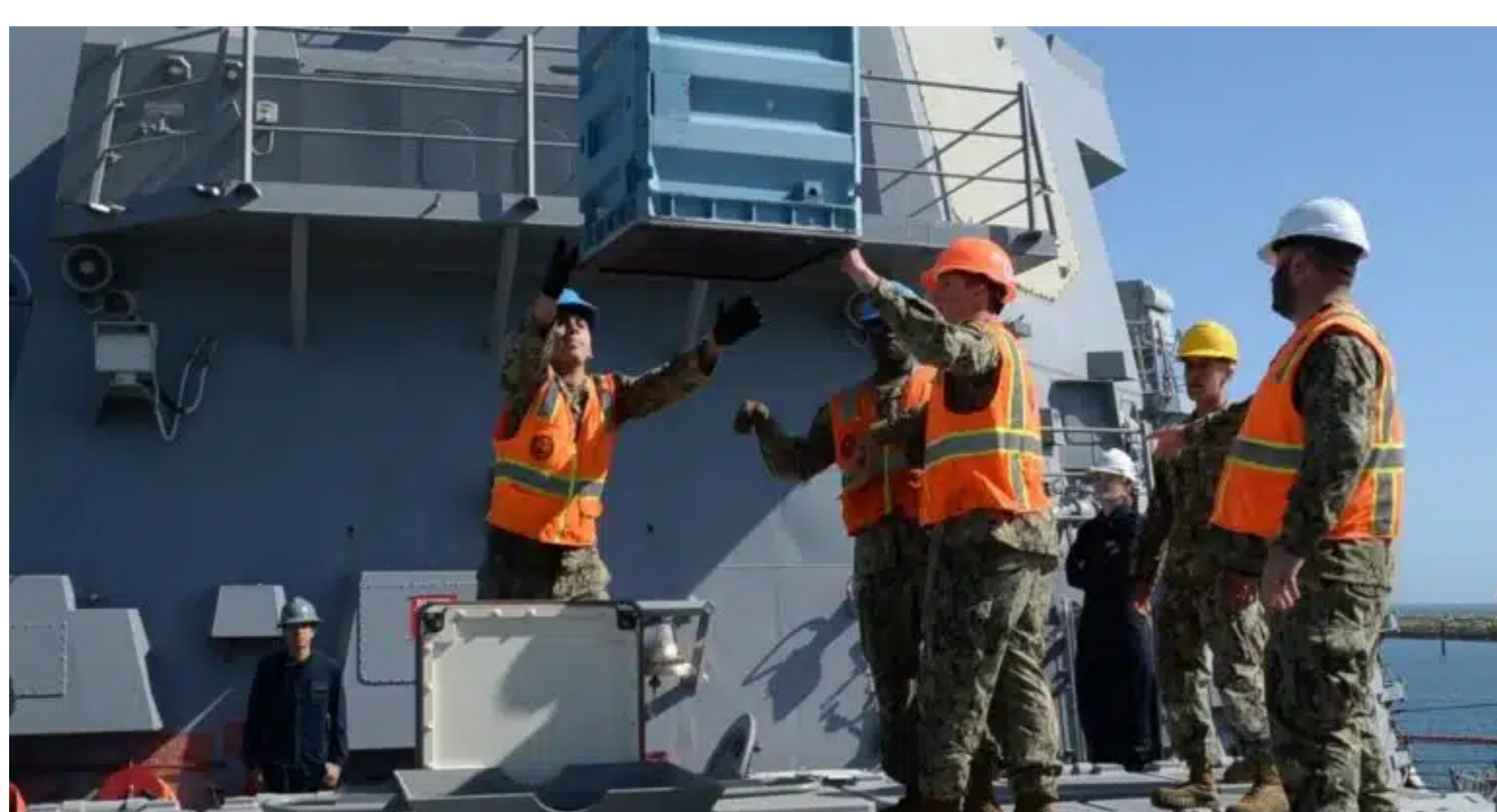




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Sailors with Navy Cargo Handling Battalion 1 guide an SM-2 missile into place as it is lowered towards a vertical launch system during an expeditionary ordnance reload training evolution with Navy Munitions Command CONUS West aboard the USS Michael Murphy (DDG 112) on Naval Weapons Station Seal Beach. (U.S. Navy photo by Chief Mass Communication Specialist Class William S. Parker)

At-Sea Rearming Deemed A "Main Priority" By SECNAV

Secretary of the Navy (SECNAV) Carlos Del Toro once again emphasized the need for at-sea reloading at this year's Combat Systems Symposium.

Aaron-Matthew Lariosa | 02 Feb 2023

At-sea rearming has been a capability brought time and time again by Del Toro in the past. With the challenges, the U.S. Navy faces against adversaries, such as China, ports and other facilities traditionally used for the rearming of the fleet's vessels have come under threat.

