

RULES

FOR THE CLASSIFICATION AND CONSTRUCTION OF FIXED OFFSHORE PLATFORMS

PART III

EQUIPMENT, ARRANGEMENTS AND OUTFIT

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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 All the requirements of Part III "Equipment, Arrangements and Outfit" of the Rules for the Classification and Construction of Sea-Going Ships¹ apply to FOP, unless expressly provided otherwise in this Part.

1.1.2 The requirements of this Part do not cover the following arrangements and equipment:

industrial machinery used exclusively in drilling and related operations as well as in output processing;

mooring equipment.

¹ Hereinafter referred to as "the RS Rules/C".

1.2 DEFINITIONS AND EXPLANATIONS

1.2.1 The definitions and explanations relating to general terminology are given in General Regulations for the Classification and Other Activity, in Part I "Classification" and Part III "Equipment, Arrangements and Outfit" of the RS Rules/C, as well as in Part I "Classification" and Part II "Hull" of the FOP Rules.

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

Watertightness is the capability of a structure to prevent water penetration in any direction under the water head the structure is designed for.

Unit is a FOP, FOP modules and/or any elements thereof.

Draught is a vertical distance measured at the midpoint of the appropriate length of the unit from the top of the plate keel or from the point where the inner surface of the shell (outer surface for units with a non-metal shell) abuts upon the bar keel, up to the relevant waterline of the unit.

Compartment is the part of the hull interior bounded by shell plating, watertight bulkheads, decks, platforms, stringers and floors.

Breadth of unit's hull is the extreme moulded breadth of the hull measured at its mid length at the level of or below the waterline in transit.

1.3 SCOPE OF TECHNICAL SUPERVISION

1.3.1 General regulations on technical supervision of equipment, arrangements and outfit are given in General Regulations for the Classification and Other Activity and in Part I "Classification" of the RS Rules/C, as well as in Part I "Classification" of the FOP Rules.

1.3.2 The scope of technical supervision of products included into equipment, arrangements and outfit of FOP shall be in compliance with the list given in 1.3 of Part III "Equipment, Arrangements and Outfit" of the RS Rules/C as far as applicable to the particular type of FOP, taking into account the additional arrangements listed below.

1.3.2.1 Arrangements for lifting and lowering columns of submersible sea water pumps:

- .1 columns and guides;
- .2 stoppers;
- .3 fastenings (bolts, pins and nuts).

1.3.3 The following equipment, arrangements and outfit are subject to the Register technical supervision during construction of the FOP in accordance with the requirements of relevant chapters of the RS Rules/C and the FOP Rules:

- .1 FOP position-keeping systems and components thereof;
- .2 openings in hull of the FOP and their closing arrangements;
- .3 masts and their rigging;
- .4 arrangement and equipment of spaces;
- .5 emergency outfit;
- .6 mooring and boarding arrangements.

2 ANCHOR ARRANGEMENT

2.1 GENERAL

2.1.1 For the period of operations at sea (in particular, when moving to the location) each FOP shall be generally provided with anchor arrangement specified in 3.1.1 of Part III "Equipment, Arrangements and Outfit" of the RS Rules/C, intended for temporary positioning of FOP at sea, and ensuring, if necessary, holding anchorage under stormy conditions which severity is in excess of that permissible for operations at sea.

If specially justified, FOP may be not provided with an anchor arrangement. In this case, to ensure temporary positioning of FOP consideration may be given to anchor arrangements of tow order vessels. Thereby detailed results of calculations and justifications for ensuring holding anchorage under stormy conditions including the characteristics of support vessels, safety factors, environmental effects and loads shall be submitted to the Register.

2.1.2 For bower anchors of FOP, considering temporary nature of the anchor arrangement operation and the possible anchorage depths, it is permitted to include wire and synthetic fibre ropes into the anchor arrangement.

2.1.3 The need for provision of stoppers to secure the anchors for sea shall be determined by the shipowner.

2.1.4 The anchor arrangement of FOP may be located on the hull or on special overhang platforms installed for the period of operations at sea. Considering the temporary nature of the anchor arrangement operation, it is reasonable to provide the use of individual items of the anchor arrangement (machinery, hawse pipes, holders, etc.) for other purposes during operation of FOP (as the mooring and other arrangements).

2.1.5 If provision is made for installation of the anchor arrangement, the anchor equipment of the FOP shall be selected from Table 3.1.3-1 of Part III "Equipment, Arrangements and Outfit" of the RS Rules/C or when chain cables of R3, R3S and R4 grades are applied — from [Table 2.1.5](#) of this Part according to the equipment number N_e determined in compliance with [2.2](#) of this Part where the equipment number obtained does not exceed values given in the said Tables.

