# Revision of the Interim Minimum Power Guidelines, based on the project results such as SHOPERA and JASNAOE

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# 1. Background

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- The 2013 Interim Guidelines for determining minimum propulsion power to maintain the maneuverability of ships in adverse conditions (hereinafter referred as “the Interim Guidelines”) was adopted at MEPC 65, which were applied to ships required to comply with regulation 21 of MARPOL Annex VI during phase 0.

- MEPC 68, held in May 2015, adopted “*Amendments to the 2013 Interim Guidelines for determining minimum propulsion power to maintain the manoeuvrability of ships in adverse conditions”* to strengthen only Level 1 assessment (minimum power lines assessment).

- In addition to the discussion related to the amendments of Level 1 assessment, MEPC 68 noted that a thorough review on the level 2 assessment (simplified assessment) of the Interim guidelines would be conducted after receiving the results of ongoing projects of SHOPERA and JASNAOE in the autumn of 2016.

# Summary of the Interim Guidelines (cf. MEPC.1/Circ.850.rev1)

## Level-1 assessment by minimum power lines

Installed propulsion power (total main engine output) is not to be less than the specified value calculated using formula as a function of deadweight for each ship type.

If a ship does not satisfy the level-1 criteria, level-2 assessment is to be considered.

## Level-2 simplified assessment by indirect assessment

Level-2 simplified assessment is an indirect assessment procedure based on an assumption that, in the following adverse condition, if a ship has sufficient installed power to move with a certain advance speed in head waves and wind, and if it is lower than the torque limit within the operating range of the installed engine, the ship can also be expected to maintain course in waves and wind from any other direction.

| Ship length Lpp (m) | Significant wave height (m) | Peak wave period (s) | Mean wind speed (m/s) |
|---|---|---|---|
| Lpp＜200 | 4.0 | 7.0 to 15.0 | 15.7 |
| 200≦Lpp＜250 | * | | * |
| Lpp≧250 | 5.5 | | 19.0 |

* Linearly interpolated depending on ship's length

# 2. Discussing issues at the IMO

# Amendment of minimum power lines of Level 1 assessment at MEPC 68

- MEPC 68 considered any possible amendment to level 1 assessment in the Interim Guidelines, taking into account documents submitted by Denmark, Greece and Japan.
- According to the Interim Guidelines, the criteria are set as follows,

**2 Minimum power lines**

2.1 The minimum power line values of total installed MCR, in kW, for different types of ships should be calculated as follows:

$$\text{Minimum Power Line Value} = a \times (DWT) + b$$

where:

*DWT* is the deadweight of the ship in metric tons; and *a* and *b* are the parameters given in table 1 for tankers, bulk carriers and combination carriers.

**Before** MEPC 68

Table 1: Parameters a and b for determination of the minimum power line values for the different ship types

| Ship type | a | b |
|---|---|---|
| Bulk carrier | 0.0687 | 2924.4 |
| Tanker | 0.0689 | 3253.0 |
| Combination Carrier | see tanker above | |

**After** MEPC 68

Table 1: Parameters a and b for determination of the minimum power line values for the different ship types

| Ship type | a | b |
|---|---|---|
| Bulk carrier which DWT is less than 145,000 | 0.0763 | 3374.3 |
| Bulk carrier which DWT is 145,000 and over | 0.0490 | 7329.0 |
| Tanker | 0.0652 | 5960.2 |
| Combination carrier | see tanker above | |

# Impacts of the amended Interim Guidelines on existing ships

- After the discussion at MEPC 68, the minimum power lines have been increased except for very large bulk carriers as below figures.

  ○Supplement of the figures
  - ・Red line: the lines revised at MEPC 68
  - ・Dotted line: the lines stipulated in the Interim Guidelines

