

Navy 25.4 Release 1 – Catapult Challenge

Ask Me Anything, Questions & Answers

N254-C02, At-Sea Reload Technologies

Questions posted during AMA that require offline response:	
Question:	Answer:
So we cannot use drones for topic N254-C02 at all? (this was a follow-up to the question on use of a heavy lift drone).	Use of drones for At-Sea Reload is outside of scope for this effort.
Where can we find more info on existing/experimental at-sea VLS reload methods, the specs around VLS reload (e.g. how heavy are the missiles and what are their dimensions), etc.? Specifically, where can we find more info on the capabilities of TRAM? Most articles online are pretty bullish on the solution, so it is interesting to hear the answer that it is limited as a proof-of-concept enabler.	<p>The TRAM demonstration was successfully completed at-sea and the results will inform a follow on effort to improve and field the capability to reload MK41 VLS in sea state 3+ conditions. Specific details and specifications are currently not available release until an aware is made.</p> <p>Publicly available references include: MIL-STD-1365C, DEPARTMENT OF DEFENSE DESIGN CRITERIA STANDARD: GENERAL DESIGN CRITERIA FOR HANDLING EQUIPMENT ASSOCIATED WITH WEAPONS AND RELATED ITEMS (17 MAY 2010)</p> <p>NAVAL WARFARE PUBLICATION UNDERWAY REPLENISHMENT NWP 4-01.4</p>
For the Advanced Maintenance support and Training using XR will this have the same restrictions on camera's being on the display system that Navy has had on other similar requests? example camera's on phones or headsets disqualify?	Navy has several projects using cameras and headsets for training and distance support including augmented reality applications. Specific restrictions and requirements depend on the system and location of use.
Do you have modeling and simulations to support this or is that an area of interest?	We used modeling and simulation to support current Navy projects related to this topic. Modeling and simulation may be used as part of a Catapult proposal, but projects focused exclusively on M&S are not of interest.

Are the TRAM design specs available for N254-C02?	TRAM design specs and other information will be available if an award is made.
Questions posted and responded to during AMA:	
Question:	Answer:
How much of the At-Sea Reload challenge is transferring ordnance between ships vs. loading ordnance into the VLS once it has been transferred to the ship?	Both aspects are issues, so it's getting the ordnance from ship to ship and once it's on board the ship being able to strike it down safely with 100% control into the VLS launcher with ship motions. <<Comment added to chat by TPOC: Both of these can be challenging, for VLS as well as other systems such as those listed on slide 21>>
What level of sensors or monitoring of the actual reload system are you looking for? Sensors to monitor operations, maintenance, cyber, etc.?	Primarily looking at the shipboard motions, the relative motions between the systems. Especially understanding what the environment is doing including the wave height, wave period. Whatever we can do to characterize the environment, shipboard accelerations, motions, and potentially the sea state would help us understand the conditions we are in and where we are at with respect to our go-no-go criteria for a given system.
Can you elaborate on ship to ship comms?	Right now it depends on the operation, but for UNREP, there is a phone and distance line. There are advancements needed in the ability to communicate between the two ships, but also the communications between the reload teams that would be on the supply ship and the combatant. The other area is the actual transfer of data. So if I have sensors on both ships, being able to have those data systems connected would be helpful for the overall situational awareness so each ship can see what the other is doing.
The At-Sea Reload is between Surface Ships only. Is there an interest/need/scope to support submarines?	There is also an interest for submarines as well, but not necessarily at sea. That would be more protected areas, but for at sea it is primarily between surface ships
Is a heavy lift drone that can land on a moving vessel in chop applicable?	Use of drones for At-Sea Reload is outside of scope for this effort.
Does re-load capability also include refuel capability?	No, this is primarily for at sea reload of ordnance. Refuel is also a Secretary of the Navy priority, but that is not part of this particular topic.
Working on a ship-to-ship UNREP solution. Would it be a waste of time to incorporate the new TRAM solution or has that been scrapped?	The current TRAM design is old and was only intended as a proof of concept demonstrator and thus has many limitations (payload capacity

	foremost). Any future developments of such a solution would require a nearly ground-up design effort.
Is there an interest in enabling Ship to Ship coms during EMCON reloading?	Yes, LPI/LPD comms & data link for EMCON conditions would be of interest.
Would a solution similar to the original strike-down VLS crane but with improved tech and motion control be of interest? Or where there fundamental issues with the strike-down crane that make the core concept undesirable?	The strikedown crane took the place of several launcher cells and has not been included in new ship builds for many years, so this would make for a difficult backfit.