



RUSSIAN MARITIME REGISTER OF SHIPPING

CIRCULAR LETTER

No. 313-04-1401c

dated 28.05.2020

Re:

amendments to the Guidelines on the Application of Provisions of the Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines, ND No. 2-030101-025-E

Item(s) of supervision:

ships under construction and in service

Entry-into-force date:

01.07.2020

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Appendices:

Appendix 1: information on amendments introduced by the Circular Letter

Appendix 2: text of amendments to Section "Abbreviations, Subscripts and Symbols"; Sections 1 "General", 2 "Survey of Marine Diesel Engines at the Firm (Manufacturer)", 3 "Application of the Marine Diesel Engine Family or Marine Diesel Engine Group Concepts at the Firm (Manufacturer)", 4 "Technical Supervision during Tests of Marine Diesel Engines at the Firm (Manufacturer) for Compliance with the NO_x Emission Limits", 5 "Surveys of Marine Diesel Engines on Board" and 6 "Survey of Diesel Engines on Board for Compliance with the NO_x Emission Limits"; and Appendices 1 and 2

Director General

Konstantin G. Palnikov

Text of CL:

We hereby inform that in connection with the entry into force of revisions to ACSUIs MPC30 (Rev.1 Nov 2019), MPC32 (Rev.1 Jan 2020), MPC33 (Rev.2 Nov 2019), MPC40 (Rev.1 Nov 2019), MPC45 (Rev.1 Nov 2019), MPC53 (Rev.1 Nov 2019), MPC54 (Rev.1 Nov 2019), MPC58 (Rev.1 Nov 2019), MPC59 (Rev.1 Nov 2019), MPC74 (Rev.1 Nov 2019), MPC77 (Rev.1 Nov 2019), MPC112 (Rev.1 Nov 2019), MPC115 (Corr.1 May 2020) and MPC116 (Rev.1 Nov 2019) the Guidelines on the Application of Provisions of the Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines, ND No. 2-030101-025-E shall be amended as specified in the Appendices to the Circular Letter.

It is necessary to do the following:

1. Bring the content of the Circular Letter to the notice of the RS surveyors, interested organizations and persons in the area of the RS Branch Offices' activity.
2. Apply the provisions of the Circular Letter during surveys of ships under construction and in service from the entry in to force date of amendments.

List of the amended and/or introduced paras/chapters/sections:

Section "Abbreviations, Subscripts and Symbols": Table 3

Section 1: Chapter 1.3

Section 2: Paras 2.1.7 and 2.1.11.7

Section 3: Paras 3.1.3–3.1.6, 3.3.11.3, 3.4.1 and 3.4.6.3

Section 4: Paras 4.2.1, 4.3.2, 4.3.5 and 4.4.5

Section 5: Paras 5.1.4.1, 5.1.4.6 and 5.2.9

Section 6: Para 6.2.1.2

Appendix 1: Paras 2.1 and 2.2

Appendix 2: Tables "Gas analyzers" and "Fuel"

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**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 "Abbreviations, Subscripts and Symbols", Table 3	The term for the symbol " T_a " has been specified considering Table 3 "Abbreviations" of the NO _x Technical Code	313-04-1401c of 28.05.2020	01.07.2020
2	Section 1, Chapter 1.3	The definitions have been specified considering IACS UI MPC32 (Rev.1 Jan 2020)	313-04-1401c of 28.05.2020	01.07.2020
3	Section 2, para 2.1.7	The requirements have been specified considering IACS UI MPC33 (Rev.2 Nov 2019)	313-04-1401c of 28.05.2020	01.07.2020
4	Section 2, para 2.1.11.7	The requirements have been specified considering IACS UI MPC45 (Rev.1 Nov 2019)	313-04-1401c of 28.05.2020	01.07.2020
5	Section 3, para 3.1.3	The requirements have been specified considering IACS UI MPC53 (Rev.1 Nov 2019)	313-04-1401c of 28.05.2020	01.07.2020
6	Section 3, paras 3.1.4–3.1.6	New paras 3.1.4 and 3.1.5 have been introduced considering IACS UI MPC53 (Rev.1 Nov 2019) and IACS UI MPC54 (Rev.1 Nov 2019), accordingly. Existing para 3.1.4 has been renumbered 3.1.6	313-04-1401c of 28.05.2020	01.07.2020
7	Section 3, para 3.3.11.3	The requirements have been specified considering IACS UI MPC58 (Rev.1 Nov 2019)	313-04-1401c of 28.05.2020	01.07.2020
8	Section 3, para 3.4.1	The requirements have been specified considering IACS UI MPC53 (Rev.1 Nov 2019)	313-04-1401c of 28.05.2020	01.07.2020
9	Section 3, para 3.4.6.3	The requirements have been specified considering IACS UI MPC59 (Rev.1 Nov 2019) and para 4.4.6.3 of the NO _x Technical Code	313-04-1401c of 28.05.2020	01.07.2020
10	Section 4, para 4.2.1	The requirements have been specified considering IACS UI MPC30 (Rev.1 Nov 2019)	313-04-1401c of 28.05.2020	01.07.2020

