, the following documents are to be submitted for examination:

(1) Operating manual

① Operating manuals containing guidance for the safe operation of the unit for both normal and envisaged emergency conditions are to be provided onboard and be readily available to all concerned. The manuals are, in addition to providing the necessary general information about the unit, to contain guidance and limitations on and procedures for the operations that are vital to the unit, ensuring that the loading and environmental conditions, on which the classification is based, will not be exceeded in service;

② The manuals are to be concise and be compiled in such a manner that they are easily understood. Each manual is to be provided with a contents list, an index and wherever possible cross-referenced to additional detailed information which is to be readily available onboard;

③ The contents of the manual are at least to comply with the relevant provisions of the Administration and/or the present Code for the Construction and Equipment of Mobile Offshore Drilling Units (hereinafter referred to as MODU Code);

④ For the purpose of classification, CCS will check the related contents of the manual for compliance with approved design conditions, limitations and criteria on which the classification is based.

(2) Construction booklet

A construction booklet approved by CCS is to be provided onboard. The construction booklet is to contain a set of plans showing the scantling, applicable position and extent of different grades and mechanical properties of structural materials (as-built), together with welding procedures used for primary structure and any other

relevant construction information including instructions regarding repairs or modifications. The structural materials contains steel, aluminum alloy and other materials.

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.

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

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

(2) The entry into force (including amendments) to the rules of CCS, 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 No. 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 international conventions, codes accepted by it and the entry into force of the amendments thereto affect the validity of the approved plans, the approved statutory plans will be invalid automatically.

Section 6 CLASSIFICATION SURVEYS

2.6.1 General requirements

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

2.6.1.2 Unit builders and manufacturers are to establish an appropriate quality assurance system for 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, information on quality management system).

2.6.1.3 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.

2.6.2 Assessment and examination prior to commencement of construction

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

2.6.3 Surveys

2.6.3.1 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 2.6.3.2 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.

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

Section 7 STATUTORY SERVICES

2.7.1 General requirements

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

2.7.1.2 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.

2.7.1.3 For units applying for being classed with CCS, wherestatutory 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.

2.7.1.4 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.

2.7.2 Basis for statutory services

2.7.2.1 The statutory requirements for convention units are referred to international conventions or codes and the amendments thereto, mainly including:

--Code for the Construction and Equipment of Mobile Offshore Drilling Units, 2009-- International Convention on Load Lines, 1966;

-- International Convention for the Safety of Life at Sea, 1974;

-- International Convention on Tonnage Measurement of Ships, 1969;

-- International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto;

-- International Convention on the Control of Harmful Anti-fouling Systems on Ships, 2001;

-- International Convention for the Control and Management of Ships' Ballast Water and Sediments 2004;

-- International Regulations for Preventing Collisions at Sea, 1972.

2.7.2.2 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 2.7.2.1 as the basis for statutory services.

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

2.7.3 Responsibilities of parties concerned

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

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

2.7.3.3 When the statutory services are carrying out, CCS will not be liable 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 existing units.

2.7.4 Assessment of statutory requirements at the request of client

2.7.4.1 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.

2.7.4.2 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.

2.7.4.3 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.

2.7.4.4 Paragraphs 2.7.1.3, 2.7.1.4 and 2.7.3.3 of this Section also apply to the assessment of statutory requirements.

2.7.5 Statutory certificates and documents

2.7.5.1 Upon satisfactory statutory surveys of the unit, the Surveyors of CCS are to issue or approve the corresponding statutory certificates and documents according to the authorized contents, e.g.:

(1) Safety Certificate of Mobile Offshore Unit;

(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) Unit operation manual;

(13) Other documents or certificates.

Section 8 APPROVAL OF SUPPLIERS

2.8.1 General requirements

2.8.1.1 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.

2.8.1.2 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.

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

2.8.2 Requirements for approval

2.8.2.1 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.

2.8.2.2 The scope and procedure of approval for suppliers are to be in compliance with the requirements of Appendix 8 "Procedural Requirements for Service Suppliers" of Chapter 5 of PART ONE of Rules for

Classification of Sea-going Steel Ships.

2.8.3 List of approved suppliers

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

Section 9 ASSIGNMENT, MAINTENANCE, SUSPENSION, CANCELLATION AND REINSTATEMENT OF CLASS

2.9.1 Assignment and maintenance of class

2.9.1.1 Where the main structure (including equipment) and machinery (including electrical installations) 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.

2.9.1.2 The main structure (including equipment) and machinery (including electrical installations) 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.

2.9.1.3 The units in service are to observe the service conditions as restricted in Operation 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.

2.9.1.4 Classification does not cover the adequacy of sea bed conditions such as bearing capacity, resistance to possible skidding and anchor holding capacity, especially for self-elevating units, it is the owner's responsibility to be satisfied that the sea bed conditions are suitable to allow the legs to be safely and adequately preloaded.

2.9.1.5 The CCS class assigned to a unit 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.

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

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

2.9.1.8 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.

2.9.2 Suspension and cancel of class

2.9.2.1 Suspension of class

(1) When a unit is operating beyond the service limitation 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 validity of 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 time of annual survey have not been dealt with, and no extension is granted by CCS;

③ when surveys after construction other than 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 2.9.1.8 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, unless 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 survey period (5 years), 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 or before the expiration of the specified extension period specified by CCS and no extension is granted by CCS again, unless the unit has been under attendance for completion of the special survey prior to resuming service, by the due date.

a. Under "exceptional circumstances", CCS may grant an extension to allow for completion of the special survey (the extension period specified by CCS according to the actual conditions of the unit), 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 practicable;

(d) where the docking survey is due prior to the expiry 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 the unit is without any outstanding recommendation/condition of class regarding underwater parts.

b. In the case that the class certificate will expire when the unit is expected to be at sea, an extension to allow for completion of the special survey may be granted provided there is documented agreement to such an extension prior to the expiry date 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.

④ when it is confirmed that the Surveyor has boarded the unit before the survey is due, but the unit is put into service before the satisfactory completion of the corresponding overdue 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 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/or overdue surveys and examination of outstanding recommendations/class conditions are carried out by CCS at the first port of arrival;

The surveys to be carried out are to be based upon the survey requirements at the original date due and not on the age of the vessel when the survey is carried out. Such surveys are to be credited from the date originally due.

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

2.9.2.2 Cancel of class

(1) The class of a unit 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 a unit's class will be canceled immediately when the unit proceeds to sea without having completed recommendations or conditions of class which were required to be dealt with before leaving port;

④ when class has been suspended for a period of six (6) months due to overdue annual, intermediate, special surveys or other surveys after construction as required by the Rules and/or overdue outstanding recommendations/conditions of class. A longer suspension period may be granted for units which are either laid up, awaiting disposition of a casualty or under attendance for reinstatement;

⑤ where main structure, equipment or machinery (including electrical installations) is so badly damaged or in other conditions (e.g. sinking, scrapping, etc.) that continuing operation of the unit is confirmed as not possible;

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

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

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

2.9.2.5 Notification of suspension or cancellation of class

(1) Cancellation of class of a unit will be indicated correspondingly in CCS Register of Ships or its supplements

(2) When the class of a unit is suspended or cancelled, 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.

2.9.3 Reinstatement of class

2.9.3.1 The class of a unit may be reinstated in any one of the following cases:

(1) Class will be reinstated subject to satisfactory overdue surveys. The surveysto be carried out are to be based upon the survey requirements at the original date due and not on the age of the vessel when the survey is carried out. The due date of the next relevant surveys is to be calculated as that of the original corresponding surveys. However, theunit is disclassed from the date of suspension until the date 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 due or overdue outstanding recommendations have been satisfactorily dealt with.

2.9.3.2 When the class of a unit 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.

Section 10 CERTIFICATES AND REPORTS

2.10.1 Certificates

2.10.1.1 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.

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

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

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

2.10.2 Duration and validity of certificates

2.10.2.1 The period of validity of classification certificates of units is in general not to exceed 5 years.

2.10.2.2 The period of validity of interim classification certificates of units is not to exceed 5 months.

2.10.2.3 The period of validity of classification certificates is to be harmonized with that of statutory certificates of the unit as possible.

2.10.2.4 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 existing certificate.

2.10.3 Issue and endorsement of classification certificates

2.10.3.1 Upon completion of classification surveys, an interim classification certificate is to be issued by the survey unit.

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

2.10.3.3 The classification certificate is to be endorsed by the Surveyor as required after completion of the survey after construction as specified in Chapter 5 of this part.

2.10.3.4 Where a new classification certificate cannot be issued to the unit before the expiry date of the existing classification certificate after completion of the special survey, the existing classification certificate may be endorsed by the Surveyor, which is to be valid within 5 months from its expiry date.

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

2.10.3.6 Notwithstanding the provision of 2.10.2.1, CCS may, when applying 2.10.3.5, determine a period of validity less than 5 years for the classification certificate and/or take any other necessary restrictive measure (e.g. service restriction(s) 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 (safety inspections by the flag/port 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 so far as practicable and regular reports are to be sent to the Class Committee.

Section 11 REGISTER OF UNITS AND LISTS OF APPROVED MARINE PRODUCTS

2.11.1 Register of Ships

2.11.1.1 CCS will enter main characteristic particulars and details of all units 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 for those related to units, such as the builders, owners, underwriters and charterers.

2.11.1.2 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.

2.11.2 Lists of Approved Marine Products

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

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

Section 12 AUDIT

2.12.1 Vertical contract audit

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

2.12.2.2 Where the auditor(s) or the 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 13 AVAILABILITY AND DISCLOSURE OF INFORMATION

2.13.1 Availability of information

2.13.1.1 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.

2.13.2 Disclosure of information

2.13.2.1 CCS will not disclose any information obtained for classification of the unit to any other party not specified in the contract and Table 2.13.2.2, except in the following cases:

(1) when the class of the unit is transferred from CCS to another member society of IACS, the relevant class information together with survey reports for the unit 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, unit operators are to authorize CCS to accepting the representatives of third-party independent audit organizations, e.g. representatives of an Accredited Certification Body (ACB), IACS observers, etc., and the representatives of the European Commission (EC) may, during their audit or assessment of CCS, have access to the certificates, documents and other information related to the units classed with 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.

2.13.2.2 The concerned parties who are entitled to have access to such information are given in Table 2.13.2.2.

Information Available to Parties Concerned **Table 2.13.2.2**

Types of Information	Information Accessible				
	Owner	Flag State	Port 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 approval letter	1				7
* Certificate of essential equipment	2				7
Unit in-service					
* Classification service of unit					
-- 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 recommendations	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	7	7	
* Class withdrawal information	7	7	7	7	

Note:
* = Insurance Company refers to the Insurance Association Limited, the main structure 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 it 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

2.13.2.3 Notwithstanding the general liability of confidentiality owed by CCS to its clients is in accordance with its Rules, CCS' 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 engineering systems, as defined in the IACS' Early Warning System (but not including any drawings relating 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 working of IACS' Early Warning System. CCS will provide its clients with written details of such information upon sending the same to IACS Members and Associates.

Section 14 LIABILITY, DISAGREEMENT AND ARBITRATION

2.14.1 Liability of each party

2.14.1.1 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.

2.14.1.2 CCS rules do not cover every piece of structure or item of equipment on board a unit, nor do they cover operational 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 manoeuvring performance, cargo securing, main structure and equipment vibrations, noises, spare parts, life-saving appliances and maintenance equipment.

2.14.1.3 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.

2.14.1.4 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.

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

2.14.1.6 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 by CCS and the applicant for CCS service. If the unit is not in compliance with such rules or standards, CCS has the power to withhold, suspend or withdraw the characters of classification and class notations.

2.14.1.7 Except as required by CCS rules, CCS will make no representations beyond the relevant reports, statements, plan approval, surveys, 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.

2.14.1.8 CCS is to provide service(s) 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.

2.14.1.9 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.

2.14.1.10 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.

2.14.2 Disagreement

2.14.2.1 The right of interpretations on the rules published by CCS is to be left solely to 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.

2.14.2.2 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 where the Surveyor serves. Where the handling of the appeal by the unit is not considered satisfactory by the interested party, it may appeal in writing to CCS Headquarters along with detailed background materials. The Headquarters will decide on the matter, and this ruling will be final.

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

2.14.3 Arbitration

2.14.3.1 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.

2.14.3.2 Notwithstanding the previous paragraph, CCS will be liable for the loss or damage due to negligent act judicially attributed 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.

2.14.3.3 Any claim for any loss or damage set forth above is to be made in writing within six months of the date the damage first discovered or the loss occurred; failure of doing so will be deemed as an absolute waiver of this right.

2.14.3.4 Unless otherwise agreed with CCS, any dispute of whatsoever nature in respect to 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.

2.14.4 Applicable laws

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

CHAPTER 3 INSPECTIONS OF PRODUCTS

Section 1 GENERAL PROVISIONS

3.1.1 General 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 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 and relevant Chapters 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 the 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 equivalent to the provisions of 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 onboard the unit;

(3) requirements for materials and welding;

(4) test items relating to safety and performance.

3.1.1.7 The manufacturer is to be responsible for compliance with relevant law, regulations, compulsory standards or customers' requirements by the products.

3.1.1.8 Class notations of the product are to be applied by the applicant and assigned by CCS after compliance with CCS relevant provisions is verified by CCS plan approval, approval test and on-site audit.

3.1.2 Certification and inspection of products

3.1.2.1 For classed products and products for delegated statutory inspections, other than the drilling plants and oil gas process facilities, the certification and inspections, including design approval, type approval and works approval, are to comply with the requirements of Chapter 3, PART ONE of the Rules for Classification of Sea-going Steel Ships. Certification requirements of classed products and products for delegated statutory inspections for mobile offshore units shall meet the following regulations:

(1) Certification requirements of class products shall meet Appendix 1A Chapter 3 Part 1 of Rules for Classification of Sea-going Steel Ships;

(2) Certification requirements of delegated statutory products shall meet related regulations of administration. If there are no regulations, Appendix 1B Chapter 3 Part 1of Rules for Classification of Sea-going Steel Ships may be refered to;

(3) Certification requirements of lifting appliances shall meet related regulations of administration. If there are no regulations, Appendix 1C Chapter 3 PART 1of Rules for Classification of Sea-going Steel Ships may be refered to;

(4) Certification requirements of class products shall meet Appendix 2A Chapter 3 PART 1of Rules for Classification of Sea-going Steel Ships;

(5) Certification requirements of products authorized legal surveys shall meet related regulations of administration. If there are no regulations, Appendix 2B Chapter 3 PART 1of Rules for Classification of Sea-going Steel Ships may be refered to;

(6) Certification requirements of lifting equipment shall meet related regulations of administration. If there are no regulations, Appendix 2C Chapter 3 PART 1of Rules for Classification of Sea-going Steel Ships may be refered to.

3.1.2.2 For certification requirements of specil classed products and products for delegated statutory inspections of mobile offshore units, other than the drilling plants and oil gas process facilities, the following the requirements are to be in compliance with:

(1) Certification requirements of specil classed products for unit are to comply with requirements in Appendix 1 of this Chapter;

(2) Certification requirements of specil products for delegated statutory inspections for unit are to comply with the relevant requirements of the Administration, or otherwise refer to Appendix 2 of this Chapter;

(3) Certification requirements of specil lifting appliances for unit are to comply with the relevant requirements of the Administration, or otherwise refer to Appendix 3 of this Chapter.

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

3.1.3 Certification and inspections of products of drilling plants

3.1.3.1 For drilling plants to be installed onboard the unit, CCS will carry out the classification survey, certification survey and qualification test upon the application by owner or its agent, and carry out statutory certification survey as per the requirements of MODU Code and the provisions of the Administration within the scopes authorized by the Administration.

3.1.3.2 Certification and inspections of drilling plants and products are to meet the requirements of Table 2.1.2.1 of CCS Guidelines for Certification of Drilling Plants.

3.1.4 Certification and inspections of products of oil gas process facilities

3.1.4.1 Certification and inspections of oil gas process facilities are to meet the relevant requirements of CCS Rules for Offshore Oil and Gas Process System.

Appendix 1 LIST OF CERTIFICATION REQUIREMENTS FOR CLASSED PRODUCTS OF MOBILE OFFSHORE UNITS

No.	Product Name	Document		Approved Mode				Remarks
		C/E	W	DA	TA-B	TA-A	WA	
1	**Jack-up and locking device**							
1.1	Hydraulic device	X	—	O	O	O	—	
1.2	Hydraulic motor	X	—	—	—	—	—	
1.3	Gear lifting/locking device	X	—	X	—	—	—	
.1	Climbing gear	X	—	O	—	—	X	
.2	Axle of climbing gear	X	—	O	—	—	X	
.3	Reduction box	X	—	X	O	—	—	
.3a	Reducing gear box	X	—	O	—	—	X	
.3b	Reducing gear shaft	X	—	O	—	—	X	
.4	Drive motor5 (over 50KW)	X	—	—	X	O	—	
.5	Lifting/locking motor	X	—	O	X	—	—	
.6	Brake	X	—	X	O	—	—	
.7	Brake resistor	X	—	—	O	—	—	
.8	Jack-up/locking electric cabinet	X	—	X	—	—	—	
.9	Jack-up/locking hydraulic plant	X	—	X	O	O	—	
.10	Locking indent	X	—	—	—	—	X	
.11	Wedge	X	—	—	—	—	X	
.12	Worm	X	—	—	—	—	X	
.13	Worm gear	X	—	—	—	—	X	
.14	Oil level cylinder	X	—	O	O	O	X	
.15	Locking system distribution board	X	—	X	—	—	—	
.16	Jack-up system distribution board	X	—	X	—	—	—	
1.4	Latch hydraulic jack-up	X	—	X	—	—	—	
.1	Hoisting ring beam	X	—	X	—	—	—	
.2	Hoist cylinder	X	—	O	O	O	—	
.3	Latch oil cylinder	X	—	O	O	O	—	
.4	Cast steel sleeves	X	—	O	O	O	X	
.5	Jack-up/locking hydraulic plant	X	—	X	O	O	—	
.a	Hydraulic controlled valve unit	X	—	O	O	O	—	
.6	Set bolts	X	—	—	—	—	X	
.7	Electric cabinet	X	—	X	—	—	—	
2	**Cantilever structure/drill skidding plant**							
2.1	Cantilever structure skidding hydraulic power unit	X	—	O	—	—	—	
2.2	Hydraulic cylinder	X	—	O	—	—	—	
2.3	Lock claw	—	X	O	—	—	—	
2.4	Slide-way pulley	—	X	O	—	—	—	
2.5	Hydraulic control device (hydraulic valve and control console)	X	—	O	—	—	—	
2.6	Hydraulic hose	X	—	O	X	—	—	
2.7	Abrasion resistant plate	—	X	O	—	—	—	
3	Sea-water lift plant							
3.1	Sea-water lift pump lift rack	X	—	X	—	—	—	
3.2	Reduction box	X	—	X	—	—	—	
3.3	Drive generator/motor	X	—	—	—	—	—	
3.4	Sea-water lift pump and hydraulic device	X	—	—	—	—	—	
4	**Spud leg**							
4.1	Rack	X	—	—	—	—	—	
4.2	Semi-circular plate (truss type)	X	—	—	—	—	—	
4.3	Chord (truss type)	X	—	—	—	—	—	
4.4	Horizontal/oblique bracing pipe (truss type)	X	—	—	—	—	—	
5	**Anti-slide pile hydraulic plant**							
5.1	Anti-slide pile hydraulic plant	X	—	—	—	—	—	
6	**Miscellaneous**							
6.1	Unit soft tube (except for the ash convey)	X	—	—	—	—	—	
6.2	Emergency shutdown system	X	—	—	O	O	—	
6.3	Anti-oil splashing belt	X	—	—	O	O	—	
6.4	Mooring line buoyant element	X	—	—	—	—	X	

Symbols: (1) C – Marine Products Certificate; E – Equivalent document; 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 OF MOBILE OFFSHORE UNITS

No.	Product Name	Document		Approved Mode				Remarks
		C/E	W	DA	TA-B	TA-A	WA	
1	**Communication, navigation and signaling equipment**							
1.1	Unit status light	X	—	—	X	O	—	
1.2	Helicopter boundary light	X	—	—	X	O	—	
1.3	Helicopter deck light	X	—	—	X	O	—	
1.4	Obstruction marking and light	X	—	—	X	O	—	
2	**Tug***							
2.1	Towing eye plate	X	—	—	—	—	—	
2.2	Towing bridge/link	X	—	—	—	—	—	
2.3	Deltoid plate	X	—	—	—	—	—	
2.4	Mooring bridle	X	—	—	—	—	—	
2.5	Connecting shackle	X	—	—	—	—	—	
2.6	Cable chock	X	—	—	—	—	—	
2.7	Towing column	X	—	—	—	—	—	
2.8	Tow rope recovery	—	X	—	—	—	—	
2.9	Recovery line	—	X	—	—	—	—	
3	High pressure med/cementing/oil testing system *							
3.1	Mud/cementing/oil testing tubes	X	—	—	—	—	—	
3.2	Mud/cementing/oil testing soft tubes	X	—	—	—	—	—	
3.3	High pressure mud/cementing riser valve	X	—	—	—	—	—	
3.4	High pressure pipe accessories (union, valve and bends)	X	—	—	—	—	—	
4	**Fire-extinguishing system and equipment ***							
4.1	Portable anti- H_2S breathing apparatus	X	—	—	X	O	—	
4.2	Fixed anti- H_2S breathing apparatus	X	—	—	X	O	—	
5	**Fire detector and alarm system ***							
5.1	Flammable vapors and H_2S gas detector	—	X	—	X	O	—	
5.2	Flammable vapors and H_2S gas alarm system	X	—	—	X	O	—	
6	**Miscellaneous**							
6.1	Deep-fat cooking equipment	X	—	—	X	O	—	
6.2	Helicopter fueling device	X	—	—	X	O	—	
6.3	Helicopter deck facilities (outsourcing)	X	—	—	O	—	—	

Note：*means the products are classified products as required in the rules and in compliance with the relevant classification conditions.

Symbols：(1) C – Marine Products Certificate; E – Equivalent document; 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 CERTIFICATION REQUIREMENTS FOR LIFTING APPLIANCES OF MOBILE OFFSHORE UNITS

No.	Product Name	Documents		Approved Mode				Remarks
		C/E	W	DA	TA-B	TA-A	WA	
1	Lifting appliances							
1.1	Hanging basket	X	—	—	—	—	—	
1.2	Personnel lift/escalator	X	—	—	—	—	—	
1.3	Drill rig	X	—	—	—	—	—	

Symbols：(1) C – Marine Products Certificate; E – Equivalent document; 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 unit, 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 unit to be classed with CCS or a novel unit to be classed with CCS, the Surveyor is to carry out evaluation for the production capacity of the builder, including production locations and facilities and quality assurance system of builder, general qualification of construction personnel and subcontractors, and to carry out assessment for 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 of 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), manufacturing 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 an appropriate stage of construction at the discretion of the Surveyor.

4.1.4 Check of other test/survey

4.1.4.1 The Surveyor is to review or confirm the relevant documents provided by the builder in preparations for building the unit, e.g. field tests and processing documents, such as installation technology of machinery, equipment and systems (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 (including comments) 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 rule, lists of certified products for the unit intended to be built, according to Appendices 1 to 3 of Chapter 3 of this part in this rules and submit them to the attending Surveyor for confirmation.

4.2.1.3 Use of materials containing asbestos has been prohibited for all units since 1 January 2012.

4.2.2 Survey and test items

4.2.2.1 The main structure survey and test items

(1) The Surveyor is to confirm that the main structure materials (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.

(2) The Surveyor is to inspect the main structure and equipment to ensure that the materials, scantlings, construction, arrangement and installation are in accordance with the approved plans, diagrams, specifications, calculations and other technical documentation and that the workmanship is in all respects satisfactory.

(3) Where any scantling, material or poor material, building work, arrangement, procedure, device or equipment is found to not 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 main stages, inspect scantlings, and inspect welding quality and welding specifications of erection.

(5) Compartment structures are to be inspected to confirm integrity of main structure.

(6) For compartment structures, including transverse and longitudinal ones, are to be subject to structural test, or leak test or hose test or an alternative test.

(7) Inspection and test of hatches and openings together with their closing means, including operation test of remote controls.

(8) Check the legs, spudcan/mat, basic structures of hoisting appliance/locking appliance, cantilever beam, lower structure of the drill block, trunk structure (leg well, moon pool, etc.), if applicable.

(9) Inspection of the supporting structures of propellers, lifting appliance, anchor winch, chain cable fairleader, etc., if applicable.

(10) Inspection and test of the fire-prevention, fire-fighting and fire-detection appliances after installation.

(11) Inspection and test of steering gear, anchoring and mooring equipment after installation.

(12) Determination of rudder centreline, propulsion shafting centerline;

(13) Determination of unit's main dimensions, load line marks, draft scale and other marks;

(14) Inclining test, including inspection of unit's condition before testing and assessment after testing, is to be attended; confirmation of lightweight and center of gravity.

(15) Inspection and test of items related to class notations, including confirming that the materials, equipment, devices and systems as required by the rules are in accordance with the approved plans, calculations and other technical documentation, that they are furnished with the certificates required by the rules and that the workmanship is in all respects satisfactory.

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

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

4.2.2.2 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 products 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 documentation.

(3) Inspection and test of manufacturing and installation of piping, including strength test in workshop and tightness test after installation on board the unit are to be attended.

(4) Operation test of pump and pipe system after installation, such as those of fuel oil, lubricating oil, sea water lift, cooling, heating, bilge, ballasting, fire-fighting, ventilation, measurement, venting, crude oil, cleaning, inert gas, unit elevating, unit locking, cantilever skidding system, etc. .

(5) Inspection and function test of machineries, equipment, devices and systems after installation, such as main engines, propulsion shafting, propeller, gear boxes, generating sets, boilers, pressure vessels, steering gear, windlasses, air compressors, heat exchangers, sea chests, scupper valves, etc.

(6) Inspection and operation test of control or remote control systems of main and auxiliary engines and other auxiliary machinery and devices after installation.

(7) Inspection and operation test of remotely controlled means of closing, such as emergency closing means of

fuel oil tanks, closing of ventilation systems and openings and after their installation.

(8) Inspection and operation test of equipment, devices and systems required by class notations after installation.

(9) Mooring tests and sea trials are to be attended.

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

(11) Inspection of fixed fire-extinguishing systems, special arrangement of machinery and boiler spaces, mechanical ventilation and exhaust fans, and operation of remotely controlled stop devices.

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

4.2.2.3 Survey and test of items for electrical installations

(1) The Surveyor is to confirm that the electrical installations and systems as required by the rules are all furnished with the products certificates or documents required by the rules.

(2) The Surveyor is to inspect the electrical installations 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 documentation.

(3) Inspection and test of the electrical installations such as generators, motors, cables, main and emergency switchboards after installation.

(4) Inspection and test of steering systems including emergency steering system;

(5) Inspection and test of internal communication systems and alarm systems on board;

(6) Inspection and test of the electrical installations after installation within dangerous zones (if any).

(7) Inspection and test of emergency power supply including temporary emergency power supply.

(8) Inspection and test of equipment, devices and systems required by class notations after installation, such as mechanical automatic control systems and remote control systems — control of main and auxiliary engines, other auxiliary machinery and boilers, inspection and operation test of safety and alarm systems and dynamic positioning systems.

(9) Earthing and inspection of mobile devices, inspection of earthing of aluminum structures.

(10) Mooring tests and sea trials are to be attended.

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

4.2.2.4 Survey and test items of protection against fire and explosion

(1) Inspection of general arrangement and hazardous areas of the unit for compliance with design plans;

(2) Inspection of means of escape and escape routes;

(3) Inspection of arrangement of ventilation system and relevant specifications;

(4) Inspection of fire integrity and insulation of fire divisions including fire walls;

(5) The Surveyor is to confirm that the materials used for structural fire protection, fire and explosion-proof equipment and systems as required by the rules are all furnished with the products certificates or documents required by the rules;

(6) Inspection of fire control plans and their display;

(7) Inspection of arrangement and ventilation of the room for controlling fire extinguishers;

(8) Inspection and testing of fixed fire-extinguishing systems;

(9) Inspection of fire safety appliances, EEBD, fireman’s outfits and hydrogen sulfide protective breathing apparatus;

(10) Inspection and testing of fire detection and alarm systems;

(11) Inspection and testing of detection and alarm systems for flammable and toxic gases;

(12) Inspection and testing of explosion-proof equipment;

(13) Inspection and testing of emergency shutdown system;

(14) Inspection and testing of inert gas system (if applicable);

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

4.2.2.5 Survey and test items of positional mooring system (if applicable)

(1) Check of product certificate of position mooring equipment;

(2) Inspection of windlasses, chain/cable stoppers, fairleads, cable guides and anchor rack after being fitted;

(3) Anchor test;

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

4.2.2.6 Survey and test items of helicopter deck facilities (if applicable)

(1) Inspection of arrangement, structure and facilities of helicopter deck;

(2) Inspection of fuel oil storage, refueling and fire-extinguishing facilities;

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

4.2.2.7 Test of mobile cantilever beams, slide beam and other skidding facilities (if applicable)

(1) Inspection and performance test of the longitudinal skidding devices on mobile cantilever beams and slide beam, and transverse skidding devices of the drilling plant after installations. During the test, the drilling structure and components are to be slid to the maximum locations of their sliding ranges.

