Program Background

The Assault Amphibious Vehicle (AAV) was initially fielded in 1972 as the Landing Vehicle Tracked 7 (LVT7). It was subsequently renamed the AAV7 and upgraded to the AAV7A1 configuration in the late 1980s and it was upgraded to the AAV7A1 RAM/RS (Reliability Availability Maintainability/Return to Standard) configuration between 1998 and 2007. The AAV, which continues to be the Marines’ primary amphibious lift and armored personnel carrier, provides ship-to-shore-to-objective mobility as well as direct fire support with organic weapons. The AAV Family of Vehicles consists of the AAVP7A1 personnel variant, the AAVC7A1 command and control variant, and the AAVR7A1 recovery variant. The AAV is scheduled to remain in service until at least 2035, requiring upgrades as a bridge to the planned Amphibious Combat Vehicle.

Program Status

The AAV Survivability Upgrade Program entered the acquisition cycle at Milestone B during FY14 and began the engineering, manufacturing, and development phase. The program improves force protection and platform survivability by integrating mature technologies into the AAV. These upgrades include belly and sponson armor, blast-mitigating seats, spall liners, and automotive and suspension upgrades. Currently
slated for AAV personnel and AAV Command variants, the upgrades will provide Marine Corps operational forces with four battalions of lift, plus some additional support capabilities. A limited number of AAV recovery variants and 22 AAV personnel variant with Mine Clearance System) are planned for a partial survivability upgrade. Milestone C was held in Aug 2017 authorizing entrance into the production and deployment phase. Initial Operating Capability is slated for FY19.

Upcoming efforts will focus on numerous subsystems and components that will require technology refresh and/or upgrades; radios and intercoms, suspension, and driver's display. The requirements of the AAV Survivability Upgrade Program and legacy sustainment may be met with non-developmental items and mature technology. The following areas, however, may offer opportunities where advanced technology could benefit the AAV.

**AAV’s Top Technical Issues**

1. **Survivability**
   Technologies that provide advances in lightweight armor, blast seats, and spall liner to improve survivability and reduce weight would benefit the AAV Survivability Upgrade.

2. **Weight/Buoyancy Management**
   Alternative lightweight, economical materials, along with design improvements to increase and protect buoyancy would benefit the AAV Survivability Upgrade.

3. **Reliability/Sustainment**
   The AAV is a 40-year-old platform that will remain in service for years to come. The day-to-day logistics, maintenance, and technical challenges of managing such a dated platform would be mitigated by advanced technology that increases reliability and reduces operation and maintenance support costs. Advances in diagnostics and modernized maintenance management would also benefit the AAV fleet.
**AAV Survivability Upgrade**

**ACAT III / MS B**

### Key Events
- **Operational Assessment:** 10 Apr–15 Jun 17
- **Milestone C:** Aug 17
- **LRIP Option award:** Aug 17
- **IOC:** 3QFY19
- **FOC:** 4QFY23

### Program Status/Issues/Concerns
- **Acquisition Status:** Engineering Manufacturing Development
- **Comments:**
  - Prototypes delivered / testing began 2Q FY16

### Description:
The Assault Amphibious Vehicle (AAV) Survivability Upgrade is an ACAT III program initiated to increase AAV7A1 force protection while maintaining required land and water mobility performance. This upgrade is derived from the need for an operationally effective amphibious armored personnel carrier capability bridge until the future amphibious portfolio of vehicles reaches full operational capability.

### Table:

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AAV Technical Issue #1 Survivability

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Concept to Capability Mapping Alignment Process

Active & Potential Investment Opportunities

Program Milestone & Insertion Points


DT/RQT/CA/LF | FUSL/PQT/RQT/IO&T&E | IOC | FRP |

Proteus: Adaptive Camouflage in Organoids
Q.E.D.: Demonstrate Value via Force-on-Force Simulation
MARS: Sensor and Perception sub-system development
MARS: Perception and World Model sub-system development
MARS: Localization and spatial orientation sub-system development
Wave Prediction from a marsupial platform
Amphibious Combat Vehicle (ACV) 1.X Mobility Enhancements
Multi-DOF Blast Effects Simulator
Amphibious Swarming Vessel

Technology
- Proteus: Adaptive Camouflage in Organoids
- Q.E.D.: Demonstrate Value via Force-on-Force Sim
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- Amphibious Swarming Vessel

Venues
- TARDEC E&O
- SBIR/STTR

TTA | POM Funding | T
AAV Technical Issue #1 Survivability

**Overview**

Program Milestone & Insertion Points

- **2017**
  - DT/RGT/OA/LF
  - FUSL/PQT/RQT/IOT&E

2018

- Adaptive Hull Structures
  - High-Speed Amphibious Assault Vehicle Hull
  - Anhedral Foils (Halobates II)

2019

- Detection Avoidance material and M&S Development
  - Aquilus Based AFES
  - Active Protection Technology

2020

- Next Generation Lightweight Armor

2021

2022

2023

**Concept to Capability Mapping Alignment Process**

**Funding Profiles ($M)**

- **S&T (6.2/6.3)**
  - FY17: 2.21
  - FY18: 1.36
  - FY19: 1.61
  - FY20: 0
  - FY21: 0
  - FY22: 0
  - FY23: 0

**Technology**

- Amphibious Swarming Vessel
- Adaptive Hull Structures
- High-Speed Amphibious Assault Vehicle Hull
- Anhedral Foils (Halobates II)
- Detection Avoidance material & M&S Development
- Detection Avoidance Technologies
- Aquilus Based AFES
- Active Protection Technology
- Next Generation Lightweight Armor
AAV Technical Issue #1 Survivability

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Active & Potential Investment Opportunities

- Biological Design Features that Retard Visual Detection and Recognition
  - Nanostructured Carbide Armor Composites
  - Advanced Topcoat Systems for Ground Vehicles

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Concept to Capability Mapping Alignment Process

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Science & Technology 6.1 System & Development 6.4
AAV Technical Issue #2 Weight/Buoyancy Management

Active & Potential Investment Opportunities

- Amphibious Combat Vehicle Fuel Efficiency Improvement
- Electrical Scavenging and Energy Regeneration for Improved Vehicle Efficiency
- Fuel Efficient ACV
- Fuel Efficient AAV/ACV
- ACV 1.X Mobility Enhancements
- Buoyancy And Speed Enhancement - Inflatable Kit (BASE-IK), Navatek Ltd.
- Lightweight Vehicle Exhaust for Amphibious Vehicles

Advanced Vehicle Power Technology Alliance

Funding Profiles ($M)

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