



# RUSSIAN MARITIME REGISTER OF SHIPPING

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**CIRCULAR LETTER**

**No. 392-06-1400c**

dated 26.05.2020

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Re:

amendments to the Guidelines on Technical Supervision of Ships under Construction, 2020, ND No. 2-030101-034-E

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Item(s) of supervision:

subsea cable lines

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Entry-into-force date:

**01.06.2020**

~~Valid till:~~

~~Validity period extended till:~~

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~~Cancels / amends / adds Circular Letter No.~~

~~dated~~

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Number of pages:

1 + 5

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Appendices:

Appendix 1: information on amendments introduced by the Circular Letter

Appendix 2: text of amendments to Section 10 "Electrical Equipment"

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Director General

Konstantin G. Palnikov

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Text of CL:

We hereby inform that the Guidelines on Technical Supervision of Ships under Construction shall be amended as specified in the Appendices to the Circular Letter.

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It is necessary to do the following:

1. Bring the content of the Circular Letter to the notice of the RS surveyors involved in technical supervision during construction of MODU and FOP, interested organizations and persons in the area of the RS Branch Offices' activity.
  2. Apply the provisions of the Circular Letter when performing technical supervision during construction of MODU and FOP contracted for construction on or after 01.06.2020, in the absence of a contract, for MODU and FOP, the keels of which are laid or which are at a similar stage of construction on or after 01.06.2020.
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List of the amended and/or introduced paras/chapters/sections:

Section 10: paras 10.5.3.1, 10.5.3.1.3 – 10.5.3.1.5, Appendix 9

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"Thesis" System No. 20-90552

**Information on amendments introduced by the Circular Letter  
 (for inclusion in the Revision History to the RS Publication)**

Nos.	Amended paras/chapters/sections	Information on amendments	Number and date of the Circular Letter	Entry-into-force date
1	Section 10, para 10.5.3.1	<p>The requirements during survey of installation works have been specified.</p> <p>New para 10.5.3.1.3 has been introduced in addition to the requirements for check during survey of installation works.</p> <p>Existing paras 10.5.3.1.3 and 10.5.3.1.4 have been renumbered 10.5.3.1.4 and 10.5.3.1.5, accordingly</p>	392-06-1400c of 26.05.2020	01.06.2020
2	Section 10, Appendix 9	New Appendix 9 has been introduced regarding laying and installation of subsea cable lines	392-06-1400c of 26.05.2020	01.06.2020

## **GUIDELINES ON TECHNICAL SUPERVISION OF SHIPS UNDER CONSTRUCTION, 2020,**

**ND No. 2-030101-034-E**

### **10 ELECTRICAL EQUIPMENT**

1 The last paragraph of **para 10.5.3.1** is replaced by the following text:

"During survey of installation works, the applicable instructions given in Appendices 3, 4, 5 and 9 to this Section shall be used."

2 New **para 10.5.3.1.3** is introduced reading as follows:

".**3** MODU/FOP power and/or control and instrumentation, and/or telecommunication and data subsea cable lines shall be properly laid and installed."

3 **Existing paras 10.5.3.1.3** and **10.5.3.1.4** are renumbered **10.5.3.1.4** and **10.5.3.1.5** are renumbered, accordingly.

4 **Section 10** is supplemented by **new Appendix 9** reading as follows:

*"APPENDIX 9*

### **RECOMMENDATIONS ON TECHNICAL SUPERVISION DURING LAYING AND INSTALLATION OF MODU/FOP POWER AND/OR CONTROL AND INSTRUMENTATION, AND/OR TELECOMMUNICATION AND DATA SUBSEA CABLE LINES**

#### **1 General**

**1.1** When carrying out technical supervision during laying and installation of subsea cable lines, the RS surveyor shall follow the RS-approved documentation.

**1.2** All cables designed for subsea laying shall be identified and visually examined.

**1.3** The RS surveyor shall check that cable ends are protected against mechanical damages and are available for testing. The cables for subsea laying shall be stored in the conditions protecting against UV irradiation and preventing mechanical damages to the coating, as well as complying with the instructions (procedures) of the cable manufacturer.

**1.4** Cable laying shall be carried out by a method specified in the RS-approved technical documentation. Unless otherwise is provided by the project, the cable laying shall be carried out by running method providing continuous performance of the whole scope of work in the specified production sequence.

