DNV·GL

MARITIME

EU-MRV and IMO-DCS

Current status, experience exchange, next steps

MARIKO+VDR Workshop "EU MRV & IMO DCS"

22 August 2018

DNV GL's role for MRV and DCS

- DNV GL is independent **Accredited Verifier** for EU MRV by DAkkS
- DNV GL is authorised as **Recognized Organisation (RO)** for IMO DCS by all major flag administrations and most other.

Agenda

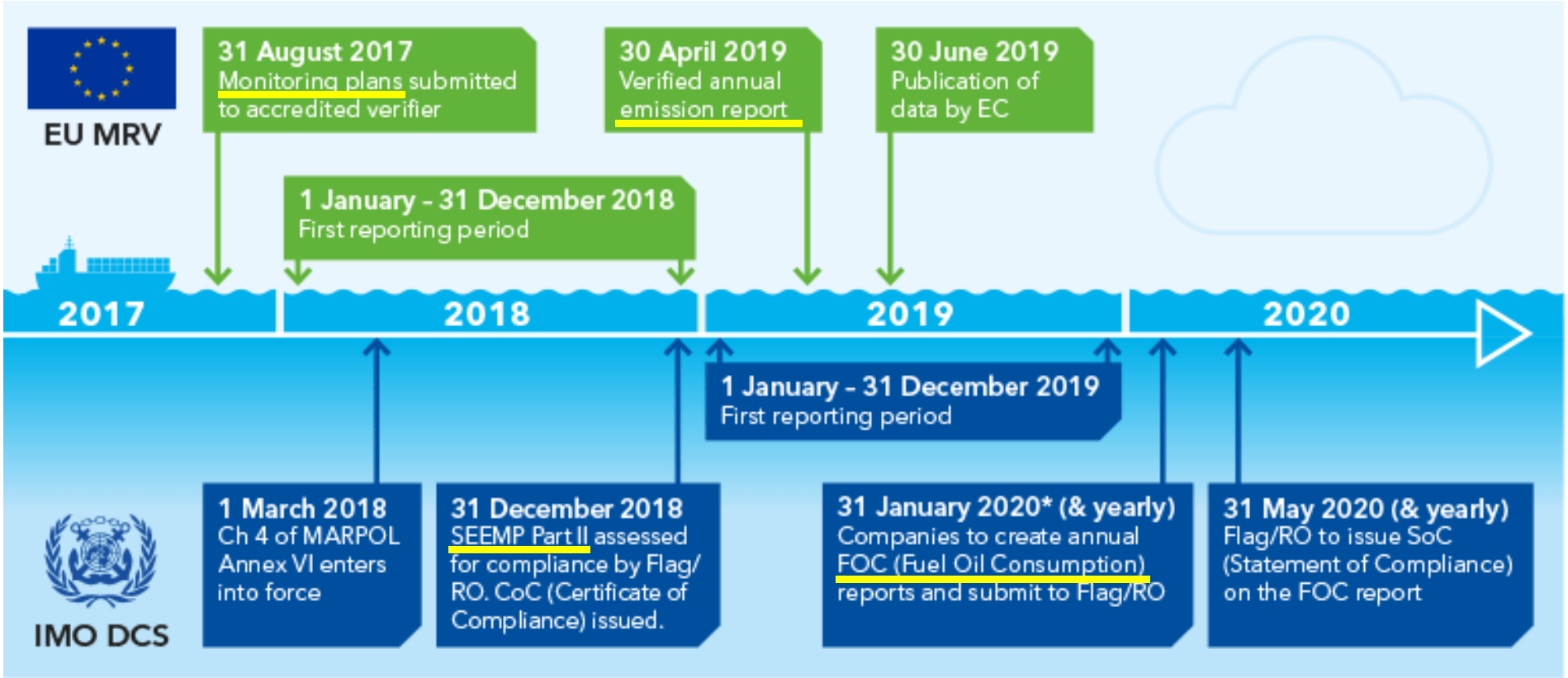
1. DCS and MRV: Regimes, key differences
2. MRV: Experience, next steps
3. DCS: SEEMP II, reporting

DCS and MRV overview

- Both, EU and IMO clear ambitions to reduce GHG (greenhouse gases) emissions from ships. Two similar albeit separate regimes introduced:
- **EU MRV** – EU Monitoring, Reporting and Verification of **CO_2 emissions** (data collection started 1 January 2018)
- **IMO DCS –** IMO Data Collection System on **fuel consumption** (data collection starts 1 January 2019)

Both EU MRV and IMO DCS requirements are **mandatory.** Collecting and analyzing emission data are the first step on the way to reduce emissions.

