Amphibious Combat Vehicle – Command and Control Variant (ACV-C)

The U.S. Marine Corps regiment or battalion command group equipped with the Amphibious Combat Vehicle – Command and Control variant (ACV-C) is operationally effective as a stationary command post. The ACV-C is suitable and survivable to most threshold ballistic threats. It is vulnerable to cyberattack from nearsiders with physical access to the ACV-C.

SYSTEM DESCRIPTION

The ACV-C is a mission-role variant in the Amphibious Combat Vehicle (ACV) family of vehicles. It shares a common hull, powertrain, drivetrain, water propulsion system, and survivability suite with the baseline Amphibious Combat Vehicle – Personnel variant (ACV-P) and integrates additional radios, antennas, and a larger battery pack to support silent watch operations. The ACV-C is equipped with seven radios that allow secure voice and data communications.

MISSION

The ACV-C serves as a tactical-echelon command post for the U.S. Marine Corps regiment or battalion, allowing the Commander to provide under armor command and control (C2) of the maneuver formation, as well as enabling the staff to develop operational situational awareness, perform operations planning, process intelligence, coordinate the delivery of fire support assets, and coordinate logistics support.

PROGRAM

The ACV family of vehicles is an Acquisition Category IB program with four variants: Personnel (ACV-P), Command and Control (ACV-C), Maintenance and Recovery (ACV-R), and Medium Caliber Cannon (ACV-30). DOT&E reported on the ACV-P in November 2020. The U.S. Navy made a production decision in March 2022 to produce the ACV-C. The U.S. Marine Corps is still developing and testing the ACV-30 and ACV-R variants.

» MAJOR CONTRACTOR

- BAE Systems Land & Armaments L.P. – Sterling Heights, Michigan

TEST ADEQUACY

ACV-C testing was adequate to support the evaluation of operational effectiveness, operational suitability, and survivability. The Marine Corps Operational Test and Evaluation Activity conducted the FOT&E and an adversarial assessment at the Marine Corps Base Camp Pendleton, California from January 20 to February 11, 2022. The Army Aberdeen Test Center conducted ACV-C LFT&E in Aberdeen, Maryland from May 2021 to January 2022. All testing was conducted in accordance with DOT&E-approved test plans and DOT&E observed the test.

PERFORMANCE

» EFFECTIVENESS

The ACV-C is operationally effective as a stationary command post but not operationally effective as a mobile command post. The ACV-C does not have enough secure beyond-line-of-sight (BLOS) voice and data nets to support the C2 mission. When the ACV-C is stationary, embarked staff can set up additional BLOS external antennas to support communication demands. The embarked staff is limited to a single BLOS net when the ACV-C is mobile.

» SUITABILITY

The ACV-C is operationally suitable. It exceeded the operational availability requirement, and the maintainers were able to remedy failures quickly, reducing system down time. The ACV-C did not meet its reliability requirement. Frequent communication failures degraded the ACV-C's C2 mission effectiveness. The embarked staff need more hands-on training in troubleshooting frequent communication problems.

» SURVIVABILITY

The ACV-C is survivable and meets the threshold-level force protection requirements against most required kinetic threats. It is vulnerable to nearsider attacks with physical access to the vehicle in a cyber-contested environment. The ACV-C's segmentation of communication and automotive networks helps mitigate some cybersecurity vulnerabilities.

RECOMMENDATIONS

The Marine Corps should:

1. Provide additional BLOS voice and data networks to support the C2 mission.
2. Improve the reliability of the communication system.
3. Train ACV-C crews to adequately support the C2 mission.
4. Consider employing two ACV-C sections to support units' C2 until the ACV-C is effective as a mobile command post.
5. Mitigate the identified vulnerabilities to kinetic and cyber threats.