

Go All In

The Marine Corps guide to maximizing the ACV

by Maj Justin Davis

“The Marine Corps must be able to fight at sea, from the sea, and from the land to the sea; operate and persist within range of adversary long-range fires; maneuver across the seaward and landward portions of complex littorals; and sense, shoot, and sustain.”¹

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family of vehicles (FoV) that provides the requisite lethality, maneuverability, and survivability to fight and thrive in support of naval concepts.

The Marine Corps has benchmarked maneuver warfare in its ethos. While the term “maneuver” can manifest itself in multiple domains, for our infantry, it implies gaining a positional advantage to place an adversary in a dilemma.² Armored vehicles enhance maneuverability, facilitate speed and tempo, and provide armor-protected firepower. Effectively removing armor capabilities will relinquish maneuver capability in the water and on land; the ability to maneuver at speed in a vehicle while protected should warrant further analysis. Let us not forget that the infantry, armor assets, and others within the GCE are the only ones that can seize territory (defined as “clear a designated area and gain control of it”)—a must if you want to establish expeditionary advanced bases (EAB).³ The Marine Corps would be arrogant to think it could always be in a position of advantage before the first shot is fired. From a historical context, you need not look further than every major battle the Marine Corps has fought that included armor. From Tarawa to Okinawa to Inchon to Hue City and Fallujah, Marine armor has decisively tipped the scales in many a battle. Suffice it to say, an infantryman never opined, “I don’t want armor over my shoulder in a fight.” Historical times may have changed, warfare may evolve, weaponry ranges are ever increasing, but the Ser-

vice must have focus; that focus cannot lose sight of ground combat warriors deserving armor-protected firepower that will do our bidding. As such—in a relatively small Service and to reach economies of scale—the Marine Corps must take its latest platform, the Amphibious Combat Vehicle (ACV), and use it as a common type chassis with multiple variants to suit multiple mission roles and needs: enter the ACV FoV.

Commonality

Future littoral combat will be highly complex, material intensive, and risky. The Marine Corps, as the nation’s expeditionary force and advocate for amphibious warfare, must develop the capabilities in concert with the Navy to conduct such intensive operations. Armored platforms are required that are capable of independent littoral maneuver; possess the capabilities to fight in air, sea, land, and cyber domains; and support the naval services’ latest concepts. An ACV FoV would prioritize type commonality while offering waterborne, self-deploying abilities from shipping. Further, it facilitates significant progress toward reducing logistical burdens and the requirement for naval connectors.

The ACV marks a major shift in armored vehicles, as it employs wheeled technology instead of the tracked technology that is typically associated with armored vehicles. The adaptation of wheeled technology to a chassis that can be used as an armored vehicle drastically diminishes the overall weight of the vehicle. Circumstantially, it frees the ACV of weight to bring an optimal solution to self-deploying amphibious requirements while providing potential growth. The ACV offers a single-chassis platform with the ability to achieve an

optimal balance of lethality, mobility, and survivability based on revisited and all-new requirements. It facilitates complementary variants that rely on the same basic hull but vary in optimization for specified roles, all developed to enhance the ability to execute expeditionary advanced base operations (EABO) and, where need be, support a gamut of operations outside of EABO—lest the Service become one-dimensional. The ACV currently has a capacity of 10,000 pounds; moreover, if the vehicle's structure is changed, this will increase as less internal, under armor capacity will be required to transport Marines. In plain speak, that is 10,000 pounds to add turrets, cranes, missile launchers, and more; the possibilities are limitless. This capacity must be used to develop personnel, air defense, missile, logistics, scout, and fire support variants. If done, these variants will replace all amphibious assault, light-armored reconnaissance, and tank platforms in the Service and consolidate them into one platform.

Amphibious Connector Reliance Today

The Marine Corps relies on a multitude of organic and naval connectors to move the majority of its tracked and wheeled assets ashore and further sustain them. Naval connectors currently consist of Landing Craft Utilities (LCUs) and Landing Craft Air Cushions (LCACs). While these platforms provide lift, their employment is cumbersome and limited. They require swaths of well-deck storage space and are relatively defenseless, which is not useful in a semi-permissive environment or worse. They bring vehicles ashore a handful at a time and take significant time to maneuver and unload, thus negating speed and tempo—an archaic practice at best. While the LCAC and the LCU will be replaced with modernized versions, LCAC-100 and LCU-1700 respectively, their funding priority rests at the bottom of the Navy's priority list.⁴ It is highly unlikely that either program will remain fully funded in light of continuing budget compression. Neither program will adequately address the inadequacies of their predecessors,



Lethality would be greatly enhanced by adding a Javelin system like the CROWS-J to every ACV. (Photo by Markus Rauchenberger.)

each only having marginal increases in speed and tonnage capacity. Alternatively, the Marine Corps can move smaller equipment and provide sustainment via its assault support vertical lift platforms to include the new CH-53K and MV-22. While these platforms are excellent in their own right, they require some level of escort and, by that margin, air superiority and/or supremacy to maneuver. Furthermore, their extravagant procurement prices make their utility even more marginal in combat against a peer adversary with legitimate air-to-air detection and prosecution capabilities. The Services insistent reliance upon these connectors hamstring its ability and makes it vulnerable. As such, support to EABO with naval connectors should be reduced to the minimal extent possible.

