AVEVAWORLD
PARIS

CSL Group Inc.

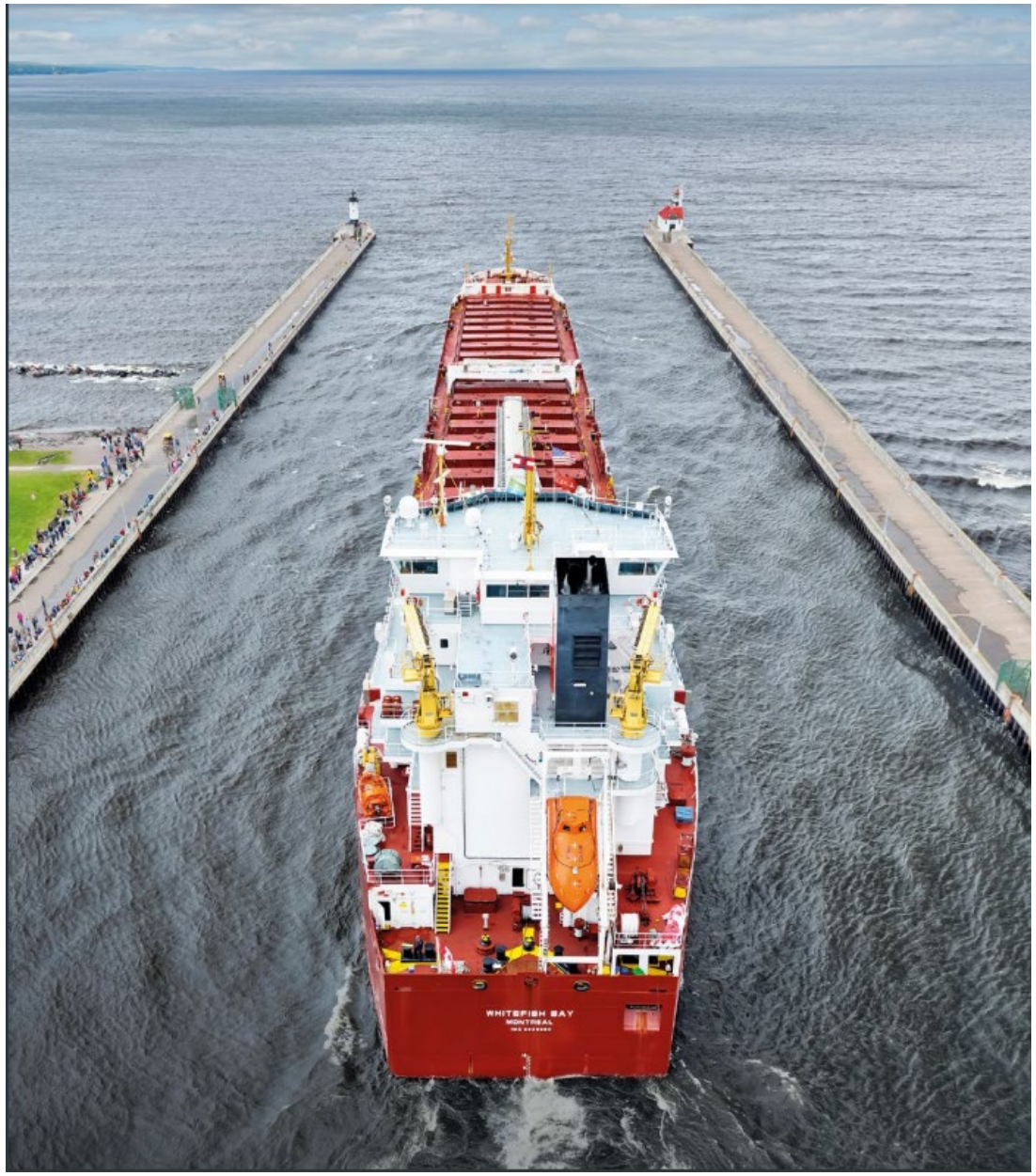
AND THE PATH TOWARDS ZERO CARBON

OCTOBER 2024

Delivering Marine Shipping Ingenuity WORLDWIDE

OUR CURRENT TOP FIVE MATERIAL TOPICS

1	2	3	4	5
Decarbonization	Accidents, Oil Spills, and Marine Pollution	Health and Safety	Diversity and Inclusion	Ethics and Anti-corruption



Over 175 Years of Shipping History

1845
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010
2020

La Compagnie Du Richelieu

In 1845, Jacques Sincennes creates La Compagnie du Richelieu, consisting of one paddle steamer and a towed barge to help farmers get their goods up the Richelieu River and along the St. Lawrence River to market in Montreal. The Richelieu River links Lake Champlain and the St. Lawrence River. Sincennes' company evolves into the Richelieu & Ontario Navigation Company, the foundation of what would eventually become Canada Steamship Lines. Inland shipping ventures such as Sincennes' grow and multiply over the next 68 years in a very fragmented way, with each serving a particular route and little overlap or coordination of services.

The Chippewa, launched in 1893

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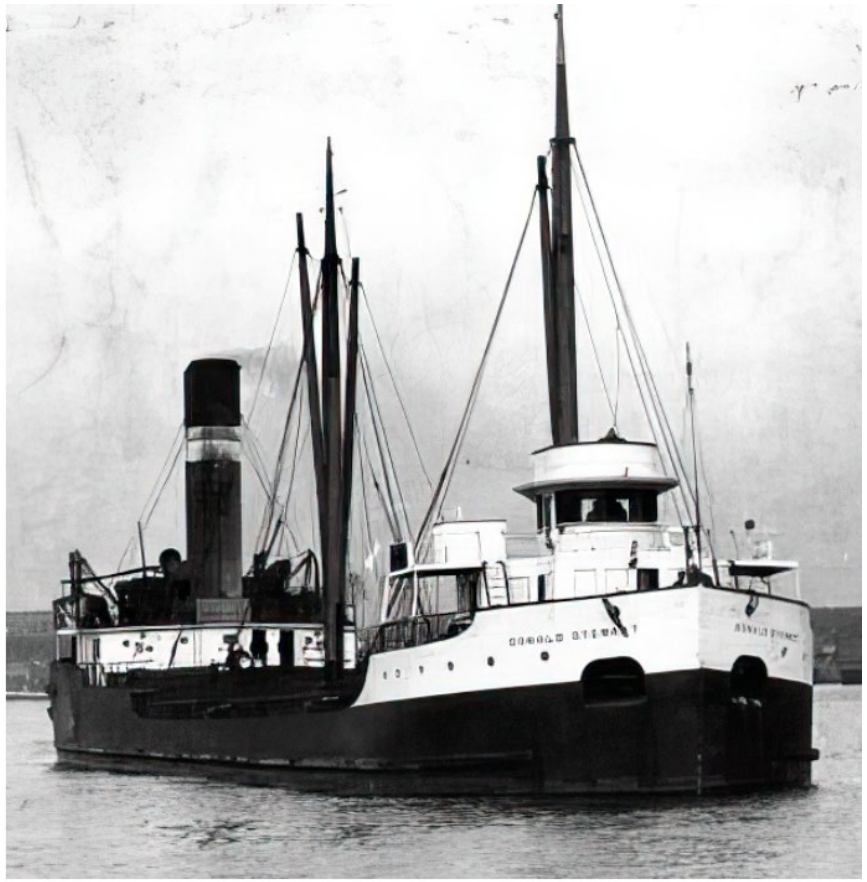


Donald Stewart is one of five CSL ships lost during World War II

CSL Ships Support The Allies

During the Quebec Conference, a highly secret military meeting is held in Quebec City between the British, Canadian and United States governments. CSL's SS Tadoussac transports all attending senior officers, including Britain's Lord Louis Mountbatten and U.S. Gen. George Marshall.

World War II ends with CSL back in the black. The company has lost five Lakes ships to enemy action: the Magog, the Waterloo, the Lennox, the Donal Stewart and the Norfolk. The end of the war also ushers in a quicker pace to life, all but ending the era of leisurely river cruises. With better highways and more affordable cars, people can travel from place to place faster than ever before. After the war, responding to massive industrialization and the growth of the steel industry and related need to transport iron ore, Sir James Dunn, owner of Algoma Steel, buys control of CSL to assure supplies.

1845
1910
1920
1930
1940
1950
1960
1970
› 1980
1990
2000
2010
2020

CSL Focus on Cargo Shipping

CSL winds up its celebrated passenger service to focus on the more lucrative cargo transport business. The company is among the last owners of passenger steamers in North America's inland waters.

Over 175 Years of Shipping History

The Rimouski, launched in 1965

Over 175 Years of Shipping History

1845

1910

1920

1930

1940

1950

1960

1970

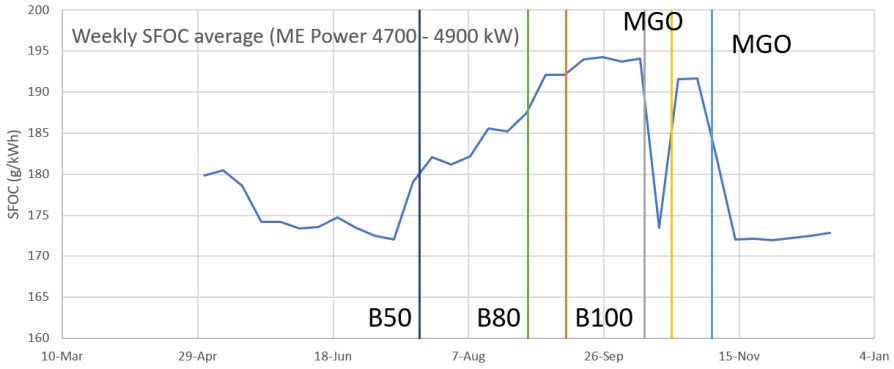
1980

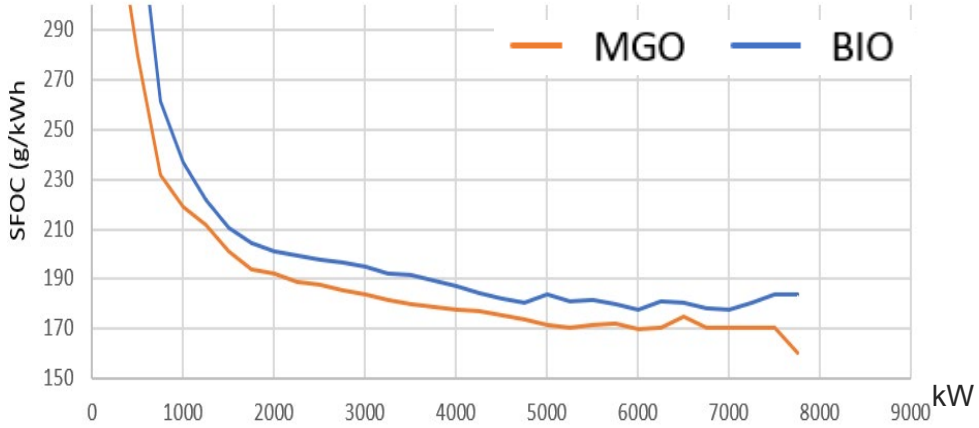
1990

2000

2010

› 2020





World's Longuest Running B100 Biofuel Trials

On August 2019, CSL runs its first test of a marine biofuel made of 50% bio-content made from waste agricultural products. on the 36,920 DWT self-unloading bulk carrier Atlantic Huron. The test shows promising results as a transition fuel towards decarbonization.

CSL completes the world's longest-running trials of B100 biodiesel on marine engines, accumulating nearly 30,000 running hours. Conducted on half of CSL's Canadian fleet, the tests result in a 23% total fleet life cycle reduction of CO2 as compared to marine gas oil (MGO). During the trials, 14,000 tonnes of MGO was substituted for 100% bio-content second-generation biofuel, requiring no modification to existing ship equipment. The test results confirm the potential of biodiesel as a realistic and immediate alternative to fossil fuel to support the decarbonization of the marine transportation sector.

Excellent Anecdote where AVEVA greatly help at the beginning of this Trial: Fuel test were showing a calorific value equal to MGO while we found, with the PI System that it was between 12 to 15% less. Calorific value is directly proportional to fuel consumption

2021

2022

2023

2024

CSL Acquire 50% of Peak Group

Under the Peak CSL Group banner, the company is positioned to provide an expanded suite of services, particularly catering to the fast-growing offshore renewable energy sector.

This will cover rock and ballast logistics support for offshore wind farms, turnkey material transfer solutions and a fleet of project carriers that includes low-to-zero emission vessels.

Over 175 Years of Shipping History

24 HOURS A DAY

24 hours a day operation at speeds up of up to 5,000 tonnes per hour

OFFSHORE WIND PROJECTS

Self-unloaders are ideally suited and cost-effective to support offshore wind projects

HIGH-PRECISION

High-precision discharge boom pinpoints cargo placement

2023 Highlights

Environment

- **16,377 MT** OF **B100 BIODIESEL** USED ON 8 VESSELS
- **29%** **CARBON INTENSITY REDUCTION** VS 2005 LEVELS
- **8%** OF **TOTAL ENERGY CONSUMED** IS **RENEWABLE**
- **6%** **INCREASE** IN VOLUME OF **RECYCLING**

Social

- **3%** **INCREASE** IN **FEMALE SEAFARERS** IN CANADA
- **0.6** **LOST-TIME INJURY** FREQUENCY RATE
- **4.1%** **REDUCTION** IN VOLUNTARY **EMPLOYEE TURNOVER** RATE FROM 2022
- **9.41** **NET PROMOTER SCORE** FOR CUSTOMER **SATISFACTION**
- **1%** OF **NET PROFIT** DONATED TO **CHARITIES** AND **DISASTER RELIEF**

Governance

- **98%** SCORE ON **MACN ANTI-CORRUPTION** SCORECARD
- **29%** **FEWER POLICY BREACH COMPLAINTS** COMPARED TO 2022
- **ZERO** **CYBERSECURITY LEAKS, THEFT** OR **LOSSES** OF **DATA**
- **90%** OF **SHORE EMPLOYEES** TRAINED IN **CYBERSECURITY**

