

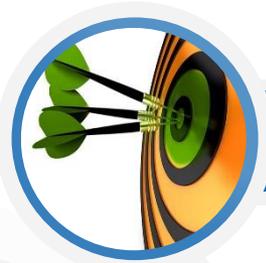
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IMO DCS

Main issues ; SEEMP Part II

KOREAN REGISTER

Future Technology Research Team



Collecting ship fuel oil consumption & GHG emission

- Identify information on ship fuel usage and GHG emissions
- IMO Strategy on reduction of GHG emissions from ships (2023, including short-, mid- and long-term)



MARPOL ANNEX VI

(Regulations for the Prevention of Air Pollution from Ships)

- Reg. 22A
(Collection and Reporting of Ship Fuel Oil Consumption Data)
 - ✓ (MEPC 69) Amendment of MARPOL Annex VI. Chapter IV
 - ✓ (MEPC 70) Adoption of Res. MEPC.278(70)



Guidelines

- **The development of a ship energy efficiency management Plan**
- Administration verification of ship fuel oil consumption data
- The development and management of the IMO ship fuel oil consumption database
- MEPC.1/Circ.876 (Sample format for the Confirmation of Compliance)

APPLICATION of IMO DCS

▶ 5,000 GT and Above

- It is not applied to ships not propelled by mechanical means, and platforms including FPSOs, FSUs and drilling rigs, regardless of their propulsion

Company

Ship

- SEEMP Part II
- CoC kept on board

Entry into force

'18.3.1



- SEEMP Part II Survey
- Issuance of CoC

'19.1.1

Ship

Data monitoring



Calendar year

'19.12.31

Ship

Report data to Administration or RO

'20.3.31

'20.5.31



within 1 month



- Verification of annual data collected
- Issuance of SoC
- Transfer to IMO DB
- Via electronic communication
- Using standardized format

Ship

Effective SoC kept on board

DCS Annually

Administration / RO



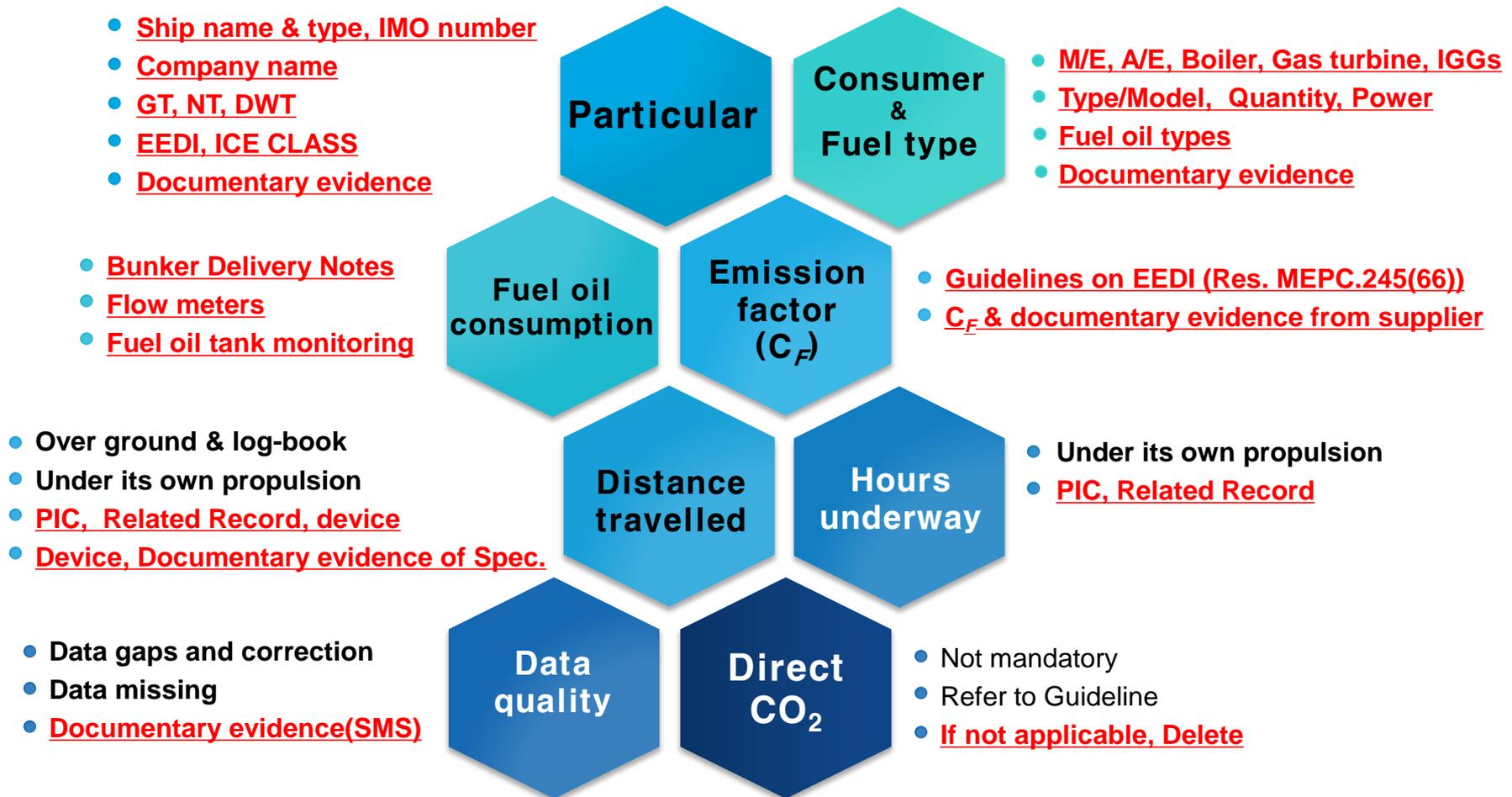
- ✓ Confirmation of Compliance
- ✓ Approval of SEEMP Part II
- ✓ Keeping on board