(2) Load test of cantilever beams (if applicable).

4.2.2.8 Survey and test of elevating device /locking device (if applicable):

(1) Inspection and operation test of elevating system /locking device after installation;

(2) Lifting and load test of elevating system during the whole range;

(3) Emergency elevating test.

4.2.2.9 Survey and test of other special system and facilities (if applicable):

Survey and test are to be conducted 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 tests of compartments are to be in accordance with the relevant requirements in Section 3 of this Chapter.

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

4.2.3.3 Requirements for inclining test are given in PART THREE of the rules.

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

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 tanks[2];

(2) Watertight or weathertight structures.

4.3.1.2 The purpose of these tests is to verify the watertightness of tanks and watertight boundaries, the structural adequacy of tanks and weathertightness of structures/ outfittingfor units under construction and units under major conversions or repairs[3].

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

4.3.2 Definitions

4.3.2.1 For the purpose of this Section:

(1) Structural test: A test to verify the structural adequacy of the construction of the tanks. This may be a hydrostatic test or a hydropneumatic test.

(2) Leak test: A test to verify the tightness of the boundary. Unless a specifictest is indicated, this may be a hydrostatic/hydropneumatic test, air test or hose test.

(3) Hydrostatic test (leak and structural): A test by filling the space with a liquid to a specified hea**d.**

(4) Hydropneumatic test (leak and structural): A test wherein the space is partially filledwith liquid and air pressure applied on top of the liquid surface.

(5) Hose test (leak): A test to verify the tightness of the joint by a jet of water.

(6) Air tests (leak): A test to verify the tightness by means of air pressure differential and leak detection solution. It includes tank air tests and joint air tests, such as a compressed air test and vacuum box test.

(7) Compressed air filletweld test (leak): An air test of a filletwelded tee joint with a leak indicating solution applied on the fillet welds**.**

(8) Vacuum box test (leak): A box over a joint with leak indicating solution applied on the filletor butt welds. A vacuum is created inside the box to detect any leaks.

(9) Ultrasonic test (leak): A test to verify the tightness of a sealing by means of ultrasound.

(10) Penetration test (leak): A test to verify that no continuous leakages exist in the boundaries of a compartment by the application of low surface tension liquids.

4.3.3 Testing procedures

4.3.3.1 General requirements

Tests are to be carried out in the presence of the Surveyor at a stage sufficientlyclose to the completion of the work with all hatches, doors, windows, etc., installed and all penetrations including pipe connections fitted,and before any ceiling and cement work is applied over the joints. Specifictest requirements are given in 4.3.4 and Table 4.3.4.1. For the timing of application of coating and the provisions for safe access to joints, see 4.3.5, 4.3.6 and Table 4.3.5.1.

4.3.3.2 Structural test procedures

(1) Type and time of test

① Where a structural test is specifiedin Table 4.3.4.1, a hydrostatic test in accordance with 4.3.4.1 will be acceptable. Where practical limitations (strength of building berth, density of liquid, etc.) prevent the performance of a hydrostatic test, a hydropneumatic test in accordance with 4.3.4.2 may be accepted as an equivalent method.

② Provided the results of a leak test are confirmed satisfactory, a hydrostatic test for confirmation of structural adequacy may be carried out while the unit is afloat.

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[2] Gravity tanks mean tanks the vapor pressure of which is not more than 70 kPa.

[3] Major repairs mean repairs that affect the structural integrity.

(2) Number of structural tests

① A structural test is to be carried out for at least one tank of the same construction (i.e. tanks of the same structural design and configuration and same general workmanship as determined by the attending Surveyor) on each unit provided all subsequent tanks are tested for leaks by an air test.However, where structural adequacy of a tank was verifid by structural testing required in Table 4.3.4.1, the subsequent units in the series (i.e. sister units built in the same shipyard) may be exempted from such testing for other tanks which have the structural similarity to the tested tank, provided that the watertightness in all boundaries of exempted tanks are verifiedby leak tests and thorough inspection. For sister units built several years after the last unit of the series, such exemption may be reconsidered. In any case, structural testing is to be carried out for at least one tank for each unit in order to verify structural fabrication adequacy.

② For watertight boundaries of spaces other than tanks (excluding chain lockers), structural testing may be exempted, provided that the watertightness in all boundaries of exempted spaces are verifiedby leak tests and thorough inspection.

③ These subsequent tanks may require structural testing where necessary after the structural testing of the first tank.

④ Tanks for structural test are to be selected so that all representative structural members are tested for the expected tension and compression.

4.3.3.3 Leak test procedures

(1) For the leak test specifiedin Table 4.3.4.1, hose test, tank air test, compressed air filletweld test, vacuum box test in accordance with 4.4.4.3 to 4.4.4.6, or their combination will be acceptable. A hydrostatic or hydropneumatic test may also be accepted as the leak test provided 4.3.5 and 4.3.6 are complied with. A hose test will also be acceptable for the locations as specified inTable 4.3.4.1 with note 3.

(2) A joint air test may be carried out in the block stage provided all work on the block that may affect the tightness of the joint is completed before the test. See also 4.3.5.1 for the application of finalcoating and 4.3.6 for safe access to the joint and Table 4.3.4.3.

4.3.4 Testing requirements

4.3.4.1 Hydrostatic test

(1) Unless other liquid is approved, the hydrostatic test is to consist of filling the space by fresh water or seawater, whichever is appropriate for testing of the space, to the level specified inTable 4.3.4.1.

(2) In case a tank for cargoes with higher density is to be tested with fresh water or seawater, the testing pressure height is to be specially considered.

4.3.4.2 Hydropneumatic test

A hydropneumatic test where approved is to be such that the test condition in conjunction with the approved liquid level and air pressure will simulate the actual loading as far as practicable. The requirements and recommendations for tank air tests in 4.3.4.4 will also apply to the hydropneumatic test.

4.3.4.3 Hose test

(1) A hose test is to be carried out with the pressure in the hose nozzle maintained at least at 0.2 MPa during the test. The nozzle is to have a minimum inside diameter of 12 mm and be at a distance to the joint not exceeding 1.5 m.

(2) Where a hose test is not practical because of possible damage to machinery, electrical equipment insulation or outfittingitems, it may be replaced by a careful visual examination of welded connections, supported where necessary by means such as a dye penetrant test or ultrasonic leak test or an equivalent.

4.3.4.4 Tank air test

(1) All boundary welds, erection joints and penetrations including pipe connections are to be examined in accordance with the approved procedure and under a pressure differential above atmospheric pressure not less than 0.015 MPa with a leak indication solution applied.

(2) It is recommended that the air pressure in the tank be raised to and maintained at about 0.02 MPa for approximately one hour, with a minimum number of personnel around the tank, before being lowered to the test pressure.

(3) A U-tube with a height sufficientto hold a head of water corresponding to the required test pressure is to be arranged. The cross sectional area of the U-tube is not to be less than that of the pipe supplying air to the tank. In addition to the U-tube, a master gauge or other approved means to verify the pressure is to be approved.

4.3.4.5 Compressed air fillet weld tes

In this air test, compressed air is injected from one end of a filletwelded joint and the pressure verifiedat the other end of the joint by a pressure gauge on the opposite side. Pressure gauges are to be arranged so that an air pressure of at least 0.015MPa can be verified at each end of all passages within the portion being tested.

Note: Where a leak test of partial penetration welding is required and the root face is sufficientlylarge (i.e. 6 ~ 8 mm), the compressed air test is to be applied in the same manner as for a fillet weld

4.3.4.6 Vacuum box test

A box (vacuum tester) with air connections, gauges and inspection window is placed over the joint with leak indicator applied. The air within the box is removed by an ejector to create a vacuum of 0.02 ~ 0.026 MPa inside the box.

4.3.4.7 Ultrasonic test

An arrangement of an ultrasonic echoes transmitter placed inside of a compartment and a receiver outside. A location where the sound is detectable by the receiver displays a leakage in the sealing of the compartment.

4.3.4.8 Penetration test

A test of butt welds by applying a low surface tension liquid to one side of a compartment boundary. When no liquid is detected on the opposite side of the boundary after expiration of a definitetime, the verificationof tightness of the compartments boundary can be assumed.

4.3.4.9 Other tests

Other methods of testing may be considered by CCS upon submission of full particulars prior to commencement of the testing.

Testing Requirements for All Units **Table 4.3.4.1**

No.	Tank or boundary to be tested	Test type	Test head or pressure	Remarks
1	Double bottom tanks[4]	Leak &Structural[1]	The greater of · top of overflow, · to 2.4 m above top of tank[2], or · to bulkhead deck	
2	Double bottom voids[5]	See SOLAS Reg. II-1/11[9]		
3	Double side tanks	Leak &Structural[1]	The greater of · top of overflow; · to 2.4 m above top of tank[2], or · to bulkhead deck	
4	Double side voids	See SOLAS Reg. II-1/11[9]		
5	Deep tanks other than those listedelsewhere in this table	Leak &Structural[1]	The greater of · top of overflow, or · to 2.4 m above top of tank[2]	
6	Fuel oil tanks	Leak &Structural[1]	The greater of · top of the overflo, · to 2.4 m above top of tank[2], or · to top of tank[2] plus setting of any pressure relief valve	
7	Fore peak and after peak tanks	Leak &Structural[1]	The greater of · top of overflow, or · to 2.4 m above top of tank[2]	Only applicable to surface-type unit, after peak to be tested after installa-tion of stern tube
8	a. Fore peak voids	See SOLAS Reg. II-1/11[9]		Only applicable to surface-type unit

No.	Tank or boundary to be tested	Test type	Test head or pressure	Remarks
	b. After peak voids	Leak	See 4.3.4.4 ~ 4.3.4.6, as applicable	Only applicable to surface-type unit
9	Cofferdams	Leak	See 4.3.4.4 ~ 4.3.4.6, as applicable	
10	a. Watertight bulkheads	Leak	See 4.3.4.3 ~ 4.3.4.6, as applicable[7]	
	b. Superstructure end bulkhead	Leak	See 4.3.4.3 ~ 4.3.4.6, as applicable	
11	Watertight doors below freeboard or bulkhead deck	Leak[6,8]	See 4.3.4.3 ~ 4.3.4.6, as applicable	
12	Weathertight hatch covers andclosing appliances	Leak[3,8]	See 4.3.4.3 ~ 4.3.4.6, as applicable	Hatch covers closed by tarpaulins and battens excluded
13	Chain locker	Leak &Structural	Top of chain pipe	
14	Independent tanks	Leak &Structural[1]	The greater of · top of the overflo, or · to 0.9 m above top of tank	
15	Ballast ducts	Leak &Structural[1]	The greater of · ballast pump maximum pressure, or · setting of any pressure relief valve	
16	Brine water tank/mud tank	Leak &Structural[1]	Simulating the actual static water pressure	Carrying out strength check of the test tank under the test pressure head
17	Tank with an open top	Structural[9]	Simulating the actual static water pressure	

Note:

1 Subject to agreement of the Administration of the flag State, structural test is to be carred out for at least one tank of the same construction (i.e. same design and same workmanship) on each unit provided all subsequent tanks are tested for leaks by an air test. However, where structural adequacy of a tank was verifiedby structural testing, the subsequent units in the series (i.e. sister units built in the same shipyard) may be exempted from such testing for other tanks which have the structural similarity to the tested tank, provided that the watertightness in all boundaries of exempted tanks are verifiedby leak tests and thorough inspection is carried out. In any case, structural testing is to be carried out for at least one tank for each unit in order to verify structural fabrication adequacy (see 4.3.3.2(1)).

2 Top of tank is deck forming the top of the tank excluding any hatchways.

3 Hose test may be accepted as a medium of the test (see 4.3.2.1).

4 Including tanks arranged in accordance with the provisions of SOLAS Reg. II-1/9.4.

5 Including duct keels and dry compartments arranged in accordance with the provisions of SOLAS Reg. II-1/9.4.

6 Where watertightness of watertight doors has not been confirmedby prototype test, testing by fillingwatertight spaces with water is to be carried out. See SOLAS Reg. II-1/16.2 and MSC/Circ.1176.

7 Where a hose test is not practicable, other testing methods listed in 4.3.4.7 ~ 4.3.4.9 may be applicable subject to adequacy of such testing methods being verified. See SOLAS Reg. II-1/1.1.

8 As an alternative to the hose testing, other testing methods listed in 4.3.4.7 ~ 4.3.4.9 may be applicable subject to the adequacy of such testing methods being verified. See SOLAS Reg. II-1/1.1.

9 Subject to agreement of the Administration of the flagState, the hydrostatic test may be omitted where the watertightness of all boundaries of compartments or tanks is verifiedby appropriate tests and the structural strength of the boundaries is guaranteed.

4.3.5 Application of coating

4.3.5.1 Final coating

(1) For butt joints by automatic process, finalcoating may be applied any time before completion of the leak test of the space bounded by the joint.

(2) For all other joints, finalcoating is to be applied after the completion of the leak test of the joint. See also Table 4.3.5.1.

(3) The Surveyor reserves the right to require a leak test prior to the application of the final coating over automatic erection butt welds.

4.3.5.2 Temporary coating

Any temporary coating which may conceal defects or leaks is to be applied at a time as specifiedfor finalcoating. This requirement does not apply to shop primer.

4.3.6 Safe access to joints

For leak tests, a safe access to all joints under examination is to be provided. See also Table 4.3.5.1.

Application of Leak Test, Coating and Safe Access for Different Types of Welded Joints **Table 4.3.5.1**

Type of welded joints		Leak test	Coating[1]		Safe access[2]	
			Before leaktest	After leak test & before structural test	Leak test	Structural test
Butt	Automatic	Not required	Allowed	Not applicable	Not required	Not required
	Manual or semi-automatic	Required	Not allowed	Allowed	Required	Not required
Fillet	Boundary including penetrations	Required	Not allowed	Allowed	Required	Not required

Notes: 1 Coating refers to internal (tank/hold coating), where applied, and external (shell/deck) painting. It does not refer to shop primer.

2 Temporary means of access for verification of the leak test.

Section 4 NDT OF STRUCTURE WELD

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 with the agreement of 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 by CCS.

4.4.2 Category of testing

4.4.2.1 Category of weld testing is to be determined based on the 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	Structural types
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 joined components. For stiffened plates, unless otherwise specified, the weld connection between stiffener and stringer and girder web to the plate may be inspected according to inspection category III.

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

4.4.3 Time of inspection

4.4.3.1 NDT of weldments is to be conducted at a suitable interval after welds or post welding heat treatments have been completed and cooled to ambient temperature. Latency timing specified in 4.4.3.2~4.4.3.4 is to be started when it is cooled to ambient temperature.

4.4.3.2 For high strength steels with yield strength less than 420 N/mm^2, testing is to be started after 24 hours when welds or heat treatments have been completed. For base metal of steels of general thickness less than 100 mm, latency inspection may not be considered.

4.4.3.3 For high strength quenched and tempered steels with yield strength not less than 420 N/mm^2, testing is to be started after 48 hours when welds or heat treatments have been completed.

4.4.3.4 When the thickness of base metal exceeds 100 mm, the latency inspection is recommended to be performed after more than 72 hours when the weld has been completed, considering of the temperatures of operation, thickness of the components and structural restrictions.

4.4.4 Scope of NDT

4.4.4.1 Category and scope of weld inspections are to be based on the types , level and direction of designed stress, , and the importance of the influence of the members on overall structural integrity and redundancy of the members, accessibility for in-service survey. In addition, when the extent of inspection and location are determined, the positions of sections, manual weld or automatic weld, starting point and ending point of welds are to be considered besides the above-mention design factors.

4.4.4.2 Category and extent of NDT are to be clearly indicated on the plan.

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

For welds that are examined for only a given percentage, the importance to the integrity of the structure is to be considered when selecting the welds to be examined, i.e. the relatively important components and connecting welds are to be covered in the inspection. A representative sampling of welds, with due regards to NDT areas are to be performed if the requirement of NDT extent is lower.

4.4.4.4 If applicable, ultrasonic inspection may be replaced by radiographic inspection, and vice versa. If the defects displayed by ultrasonic inspection are obscure, additional radiographic inspection is to be performed.

4.4.4.5 NDT is to cover the start point of automatic welding seams.

4.4.4.6 Ultrasonic examination of welds is to include examination of the area adjacent to the weld (the scanning area for angle probes) for laminations and scanning for transverse defects in the weld and base material.

4.4.4.7 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 prevent the presence of lamellar tearing in the member subject to tensile stresses. If a Z-shaped steel is adopted, the examinations may be reduced to 2%~5% coverage.

4.4.4.8 Increase of inspection extent

(1) For welds that are examined for only a given percentage, if severe defects (i.e. other planar defects, cracks or excessive slag lines) occur repeatedly, all welds made with the same welding procedure during this period, are to be examined full length.

(2) For welds that are examined for only a given percentage, whatever 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 with the same welding procedure during this period:

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

② Where defect rate doesn’t exceed 10% (magnetic particle inspection exceeding 1%), the inspection extent is to be doubled; if the defect rate after inspection scope doubled still exceeds 5%, the inspection extent will be increased to 100%.

Note: Defect rate means the ratio of defect length to the length of welds inspected with the same NDT method. It does not include the length of NDT after repairs for the calculation.

4.4.4.9 Reduction of inspection extent

(1) The extent may be reduced appropriately (upon the approval by CCS surveyors), based on experience and documented records with similar joints, provided the defect rate for UT or RT is <2.0% and for MT is <0.2% during the latest examination of weld in the length of 100 m. The latest examination of weld in the length of 100 m 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 testing	Connection type	Visual inspection	RT①	UT②	MT③
I	Butt	100	10～20	100	100
	cross/T，penetration weld	100	-	100	100
	cross /T，fillet weld/deep penetration welding	100	-	-	100
II	Butt	100	2～5	20⑤	20⑤
	cross /T，penetration weld	100	-	20⑤	20④⑤
	cross /T，fillet weld/deep penetration welding	100	-	-	20④
III	Butt	100	-	2～5	2～5
	cross /T，penetration weld	100	-	2～5	2～5
	cross /T，fillet weld/deep penetration welding	100	-	-	0～5

Note:

① If agreed, part or all may be substituted by UT;

② For plates whose thickness is less than 8mm, UT is not proposed. It is proper to be substituted by RT;

③ For non-iron magnetic materials, liquid penetration detection is applied;

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

⑤ Welds of joints are to be increased to 100% UT and MT;

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

4.4.5 Acceptance standards of weld testing

4.4.5.1 The quality of weld surface and interior of special structural members are in general to comply with the relevant requirements for Class B in ISO5817-2003. Primary and secondary structural members are to comply with the relevant requirements for Class C. The use of other standards is to be agreed by CCS.

Section 5 DOCUMENTATION

4.5.1 Reports

4.5.1.1 The builder is to submit the reports and records related to inspection, testing 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 various survey reports, records, data and relevant certificates for the unit‘s main structure and equipment, machinery, electrical installations in the forms specified by the Headquarters of CCS and report this 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, e.g. relevant drawings, diagrams and tables, specifications and calculations are to be in compliance with the actual condition of the unit.

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

(1) Main drawings:

① General arrangement;

② Capacity plan;

③ Hydrostatic curves;

④ Loading Manual, where required.

⑤ Corrosion control, including coating and cathodic protection;

⑥ Fire control plan;

⑦ Division of dangerous areas.

(2) Unit structural drawings:

① Basic structural plan;

② Main section plan;

③ Deck structural plan;

④ Shell expansion plan;

⑤ Stem structure and stern structure plan, if any;

⑥ Infrastructure plan of self-elevating legs, spudcan or mat, leg well, elevating device/locking device;

⑦ Structural plan of columns, lower hull, bracing members and anti-slide piles for submersible units;

⑧ Structural plan of columns, footings or lower hull ,bracing member for column-stabilized units;

⑨ Structural plan of the wellhead structure, cantilever beams, and drill floor supporting;

⑩ Hatch cover plans of crude oil tank (if applicable).

(3) Piping diagrams of seawater lifting, bilge, fire-fighting and ballast;

(4) Diagrams and specifications of hoisting gear, locking facilities and their control system (if applicable);

(5) Diagram of crude oil piping system (if applicable).

4.5.2.3 The following as-built construction documents and information are to be maintained on 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;

② Operation manual;

③ Stability information;

④ Construction specifications;

⑤ Equipment instructions and other guidelines.

(2) Certificates of the unit and its equipment including installations 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.

The other important dates for the unit, e.g. the signing date of construction contract, the date of commencement of construction, the date of the keel laid, 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, 4.5.2.4 above and subsequent documents and information related to them are to be kept by all parties concerned, e.g. the unit, owner or manager of the unit, during the lifetime of the unit.

4.5.2.6 CCS is to, at least during the period in which the unit is classed with CCS, maintain the drawings and documentation referred to in 4.5.2.1, 4.5.2.2, 4.5.2.3 and 4.5.2.4 that are related to the classification management of the unit.

CHAPTER 5 SURVEYS 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 their 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 at any of the surveys, the Surveyor is to inform the owner or his representative of the recommendations in time when he deems 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.

5.1.1.4 Regarding surveys after construction for old-aged units, CCS will give special consideration.

5.1.2 Reclassification

When reclassification is desired for a unit for which the class previously assigned by CCS has been canceled, CCS will carry out a survey appropriate to the age of the unit and the circumstances of the case. If, at such a survey, the unit is found or placed in a good and efficient condition in accordance with CCS rules, CCS will reinstate the original class or assign such other class as may be deemed necessary. The date of any reclassification will be recorded in the Register of Ships or its supplement.

5.1.3 Damage and repair surveys

5.1.3.1 It is the responsibility of the Owner or his agent of the unit to report to CCS without delay any damage, defect or breakdown, which could invalidate the conditions for which a classification has been assigned so that it may be examined at the earliest opportunity by CCS's Surveyor(s). All repairs found necessary by the Surveyor are to be carried out to his satisfaction.

5.1.3.2 Where repairs to hull, legs, columns or other structures, machinery or equipment, which affect or may affect classification, are planned in advance to be carried out, a complete repair procedure including the extent of proposed repair and the need for Surveyors attendance is to be submitted to and agreed upon by CCS reasonably in advance. Failure to notify CCS, in advance of the repairs, may result in suspension of the unit's classification until such time as the repair is redone or evidence submitted to satisfy the Surveyor that the repair was properly carried out. This applies also to repairs during voyage or on site.

5.1.3.3 The above is not intended to include maintenance and overhaul to hull, other structures, machinery and equipment in accordance with recommended manufacturers procedures and established marine practice and which does not require CCS approval; however, any repair as a result of such maintenance and overhauls which affects or may affect classification is to be noted in the unit's log and submitted to the Surveyor.

5.1.4 Alteration or modification surveys

5.1.4.1 When alterations or modification which may affect classification are to be made to the hull or machinery of a classed unit, plans of proposed alterations and related drawings are submitted and approved by CCS before the work of alterations is commenced. Such alterations or modifications and related items are in general to comply with the provisions of the present rules of CCS or at least the requirements of previously applicable rules. Such work is to be carried out in accordance with approved plans and survey on completion as required by the Rules and to the satisfaction of the Surveyor.

5.1.4.2 Alterations or modifications of a major character, if any, are to comply with the provisions of Section 12 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 primarily for the carriage of salt water ballast.

(2) **Space**s are independent compartments, including crude oil tanks, liquid tanks, pump rooms and void spaces.

(3) A **preload tank** is a tank within the hull of a self-elevating unit. These tanks are periodically filled with salt water ballast and used to preload the footings of the unit prior to commencing drilling operations. Preload tanks are considered equivalent to ballast tanks.

(4) A **transverse section** includes all longitudinal members such as plating, longitudinals and girders at the deck, side, bottom, inner bottom, and longitudinal bulkhead (where applicable, hopper side plating and bottom plating of top wing tanks). For transversely framed units, a transverse section includes adjacent frames and their end connections in way of transverse sections.

(5) **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 selecting representative spaces, account is to be taken of the service and repair history on board and identifiable critical and/or suspect areas.

(6) **Critical Structural Areas** are locations which have been identified from calculations to require monitoring or from the service history of the subject Unit or from similar Units or sister Units, if applicable, to be sensitive to cracking, buckling or corrosion which would impair the structural integrity of the Unit.

(7) **Suspect areas** are locations showing substantial corrosion and/or are considered by the Surveyor to be prone to rapid wastage.

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

(9) Excessive Diminution is an extent of corrosion beyond allowable limits.

(10) A **Corrosion Prevention System** is normally considered a full hard protective coating. Hard Protective Coating is usually to be epoxy coating or equivalent. Other coating systems, which are neither soft nor semi-hard coatings, may be considered acceptable as alternatives provided that they are applied and maintained in compliance with the manufacturer's specifications.

(11) A **prompt and thorough repair** is a permanent repair completed at the time of survey to the satisfaction of the Surveyor, therein removing the need for the imposition of any associated condition of classification.

(12) 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.

(13) 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. normally within reach of hand.

(14) **Special consideration** or **specially considered** (in connection with close-up surveys and thickness measurements) means sufficient close-up inspection and thickness measurements are to be taken to confirm the actual average condition of the structure under the coating.

(15) Coating condition:

GOOD: Condition with only minor spot rusting;

FAIR: Condition with local breakdown at edges of stiffeners and weld connections and/or light rusting over 20% or more of areas under consideration, but less than as defined for POOR condition;

POOR: Condition with general breakdown of coating over 20% or more of areas or hard scale at 10% or more of areas under consideration.

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

(17) Transit under restrictive climate conditions: transit that can be accomplished within a particular climate window usually within 72 hours, in which case the corresponding design environmental conditions for the transit may be reduced appropriately based on the specific characteristic values of the target sail line;

(18) Ocean transit: the transits other than the transit under restrictive climate conditions defined in (16) of this subpart.

(19) Propulsion Assist

Units that are given the notation "Propulsion Assist" are non-self-propelled Units fitted with thrusters intended to assist in maneuvering or propelling while under tow.

5.1.6 Preparations for survey

5.1.6.1 Conditions for survey

(1) The owner is to provide the necessary facilities for a safe execution of the survey; entrance of the resitricted spaces should meet the requirements of IACS PR 37;

(2) Tanks and spaces are to be safe for access. Tanks and spaces are to be gas free and properly ventilated. Prior to entering 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 and thickness measurements and to allow for a thorough examination, all spaces are to be cleaned including removal from surfaces of all loose accumulated corrosion scale. Spaces are to be sufficiently clean and free from water, scale, dirt, oil residues etc. to reveal corrosion, deformation, fractures, damages, or other structural deterioration, as well as the condition 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) Sufficient illumination is to be provided to reveal corrosion, deformation, fractures, damages or other structural deterioration, as well as the condition of the coating.

(5) Where soft or semi-hard coatings have been applied, safe access is to be provided for the surveyor to verify the effectiveness of the coating and to carry out an assessment of the conditions of internal structures which may include spot removal of the coating. When safe access cannot be provided, the soft or semi-hard coating is to be removed.

5.1.6.2 Access to structures

(1) For survey including overall survey of all units, means are to be provided to enable the Surveyor to examine the main structure in a safe and reliable way.

(2) For internal survey of voide spaces and seawater ballast tanks, one or more of the following means for access, acceptable to the Surveyor, is to be provided:

① permanent staging and passages through structures;

② temporary staging and passages through 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 the equipment is to be proven to the Surveyor as required. Thickness measurements are to be carried out by a firm approved by CCS in accordance with Appendix 1 of this Chapter.

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

① radiographic equipment;

② ultrasonic equipment;

③ magnetic particle equipment;

④ dye penetrant；

⑤ Other acceptable NDT techniques.

5.1.6.4 Survey offshore or at anchorage

(1) Survey offshore or at anchorage may be accepted provided the Surveyor is given the necessary assistance from the personnel onboard.

(2) A communication system is to be arranged between the survey party in the tank or space and the responsible officer on deck. This system must also include the personnel in charge of ballast pump handling if boats or rafts are used.

(3) When boats or rafts are used, appropriate life jackets are to be available for all participants. Boats or rafts are to have satisfactory residual buoyancy and stability even if one chamber is ruptured. A safety checklist is to be provided.

(4) Surveys of tanks by means of boats or rafts may only be undertaken at the sole discretion of the Surveyor, who is to take into account the safety arrangements provided, including weather forecasting and ship response in reasonable sea conditions.

5.1.7 Document management on unit

5.1.7.1 A specific Survey Program for Hull Special Surveys and Hull Special Continuous Surveys must be worked out in advance of the Special Survey by the Owner in cooperation with the Classification Society. The Survey Program shall be in written format.