Where the equipment numbers exceed tabulated values given in the RS Rules/C, the anchor equipment of FOP shall be determined by special calculations, based on natural conditions and loads corresponding to the possible conditions for performance of operations at sea, having regard to additional positioning of FOP ensured by tow order vessels. In such a case, it is recommended to assume the design parameters of environmental effects by 15 — 20 % higher than those which are assumed when determining the total pull of tow order vessels.

Table 2.1.5

Equipment number N_e		Bower anchors		Chain cables for bower anchors			
				Total length of both chain cables, in m	Diameter, in mm		
Exceeding	Not exceeding	Number	Mass per anchor, in kg		Grade R3	Grade R3S	Grade R4
1390	1480	2	4230	577,5	50	—	—
1480	1570	2	4590	577,5	50	—	—
1570	1670	2	4890	577,5	52	—	—
1670	1790	2	5250	605	54	50	—
1790	1930	2	5610	605	56	52	50
1930	2080	2	6000	605	58	54	52
2080	2230	2	6450	632,5	60	56	54

Equipment number N_e		Bower anchors		Chain cables for bower anchors			
				Total length of both chain cables, in m	Diameter, in mm		
Exceeding	Not exceeding	Number	Mass per anchor, in kg		Grade R3	Grade R3S	Grade R4
2230	2380	2	6900	632,5	62	58	56
2380	2530	2	7350	632,5	64	60	58
2530	2700	2	7800	660	66	62	60
2700	2870	2	8300	660	68	64	62
2870	3040	2	8700	660	70	66	64
3040	3210	2	9300	687,5	73	68	66
3210	3400	2	9900	687,5	76	70	66
3400	3600	2	10500	687,5	76	73	70
3600	3800	2	11100	715	78	73	70
3800	4000	2	11700	715	81	76	73
4000	4200	2	12300	715	84	78	76
4200	4400	2	12900	742,5	84	81	78
4400	4600	2	13500	742,5	87	81	78
4600	4800	2	14100	742,5	90	84	81
4800	5000	2	14700	770	92	87	84
5000	5200	2	15400	770	95	90	87
5200	5500	2	16000	770	95	90	87
5500	5800	3 ¹⁾	16900	820	97	90	87
5800	6100	3	17800	820	100	92	90
6100	6500	3	18800	820	105	95	95
6500	6900	3	20000	820	107	100	97
6900	7400	3	21500	820	111	102	100
7400	7900	3	23000	820	114	105	102
7900	8400	3	24500	820	117	107	105
8400	8900	3	26000	820	122	111	111
8900	9400	3	27500	820	127	117	114
9400	10000	3	29000	820	127	120	114
10000	10700	3	31000	820	132	124	120
10700	11500	3	33000	820	137	130	124
11500	12400	3	35500	820	142	132	127
12400	13400	3	38500	820	147	137	130
13400	14600	3	42000	820	152	142	137
14600	16000	3	46000	820	157	147	142

¹⁾ One anchor is supposed to be a spare anchor.

2.1.6 FOP, as a rule, shall be equipped with not more than two anchors. For prolonged tows at sea under severe natural conditions, it is necessary to provide a spare set of the anchor arrangement items (anchor, anchor rope, joining devices) which may be carried on FOP or on tow order vessels.

2.2 EQUIPMENT NUMBER

2.2.1 The equipment number used for selection of anchor equipment of FOP or individual FOP modules is determined by the formula

$$N_e = K_1 K_2 \Delta^{2/3} + K_3 A \quad (2.2.1)$$

where K_1, K_2, K_3 = coefficients accounting for the form of the hull, effect of waves and wind conditions at the anchorage, respectively;
 Δ = volume displacement of FOP or FOP modules sections at the given draft (or to the centre of the load line mark), in m³;
 A = total projected area of the structures above the waterline (passing through the centre of the load line mark) on the plane normal to the horizontal projection of the anchor line, in m².

2.2.2 The form coefficient K_1 shall be taken equal to:
 1,5 for FOP/FOP modules.

The coefficient K_1 may be also obtained from the ratio R/R' where R' and R are resistances of the submerged part of a conventional ship and FOP/FOP modules, with the same displacement, respectively.

The coefficients K_2 and K_3 with design wind velocity not exceeding 36 m/s and design wave height of 3% probability not exceeding 11 m are taken from [Table 2.2.2](#). Where the above design weather condition parameters are exceeded, the values of K_2 and K_3 coefficients shall be determined proceeding from the actual conditions of the FOP operation.

