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INTERNATIONAL CONVENTION FOR THE CONTROL AND MANAGEMENT OF SHIPS' BALLAST WATER AND SEDIMENTS, 2004

Guidance on scaling of ballast water management systems

1 The Marine Environment Protection Committee, at its sixty-second session (11 to 15 July 2011), approved the Guidance on scaling of ballast water management systems developed by the Sub-Committee on Bulk Liquids and Gases (BLG) at its fifteenth session (7 to 11 February 2011), as set out in the annex.

2 Member Governments and international organizations are invited to bring the annexed Guidance to the attention of all parties concerned.

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ANNEX

GUIDANCE ON SCALING OF BALLAST WATER MANAGEMENT SYSTEMS

1 Reference in the Guidelines (G8)

1.1 In addition to the definitions given in the Guidelines (G8), the following terms are defined:

.1 *Base unit* is a ballast water treatment equipment as defined in the Guidelines (G8).

.2 *Scaled unit* is the ballast water treatment equipment that is based on the base unit but has been modified to accommodate a higher or lower treatment rated capacity (TRC).

1.2 An equipment review and certification of a scaled system should be undertaken by the Administration. Such a review should be supported by:

.1 Mathematical modelling and/or calculations demonstrating that any parameters that would affect system performance are equivalent between base and scaled units; and

.2 The results of the environmental tests specified in Part 3 of the Annex to Guidelines (G8), for each configuration of scaled units, should such tests be required by the Administration.

1.3 The assumptions made for the scaling of the base unit should be verified for each scaled unit (i.e. discrete models, e.g., 250 m^3/h, 500 m^3/h, 1,000 m^3/h) by testing to the requirements of Part 2 of the Annex to the Guidelines (G8) for shipboard tests (hereafter referred to as shipboard tests). The time required in paragraph 2.2.2.7 of the Guidelines (G8) may be reduced from 6 to 3 months.

1.4 The same consideration should be given for scaled systems (i.e. discrete models, e.g., TRC=250 m^3/h, 500 m^3/h, 1,000 m^3/h) that are tested according to the requirements for land-based tests.

1.5 In the case where all discrete models are tested according to the requirements for land-based tests, the most vulnerable model should be tested according to the requirements for shipboard tests, to demonstrate the ability of the model to operate in normal ships' conditions.

1.6 Combinations of base units and scaled units which have been verified in their performance according to paragraphs 1.2 to 1.5 should be regarded as multiple units mounted in parallel and do not fall within the scope of this document.

1.7 Failing to meet the provisions of 1.2 to 1.5, each scaled system should be tested according to the requirements for land-based tests and shipboard tests.

1.8 If scaling and shipboard testing is intended to be utilized to type-approve a system beyond its currently approved TRC without land-based testing then the following process applies:

.1 The documentation specified in paragraph 1.5 should identify the key internal and external performance parameters (e.g., dosage concentration, UV intensity, filter flux density, etc.) required to achieve the system's efficacy, and also specify the physical/environmental conditions and design parameters that affect these.

.2 Validated mathematical model and/or calculations should be used to predict that the key performance parameters will be achieved in the scaled unit design and that the fundamental mechanism of operation is not changed.

.3 It should be verified through shipboard testing that the scaled unit achieves the critical values of the key performance parameters utilizing the design determined by the model and or calculations identified in subparagraph 1.8.2.

.4 Modelling should address the efficacy and environmental impact of the system. The actual chemical analysis for by-products should be performed during shipboard testing, if necessary.

1.9 A representative number of scaled systems capacities, taking into account the treatment technology, should be tested according to the requirements for shipboard tests.

2 Reference in the Procedure (G9)

2.1 When scaling from systems that have received Basic and Final Approval from the Committee according to the Procedure (G9), the manufacturer and the Administration should ensure that any conditions on Final Approval of the base unit are still met for the scaled system or systems.

3 Issuing of Type Approval for systems using scaled units

3.1 The Type Approval Certificate issued by the Administration should include each and every scaled system if the scaling is done according to these procedures.

4 Application to existing Type Approvals involving scaled units

4.1 Administrations are encouraged to apply this guidance to systems having received Type Approval involving scaled units prior to the adoption of this guidance to the greatest extent possible.