5.1.7.2 Plans and procedures for survey of the outside of the unit's bottom and related items are to be submitted for review by CCS in advance of the survey and made available on board. These should include drawings or forms for identifying the areas to be surveyed, the extent of hull cleaning, non-destructive testing locations (including NDT methods), nomenclature, and for the recording of any damage or deterioration found. Submitted data, after review by CCS, will be subject to revision if found to be necessary in light of experience.

5.1.8 Procedures for thickness measurements

5.1.8.1 General requirements

(1) The thickness measurements are to be carried out by a qualified thickness measurement firm and witnessed by an attending Surveyor.

(2) Before thickness measurement, the thickness measurement firm generally reaches an agreement with relevant parties on the plan:

① reporting of thickness measurements on regular basis;

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

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

b. structural defects like buckling, fractures and deformed structures;

c. detached and/or holed structure; and

d. corrosion of welds.

(3) Thickness measurements of structures in areas where close-up surveys are required are to be carried out simultaneously with close-up surveys.

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

5.1.8.2 Thickness measurement

(1) Thickness measurement firms are to be certified by CCS according to Appendix 1 of this Chapter.

5.1.8.3 Reporting

(1) A thickness measurement report is to be prepared. The report is to give the location of measurements, the

thickness measured as well as corresponding original thickness. Furthermore, the report is to give the date when the measurements were carried out, type of measurement equipment, names of personnel and their qualifications and has to be signed by the operator.

(2) The Surveyor is to review the final thickness measurement report and countersign the cover

5.1.8.4 Monitoring of the thickness measurement process onboard

(1) The Surveyor is to decide final extent and location of thickness measurements after overall survey of spaces onboard units.

(2) In case the owner prefers to commence the thickness measurements prior to the overall survey, then the Surveyor is to require that the planned extent and locations of thickness measurements are subject to confirmation during the overall survey. 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 readings taken represent, on average, the condition of the structure for that area.

(4) Thickness measurements taken mainly to evaluate the extent of corrosion, which may affect the overall strength, are to be carried out in a systematic manner such that all 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 direct locations for additional thickness measurements in order to delineate areas of substantial corrosion and to identify structural members for repairs/renewals.

5.1.8.5 Review and verification

(1) Upon completion of the thickness measurements, the Surveyor is to confirm that no further gaugings are needed, or if necessary, specify additional gaugings.

(2) Where any reduction is allowed to the extent of thickness measurements after special considerations by the Surveyor, these special considerations are to be reported, where appropriate.

(3) In case thickness measurements are partly carried out, the remaining extent of thickness measurements is to be reported for the use of the next Surveyor.

5.1.9 Repairs

5.1.9.1 Any damage in association with wastage over the allowable limits (including buckling, grooving, detachment or fracture), or extensive areas of wastage over the allowable limits, which 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(11) of this Chapter).

5.1.9.2 For locations where adequate repair facilities are not available, with the consent of CCS, consideration may be given to allow the unit to proceed directly to a port with adequate repair facilities for completing the repairs, provided safety is guaranteed. This may require transit and unloading and/or temporary repairs for the intended voyage.

5.1.9.3 When a survey results in the identification of structural defects or corrosion, either of which, in the opinion of the Surveyor, will impair the unit's fitness for continued transit, remedial measures are to be implemented before the unit continues in transit.

5.1.9.4 Where the damage mentioned in Para. 5.1.9.1 is isolated and of a localised nature which does not affect the unit's structural integrity, consideration may be given by the surveyor to allow an appropriate temporary repair to restore watertight or weather tight integrity and impose a Recommendation/Condition of Class in accordance with IACS PR 35, with a specific time limit.

5.1.10 Welding and Replacement of Materials

5.1.10.1 Welding of steels, including high strength structural steel， is to be to the satisfaction of CCS.

5.1.10.2. Welding or other fabrication performed on steels of special characteristics or repairs or renewals of such steel or in areas adjacent to such steel is to be accomplished with procedures approved by CCS considering the special materials involved. Substitution of steels differing from those originally installed is not

to be made without approval by CCS.

5.1.10.3. It may reference the suitable requiements of Chapter 1 PART 2 of this rule when considering suitable replacement materials.

5.1.11 Thickness measurements and close-up surveys

In any kind of survey, i.e. special, intermediate, annual or other surveys having the scope of the foregoing ones, thickness measurements of structures in areas where close-up surveys are required, are to be carried out simultaneously with close-up surveys.

5.1.12 Owner's main structure inspection and maintenance schemes

CCS encourages owners to implement main structure inspection and maintenance schemes as a means for maintaining compliance with classification and statutory requirements between 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 main structure by CCS Surveyors.

5.1.13 Attendance for survey of units detained by port States

5.1.12.1 The owner is to notify CCS on all occasions when a unit is being detained by a port State authority, or the flag Administration has found deficiencies which affect the unit's classification or statutory certificates issued by CCS, prior to the unit's departure in order that CCS Surveyor may attend and carry out a survey for the purpose of assessing and insuring the correction, if necessary, of the reported deficiencies or other matters which affect or may affect classification or the validity of statutory certificates issued by CCS. If the Surveyor is not able to attend for any reason, CCS will notify the owner to arrange for attendance in the next port of call.

5.1.12.2 If an owner does not notify CCS of a detention, then CCS reserves the right to suspend or cancel classification of the unit or invalidate the related statutory certificate(s).

5.1.14 Attendance at port State request

5.1.13.1 In cooperation with the port State, CCS Surveyor will attend on board a classed unit when so requested by the Port State, and upon concurrence by the owner, will carry out a survey in order to facilitate the rectification of reported deficiencies or other discrepancies that affect or may affect classification.

5.1.13.2 CCS Surveyor will also provide inspectors of the port State with background information (e.g. conditions of class, due dates of surveys, and expiry dates of certificates), if requested.

5.1.15 Unit's safety management system

5.1.14.1 If during any survey, the attending CCS Surveyor finds evidence that the unit's safety management system that complies with the requirements of 5.1.14.1 (1) or (2) is not in operation or functioning as required by the ISM Code, this will be communicated to the relevant flag Administration or the organization which issued the Safety Management Certificate on behalf of the flag Administration for their consideration and action.

(1) Mechanically propelled offshore mobile drilling units constructed on and after 1 July 2002 are to comply with the requirements of the International Safety Management (ISM) Code;

(2) Mechanically propelled offshore mobile drilling units not being in position are to comply with the requirements of the International Ship and Port Facility Security (ISPS) Code.

Section 2 TYPES AND PERIODS OF SURVEYS

5.2.1 Annual surveys

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 of the completion of the last special survey. The surveys are to be carried out in accordance with the relevant requirements of Sections 3 to 6 of this Chapter.

5.2.2 Intermediate surveys

Intermediate surveys are to be carried out on all units either at or between the 2nd and 3rd annual survey. Those items which are additional to the requirements of the annual surveys may be surveyed either at or between the 2nd and 3rd annual survey. The surveys are to be carried out in accordance with the relevant requirements of Sections 3 to 6 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 of units may be carried out with the unit in dry dock or on a slipway, or while the unit is afloat. The examinations in dry dock or on a slipway are considered as docking surveys and the examinations with the unit afloat as in-water surveys. Surveys of the outside of the unit's bottom and related items should be generally carried out in dry dock. But while the unit is afloat, underwater inspection mentioned in Section 7 of this Chapter can be used

5.2.3.2 There is to be a minimum of two examinations of the outside of the unit's bottom and related items during each five-year special survey period. One such examination is to be carried out in conjunction with the special survey. In all cases the interval between any two such examinations is not to exceed 36 months. The surveys are to be carried out in accordance with the relevant requirements in Section 7 of this Chapter. Under exceptional circumstances, CCS may seriously consider to extend the survey interval. The definition of exceptional circumstances can be seen in 3.1.3.1(18) Chapter 2 of this PART. The interval of docking surveys may be extended for units operating in sea water for less than 6 months a year, only upon the agreement by CCS.

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

5.2.3.4 For units of 20 years and below, in-water surveys in lieu of docking surveys may be considered. In-water surveys are to be carried out in accordance with the relevant requirements of Sections 7 of this Chapter.

5.2.3.5 For oil storage units of 15 years and over, but not involving the units which have oil storage tanks, in-water surveys in lieu of docking surveys are not to be considered.

5.2.3.6 Where an in-water survey in lieu of docking survey is requested by the owner for a unit of 20 years or over, CCS will consider this according to the specific condition of the unit and the status of last survey.

5.2.4 Special surveys

5.2.4.1 All units are to be subject to special surveys at 5 years intervals 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 5 years from the credited date of the previous special survey. If necessary, the period of the special survey may be shortened.

5.2.4.2 The special survey may be commenced at the annual survey prior to its expiry date and be progressed during the succeeding year with a view to completion by its expiry date. When the special survey is commenced before the annual survey prior to its expiry date, the entire survey is to be completed within 15 months from the date of commencement of the special survey if such work is to be credited to the special survey.

5.2.4.3 Where the owner is not able to arrange the special survey by its expiry date in exceptional circumstances and upon the owner's request, CCS may grant an extension in accordance with 2.9.2.1(4)③a and/or b , provided that a written application is received before the expiry date. In this case the next period of class will start from the expiry date of the Special Survey before the extension was granted.

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

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

5.2.4.6 At the request of the Owner, and upon the CCS's approval of the proposed arrangements, a system of Continuous Survey may be undertaken whereby the Special Survey requirements are carried out in regular

rotation in accordance with the Rules of the Society to complete all the requirements of the particular Special Survey within a five year period. Any defects that may affect classification found during the survey, are to be reported to CCS and dealt with to the satisfaction of the Surveyor.

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

5.2.4.8 The special surveys are to be carried out in accordance with the relevant requirements of Sections 3 to 6 of this Chapter.

5.2.5 Screwshaft and tubeshaft surveys

The screwshaft and tubeshaft surveys to be carried out and the interval between the surveys are to be in accordance with the requirements of Section 8 of this Chapter.

5.2.6 Boiler surveys

The boiler surveys to be carried out and the interval between the surveys are to be in accordance with the requirements of Section 9 of this Chapter.

5.2.7 Continuous surveys

5.2.7.1 Continuous survey system for the units' main structure

(1) Continuous system for the units' main structure survey is an alternative survey system for special survey and is applicable to units other than those for production and oil storage purpose.

(2) The overall survey of the units' main structure to meet the requirements of the units' main structure special survey, can be carried out on the continuous survey system basis, when, at the request of the owner it has been agreed by CCS. However, units on the continuous survey system are not exempt from other periodical surveys.
(3) When such a system is adopted, all the requirements of the particular main structure special survey must be completed at the end of the five-year class period.

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

(5) The owner is entitled to fix the sequence in which the individual items of the main 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 (in two cycles) examinations of each item will not exceed five years. The survey in dry dock may be held at any time within the five-year class period, provided all the requirements of Section 8 of this Chapter are also complied with. For units more than 10 years of age, the ballast tanks are to be internally examined twice in each five-year class period, i.e. once within the extent of the intermediate survey and once within the scope of the continuous system for the main structure special survey.

(6) The Surveyor may extend the inspection, at his discretion, to other items if the inspections carried out revealed any defect.

(7) The agreement for surveys to be carried out on a continuous survey system basis 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 machinery (including electrical installations) may be carried out on the continuous survey basis.

(2) When the continuous survey is carried out, the various items for special survey of the machinery (including electrical installations) are to be examined in rotation, evenly distributed within the cycle of the special survey (5 years).

(3) The longest interval between consecutive examinations of each item is not to exceed 5 years. All items to be inspected are to be submitted to the Surveyors for examination after opening and cleaning, as in the special survey. Control, alarm and safety systems are in general to be checked only by operation test or simulation test.

(4) CCS at its discretion, or the owner in view of the implementation of the continuous survey system, may terminate this system at any time and apply special survey.

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

5.2.8 Survey of planned maintenance scheme (PMS) for machinery

5.2.8.1 For the machinery and installations which are subject to planned maintenance and with the consent of CCS, the survey of planned maintenance scheme may be introduced to replace the special or continuous survey of mechanical equipments (including electrical equipments). The details can be seen in Appendix 2 of this Chapter 5.

5.2.9 Lay-up and reactivation surveys

5.2.9.1 General requirements

(1)When CCS is notified by the Owner that a unit has been laid-up, this status will be noted in the vessel's survey status and surveys falling due during lay-up may then be held in abeyance until the vessel reactivates, at which time they are to be brought up-to-date.

(2) The class of which may be maintained provided that:

① a scheme for maintenance of the unit during its lay-up period is developed by the owner and agreed by CCS;

② lay-up survey is requested at the beginning of the lay-up period;

③ annual lay-up condition survey is carried out in lieu of the normal annual survey during the lay-up period.

(3) Where a maintenance scheme agreed by CCS is available for a unit being laid up for a period beyond due date of the special classification survey, all surveys after construction which fall due during lay-up will then be held in abeyance until it is reactivated, subject to satisfactory completion of the annual lay-up condition survey stated in (1)③ above.

(4) At the request of the owner and as determined by CCS, part or all of surveys after construction may be carried out for a laid-up unit, with particular attention 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 next survey of the same type after construction.

5.2.9.2 Lay-up surveys

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

(2) Laid-up units are to be attended by on-watch personnel. The number of on-watch personnel is to be determined depending on the type, dimension, lay-up position and mooring equipment of the mobile unit, rescue capacity of the shore base in the event of any fire, leak, collision, downflooding and other emergencies, and the work quantity of necessary maintenance;

5.2.9.3 Annual lay-up condition surveys

(1) An annual lay-up survey is to be carried out, in lieu of the normal annual survey during the lay-up period, to determine whether the unit remains in compliance with the lay-up maintenance scheme. The extent of the survey 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 lay-up log;

(2) During the lay-up period, units comply with requirements for fire-prevention;

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

5.2.9.4 Reactivation surveys

(1) Units which have been laid up and are returning to active service, regardless of whether CCS has been previously informed that the vessel has been in lay-up, a Reactivation Survey is required. The requirements for

the Reactivation Survey are to be specially considered in each case, having due regard being given to the status of surveys at the time of the commencement of lay-up, the length of the lay-up period and the conditions under which the vessel has been maintained during that period.

(2) The owner is to inform CCS of 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(2), taking into account the requirements of 5.2.9.1(3).

(3) 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(2), and where surveys have been carried out according to 5.2.9.4(1), a complete special survey is to be carried out prior to the reactivation. Those items which have been surveyed in compliance with the special classification survey requirements within 15 months preceding the reactivation may be credited.

(4) Upon satisfactory completion of the survey, the classification certificate is to be endorsed to the effect that the unit is reactivated.

5.2.10 Initial classification surveys

5.2.10.1 An initial classification survey of a unit requesting to be classed with CCS is the examination of compliance of its documentation and of the design, configuration, technical condition and management of its structure and equipment with CCS rules and regulations for classification and other technical requirements recognized by it, prior to assigning CCS class and classification certificates to it for the first time.

5.2.10.2 The initial classification surveys of the existing units and the units constructed not under the supervision of CCS are to be carried out in accordance with the relevant requirements of Section 10 of this Chapter.

5.2.10.3 The initial classification surveys of new-buildings are to be carried out in accordance with the requirements of Chapter 4 of this part for surveys during construction.

5.2.11 Occasional surveys

5.2.11.1 An occasional survey is any survey which is not a periodical survey. The survey may be defined as an occasional survey of main structure, machinery, boilers, electrical installations, 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 the owner or operator;

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

(3) port State control inspection;

(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.

5.2.12 Survey after ocean transit

5.2.12.1 Ocean transit is usually categorized into such two forms as ocean wet towing and ocean dry towing.

5.2.12.2 Upon completion of an ocean wet towing of a self-elevating unit and prior to elevation of the unit, a special post-towing survey of the unit is to be carried out. This survey is to include a thorough visual examination of the unit's structure and helicopter deck support structure, as well assurface NDT of critical structural areas, as deemed necessary. If such survey is carried out by the Owner and any damage that affects

or may affect the class of the unit is detected, CCS is to be immediately notified andrequested to arrange a survey. If no damage that affects or may affect the class of the unit is detected in the Owner's survey, CCS is to be notified of the details about the survey and CCS will perform confirmation survey at next periodical survey.

5.2.12.3 Upon completion of an ocean dry towing of a self-elevating unit and prior to elevation the unit, a special post-towing survey of the unit is to be carried out. This survey is to include a thorough visual examination of the unit's structure and helicopter deck support structure, as well as surface NDT of critical structural areas, as deemed necessary. If such survey is carried out by the Owner and any damage that affects or may affect the class of the unit is detected, CCS is to be immediately notified and requested to arrange a survey. If no damage that affects or may affect the class of the unit is detected in the Owner's survey, the survey records are to be kept onboard the unit for confirmation by a CCS surveyor at next periodical survey.

Section 3 MAIN STRUCTURE AND EQUIPMENT SURVEY

5.3.1 General requirements

5.3.1.1 This Section applies to surveys of main structure (including equipment) of all units.

5.3.1.2 Where statutory certificates of the unit have been issued or endorsed 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 will be determined according to the specific conditions.

5.3.2 Annual surveys

5.3.2.1 General requirements for all units

(1) The annual survey intervals are specified in Section 2 of this Chapter.

(2) During an annual survey, an overall examination of exposed parts of the main structure, deck, deckhouses, superstructures, structures attached to the deck including supports to drilling/process plant, derrick substructures, crane pedestals and other supporting structures, accessible internal spaces and the applicable parts listed under 5.3.2.2 to 5.3.2.10 below is to be carried out and their satisfactory condition confirmed.

(3) The Surveyors are to be satisfied at each Annual Survey that no material alterations have been made to the unit, its structural arrangements, subdivision, superstructure, fittings, and closing appliances upon which the stability calculations or the load line assignment is based.

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

5.3.2.2 Extent of the survey for all units:

(1) The main structure:

① examining, in general and as far as can be seen, the main structure and its closing appliances;

② examining the anchoring (anchors, chain cables, windlass (including its foundation, prime mover and shafting), cable lifters, brakes, chain stoppers, etc. as far as practicable) and mooring equipment as far as can be seen. Where the temporary anchoring equipment forms part of position mooring equipment, that part of the position mooring equipment is also to be examined as far as practicable;

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

④ examining and testing (locally and remotely) all the watertight doors in watertight bulkheads, examining the arrangements for closing openings in the shell plating below the freeboard deck;

⑤ examining each bilge pump and confirming that the bilge pumping system for each watertight compartment is satisfactory;

⑥ confirming that no new installation of materials containing asbestos is on board units since last survey.

(2) Loadlines — general requirements:

① checking, in general, that the strength of the main structure remains in compliance with rules;

② checking of the positions of the deck line and load line which, if necessary, are to be re-marked and re-painted;

③ checking that no alterations have been made to the main structure or superstructures that would affect the calculations determining the position of the load lines;

④ examining the superstructure end bulkheads and the openings with their closing appliances therein;

⑤ examining the means of securing the weathertightness of hatchways and other openings on the freeboard and superstructure decks;

⑥ examining the ventilators and air pipes, including their coamings and closing appliances, and in particular, examining the weld connection between air pipes and deck plating as well as external examination of all air pipe heads installed on the exposed decks;

⑦ examining the watertight integrity of the closures to any openings in the unit's side below the freeboard deck;

⑧ examining the scuppers, inlets ,freeing ports together with bars, shutters and hinges;

⑨ examining the side scuttles and deadlights;

⑩ examining the bulwarks including the provision of freeing ports, special attention being given to any freeing ports fitted with shutters;

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

⑫ examining, when applicable, the means provided to minimize water ingress through the spurling pipes and chain lockers;

⑬ examining, if applicable, portholes, bow doors, stern doors and other similar openings and their closing appliances.

(3) Loadlines — protection of cargo hatches (if applicable)

① checking that no unapproved changes have been made to the hatch covers, hatch coamings and their securing and sealing devices since the last survey;

② exposed hatch covers are to be examined to confirm the structural integrity and capability of maintaining weathertightness. Where extensive areas of wastage and/or substantial corrosion of steel hatch covers are found, thickness measurements are to be carried out to confirm the extent of wastage or corrosion, and renewals or repairs made when wastage exceeds allowable margins;

③ where mechanically operated steel covers are fitted, checking the satisfactory condition of:

a. close-up survey of hatch covers including plating;

b. close-up survey of hatch coamings including stiffeners;

c. tightness devices of longitudinal, transverse and intermediate cross junctions (gaskets, gasket lips, compression bars, drainage channels);

d. clamping devices, battens, cleating;

e. chain or rope pulleys;

f. guides;

g. guide rails and track wheels;

h. stoppers, etc.;

i. wires, chains, gypsies and tensioning devices;

j. hydraulic system essential to closing and securing;

k. safety locks and retaining devices;

l. random checking of stowage and securing of hatch covers in open condition;

m. random checking of proper fit, locking and efficiency of sealing of hatch covers in closed condition;

n. random checking of operational testing of hydraulic and power components, wires, chains, and link drives;

④ where steel pontoon hatch covers are fitted, checking the satisfactory condition of:

a. steel pontoons;

b. tarpaulins;

c. close-up survey of hatch coamings including stiffeners;

d. cleats, battens and wedges;

e. hatch securing bars and their securing devices;

f. loading pads/bars and the side plate edge

g. guide plates and chocks;

h. compression bars, drainage channels and drain pipes (if any).

(4) Stability information, operation manual and loading manual

① checking the approved stability information, loading manual, damage control plan and damage control manual (if applicable);

② operation manual and construction booklet;

③ the loading instrument, which is a supplement to the stability information, is to be confirmed in working order by use of the approved check conditions. The user's instruction manual for the loading instrument is to be confirmed on board (if applicable).

(5) Structural fire protection

① confirming that fire control plans are posted and kept as required;

② confirming that no significant changes have been made to the arrangement of structural fire protection;

③ checking integrity and efficiency of all manual and automatic fire doors, if fitted;

④ confirming that the means for escape from the accommodations, machinery spaces and other spaces are satisfactory.

(6) Fire-fighting equipment

① examining the fire pumps, fire mains, hydrants, hoses and nozzles and the international shore connection and checking that each fire pump, including the emergency fire pump, can be operated separately so that two jets of water are produced simultaneously from two different hydrants at any part of the unit whilst the required pressure is maintained in the fire main;

② checking the provision and randomly examining the condition of the portable and non-portable fire extinguishers;

③ confirming that the firemen‘ outfits are complete and in good condition and that the cylinders, including the spare cylinders, of any required self-contained breathing apparatus are suitably charged;

④ checking the operational readiness and maintenance of fire-fighting systems;

⑤ examining the fixed fire-fighting system for the machinery and cargo spaces, as appropriate, and confirming that its means of operation are clearly marked;

⑥ examining the fire extinguishing and special arrangements in the machinery spaces and confirming, as far as practicable and as appropriate, the operation of the remote means of control provided for the opening and closing of the skylights, the release of smoke, the closure of ventilation openings of the space enclosing the funnel, the closure of power-operated and other doors, the stopping of ventilation and boiler space forced and induced draft fans and the stopping of oil fuel and other pumps that discharge flammable liquids;

⑦ examining, as far as possible, and testing, as feasible, any fire detection and alarm system;

⑧ checking the provision of a fire-extinguishing system for spaces containing paint and/or flammable liquids and deep-fat cooking equipment in accommodation and service spaces;

⑨ examining the helicopter facilities;

⑩ examining the arrangement of tanks for oil fuel, lubricating oil and other flammable oils, as far as practicable and as appropriate, the operation of the remote means of closing the valves on the tanks that contain oil fuel, lubricating oil and other flammable oils; examination of flame screens on vents to all bunker tanks;

⑪ examining and testing of the general emergency alarm system.

(7) Suspect areas

① overall examination of suspect areas of the main structure, including overall and close-up survey of those suspect areas identified at previous surveys;

② thickness measurements of areas of substantial corrosion identified at previous surveys;

③ where extensive corrosion is found or when considered necessary by the Surveyor, thickness measurements are to be carried out and renewals or repairs made when wastage exceeds allowable margins. If the results of these thickness measurements indicate that substantial corrosion is found, then the extent of thickness measurements is to be increased to determine areas of substantial corrosion. 5.3.5.2(4) of this part may be used as guidance for these additional thickness measurements. These extended thickness measurements are to be carried out before the annual survey is credited as completed.

(8) Salt water ballast spaces

Examination of ballast tanks when required as a consequence of the results of the special survey and intermediate survey is to be carried out. Where extensive areas of wastage are found or when considered necessary by the Surveyor, thickness measurements are to be carried out. If the results of these thickness measurements indicate that substantial corrosion is found, then the extent of thickness measurements is to be increased to determine areas of substantial corrosion. 5.3.5.2(4) of this part may be used as guidance for these additional measurements. These extended thickness measurements are to be carried out before the annual survey is credited as completed.

(9) Steering gear

If applicable, main and auxiliary steering gear, including their associated equipment and control systems, are to be examined and tested and if appropriate, relevant entries in the logbook are to be verified.

(10) Others (if applicable)

① structure connecting the flare tower with main structure;

② Crane pedestal.

5.3.2.3 Additional extent of survey for surface-type units:

In addition to the applicable survey items specified in 5.3.2.2, the main structure and deck structure around the wellhead (moon-pool) and in vicinity of any other structural changes in section, slots, steps, or openings in the deck or primary structural members and the back-up structure in way of structural members or sponsons connecting to the main structure.

5.3.2.4 Additional extent of survey for self-elevating units

In addition to the applicable survey items specified in 5.3.2.2, jack-house structures and attachments to upper hull or platform. Jacking or other elevating systems and leg guides, externally. Legs as accessible above the waterline, plating and supporting structure in way of leg wells, drilling cantilevers and supporting structure.

5.3.2.5 Additional extent of survey for column-stabilized units

In addition to the applicable survey items specified in 5.3.2.2, columns, diagonal and horizontal braces together with any other parts of the upper hull supporting structure as accessible above the waterline.

5.3.2.6 Additional extent of survey for submersible unitsIn addition to the applicable survey items specified in 5.3.2.2, columns, diagonal and any other parts of the upper hull supporting structure as accessible above the waterline, and slide resistant legs and leg well structure.

5.3.2.7 Towing arrangements are to be examined.

5.3.2.8 Class conditions or outstanding recommendations made at the previous survey and/or restrictions imposed by the Administration are to be dealt with as specified.

5.3.2.9 CCS may require an examination of major structural components including NDT of critical areas at the first annual survey subsequent to completion of construction of column-stabilized or self-elevating units, if it deems this necessary. The extent of the examination is to be agreed by CCS and the owner/operator prior to commencement of the survey.

5.3.2.10 Additional survey requirements for production and oil storage units

For unit with oil storage tanks, in addition to the applicable requirements of 5.3.2.1 to 5.3.2.9, the following are to be examined where applicable to confirm their effective condition:

(1) Weather deck:

① examination of oil storage tank openings including gaskets, covers, coamings and screens;

② examination of pressure/vacuum valves and flame screens of oil storage tank venting and auxiliary venting systems;

③ examination of flame screens on vents to all bunker, oily ballast and oily slop tanks;

④ examination of oil storage, crude oil washing, bunker, ballast and vent piping systems together with flame arrestors, etc, as applicable above the upper deck within the oil storage tank area, including vent masts and headers.

(2) Cargo oil pump room and pipe tunnel, if fitted:

① verification that no potential sources of ignition such as loose gear, excessive products in the bilges, excessive vapors, combustible materials, etc., are present in or near the oil storage pump room and that access ladders are in good condition;

② examination of all pump room bulkheads for signs of leakage or fractures, and in particular, the sealing arrangements of all penetration s in these bulkheads;

③ examination of the condition of all piping systems in the oil storage pump room so far as is practicable;

④ verification that installed pressure gauges on cargo discharge lines and level indicator systems are operational;

⑤ examination so far as is practicable of oil storage, ballast, bilges and stripping pumps for excessive gland seal leakage, verification of proper operation of electrical and mechanical remote operating and shutdown devices and operation of pump room bilge system, and checking that pump foundations are intact;

⑥ verification that the pump room ventilation system is operational, ducting intact, dampers operational and screens are clean.

(3) Special structures:

Production deck structure and connection with main deck.

(4) Ballast tanks:

Examination of ballast tanks when required as a consequence of the results of the special survey and intermediate survey. When considered necessary by the Surveyor, thickness measurement is to be carried out.

5.3.3 Intermediate surveys

5.3.3.1 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 statutory intermediate surveys or docking surveys in so far as practicable.

(3) In addition to cover the applicable items specified in 5.3.2 of this Section, intermediate surveys are to include the items specified in 5.3.3.2 and such items are to be found satisfactory.

5.3.3.2 Survey items for all units

(1) Fire-fighting equipment

Check of quantity and efficiency of medium of fixed fire-extinguishing arrangements, examination and testing of fire-extinguishing system.

(2) Windlass

Partial test of slipping and hauling anchors by windlass.

