Nine months experience with LSF in ECA/SECA Zones

SHIP EFFICIENCY 2015
by STG
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Agenda

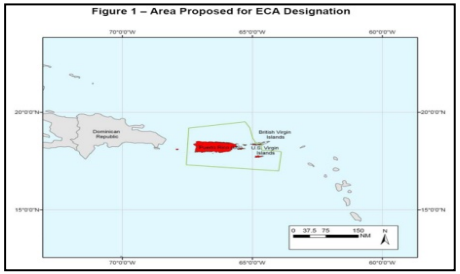
1. Why is Maersk **interested** in SOx emission regulations?

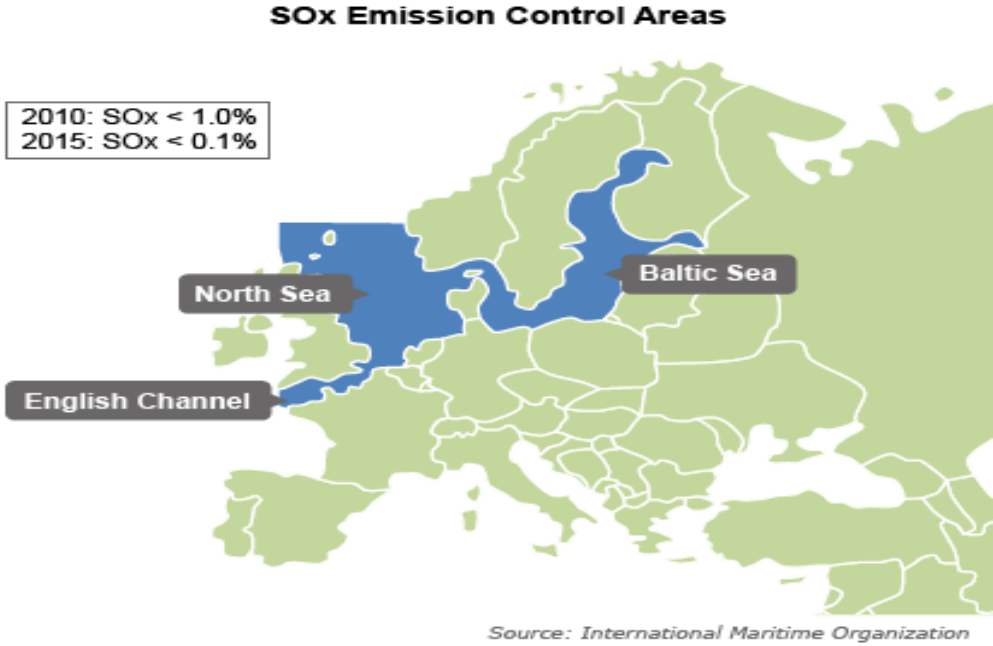
2. What are the experiences so far?

3. What are the **challenges** from our point of view?

SOx & NOx regulations: Emission Control Areas - ECA

SOx and NOx Emission Control Areas





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New ECAs in China?

- Areas for low sulphur fuel:
- Pearl River Delta
- Yangtze River Delta
- Bohai Bay
- Cold ironing – 90% by 2020.

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New ECAs in Mexico and NSW?

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Why is Maersk **interested** in SOx emission regulations?

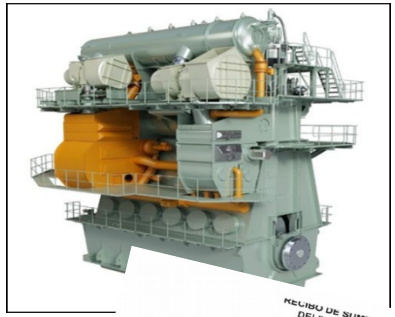
- **Non-compliance will create an uneven playing field,** which means that the companies that comply with the SOx regulations are getting punished for doing so

- **Maersk alone spends 200 million $ a year to comply with the current SOx regulations,** when the global cap comes this number will increase many fold

- **There is significant financial incentive,** therefor there is a risk of widespread non-compliance

Why is SOx special compared to other current rules?

- **Ballast Water**:
  - Inherent carriage requirement



- **NOx Tier III:**
  - Inherent carriage requirement

- **SOx:**
  - Purely operational – evidence of compliance is basically a piece of paper with no standard format.
  - The “cheating bonus” can run into $millions

50 mill. tons of oil out of Primorsk + 25 mill tons out of Ust Luga annually.