ACV Today

The ACV is executing final testing prior to a fielding decision on its most basic variant: ACV-P (Personnel). This vehicle provides evolutionary capability over the legacy vehicle it was designed to replace. Key Performance Parameter documentation currently articulates the requirement for a command and control, recovery, and gun or 30mm cannon variant.⁵ While these requirements are a baseline, they almost mirror the

legacy platforms requirements with little thought given to today's naval concepts and force design requirements. The following should be the vision for an ACV FoV procurement in support of EABO to include personnel, air defense, missile, logistics, scout, and fire support variants.

ACV–Personnel (P)/Priority #1

“Maneuver across the seaward and landward portions of complex littorals.”⁶

The ACV-P is the base version for the platform and offers a common chassis for all other proposed variants. ACV-P incorporates a crew of three and is designed to maneuver a squad of thirteen Marines while providing a stabilized weapons platform to support maneuverability and drastically increasing force armor protection. ACV-P fields an XM153 Protector Remote Weapon Station (RWS) that facilitates a fully stabilized weapons platform while the vehicle is maneuvering, and thus ACVs can provide direct fire gunnery under all maneuver circumstances. The RWS

provides the capability to engage adversarial aviation assets, to include unmanned aerial systems and surface born threats, such as fast attack craft and fast inshore attack craft. While the ACV-P enhances the lethality of the infantry squad for which it embarks, it is reliant upon weapon systems that are legacy weapons in themselves: the M2 .50 Cal machine gun is very much the same weapon it was when designed in 1918; the MK-19 grenade launcher is very much the same weapon it was when designed in 1966. While both weapons are viable, they lack the range and lethality to combat adversarial fixed fortifications, armor, and even naval vessels. An immediate solution is that all ACV-Ps incorporate a FGM-148 Javelin missile launcher that is already fully compatible with the XM153 Protector RWS. This will remove the requirement for the infantry to carry missile systems when operating in a mechanized environment while simultaneously doubling the range of the ACV-P's lethality radius at minimal integration and procurement cost.

ACV-AD (Air Defense)/Priority #2

"We have shortfalls in medium- to long-range air defense systems; short-range (point-defense) air defense systems."⁷

Against a peer adversary, our warfighters will face a myriad of airborne threats to include fixed/rotary wing and unmanned aerial systems. The Marine Corps has stepped out smartly with regard to the pursuit of a medium caliber weapon system and corresponding turret for use in an ACV-Gun variant. Currently, the Service is assessing two vendor turret options for the incorporation of a MK-44 30mm cannon. This variant is said to be optimized for infantry support while harnessing the ability to destroy adversary armored vehicles.⁸ While this variant is

a step in the right direction, it is one dimensional with regard to infantry support. The ACV-30 must be taken a step further and become the ACV-AD, which answers the Commandant's call for enhanced air defense systems with the integration of an Avenger/Stinger missile system. While the Stinger Missile, first developed in the late 1960s, is a relative legacy platform in itself, its capability, through extensive life-cycle modifications, is still on par with other short-range air defense missile systems. The ACV could mount a larger missile system if necessary, but there is a large capability gap between the Stinger Missile and the next step-up in capability—the Patriot Missile. The Marine Corps divested itself of its medium-range air defense systems long ago in what was the MIM-23 Hawk system, which was traded for naval assurance of air defense via the Aegis system coverage.⁹ The incorporation of an Avenger system, in addition to a medium caliber weapon system, will greatly enhance air defense to the infantry and its supporting apparatus. The genius of an AD variant is that the medium caliber cannon and its co-axial medium or heavy machine gun can be used in the direct fire gunnery role thereby making this platform multi-functional in its support to ground maneuver.

