

RULES

FOR THE CLASSIFICATION AND CONSTRUCTION OF FIXED OFFSHORE PLATFORMS

PART VII

MACHINERY INSTALLATIONS AND MACHINERY

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**St. Petersburg
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RULES FOR THE CLASSIFICATION AND CONSTRUCTION OF FIXED OFFSHORE PLATFORMS

Rules for the Classification and Construction of Fixed Offshore Platforms (the FOP Rules) of Russian Maritime Register of Shipping (RS, the Register) have been approved in accordance with the established approval procedure and come into force on 1 September 2023.

The present Rules are based on the latest version of the Rules for the Classification, Construction and Equipment of Mobile Offshore Drilling Units and Fixed Offshore Platforms, 2022, taking into account the amendments and additions developed immediately before publication.

The Rules set down specific requirements for FOP and supplement the Rules for the Classification and Construction of Sea-Going Ships and the Rules for the Equipment of Sea-Going Ships.

The Rules are published in the following parts:

Part I "Classification";

Part II "Hull";

Part III "Equipment, Arrangements and Outfit";

Part IV "Stability";

Part V "Subdivision";

Part VI "Fire Protection";

Part VII "Machinery Installations and Machinery";

Part VIII "Systems and Piping";

Part IX "Boilers, Heat Exchangers and Pressure Vessels";

Part X "Electrical Equipment";

Part XI "Refrigerating Plants";

Part XII "Materials";

Part XIII "Welding";

Part XIV "Automation";

Part XV "Safety Assessment";

Part XVI "Signal Means";

Part XVII "Life-Saving Appliances";

Part XVIII "Radio Equipment";

Part XIX "Navigational Equipment";

Part XX "Equipment for Prevention of Pollution".

REVISION HISTORY

(purely editorial amendments are not included in the Revision History)

For this version, there are no amendments to be included in the Revision History.

1 GENERAL

1.1 APPLICATION

1.1.1 The requirements of this Part of the Rules for the Classification and Construction of Fixed Offshore Platforms (FOP)¹ apply to machinery installations, engines, machinery, and equipment of machinery spaces essential to the safety of FOP.

Apart from this Part, the machinery installations of FOP, unless otherwise specified, are subject to all applicable requirements given in Parts VII "Machinery Installations", VIII "Systems and Piping", IX "Machinery", X "Boilers, Heat Exchangers and Pressure Vessels", XII "Refrigerating Plants" and XV "Automation" of the Rules for the Classification and Construction of Sea-Going Ships².

¹ Hereinafter referred to as "the FOP Rules".

² Hereinafter referred to as "the RS Rules/C".

1.2 DEFINITIONS AND EXPLANATIONS

1.2.1 Definitions and explanations relating to the general terminology are given in the General Regulations for Classification and Other Activity, Part I "Classification" and Part VI "Fire Protection" of the Rules RS/C. Besides, all applicable definitions and explanations of Part VII "Machinery Installations" of the Rules RS/C are also used.

1.2.2 For the purpose of this Part, the following definitions have been adopted.

Main control room of FOP is a space containing the remote controls of main machinery, machinery, equipment and arrangements providing generation of electrical power, as well as safe operation of FOP, and fitted with indicating instruments, alarms and means of communication.

General purpose machinery spaces are spaces containing machinery, equipment and arrangements intended for generating electrical power and to assure safe operation of FOP.

Process machinery spaces are spaces containing machinery, equipment and arrangements intended for constructing and operating the well.

Control stations are those spaces where radio equipment, emergency sources of power, fire detection and fire control equipment are located. However, for the purpose of application of the requirements of Part VI "Fire Protection" of the FOP Rules, the space where the emergency source of power is located is not considered as a control station.

1.3 SCOPE OF TECHNICAL SUPERVISION

1.3.1 General provisions relating to classification procedure, technical supervision during construction and surveys, as well as requirements for technical documentation to be submitted to the Register for review and approval are set forth in the General Regulations for Classification and Other Activity and in Part I "Classification" of the RS Rules/C and in Part I "Classification" of the FOP Rules.

1.3.2 In the process of the FOP construction the machinery, equipment and systems covered by Parts VII "Machinery Installations", VIII "Systems and Piping", IX "Machinery", X "Boilers, Heat Exchangers and Pressure Vessels", XII "Refrigerating Plants" and XV "Automation" of the RS Rules/C are subject to the Register technical supervision during manufacture, installation and tests.

Apart from that, the following shall be supervised by the Register:

- .1** hydraulic driving machinery, lifting and lowering mechanisms of sea water supply pipes and submersible sea water pumps;
- .2** hydraulic drive for closing preventers.

2 MACHINERY INSTALLATIONS. GENERAL REQUIREMENTS

2.1 GENERAL

2.1.1 All the external rotating parts of machinery and equipment (couplings, shafts, drives, belts, etc on the pumps, compressors, coolers, gas turbines and engines) shall be protected by guards.

2.1.2 Where the used alternative design or arrangements deviate from the prescriptive provisions of the Rules for the Classification, an engineering analysis, evaluation and approval of the design and arrangements in accordance with regulation II-1/55, SOLAS- 74 (IMO Guidelines on Alternative Design and Arrangements for Chapters II-1 and III (MSC.1/ Circ.1212) SOLAS-74).