11	Section 4, para 4.3.2	The requirements have been specified considering IACS UI MPC74 (Rev.1 Nov 2019)	313-04-1401c of 28.05.2020	01.07.2020
12	Section 4, para 4.3.5	The requirements have been specified considering IACS UI MPC74 (Rev.1 Nov 2019)	313-04-1401c of 28.05.2020	01.07.2020
13	Section 4, newpara 4.4.5	New para 4.4.5 has been introduced considering IACS UI MPC74 (Rev.1 Nov 2019)	313-04-1401c of 28.05.2020	01.07.2020
14	Section 5, para 5.1.4.1	The requirements have been specified considering IACS UIs MPC112 (Rev.1 Nov 2019), MPC115 (Corr.1 May 2020), MPC116 (Rev.1 Nov 2019)	313-04-1401c of 28.05.2020	01.07.2020
15	Section 5, para 5.1.4.6	The requirements have been specified considering IACS UIs MPC112 (Rev.1 Nov 2019), MPC115 (Corr.1 May 2020) and MPC116 (Rev.1 Nov 2019)	313-04-1401c of 28.05.2020	01.07.2020
16	Section 5, para 5.2.9	The requirements have been specified considering IACS UI MPC40 (Rev.1 Nov 2019)	313-04-1401c of 28.05.2020	01.07.2020
17	Section 6, para 6.2.1.2	The requirements have been specified considering IACS UI MPC77 (Rev.1 Nov 2019) and para 6.2.1.2 of the NO _x Technical Code	313-04-1401c of 28.05.2020	01.07.2020
18	Appendix 1, Section 2, para 2.1	The requirements have been specified	313-04-1401c of 28.05.2020	01.07.2020
19	Appendix 1, Section 2, para 2.2	The requirements have been specified	313-04-1401c of 28.05.2020	01.07.2020
20	Appendix 2, Section 4, Table "Gas analyzers"	The requirements have been specified considering IACS UI MPC74 (Rev.1 Nov 2019)	313-04-1401c of 28.05.2020	01.07.2020
21	Appendix 2, Section 4, Table "Fuel"	The requirements have been specified considering IACS UI MPC74 (Rev.1 Nov 2019)	313-04-1401c of 28.05.2020	01.07.2020

GUIDELINES ON THE APPLICATION OF PROVISIONS OF THE TECHNICAL CODE ON CONTROL OF EMISSION OF NITROGEN OXIDES FROM MARINE DIESEL ENGINES, 2018

ND NO. 2-030101-025-E

ABBREVIATIONS, SUBSCRIPTS AND SYMBOLS

1 **Table 3.** The term for the symbol " T_a " is replaced by the following text:

"Intake air temperature determined at the engine intake".

1 GENERAL

2 **Chapter 1.3.** The new definition "**Substantial modification of the marine diesel engine**" is introduced after the definition "Record book of Engine Parameters" reading as follows:

"Substantial modification of Marine Diesel Engine means

.1 for engines installed on ships constructed on or after 1 January 2000, substantial modification means any modification to an engine that could potentially cause the engine to exceed the emission standards set out in Appendix 1 (regulation 13 of Annex VI to MARPOL 73/78). Routine replacement of engine components by parts specified in the Technical File (refer to 2.1.11) that do not alter emission characteristics shall not be considered a substantial modification, regardless of whether one part or many parts are replaced;