(3) Spaces used for salt water ballast:

① Units between 5 and 10 years of age:

A general, internal examination of representative spaces used for salt water ballast is to be carried out. Where a hard protective coating in POOR condition or any other defect is found, where soft coating has been applied, or where there is no hard protective coating, the examination is to be extended to other ballast spaces of the same type. Representative ballast tanks for different types of units are as follows:

a. Surface-type units

one peak tank and at least two other representative ballast tanks between the peak bulkheads used primarily for water ballast;

b. Self-elevating units

at least two representative pre-load tanks within hull, and accessible representative ballast tanks and free-flooding compartments in mat or spudcans;

c. Column-stabilized units

representative ballast tanks in pontoons, lower hulls, and free-flooding compartments as accessible, and at least two ballast tanks in columns and upper hull, if applicable;

d. Submersible units representative ballast tanks in mat or free-flooding compartments as accessible.

② Units over 10 years of age:

All ballast tanks (including pre-load tanks) and free-flooding compartments are to be internally examined as far as practicable.

③ If such examinations as stated in ① and ② above reveal no visible structural defects, the examination may be limited to a verification that the corrosion prevention system remains effective.

④ For spaces used for salt water ballast, excluding double bottom tanks, where a hard protective coating is found in POOR condition and it is not renewed, where soft coating has been applied, or where there is no hard protective coating, the spaces in question are to be internally examined at annual intervals.

⑤ When such conditions as stated in ④ above are found in salt water ballast double bottom tanks, the spaces in question may be internally examined at annual intervals.

(4) Thickness measurements

Where extensive corrosion is found, thickness measurements may be required and renewals made when wastage exceeds allowable margins.

5.3.3.3 Production and oil storage units

For unit with oil storage tanks, in addition to the applicable requirements of 5.3.3.1 to 5.3.3.2, the following are to be examined where applicable to confirm their effective condition:

(1) An examination of oil storage, crude oil washing, bunker, ballast, steam and vent piping on weather decks, as well as vent masts and headers. If upon examination there is any doubt as to the condition of the piping, the piping may be required to be pressure tested, gauged, or both.

(2) Units over 10 years and up to 15 years of age

① Overall survey of combined salt water ballast/crude oil storage tanks;

② Overall survey of at least two representative crude oil storage tanks;

③ Machinery and boiler spaces including tank tops, bilges and cofferdams, sea suctions and overboard discharges are to be generally examined.

(3) Units over 15 years of age

Close-up survey of one crude oil storage tank. Where protective coatings are found to be in GOOD condition as defined in 4.3.2.2, the extent of close-up survey will be specially considered.

5.3.4 Special surveys

5.3.4.1 General requirements

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

(2) Special surveys are to be carried out in conjunction with statutory renewal surveys in so far as practicable.

(3) In addition to the applicable items specified in 5.3.2 of this Section, special surveys are to include examination, tests and checks of the items listed in 5.3.4.2 to 5.3.4.8 to ensure that the main structure, equipment and related piping are in satisfactory condition and that the unit is fit for the intended purpose for the next five (5) year class period, subject to proper maintenance and operation and the periodical surveys being carried out at the due dates. The examinations of the main structure are to be supplemented by thickness measurements and testing as required in 5.3.5 and 5.3.4.9, to ensure that the structural integrity remains effective. The aim of the examination is to discover substantial corrosion, significant deformation, fractures, damages or other structural deterioration, that may be present.

(4) Items for docking survey specified in Section 7 of this Chapter. 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.

5.3.4.2 Items of Special Survey No. 1for all units

(1) The hull or platform structure including tanks, watertight bulkheads and deck, cofferdams, void spaces, sponsons, chain lockers, duct keels, helicopter deck and its supporting structure,machinery spaces, peak spaces, steering gear spaces, and all other internal spaces are to be examined externally and internally for damage, fractures, or excessive diminution. Thickness gauging of plating and framing may be required where wastage is evident or suspected.

(2) All tanks, compartments and free-flooding spaces throughout the unit are to be examined externally and internally for excess wastage or damage； Internal examinations of spud cans and mats may be specially considered； Watertight integrity of tanks, bulkheads, hull, decks and other compartments is to be verified by visual inspection； Suspect areas and critical structural areas should be examined and may be required to be tested for tightness, non-destructive tested or thickness gauged. For units with unconventional design, in lay-up condition or under unusual circumstance, the special survey may be determined according to the specific

situation.

(3) Internal examination and testing of void spaces, compartments filled with foam or corrosion inhibitors, and tanks used only for lube oil, light fuel oil, diesel oil, fresh water, drinking water or other non-corrosive products may be waived provided that upon a general examination the Surveyor considers their condition to be satisfactory. External thickness gauging may be required to confirm corrosion control.

(4) Boundaries of double-bottom, deep, ballast, peak and other tanks are to be tested with a head of liquid to the top of air pipes. Boundaries of fuel oil, lube oil and fresh water tanks are to be tested with a head of liquid to the highest point that liquid will rise under service conditions.

(5) Hydraulic test for some tanks, when found difficult, may be substituted by airtightness test.

(6) All special and primary application structures and identified critical structural areas are to be subjected to close up survey.

(7) Tanks and other normally closed compartments are to be ventilated, gas freed and cleaned as necessary to expose damages and allow meaningful examination and thickness gauged in case of excessive diminution.

(8) Where provided, the condition of corrosion prevention system of ballast tanks is to be examined. Where a hard protective coating is found in POOR condition and it is not renewed, where soft or semi-hard coating has been applied, or where a hard protective coating was not applied from time of construction, the tanks in question are to be internallyexamined at annual intervals. Thickness measurements are to be carried as deemed necessary by the surveyor.

(9) Where repairs are done to the shell plating or bulkheads, any tanks in way are to be tested on completion of these repairs.

(10) Derrick substructure and supporting structure, jack-houses, pipe rack, deck, superstructures, raw water (sea water intake) towers and their respective attachments to the deck or hull are to be examined.

(11) Foundations and supporting headers, brackets, and stiffeners for drilling related apparatus, where attached to main structure, deck, superstructure or deck house, are to be examined.

(12) The hatch covers and coamings are to be surveyed as follows:

① the items listed in 5.3.2.2(3);

② checking of the satisfactory operation of all mechanically operated hatch covers is to be made, including:

a. stowage and securing in open condition;

b. proper fit and efficiency of sealing in closed conditions;

c. operational testing of hydraulic and power components, wires, chains and link drives;

③ checking the effectiveness of sealing arrangements of all hatch covers by hose testing or equivalent is to be carried out.

(13) Anchoring equipment

The attachments of anchor racks and anchor chain fairleads are to be examined. The chains survey of position mooring system shall meet the requirements of CCS Guidelines for the Survey of Offshore MooringChain Cable in Use.

① All anchoring elements and all other elements attached to anchor cables are to be cleaned and examined.

② The chains are to be checked for wastage, fractures, twists, loose or detached cable studs; mooring wires are to be checked for wastage, corrosion, flattening and broken wires;

③ Joining shackles are to be checked for corrosion, wastage, bending, and loose studs;

④ All Kenter joining shackles over 4 years in service are to be disassembled for magnetic particle inspection. Joining shackles of other types are to be partially or wholly disassembled for inspection, as appropriate;

⑤ Links significantly worn at end and making 1% of all links are to be selected for measuring mean diameter. The Surveyor may increase the number of links to be measured according to the results of his visual inspection, and the selected links are to be evenly distributed in the working length of the chain so far as is practicable. Chain cables are to be renewed in cases where it is found that the links have been so far worn that their mean diameter is 12% or more below the original required nominal size;

5.3.4.3 Additional items of Special Survey No. 1 for surface-type unit

In addition to the survey requirements in 5.3.4.2, the following are to be carried out:

(1) Structural appendages and ducts for positioning units are to be examined, taking into account relevant requirements of CCS Rules for Classification of Sea-Going Steel Ships.

5.3.4.4 Additional items of Special Survey No. 1for self-elevating units

In addition to the survey requirements in 5.3.4.2, the following are to be carried out:

(1) All legs, including chords, diagonal and horizontal braces, gussets, racks, joints, together with leg guides are to be examined. Tubular or similar type legs are to be examined externally and internally, together with internal stiffeners and pinholes as applicable;

(2) Structure in, around and under jack-house and leg walls. NDT of these areas may be required;

(3) Leg jacking or other elevating systems externally;

(4) Leg connections to bottom mats or spudcans, including NDT of leg connections to mats or spud cans;

(5) Jetting piping systems or other external piping, particularly where penetrating mats or spudcans;

(6) Spudcans or mats are to be examined. Where the spudcans are or the mat is partly or entirely obscured below the mud line where the special survey is otherwise being completed, consideration will be given to postponement of the examinations until the next rig move, subject to the agreement by CCS.

5.3.4.5 Additional items of Special Survey No. 1 column-stabilized units

In addition to the survey requirements in 5.3.4.2, the following are to be carried out:

(1) Connections of columns and diagonals to upper hull, structure or platform and lower hull, structure or pontoons. Joints of supporting structure including diagonals, braces and horizontals, together with gussets and brackets. Internal continuation or back-up structure for the above. NDT may be required of these areas.

5.3.4.6 Additional items of Special Survey No. 1 for submersible units

In addition to the survey requirements in 5.3.4.2, the following are to be carried out:

Connections of columns and diagonals to upper hull, structure or platform and lower hull, structure. NDT may be required of suspect areas.

5.3.4.7 Special Survey No. 2 and Subsequent Special Surveys

These Surveys are to be at least as comprehensive as Special Survey No. 1, with special attention being given to the condition and thickness of material in high corrosion areas. Representative thickness gaugings will be required as per 5.3.5 of this chapter. Special attention should be paid to splash zones on structure, legs or related structure, and in ballast tanks, pre-load tanks, free-flooding spaces, spud cans and mats.

For surface-type unit, the relevant requirements of CCS RULES FOR CLASSIFICATION OF SEA-GOING STEEL SHIPS shall be refered to.

5.3.4.8 Production and oil storage units

In addition to the survey requirements in 5.3.4.2, the following are to be carried out:

(1) All piping systems on decks and in crude oil tanks and adjacent spaces are to be examined for satisfactory thickness and condition. Special attention is to be paid to ballasting piping in crude oil tanks and crude oil piping in ballast tanks, pump room, pipe tunnel and void spaces.

(2) Crude oil tanks, in which substantial corrosion as defined in 5.1.5.1(8) is found and has not been rectified, are subject to examination at annual or intermediate survey and if necessary, thickness measurement is to be

carried out.

5.3.4.9 All bilge and ballast piping systems are to be examined and operationally tested to working pressure to attending Surveyor's satisfaction to ensure that tightness and condition remain satisfactory.

5.3.5 Thickness measurement and NDT of unit structure

5.3.5.1 General requirements

(1) Where substantial corrosion is found in any area of the unit 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 measurements 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.

5.3.5.2 Thickness measurement

(1) The minimum requirements to thickness measurement for all types of units at special surveys are given respectively in Tables 5.3.5.2 (1)①, ②, ③ and ④.

(2) Where substantial corrosion is shown by thickness measurements, the Surveyor may further extend the thickness measurements as deemed necessary. Table 5.3.5.2(2) nay be used as the guide for additional thickness measurement.

(3) Thickness measurements are normally to be carried out by a company certified by CCS according to Appendix 1 of this Chapter, by means of ultrasonic test equipment. The accuracy of the equipment is to be proven to the Surveyor as required. The operator is to hold a qualification certificate acceptable to CCS.

(4) Thickness measurements are normally to be witnessed by the Surveyor on board to control the process. 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.

Minimum Requirements to Thickness Measurement at Special Surveys of Hull for Surface-Type Unit

Table 5.3.5.2(1)①

Special Survey No.1 Age ≤ 5	Special Survey No.2 5 < Age ≤ 10	Special Survey No.3 10 < Age ≤ 15	Special Survey No.4 and Subsequent Age > 15
(1) Suspect areas throughout the unit.	(1) Suspect areas throughout the unit. (2) One transverse section of deck plating abreast moon-pool opening within the amidships 0.5*L* and structural members in way of the section, if deemed necessary. Where fitted with side ballast tanks, plating and structural members in way of the selected transverse section also to be included. (3) Moon-pool boundary bulkhead.	(1) Suspect areas throughout the unit. (2) One transverse section of deck, bottom and side plating respectively abreast moon-pool opening and one hatch within the amidships 0.5*L* and structural members in way of the sections, if deemed necessary. Where fitted with side ballast tanks, plating and structural members of the side ballast tank in way of the selected transverse sections also to be included. If necessary, remaining members in the ballast tank to be measured (3) Moon-pool boundary bulkhead. (4) Internals of peak tanks, if deemed necessary.	(1) Suspect areas throughout the unit. (2) A minimum of three transverse sections of deck, bottom, side and longitudinal bulkhead plating and their structural members respectively in way of moon-pool opening and other areas within the amidships 0.5*L*. Where side ballast tanks fitted in periphery of selected sections, such tanks to be included. (3) Moon-pool boundary bulkhead. (4) Internals of fore and aft peak tanks, if deemed necessary. (5) Lowest strake in way of all transverse bulkheads in cargo spaces and if deemed necessary, thickness measurement of remaining bulkheads. (6) Two wind and water strakes, respectively port and starboard, full length. (7) All exposed main deck plating, full length, and all exposed first-tier superstructure deck plating. (8) All plate keels, full length, and if deemed necessary, remaining bottom plating, particularly in way of cofferdams and machinery space. (9) Duct keel or pipe tunnel plating or pipe tunnel plating and internals as deemed necessary. (10) Representative measurements of drilling derrick substructure. (11) Plating of sea chests. Shell plating in way of overboard discharges as considered necessary by the attending surveyor.

Minimum Requirements to Thickness Measurement at Special Surveys of Hullfor Self-Elevating Unit

Table 5.3.5.2(1)②

Special Survey No.1 Age ≤ 5	Special Survey No. 2 5 < Age ≤ 10	Special Survey No. 3 10 < Age ≤ 15	Special Survey No. 4 and Subsequent Age > 15
(1) Suspect areas throughout the unit. (2) Suspect areas throughout the unit (particular attention to be paid to the legs in way of the Splash Zone).	(1) Suspect areas throughout the unit. (2) Legs in way of Splash Zone. (3) Primary application structures where wastage is evident. (4) Representative gaugings of upper hull deck and bottom plating and internals of one preload (ballast) tank.	(1) Suspect areas throughout the unit. (2) Legs in way of Splash Zone. (3) Representative gaugings, throughout, of special and primary application structures. (4) Leg well structure. (5) Representative gaugings of deck, bottom, and side shell plating of hull and mat. (6) Representative gaugings of upper hull deck and bottom plating and internals of at least two preload (ballast) tanks.	(1) Suspect areas throughout the unit. (2) Legs in way of Splash Zone. (3) Comprehensive gaugings, throughout, of special and primary application structures. (4) Leg well structure. (5) Representative gaugings of deck, bottom, and side shell plating of hull and mat. (6) Substructure of derrick as deemed necessary. (7) Representative gaugings of internals of all preload (ballast) tanks.

Minimum Requirements to Thickness Measurement at Special Surveys of Main structure for Column-Stabilized Unit **Table 5.3.5.2(1)③**

Special Survey No. 1 Age ≤ 5	Special Survey No.2 5 < Age ≤ 10	Special Survey No. 3 10 < Age ≤ 15	Special Survey No. 4 and Subsequent Age > 15
(1) Suspect areas throughout the unit. (2) Columns and bracings where wastage is evident in Splash Zone.	(1) Suspect areas throughout the unit. (2) Representative gaugings of columns and bracings in Splash Zone together with internals in way as deemed necessary. (3) Special and primary application structure where wastage is evident.	(1) Suspect areas throughout the unit. (2) Representative gaugings, throughout, of special and primary application structures. (3) One Transverse Section (Girth Belt) of each of 2 columns and 2 bracings in Splash Zone together with internals in way as deemed necessary. (4) Lower hulls in way of mooring lines where wastage is evident. (5) One Transverse Section (Girth Belt) of each lower hull between one set of columns.	(1) Suspect areas throughout the unit. (2) Comprehensive gaugings, throughout, of special and primary application structures. (3) One Transverse Section (Girth Belt) of each of one-half of the columns and bracings in Splash Zone and internals in way as deemed necessary (i.e., gauge half of the unit's columns and bracings in Splash Zone). (4) Lower hulls in way of mooring lines where wastage is evident. (5) One Transverse Section (Girth Belt) of each lower hull between one set of columns. (6) Representative gaugings of substructure of drilling derrick.

Minimum Requirements to Thickness Measurements at Special Surveys of the Main Structure for Submersible Unit **Table 5.3.5.2(1)④**

Special Survey No.1 Age ≤ 5	Special Survey No.2 5 < Age ≤ 10	Special Survey No. 3 10 < Age ≤ 15	Special Survey No. 4 and Subsequent Age > 15
(1) Suspect areas throughout the unit. (2) Columns and braces of significant wastage in splash zone.	(1) Suspect areas throughout the unit. (2) Representative measurements of columns and braces in splash zone. (3) Main and special components of significant wastage.	(1) Suspect areas throughout the unit. (2) One transverse section of main structure plate and structural members of one column or brace selected from every two columns and every two braces in splash zone, if deemed necessary. (3) Representative measurements of main and special components. (4) Representative measurements of deck, bottom, side and skirt plating of upper and lower hulls.	(1) Suspect areas throughout the unit. (2) One transverse section of main structure plate and structural members of half the columns and braces in splash zone, if deemed necessary. (3) Extensive measurements of main and special components. (4) Representative measurements of deck, bottom, side and skirt plating of upper and lower hulls. (5) Representative measurements of derrick substructure.

Guidance for additional Thickness Measurements in way of Substantial Corrosion **Table 5.3.5.2(2)**

STRUCTURAL MEMBER	EXTENT OF MEASUREMENT	PATTERN OF MEASUREMENT
Plating	Suspect area and adjacent plates.	5 point pattern over 1 square meter.
Stiffeners	Suspect area.	3 measurements each in line across web and flange.

Section 4 SURVEYS OF MACHINERY INSTALLATIONS AND SYSTEMS

5.4.1 General requirements

5.4.1.1 This Section applies to surveys of machinery installations and systems for all units. Surveys of screwshaft and tubeshaft are specified in Section 8 of this Chapter; Surveys of boilers and thermal oil heaters

are specified in Section 9 of this Chapter and.

5.4.1.2 The purpose of surveys for general machinery installations and systems is to confirm that machinery installations and systems are properly maintained, in good and effective condition and fit for their intended purposes. Surveys for machinery installations and systems are normally to be carried out in conjunction with corresponding main structure surveys.

5.4.1.3 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.

5.4.1.4 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.

5.4.2 Annual surveys

5.4.2.1 For the interval of annual surveys, see the relevant provisions in Section 2 of this Chapter.

5.4.2.2 Annual surveys are to be carried out in conjunction with the statutory annual survey.

5.4.2.3 The purpose of annual surveys is to confirm that the general condition of machinery installations and systems is properly maintained since last survey and is fit for their intended purposes.

5.4.2.4 For self-propelled units, a general examination of main and auxiliary engines, boilers, steering machinery, pumps, pipings, electrical installation including those in hazardous areas, and fire extinguishing systems is to be carried out. For non-self propelled units, a general examination of items required for classification such as auxiliary machinery, pumps, piping, electrical installation in hazardous areas and fire extinguishing systems is to be carried out. For units with propulsion-assist or dynamic positioning, propulsion-assist and dynamic positioning equipment should be surveyed.

5.4.2.5 General survey items:

(1) Confirming that there is no existence of any fire and explosion hazards in machinery spaces;

(2) Confirming that ventilating systems including closing and shutoff devices in machinery spaces and boiler spaces are in a good working condition;

(3) Confirming that no unapproved changes have been made to the structures of machinery spaces and boiler spaces;

(4) Confirming that doors in machinery spaces and boiler spaces are in a good working condition, and escape routes are free from obstruction;

(5) Confirming that maintenance of main propulsion plant, dynamic positioning system, gear unit, shafting system, etc. is in accordance with the rules and that they are in a good working condition;

(6) Confirming that systems associated with the main propulsion and dynamic positioning systems are maintained in a good working condition;

(7) Confirming that generator prime mover and other auxiliary machinery and associated systems are in a good working condition;

(8) Confirming that essential safety and protective devices including safety valves of fuel oil auxiliary boilers, exhaust boilers, economizers, steam heaters, steam generators, boilers used not for propulsion services having a working pressure exceeding 0.35 MPa and a heating surface exceeding 4.5 m^2, thermal oil and hot water units, relief valves of pressure vessels having a working pressure exceeding 0.7 MPa, safety devices and emergency cut-off devices for oil supply and burning units, etc. are in a good working condition, and that safety means for all moving parts and hot surfaces are in a good working condition and effective;

(9) Examining the bilge pumping systems and bilge wells, including operation of pumps, and level alarms, as far as practicable, for confirming their good working condition;

(10) Confirming that the ballast system are well maintained and in good working condition;

(11) Confirming that initial starter is effective;

(12) Confirming that the engineer's alarm is clearly audible in the engineers' accommodation;

(13) Confirming that the main and auxiliary steering gears and associated control systems are in a good working condition;

(14) Confirming that the means of communication between the navigation bridge or main control room and ballast control room and machinery spaces, steering gear compartment and where fitted, emergency steering positions are operating satisfactorily;

(15) For units with moveable drilling cantilevers, the mechanical arrangements for skidding the cantilevers and sub-structure are to be generally examined;

(16) Confirming that voyage repairs made by crew are satisfactory;

(17) Confirming that recommendations and remaining items from previous surveys have been dealt with in accordance with related requirements.

5.4.2.5 Additional requirements for self-elevating units

For self-elevating units, the jacking gear and associated control systems including locking system are to be generally examined. A scheduled cycle is to be agreed with CCS for the examination of critical components, i.e. pins, flexible hoses and joints, lugs and ring beams, drive gears, racks, guides, etc. and where necessary, NDT may be required.

5.4.2.6 Additional survey items for units with class notation of inert gas system notation (IGS)

For units with class notation of inert gas system (IGS), an examination and/or test of the following items is to be carried out to confirm that the system is in a good working condition:

(1) visual examination of all piping and venting pipes on decks and discharges in the shell plating to confirm that there is no any sign of gas or effluent leakage;

(2) confirming the proper operation of inert gas blowers;

(3) confirming the proper operation of the scrubber-room ventilation system;

(4) checking the deck water seal for automatic filling and draining;

(5) examining the operation of all remotely operated or automatically controlled valves and, in particular, the flue gas isolating valves;

(6) verifying the interlocking feature of soot blowers;

(7) verifying that the gas pressure regulating valve automatically closes when the inert gas blowers are secured;

(8) checking/testing, as far as practicable, the following alarms and safety devices of the inert gas system using simulated conditions where necessary:

① high oxygen content of gas in the inert gas main;

② low gas pressure in the inert gas main;

③ low pressure in the supply to the deck water seal;

④ high temperature of gas in the inert gas main;

⑤ low water pressure or low water-flow rate;

⑥ accuracy of portable and fixed oxygen detector by means of calibration gas;

⑦ high water level in the scrubber;

⑧ failure of the inert gas blowers;

⑨ failure of the power supply to the automatic control system for the gas regulating valve and to the instrumentation of continuous indication and permanent recording of pressure and oxygen content in the inert gas main;

⑩ high pressure of gas in the inert gas main.

(9) checking the proper operation of the inert gas system.

5.4.2.7 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 tests of the following items is to be carried out, in so far as practicable, to confirm that they are in a good working condition:

(1) performance test of alarm indicators;

(2) checking functions of control systems of 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 or change-over of standby pumps for essential pumps serving main engines;

⑤ function test of engine room bilge level detection and alarm system and of start of pumps;

(3) communication and extended alarm between the navigation bridge and engineers' accommodation;

(4) checking functions of fixed fire detection and fire alarm systems;

(5) function test of repaired items of automatic and remote control systems of other essential machineries;

(6) examining the machinery records to check the performance of the control system throughout the period since the last survey and to establish if there has been any abnormal functioning or failures and what corrective measures had been taken to preclude their recurrence.

5.4.3 Intermediate surveys

5.4.3.1 For the interval of intermediate surveys, see the relevant provisions in Section 2 of this Chapter.

5.4.3.2 In addition to the applicable requirements for annual surveys, the following items are to be added:

(1) prime movers of driving generators are to be operationally tested under working conditions to verify that they are in a good working condition;

(2) sea chests and overboard discharge valves in machinery and boiler spaces are to be inspected;

(3) an overall examination of windlass and a partial load test by slipping and hauling anchors are to be carried out.

(4) an overall examination of the jacking gear and associated control systems.

5.4.4. Special surveys

5.4.4.1 For the interval of special surveys, see the relevant provisions in Section 2 of this Chapter.

5.4.4.2 Conditions for survey

(1) The owner is to provide the necessary conditions and safety facilities for the survey, e.g. disassembling or opening and cleaning, safe access to and illumination for survey items.

(2) Special surveys are to include examinations, tests, and checks of sufficient extent to ensure that the machinery installations are properly maintained and are fit for the intended purpose for the new period of class of five years.

5.4.4.3 General survey and test items

(1) The items of intermediate surveys specified in 5.4.3.2 of this Chapter.

(2) All shafts (excluding screwshaft, tubeshaft, directional propeller and water jet propulsion arrangements) and bearings of the main propulsion system are to be examined. The lower half of the bearings need not be exposed if alignment and wear are found in order (where applicable).

(3) All gear units are to be opened up and their pinions and wheels, shafts, bearings, thrust bearings and

lubricating system examined. Conventional gear units 1,120 kW and below and all epicyclic gear units need not be opened up provided that satisfactory operating records are provided by the owner.

(4) Auxiliary engines, air compressors and its intercoolers, filters and safety devices are to be examined.

(5) All pumps and associated components used for the propulsion and dynamic positioning device are to be overhauled for examination.

(6) Steering gear, including the main and auxiliary actuating gears are to be examined, and a hydrostatic check of the steering system to the relief valve setting is to be conducted.

(7) Examination of anchor windlass, including operational check, check of the brake and foundation, and testing of safety devices.

(8) Foundation bolts and gaskets of main and auxiliary engines, gearboxes as well as thruster and intermediate shaft pedestals are to be examined.

(9) Heat exchangers and other unfired pressure vessels within the scope of classification are to be examined, opened up or thickness gauged and pressure tested as considered necessary, and associated relief valves proved operable. Evaporators that operate with a vacuum on the shell need not be opened, but may be accepted on basis of satisfactory external examination and operational test or review of operating records.

(10) Pumps and pumping arrangements, including valves, cocks, pipes and strainers are to be examined. Non-metallic flexible expansion pieces in the main salt water circulating system are to be examined internally and externally. The Surveyor is to be satisfied with the operation of the bilge and ballast systems. Other systems are to be tested as considered necessary.

(11) Connection and blanking arrangements of fuel oil, lubricating oil, cooling water, feed water and ballast systems are to be examined or tested and if necessary opened up for examination.

(12) Fuel oil tanks constructed not forming part of main structure are to be examined and if deemed necessary by the Surveyor, to be pressure tested. If fuel oil tanks are found satisfactory during the external examination, the internal examination of such tanks may be exempted for units less than 10 years of age.

5.4.4.4 Additional survey items for units with class notations of machinery control and automation

In addition to 5.4.2.7, an overall examination of the following items is to be carried out to confirm that they are in a good working condition.

(1) Simulated operation test of automated system of main propulsion machinery:

① main control system (including automatic control of start, operation, stopping 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 confirming changeover to manual control in case of failure of remote control system;

⑧ performance test of control, safety and alarm systems when power (electrical, hydraulic or pneumatic) is restored after a power failure.

(2) Simulated operation test of automated system of boilers:

① safety system for burning (including automatically stopping fuel supply pump, automatically starting and stopping feed pump, scavenging, automatically controlling temperature);

② monitoring and alarm systems;

③ manual control devices.

(3) Automatic controls and alarms of generating system and power plant (including automatic start, switch-in, parallel operation, load distribution and shutoff of standby generating sets) are to be examined.

(4) Simulated operation test of other essential machinery:

① function test of control, safety and alarm systems (including alarm indicators, displays) are to be carried out so far as is practicable;

② components (elements, valves, actuators, instruments) of automatic and remote control systems are to be visually examined and if necessary, opened up for examination and test.

(5) Remote operation test of suction valves and discharge valves below waterline.

(6) Checking records of fault recorder and reviewing log book entries regarding automatic and remote control equipment to confirm operational reliability of all systems.

5.4.4.5 Additional survey items of units with class notation of inert gas system (IGS)

In addition to requirements in 5.4.2.6, the following items are to be examined and/or tested to confirm that they are in a good working condition:

(1) inert gas generator and scrubber are to be overhauled for examination if there is any sign of gas or effluent leakage;

(2) inert gas piping and stop valve together with interlocking feature of soot blowers are to be disassembled for examination if there is any abnormality;

(3) deck water seal and non-return valve are to be dismantled for examination;

(4) water cooling system including discharge pipe and scrubber overboard discharge pipe are to be examined, and valves are to be overhauled for examination;

(5) performance test of all automatic closing appliances and alarm systems;

(6) examining the integrity of the system under working condition;

(7) upon the request by the owner, a system of continuous surveys 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, so far as practicable, at the specified interval (normally five (5) years). The interval between consecutive examinations of each item is not to exceed five (5) 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) examining the whole system under working condition.