2021

2022

› 2023

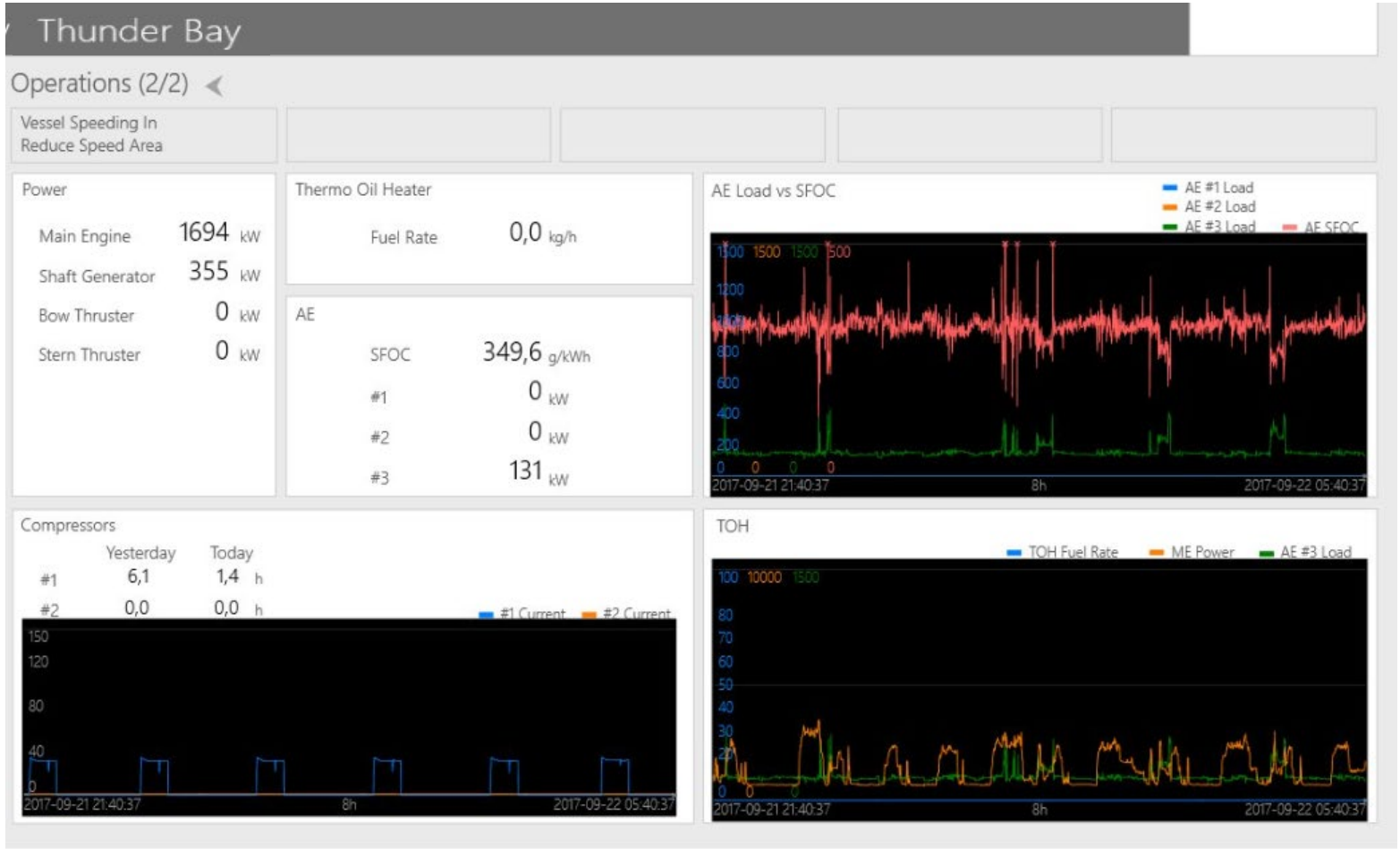
2024

Today's CSL At a Glance

- 2021
- 2022
- 2023
- 2024

CSL Venture in Digital Twinning

- 2016
- 2017
- 2018
- 2019
- 2020
- 2021
- 2022
- 2023
- 2024



With Aggressive Health & Safety, Decarbonization and Environmental goals, CSL feels the need to explore Digitalization of their Asset.

As a Pilot, they installed the AVEVA PI System on board M/V Thunder Bay and CSL Niagara; respectively a modern Trillium Class Vessel and an older recently Repowered Forebody Class Vessel

Leveraging Digital Technology to Achieve our Goals

2016

2017

2018

2019

2020

2021

2022

2023

2024

First Use Case:

Brief Description: OWS running at night: O2 red flags on one Vessel

Case: OWS running too much

solution: To install mechanical seals instead of packing. Cost $15,000

$12,000 spent in parts in 2016 for the OWS.

90% of $12,000= 10,800$. 30% Contingency:

10,800 (-$3240) = $7,560 x 2 years:

$15,120 in addition to Environmental Risks & Energy Savings.

CSL Goes Entreprise Agreement With AVEVA

Business Case was Proven after a year of Data Analytics; CSL Opens the Project and Signed Enterprise Agreement with AVEVA and Chose Maya HTT as their Partner to Deploy the Solution Worldwide

Compliance / Process Digitalization	Energy Management	Asset Management
10% of benefits	50% of benefits	40% of benefits

Leveraging Digital Technology to Achieve our Goals

2016

2017

2018

2019

2020

2021

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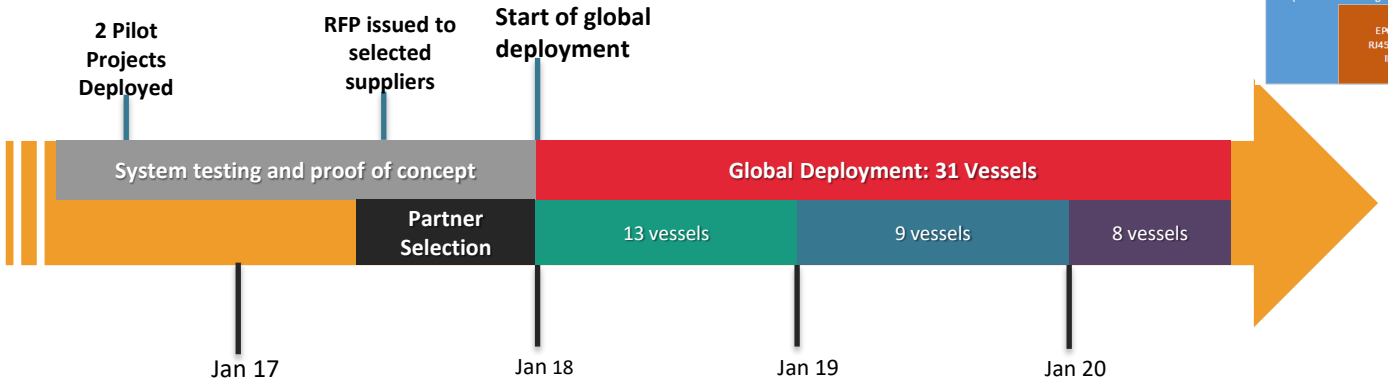
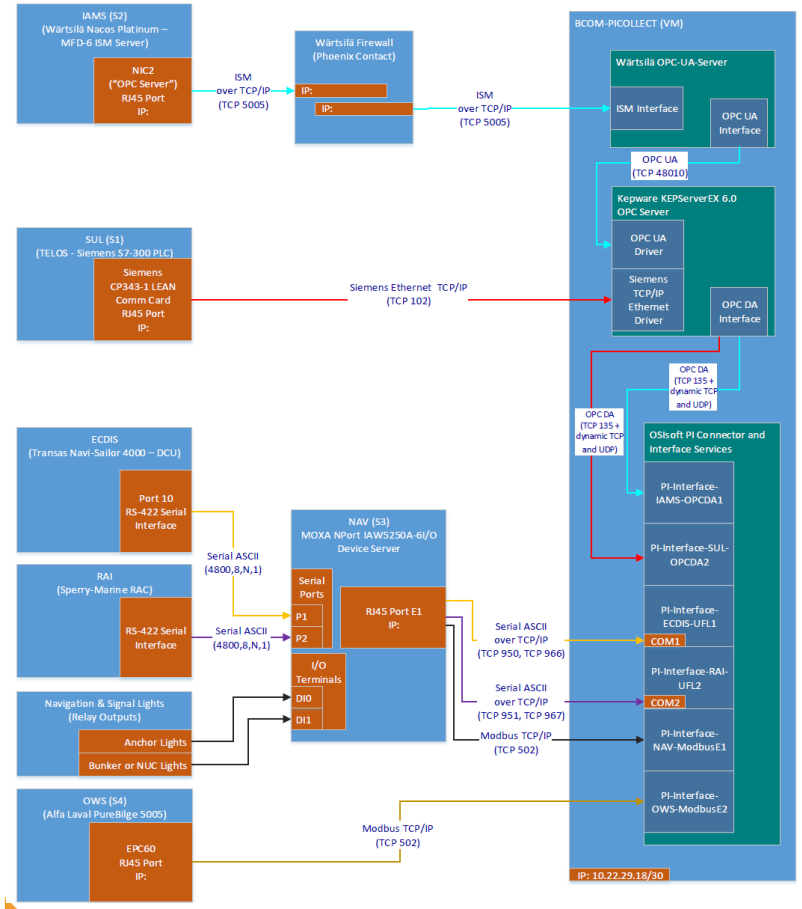
CSL Deploys and change Installation Topology

As a results of cost, complexity, footprint and forecasted maintenance burden, CSL Decides to go from an on-premise server installation to a central remote single server installation. Time has proven that this was the right decision; especially with the advancement of PI Connect and Edge Data Store.

Four vessels had to be reconfigured.





CSL Creates Custom Application - The O2 HMI

2016

2017

2018

2019

2020

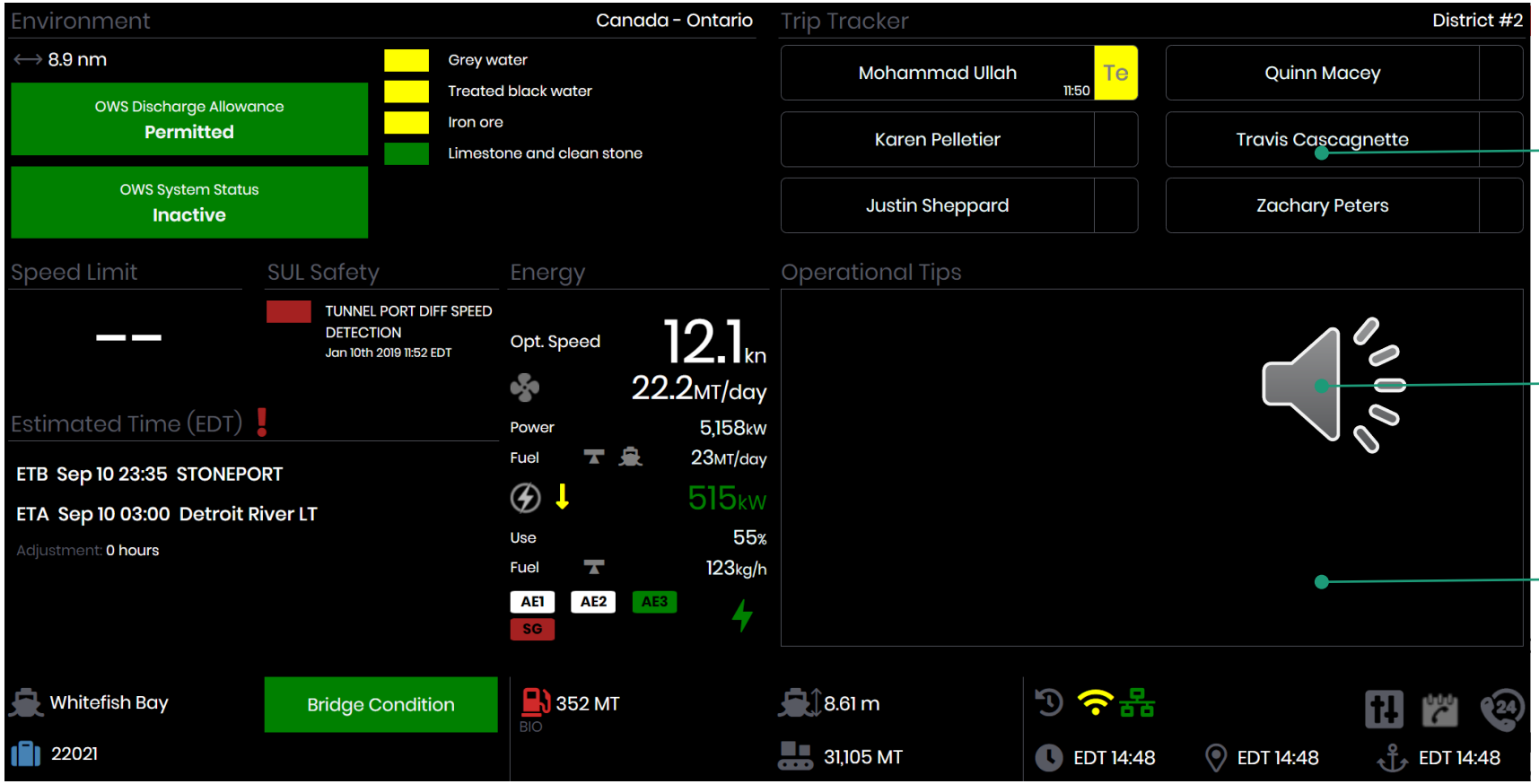
2021

2022

2023

2024

The Power of AVEVA made it seamless for CSL to build their onboard custom application linked to the AVEVA PI System. O2 HMI permits to have offline experience, well develop in taking manual inputs and design compliant with Bridge Console Equipment



Among Other Things

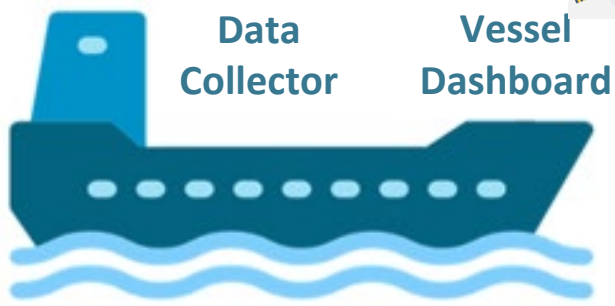
2020	O2 Team Reorganization - A mix of Deployment, Development and Value Finding And … A new Logo for O2
2021	Conjoint Project With AVEVA and Advance Analytics
2022	O2 Team Reorganization – Creation of Standard, System and Support Center (S3C)
2023	Project Closure and Value Finding -----> New vessels under new built / conversion umbrella
2024	O2 Project is getting out of CSL ----> Plan to install on a new vessel of one of our Joint Venture. Connecting O2 with Vessel Plan Maintenance - ShipSure

O2 overview – We are Innovators

1- Digitizing Vessel Data

Systems data and crew inputs are captured and archived in a digital twin located onshore

CSL TACOMA		
Data Source	OT Sensor	Status
ECDIS	NAV MOXA	
Nav. Lights	NAV MOXA	
RAI	NAV MOXA	
AMS	MFD5	
Ammeters	AMS	
Flow Meters	AMS	
Torque Meter	AMS	
SUL	CP Lean Processor	
OWS	Alfa Laval BlueBox	

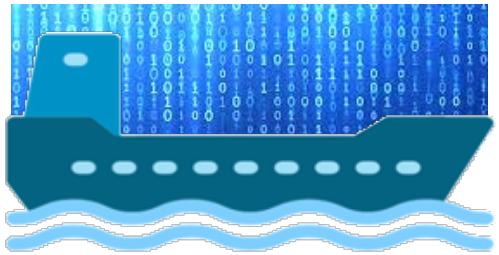


Data Collector

Vessel Dashboard

2- Expanding with Context

Vessel data is enriched with voyage, geofencing, traffic, compliance, weather, and user inputs



Digital Twin

Voyage (IMOS)

Traffic

Geofencing (ESRI)

Weather

Compliance

O2 digitally generated report

GREAT LAKES PILOTAGE REGION DISTRICTS TRANSIT SUMMARY	
(C)-Carnuall (Saint-Lambert to Snell)	0
(1)-District 1 (Snell to Cape Vincent)	0
(LO)-Lake Ontario (Cape Vincent to Port Weller)	3
(2)-District 2 (Port Weller to Huron Cut Buoys 11&12)	11
(3)-District 3 (Navigable waters above Huron Cut Buoys 11&12)	0

3- Advisory and Analytics

Produces decisional Advisory Dashboards and Analytics Reports using algorithms and third party plugins. Helps crew and office make better-informed decisions.