- ✓ Statement of Compliance
- ✓ Data Verification
- ✓ Keeping on board (PSC)

SEEMP Part II Sample - KR

✓ Published SEEMP Part II Sample (Ver.4), based on Guideline(SEEMP)



Documentary Evidence

- ✓ **SMC**(Safety Management Certificate)
 - Company & Flag
 - Additionally, Ship name, ship type*, IMO number, Gross Tonnage
- ✓ **ITC**(International Tonnage Certificate)
 - Net Tonnage, Gross Tonnage
- ✓ **IEE**(International Energy Efficiency Certificate)
 - EEDI & DWT
 - Refer to 'Attained' EEDI
- ✓ **ICC**(Ice Classification Certificate)
 - Ice class 확인

❖ Ship Particulars

Name of ship

IMO number

Company

Flag

Ship type

Gross tonnage

NT

DWT*

EEDI (if applicable)

Ice class

❖ Ship Type

Bulk carrier	Passenger ship
Tanker	Combination carrier
Gas carrier	Refrigerated cargo carrier
LNG carrier	Ro-ro cargo ship (Vehicle carrier)
Container ship	Ro-ro passenger ship
Cruise passenger ship	

Documentary Evidence

- ✓ **Piping diagram**
 - Fuel consumer
 - Method to measure fuel oil consumption(esp.B)
- ✓ **IAPP(International Air Pollution Prevention Certificate)**
 - Engine(Main & Auxiliary) information
 - * Type/Model, Power, RPM etc.
- ✓ **Document stated information of other consumer**
 - Unable to check by IAPP certificate
 - Check information stated in SEEMP Part II
- ✓ **Capacity Plan**
 - Used Fuel type & tanks
- ✓ **Other fuel oil type**
 - **Submission of C_F and supporting documents**
 - Estimating fuel oil type(grade) based on recent BDN
 - If it's difficult to estimate, multiple selection is recommended
 - (LNG Carrier) If BOG is used as fuel, include LNG surely

❖ Fuel consumers

Main engine	Mandatory
Auxiliary engine	
Gas turbines	
Boilers	
Inert Gas Generator	
Incinerator	✓ BAHAMA flag, Mandatory
Heater	✓ Other flag, Voluntary

Fuel oil Type	C_F
Diesel/Gas oil	3.206
LFO	3.151
HFO	3.114
LPG (propane)	3.000
LPG (butane)	3.030
LNG	2.750
Methanol	1.375
Ethanol	1.913
Other(.....)	

Method to measure fuel oil consumption – (A)BDN

- ✓ Determining the annual total amount of fuel oil used based on BDN(3 years)
 - Annual fuel oil consumption = $T_1 + R - S - T_2$
 - T_1 = Amount of remaining tank oil at the beginning of the year
 - R = Total amount of bunkering for calendar year
 - S = Total amount of fuel oil offloaded for calendar year
 - T_2 = Amount of remaining tank oil at the end of the year
- ✓ (Issue 1) Considering density for report fuel consumption in metric tonnes
 - Specifying Calculation Methods, Procedures, records etc.
 - Refer to SEEMP Part II sample(Ver.04)
- ✓ (Issue 2) Check residual quantity in tanks
 - Method for fuel oil tank reading(Equipment, applied tank or emission source, Details)
 - In details, specifying measurement equipment specification, maintenance intervals etc.