EU MRV & IMO DCS timeline



*The IMO DCS regulations requires companies to submit the FOC by end-March 2020 (and yearly), but DNV GL, as an RO, will strongly recommend earlier submission to rectify possible errors/non-compliance and ensure timely issuance of the SoC

Key differences between DCS and MRV

1. MRV: Consumption in port and consumption during voyage to be split
   DCS: Total aggregated annual consumption
2. MRV: Cargo for each voyage
   DCS: not required
3. MRV: new owner to report for the whole year
   DCS: each owner to report for his part of the year
4. MRV: Company to report to Thetis
   DCS: Ship to report FOC to Flag / RO ➔ Reporting to GISIS by Flag / RO
5. MRV: ER upon end of reporting period, even if owner changes
   DCS: FOC-report upon year end, change of owner or flag (from 2018, too!)

Despite those and some more differences, DNV GL
is offering one combined service for both regulations:

MRV with DNV GL? Done with DCS!

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New MRV monitoring plans from 2018 on: 15-20% yearly

1. Owner change – new MP and SoC?
   If only owner: no. In all other cases: yes.

2. Change of company - notify DNV GL / verifier?
   Yes, ref. 2015-0757 Art. 7.2.a and 7.3.

3. Change of owner – by when announce change or submit new MP?
   Without undue delay but not later than two months, ref. 2015-0757 Art. 6.2.

4. Seller required to hand over MP to buyer?
   DNV GL's legal department's is of the opinion that the seller is not required to hand over MP to buyer (mentioned in the preamble but preamble not enforceable). We suggest that the sale and purchase contract contains an obligation to deliver the MP.

MRV voyage monitoring – some challenges

- Voyage definition by berth concept, not in all companies' routines before
- Arrival = Arrival at berth at port of call
- Departure = Departure from berth at port of call
- Port of call = change of cargo, otherwise voyage continues, also STS
- Reporting period start: First departure / arrival in new period (for start of MRV reporting in 2018 and for new period starting 2019, too)
- Voyage logic (3 examples)
  - Example 1: Ship discharges fully in Korea, sails to China for dry docking, sails to Singapore for bunkering, arrives in EU for loading. Departure port?
  - Example 2: Ship arrives in EU-port to offload cargo, starts her voyage but after 15 minutes the pilot is cancelled and vessels goes back into port 1 (30min), departs and sails to other EU-port. When was departure?
  - Example 3: Ship leaves Singapore on 2017-12-20 and arrives in EU on 2018-01-03. Should this voyage be included?

MRV Emissions Report

- Emissions report:
  - Template 3 pages' document (Regulation 2016-1927 Annex III)
  - 4 parts (A-D)
- Part D: the part requiring the actual annual monitoring:
  - Fuel consumption (port/voyage)
  - Distance travelled
  - Time spent at sea
  - Transport work
- To be uploaded to Thetis by company after the end of the first 2019-01-01.
- 30 April: Verified Emissions Report
- 30 June: Publication of data by EC

Agenda

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DCS: The new SEEMP II

- Previously
  - one SEEMP (improve energy efficiency)

- Now, with DCS
  - New SEEMP consisting of two parts:
    - SEEMP I (improve energy efficiency, as before)
    - SEEMP II (describing DCS data collection)

- Note:
  - SEEMP II should be submitted separately for approval since SEEMP I is not subject to approval

- 3 pages template from IMO Resolution MEPC 282(70)

SEEMP-II (1/3)

