



SPAWAR
Systems Center
San Diego

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SSC San Diego
Command History
Calendar Year 2001

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SSC San Diego

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*SPAWAR
Systems Center
San Diego*

SSC San Diego
San Diego, CA 92152-5001

SSC SAN DIEGO
San Diego, California 92152-5001

P. A. Miller, CAPT, USN
Commanding Officer

R. C. Kolb
Executive Director

ADMINISTRATIVE INFORMATION

This technical document was prepared in response to OPNAVINST 5720.12F. The document summarizes the major activities and achievements of Space and Naval Warfare Systems Center, San Diego (SSC San Diego) in 2001. This document was prepared by the Technical Information Division using in-house funding.

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Technical Information
Division

PREFACE

The Space and Naval Warfare Systems Center, San Diego (SSC San Diego) Command History for calendar year (CY) 2001 is submitted in conformance with OPNAVINST 5750.12F. The history provides a permanent record of CY 2001 activities at SSC San Diego. Although the history covers one calendar year, much of the information was only available on a fiscal year (FY) basis and is so noted in the text.

This Command History is divided into three main sections. The first section is a general introduction to SSC San Diego. The second section describes administrative highlights. The third section documents technical highlights.

Appendices to this document provide supplementary SSC San Diego information. Appendix A lists achievement awards given in CY 2001. Appendix B lists patents awarded in CY 2001. Appendices C and D provide lists of distinguished visitors hosted by SSC San Diego and major conferences and meetings at SSC San Diego, respectively. Appendix E lists acronyms used in the document.

SSC San Diego's Command History can only highlight the breadth of work performed by the Center's scientists and engineers. We urge interested readers to obtain SSC San Diego's *Biennial Review 2001*,* which contains 36 technical papers documenting current research and development in a number of diverse areas, including Next-Generation Information Systems, Data Acquisition and Exploitation, C⁴ISR Systems Integration and Interoperability, Simulation and Human-Systems Technologies, Communication Systems Technologies, Navigation, and Applied Sciences.

* *Biennial Review 2001*, TD 3117, Space and Naval Warfare Systems Center, San Diego (SSC San Diego), San Diego, CA, (August). Please contact the Center for more information. The document is also available in pdf format on the Center's public website: <http://www.spawar.navy.mil/sti/publications/pubs/td/3117/index.html>

CONTENTS

SECTION 1 INTRODUCTION	1
INTRODUCTION TO SSC SAN DIEGO	2
Mission	2
Leadership and Technology Areas	2
Assigned Leadership Areas	2
Technology Areas	2
Vision	3
Programs	3
Organization	3
SECTION 2 ADMINISTRATIVE HIGHLIGHTS	5
FUNDING	6
PERSONNEL	7
Personnel Onboard	7
Major Personnel Changes	7
CENTER INITIATIVES	9
Project Cabrillo: Enterprise Resource Planning	9
Software Process Improvement Initiative	9
SECTION 3 TECHNICAL HIGHLIGHTS	11
NAVIGATION AND APPLIED SCIENCES	12
Marine Mammal Program	12
Global Positioning System	12
Robotics	15
COMMAND AND CONTROL	16
Command 21–Decision Support for Military Command Centers	16
Link-16 Gateway Emulator Installation	16
Common Data Link Management System	16
Arrow Weapon System	17
Realtime Execution Decision Support System	18
Link-16 System Integration Test	18
Capable Warrior and Extending the Littoral Battlespace Major System Demonstration II	18
GCCS Integrated Imagery and Intelligence	19
FLEET ENGINEERING	20
NITES 2000	20
INTELLIGENCE, SURVEILLANCE, AND RECONNAISSANCE	21
Standard Tactical Receive Equipment Display 7.0	21
Medical Concept Exploration Lab Software	21
COMMUNICATIONS AND INFORMATION SYSTEMS	23
Joint (UHF) MILSATCOM Network Integrated Control System	23
Joint Warrior Interoperability Demonstration 2001	23
Joint C ⁴ ISR Architecture Planning/Analysis System	24
Crisis Consequence Management Initiative	25
COMWIN Wearable Antenna	25
Microelectronics	26
APPENDIX A: CY 2001 ACHIEVEMENT AWARDS	27
APPENDIX B: CY 2001 PATENT AWARDS	35
APPENDIX C: CY 2001 DISTINGUISHED VISITORS	37
APPENDIX D: CY 2001 MAJOR CONFERENCES AND MEETINGS	45
APPENDIX E: ACRONYMS	47
SOURCES/NOTES	51

**SECTION 1
INTRODUCTION**

INTRODUCTION TO SSC SAN DIEGO

The Space and Naval Warfare Systems Center San Diego (SSC San Diego) is a full-spectrum research, development, test and evaluation (RDT&E), engineering and fleet support center serving the Navy, Marine Corps, and other Department of Defense (DoD) and national sponsors within its mission, leadership assignments, and prescribed functions. SSC San Diego reports directly to the Commander, Space and Naval Warfare Systems Command (SPAWAR).

MISSION

SSC San Diego's formal mission is "To be the Navy's full-spectrum research, development, test and evaluation, engineering and fleet support center for command, control and communication systems and ocean surveillance and the integration of those systems which overarch multiplatforms."

LEADERSHIP AND TECHNOLOGY AREAS

Consistent with our mission, eight leadership areas are formally assigned to SSC San Diego. These leadership areas clearly represent SSC San Diego's command, control, communication, computers, intelligence, surveillance, and reconnaissance (C⁴ISR) charter as well as leadership areas outside that scope—ocean engineering and marine mammals. Beyond these, SSC San Diego has demonstrated national- and international-level expertise in a broad range of technology areas.

ASSIGNED LEADERSHIP AREAS

- Command, control, and communication (C³) systems
- Command, control, and communication systems countermeasures
- Ocean surveillance systems
- Command, control, and communication modeling and analysis
- Ocean engineering
- Navigation systems and techniques
- Marine mammals
- Integration of space communication and surveillance systems

TECHNOLOGY AREAS

- Ocean and littoral surveillance
- Microelectronics
- Communications and networking
- Topside design/antennas
- Command systems
- Computer technology
- Navigation and aircraft C³
- Intelligence/surveillance/reconnaissance sensors
- Atmospheric effects assessment

- Marine mammals
- Environmental quality technology/assessment

VISION

SSC San Diego’s vision is: “To be the nation’s pre-eminent provider of integrated C⁴ISR solutions for warrior information dominance.” SSC San Diego’s vision guides the Center’s efforts in defining, developing, integrating, installing, and sustaining C⁴ISR systems.

PROGRAMS

SSC San Diego conducts a broad range of programs that focus on integrated C⁴ISR. The Center also conducts several unique programs outside of our primary C⁴ISR focus: Environmental Quality Technology/Assessment, Marine Resources, Marine Mammals, Ocean Engineering, and Robotics and Physical Security. Innovative new research is encouraged through our In-House Laboratory Independent Research program.

ORGANIZATION

Figure 1 shows SSC San Diego’s organization as of 31 December 2001.

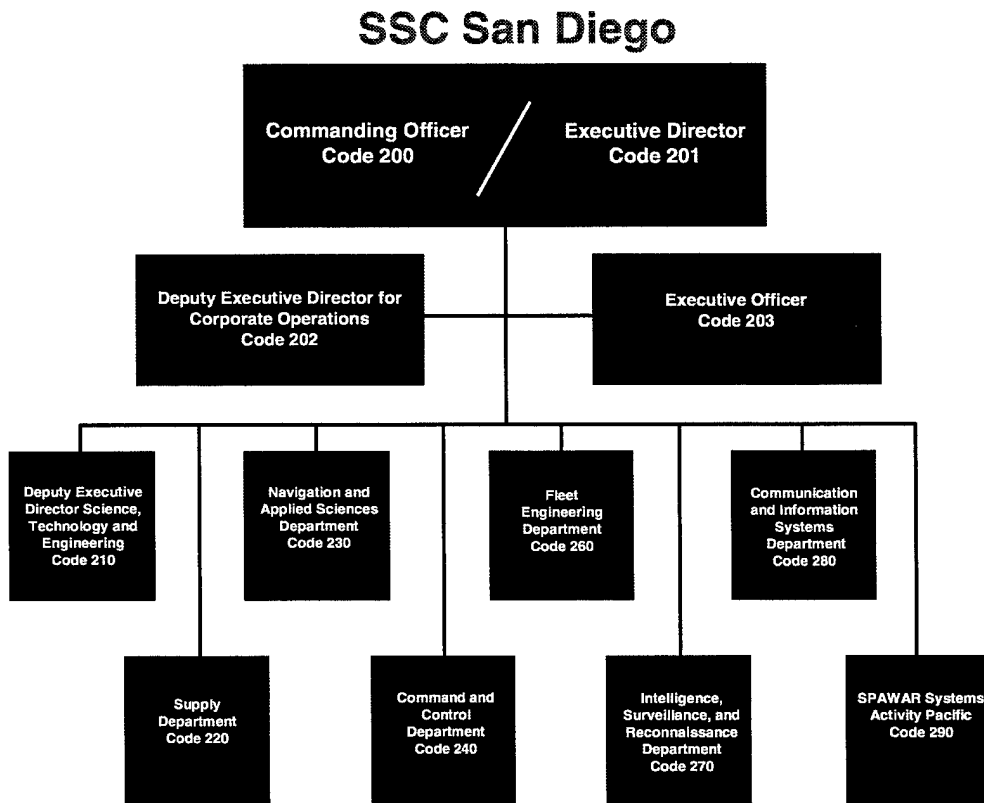


Figure 1. SSC San Diego organization.

**SECTION 2
ADMINISTRATIVE
HIGHLIGHTS**

FUNDING

Total SSC San Diego funding in FY 01 was 1.227B. Table 1 shows funding by sponsor. Table 2 shows total funding by type.

Table 1. Funding by sponsor, FY 01.

Sponsor	\$M (% of Total)
SPAWAR	439 (36%)
DARPA	233 (19%)
OTHER NAVY	173 (14%)
OTHER	165 (13%)
ONR	91 (7%)
NAVAIR	67 (6%)
NAVSEA	59 (5%)
Total	1,227

DARPA (Defense Advanced Research Projects Agency)
 ONR (Office of Naval Research)
 NAVAIR (Naval Air Systems Command)
 NAVSEA (Naval Sea Systems Command)

Table 2. Funding by type, FY 01

Type	\$M (% of Total)
RDTE	535 (44%)
OPN	329 (27%)
OMN	200 (16%)
Other DoD	144 (12%)
Other Navy	1 (0%)
Non-DoD	18 (1%)
Total	1,227

OPN (Other Procurement, Navy)
 OMN (Operation and Maintenance, Navy)

Other FY 01 SSC San Diego financial highlights include the following:

- Total funding was \$1.227B (actual) vs. \$1.143B (budgeted)
- Achieved a savings of \$7.4M in Overhead Expenses:
 - \$2.7M in Production
 - \$4.7M in G&A
- Met Carryover Target
 - \$212M (actual) vs. \$235M (targeted)
- Positive Operating Results:
 - Net Operating Result of \$8.1M (actual) vs. -3.1M (budgeted)
 - Accumulative Operating Result of \$18.9M (actual) vs. \$9.7M (budgeted)

PERSONNEL

PERSONNEL ONBOARD

Total personnel onboard as of 31 December 2001 was 3,480. Table 4 lists personnel by area.