Table 2.2.2

FOP	K_2	K_3
Open sea	1,2	2,1
Enclosed sea	1,1	1,8

2.2.3 In well-grounded cases the Register may accept other values of coefficients given in [2.2.2](#) provided it is proved that the proposed values are in agreement with the actual service conditions.

2.2.4 The application of other calculation methods for anchor equipment is allowed.

In this case, detailed data on construction, characteristics of items and location of the anchor arrangement on FOP, justifications, methods, calculation results, accepted safety factors, design parameters of holding anchorage under stormy conditions, consideration of additional positioning due to operation of the tow order shall be submitted to the Register.

2.3 ANCHORS, CHAIN CABLES AND ROPES FOR ANCHORS, ANCHOR EQUIPMENT AND MACHINERY

2.3.1 Anchors, chain cables and ropes for anchors, anchor equipment and machinery shall comply with the requirements of 3.3.2, 3.3.3, 3.4.4 — 3.4.9, 3.4.12, 3.6.1 — 3.6.4 of Part III "Equipment, Arrangements and Outfit" of the RS Rules/C.

It is allowed to use in a FOP chain cables with intermediate lengths of a continuous length and strength grade according to 7.2 of Part XIII "Materials" of the RS Rules/C.

2.3.2 A chain cable may be replaced with a wire rope except for the anchor length and the next section of a common link chain.

In this case the total length of the chain cable portion shall be equal to the distance between the anchor machinery and the point of securing the anchor for sea, but not less than 12,5 m.

The breaking strength of such ropes shall be generally not less than the breaking load of the corresponding chain and their length shall not be less than 1,5 times the length of these chain cables.

Equipment and machinery shall ensure the required wire rope tension during anchor stowage and during station-keeping of the unit to preclude formation of sheepshank knots on the rope.

2.3.3 Use of synthetic fibre ropes in the anchor arrangement of FOP is allowed, provided the requirements in 4.1.6 of Part III "Equipment, Arrangements and Outfit" of the RS Rules/C are met.

2.3.4 When selecting the anchor arrangement on the basis of special calculations, the anchor characteristics (type, mass) shall be determined on the assumption that they will ensure the required holding power. The holding power of the anchor shall be determined under design parameters of holding anchorage under stormy conditions with a safety factor within the range from 0,8 up to 1,0. In this case, the anchor rope tension shall not exceed the permissible value considering the safety factor which is recommended to be taken not less than 1,7.

2.3.5 If specially justified, FOP may be not equipped with anchor machinery where the carriage, dropping and heaving of anchors are provided by auxiliary of tow order vessels.

2.3.6 Anchors, chain cables and ropes shall be manufactured in compliance with the requirements of Appendices 1 — 3 to Section 3 of Part IV "Technical Supervision during Manufacture of Products" of the Rules for Technical Supervision during Construction of Ships and Manufacture of Materials and Products for Ships and Sections 3 and 7 of Part XIII "Materials" of the RS Rules/C.

3 POSITION-KEEPING SYSTEMS AND COMPONENTS THEREOF

3.1 GENERAL

3.1.1 If a position-keeping system is used, the requirements of Part III "Equipment, Arrangements and Outfit" of the Rules for the Classification and Construction of Mobile Offshore Drilling Units¹ shall be met.

The requirements apply to position mooring systems including anchors and flexible anchor lines intended for keeping the FOP afloat in a certain position with limitation in shifting within the prescribed limits and provision of normal conditions for carrying out technological processes and works at a site (loading of solid ballast, outfitting, etc.).

3.1.2 The requirements of this Section also apply to distributed anchoring systems ensuring mast FOP positioning.

3.1.3 When developing position mooring systems, consideration shall be given to the requirements of Part II "Hull" of the FOP Rules which may be affected by the position-keeping system operation.

¹ Hereinafter referred to as "the MODU Rules".

4 MOORING AND BOARDING ARRANGEMENTS

4.1 For FOP the operation of which involves the use of contact mooring method for the supply vessels shall be provided with mooring and boarding arrangements to ensure approach of ships and embarkation/disembarkation of people.

4.2 The Register shall be provided with drawings and documentation of the mooring and boarding arrangements which show their location and containing detailed description of the arrangements.

