AIR EMISSIONS: ECAs, Bunker Quality & GHG/MRV

Joe Angelo
Deputy Managing Director
Å Emission Control Area(s) (ECA)
  • Overview
  • Technical issues
  • United States/Europe enforcement

Å Bunker Quality
  • IMO
  • Regional Developments

Å Greenhouse Gas (GHG)/ Monitoring Reporting and Verification (MRV)
  • IMO
  • EU
Leading the way; making a difference

Air Emission Requirements (SOx)

A review in 2018 may conclude that the 0.5 limit should be postponed to 2025
Emission Control Areas (ECAs)
ECAs – Low Sulfur Fuel Oil (LSFO) Availability (0.1%)

- LS MGO generally available
- Sting of 0.1% soothed by oil price falls
- Premium expected to keep constant at ~$200-300 per ton
- New fuel/blends/hybrids (i.e. HDME 50)
ECAs – Fuel Change Over Challenges

Safety aspects
• combustion characteristics
• heat transfer and circulation
• flash point temp. (would 60ºC be lowered?)

Operational aspects
• fuel segregation/contamination
• incompatibility - fuel filter blockages
• low viscosity – leaks & loss in pressure
• low lubricity - pump seizure
• cloud point temperature
• bio element
HAZID to avoid mechanical failure & power loss

- INTERTANKO/OCIMF Recommendations on Fuel Change Over Procedures

- API Technical Considerations for Fuel Switching

- CIMAC Guideline for Operation of Marine Engines on Low Sulphur Diesel
USCG Advice for January 1, 2015

• Ship owners & operators should:
  – ensure that all relevant equipment on board is capable of handling ECA fuel
  – any modifications necessary are put in place and tested well before the deadline
  – review contracts with fuel suppliers to ensure an adequate supply of ECA fuel

• A vessel must use compliant fuel when operating in the ECA... however...
EPA - Fuel Oil Non-Availability Report (FONAR)

• If a ship owner is not able to obtain compliant fuel due to non-availability, a FONAR Report must be submitted

• **FONAR is not a waiver, it is a statement of non-compliance**
  – The lowest possible sulphur content fuel should be used

• Four companies that have submitted a number of FONARs have been issued subpoenas by EPA

• If Bunker Delivery Note (BDN) and independent test differ, Notice of Protest (NOP) should be submitted
EPA - Fuel Oil Non-Availability Report (FONAR)

During Coast Guard PSC examination, the ship should:

– present a record of actions taken to attempt to achieve compliance

– provide evidence the vessel attempted to purchase compliant fuel oil in accordance with its voyage plan, and if not available where planned, that attempts were made to locate an alternative source

– provide documentation that Flag Administration and EPA were notified

– USCG will refer deficiencies identified during PSC of ECA non-compliance to EPA (Reg. 14/18) for enforcement

– EPA responsible for adjudication of non-compliant event
EPA Penalty Policy

- On 16 January, the United States Environmental Protection Agency (EPA) released its penalty policy for violations of the sulphur in fuel standard and related provisions for ships.

- The policy applies to violations of new international standards for sulphur emissions from ships that went into effect on 1 Jan 2015, and violations under the previous standards.

- This policy is intended to deter potential violators, ensure that the EPA assesses fair and equitable penalties and allow for the swift resolution of claims arising from noncompliance.

The new policy can be found at http://www2.epa.gov/enforcement/marpol-annex-vi
ECA 2015 – Paris MOU

New Guidelines on PSC and fuel non-availability*:

At initial inspection within an ECA or first port after transiting an ECA the PSCO will look at:

- Bunker Delivery Note (BDN)
- MARPOL sample
- Evidence of written change over procedures
- Record of fuel oil changeover

ECA 2015 – Paris MOU

If fuel not available, must present a record of actions, including:

- Voyage plan and when notice of ECA transit received
- Date and time of expected transit
- Description of actions taken to obtain fuel
- Availability of compliant fuel at first port call in ECA and plans to obtain fuel
- Ship need not deviate from intended voyage or unduly delay the voyage

MOU Party will take into account relevant circumstances and evidence to determine the appropriate action, including not taking control measures
EC Implementation Decision (for Dir. 1999/32/EC)

From 1 Jan 2016 Requires...

- 10% of ships to be inspected

And of those, a percentage to be tested:

- (a) 40% in Member States fully bordering SOx Emission Control Areas (SECAs);
- (b) 30% in Member States partly bordering SECAs;
- (c) 20% in Member States not bordering SECAs.