2.1.3 Automatic starting, operational and control systems for machinery essential for the safety of FOP shall include provisions for manually overriding the automatic controls. Failure of any part of the automatic and remote control system shall not prevent the use of the override. Visual indication shall be provided to show whether or not the override has been actuated.

2.2 ENVIRONMENTAL CONDITIONS

2.2.1 The machinery, equipment and systems installed in the ship shall remain operative under ambient temperature:

in enclosed spaces – from 0 °C to + 45 °C;

in spaces subject to temperatures exceeding 45 °C and below 0 °C – according to specific local conditions;

on the open deck – from -25 °C to + 45 °C.

For FOP designed for geographically restricted service other temperatures may be adopted if technical substantiation is available.

2.3 ARRANGEMENT OF MACHINERY AND EQUIPMENT

2.3.1 Internal combustion engines in hazardous areas (refer to 2.9, Part X "Electrical Equipment" of the FOP Rules) and spaces is permitted in case the requirements in [2.3.1.1 — 2.3.1.4](#) are met:

.1 machinery equipment in such areas shall be limited to that necessary for operational purposes;

.2 machinery equipment and machinery in hazardous areas shall be so constructed and installed as to reduce to minimum the risk of ignition from sparking due to formation of static electricity or friction between moving parts and from high temperatures of exposed parts due to exhaust or other emissions;

.3 installation of internal combustion machinery in zones 1 and 2 hazardous areas may be permitted, provided the precautions have been taken against the risk of dangerous ignition;

.4 installation of the equipment that may be a cause of ignition in zone 2 hazardous areas may be permitted, provided the precautions have been taken against the risk of dangerous ignition.

2.3.2 Air intakes for internal combustion engines and boilers shall be at a distance not less than 3 m from hazardous areas.

2.3.3 Oil- or gas-fired boilers shall not be installed in hazardous spaces and areas.

2.3.4 Pressure vessels of riser tensioning systems and heave compensating devices located on open decks and platforms shall be protected from mechanical damage and radiation effects.

2.3.5 Drilling equipment in which oil products may be present shall not be located in spaces housing the main and auxiliary machinery.

2.4 CONTROL STATIONS

2.4.1 The main control room of FOP shall be located outside the machinery spaces and as far from hazardous areas as practicable.

2.4.2 The equipment of the main machinery control room shall comprise:

- .1** controls of main machinery providing generation of electrical power;
- .2** devices for disconnection of any of the main machinery mechanisms in case of its failure;
- .3** means of communication.

2.4.3 In addition to the devices listed in 3.2.1, Part VII "Machinery Installations" of the RS Rules/C the main machinery control room of the FOP shall be equipped with alarm and indication facilities according to 3.1.1.1 and 3.3.2.6, Part VIII "Systems and Piping" of the FOP Rules.

2.5 MEANS OF COMMUNICATION

2.5.1 Two-way communication shall be provided between the main control room of FOP and machinery control room located in the machinery space.

2.5.2 Two-way communication shall be provided between the drilling foreman's position and the machinery control room located in the machinery space, the main control room and other spaces containing equipment essential to the safety of FOP.

2.6 MACHINERY SPACES

2.6.1 Machinery spaces (refer to [1.2.2](#) of this Part of the FOP Rules and 1.2, Part VII "Machinery Installations" of the RS Rules/C), as well as non-hazardous process machinery spaces shall not communicate with hazardous spaces and areas (refer to 2.9, Part X "Electrical Equipment" of the FOP Rules). If such communication cannot be avoided the relevant requirements of 2.9, Part X "Electrical Equipment" of the FOP Rules shall be met so that the safety of the machinery spaces and non-hazardous process machinery spaces is not affected.

2.6.2 Every attended space or space which requires often visits of personnel shall have at least two escape routes arranged in the opposite ends of the space. Dead-end corridors exceeding 5 m in length shall not be permitted in such spaces.

2.6.3 Hazardous process machinery spaces (refer to 1.2.2 of Part VI "Fire Protection" of the FOP Rules) shall have at least two means of escape, one of which shall lead directly to the open deck.

2.7 VIBRATION OF MACHINERY AND EQUIPMENT

2.7.1 Vibration of machinery and equipment listed in [1.1](#) shall not exceed levels given in Section 9, Part VII "Machinery Installations" of the RS Rules/C and shall not hinder operation of process machinery and equipment.

2.7.2 Vibration induced by industrial machinery and equipment shall not disturb normal operation of machinery and equipment listed in [1.1](#).

2.7.3 All the machinery and equipment shall be installed on the foundations by a method that precludes onset of vibrations with unacceptable amplitudes when operating at full load.

2.8 REFRIGERATING PLANTS

2.8.1 The FOP is covered by all the requirements of Part XII "Refrigerating Plants" of the RS Rules/C regarding unclassified and classed refrigerating plants in so much as applicable.

2.8.2 Spaces containing refrigerating machinery and refrigerant piping shall be located outside the hazardous spaces and areas.

