AVALANCHE!

National Ocean Service
National Oceanic and Atmospheric Administration
U.S. Department of Commerce

HSRP Arctic Update

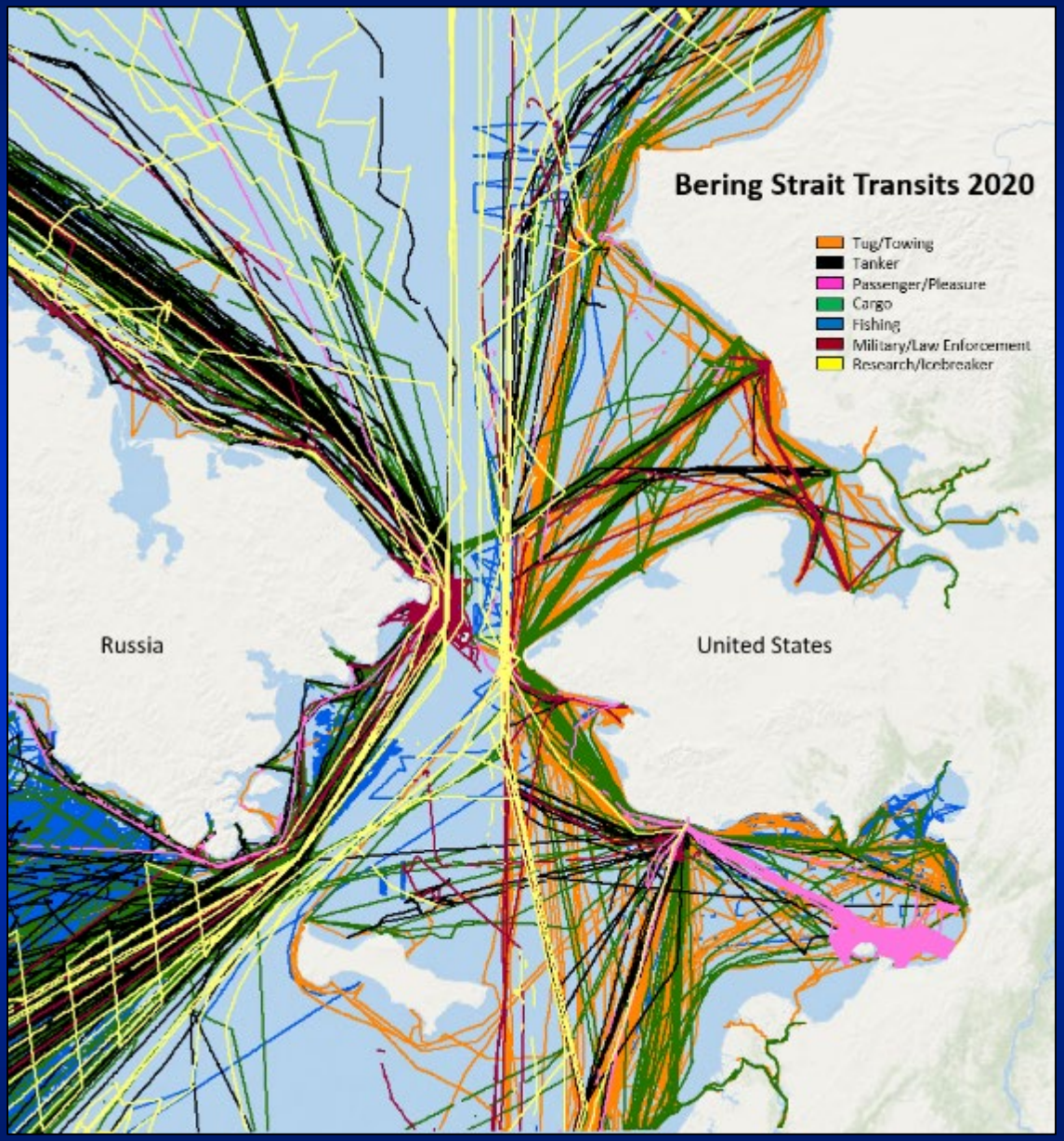
Application of NOAA Services to support Alaska's Blue Economy

