

Continuous Emission Monitoring System Pilot Project

A collaborative project between Maersk Line, Limited and
WR Systems

Kit Chope
The Port of Virginia

AAPA Energy & Environment Seminar
September 15, 2016

What's in it for me?

- Demonstration of merged technologies in emissions control/measurement
- Use of public funding by private firms for common good
- Levels the playing field with respect to regulatory compliance



Project Details

- Temporary installation of exhaust stack analyzer and communications suite for 90 day trial onboard a Maersk container ship
- Demonstrate the ability to continuously measure vessel emissions during speed and fuel changes to quantify emission reductions
- Transmit tamperproof emissions data for review offsite in real time

The Technology

- EMSYS-iS Stack Analyzer
 - Measures CO₂ and SO₂
- Pole Star Satellite comms
 - Transmits position, course, speed and emissions data



Why?

- Through vessel speed reduction, any ship can...
 - Lower all emissions, reduce engine load and reduce fuel consumption
 - But exactly how much?
- Establish specific profiles for a ship or ship class
 - Determine optimal speed within emission control areas
 - Validate change over point for fuel switching

Outputs

POLE STAR

Administration Help/FAQ's 26 Jan 2016 15:31 UTC

MAERSK MONTANA

IMO: 9305312
Ship type: Container Ship (Fully Cellular)

Position +
Ship information +
SkyWave - IDP-690 +
Environmental Compliance -

Emsys status: **Vessel conditions**
See details

MAERSK MONTANA

9305312
Container Ship (Fully Cellular)

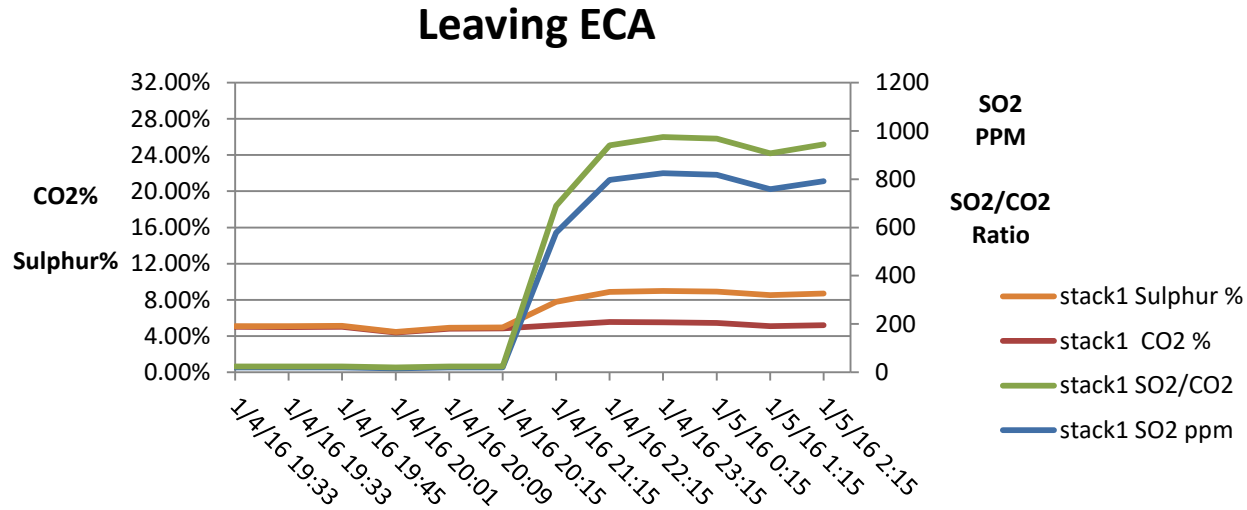
Emsys status

IMO: 9305312 Timestamp: a day ago
 Inside ECA zone: n/a Latitude: 37° 44' 8.34" N
 System Health: Operational Longitude: 69° 14' 7.38" W
 Unit State: Online Course/speed: 081° / 20.8 knots

Field	Status	Field	Status
Stack1 State:	Active	Stack2 State:	Unknown
Stack1 sulphur:	3.26 %	Stack2 sulphur:	n/a
Stack1 SO ₂ :	721 ppm	Stack2 SO ₂ :	n/a
Stack1 CO ₂ :	5.10 %	Stack2 CO ₂ :	n/a
Stack1 SO ₂ CO ₂ :	141.39	Stack2 SO ₂ CO ₂ :	n/a
Stack1 NOx:	1632 ppm	Stack2 NOx:	n/a

Close

Montana Emissions Leaving ECA



Benefits

- Potential to manage fleet (engine loading, fuel consumption, emissions profiling, identification of engine anomalies quickly)
- Potential to ensure uniform compliance
 - Concern about varying enforcement of regulations, inspections and monitoring



Takeaways

- Qualified success
 - Effective connection of technologies
- Technology needs maturation
- This pilot represented a logical step for the Port of Virginia and MLL to measure impacts to the environment
- Port facilitated funds (grants) used to facilitate pilot
 - Under Port of Virginia's Green Operator Program

Way Ahead

- Connected Vessel initiative
 - Communicates performance, maintenance needs, routing, emissions
- Ability to quantify emissions to inform inventory
- Overhead sensors to monitor emissions (bridges, drones)
- Remote access for reporting and system updates



ACCESSIBILITY
FORTITUDE
HELPFULNESS

INNOVATION
MINDFULNESS
SUSTAINABILITY