

Section 7

PEO LS PROGRAMS

Advanced Technology Investment Plan

Section 7.1 PEO LS Program

ASSAULT AMPHIBIOUS VEHICLE



Program Background

The Assault Amphibious Vehicle (AAV) was initially fielded in 1972 as the Landing Vehicle Tracked 7 (LV7). 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 Phase 1 Increment 1.

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 will improve 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 expected automotive and suspension upgrades. Currently slated for

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Part One

AAV Survivability Upgrade

ACAT III / MS B

MS C = 2QFY17
IOC = 4QFY19

AAO = 3Q2
FOC = FY23

Next Contract Action:
Low Rate Initial Production Option:
Mar FY17-4QFY19

Issues: Maintaining FOC in FY23



PROGRAM	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23
Milestones & Phases	MS B			MS C		FP				
SETR Reviews										
Test Events	DMD K	Build Option		LRP Option						
Contract Events										

Legend: N = no capability, T = Threshold, O = Objective

Part Two

AAV Technical Issue #1 Survivability

AAV	2015	2016	2017	2018	2019	2020	2021
Program Milestone & Insertion Points	CDR	TR	DTDA	FULL-PROTOWISE	FRP	Production Award	
Active & Potential Investment Opportunities	Human Body Model \$1,30M	Detection Avoidance Material and MAS Development \$1,75M	Interior Impact Protective Solutions	Mitigation of Blast Injuries \$0.87M	Advanced Camouflage \$1,40M	ACV High Water Speed Parameter Setting Study \$0.73M	
D & I E & C							
CONCEPT TARDIG							
CONCEPT TARDIG							
CONCEPT TARDIG							
Funding Profiles (\$M)	FY15	FY16	FY17	FY18	FY19	FY20	FY21
S&T (6.2/6.3)	2.31	1.74	1.26	1.26	1.26		

6.1 Science & Technology 6.3 6.4 System & Development 6.7

Part Three

Program Executive Officer Land Systems (PEO LS) consists of seven program offices overseeing 21 programs. The following sections discuss the Advanced Technology Investment Plans for each of the pertinent PEO LS programs. Each selected program has a dedicated section that is described in the three parts listed below. The goal is to use all available Science and Technology (S&T) venues to leverage resources for PEO LS programs to close warfighter gaps, and solve program technology requirements.

Part One describes the program's background, status, and Top Technical Issues.

Part Two describes the program's quad chart, which addresses the program's fundamental information

and characteristics, i.e., specific information, including a detailed program description, status, and schedule.

Part Three graphically addresses the Top Technical Issues for each program. Each technical issues and related S&T projects are aligned to the current program schedule. It is divided into the following four sections:



