CAMO and Port Fourchon Launch AIS Vessel Safety Initiative

Coastal and Marine Operators Members

CAMO Pipeline Safety Industry Initiative

- Purpose - To explore and address issues and challenges, in preventing spills, releases and damage to coastal and marine infrastructure, which negatively impacts the environment and safety.
- Action - Design and Support “Drivers” that will enhance the protection of oil and gas pipeline infrastructure through industry, government and agency collaboration, while demonstrating continuous improvement.
- Goals – Implement effective solutions and objectives that sustain and enhance industry asset integrity, environmental protection, industry perception, and our right to operate.
- CAMO - formed in 2009 with about 20 pipeline companies participating, we have at one general membership meeting a year

Both Marine and On Land

Unknown and 3rd party damage (including Vessel Interactions) is one source of our industries' largest spills.

Excavator Operators VS Marine Vessel Operators

Are infrastructure safety, security and damage prevention equally understood with stakeholders in lakes, bays, rivers and other marine areas as they are on land?

Coastal and Marine Third Party

Damage Incident DATA

The data below was compiled from PHMSA, Minerals Management Service, United States Coast Guard and the National Transportation Safety Board.

Description	Reported Impact (1987-2015)
Pipeline Strikes	137
Fatalities	25
Injuries	17
Property Damage and Lost Product	$120,500,000
Product Released to the Environment	100,000 bbls

Subsea Infrastructure Protection

- Interactions between vessels, anchors and pipelines from 1987 to 2015 resulted in the following: **137 pipeline strikes**, **25 fatalities**, and **17 injuries**, **100,000 barrels** of released product and over **$120,500,000 in property damage**.
- **Each day** approximately **400 large supply vessels** traverse the Port Fourchon waterways and **1.15 million barrels of crude oil** are transported via pipelines through the port.
- In **2009** in Bayou Lafourche, a **16" Natural Gas Pipeline was struck**, waterway was **closed for over 6 hours** and the cost of pipeline repairs and gas loss **exceeded $800,000**

Coastal and Marine Third Party

Damage Incident Examples

- Terrebonne Bay, May 1997, 5000 bbls. crude oil released, cause Spud Barge
- Catfish Lake, Sept 2001, Boat Prop from eroded area new path
- Little Lake, Vessel Damage – Tug boat finding channel
- Bayou Perot, Jan 2007, 10,000 bbls barge hit largest spill in US
- Poseidon Pipeline, over 3000 bbls crude oil, anchor drag
- Safety - West Cote Blanche Bay Oct 2006 kills six, spud barge
- 2010 - Morgan City Area Dredge Gas PL Hit and Delta Release Spud Barge Hit crude line

Wheel Washing - Vessel Damage to a 16” Natural Gas Pipeline

Worker safety and releases in marine environments can be very serious

Spills in Coastal/ Marine Environments can average over $10,000 a bbl. just to clean up

Louisiana Law States

ANY Movement or removal of earth either on land or submerged must have a *One Call Notification*.

Recommendation: Any force contacting the water bottom creating 150 lbs of force or more, should require a one call notification.

News Article

Barge Pipeline Strike Causes Massive Fireball in Louisiana Bayou March 2013

"A pipeline south of New Orleans erupted in a massive fireball after being struck by a tug and barge.

The U.S. Coast Guard said that it is responding after crews received a report that the tug pushing a 154-foot oil barge hit the pipeline near 30 miles south of New Orleans.

One fatality occurred from this incident…."

USCG Reports 4 – Incidents in March 2013 involving vessels and oil/gas or pipeline infrastructure

So what's at Stake?

- Industry Perception – we have too many spills or releases
- Industry Image? - Doesn't demonstrate continuous improvement
- State and National economy and energy security
- Worker Safety, preserve our license to operate
- Your legal liability both Personally and Corporately
- Reasons to support CAMO initiatives
  - Environmental Responsibility
  - Reduce both Oil and Gas releases
  - Reduce asset downtime which protects State/ Fed. revenue
  - Public safety
  - Sustain effective operations

SOME Preventive Measures

- Call 811 or Gulfsafe or contact the pipeline company before you contact the water bottom
- Make a Voyage Plan that includes pipeline locations
- Check and update your maps, look for markers
- When in question – Shutdown and call USCG/ State Police/ or 811
- One Solution is innovative use of the AIS system … (vessel Auto. ID System) to prevent incidents with an invisible asset fence

WHY?

- We all need to collaborate
- Help protect the safety of employees, community and the environment.
- Enhance security of assets
- Protect the US oil and gas supplies

Contact Information

Follow us on

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OCEANEERING®

Automatic Identification System (AIS) Safety Message Transmission

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Director of Operations

Oceaneering Global Data Solutions

What is….
Automatic Identification System (AIS)