4.3 In calculation of the mooring and boarding arrangements consideration shall be given to the loads due to:

.1 tied up ships swinging foul of the mooring arrangements under the action of wind, waves, current and ice (if any);

.2 a ship swinging foul when approaching the mooring arrangement;

.3 mooring line tension when the ship is subjected to wind and current action.

4.4 Account shall be taken of the provision of shielding barriers on the windward side of the tied up ship if this can result in significant reduction of the wind loads on the ship.

4.5 Mooring and boarding arrangements shall be located on at least two sides of the platform and shall rise:

by at least 1,5 m above the highest annual sea level;

by at least 1 m above the ice cover level;

by at least 0,5 m above the design wave crests when people stay on the platforms where arrangements are located.

When the FOP design features and operational conditions do not allow to arrange mooring and boarding arrangements on two sides of the platform, it is permitted to locate them at one FOP side only.

4.6 The mooring and boarding arrangements of ice-resistant FOP shall ensure approach of ships and disembarkation of people under the clean water conditions and emergency evacuation of the platform personnel under all service conditions.

4.7 Where the calculation-supported possibility of performing operations at the weather condition parameters of the open sea in the area of FOP operation, which are inferior to those given below, is not provided approach, mooring, stay of ships, cargo handling operations therefrom, transfer of people shall be assured under the following conditions:

wind speed: 8 to 10 m/s;

wave height: 0,75 to 1,25 m (force 3);

current speed: 0,6 knots.

4.8 The mooring and boarding arrangements shall provide safe conditions for making fast ships with displacement of 2500 t and over at the approach speed up to 1 knot and to withstand appropriate loads produced by ships swinging foul without damage to their particular structural elements.

In each particular case therewith the maximum displacement of the ship shall be specified in drawings, the mooring and boarding arrangements are designed for under the conditions stated in [4.7](#).

4.9 On the ice-resistant FOP, action of ice on the mooring and boarding arrangements when in inoperable condition shall be precluded.

4.10 The mooring and boarding arrangements shall be provided with systems to monitor the ship stay conditions and with means to prevent damage to ship hull due to accidental overloading.

4.11 Illumination of the places of embarkation/ disembarkation at dark shall be at least 30 lux.

4.12 If necessary, mooring and boarding arrangements may be provided with mooring and fendering equipment to ensure supply vessels anchorage. In case of contactless mooring of ships, FOP may be provided only with mooring equipment to attach ropes.

4.13 Characteristics and complete set of the mooring and fendering equipment depend on the mooring method (contact, contactless, alongside, by stem), mass and overall dimensions and characteristics of mooring equipment on design ships.

Generally, it is recommended to equip FOP with a set of arrangements for hoisting and securing of mooring ropes of ships: heaving lines, line-throwing appliances, mooring hawses, fairleads, bollards or bitts, self-releasing hooks, machinery (winches, capstans).

4.14 Mooring and fendering equipment shall be designed on the basis of special calculations of interaction of ships during approach, stay and reloading from FOP:

When selecting the components of the equipment, it is recommended to:

- .1 use slowly restorable shock-absorbers of high power capacity with low rigidity parameter and low friction coefficients;
- .2 include safety devices ("weak link") to prevent damage to the mooring or fendering equipment as a whole;
- .3 specify dimensions and arrangement of fendering equipment so that minimum loads are transferred to the hulls of ships and FOP;
- .4 whenever possible, bring each mooring rope on a separate winch;
- .5 ensure reasonable lengths and inclination angles for each mooring rope;
- .6 provide for the possibility and ease of repairing the equipment;
- .7 assume design loads on the mooring equipment items and components that are consistent with the strength of the mooring ropes of the largest design ship;
- .8 use, where possible, the same components (machinery, hawses, stoppers, holders) in anchor, mooring and towing arrangements.

5 TOWING ARRANGEMENT

5.1 GENERAL

5.1.1 FOP towing arrangement shall comply with the requirements of the Rules for Planning and Execution of Marine Operations.

6 SIGNAL MASTS

6.1 GENERAL

6.1.1 The signal masts shall meet the requirements of Section 6 of Part III "Equipment, Arrangements and Outfit" of the RS Rules/C.

The signal masts of FOP/FOP modules shall be calculated depending on conditions of the actual loads in the area of their operation, therewith the stresses in the mast structure elements shall not exceed 0,7 of the upper yield stress of their material.

6.1.2 Installation of signal means shall comply with the requirements of Part III "Signal Means" of the Rules for the Equipment of Sea-Going Ships and Part XVI "Signal Means" of the FOP Rules.