Table 4. Personnel onboard, 31 December 01.

Scientists and Engineers	1776
Technicians	413
Tech Specialists	421
Admin	391
Clerical	376
Ungraded/Other	32
Officers	37
Enlisted	34
Total	3480

MAJOR PERSONNEL CHANGES

Capt. Patricia A. Miller¹

Capt. Patricia A. Miller, who reported as SSC San Diego Executive Officer in July 2001, was appointed as Center Commanding Officer by SPAWAR Commander, Rear Adm. Kenneth Slaght on 8 December 2001.

A native of Fairfield, Connecticut, Capt. Miller received her commission in July 1977 from Officer Candidate School in Newport, Rhode Island. Her first tour of duty was as an oceanographic research watch officer and assistant operations officer at the U.S. Naval Facility, Midway Island. She was selected for, and completed, training at Surface Warfare Officer Basic. In June 1979, she was assigned to USS *L. Y. Spear* (AS 36) at Norfolk, VA, where she earned the surface warfare officer designation.

She attended the Naval Postgraduate School, received a master's degree in management, and in early 1984 reported to the staff of Deputy Chief of Naval Operations for Manpower, Personnel and Training (MPT). At this time, Capt. Miller was redesignated general unrestricted line officer. She served in the Economic Analysis Branch for 18 months followed by a 3-year assignment as administrative officer for Deputy Chief of Naval Operations (MPT). In July 1988, she reported as officer in charge of the Personnel Support Detachment in Bethesda, Maryland.

She reported to the staff of U.S. Central Command (USCENTCOM) in August 1990. When Operation Desert Storm ended, she served on a Secretary of Defense directed Joint Security Review of the Saudi Arabian Armed Forces and deployed to Saudi Arabia. Returning to USCENTCOM, she served as Manpower Branch head.

In April 1994, Capt. Miller assumed the duties of Executive Officer, Naval Station Everett, Washington, and was charged with standing up the Navy's newest homeport while simultaneously preparing for, and executing, the closure of Naval Station Puget Sound in Seattle, Washington. During her 3-year tenure as executive officer, all of the assigned ships arrived at their new homeport including USS *Abraham Lincoln* (CVN 72). During this tour she was redesignated as a Fleet Support Officer. In April 1997, she reported to the staff of Commander, Navy Region Southwest to undertake the task of regionalizing base operating

support services in the tri-state region of California, Nevada, and Arizona. She was instrumental in institutionalizing Business Process Reengineering efforts for the Navy Region Southwest and the stand-up of the regional business office.

Following a tour from October 1999 to July 2001 as Commanding Officer, Navy Manpower Analysis Center, Millington, Tennessee, Capt. Miller reported to SSC San Diego as the Executive Officer.

Personal awards include Legion of Merit, two Defense Meritorious Service Medals, two Navy Meritorious Service Medals, Joint Service Commendation Medal, two Navy and Marine Corps Commendation Medals and numerous service awards.

Capt. Miller appointed Cmdr. Mark Kohlheim, Global Command and Control System–Maritime manager, as acting SSC San Diego Executive Officer.

Capt. Ernest L. Valdes²

Capt. Ernest L. Valdes, Commanding Officer, SSC San Diego, received non-judicial punishment (NJP) at Admiral's Mast 8 December 2001 by Rear Adm. Kenneth Slaght, Commander, Space and Naval Warfare Systems Command (SPAWAR) of three counts of dereliction of duty and two counts of conduct unbecoming an officer. Capt. Valdes was relieved of command as a result of the NJP.

CENTER INITIATIVES

PROJECT CABRILLO: ENTERPRISE RESOURCE PLANNING³

On 27 June 2001, the Enterprise Resource Planning (ERP)/Project Cabrillo Team passed the last external milestone before activating the new SAP R/3 system. Assistant Secretary of the Navy Charles Nemfakos granted approval to operate the new system. On 28 June, the Project Cabrillo Executive Steering Committee met to review the status of readiness. Upon completion of that review, the committee voted to "Go-Live" and, after conversion of the old Defense Industrial Financial Management System (DIFMS) data into SAP R/3 was completed, the new system was turned on 2 July. Project Cabrillo is SSC San Diego's name for the implementation of ERP software (SAP R/3 is a product of Germany's SAP company) that is intended to integrate business processes and information across the Center's business enterprise.

SOFTWARE PROCESS IMPROVEMENT INITIATIVE⁴

The SSC San Diego Software Process Improvement (SPI) Initiative resulted in two more projects achieving Level 3 on the Software Capability Maturity Model (SW-CMM): the Control Display Navigation Unit (CDNU) project and the Joint Tactical Information Distribution System (JTIDS).

The CDNU and JTIDS projects were evaluated in July 2001 by an internal assessment team. The team conducted interviews and reviewed project processes, procedures, and documentation. The evaluation team then compared the project's practices against the best practices described in the SW-CMM.

Both CDNU and JTIDS join an elite group of SSC San Diego projects that have achieved SW-CMM Level 3. In 2000, four other SSC San Diego projects achieved SW-CMM Level 3: Common Tier 3, Navy Key Management System, Marine Corps Air Traffic Control and Landing System, and Joint Network Design Agent. As the SPI Initiative continues to expand, more projects will be achieving this milestone. The SPI Initiative now includes systems engineering and the Capability Maturity Model Integration (CMMI). The Center's goal is for projects to achieve CMMI Level 3 as an interim milestone to Level 5.

**SECTION 3
TECHNICAL HIGHLIGHTS**

NAVIGATION AND APPLIED SCIENCES

MARINE MAMMAL PROGRAM

Northern Edge Exercise

SSC San Diego's Biosciences Division (Code 235) supported the participation of Explosive Ordnance Disposal Mobile Unit 3 (EOD MU3) in the Northern Edge exercise in Ketchikan, Alaska, 20-29 March 2001. The division provided senior technical representatives and veterinarians to care for Marine Mammal System dolphins on the C-17 aircraft flights and on the ground in Ketchikan, to support ongoing training and operation of the animals in exercise participation, and to care for and observe an R&D animal during cold water studies. Additional division personnel included physiologists to gather cold-water data on the animals, and engineering personnel, who erected the pools and the tent, complete with unique heating and filtration systems, to ensure a comfortable environment for the animals between working sessions.

EX 8 Marine Mammal System⁵

The EX 8 Marine Mammal System (MMS) successfully completed Operational Evaluation (OPEVAL) testing on 31 May 2001. On 4 October 2001, PEO Mine and Undersea Warfare convened an Acquisition Review Board and approved the system for production and installation into fleet mine countermeasure systems. Now designated MK 8 MMS, the system is part of the EOD Group ONE, Very Shallow Water Mine Countermeasures Detachment. The MK 8 MMS is a mine detection and mapping system using dolphins that operates in a nighttime pre-assault environment. It provides the fleet the capability of determining whether mines are present, maps their locations, and identifies any gaps in the mine defense in the littoral zones near shorelines. Military tactical decisions not possible before can be made based on information provided by this unique system. MK 8 MMS is currently being outfitted, with Full Operational Capability expected by FY 03.

NATO Exercise Blue Game 2001⁶

The Navy's Marine Mammal Systems participated in Blue Game 2001, a major North Atlantic Treaty Organization (NATO) maritime exercise, which took place in Norwegian and Danish waters. More than 70 naval vessels and more than 50 aircraft from 10 countries participated in the 2001 exercise. Contributing countries were Belgium, Canada, Denmark, France, Germany, Netherlands, Norway, Poland, United Kingdom, and the United States. The aim was to exercise NATO maritime forces in littoral waters, including a variety of maritime warfare aspects, with a focus on mine countermeasures. In addition to traditional mine laying and mine clearing operations, strategic mine laying by B52 aircraft from the U.S. was exercised. Four bottlenose dolphins from EOD MU3 were deployed to detect, locate, and mark practice mines off the coast of South Norway.

GLOBAL POSITIONING SYSTEM⁷

Throughout 2001, SSC San Diego continued to conduct modernization efforts of the Global Positioning System (GPS). Core efforts included the following: Modernization Test Bed; Digital Antenna Electronics; Miniaturized Airborne GPS Receiver 2000/Control Display Navigation Unit/Non-Precision Approach integration; Location of GPS Interferers; and Sea Navigation Warfare.

Modernization Test Bed

GPS modernization efforts include the development of new signal structures and, in the near future, new GPS receivers. New equipment must be developed to support monitoring of these new satellite signals as well as testing of the modernized GPS receivers. New tools are also required to allow system developers to test and demonstrate proposed waveforms and perform operational assessment in a controlled laboratory environment. SSC San Diego (Code 231) is at the forefront of this tool set development with various, but synergistic, Modernization Test Bed efforts.

The Advanced Global Navigation Simulator (AGNS) effort is responsible for developing the next generation GPS and Signal in Space simulators. The primary tasking for the AGNS effort is to develop an Interface Control Document and specification that allows an open system architecture approach to simulator development and future enhancements. The Interface Control Document is being defined and verified using a fully functional prototype system.

The prototype system uses commercial off-the-shelf hardware and government-developed software. The software being developed takes advantage of the extensive simulation capability that already exists in SSC San Diego's GPS Central Engineering Activity Laboratory. SSC San Diego (Code 231) will also act as software support activity support of future AGNS procurements.

The hardware used by AGNS is based on Field Programmable Gate Arrays (FPGAs). The FPGA architecture allows for easy reconfiguration of the signal generator cards to produce a wide variety of waveforms.

Several GPS receiver-like efforts are also being executed in support of GPS modernization. The two primary receiver-like efforts are the AGNS Test Station (ATS) and the Modernization Receiver Test Asset (MRTA). The ATS is the corollary to AGNS and is an SSC San Diego led effort that also includes the Jet Propulsion Laboratory and Science Applications International Corporation. The intent of the ATS is to be able to track and verify the correct signal structure of any signal that AGNS generates. The ATS design is also based on an FPGA architecture thus allowing for easy reconfiguration of its waveform tracking capability.

The MRTA effort is a MITRE-led effort with SSC San Diego as a supporting member. The MRTA is being looked at as one of several possible methods to be used by the GPS Control Segment to monitor on-orbit signal quality by placing it at the Cape Canaveral GPS Monitor Station. SSC San Diego is responsible for creating various FPGA modules including those required for both the frequency hopping and puncture acquisition aiding techniques. Facilities are being modified to accommodate the new classification requirements in support of the AGNS, ATS, and MRTA efforts.

Digital Antenna Electronics

The Digital Antenna Electronics (DAE) program is a research and development acquisition managed under sponsorship of the GPS Joint Program Office. SSC San Diego issued a Request for Proposal in March 2001, conducted a technical and cost evaluation of the received proposals, and awarded contracts in July 2001 to Lockheed Martin, Raytheon Electronic Systems, and Raytheon Systems Limited for the development of the DAE prototype.