ACV-Missile (M) / Priority #3

"We have shortfalls in expeditionary long-range precision fires."¹⁰

Senior leadership has strongly advocated for long-range precision fires—essentially, missiles capable of striking surface targets to include waterborne ones. This procurement is an integral portion of the Service's contribution to the greater naval mission to include sea-control and sea-denial. The Marine Corps has been quick to initiate procurement of a system that supports the use of the Kongsberg Naval Strike Missile, a proven missile already in use by our own Navy and other allied partners. While the missile procurement itself is sound, the Service has done so with a holistic focus on a truckbased solution that will require vulnerable connector platforms or vertical assault support to facilitate littoral maneuver and sustainment. Alternatively, the Service should utilize its newest armored vehicle as a platform for missiles. ACV-M would incorporate a system similar to what is currently optimized in the HIMARS



An ACV-AD would look comparable to the Army's quest for short-range air defense replacement for the Avenger. (Photo by Sgt Anthony Hewitt.)

but adapted to facilitate the use of anti-ship cruise missiles, such as the Naval Strike Missile. Missile launcher and ammunition weight will be the only limiting factor as to how many launchers and missiles can be carried. To optimize this solution, ACV-Ms would be incorporated into unit compositions that include other ACV variants who can provide the requisite ammunition and, more importantly, the required lift apparatus to reload the launcher. These ACVs can be provided in a small but comprehensive force package that can self-sustain without the need for naval connectors, runways, or vertical replenishment. Further, these armored vehicles would incorporate additional weapons from pintle mounts that would enable them to defend themselves. Moreover, the ACV's integral armor provides far superior force protection measures than any truck solution could hope to achieve.

ACV-L (Logistics)/Priority #4

“Forces that cannot sustain themselves inside the Weapons Engagement Zone are liabilities.”¹¹

An undoubtedly important piece of any equipment's sustainment is its maintenance requirements and ability to replenish. While requirements documentation already supports the procurement of a recovery variant of the ACV, the requirements need to go further in order to make this a true logistics vehicle instead of just a recovery vehicle. First, its crane and winch package must be modular; the crane and winch should be able to be removed from the vehicle when they are not required. When these apparatuses are removed from the vehicle, the Service would have a large flatbed self-deploying amphibian that can be loaded with ammunition, including Naval Strike Missile reloads, to replenish ACVs and equipped EABs. Undoubtedly, testing will need to be



ACV-M could bring self-deploying long-range fires to the GCE without footprint of HIMARS or Patriot. (Photo by Jason Cutshaw.)

done with all the various load packages to ensure center of gravity requirements are met when conducting waterborne movement. This concept is simple, feasible, and achievable if the ACV Recovery requirements are enhanced into a logistics variant with built-in modular adaptability. A chassis like this, with an open bed when the crane module is not mounted, would also serve as the base for ACV-M. Multiple ACV-Ls will allow a self-sustained force the ability to reload large-scale ammunitions without the requirement for external support.

ACV-S (Scout)/Priority #5

“All-domain reconnaissance and counter-reconnaissance will be a critical element of any future contingency.”¹²

The Service is well into its search for a Light Armored Vehicle (LAV) replacement; these efforts have manifested themselves in the Advanced Reconnaissance Vehicle (ARV). Currently, two vendors are building technology demonstrators that will go through a

gamut of testing to inform requirements documentation for the LAV replacement. The ARV contenders are currently optimized to replace the LAV but do little to enhance commonality with a comparable other system already coming to fruition—the ACV. The LAV replacement should be based on the ACV and manifest itself in a Scout variant. ACV-S will have a self-deploying, ship-to-shore maneuver capability, which will negate the need for connectors. The requirement to maneuver ARVs on a connector, similar to what is done today with LAVs, is constraining the weight and dimensions of the ARV and, therefore, reducing the platform's capability. Naysayers of an ACV-S vehicle will claim that its size makes it unnecessarily large as a reconnaissance vehicle. To counter this claim, one need not look further than our partners in Australia who are procuring the Boxer eight-wheel platform for their reconnaissance requirements to directly replace their Australian LAVs (ASLAVs), an LAV variant.¹³ An ACV-S will enable commonality across armored platforms, realize economies of scale in manufacturing and parts procurement, and increase the propensity for personnel to be proficient across all future armored platforms within the Service.

“Attrite adversary forces, enable joint force access requirements.”¹⁴

With the recent announcement that the Marine Corps will divest itself of its M1A1 tanks, and thus its tank battalions, it is worth a look at alternative options that could provide type commonality with the ACV while providing the direct gunnery fire support that the infantry has come to expect from a tank platform. What an ACV fire support variant cannot do is replace a main battle tank; it does not have the armor or weight characteristics to do so. However, it can provide comparable lethality and mobility that the infantry has come to expect from tank support. ACV-FSV



Like the LAV, a logistics/recovery variant of ACV would bring great modular utility in the GCE.
(Photo by Sgt Tatum Vayavananda.)

would give the Service an ability to engage adversarial armored vehicles and fixed fortifications, all within the confines of a self-deploying amphibian. The

Service should, at best, field a vehicle within this realm or at least, conduct a trade and industry analysis of comparable eight-wheeled fire support vehicles

Call For Papers

Marine Corps University and the Marine Corps Association & Foundation are pleased to announce a call for papers for the annual President’s Lecture Series essay contest. This year’s lecture series is entitled “Great Power Competition,” and the associated essay contest challenges participants to consider how leaders might respond to the security challenges posed by the reemergence of great power competition.