CSL TACOMA

Data Source	OT Sensor	Status
ECDIS	NAV MOXA	
Nav. Lights	NAV MOXA	
RAI	NAV MOXA	
AMS	MFD5	
Ammeters	AMS	
Flow Meters	AMS	
Torque Meter	AMS	
SUL	CP Lean Processor	
OWS	Alfa Laval BlueBox	

SHEILA ANN

Data Source	OT Sensor	Status
ECDIS	NAV MOXA	
Nav. Lights	NAV MOXA	
AMS	ECR MOXA 1	
Flow Meters	ECR MOXA 2	
Torque Meter	ECR MOXA 2	
SUL	CP Lean Processor	
OWS	Alfa Laval BlueBox	

CSL TECUMSEH

Data Source	OT Sensor	Status
ECDIS	NAV MOXA	
Nav. Lights	NAV MOXA	
RAI	NAV MOXA	
AMS	MFD5	
Ammeters	AMS	
Flow Meters	AMS	
Torque Meter	AMS	
SUL	CP Lean Processor	
OWS	Alfa Laval BlueBox	

CSL TARANTAU

Data Source	OT Sensor	Status
ECDIS	NAV MOXA	
Nav. Lights	NAV MOXA	
RAI	NAV MOXA	
AMS	MFD5	
Ammeters	AMS	
Flow Meters	AMS	
Torque Meter	AMS	
SUL	CP Lean Processor	
OWS	Alfa Laval BlueBox	

RT. HON. PAUL E. MARTIN

Data Source	OT Sensor	Status
ECDIS	NAV MOXA	
Nav. Lights	NAV MOXA	
RAI	NAV MOXA	
AMS	MFD5	
Ammeters	AMS	
Flow Meters	AMS	
Torque Meter	AMS	
SUL	CP Lean Processor	
OWS	Alfa Laval BlueBox	
FiRM	SIP PLC	

CSL METIS

Data Source	OT Sensor	Status
ECDIS	NAV MOXA	
Nav. Lights	NAV MOXA	
RAI	NAV MOXA	
AMS	Hijoy Switch	
Ammeters	DAP Panel	
Flow Meters	AMS	
Torque Meter	AMS	
SUL	CP Lean Processor	
OWS	Alfa Laval BlueBox	
FiRM	SIP PLC	

CSL SPIRIT

Data Source	OT Sensor	Status
ECDIS	NAV MOXA	
Nav. Lights	NAV MOXA	
RAI	NAV MOXA	
AMS	ECR MOXA 1	
Flow Meters	ECR MOXA 2	
Torque Meter	ECR MOXA 2	
SUL	CP Lean Processor	
OWS	Alfa Laval BlueBox	

CSL FRONTIER

Data Source	OT Sensor	Status
ECDIS	NAV MOXA	
Nav. Lights	NAV MOXA	
RAI	NAV MOXA	
AMS	Praxis Cab./ECR MOXA	
Ammeters	Praxis Cab.	
Flow Meters	Praxis Cab.	
Torque Meter	Praxis Cab.	
SUL	CP Lean Processor	
OWS	Alfa Laval BlueBox	

CSL KOASEK

Data Source	OT Sensor	Status
ECDIS	NAV MOXA	
Nav. Lights	NAV MOXA	
RAI	NAV MOXA	
AMS	MPC1 & MPC2	
Flow Meters	AMS	
Torque Meter	AMS	
Ammeters	AMS	
SUL	CP Lean Processor	
OWS	Alfa Laval BlueBox	
FiRM	SIP PLC	

CSL KAJIKA

Data Source	OT Sensor	Status
ECDIS	NAV MOXA	
Nav. Lights	NAV MOXA	
RAI	NAV MOXA	
AMS	MPC1 & MPC2	
Flow Meters	AMS	
Torque Meter	AMS	
Ammeters	AMS	
SUL	CP Lean Processor	
OWS	Alfa Laval BlueBox	
FiRM	SIP PLC	

ADELIE

Data Source	OT Sensor	Status
ECDIS	NAV MOXA	
Nav. Lights	NAV MOXA	
RAI	NAV MOXA	
Ammeters	DAP PLC	
FiRM: Fike, C	E1210 MOXA 1	
Flow Meters	ECR MOXA	
Torque Meter	ECR MOXA	
SUL	CP Lean Processor	
OWS	WhiteBox Recorder	

AKUNA

Data Source	OT Sensor	Status
ECDIS	NAV MOXA	
Nav. Lights	NAV MOXA	
RAI	NAV MOXA	
AMS	MPC1 & MPC2	
FiRM: Fike, C	E1210 MOXA	
Flow Meters	AMS	
Torque Meter	AMS	
Ammeters	AMS	
OWS	WhiteBox Recorder	

DONNACONA

Data Source	OT Sensor	Status
ECDIS	NAV MOXA	
Nav. Lights	NAV MOXA	
RAI	NAV MOXA	
Ammeters	DAP PLC	
FiRM: Fike, C	E1210 MOXA 1	
Flow Meters	ECR MOXA	
AMS	Phoenix Cont. Firewall	
DEIF PMS	Phoenix Cont. Firewall	
Ballast PLC	Pleiger MOXA + RedLion	
SUL	CP Lean Processor	
OWS	WhiteBox Recorder	
Pitch	LIPS (MOXA + WAGO)	

THUNDER BAY

Data Source	OT Sensor	Status
ECDIS	NAV MOXA	
Nav. Lights	NAV MOXA	
RAI	NAV MOXA	
AMS	MFD6	
Ammeters	AMS	
Flow Meters	AMS	
Torque Meter	AMS	
SUL	CP Lean Processor	
OWS	Alfa Laval BlueBox	

BAIE COMEAU

Data Source	OT Sensor	Status
ECDIS	NAV MOXA	
Nav. Lights	NAV MOXA	
RAI	NAV MOXA	
AMS	MFD6	
Ammeters	AMS	
Flow Meters	AMS	
Torque Meter	AMS	
SUL	CP Lean Processor	
OWS	Alfa Laval BlueBox	

BAIE ST. PAUL

Data Source	OT Sensor	Status
ECDIS	NAV MOXA	
Nav. Lights	NAV MOXA	
RAI	NAV MOXA	
AMS	MFD6	
Ammeters	AMS	
Flow Meters	AMS	
Torque Meter	AMS	
SUL	CP Lean Processor	
OWS	Alfa Laval BlueBox	

WHITEFISH BAY

Data Source	OT Sensor	Status
ECDIS	NAV MOXA	
Nav. Lights	NAV MOXA	
RAI	NAV MOXA	
AMS	MFD6	
Ammeters	AMS	
Flow Meters	AMS	
Torque Meter	AMS	
SUL	CP Lean Processor	
OWS	Alfa Laval BlueBox	

ELANORA

Data Source	OT Sensor	Status
ECDIS	NAV MOXA	
Nav. Lights	NAV MOXA	
RAI	NAV MOXA	
AMS	MPC1 & MPC2	
FiRM	SIP Panel	
Flow Meters	AMS	
Torque Meter	AMS	
Ammeters	AMS	
SUL	CP Lean Processor	
OWS	WhiteBox Recorder	

GOLIATH

Data Source	OT Sensor	Status
ECDIS	NAV MOXA	
Nav. Lights	NAV MOXA	
AMS	SCU + mGuard	
FiRM: Fike, C	E1210 MOXA	
Ammeters	AMS	
SUL	OPC Server (PC cabinet)	
OWS	WhiteBox Recorder	

KONDILI

Data Source	OT Sensor	Status
ECDIS	NAV MOXA	
Nav. Lights	NAV MOXA	
RAI	NAV MOXA	
AMS	MPC1 & MPC2	
FiRM: Fike, C	E1210 MOXA	
Flow Meters	AMS	
Torque Meter	AMS	
Ammeters	AMS	
OWS	WhiteBox Recorder	

CSL NIAGARA

Data Source	OT Sensor	Status
ECDIS	NAV MOXA	
Nav. Lights	NAV MOXA	
AMS	AM.PN05	
Flow Meters	AM.PN05	
Torque Meter	AM.PN05	
Ammeters	AM.PN05	
SUL	Hilscher NL-50-MPI	
OWS	WhiteBox Recorder	

CSL LAURENTIEN

Data Source	OT Sensor	Status
ECDIS	NAV MOXA	
Nav. Lights	NAV MOXA	
AMS	AM.PN05	
Flow Meters	AM.PN05	
Torque Meter	AM.PN05	
Ammeters	AM.PN05	
SUL	Hilscher NL-50-MPI	
OWS	WhiteBox Recorder	

RH PAUL J. MARTIN

Data Source	OT Sensor	Status
ECDIS	NAV MOXA	
Nav. Lights	NAV MOXA	
AMS	AM.PN05	
Flow Meters	AM.PN05	
Torque Meter	AM.PN05	
Ammeters	AM.PN05	
SUL	Hilscher NL-50-MPI	
OWS	WhiteBox Recorder	

CSL ASSINIBOINE

Data Source	OT Sensor	Status
ECDIS	NAV MOXA	
Nav. Lights	NAV MOXA	
AMS	AM.PN05	
Flow Meters	AM.PN05	
Torque Meter	AM.PN05	
Ammeters	AM.PN05	
SUL	CP Lean Processor	
OWS	WhiteBox Recorder	

WYUNA

Data Source	OT Sensor	Status
ECDIS	NAV MOXA	
Nav. Lights	NAV MOXA	
RAI	NAV MOXA	
AMS	MPC1 & MPC2	
FiRM: Fike, C	E1210 MOXA	
Flow Meters	AMS	
Torque Meter	AMS	
Ammeters	AMS	
OWS	WhiteBox Recorder	

CSL RELIANCE

Data Source	OT Sensor	Status
ECDIS	NAV MOXA	
Nav. Lights	NAV MOXA	
FiRM: Fike, C	E1210 MOXA	
FiRM: LHD, De	E1210 MOXA	
SUL	RedLion	
Flow Meters	ECR MOXA	
Torque Meter	ECR MOXA	
Ammeters	DAP PLC	
OWS	WhiteBox Recorder	

MAREEBA

Data Source	OT Sensor	Status
ECDIS	NAV MOXA	
Nav. Lights	NAV MOXA	
RAI	NAV MOXA	
FiRM	DAP PLC	
Ammeters	DAP PLC	
Flow Meters	ECR MOXA	
Torque Meter	ECR MOXA	
OWS	WhiteBox Recorder	

FERBEC

Data Source	OT Sensor	Status
ECDIS	NAV MOXA	
Nav. Lights	NAV MOXA	
RAI	NAV MOXA	
AMS	ECR MOXA 1	
Flow Meters	ECR MOXA 2	
Torque Meter	ECR MOXA 2	
Ammeters	ABB PLC	
OWS	WhiteBox Recorder	

CSL ST-LAURENT

Data Source	OT Sensor	Status
ECDIS	NAV MOXA	
Nav. Lights	NAV MOXA	
RAI	NAV MOXA	
AMS	MFD6	
Ammeters	AMS	
Flow Meters	AMS	
Torque Meter	AMS	
OWS	AMS	

CSL WELLAND

Data Source	OT Sensor	Status
ECDIS	NAV MOXA	
Nav. Lights	NAV MOXA	
RAI	NAV MOXA	
AMS	MFD6	
Ammeters	AMS	
Flow Meters	AMS	
Torque Meter	AMS	
OWS	AMS	

NUKUMI

Data Source	OT Sensor	Status
ECDIS	NAV MOXA	
Nav. Lights	NAV MOXA	
RAI	AMS	
AMS	MPC1 & MPC2	
Ammeters	AMS	
Flow Meters	AMS	
Torque Meters	AMS	
SUL	CP Lean Processor	
OWS	WhiteBox Recorder	

FRONTENAC

Data Source	OT Sensor	Status
ECDIS	NAV MOXA	
OWS	WhiteBox Recorder	

OAKGLEN

Data Source	OT Sensor	Status
ECDIS	NAV MOXA	
OWS	WhiteBox Recorder	

SPRUCEGLEN

Data Source	OT Sensor	Status
ECDIS	NAV MOXA	
OWS	WhiteBox Recorder	

ATLANTIC HURON

Data Source	OT Sensor	Status
ECDIS	NAV MOXA	
OWS	WhiteBox Recorder	

CSL TADOUSSAC

Data Source	OT Sensor	Status
ECDIS	NAV MOXA	
OWS	WhiteBox Recorder	

LEGEND	Explanation
	Data collecting and fully commissioned
	Data collecting and partially commissioned OR warrants additional verifications
	Data collecting, but not commissioned
	Sensor and/or cabling installed
	Sensor and/or cabling NOT installed

GOALS AND AMBITIONS

Decarbonization

35% reduction in carbon intensity of shipping operations by 2030 compared to 2005

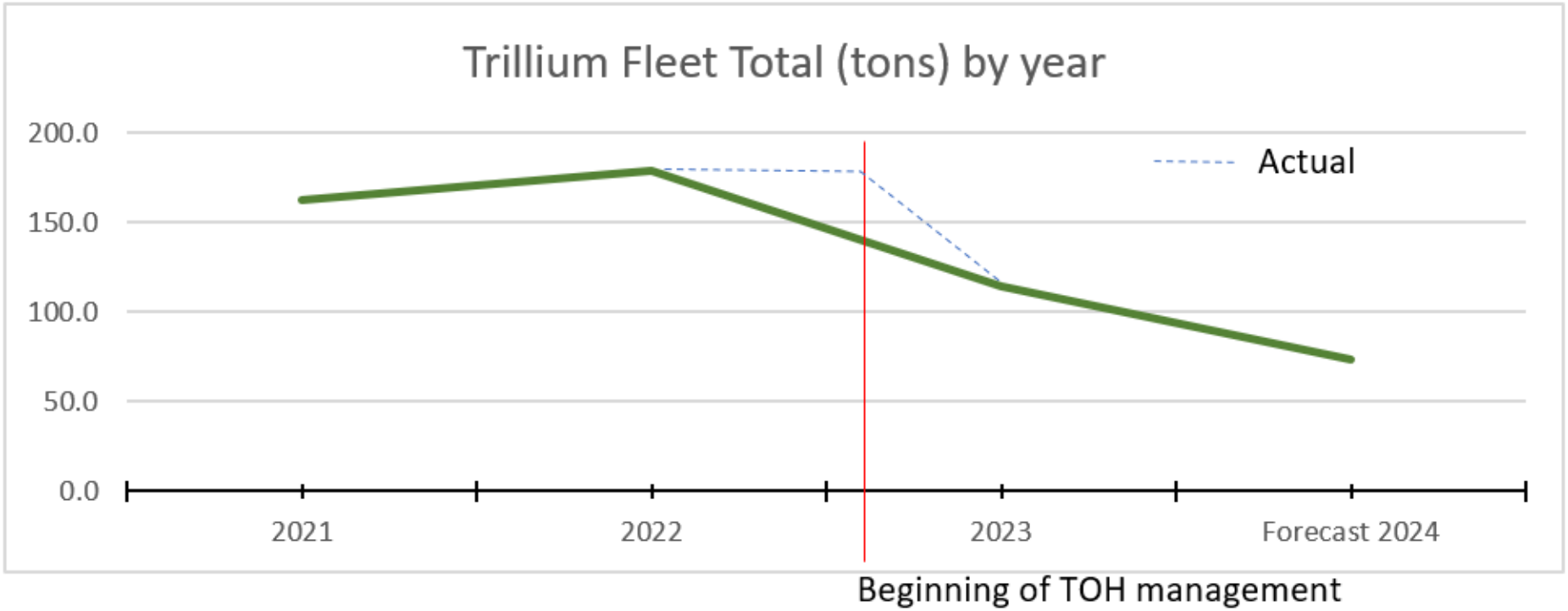
An evaluation revealed that various initiatives utilizing O2 led to an 8,233-tonne reduction in CO2 equivalent emissions across 11 vessels during the sailing season, compared to the average over five years.

