Amphibious Cavalry

The future of mounted reconnaissance in the amphibious environment

by Maj Charles H. Richardson, IV

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The Commandant has identified force design as one of his top five priorities of focus. He has directed that current legacy systems not meeting future requirements outlined within his planning guidance are candidates for divestment. Three points that standout within the *Commandant's Planning Guidance* [1] are that the Marine Corps must focus on countering power projection, supporting naval operations, and embracing low cost and redundant platforms. The light armored vehicle (LAV) is specifically mentioned as a possible candidate for divestment. The current light armored reconnaissance (LAR) force structure is not postured with the appropriate platforms, task organization, and mission to support the commandant's overall plan. If LAR is to continue, it must radically change its current operating platform and structure—even if it means we are no longer a LAR force.

The current LAR mission is to provide armored reconnaissance, security, and limited offensive operations to the supported commander. This current mission is tied to the capabilities of our legacy LAV system and mission role variants during ground combat operations with limited amphibious capabilities. These capabilities allow us to maneuver over large areas of land with limited water crossing abilities through slow moving rivers, lakes, and calm inlets. Though these assets performed well during ground operations in the Gulf War, initial phases of Operation IRAQI FREEDOM (OIF), and portions of Operation ENDURING FREEDOM (OEF), they are largely irrelevant today because of their susceptibility to improvised explosive devices/mines, increasing standoff of anti-tank weapons, and limited ability to operate within an amphibious environment. Additionally, it is an aged vehicle that is treated like a Christmas tree by adding additional capabilities-like ornaments that tax the existing power structure and the overall maneuverability of the system.

It is difficult to imagine a future LAR without the iconic LAV-25 and associated mission role variants. Many of the future ideas of LAR are tied to platforms reminiscent of the current model with relatively small tweaks in improvised explosive device survivability, size, armament, and information collection capabilities that utilize a combination of manned and unmanned systems. Some proponents within the LAR community have advocated for a future LAR platform that is similar to the LAV but with enhanced characteristics that would come with a high monetary cost that aim to bring synchronization of reconnaissance assets and information efforts while operating as the F-35 of ground reconnaissance. While these future visions of LAR have merit, they are not viable under the Commandant's guidance.

The Marine Corps must bring something unique to the fight within the joint forces and specifically to the naval forces if it is to remain a viable option for the future envisioned by the Commandant. The Army already has light armored reconnaissance to offer the joint task force commander. If the LAR community is to solve this problem, it is important to remember that LAR's identify is not tied to a vehicle but to its mission. This new construct must be able to carry out traditional LAR missions to scale and accomplish it in a truly amphibious environment. In creating our future force, and though LAR is rarely referred to as such, it is important to remember that LAR is really the Marine Corps' version of cavalry.

If LAR is to remain relevant in the future fight it must change in a way that truly supports naval forces. The future LAR community will not be known as light armored reconnaissance, but it will have to transform into amphibious cavalry to remain relevant. It must rely on "low cost and redundant operating systems" that are hard to target, rapidly deployable from a multitude of platforms, able to operate forward and to the flanks of supported naval forces, and diverse in countering air, water, and ground threats while incorporating both manned and unmanned operating platforms. For a proof of concept, we do not have the luxury of waiting years in the future for the perfect platform to be developed but rather be open to experimenting with a combination of platforms and systems that currently exist.

An existing amphibious platform that can accomplish this mission is available in the commercial market named the Quadski XL[2,3] It is a hybrid of an all-terrain vehicle (ATV) and a jet ski that has four wheels that can retract and subsequently transition from a drive shaft engine to a water propulsion vessel within five seconds. The Quadski can seat two personnel and weighs just over 1,400 pounds, is 11 ½ feet long, and is equipped with a 140 horse-power engine. The Quadski can travel at 45 mph on both land and water with a total range of 200 miles. A tow behind hydro trailer can be used to incorporate additional storage room

for 200 pounds of weapons, ammunition, fuel, and supplies on water and can potentially be modified for land. This use of ATVs and jet skis is not new to warfare with examples found in other services within the United States military in different missions: ATVs have been used by Special Forces during OEF/OIF, and jet skis have been experimented with for ship boarding operations by Navy SEALs.[4] Ambitious sport fisherman have proven the capabilities of modified jetski's to travel 160 miles round trip in oceans with 3-5 ft seas while traveling to offshore fishing areas.[5] These specially outfitted jetski's are often equipped with gps navigation systems, 3D Sonar, VHF radio, and satellite communications. Once encrypted, these are all applicable tools that could be used for military purposes to carry out reconnaissance missions and quickly report to the supported commander.

The Quadski XL would use existing man portable weapons, reconnaissance, and communications systems; all of which could be carried on a modified Quadski. Using man portable weapons adds a diversity of options and capabilities that can be tailored to the needs of the mission. Utilization of reconnaissance and armed UAS would give the capability to observe and engage threats outside direct fire weapons systems maximum effective range. On any battlefield, being able to observe the enemy and engage their forces before they can react has proven a key factor to success. As the technology of weapons systems continues to increase faster than our existing procurement model can support, we should leverage existing interchangeable weapons and UAS that will not grow irrelevant as a component of large and expensive platforms but can accommodate emerging technologies.

