Navy Demonstrates ‘Game-Changing’ System to Rearm Warships at Sea



Sailors from the Navy Expeditionary Logistics Support Group and USS Chosin (CG 65) carefully guide a missile canister using the U.S. Navy’s Transferrable Rearming Mechanism as they demonstrate the ability to reload a Vertical Launching System cell on July 10 at Naval Surface Warfare Center, Port Hueneme Division’s Underway Replenishment Test Facility. (U.S. Navy photo by Dana Rene White)

From Naval Surface Warfare Center, Port Hueneme Division (NSWC PHD)

Naval Surface Warfare Center, Port Hueneme Division (NSWC PHD) successfully conducted the first land-based demonstration of the Transferrable Rearming Mechanism (TRAM), which will enable U.S. Navy surface combatants to reload missile canisters into their MK 41 Vertical Launching Systems (VLS) at sea.

Secretary of the Navy Carlos Del Toro has made TRAM one of his top priorities. In a speech at Columbia University in New York City in December 2022, the secretary set out the goal that, “during my tenure, we will set the Navy on track to deliver the game-changing capability to rearm our warships at sea. Being able to quickly rearm our warships’ vertical launch tubes at sea will significantly increase forward, persistent combat power with the current force. No longer will our combatants need to withdraw from combat for extended periods to return for vulnerable in-port reloading of weapon systems…. My intention is to perfect this capability and field it for sustained, persistent forward-strike capacity during wartime.”

The Naval Sea Systems Command (NAVSEA) and NSWC PHD team delivered on the secretary’s call for speed at the Sea-Air-Space Exposition in National Harbor, Maryland, in April, where Del Toro said, “The at-sea demonstration will take place later this year – an unheard-of pace for a capability with such revolutionary strategic potential. If we had waited to Program Objective Memorandum, or POM, for it, we wouldn’t see it demonstrated for at least another two or three years. Instead, we’re on track to begin fielding it in two or three years.”

The test’s execution underscored the versatility and rapid adaptability of the Navy’s sailors and engineers. Tim Barnard, director of the NAVSEA Technology Office (05T), praised the speed at which the sailors of the Navy Expeditionary Logistics Support Group and USS Chosin (CG 65) became acquainted with TRAM in order to execute the demonstration.

“This team has been remarkable,” Barnard said. “Without previous familiarity with TRAM, the sailors got spun up for this week’s shore demonstration with just a week of training. They understand TRAM is a game-changer that will allow our ships to reload missiles just like they refuel – using connected underway replenishment, steaming at speed and in open ocean.”

This week’s land-based test incorporated, for the first time, real-time analytics and direct monitoring through instrumentation, which facilitated real-time assessment and modifications that would otherwise take weeks or months. This unique approach will inform the upcoming at-sea demonstration and follow-on engineering updates.

Ryan Hayleck, technical director for NAVSEA 05T and technical lead for the demonstration, emphasized during the test that “as we introduce new improvements based on the sailors’ inputs this week and in the upcoming at-sea test, TRAM will only get better and faster from here. I am very excited to take TRAM to sea.”

NSWC PHD Commanding Officer Capt. Tony Holmes stressed the importance of the Navy’s support behind the test.

“NSWC PHD appreciates this opportunity to further such a critical and essential capability for the warfighter and the U.S. Navy, thanks to the efforts and focused interest of the secretary of the Navy,” Holmes said. “We look forward to continuing to work on the next steps.”

Technical Director Jeff Koe added that the resourceful spirit of NSWC PHD’s Underway Replenishment Team has demonstrated that innovation is alive and well in the Navy.

“Our enterprising teammates years ago saw the need to rearm surface ships at sea and took the initiative to design a way to materialize that vision,” Koe said. “Now, our Navy will benefit from that ingenuity as NSWC PHD and its partners bring TRAM to fruition.”

Rich Hadley, director of NSWC PHD’s underway replenishment division which designed TRAM, explained that “by solving key relative motion challenges, TRAM is a capability enabling reloading operations while underway in significant sea states. TRAM will greatly expand the fleet’s logistical flexibility, resilience, as well as volume and tempo of long-range fires.”

Thanking the NAVSEA-NSWC PHD leadership team and the sailors from the Navy Expeditionary Logistics Support Group and USS Chosin who carried out the demonstration, Steven Brock, senior adviser to the secretary of the Navy, noted the historic import of the occasion.

“This demonstration that you superbly delivered on the secretary’s aggressive timeline sends a powerful message,” Brock said. “This revolution in surface warfare will make our existing fleet even more formidable, both in sustained forward presence and lethality – and will create a powerful new near-term deterrent that will disrupt the strategic calculus of our adversaries.”

Hunter Stires, maritime strategist with the Office of the Secretary of the Navy, added, “TRAM will enable us to do the modern-day equivalent of firing two broadsides to the enemy’s one. The U.S. Navy’s very best are making this capability real.”