Agenda

- Marine Exchange Background
- Arctic Marine Transportation System Risks & Challenges
- MXAK Tracking, Monitoring & Analysis Systems
- Marine Domain Management
- MXAK Partnerships
- Way Ahead
Marine Exchanges Date Back to 1800’s

- Brokers of Maritime Information
- Initially used telescopes and semaphore
- Today radars, radios, AIS, e-mail, web, and satellites.

Marine Exchange of Alaska Est. 2000
Maritime Information Services of North America (MISNA)

- Alaska
- Seattle
- Portland
- San Francisco
- LA/LB
- New York/New Jersey
- Philadelphia
- Baltimore
- Hampton Roads Virginia
- Jacksonville
- Tampa
- New Orleans
- Houston
A non-profit maritime organization established to provide the Alaska maritime community information, communications and services to ensure safe, secure, efficient and environmentally responsible maritime operations.

Shared Marine Industry, Government and Public’s Goals
Members – Maritime Professionals

- Tanker Companies
- AMHS
- Cruise Industry
- Container Lines
- Passenger Vessel Operators
- Ports and Harbors
- Tug and Barge Companies
- Oil Spill Response Organizations
- Fishing Companies
- Pilot Associations
Arctic Marine Transportation System 
Challenges

• Climate change and changing ice conditions
• New and expanded resource development
• Community resupply
• Increased marine traffic
• Limited infrastructure, cost of building and maintaining infrastructure
• Tourism & Adventurers
• Limited search and rescue capacity
• International interest
Risks and Concerns

- Groundings
- Collisions
- Marine Mammal Strikes
- Altering & Impeding Migration Routes
- Subsistence Hunting
- Loss of Power
- Unintended Ice Encounters
- Sinkings
- Oil Spills
What are the Vessels of Concern?

- Tankers
- Cargo Ships
- Offshore Supply Vessels
- Drilling Vessels
- Tugs and Oil Barges
- Fishing Vessels
- Tugs and Deck Barges
- Landing Craft
- Oil Spill Response Vessels
- Pleasure Crafts
Why Track Vessels?

- Safety Net
- Risk Assessments
- Environmental Protection
- Validate Compliance
- Emergency Response
- Improve Efficiency
- Maritime Security

Safe, Secure, Efficient and Environmentally Sound Maritime Operations
Vessel Tracking

Primary focus on Prevention ….Secondary Response

Development and Operation of a Vessel Tracking System providing information on:

- Level of Maritime Activity
- Types of Vessels in Transit
- Vessel Routes
- Location of Response Resources
- Level of Compliance with Environmental Protection Measures

Objective: Identify and Manage Risk
Vessels Tracked

- Cruise Ships
- Ferries
- Tank and Cargo Barges
- Tank Vessels
- Cargo Ships
- Tugs
- Fishing Vessels
- Coast Guard Vessels
- Small Passenger Vessels
- State Fish and Game Vessels
- Oil Spill Response Vessels
- AIS equipped pleasure crafts
- Oil Exploration and Production Vessels
Managing the Maritime Domain
Best Available Technologies & Procedures

- AIS (Automatic Identification System)
  - Tactical applications: Terrestrial AIS
  - Strategic applications: Satellite AIS
- Satellite Transponders
- Weather/Environmental Sensors
- AIS shore transmissions – safety and environmental
- Digital Selective Calling (DSC) – Receivers
- Live watch
Marine Exchange AIS Receiving Sites

121 Sites
Marine Exchange Weather Sites

31 Sites
North Slope Vessel Transits
Bering Strait Vessel Transits

Oct 2012-Oct 2013

Colour Explanation (SHIP_TYPE)
- Tanker
- Cargo
- Tug
- Towing
- Towing long/wide
- Passenger
- Fishing
- SAR
- Military
- Law enforcement
- Others
# Vessel Traffic Analysis

## Red Dog Cargo Ships

### Russian Northern Sea Route Traffic

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<th>Time</th>
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Bering Strait

Perception

- Narrow
- Shallow
- Hundreds of Vessels
- Dangerous
- Need to stop ships

Reality

- Wide
- Deep
- Limited traffic
- Pretty Safe
- Need to manage risk
Selendang Ayu
No Maritime Domain Awareness or Management
Maritime Domain Awareness
No Maritime Domain Management
Identifying and Tracking Vessels

Tanker *Marilee*, San Francisco to Tuktoyaktuk

Foreign Tanker *Torm Lotte* on voyage from San Francisco to Canadian Arctic Through Alaska Waters
Maritime Domain Awareness and Management

www.mxak.org
Dissemination of Vessel Information

Alaska Maritime Safety Net
Automated Vessel Tracking System
Operated by Marine Exchange of Alaska

- Satellite AIS
- Long Range SSAS
- Terrestrial AIS
- MXAK Satellite Transponders

- State
- BOEM
- BSEE
- Local Authorities
- USCG
- Vessel Companies
- Communities
- OSROS
- Shore Support & Affiliates
- Facilities and Ports

Info accessed when authorized by MXAK
Network Tanker and Nontank Vessel Alternative Planning Criteria (APC’s) for Alaska

The Alaska Maritime Prevention and Response Network is a non-profit organization established to implement alternative spill response and prevention measures that most cost effectively meet the environmental protection objectives of state and federal regulations.
INFORMATION
Notice of Incident, Location of vessels in distress, Location of assist vessels.

TIME
Distance offshore provides time for assist vessels to arrive. Early detection and immediate location of assist resource buys more time.

CAPABILITIES
Monitoring locations of Assist vessels, Emergency Towing Systems, Vessels of Opportunity, Oil Spill Response Resources.
AOOS Sponsored AIS Weather Project

Juneau Tower

Portland Island Sensor

AOOS
Alaska Ocean Observing System

MXAK Office

Marmion Island Sensor
USCG-MXAK CRADA
(Cooperative Research and Development Agreement)

“Arctic Next Generation Navigational Safety Information System”

Builds upon AOOS AIS/WX project to communicate information to vessels via AIS;

- Virtual aids to Navigation (i.e. buoys)
- Locations of whalers
- Environmental Data (i.e. weather and ice)
- Locations of whales
- Vessels in distress, etc.
- Notify vessels in “Areas to be Avoided” or exceeding speed restrictions
Arctic Maritime Safety Net Project

Oil & Gas Industries

Arctic Vessel Tracking and Emergency Response System for Alaska Natives

- Commercial vessels colliding with subsistence hunter boats
- Safety of subsistence hunters
- Commercial vessels impacting whales
“Completion of an AIS receiver network in the Arctic is high priority; linkages between AIS and marine mammal awareness need to be developed.”
NATIONAL STRATEGY FOR THE ARCTIC REGION

MAY 2013
Questions