1

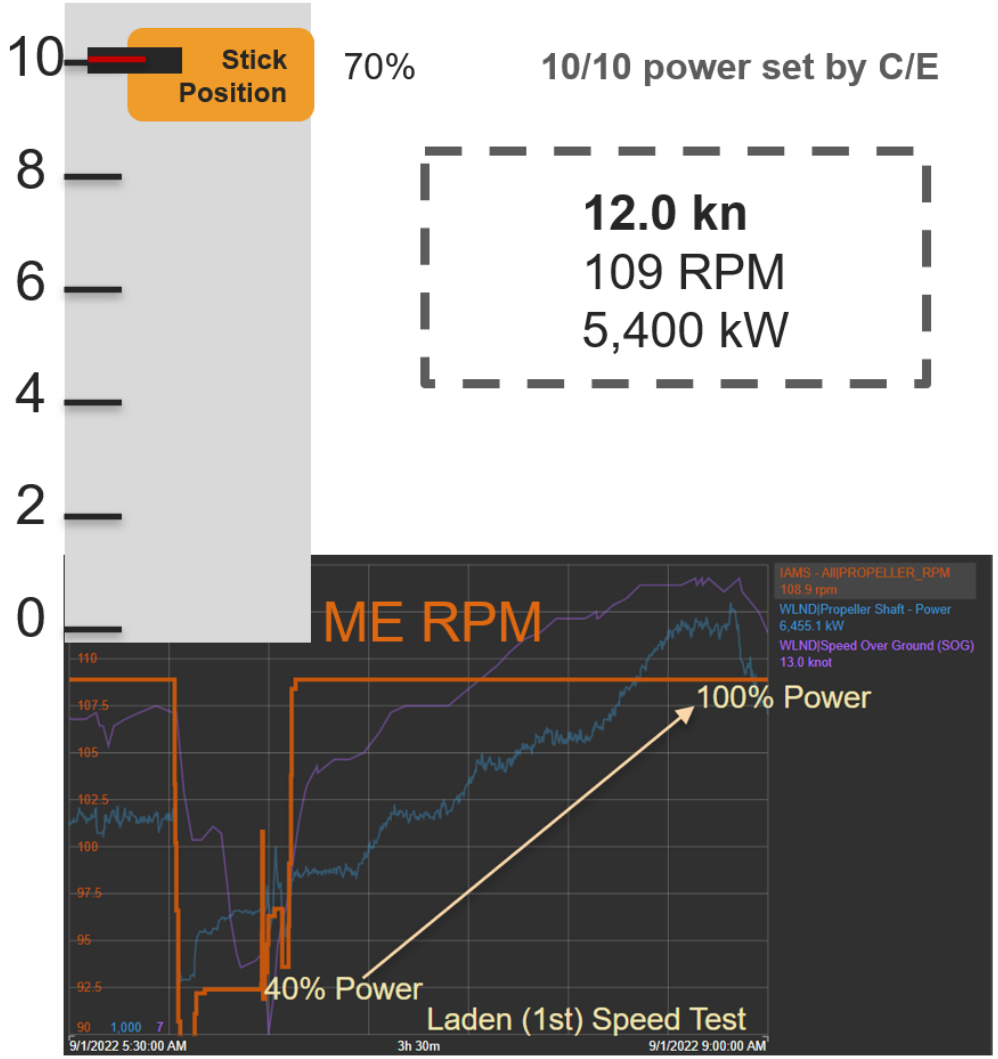
Using Data to find Positive Outliers

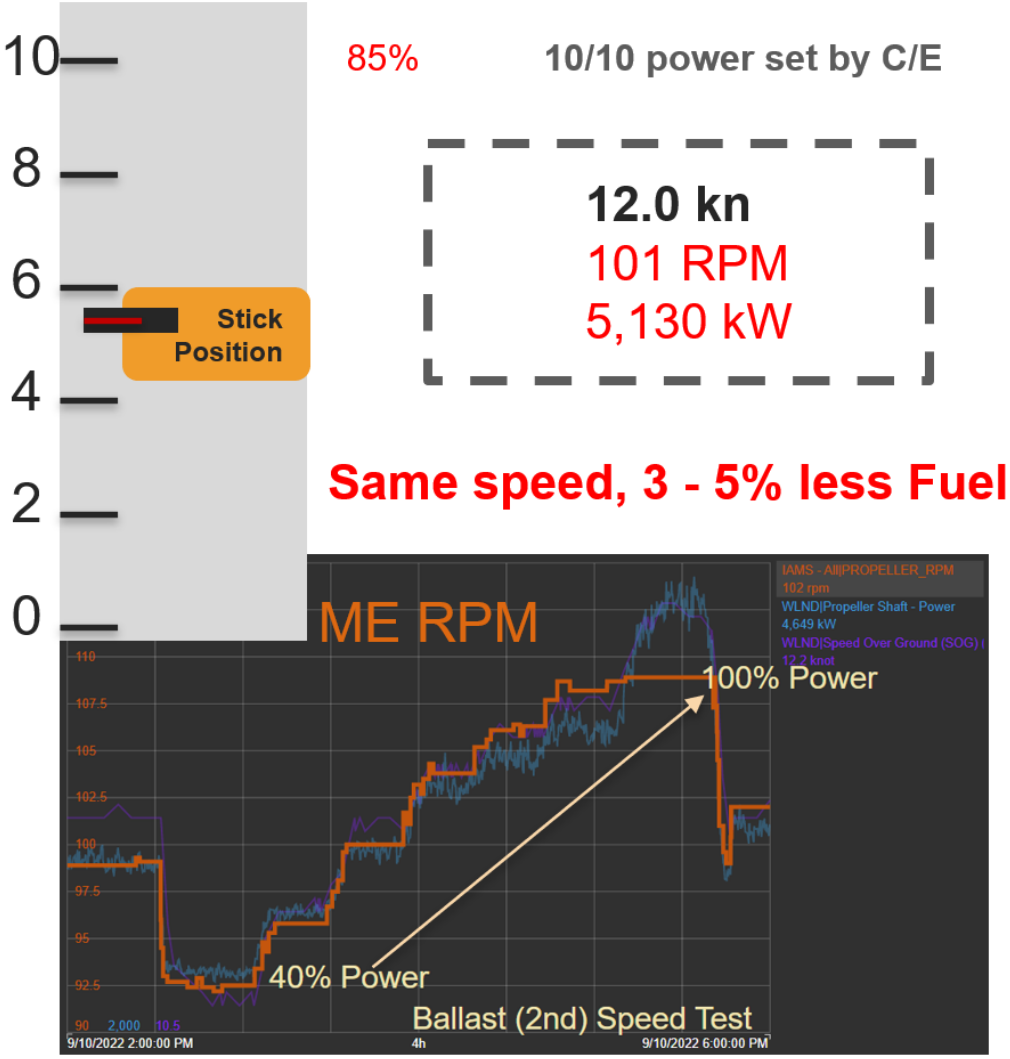
One vessel of a sister fleet came out as an outliers because its consumption was far better than the rest. This was found using the O2 and the tools in place. Investigation was found and just by adjusting settings and slightly change heat management onboard, considerable savings were achieve with out tradeoff nor investment.

Cut TOH Consumption by more than half



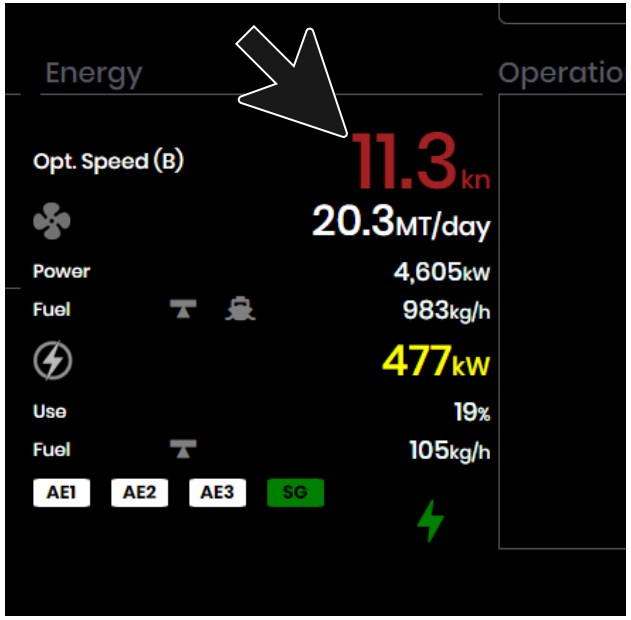
ME Settings Ajustement

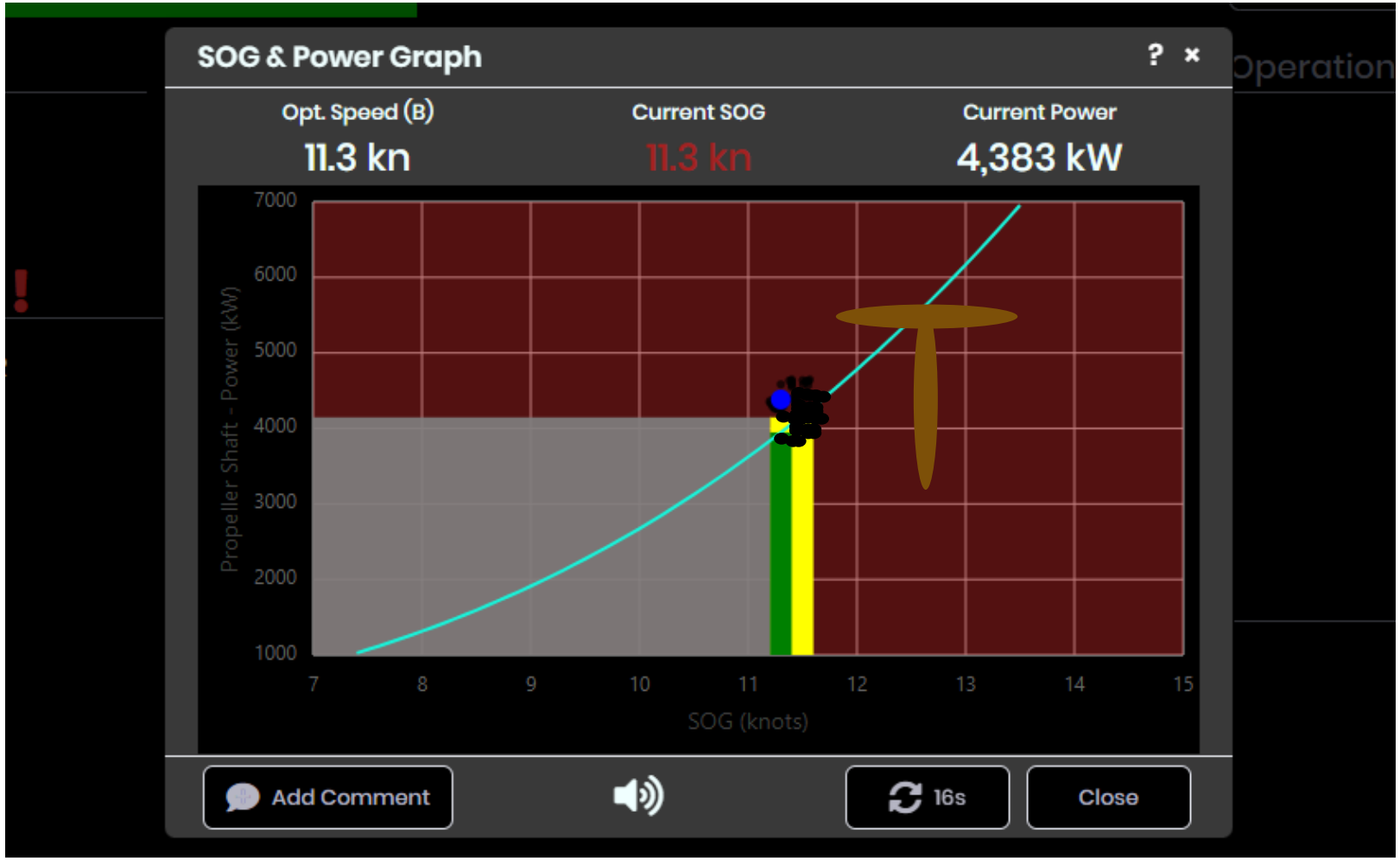




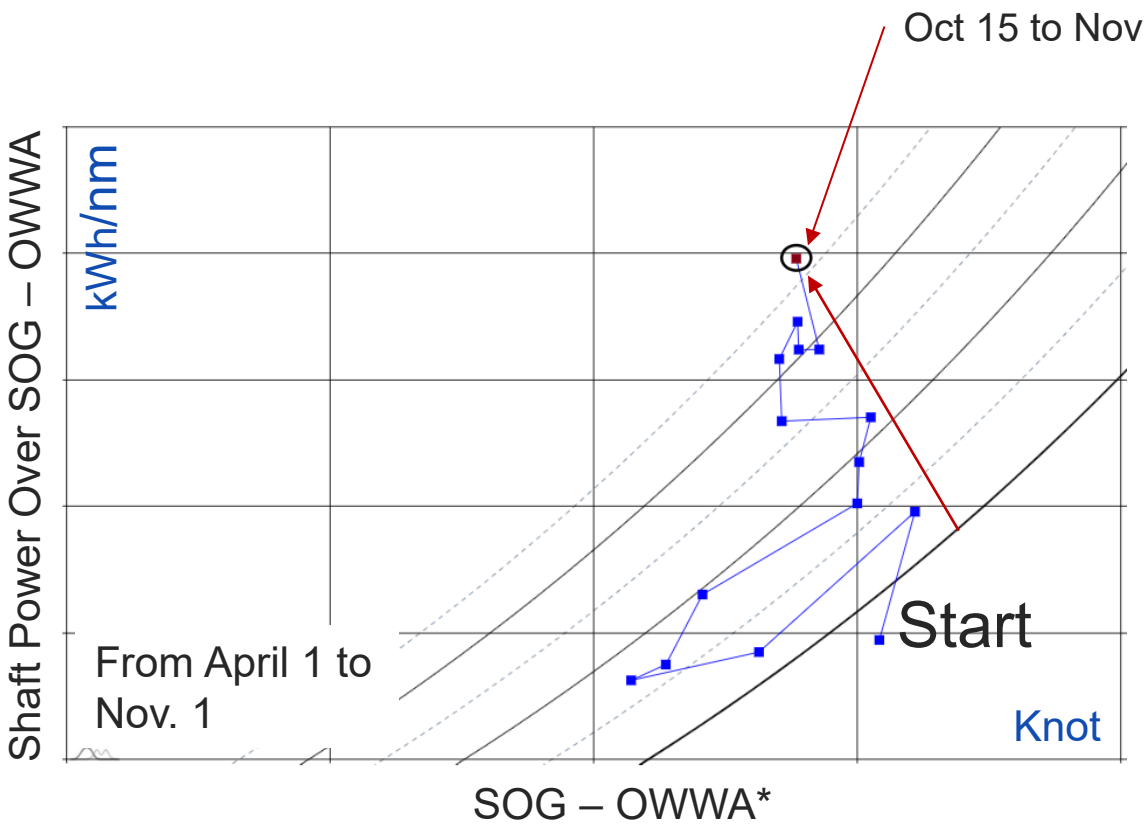
Using Data to prescribe and Maintain Just in Time Speed

