Remark

Please be noted that it is just a sample input and you need to revise the detail procedure in accordance with the company's procedure, and to arrange it as a company's document (i.e. provide cover page and/or document styles as necessary.)

SHIP FUEL OIL CONSUMPTION DATA COLLECTION PLAN

(PART II OF THE SEEMP)

1 Ship Particulars

Name of the ship	NK MARU
IMO number	9999999
Company	NK Ship Management Co., Ltd.
Flag	Marshall Islands
Ship Type	Ro-ro cargo ship (vehicle carrier)
Gross Tonnage	60,000
NT	18,000
DWT	18,000
EEDI (if applicable)	N/A
Ice class	N/A

defined by MARPOL Annex VI Reg.2
same as IEE Certificate

To enter in accordacnce with the item 3.1 of Supplement to IEE Certificate

2 Record of revision of Fuel Oil Consumption Data Collection Plan

Date of revision	Revised Provision
2018/3/1	Newly developed

3 Ship engines and other fuel oil consumers and fuel oil types used

No.	Engines or other fuel oil consumers	Power	Fuel oil types
1	Main Engine ABC Diesel, 7XX60YY	Max. Continuous Output (M.C.O.) : 10000 kW Revolution at M.C.O. : 100 rpm	HFO MDO/MGO
2	Auxiliary Engine (No.1) XYZ Diesel, 6XY20Z	Max. Continuous Output (M.C.O.) : 1000 kW Revolution at M.C.O. : 900 rpm	HFO MDO/MGO
3	Auxiliary Engine (No.2) XYZ Diesel, 6XY20Z	Max. Continuous Output (M.C.O.) : 1000 kW Revolution at M.C.O. : 900 rpm	HFO MDO/MGO
4	Auxiliary Engine (No.3) XYZ Diesel, 6XY20Z	Max. Continuous Output (M.C.O.) : 1000 kW Revolution at M.C.O. : 900 rpm	HFO MDO/MGO
5	Auxiliary Boiler XX BOILER MFG., ZZZ160-xx	Evaporation of fire side : 1.60 kg/h	HFO MDO/MGO

4 Emission factors:

Fuel oil Type	C_F ($t\text{-}CO_2$ / t- Fuel)
Diesel/Gas Oil (Reference: ISO 8217 Grades DMX through DMB)	**3.206**
Light Fuel Oil (Reference: ISO 8217 Grades RMA through RMD)	**3.151**
Heavy Fuel Oil (Reference: ISO 8217 Grades RME through RMK)	**3.114**
Liquefied Petroleum Gas (Propane)	**3.000**
Liquefied Petroleum Gas (Butane)	**3.03**
Liquefied Natural Gas	**2.750**
Methanol	**1.375**
Ethanol	**1.913**
Other fuel	**N/A**

CF value is to be entered in case where the fuel other than above is used.

CF is a non-dimensional conversion factor between fuel oil consumption and CO2 emission in the 2014 Guidelines on the method of calculation of the attained Energy Efficiency Design Index (EEDI) for new ships (resolution MEPC.245(66)), as amended. The annual total amount of CO2 is calculated by multiplying annual fuel oil consumption and CF for the type of fuel.

Example: Flow meter

5 Methods to measure fuel oil consumption

5.1 Measurement procedure, aggregation and calculation method of annual value in calender year

Please modify in accordance with the company's procedure.

Method	Description
Method 2: method using flow meters	Annual fuel oil consumption to be the sum of daily fuel oil consumption data of all relevant fuel oil consuming processes on board measured by flow meters. Amount for each type of fuel consumed from previous daily report for each navigation condition (at sea, at berth, at anchoring) to be recorded. The amount to be calculated based on fuel flow meter as per; The following formula to be used: (FOC measured by flow meter) [KL] × (density) [g/cm3] × (volume conversion factor) = FOC (MT) - The density [unit : g/cm3] to be confirmed by the fuel supplier (described in BDN). - FOC to be measured at 15℃. For the correction for temperature at 15℃, the volume conversion factor described in "attached conversion table II 2B, volume conversion factors per temperature" of "JIS K2249-4:2011 Crude petroleum and petroleum products - Determination of density - Part4:Ptroleum measurement tables" to be used.