DAE is intended to increase the operational utility of GPS available to the warfighter by advancing the state-of-the-art in countering the evolving electronic warfare threat. The Navy Operational Requirements Document now mandates certain anti-jam requirements and priorities for the GPS systems on Navy platforms. The near-term strategy to satisfy these requirements depends on adaptive antenna solutions.

The current anti-jam antenna system, the GAS-1 (GPS Antenna System-1), was developed under sponsorship of the GPS Joint Program Office. It is in use on numerous Air Force platforms and is being integrated into high-priority Navy platforms. It consists of a multi-element antenna and an accompanying analog antenna electronics (AE) unit that functions as an adaptive processor. When connected to a GPS receiver, GAS-1 reduces the jamming energy present at the GPS receiver input by decreasing the gain of the antenna in the direction of the interference sources.

The DAE program goal is to develop a prototype digital upgrade to the GAS-1 AE that will use advanced digital signal processing techniques to provide anti-jam performance superior to the GAS-1 and also be compatible with the planned modernization of the GPS signal structure.

Miniaturized Airborne GPS Receiver 2000/Control Display Navigation Unit /Non-Precision Approach

The MH-53E helicopter navigation system is being upgraded to perform non-precision approach. The currently installed 3A and Miniaturized Airborne GPS Receiver (MAGR) GPS receivers do not comply with all civilian airspace requirements needed for non-precision approach.

SSC San Diego (Code 231) is tasked to modify the Control Display Navigation Unit (CDNU) Operational Flight Program (OFP) on the MH-53E helicopter to enable aircraft integration of the MAGR 2000 GPS receiver and insert the new software modules to use Federal Aviation Administration approved approach procedures. SSC San Diego expects to deliver the new CDNU OFP in January 2002. The updated OFP will enable the MH-53E to perform GPS instrument flight rule approaches at civilian airports.

The MH-53E platform is the first naval platform to implement a GPS non-precision approach using the MAGR 2000 as the primary means of navigation. Several follow-on platforms are expected. The CDNU system provides the control, display, processing, and interface capability required to integrate the GPS avionics system into rotary and fixed wing aircraft platforms as the sole means of navigation. Using deviation, range, and bearing displays, the CDNU provides all navigation, and pilot-steering functions for enroute, terminal (departure and arrival), and approach (including mission phases of flight).

Location of GPS Interferers

Location of GPS Interferers (LOCO GPSI) addresses safety-of-life applications such as flight in controlled airspace and harbor navigation. Increased attention is now being placed on the risks associated with using a low signal power radio navigation system because safety-of-life applications require a high degree of accuracy, availability, continuity, and integrity of service. Radio frequency interference can potentially degrade and/or disrupt GPS parameters, causing a potentially hazardous situation. SSC San Diego (Code 231) is researching detection and source location of GPS interference.

The LOCO GPSI sensor is a passive tactical airborne system providing precision, detection, characterization, and location of real-time sources of GPS interference. It can process low-power interferers at operational ranges beyond threat envelopes for tactical aircraft. Geo-location of the threat is determined through the application of passive ranging to resolve precision direction-finding vectors. Situational awareness data may be exchanged directly to the tactical platform or communication via existing data links to the planning cell.

LOCO GPSI was flight-tested in May 2001 with outstanding results. SSC San Diego was tasked to develop a flyable prototype that can rapidly detect, locate, and characterize sources of GPS interference and to assess the utility of such a system on manned and unmanned vehicles.

Sea Navigation Warfare

In support of PMW/A-156, SSC San Diego (Code 231) is evaluating the GAS-1 Null Steering Antenna to greatly reduce interference received by Navy and Marine air and sea platforms. SSC San Diego is leading the integration and developmental testing on high priority platforms. The Center completed a successful evaluation on the landing craft air cushion platform last year, and is currently leading an at sea evaluation on a mine warfare ship. The program goal is to receive approval for acquisition and integration into all mine warfare ships, obtain data needed for installation approval on other ships, and do limited operational assessment.

ROBOTICS⁸

At the request of Office of the Secretary of Defense (OSD), and with the support of the U.S. Army/Marine Corps Unmanned Ground Vehicles/Systems Joint Project Office, SSC San Diego deployed three URBOTS (urban robots) and support equipment to New York City to assist in the search and recovery efforts at the World Trade Center. SSC San Diego personnel provided technical coordination and operation of the robots. Coordinating support for this operation was provided by SPAWAR Headquarters and VR-57. SSC San Diego personnel participated at the World Trade Center site as part of a robotics team sponsored by the National Institute for Urban Search and Rescue in support of the Special Operations Branch of the New York City Fire Department.

COMMAND AND CONTROL

COMMAND 21—DECISION SUPPORT FOR MILITARY COMMAND CENTERS⁹

The USS *Carl Vinson* (CVN 70) battlegroup arrived in the North Arabian Gulf on 11 September 2001 to play what would prove a pivotal role in supporting Operation Enduring Freedom. COMCARGRU THREE (CCG3) became the Composite Warfare Commander for military activities in the Gulf. CCG3 and his staff were uniquely qualified to take on this role due to their adoption of a function-based concept of operations for command and control that they employed at the Naval War College during the Global 2000 Wargame. The SSC San Diego Command 21 project developed enabling technologies to support the implementation of this concept of operations, including a "Knowledge Wall" (K-Wall) and "Knowledge Web" (K-Web). At the request of CCG3, these tools were placed aboard *Carl Vinson* prior to their deployment. This allowed the battlegroup to innovate and explore the implications of a Web-Enabled Navy and Speed of Command.

LINK-16 GATEWAY EMULATOR INSTALLATION¹⁰

The SSC San Diego Data Link Test Tools team concluded several intensive weeks of software testing in the System Integration Facility that led to the successful delivery and installation of Gateway Terminal Emulator systems for the Federal German Navy Programming Center in Wilhelmshaven, Germany. The effort was completed in support of PMS 380 and PMS 430 to provide Link-11 connectivity via Data Link Test Tool Gateway systems with the FF-47 Laboratory at Dam Neck, VA.

COMMON DATA LINK MANAGEMENT SYSTEM¹¹

The Common Data Link Management System (CDLMS) provides integrated control and monitoring of essential naval Tactical Digital Information Link (TADIL) communication as well as more affordable and flexible TADIL processing for the fleet. It has reached the culmination of its 6-year development program at SSC San Diego. CDLMS Version 2.0 was released in late 2000 and passed the Aegis system test in January 2001 at the Surface Combat Systems Center, Wallops Island, VA. As a result, CDLMS has been approved for installation on all new Aegis destroyers and Aegis ships planned for upgrade, a process that will occur over the next several years.

The first ship installation of the completed CDLMS Version 2.0 was on the USS *Ramage* (DDG 61) in December 2000. Pre-deployment validation of CDLMS is being done as part of Naval Sea System Command's Distributed Engineering Plant Battle Group Integration Testing program. CDLMS has been a participant in the Distributed Engineering Plant program since September 1999.

CDLMS was developed in the Tactical Systems Integration and Interoperability Division (Code 245), with support from the Link-16 In-Service Engineering Activity (Code 2643). CDLMS development was started in 1995 by the SPAWAR Advanced Tactical Data Links Program Office (PMW-159). It was initiated when it became apparent that managing the expanding shipboard TADIL environment was becoming increasingly difficult. CDLMS consolidates TADIL operational control, performance monitoring, and maintenance support functions into a single system. It provides this capability by combining the functions and displays provided by several existing and upgraded shipboard systems, including the Rehosted Command and Control Processor (RC²P), the Link Monitoring System-11, the Data Link Work Station, and the new Link-11 Common Shipboard Data Terminal Set (CSDTS).

CDLMS consists of three components: the RC²P, which processes Multi-TADIL information from Link-16, Link-11, and Link-4A; the CSDTS, which provides all of the capabilities of the older Link-11 data terminal sets as well as additional capabilities for Link-11 communication and monitoring; and the Human-Machine Interface (HMI) data link management component, which provides RC²P and CSDTS control and TADIL link monitoring and analysis displays in a Windows-based environment.

The TADIL processing component of CDLMS, the RC²P, is based on the standard Navy AN/UYSK-43 Command and Control Processor (C²P), developed in the mid 1980s.

The C²P provides the interface between the TADIL communications systems and the shipboard host combat system processors, such as the Aegis Command and Decision and the Advanced Combat Direction System. The C²P extracts information from a data link terminal, such as the Joint Tactical Information Distribution System (JTIDS) terminal, translates and forwards information between the data links, and provides normalized TADIL message information to the host system. The RC²P development project began in 1994 to provide the same functionality with commercial off-the-shelf hardware making it easier and less costly to upgrade.

The CSDTS component of CDLMS was developed by DRS Technologies. The CSDTS provides upgraded features for Link-11 communications such as Multi-Frequency Link-11, Satellite Link-11, and Single Tone Link-11 Waveform modulation.

The HMI component of CDLMS was developed by Code 245 personnel and contractors. The HMI component is the hub for all CDLMS HMI and includes RC²P and CSDTS control. Additional HMI displays support Multi-TADIL monitoring and analysis, including graphical displays, alert filtering, on-line help, expert system advice, and display tailoring.

At the height of CDLMS development, more than 80 civil service staff and contractors were involved. Software development, configuration management, testing, and installation support included personnel from SSC San Diego as well as contractor support from CACI International, Comptek Federal Systems (now a part of Logicon), Digital Wizards, DRS Technologies, G2 Software Systems, Science Applications International Corporation, Sherikon, Incorporated (now a part of Anteon Corporation), Tactical Engineering and Analysis, and VisiCom.

CDLMS Version 1, released in December of 1999, consists of a stand-alone system that runs the RC²P and CSDTS, but lacks the display screens that are key to the complete system. Version 1 was installed on several ships and land sites during 2000 and will be upgraded. During the next 2 years, SSC San Diego will be installing and upgrading CDLMS in approximately 40 ships, plus several land sites. Work is also in progress on CDLMS Version 3, which will include additional software capabilities, but require no hardware changes.

ARROW WEAPON SYSTEM¹²

SSC San Diego is supporting Israel's national missile defense system, which is based on the Arrow Weapon System (AWS). SSC San Diego Tactical Systems Integration and Interoperability Division (Code 245) and Link-16 In-Service Engineering Agent (Code 2643) personnel provide the expertise to build, field, test, and analyze a unique data translation system that permits the United States and Israel to share real-time information on missile defense. The AWS Link-16 System (ALS) system, developed by Code 245, allows the Israeli AWS to exchange real-time missile track data with U.S. tactical systems and link the Arrow-II antiballistic missile to U.S. radar systems via Link-16.

The Code 245/2643 team began developing and testing the ALS in 1997 as a Foreign Military Sales case to link the Israeli AWS to U.S. theater ballistic missile systems using tactical data links. Code 245 team members built a translator to convert data from Tactical Digital Information Link-Joint (TADIL-J)

messages into AWS messages and AWS to TADIL-J. The TADIL-J messages are exchanged through a Joint Tactical Information Distribution System (JTIDS) network to U.S. forces. The ALS is now operational and installed in Israel.

