RUSSIAN MARITIME REGISTER OF SHIPPING
HEAD OFFICE

CIRCULAR LETTER **No.** 315-46-904c dated 09.06.2016

Re:

implementation of the requirements of IMO resolution MSC.379(93) "Performance Standards for Shipborne Beidou Satellite Navigation System (BDS) Receiver Equipment" in the Rules for the Equipment of Sea-Going Ships, 2016, ND № 2-020101-088-E

Item of technical supervision:

radionavigation system receivers

Implementation:	01.07.2016
Valid: till	---
Validity period extended till	---
Cancels / Amends/ Supplements Circular Letter No.	--- dated --
Number of pages:	1+3
Appendices:	amendments to Part V "Navigational Equipment" of the Rules for the Equipment of Sea-Going Ships, 2016, ND No. 2-020101-088-E

Technical Director - Head of Classification Directorate Vladimir I. Evenko

Amends Part V "Navigational Equipment" of the Rules for the Equipment of Sea-Going Ships, 2016, ND No. 2-020101-088-E

We hereby inform that in connection with coming into force on 1 July 2016 of the provisions of IMO resolution MSC.379(93) "Performance Standards for Shipborne BeiDou Satellite Navigation System (BDS) Receiver Equipment" and with the purpose of implementation of the above document provisions in the RS practical activity, Part V "Navigational Equipment" of the Rues for the Equipment of Sea-Going Ships, 2016, ND No. 2-020101-088-E, shall be amended as specified in the Appendix to the Circular letter.

The amendments shall be considered during the republication of the Rules.

It is necessary to do the following:

1. **Bring the content of the Circular Letter to the notice of the RS surveyors and all interested organizations and shipowners in the area of the RS Branch Offices' activity.**
2. **Apply the amendments to the Rules for the Equipment of Sea-Going Ships specified in the Appendix to the Circular Letter since 01 July 2016.**

Person in charge:	I.P. Shvaiba	315	380 19 92
DMS "THESIS" No.:	No. 16-134189 of 31.05.2016		

Appendix to Circular Letter
No. 315-46-90/f 09.06.2016

Amendments to Part V "Navigational Equipment" of the Rules for the Equipment of Sea-Going Ships, 2016, ND No. 2-020101-088-E

Part V "Navigational Equipment"

1. Chapter 5.11 "Radionavigation system receivers" shall be supplemented with **para 5.11.7** reading as follows:

"**5.11.7** BeiDou satellite navigation system (BDS) receiver.

5.11.7.1 The BDS receiver equipment intended for navigation on board the ships having the speed not exceeding 70 knots shall include the following minimum facilities:

.1 antenna capable of receiving BDS signals;
.2 BDS receiver and processor;
.3 means of accessing the computed latitude/longitude position;
.4 data control and interface;
.5 position display and, if required, other forms of output.

If BDS forms part of an RS- approved Integrated Navigation System (INS), requirements of 5.11.7.3, 5.11.7.4, 5.11.7.5 may be provided within the INS.

5.11.7.2 The antenna design shall be suitable for fitting at a position on the ship which ensures a clear view of the satellite constellation.

5.11.7.3 The BDS receiver equipment shall conform to the following performance standards:

.1 be capable of receiving and processing the BDS positioning and velocity, and timing signals, and shall use the ionospheric model broadcast to the receiver by the constellation to generate ionospheric corrections;
.2 provide position information in latitude and longitude in degrees, minutes and thousandths of minutes;

N o t e. BeiDou uses China Geodetic Coordinate System (CGCS) 2000 which is a realization of the International Terrestrial Reference Frame (ITRF) system and differs from WGS 84 by less than 5 cm worldwide.
Conversion to WGS 84 is not needed for maritime navigation.

