Naval Information Warfare Center PACIFIC

NIWC PACIFIC QUICK OVERVIEW

Naval Information Warfare Center (NIWC) Pacific provides the U.S. Navy and military with essential capabilities in the areas of:

- Full lifecycle engineering for information warfare
- Robust research, development, and technology transition
- Applied electromagnetics, photonics, and atmospheric propagation
- Development of offensive and defensive cyber capabilities
- Positioning, navigation, and timing laboratory and test facilities
- Rapid prototyping and delivery
- Cloud-based digital development environment, cloud-enabled digital twins ("Digital Abe," "Digital TR"), DevSecOps, Agile Core Services
- Machine learning, artificial intelligence, data science, decision optimization
- Development and support of unmanned systems (unmanned underwater vehicle, unmanned surface vehicle, unmanned aerial vehicle)

Naval communications on Point Loma date back to the early 1900s with the commissioning of the Navy Radio Station Point Loma in 1906. The Navy chose Point Loma for its first West Coast laboratory in 1940.

During the Center's first three decades, it developed a Navywide reputation for its work in radio, tactical warfare simulators, information display and data management systems, sonar, lasers, navigation, satellite communication, and radar.

In the 1980s, the Center achieved notable success in the fields of command and control, satellite communications, ocean surveillance, remotely operated vehicles, microelectronics and environmental research.

From the 1990s to today, NIWC Pacific has been at the forefront of bringing integrated command and control, communications, computers, intelligence, surveillance and reconnaisance to the warfighter.

A series of firsts

- **Center scientist Waldo Lyon:** On board the Nautilus' pioneering voyage beneath the Arctic ice cap
- **West Coast satellite tracking station:** The first non-Soviet station to confirm that Sputnik I had orbited the earth
- **First successful live launch of a Polaris missile:** A few months later the Navy's Polaris submarine, USS George Washington (CVN 73), was commissioned
- **Liquid light beam:** First liquid light beam that produced a visible light beam

- **Testing of Navy Tactical Data System (NTDS):** A computing milestone, NTDS validated the use of digital data processing and facilitated the Navy's shift from analog to digital data processing
- **ARPANET/Internet:** During the 1970s, Center was node 3 in the ARPANET, the research network that was a precursor to the Internet; scientists conducted research, testing, and experimentation in connecting different computers into the network
- **Surveillance Towed Array Sensor System (SURTASS) mobile towed surveillance array:** Deployed in the 1980s, SURTASS revolutionized undersea surveillance
- **Integrated Refractive Effects Prediction System (IREPS):** Allowed operational commanders to properly assess, for the first time, the effects of the atmosphere on the performance of electromagnetic systems such as radar and radio
- **Blue laser and receiver communications technology:** enables transition to space-based submarine laser communications system

The Center's Workforce

- NIWC Pacific employs a highly educated, diverse, multidisciplinary workforce of more than 5,000 computer scientists, electrical engineers, cyber engineers, artificial intelligence/machine learning scientists, technical specialists, contract managers and more, who hold more than 200 Ph.D./J.D. degrees, and approximately 1,500 master's degrees.
- The lab, located in San Diego, California, is ranked as a top generator of patents and license agreements. With 85 issued patents in fiscal year 2019, the Center's active intellectual property portfolio (invention disclosures, filed patent applications and issue patents) grew to more than 1,000.
- NIWC Pacific's workforce also includes the largest number of active duty military personnel stationed at any naval laboratory or warfare center. This unique arrangement combines the fleet and operational expertise of the warfighter with the skills of the Center's research staff to tackle real-world problems facing the U.S. today and in the future.

Economic Impact

- More than $20 billion awarded to local industry, small business and academia in past 15 years
- Extensive lab/engineering facilities
- Growing, credentialed cyber and cybersecurity workforce

Current research and development efforts include:

- **Aegis Ashore:** This land-based capability of the Aegis Ballistic Missile Defense (BMD) system provides increased capability for countering ballistic missile threats; NIWC Pacific is designated as the lead test and evaluation agent for the C4I component of the Aegis Ashore weapon system
- **Battlespace Exploitation of Mixed Reality laboratory (BEMR)**: Team members manipulate cutting-edge, low-cost, commercial off-the-shelf, mixed reality technology (virtual and augmented)

BEMR Lab

- **Joint Space Operations Center Mission System Program (JMS):** Provides space situation awareness and command and control operations
- **Distributed Common Ground System-Navy Engineering and Integration Effort (DCGS-N Increment 2):** Will provide robust, integrated ISR capability that makes maximum use of commercial off-the-shelf and mature non-developmental items or government software
- **Maritime Tactical Command and Control (MTC2):** Will provide a single, interoperable, integrated, scalable command and control system that fuses, correlates, filters, and displays location and attribute information on friendly, hostile, and neutral land, sea, and air forces
- **Consolidated Afloat Networks and Enterprise Services (CANES):** Represents a key aspect of the Navy's modernization planning by upgrading cybersecurity, command and control, communications and intelligence systems; the enhanced degree of standardization will reduce the number of network variants by ship class across the fleet
- **Mobile User Objective System (MUOS):** Provides improved and secure communications for mobile warfighters, including simultaneous voice, video, and data communications

At its main San Diego location, NIWC Pacific is close to many of America's top defense contractors, global leaders in digital communications and computing, world-class educational institutions and major Navy and DoD commands. We actively partner with industry, academia and other government and non-government entities.

NIWC Pacific offers unique laboratory settings and simulated operational environments that are unachievable elsewhere, such as San Clemente Island, ballistic missile defense/Link 16 combined test bed, and live virtual and constructive environments. Our facilities allow us to create large-scale virtual integrated systems to support architecture development, systems engineering, acquisition, training and fleet operations.

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JN20210153 / JN20210153 Rev 22 JUN 2021