1 Ship particulars

Name of ship	
IMO number	
Company	
Flag	
Ship type	
Gross tonnage	
NT	
DWT	
EEDI (if applicable)	
Ice class	

2 Record of revision of Fuel Oil Consumption Data Collection Plan

Date of revision	Revised provision

→***Source:*** *IMO Resolution MEPC 282(70)*

SEEMP-II (2/3)

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

	Engines or other fuel oil consumers	Power	Fuel oil types
1	Type/model of main engine	(kW)	
2	Type/model of auxiliary engine	(kW)	
3	Boiler	(…)	
4	Inert gas generator	(…)	

4 **Emission factor**

C_F is a non-dimensional conversion factor between fuel oil consumption and CO_2 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 CO_2 is calculated by multiplying annual fuel oil consumption and C_F for the type of fuel.

Fuel oil Type	C_F (t-CO_2 / t-Fuel)
Diesel/Gas oil (e.g. ISO 8217 grades DMX through DMB)	3.206
Light fuel oil (LFO) (e.g. ISO 8217 grades RMA through RMD)	3.151
Heavy fuel oil (HFO) (e.g. ISO 8217 grades RME through RMK)	3.114
Liquefied petroleum gas (LPG) (Propane)	3.000
Liquefied petroleum gas (LPG) (Butane)	3.030
Liquefied natural gas (LNG)	2.750

→***Source:*** *IMO Resolution MEPC 282(70)*

SEEMP-II (3/3)

5 **Method to measure fuel oil consumption**

The applied method for measurement for this ship is given below. The description explains the procedure for measuring data and calculating annual values, measurement equipment involved, etc.

Method	Description

6 **Method to measure distance travelled**

Description

7 **Method to measure hours underway**

Description

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

Description

9 **Data quality**

Description

→***Source:*** *IMO Resolution MEPC 282(70)*

SEEMP-II – Generated by DNVGL web application

IMO SEEMP PART II - SHIP FUEL OIL DATA COLLECTION PLAN

DNV GL Id No:

Record of revision

Version No	Date of revision	Status	Reference to chapters where modification have been made, incl. brief explanation of changes

Particulars of vessel

Name of vessel:
Type of Ship:
Gross Tonnage:
Net Tonnage:
Deadweight:
Flag:
IMO Number:
Ice class:
Energy efficiency design index, EEDI:

Prefilled by DNV GL

Particulars of Company

Company Name:
Company IMO No:

Ship engines and other fuel oil consumers and fuel oil type used

Engines or other fuel oil consumers	Power	Fuel oil types

Power output (rated power) of main and auxiliary reciprocating internal combustion engines over 130 kW (to be stated in kW). Rated power means the maximum continuous rated power as specified on the nameplate of the engine.

Emission factors

Fuel oil type	Emission factor, CF (t-CO2/t-Fuel)

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.

Method to measure fuel oil consumption

Method:

Description:

Fuel oil consumption should include all the fuel oil consumed on board including but not limited to the fuel oil consumed by the main engines, auxiliary engines, gas turbines, boilers and inert gas generator, for each type of fuel oil consumed, regardless of whether a ship is underway or not.

Method to measure distance travelled

Description:

Distance travelled should include distance travelled over ground in nautical miles to be recorded in the log-book in accordance with SOLAS regulation V/28.1. The distance travelled while the ship is underway under its own propulsion should be included into the aggregated data of distance travelled for the calendar year.

Method to measure hours underway

Description:

Hours underway should be an aggregated duration while the ship is underway under its own propulsion.

Processes that will be used to report data to the administration

Description:

Data quality

Description:

DNV GL approved MRV Plan?
Same monitoring method as for DCS?