.3 provide time referenced to universal time coordinated UTC (NTSC) (NTSC - China National Time Service Centre);
.4 be provided with at least two outputs from which position information, UTC, course over ground (COG), speed over ground (SOG) and alarms can be supplied to other equipment. The output of position information shall be based on the World Geodetic System (WGS) 84 datum and shall be transferred in accordance with international standards (IEC 61162). The output of UTC, course over ground (COG), speed over ground (SOG) and alarms shall be consistent with the requirements of 5.11.7.3.15 and 5.11.7.3.17;

.5 have static accuracy such that the position of the antenna is determined to be within 25 m horizontally (95 per cent) and 30 m vertically (95 per cent);
.6 have dynamic accuracy equivalent to the static accuracy specified in 5.11.7.3.5 above under the normal sea states and motion experienced in ships;
.7 have position information in latitude and longitude in degrees, minutes and thousandths of minutes with a position resolution equal to or better than 0,001 min of latitude and longitude;
.8 be capable of selecting automatically the appropriate satellite-transmitted signals to determine the ship's position and velocity, and time with the required accuracy and update rate;
.9 be capable of acquiring satellite signals with input signals having carrier levels in the range of -130dBm to -120dBm. Once the satellite signals have been acquired, the equipment shall continue to operate satisfactorily with satellite signals having carrier levels down to -133dBm;
.10 be capable of operating satisfactorily under normal interference conditions (refer to 5.1);
.11 be capable of acquiring position, velocity and time to the required accuracy within 12 min where there is no valid database (almanac data);
.12 be capable of acquiring position, velocity and time to the required accuracy within 1 min where there is valid database (almanac data);
.13 be capable of reacquiring position, velocity and time to the required accuracy within 1 min when there has been a service interruption of 60 s or less;
.14 generate and output to a display and digital interface a new position solution at least once every 1 s for conventional craft and at least once every 0,5 s for high-speed craft;
.15 provide the course over ground (COG), speed over ground (SOG) and Universal Time Coordinate (UTC) outputs, with a validity mark aligned with that on the position output. The accuracy requirements for COG and SOG shall not be inferior to the relevant performance standards for heading, speed and distance measuring equipment, and the accuracy shall be obtained under the various dynamic conditions that could be experienced on board ships;
.16 provide at least one normally closed contact, which shall indicate failure of the BDS receiver equipment;
.17 have a bidirectional interface to facilitate communication so that alarms can be transferred to external systems and so that audible alarms from the BDS receiver can be acknowledged from external systems. The interface shall comply with the relevant international standards (IEC 61162);
.18 have the facilities to process differential BDS (DBDS) data fed to it in accordance with the standards of ITU-R9 and the appropriate Radio Technical Commission for Maritime Services (RTCM) standard and provide indication of the reception of DBDS signals and whether they are being applied to the ship's position. When a BDS receiver is equipped with a differential receiver, performance standards for static and dynamic accuracies (5.11.7.3.5 and 5.11.7.3.6 above) shall be 10 m (95 per cent);
.19 the BDS receiver equipment shall indicate whether the receiver performance is outside the bounds of requirements for general navigation in the ocean, coastal, port approach and restricted waters, and in inland waterway phases of the voyage.

5.11.7.4 The BDS receiver equipment shall, as a minimum:

.1 provide a warning within 5 s of loss of position or if a new position based on the information provided by the BDS constellation has not been calculated for more than 1 s for conventional craft and 0,5 s for high-speed craft. Under such conditions the last known position and the time of last valid fix, with the explicit indication of the state allowing for no ambiguity, shall be output until normal operation is resumed;
.2 use Receiver Autonomous Integrity Monitoring (RAIM) to provide integrity performance appropriate to the operation being undertaken;
.3 provide a self-test function.

5.11.7.5 Precautions shall be taken to ensure that no permanent damage can result from an accidental short circuit or grounding of the antenna or any of its input or output connections or any of the BDS receiver equipment inputs or outputs for a duration of five minutes. **".**

~~1.~~2. **Para. 5.1.17** shall be renumbered **5.11.8.**

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