In January, the SSC San Diego team supported successful Theater Missile Defense System Exerciser (TMDSE) interoperability testing of the Israeli missile defense system using an exercise simulator for the Aegis, Patriot, and AWS systems. TMDSE is a test capability developed by Ballistic Missile Defense Organization (BMDO) and the U.S. theater missile defense (TMD) community to enable “closed-loop” interoperability testing between various TMD elements. The interoperability testing was done at facilities linked from Aegis (Dahlgren, VA), Patriot (Huntsville, Alabama), Joint National Test Facility (Colorado Springs, Colorado), and AWS (Israel). Each TMD element was able to see a common tactical picture and exchange tactical messages in response to the threat through local area network, integrated services digital network, and T1 lines.

In February, the SSC San Diego team supported the U.S./Israeli Juniper Cobra '01 exercise in Israel. The joint exercise consisted of Patriot missile batteries from the European Command and an Aegis cruiser, USS *Porter* (DDG 78), and the Israeli AWS. As part of the exercise, the AWS successfully participated in a technical demonstration with U.S. TMD systems to defend Israel from simulated ballistic missile attacks. The AWS exchanged tactical data with *Porter*, Patriot batteries, Mobile Universal Link Translator System (MULTS), and an early warning simulator. The SSC San Diego team provided a radio frequency data link, via a JTIDS terminal, connecting the AWS, *Porter*, and the U.S. Navy's MULTS. This connection integrated the AWS into the exercise's Link-16 tactical message network at the primary exercise site where Link-16 messages were exchanged via JTIDS radios. The primary objective of this demonstration was to assess the ability of the AWS command center to operate within the Link-16 communication architecture in order to reduce the risk associated with inclusion of the AWS as a baseline participant in future exercises.

REALTIME EXECUTION DECISION SUPPORT SYSTEM¹³

SSC San Diego's Realtime Execution Decision Support (REDS) system was selected by RADM Cohen, Commanding Officer of the Office of Naval Research (ONR), to be installed on a Yard Patrol Boat docked at the Navy Yard in Washington, DC. ONR technologies were showcased for Congressional tours during Fleet Week in May 2001. REDS is an ONR/NAVAIR sponsored effort to develop systems that will dramatically improve strike mission planning times and will eventually allow missions to be altered/updated after the strike aircraft have departed. REDS is being designed to integrate with the Information Technology for the Twenty-First Century (IT-21) architecture.

LINK-16 SYSTEM INTEGRATION TEST¹⁴

SSC San Diego personnel supported a successful Link-16 System Integration Test (SIT) in Germany. This was a significant, formal milestone in the ongoing integration of Link-16 systems aboard the new German F124 frigate class. This SIT formally demonstrated the Link-16 Command and Control Processor (C²P) ability to operate with the German-designed Combat Direction System (a first for the SSC San Diego C²P). The success of a previous installation and this SIT has reinforced Germany's decision to use the C²P on the new K130 Korvette.

CAPABLE WARRIOR AND EXTENDING THE LITTORAL BATTLESPACE MAJOR SYSTEM DEMONSTRATION II¹⁵

The SSC San Diego Capable Warrior (CW) team successfully supported the Marine Corps Warfighting Laboratory's CW Experiment. The CW team also successfully supported the Extending the Littoral

Battlespace (ELB) Major System Demonstration II, which was deemed extremely successful. The Integrated Marine Multi-Agent Command and Control System applications worked very well during the demonstration. Marines were pleased with their ability to share the common tactical picture both aboard USS *Coronado* (AGF 11) and in the field.

GCCS INTEGRATED IMAGERY AND INTELLIGENCE¹⁶

SSC San Diego implemented a new Global Command and Control System (GCCS) Integrated Imagery and Intelligence capability in the Commander-in-Chief, U.S. Pacific Command command center. This installation adds substantial functionality to the GCCS common operational picture, including capability to access, graphically plot, and geographically display national and tactical intelligence data and imagery. The result is enhanced battlespace awareness through an integrated, linked intelligence and imagery capability. SSC San Diego engineers (Codes 290 and 240) teamed to provide video and network integration assistance essential for achieving Initial Operational Capability a week ahead of schedule in order to support major Pacific Command exercise RSOI '01 (Reception, Staging, Onward-movement and Integration).

FLEET ENGINEERING

NITES 2000¹⁷

The AN/UMK-4(V) Tactical Environmental Support System (TESS)/Naval Integrated Tactical Environmental System (NITES), also known as NITES 2000, successfully passed the ashore follow-on operational test and evaluation (FOT&E). The FOT&E was conducted at Naval Atlantic Meteorology and Oceanography Center (NLMOC), Norfolk.

An excerpt from the FOT&E report states: “TESS/NITES permitted NLMOC to provide timely, detailed, value-added support products that were tailored to deployed units. They fully supported the survivability of fleet customers within the NLMOC area of responsibility (AOR) during a very busy winter storm season.”

NITES 2000 is an integrated, scalable system that receives, processes, displays, and maintains current geo-located meteorological and oceanographic (METOC) information. The system operates on land, sea, and air, and integrates intelligence and environmental information. Its design and development were a 5-year joint effort between multiple Navy agencies, contractors, and commercial off-the-shelf developers.

The NITES 2000 ashore configuration functions as a regional METOC data fusion hub and principal data delivery system for afloat and shore units operating in their AOR. The ashore configuration will provide global support via METOC centers located at Norfolk, San Diego, Rota, Pearl Harbor, Yokosuka, and Bahrain. It follows the afloat version already fielded on 16 combat ships, including carriers, command ships, and amphibious assault ships. NITES 2000 follow-on development efforts include development for select METOC shore facilities and detachments, mobile meteorological teams, and the AN/TMQ-44A(V) U.S. Marine Corps Meteorological Mobile Facility Replacement system.

The SSC San Diego team was composed of personnel from SSC San Diego’s Fleet Engineering Command and Control Division (Code 264) and Command and Intelligence Systems Division (Code 242).

INTELLIGENCE, SURVEILLANCE, AND RECONNAISSANCE

STANDARD TACTICAL RECEIVE EQUIPMENT DISPLAY 7.0¹⁸

Standard Tactical Receive Equipment Display (STRED) 7.0 was certified as Information Technology for the Twenty-First Century (IT-21) compliant by SPAWAR Program Manager, Naval Integrated Networks (PMW-158). This certification allows STRED 7.0 to be listed on the Navy's preferred product list for the IT-21 environment.

STRED 7.0 provides the capability to receive Tactical Data Dissemination System, Tactical Information Broadcast Service, and Tactical Data Information Exchange System–Broadcast data over secure networks, such as the Secret Internet Protocol Router Network, without procuring costly receiver equipment for these broadcasts.

STRED 7.0 was developed by the Joint Tactical Information Systems Branch (Code 273D). It started as a Navy Tactical Exploitation of National Capabilities initiative software tool developed in the early 1990s at the National Reconnaissance Office (NRO) in Chantilly, VA. The initial STRED effort was developed by a contractor as follow-on to the Control and Alert Reporting Terminal (CART). CART was a prototype for a graphical based tactical data processor controlling the Tactical Receive Equipment (TRE) and display for national data. NRO's follow-on effort to CART was deployed to over 300 DoD, national, and allied users. Eventually, numerous variants were developed to demonstrate new functions. These functions were not integrated into a single STRED software release, but developed limited operations and maintenance support as individual projects.

In the mid 1990s, the Operational Support Office (OSO) began developing STRED 95, a Windows 95 upgrade to the STRED V2.0 baseline. When the OSO contract was completed, STRED 95 was transferred to the SSC San Diego Joint National Systems Division (Code 273). OSO retained program management and operations and maintenance control over the project, but SSC San Diego was asked to continue development. SSC San Diego's STRED team discovered that the delivered source code was missing files and would not compile. The team recovered source code from the OSO contractor's computers, and then successfully compiled and tested STRED 95. Within a year, SSC San Diego baselined STRED and deployed STRED 6.1 as the first operational release to the fleet.

In 1996, the Intelligence Systems Board identified migration tactical data processors in an effort to reduce the funding requirements for duplicated development. STRED was designated as one of the migration tactical data processors for this effort. OSO was directed to identify STRED variants and migrate unique functionality into a single release.

In 1997, SSC San Diego proposed replacing the TRE embedded message processor with an object-oriented application running on a PC. Following SSC San Diego's development of a successful prototype, NRO funded a demonstration and a full software development. Subsequent testing proved that the STRED software could process 100% of current and future tactical broadcasts. By removing the processor and replacing it with a PC, the life of the tactical receiver can be extended significantly, potentially saving millions of dollars in migration functions.

MEDICAL CONCEPT EXPLORATION LAB SOFTWARE¹⁹

SSC San Diego personnel provided the Concept Exploration Lab Medical Surveillance software to the Theater Medical Information Program–Maritime medical surveillance working group. The software was well received and is on schedule to begin transitioning to the acquisition program starting March 2002.

The Dynamic Change Point Detection algorithms were funded with In-House Laboratory Independent Research funding.

COMMUNICATIONS AND INFORMATION SYSTEMS

JOINT (UHF) MILSATCOM NETWORK INTEGRATED CONTROL SYSTEM

Commander, Operational Test & Evaluation Force determined the Joint (UHF) MILSATCOM Network Integrated (JMINT) Control System to be "operationally effective and operationally suitable for dynamic centralized control." The report signed 16 March 2001 listed no major discrepancies and only a small number of minor discrepancies with recommendations. The JMINT Control System is another example of a government/industry Integrated Product Team success story.

JOINT WARRIOR INTEROPERABILITY DEMONSTRATION 2001²⁰

Joint Warrior Interoperability Demonstration 2001 (JWID '01) successfully completed its Exploitation Year (second year of its 2-year technology assessment cycle) on 27 July 2001. SPAWAR was the lead U.S. Navy site in this international event involving over 1000 participants from 10 allied nations and North Atlantic Treaty Organization (NATO).

At the SPAWAR Advanced Concepts Site (ACS), 20 fleet warfighters from 12 different commands conducted six independent operational assessments.

Key technologies demonstrated were (1) Joint Attack Command and Control System, (2) Meteorology and Oceanography for the Coalition Warfighter, (3) Network Centric Q-70, and (4) Space and Information Analysis Model. In addition, Multinational Naval Task Group and Combined Forces Maritime Component Commander elements supported demonstrations and operational assessments.

Joint Attack Command and Control System

Joint Attack Command and Control System (JACCS) is a network-centric fire support battle management tool that accelerates joint/coalition warfighting by improving interoperability, provides near real-time precision targeting and enhanced weapon-target pairing, and significantly reduces sensor-to-shooter timelines. JACCS also provides situational awareness to the joint/coalition and component commander, staff, and subordinates on a network-wide basis.

Meteorology and Oceanography

The Meteorology and Oceanography (METOC) demonstration streamlines and automatically delivers critical information to the warfighters and their decision-making tools regardless of the network and workstation those tools are operating on. The fly-away METOC server provides a portable system for establishing a METOC data and information server on the warfighters' network and allows the warfighter to access needed METOC information.

Associated workstations provide modern tactical decision aids that focus on electromagnetic and electro-optic vulnerability. A flexible, state-of-the-art information architecture automatically replicates information to tactical users and applications even across the gap between lower and higher classified networks, i.e., Non-secure Internet Protocol Router Network to Coalition Wide Area Network (CWAN). A robust, interactive web browser access provides the warfighter with easy visualization and manipulation of the highest resolution METOC information available.