7 ARRANGEMENT AND EQUIPMENT OF SPACES

7.1 GENERAL

7.1.1 The arrangement and equipment of spaces shall comply with the requirements of Section 8 of Part III "Equipment, Arrangements and Outfit" of the RS Rules/C and the expressly specified requirements of the FOP Rules.

7.2 EXITS, DOORS, CORRIDORS, STAIRWAYS AND VERTICAL LADDERS

7.2.1 At least two separate escape routes spaced as far apart as practicable shall be provided from each deck having spaces which are likely to be regularly manned or in which personnel is accommodated, to the open decks and places of embarkation into lifeboats and liferafts.

7.2.2 As an exception, the Register may permit only one means of escape, due regard being paid to the nature and location of spaces and the number of persons who normally might be accommodated or employed there.

7.2.3 The helideck shall have both a main and an emergency personnel access routes located as far apart from each other as practicable, preferably on opposite sides of the helideck.

7.2.4 The working spaces of FOP shall be provided with exits located on opposite sides. The exits shall be provided with doors which open outside.

7.2.5 Exits from spaces and structures leading to the area where toxic or explosive gases are likely to release are not permitted.

7.2.6 All passageways shall be readily accessible and afford free movement of people along them.

Dead-end corridors exceeding 7 m in length are not permitted.

7.2.7 Stairways shall be used as means of escape, but the use of a vertical ladder as one means of escape may be permitted if it can be demonstrated that installation of a stairway is impossible.

7.2.8 Stairways and corridors used as means of escape shall be not less than 700 mm in clear width and shall have a handrail on one side. Stairways and corridors with a clear width of 1800 mm and over shall have handrails on both sides.

The angle of inclination of the stairways shall be, in general, 45° but not greater than 50°, and in machinery spaces and small spaces not more than 60°. Doorways which give access to a stairway shall be of the same size as the stairway.

7.2.10 Lighting of the escape routes.

7.2.10.1 In addition to the emergency lighting, as specified in 6.3 of Part X "Electrical Equipment" of the MODU Rules, the means of escape in FOP accommodation areas, including stairways and exits, shall be marked by lighting or photoluminescent strip indicators at all points of the escape route, including angles and intersections. The marking shall enable personnel to identify the routes of escape and readily identify the escape exits.

7.2.10.2 The marking of the escape routes shall comply with the requirements of 8.5.5.2 — 8.5.5.8 of Part III "Equipment, Arrangements and Outfit" of the RS Rules/C.

7.2.10.3 If electric illumination is used, it shall be supplied by the emergency source of power and it shall be so arranged that the failure of any single light or cut in a lighting strip will not result in the marking being ineffective.

7.2.10.4 Additionally, escape route signs shall be of photoluminescent material or marked by lighting.

7.3 GUARD RAILS, BULWARK

7.3.1 Any exposed areas and companionway openings in the decks shall be provided with guard rails, bulwark or other arrangements complying with the requirements of 8.6 of Part III "Equipment, Arrangements and Outfit" of the RS Rules/C.

8 EMERGENCY OUTFIT

8.1 GENERAL

- 8.1.1** The emergency outfit items for FOP shall be determined by the shipowner.

9 CARGO HANDLING GEAR

9.1 GENERAL

9.1.1 The cargo handling gear of the FOP and surface units shall meet the requirements of the Rules for the Cargo Handling Gear of Sea-Going Ships.

9.1.2 Cranes used on the FOP shall be so located and protected as to reduce to a minimum any danger to personnel, due regard being paid to moving parts of the cranes.

9.1.3 Cranes used for loading and discharging of offshore supply vessels shall be furnished with rating tables or curves which take into account the dynamics associated with vessel's motions.

9.1.4 A Crane Manual shall be provided for each crane. This Manual shall contain full information concerning:

- .1** design standard, operation, erection, dismantling and transportation;
- .2** all limitations during normal and emergency operations with respect to SWL, safe working moment, maximum wind, maximum heel and trim, design temperatures and braking systems;
- .3** all safety devices;
- .4** testing of the emergency lowering system for personnel transfer, if fitted;
- .5** diagrams for electrical and hydraulic systems and equipment;
- .6** materials used in crane's structures, welding procedures and extent of non-destructive testing; and
- .7** guidance on operation, maintenance and periodic inspections.

9.1.5 FOP and surface units shall be furnished with information on the rated capacity of all lifting and hoisting equipment installed thereon.

9.1.6 FOP's and surface unit's personnel transfer nets and platforms may be used for pilot transfer.

Russian Maritime Register of Shipping

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Part III
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FAI "Russian Maritime Register of Shipping"
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