An Aframax tanker can save USD 100,000+ on a voyage from the Atlantic to Primorsk and back again by burning HFO instead of MGO.

(50 t/day in 10 days; price gap 200$)

Distance sailed within the ECA: ~3300 NM

Such a ship can save 1000$ / hour

Experiences so far with fuel switching

- Maersk Line made 2399 fuel switches in Californian Waters (HFO -> MGO and vice versa) from 2006 – 2015.
- Two incidents of L.O.P. (due to not following procedures).
- No incidents in 2015 in North Europe or North America.
- One incident of too high sulphur due to leaking valve in fuel system (MT)
- One incident with contaminated MGO (ML)

Will non-compliance be **widespread**?

- **History** shows countless examples of cheating in the shipping and bunkering industry:
  - Magic pipes to circumvent OWS
  - Magic pipes to transfer cargo oil into bunker tanks
  - Falsified or fake Bunker Delivery Notes (BDN)
  - Falsified adjustment of Oil Record Books
  - Hidden tanks
  - Turning off AIS

- Bunker cheating (through quantity short delivery) is about 2% - which runs up to **100+ million a year for Maersk alone** and more than **1 billion dollar a year in the industry**

Statistics for inspections and compliance

- According to the latest findings from EMSA's, based on data in THETIS-S, from 1. Januar till July 2015, 3821 inspections of fuel were carried out in EU (document control).
- **Non-compliance-rate was 6,04 %.**
- At some of the 3821 inspections, a sample of "fuel used" was taken. It amounts to 622 samples.
- **Non-compliance rate of those samples was 5,95 %.**

- **Is that satisfactory?**

What are the **challenges** from our point of view?

1. **Detection** of non-compliance is very difficult

- Inspections are mostly **limited to ports**
  - How to detect ships that shift over just before calling on a port?
  - Share of ships caught in port inspections is likely a poor indication of non-compliance level
- **National boundaries** limits the efficiency of compliance control
  - How do we control that switch-over to HFO does not happen pre-maturely prior to leaving an ECA zone?
  - How do we ensure compliance of the EU 0.5% is kept within the EEZ? What about Canary islands and the Azores?
- Today there is **no easy solution for detection in high seas**

2. **Penalties** are often not *"effective, proportionate and dissuasive"*

In many countries penalties are not *"effective, proportionate and dissuasive"*:

- Penalties down to fines as low as **1500€**
- …compared to savings on **90-100.000$** per trip, per ship!
- Very few detentions.
- Norwegian Maritime Authority found the vessel Sardius, owned by Dutch company De Bock Maritiem BV to have breached the 0.10% sulphur limit within the ECA twice. The fine was NOK 100,000 (approximately **$12,200**).

PENALTIES FOR NON ECA SOx COMPLIANCE

ECA limits: January 1 2015, maximum sulphur in fuel drops from 1.0% to 0.1%. Other possible permissions are to use LNG fuel or abatement technology with high sulphur content fuels providing SOx emissions are below 0.1%

Country	Penalty
Denmark	Equal to the cost advantage the carrier had on that voyage
Sweden	To be established when the first case goes to court
Germany	€2,000 - €5,000 ($2,759 - $6,898)
Netherlands	Declined to comment
UK	Up to £50,000 ($82,616)
Finland	To be established when the first case goes to court
Poland	Up to €45,000 ($62,087)
Estonia	Up to €2,000 ($2,759)
Norway	Start at €10,000 ($13,797)
Lithuania	€1,500 ($2,069) plus the price of taken proper fuel on board