Arctic Maritime Activity

Year	Northbound	Southbound	Total
2009	136	126	262
2010	128	114	242
2011	124	115	239
2012	154	162	316
2013	171	173	344
2014	130	125	255
2015	232	220	452
2016	158	182	340
2017	164	196	360
2018	183	175	358
2019	241	236	477
2020	260	290	550

Bering Strait Transits 2020

- Tug/Towing
- Tanker
- Passenger/Pleasure
- Cargo
- Fishing
- Military/Law Enforcement
- Research/Icebreaker

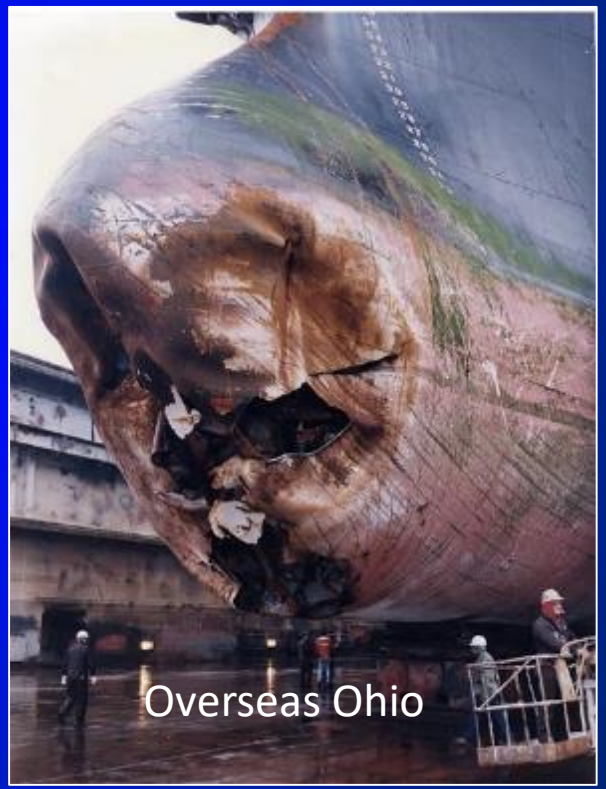


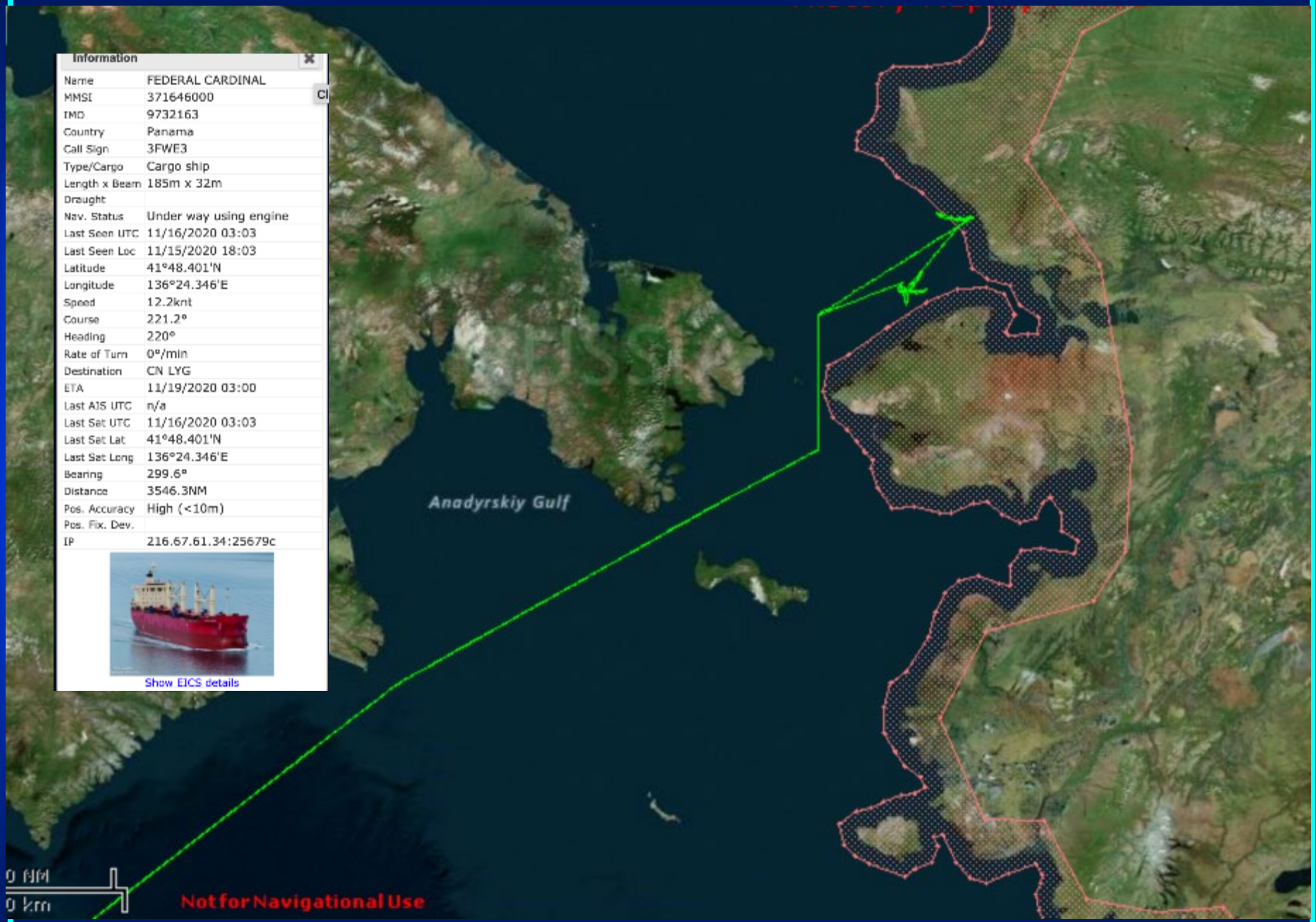
Captain Page acknowledged that if something went disastrously wrong with a ship within the 1.5 million square miles of ocean his network covers, "it would be ugly."