Network Centric Q-70

Network Centric Q-70 demonstrated a framework for a low-cost, efficient computing environment through server consolidation and ultra thin client technology. Server consolidation along with thin and ultra thin clients provide solutions to total ownership costs by reducing weight, space, and power requirements, and providing simplified system administration and configuration. Use of smart cards provides ease of mobility and improved readiness by maintaining and recalling server sessions as operators move about from one ultra thin client to another. The demonstration also included a scalable architecture that can cross operating system boundaries, breaking the paradigm of dedicated, single-purpose machines.

Space and Information Analysis Model

Space and Information Analysis Model (SIAM) is an automated decision support tool that assists in planning effective employment of air and space forces. Both in-theater and worldwide information flow networks are assessed for their contribution to battlefield decision-making processes. SIAM displays communication paths, identifies choke points, prioritizes targets, analyzes strategies/courses of action, and identifies intelligence collection shortfalls. This tool supports both prioritization of red targets and blue vulnerability/outage assessments.

Demonstration assessments were supported by warfighters from a variety of active and reserve commands. The warfighters provided an assessment of each demonstration from an operational viewpoint.

The Special Projects and Implementation Branch (Code 2644) provided project management, network, and systems engineering services for JWID in support of SPAWAR Chief Technology Office (Code 06). The Environmental Test Radiation Detection, Indication, and Computation and Materials Support Branch (Code 2655) provided information security oversight, ensuring security was maintained over the classified CWAN. The Integrated Networks Branch (Code 2824) provided overall management and technical support for the Multinational Naval Task Group. Tactical Network Communications Branch (Code 2631) supported the network connections for both the ACS and Building 660 to the JWID CWAN using assets of SSC San Diego's Joint Integrated Communications Facility.

JOINT C⁴ISR ARCHITECTURE PLANNING/ANALYSIS SYSTEM²¹

U.S. Army Maj. Tom Cook announced that the Joint C⁴ISR Architecture Planning/Analysis System (JCAPS) prototype was fully certified and within budget. Maj. Cook is deputy program manager for JCAPS, Directorate of Architectures and Interoperability, Office of the Deputy Chief Information Officer, Department of Defense. SSC San Diego and SSC Charleston were instrumental in helping make the program a success.

JCAPS, developed by Logicon, is a custom distributed database application designed to capture all information necessary to describe architectures in accordance with the C⁴ISR Architecture Framework Version 2.0. JCAPS provides a flexible set of architecture development tools. It can be used to access, manipulate, and analyze currently documented information exchange requirements from multiple sources. It can also be used to quickly document new information exchange requirements as well as provide the essential operational and systems view products. This certification will facilitate placement on the Secret Internet Protocol Router Network by sites in order to share architectures and data.

SSC San Diego Information Technology Certification and Accreditation Branch (Code 2874) collaborated with SSC Charleston in a joint effort to provide the talent, facilities, equipment, and testing necessary to certify JCAPS. SSC San Diego developed the System Security Authorization Agreement for

the JCAPS per DoD Instruction 5200.40; developed the Defense Information Technology Certification and Accreditation Process in San Diego for the Office of the Secretary of Defense/Command, Control, Communications and Intelligence; and conducted the security test and evaluation of JCAPS to ensure the security features of the system were enabled. SSC San Diego also developed the security test and evaluation report, updated the System Security Authorization Agreement and an accreditation recommendation, and forwarded all documents to the designated approving authority for review and decision.

CRISIS CONSEQUENCE MANAGEMENT INITIATIVE²²

Members of the Crisis Consequence Management Initiative (CCMI), SSC San Diego, and the High Performance Wireless Research and Education Network (HPWREN) project at the University of California, San Diego (UCSD) conducted an urban emergency exercise with local San Diego government agencies on 28 August 2001. They demonstrated how new technologies could enhance the speed and efficiency of incident management.

The government/university team set up the chemical spill exercise designed to require the combined assistance of multiple agencies from the City of San Diego and the State of California. An emergency command post was established at the National Guard Armory in Kearny Mesa and equipped with three critical technologies: the Enhanced Consequence Management Planning And Support System (ENCOMPASS), a field installation of the HPWREN, and the Deployable Communications Support Terminal (DCST).

ENCOMPASS, developed by the Defense Advanced Research Projects Agency, is an integrated set of incident management tools that allows emergency managers in different locations to share text and graphical data with each other using conventional communications channels or the Internet. Information in one location is immediately updated at all sites on the emergency network. The HPWREN provided high-speed wireless links from the "street" to central command centers. The DCST is a self-powered, stand-alone communications system in a transportable box. Developed by SSC San Diego engineers for the Defense Logistics Agency, the DCST connects users anywhere in the world via an International Maritime Satellite link.

During the exercise, all data sharing for ENCOMPASS was channeled remotely through SSC San Diego computers via the DCST, while visual data on the simulated disaster was shared with distributed sites via the San Diego Supercomputer Center. Using these new tools, the team worked through each step in the exercise scenario with participants or observers from San Diego Police Department, San Diego Fire Department, Navy Region Southwest, National Institute of Justice, Border Research Technology Center, California Department of Transportation, California Highway Patrol, and the California National Guard. The technology suite augmented communications and information exchange across all levels of the participating agencies, regardless of their geographic location. Decision-making was aided with real-time maps and images of the incident scene, locations and status of all emergency vehicles, and procedural tracking (checklists, assistance requests, notifications, etc.) for these agencies.

COMWIN WEARABLE ANTENNA

The final portion of the COMWIN (Combat Wear Integration) antenna system was demonstrated. The COMWIN antenna system is designed to make the radio operator indistinguishable from other soldiers while operating at frequencies between 2 MHz and 2 GHz. The 2- to 30-MHz component has an excellent voltage standing wave ratio (less than 2:1) and acts as an efficient antenna. Tests demonstrated that periodic broadcast of time code came through loud and clear at frequencies 5, 10, 15, and 20 MHz, even

when the wearer was standing on a ground plane. The signal levels were comparable to those from an 18-foot whip.

MICROELECTRONICS

Advanced Photolithography Lab²³

The Integrated Circuit Research and Fabrication Branch (Code 2876) held opening ceremonies for the newly constructed Advanced Photolithography Lab (APL). The APL is part of the Center's Integrated Circuit Fabrication Facility (ICFF), which serves as the Navy's principal site for developing advanced silicon-based integrated circuit materials, designs, devices, and fabrication technologies not currently part of the commercial mainstream. This includes long-term commitment to developing and maintaining radiation-hard processes based on silicon-on-insulator (SOI) and silicon-on-sapphire (SOS) substrates.

Combined with an emphasis on development and pilot-scale production is the high level of manufacturing discipline that is prerequisite for transferring technology to industry when larger scale production builds are required. The APL building and equipment represent an investment of about \$8 million provided primarily by the Strategic Systems Programs Office (SSPO).

The APL clean room consists of 1,100 square feet of Class 100 space surrounding 720 square feet of Class 10 space. The Class 100 space connects to the existing ICFF Class 100 clean room so that all of the major fabrication space is contiguous. Also added is 580 square feet of new mechanical space housing the air handling equipment required to maintain the low particle contamination levels. The new Class 100 space serves as an air plenum for the Class 10 space and features a new FSI Mercury Multiple Position wafer surface conditioning system.

The Class 10 space contains advanced lithography equipment that will permit more advanced process development at 0.25-micron production feature sizes and below. This smaller feature size will increase capability for more metal-interconnect levels and higher circuit densities. It allows flexibility in device exploration for more advanced electronic needs. At dimensions of 0.18 to 0.15 microns, the frequency range of radio frequency circuits shift from the S to the X band and above, while digital frequencies are possible between 5 and 10 GHz. These increases in capability will enable fabrication to meet unique integrated circuit requirements for C⁴ISR classified and strategic systems.

The ICFF is committed to project sponsors such as the SSPO, Office of Naval Research, Defense Advanced Research Projects Agency, U.S. Air Force, Naval Air Systems Command, National Institute of Standards and Technology, Defense Threat Reduction Agency, and Advanced Research and Development Activity. It is currently pursuing cooperative agreements with academic, government, and industry partners on projects. The advanced processing capability that the new APL facility represents will extend the ability to attract and retain new sponsors from both government and commercial arenas.

APPENDIX A: CY 2001 ACHIEVEMENT AWARDS

FEDERAL AWARDS

President's Council on Year 2000 Conversion Commendation Medal

Heidi Mohlenbrok, for planning and executing three Y2K operational validations for the USS *Constellation* (CV 64) and USS *John C. Stennis* (CVN 74) task forces and the forward deployed naval forces

Federal Laboratory Consortium Award for Excellence in Technology Transfer

Dr. Stephen Russell, for design and development of manufacturing processes for a novel, high-performance micro-display formed on a layer of silicon-on-sapphire

John Andrews, Greg Anderson, and Mike Kagan for automated oil spill detection system

NAVY AWARDS

Navy Meritorious Civilian Service Awards

Charles Anfuso, for providing technical expertise and guidance on the Navy/Marine Corps Intranet security certification and accreditation

Thomas Bamberg, for team leadership in development of two Mobile Sensor Platform prototypes and subsequently securing sponsorship for fabrication of production systems at SSC San Diego

Kevin Boner, for expansion of the Center's systems engineering role as leader of the Urban Warrior Program to include all integration, testing, and experiment planning and execution

Kenneth Boyd, whose technical expertise and operational experience established SSC San Diego as the lead agency for the Naval Sea Systems Command Distributed Engineering Plant network

Billie Coon, for outstanding service as the resource manager for the Intelligence, Surveillance, and Reconnaissance Department

Harvey Fendelman, for his 27 years in practice as a Center patent attorney, protecting the Center's interests in all phases of intellectual property

Steve Fox, for leadership skills and customer focus as Navy Mission Planning Systems Program Fleet Support Team manager, including his key role in development of a combined Navy/Air Force sustainment approach for the Joint Mission Planning System

Miriam Glorioso, for her efforts as the Global Command and Control System-Maritime Software Process Improvement agent, supporting Center initiatives to achieve Capability Maturity Model Level 3

Richard Hall, for program management of the EX-8 Marine Mammal System development and acquisition to meet urgent fleet requirements

Peter Jung, for participation in such important Center programs as Dark Eyes and the Bomb Dummy Unit

Harry Lachtman, for defining system software architecture, specifying requirements for contact data fusion, and implementing automated data collection and analysis techniques for formal operational tests

Richard Morin, an authority on tactical digital information links, for support of shipboard combat direction systems and tactical data link systems development

Dean Nathans, whose leadership has established SSC San Diego's role in the Global Positioning System anti-jam system development and testing into a key business area

Patrick Osborn, for technical skills in blending commercial off-the-shelf products and new technology into the Network Centric Q-70 program, revolutionizing the way information technology services are provided

Robert Reed, for technical leadership in communication networking and pierside connectivity, establishing SSC San Diego as a focal point for Navy and DoD Local Area Network/Wide Area Network engineering

