INTERNATIONAL MARITIME ORGANIZATION

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MARINE ENVIRONMENT PROTECTION COMMITTEE
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Agenda item 4

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PREVENTION OF AIR POLLUTION FROM SHIPS

Proposal of the ISO 15016 for the development of the EEDI verification procedure and report of status of its computer programme

Submitted by the Republic of Korea

SUMMARY	
Executive summary:	This document proposes to use the ISO 15016 Speed Trial Analysis Guidelines as a starting point for the development of an EEDI verification procedure and reports the status of a comprehensive computer programme which complies with the ISO 15016
Strategic direction:	7.3
High-level action:	7.3.1
Planned output:	7.3.1.1 and 7.3.1.3
Action to be taken:	Paragraph 11
Related documents:	MEPC 58/23; GHG-WG 2/2/14, GHG-WG 2/2/16 and MEPC 59/4/2

Introduction

1 This document is submitted in accordance with paragraph 4.10.5 of the Guidelines on the organization and method of work of the Committees and their subsidiary bodies (MSC-MEPC.1/Circ.2) and comments on document MEPC 59/4/2 (Secretariat).

2 MEPC 58 approved the use of the draft Interim Guidelines on the method of calculation of the Energy Efficiency Design Index for new ships, and for calculation/trial purposes with a view to further refinement and improvement (MEPC 58/23, paragraph 4.54).

3 GHG-WG 2 reported that the verification process was a technical issue and would be one of the targets of trial calculations of the EEDI (MEPC 59/4/2, paragraph 2.52).

4 In document GHG-WG 2/2/16, Japan advocated that the attained EEDI must be verified in a transparent, consistent and fair manner (paragraph 8), and that the results of sea trials should be implemented in accordance with ISO15016 (paragraph 26).

5 In document GHG-WG 2/2/14, Norway emphasized that an ISO international standard exists that may be a starting point for the development of an EEDI verification procedure, i.e. ISO 15016:2002 Ships and marine technology – Guidelines for the speed and power performance by analysis of speed trial data (paragraph 8).

Application of the ISO15016 Standard for the Vref Verification

6 The ISO 15016 speed trial analysis guidelines which has already been developed by ISO is known to be a very sophisticated method that can consider various effects, such as wave, wind, steering, drifting, water temperature, salt content, vessel condition, and shallow water. By using a reliable industry standard, the Republic of Korea believes that IMO can devote itself more to the development of requirements and regulations.

Proposal

7 Therefore, the Republic of Korea proposes that the Committee agrees that the ISO 15016 Speed Trial Analysis Guidelines should be used as a starting point for the development of the EEDI verification procedure.

Provision of Computer Programme for the ISO 15016 Speed Trial Analysis Guidelines

8 In the Republic of Korea, a comprehensive computer programme that complies with the ISO 15016 Speed Trial Analysis Guidelines has already been developed by KORDI (Korea Ocean Research and Development Institute), published at the eighth International Symposium on Practical Design of Ships and Other Floating Structures (PRADS) that was held in Shanghai, China, in August 2001, and is widely used by shipyards in the Republic of Korea.

9 This computer programme was developed complying with the ISO 15016 and supplemented slightly as in annex, so that users could easily input any calculation with graphic user interface it embodies, as well as provide calculation results with table and figures. Further information on the computer programme may be found in the annex (in English only) to this document.

10 The Republic of Korea is willing to review this programme and to develop an updated programme by coordination with other Member States for the purpose of speed trial calculation and verification of the EEDI.

Action requested of the Committee

11 The Committee is invited to consider the ISO 15016 standard and its related computer programme as a starting point for the development of the EEDI verification procedure.

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ANNEX

COMPUTER PROGRAMME OF SPEED TRIAL ANALYSIS ACCORDING TO THE ISO 15016 STANDARD

1 Background of the Speed Trial Analysis Programme ST10

This comprehensive computer programme ST10 complying with the ISO 15016 Speed Trial Analysis Guidelines has been developed by Korea Ocean Research and Development Institute (KORDI), and published at the eighth International Symposium on Practical Design of Ships and Other Floating Structures (PRADS) in August 2001 as follows:

> Kim, Eun-Chan *et al*., "Evaluation and Computer Programme on the Speed Trial Analysis Method of the Ongoing Work in ISO/TC8", Proceedings of the Eighth International Symposium on Practical Design of Ships and Other Floating Structures, Shanghai, 2001

The speed trial results should be analysed under the contractually stipulated conditions where there are usually no wind, no wave, no current, deep water, smooth hull and smooth propeller surface conditions. ISO 15016:2002, entitled "Guidelines for the assessment of speed and performance by analysis of speed trial data," contains basic procedure for the speed loss and various procedures for the correction of all influences. Several methods are supplemented slightly to complete all influences at the speed trial condition.

This computer programme is developed to optimize the structure, to emphasize the graphic function and to implement the GUI at WINDOWS environment. Various analysis methods for resistance increase due to ship motion, wave diffraction, wind, steering, drifting, water temperature and salt content, deviation of displacement, hull and propeller surface roughness, and shallow water effects are contained in this computer programme.

2 Functions of the computer programme

The computer programme was developed containing all of the ISO 15016 methods, and supplemented few methods. The functions of this programme are shown in Table 1.

