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BEYOND THE HORIZON

USCG Arctic District
and Alaska's Complex
Operational Challenges



Marine Exchange of Alaska

Drawing a definitive line in the sand

by KIMBERLY VALVERDE
Communications Director
Marine Exchange of Alaska

STEVE WHITE
Executive Director
Marine Exchange of Alaska

The phrase “a line in the sand” has been used throughout history to set boundaries between acceptable and unacceptable. The Marine Exchange of Alaska (MXAK), a nonprofit organization founded in 2001, has established a line in the sand by defining sufficient and responsible maritime domain awareness in Alaska. With critical coverage gaps identified, MXAK has dedicated the past 25 years to building and maintaining a vast monitoring and communication system to protect Alaska’s maritime environment, economy, and the mariners who operate across its challenging waters.

In 2001, the state of Alaska supported the MXAK’s mission with a \$646,000 grant to develop an emergency prevention and response system that includes a vessel location system, an email-based emergency communications system, and a marine emergency logistics and services database. This funding was the acorn that rooted a mighty oak. Since then, MXAK has steadily grown, incorporating the best available technology, leveraging contributions from the maritime community, the federal government, and Alaska to develop a best-in-class, around-the-clock maritime operations center and a robust network of marine safety sites.



A maritime information specialist monitors operations and broadcasts necessary safety alerts via VHF-FM from MXAK’s 24/7 Maritime Operations Center in Juneau, Alaska. Photo courtesy of Marine Exchange Alaska

The technologies installed on marine safety sites allow MXAK to track vessels, collect and transmit safety messages and environmental conditions, monitor VHF-FM traffic for distress calls, and communicate crucial information to prevent and respond to maritime disasters.

MXAK’s marine safety site capabilities include:

- **137 AIS receivers** that provide the highest standard of reliability and lowest latency for vessels operating near shore to detect potential incidents and initiate a timely response. In lieu of building a separate AIS network in Alaska, the Coast Guard has contracted MXAK for access to its terrestrial AIS data since 2008.
- **74 AIS transceivers (ATONs)** that provide real-time broadcasts of weather conditions, potential hazards, and navigational warnings. ATONs are globally recognized as the best available technology to disseminate information.
- **58 digital selective calling receivers** that transmit and relay VHF CH-70 signals to the 24/7 maritime operations center.
- **22 VHF-FM transceivers** that receive distress calls that the Coast Guard’s Rescue 21 System may not have detected due to range limitations or degraded service, increasing Alaska’s communication capabilities.
- **71 independent terrestrial weather stations** that fill gaps and provide real-time environmental conditions to mariners, the National Weather Service, and international weather model providers.
- **14 mobile marine safety sites** that collect and transmit real-time weather conditions from vessels navigating the most remote areas. This provides data to regions where observations have previously not existed. All of the Alaska Marine Highway System’s ferries and several industry partner vessels are equipped and participating in the mobile safety sites.
- **24/7 monitored two-way satellite communications radio** that allows the maritime operations center to contact vessels with similar equipment, including

many operating in the Bering Sea and beyond.

Information gathered from marine safety sites and satellite tracking services are directed to MXAK's 24/7 Maritime Operations Center where maritime information specialists actively monitor vessel traffic, communicate with operators, and disseminate critical information. A visit to the operations center will quickly reveal the pride and professionalism MXAK employees have in their shared mission. Using the latest technologies, the operations center identifies anomalies, investigates, and if necessary, alerts responders. Often the first line of defense in preventing major marine casualties or being the first—and sometimes only entity—to hear and respond to mayday calls, they understand the stakes and the importance of reducing the time between problem identification and response.

In mid-November 2024, a marine safety site located on Kodiak Island's Elbow Mountain picked up a distress call from M/V *Yahoo* in Marmot Bay off Kodiak Island. The MXAK Maritime Operations Center received the distress call and collaborated with the Coast Guard, which deployed a helicopter to rescue the three mariners onboard. The disabled vessel was never recovered. This case could have had a much different outcome if the *Yahoo's* distress call had not been received.

Although response incidents validate the need for supplemental coverage, MXAK's priority has always been prevention. The staff of 33 contributes broad skill-sets and represents diverse backgrounds, including more than 150 years of former Coast Guard service. From

regulatory specialists offering compliance services, to software engineers, field technicians, and data analysts, the crew has created a maritime safety net from the ground up. Their shared commitment to providing the best available services helps prevent maritime incidents and save lives.

Prevention starts early. MXAK's regulatory compliance department helps members navigate complex federal, state, and international maritime safety, security, and environmental regulations. The goal is to not just meet regulatory requirements, but to identify practical solutions unique to Alaska's environments. The organization also provides vessel and facility security and response plans, audits, and various training. By working with multiple agencies and industry partners throughout Alaska, the Marine Exchange can share best practices, develop consistency and awareness. MXAK's compliance staff also works with the National Park Service (NPS) and the cruise ship industry to conduct third-party environmental audits on large cruise ships operating in Glacier Bay National Park. Selected at random, an unannounced compliance officer boards cruise ships while underway in park boundaries, conducts audits and reports findings to the NPS. The program has been an enormous success showcasing cooperation between industry, the federal government, and a nonprofit organization.