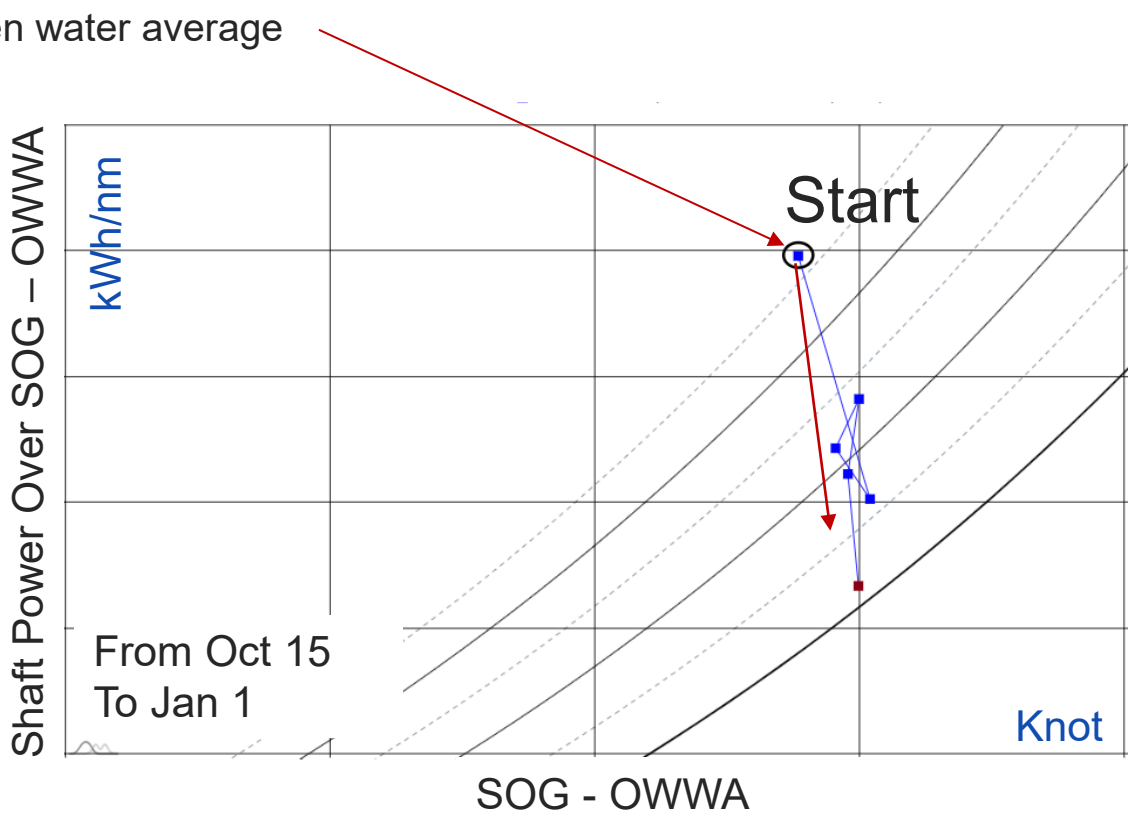
With Deep Analytics and AI, CSL has the right Data, the right level of monitoring and the right level off feedback to prescribe the right Speed any time while tools are in place to assist the crew in maintaining this speed. **This is a big contributor to 8,233-tonne reduction in CO2 equivalent -**





Using Advance Analytics to Detect and confirm Hull Fouling

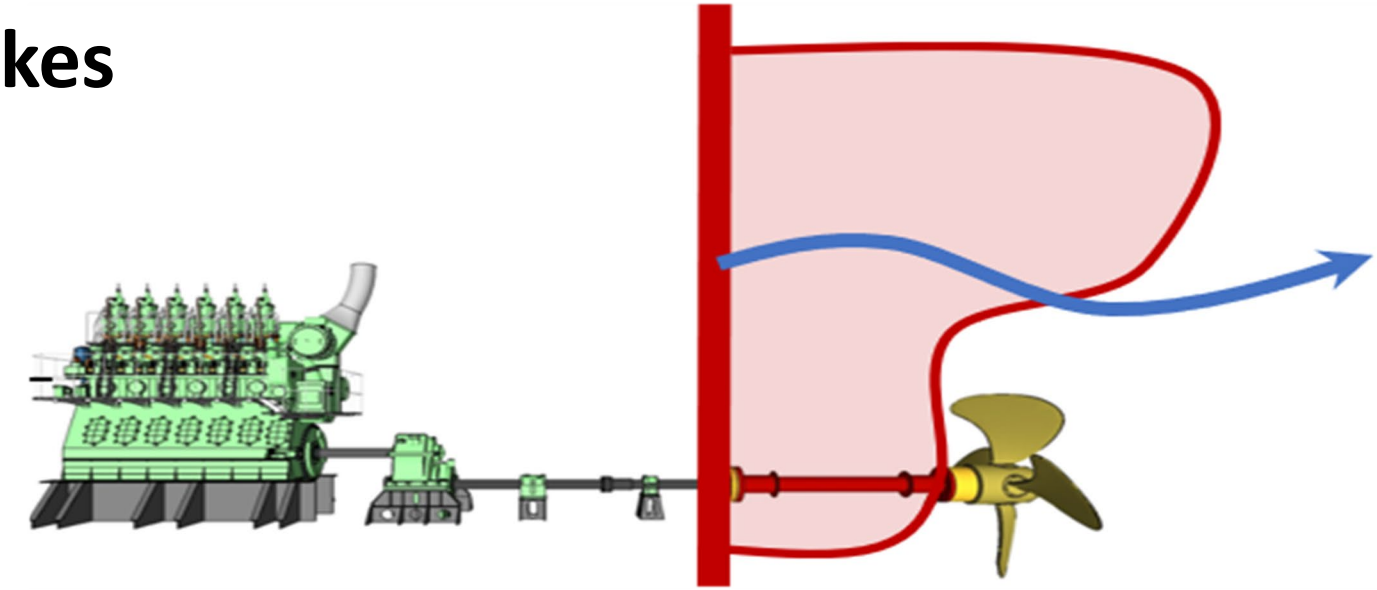




*OWWA – Open Water Weekly (2) Average

Hull Fouling – What Next

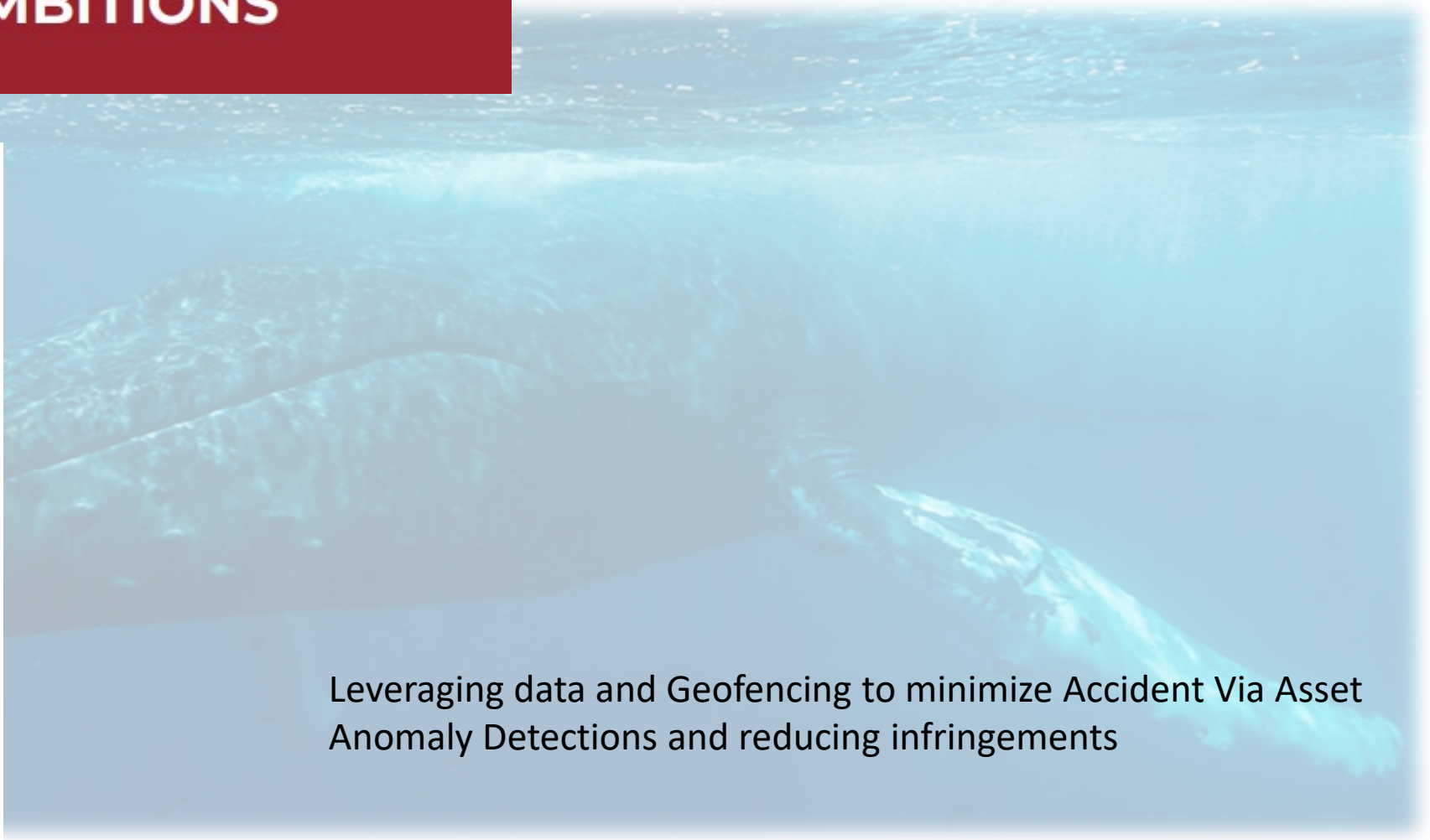
In talks with Service Providers, Port Authorities and Governments to find best path Forward on the Great Lakes



GOALS AND AMBITIONS

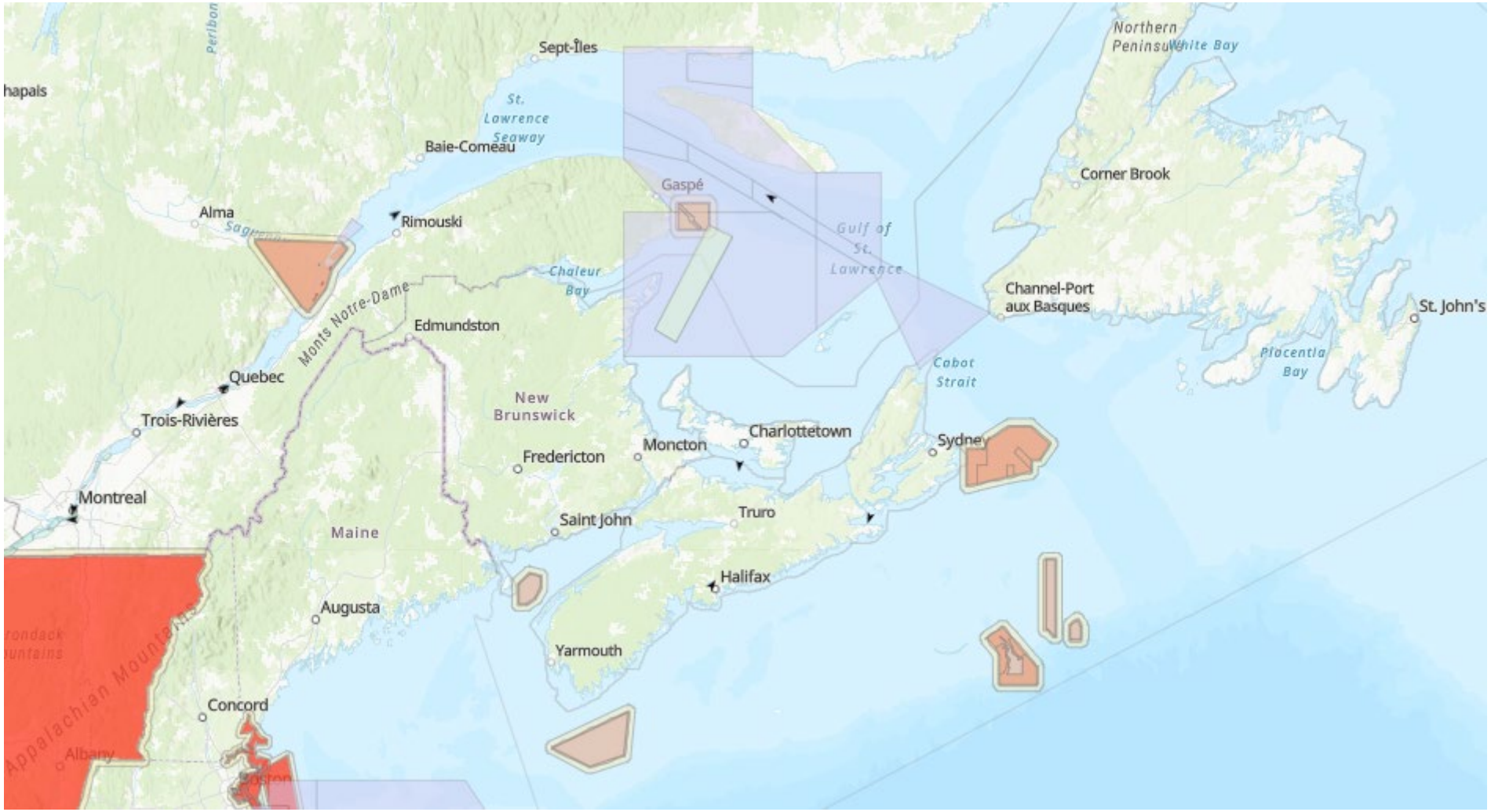
Accidents, Oil Spills, and Marine Pollution