And

- As from 1 January 2020, in Member States not bordering SECAs, the sulphur content of the marine fuel being used on-board shall also be checked by sampling or analysis or both of 30% of the inspected ships.
EC Implementation Decision (for Dir. 1999/32/EC)

Initial results of inspections - three months in operation

- THETIS-S information system developed by EMSA is being used by EU Member States to facilitate the process of recording and exchanging information on compliance results
- 1,142 recorded inspections, within and outside SECA areas
- Approximately 10% of inspections resulted in fuel verification (i.e. sampling) and overall 5% of ships inspected were found to be non-compliant
- EMSA will continue to offer assistance to member states in their use of THETIS-S, and has already provided training to sulphur inspectors with two more sessions planned for 2015.
EU States, US, Canada and Russia Awareness Campaign

CHECKLIST FOR COMPLIANCE
Before entering a SECA, you must check that you are in compliance and that you carry the necessary documentation on board. You should at least check the following:

CHECKLIST (NON-EXHAUSTIVE)
- Has the ship use fuel oils with a sulphur content not exceeding 0.1% to comply with the limits for SECA emission control areas?
- Have the alternative arrangements (e.g. scrubbers) installed on board been flag State approved?
- Are bunker delivery notes with details of fuel for combustion purposes kept available on board for a period of three years after the fuel oil has been delivered on board?
- Are representative sealed and signed samples of the fuel oil delivered on board available for the recent 12 month period?
- When an approved alternative arrangement (e.g. scrubber system) is used, is a written procedure available describing how a fuel oil change-over is to be made for achieving compliance with the requirements for max. 0.1% sulphur content in the fuel of vessels entering or leaving SECA emission control areas?
- Have ships entering or leaving SECA emission control areas: have details of the change-over of fuel oils been recorded in a logbook as prescribed by the administration?

FURTHER INFORMATION
If you need additional information about the technical requirements, please contact your local flag State administration or relevant authorities in the past three months. Below you will find a list of contacts for the SECA countries:

<table>
<thead>
<tr>
<th>Country</th>
<th>Contact Person</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td><a href="mailto:sulphur@mobii.fgov.be">sulphur@mobii.fgov.be</a></td>
</tr>
<tr>
<td>Canada</td>
<td><a href="mailto:marine@navydefensecanada.ca">marine@navydefensecanada.ca</a></td>
</tr>
<tr>
<td>Denmark</td>
<td><a href="mailto:mth@dfm.dk">mth@dfm.dk</a></td>
</tr>
<tr>
<td>Estonia</td>
<td><a href="mailto:hankk.hart@ernek.ee">hankk.hart@ernek.ee</a></td>
</tr>
<tr>
<td>Finland</td>
<td><a href="mailto:sipm@sinfraf.fi">sipm@sinfraf.fi</a></td>
</tr>
<tr>
<td>France</td>
<td>DEREM/Department-de-pollu-durable@def.gouv.fr</td>
</tr>
<tr>
<td>Germany</td>
<td><a href="mailto:ref.waste@enviro.bund.de">ref.waste@enviro.bund.de</a></td>
</tr>
<tr>
<td>Latvia</td>
<td><a href="mailto:sulphur@farv.gov.lv">sulphur@farv.gov.lv</a></td>
</tr>
<tr>
<td>Lithuania</td>
<td><a href="mailto:vvlhke@mil.gov.lt">vvlhke@mil.gov.lt</a></td>
</tr>
<tr>
<td>Netherlands</td>
<td><a href="mailto:marine@navydefense.com">marine@navydefense.com</a></td>
</tr>
<tr>
<td>Norway</td>
<td><a href="mailto:mvret@navydefense.no">mvret@navydefense.no</a></td>
</tr>
<tr>
<td>Poland</td>
<td><a href="mailto:wheration@polmil.gov.pl">wheration@polmil.gov.pl</a></td>
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<tr>
<td>Russia</td>
<td><a href="mailto:what.kee@navydef.ru">what.kee@navydef.ru</a></td>
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<td>Singapore</td>
<td><a href="mailto:wheration@navydef.sg">wheration@navydef.sg</a></td>
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<tr>
<td>United Kingdom</td>
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<tr>
<td>USA</td>
<td>whé<a href="mailto:ration@navydef.com">ration@navydef.com</a></td>
</tr>
</tbody>
</table>

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Alternative Compliance - Scrubbers

Key points:
Å Acceptability of open loop scrubbers?
Å EU Water Framework Directive may prohibit scrubber wash water discharge in some ports
Å Some countries may not allow open loop scrubbers at all, clarity is still lacking
Å Major investments already made by ship owners/operators
Å Scrubber discharge water pH verification
# Alternative Compliance - Scrubbers