5.4.4.6 Diesel engines

For diesel engines, the following components (if fitted) are to be disassembled for examination.

(1) Cylinder liners, cylinder covers, valves and their transmitting gear, pistons, piston rods, crossheads, guides, connecting rods, crankshaft and all bearings, crankcases, bedplates, frames and entablatures, crankcase door fastenings and explosion relief devices, scavenger relief devices, scavenging pump or blowers, superchargers and their associated coolers, fuel pumps and fittings, camshafts and their transmitting gear together with balance weights, torsional vibration dampers or detuners, elastic couplings, clutches, reverse gears, 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 addition to steam blowing, the portions of pipes adjacent to main starting valve and air discharge from 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 bores of 300 mm or below may be carried out according to the manufacturer's scheduled maintenance program, provided the engines are maintained under the program. The records of the program, including lubrication servicing, are to be made available to the Surveyor. Periodical overhauls, required by the manufacturer's scheduled maintenance program, are to be witnessed by the Surveyor.

5.4.4.7 Gas turbines

For gas turbines, the following parts are to be opened out for examination.

(1) Impellers or blading, rotors and casings of the air compressors, combustion chambers, intercoolers, 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 for approval maintenance schedules for each type of gas turbine in service, specifying proposed intervals for combustion checks, hot-gas-path examinations and other items.

(3) For gas turbines in continuous service, at least one hot-gas-path examination is to be scheduled each survey period (normally five (5) years) and is to include an examination of turbine rotors, fixed blading (nozzle ring), combustors, inlet casings, exhaust casing, air control valves and protective apparatus. 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) Opening of compressor sections is to be scheduled in conjunction with other items, provided that examination of the blades visible from the inlet plenum during the hot-gas-path examination reveals no evidence of defects.

(5) The required examinations of auxiliary gas turbine units, at least once each period (normally five years), are to be based on manufacturer's recommendations, as appropriate for the actual operating hours and conditions, together with an operation test including protective apparatus.

(6) Where auxiliary gas turbines are arranged such that the auxiliary gas turbine is removed from the unit and dismantled at another facility, the internal examination may be carried out at the facility. The reinstallation is to be carried out to the satisfaction of the Surveyor.

(7) Upon reassembly/reinstallation, all fuel lines, lube oil piping, the gas turbine itself and exhaust system are to be checked under full speed operational conditions for leakage. All shielding and fuel oil double wall piping is to be examined.

(8) Cylinders, pistons, end covers, valves and valve gear, pumps and fittings, synchronizing and control gear, cooling system, explosion relief devices including bypass arrangements of free piston gas generators are to be opened out and examined.

(9) Air compressors including rotors and casings, combustion chambers, burners, intercoolers, heat exchangers, gas and air piping of gas turbines are to be opened out and examined.

5.4.4.8 For self-elevating units, the following essential components of the jacking gear are to be examined:

(1) Rack-and-pinion jacking system

① Pinions and gears of the climbing pinion gear train of rack and pinion systems are to be examined and if deemed necessary by the Surveyor, NDT is to be carried out (as far as practicable);

② Attachment between the reduction gear box and jack-house or other supporting structures is to be examined and bolting arrangements are to be examined for security;

③ Leg guides and shock pads are to be examined for excessive wear;

④ The locking system is to be examined for wear and satisfactory operation/engagement;

⑤ Grease injection lubrication system is to be examined for damage to piping. Satisfactory operation of system is to be verified;

⑥ Hydraulic motors and hydraulic pipelines are to be examined;

⑦ Operational tests of the jacking system are to be carried out to the Surveyor's satisfaction.

(2) Shutting-pin jacking system

① Lugs and ring beams are to be examined and if deemed necessary by the Surveyor, NDT is to be carried out;

② A number of pins are to be removed for examination;

③ Hydraulic pumps, hydraulic piping (including flexible hoses and couplings) and control tubing are to be examined;

④ Main and auxiliary cylinders are to be examined for wear;

⑤ Operation tests of the jacking system are to be carried out to the Surveyor's satisfaction.

5.4.4.9 For units provided with moveable drilling cantilevers, the following mechanical arrangements for skidding the cantilevers and sub-structure are to be examined:

(1) Jacksj and other mechanical systems for skidding the structure are to be examined for wear. Satisfactory operation of system is to be verified;

(2) Equipment securing bolts and other attachments to the structure are to be examined for security;

(3) Control and safety systems are to be verified;

(4) Lubrications system is to be proven effective;

(5) Operation tests of the skidding system are to be carried out to the Surveyor's satisfaction.

5.4.4.10 Piping systems used solely for drilling or production operations are to be examined, as far as practical, operationally or hydrostatically tested to working pressure, to the satisfaction of the Surveyor.

Section 5 SURVEYS OF ELECTRICAL INSTALLATIONS

5.5.1 General requirements

5.5.1.1 This Section applies to various surveys of electrical installations for all units.

5.5.1.2 Where electrical installations have been surveyed and tested by the Administration, CCS will carry out 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 statutory annual surveys so far as is practicable.

5.5.2.3 A general examination of electrical machinery at annual survey, the emergency sources of electrical power, the switchgear, and other electrical equipment, including operation of same is to be carried out. The operation of the emergency sources of power, including their automatic operation, is to be confirmed as far as practicable. Survey items:

(1) Confirming that means of communication between the central control room or navigation bridge and all machinery control stations and the means of indicating the angular position of the rudder are operating satisfactorily.

(2) Confirming that the engine room telegraph, the second means of communication between the central control room or navigation bridge and the machinery spaces and the means of communication with any other positions from which the engines are controlled are operating satisfactorily.

(3) Confirming that the engineer's alarm is clearly audible in the engineer's accommodation.

(4) Confirming that generators, motors driving essential machineries together with controls are in normal working condition.

(5) Satisfactory operation of main power source, emergency power source including its starting device and emergency power supply of the equipment essential to unit safety is to be tested. Where these power sources are provided with automatic power supply, the test is to be carried out in automatic mode.

(6) For electrically propelled units, the propulsion motors, generators, cables and all ancillary equipment and controls are to be examined and insulation resistance measured.

(7) Failure indicators and alarms associated with electrical equipment essential to safety of unit are to be

examined and tested.

(8) Navigation lights are to be tested under working condition to verify correct indication and alarm on failure of power supply or of the lights.

(9) Emergency lighting, temporary emergency lighting, supplementary emergency lighting, general alarm and public address system are to be tested in so far as practicable.

(10) Examining, as far as practicable, visually and in operation, the electrical installations, including the main source of power, main and emergency lighting systems and cables.

(11) Examining, in general, that the precautions provided against shock, fire and other hazards of electrical origin are being maintained, e.g. bonding straps for the control of static electricity and earthing arrangements are to be examined where fitted.

(12) Confirming that no potential sources of fire exist in dangerous spaces, and that all electrical equipment in dangerous zones is suitable for such locations, is in good condition and is being properly maintained.

(13) An overall examination of the automatic and remote-control system is to be carried out in conjunction with the survey of machinery to the Surveyor's satisfaction.

(14) Class conditions or outstanding recommendations provided at the previous survey and/or restrictions imposed by the Administration of the flag State are to be elimiated as specified.

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 Intermediate surveys are to be carried out in conjunction with statutory intermediate and docking surveys as far as is practicable.

5.5.3.3 Survey items

(1) Applicable survey items specified in 5.5.2.3;

(2) Generators are to be operationally tested under working conditions to verify that they are in a good working condition.

(3) Electrical equipment in dangerous zones or circuits passing through dangerous zones are to be examined to verify that there are no dangers, defects, improperly installed or unapproved equipment and dead end wiring, etc.

(4) Insulation resistance of electrical circuits in dangerous zones (such as cargo pump rooms and spaces adjacent to cargo tanks) is to be tested, but in cases where a proper record of testing is maintained, consideration is to be given to accepting recent readings.

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 Special surveys are to be carried out in conjunction with statutory renewal surveys so far as is practicable.

5.5.4.3 Conditions for survey: The owner is to provide the necessary conditions and safety facilities for the survey, e.g. disassembling or opening and cleaning, safe access to and illumination for survey items.

5.5.4.4 Survey and test items

(1) The items in 5.5.3.3 of this Section applicable to the unit.

(2) The items in 5.7.2 of this Chapter applicable to the unit. However, a docking survey is considered to coincide with the special survey when carried out within 15 months prior to the due date of the special survey.

(3) Insulation resistance of electrical equipment and circuits are to be tested. All equipment and circuits are to be inspected for possible development of physical changes or deterioration. The insulation resistance of the circuits is to be measured between conductors and between conductors and ground and these values compared with those previously measured.

(4) The fittings on the main and emergency switchboard, section boards and distribution boards are to be examined and over-current protective devices and fuses 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 protective devices.

(6) All cables are to be examined to verify that there are no loosening clamps and casings. Cables (Wire circuit) are to be examined as far as practicable without undue disturbance of fixtures.

(7) Motors and their auxiliary control and operating mechanisms for essential services are to be examined and if considered necessary, to be operated under working conditions. All generators and steering motors are to be examined and tested under working conditions and if considered necessary, a full-load test may be carried out simultaneously.

(8) Where transformers of essential power supply are of wet type, the owner is to submit the liquid sample to an authoritative institution for testing 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 tested as considered necessary by the Surveyor;

② The insulation resistance of the windings of electrical control motors or actuators is to be measured, with all circuits of different voltages above ground being tested separately to the Surveyor's satisfaction, see (3) of this paragraph;

③ Control systems for unattended machinery spaces are to be subjected to dock trials at reduced power on the propulsion engine to ensure the proper performance of all automatic functions, alarms, and safety systems.

(10) In addition to the requirements for Annual Surveys, at each Special Survey, special attention is to be given to the following items as applicable:

① All generators are to be run under load, either separately or in parallel. Switches and circuit breakers are to be tested.

② Electrical auxiliaries installed for vital purposes, generators and motors are to be examined and their prime movers opened for inspection. The insulation resistance of each generator and motor is to be measured.

③ The windings of main propulsion generators and motors are to be thoroughly examined and found or made dry and clean. Particular attention is to be paid to the ends of all windings of stators and rotors.

④ Emergency power systems are to be examined and tested.

⑤ Control Actuators: All mechanical, hydraulic, and pneumatic control actuators and their power systems are to be examined and tested as considered necessary.

Section 6 SURVEYS OF FIRE AND EXPLOSION PREVENTION EQUIPMENT

5.6.1 General requirements

5.6.1.1 This Section applies to surveys of fire and explosion prevention equipment for all units.

5.6.1.2 Where fire and explosion prevention equipment has been surveyed and tested 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 will be determined according to the specific conditions.

5.6.2 Annual survey

5.6.2.1 For the interval of annual surveys, see the relevant provisions in Section 2 of this Chapter.

5.6.2.2 Annual surveys are to be carried out in conjunction with statutory annual surveys so far as is practicable.

5.6.2.3 The Surveyor is to carry out an examination of the following items to confirm that they are in an effective condition:

(1) Checking that no major changes have been made to the arrangement of structural fire protection;

(2) Check and operational test of fire doors;

(3) Checking that fire control plans are displayed and stored as specified;

(4) Examination of efficiency of automatic fire detection and alarm system, manual alarm buttons and flammable gas detection and alarm system (including portable flammable gas detectors);

(5) Examination of fire-fighting water supply systems including automatic sprinkling system (if fitted) for confirming that each fire pump (and each emergency fire pump) together with its pipelines are in an effective condition;

(6) Fire hoses, nozzles, foam applicators, fog applicators, spanners, portable and moveable fire extinguishers are to be in working condition, well maintained and stowed in their respective specified locations;

(7) Examination of controls, pipelines, operating valves, nozzles, marks and instructions of fixed fire-extinguishing systems (including pressure water-spraying system, CO_2 system, foam fire-extinguishing system, etc.), check of maintenance status and last test date as entered in routine maintenance record book;

(8) Check of quantity of medium of fixed fire-extinguishing systems and if applicable, the pressure of expellant gas. For fixed foam fire-extinguishing systems, the effective condition of medium is to be ascertained. High-pressure CO_2 bottles are to be weighed every two years;

(9) Examination of remote shutdown devices of motors of ventilators, oil pumps, etc., and remote closing appliances of oil lines in machinery spaces so far as is practicable;

(10) Examination of closing appliances of ventilators, funnel space, skylights, doorways and shaft tunnels, if applicable. Fire dampers are to be operationally tested;

(11) Examination of 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;

(12) Check of integrity, completeness and good condition of fireman’s outfit, emergency breathing apparatus and hydrogen sulfide protective breathing apparatus;

(13) Check of the scope of hazardous areas for any change;

(14) Examination of protection system against gas ingress into safe areas and less hazardous areas for confirming its effective condition;

(15) Examination of protection system against gas escape in enclosed and semi-enclosed hazardous areas for confirming its effective condition;

(16) Examination of emergency shutdown system for confirming its effective condition;

(17) Verification that automatic shutdown and alarm devices operate satisfactorily;

(18) Alarms and interlocks associated with pressurized explosion-safe equipment or spaces are to be tested for corrected operation;

(19) Check of gangways including means of escape for confirming that they are in good condition, free from obstructions and clearly marked;

(20) Examination of fired vessels and diesel engines in hazardous areas;

(21) Class conditions or outstanding recommendations provided at the previous survey and/or restrictions imposed by the Administration are to be eliminated as specified.

5.6.3 Intermediate surveys

5.6.3.1 For the interval of intermediate surveys, see the relevant provisions in Section 2 of this Chapter.

5.6.3.2 Intermediate surveys are to be carried out in conjunction with statutory intermediate surveys so far as is practicable.

5.6.3.3 In addition to the applicable items specified in 5.6.2 of this Section, an examination of the items listed below is to be carried out:

(1) Check of weighing record of high-pressure CO_2 bottles;

(2) Test of pipelines of fixed fire-extinguishing system for free passage;

(3) Checking the pressure for opening and closing safety valves of low-pressure CO_2 system;

(4) Selecting an appropriate number of water-spraying system nozzles for water-spraying test;

(5) Chemical analysis of foam concentrates.

5.6.4 Special surveys

5.6.4.1 For the interval of special surveys, see the relevant provisions in Section 2 of this Chapter.

5.6.4.2 Special surveys are to be carried out in conjunction with statutory renewal surveys so far as is practicable.

5.6.4.3 In addition to the applicable items specified in 5.6.3 of this Section, an examination of the items listed below is to be carried out:

(1) Performance test of each fire pump (and each emergency fire pump);

(2) Pressure test of pipelines of high-pressure CO_2 system;

(3) Hazardous areas:

Enclosed hazardous areas such as those containing open active mud tanks, shale shakers, degassers and desanders are to be examined and doors and closures in boundary bulkheads verified as effective. Electric lighting, electrical fixtures and instrumentation are to be examined, proven satisfactory and verified as explosion-proof. Ventilating systems including duct work, fans, intake and exhaust locations for enclosed restricted areas are to be examined, tested and proven satisfactory. Ventilating-air alarm systems are also to be proven satisfactory. Electrical motors are to be examined including closed-loop ventilating systems for large d.c. motors. Automatic power disconnect to motors in case of loss of ventilating air is to be proved satisfactory. Piping systems for drilling/process plant and other systems in hazardous areas are to be checked for leaks, corrosion, and the safe operation of valves. Piping systems are to be tested when required by the Surveyor;

(4)Remote shutdown arrangements:

Remote shutdown for fuel-oil transfer service pumps and ventilating equipment, together with oil tank outlet valves where required to be capable of being remotely closed are to be proven satisfactory. Emergency switch(s) for all electrical equipment including main and emergency generators are to be proven satisfactory. Alarm and communication systems and lighting in vital areas such as escape routes and landing platforms are to be proven satisfactory.

Section 7 SURVEYS OF THE OUTSIDE OF THE UNIT'S BOTTOM AND RELATED ITEMS

5.7.1 General requirements

5.7.1.1 Examinations of the outside of the unit's bottom and related items can be carried out with the unit in dry dock or on a slipway. Alternate examination may be carried out while the unit is afloat as an in-water survey, subject to provisions of 5.2.3 in Section 2 of this Chapter.

5.7.1.2 The interval between examinations of the outside of the unit's bottom and related items is to be in compliance with the provisions given in Section 2 of this Chapter.

5.7.2 Extent of survey for the outside of the unit's bottom

5.7.2.1 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 the necessary staging to permit the examination of elements such as shell plating including bottom and bow plating, stern frame and rudder, sea chests and valves, propeller, etc.

(2) Special attention is to be given to the parts of the structure particularly liable to excessive corrosion or to deterioration from causes such as chafing and lying on the sea bed, and to any undue unfairness of the plating of the bottom. Important plate unfairness or other deterioration which do not necessitate immediate repairs is to be recorded.

(3) The external cathodic protection system and coatings are to be examined.

(4) The sea connections (including sea chest, valves, securing arrangements and suction grids) and overboard discharge valves and their attachments to the main structure are to be examined. Thickness measurement and tightness, strength, hydraulic tests of the sea chest and overboard discharge valves and fittings are to be carried out where necessary.

(5) Visible parts of side thrusters are to be examined.

(6) Examinations of the Anti-fouling System and In-Water Survey class notation (if applicable) are to be carried out.

5.7.2.2 Surface-type units

(1) External surfaces of the hull, keel, stem, stern frame, rudder, nozzles, and sea strainers are to be selectively cleaned to the satisfaction of the attending Surveyor and examined together with appendages, the propeller, exposed parts of sterntube bearing assembly, rudder pintle and gudgeon securing arrangements, sea chest and strainers, and their fastenings.

(2) Propeller shaft bearing, rudder bearing, and steering nozzle clearances are to be ascertained and reported upon.

(3) Zinc and corrosion control systems are to be examined.

5.7.2.3 Self-elevating units

(1) External surfaces of the hull, spud cans, mat, underwater areas of legs, together with their connections as applicable, are to be selectively cleaned to the satisfaction of the attending Surveyor and examined;

(2) At each docking survey (or equivalent in-water survey), after the second special survey, the Surveyor is to be satisfied with the condition of the internal structure of the mat or spud cans;

(3) Leg connections to mat or spudcans are to be examined at each docking survey;

(4) NDT may be required of areas considered to be critical by CCS or found to be suspect by the Surveyor.

5.7.2.4 Column-stabilized units

(1) External surfaces of the upper hull, footings, lower hulls, columns, bracing and their connections, and propulsion units as applicable, are to be selectively cleaned and examined to the satisfaction of the attending Surveyor;

(2) NDT may be required of areas considered to be critical by CCS or found to be suspect by the Surveyor.

5.7.2.5 Submersible units (1) External surfaces of the upper hull, mat, columns, bracing and their connections are to be selectively cleaned and examined to the satisfaction of the attending Surveyor;

(2) NDT may be required of areas considered to be critical by CCS or found to be suspect by the Surveyor.

5.7.3 In-water surveys

5.7.3.1 General requirements

(1) For the 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. Specific requirements for in-water surveys are given in Chapter 7 of PART EIGHT of the Rules.

(2) At the request of the owner and under particular ambient conditions, CCS may agree to carry out the in-water survey to the units without In-Water Survey class notation to replace the docking survey as described in 5.7.2 of this Section.

(3) CCS will consider accepting by other means, including remotely operated vehicle (ROV), as an alternative to in-water survey specified in this article, provided that the means to obtain the results and details have equivalent effects.

5.7.3.2 Conditions for in-water surveys

(1)Both plan and procedure of in-water survey are to be submitted to CCS for review prior to the survey and kept onboard. In-water survey plan is to include the structural areas to be surveyed, the scope of in-water cleaning, the locations and methods of NDT, terminology and records of any detected damage or defect;

(2) The company and operators performing the in-water survey are to comply with the requirements contained in Section 8; Chapter 2 of this PART and hold CCS recognized certificates and qualification certificates;

(3) For in-water survey, documents that are usually available for docking survey are to be provided as practically possible;

(4) Where any abnormal deformation or damage of the underwater portions of the unit has been recorded, or any damage sufficient to affect the suitability of the unit has been found during the survey, an in-water survey in lieu of a docking survey may not be acceptable;

(5) In conjunction with the in-water survey, in-water or internal thickness measurement of suspect areas may be requested. In-water NDT is also required for cracks detection;

(6) The unit to be surveyed and its surrounding environment are to be in good conditions, for instance, the unit is as close as possible to a zero load condition, the portions below the waterline is sufficiently clean, the outside plating is identified with permanent marks satisfactory to CCS to help the divers locate the desired positions, the unit is situated in the sheltered waters with sufficient water depth and smooth water current (including tidal current), and seawater clearness is adequate to allow the divers to perform effective examination and photographing orvideo recording.

5.7.3.3 Extent of the survey and survey report

(1) The in-water survey is to provide the information normally obtained from a docking survey. The extent of in-water survey is to be the same as the survey items listed in 5.7.2, so far as practicable. Special consideration may be given to ascertaining rudder bearing clearances and stern bush clearances of oil stern bearings based on a review of the operating history, on board testing and stern oil sample reports. 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 agreed with CCS.

(2) Upon completion of an in-water survey, a detailed report together with a video tape (or other carriers) and photos showing 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 unit be dry-docked in order that a detailed survey can be undertaken and the necessary repairs carried out.

5.7.3.4 Examination

(1) Exposed areas

The external examination of the unit structures above the waterline is to be carried out by the surveyor. Means are to be provided to allow the surveyor to safely get access to the structures to perform visual examination, and NDT when necessary.

(2) Underwater areas

An examination of the unit below the waterline is to be carried out by an approved firm .

(3) Damaged areas

Photos of the damaged areas are to be taken. The surveyor may require internal inspection, measurement, marking and thickness measurement of the damaged areas. The position, direction and surface conditions of the damaged areas are to be able to be identified from the photographs or video tapes.

(4) Mat or footing of self-elevating units

During in-water survey of the mad or footing of self-elevating units, if the survey items cannot be fully completed due to the mat or footing being partially or wholly buried below the mud line, the uncompleted survey items may, with the approval of CCS, be postponed to the next relocation of the unit, but no later than the date of the originally planned next docking survey.

Section 8 SURVEYS OF PROPELLER SHAFTS AND STERNTUBE SHAFTS

5.8.1 General requirements

5.8.1.1 Propeller shafts or sterntube shafts are to be surveyed in accordance with relevant provisions of Chapter 5, PART ONE of CCS Rules for Classification of Sea-Going Steel Ships. Due to low running hours of sterntube shafts for units compared with conventional ships, intervals between sterntube shaft surveys may be extended as appropriate to the satisfaction of the Surveyor and based on:

(1) diver's external examination of outboard sealed areas including subsidence check as far as possible;

(2) internal examination of the stern shaft area (inboard seals) in engine room(s);

(3) confirmation of satisfactory lubricating oil records (oil loss rate, contamination);

(4) shaft seal elements are examined/replaced in accordance with seal manufacturer's recommendations.

5.8.1.2 Other propulsion system shall be surveyed according to CCS rules.

Section 9 BOILER AND STEAM TUBE SURVEYS

5.9.1 General requirements

5.9.1.1 Boiler surveys are to be carried out in accordance with relevant provisions of Chapter 5, PART ONE of CCS Rules for Classification of Sea-Going Steel Ships.

5.9.1.2 At each survey, the boilers, superheaters, economizers, and steam heated steam generators are to be examined internally on water-steam side and fire side, including drum, shell, tubes, stays and insulation.

5.9.1.3 Boiler mountings and safety valves are to be examined at each survey and opened out as considered necessary by CCS.

5.9.1.4 At each survey, surveyor shall confirm the safety valves operate well.

5.9.1.5 When considered necessary by the Surveyor, boilers and superheaters shall be tested by hydrostatic pressure.

Section 10 INITIAL CLASSIFICATION SURVEYS OF UNITS CONSTRUCTED NOT UNDER THE SUPERVISION OF CCS

5.10.1 General requirements

5.10.1.1 The initial classification surveys of units constructed not under the supervision of CCS includes:

(1) initial classification surveys of units which are under construction;

(2) initial classification surveys of units after construction.

5.10.1.2 The initial classification surveys specified in this Section include surveys related to class notations.

5.10.1.3 Whenever CCS is requested by an owner to accept the transfer of class for a unit 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 5.10.3.1 are required to be satisfactorily completed 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 recommendations/conditions of class previously issued against the unit as specified to the owner 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 recommendations/conditions of class previously issued against the unit;

(4) any outstanding recommendations/conditions of class are to be dealt with by their due dates;

(5) the principles given in items (1), (2) and (3) above 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 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) copies of the plans listed in this Section are to be provided to CCS as a prerequisite to obtaining a full term Class Certificate.

5.10.1.4 If found satisfactory at the survey, load lines will be marked in accordance with Section 2, Chapter 3 of PART THREE of the Rules.

5.10.2 Initial classification surveys of units under construction

5.10.2.1 Initial classification surveys of units which have been surveyed by the Societies accepted by CCS

(1) All plans, calculations and other technical documents for construction (approved by the losing Society according to their rules) are to be submitted to CCS for check. The construction of these units 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 relevant records made by the losing Society):

① the builder is to submit records of the checked or confirmed items for review;

② the Surveyor is to carry out an overall survey of the compartments, spaces and installations which have been inspected and confirm that materials, scantlings, workmanship and arrangements are in compliance with the approved plans;

③ the information on the attended inspections and tests of compartments is to be accepted when such information is confirmed as authentic. When some of the compartments are to be tested again, e.g. functional tests during transit test and in particular the inspection and testing of ballast tanks, the new tests are to be attended;

④ the records of NDTs are to be checked and if necessary, sampled. Any NDT is to comply with the provisions of the Rules;

⑤ the materials (including forgings and castings) used for construction, and manufacturing and testing of anchors and anchor chains are to meet the requirements of the standards acceptable to CCS;

⑥ main propulsion machinery and essential auxiliaries are to be manufactured, installed and tested in accordance with CCS rules or the standards acceptable to CCS;

⑦ the anchors and anchor chains are to be inspected and certified in accordance with the CCS rules, if they have not been delivered to the builder;

⑧ all outstanding recommendations are to be completed.

5.10.2.2 Initial classification surveys of units 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 is made in the originally approved plans as the 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 specified in 5.10.2.1 of this Section and if necessary, the completed items may be sampled.

5.10.3 Initial classification surveys of units after construction

5.10.3.1 Initial classification surveys of units which have been surveyed by the Societies accepted by CCS:

(1) Initial classification surveys of units which have been certified by the Societies accepted by CCS:

① When applying for an initial classification survey, as the prerequisite for issuance of a long-term classification certificate by CCS, the owner is to submit at least one copy each of the plans, calculations and other technical documents to CCS for check, including at least the following:

a. Main drawings

(a) General arrangement;

(b) Capacity plan;

(c) Hydrostatic curves;

(d) Operation manual and loading manual (if required);

(e) Damage stability calculation (if required).

b. Drawings of main structure:

(a) Transverse section;

(b) Construction profile, including longitudinal section, decks, inner bottom structure, superstructure and deckhouse;

(c) Transverse bulkhead;

(d) Shell expansion;

(e) Rudder and rudder stock (if applicable);

(f) Hatch covers;

(g) For self-elevating unit, legs, spudcans or mats, leg well structure;

(h) For column-stabilized units, columns, footings or lower hull, diagonals and bracing members;

(i) For submersible units, columns, bracing members, lower hull and slide-resistant legs:

(j) For drilling units, wellhead structure, cantilever beams and supporting structure;

(k) Construction booklet.

c. Drawings of machinery:

(a) Arrangement of engine room;

(b) Diagram of bilge and ballast piping;

(c) Laying of cables;

(d) For self-propelled units:

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 by units less than two years of age;

f) e=Elastic coupling of propulsion shafting and/or shaft torque limiter (or manufacturer, model and specifications) additionally required for units with ice class notation;

(e) For self-elevating units:

Jacking gear, locking devices and associated control systems together with a description;

(f) For oil storage units:

a) Arrangement of pump room arrangement;

b) Arrangement of pumping system at the forward and after ends and drainage of cofferdams and pump rooms;

c) Arrangement of cargo oil piping in tanks and on decks;

d) Arrangement of venting system.

d. Drawings of electrical installations:

(a) Diagram of electric power distribution;

(b) Arrangement of explosion-prevention equipment and specifications;

(c) For units with class notation of periodically unattended engine room:

a) Checklist of measuring instruments and alarms;

b) Fire alarm signal devices;

c) List of automatic safety functions (e. g., slackening, shutdown);

d) Diagram of functional tests.

e. Fire and explosion prevention:

(a) Fire control plan;

(b) Classification of hazardous areas;

(c) Pipelines and gauges of fixed fire-extinguishing system;

(d) Inert gas system (if applicable);

(e) Fire detecting and alarming system;

(f) Flammable gas detecting and alarming system.

f. Any other documents requested by the Administration:

(a) Safety;

(b) Stability;

(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 relating to special features of the unit (if applicable).

h. freeboard calculations.