Method to measure fuel oil consumption – (B)Flow meters

✓ By measuring fuel oil flows on board by using flow meters

- Annual fuel oil consumption = **Sum of daily fuel oil consumption**
- To measure all fuel oil consumption on board
- Describing flow meters & their link to specific fuel oil consumers
- If consumer not monitored with flow meter, alternative method should be included
- If flow meter is installed after the daily tank, correction for sludge is not necessary
- Specifying and recording calibration & maintenance

✓ (Issue 1) **Checking method selected – validation**

- **Piping Diagram**
- **Recording fuel oil consumption daily**
- **For detail, including procedure to calculate consumption, record, PIC etc.**

✓ (Issue 2) **Calibration and maintenance**

- **Must be included in SEEMP Part II(refer to data quality)**
- **If internal procedures is used, the content should be incorporated in SEEMP Part II**
- **Submission of internal procedures**

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- Specifying and recording calibration & maintenance

✓ (Issue 3) Recommendation of calibration

- (1) Executing calibration from specialized company at regular interval ► result(report)
- (2) Executing calibration from specialist(supplier) at regular interval ► result(report)
- (3) Verifying accuracy by a competent person at regular interval ► records

✓ (Issue 4) BAHAMA Flag – mandatory issues

- Backup method must be described for use in case of fuel meter malfunction
- Accuracy of fuel meters shall be verified by a competent person on annual basis

Method to measure fuel oil consumption – (C) Tank sounding

- ✓ By tank readings which are carried out by appropriate methods
 - Annual fuel oil consumption = amount of daily fuel oil consumption data
 - Using automated system, soundings and dip tapes
 - Occurring daily when the ship is at sea
 - Occurring each time the ship is bunkering or de bunkering
 - Summary of monitoring data containing records of measured fuel oil consumption
- ✓ (Issue 1) Considering density for report fuel consumption in metric tonnes
 - Specifying Calculation Methods, Procedures, records etc.
 - Refer to SEEMP Part II sample(Ver.04)
- ✓ (Issue 2) Check residual quantity in tanks
 - Checking daily tank sounding
 - For detail, including procedure to calculate consumption, record, PIC etc
 - (Indirect) Equipment name, location, type/model, emission source, fuel types used
 - (Direct) Equipment name, applied tank or emission source, Details)
 - In details, specifying measurement equipment specification, maintenance intervals etc.

◆ Data quality

✓ (Q.1) 2016 Guidelines 7.2, Approval of Safety Management System

The Data Collection Plan should include data quality control measure which should be incorporated into the existing shipboard safety management system

✓ (Q.2) Range of difference(A) & error (B,C) (in case of using KR's sample)

(A.1) Safety Management System(SMS) is subject to approval

- ✓ All SEEMP Part II is included in the existing SMS
- ✓ Data quality control measure is only included in SMS

(A.1) Safety Management System(SMS) is not subject to approval

- ✓ SEEMP Part II refer to data quality control measure of SMS

(A.2) Standard of difference & error – Company's internal procedure

- ✓ If applicable, refer to the internal procedure
- ✓ If not applicable, recommendation $\pm 10\%$ or less

SEEMP Part I & Part II

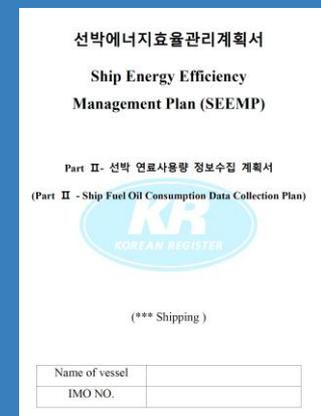
✓ Reg.22.2,

On or before 31 December 2018, in the case of a ship of 5,000 gross tonnage and above, The **SEEMP shall include a description of the methodology** that will be used to collect the data required by regulation 22A. of this Annex and the processes that will be used to report the data to the ship's Administration.

✓ (Q.1) Amendment of SEEMP

(A.1) Recommendation – Developing SEEMP Part I and Part II respectively

- ✓ SEEMP Part I(existing ship management plan to Improve energy efficiency)
 - Keeping approved SEEMP Part II on board
- ✓ SEEMP Part II, including revision information
 - Applying IMO DCS requirements(based on sample)
 - Improving efficiency on management of SEEMP Part I & II



선박에너지효율관리계획서
Ship Energy Efficiency
Management Plan (SEEMP)

Part II - 선박 연료사용량 정보수집 계획서
(Part II - Ship Fuel Oil Consumption Data Collection Plan)



(*** Shipping)

Name of vessel	
IMO NO.	

SEEMP Part II Re-approval

✓ (Q) Case of SEEMP Part II re-approval and CoC re-issue

(A) Reflecting Major conversion

✓ MARPOL Annex VI Reg.5.4.3

The survey shall also verify that the SEEMP required by regulation 22 is on board and for a ship to which regulation 22A applies, has been revised appropriately to reflect a major conversion in those cases where the major conversion affects data collection methodology and/or reporting processes

(A) Revising - Company

- ✓ If Company is the manager or charterer
- ✓ If Company is the owner
 - unavailability of using methods specified in SEEMP Part II

(A) Transfer of ship from one administration to another

(A) Changing from one company to another

(A) Changing from one Class to another

- ✓ BAHAMA, PALAU Flagged ship is mandatory, other is voluntary



Thank you