"But we should stop worrying about what we're going to do when things go wrong," he said. "We should prevent things from going wrong."

ICE

Maritime Domain Awareness &
Maritime Domain Communications




Information
Name FEDERAL CARDINAL
MMSI 371646000
IMO 9732163
Country Panama
Call Sign 3FWE3
Type/Cargo Cargo ship
Length x Beam 185m x 32m
Draught
Nav. Status Under way using engine
Last Seen UTC 11/16/2020 03:03
Last Seen Loc 11/15/2020 18:03
Latitude 41°48.401'N
Longitude 136°24.346'E
Speed 12.2knt
Course 221.2°
Heading 220°
Rate of Turn 0°/min
Destination CN LYG
ETA 11/19/2020 03:00
Last AIS UTC n/a
Last Sat UTC 11/16/2020 03:03
Last Sat Lat 41°48.401'N
Last Sat Long 136°24.346'E
Bearing 299.6°
Distance 3546.3NM
Pos. Accuracy High (<10m)
Pos. Fix. Dev.
IP 216.67.61.34:25679c
Show EICS details
Anadyrskiy Gulf
Not for Navigational Use

HYDROGRAPHIC SERVICES REVIEW PANEL

A federal advisory committee, advising the NOAA administrator

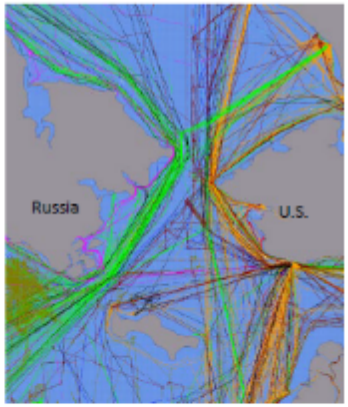
Expanding NOAA's Navigational Services in the Arctic

The Arctic is the world's new maritime frontier. Arctic waters provide shorter and more fuel-efficient shipping routes and present a significant opportunity to grow our nation's Blue Economy through increased trade and improved access to raw materials. While the benefits of this new maritime frontier are substantial, expanded maritime activity must be approached cautiously and in alignment with our international partners. We must preserve the pristine environment and rich cultural heritage that define the Arctic by requiring maritime operations be conducted safely and environmentally sound manner.