5.2 Flow meters identification/specification and their link to fuel oil consumers

Please input the identification / specification of the applicable flow meters.

Elements applied to fuel consumers	Specification
Main Engine	Maker: XYZ CO.,LTD. Type: FM001
Aux. Engines	Maker: XYZ CO.,LTD. Type: FM002
Boiler	Maker: ABC CO.,LTD. Type: MFM123

5.3 Calibration of the flow meter

Please modify in accordance with the company's procedure.

Chief engineer checks the soundness of measurement device regularly according to the following method.
- Compare the data of Fuel Oil Consumption and Remaining On Board for each voyage.
- In addition to the above procedure, measure the fuel oil tank level (tank sounding) and fuel temperature and calculate the actual volume and record it in the engine logbook or tank sounding report. Compare this actual volume with the remaining volume in the engine logbook or tank sounding report as calculated from the flow meter value and check if for any major discrepancy.

5.4 Any consumer not monitored with a flow meter, and alternative fuel oil consumption measurement method

Nil.

6 Method to measure distance travelled

Please modify in accordance with the company's procedure.

Description
Data source is record in deck log book obtained from GPS or ECDIS or Paper chart. Annual value of distance travelled, over ground, to be integrated from daily records in noon report.

7 Method to measure hours under way

Please modify in accordance with the company's procedure.

Description
Data source is record in deck log book. Annual value of hours underway to be integrated from daily records in noon report.

8 Processes that will be used to report the data to the Administration

Please modify in accordance with the company's procedure.

Description
The vessel prepares electronic "Abstract Log" based respectively on the Deck log book and Engine log book every day at noon. Fuel consumption and other relevant data is recorded manually on board. The vessel is reporting the data in electronic form daily to the office in standardized formats; the data is then stored, processed, and analyzed ashore. After the end of calender year, Company aggregates the data into annual value and reports the data to the Administration or RO for verification. In addition, the relevant underlying data will be exported to IT System established by Administration / RO for verification according to requirements. (Overview) Vessel Send Noon report >>> Data is processed on IT system (ABLOG system) >>> Company (Department) Data quality control >>> Company Reporting for veriification

9 Data quality

	Description
Data quality control measures: Internal reviews and validation of relevant data	Companies should assess the quality of the information in the aggregated report before submitting the report for verification. .1. Responsibility of Internal reviews and validation Company shall assign a person who has enough knowledge and experience on the ship data management as responsible person for internal review and validation (hereafter Internal Reviewer). .2. Contents of internal review and validation Internal Reviewer shall review whether the reported data is complying with Regulation and show a brief description identifying that the review and validation process includes a check on whether; - data is complete - comparison with data over previous years - comparison of fuel consumption reported with purchase records - comparison of factors obtained for fuel suppliers with international reference factors - and, criteria for rejecting data, if applicable
Additional measures to be considered: Data gap	(1) Data gap on FOC In case where the fuel consumption cannot be confirmed due to missing of the engine logbook, flow meter malfunction etc., Internal Reviewer shall take countermeasures for deciding the value of fuel consumption by means of checking BDN and measurement record of fuel consumption which has been done before and after bunkering and at the time of departure and arrival. (2) Data gap on distance travelled and/or hours underway In case where the distance travelled/hours underway cannot be confirmed due to missing of the deck logbook etc., Internal Reviewer shall take countermeasures for deciding distance travelled by ECDIS or Paper Chart and etc. In certain circumstances, Internal Reviewer may calculate based on port departure time and port arrival time.

Please modify in accordance with the company's procedure.