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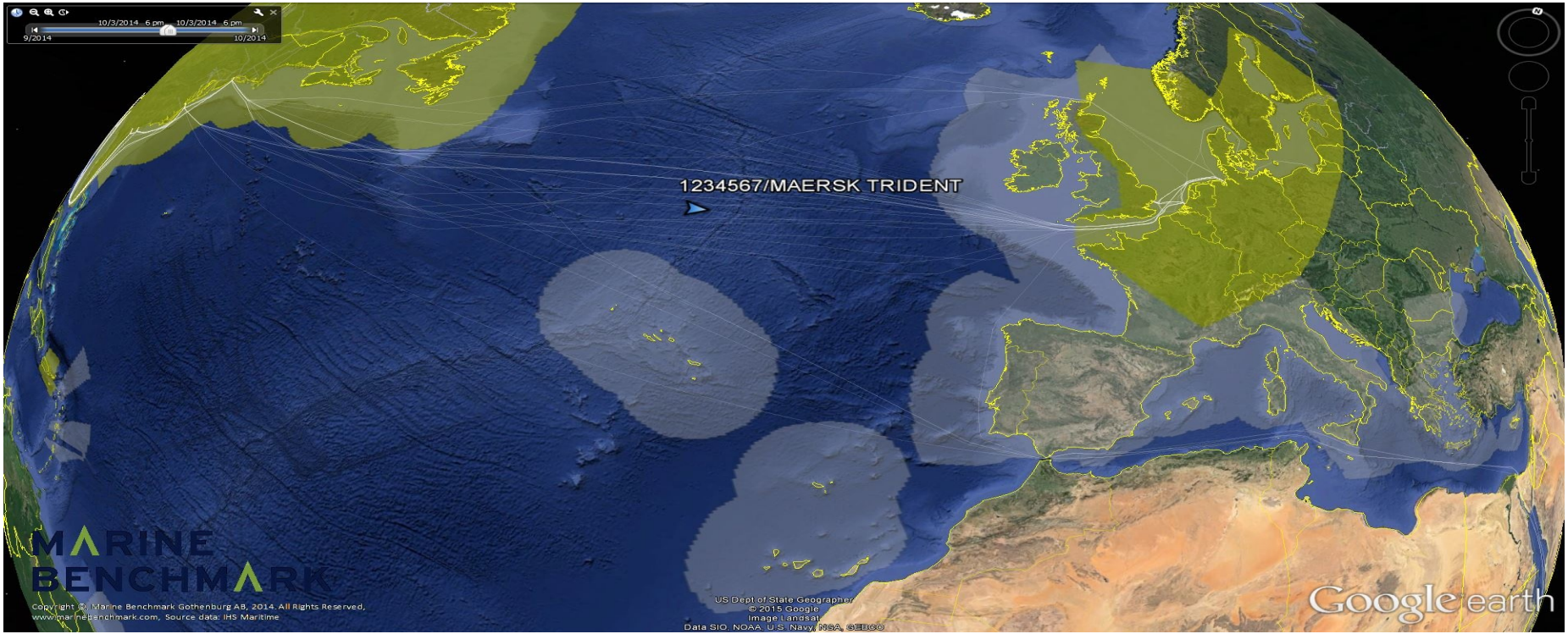
3. There are some **legal** challenges

- Unclear who will police and enforce regulations **in EEZ and international waters**
- Who can ensure that a Flag State actually fulfils its obligations and sanction ships flying its flag?
- Uncertainty on **penalizing beyond national jurisdiction** - what part of the voyage can be penalized by the port state?
- Which **detection methods will stand in court** as evidence?

EU 2020 0.50% S regime:



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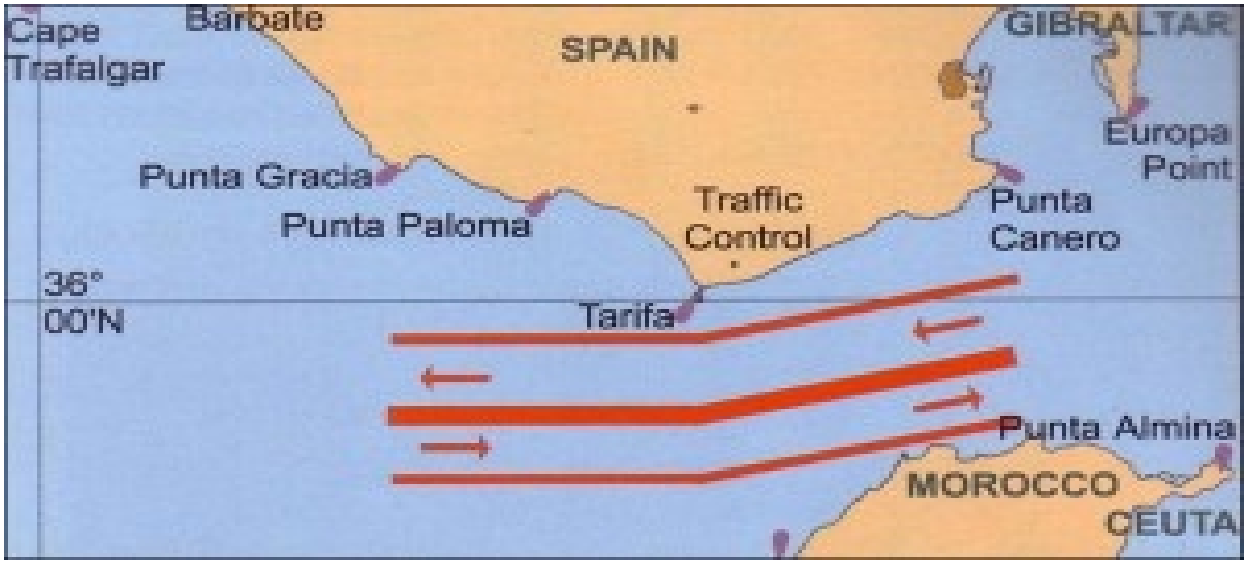
EU 2020 0.50% S regime: Challenge in the Strait of Gibraltar