NOAA's National Ocean Service's (NOS) products and services play a critical role in our nation's development of this emerging maritime frontier. However, the unique geography, harsh environment, and remoteness of this region call for a new approach to traditional methods to provide NOAA services. The opportunity exists for NOS to leverage new technologies to deliver innovative product and service solutions. The challenges, needs, and proposed solutions are summarized below.

CHALLENGES IN THE ARCTIC

- **Limited infrastructure and communications in the region** complicate the execution of NOAA's traditional missions.
- **Remote coastal communities** with few resources are challenged to bring in vital commerce through small shallow harbors, face eroding shorelines, and are increasingly susceptible to storm surge.
- **The vastness, remoteness, seasonal ice, and weather conditions** force shorter survey seasons and present unique mobilization and cost challenges for NOAA and NOAA's contract partners.
- **Oil spill response has limited effectiveness in Arctic conditions**. Emphasis must be placed on prevention of marine casualties in order to protect the sensitive and fragile Arctic marine environment.
- **Safety and environmental issues are seasonal and dynamic.** These include but are not limited to the presence of ice, marine mammals, and indigenous subsistence hunters.



Maritime traffic in the Bering Strait with AIS detected by the Marine Exchange of Alaska's AIS network, 2018.

CRITICAL NEEDS: NOAA SERVICES IN ARCTIC WATERS

- A robust geospatial and oceanographic infrastructure to support nautical charting, accurate positioning services, and water levels along the coasts of the Chukchi and Beaufort Seas. This includes addressing gaps in geodetic coverage, tides and currents, hydrographic surveys, and shoreline mapping – the foundational data building blocks for providing accurate nautical charts.
- Installation and operation of sensors to obtain real-time information on water levels, currents, ice, and weather, and development of hydrodynamic forecast models that collectively provide information that aid safe maritime operations.
- Installation and operation of Continuously Operating Reference Stations (CORS) to support surveying, mapping, and modeling.
- Utilization of emerging electronic technologies including but not limited to Automatic Identification System (AIS) to communicate environmental and safety information to mariners.
- Implementation of the Alaska Geospatial Council Coastal Strategy to provide nearshore bathymetry and shoreline surveys to mitigate coastal erosion and flooding threatening coastal communities.
- Prioritization of hydrographic and shoreline surveys for higher resolution navigational charts based on historical vessel tracks and planned future development to support Alaska's Blue Economy.
- Use of emerging electronic navigation (eNav) technologies to transmit environmental and updated chart information to mariners.

Russian oil tanker SMUSHI being escorted through Bering Sea ice by the U.S. Coast Guard icebreaker HEALY.

RECOMMENDATIONS FOR NOAA ACTION

- Evaluate new technologies for the acquisition of geospatial data as well as the delivery of products and services to remote regions of the Arctic.
- Evaluate areas of the Arctic where tidal and geospatial needs require Physical Oceanographic Real Time System (PORTS®) sensors and Continuously Operating Reference Stations (CORS) be installed to provide foundational data for charting as well as additional information to mariners that enhance maritime safety and environmental protection.
- Partner with the Coast Guard, other agencies, and involved parties to expand the dissemination of NOAA environmental and safety information to vessels via AIS transmitters and other emerging communications technologies the Coast Guard has available or is developing.
- Develop a dynamic electronic "Coast Pilot" for Arctic waters to more effectively provide relevant and current information to mariners navigating Arctic waters.
- Prioritize NOAA and NOAA contracted hydrographic and shoreline surveys for the production of accurate, updated navigational charts through review of historical vessel tracking information on vessels transiting Arctic waters obtained from AIS monitoring systems.

In October 2003, Secretary of Commerce Don Evans established the HSRP as directed by the Hydrographic Services Improvement Act of 2002, Public Law 107-372. Panel members, appointed by the NOAA Administrator, include a diverse field of experts.