2.9 STEAM BOILERS AND BOILER FEED SYSTEMS

2.9.1 Water tube boilers serving turbine propulsion machinery shall be fitted with a high-water-level alarm.

2.9.2 Every steam generating system which provides services essential for the propulsion of the unit which affects the safe FOP operation shall be provided with not less than two separate feedwater systems from and including the feed pumps, noting that a single penetration of the steam drum is acceptable. Means shall be provided which will prevent overpressure in any part of the systems.

2.10 MACHINERY CONTROLS

2.10.1 Machinery essential for generating electrical power shall be provided with effective means for its operation and control. All the FOP control systems shall be independent or designed such that failure of one system does not degrade the performance of another system.

2.10.2 Where remote control of machinery from the navigating bridge is provided and the machinery spaces are intended to be manned, the following shall apply:

.1 the main machinery shall be provided with an emergency stopping device and independent from the main control room and the main machinery control room;

.2 propulsion machinery orders from the main control room and the main machinery control room shall be indicated in the local machinery control station;

.3 remote control of the propulsion machinery shall be possible from only one station at a time; at one control station interconnected control units are permitted. There shall be at each station an indicator showing which station is in control of the propulsion machinery. The transfer of control between navigating bridge and machinery spaces shall be possible only in the machinery space or main machinery control room;

.4 It shall be possible to control the propulsion machinery locally, even in the case of failure in any part of the remote control system;

.5 the design of the remote control system shall be such that in case of its failure an alarm shall be given and the preset speed and direction of thrust be maintained until local control is in operation;

.6 an alarm shall be provided at the main machinery control room and in the machinery space to indicate low starting air pressure set at a level which still permits main engine starting operations. If the remote control system for the propulsion machinery is designed for automatic starting, the number of automatic consecutive attempts which fail to produce a start shall be limited to safeguard sufficient starting air pressure for starting locally;

2.10.3 Where the main propulsion and associated machinery including sources of main electrical supply are provided with various degrees of automatic or remote control and are under continuous manned supervision from a main machinery control room, this control room shall be designed, equipped and installed so that the machinery operation will be as safe and effective as if it were under direct supervision local control rooms. Particular consideration shall be given to protection against fire and flooding.

2.11 COMMUNICATION BETWEEN MAIN MACHINERY CONTROL ROOM AND ENGINE ROOM

2.11.1 Units shall be provided with at least two independent means for communicating orders from the main machinery control room to the position in the machinery space from which the engines are normally controlled, one of which shall provide visual indication of the orders and responses both in the machinery space and in the main machinery control room. Consideration shall be given to providing a means of communication to any other positions from which the engines may be controlled.

2.12 ENGINEERS' ALARM

2.12.1 An engineers' alarm shall be provided to be operated from the engine control room or at the maneuvering platform, as appropriate, and clearly audible in the engineers' accommodation.

3 MACHINERY

3.1 GENERAL

3.1.1 Machinery components listed in Table 1.2.4, Part IX "Machinery" of the RS Rules/C shall be supervised by the Register during manufacture with respect to observance of the requirements given in Parts XIII "Materials" and XIV "Welding" of the RS Rules/C and the FOP Rules or compliance with the requirements of the standards agreed with the Register, as well as the approved technical documentation specified in 1.2.3, Part IX "Machinery" of the RS Rules/C.

3.1.2 It is permitted to utilize the power of main engines to drive the drilling machinery. In such a case, the main engines shall be fitted with efficient means of protection from possible overload.

3.1.3 Electrical equipment of the engines and machinery shall comply with the relevant requirements of Part XI "Electrical Equipment" of the RS Rules/C.

3.1.4 All the machinery and equipment essential to the safety of FOP shall remain operative under the conditions specified in [2.2.1](#).

3.2 INTERNAL COMBASTION ENGINES

3.2.1 Engines intended for use in FOP shall comply with the requirements of Sections 2 and 9, Part IX "Machinery" of the RS Rules/C in so much as they are applicable.

3.3 GAS TURBINES

3.3.1 Gas turbines intended for use in FOP shall comply with the requirements of Section 8, Part IX "Machinery" of the RS Rules/C in so much as they are applicable.

3.4 AUXILIARY MACHINERY

3.4.1 Auxiliary machinery intended for use in FOP shall comply with the requirements of Section 5, Part IX "Machinery" of the RS Rules/C in so much as they are applicable.

3.5 DECK MACHINERY

3.5.1 Deck machinery intended for use in FOP shall comply with the requirements of Section 6, Part IX "Machinery" of the RS Rules/C in so much as they are applicable.

3.6 HYDRAULIC DRIVES

3.6.1 Hydraulic drives intended for use in FOP shall comply with the requirements of Section 7, Part IX "Machinery" of the RS Rules/C in so much as they are applicable.

3.7 GEAR, DISENGAGING AND ELASTIC COUPLINGS

3.7.1 Gears, disengaging and elastic couplings intended for use in FOP shall comply with the requirements of Section 4, Part IX "Machinery" of the RS Rules/C in so much as they are applicable.

Russian Maritime Register of Shipping

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