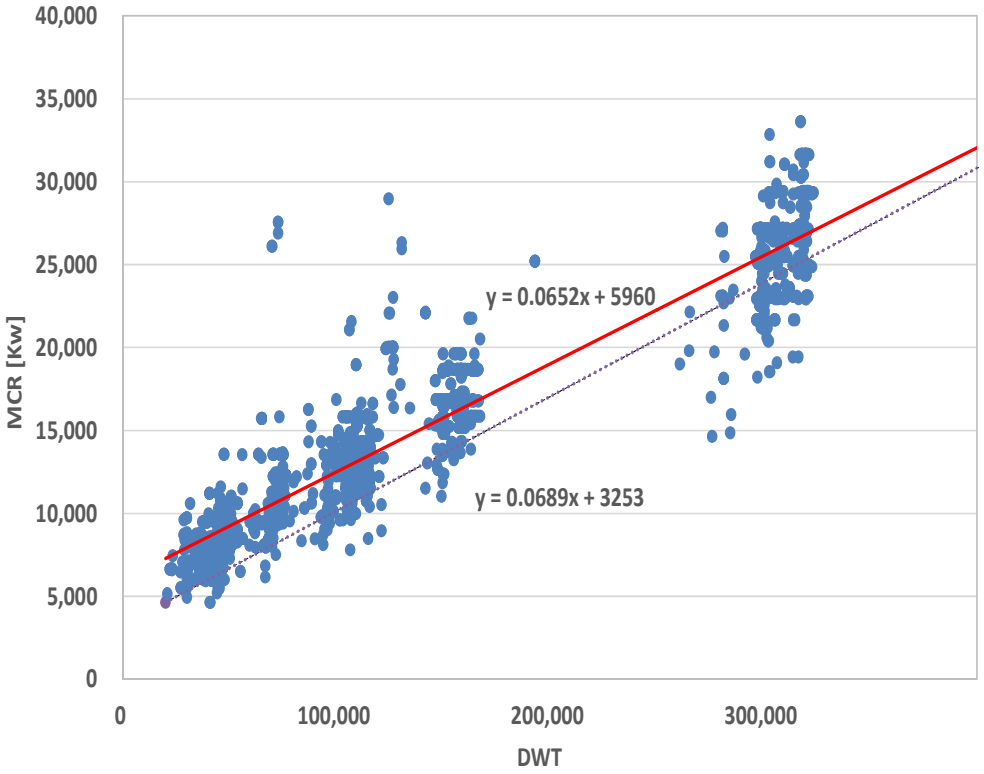


Fig.1 The minimum power lines for tankers

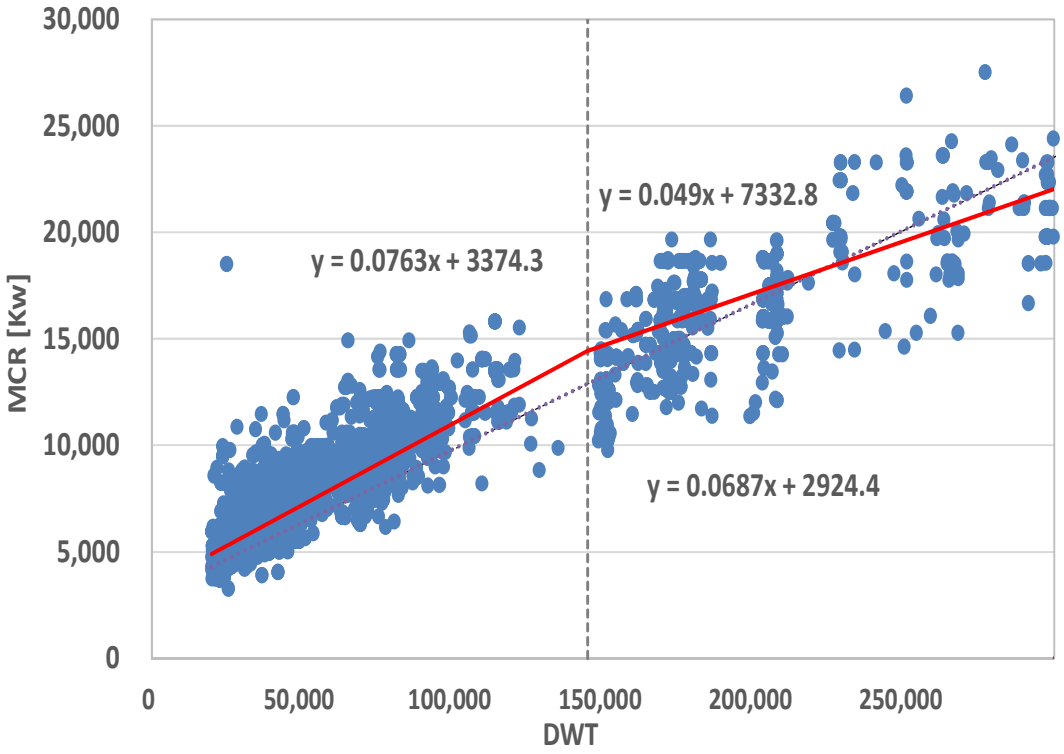


Fig.2 The minimum power lines for bulk carriers

# Future work toward MEPC 71

- A thorough review on the level 2 assessment (simplified assessment) of the Interim Guidelines would be conducted based on the results of ongoing projects of SHOPERA and JASNAOE.
- In accordance with the work plan for revision of the Interim Guidelines, Japan believes that interested countries and organizations may consider this issue with view to adopt the revised Guidelines at MEPC71 which will be held in the spring of 2017 .

Issues to be considered for the revised Guidelines

**① Development of numerical simulation for direct assessment in the revised Guidelines**

- ✓ Conducting a model tests
- ✓ Verifying a numerical calculation based on the model tests

**② Consideration of framework and contents of the revised Guidelines.**

- ✓ Framework of the revised Guidelines.
- ✓ Simplified assessment
- ✓ Determination of the criteria for minimum propulsion power

It is important to develop technically appropriate and consistent revised Guidelines based on research results such as SHOPERA and JASNAOE.

# 3. Conclusions

# Conclusions

1. Japan considers that it is essential for international shipping to achieve EEDI requirement as well as keeping minimum power requirement.

2. Therefore, when considering revision of the Interim Guidelines, it is essential to conduct comprehensive review and revision of the Interim Guidelines taking into account of the result of various ongoing research projects such as SHOPERA and JASNAOE.

3. Japan would like to contribute the development of the revised Guidelines which have realistic and technically consistency solutions towards MEPC 71.

# Thank you for your kind attention