HSRP MEMBERS 2019

Dr. Larry Atkinson
Capt. Anuj Chopra
Mr. Sean M. Duffy, Sr.
Mr. Lindsay Gee
Ms. Kim Hall
Ms. Deanne Hargrave
Mr. Edward Kelly
Capt. Ann Kinner
Dr. David F. Maune
Capt. Anne McIntyre
Capt. Ed Page
Capt. Salvatore Rassello
Mr. Edward J. Saade (*Chair*)
Ms. Julie Thomas (*Vice Chair*)
Mr. Gary Thompson

RECOMMENDATIONS FOR NOAA ACTION

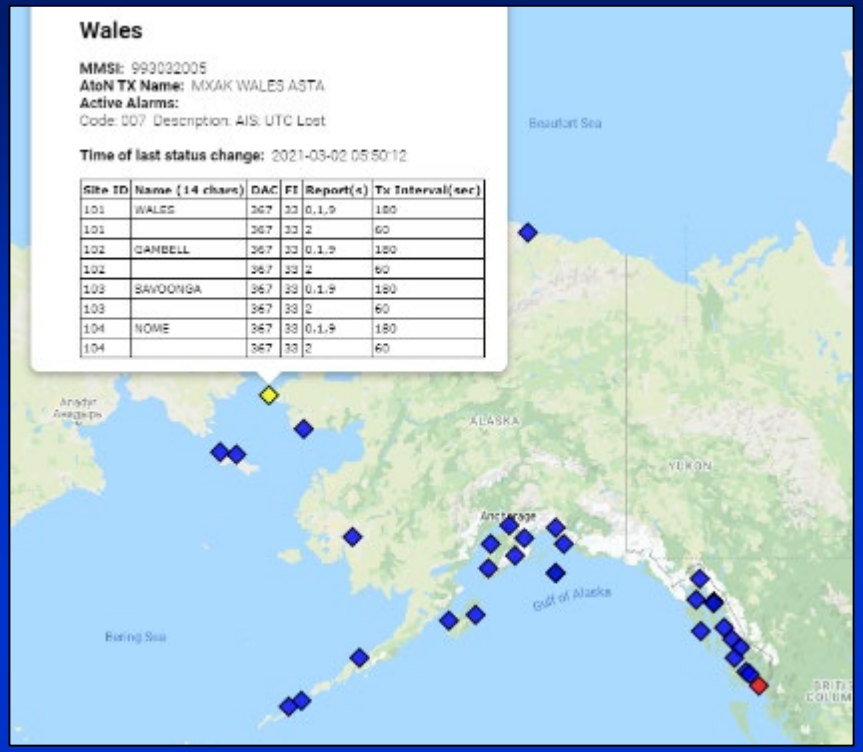
- Evaluate new technologies for the acquisition of geospatial data as well as the delivery of products and services to remote regions of the Arctic.
- Evaluate areas of the Arctic where tidal and geospatial needs require Physical Oceanographic Real Time System (PORTS ®) sensors and Continuously Operating Reference Stations (CORS) be installed to provide foundational data for charting as well as additional information to mariners that enhance maritime safety and environmental protection.
- Partner with the Coast Guard, other agencies, and involved parties to expand the dissemination of NOAA environmental and safety information to vessels via AIS transmitters and other emerging communications technologies the Coast Guard has available or is developing.
- Develop a dynamic electronic "Coast Pilot" for Arctic waters to more effectively provide relevant and current information to mariners navigating Arctic waters.
- Prioritize NOAA and NOAA contracted hydrographic and shoreline surveys for the production of accurate, updated navigational charts through review of historical vessel tracking information on vessels transiting Arctic waters obtained from AIS monitoring systems.

RECOMMENDATION

- Evaluate new technologies for the acquisition of geospatial data as well as the delivery of products and services to remote regions of the Arctic.
- Evaluate areas of the Arctic where tidal and geospatial needs require Physical Oceanographic Real Time System (PORTS ®) sensors and Continuously Operating Reference Stations (CORS) be installed to provide foundational data for charting as well as additional information to mariners that enhance maritime safety and environmental protection.
- Partner with the Coast Guard, other agencies, and involved parties to expand the dissemination of NOAA environmental and safety information to vessels via AIS transmitters and other emerging communications technologies the Coast Guard has available or is developing.
- Develop a dynamic electronic "Coast Pilot" for Arctic waters to more effectively provide relevant and current information to mariners navigating Arctic waters.
- Prioritize NOAA and NOAA contracted hydrographic and shoreline surveys for the production of accurate, updated navigational charts through review of historical vessel tracking information on vessels transiting Arctic waters obtained from AIS monitoring systems.