## Å Information on Members States’ Positions (Weekly News 02/2015)

European Sustainable Shipping Forum (ESSF)  14 November 2014

<table>
<thead>
<tr>
<th>Countries</th>
<th>National/Local Regulations?</th>
<th>EGCS wastewater discharge allowed?</th>
<th>If allowed, are there any exemptions?</th>
<th>Additional information/comments provided</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finland</td>
<td>No</td>
<td>Yes</td>
<td>No exemptions so far</td>
<td>Ports can set rules for themselves but haven't done yet.</td>
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<tr>
<td>Sweden</td>
<td>No</td>
<td>Yes</td>
<td>No exemptions so far</td>
<td>Ports can set rules for themselves, but haven't done yet.</td>
</tr>
<tr>
<td>Norway</td>
<td>No</td>
<td>Yes</td>
<td>No exemptions so far</td>
<td>Ports can set rules for themselves, but haven't done yet.</td>
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<tr>
<td>Estonia</td>
<td>No</td>
<td>Yes</td>
<td>No exemptions so far</td>
<td>Ports can set rules for themselves, but haven't done yet. This topic is under discussion.</td>
</tr>
</tbody>
</table>

Contact Person (Competent Authority):
- Anita Mäkinen: anita.makinen@traficom.fi
- Caroline Pernhi: caroline.pernhi@transportfrielsen.se
- Svein Erik Enga: SveinErik.Enga@opfersdor.no
- Helko Hetur: Helko.Hetur@envir.ee
Alternative Fuels

Key issues:
Å IGF Code Approved in Principle at MSC 94
Å Bunkering Standards – Society for Gas as a Marine Fuel publication
Å Bunker Delivery Note for LNG

ISTEC Alternative Fuels working Group
Å Gas ready specifications/notations
Å Bunkering in Antwerp
Å LNG market and gas fuelled fleet growth
Å Presentations on INTERTANKO website
Emission Control Area (ECA)  
2015 - SOx Requirements  
Advisory to INTERTANKO Members  
December 2014

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Clauses for Emission Control Areas

INTERTANKO MARPOL Annex VI clauses for Voyage Chartering in Emission Control Areas

Â Worldscale Formula
Â Lumpsum or USD/tonne basis
Â Parcel Trades
Â Details in Weekly News 02/2015
Bunker Quality

Reg. 18, MARPOL Annex VI - *Fuel Oil Availability and Quality*

Fuel oil . . . shall meet the following requirements:

- shall be blends of hydrocarbons derived from petroleum refining
- shall be free from inorganic acid
- shall not include any added substance or chemical waste which:
  - jeopardizes the safety of ships or adversely affects the performance of the machinery, or
  - is harmful to personnel, or
  - contributes overall to additional air pollution
The requirements are placed upon the ship to ensure that the fuel used on board the ship complies with these standards (Regulations 14 and 18 of MARPOL Annex VI).

If the ship is found to be using fuel oil that is not in compliance with these standards, it is the ship and the ship operator that suffers the consequences of port state control action and penalties under national laws.

There are effectively no requirements on the fuel supplier to ensure they provide the ship with fuel that meets the Annex VI requirements.
Bunker Quality

A Bunker Alerts issued by test laboratories every week

BUNKER ALERT, REF : 47/2013
DNV PETROLEUM SERVICES
7 November 2013

Alternative Contacts

DNVPS Technical
Tel : +65 779 2475

HIGH DENSITY FUELS IN NEW YORK AND SURROUNDING PORTS, USA
Bunker Quality

Norway and INTERTANKO collected data from two fuel testing laboratories which together had more that 50% of all bunker deliveries worldwide

Â Out of over 100,000 bunker samples, the receiving vessels have reported that on 1,468 occasions they have had machinery problems as a result of using the fuels as supplied.

Â These were events resulting in machinery damage and black out events
Bunker Quality

INTERTANKO and others submitted paper to MEPC 67 proposing that Parties to Annex VI:

Å require that local bunker suppliers have procedures to confirm that fuel supplied to vessels is in compliance with IMO requirements;

Å make registries of locally recognised bunker suppliers available to IMO; and

Å audit/inspect the local suppliers and report the investigation results and follow-up actions in response to any Note of Protest from ships that received non-compliant fuel.
IMO and Bunker Quality

MEPC 67 Correspondence Group:

- develop draft guidance for assuring the quality of fuel oil delivered for use on board ships

- consider the adequacy of the current legal framework in MARPOL Annex VI for assuring the quality of fuel oil for use on board ships, taking into account the outcome of MSC 94, when available