Ted Rogers, for technical expertise in developing novel techniques for determining the refractive structure of the lower atmosphere over the ocean from radar sea clutter returns

Daniel Rountry, who led the Surveillance Towed Array Sensor System project team, supporting numerous at-sea tests, for most of which he served as test director

Michael Shrader, for creating a common operating business environment to standardized business practices and functions for the Global Positioning and Navigation System Division

Cheryl Smith, for developing and efficiently employing her administrative, financial, and resource operations knowledge and skills in support of the Intelligence, Surveillance, and Reconnaissance Department

Richard Snow, for establishing the Integrated Intelligence and Imagery Applications as the joint system for tactical intelligence applications and for effectively supporting establishment of the Navy as the executive agent for the joint program

Anil Taylor, who supported information assurance programs essential to the Navy's warfighting capability by ensuring the security of information across untrusted communication paths

Pei Wang, for superior technical guidance on environmental modeling and prediction applications for Naval Sea Systems Command

Malcolm Weaver, for service as battle force superintendent for the USS *Abraham Lincoln* (CVN 72) Battle Group/USS *Tarawa* (LHA 1) Amphibious Ready Group, personally resolving many problems during the conclusion of the groups' installation period

Navy Award of Merit for Group Achievement

Global Command and Control System–Maritime Installation Team

Wade Bolton
Mark Gabriels
Orlando Lugo
Penny Myer

Network Centric Q-70 Team

LCDR Larry Brachfield, USN
Mark Blocksom
Greg Mani
Pat Osborne
Ted Tran
Jeff Wildasin
Keith Wong

Sailor-to-Engineer Team

Ron Broersma, *Technical Staff*
Michelle Ferro-Czech, *Personnel and Information Security*

Navigation and Applied Sciences Department

Jeanne Abriel	Alan Franklin	Alan Rotkiewicz
Jimmie Chie	John Gillespi	Joseph Schultz
Mary Cooper	Lenny Kerbs	Roger Tennison
David Di Marino	Clyde Magas	Roy Villa
Ray Erickson	Eric Matsuo	Thomas Wingate
Gregory Fournier	Ky Nguyen	

Command and Control Department

Steve Auguston
ET2 Jonathan Breeden, USN
Brian Britt
LCDR Kathryn Christensen, USN
CDR Mark Kohlheim, USN
Steven Musson

Fleet Engineering Department

Allen Ashe	Jody Jordan	Tim Martin
Simon Chammas	Jeffrey Jung	Gary Marx
Sharalyn Cherne	John Kmet	Grace Massamiri
Ernie Cusi	Harvey Krell	Colleen McCall
Steven Do	Eugene Laird	Rolando Medina
Tom Edison	Bridgette Larson	Wolfgang Milczewsky
George Frederick	Delia Layton	Felix Nazario
Dee Goff	Nguyet Le	Dung Nguyen
Charles Gooding	Lauren Lee	Tracy Nguyen
Luis Gonzalez	Harry Lem	Litta Sue Pangelinan
Jin Guo	Tran Luong	Khanh Phan
Dr. Yanhe Jin	Harry Majewski	Phoung Phan

Michael Reddish
Marjorie Rezachek
Carlos Rosado
Charles A. Smith
LCDR Travis Smith, USN

Bill Spearow
Kai Tang
Nga Khanh Tran
Keith Truong
Glenn Urie

Douglas Wardwell
Greg Whalin
Jimmie Williams
Kimberly Wollin

Communication and Information Systems

Jorge Alvarez
Eric Buckland
Mario Church
Vincent Duenas

Armand Gladu
Jimmy Hathaway
Mark Koch
James McGearry

Donald Moore
Joseph Nishio
William Wolfe

SPAWAR Award of Merit for Group Achievement

Software Engineering Process Team

Deputy Executive Director, Science, Technology and Engineering

Beth Gramoy
Joe Reyna
Bill Windhurst

Navigation and Applied Sciences Department

Ron Ballard
Rich Cassity
Ann Hess
Chris McAllister
George Titus
Ying Wong

Command and Control Department

Mike Moser
Bob Nydam

Communication and Information Systems Department

Chuck Anfuso
LCDR Robert Bradshaw
Chuck Dennis
Gina Engh
Erwin Green
Karen Hanes
Dee Johnson
Houston Jones
Gary King

Dan Lam
Bob Lombard
George McCarty
Ty McConkey
Theresa Myers
Tom Nguyen
Kevin O'Leary
Vinh Pham
Michael Philbrook

Nolan Ruiz
Lee Slaughter
John Stevenson
Anil Tailor
John Townsend
Amy Van
Kristine Vuong
Elisa Wing

Space And Naval Warfare Systems Command Rear Admiral Gauss Award of Merit For Group Achievement

To the Joint Ultra High Frequency (UHF) Military Satellite Communications Network Integrated Control System team, which included the following SSC San Diego personnel:

Ted Andrews	Gary Huckell	Jim Parsons
Lt. Tracie Andrusiak	Doris Jubeck	Ed Peterson
Gerry Castro	Charlie Lee	Candice Saka
Sojin Choi	Sam Milligan	Alvin Shimogaki
Gary Clinesmith	Orlander Moore	Dick Sprigle
Leslie Davenport	Karen Myers	Gary Thrapp
Sid Graser	Kathy Nelson	Beth Walker
Laura Hickman	Giao Nguyen	Meri Worthley
Chris Hollands	John Nugent	

Special Act Award

Kent Kuriyama and Sandra Sclabassi, for technical support of the Ehime Maru Court of Inquiry proceedings, playing key roles in providing broadcast quality video coverage for news media representatives covering the proceedings

INDUSTRY AWARDS

National Defense Industrial Association Special Achievement Award Bronze Medal

Dr. Homer Bucker, in recognition of his 30 years of research in underwater sound propagation and signal processing theory, and for his direction of large-scale field tests related to underwater acoustics

National Defense Industrial Association Fleet Support Award

Gail Okumura, in recognition of technical contributions to the fleet, including design and integration of wide area networks to enable dissemination of fleet products, and engineering solutions to solve Sensitive Compartmented Information (SCI) network interoperability problems for Commander-in-Chief, U.S. Pacific Fleet battle groups

CENTER AWARDS

Lauritsen-Bennett Awards

Faye Esaias, for excellence in staff support, for her substantial contributions to the negotiation and awarding of the I2000 procurement, the two largest contracts ever awarded at the Center. They included special contract provisions and increased award fees, and were awarded on schedule and without protests. She also managed contracting activity for the Fleet Engineering Department, Communications and Information Systems Department, SPAWAR Systems Activity Pacific, and the staff codes.

Bart Everett, for excellence in engineering, for guidance of the Mobile Detection Assessment and Response System, a robotics program, through intensive software and hardware development and testing phases. He directed a team which developed many novel robotics technologies that resulted in two Cooperative Research And Development Agreements that save the government substantial development costs.

Tom Roy, for excellence in science, for initial work in high frequency communications, followed by leadership in significant advancements in undersea surveillance sensors and automated signal processing. His vision and leadership of the Autonomous Off-Board Surveillance System resulted in establishment of a 5-year, \$15-million program in littoral undersea surveillance that he now directs.

Executive Director's Award

Elizabeth Gramoy, for her technical and programmatic leadership of multiple departmental teams in the area of software engineering process improvement, resulting in a national reputation for the Center in implementing new processes and procedures, and in attainment of Capability Maturity Model (CMM) Level III

Secretarial Awards

Sustained Exceptional Performance

Paula Boyle
Tammie Gore
Belinda Romero

Significant Group Achievement for a Team

Susan Allen
Elizabeth Bowen
Mary Elliott
Linnell Kunavich
Patricia Taylor

Exemplary Award for Team Achievement

Software Process Improvement Team

Jeff Appel	Michael Moser
Lillian Craven	Kevin O'Leary
Miriam Glorioso	Joseph Reyna
Elizabeth Gramoy	Dennis Squier
Brian Groarke	George Titus
Ann Hess	William Windhurst
Jorge Mora	

Exemplary Achievement Awards

Project Cabrillo Team

Betty Aguilar	Kevin Henry	Dr. Richard North
Thomas Aird	Susan Henry	Robert Nydam
Gary Alexander	Barry Hensley	Kenneth Oates
Elaine Allen	Christopher Hollands	Robert O'Leary
Dennis Almazan	Steven Holden	Sherry Peaslee
Stephen Ambrosius	John Holt	Michael Pohoski
John Andrews	Tri Hua	Robert Pritchard
Charles Bendall	Steven Hugueley	Alan Rathsam
Mary Boner	Mark Ignacio	Michael Reddish
Scott Browne	Christine In	Dr. David Rees
Eric Buckland	Glenn Jimenez	James Roze
Tracey Burr	Jeffrey Jung	Mark Rush
Jerry Cabradilla	Michael Kalman	Dr. Randy Shimabukuro
Bob Cagle	Bruce Kemp	Marie Smith
William Carper	Kit Ketron	Penelope Sommerville
Nidia Carrero	John Kmet	Bob Stephenson
Thomas Charters	Thomas Knoebel	John Stevenson
Donald Coker	Michael Kuntzman	Barrie Strachan
Patricia Collins	John Laccone	Judith Theisen
Leslie Davenport	James Lam	Violette Thomas
Steven Dunham	Michael Lee	Chiang Tom
James Farley	Orlando Lugo	Gregory Tompkins
Michelle Ferro-Czech	William Macha	Helen Topacio
David Flattum	Leah Mallari	Viet Tran
David Fogliatti	Brian Matsuyama	Minh Vo
Steven Fredrickson	Nicole Mauer	Daniel Whitaker
Wallace Fukumae	Tracy Mayhew	Jeffrey Wildasin
Eric Gadd	David McDermott	Dewann Williams
Allan Gaidis	Nancy Meyett	William Wolfe
Ralph Glenn	Karen Myers	Orest Wontorsky
Frank Greco	Bert Nakagawa	Peter Wussow
David Guitas	William Naputi	
Clark Hendrickson	Catherine Neeb	

MILITARY AWARDS

Navy and Marine Corps Achievement Medal

Lt. Jason Brandt, USN, for professional achievement while serving as Naval Fire Control System and DD-21 project officer from October 1999 to December 2000

ET2 Jonathan Breeden, USN, for service as Sailor-to-Engineer Global Command and Control System-Maritime web site content coordinator

IT1 (SW) Mark McKenzie for professional achievement resulting in his selection as Sailor of the Year

Lt. Scot Napoletano for service as E-2C Hawkeye software support representative from January to March 2001

ITSC Tammie Shuart, for performance of duties as acting head of the Military Personnel Administrative Branch

Sailor of the Year

Information Systems Technician First Class (Surface Warfare) Mark McKenzie, USN

Sailor of the Half-Year (August-December 2000)