The task organization for a theoretical platoon-sized element of amphibious cavalry would be three squads and a headquarters element. Each squad would consist of six Quadskis utilizing two tow behind hydro trailers and operated by twelve Marines and a corpsman. A typical squad would have two Javelins, two Stingers, and two rear mounted medium machine guns. Additionally, they would be equipped with a switchblade armed UAS for precision engagements, two PAS-28 with Vector/DAGRs for observation and targeting, and a Puma UAS. The combination of specialties and weapons could be interchanged to suit the mission. The task organization would consist of a combination of five 03XX infantry Marines (two cross-trained as UAS operators), two Javelin missilemen, two attached light anti-air defense Stinger missilemen, a platform mechanic, corpsman, radio operator, and a squad leader.

Within and outside the littoral zone, amphibious cavalry could operate from small land masses such as islands, sand-

The Quadski in action. *(Photo by Gibbssports.com.)*

Puma being launched from the beach. *(Photo by AeroVironment.)*

bars, reefs, or while on the open water for limited durations of time. Amphibious cavalry would have the capabilities to employ its weapons systems against vessels, low flying rotary- and fixed-wing, and ground vehicles. A platoon's squads could operate independently or as mutual support adjacent squads within the same weapons range or dispersed to cover a larger area. Their strength and resiliency would lie not in armor protection but a combination of small size, speed, shallow draft, organic UAS, and the capacity in delivering high probability hit weapons systems. These platforms could travel dispersed to infiltrate into an enemy's threat ring, aggregate to mass weapons systems, then disperse for exfiltration to avoid being targeted.

Missions that required further penetration of enemy territory would need naval connectors. U.S. or coalition naval vessels such as amphibious ships, commercial, or smaller crafts such as the Navy's Mark VI patrol boat could deliver the amphibious cavalry platoon or squad to an area just outside of the enemy threat ring and under radar detection systems where they could be deployed for infiltration operations with subsidiary missions.[6] These delivery vessels could also be used for command and control, used to launch and recover larger UAS systems, facilitate resupply, or act as causality evacuation platforms. No longer would LAR be passive passengers to the fight but could instead create small mobile strong points to the front, flank, and rear that could protect the naval forces, monitor or control shipping lanes, detect underwater mines and submersibles, or deny power projection from the land, air, and sea in contested environments. The tactics would not change dramatically from the traditional LAR mission; they would just be executed from a different platform, smaller scale, and in an amphibious environment.

Launching a Switchblade. *(Photo by AeroVironment.)*

On land, the use of Quadskis as a mobility platform is a different take on an old concept. An example can be found in mounted cavalry units during the American Civil War where they effectively conducted screening, reconnaissance, and limited raids on horseback. In the book *To Fight or Not Fight: Organizational and Doctrinal Trends in Mounted Maneuver Reconnaissance from the Interwar Years to OIF* by Dr. Robert Cameron, while referring to mounted horse cavalry:

> The horse provided unparalleled tactical maneuverability and could easily be mounted or dismounted. Quiet and readily concealed, the horse moved at a reasonable speed, its height offered good visibility. Through careful, stealthy movement, a horse-mounted scout could remain nearly invisible relying on his weapon primarily to protect himself in an emergency.[7]

Additionally, waterways such as rivers and estuaries would not be obstacles but instead serve as avenues of approach or withdrawal. This is an example of something old made new through existing technologies.

Acquiring the equipment available to conduct a proof of concept is not without obstacles. Gibbs, the company that produced the Quadski XL, has sold over 1,000 models but is currently out

of production since 2015 because of the significant cost of the platform at $40,000 in the civilian market. Quadskis are still available for sale, but these are second hand and would have to be procured initially from third parties. The company still exists, can supply parts, and is currently working on future designs. Another issue is weapons systems. The Javelin has not been tested in an amphibious environment and the motion of the waves may make it difficult to track and target vessels. The Stinger missile is not effective against small UAS and an effective man portable counter-UAS weapon has not yet been produced to date. All these issues could be addressed during procurement and the proof of concept phase.

Conclusion

If LAR does not radically change, then it will become irrelevant in the amphibious fight. The future platform that Marines ride into battle will not be an LAV 2.0 but something completely different. This platform will have to be comfortable operating in an amphibious environment, able to reduce its overall signature, and leverage UAS and precision weapons. This is a concept the Marine Corps does not have to wait years in the future to begin testing since all the assets already exist. Once a proof of concept has been tested and solidified at the squad level, this concept can be developed at the platoon and higher level. If LAR does not make rapid and significant changes to offer these capabilities to the naval forces, it will create gaps in our overall capabilities and will provide an advantage to our adversaries.

Notes

1. Gen David H. Berger, *38th Commandant's Planning Guidance*, (Washington, DC: 2019 July).

2. Information available at www.gibbssports.com/quadski

3. Maj Brian Jaquith first proposed the idea of using the QuadSki as a ship to shore platform for forcible entry during an informal conversation in November 2016 while in Okinawa, Japan.

4. Kyle Mizokami, "US Navy SEALs Have Special Ops Jet Skis: The SEALs and Potential Adversaries Iran and Russia Both Use Personal Watercrafts," *Popular Mechanics,* (August 2019), available at www.popularmechanics.com.

5. Jeff Hemmel, "Fishing From a Jet Ski: We Explore the Extreme Sport of Fishing from a Personal Watercraft," *Boating Magazine,* (August 2016), available at www.boatingmag.com.

6. LT Luke Feist suggested the use of the Mark VI patrol boat as a possible candidate to transport the QuadSki over long distances and that the QuadSki could possibly be used for underwater threat detection during an informal interview on 13 August 2019.

7. Dr. Robert S. Cameron, *To Fight or Not to Fight? Organizational and Doctrinal Trends in Mounted Maneuver Reconnaissance from the Interwar years to Operation IRAQI FREEDOM*, (Scotts Valley, CA: CreateSpace Independent Publishing Platform, December 2013).