➔ DNV GL will approve MP as SEEMP II

SEEMP Part II - use same methodology as in MRV Monitoring Plan

- The monitoring and reporting method described in an approved MRV Monitoring Plan contains all the necessary elements required in a SEEMP Part II and **a reference to this can be accepted as a DCS SEEMP Part II.**
- If an DNV GL approved MRV Monitoring Plan exists for a ship, the customer can confirm that the same method will be applied for DCS.
- A cover page will be produced with ship particulars and a reference to the MRV Monitoring Plan as the applied method.
- A Confirmation of Compliance document will be issued with reference to the cover page and attached MRV Monitoring Plan.
- Requirements:
  - The cover page and the Monitoring Plan **shall be made available onboard** attached to the existing SEEMP as Part II
  - **The MRV monitoring and reporting method shall be applied throughout the year** also on voyages outside EU

DNV GL approved MRV Plan? Same monitoring method as for DCS?

➔ DNV GL will approve MP as SEEMP II

DCS: Fuel Oil consumption report (FOC-report)

STANDARDIZED DATA REPORTING FORMAT FOR THE DATA COLLECTION SYSTEM

Method used to measure fuel oil consumption[9]	Fuel oil consumption (t)										Hours underway (h)	Distance Travelled (nm)	Power output (rated power) (kW)[8]		Ice class[7] (if applicable)	EEDI (if applicable)[6] ($gCO_2/t.nm$)	DWT[5]	NT[4]	Gross tonnage[3]	Ship type[2]	IMO number[1]	End date (dd/mm/yyyy)	Start date (dd/mm/yyyy)
	Other(.....)	(C_f ;.....)	Ethanol (C_f: 1.913)	Methanol (C_f: 1.375)	LNG (C_f: 2.750)	LPG (Butane) (C_f: 3.030)	LPG (Propane)	HFO (C_f: 3.114)	LFO (C_f: 3.151)	Diesel/Gas Oil (C_f: 3.206)			Auxiliary Engine(s)	Main Propulsion Power									

1 In accordance with the *IMO Ship Identification Number Scheme*, adopted by the Organization by resolution A
2 As defined in regulation 2 of MARPOL Annex VI or other (to be stated).
3 Gross tonnage should be calculated in accordance with the International Convention on Tonnage Measurem
4 NT vention on Tonnage Measurement of Ships
5 DW f a ship in water of relative density of 1025
ship n summer draught as certified in the stability booklet approved by the Administration or an organization
reco
6 EED es on esign Index (EEDI) for new ships, as
ame , note
7 Ice ernati dopted by resolutions MEPC.264(68)
and
8 Pow rnal combustion engines over 130 kW (to be stated in kW). Rated power means the maximum continuous
rate
9 Method used to measure fuel oil consumption: 1: method using BDNs, 2: method using flow meters, 3: method using bunker fuel oil tank monitoring