Global Cap – 2020 or 2025???

- Will we know before 2018?

- What is the likelihood of 2020?

- Will harmonization of Flashpoints, if accepted in IMO, play a role?

- Can the Global Cap be enforced in the middle of the Pacific Ocean? ?

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Testing a **Continuous Emission Monitoring System (CEMS)** technology on Maersk Montana

Goal:

- Evaluate the possibility of **reliable onboard measurement of SOx emissions** and transmission of the data via satellite
- Identify the **advantages and disadvantages** of such a system first hand (evaluate technology, operational criteria etc.)

Status:

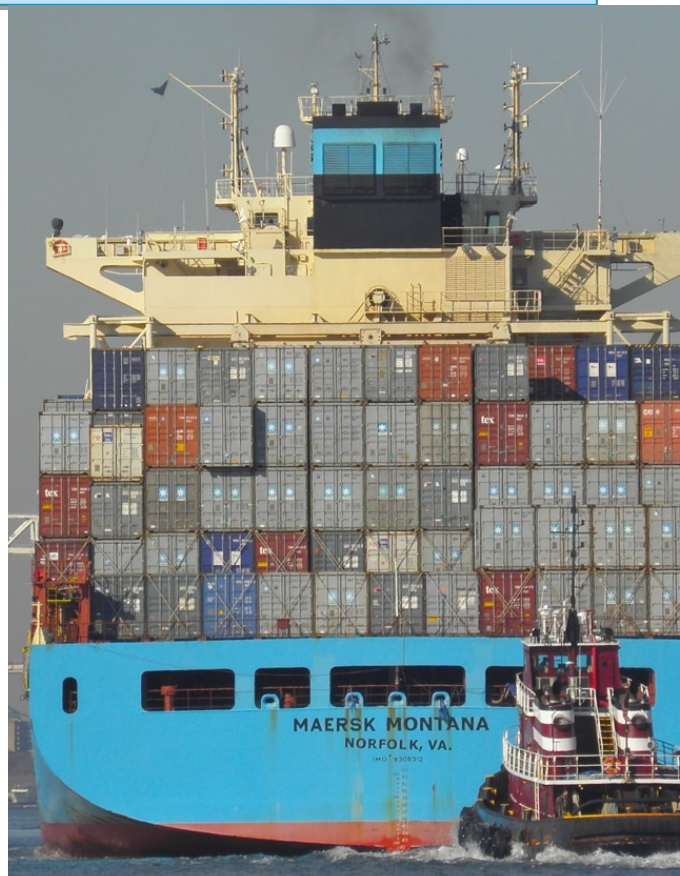
- Installation has been tried during port stay, but has failed. Installation to be done during docking

Pro:

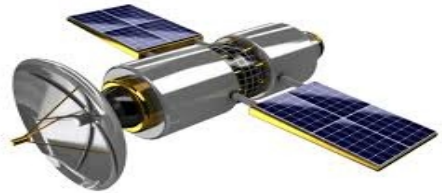
- Allows first-hand **monitoring on high seas**

Cons:

- **Hard and expensive to install**, only possibly when the ship is in dock
- Installation on board the vessel, makes **tampering possible**



Global Cap – how to enforce, even with CEMS?



…and who cares???

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The Trident Alliance: working for a robust enforcement of the sulphur regulation

TRIDENT ALLIANCE

- **A shipping network**, with the **35** leading shipping companies (so far)
- Spreading **awareness**
- Working for **strong enforcement**
- Drive solution strategies for a **robust and efficient enforcement**

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At the end of the day it's all about maintaining a level playing field.


THANK YOU
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