**1.5** Where it is required to spool a cable on the drum installed on the ship, the RS surveyor shall check that the spooling procedure is carried out by the RS-approved method complying with the allowable bend radii of cables, pay-in speed, cable tension values, correct pay-in, absence of sudden changes in cable tension and cable coils overlap on the drum.

**1.6** The RS surveyor shall make sure that when laying the cable lines in compliance with the RS-approved project, depth data, current velocity and sea water wave motion on the route, prevailing directions and values of wind force, profile and content of seabed soil, including its geological and geotechnical parameters shall be monitored.

**1.7** When laying the cable at negative temperatures, the RS surveyor shall check that the cable coils are free of icing. Cable storage temperature and temperature during submerging and laying the cable on the seabed shall not be less than the values recommended by the cable manufacturer.

**1.8** When paying-out the cable from the ship, the RS surveyor shall make sure that the forces imposed on the cable, uniformity of pay-out and absence of sudden changes in cable tension, bends and fractures due to the coils freezing-up, improper factory pay-in, sudden change of pay-out speed are monitored.

**1.9** The RS surveyor shall check that the cable pulling devices are equipped with the recorders for cable line tension and length. All measuring equipment shall be calibrated. Prior to the actual cable laying, pulling force of the devices shall be checked by testing. The specified static towing force (rated static force of pulling devices) shall exceed the maximum pulling force during laying.

**1.10** Physical contact between a new cable and the existing ones shall be avoided. The RS surveyor shall verify that the crossings of subsea cable routes and pipelines comply with the RS-approved documentation (documentation shall be approved according to the requirements of 8.2.3, Part I "Subsea Pipelines" of the Rules for the Classification and Construction of Subsea Pipelines (SP Rules)).

**1.11** The RS surveyor shall make sure that during cable operations (laying, pulling-in, connection of sections, lowering to the seabed, burial), continuous monitoring is provided that cables are not subjected to mechanical loads exceeding design limits specified by the cable manufacturer, including tension, bending, torsion and compression.

## **2 Cable laying on the seabed**

**2.1** The RS surveyor shall check that the method of protection against mechanical damages and/or subsea cable burial depth, considering data on the sea depth, current parameters, seabed profile, geological and geotechnical features of the soil properties, comply with the RS-approved technical documentation. The RS surveyor shall check that in the water areas with seasonal ice cover where the presence of ice gouging is revealed, the burial depth assumed based on the design value of exaration, which may be determined by methods specified in 8.3.1, Part I "Subsea Pipelines" of the SP Rules or other RS-approved methods, shall comply with the RS-approved technical documentation.

**2.2** The RS surveyor shall make sure that the cable-laying vessel is equipped with a cable tensioner to create the required tension when laying cable on the seabed and the pulling force corresponds to the rated value.

**2.3** The cable-laying vessel shall be equipped with a stern cable laying device (Chute, Stinger). The RS surveyor shall make sure that the radius of the stern cable laying device at the place of the cable contact shall not be less than the minimum allowable cable bend radius specified by the cable manufacturer. Technical parameters of the chute shall comply with the RS-approved documentation.

**2.4** The RS surveyor shall make sure that the length of the lowered cable is constantly monitored on the cable-laying vessel.

**2.5** The RS surveyor shall make sure that the subsea cable lines are provided with the protection area 500 m wide in each direction from the cable laying range that shall be indicated in the notices to mariners and plotted on nautical charts.

**2.6** The RS surveyor shall check that the technical features of the trenchers allow the cable burial on the design depth.

**2.7** Deployment/removal of trenchers shall not be carried out within 50 m radius from each near-bed structure.

**2.8** Operations on cable laying on the seabed soil, installation of supports or burial shall be continuously monitored both by means of measurement equipment on the machinery and from the surface by using ROV, navigational systems and echo sounders. The Register shall review examination results for deviations from the values specified in the technical documentation.

**2.9** The minimum cable bend radius during laying shall not be less than the value indicated in the documented technical data of the cable manufacturer.

**2.10** The Register shall be provided with the materials of monitoring the cable laying on the seabed or cable burial depth performed by means of underwater TV, sonar survey or diver survey after cable laying.