Table 1: Speed trial analysis methods of the computer programme ST10

Speed Trial Analysis	Speed Trial Analysis Programme ST10	
	ISO 15016 Method	Supplemented Method
Speed loss from added resistance	Taniguchi-Tamura	
Added resistance due to wind	Wind Test Results	Blendermann Chart Isherwood Chart
	JTTC Chart	
Resistance Increase due to waves	Maruo	
Diffraction of incident waves in short waves	Faltinsen	
	Kwon	
	Fujii-Takahashi	
Effect of steering for course keeping	SR208	
Effect of drifting	SR208	
Effect of water temperature and salt content	Simple Formula	

Speed Trial Analysis	Speed Trial Analysis Programme ST10	
	ISO 15016 Method	Supplemented Method
Effect of displacement	Simple Formula	
Effect of shallow water	Lackenby	
Effect of hull roughness	-	ITTC '78
Effect of propeller roughness	-	ITTC '78

3 Running Procedures of the computer programme

Figures 1-3 show the examples of input data, running procedure and output data.

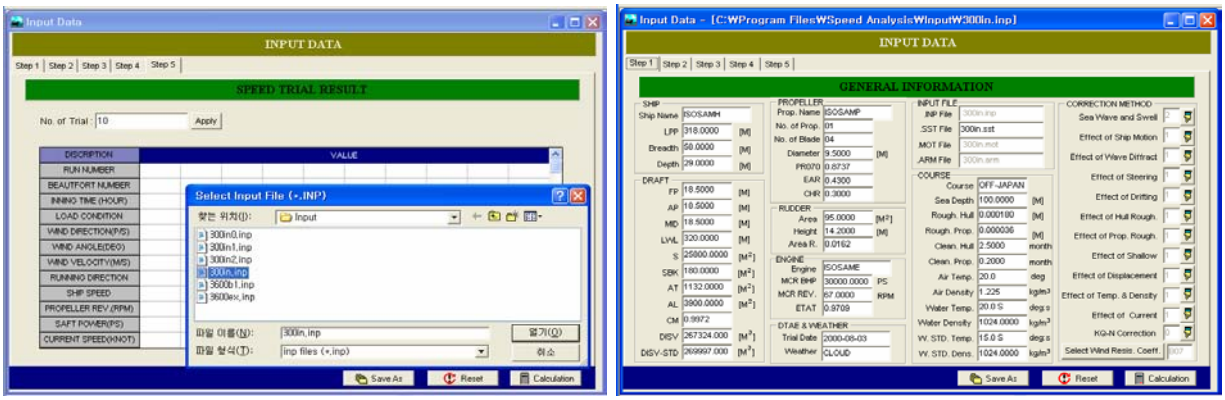

Figure 1: Example of data input

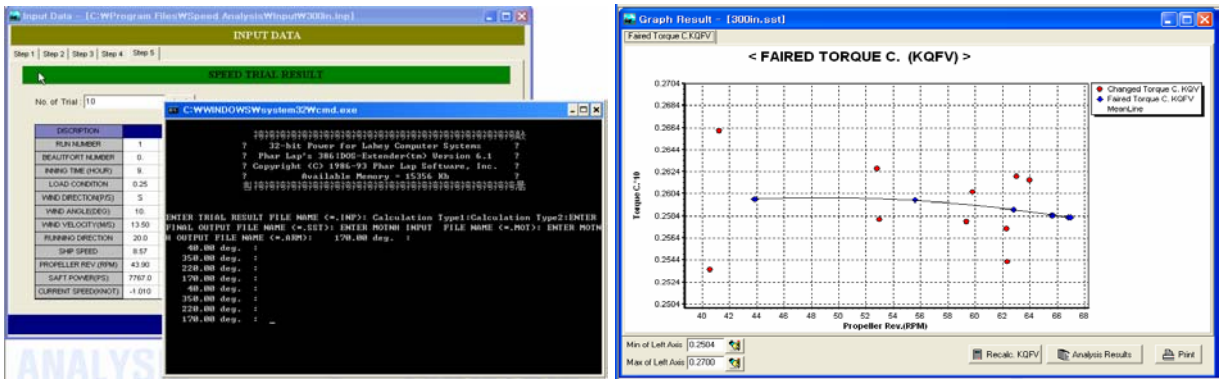

Figure 2: Example of running programme

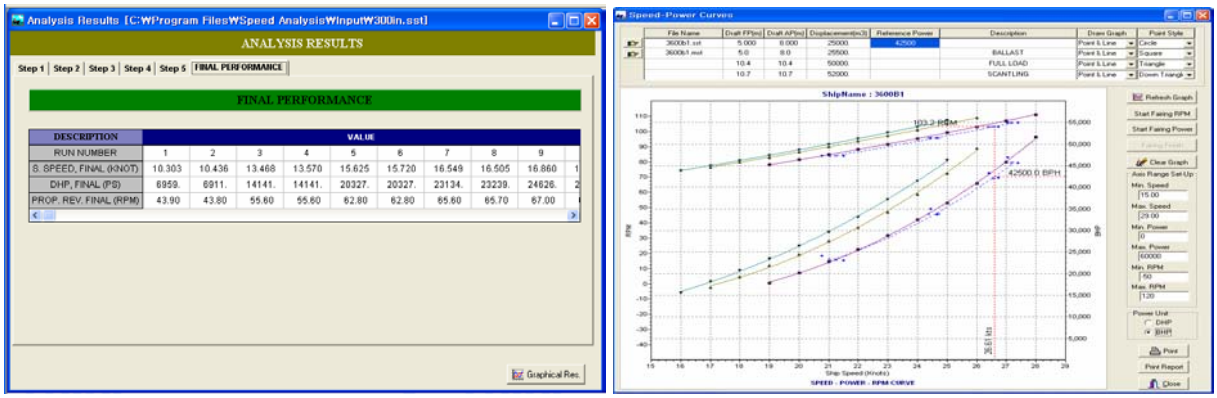

Figure 3: Example of output