RECOMMEND

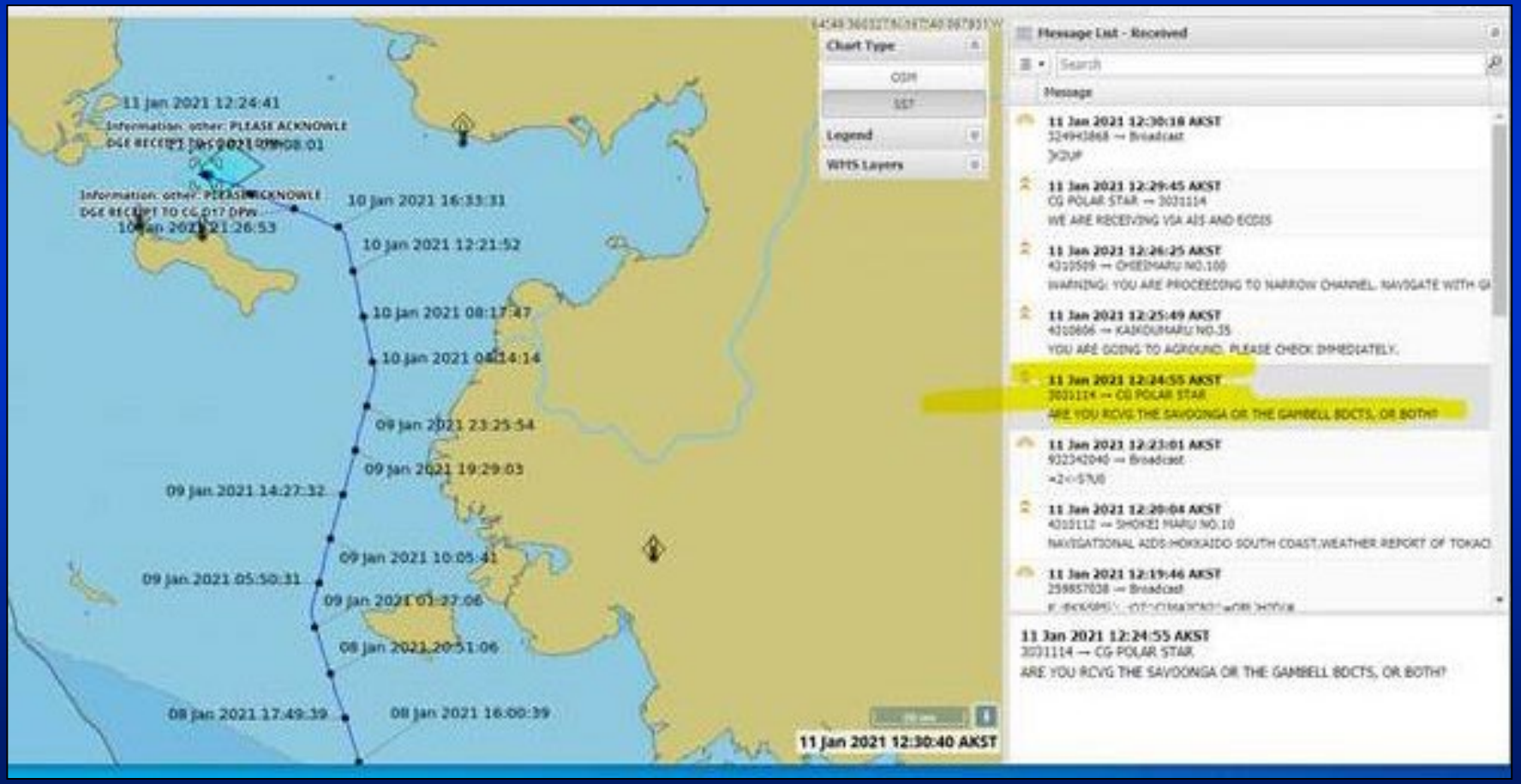
- Evaluate ne … delivery of products an …
- Evaluate areas of the Arctic where tidal and geospatial needs require Physical Oceanographic Real Time System (PORTS ®) sensors and Continuously Operating Reference Stations (CORS) be installed to provide foundational data for charting as well as additional information to mariners that enhance maritime safety and environmental protection.
- Partner with the Coast Guard, other agencies, and involved parties to expand the dissemination of NOAA environmental and safety information to vessels via AIS transmitters and other emerging communications technologies the Coast Guard has available or is developing.
- Develop a dynamic electronic "Coast Pilot" for Arctic waters to more effectively provide relevant and current information to mariners navigating Arctic waters.
- Prioritize NOAA and NOAA contracted hydrographic and shoreline surveys for the production of accurate, updated navigational charts through review of historical vessel tracking information on vessels transiting Arctic waters obtained from AIS monitoring systems.