The Indo-Pacific was noted specifically for these challenges, with Del Toro stating *"We must pay attention to the logistics side for our fleet in the Pacific in particular."*



Sailors aboard Arleigh Burke-class guided-missile destroyer USS Spruance (DDG 111) guide training ordnance into the ship's forward vertical launch system (VLS) cells during a proof-of-concept evolution in San Diego. Oct. 4. MV Ocean Valor conducted its first at-sea vertical launch system reload with Spruance, demonstrating the ability of the U.S. Navy to re-arm surface vessels who employ VLS. (U.S. Navy photo)

In a wartime scenario, ports may not be accessible or safe to permit the reloading of vertical launch system (VLS) cells, leaving Navy warships empty in a high-end fight. This is of concern in the Western Pacific, where key installations for keeping vessels supplied and maintained are few and within adversary striking range. With these challenges in mind, SECNAV is pursuing new practices and the technologies needed to keep warships firing.

"Winning will require [keeping] our assets in the fight. Rearming our warships' vertical launch tubes at sea is amongst the clearest example of sustaining capacity and increased persistent combat power from the current force."

SECNAV

Del Toro detailed the Navy's efforts in at-sea rearming, noting **recent tests** of new concepts:

"When I traveled to San Diego recently, I visited the USS Spruance. We got briefed on a new concept for at-sea rearming using an articulated crane. I've also been seeing a demonstration of a connected replenishment technique pioneered by distinguished ASNE (American Society of Naval Engineers) member, Marvin Miller, considered by some to be the Rickover of underway replenishment."



The At-Sea Precision Lift concept on NASSCO's ESB is being explored for at-sea VLS reload. Scan by author.

This connected replenishment technique has been seen in various concepts and reports on at-sea rearming. At SNA 2023, one of **NASSCO's concepts for the Expeditionary Strike Base** involved a method similar to the one described by SECNAV. It was also stated that the technology being used in their At-Sea Precision Lift concept was also being examined for at-sea VLS reloading.

A new concept for at-sea reloading was brought up by SECNAV called Transferable Rearming Mechanism (TRAM). This seems to be the first mention of such a system, explored by the late Marvin Miller. Miller was an influential figure on underway replenishment in the Navy throughout the Cold War, and it seems his concepts are being explored once more by the fleet as it re-enters another era of high-end competition.

"I recently reread this landmark article on the Transferable Rearming Mechanism, called the TRAM. I saw the key relative motion challenges that presents one of the most promising solutions to field the capabilities suited for rapid reload in high sea states."