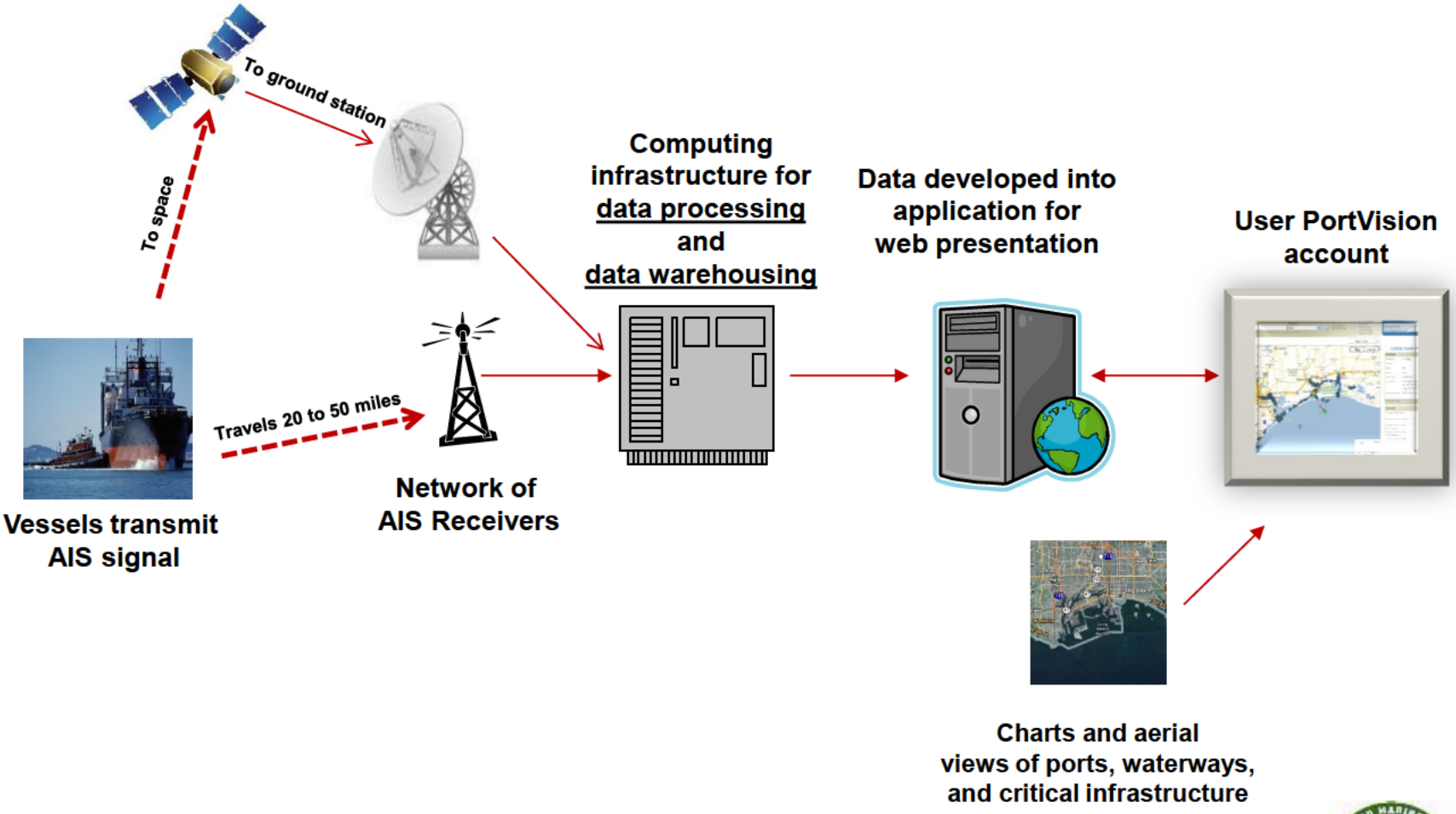
- Collision avoidance between vessels
- Signal transmitted via VHF with range of 20 to 40 miles
- **Title 33, Code of Federal Regulations**

  164.01 Applicability & § 164.46 - vessels of **65 feet or more** in length, other than passenger and fishing vessels, **Towing** vessels of **26 feet or more** in length and **more than 600 horsepower**, **Passenger vessels, of 150 gross tonnage or more**, **more than 150 passengers-for-hire**, **Tankers**, regardless of tonnage

AIS Data is Captured & Processed

- **Global network** of AIS receivers to captured signals
- Patented Geo-fencing to **log and alert** as vessels
  –arrive –depart –pass points of interest.
- **Historical AIS data** captured for playback and analytical reporting up to twice a minute
  - 15 billion records dating back 5+ years
  - 50 million new location reports every day