**2.11** Immediately after cable laying the Register shall be provided with the examination results of the entire route. The examination shall confirm that the cable laying has been carried out in accordance with the requirements specified in the technical documentation.

**2.12** The examination shall include the following:

- determination of the cable position with regard to allowable tolerances;
- determination of burial depth, where applicable, if not ascertained during burial operations;
- identification and quantification of any free spans/non-buried sections with length and gap height;
- positioning and description of previously unidentified wreckage, debris or other objects which may affect the cable line;
- localization of damage to cable;
- video documentation of the subsea cable system interfaces at offshore units, if applicable and required;
- verification that the condition of cable protection is in accordance with the design specification;
- recording of length, cross-profiles, covering height of cable protection, if applicable;
- check of any existing infrastructure in close vicinity in order to ensure, that the infrastructure has not suffered damage.

If necessary, relevant renewal shall be carried out; herewith, the relevant sections shall be reexamined. The examination results shall be submitted to the Register.

### **3 Pulling-in and installation of the subsea cable on FOP**

**3.1** Monitoring of cable pulling in the FOP standpipe shall be carried out by using the following:

- equipment to measure the cable tension both on FOP and on cable-laying vessel;
- visual cable monitoring by use of ROV and/or diver survey with video documentation or alternative methods of survey near the entry of I- or J-tube to define free span form, length of seabed contact (if any), cable catenary radius and cable twisting, detection of possible loops and kinks.

**3.2** The RS surveyor shall make sure that the tensioning device to pull the cable in the protective pipes is equipped with a recorder and automation shutdown device when the maximum allowable tension is reached. The maximum lateral force in bends of protective pipes (standpipes) that does not cause cable deformation during pulling-in shall comply with the design value.

**3.3** The RS surveyor shall make sure that to limit the cable bending and avoid its damage, at the entry of J-tube a special bend restrictor shall be fitted limiting the cable bend radius during pulling-in within allowable tolerances specified by the cable manufacturer.

**3.4** The RS surveyor shall make sure that the further pulling-in stages of subsea cable on FOP are monitored by divers or ROV-mounted video camera:

- pulling-in head movement to the entrance of I- or J-tube bellmouth to avoid its possible locking;
- installation of seals and bend restrictor on the entry of I- or J-tube.

The results of examination shall be submitted to the Register.

**3.5** The integrity of conductor shall be monitored during laying and pulling-in at intervals specified in the project. In case where the continuity is damaged, the operation shall be abandoned (if provided by the approved procedures) and the conductors shall be tested for electrical resistance.

**3.6** The RS surveyor shall make sure that the installation of cable on FOP is not carried out near the heat sources; otherwise the grounds shall be provided that the insulation at rated current withstands the applied temperatures and heat accumulation in these places.

**3.7** The RS surveyor shall make sure that the fixing devices are installed in accordance with the technical documentation and are made of steel adequately protected against corrosion or non-metallic materials with appropriate properties.

**3.8** The RS surveyor shall make sure that upon completion of the cable pulling in the protective standpipes, the cables are fixed on the standpipe upper flange, the cores are laid in the terminal boxes. In case of the cable hanging, the RS surveyor shall check that it is securely fixed and the mechanical loads are transferred from the cable to the hanging structure.

**3.9** Connection and termination of cable cores, earthing of metallic cable sheaths and metallic coupling covers and enclosures shall be carried out in accordance with the approved

wiring diagrams. Connecting couplings and termination elements shall comply with the cable parameters and be compatible with switchgear on voltage, dimensions, operating conditions and applied structural materials.

**3.10** Upon completion of pulling-in and connection of cable in the witness of the RS surveyor, the following shall be carried out:

- check of damages to sheath and water ingress inside the cable;

- check of cable core integrity (DC resistance of conductor);

- check of cable phases;

- measurement of cable insulation resistance (including fibre optic cable, where applicable);

- cable overvoltage testing (DC or AC beyond low frequency);

- measurement of optical fibre features received by optical reflectometer, which record shall be obtained for each fibre and, if possible, from both ends;

- integrated cable load testing.

Received values shall be compared with the factory test report, any deviations shall be recorded.

**3.11** Additional examination shall confirm that the cable and the relevant equipment (e.g. weak link, bend restrictor, protection) are installed in accordance with the specified requirements and all temporary installation devices are removed."