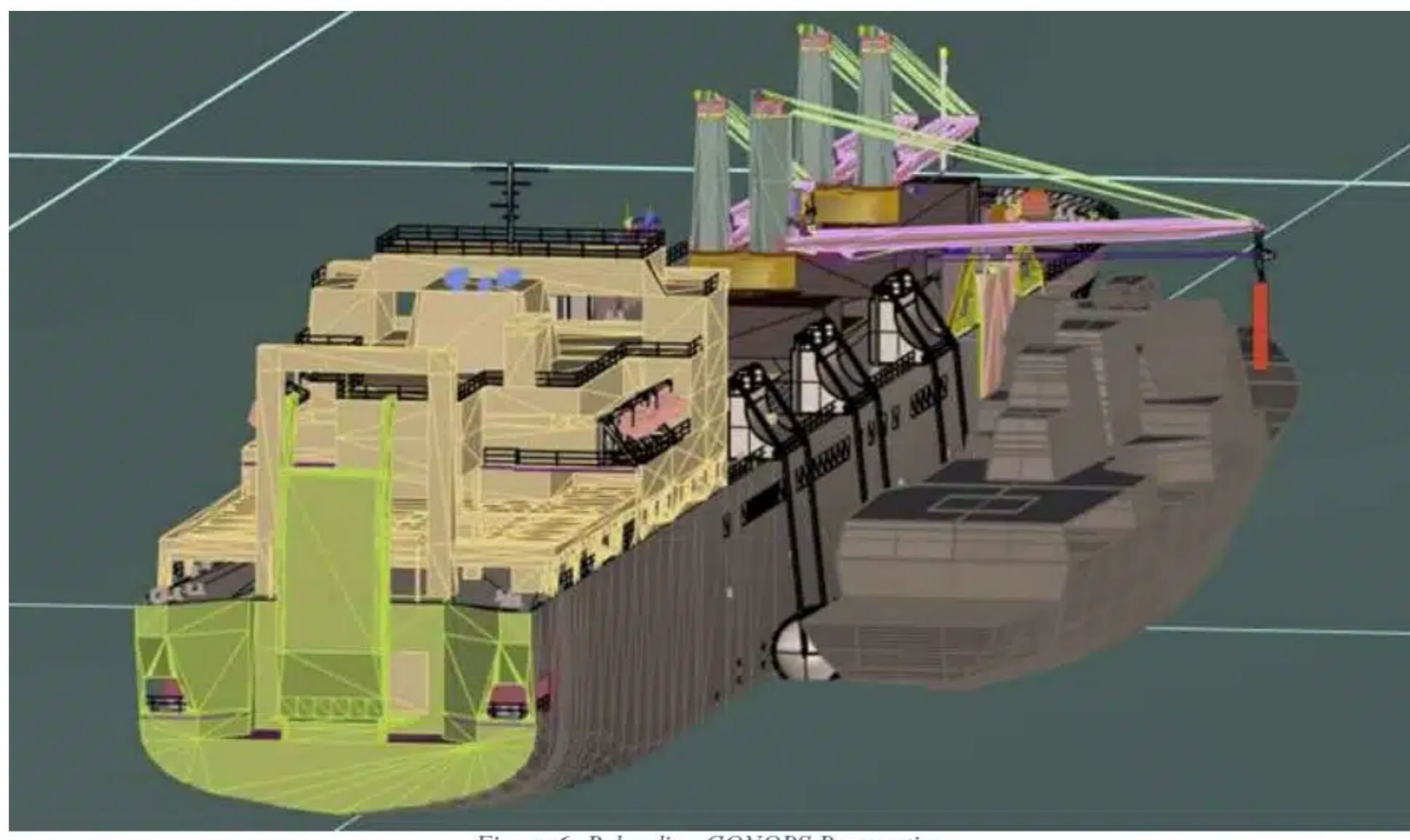


Figure 6: Reloading CONOPS Perspective

One of the more noteworthy contemporary at-sea VLS rearming concepts involves a retrofitted T-AKR RO/RO. (Screenshot from Forward Deployed VLS Reloading)

While early at-sea VLS rearming failed with the notorious Mark 41 VLS Strikedown crane, new challenges have reinvigorated efforts to find a solution.

"Today, I want to reiterate to this audience that advancing our rearming at-sea capabilities are a major priority for me."

TAGS **At-Sea Rearming** **US Navy** **VLS**



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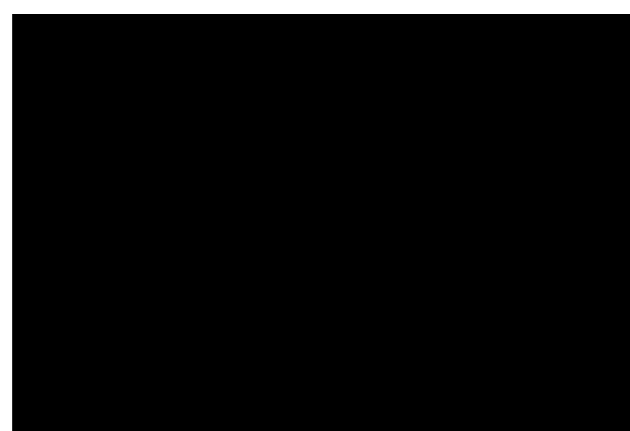


Posted by : **Aaron-Matthew Lariosa**

Aaron-Matthew is a freelance writer based in Washington, D.C. He is currently studying International Relations at American University, and is interested in U.S. Marine Corps developments in the Pacific and Philippine Naval modernization efforts.



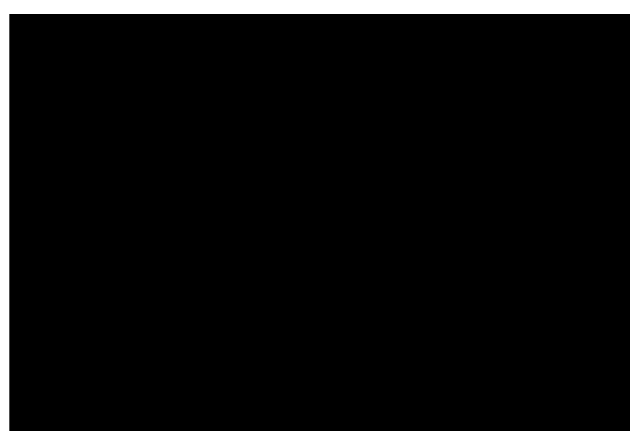
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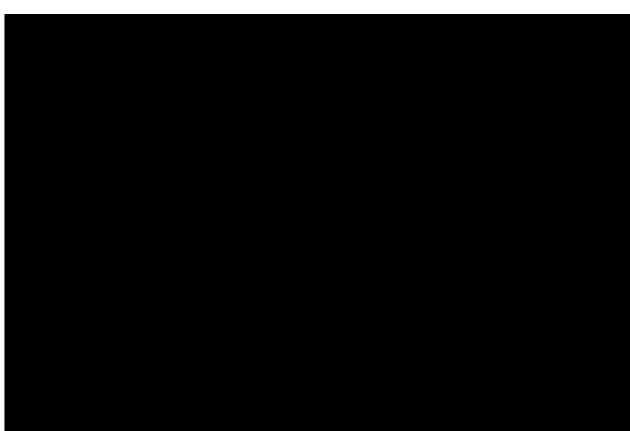
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