Electronic Technician Second Class Jonathan Breeden, USN

APPENDIX B: CY 2001 PATENT AWARDS

Inventor(s)	Title	Patent No.	Date
McLandrich, Matthew N.	System for Generating a Wavelength Stabilized Output from a Superluminescent Diode	6,169,832	02 Jan 01
Bond, James W. Schlosser, Thomas W. Velez, William	Adaptive Processor Integrator for Interference Suppression	6,173,167	09 Jan 01
Aklufi, Monti E. Russell, Stephen D.	Method for Improving Crystalline Thin Films with a Contoured Beam Pulsed Laser	6,176,922	23 Jan 01
Whitesell, Eric James	Volumetric Display	6,177,913	23 Jan 01
Miller, Howard A.	Low Surface Friction Acoustic Envelope for Towed Sonar Arrays	6,185,154	06 Feb 01
Mastny, Gary F. Copeland, Hugh D. Patterson, Andrew E.	System for Controlling Deglycerolization of Red Blood Cells	6,190,919	20 Feb 01
Shimabukuro, Randy L. Russell, Stephen D. Offord, Bruce W.	Ultra-High Resolution Liquid Crystal Display on Silicon-on-Sapphire	6,190,933	20 Feb 01
Nastronero, John J.	Pulse Doppler Target Detecting Device	6,198,425	06 Mar 01
Russell, Stephen D. Ramirez, Ayax D.	Method for Making Electrical Contacts and Junctions in Silicon Carbide	6,204,160	20 Mar 01
Pryor, John T. Marn, William H. Young, Christopher M.	System for Determining the Deployed Length of a Flexible Tension Element	6,222,899	24 Apr 01
Schlosser, Thomas W.	Signal Quality Measurement Device	6,229,847	08 May 01

Inventor(s)	Title	Patent No.	Date
Hart, Stephen M.	Opto-Electronically Controlled Frequency Selective Surface	6,232,931	15 May 01
Firman, Carl M. Russell, Linda C.	Interactive Overlay for Displaying 3-D Data	6,281,901	28 Aug 01
Nelson, Robert S.	System and Method for Enhancing Detection of Objects Through an Obscuring Medium	6,288,974	11 Sep 01
Gomez, Aldan D. Dahlke, Weldon J. Schmiedeberg, David B. Wilcox, Dwight R. Pham, Peter N.	Radar/IFF Simulator Circuit for Desktop Computer	6,301,552	09 Oct 01
Peterson, Edward Douglas	System and Method for Determining Message Transmission Time for Establishing a Communications Link on a Time Domain Multiple Access Network	6,301,262	09 Oct 01

APPENDIX C: CY 2001 DISTINGUISHED VISITORS

January

- 16 Mr. James Eccleston
Assistant Deputy Undersecretary for Supply Chain Integration
Office of the Secretary of Defense
- 23 Major General John D. Becker, USAF
Director, Operations and Logistics
U.S. Transportation Command
- 23 Rear Admiral Edward J. Fahy, Jr., USN
Director, Plans and Policy
U.S. Transportation Command
- Major General Kenneth L. Privratsky, USA
Commander, Military Traffic Management Command
- 29–30 Dr. Albert E. Brandenstein
Director/Chief Scientist, Counterdrug Technology Assessment Center
Office of National Drug Control Policy
Executive Office of the President of the U.S.
- 31 Mr. Richard Leach
Auditor General of the Navy

February

- 1 Rear Admiral Kirkland H. Donald, USN
Deputy Chief of Staff for C⁴I Resources, Requirements and Assessments
U.S. Pacific Fleet
- 7 Mr. Arthur Hildebrandt
Associate General Counsel for Management
Office of the General Counsel of the Navy
- 8 Rear Admiral Phillip Balisle, USN
Commander, Abraham Lincoln Battle Group
Cruiser-Destroyer Group Three
- 12 The Honorable Susan Davis (D-CA)
Representative, 49th Congressional District
U.S. House of Representatives
- 14 Mr. Tim Vigotsky
Director, National Business Center
Office of the Secretary of the Interior
- 21 Ms. Kedron Simon
Military Legislative Assistant to Congressman Joe Scarborough (R-Fla)

- 23 Lieutenant General Joseph “Keith” Kellogg, Jr., USA
Director, C⁴ Systems (J6)
The Joint Staff
- 28 Rear Admiral Uwe Kahre, German Navy
Assistant Chief of Staff, Communications and Information Systems
Supreme Allied Commander, Atlantic
- March**
- 5 Brigadier General Janet Hicks, USA
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U.S. Pacific Command
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Office of the Chief of Naval Operations
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Naval Sea Systems Command/Commander, Naval Undersea Warfare Center
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Assault and Special Mission Program
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- Mr. James Detjen
Intelligence Liaison to the Office of the Chief of Naval Operations
Office of Naval Intelligence
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- 22 Dr. John Prange
Technical Director, Advanced Research and Development Activity
- April**
- 12 Ms Claudia Clarke
Executive Director, Office of Naval Intelligence

- 17 Brigadier General Shmuel Yachin
Head, Military R&D Unit, Israeli Ministry of Defense
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Professional Staff Member, House Armed Services Committee
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Office of the Chief of Naval Operations
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Commander, Naval Sea Systems Command
- 28-29 Rear Admiral Terrance T. Etnyre, USN
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Inspector General, Environmental Protection Agency
- 23 Dr. Robert Wright
Office of the Governor of Massachusetts
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U.S. Joint Forces Command
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Acting Assistant Secretary of the Navy (Research, Development & Acquisition)
- 30 Rear Admiral Frederic Ruehe, USN
Commander, Navy Region Southwest
- 30 Mr. Chris Andrews
Assistant for Space Control, Office of the Assistant Secretary of Defense (C³I)
- June**
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Defence Attache/Head, British Defence Staff, Washington

- 12 Lieutenant General Edward G. Anderson, III, USA
Deputy Commander-in-Chief and Chief of Staff
U.S. Space Command/Vice Commander, U.S. Element
North American Aerospace Defense Command
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Director, Space, Information Warfare, Command and Control
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Office of the Chief of Naval Operations
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- 18 Vice Admiral John Nathman, USN
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Commander, Third Fleet
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Commander, Naval Surface Force, U.S. Pacific Fleet
- 18–19 Rear Admiral Gwilym Jenkins, USN
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Office of the Assistant Secretary of the Navy for RD&A
- 22 Ms. Betsy Phillips
Professional Staff Member, Subcommittee on Defense
Committee on Appropriations, U.S. House of Representatives
- 25 Mr. Hugh Montgomery
Technical Director, Marine Corps Warfighting Lab
- Dr. Albert E. Brandenstein
Director/Chief Scientist, Counterdrug Technology Assessment Center
Office of National Drug Control Policy
Executive Office of the President of the U.S.
- Rear Admiral Daniel Bowler, USN
Director, Warfare Integration and Assessment Division
Office of the Chief of Naval Operations

- Dr. Paul Torelli
Senior Advisor, C⁴ISR Strategy and Threat Reduction
Office of the Secretary of Defense
- 25–26 Rear Admiral Robert Sprigg, USN
Commander, Navy Warfare Development Command
- 26 Rear Admiral William J. Maguire, USN
Vice Commander, Naval Supply Systems Command
- 26–28 Brigadier General Ricahrd Zahner, USA
Deputy Director, Customer Relations, Signals Intelligence Directorate
National Security Agency
- 28 Mr. David Boyd
Director, Science and Technology
National Institute of Justice
- July**
- 6 Ms. Dede Alpert
State Senator, 39th District
State of California
- 13 Rear Admiral (Select) John Donnelly, USN
Director, Combat Plans/ Deputy Director, Plans and Policy
U.S. Strategic Command
- 18 Rear Admiral (Select) David Nichols, USN
Commander, Carrier Group One
- 23–25 Ms. Susan Bales
Director, Naval Fleet/Force Technology Innovation Office
Office of Naval Research
- August**
- 1 Dr. Fred Saalfeld
Executive Director/Technical Director, Office of Naval Research
- Brigadier General William Fraser, III, USAF
Deputy Director, Military Support
National Reconnaissance Office
- 6 Mr. Stephen Tabone
Deputy Director, Property, Plant and Equipment Policy
Office of the Undersecretary of Defense (Acquisition Technology & Logistics)
- Mr. Ronald Haas
Director, Office of Financial Operations
Office of the Assistant Secretary of the Navy (Financial Management and
Controller)

- 7 Ms. Nancy Lifset
Legislative Director to Congressman Randy “Duke” Cunningham (R–CA)
U.S. House of Representatives (51st District)
- 17 Dr. Anthony J. Tether
Director, Defense Advanced Research Projects Agency
- 21–22 Ms. Betsy Phillips
Professional Staff Member, Subcommittee on Defense
Committee on Appropriations, U.S. House of Representatives
- 23 Mr. Dan Goldstein
Director, Science & Technology Requirements Division
Office of the Chief of Naval Operations

September

- 6 Rear Admiral Michael Lohr, USN
Deputy Judge Advocate General of the Navy

October

- 1 Rear Admiral Dave Belz, USCG
Director, Joint Interagency Task Force East
- 1–12 Ms. Katherine Hegmann
Chair, Naval Research Advisory Committee
- 11–12 The Honorable John J. Young, Jr.
Assistant Secretary of the Navy (Research, Development & Acquisition)
- 15 Rear Admiral Frederick Ruehe, USN
Commander, Navy Region Southwest
- 18 Mr. Martin Earwicker
Chief Executive, Defense Science and Technology Laboratory
UK Ministry of Defense
- 29–30 Mr. Robert Hobart
Deputy Commander, C⁴I Integrated Systems
Marine Corps Systems Command
- 29–30 Lieutenant General Michael W. Hagee, USMC
Commanding General, 1 Marine Expeditionary Force
- Major General James E. Cartwright, USMC
Commanding General, First Marine Air Wing
- Major General Charles F. Bolden, Jr., USMC
Commanding General, Third Marine Air Wing
- Vice Admiral Toney Bucchi, USN
Commander, Third Fleet

Rear Admiral Kenneth Slaght, USN
Commander, Space and Naval Warfare Systems Command

Rear Admiral David J. Antanitus, USN
Director, Installations and Logistics Directorate
Space and Naval Warfare Systems Command

Mr. Robert Hobart
Deputy Commander, C⁴I Integrated Systems
Marine Corps Systems Command

30 The Honorable Alberto Mora
General Counsel of the Navy

31 Rear Admiral Jway Ching Hua, RSN
Head, Naval Logistics
Headquarters, Republic of Singapore Navy

November

5 Mr. Fred Armendariz
Associate Deputy Administrator
Office of Government Contracting and Business Development
U.S. Small Business Administration

5 Vice Admiral John Nathman, USN
Commander, Naval Air Force, U.S. Pacific Fleet

9 Vice Admiral Joseph Dyer, USN
Commander, Naval Air Systems Command

14 Rear Admiral Larry Newsome, USN
Director, Naval International Programs Office

December

6 Mr. John "Mike" Richmond
Director, S.D. District Office for U.S. Senator Dianne Feinstein (D-CA)

10 The Honorable Diane Morales
Deputy Under Secretary of Defense for Logistics and Material Readiness

Vice Admiral James "Cutler" Dawson, Jr., USN
Commander, Second Fleet/Commander, NATO Striking Fleet, Atlantic

11 Mr. Donald Schregardus
Deputy Assistant Secretary of the Navy (Installation and Environment)
Office of the Secretary of the Navy