Communication Pipeline



AIS Data Utilization

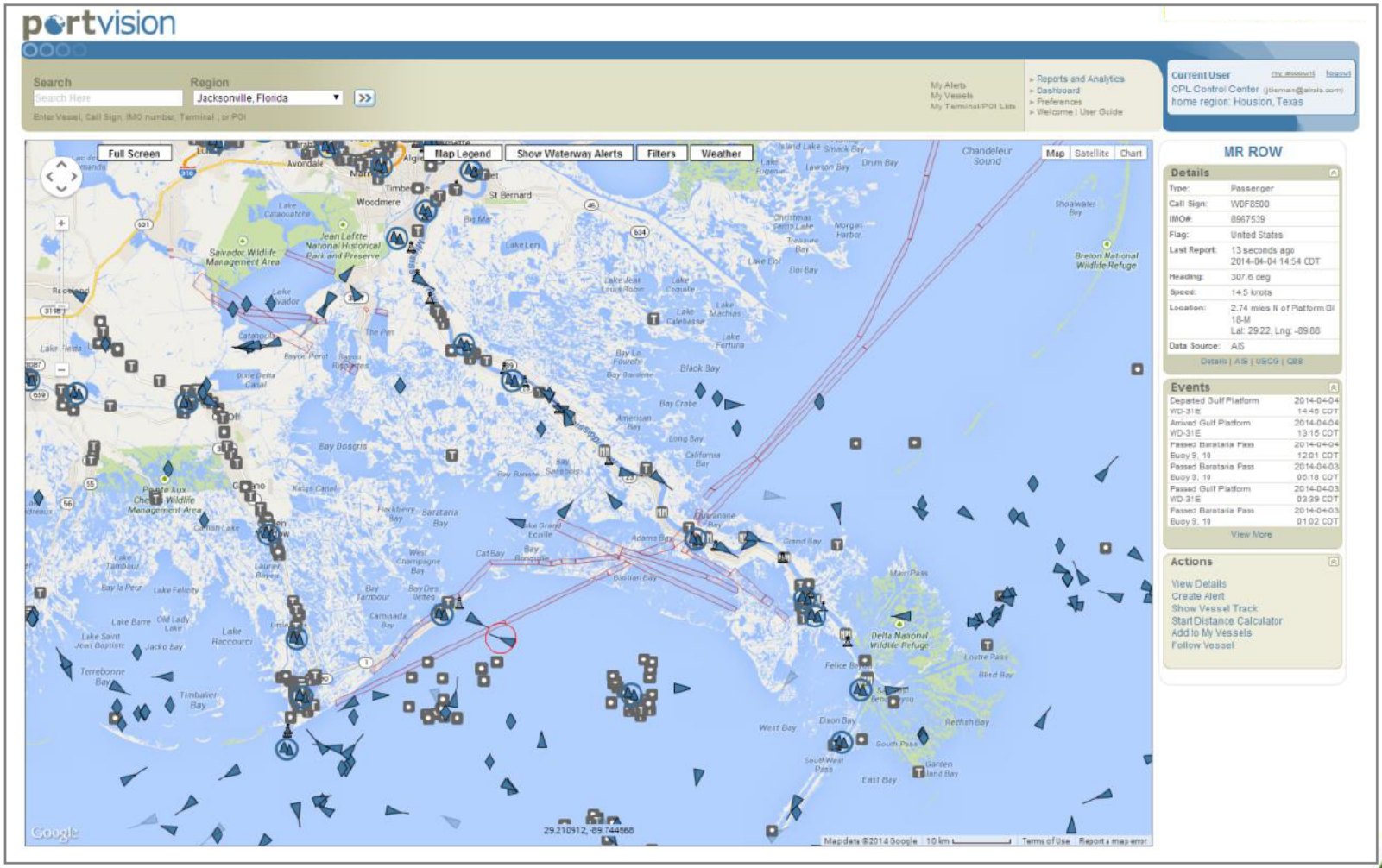
- Automated documentation of factual vessel position data
- Optimize terminal and waterway utilization
- Traffic pattern studies
- Competitive analysis of fleets, terminals, assets
- Enforcement of Federal, State, Local, and company stated policies
- Emergency response: Situational reporting, logistical coordination, safety of responders

PortVision – Protecting Subsea Assets

Leveraging Automatic Identification (AIS) transmissions from vessels we are able to:

- **Real-time visibility of vessel traffic** over or near your pipeline corridor.
- **Alert on vessel threats**, via e-mail and/or text, of vessels operating over submerged cables in a threatening manner.
- **Historical playback of vessel traffic** for post incident investigations to determine cause factors and identify responsible parties that may have been previously unidentifiable.
- **Analytical tools** to target funding towards infrastructure protection and remediation efforts based on documented vessel activities.

