

# Functional Area 2 - Engineering, System Engineering, and Process Engineering

**PSI Contract N00167-02-D-0038 DO 9:** The Naval Surface Warfare Center Carderock Division (NSWCCD) is responsible for the operation and maintenance of the data gathering and processing systems onboard 688 and 21 class submarines. As part of the lifecycle maintenance of these systems, NSWCCD is moving to integrate the capability of several analysis and processing systems into a single new platform, the TUBA Combined Processing System (CPS). PSI is supplying systems engineering support to this effort. Engineering support supplied includes QA review of NSWCCD rep

orts, design of the integrated system, documentation of the integrated system design, and review of all design documentation. In addition, PSI is tasked to make implementation suggestions to assure that the CPS system is developed using engineering best-practices.

**PSI Contract N00039-99-C-2201 TO 501:** Using a systems engineering approach, PSI engineers developed the Meteorological and Oceanographic (METOC) Air, Surface, Undersea Reporting Equipment (MEASURE) Interface Processor (MIP), which is a versatile meteorological and oceanographic system that supports new Warfighting capabilities by providing a multi-platform tactical environmental reporting system. MIP can collect data from all current U.S. Navy operational METOC sensors, as well as from many non-standard sensors. The MIP system contains an embedded single-boa

rd computer that performs all processing and display functions. The other main components of the embedded system include a miniature low-power GPS receiver for position and timing information, a synchronous serial interface to Motorola LST-5D satellite communications and line-of-sight radios for data transfer, a PSI-designed 4-channel RF sonobuoy receiver for direct reception of data from METOC buoys, an 8-channel 12-bit A/D converter for digitization of demodulated RF data, and a complete Ethernet interface for configuration and control. All hardware control, data processing, and formatting of the outgoing messages are controlled via LabView virtual instruments.

**PSI Contract N00039-99-C-2201 TO 518:** Provides engineering support for PEO(C4I&Space) PMW 161 for C4ISR interoperability and security issues for FORCEnet and Task Force Web (TFW) security. This support includes procuring and installing equipment for the C4ISR Security Laboratory, which is located in Monterey, CA. PSI provided engineering and logistics support for identifying and evaluating existing and emerging information assurance technologies, including a government-hosted Industry Day, development of an RFI, and technical assessment of RFI responses.

**PSI Contract R11710376:** Under this GSA contract PSI provides support to the Submarine Maintenance, Engineering, Planning & Procurement (SUBMEPP) Activity at the Portsmouth Naval Shipyard in Kittery, Maine - a field operation of NAVSEA 92 - the Submarine Directorate. In support of SUBMEPP, PSI is providing Engineering support

for the operation and maintenance of legacy computer database systems for the development and issuing of submarine maintenance work packages. These systems cover all Non-Propulsion equipments for all classes of submarines (SSN and SSBN) as well as planning for the support of Virginia and specialized units such as the NR-1 and ASDS. PSI engineering support includes the insuring that all scheduled availabilities, platforms and equipage are accounted for in the maintenance planning process. The effort has a main focus on ensuring that system requirements and specifications are followed.

**APS Contract N00167-03-M-0163:** Conducted analyses of innovative boundary damping concepts and materials for application to a critical submarine component. Different damping concepts were evaluated and their relative performance attributes were compared. In addition, other concepts for reducing resonant enhancement and acoustic radiation from the component structures were evaluated. These included the introduction of in-plane drill holes with dissipative fillers, the redistribution of plate mass to reduce resonant amplification, the modification of overall plate parameters to reduce amplification for an array of plates, enhancement of performance by inhomogeneous treatment bonding, and introduction of treatment at boundaries. A detailed report documenting the damping concepts and mechanisms, and their relative performance benefits was prepared. Benefits associated with combining the treatments were also evaluated and documented.

**AAC Contract N00178-98-C-2011:** Under this contract, AAC was tasked to design and develop the Surface Network Embedded Analysis Tactical Trainer (SNEATT). Much of this work was done directly for NUWC Keyport. SNEATT is a multi-sensor trainer for the aircraft carrier CV-TSC. To support this effort, AAC engineers performed detailed systematic analyses of requirements for SNEATT, identified candidate designs, recommended an approach, and produced design specifications. SNEATT development is complete and it is currently installed and in use.

## **Additional Contracts:**

APS Contract N65540-03-M-0136, Contact F. Flickinger 215-897-8907

ASTM Contract N00019-03-C-0069, Contact Jim Lumpkins, 301-757-6761

NTI Contract N00167-01-D-0016, Contact Dr. J. Niemiec, 301-227-1857

STG Contract N00167-03-F-0084, Contact Michael Marsh 301-227-1316

AHA Contract N00039-97-C-0031, Contact Loretta Bourne - 619-524-7154

CTI Contract DTTS59-00-D-00918, Contact Sam Pettito, 202-366-9737