Conventional Prompt Strike (CPS)



In 3QFY24, the Conventional Prompt Strike (CPS) program conducted an end-to-end flight test of the prototype CPS All-Up Round (AUR). The CPS program and Army's Long Range Hypersonic Weapon (LRHW) – Dark Eagle program intended an additional CPS AUR test flight from the Army's transporter-erector-launcher (TEL) in 4QFY24 but did not execute the flight test due to a system problem. The CPS program expects to conduct demonstrations of the CPS AUR from the Army's TEL and the Navy's ship/submarine-launch canister in FY25.

SYSTEM DESCRIPTION

CPS is a conventional, boost-glide hypersonic weapon system. The CPS AUR missile includes a twostage solid rocket motor booster and a Common Hypersonic Glide Body containing a kinetic energy projectile warhead. The Navy will integrate CPS into both Zumwalt-class destroyers and Virginia-class submarines. The Navy will utilize cold-gas ejection ("cold launch") to launch the AUR from both platforms. The Army LRHW system, which is being reported on in a separate article, will fire a common AUR from their TEL, igniting it in the launch canister ("hot launch").

MISSION

U.S. combatant commanders will launch CPS from *Zumwalt*class destroyers and *Virginia*class submarines to penetrate air defenses to strike highvalue, time-sensitive targets.

PROGRAM

The Navy is employing a threephase acquisition strategy to deliver CPS. Phase 1 is a Middle Tier of Acquisition (MTA) rapid prototyping effort to develop and demonstrate a prototype hypersonic missile system capability through a four-flight test campaign ending in FY25. Phase 2 is an MTA rapid fielding effort that includes a flight test from a *Zumwalt*-class destroyer and is intended to field CPS on the first Zumwalt-class destroyer in FY27. Phase 3 is a Major Defense Acquisition program that the Navy intends to field CPS aboard the remaining two Zumwalt-class destroyers and aboard Virginiaclass submarines. The program office approved an initial Life Cycle Sustainment Plan in July 2024 to address product support and fielding aboard both the Zumwalt-class destroyers and the Virginia-class submarines.

DOT&E conditionally approved the Navy's Master Test Strategy (MTS) for the CPS MTA rapid prototyping program in March 2023, provided the CPS Program Office submits the combined Phase 2 and Phase 3 TEMP and the LFT&E Strategy in 2023. Changes in CPS development objectives and delivery schedule delayed submittal of these T&E documents through FY24. The Navy is working with DOT&E to resolve DOT&E concerns with their test strategy in the combined Phase 2 and Phase 3 TEMP and the LFT&E Strategy and expects to deliver them for DOT&E approval in early FY25. The CPS Program Office expects to submit test plans for DOT&E approval in FY25 to conduct a demonstration of the CPS AUR from the Army's TEL and an Operational Demonstration (Ops Demo) from the Navy's ship/ submarine-launch canister.

In April 2024, the Navy issued a memorandum that changed the CPS rapid prototyping test program to complete on the fourth flight test instead of a fifth flight test due to a change in program objectives. DOT&E acknowledged this change, noting concern for the limited opportunity to identify and make CPS improvements prior to its fielding.

In FY24, the LRHW – Dark Eagle program continued development of a prototype LRHW Battery Operations Center and TEL system. Details of these efforts, and integration of the AUR missile and weapons control system, are reported in the LRHW – Dark Eagle article of this Annual Report.

» MAJOR CONTRACTORS

- Lockheed Martin Space
 Littleton, Colorado
- Dynetics, a subsidiary of Leidos – Huntsville, Alabama (Common Hypersonic Glide Body)

TEST ADEQUACY

In 3QFY24, the CPS program conducted an end-to-end developmental flight test of the prototype CPS AUR from the Pacific Missile Range Facility in Kauai, Hawaii. The Navy's **Operational Test and Evaluation** Force developed a data collection plan and DOT&E observed this event for potential use of collected data in operational assessment. This test did not utilize a Navy- or Army-representative launcher. In 4QFY24, the CPS program and the LRHW – Dark Eagle program attempted a fourth CPS flight test using the Army's TEL. This test did not occur due to a system problem that the CPS program

office identifies as now corrected. In FY25, the CPS program and the LRHW – Dark Eagle program expect to demonstrate launch capability from a TEL in a third CPS missile flight test and launch capability from a representative launch canister of the *Zumwalt*-class destroyers and *Virginia*-class submarines in a fourth CPS missile flight test.

The Navy conducted a warhead arena test in 1QFY24 and a sled test in 2QFY24. As noted in the FY22 and FY23 Annual Reports, the initial CPS sled and flight tests did not include operationally representative targets and consequently did not provide direct validation of the weapon's lethal effects. The Navy included some threat-representative targets in the recent sled test. The Navy is further investigating methods to obtain lethality and effectiveness data by incorporating representative targets into the CPS flight tests. The Navy expects to provide an LFT&E Strategy for DOT&E approval in FY25.

In FY24, the Navy completed its 10th cyber survivability evaluation of the CPS AUR missile design and its supporting combat system as developmental test to identify the attack surface and potential vulnerabilities. These events will inform cyber vulnerability risk of the Phase 1 CPS prototype but are not a comprehensive evaluation of the vulnerabilities of the delivered prototype or mission effects. Cyber survivability evaluations are planned for both Zumwalt-class destroyers and Virginia-class submarines in Phases 2 and 3;

CPS will require comprehensive evaluation prior to fleet deployment with the system installed.

The Navy has only evaluated to a limited extent the effect of a contested environment on CPS AUR missile performance. The Navy plans to use a combination of modeling and simulation (M&S), component testing, and hardware-in-the-loop evaluations to assess CPS performance in the contested environment. The full M&S federation is expected to be complete and provide results at the end of the IOT&E period. Adequate testing in the full-spectrum contested environment is required, however, to determine CPS effectiveness under combat conditions.

PERFORMANCE

» EFFECTIVENESS, LETHALITY, AND SUITABILITY

Insufficient data are available to assess operational effectiveness, lethality, and suitability of the Phase 1 CPS prototype. DOT&E will provide assessment of CPS prototype effectiveness, lethality, and suitability after the Ops Demo that the CPS Program Office expects to occur in FY25.

» SURVIVABILITY

Analysis of the Phase 1 CPS cyber survivability is in progress. DOT&E will report assessment of the CPS prototype cyber survivability after completion of the Ops Demo that the CPS program expects to occur in FY25.

RECOMMENDATIONS

The Navy should:

- Submit the combined CPS Phase 2 and Phase 3 TEMP for DOT&E approval in early FY25, to support the determination of operational effectiveness, suitability, and survivability of CPS through those phases. Ensure that the combined CPS Phase 2 and Phase 3 TEMP incorporates the full-spectrum contested environment.
- 2. Submit a CPS LFT&E Strategy, in conjunction with the combined Phase 2 and Phase 3 TEMP, for DOT&E approval in early FY25, to support the determination of lethality of the CPS AUR against threat-representative targets. This effort should be coordinated with the Joint Technical Coordinating Group for Munitions Effectiveness, to include data required to validate the CPS weaponeering tools for operational use.