2

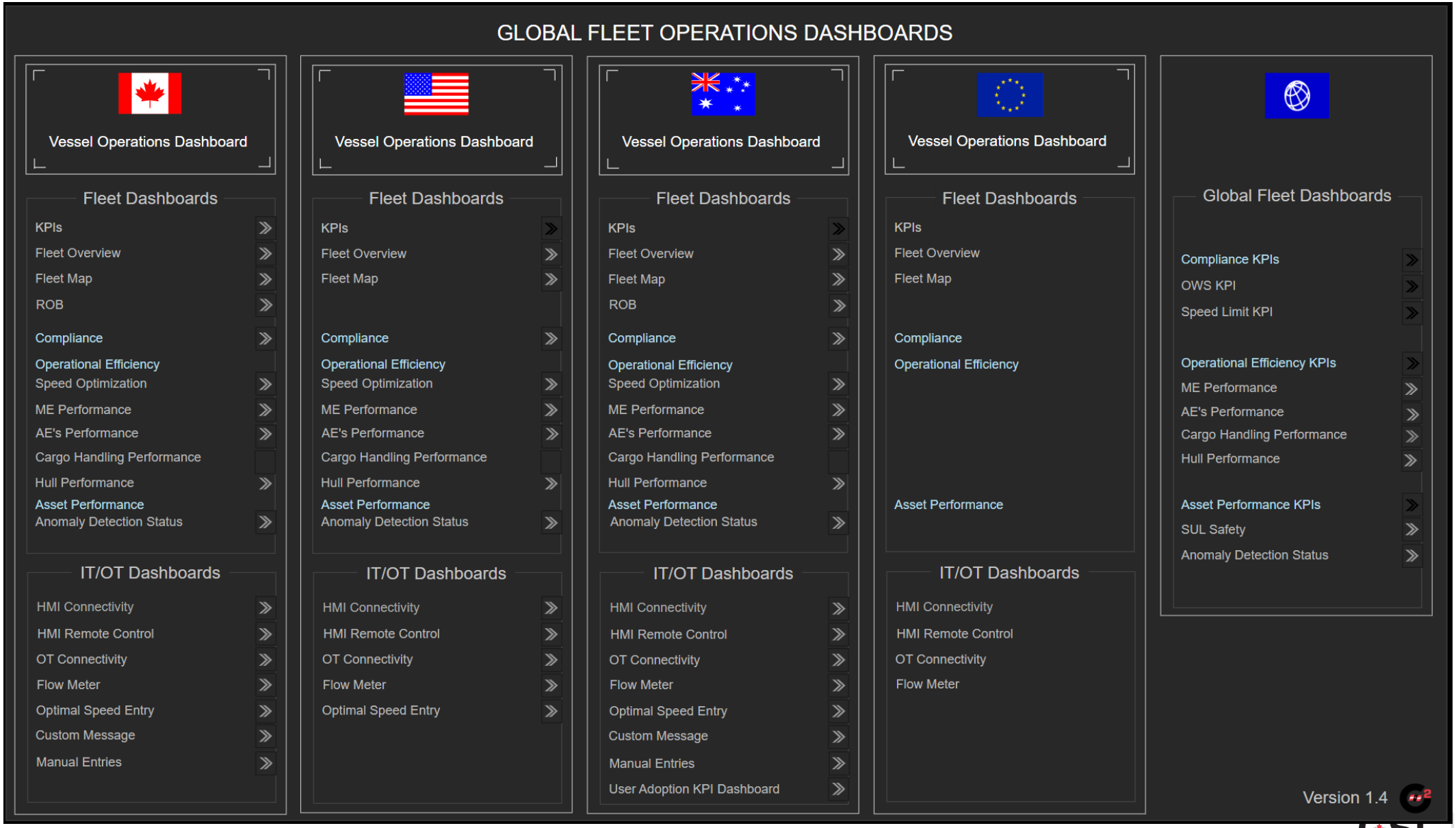


Leveraging data and Geofencing to minimize Accident Via Asset Anomaly Detections and reducing infringements

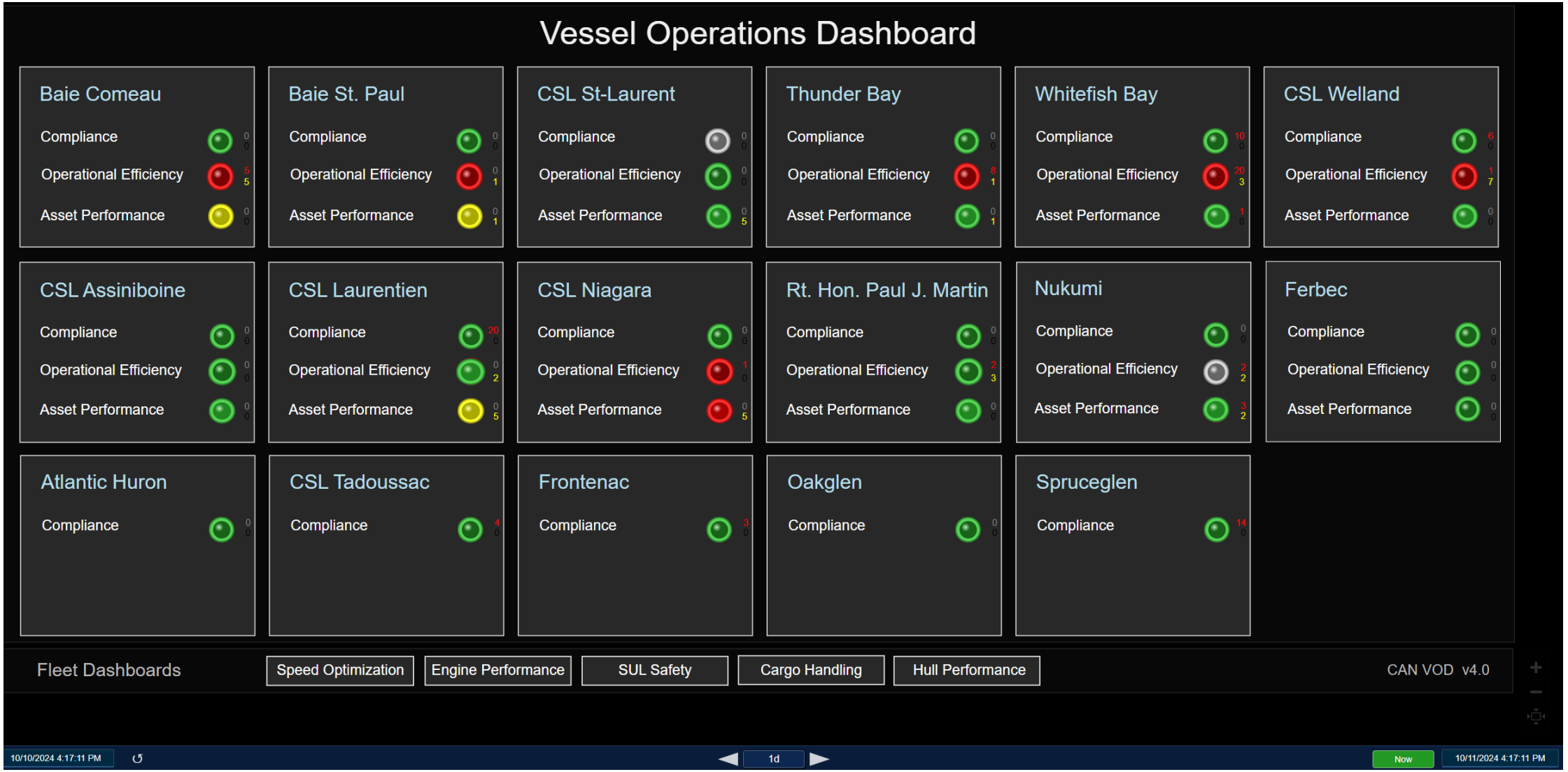
Whale – Speed Reduction Dynamic Zones



Anomaly Detection



Anomaly Detection



Anomaly Detection –

Very Slow Trending Oil Pressure reveals Auxiliary Engine Oil Bad Condition

Anomaly Detection –

Very Slow Trending Oil Pressure reveals Auxiliary Engine Oil Bad Condition

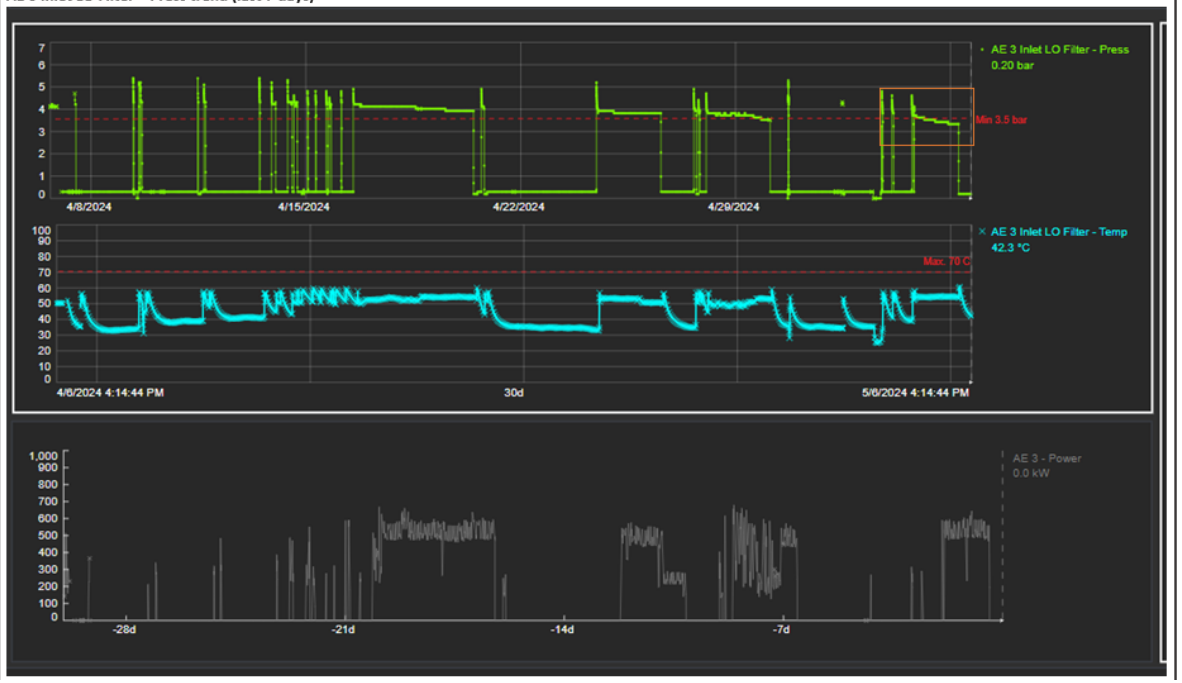
O2 detected a below abnormal trend relating to the ME shaft earthing device.
Please acknowledge the receipt of this notification and provide any findings related to the subject matter.

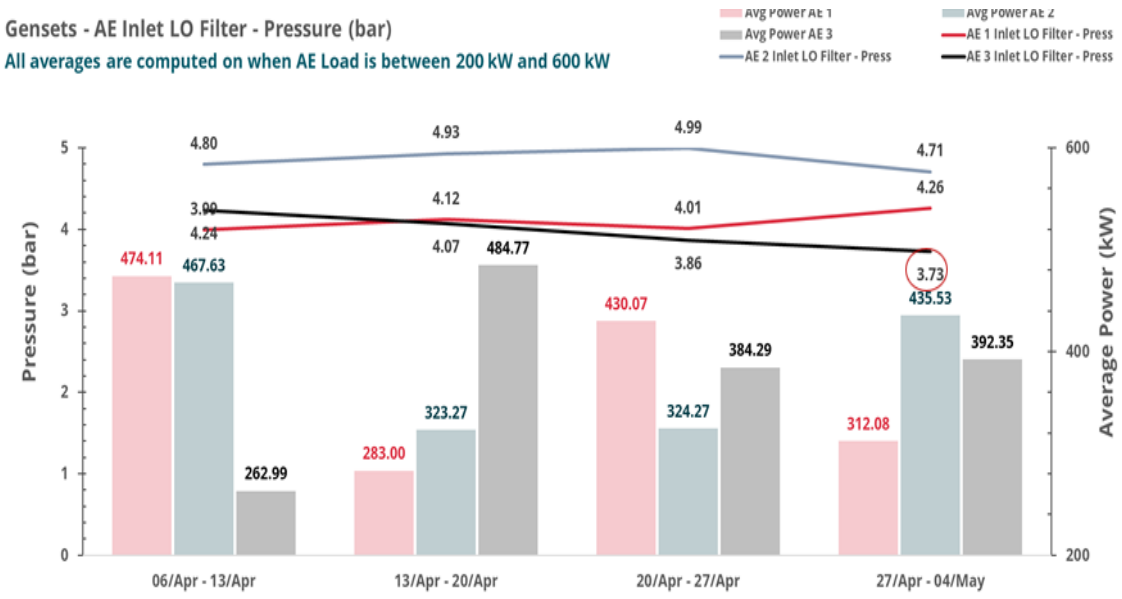
Anomaly Detection Details
AE 3 LO inlet pressure gradual decreasing

Possible Root Causes
- Poor LO pump performance
- Dirty LO filter or LO inlet lines
- Faulty Sensor

Attachment
- AE 3 Inlet LO Filter – Press trend (last 7 days)
- For Comparison: AE Inlet LO Filter – Press & AE Inlet LO Filter – Temp data for AE 1, AE 2 and AE 3 (Last 30 days)