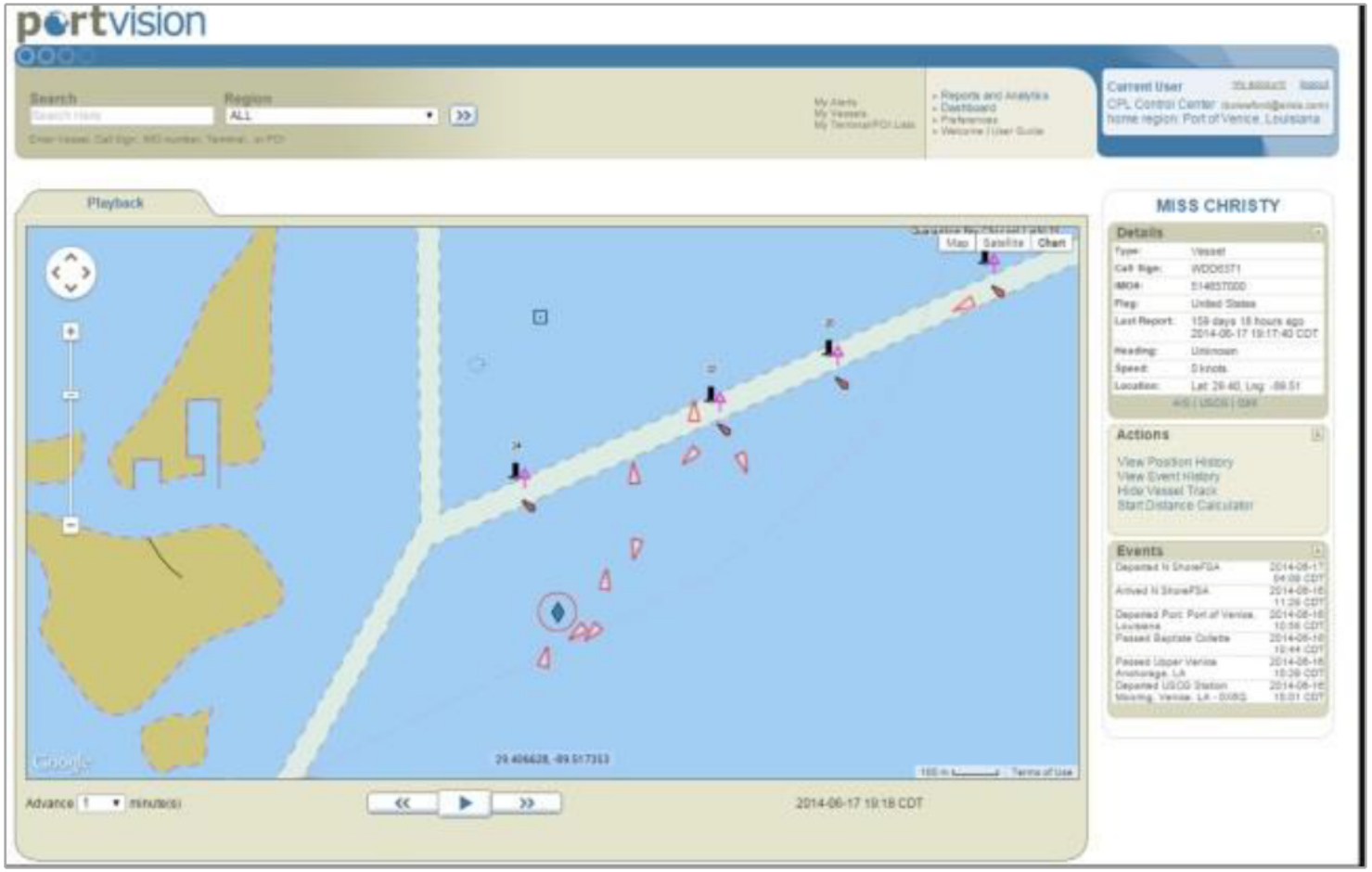
Pipeline Monitoring Zones



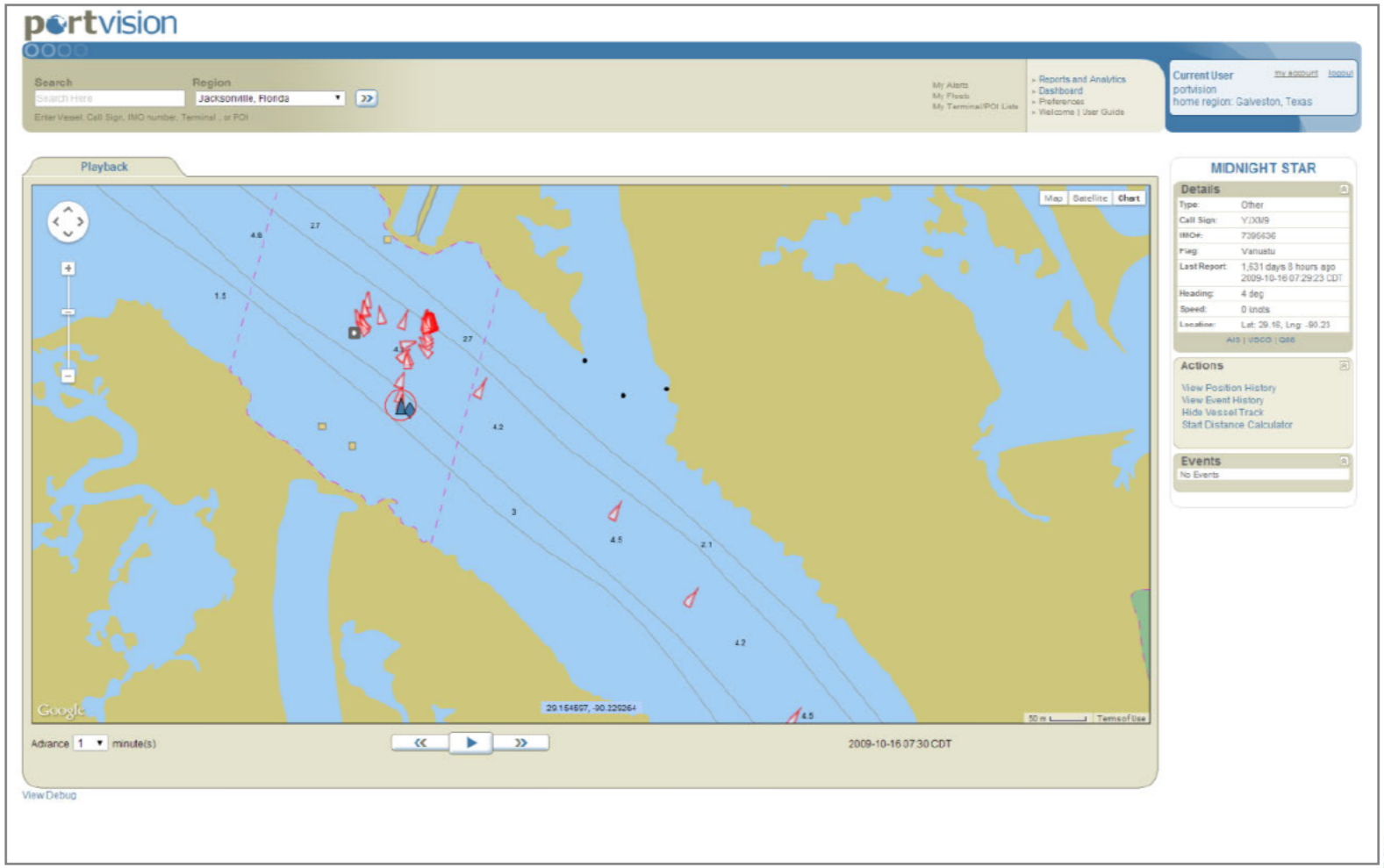
Pipeline Near-Miss Case Study

- Pipeline operator **received an alert** regarding a vessel over a pipeline segment that looked suspicious.
- Field **inspector sent to investigate** and **confirmed vessel was stopped** in pipeline corridor.
- Inspector **notified Field Supervisor and Control Center.**
- Field inspector **contacted vessel owner**, provided vessel captains phone number.
- Captain was asked for an **ALL STOP** until further notice to do his proximity to pipeline.
- **Confirmed vessel was grounded**, notifications were made to all pipeline stakeholders.
- Vessel **held fast to high tide**, so not to be a threat to the pipeline.