- INTERTANKO participating
Bunkers – Regional/Local Developments

• Singapore
  – Revision of SS 600
  – Mass Flow Meters (by Jan 2017)

• Rotterdam
  – List of “Undesirable Substances”
    • ISO 8217/non-ISO (clause 5 – contaminants not derived from petrochemical refining)
    • Possible control through sampling at terminal transfer (to barge)
    • Sulphur level not included in checks
Bunkers – Regional/Local Developments

• Gibraltar
  – Requires supplier to retain “MARPOL Sample”
  – Follows up Notice of Protest

• Sweden – charging for testing at PSC
  – Swedish ship owners have challenged

• Hong Kong – 0.5% at berth
  – Ongoing
  – Possible from 1 July 2015
Ships reduce GHG emissions at a higher rate than land based industry

Source: IMO 3rd GHG Study (2014)
GHG and MRV – IMO

• IMO decisions:
  – mandatory Energy Efficiency Design Index (EEDI) for new buildings (contracted for after January 1, 2013)
  – Ship Energy Efficiency Management Plan (SEEMP) for all ships

• SEEMP does not set a target for GHG emissions reduction of ship in operations

• Regulators want a target...
Potential amendment to MARPOL Annex VI

The proposals for an operational measure:

- USA – Existing ship efficiency standard
- Japan – Annual EEOI (renamed “Annual Efficiency Ratio (AER)”)
- Germany – Fuel Oil Reduction Strategy
- EU/EMSA – Efficiency Indicator (hybrid design/operational)
Potential amendment to MARPOL Annex VI

The Concept: Three step phase-in legislation

- Phase I – data monitoring, reporting and verification (MRV); analyse and determine base line; determine target for improvement
- Phase II – trial period for verification of enforceability of the set target
- Phase III – enforcement
Update from MEPC 67 (October 2014)

• Agreed to continue to work on a draft text for a mandatory data collection
• No development of an energy efficiency model for ships in operations
• This will be discussed at a later stage, after assessing the data collected
• The further work to be done by a correspondence group (CG)
Update from MEPC 67

• Data collection from ships of > [5,000] DWT
• Data reported to a centralised Database managed and paid for by IMO
• Reporting system to be established by the Flag
• Annual Report in electronic format
• Definition of the “annual reporting period” to be developed by the CG
• Ships maintain annual reports on-board and make it available if requested by Flag
• CG will not discuss whether data should be made public; this will be discussed further by MEPC at a later stage
Update from MEPC 67

- Data which could be collected:
  - identify the ship (name of the ship, IMO number, flag State Administration and registered owner)
  - provide technical characteristics of the ship (ship type, GT, NT, DWT, engine power, reference/design speed, EEDI (if applicable)) and ice class (if applicable)
  - provide total annual fuel consumption per fuel type.

- MEPC 67 agreed to not include any other data such as total distance travelled, total service hours and total cargo carried over one year.

- A decision on this type of data to be taken after MEPC has had a full policy debate in order to explore possible consensus of any additional measures except fuel consumption data reporting.
Update from proposed EU measures (MRV)

- **Applicability:** All ships > 5,000 GRT calling to EU ports

- **Reporting CO\textsubscript{2} emissions when ships travel:**
  - between EU ports,
  - an incoming voyage from a non-EU to an EU port
  - an outgoing voyage from an EU port to a non-EU port

- **Data to be reported:** fuel consumption, distance and cargo

- **Measure:** to monitor the ship’s average energy efficiency at least with the following criteria:
  - Total annual CO\textsubscript{2} emissions / total annual distance travelled
  - Total annual CO\textsubscript{2} emissions / total annual transport work
Update from EU

Proposed Dates for implementation:

- **1 July 2015** – enter into force
- **By 31 August 2017** – companies should submit to “verifiers” a Monitoring Plan (or within 2 months of first call)
- **1 January 2018** – starts first annual reporting period
- **2019 and after**
  - by 30 April each year, companies shall submit a verified emissions report to the EC and to the Flag State
  - by 30 June each year, the European Commission will make the emissions reported by ships publicly available
INTERTANKO Comments on MRV

- MRV should be discussed at IMO - Regional MRV will bring marginal benefit (shipping contribution to total GHG in EU – less than 0.50%)
- Regulators must consider thoroughly data collected and assessment results before taking next step
- There is no model to define a fair and concrete legal binding operational standard for ships
- No problems with some data collection (aggregate annual values)
- Simplicity in data collection
- Verifiers to be licensed and have shipping experience
THANK YOU!

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