CASE STUDY

Powerwave
Coverage Solutions

Puget Sound Naval Shipyard

Ship-shape Wireless Coverage System Powers Submarine Overhaul Activities at Puget Sound Naval Shipyard

When it comes to the design, engineering and installation of wireless coverage systems for the military's most challenging environments, Powerwave has it covered.

Case in point: Powerwave's experience in deploying a wireless coverage system for extending two-way voice communications services of the Puget Sound Naval Shipyard aboard naval submarines during overhaul and repair work.

A World-class Facility with a Rich Naval History

Located on the Kitsap Peninsula in Washington state, and with a proud history dating back to 1891, Puget Sound Naval Shipyard and Intermediate Maintenance Facility is a world-class maintenance facility for the U.S. Navy, the Pacific Northwest's largest Naval shore facilities, and one of Washington State's largest industrial installations.

During World War I, the Navy Yard constructed ships, including 25 sub-chasers, seven submarines, two minesweepers, seven sea-going tugs, and two ammunition ships, as well as 1,700 small boats. During World War II, the Shipyard's primary effort was the repair of battle damage to ships of the U.S. fleet and those of its allies.

Following World War II and during the Korean conflict, the facility was designated Puget Sound Naval Shipyard, and engaged in an extensive program of modernizing carriers and activating ships, and in the late 50's, building a new class of guided missile frigates.

In 1990 the U.S. Navy authorized a program to recycle nuclear powered ships at Puget Sound Naval Shipyard. During this time, the shipyard pioneered an environmentally safe method of deactivating and recycling nuclear-powered ships.

In 2003, Puget Sound Naval Shipyard and the Naval Intermediate Maintenance Facility, Pacific Northwest (located at Bangor, Bremerton and Everett, Wash.) were consolidated into one maintenance activity.

Addressing Rigorous Requirements

Modern-day submarines require the most advanced technology; the same can be said for the men and women that service these sophisticated machines. Wireless

Powerwave® technologies

communications help support the necessary collaboration and data exchange required in the process of maintaining and overhauling the fleet.

In 2002, Powerwave (then Kaval Wireless) was selected by the U.S. Navy to design and deploy a ship board two-way radio coverage extension solution for the shipyard. The solution needed to be “turn-key” and support a minimum coverage area of 600 feet, spanning seven compartments and three levels onboard the submarine. It also needed to fit the limited space constraints and support continuous operation over an extended period of time with minimal maintenance and upkeep.

Additionally, the system needed to be designed to operate in extreme environmental conditions – a non-air-conditioned shipboard environment – where temperatures range from 0 to 120 ºF, and humidity can be up to 100 percent.

The system also needed to be modular with plug and play capabilities, where each coverage segment could be turned on or off as needed without significant loss of overall signal strength. Additional requirements mandated that the system be reusable and transportable, and linear and capable of passing analog and digital trunking protocols in the 400 MHz band. The system also required a redundant power supply with automatic hot switch-over capability.

A Wireless Coverage System as Tough as the Navy Itself

Powerwave’s indoor/outdoor wireless coverage systems support mission critical communications for government and public safety agencies worldwide. Powerwave technology is ideal to meet the needs of this market due to its ability to support multiple services using a single wireless infrastructure, its ability to support the relevant public safety and commercial wireless bands and the necessary product/handset exchanges; and also provide RF coverage even in the most challenging environments.

The wireless coverage solution designed and deployed to meet the needs of the Puget Sound Naval Shipyard featured a modern, sophisticated distributed antenna system (DAS) leveraging coaxial cable. This system was designed to allow a single cable run to distribute multiple signals throughout the vessel, with the antenna systems providing seamless coverage handoff between sectors, ensuring robust and controlled RF signal distribution.

Concurrent with the Navy’s desire to continually optimize the system for performance, the system was microprocessor controlled so that technicians could set and check all system parameters during installation and/or servicing.

And to ensure maximum service life, streamlined maintenance and repair, government journeyman mechanics were trained in the proper operation and maintenance of the equipment. Additionally, since the system would be removed upon completion of the overhaul activities and reinstalled in other submarines, training was also provided to shipyard personnel on the proper shipboard installation, operation, and removal of the equipment and its component parts.

Around the world, Powerwave technology supports mission critical communications for government, military and public safety personnel in the most challenging environments. In this particular case, that included an innovative solution for a very unique ship to shore application – helping the U.S. Navy ensure our nation's submarine fleet is "ship shape."

About Powerwave Technologies

A global leader in end-to-end wireless coverage and capacity solutions, Powerwave Technologies, Inc. offers cutting edge wireless infrastructure to address the demands of enterprise and commercial customers. Powerwave offers a comprehensive suite of solutions, including Antennas, Base Station Solutions and Coverage Solutions. Powerwave's product line supports all wireless network protocols and frequencies including Next Generation Networks in 4G technology such as WiMAX™ and LTE®. Powerwave solutions, products and services also help wireless operators and OEMs reduce capital and operating expenses, speed rollout of services, improve coverage and capacity, and reduce environmental impact. For more information, visit us at www.powerwave.com.

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