eNAV
(electronic navigation)

AIS Transmitters (33)

Time	Msg Ty	Src MMS	Dest MM	
1/11/2021 21:12	Sfty Addr	367255000	993032033	TEST SA
1/11/2021 21:12	Sfty Addr	367255000	993032033	TEST SA
1/11/2021 21:12	Sfty Addr	367255000	993032033	TEST SA
1/11/2021 21:12	Sfty Addr	367255000	993032033	TEST SA
1/11/2021 20:21	Sfty Addr	367255000	993032032	TEST SA
1/11/2021 20:21	Sfty Addr	367255000	993032032	TEST SA
1/11/2021 20:21	Sfty Addr	367255000	993032032	TEST SA
1/11/2021 20:18	Sfty Addr	367255000	993032033	TEST SAT :)
1/11/2021 20:17	Sfty Addr	367255000	993032033	TEST SAT :)
1/11/2021 20:17	Sfty Addr	367255000	993032033	TEST SAT :)
1/11/2021 19:11	Sfty Addr	367255000	993032033	TEST RECIEVED FROM CGC POLAR STAR
1/11/2021 19:11	Sfty Addr	367255000	993032033	TEST RECIEVED FROM CGC POLAR STAR
1/11/2021 19:11	Sfty Addr	367255000	993032033	TEST RECIEVED FROM CGC POLAR STAR
1/11/2021 17:27	Sfty Addr	367255000	993032033	RCVD FRM SAVOONGA AT 1710L
1/11/2021 17:27	Sfty Addr	367255000	993032033	RCVD FRM SAVOONGA AT 1710L
1/11/2021 17:27	Sfty Addr	367255000	993032033	RCVD FRM SAVOONGA AT 1710L
1/11/2021 17:27	Sfty Addr	367255000	993032033	RCVD FRM SAVOONGA AT 1710L
1/11/2021 17:27	Sfty Addr	367255000	993032033	RCVD FRM SAVOONGA AT 1710L
1/11/2021 16:13	Sfty Addr	367255000	993032033	USCGC POLAR STAR RECEIVED
1/11/2021 16:13	Sfty Addr	367255000	993032033	USCGC POLAR STAR RECEIVED
1/11/2021 16:13	Sfty Addr	367255000	993032033	USCGC POLAR STAR RECEIVED
1/11/2021 16:13	Sfty Addr	367255000	993032033	USCGC POLAR STAR RECEIVED