Vessel Track Over Pipeline



Case Study: MIDNIGHT STAR Vessel Track Over Pipeline



CAMO Pipeline AIS Broadcast Project

AIS Notification System for pipelines in the Port Fourchon Region

- Each vessel passing through the two pipeline corridors below, will be monitored to alert if their activities threaten the submerged pipelines

  Location of pipeline monitoring/alerting zones:

  - Bayou LaFourche North, Southeast of Halvoline Canal - Centered on the point Lat. 29.157558 Long. -90.230906 (Pipeline Corridor 2 Bayou LaFourche North)
  - Bayou LaFourche South, vicinity of SW corner of Port Fourchon - Centered on the point Lat. 29.11072, Long. -90.208890 (Pipeline Corridor 1 SouthWest Channel)

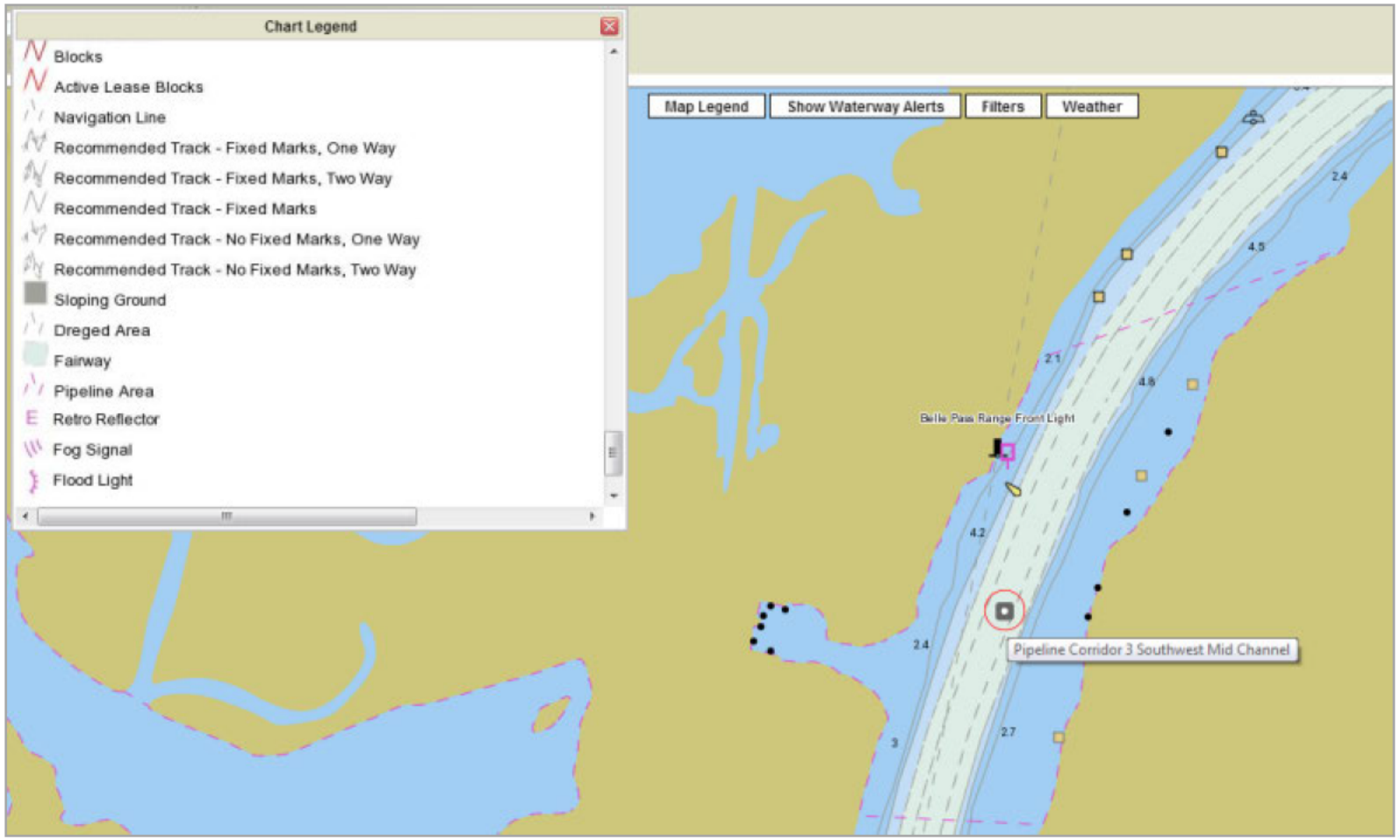
- Vessels will receive an AIS safety message: “PIPELINE BELOW”, if stopped inside one of one the above two monitored zones. The message automatically will be generated and broadcast specifically addressed to their vessel alerting them.
- Pipeline Operators will also receive an alert with position and identity of vessels inside the charted pipeline corridors