② Where the drawings and documents can not be submitted according to 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 equivalent.

③ Where the information on stability including intact and damage stability, the operation manual and the loading manual have been approved by the Administration of the flag State or an organization authorized by it and compliance of the arrangement on board the unit 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 unit's age and losing class status, the extent of surveys is to include the following:

a. Main structure:

(a) For units of less than 5 years, an annual survey is to be carried out.

(b) For units of 5 years or above but less than 10 years, the survy is to include annual survey and an inspection of an appropriate number of representative ballast tanks;

(c) For oil storage units of 10 years or above but less than 20 years, in addition to the requirement under (b) above, an inspection of an appropriate number of representative crude oil tanks is to be carried out.

(d) For oil storage units of 15 years and over, the requirements for special or intermediate surveys (whichever is due) are to be complied with, i.e., if the unit is in the first year after completion of the special survey, the intermediate survey is to be completed at the time of transfer of class, and if the unit is in the third or fourth year after completion of the intermediate survey, the special survey is to be completed.

(e) For units of 20 years and over, the requirements for special surveys are to be complied with, and this applies also to units under continuous main structure survey.

(f) If a dry-docking of the unit is not due at the time of transfer of class, and subject to consent of the Headquarters of CCS, an underwater examination may be taken in lieu of dry-docking required in (d) and (e). For units 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, 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.

– 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 they were carried out within the applicable survey window of the periodical 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 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,

(h) Where surveys for transfer of class are not carried out in conjunction with the periodical surveys required to maintain the unit's class during execution of abovementioned (c)-(f), as applicable for the units of more than 15 years, the test of liquid cargo holds is not required as part of the surveys for transfer of class; and where surveys for transfer of class are carried out in conjunction with the periodical surveys required to maintain the unit's class, CCS may consider accepting the test results of liquid cargo holds from the original classification society, provided that the test of liquid cargo holds performed by the original classification society is within the time window of the periodical classification surveys by CCS;

(i) Where surveys for transfer of class are not carried out in conjunction with the periodical surveys required to maintain the unit's class during execution of abovementioned (a)-(f), as applicable, the items required to comply with the specified requirements (e.g. 5.3.5, Section 3 of this chapter) in combination with the periodical classification surveys for the unit may not be part of the surveys for transfer of class.

b. Machinery (including electrical installations):

(a) An overall examination of all essential machinery is to be held and is generally to include:

a) examination under working conditions of fuel oil auxiliary boilers, economizers, steam heaters and steam generators. The adjustment of safety valves of this equipment is to be verified by checking the records on the unit.

b) compliance of all pressure containers with submitted drawings and certificates is to be verified;

c) insulation resistance, generator circuit breakers, preference tripping relays and generator prime mover governors are to be tested and paralleling and load sharing to be proved;

d) in all cases, navigating lights and indicators are to be examined and their working and alternative sources of power verified;

e) bilge pumping system, fuel oil burning installations together with emergency fire pumps and remote controls for fuel oil valves, fuel oil pumps, lubricating oil pumps and forced draught fans are to be examined under working conditions and tested;

f) compliance of recirculating and ice-clearing arrangements with class notations is to be verified, if any;

g) the main and all auxiliary machinery necessary for operation of the self-propelled unit at sea together with essential controls and steering gear are to be tested under working conditions. Alternative means of steering are to be tested. A short sea trial is to be held at the Surveyor's discretion if the unit has been laid up for a long period (if applicable);

h) initial start arrangements are to be verified;

i) in the case of oil storage units, the electrical installations in way of hazardous spaces are to be checked for compliance with rules. Where intrinsically safe equipment is installed, the Surveyors are to satisfy themselves that such equipment has been approved by the Society accepted by CCS or an organization authorized by it. The safety devices, alarms and the essential instruments of the inert gas system are to be examined to confirm that they are in a good working condition, and systems are to be generally examined to ensure that they do not constitute any hazard to the unit.

c. Fire and explosion prevention:

(a) An overall examination of fire-extinguishing system 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 in the first port of initial classification survey (also referred to as "survey for transfer of class" required by 5.10.3.1(1), the survey may be carried out stepwise and CCS may allow the unit to undertake a direct 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 main structure survey and additional machinery surveys as required in 5.10.3.1(1)④b.

e. The surveys for transfer of class may be carried out in conjunction with required periodical surveys after construction. Where such surveys are not carried out in conjunction with periodical classification surveys related, the conditions of class which are not overdue and required to be completed in conjunction with periodical surveys need not be completed at surveys for transfer of class.

f. After the surveys stated in 5.10.3.1(1)① to④ of this Section, the interval between surveys may be corresponding to that of the losing society.

g. Requirements for double classed units or dual class units:

(a) for double classed units, the extent of survey is to be in accordance with 5.10.3.1(1)① and ④;

(b) for dual class units, the extent of survey is to be at least in accordance with that of annual surveys.

(2) Initial classification surveys of units which have not been certified by the Societies accepted by CCS:

① Submission of plans and information for review and survey items are to be in accordance with 5.10.3.1(1) of this Section;

② The owner is to submit records and reports related to surveys, testing and measurement during construction as well as certificates, test information, etc. for main marine products;

③ The Surveyors are to examine main structural dimensions to confirm compliance with relevant provisions of the Rules;

④ If necessary, test and/or survey for confirmation is to be carried out.

5.10.3.2 Initial classification surveys of units which have been surveyed by other Societies

(1) This article applies to units which have not been constructed in accordance with CCS rules and classed by CCS or any classification societies acceptable to CCS;

(2) In general, units are to comply with the present rules of CCS and at least with the applicable rules of CCS during the construction of units;

(3) In general, plans of the unit are to be submitted for review according to the requirements described in CCS rules regarding unit construction. If it is difficult to submit the plans related to quality control during construction of the units, means to evaluate and verify the related structures or equipment are to be provided. If such methods are assessed by CSS as acceptable and verified during classification surveys, exemption from submission of related plans may be granted. In any case, it is to be ensured that, as a minimum, the plans and information, calculations and related technical documents listed in 5.10.3.1(1)① are submitted to CCS for approval;

(4)In addition to the special survey scope for units of the same type and age as required by CCS rules, including docking survey, propeller shaft and stern tube and tailshaft survey, boiler survey and inert gas system survey (if applicable), surveys are to include the following items:

① Hull thickness measurement is to be carried out as per the requirements that are not less strict than the minimum requirements of thickness measurement for the 4th special survey;

② Based on verification of the unit's conditions and review of the unit's operation and repair history, CCS may require further surveys, including NDT of critical weld joints of the hull structure at a certain proportion, and extend the test extent as appropriate;

③ Review of the records of survey, test and measurement during the original construction process of the unit, including materials used, construction method, test method, standard and scope of structural weld NDT, mooring and navigation test records and marine product certificates, as well as the necessary verification carried out during the surveys;

④ Verification of related structures or equipment by the means as accepted in 5.10.3.2(3).

Section 11 SURVEYS OF EQUIPMENT COVERED BY CLASS NOTATIONS

5.11.1 General requirements

5.11.1.1 This Section applies to surveys of the equipment covered by the class notations specified in 2.3.2.5 of Chapter 2 of this part on category C, D and E.

5.11.1.2 The surveys of the equipment covered by the following class notations (see 2.3.2.5 of Chapter 2 of this part) are to be carried out in accordance with the Rules and CCS other applicable rules or guidelines:

(1) DRILL (Drill Plant);

(2) Oil Storage Tank;

(3) PROCESS (Oil Gas Water Processing System);

(4) IWS (In-water Survey);

(5) Loading Computer;

(6) Lifting Appliance;

(7) IGS (Inert Gas System);

(8) CMS (Continuous Machinery Survey);

(9) PMS (Planned Maintenance System);

(10) AUT-0 (Automation- 0);

(11) MCC (Machinery Centralized Control);

(12) AFS (Anti-fouling System);

(13) Thruster;

(14) Ice Class B, B1*, B1, B2 and B3;

(15) On Bottom Strengthened;

(16) PSPC (Protective Coating);

(17) Clean;

(18) FTP (Fuel oil tank protection);

(19) GWC (Grey water control);

(20) NEC (NO_X emission control);

(21) SEC (SO_X emission control);

(22) RSC (Refrigerating system control);

(23) COMF(NOISE) N;

(24) COMF(VIB) N.

5.11.1.3 Survey of the equipment with following additional notations is to be in compliance with the requirements of this Section:

(1) HELDK;

(2) PM or PM-TA;

(3) DP-N.

5.11.2 Helicopter deck

5.11.2.1 Annual surveys

(1) Helicopter deck and its supporting structure, securing arrangements, safety net, visual aids, etc. are to be generally examined;

(2) Gangways including means of escape are to be in good condition, free from obstructions and clearly marked;

(3) Fire hoses, nozzles, foam applicators, portable and moveable fire extinguishers are to be examined, maintained in good working condition and stowed in their respective specified locations;

(4) All refueling facilities including bonding and emergency shutdown devices, fuel spillage draining facility, etc. are to be generally examined and maintained in a good and efficient condition.

5.11.2.2 Special surveys

In addition to the items required by 5.11.2.1, the applicable items in 5.4.4, 5.5.4 and 5.6.4 of this Chapter are to be surveyed.

5.11.3 Positional mooring system and thruster assisted positional mooring system

5.11.3.1 The thruster system associated with thruster assisted positional mooring system is to be surveyed in accordance with applicable requirements of Sections 5 and 6 of this Chapter. The positional mooring system is to be surveyed in accordance with the requirements specified below in this Section.

5.11.3.2 A program for periodical surveys of positional mooring system is to be developed by the owner, submitted to CCS for review and made available on board.

5.11.3.3 Annual survey items

The component parts 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 (wastage, corrosion, deterioration, etc.) of the mooring system including cables, chains, fittings, connections, fairleads and windlass. The Surveyor is to be satisfied that all components and equipment remain in an acceptable condition. Particular attention is to be given to the following cables or chains:

(1) Cable or chain in the vicinity of winches or windlasses;

(2) Cable or chain in contact with guidance 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.

5.11.3.4 Special survey items

(1) Windlasses and their driving gear 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, fractures, twists, loose or detached cable studs; mooring wires are to be checked for wastage, corrosion, flattening and broken wires;

(3) Joining shackles are to be checked for corrosion, wastage, bending, and loose studs;

(4) All Kenter joining shackles over 4 years in service are to be disassembled for examination and magnetic particle inspection. Joining shackles of other types are to be partially or wholly disassembled for inspection, as appropriate;

(5) Links significantly worn at end and making 1% of all links are to be selected for measuring mean diameter. The Surveyor may increase the number of links to be measured according to the results of his visual inspection, and the selected links are to be evenly distributed in the working length of the chain so far as is practicable. Chain cables are to be renewed in cases where it is found that the links have been so far worn that their mean diameter is 12% or more below the original required nominal size;

(6) Armored or sheathed mooring wires are to be examined for their armor or sheathing, paying attention to fractures, tears and wastage of sheathing;

(7) An overall examination of mooring wire sockets and connections is to be made, with particular attention being paid to wastage and corrosion of wires in the vicinity of sockets;

(8) For in-water surveys, an in-water survey plan (detailing scope and methods of cleaning and examining mooring components) is to be submitted to CCS for approval. The approval status of equipment, deep-diving submersible or other appropriate tools used for in-water surveys 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 subject to the supervision of the Surveyor(s).

5.11.4 Dynamic positioning system

5.11.4.1 Initial classification survey

(1) For a mobile unit intended for the notation of DP, the drawings and documents required by 11.1.4 of Chapter 11, PART EIGHT of CCS Rules for Classification of Sea-going Steel Ships are to be submitted for approval.

(2) The survey of the unit during construction is to include examinations and tests of the following items:

① every dynamic positioning system (including controller and measuring system) which is to be assigned with a class notation of DP is to be subjected to an inspection in accordance with Chapter 3 of PART ONE of CCS Rules for Classification of Sea-going Steel Ships and issued a relevant Marine Products Certificate;

② checking Marine Products Certificates of relevant equipment;

③ confirming that the equipment and arrangement of dynamic positioning system is in compliance with the approved plans and Chapter 11, PART EIGHT of CCS Rules for Classification of Sea-going Steel Ships;

④ where redundancy and independence of DP system is required, the specific conclusions for FMEA of different sub-systems are to be verified by means of tests (in accordance with the specified redundancy test procedure);

⑤ all sensors, peripheral equipment and reference systems are to be tested before the test of the whole dynamic positioning system. Alarm system and logical conversion are to be calibrated in accordance with the failure of analogue sensors;

⑥ the following tests are to be carried out to the thruster:

a. function test to control and alarm system of each thruster;

b. test of signal exchanges between each thruster and dynamic positioning system computer;

c. test of different control methods of the thruster;

⑦ test is to be carried out to the power control apparatus;

⑧ the following tests are to be carried out to the whole set of dynamic positioning system:

a. tests to conversion method, back-up system and alarm system with all operation modes and in various simulated failure conditions;

b. test to manual override function under normal operation and failure conditions;

c. continuous site test for at least 6 to 8 hours to the whole set of automatic system and any failure occurred is to be recorded and analyzed;

d. the whole dynamic positioning system is to be tested for at least 2 hours under specified environmental conditions. Weather conditions are to be such as to make the average thruster load level reach 50% or higher. Where the environmental conditions can not satisfy such requirement, the test may be carried out as a special test later on an appropriate occasion.

5.11.4.2 Annual surveys

(1) The apparatus such as generator and thruster system related to dynamic positioning system is to be surveyed in accordance with the requirements of the main class.

(2) It is to be confirmed that the dynamic positioning system has been normally maintained in good working order.

5.11.4.3 Special surveys

(1) The following tests are to be carried out to the thruster:

① function test to control and alarm system of each thruster;

② test of signal exchanges between each thruster and dynamic positioning system computer;

③ test of different control methods of the thruster.

(2) Test is to be carried out to the power control apparatus. The following tests are to be carried out to the whole set of dynamic positioning system:

① tests to conversion method, back-up system and alarm system with all operation modes and in various simulated failure conditions;

② test to manual override function under normal operation and failure conditions;

③ continuous site test for at least 6 to 8 hours to the whole set of automatic system and any failure occurred is to be recorded and analyzed;

④ the whole dynamic positioning system is to be tested for at least 2 hours under specified environmental conditions. Whether conditions are to be such as to make the average thruster load level reach 50% or higher. Where the environmental conditions can not satisfy such requirement, the test may be carried out as a special test later on an appropriate occasion.

5.11.4.4 Survey to alteration of dynamic positioning system

(1) Where a major alteration is made to the hardware or software of the dynamic positioning system (i.e. adding a position reference system, installing more or different thruster(s) or adding a different control method), a survey is to be carried out as appropriate to ensure compliance of the system with the requirements of Chapter 11 of PART EIGHT of CCS Rules for Classification of Sea-going Steel Ships.

Section 12 OTHER SURVEYS

5.12.1 Surveys of repairs, alterations and modifications of a major character

5.12.1.1 General requirements

(1) This paragraph applies to surveys of repairs, alterations and modifications which substantially change one or more of the following characteristics of existing units (hereinafter referred to as major conversions):

① main scantling or capability of a unit;

② unit type;

③ level of subdivision of a unit;

④ other major conversions in the opinion of the Administration.

5.12.1.2 Surveys

(1) Drawings and documents of the units subject to a major conversion are to be submitted to CCS for approval. The unit's structure, including the original and the altered structures are both to comply with the rules applicable to the contract date for major conversions. Other parts, e.g. machinery (including electrical installations), inert gas system, automation system and other equipment related to the class, are to be treated as those of newbuildings, i.e. the requirements of present CCS Rules are to be complied with.

(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 tested for tightness 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 unit as appropriate to ensure that the materials used and workmanship are satisfactory in all respects and that the unit is fit for the intended purpose, and if applicable, the load lines are to be marked in accordance with Section 2, Chapter 3 of PART THREE.

(5) New certificates will be issued for altered units 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 unit, 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 units which have undergone a major conversion. The inclining test may be dispensed with upon approval by the Administration.

5.12.2 Occasional surveys

5.12.2.1 General requirements

(1) For any occasional survey covered by 5.2.11 of this Chapter, the owner or operator of the unit is to make an application to CCS.

(2) If the owner or operator of the unit, in respect to any damage or repairs of the unit, directly applies for any related periodical survey specified in the Rules, a separate application for an occasional survey need 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.

5.12.2.2 Damage surveys

(1) In the event of any sea or machinery damage which affects or may affect the class of the unit, the owner is to apply to CCS for a survey promptly so as to enable the Surveyor to ascertain the extent of the damage and necessary repairs, if any.

(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 unit 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 can not be repaired immediately and thoroughly, is considered to be not affecting safety of the unit 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.

5.12.2.3 Repair surveys

(1) Any repair which affects the class of the unit 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 unit.

(2) For any repair which affects the class of the unit, the owner or operator of the unit 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 unit, if any.

(3) The repair survey is to check the defect or damage, require repairs, confirm repair plan and carry out supervision of repairs① 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 suggestions, is to be signed.

5.12.2.4 Port State control inspections

(1) Where defects are found as a result of a port State control inspection, the owner is to promptly report this to CCS and apply for an occasional survey to confirm such defects.

(2) The defects, when related to the classification certificate or the statutory certificates issued by CCS as authorized, are to be rectified and/or the necessary repair work is to be carried out within the due time.

5.12.2.5 Surveys for change of unit's name, port of registry, owner or operator and flag

(1) When the unit's name, port of registry, owner or operator and flag is to be changed, the owner is to inform

CCS of the relevant information in so far as practicable in advance and apply for an occasional survey.

(2) When the owner of the unit is changed, any information related to the class of the unit is not to be provided or confirmed to any third party, unless the requesting party formally signs a written document or is authorized by the present owner.

(3) Survey requirements:

① The survey for the change of a unit's name or port of registry is in general to check the unit'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 unit and issue a survey report accordingly.

② When the owner of a unit is changed, the existing class of the unit 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 unit's flag is to confirm the unit's certificate of nationality and check the unit and its relevant documents and certificates in respect to the flag State, etc. Such surveys are to be carried out in conjunction with statutory surveys.

Appendix 1 PROCEDURES FOR CERTIFICATION OF FIRMS ENGAGED IN THICKNESS MEASUREMENT OF MAIN STRUCTURES

1 Application

1.1 The Procedures apply to certification of the firms which intend to engage in the thickness measurement of main structures of the units.

2 Procedures for certification

2.1 Submission of documents

2.1.1 Following documents are to be submitted to CCS for approval:

(1) outline of firms, e.g. organization and management structure;

(2) experiences of the firms on thickness measurement inter alia of the main structures of the units;

(3) technicians' careers, i.e. experiences of technicians as thickness measurement operators, technical knowledge of the main structure etc. Operators are to be qualified according to a recognized industrial NDT Standard;

(4) equipment used for thickness measurement such as ultra-sonic testing machines and its maintenance/calibration procedures;

(5) a guide for thickness measurement operators;

(6) training programmes of technicians for thickness measurement.

2.1.2 Auditing of the firms: Upon reviewing the documents submitted with satisfactory results, the firm is to be audited on site by CCS in order to ascertain that the firm is duly organized and managed in accordance with the documents submitted, and eventually is capable of conducting thickness measurement of he main structure construction of the units.

2.1.3 Assessment of thickness measurement operation: Certification is to be made by CCS on an onboard demonstration at thickness measurements as well as satisfactory reporting.

3 Certification

3.1 Upon satisfactory results of both the audit of the firm in 2.1.2 and the demonstration tests in 2.1.3 above, CCS will issue a certificate of approval as well as a notice to the effect that the thickness measurement operation system of the firm has been certified by CCS.

3.2 Renewal/endorsement of the certificate is to be made at intervals not exceeding 3 years by verification that original conditions are maintained.

4 Control of any alteration to the certified thickness measurement operation system

In case where any alteration to the certified thickness measurement operation system of the firm is made, such an alteration is to be immediately informed to CCS. Re-audit is made where deemed necessary by CCS.

5 Cancellation of approval

5.1 Approval will be cancelled in the following cases:

(1) where the measurements were improperly carried out or the results were improperly reported;

(2) where CCS Surveyor found any deficiencies in the approved thickness measurement operation systems of the firm;

(3) where the firm failed to inform any alteration in 4 above to CCS.

Appendix 2 GUIDELINES FOR SURVEY OF MOBILE UNIT MACHINE PLANNED MAINTENANCE SCHEME (PMS)

1. General

1.1 Purpose

1.1.1 The Guidelines for Survey of the Mobile Unit Machine Planned Maintenance Scheme (PMS) may serve as guidance notes for the implementation of PMS by CCS surveyors and Plan owners, Plan management companies and Plan authorized personnel.

1.2 Scope

1.2.1 These Guidelines apply to the mobile units having the class notation PMS.

1.2.2 PMS may be regarded as an alternative to the manchinery special survey or the continuous machinery survey (CMS) and the surveyitems and contents are to cover those of the related continuous survey.

1.2.3 For the mobile units subject to PMS survey, any other survey items necessary for maintaining its class is not to be cancelled and changed; the items not included in PMS survey items shall also be inspected according to the provisions of Chapter 5 of Part 1 of the Rules.

1.3 Requirements for the Owner and Management Company

1.3.1 Organizational unit and personnel

(1) The owner or management company applying for the implementation of survey of PMS is to establish a special organization unit to manage the PMS. The department of machinery business may act as such unit or a specialized department may be set up. In any case,a special posts in charge is to be assigned.

(2) The organizational unit is responsible for the PMS documentation and PMS daily management.

1.3.2 Plan formulation

(1) The PMS department of the owner or management company is to make a list of PMS equipment in accordance with the relevant requirements in the Rules and the specifications of the Equipment Manufacturer.

(2) The List of PMS Equipment is to cover the items of special machinery survey or continuous machinery survey required by the Rules, and each maintenance interval is to be determined and detailed maintenance plan is to be made in accordance with the specifications of manufacturers and the actual operation of equipment on board, so as to prepare detailed maintenance contents; the items not required in the specifications of manufacturers are to be overhauled at least once within a five-year survey period of PMS.

(3) The computerized PMS management system is to be programmed in accordance with the above-mentioned documentation.

1.3.3 Maintenance Interval and Inspection Items

(1) When the Unit is subject to PMS survey, contents of preventive maintenance are to be included in the PMS schedule in accordance with the specifications of machinery and requirements of CCS Rules, and items subject to confirmatory examination each year and items to be overhauled within

a five-year survey period specified as special survey items in the current CCS Rules are also to be included in PMS schedule.

(2) In general, the intervals between any two PMS surveys are not to exceed 5 years.

(3) For items which are subject to survey based on running hours, intervals exceeding 1 year may be accepted, but not to exceed 5 years.

(4) Unless otherwise specified, the maintenance of the equipment effectively controlled by the approved condition monitoring system may be carried out in accordance with the maintenance intervals indicated in the specifications of manufacturers, but not to exceed 5 years as maximum. Apparatus and sensors with condition monitoring techniques used by condition monitoring equipment are to be provided with certificates of metrological verification.

(5) Items subject to confirmatory examination each year and items to be overhauled once within a five-year survey period are to be indicated by “F” and “H” respectively in Annex “Items for Survey of PMS” to this Appendix.

1.3.4 Requirements for PMS Database System

(1) Documentation requirements

① The software development unit is to be provided with Business License for business entity and qualification certificate for developing relevant software;;

② System Specification;

③ Operating Manual (instructions for use);

④ Reports and plans for testing which have been carried out (all software functions in various operation modes, important function combinations, relevance are to be included);

⑤ instructions of system key algorithm (included in system specifications or provided individually);

⑥ Other relevant technical specifications, etc..

(2) Function requirements

① Management of code: complete standard code management system (all PMS items may be covered and requirements of CCS Rules and guidelines are met);

② Management of survey plan

a. Each overhaul of the item is covered during the preparation of the plan and requirements of rules or specifications are complied with;

b. Indication is to be provided that the item has entered the survey period when the planned date enters the windows (such as first three months) and automatic alarms will be given when the item is overdue;

c. The PMS survey plan of any intervals within a period may be inquired and printed;

d. The arranged PMS survey plan distribution in the system may be overviewed;

e. The planned completion time for each PMS item and allowable flexible range may be indicated;

f. When the completion time of one item is inputted, the subsequent plan grade and date may begenerated automatically;

g. When the completion time of one item is inputted, the subsequent plan grade and date may begenerated automatically;

③ Management of work sheet

a. Working sheets of any survey items may be inquired and printed;

④ Management of work report

a. Survey reports may be generated automatically while the working contents are inputted;

b. Survey items of any interval within a period may be inquired and printed (at least name of PMS equipment/standard code/planned time/completion time are to be included);

c. Survey reports of any interval within a period may be inquired and printed;

d. The common format of testing report is considered to be included in the database;

⑤ Condition monitoring equipment

a. Where condition monitoring equipment is used by the ship Unit, a matching interface is to be provided to deal with the data transmitted by condition monitoring equipment and to put forward recommendations;

⑥ Correction/self-checking function

a. Software is to be capable of identifying normal faulty operation and correcting automatically;

b. Software is to be capable of testing normal mistakes in database;

(3) Compatibility

① Software is to be with good compatibility, for example, it is to be compatible with the common software such as WINDOWS XP, WIN7, WIN8, etc.;

② Requirements for hardware are to be with generality and not to be over demanding;

(4) Information security

① Effective backup systems and means are to be provided;

② Stable data synchronization scheme and correction and recovery capability in dealing with data conflict and document missing etc.;

③ Modification of procedure/plan

a. Specific level of modification permission is to be determined in order to prohibit illegal modification of procedures and plans;

b. Records must be kept for change of the plan and are to be easy to inquire;

④The system is to be with a certin anti-virus capabilities.

(5) Software is easy and simple to operate;

(6) Only the software developer or personnel authorized by the developer is permitted to update and modify the documentation and information in database. Contents of update and modification are to be described when the company and unit are subject to the annual audit and are to be confirmed by the Surveyor to be valid;

(7) CCS Type Approval and type approval certificates are to be acquired for the above requirements. The period of validity of type approval certificate is 5 years and the renewal audit is to be carried out once every 5 years to ensure the effectiveness of the software after maintenance, upgrading or update.

1.3.5 Implementation of the plan

(1) The authorized personnel of the Unit is to complete the required items in time in accordance with the monthly maintenance plan generated automatically by computer and PMS management system installed on board.

(2) The Unit is at least to report the monthly completion to the PMS department in accordance with the document requirements of the company and the PMS department is responsible for collecting the information, statistics and supervision of the completion and is to give feedback to the ship of the supervision comments or advise on the completion of PMS in time.

1.3.6 Report

(1) The organization in charge of the owner or the management company is to submit PMS completion to CCS for confirmation when applying for CCS PMS survey.

(2) When the unit applies for the annual classification survey, the owner or the management company is to submit an application for PMS annual audit simultaneously; the Surveyor is to carry out confirmatory examination on board (see items indicated by “F” in Annex “Items for Survey of PMS” to this Appendix); when the special classification survey is due, the owner or the management company is also to submit an application for PMS annual audit simultaneously, and the Surveyor is to carry out confirmatory examination on board (see items indicated by “F” in Annex “Items for Survey of PMS” to this Appendix).

1.3.7 Responsibilities of Authorized Personnel

(1) The head of the M&E equipment safety on the units is the person in charge of the implementation of PMS on the units.

(2) The head of the M&E equipment safety on the units is to arrange the maintenance of each item of PMS. Maintenance is to be carried out in accordance with the preventive maintenance contents and technical requirements entered in the PMS computer system, and necessary repair and measurement records are to be kept. The relevant maintenance reports are to be examined or confirmed and signed.by the head of the M&E equipment safety on the units.

(3) Requirements for the head of the M&E equipment safety on the units are as follows:

① The responsible person is to be familiar with specific implementation details of the PMS maintenance plan and the use of software;

② The Company is to be provided the responsible person with training contents and training assessment records;

③The responsible person is to be participated in CCS training organized according to the requirements of the Rules for Classification of Mobile Offshore Unit, PMS Implementation Guidelines and PMS review procedure, and passed the examination;

④ The certificate is to be issued to the PMS authorized personnel based on the qualified records of training organized by the company and CCS. The certificate is valid for five years.

1.3.8 When the owner or the management company is changed, and the class notation PMS of the unit needs to be maintained, the new company or new management company is to re-submit the changed parts to CCS for audit and confirmation in accordance with the requirements of 1.3.1 to 1.3.7.

1.4 Definitions

1.4.1 Ship Maintenance System (CWBT) combines the traditional onboard equipment management with the internationally used card-inserted type management to form a new, scientific and practical mode of onboard equipment management, including planning, management and guidance. It's abbreviation CWBT consists of the initials of Chinese phonetic letters for the four Chinese words Chuanbo (ship), Weixiu (repair) Baoyang (maintenance) and Tixi (system).

1.4.2 Planned Maintenance System (PMS) means a detailed periodical maintenance plan for machinery (including electrical installations) onboard made by the owner or ship management company in accordance with the relevant requirements of the Rules and the specifications of manufacturers. Through the implementation on board, the machinery will be always kept in good technical condition. Such planned management of periodical maintenance for machinery is called planned maintenance system.