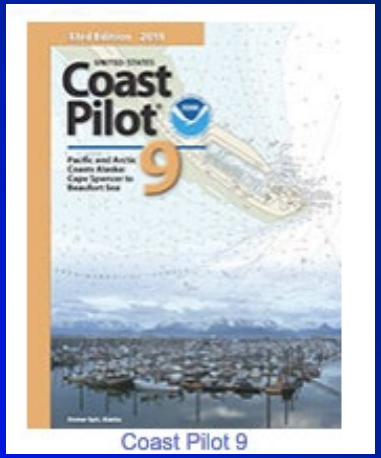

11 Jan 2021 12:24:41
10 Jan 2021 16:33:31
10 Jan 2021 12:21:52
10 Jan 2021 08:17:47
10 Jan 2021 04:14:14
09 Jan 2021 23:25:54
09 Jan 2021 19:29:03
09 Jan 2021 14:27:32
09 Jan 2021 10:05:41
09 Jan 2021 05:50:31
09 Jan 2021 01:37:06
08 Jan 2021 20:51:06
08 Jan 2021 17:49:39
08 Jan 2021 16:00:39
Chart Type
Legend
WMS Layers
11 Jan 2021 12:30:40 AKST
Message List - Received
Search
Message
11 Jan 2021 12:30:18 AKST
11 Jan 2021 12:29:45 AKST
CG POLAR STAR → 3031114
WE ARE RECEIVING VSA AIS AND EGDS
11 Jan 2021 12:25:49 AKST
11 Jan 2021 12:24:55 AKST
3031114 → CG POLAR STAR
ARE YOU RCVG THE SAVOONGA OR THE GAMBELL BDCTS, OR BOTH?
11 Jan 2021 12:23:01 AKST
11 Jan 2021 12:20:04 AKST
11 Jan 2021 12:19:46 AKST
11 Jan 2021 12:24:55 AKST
3031114 → CG POLAR STAR
ARE YOU RCVG THE SAVOONGA OR THE GAMBELL BDCTS, OR BOTH?

Operations Center Engagement with Polar Star

RECOMMENDATI

- Evaluate new te l as the delivery of products and se
- Evaluate areas of the Arctic where tidal and geospatial needs require Physical Oceanographic Real Time System (PORTS ®) sensors and Continuously Operating Reference Stations (CORS) be installed to provide foundational data for charting as well as additional information to mariners that enhance maritime safety and environmental protection.
- Partner with the Coast Guard, other agencies, and involved parties to expand the dissemination of NOAA environmental and safety information to vessels via AIS transmitters and other emerging communications technologies the Coast Guard has available or is developing.
- Develop a dynamic electronic "Coast Pilot" for Arctic waters to more effectively provide relevant and current information to mariners navigating Arctic waters.
- Prioritize NOAA and NOAA contracted hydrographic and shoreline surveys for the production of accurate, updated navigational charts through review of historical vessel tracking information on vessels transiting Arctic waters obtained from AIS monitoring systems.

United States Coast Pilot®



Coast Pilot 9

Subsistence harvesting of Beluga whales occurs at **Point Lay** during the months of June and July and vessels should contact the Point Lay telecommunications center on VHF-FM channel 68 if transiting in the area during this time.

(116) **Point Hope** 22 miles NW of Cape Thompson and 102 miles from Cape Krusenstern, is the seaward extremity of a low tongue of land that projects 16 miles W from the general line of the coastal mountains. Subsistence whaling at Point Hope occurs in the spring (April-May) and fall (September-October) as far as 30 miles offshore. Vessels transiting in the vicinity of Point Hope during these times are requested to contact the Alaska Eskimo Whaling Commission and the Point Hope communications center on VHF-FM channel 68.

(187) Mariners should be aware that Alaskan Natives engage in subsistence whaling in the Beaufort Sea near **Point Barrow** in the spring from March through June and in the fall from September through November. Vessel operators are requested to contact the Alaska Eskimo Whaling Commission at 907-852-2392 or 800-478-2392 or aewcdir@barrow.com prior to entering this area for information about the location and avoidance of traditional Native hunting parties.

RECOMMENDATIO

- Evaluate new tec delivery of products and ser
- Evaluate areas of Oceanographic Real Time System (PORTS ®) sensors and Continuously Operating Reference Stations (CORS) be installed to provide foundational data for charting as well as additional information to mariners that enhance maritime safety and environmental protection.
- Partner with the Coast Guard, other agencies, and involved parties to expand the dissemination of NOAA environmental and safety information to vessels via AIS transmitters and other emerging communications technologies the Coast Guard has available or is developing.
- Develop a dynamic electronic "Coast Pilot" for Arctic waters to more effectively provide relevant and current information to mariners navigating Arctic waters.
- Prioritize NOAA and NOAA contracted hydrographic and shoreline surveys for the production of accurate, updated navigational charts through review of historical vessel tracking information on vessels transiting Arctic waters obtained from AIS monitoring systems.