ICOM®

IP100H - IP Advanced Radio System: **Case Study**

Research Vessel *Sikuliaq*
University of Alaska Fairbanks
Icom's IP Radios Provide Push-to-Talk Instant Wide-Area
Communication Using Existing Wireless Network

**A case study prepared by Icom America, manufacturers of
high-performance, award-winning radios for over 60 years.**

Research Vessel *Sikuliaq*
Icom America Helps Provide Easy-to-Use Handheld Communications Over Vessel's Existing Wireless Network

The oceanographic research vessel *Sikuliaq* (pronounced see-KOO-lee-auk), is a 261-foot ship operated by the College of Fisheries and Ocean Sciences at the University of Alaska Fairbanks. *Sikuliaq* is one of the most advanced university research vessels in the world, and while breaking ice up to 2.5 feet thick in the North Pacific/Arctic Ocean is no task, the crew found communicating via UHF radio through the steel hull and bulkheads anything but.

The ship carries 22 crew in addition to 26 scientists aboard, but the challenge was keeping the crew in communication with each other throughout the ship, inside and out. The original system (UHF handheld and base station radios) was not the best solution for this type of vessel; there were latency issues, poor signal strength, and the ship was full of 'dead spots' scattered around the ship, both on high and low decks. Since UHF mostly transmits radio waves by line of sight, signals can be easily blocked by large structures. Indoor reception can still generally be maintained through regular structures on land, but in this environment, the abundance of steel becomes a hindrance.

Featured Products:
- IP100H
- VE-PG4
- IP1000C
- IP100FS

With radio communications being used by several crew departments aboard the ship (deck, navigation, engineering), a dependable radio system is crucial for safety while on board and in port operations. Without this, the results can be perilous for the crew, equipment, and the environment.

Searching for Solutions

While *Sikuliaq* docked at the University of Washington on Lake Union (Seattle, WA), Icom America, along with the assistance of local dealer Silke Communications, worked with the ship's Science Systems Engineer in hopes of getting the ship outfitted with a new and improved communications system. Requirements were to have clear signals and minimal, if any at all, dead spots. Viable options available to them were scarce.
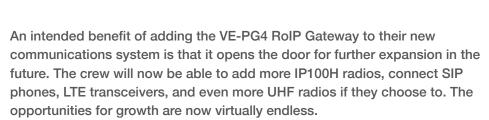
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IP100H

Icom's IP Advanced Radio Solution

Icom America suggested they implement a new system of IP radios that can run on their current existing wireless network eliminating the dead spots on board by installing additional wireless access points (WAPs) where needed. The IP100H would be the perfect fit for *Sikuliaq!* The IP100H is cost-effective, compact, has crystal clear audio with a range as far as the IP network reaches, and is easy to use. A fleet of these radios would allow up to 100 users to communicate at the same time (full-duplex), also allowing them to communicate via text message if desired. The radio is rugged, quick to deploy, secure, and does not require a license to operate.

IP100FS

IP1000C   VE-PG4

This IP radio system requires an IP1000C controller unit (this controls all terminal voice traffic and configurations), and in this particular case with *Sikuliaq*, added to the system was one of Icom's new RoIP Gateway units, the VE-PG4. The VE-PG4 allows radios of different protocols to interoperate seamlessly. This means they were able to continue using a set of the previous system's legacy UHF radios as an emergency precaution, in case they lose power or wireless access. The VE-PG4 allowed the UHF radios and the new IP100H radios to communicate without any problems.

An intended benefit of adding the VE-PG4 RoIP Gateway to their new communications system is that it opens the door for further expansion in the future. The crew will now be able to add more IP100H radios, connect SIP phones, LTE transceivers, and even more UHF radios if they choose to. The opportunities for growth are now virtually endless.

"R/V Sikuliaq has been one of the most rewarding challenges of my career. Icom's VE-PG4 RoIP Gateway and IP100H wifi radios have allowed the crew seamless and reliable wireless communications through the iron and steel of every deck and compartment; from bow to stern, and bridge to bilge. Truly gives meaning to the slogan #IcomEverywhere, even 75° North latitude in the Arctic Ocean."   *– Tim Thometz, Icom's NW District Sales Manager*

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Inside *Sikuliaq's* control room, a PC was set up with Icom's own IP100FS software, which allows an administrator to communicate with all IP100H users at the click of a button. You can view the location of any radio based on which of the 27 strategically placed access points they are connected to and can directly contact them, via voice or text. One of the access points has even been placed on top of the bridge outside, and the crew can leave the ship and roam at least a few hundred feet and still have a very clear signal.

Since implementing the new system, dead spots are no longer an issue aboard *Sikuliaq*.

"Upon coverage testing and a site walk of Sikuliaq, we noticed several access points throughout the ship and immediately knew that the Icom IP radios were the only option. The opportunity for Silke Communications to assist in finding a solution provided me with great satisfaction."
– Starsky Brolin, Silke Communications

Sikuliaq's Mission

Sikuliaq is an Iñupiaq name meaning 'young sea ice' or 'young sea ice that is safe to walk on'. *Sikuliaq's* mission is to allow scientists and researchers to collect sediments and samples directly from the sea floor while having the lowest possible environmental impact, including noise pollution for marine mammals.

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