.2 for engines installed on ships the keels of which are laid or which are constructed before 1 January 2000 —the alterations of which at the engine modifications after 1 January 2000 may 10 % increase the existing NO_x emission characteristics as specified in 6.3.11.1. These changes include, but not limited to, changes in its operations or in technical parameters: changing camshafts of high pressure fuel pumps; fuel injection systems, air systems, combustion chamber configuration, timing calibration of the engine, and other changes influencing the NO_x emissions. The Installation of a surveyed approved method pursuant to regulation 13.7.1.1 of Annex VI to MARPOL 73/78 or survey in compliance with regulation 13.7.1.2 of Annex VI to MARPOL 73/78 is not considered to be a substantial modification for the purpose of the application of regulation 13.7.1.2 of Annex VI to MARPOL 73/78.

Any modification made on or after 1 January 2000 to such an engine involving alternative duty cycle, rating, components or settings that were available, but not necessarily utilised, prior to 1 January 2000 shall not be considered as representing a "substantial modification" to that engine."

Chapter 1.3. The definition "**Substantial modification of a marine diesel engine**" is deleted.

2 SURVEY OF MARINE DIESEL ENGINES AT THE FIRM (MANUFACTURER)

3 **Para 2.1.7** is replaced by the following text:

2.1.7 If the marine diesel engine cannot be surveyed on a test bed, due to its size, construction and delivery schedule, the engine may apply to the manufacturer, shipowner or shipbuilder may apply to the Register with a request for on-board test and before the test results are ready a preliminary approved Technical File, pending the results of the emission test shall be provided. If the result of the emission test does not comply with the applicable NO_x regulation, the engines shall be re-adjusted to the compliance condition originally approved, if any, or the

applicant shall apply to the Flag Administration for acceptance of further testing. The applicant shall demonstrate to the Register that the on-board test fully meets all the requirements of a test-bed procedure, as specified in Section 4. Such a procedure of survey may be accepted for one engine or for an engine group represented by the parent engine only, but it shall not be accepted for an engine family survey."

4 **Para 2.1.11.7** is replaced by the following text:

"**.7** identification marking (specifications) of those spare parts/components which, when used in the engine, according to those specifications, will result in continued compliance of the engine with the applicable NO_x emission limit. The "specification" need only address those aspects of the design of the component which directly affect its function as a NO_x critical component. For some components it shall be possible to define these components by means of an outline dimensioned drawing within the conformity of production procedures or as a drawing directly included within the Technical File, or other data defining the features used by a manufacturer's during manufacture."

3 APPLICATION OF THE MARINE DIESEL ENGINE FAMILY OR MARINE DIESEL ENGINE GROUP CONCEPTS AT THE FIRM (MANUFACTURER)

5 **Para 3.1.3** is replaced by the following text:

"**3.1.3** The diesel engine group concept in accordance with GOST R ISO 8178-8 may be applied to any engine intended for main propulsion or auxiliary duties, where adjustment and modification following installation (and through the service life of the engine) is considered routine."

6 **New para 3.1.4** is introduced reading as follows:

"**3.1.4** Engines within an Engine Family may have different cylinder bore and stroke dimensions (within the defined limits – refer to 3.3.9.2.3). Engines within an Engine Group concept have identical bore and stroke dimensions as a result of only one of the parameters defined under 3.4.6.2 being permitted to vary within the defined engine group.

An Onboard NO_x Verification Procedure shall be included within the Technical Files of all engines irrespective of whether they are included within an Engine Family or Engine Group."

New para 3.1.5 is introduced reading as follows:

"**3.1.5** Where the measured performance of a Member Engine to an Engine Family or Engine Group is fundamental to the verification that that member engine is operating within the parameters defined by the approved engine family or group, then that performance data (emissions, engine performance, ambient conditions) and other necessary data shall have been obtained (refer to Section 4, Chapter 5 of the NO_x Technical Code)."

Existing para 3.1.4 is renumbered **3.1.6**.

7 **Para 3.3.11.3** is replaced by the following text:

"**3.3.11.3** If the parent marine diesel engine of the family complies with all specified criteria (refer to 3.3.10.2 and its compliance with the NO_x emission is confirmed, the determined Parent Engine NO_x emission value specified in the Supplement to EIAPP Certificate for Parent Engine(s) and all subsequent Member Engines within the Engine Family or Engine Group as established from that Parent Engine test.