1.4.3 Planned maintenance system (PMS) for machinery survey means a system as an alternative to CMS for machinery (including electrical installations), which is applied for by the owner or the management company and subject to approval by CCS.

1.4.4 Condition monitoring equipment means that the monitoring is to be carried out periodically for the equipment (the frequency of monitoring is to be in accordance with the specifications of manufacturers) by means of condition monitoring techniques, e.g. analyzing vibration signal, lubricating oil and impact impulses, measuring temperature and internal detection of cylinder. The monitored data are analyzed to determine whether repair or maintenance is necessary. Such equipment, the operation condition of which is analyzed and judged by applying condition monitoring techniques, is called condition monitoring equipment.

1.4.5 Confirmatory audit means confirmation of validity of the class notation PMS. For the survey of PMS, an annual audit is to be made in accordance with the requirements of 3.2 of Section 3 when the annual/intermediate/special survey is carried out every year.

1.4.6 Implementation Survey means the first confirmatory survey of PMS for the unit which applies for survey of PMS within one year of its trial.

1.4.7 The head of the M&E equipment safety on the units: the general technical leader of unit machinery, power, electrical and instrumental equipments appointed by the unit company, and supervises and guides the technical management of all equipment in service on the units.

1.5 Appendix

1.5.1 The Items for Survey of PMS in the Appendix of these Guidelines are only for reference for the owner or the management company and PMS computer programming personnel in formulating the PMS and developing the programs.

1.5.2 CWBT code in the Items for Survey of PMS is recommended to be used where no international code system is available.

2 Procedural Requirements

2.1 Application

2.1.1 The owner of the mobile unit or the unit management company, for which PMS is intended, is to submit an application for the assignment of PMS notation to the Headquarters or a survey unit of CCS.

2.1.2 After the owner or the management company is provided with PMS notation, application for PMS implementation of the unit is to be made on the completion of initial classification survey or special machinery survey or continuous machinery survey.

2.1.3 For the unit which is under continuous survey, where the owner or the management company applies to CCS for PMS implementation, the items of the original continuous survey may be confirmed, provided the survey of PMS items can be reasonably arranged, and the items for survey of PMS are to cover all those of the continuous survey. And it is to be ensured that the interval between the completion date of the original continuous survey and the next PMS maintenance date will not exceed 5 years.

2.1.4 For the unit which applies for PMS between two special surveys, where all items of special machinery survey can be reasonably arranged within the remaining special survey period (from the application date to the due date of this special survey), the survey of PMS implementation may also be carried out.

2.1.5 For the mobile units whose machinery planned maintenance system management has been implemented before the additional PMS marking is intended, the finished special survey items in the machinery planned maintenance system can be confirmed, and the period from the completion date of the finished special survey items in the original machinery planned maintenance system to PMS implementation date shall be ensured not to exceed PMS survey interval.

2.2 Approval documentation

2.2.1 While the owner or the management company applies to CCS for assignment of PMS notation, the following written documentation or electronic file are to be submitted for approval:

(1) Organization chart identifying related posts (responsibilities);

(2) PMS documentation preparation procedures(or preparation instructions);

(3) List of PMS Equipment;

(4) Description of identification of PMS equipment (or PMS number);

(5) Preventive maintenance items for each unit of PMS equipment;

(6) Maintenance plan for each unit of PMS equipment (for the equipment to be surveyed according to running hours, the hours of overhaul period are to be indicated in the plan);

(7) List and specifications of condition monitoring equipment (if any);

(8) Baseline data of condition monitoring equipment (if any);

(9) Type approval certificate of PMS computer management software approved by CCS.

2.2.2 For series units or sister units, if the PMS equipment of which are the same, documentation provided in accordance with 2.2.1 are to cover all the applicable units, under the application of the owner or the management company.

2.3 Documentation to be kept on board

2.3.1 The following documentation are to be kept on board:

(1) All items of 2.2 above in an up-to-date version;

(2) Maintenance specifications of equipment manufacturers and shipyards;

(3) All monitored data of condition monitoring equipment since the last overhaul, including initial baseline data of equipment (if any);

(4) References documents (trend analysis program, etc.);

(5) Equipment maintenance records (including repaired and replacement).

2.4 Approval

2.4.1 Upon receipt of the application and documentation submitted by the owner or the management company, CCS is to review the documentation in time. After satisfactory examination, CCS will arrange the audit of the PMS Department established by the owner or the management company in accordance with the relevant requirements of 1.3.

2.4.2 When the owner or the management company has the units which have been assigned with PMS notation or have been PMS surveyed, requirement of 2.4.1 for audit of the PMS department may be exempted.

2.5 Assignment of class notation

2.5.1 The unit which has been approved to implement the PMS is to apply for an occasional machinery survey to:

(1) Confirm that the documentation specified in 2.3 are complete and meet the requirements;

(2) Confirm that PMS survey plan coverse all items of Sspecial Survey or CMS.

2.5.2 After the confirmation, the survey unit may issue an interim classification certificate to the unit, recommending that the PMS notation be assigned by CCS Headquarters and RA report issued at the same time. A full-term certificate will be issued by the Headquarters in accordance with the interim certificate.

2.5.3 For the unit which is assigned the class notation PMS for the first time, a class memorandum is to be given and Implementation Survey is to be carried out by CCS Surveyor within one year since the approval date.

3 Survey Requirements

3.1 Implementation Survey

3.1.1 For the unit which begins to carry out the PMS, trial is to be completed before implementation of the survey. After the trial is finished, the owner or the management company is to apply to CCS for an implementation survey and submit an trial implementation report at the same time.

3.1.2 The Surveyor is to confirm the following:

(1) PMS has been implemented according to the approved documentation, and the PMS computer management procedures on board are suitable for the onboard equipment and systems;

(2) The documentation necessary for the PMS annual audit and surveys/test necessary for maintaining the unit's class are provided.

(3) M&E equipment personnel in charge of monitoring of equipment and machines on units shall be familiar with PMS procedures.

3.2 Annual Audit

3.2.1 A confirmatory audit is to be carried out during annual/intermediate survey every year for the mobile units under PMS, and it is preferably to be carried out concurrently with the annual/intermediate survey.

3.2.2 During the annual confirmatory audit, the owner or the management company is to submit the annual report of PMS implementation to CCS survey unit. The report is to include at least the updated contents of the items mentioned in 2.2.1(1) to (6) (if any), and:

(1) List of PMS equipment maintained comlpeted since the previous annual audit;

(2) General condition of all machinery and equipment since the previoust annual audit;

(3) Details of mechanical breakdown/malfunction (if any) and cause analysis;

(4) Repair records and renewal of spare parts. The omponents or equipment which have been replaced are to be kept for inspection by the Surveyor (if any).

3.2.3 During the annual audit, while the Surveyor is examine the following items when reviewing the annual report submitted by the owner or the management company:

(1) The confirmatory examination is to be carried out for PMS computer management system verifying that PMS is being correctly and effectively implementation, and that the machinery has been functioning satisfactorily since the previous annual audit. Meanwhile, the implementation of items of the preventive maintenance plan in relation to PMS is to be checked;

(2) The performance maintenance records are to be examined to verify that the machinery has functioned satisfactorily since the previous annual audit or action has been taken in response to machinery operating parameters exceeding acceptable tolerances and the overhaul intervals have been maintained according to the requirements of the Rules and manufactures.

(3) Detailed record of mechanical equipment breakdown or malfunction;

(4)The description of repairs carried out is to be examined. Any damaged machinery part, which has been replaced by a spare one, is to be retained on board – where possible – until examined by the Surveyor; where necessary, the authorized person is to take photographs for such examination. For the renewed essential parts required by the Rules, the relevant product certificate is to be provided;

(5) At the discretion of the Surveyor, function tests, confirmatory surveys and random check readings, where condition monitoring equipment is in use, are to be carried out as far as practicable and reasonable;

(6) When the Surveyor deems, in examining maintenance records, that the measured data are not correct or that the data exceed acceptable tolerances with no renewal being made and that the machinery malfunction is not properly handled, he may require the authorized person to open the equipment for further survey;

(7) General examination is to be carried out for items indicated by "F" in Annex "Items for Survey

of PMS" to this Appendix, and all items indicated by "H" which have been completed form the previous annual audit to this annual audit are to be verified and visual examination to be carried out.

(8) For the items indicated by "F" in Annex "Items for Survey of PMS" to the Appendix, when the overhaul time coincides with the time of annul audit, confirmatory examination is to be carried out under the surveyor's supervision; for the items indicated by "H" in Annex "Items for Survey of PMS" to this Appendix, when the overhaul and test time coincides with the time of annul audit, overhaul and test are to be carried out under the surveyor's supervision;

(9) According to the audit and examination results, the Surveyor is to issue an appropriate audit report.

3.3 PMS audit during special class survey

3.3.1 When the special class survey is due, the owner or management company is to apply for special survey and PMS annual audit.

3.3.2 The annual report of PMS implementation to be submitted by the owner or management company and the survey requirements of the Surveyor are the same as 3.2.2 and 3.2.3 above.

3.3.3 PMS annual audit to be implemented in accordance with the requirements of 3.2, and special attention to be paid in checking the overall implementation of PMS during this special survey interval. After the completion of the annual survey and PMS annual audit, the special survey of classification certificate may be considered to have been completed if it is satisfactory.

3.3.4 For the items indicated by "F" in Annex "Items for Survey of PMS" to this Appendix, when the overhaul time coincides with the time of special class survey, confirmatory examination is to be carried out under the surveyor's supervision; for the items indicated by "H" in Annex "Items for Survey of PMS" to this Appendix, when the overhaul and test time coincides with the time of special class survey, overhaul and test are to be carried out under the surveyor's supervision.

3.3.5 Where the special class survey is due and cannot be completed due to other reasons, the owner or management company may apply for extension. Where found satisfactory, an extension not exceeding 3 months may be granted for the special class survey and PMS annual audit. Such survey and audit are to be carried out in accordance with the requirements of 3.3.1 to 3.3.3 by the end of the extension.

3.4 Damage and Repair Survey

3.4.1 The damage of PMS equipment (including components) is to be applied for to CCS for occasional class survey. The repairs of such components/machinery are to be carried out to the satisfaction of the Surveyor.

3.4.2 Any repair and corrective action regarding machinery under PMS are to be recorded in the engine logbook and the result of the repair of the machinery is to be verified by the Surveyor at the annual audit.

3.4.3 In the case of overdue outstanding recommendations or a record of unrepaired damage which would affect the PMS, the relevant items are to be kept out of the PMS, i.e. subject to the inspection by the Surveyor until such outstanding recommendations are fulfilled.

3.5 Change of Plan

3.5.1 In general, the maintenance interval of items indicated by "H" of PMS items is to be implemented in accordance with the requirements of 1.3.3 of these Guidelines.

3.5.2 The maintenance plan may be properly adjusted by the owner or management company or authorized person according to the maintenance of equipment and the operation of ship, however, the maximum interval between two maintenances for items indicated by "H" of PMS items is not to exceed that required in 1.3.3.

3.5.3 Where the authorized personnel has completed the maintenance of a certain PMS item indicated by “H” in advance, the interval between the completion date and the next maintenance date is to comply with that specified in 1.3.3.

3.6 Withdrawal and cancellation

3.6.1The owner or management company may apply for the withdrawal of PMS in writing to restore the special or continuous machinery survey:

(1) Where application for the withdrawal of class notation PMS and assignment of class notation CMS is made during special class survey, the survey unit is to examine all PMS items according to the equipment maintenance plan of PMS to confirm that the continuous survey may be restored directly after all due items for survey of PMS have been completed. The continuous machinery survey (CMS) scheme is to be prepared by the attending Surveyor in conjunction with the completion date of PMS survey items.

(2) When applying for the withdrawal of class notation PMS and assignment of class notation CMS during the second to the fourth PMS annual audits, the survey unit is to examine all PMS items according to the equipment maintenance plan of PMS to confirm that all due PMS items before applying for the withdrawal of class notation PMS have been completed. Items indicated by “H” among PMS items to be completed until the expiry date of the special survey are to be prepared into the continuous machinery survey (CMS) scheme and these continuous survey items are to be completed within the period between the date on the continuous machinery survey (CMS) scheme and expiry date of special survey.

(3)Where application for the withdrawal of class notation PMS and application for special class survey are made during special class survey, the survey unit is to examine all PMS items according to the equipment maintenance plan of PMS. After confirming that all due PMS survey items have been completed, items other than those indicated by “H” among PMS items completed within 15 months prior to the expiry date of the special survey period are to be overhauled to the satisfaction of the Surveyor, and the special survey may be restored.

(4) Where application for the withdrawal of class notation PMS and application for special class survey are made during the second to the fourth PMS annual audits, the survey unit is to examine all PMS items according to the equipment maintenance plan of PMS. After confirming that all due PMS survey items have been completed, items other than those indicated by “H” among PMS items completed within 15 months prior to the expiry date of the special survey period are to be overhauled to the satisfaction of the Surveyor, and the special survey may be restored. For the unit of first PMS period, where application for the withdrawal of class notation PMS is made during the second to the fourth PMS annual audits, conversion may be made directly to special class survey. When special survey is due, implementation is to be in accordance with requirements for special survey.

3.6.2 Where the survey unit finds that the unit has not dealt with the survey of PMS seriously, it is to report this to the Headquarters. The Headquarters will remind the owner or management company in writing as appropriate, or require the owner or management company to take corrective actions within a specified period and failure to do so will result in cancellation of the class notation PMS. On that occasion, the survey is to comply with the requirements of 3.6.1 above.

Items for Survey of PMS

PMS No.	Items	Details
G1000	Diesel engine and generator sets	
G1100	Cylinder cover	H* 1. Inspecting each connected flange around cylinder cover and valve hole for defects, e.g. crack, ablation, unevenness. 2. Inspecting cooling water jacket space for scale and corrosion; 3. 0.7 MPa hydraulic test of cooling water jacket space after repair or where necessary.
G1210	Piston	H Trunk piston 1. Inspecting piston head, suspension lug, piston ring groove, piston pin hole, piston skirt, etc. for crack and ablation, and repair or renewal to be made where necessary. 2. Measuring and recording.
G1240	Connecting rod	H 1. Inspecting the connecting rod for crack. 2. Inspecting bolts for crack, deformation, loosening, thread damage, and detection or renewal to be made where necessary
G1240	Piston rod Stuffing box	H 1. Cleaning, inspecting, measuring and recording. 2. Aligning the center and air clearance where necessary. 3. Disassembling, cleaning and inspecting the stuffing box, and renewing stuffing where necessary
G1310	Cylinder liner	H 1. Inspecting the cylinder liner for crack, scotch and excessive wear, etc. 2. Drawing out the liner for clean and inspection, and renewing the packing ring periodically in accordance with specifications. 3. Measuring and recording
G1120	Intake valve	H 1. Inspecting casing, core and spring of each valve for crack, whether the working face between valve and valve seat is in normal order, and detection of valve rod to be made where necessary. 2. Checking the safety valve with opening pressure not exceeding 1.4 times the maximum combustion pressure
G1130	Exhaust valve	
G1140	Safety valve	
G1150	Indicator valve	
G1160	Starting valve	
G1540	Transmission mechanism of intake valve	H 1. Inspecting and measuring clearance of roller. 2. Inspecting the push rod and push rod seat
G1550	Transmission mechanism of exhaust valve	
G1330	Frame and bedplate	H 1. Visual inspection for crack, deformation, damage, corrosion,etc. 2. Inspecting connection of frame, bedplate and cylinder block. 3. Hammering check of bolts and rivets for damage, fracture and tightening.
G1340	Crankcase & safety devices	H 1. Visual inspection. 2. The spring of explosion-proof door has no fracture and the valve is in order
G1370	Foundation bolts & packing blocks	H 1. Visual inspection; 2. Inspecting foundation bolts for loosening or fracture; 3. Inspecting the tightening of packing blocks and bolts.

G1420	Main bearing & shaft journal	H 1. Inspecting the bearing for crack, shelling, overheat, scotch and contact, wear conditions. 2. Inspecting the shaft journal for scotch, pitting corrosion, and detection to be made where necessary. 3. Gauging the wear-down of crankshaft by bridge gauge, and where necessary, measuring and recording eccentric deviation. 4. Measuring thickness of bearing pillow, bearing clearance and recording. 5. Measuring the shaft journal and recording when the crankshaft is lift.
G1450	Transmission mechanism of crankshaft	H 1. Tooth gear: inspecting the gear for crack, erosion, collapse, excessive wear, gear engagement and lubrication, measuring side clearance of the gear and recording. 2. Chain gear: inspecting links and rollers for crack, erosion, and wear, whether rollers are in order, and detection to be made and pre-tightening of chain adjusted where necessary.
G1510 G1520	Camshaft Camshaft bearing	H 1. Inspecting the procedure for tightening cam on the shaft. 2. Inspecting the surface of cam for crack, pitting corrosion, scotch and excessive wear. 3. The bearing may not be dismantled where it has been in good operation with normal appearance and has not been repaired. 4. Overhauling, and measuring and recording the size and eccentric deviation of shaft journal and the clearance of bearing.
G1740	High-pressure oil pump	H 1. Overhauling the pump case and spring for defects, e.g. crack, deformation. 2. Inspecting the plunger, inlet valve and outlet valve for defects, e.g. crack, wear, scotch, pit corrosion, burr. 3. Check periodically.
G1940	Exhaust-gas turbocharger	H 1. Inspecting the casing for crack, the cooling water jacket space for scale and the corrosion, and thickness measurement to be made where necessary. Hydraulic test with 1.5 times working pressure (not less than 0.4 MPa) for cooling water jacket space of the casing. 2. Lifting out and inspecting the rotor, blades, guide blade and diffuser for defects, e.g. crack, bending, deformation, collapse, corrosion, and dynamic balance test to be made and a report submitted where necessary. 3. Inspecting the bearing for defects and renewing it in accordance with the specifications.
G1950	Air cooler	H 1. To inspect whether the pipe and tube plate have deformation, damage, scale, corrosion, etc. 2. To wash the air and water jacket space. 3. To renew corrosion-proof zinc block. 4. Hydraulic test with 1.5 times working pressure is made at the side of air cooler.
G1350	Through bolt	H 1. To check the pre-tightening of through bolt in accordance with the specifications.
G1430	Vibration damper or antivibrator	H 1. Flexible base: Inspecting the vibration isolating rubber and spring for damage. 2. Back balance antivibrator: to inspect the tightening of back balance and bolt. 3. Hydraulic spring-type antivibrator: Opening the covers at both sides of antivibrator, inspecting whether the spring unit, locating pin and oil hole are in order and unblocked and inspecting oil quality.
G1840	Engine-driven air compressor	H Where engine-driven pump is a reciprocating pump: 1. Inspecting the reliability of engine-driven transmission mechanism. 2. Inspecting piston, piston rod, cylinder liner, air inlet valve, exhaust air (water, oil) valve and spring for crack, scotch and excessive wear. 3. Lifting out the piston and connecting rod, measuring the clearance of bearing and recording.
G1661	Engine-driven diesel oil booster pump	
G1631	Engine-driven diesel oil delivery pump	

G1781	Engine-driven freshwater pump	4. Effectiveness test and checking the safety valve H Where engine-driven pump is a rotating-type pump: 1. Inspecting the reliability of engine-driven transmission mechanism. 2. Inspecting the casing, impeller or gear or worm, bearing, shaft, shaft gland and components for crack, deformation, excessive wear, and renewal to be made where necessary. 3. Effectiveness test.
G1782	Engine-driven cooling freshwater pump	
G1680	Engine-driven cooling pump for fuel injuector	
G1751	Engine-driven lub. oil pump	
G1752	Engine-driven reduction gear lub. oil pump	
G1783	Engine-driven seawater circulating pump	
G1784	Engine-driven seawater cooling pump	
G1771	Engine-driven freshwater cooler	H 1. Cleaning seawater jacket space, renewing corrosion-proof zinc block and inspecting end cover gasket. 2. Washing freshwater jacket space. 3. Hydraulic test
G1772	Engine-driven lub. oil cooler	H 1.Cleaning seawater jacket space, renewing corrosion-proof zinc block and inspecting end cover gasket. 2. Washing freshwater jacket space. 3. Hydraulic test.
G1810	Partial pipeline of starting air system	H 1. Visual inspection for corrosion, damage or leakage trace, and hydraulic test or thickness measurement to be made where necessary. 2. Disassembling some valves and pipeline lengths of starting air system for internal inspection. 3. Checking the safety valve of starting air manifold (if any) with the pressure not exceeding 1.1 times working pressure. 4. Inspecting the tightness.
G1410	Crankshaft	H 1. Inspecting the shaft journal of crankshaft for scotch, pitting corrosion, mechanical damage and wear, inspecting the fillet and oil hole for crack. 2. Inspecting crankshaft cylinder liner or press fit or loosening or offset. 3. Inspecting the reliable tightening of flange connection for sectional crankshaft and of back balance for assembled crankshaft. 4. Measuring the shaft journal of crankshaft and recording. 5. Measuring the crankshaft deflection and recording.
E3000	Main distribution board and accessories	H 1. Measuring the insulance of each branch. 2. Inspecting the working condition under operation and recording the indicated values of each instrument and working conditions. 3. Testing the interlock of shore power switch and main switch of each generator. 4. Primary instruments to be sent for calibration in accordance with the metering requirements.
E1100 (E2000)	Main generator	H 1. Operation test of generator under working load and inspection of working condition. 2. Measuring and recording the clearance of rotor and stator of each generator or dismantling, inspecting the bearing and measuring the wear-down. 3. Single and parallel operation test of overhauled or repaired generators under working load, inspecting speed governing of prime motors and load distribution function of generators, and recording the details.

E3300 S4300	Protection system of main power station & emergency power station	H 1. Checking the overload and delay protection, under-voltage protection, reverse power protection (or reverse current protection), automatic unloading protection, etc. of each motor, recording protective setting and delay time in detail..
GX920 (S4320) (S4310)	Safety & protection device of auxiliary diesel engine	H 1. To test the protective functions such as inlet pressure of lub. oil for diesel engine is overdue low, outlet temperature of cooling fresh water is overdue high, etc. and to record each protective action value in detail.
Air compressed system		
A1200	Main air compressor	F ** 1. General visual inspection for leakage and operation. H 1. Dismantling the cylinder head and inspecting valve hole and water hole. 2. Inspecting cooling water jacket space for scale and corrosion. 3. Inspecting, measuring the wear of crankshaft journal and bearing and recording. 4. Measuring and recording each grade of cylinder liners. 5. Lub oil condition,and effectiveness test of safety valve. 6. Opening the end cover of intercooler and inspecting cooling pipeline and sealing condition.
A1300	Auxiliary air compressor	
A2300	Accessory safety device	
S5300	Emergency air compressor and air bottle	F 1. Inspecting the external corrosion. H 1. Effectiveness test of emergency air compressor. 2. Airtightness test of outlet valve and drain valve of emergency small air bottle. 3. Check of safety valve.
A1410 A1510 A1430 A1530 A1440 A1540	Main and auxiliary air bottles, working air bottles and safety valves and other accessories	F 1. General visual inspection. H 1. Opening big and small manholes for internal cleaning. 2. Inspecting air bottle for internal corrosion. 3. Inspecting various valves for airtightness. 4. Checking safety valve. 5. Hydraulic test with 1.3 times working pressure for suspect air bottles.
Essential pumps and motors		All kinds of pumps are disassembled in accordance with the specifications
B1210 B1220	Seawater pump & motor for main engine	F 1. General visual inspection of the pump group and flange connection, and the tightening of seat. H 1. Inspecting shaft gland for wear and leakage. 2. Inspecting the impeller for corrosion and dynamical balance. 3. Measuring and recording the clearance between impeller and pump case. 4. Inspecting the wear of blade and tooth face, measuring and recording the clearance. 5. Inspecting the shaft gland for wear. 6. Inspecting the bearing for wear. 7. Effectiveness test after assembly. Key inspection in accordance with different types of pumps: Centrifugal pump: H 1. Inspecting suction pipeline for corrosion and self-priming capability. 2. Inspecting of impeller and blades for cavity corrosion. Gear pump: H 1. Measuring and recording the clearance between gear plane and end cover of pump case. Reciprocating pump: H 1. Inspecting the wear and the opening of piston ring. 2. Measuring and recording the size of pump cylinder. Screw pump: H 1. Watching the noise and stability during operation. 2. Inspecting by-pass safety valve for reliability. Sled (vane) pump: H 1. Measuring and recording the clearance of vane in chute. 2. Measuring and recording the clearance of vane end surface.
B1410 B1420	Seawater pump and motor for berthing	
B2200	Ballast pumps and motors	
B2300	Equalizing pump & motor	
B2400	General service pump & motor	
B4200	Sanitary pump and motor	
F2700	Fresh water pump and motor	
T6500	Boiler feedwater pump and motor	
T6400	Boiler Circulating water pumps and motors	
T2300	Boiler fuel oil pump and motor	
S1100	Fire pump and motor	

S5100	Emergency fire pump and driving device	Inspection of driving motors of various pumps: H 1. Measuring and recording insulance of motors. 2. Replacing the ball bearing or roller bearing and recording as the circumstance dictates and according to overhaul period. 3. Effectiveness test after assembly.
K1210 K1220	Bilge pump and motor	
F4200	Seawater pump of fresh water generator and motor	
F4500	Condensate pump of generator and motor	
O1410	Diesel oil transfer pump and motor	
K1410 K1420	Residual oil pump and motor	
F3200	Daily service fresh water pump and motor	
F3300	Hot water circulating pumps and motors	
F5200	Drinking water pump and motor	
F3210 F3220	Fresh water transfer pump and motor	
F4300	Fresh water generator vacuum pump set	
F4400	Salt water pump of generator and motors Vacuum air pump Feed water jet pump Bilge water jet pump All Other engine-driven pumps	
	Motors of various important equipment (see pump sets in mechanical part)	F 1. Various motors is to be inspected under normal working conditions; 2. Running test is to be conducted on steering gear. H 1. Running test is to be conducted on the motors overhauled or repaired, and detailed test records to be made.
Oil purifier		
O2410 O2420	Diesel oil purifier and motor	H 1. Disassemble the oil purifier, and inspecting each component; 2. Inspecting the vertical spindle for bending and wear. 3. Inspecting bearing for wear and measuring clearance. 4. Inspecting worm wheel and worm for engagement and wear of teeth. 5. Measuring insulance of motor and replacing ball bearing or roller bearing as the circumstance dictates and recording. 6. Effectiveness test after assembly.
L2200	Lubricating oil purifier motor	
Mooring system		
D2100	Windlass	F 1. Visual inspection and effectiveness test for windlass. H 1. Inspecting gear, chain sprocket, bearing, brake ribbon (shoe)，etc.
D2120	Prime motor	
D2130	Driving	
D2140	Control unit	

D2150	Operating	2. Inspecting hydraulic cylinder, rotor, blade, bearing, sealing device, etc. 3. Inspecting the tightening of windlass base. 4. Steam windlass: inspecting cylinder, piston, piston ring, crankshaft, bearing, etc. and recording. 5. Inspecting valves, safety valve, etc. on each pipeline. 6. Measuring the insulance of motor and inspect ball bearing or roller bearing.
D2170	Braking devices	
Piping system		
K1100	Bilge pipe, strainer, bilge well suction, sludge pipe	F 1. Effectiveness test. 2. Visual inspection of bilge well. H 1. Effectiveness test. 2. Inspecting suction screen and mud box for cleanness. 3. Action test of operating valve of emergency bilge suction in engine room.
F3000 B4150 F5000	Fresh water pressure tank, sanitary tank (seawater pressure tank) and potable fresh water tank	F 1. General visual inspection. H 1. Opening big and small manholes for internal cleaning. 2. Inspecting air bottle for internal corrosion. 3. Inspecting various valves for airtightness. 4. Checking safety valve. 5. Hydraulic test with 1.3 times working pressure for suspect air bottles.
B2100 B2500	Ballast pipe, valve and ballast operating system	F 1. Effectiveness test. H 1. Effectiveness test. 2. Operating test of remote control valve
T1000	Pressure strainers, heaters, coolers and various strainers of fuel oil, lub. oil, cooling water, boiler water	H 1. Disassembling, cleaning and inspecting screen, sealing, pipe, etc. 2. Tubular heater or cooler: Opening the cover for internal washing, and external chemical washing of cooler. Inspecting watertight riveting of tube plate of and internal erosion. 3. Plate-type heater or cooler: Opening and scouring clamp plate, and inspecting for corrosion and sealing strips. 4. Visual inspection and effectiveness test after assembly
H6000	Fuel oil tank separated from hull	H 1. Inspecting internal structure. 2. Inspecting heating pipe. 3. Hydraulic test after overhaul.
Emergency equipment of fire extinguishing system		
S1200 S1300 S1400 S1700	Fixed fire extinguishing system (foam, CO_2, halide, dry powder)	F 1. Inspecting piping, control system, marks and operational instructions. 2. Inspecting ventilation, illumination, communication, instrument, etc. in rooms/stations. 3. Visual inspection of fire-extinguishing agent containers, valves, etc. 4. Measurement of stored quantity of fire-extinguishing agents and passage test of pipeline to be made once two years. 5. Action test of quick-closing valve of oil tank.
H4000	Escape route in engine room and boiler room	F 1. Inspecting escape route for unobstructed passage, especially exits not to be locked. 2. Inspecting whether self-closing devices of exit of engine and boiler rooms are effective.
H4100	Steam boilers, hot oil heaters, and pressure vessels, including all the safety devices	F 1. Visual inspection. 2. Checking safety valves.