Goals: Improve safety of mariners, protect environment, keep waterways open and traffic moving

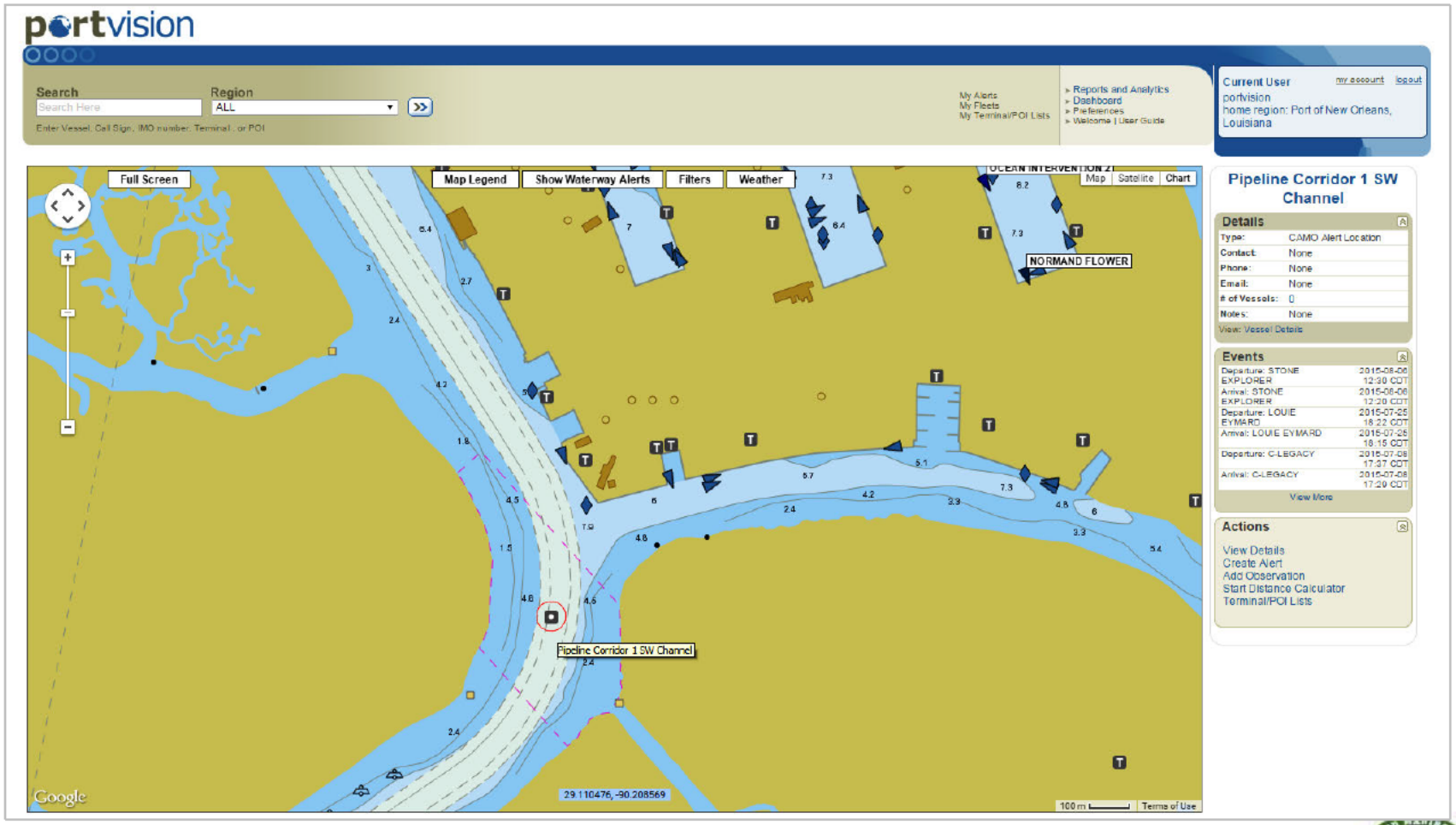
Partners and Participants

- CAMO
- Port Fourchon
- PortVision as service of Oceaneering
- Oil and Gas operators
- Vessel operators
- USCG (support)
- FCC (licensing)