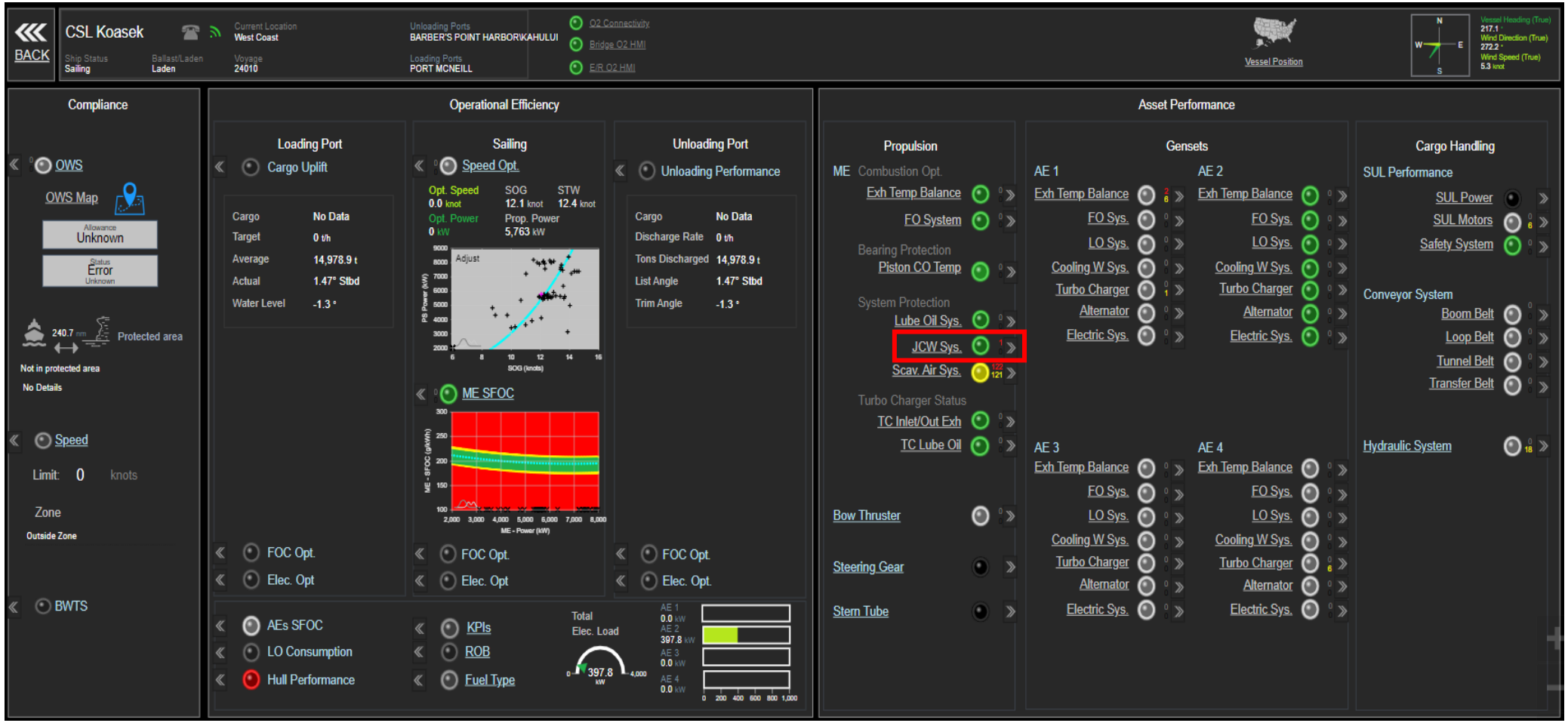
AE 3 Inlet LO Filter – Press trend (last 7 days)





Anomaly Detection –

High Deviation in ME Jacket Cooling Water Outlet (Cyl. 4)
Temperature Reveals Cooling Chamber Clogging by Rubber Particles



Anomaly Detection –

High Deviation in ME Jacket Cooling Water Outlet (Cyl. 4) Temperature Reveals Cooling Chamber Clogging by Rubber Particles

O2 has detected the following trends related to ME Jacket Cooling Water Outlet Temperature(cylinder 4).
Please acknowledge the receipt of this notification and provide any findings related to the subject matter.

Anomaly Detection Details

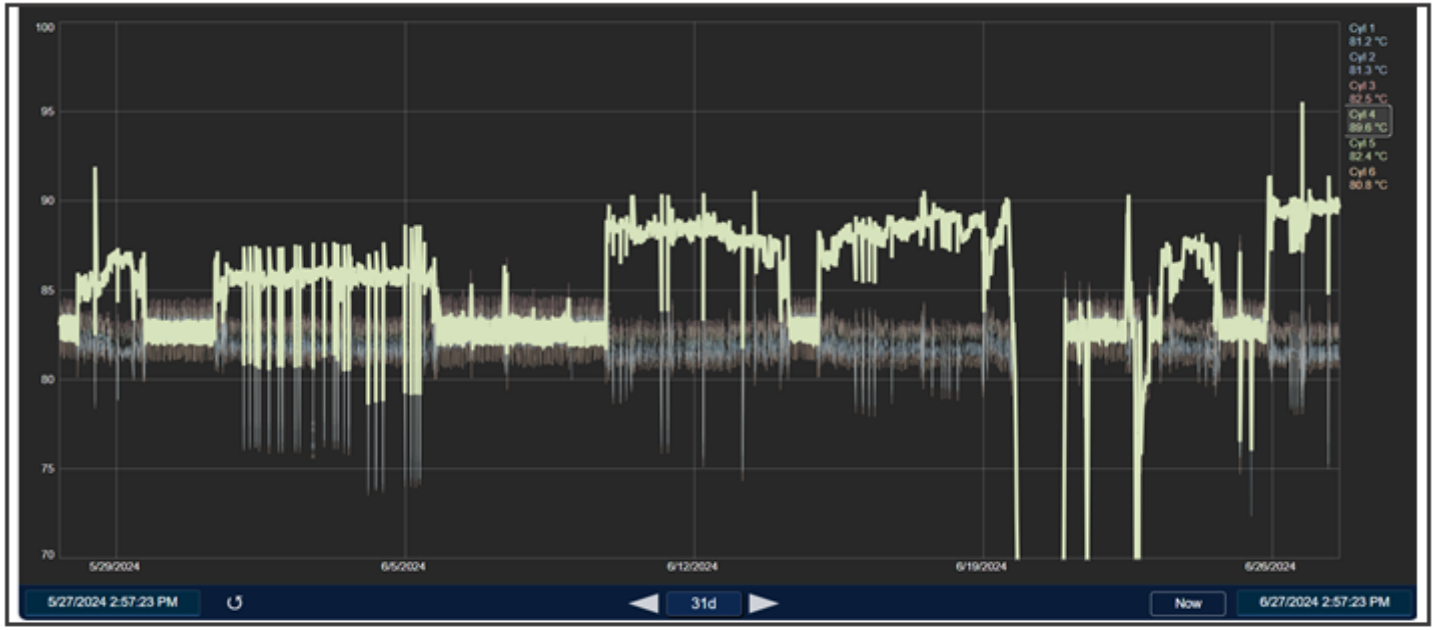
High deviation in ME Jacket Cooling Water Outlet (cylinder 4) Temperature

Possible Root Causes

- Electrical noise due to poor cable connection to card or terminal
- Cable, terminal, or relevant control module damage.
- Relevant J/B or Panel vibration

Attachment

- ME Jacket Cooling Water Outlet Temperature trends (all cylinders) (Last 31 days)

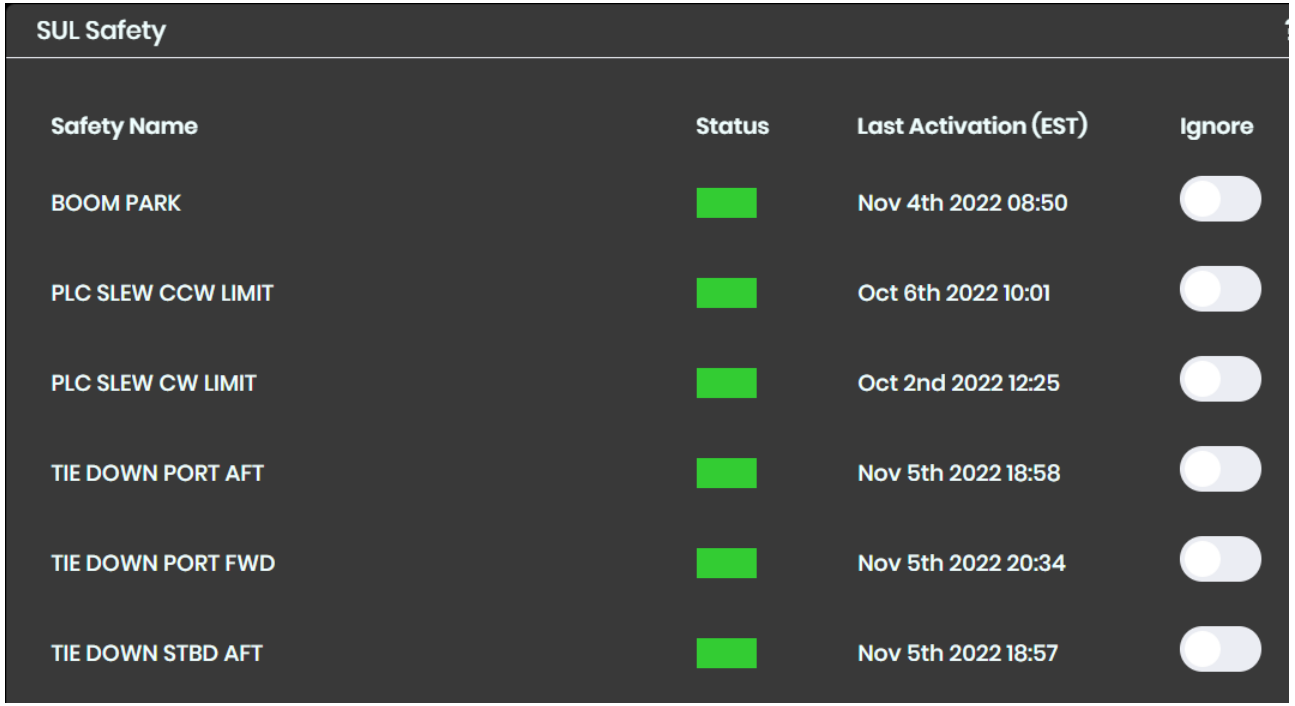


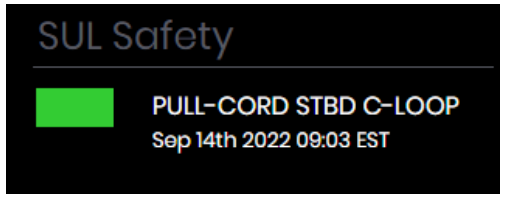
SUL Safety Alarms Feature

- O2 SUL Safety alarms feature aims to assist the crew in automatically recoding each time a safety switch, emergency stop or shutdown is activated.

- O2 displays the latest activation date and consequently the appropriate color with the longest standing alarm activation by default on the main dashboard.

- The color of an indicator displays the elapsed period since its activation:
  - Green < 60 days
  - Yellow > 60 days
  - Red > 90 days
  - Gray – Unavailable or ignored





SUL SAFETY

Sept 2022

Nov 2022

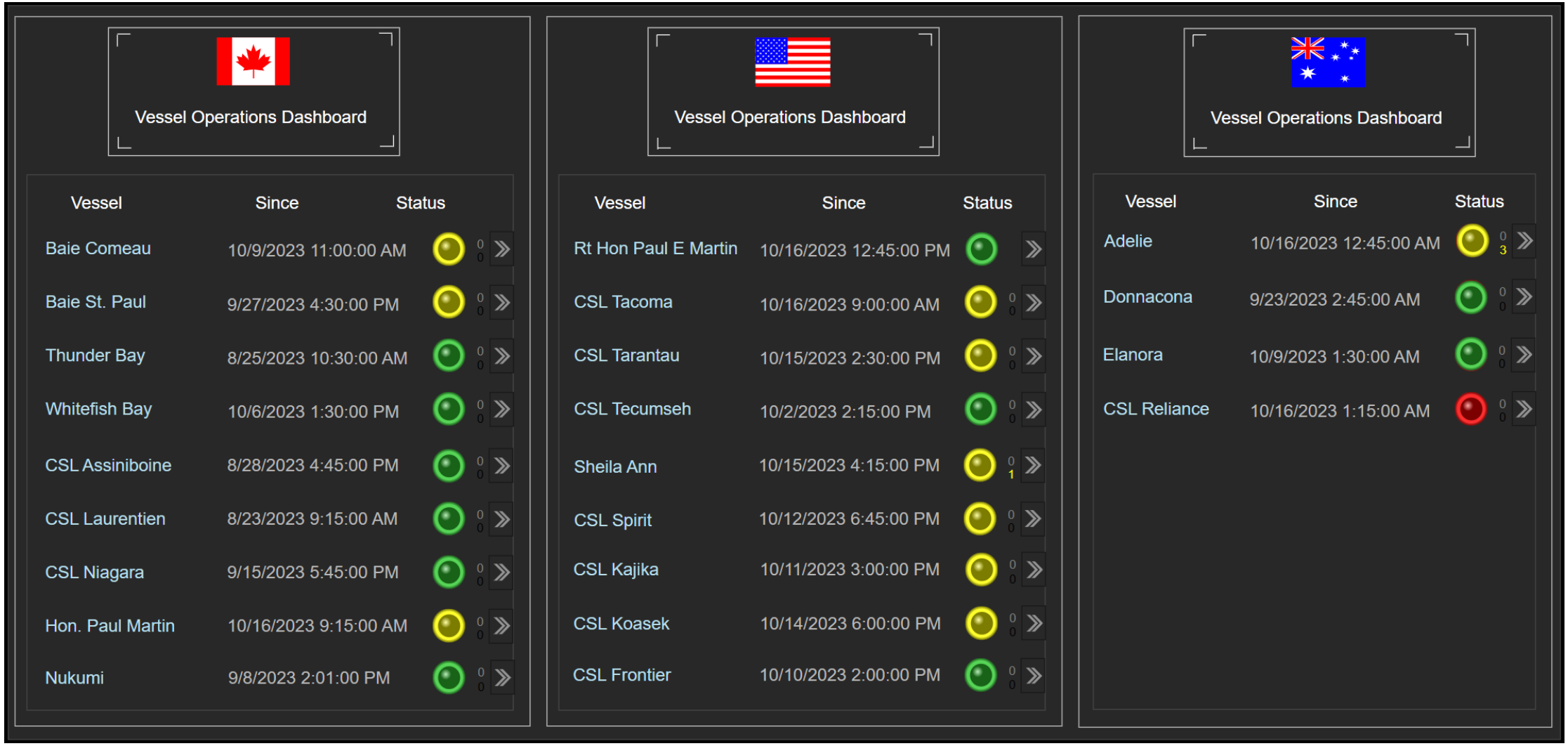
Red → Not Activated for more than 90 Days
Yellow → Not Activated for more than 60 Days
Green → Activated sometimes in the last 60 days

260 Safeties - 4 Trillium SUL
- Sep 2022: 119 red
- Nov 2022: 0 red (waiting parts, RA in place)
- 4 Forebodies ECD April 2023

788 Safeties - 9 vessels
- Commissioning in progress, ECD April 2023
- Metis ECD June 2023

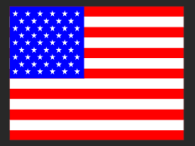
291 Safeties - Adelie, Elanora, Reliance, Donnacona
- Commissioning in progress, ECD April 2023
- Cement ships safeties – not many - lower priority

