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Mariners Connect Across Alaska's Sea of Static

Feature by PA1 Kurt Fredrickson

The seas surrounding Alaska encompass more than five million square miles of some of the most remote and hostile waters in the world. They are also a primary transit route for commercial ships transporting goods to and form Asia, as well as one of the largest and most productive commercial fishing grounds in the world. For this reason there is a continuous flow of vessels in need of a link to the outside world as they pass through this remote region.

KODIAK, Alaska – Petty Officer 2nd Class Nate Bryan, operational specialist at Communications Station Kodiak, conducts a test on emergency frequency 4125 as part of his watch standing duties in the voice distress booth. Radio operators spend up to four hours in the small static filled booth listening for calls from mariners in distress. Official U. S. Coast Guard photo by PA1 Kurt Fredrickson.

One means of communication that mariners rely on is high frequency radio; more commonly known as HF. Although old compared to the satellite technology of today, HF has proven for decades to be an effective means of communication to bridge the void between mariners and the Coast Guard in times of need. This lifeline is one of the few means of communication that has the attributes to work in this unforgiving and unique region where having the means to call for help can mean the difference between life and death.

This July will mark 50 years that radio operators at Communications Station (COMMSTA) Kodiak have been standing vigil 24 hours a day, seven days a week to maintain that vital link. With radio towers climbing hundreds of feet into the sky, the COMMSTA monitors any transmission of distress, from not only mariners in Alaska but throughout the world. Although their job is one not in the limelight of Coast Guard operations, it is a pivotal part in saving lives when things go wrong in an unforgiving sea.

“Our primary mission is long-range search and rescue distress communications,” said Lt.Cmdr. Michael Nasitka, commanding officer of COMMSTA Kodiak. “Basically we provide rapid and reliable communications both HF voice, messaging and data traffic to maritime public as well as Coast Guard command and control functions.”

Although there are many means of transmitting information to mariners and within the Coast Guard, the rugged environment of Alaska makes HF one of the most reliable choices for communications, simply by the way it works. In comparison, traditional means of communication, such as VHF radios and cell phones, have limited long distance effectiveness in Alaska.

KODIAK, Alaska – Petty Officer 2nd Class Robert Ray, aviation maintenance technician at Air Station Kodiak, establishes a radio guard aboard an HH-60 Jayhawk helicopter shortly after takeoff. Radio guards with Communication Station Kodiak are an essential part of Coast Guard aircraft operations in Alaska due to the remote operating environment. Official U.S. Coast Guard photo by PA1 Kurt Fredrickson.

Unlike HF, VHF operates at a higher frequency and relies on a line of sight to get the signal across. For this reason Coast Guard units located in the lower 48 states can maintain coverage of much of their operational areas using VHF 40 to 50 miles offshore, Nasitka explained. In comparison, “Alaska is too big for VHF coverage,” he concluded. Because of the curvature of the earth and the frequency of VHF, the radio waves travel straight through the earth’s atmosphere and out into space.

“HF is like a long range version of a CB radio,” explained Chief Warrant Officer Jeff Slocumb, operations officer at COMMSTA Kodiak. “It’s similar technology, but longer range. What makes it work is frequency.”

Because of its low frequency, HF does not penetrate the electrically charged upper layer of the atmosphere and bounces back down to earth creating long distance hops, Slocumb explained. It is this feature of HF that makes it a common means of long distance communication with mariners in the remote waters of the Bering Sea.

Like many mariners, Mark Alwert, captain of two 90-foot fishing boats home ported in Kodiak, carries several means of communication, including VHF, HF and a satellite phone. While today's satellite technology provides easy and clear one on one communication, nearly all mariners constantly monitor HF emergency frequencies. In this way HF increases the chance that someone will hear the call for help that a mariner may only have seconds to transmit, Alwert explained.

"In the last five years our use of HF, as far as transmissions, has declined probably 70 percent, but as far as receiving we listen 24/7," Alwert said. "We don't use it for vessel to vessel communication very often anymore. I normally use HF if someone else is in trouble calling mayday and we will help relay information to COMMSTA. We've done that numerous times over my career."

KODIAK, Alaska – Transmission antennas reach hundreds of feet into the sky over Communication Station Kodiak. The high frequency radio antennas enable the Coast Guard to communicate with vessels and Coast Guard aircraft thousands of miles out to sea. Official U.S. Coast Guard photo by PA1 Kurt Fredrickson.