Pipeline Corridor - NOAA Chart



Monitoring Two Pipeline Corridors



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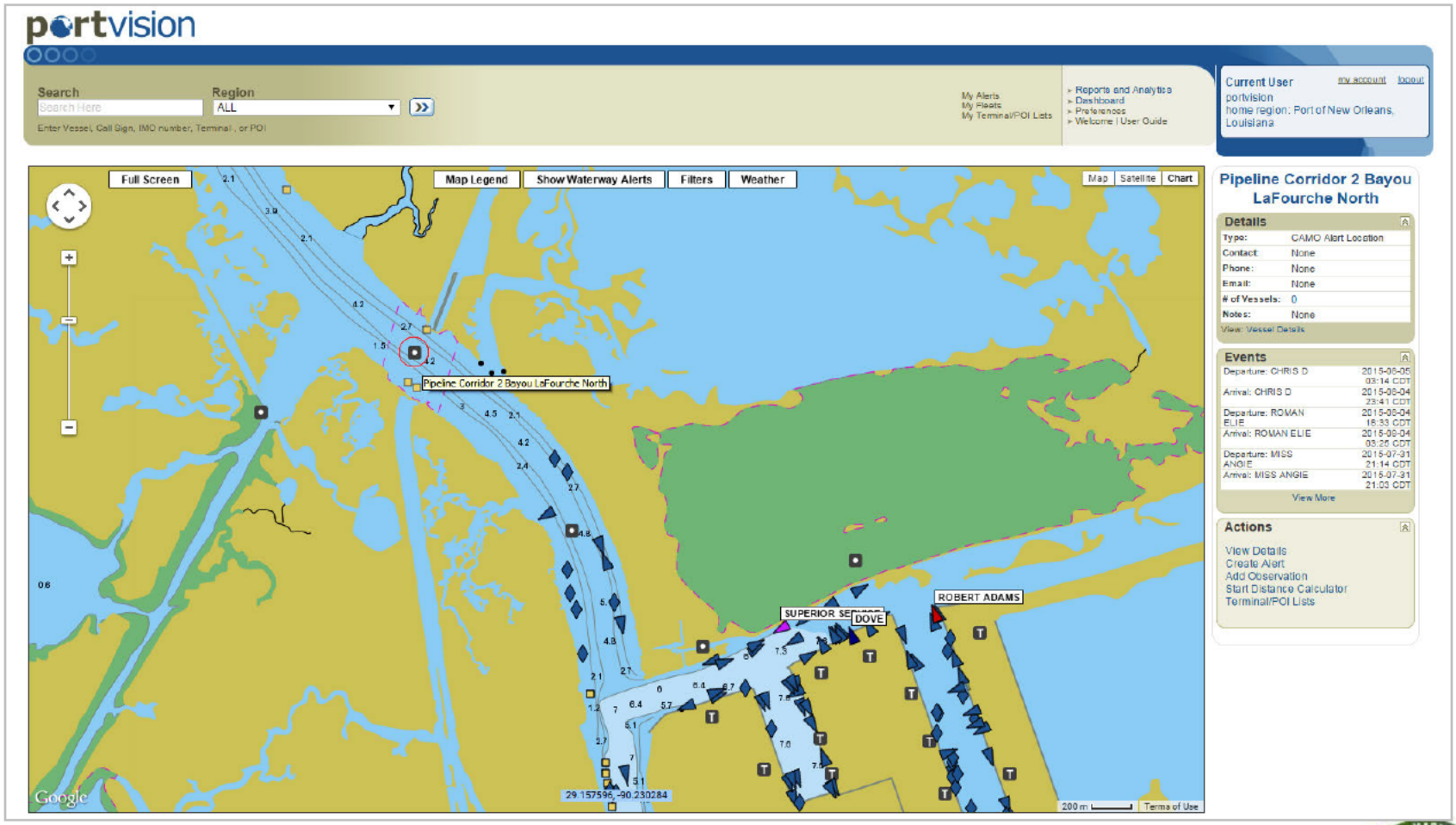