S2210 S2230	General alarm system Alarm system for releasing of fire-extinguishing agent	F 1. Effectiveness test for inspecting the operation of each switch, button, alarm bell. H 1. Effectiveness test for inspecting the operation of each switch, button, alarm bell. Recording details of test, repair, renewal, etc.
S2100	Fire detection and fire alarm system Fixed combustible gas and hydrogen detection and alarm system Portable combustible gas and hydrogen detection and alarm system	F 1. Effectiveness test on the fire detection and fire alarm system, and the fixed and portable combustible gas and hydrogen detection and alarm systems on the board, and take notice if there is corrosion or damage on the base of the detector, and if wiring of the detector and junction box meets the requirements of the degree of protection and explosion-proof rating. 2, When the two systems are connected with the ESD system, Simulation test to be carried out in accordance with the approved logic diagram and the actual situation of the units, and recorded. H 1. Simulation test on the fire detection and fire alarm system, fixed combustible gas and hydrogen detection and alarm system, and portable combustible gas and hydrogen detection and alarm system; recorded all the test cases, and recorded in detail the repair and replacement of parts, etc.
S1180	Sprinkling system for fire control (deluge system automatic water spray system, life building water curtain system, drill floor deluge system, torch arm drencher system, cabin local water mist system, etc.) Additional marking of the helicopter deck and helicopter foam extinguishing	F 1. Effectiveness test of control system. H 1. Effectiveness test of the system and recording details of repair,component renewal, etc.
S5240	Fan and oil pump emergency cut-off device	F 1. Effectiveness test as practicable as possible. H 1. Effectiveness test of each emergency cut-off device and recording details of test, repair, etc.
S4200	Emergency generating set and emergency accumulator battery	F 1. Emergency generating set: Power supply test by manual & automatic (if any) starting and automatic switching on, and recording time of automatic starting & automatic switching on for power supply. Manual starting to be tested three times if a secondary starting source is provided. 2. Emergency storage batteries: discharge test for automatic operation after simulated cutoff of main power source. H 1. Operation test of overhauled or repaired generating set under working load, recording details of overhaul and test. 2. Charging and discharging test of emergency storage batteries in rated condition and recording.
S4400	Emergency switchboard and emergency charging and discharging board	F 1. Inspecting the working condition under operation. H 1. Measuring the insulance of each branch. 2. Effectiveness test of power distribution and supply, and recording indicated values of each instrument and working conditions. 3. Testing the interlock of main switchboard and shore power switch (if any).

S4520 S4530	Emergency lighting, temporary emergency lighting, and additional lighting (if provided)	F 1. Measure the insulance of each branch and confirm wiring of each emergency lamp body, base and connection box satisfy requirements of the level of protection and the explosion-proof class. 2. Function test: each lamp shall be free of damage or dirt, and can work normally and has a clear sign of emergency lights.
S4600	UPS Uninterruptible Power	F 1. Check UPS battery, and test insulation resistance of each shunt. 2. Functional test: test protection, alarm, bypass, uninterrupted power supply and response and other functions of the of UPS system, to confirm if it can work normally.
Distribution box, cable and others		
E5980	Insulance of powersystem on board	F 1. Testing and recording the insulance of installations, such as generators, motors. H Measuring and recording the insulance of the following equipment under hot condition: 1. Each generator, motor, main lighting transformer and emergency lighting transformer (if any). 2. Main switchboard, emergency switchboard, emergency battery charging and discharging panel, power distributor. 3. Each power supply branch switch and cable for the items in subparagraph 2 above. 4. Various electrical heaters.
E5990	Insulance of lighting system on board	F 1. Testing and recording insulance of each lighting system. H Measuring and recording insulance of the following equipment in hot condition: 1. Each lighting distributor, power supply branch switch and cable. 2. Each navigation light, signal light and explosion-proof light .
E5X10	Cables	F 1. Inspecting cables for damage. H 1. Renewed and added cables to be in compliance with existing rules and detailed data of cable specifications, current-carrying capacity, etc. to be provided.
E5X20	Distribution box and accessories	F 1. Inspecting whether each distribution box is in the normal condition. H 1. Inspecting each branch switch, internal wiring, safety grounding, etc., and record repair damages and repairs.
N3420 N3410	Navigation light, signal lamp, and helicopter deck visual aids system	F Alarming for navigation light and duplicate supply failures. 2. Effectiveness test and keep recording.
N1530 N1540	Internal communication facility (telegraph and sound powered telephone)	F 1. Testing all communications between bridge and engine or centralized control room (including telegraph and sound-powered telephone). 2. Testing communications between bridge and steering gear room.
P4200 p4320 B4230 P4330 B4240 P4340 P4500 P4630	Steering gear (Electric) main motor and auxiliary motors Controller of the main motor and auxiliary motor Controls of automatic control equipment of the main motor and auxiliary motor Rudder angle indicator	F 1. Steering test of main & auxiliary steering gears and recording each parameter (steering time, maximum rudder angle, etc.). 2. Checking rudder indicator by actual rudder angle. 3. Effectiveness test of emergency steering. 4. Effectiveness test of power supply from duplicate sources.

R5200 R4240 T1430 E1430 T3430 R4260 R4250	Ventilator set Ventilator in cargo hold Ventilator in engine room (including ventilators for auxiliary engine room and oil separator room) Forced ventilation for boiler Ventilator in pump room Ventilator in CO2 room	F 1. Effectiveness test of each ventilator set. 2. Effectiveness test of emergency shutdown of ventilator sets. H 1. For ventilators having operated for a long time, operational test to be made after dismantling, replacing or repairing the bearing of motor, and maintenance and operational parameters to be recorded.
Survey items to be added for ships with the class notation AUTO-0, MCC and BRC		
U1000	Remote control system for main engine	
U2000	Automatic control system of power plant	F 1. Effectiveness test of automatic control system of power plant. H 1. Inspecting the standby generating set for starting and being switched on automatically to supply power within the required time in a simulated condition of failure and stopping of the generating set in operation. 2. Inspecting primary pumps serving main and auxiliary engines for starting automatically in sequence after restoring power supply. 3. For two or more generators operating parallel, simulating failure and stopping of one generator, inspecting the actions of automatic unloading device and the standby generator for starting, being switched on and distributing load automatically within the required time, and recording details of such tests.
U3000 (U4000)	Automatic control system of boiler	F 1. Effectiveness test of automatic control system of boiler. H 1. Testing protective function for automatically stopping the operation of boiler in case of limited low water level, flame failure, excessive steam pressure, etc., inspecting visual and audible alarm and recording test process and data. 2. Testing automatic control procedure of boiler, especially conditions prior to scavenging. 3. Testing function of emergency stopping buttons for boilers in centralized control room.
U5100	Safety and protection devices of the main engine	F 1. Simulating automatic stopping and reduction conditions of main engine and inspecting protective functions of safety system. H 1. Cutting off main power source of safety system, inspecting the system for being capable of automatically converting power source to independent standby storage batteries and giving visual and audible alarm. 2. Simulation test of automatic reduction and stopping functions of main engine in case of excessively low lub. oil inlet pressure, excessively high temperature of cooling water, excessive concentration of oil fog in crankcase, etc., checking the setting of each sensor and recording the details.

U5600	Engine room alarm system	F 1. Effectiveness test of alarm system for normal operation of each visual and audible alarm unit. When main alarms are given, e.g. alarms for main engine, generating set, boiler, primary auxiliary machinery, high level of bilge well in engine room and fire in engine room, the failure logging device (if any) is to be capable of printing and recording correctly. H 1. Cutting off main power source of alarm system, inspecting the system for being capable of automatically converting power source to independent standby storage batteries and giving visual and audible alarm. 2. Testing at least the following alarm items (simulation test may be made): a. excessively low starting air pressure and failure of third automatic starting of main engine; b. low lub. oil inlet pressure of both main engine and auxiliary engine; c. low water level of boiler; d. power failure, loss of A.C. phase, etc of steering gear; e. high level of bilge well and long operation (or excessively frequent starting) of bilge pump in engine room. 3. Inspecting alarm system for extended alarming function (if any) and automatically starting engineers' alarm in case of no response within the set time, and inspecting engineers' alarm signal for being clearly audible in engineers' accommodation.
U6X00	Condition monitoring system (if provided)	F 1. Effectiveness test of condition monitoring equipment. H 1. Baseline data and measurement data of condition monitoring equipment kept on board. 2. Checking measured data of condition monitoring equipment with baseline data to ensure reliability of equipment when overhauling the equipment. 3. Overhaul and maintenance of monitored machinery and electrical installations may be carried out in accordance with the specifications of condition monitoring equipment provided that the condition monitoring techniques are proper and Reliable.
L3240 O3240 O3340 F2240 F2340 B1240 F2440 L3340 F2540 T6540 O5240	Automatic switch of main pump sets Main engine lubricating oil pump Main engine fuel pump Fresh water cooling pump Sea water cooling pump Piston cooling pump (when individually set) Fuel valve cooling pump (when individually set) Boiler feedwater pump Boiler fuel oil pump, etc.	F 1 Effectiveness test of automatic switching of main pump sets, recording automatic switch setting, adjustment and maintenance of each pump.
EX000	Explosion proof equipment in hazardous areas	F 1. Confirm if the explosive-proof grade of the electrical equipment in the hazardous areas meets grade requirements of the hazardous areas according to the approved hazardous areas drawing; 2. Inspecting if there is corrosion and damage on the explosion-proof equipment, incoming lines and installed base in the hazardous areas, and if there are defects that affect the explosion-proof performance; 3. Inspecting the explosive-proof grade and type of the replaced explosion-proof electrical equipment to meet the explosion-proof requirements of corresponding areas, and keep records accordingly.

W0000	Personnel warning system (statuslight of plant)	F 1. Inspecting the appearance and wiring of the lamp body; confirm if lamps meet corresponding requirements for the level of protection and the explosion-proof grade. 2. Function test; each lamp to be free of damage or dirt, and can work normally.
Cargo oil area		
C7000	Cargo oil pump, bilge pump, stripping pump, and segregated ballast pump	F 1. General inspection of cargo oil pump, bilge pump, stripping pump and segregated ballast pump. 2. Inspecting the bases of cargo oil pump, bilge pump, stripping pump and segregated ballast pump, as well as the reliability of gaskets and binding bolts, corrosion of bedplate and condition of locating pins.
C7200 C7300 C7400	Cargo oil pump	H 1. Disassembling cargo oil pump and prime motor, inspecting each component for obvious corrosion, deformation, wear, measuring clearance of each component and recording. 2. Inspecting shaft gland for leakage. 3. Aligning the shafting and recording. 4. Functional test of automatic control system and alarm system of prime motor and recording of parameters. 5. Action test of emergency and remote shutdown.
C7200 C7300 C7400	Stripping pump	H 1. Disassembling stripping pump and prime motor, inspecting operation of each component, measuring clearance and recording. 2. Inspecting shaft gland for leakage. 3. Action test of emergency and remote shutdown.
C7550	Sealing device for pump drive assembly	H Disassembling, inspecting and testing sealing device for pump drive assembly penetrating bulkhead.
C7100	Piping and fittings	H 1. Disassembling, inspecting, and hydraulically testing piping and fittings of cargo oil and ballast pumps and recording.
H3200	Venting system of cargo oil tank	F 1. General inspection of venting system (including breathing valve) in cargo oil tank and slop tank. H 1. Disassembling and inspecting partial venting pipe in cargo oil tank. 2. Disassembling and inspecting the breathing valve in cargo oil tank, checking pressure and inspecting flame screen. 3. Disassembling and inspecting the quick venting valve in cargo oil tank fitted with IGS, checking pressure and inspecting flame screen.
C7730 C5240	Crude oil tank washing machine heater	F 1. Visual inspection of crude oil washing system. 2. Visual inspection for washing heater.
C7730	Crude oil tank washing machine	H 1. Disassembling and inspecting crude oil washing machine and action test.
C5240	Washing heater	H 1. Disassembling washing heater, inspecting tube plate for corrosion, inspecting zinc plate, pipe and hydraulic test. 2. Disassembling, inspecting and testing the safety valve of washing heater, testing automatic temperature control system and automatic level control system. 3. Inspecting the valve or other mechanisms separating the heater from crude oil washing piping.
T5400	Cargo oil heating system	H 1. Inspecting cargo oil heating system and accessories (safety valve, reducing valve, automatic pressure regulator valve, regulator, etc. of pipeline). 2. Internal inspection, thickness measurement, hydraulic test of partial cargo oil heating pipe and recording. 3. Inspecting the fixing of heating pipes in cargo oil tank.

K5000	Ventilation system of cargo oil pump tank	F 1. General inspection for ventilation system of cargo oil pump tank. H 1. Disassembling and inspecting the ventilator in cargo oil pump tank. 2. Disassembling, inspecting and testing the sealing device of shaft drive assembly for ventilator in cargo oil pump tank that penetrates bulkhead. 3. Emergency shutdown of ventilator and effectiveness test of emergency vent. 4. Visual inspection of ventilator and inspecting the fixing of ventilator. 5. Inspecting the interlock of ventilator and illumination of pump room.
U7000	Relevant instruments of cargo oil & ballast control stations	F 1. General inspection of cargo oil and ballast control stations and relevant equipment. H 1. Checking relevant instruments of cargo oil and ballast control stations by contrast, e.g.: Steam inlet pressure gauge of steam turbine, tachometer of cargo oil pump, cargo outlet pressure gauge, cargo outlet thermometer, seawater outlet thermometer of washing heater, outlet pressure gauge of ballast pump, hydro-oil outlet pressure gauge of hydraulic pump station, and voltmeter, ammeter and control air pressure gauge of control station. 2. Inspecting the remote control valve and valve position indicator of cargo oil system for hydro-oil leakage and correct indication. 3. Test of high level alarm for pump room bilge. 4. Effectiveness test of alarming for combustible gas concentration.
Inert gas system		
S7200	Inert gas system	Inspection of inert gas system (IGS) F 1. General inspection of pipeline and components, serious corrosion, water and oil leakage to be dealt with if found. 2. Action test of remote control, automatic control, soot blower, etc., as far as possible. 3. Alarm test by simulation for key alarming points of IGS. 4. Checking oxygen content meter.
S7200	Automation control of inert gas system	H 1. Inspecting the action and delay time of automatic control regulating valve under different alarm levels and recording. 2. Inspecting the quality performance parameters (set and measured values of outlet pressure of inert gas), reaction sensitivity and accuracy of automatic control for the system.
S7130 S7150 S7400	Inert gas generator, washing tower, fan, and deck water seal	H 1. Disassembling and inspecting inert gas generator, and effectiveness test to be made. 2. Disassembling scrubber and inspecting nozzle, screen, case, protective coating, discharging pipe. 3. Disassembling fan and inspecting impeller, shaft, case, and shaft seal, and test conversion with stand-by fan. 4. Disassembling deck water seal and inspecting internal coating, case, damper, passage of discharging pipe and operation of overboard discharging valve. 5. Disassembling pressure vacuum breaker and inspecting internal corrosion.
S7170	Cooling pump	H 1. Disassembling and inspecting the cooling pump of scrubber, measuring and recording clearance, and test conversion with stand-by pump. 2. Disassembling and inspecting deck water seal, measuring and recording clearance, and test conversion with stand-by pump.
Self-elevating unit		
E1000	Jacking gear/locking devices	Inspected and maintained according to maintenance manual of manufacturer.

E1100 E1200 E1300	Jacking gear Jacking gear shaft Reduction gear case	F 1. General inspection of gear case,for leakage or crack and know the welding. H 1.Inspected for wear conditions of gear shaft, and shaft journal for scotch, 2. Inspected for meshing of each big and small gear, and if there is any crack on the tooth root; 3. Inspected for wear condition of tooth surface, measure and record; 4Inspected for lubricating oil systems.
M1100	Motors with brake discs	F 1. Inspected for protection, wiring and grounding of the shell of motor. H 1. Inspected for state of brake disks;
M1200	Motor control center (MCC)	F 1. Visual inspection; 2. Insulation measurement.
M1300	Inverse power resistance	F 1. Visual inspection; 2. Insulation measurement.
M1400	Central control console	F 1. Visual inspection; 2. Insulation measurement; 3. Function test.
Shutting-pin type hydraulic Jacking sytem		
J1000	Jacking ring beam, pin, and big positioning bolt	F 1. General inspection of jacking ring beam, steel casting, pin, big positioning bolt and hydraulic oil tank for leakage or crack and the welding conditions. H 1. Inspected for moving parts, according to the instruction manual; 2. Replace seals and other wearing parts. 3. Record the running test.
Y1000	Hydraulic unit	
Y1100	Hydraulic oil tank	
Y1200	Hydraulic motor	
Y1300	Hydraulic oil cylinder	F 1. Inspected for protection, wiring and grounding of the motor shell. H 1. Disassembling and inspecting the motor according to the instruction manual.
Cantilever beam/ drill floor skidding device		Refer to Jacking gear/locking devices
S1000	Locking pawl, pin, and cylinder base	F 1. General inspection of the hydraulic oil cylinder, locking pawl, pins, and cylinder bases for leakage or crack and the welding conditions. H 1. Disassembling and inspecting the motor according to the instruction manual;. 2. Replace seals and other wearing parts. 3. Record the running test.
Y1000	Hydraulic unit	
Y1100	Hydraulic oil tank	
Y1200	Hydraulic motor	
Y1300	Hydraulic oil cylinder	
M1100	Hydraulic motor	F 1. Inspected for protection, wiring and grounding of the motor shell. H 1. Inspected for disassembling motor according to the instruction manual.
	Seawater lifting device	Refer to Jacking gear/locking devices

	Drilling system	
D1000	Derrick and substructure	F 1. Inspected of columns and diagonals on the derrick for bending, deformation, damage, crack, fracture and corrosion and other defects; 2. Inspected of guide roller of the raising line on the derrick for damage and wear, and there is good lubrication. 3. Inspected of lifting A-bracket for no damage and deformation, and wear of pin holes; 4. Inspected for integrity of ladder and handrail and pedal fastness; 5. Inspected for integrity of the body of each level of units and handrail; 6. Inspected for integrity of pin connection; 7. Inspected for integrity of bolt connection and fastness; 8. Inspected for skidding of derrick and technical condition of locking devices; 9. Inspected of substructure for no bending, deformation, damage, weld cracking and corrosion and other defects.
D1100	Crown block and travelling block	F 1. Inspected for fasteners by hammering to ensure that there is no looseness; 2. Inspected of pulley groove for no crack; 3. Inspected for wear condition of pulley groove; 4. Surface detect the defects on the bearing of the crown block; 5. Inspected for wear of bearing of crown block; 6. Inspected for swing of the worn pulley.The largest oscillating quantity less than 0.4% of the pulley diameter; 7. Inspected of travelling block for no excessive deformation, and no crack on all welds.
D1200	Draw Works	F 1. Check the draw works to ensure that there is no abnormal vibration and noise under the working status;Check the gas, oil and water line sealing; Touch the draw works body to ensure that there is no high temperature, Check the working position to ensure good lubrication; 2. Check the function of the main brake, to ensure that there is no excessive wear. 3. Check the function of the auxiliary brake. 4. Check the function of the emergency brake 5. Check the funtiion of the Crown-O-Matic 6. Check the records of drill-line maintence and replacement 7. General inspection of Frame cover wheel assembly, to ensure that there is no scratch and crack H 1. Detailed visual inspection of all parts of the Draw works in the disassembly condition 2. Performance test after assembly again.
D1300	Rotary table	F 1. Check the Rotary Table to ensure that there is no abnormal vibration and noise under the working status; Touch the draw works body to ensure that there is no high temperature, Check the working position to ensure good lubrication; 2. Check the operating flexibility of brake device. H 1. Check the wearness condition of the master bushing and quadrel 2. Check the mesh condition of of Gear assembly and the abrasion condition of quadrel O.D. and rig floor hole.

D1400	BOP	F 1. General inspection of BOP's fastness, and sealed of oil pipe ; 2. Remove the head cover rubber core and the pistons of annular preventer, check the head cover, chamber, pistons, bearing ring, rubber core, seal ring slot, and sealing gasket groove and the condition of the connectors, and replace the damaged parts; 3. Disassemble part of the ram BOP, check the technical conditions of the chamber l, sidedoor, ram assembly, ram shaft, locking shaft, seal ring, and connectors, replace the damaged parts, and repair the damaged threaded holes and sealing surface; 4. Disassemble annular preventer, check the size of the main parts, check the abrasion loss of through-hole cylindrical surface on the chamber body, check the abrasion of wear ring, replace all the seals and rubber cores, replace wear ring and seal ring, and repair damaged parts; 5. Disassemble the ram BOP ,check the size of the main parts,, measure the abrasion loss of through-hole cylindrical surface on the chamber body, check the dimensions of the ram shaft, locking shaft, and hinge assembly, replace all seals and rubber cores, and repair damaged parts; 6. Hydraulic test on the closed chamber of annular blowout preventer; 7. Hydraulic test on the open chamber of annular blowout preventer; 8. Hydraulic test on the closed string of annular blowout preventer; 9. Hydraulic test on the closed chamber of ram blowout preventer; 10. Hydraulic test on the open chamber of ram blowout preventer; 11. Low-pressure seal performance test on the ram blowout preventer (testing pressure: 1.4Mpa); 12. High-pressure seal performance test on the ram blowout preventer; 13. Seal performance test on the annular blowout preventer on the premise of sealing drills and empty wells; 14. Low-pressure (1.4MPa) and high-pressure (rated working pressure) seal performance tests on the ram blowout preventer.
D1500	Top drive	F 1. Check the operating flexibility of moving parts; 2. Check the connection fastness of bolts; 3. Check the integrity of sealing; 4. Check the easily wearing parts to ensure that there is no abrasion and crack; 5. Flaw inspection on the surface of lifting rings, lifting ring pin holes, lifting ring pins and central tubes; 6. Detailed visual inspection of all parts of the top drive in the disassembly condition; 7. Internal flaw inspection on the lifting rings, vicinity of lifting ring pin holes, central tubes, and lifting ring pins.
D1600	Hook	F 1. Check the integrity of lubrication, and the flexibility of moving parts; 2. Check the wear condition of pins and pin holes free of cracks; 3. Surface flaw inspection of easily wearing parts; 4. Check the operating flexibility of spring bolts and lock pins; 5. Check the worn parts of lifting lugs and hooks to ensure that there is no excessive abrasion and crack; 6. Disassembly inspection of hooks; 7. Internal flaw inspection of lifting rings, hooks and other connection parts.
D1700	Driller control device	F 1. General visual inspection of the driller's console, choke and kill manifold console and remote console; 2. Check if the handles are in correct position; 3. Check of the display positions are consistent with on and off positions; 4. General visual inspection of accumulators; 5. Check if the pressure of accumulators system and pipes is correct; 6. Check the oil and pneumatic line installation and sealing; 7. Check if the electric pump and air pump work normally; 8. Check if the handle of the reversing valve for the blind ram has been limited.

D1900	Mud pump, cementing pump and mud system	F 1. Listen carefully by use of listening rods to ensure that there is no metallic rapping at the power end or metallic and liquid rapping at the fluid end; 2. Check the pumps to ensure that there is no strong vibration and abnormal noise in the working status, and check all caps and valve covers and cylinder heads on the pumps; 3. Touch the pump body and bearing to ensure that there is no high temperature; 4. Check the fluid supply of the spray pump, and check the cylinder liner and piston to ensure good lubrication; 5 Visual inspection of the air chamber (ripple compensator) to ensure normal pressure; 6. Visual inspection of the safety valve, and ensure that the safety pin has spare parts; 7. Check the pump body, cylinder liner, cylinder head, piston, connecting rod, connecting rod bearing, crank, crank bearing, combination valve, etc. under the condition of disassembly; 8. Check the easily wearing parts to ensure that there is no excessive wear. H 1. Check the crank to ensure that there is no scratch and crack, particularly, to ensure that there is no crack at the corner of the cranke; 2. Check the safety valve under the condition of disassembly, and re-verify the pin hole position to determine the opening pressure of the safety valve; 3. Performance test after assembly again.
DP (Dynamic Position System)		
X1100	Switchboard	F 1. Measure the insulation resistance of all shunt circuits. 2. Check the switchboard to ensure that there is no abnormal condition under the working status. 3. Test interlocks function of all switches. 4. The main instrument is sent to qualification test according to the measurement requirements.
X2100	Propulsion transformer	F 1. Measure the insulation resistance. 2. Check the working condition under the working status and take the working record.
X2200	Earthing transformer	F 1. Measure the insulation resistance. 2. Check the working condition under the working status and take the working record.
X2300	Earthing Resistor	F 1. Measure the insulation resistance. 2. Check the working condition under the working status and take the working record.
X2400	Propulsion Motor	H 1. Measure the motor insulation resistance. 2. Exchange the ball bearing or roller bearing and take record in the case of repair cycle. 3. Take the function test.
X2500	Inverter for propeller	F 1. Check the working condition under the working status and take the working record.
X2600	Propulsion Drive control unit	F 1. Check the working condition under the working status and take the working record.
X2700	Propulsion Control	F 1. Check the working condition under the working status and take the working record.

X3600	Propeller	H 1. Inspeated for the integrity of anti-rope , rectifying facilities, fastening devices, and bending, deformation and corrosion. Inspeated for screw pitch inspection when necessary; 2. Inspeated for clearance of blades and air deflector for the propeller with air deflector, inspection of corrosion of the air deflector belt, inspection for damage or crack on surface of the air deflector and hanging bracket, and corrosion of welds on connection parts of the ships and crack.
X3200	Local control box	F 1. Inspeated for working condition, and keep records.
X3100	Propeller remote control system	F 1. Inspeated for working condition, and keep records.
X3000	Network	F 1. Confirm that network equipment and circuits are normal; 2. Confirm the normal work of the network nodes and the condition of network redundancy.
X3300	Main DP control station	F 1. Inspeated for working condition, and keep records; 2. Mutual transfer with the standby system.
X3400	Standby DP control station	F 1. Inspeated for working condition, and keep records; 2. Transfer with the main system.
X3500	Joint operating lever system	F 1. Inspeated for working condition, and keep records; 2. Transfer with the main and standby systems.
X4000	Software	F 1. Confirm upgrade software versions, and keep records.
X4100	PMS field workstation	F 1. Visual inspection of equipment; 2. Inspeated for working condition, and keep records.
X4200	Operator stations	F 1. Visual inspection of equipment; 2. Inspeated for working condition, and keep records.
X5000	Location reference system (for example: HIPAP, MRU, DGPS / GLONASS, GYRO, and WIND SENSOR)	F 1. Visual inspection of equipment; 2. Inspeated for working condition, and keep records.
X6000	DP printer	F 1. Visual inspection of equipment; 2. Inspeated for working condition and keep records;
X6100	DP alarm system	F 1. Visual inspection of equipment; 2. Inspeated for working condition, and keep records.
P1000	Shafting (Dynamic Positioning System)	
P1100	Intermediate shaft and bearing	F 1. Inspeated for crack of shafting and bearing base and fastening, etc.. H 1. Open the top cover to check wear of shaft journal; 2. Measure and record the jerk value of shaft journal; 3. Inspeated for fastness of flange connection bolts. 4. Inspeated for smoothness of cooling water pipes; If the shafting centering is good after the check, the lower half bearing may not be checked by disassembly.
P1500	Thrust shaft and bearing	F 1. Inspeated for bearing shell and seal and crack; 2. Inspeated for self-alloy of the thrust block, wear and looseness; 3. Inspeated for working condition of the lubricating oil system; 4. Inspeated for working condition of cooling water. H 1. Measure and record thrust bearing clearance.
P1000	Propulsion control system	

P1400	Reduction and increasing gears	F 1. General inspection of gear box leakage or crack and know the fastening. H 1. Inspeated for wear of gear shaft, and scotch on the shaft journal; measure and record the jerk value of the shaft journal; 2. Inspeated for meshing of each big and small gear, and crack on the tooth root; 3. Inspeated for wear condition of tooth surface, measure and record clearance; 4. Inspeated for lubricating oil systems.
P1300	Clutch	F 1. General inspection of leakage and check the fastening of anchor bolts. H 1. Inspeated for items in accordance with the specifications; 2. Inspeated for function test.

Notes: * H stands for the items requiring at least one overhauling during each PMS survey period and tests on part of systems.

** F stands for the items subject to confirmatory survey every year.