Essay Topic

How might the tenets of Maneuver Warfare inform the Nation’s approach in responding to the reemergence of great power competition?

Essays should be at least 1500 but no more than 3000 words in length. Essays are due by 12 February 2021 and must be submitted via email to Ms. Angela Anderson, Director, Marine Corps University Press at angela.anderson@usmcu.edu. Winners will be announced in April 2021.

Prizes

Winning Essay in Each Category

- Cash award and plaque provided by the Marine Corps Association & Foundation
- Publication in *Leatherneck*, *Marine Corps Gazette*, or *Marine Corps History*
- Recognized at a Marine Corps University Lecture Series Event

Two Honorable Mentions in Each Category with a cash award provided by the Marine Corps Association & Foundation.

Contest Categories and Eligibility

- Active Duty and Reserve E5 & Below
- Active Duty and Reserve E6 & Above
- Active Duty and Reserve O3 & Below
- Active Duty and Reserve O4 & Above



to determine if further procurement is valid, warranted, and achievable.

Cancel ACV-C

There is a current requirement for a command and control variant for the ACV platform; this is a misplaced effort. For one, all variants of ACVs will field far superior communication and battlefield management systems than what is currently used in an Amphibious Assault Vehicle (AAV) today. Additionally, with the call for disaggregated operations at small unit levels, the likelihood is small to none of regimental and battalion level staffs wanting to establish command posts from an ACV-C. The vehicles electromagnetic signature will likely cause a disproportionate response from adversarial forces that will make it a hazard on the future battlefield. Ad-

ditionally, it is foolish to create a variant that, in correlation with the current AAV-C, is only used by the infantry and tank communities. The tank community is already being divested as previously stated. The infantry community simply does not use the vehicle to the proficiency that they should; thus, the platform is shied away from. A cursory review of the last five years of after action reports from integrated training exercises leads to a litany of negative comments and misuse towards the platform from the Infantry community.¹⁵ This leads to the simple question, if the end user does not utilize it, why would the Marine Corps procure such a vehicle? The habit of utilizing pre-existing requirements associated with legacy platforms as a basis for new systems needs to cease. The Marine Corps would do well to pay attention to end user feedback and comments and delete this variant from thought. Its continued pursuit will lead to a path that is comparable to the use

Conclusion

The advent of the ACV presents a remarkable opportunity for the Marine Corps and the greater naval Service. It provides an effective and timely option to address existing critical capabilities gaps in an armored and thus more survivable platform that is already in production. It is imperative to break the mental model of what we consider an ideal amphibious force now and instead evolve our expeditionary mind set to meet future challenges that exceed our relative understanding. In concert with *FD30* and the naval Services' latest concepts, the time is here and now to develop the ACV into an FoV that is suitable

to the probable conflicts of the future while still be able to prosecute those that are unforeseen. Recapitalizing its capabilities with a mutually supporting ACV FoV is the only way the Marine Corps will be able to conduct contested amphibious operations in the future with the staying power to be a viable threat to peer adversaries. The ACV FoV provides a multi-variant platform that can fulfill a multitude of naval force needs with minimal developmental, integration, fielding, and sustainment costs. It will bring unsurpassed maneuver and lethality options for a commander with an ability to generate heavy to light force packages based on the same platform. An armored force maneuvering from the sea that can defend itself and exert sea control and denial in contested littorals will facilitate the Marine Corps' ability to conduct EABO and truly embrace disaggregated operations with the staying power to be a credible force.

... all variants of ACVs will field far superior communication and battlefield management systems than what is currently used in an Amphibious Assault Vehicle (AAV) today.

Notes

1. Headquarters Marine Corps, *Force Design 2030*, (Washington, DC: March 2020).
2. Headquarters Marine Corps, *MCDP 1, Warfighting*, (Washington, DC: June 1997).
3. Headquarters Marine Corps, *MCDP 1-0, Marine Corps Operations*, (Washington, DC: August 2011).
4. Richard R. Burgess, "Restoring Afloat Readiness is Top Navy Unfunded Priority," *Seapower Magazine*, (January 2017), available at <http://seapowermagazine.org>.
5. Marine Corps Combat Development Command, "Amphibious Combat Vehicle Update," (Quantico, VA: April 2020).
6. *Force Design 2030*.
7. Ibid.
8. "Amphibious Combat Vehicle Update."
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11. Ibid.
12. Ibid.
13. Nigel Pittaway, "Rheinmetall Wins \$3 Billion Australian Armored Vehicle Competition," *Defense News*, (March 2018), available at <https://www.defensenews.com>.
14. *Force Design 2030*.
15. Nicholas Kostovny, "Integrated Training Exercise AACV7 Employment Trends, FY-13," (PowerPoint presentation).