MXAK shares information and works closely with other national marine exchanges, some that have operated for more than 175 years. Together, the organizations form the Maritime Information Services of North



Technologies installed on marine safety sites allow MXAK to track vessels, collect and transmit safety messages and environmental conditions, as well as monitor VHF-FM traffic for distress calls, and communicate crucial information to prevent and respond to maritime disasters. Photo courtesy of Marine Exchange Alaska

America, which identifies trends, shares best practices between North American ports, and is frequently consulted for national maritime insights.

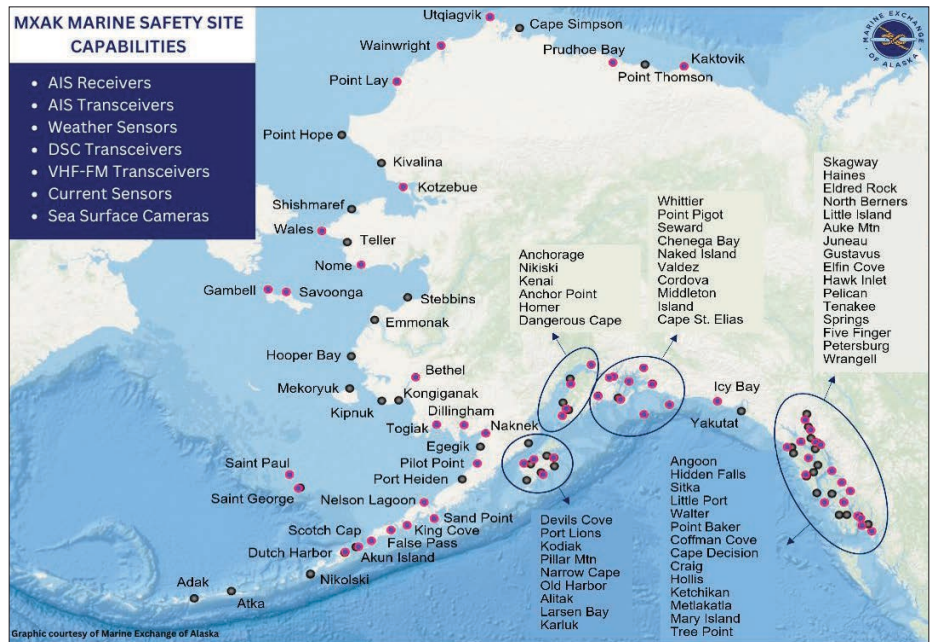
Conclusion

Despite all this, the work is not done. There are still significant areas of Alaska—particularly in the Bering Strait and Arctic regions—that lack capabilities that other parts of the state rely on. To address these shortcomings, MXAK and its partners have joined forces to develop Arctic Watch. The objective is to build out technology and employ local knowledge and expertise to strengthen maritime domain awareness in a region experiencing increasing traffic, growing national security significance, dynamic environmental conditions, and threatened food security. Plans include installation and capability upgrades of 12 marine safety sites in the next three years.

This work cannot be done alone. Anyone who has operated in Alaska understands the challenges that come from its vastness, remoteness, and limited response assets. Neither the federal government, Alaska, or the maritime industry alone have the means to provide coverage for Alaska like what's available in the Lower 48 states.



Field technicians unload equipment at a remote marine safety site in Southeast Alaska. The site provides a lifeline for mariners in distress and for marine information specialists at Marine Exchange Alaska's 24/7 Operations Center to pass crucial information to mariners. Photo courtesy of Marine Exchange Alaska



Marine Exchange Alaska maintains a network of more than 150 marine safety sites throughout Alaska. These sites provide coverage to mariners operating in some of the most remote waters around the state. Photo courtesy of Marine Exchange Alaska

The answer to meeting those needs is to work together to maximize limited resources. Uniting all the players to address common goals ensures that more can be done with less. Strong partnerships are the catalysts for success, and MXAK's ability to serve as a leading source of maritime domain awareness in Alaska will continue to rely upon support and input from industry and government.

As technologies evolve, MXAK remains nimble and forward-leaning. Governed by a volunteer board of industry members, seasoned mariners, and Alaska residents, the organization serves as a conduit between government and the maritime community to develop innovative solutions for the unique, ever-changing challenges found only in Alaska. One thing that remains constant is MXAK's commitment to Alaska and its firm stance on the side of the line that signifies progress and promotes safe, secure, efficient, and environmentally responsible maritime operations. 

About the authors:

Kimberly Valverde joined the Marine Exchange of Alaska in 2020 and serves as communications director. Originally from California, she moved to Alaska in 2012 and has spent more than a decade working in the maritime industry.

Retired Coast Guard CAPT Steve White is the executive director of Marine Exchange of Alaska. He joined MXAK in 2021 after a 31-year Coast Guard career, serving seven tours in Alaska and retiring as sector commander and captain of the port for Southeast Alaska.