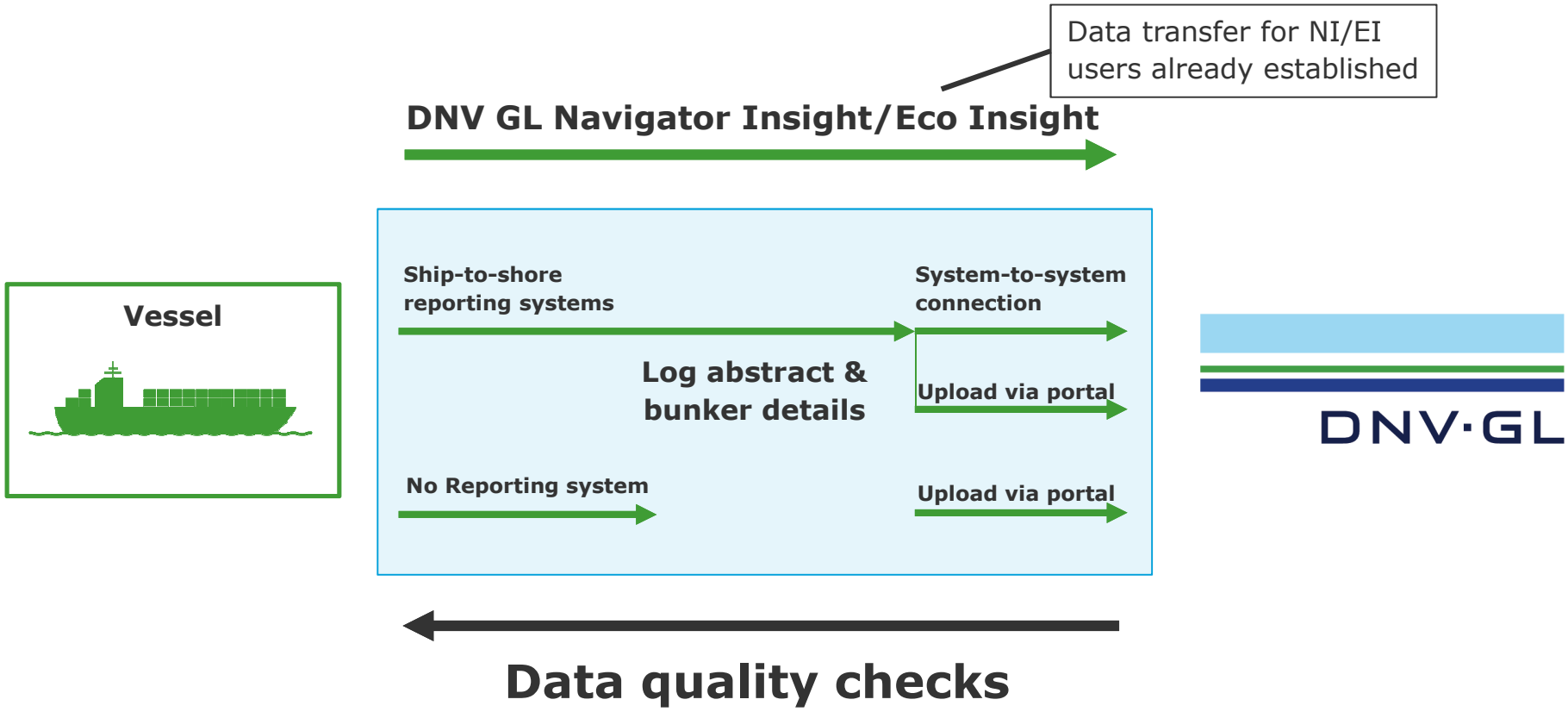
- All emission sources, aggregated annually
- 3 methods: BDNs, Flow Meters, Bunker fuel oil tank monitoring

- Vessel underway under its own propulsion

- Distance from logbook acc. SOLAS V/28.1

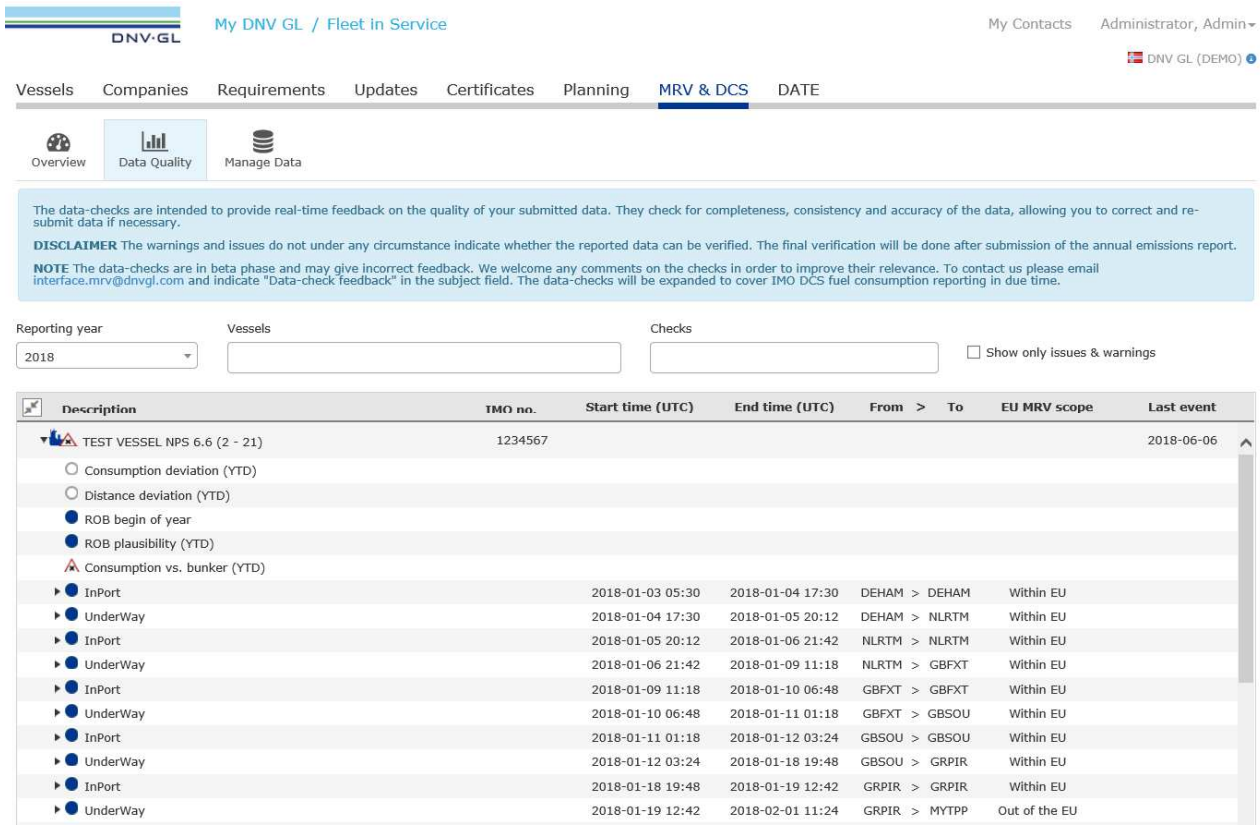
Source: MEPC.282(70)