SUL SAFETY - NOW



BACK

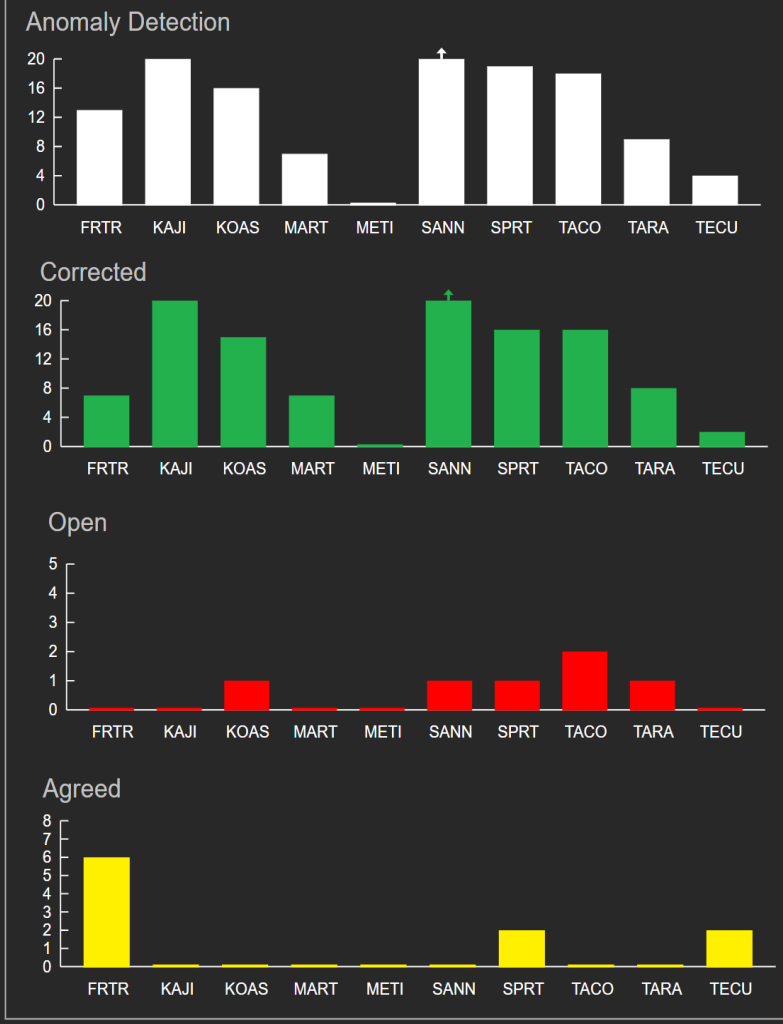
AME Anomaly Detection Status Dashboard



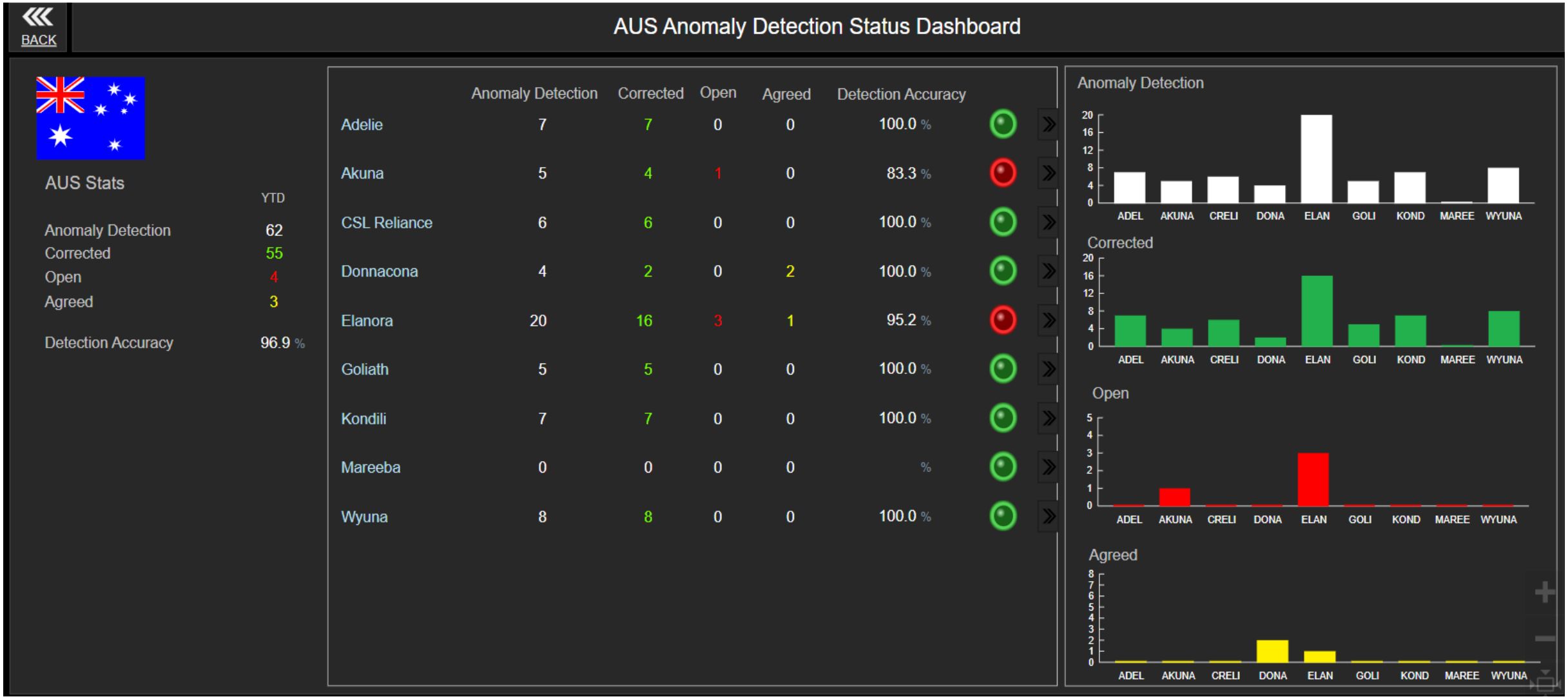
AME Stats

	YTD
Anomaly Detection	132
Corrected	116
Open	6
Agreed	10
Detection Accuracy	97.8 %

	Anomaly Detection	Corrected	Open	Agreed	Detection Accuracy
CSL Acadian	No Data				%
CSL Argosy	No Data				%
CSL Frontier	13	7	0	6	100.0 %
CSL Kajika	20	20	0	0	95.2 %
CSL Koasek	16	15	1	0	100.0 %
Rt. Hon. Paul E. Martin	7	7	0	0	87.5 %
CSL Metis	0	0	0	0	%
Sheila Ann	26	25	1	0	100.0 %
CSL Spirit	19	16	1	2	95.0 %
CSL Tacoma	18	16	2	0	100.0 %
CSL Tarantau	9	8	1	0	100.0 %
CSL Tecumseh	4	2	0	2	100.0 %



[PI Vision - AME - L1 - AAD KPI (cslships.com)]



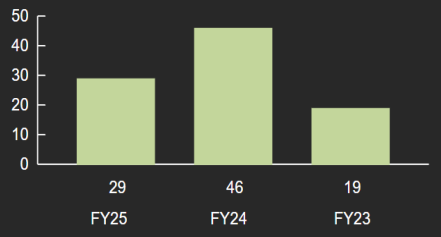
[PI Vision - AUS - L1 - AAD KPI (cslships.com)]

BACK

CAN Anomaly Detection Status Dashboard

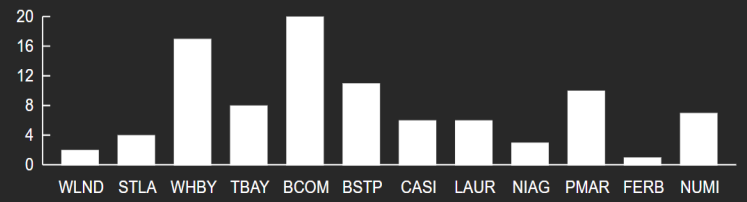
CAN Stats

	YTD
Anomaly Detection	95
Corrected	83
Open	2
Agreed	10
Detection Accuracy	89.6 %

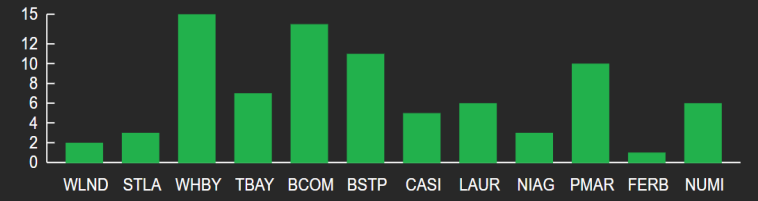


	Anomaly Detection	Corrected	Open	Agreed	Detection Accuracy
Baie Comeau	20	14	1	5	100.0 %
Baie St. Paul	11	11	0	0	91.7 %
CSL Assiniboine	6	5	0	1	60.0 %
Ferbec	1	1	0	0	50.0 %
CSL Laurentien	6	6	0	0	100.0 %
CSL Niagara	3	3	0	0	100.0 %
Nukumi	7	6	0	1	100.0 %
Hon. Paul Martin	10	10	0	0	83.3 %
CSL St Laurent	4	3	1	0	100.0 %
Thunder Bay	8	7	0	1	88.9 %
Whitefish Bay	17	15	0	2	94.4 %
CSL Welland	2	2	0	0	66.7 %

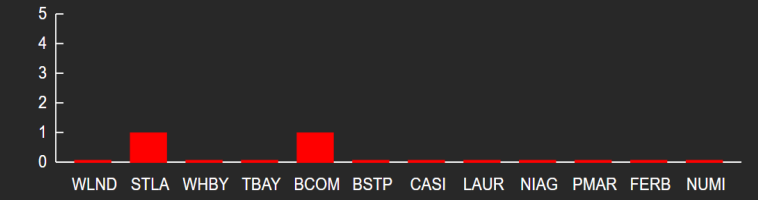
Anomaly Detection



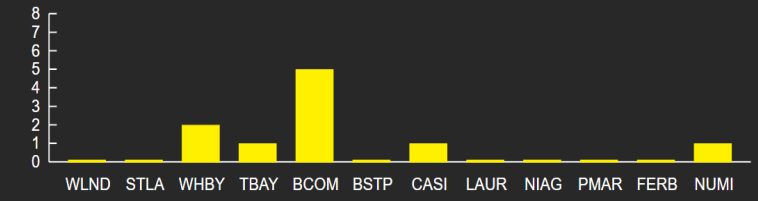
Corrected



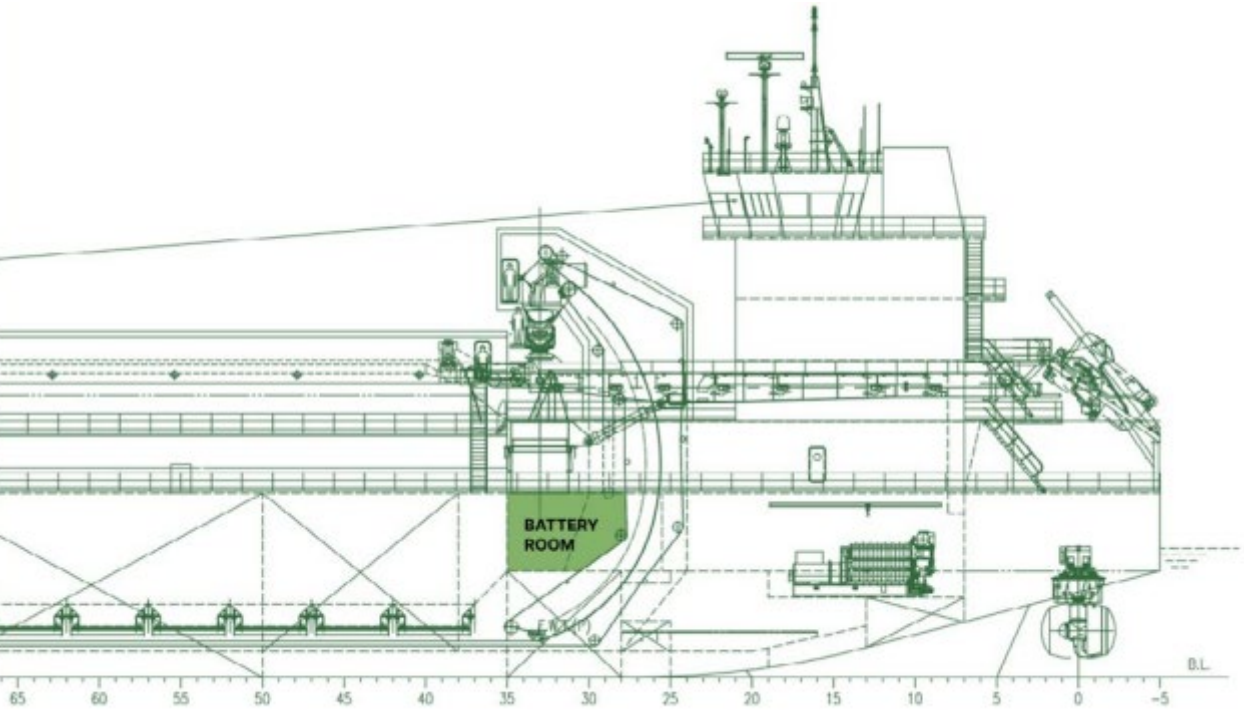
Open



Agreed



[PI Vision - CAN - L1 - AAD KPI (cslships.com)]



BUILDING THE WORLD'S FIRST FULLY ELECTRIC BATTERY CAPABLE SELF-UNLOADER

2023

2024

2025

2026

2027

The Path to NET – ZERO Vessels

FIRST FIVE YEARS OF OPERATION	2031 ONWARDS	
25% propulsion from batteries	100% propulsion from batteries	First Australian flag **NET ZERO** SUL powered by **100%** renewable energy operating exclusively in South Australian waters
100% shore power for discharging	100% shore power & battery charging with renewable energy	**Annual** CO_2 emissions savings of **>10,000 tonnes**
50% shore power for loading		Vessel lifetime CO_2 emissions savings of **>260,000 tonnes** (30-year life)

MARITIME| Global

CSL Group Inc. Achieve 29% Carbon Intensity reduction

Challenge

- Extremely aggressive targets
- Gap between vessel and office
- Frequent crew changes, availability of senior officers
- technology readiness
- Hard to get a holistic vision of our fleets

Solution

- Deployed AVEVA™ PI System™ to collect all vessel and other operational data. Leverage System to organize, standardize, represent and give the right insights to meaningful actions

Results

- **Deployed system on 40 plus vessels**
- **Considerable fuel savings and 24/7 monitoring of fuel consumption. Ex.: 8,233 mt of CO2 equivalent across 11 vessels**
- **Various failure avoidances – 300 Anomaly Detections found YTD**

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Merci - Thank you

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