GENERAL DYNAMICS
Mission Systems

AN/BYG-1 Submarine Combat System

Progeny Systems

Open-architecture submarine combat system

Deployed across multiple submarine classes

Anti-submarine and strike warfare

Robust multi-level cybersecurity

Enables rapid payload integration updates

Overview

AN/BYG-1 is an open-architecture submarine combat control system that integrates tactical control, payload and weapons control, information assurance, and a number of smaller subsystems and applications. Sailors interact with this system through multiple operator displays, which are installed on the U.S. Navy's Virginia, Los Angeles, Ohio, Columbia, and Seawolf-class submarines as well as the Australian RAN Collins-class submarine. The integrated AN/BYG-1 system provides the submarine force with the ability to conduct a wide range of missions, including Anti-Submarine Warfare (ASW), Anti-Surface Warfare (ASUW), Strike, and Intelligence, Surveillance, and Reconnaissance (ISR) .

System Components:

- Tactical Control System (TCS): Integrates submarine sensor and communication data to deliver a common operational picture, offering sensor fusion, target motion analysis, situational awareness, and command-and-decision tools to support watch standers and commanding officers in mission execution.
- Payload Control System (PCS): Provides planning, command and control, and launch control for all submarine payloads — including torpedoes, missiles, unmanned vehicles, and countermeasures. Rearchitected from the legacy Weapons Control System (WCS), PCS enables rapid integration and updates of current and future payloads.
- Information Assurance: Robust, multi-level, and customizable cybersecurity software — covering user permissions to intrusion detection — protects submarines from cyber threats in all environments. Continuous R&D efforts ensure solutions keep pace with ever-evolving threats.

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AN/BYG-1 Capabilities

- Utilizes ruggedized Commercial Off-The-Shelf (COTS) computer hardware and software that are amenable to rapid technology insertion updates.
- Provides detailed operator displays for contact management, payload command and control, threat warning, mission tasking, geographic environment, signal alerts, analysis, and reports.
- Analyzes submarine sensor data to track submarine and surface vessels.
- Employs heavyweight torpedoes against submarine and surface ship targets.
- Receives strike warfare tasking, plans strike missions, and employs Tomahawk cruise missiles against various targets.
- Receives and synthesizes all sensor data and external tactical intelligence to produce an integrated tactical picture.

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