Digital verification with DNV GL



MRV & DCS - Fleet in Service Portal

- „Overview" – status of Monitoring Plan and SEEMP II for each vessel, easy access to plan generator apps
- „Data Quality" – feedback on consistency and completeness of reported data



Description	IMO no.	Start time (UTC)	End time (UTC)	From > To	EU MRV scope	Last event
TEST VESSEL NPS 6.6 (2 - 21)	1234567					2018-06-06
Consumption deviation (YTD)						
Distance deviation (YTD)						
ROB begin of year						
ROB plausibility (YTD)						
Consumption vs. bunker (YTD)						
InPort		2018-01-03 05:30	2018-01-04 17:30	DEHAM > DEHAM	Within EU	
UnderWay		2018-01-04 17:30	2018-01-05 20:12	DEHAM > NLRTM	Within EU	
InPort		2018-01-05 20:12	2018-01-06 21:42	NLRTM > NLRTM	Within EU	
UnderWay		2018-01-06 21:42	2018-01-09 11:18	NLRTM > GBFXT	Within EU	
InPort		2018-01-09 11:18	2018-01-10 06:48	GBFXT > GBFXT	Within EU	
UnderWay		2018-01-10 06:48	2018-01-11 01:18	GBFXT > GBSOU	Within EU	
InPort		2018-01-11 01:18	2018-01-12 03:24	GBSOU > GBSOU	Within EU	
UnderWay		2018-01-12 03:24	2018-01-18 19:48	GBSOU > GRPIR	Within EU	
InPort		2018-01-18 19:48	2018-01-19 12:42	GRPIR > GRPIR	Within EU	
UnderWay		2018-01-19 12:42	2018-02-01 11:24	GRPIR > MYTPP	Out of the EU	

Digital verification with DNV GL – Key benefits

- **Combined service** for EU MRV and IMO DCS
- Enables **fully automated reporting** minimizing efforts for the ship operator, saving efforts throughout every year.
- Digital reporting **minimizes need for site visits or requests for information** for verification of Emissions Reports
- Our **dedicated interface manager** is supporting implementation of reporting
- Continuous feedback on the **data completeness** available in DNV GL online portal one hour after an upload of reports giving confidence about monitoring

Information, tools and support

https://www.dnvgl.com/maritime/eu-mrv-regulation/index.html

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https://www.dnvgl.com/maritime/imo-dcs/index.html

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DCS or MRV questions? Use DATE via My Services on dnvgl.com

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