18 Mr. Darryl Chew
Professional Staff Member to Rep. Wayne Gilchrest (R-MD)
U.S. House of Representatives

18-19 Mr. Ray Godin
Deputy Assistant Navigator of the Navy
Office of the Chief of Naval Operations

APPENDIX D: CY 2001 MAJOR CONFERENCES AND MEETINGS

February

- 1-2 Department of the Navy Chief Information Officer (DONCIO) Knowledge Management Community Practice Meeting
- 5-9 NATO Submarine Maritime Air Working Group
- 13-15 Battle Management Command, Control, Communications, Computers and Intelligence (BMC⁴I) Workshop
- 21-22 Concept Generation Team, Strategic Studies Group

March

- 5-8 The Technical Cooperation Program (TTCP) Visualization Workshop
- 20-23 National Defense Industrial Association Joint Undersea Warfare Spring Conference
- 27-28 Joint Wireless Working Group Meeting

April

- 9-13 The Technical Cooperation Program (TTCP) Technical Panel 9 Meeting
- 24-26 23rd C⁴ISR Symposium, "JointABLE Technology"
- 25 International Senior Officers Amphibious Planning Class
- 28-29 West Coast Naval Engineering Workshop

May

- 1 The Technical Cooperation Program (TTCP) Third Information Operations Symposium
- 7 Joint Tactical Exploitation of National Capabilities (TENCAP) Meeting
- 30 Defense Advanced Research Projects Agency (DARPA) Unconventional Pathogen Countermeasures Focus Sessions on Vaccinology

June

- 12-14 Fleet Space, Information Warfare, Command and Control Conference
- 26-28 2001 Military Sensing Symposia National Symposium on Sensor and Data Fusion

July

- 10-13 Commander-in-Chief for the 21st Century Meeting
- 13 Intelligence Community Geographic Information System Meeting

- 23 Seventh Annual Joint Aerospace Weapons Systems Support, Sensors and Simulation Symposium & Exhibition
- 24–26 Joint Warrior Interoperability Demonstration (JWID) 2001
- August**
- 8 Navy Modeling and Simulation Management Office Verification, Validation and Accreditation Technical Working Group Meeting
- October**
- 1–12 Naval Research Advisory Committee Annual Study
- 15–16 U.S. Navy Information Assurance Leadership Conference
- 17 Military Special Interest Group Telecommunications Council
- 22–26 U.S./Australia Joint Radar Working Group Meeting
- November**
- 15 Association of Unmanned Aerial Vehicle Systems International Meeting
- 27 Naval Warfare Systems Forum XIV
- December**
- 5–6 Homeland Security Working Group Meeting
- 12–13 U.S. Air Force/U.S. Navy Strategic Hard Parts Working Group Meeting

APPENDIX E: ACRONYMS

ACS	Advanced Concepts Site
AE	Antenna Electronics
AGNS	Advanced Global Navigation Simulator
ALS	AWS Link-16 System
AOR	Area of Responsibility
APL	Advanced Photolithography Lab
ATS	AGNS Test Station
AWS	Arrow Weapon System
C ² P	Command and Control Processor
C ³	Command, Control, and Communications
C ⁴ ISR	Command, Control, Communication, Computers, Intelligence, Surveillance, and Reconnaissance
CART	Control and Alert Reporting Terminal
CCMI	Crisis Consequence Management Initiative
CDLMS	Common Data Link Management System
CDNU	Control Display Navigation Unit
CMMI	Capability Maturity Model Integration
COMWIN	Combat Wear Integration
CSDTS.	Common Shipboard Data Terminal Set
CW	Capable Warrior
CWAN	Coalition Wide Area Network
CY	Calendar Year
DAE	Digital Antenna Electronics
DARPA	Defense Advanced Research Projects Agency
DCST	Deployable Communications Support Terminal
DIFMS	Defense Industrial Financial Management System
DoD	Department of Defense
ENCOMPASS	Enhanced Consequence Management Planning and Support System
EOD MU3	Explosive Ordnance Disposal Mobile Unit 3
ERP	Enterprise Resource Planning
FOT&E	Follow-On Operational Test and Evaluation
FPGAs	Field Programmable Gate Arrays
FY	Fiscal Year
G&A	General and Administrative
GAS-1	GPS Antenna System-1
GCCS	Global Command and Control System
GPS	Global Positioning System
HMI	Human-Machine Interface
HPWREN	High Performance Wireless Research and Education Network
ICFF	Integrated Circuit Fabrication Facility

JACCS	Joint Attack Command and Control System
JCAPS	Joint C ⁴ ISR Architecture Planning/Analysis System
JMINI	Joint UHF MILSATCOM Network Integrated (Control System)
JTIDS	Joint Tactical Information Distribution System
JWID	Joint Warrior Interoperability Demonstration
LOCO GPSI	Location of GPS Interferers
MAGR	Miniaturized Airborne GPS Receiver
METOC	Meteorological and Oceanographic
MPT	Manpower, Personnel and Training
MRTA.	Modernization Receiver Test Asset
MULTS	Mobile Universal Link Translator System
NATO	North Atlantic Treaty Organization
NAVAIR	Naval Air Systems Command
NAVSEA	Naval Sea Systems Command
NITES	Naval Integrated Tactical Environmental System
NLMOC	Naval Atlantic Meteorology and Oceanography Center
NRO	National Reconnaissance Office
O/H	Overhead
OPF	Operational Flight Program
OMN	Operation and Maintenance, Navy
ONR	Office of Naval Research
OPN	Other Procurement, Navy
OSD	Office of the Secretary of Defense
OTC	Old Town Campus
RC ² P	Rehosted Command and Control Processor
RDTE, RDT&E	Research, Development, Test and Evaluation
REDS	Realtime Execution Decision Support
RSOI '01	Reception, Staging, Onward-Movement, and Integration
SIAM	Space and Information Analysis Model
SIT	System Integration Test
SOI	Silicon-on-Insulator
SOS	Silicon-on-Sapphire
SPAWAR	Space and Naval Warfare Systems Command
SPI	Software Process Improvement
SSC San Diego	Space and Naval Warfare Systems Center, San Diego
SSPO	Strategic Systems Programs Office
STRED	Standard Tactical Receive Equipment Display
SW-CMM	Software Capability Maturity Model
TADIL	Tactical Digital Information Link
TADIL-J	Tactical Digital Information Link-Joint
TESS	Tactical Environmental Support System
TMD	Theater Missile Defense
TMDSE	Theater Missile Defense System Exerciser
TRE	Tactical Receive Equipment

UCSD University of California, San Diego
URBOTS Urban Robots
USCENTCOM U.S. Central Command

SOURCES/NOTES

- ¹ *Outlook*, "Capt. Miller Appointed Center Commander," 4 January 2002, Volume 25, Number 1
- ² *The San Diego Union-Tribune*; "Navy Captain is Guilty of Misconduct, to Retire," San Diego, Calif.; 9 December 2001, James W. Crawley.
- ³ Note: The following *Outlook* articles provide extensive coverage of the ERP implementation in 2001: *Outlook*, "Special Edition: Project Cabrillo Sheds Light on the Future!" 16 February 2001, Volume 24, Number 4; *Outlook*, "ERP/Project Cabrillo Organizational Impact and You!" 16 February 2001, Volume 24, Number 4; *Outlook*, "Realizing ERP/Project Cabrillo Benefits," 16 February 2001, Volume 24, Number 4; *Outlook*, "Training Team Prepares to SAP You!" 16 February 2001, Volume 24, Number 4; *Outlook*, "Project Cabrillo Hosts Town Hall Meeting." 16 March 2001, Volume 24, Number 6; *Outlook*, "Project Cabrillo Prepares for User Training," 13 April 2001, Volume 24, Number 8; *Outlook*, "Project Cabrillo Turns Off DIFMS," 8 June 2001, Volume 24, Number 12; *Outlook*, "Project Cabrillo Enters the Home Stretch!" 22 June 2001, Volume 24, Number 13; *Outlook*, "All Systems Go: SSC San Diego 'Goes-Live' with ERP!" 6 July 2001, Volume 24, Number 14; *Outlook*, "Exemplary Award For Team Achievement Presented to Project Cabrillo Team 3," August 2001, Volume 24, Number 16; *Outlook*, "Performance and Benefits of Enterprise Resource Planning (ERP) Measured," 17 August 2001, Volume 24, Number 17
- ⁴ *Outlook*, "More Center Projects Achieve SW-CMM Level 3," 9 November 2001, Volume 24, Number 23
- ⁵ Code 230, Department Weekly Highlights, June 2001, and personal communication with Richard Hall. SSC San Diego program manager for this acquisition was Mr. Richard Hall. Mr. Robert Simmons was the overall program manager at NAVSEA (PMS-EOD).
- ⁶ *Outlook*, "Marine Mammals Support NATO Exercise Blue Game 2001," 28 September 2001, Volume 24, Number 20
- ⁷ *Outlook*, "Global Positioning System Undergoes Modernization," 7 December 2001, Volume 24, Number 25
- ⁸ Code 230, Department Weekly Highlights, October 2001. Also see: *Outlook*, "Robotics Group Assists New York Rescue Operations," 12 October 2001, Volume 24, Number 21
- ⁹ Additional information about the Command Project can be found in *Biennial Review 2001*, TD 3117, Space and Naval Warfare Systems Center, San Diego (SSC San Diego), San Diego, CA, (August)
- ¹⁰ Code 245, Department Weekly Highlights, May 2001
- ¹¹ *Outlook*, "The Common Data Link Management System Passes AEGIS System Test," 2 March 2001, Volume 24, Number 5
- ¹² *Outlook*, "Israel's Arrow Missile Defense System Supported," 22 June 2001, Volume 24, Number 13
- ¹³ Code 240, Department Weekly Highlights, April 2001
- ¹⁴ Code 240, Department Weekly Highlights, July 2001
- ¹⁵ Code 240, Department Weekly Highlights, July 2001
- ¹⁶ Code 290, Department Weekly Highlights, May 2001
- ¹⁷ *Outlook*, "NITES 2000 Passes Operational Test and Evaluation," 9 November 2001, Volume 24, Number 23
- ¹⁸ *Outlook*, "Standard Tactical Receive Equipment Display 7.0 Certified," 27 April 2001, Volume 24, Number 9
- ¹⁹ Code 270, Department Weekly Highlights, July 2001
- ²⁰ *Outlook*, "SPAWAR and SSC San Diego host JWID 2001," 20 July 2001, Volume 24, Number 15; *Outlook*, "Real Warfighters, Real Systems, Real Operational Assessments," 14 September 2001, Volume 24, Number 19
- ²¹ *Outlook*, "Cross Claimancy Cooperation Results in Certification," 11 May 2001, Volume 24, Number 10
- ²² *Outlook*, "SSC San Diego Teams with Local Emergency Agencies," 12 October 2001, Volume 24, Number 21
- ²³ *Outlook*, "Dedication Ceremony Held for Photolithography Lab," 18 January 2002, Volume 25, Number 2

Notes: (1) Department Weekly Reports may not be retrievable; please contact the cognizant SSC San Diego codes for more information. (2) For more information about *Outlook* articles, please contact the Editor, Code 2003, Space and Naval Warfare Systems Center San Diego, CA 92152-5185. Telephone (619) 553-2727.

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