USCG & FCC Project Approval

U.S. Coast Guard

Aid to Navigation Approval Issued: 2013-11-07

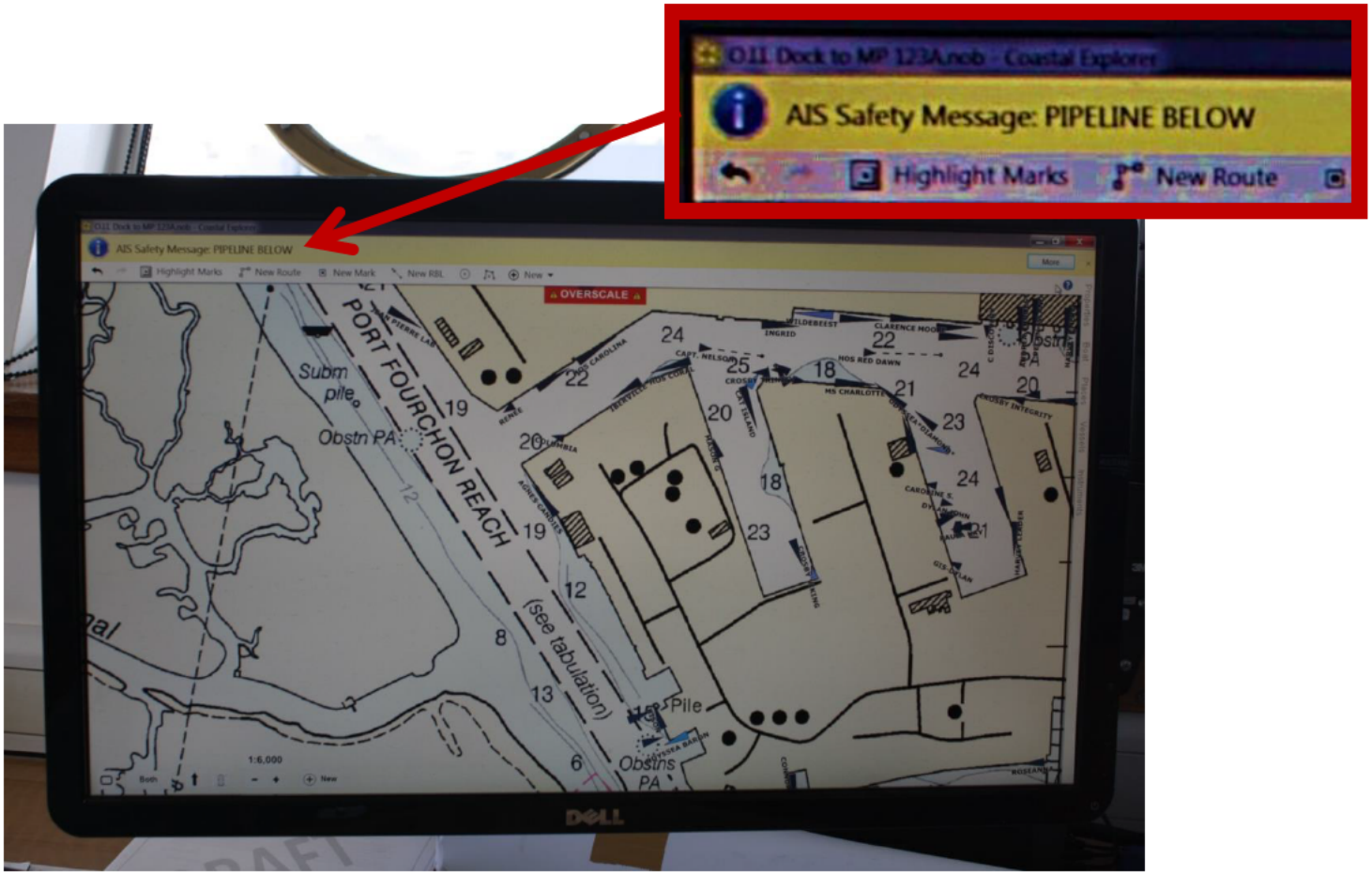
Federal Communications Commission

Experimental Radio Station Construction Permit & License
Approval Issued: 2014-09-23

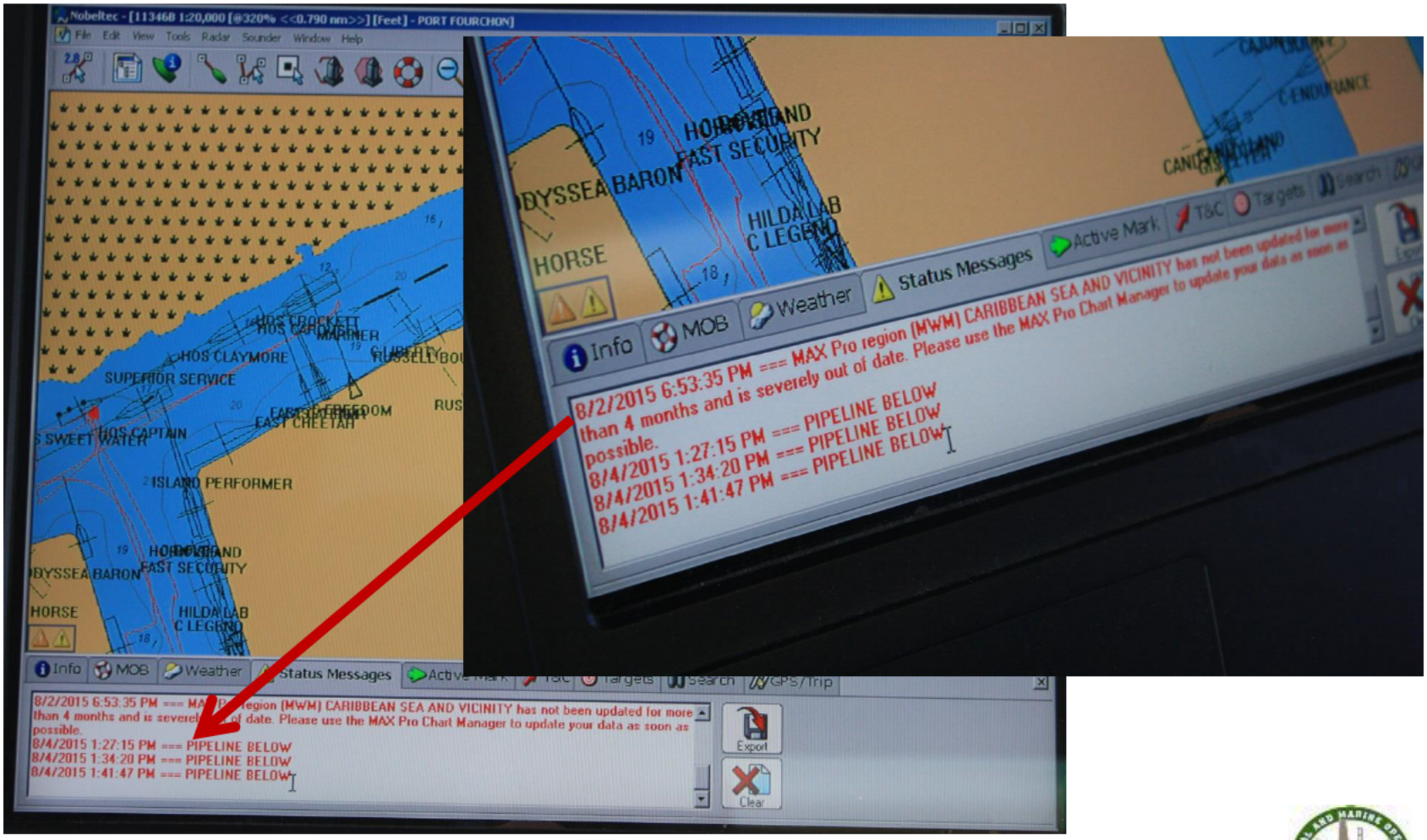
AIS Safety Message-Wheelhouse Alert

AIS Safety Message-Wheelhouse Alert

Rose Point Chart Message Display



Nobeltech Chart Message Display



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