While mariners rely on HF to transmit during an emergency, the system is only as good as those listening on the other end of the line.

Coast Guard operational specialists stand a 12 hour watch at the COMMSTA, four hours of which can be spent in the small voice distress booth listening to static. In the booth operational specialists monitor most closely Alaska's commonly used emergency frequencies of 4125 and 2182 kilohertz. It is on these frequencies that mariners will transmit a mayday and send the Coast Guard into action.

When a call for help is received watch standers act as the first link in a complex chain of events. Like a maritime 911, the COMMSTA plays the important middle man between the Coast Guard's Rescue Coordination Centers and the individual in distress. It is the watch stander who receives the initial mayday who gathers all the pertinent information in the first few seconds of a crisis.

"You don't want them to panic," said Petty Officer 3rd Class Michael DiGiorgio, operational specialist at COMMSTA Kodiak. "You want to be that calm and collected voice that they can talk to."

The watch stander takes all the information from the vessel, or from other vessels in the area, and passes that information along so that it can be processed to help those in distress, he explained.

"In that way, the watch stander is the critical ear," DiGiorgio noted.

No matter how intently a watch stander listens, or how intently a mariner transmits, HF has its flaws. Because HF bounces from point to point, it is possible for a signal to jump over a receiving station and not be heard. To reduce the chance of a signal not being received, the Coast Guard has established remote high sites in Nome, Attu, Point Higgins, St. Paul, and Cold Bay Alaska for both receiving and transmitting. These high sites are remote stations, which monitor for distress communication on 4125 kilohertz. Remote transmitters located in the same locations provide the Coast Guard additional points of transmission. High sites, in effect, extend the communication

capabilities of the COMMSTA operators, allowing them an extra chance to catch a mayday originating in a skip zone or transmit to a vessel in distress, according to DiGiorgio.

For mariners, the added coverage can make the difference in an industry known for its unpredictable and unforgiving nature.

“There hasn’t been one time that I haven’t gone to sea scared of the results of an accident or miscalculation on my behalf,” Alwert explained. “Knowing that you can get a hold of the COMMSTA with the push of a button is invaluable.”

Although HF can cross vast distances, and the high sites improve the likelihood of a signal being received, the Coast Guard does not recommend mariners solely rely on HF for distress communication. Mariners can also use VHF radios, satellite technology, visual distress signals, and cell phones.

“It’s better to notify eight different ways and have one work, than one way and have it not work,” said Lt. Michael Crider, executive officer of COMMSTA Kodiak. “Also, mariners should call early when they get into trouble. It’s easier to say never mind than it is to swim.”

While the services of COMMSTA are valuable to mariners, it is also an essential part of the Coast Guard’s operational mission in Alaska. The HF capabilities of COMMSTA provide an essential radio guard for aircraft and communication between ships when the call for help is being answered.

Coast Guard aircraft operating in Alaska typically fly over vast expanses of water and uninhabited wilderness. As a safety measure helicopters establish a radio guard with COMMSTA within minutes of taking flight. Once airborne they report their position every 15 minutes, while airplanes report their position every 30 minutes, explained Lt. Kevin Rapp, HH-60 Jayhawk helicopter pilot at Air Station Kodiak.

“As Coast Guard aircrew, we often conduct operations in poor weather with little margin for error,” Rapp explained. “When the unlikely occurs and we find ourselves in a forced landing off-shore, it is essential to have an entity outside of the aircraft keeping watch over us.”

Even if there is not enough time to get a distress call off, Coast Guard procedures ensure that after the second radio guard is missed, another Coast Guard asset is launched to assist in locating the crew, Rapp added. This frees up the aircrew to focus on getting into a life-raft or stabilize the situation while waiting for help.

“Proper aircraft guards establish a likely last position and will also decrease search times,” Rapp said. “Bottom Line; COMMSTA is in a position of responsibility for the lives of the aircrew where they will eventually play a vital role in rescuing the rescuers."

While the COMMSTA is not performing search and rescue communications, they are busy transmitting vital weather information to ships and providing communications throughout the Coast Guard and with other state and federal agencies. While the most visible part of the COMMSTA are its many antennas illuminated with red flashing lights, the facility itself is for the most part out of the public eye. However what they lack in visibility is more importantly made up for by what is said across the vast open oceans of Alaska and through a sea of static.

“Having the guys out there in the air or at the COMMSTA listening is an invaluable part of what I do for a living,” Alwert said. “Knowing that safety net with the Guard is there is awesome.”