Where Member Engine pre-certification requires the measurement of some performance values, the calibration of the equipment used for those measurements shall be in accordance with the requirements of Appendices 4 and 5."

8 **Para 3.4.1** is replaced by the following text:

3.4.1 The Engine Group concept shall be interpreted as applicable to any engine intended for main propulsion or auxiliary duties, where adjustment and modification following installation (and through the service life of the engine) is considered routine.

However, these modifications and adjustments shall not result in the NO_x emissions exceeding the limits."

9 **Para 3.4.6.3** is replaced by the following text:

3.4.6.3 Generally, if the criteria required by 3.4.6.2 are not common to all engines within a prospective Engine Group, then those engines may not be considered as an Engine Group. However, an Engine Group may be accepted if only one of those criteria is not common for all of the engines within a prospective Engine Group.

When considering the criteria the IACS UI MPC59 (Rev. 1 Nov 2019) shall be followed. Rated power at rated speed is considered as one parameter. Derating and uprating, in terms of power per cylinder and rated speed, outside the approved power or speed ranges shall be interpreted as deviations from the specified parameter."

4 TECHNICAL SUPERVISION DURING TESTS OF MARINE DIESEL ENGINES AT THE FIRM (MANUFACTURER) FOR COMPLIANCE WITH THE NO_x EMISSION LIMITS

10 **Para 4.2.1.** The first paragraph is replaced by the following text:

4.2.1 Test air condition parameter.

The absolute temperature T_a of the intake air in K, determined at the engine intake that is determined at the engine/turbobcharger intake suction filter shall be measured, and the dry atmospheric pressure p_s , in kPa, shall be measured or calculated as follows:"

11 **Para 4.3.2** is replaced by the following text:

4.3.2 The selection of the fuel oil for the test depends on the purpose of the test. If a suitable reference fuel oil is not available, it is recommended to use a DM-grade marine fuel specified in ISO 8217:2017 or domestic analogue, with properties suitable for the engine type. In case a DM-grade fuel oil is not available, a RM-grade fuel oil according to ISO 8217:2017 shall be used. The fuel oil shall be analysed for its composition of components and properties necessary for a clear identification and determination of fuel properties shall justify ISO 8217 (DMA, DMB or RM-grade), including determination of the fuel Cetane index (ISO 4264:2018), carbon residue (ISO 10370:2014)."

12 **Para 4.3.5** is replaced by the following text:

4.3.5 Gas fuel temperature shall be measured and recorded with the measurement point position together with other measurements."

13 **New para 4.4.5** is introduced reading as follows:

4.4.5 The data set given under Appendix 3 "Test report" (Annex 5 of the NO_x Technical Code (NTC)), shall not be considered definitive and any other test data (i.e. engine performance or setting data, description of control devices) shall be specified as well, relevant to the approval of a specific engine design and/or on-board NO_x verification procedures, shall also be given. For the engine fitted with selective catalytic reduction system (SCR) and tested under scheme "A", the parameters listed in 5.2.2 of IMO resolution MEPC.291(71) shall be measured and recorded in the engine test reports:

- .1 reduction catalyst/reducing agent injection speed at each load point (kg/h);
- .2 exhaust gas temperature at the intended inlet and outlet of the SCR chamber (°C);
- .3 pressure differential (kPa);
- .4 other parameters specified by Administration.

For the engine fitted with selective catalytic reduction system (SCR), under scheme B, the exhaust gas temperature at the intended inlet of the SCR chamber shall be determined and recorded in the test report. For dual fuel engines, the ratio of liquid-to-gas, gas fuel temperature and its measurement point position shall be recorded during the testing."

