



# IWSL

## INTEGRATED WARFARE SYSTEMS LABORATORY



## Overview

The Integrated Warfare Systems Laboratory (IWSL) is the principal Navy facility supporting computer program engineering for operational Aegis cruisers and destroyers. Although its mission is to provide a site adequately equipped and staffed to support the Lifetime Support Engineering Agent (LSEA) in generating, maintaining, updating, and certifying Aegis Combat System computer programs, the facility is broadening its business base with the addition of other programs, customers, and labs. Primarily, the IWSL provides the Aegis fleet, warfighters, and community with the facilities and support services to generate, test, integrate, and deliver quality-assured Aegis tactical, simulation, support, and training computer programs. All computer programs delivered to operational Aegis ships come from the IWSL. The facility houses shipboard computers, displays, and peripherals, along with simulation, program generation, data reduction, systems analysis, configuration management, and communications equipment.

## Program Generation and Analysis

The program generation and analysis functions performed in the IWSL utilize a host of commercial computing systems ranging from mainframes to workstations, accessed locally and remotely by more than 800 different users each day. Primary activities conducted include the following:

- Aegis and Ballistic Missile Defense (BMD) element-level code, design, and analysis
- Generation or integration of source-level computer programs or changes
- Data compilation of source code
- Data reduction and analysis in support of computer program development and maintenance
- Data reduction and analysis of critical test data from Aegis ship operations events
- Computer program, ship, and site configuration management

## Computer Networks and Communication Capabilities

In support of Naval Surface Warfare Center, Dahlgren Division (NSWCDD), roles and responsibilities within the Aegis Program, the IWSL manages and connects to a variety of communication networks utilized by the Aegis and other military communities:

- Aegis Sites Network
- Aegis Communications Support System
- Aegis Broadcast Network
- Aegis Performance Network
- IWSL Unclassified Support System
- Distributed Engineering Plant
- Joint Distributed Engineering Plant
- Fiber-optic links to other NSWCDD facilities via the Tactical Protected Distribution System
- Missile Defense Agency (MDA) Classified Network

## Computer Program Test

The IWSL provides a real-time, test-bed environment critical to Aegis computer program maintenance, upgrade, and certification. Shipboard systems are paired with high-fidelity suites simulating sensor and weapon systems not contained within the facility. This area of the facility also supports other naval programs, such as the Open Architecture Test Facility and the Single-Integrated Air Picture labs. Primary functions include the following:

- Duplication and resolution of fleet-reported computer program problems
- Multi-platform interoperability test and analysis
- Element-level test and debug
- Multi-element and system-level integration
- Computer program load-cycle testing prior to ship delivery

Communications capability is provided to IWSL users to integrate IWSL systems with other combat system facilities within the NSWCDD complex and throughout the nation, as well as in operational ships. The capability provides IWSL users the ability to perform the following:

- Interoperability certification of Link-11, Link-16, and Link-4 tactical digital data links
- Cooperative Engagement Capability testing
- Naval battle group interoperability testing
- Joint and coalition interoperability testing
- MDA Missile Defense System Exerciser testing
- Combat system element test and system integration
- Homeland Defense exercises

## Computer Program Media Production

The IWSL provides systems for the production of master media containing Aegis computer programs for delivery from NSWCDD to the Aegis fleet and land-based test and training facilities. This media production lab

- Consists of tactical computers, tape drives, disk drives, operator control devices, and printers
- Provides unique equipment suites for the CG 47 cruiser and DDG 51 destroyer ship classes

This system is managed under strict configuration control and quality assurance standards to remain compatible with fleet assets.



NSWCDD/MP-07/113: 2/08

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