



The dramatic south view of the Nimitz-MacArthur Pacific Command Center. All photos by Neal Miyake, SSC San Diego assistant project manager.

The new headquarters for the U.S. Pacific Command (USPACOM) located on Camp Smith, Hawaii, was dedicated in April. Named the Nimitz-MacArthur Pacific Command Center (NMPCC), the striking six-story, 274,500 square-foot facility overlooks Honolulu and replaces a nearly 60-year-old structure originally built as a hospital during World War II.

The new command center, equipped with more than 100 cutting-edge command and control and communications systems, is a model for future command centers. Accommodating more than 1,350 personnel, the NMPCC provides the commander and staff members with new information and decision-making technologies to effectively conduct the USPACOM mission throughout the Pacific and the world.

The NMPCC is one of the nation's premier facilities for Command, Control, Communications, Computers and Intelligence (C4I) systems. C4I plans were developed around the "battle cell" concept for distributed command and control. The systems architecture integrates new and existing systems into a flexible, joint, interoperable environment and greatly enhances collaboration capabilities throughout the Asia-Pacific theater. An engineering team from the Space and Naval Warfare Systems Center San Diego, located on Pearl City Peninsula, designed, engineered, integrated and installed the complex C4I systems.

The mammoth task of seamlessly transitioning command headquarters personnel and C4I systems was made more challenging by the requirement to sustain 24/7 operations during the transition. The C4I team's comprehensive installation plan, which included installing 12,000 data channels throughout the building, meticulously tracked system interdependencies while managing transition timetables, risks and related issues. Some of the capabilities include unclassified and classified data networks, telecommunications and voice systems, satellite communications (SATCOM), the J2 (Intelligence) Information Technology Support Office and the Joint Operations Center. New integrated video services provide enhanced capabilities such as multiple, simultaneous video teleconferencing.

For decades, SSC San Diego personnel provided C4I engineering and installation support to the U.S. Pacific Command. Their early involvement in this project allowed the C4I infrastructure to be integrated into the building plan rather than being imposed later into an existing design. The expertise of C4I engineers and technicians proved invaluable in fulfilling the project's technical requirements, while accommodating the operational processes unique to USPACOM.

The new headquarters provides USPACOM with critical information and advanced decision-making tools for real-time crisis management. Extensive connectivity and interoperability enhance collaboration among a wide range of resources, from the President of the United States, the Secretary of Defense and the Joint Chiefs of Staff, to service components, subordinate unified commands, and joint task force groups, as well as to coalition partners and local government agencies.

Using Space and Naval Warfare Systems Command guidance, the C4I team identified requirements with USPACOM staff and determined engineering solutions. The team collaborated with the Naval Facilities Engineering Command Pacific Division (PACDIV), the PACDIV Resident Officer in Charge of Construction and the building contractor to ensure the correct infrastructure was built into the facility. The team also worked with equipment and furniture contractors, USPACOM security and the Transition Task Force. In many cases, C4I planning influenced scheduling and the design of other efforts.

Early in the planning process, USPACOM determined that all systems, or information service domains, were to be described using the USPACOM Information Capabilities (IC) Framework model. Accordingly, the C4I team structured the information technology design package to align with the IC Framework, most notably in the Information Capabilities Requirements Analysis Document. This document provides a system engineering methodology by which a complex information technology infrastructure can be broken down into the different service area components it comprises.

To simplify management of the project, the C4I team used the IC Framework model and divided the project into eight functional areas which became the cornerstones of the overall C4I effort.

1. Inter-building cabling. Provides connectivity from the NMPCC to spaces in outlying buildings throughout Camp Smith and facilitates the circuit transition process.

2. Telecommunications. Administrative phone services via a Private Branch Exchange (2,000 lines) and the Defense Red Switch Network provide secure voice services (100 handsets).

3. Tech Control. More than 130 unclassified and classified circuits were transitioned to new position points in the new headquarters with cryptographic and messaging support. A state-of-the-art automated tech control was installed to monitor and route circuits with the capacity to manage more than 500 channels.

4. Networks. A backbone local area network (LAN) with multiple security levels was designed and engineered for classified legacy networks via 25 virtual LANs. The C4I team coordinated their plan with the Navy Marine Corps Intranet (NMCI) effort, assisting in the transition of NMCI secret and unclassified LANs and 2,400 associated workstations.

5. J2 Information Technology Support Office (ITSO). This is the directorate in charge of USPACOM intelligence. Intel and bilateral circuit management along with intel LANs and video teleconferencing (VTC) assets were consolidated into a centralized location. The J2 ITSO was outfitted to provide cryptographic support and patch connectivity to outlying temporary secured working areas.

6. Radio frequency/satellite communication. Antenna farms and radio rooms were created to provide command and control and tactical satellite communication. Radio-remoting technology and external cryptographics were used to more efficiently manage ultra-high frequency systems.

7. Briefing and display/video architecture (BDVA). Twenty-one specialty rooms were equipped with audiovisual (A/V) capabilities for visualization and advanced collaboration. Key efforts included: VTC across multiple classifications, robust A/V source switching, environment control system and specialized display and audio systems. Display technologies included: video walls, front and rear screen projection, liquid crystal display and plasma flat panel screens. An A/V control facility was created as the central control hub for VTC scheduling and source routing.

8. Joint Operations Center (JOC) and associated cells. In crisis management, the JOC provides battle staff with decision-making tools and information; the C4I team provided coordinated installation of all C4I assets, especially five national command and control systems. A robust cable infrastructure was provided to the JOC floor and outlying areas to harness all C4I assets within the building.

One key goal of the NMPCC was to support the battle cell concept where specialty rooms, including directorate conference rooms,



Above: Video wall for the Joint Operations Center at the Nimitz-MacArthur Pacific Command Center.



Above: Front view of the Nimitz-MacArthur Pacific Command Center. For more information about USPACOM or SPAWAR San Diego, go to their Web sites: <http://www.pacom.mil> or <http://www.spawar.navy.mil/sandiego/>.

would have virtual presence to the JOC via A/V systems and networking. This arrangement allows the JOC to be supportable from beyond the confines of the JOC floor and facilitates the management of multiple crises. The common thread is the BDVA Command Briefing System which allows the specialty rooms to share sources and to communicate with the JOC and battle staff.

In addition to many other C4I-related projects such as overall configuration management, transition planning and risk management, the C4I team was responsible for engineering and installing the Integrated Physical Security System. This \$4.3 million project includes an access control system using proximity, password and biometric authentication. The system is forward compatible with the Department of Defense Common Access Card, and includes surveillance cameras, an intrusion alarm system, remote alarming and a control room integrated with the visitor's control center.

Through conceptual and technological innovations like the Nimitz-MacArthur Pacific Command Center, the Navy is leading the military transformation to an effective joint warfighting force for the 21st century. 