5 SURVEYS OF MARINE DIESEL ENGINES ON BOARD

14 **Para 5.1.4.1.** The first paragraph is replaced by the following text:

"**5.1.4.1** Where a NO_x reducing device is to be included within the EIAPP Certificate, it shall be recognized as a component of the engine and its presence shall be recorded in the Technical File of Marine Diesel Engine. The marine diesel engine fitted with SCR system to reduce NO_x emissions shall be certified in terms of the requirements referenced in Chapter 2 of the NO_x Technical Code. The procedures provided by Scheme A or Scheme B in compliance with the Guidelines Addressing Additional Aspects of the NO_x Technical Code with regard to Particular Requirements related to Marine Diesel Engines fitted with SCR Systems adopted by IMO resolution MEPC.291(71), as amended by IMO resolution MEPC.313(74), shall be applied. At that IACS UIs MPC112(Rev.1 Nov 2019), MPC115 (Corr.1 May 2020) and MPC116 (Rev.1 Nov 2019) shall be considered.

15 **Para 5.1.4.6** is replaced by the following text:

"**5.1.4.6** In addition to the information supplied in 5.1.4.3 and 5.1.4.4 an engine including the NO_x reducing device may be approved considering 2017 Guidelines Addressing Additional Aspects of the NO_x Technical Code 2008 with regard to Particular Requirements related to Marine Diesel Engines fitted with SCR systems. At that the IACS UIs MPC112 (Rev.1 Nov 2019), MPC115 (Corr.1 May 2020) and MPC116 (Rev.1 Nov 2019) developed to these Guidelines shall be considered."

16 **Para 5.2.9** is replaced by the following text:

"**5.2.9** If any adjustment or modification is made which is outside the approved limits documented in the Technical File, the IAPP Certificate may be issued only if the overall NO_x emission performance is verified to be within the required limits by onboard Simplified Measurement; or, reference to the test-bed testing for the relevant Engine Group approval showing that the adjustments or modifications do not exceed the applicable NO_x emission limit. At surveys after the initial engine survey, the Direct Measurement and Monitoring method, as approved by the Administration, may alternatively be used.

In these instances it shall be understood that the Parent Engine emission value, as given in the EIAPP Certificate, thereafter only relates to the condition of that engine at the Precertification Survey stage."

6 SURVEY OF DIESEL ENGINES ON BOARD FOR COMPLIANCE WITH THE NO_x EMISSION LIMITS

17 **Para 6.2.1.2** is replaced by the following text:

"**6.2.1.2** The marine diesel engine parameter check method shall be conducted, whenever there is a check in components and/or adjustable features of the marine diesel engine that affect the NO_x emission levels.

In compliance with IACS UI MPC77 (Rev.1 Nov 2019) a survey shall additionally be required where the component or adjustable feature change is outside that already approved for the Engine Group or Engine Family and as given in the engine's Technical File. In such cases the change shall need to be documented in accordance with 6.2.3.2."

NO_x EMISSION STANDARDS AND TEST CYCLES

2 TEST CYCLES AND WEIGHTING FACTORS

18 **Para 2.1** is replaced by the following text:

"2.1 For every Individual Engine or Parent Engine of an Engine Family or Engine Group, one or more of the relevant test cycles specified in 2.2 — 2.6 shall be applied for verification of compliance with the applicable NO_x emission limits contained in regulation 13 of Annex VI to MARPOL 73/78.

19 **Para 2.2** is replaced by the following text:

"2.2 For constant speed marine diesel engines for ship main propulsion, including diesel electric drive, test cycle E2 shall be applied in accordance with Table 2.2.

For those cases when the installed engine with a constant speed can be used either exclusively as the main engine or for auxiliary purposes, then such an engine shall be certified for both test cycles E2 and D2. Where the generator is permanently installed or coupled to the main engine, which is a part of the propulsion shafting system, then certification of such a main engine only in E2 or E3 cycles, as applicable, shall be required."

TECHNICAL FILE (UNIFIED FORM WORKED OUT BY THE REGISTER)

4 TEST BED TRIALS PROTOCOL

3 DATA ON MEASURING EQUIPMENT

Sheet 3

20 **Table "Gas analyzers"**. "Deviation, in %" is supplemented by reference "1" reading as follows:

"1 Deviation, in %, refers to the deviation of the analyzer calibration and not the deviation of the span gas concentration".

4 DATA ON FUEL AND LUBRICATING OIL

Sheet 4

21 **Table "Fuel"**. The first line is replaced by the following text:

"Grade (ISO 8217:2017)".

Table "Fuel" is supplemented by two new lines reading as follows:

"Cetane index (ISO 4264:2018)

Carbon residue (ISO 10370:2014)".