



## DID YOU KNOW?



Space and Naval Warfare Systems Center Pacific (SSC Pacific) provides the U.S. Navy and military with essential capabilities in the areas of command and control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR), cyber, and space.

A recognized leader in the cyber domain and cyberspace, and for autonomous unmanned systems, SSC Pacific is providing the technological and engineering support critical to naval information warfare.

### Fast Facts

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 command and control, satellite communications, ocean surveillance, remotely operated vehicles, microelectronics and environmental research.

From the 1990s to today, SSC Pacific has been at the forefront of bringing integrated C4ISR to the warfighter.

### A History of Firsts

- Center scientist Waldo Lyon was on board the Nautilus' pioneering voyage beneath the Arctic ice cap
- First West Coast satellite tracking station; the first non-Soviet station to confirm that Sputnik had orbited the earth
- First successful live launch of a Polaris missile, a few months before the Navy's Polaris submarine, USS George Washington, was commissioned
- 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
- 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, for the first time, to properly assess the effects of the atmosphere on the performance of electromagnetic systems such as radar and radio
- Blue laser and receiver communications technology suitable for transition to space-based submarine laser communications system

## The Center's Workforce

- SSC Pacific employs a highly educated, diverse, multidisciplinary workforce of more than 4,600 scientists, researchers, engineers, technicians, technical specialists and more, who hold 187 Ph.D./J.D. degrees, and 1,240 master's degrees.
- The lab, located in San Diego, California, is ranked as a top generator of patents and license agreements (119 patent disclosures, 46 patent applications filed, and 60 patents issued in fiscal year 2015).
- SSC 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, motivated cyber workforce
- Credentialed cybersecurity workforce

## Current research and development efforts include:

- **BEMR Lab:** Battlespace Exploitation of Mixed Reality laboratory where team members manipulate cutting-edge, low-cost commercial off-the-shelf, mixed reality technology (virtual and augmented).
- **CERF Lab:** The Cryogenic Exploitation of Radio Frequency laboratory is equipped to test independent research aimed at the development of next-generation radio frequency sensors and devices that will operate over a broad range of temperatures and function across the full RF spectrums of interest.
- **Aegis Ashore:** This land-based capability of the Aegis Ballistic Missile Defense system provides increased capability for countering ballistic missile threats. SSC Pacific is designated as the lead test and evaluation agent for the C4I component of the Aegis Ashore weapon system.
- **JMS:** The Joint Space Operations Center Mission System program provides space situation awareness and command and control operations.



*Battlespace Exploitation of Mixed Reality (BEMR) Lab*

- **DCGS-N Increment 2:** The Distributed Common Ground System-Navy engineering and integration effort will provide robust, integrated ISR capability that makes maximum use of commercial off-the-shelf and mature non-developmental items or government software.
- **MTC2:** Maritime Tactical Command and Control 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.
- **CANES:** Consolidated Afloat Networks and Enterprise Services represents a key aspect of the Navy's modernization planning by upgrading cybersecurity, command and control, communications and intelligence systems afloat. The enhanced degree of standardization will reduce the number



*Ballistic Missile Defense test bed*

of network variants by ship class across the fleet.

- **MUOS:** Mobile User Objective System provides improved and secure communications for mobile warfighters, including simultaneous voice, video, and data.
- **SCHSIM:** Stochastic Compiler Hacks as Software Immunization Mechanisms develops artificial software diversity to minimize an attacker's knowledge of individual computer systems.
- **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.

## For more information

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