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AIR POLLUTION AND ENERGY EFFICIENCY

Unified Interpretation on engine test cycles required by the NO_X Technical Code 2008

Submitted by IACS

SUMMARY

Executive summary:	The annex to this document provides the latest version of the IACS Unified Interpretation (UI) MPC 51 on engine test cycles as required by paragraph 3.2.1 of the NO_X Technical Code 2008
Strategic direction:	1.1
High-level action:	1.1.2
Output:	1.1.2.3
Action to be taken:	Paragraph 7
Related document:	PPR 4/20

Background

1 In developing the NO_X Technical Code 2008, the DE and BLG Sub-Committees took into account IACS UI MPC 51.

2 Subsequently, the requirements for test cycles and weighting factors in the NO_X Technical Code 2008 were finalized (in resolution MEPC.177(58)) as follows:

> "3.2.1 For every individual engine or parent engine of an engine family or engine group, one or more of the relevant test cycles specified in 3.2.2 to 3.2.6 shall be applied for verification of compliance with the applicable NO_X emission limit contained in regulation 13."

Discussion

3 IACS has given careful consideration as to how the test cycles to be applied for verification of compliance with the applicable NO_X emission limits contained in regulation 13 of MARPOL Annex VI and the provisions of the NO_X Technical Code (NTC) 2008 are to be interpreted.

4 Therefore, in applying the NO_X Technical Code 2008, IACS has recognized a need to further clarify the certification of engines that are intended to operate as part of an Integrated Electric Propulsion (IEP) system i.e. engines driving an alternator supplying electrical power for both propulsion and auxiliary power. Such arrangements can typically be found on cruise ships. In particular, IACS considers that clarification is needed with respect to testing in accordance with the D2 and E2 cycles.

5 Consequently, IACS has revised UI MPC 51 based on the following considerations:

.1 the NO_X Technical Code 2008 specifies test cycles to be applied for verification of compliance with the applicable NO_X emission limits as specified in regulation 13 of the MARPOL Annex VI. Paragraph 3.2.1 of the NO_X Technical Code 2008 requires that one or more of the relevant test cycles specified in paragraphs 3.2.2 to 3.2.6 of the Code shall be applied (see paragraph 2 above);

.2 for diesel-electric propulsion applications two test cycles may be considered:

.1 test cycle E2: test cycle for "Constant-speed main propulsion" application (including diesel-electric drive and all controllable-pitch propeller installations); and

.2 test cycle D2: test cycle for "Constant-speed auxiliary engine" application;

.3 for the E2 test cycle paragraphs 3.2.2 and 3.2.3 of the NO_X Technical Code 2008 apply i.e.:

.1 paragraph 3.2.2 – "for constant speed marine diesel engines for ship main propulsion, including diesel electric drive, test cycle E2 shall be applied in accordance with table 1"; and

.2 paragraph 3.2.3 – "for an engine connected to a controllable pitch propeller, irrespective of combinator curve, test cycle E2 shall be applied in accordance with table 1"; and

.4 the test cycle D2 is intended for "constant speed" auxiliary engines rather than for engines operating in integrated electric propulsion systems. For the latter, main propulsion is considered to be the main purpose and therefore only E2 certification is required, irrespective of whether energy can be distributed to the switchboard for other (auxiliary) purposes.

6 In light of the comments and analysis above, IACS has finalized a revision to IACS UI MPC 51, a copy of which is provided in the annex to this document. The Committee is invited to note that IACS members will uniformly implement revision 1 of IACS UI MPC 51 when an application for certification of an engine is dated on or after 1 July 2018, unless they are provided with written instructions to apply a different interpretation by the Administration on whose behalf they are authorized to act as a recognized organization.

Action requested of the Committee

7 The Committee is invited to consider the comments and analysis provided in paragraphs 3 to 6 above, together with the copy of revision 1 of IACS UI MPC 51, as set out in the annex, and take action as appropriate.

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MPC 51 (July 2004) (Rev.1 Jan 2017) Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines

Paragraph 3.2.1, Chapter 3 of NOx Technical Code (NTC) 2008 reads:

3.2.1 For every Individual Engine or Parent Engine of an Engine Family or Engine Group, one or more of the relevant test cycles specified in 3.2.2 to 3.2.6 shall be applied for verification of compliance with the applicable NOx emission limit contained in regulation 13.

Interpretation

For application of this section it shall be interpreted that:

(a) For a parent engine of an engine family or engine group, one or more test cycles may be applied where an engine family or engine group may contain engine models which can be used solely for one application and engine models which can be used for another application.

(b) Individual engines or member engines of an engine family or engine group intended to be used for more than one application are to be certified for the relevant test cycles.

(c) In those instances where an engine as installed on board may be used simultaneously or separately for supplying energy for auxiliary purposes and for supplying energy to main propulsion that engine is to be certified to the test cycle only which represents the main purpose of the engine application. In such cases main propulsion is considered to be the main purpose and takes precedence. This, for example, means that any-diesel-electric propulsion application only requires E2 certification irrespective of whether energy can be distributed to the switchboard for other (auxiliary) purposes. Similarly, this applies to main engines which e.g. can also drive cargo pumps.

Note:

1. This UI is to be uniformly implemented by IACS Societies from 19 May 2005.

2. Rev.1 of this UI is to be uniformly implemented by IACS Societies when an application for certification of an engine is dated on or after 1 July 2018.

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