AAV Technical Issue #1 Survivability

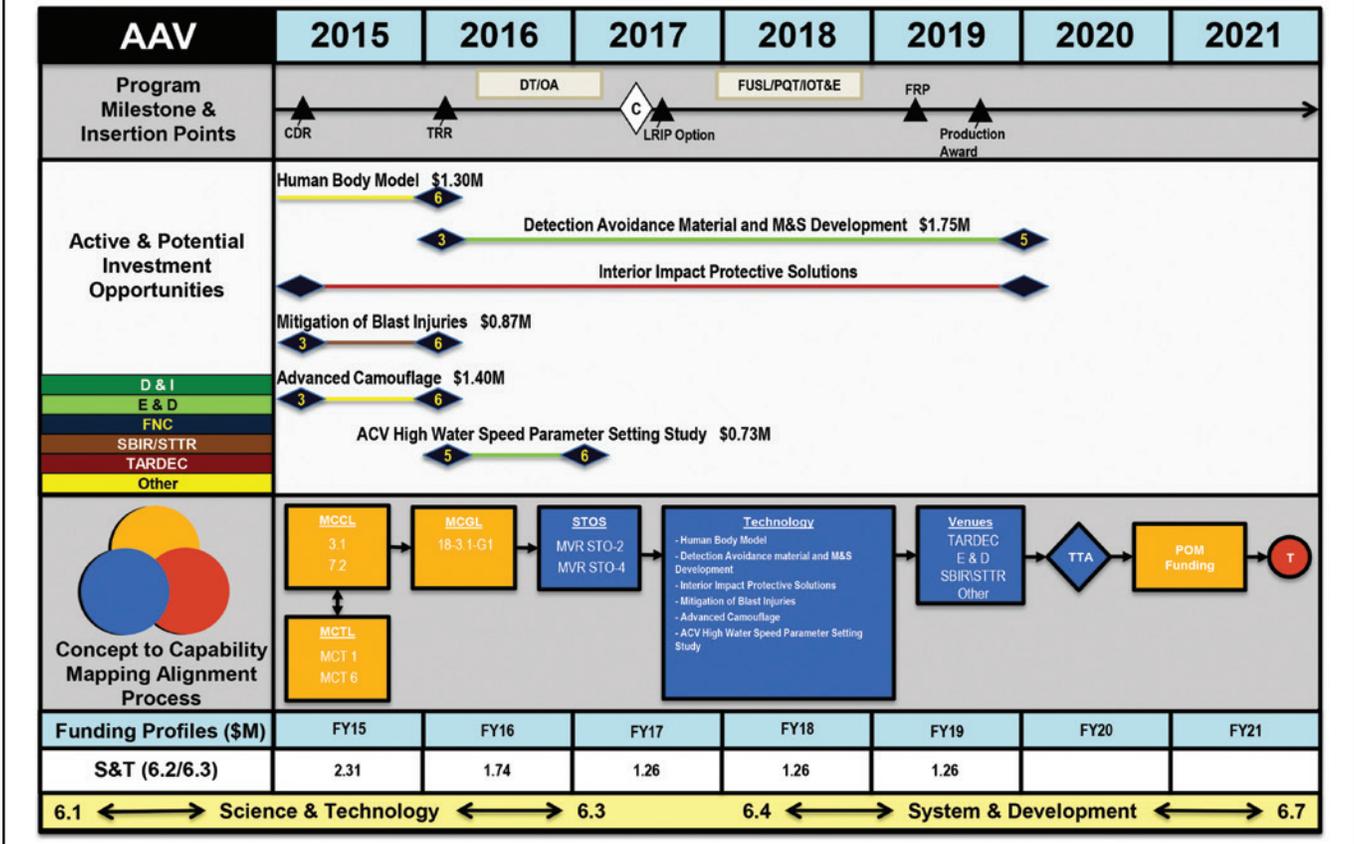


Figure 7-1. AAV Technical Issue #1 Chart

Row one identifies the program’s major milestones.

Row two displays S&T initiatives that are targeted to solve the technology issue.

T The red circle with a T in the center is used at the end of a project to identify initiatives being targeted for transition.

1 The dark blue diamond with a yellow number in the center depicts the expected Technology Readiness Levels (TRL) at the beginning and end of projects. TRLs are used to measure the maturity level of the S&T activities and initiatives.

- **TRL 1** - Basic principles observed and reported.
- **TRL 2** - Technology concepts or applications (or both) formulated.
- **TRL 3** - Analytical and experimental critical function or characteristic proof-of-concept.
- **TRL 4** - Component or breadboard validation in a laboratory environment.
- **TRL 5** - Component or breadboard validation in a relevant environment.
- **TRL 6** - System/subsystem model or prototype demonstration in a relevant environment.
- **TRL 7** - System prototype demonstration in an operational environment.

The color key on the far left side of the chart identifies the seven different types of S&T venues.

Discovery and Invention (D&I) programs consist of basic and early applied research.

Exploitation and Development (E&D) focuses on incorporating research into systems in preparation for inclusion into acquisition programs.

Future Naval Capabilities (FNC) provide the best technology solutions to formally defined capability gaps and usually leverage past D&I and E&D successes.

SBIR/STTR are composed of programs that are focused on small business innovation.

Tank Automotive Research, Development and Engineering Center (TARDEC), located in Warren, Michigan, is the U.S. Armed Forces' research and development facility for advanced technology in ground systems. It is part of the Research, Development and Engineering Command (RDECOM), a major subordinate command of the United States Army Materiel Command. Current technology focus areas include Ground Vehicle Power and Mobility (GVPM), Ground System Survivability, and Force Protection Technology, among others.

Other is a variety of other investment types, including projects involving the Office of the Secretary of Defense; initiatives that are sponsored by the program office, such as Phase "A" studies and congressional "plus ups"; and all those not otherwise covered. See Section 8 for a detailed list of applicable S&T venues.

Row three traces the issue from the originating Marine Corps Capabilities List (MCCL), through the identified gap via the Marine Corps Gap List (MCGL), to the Science and Technology Objectives (STOs) that are identified in the Marine Corps S&T

Strategic Plan, and other S&T venues that address the technical issue to illustrate the transition of technology to the Program of Record.

The mapping alignment process traces the technology issue/S&T initiative from the required capability to the transitioned technology. Using AAV Technical Issue #1, Survivability as an example, MCCL 3.1 (Maneuver Forces) identifies the capability that is associated with the technical issue. Applicable tasks identified from the Marine Corps Task List (MCTL). MVR STO-2 addresses the Maneuver (MVR) STO addressing the functional area of ground vehicle mobility. The issues are then traced through potential technologies and venues to the funded transition of that advanced technology capability. This is done for each program's top technical issue to map from the concept to the capability, identifying how to solve this technical problem, and how it can transition into a program of record.

The bottom three rows describe the funding profile associated with the S&T initiatives for each listed year.

In summary, the seventh edition of the Advanced Technology Investment Plan captures the active S&T initiatives that are currently being pursued by the program office and are aligned to high-priority technical issues and capability gaps in order to "Focus the Future Faster" by delivering gap-closing capabilities to the warfighter.