



AAV/MPC/ACV INDUSTRY DAY



April 6, 2011



Agenda

- **Welcome/Admin Information – Marc Paquette**
- **Introductions – Mr. Taylor, PEO LS**
- **Requirements Overview – Brigadier General Bullard, CD&I**
- **USMC Combat Vehicle Path Forward – Mr. Taylor, PEO LS**
- **AAV/MPC/ACV Commonality – Marc Paquette**
- **Break**
- **AAV RFI – Dennis Boucher**
- **MPC RFI – Bill Ross**
- **ACV RFI – Colonel Moore**
- **Closing Remarks**
- **One – on – One Sessions (For those scheduled)**



Admin, Logistics & Ground Rules





Ground Rules

- **This is an “Unclassified” brief.**
- **Silence all cell phones.**
- **No cameras or recording devices allowed other than those authorized by the Government.**
- **No sidebars between industry and Government.**
 - **Potential of ELIMINATING our industry partners from any future competition.**
- **No questions during the briefs.**



Ground Rules

- **All information remains pre-decisional.**
- **Requirements are subject to future updates.**
- **Request for proposals, once released, will take precedence over Industry Day information and any information on the website.**



Ground Rules (cont)

- **All questions must be submitted in writing.**
 - **Please use the index cards.**
 - **Additional index cards are placed at the doors.**
 - **Questions need to be placed in boxes at the doors.**
 - **Please print legibly.**
 - **Contact information is optional, but will not be published.**



Ground Rules (cont)

- **Questions and answers received shall be posted on the web page below.**
- **All material presented today and available for public release will be available on this website:**
- **www.marcorsyscom.usmc.mil/peolandsystems/**



Ground Rules (cont)

- After today all questions must go through the contracting officers listed in the RFI's.
 - Commonality and ACV: Valerie Mosqueira (valerie.mosqueira@usmc.mil)
 - AAVS: Edwin Wright edwin.wright@usmc.mil
 - MPC: Mike Suhy, michael.suhy@us.army.mil
- Any comments on today's event should be sent to valerie.mosqueira@usmc.mil to be used to improve future Industry Days.



Rules of Engagement for One – on – One Sessions

- **For those of you scheduled for One – on – One Sessions today, the staging area is in the lobby.**
- **Have your team there at least 5 minutes before your scheduled time.**
- **You will be escorted by a Government rep.**
- **All discussions will be unclassified.**
- **All information will be treated discreetly.**
- **Q&A's discussed will be documented.**



Mr. William Taylor ***Program Executive Officer*** ***PEO Land Systems***





Brigadier General John Bullard Jr. ***Deputy Commanding General,*** ***MCCDC***





Mr. William Taylor ***Program Executive Officer*** ***PEO Land Systems***





AAV/MPC/ACV Commonality Message To Industry





Message to Industry

(AAV/MPC/ACV Commonality)

- **The government wishes to maximize System, subsystem, and component commonality across AAV, ACV, and MPC.**
- **Increased commonality will provide opportunities to: (1) Reduce Non-Recurring Engineering R&D cost; (2) Reduce O&S cost; and (3) Reduce procurement/acquisition cost.**
- **Our intentions in sharing our thoughts on commonality with you, our “Industry Partners”, are to gain your perspectives, your ideas, suggested approaches, and obtain information from you to better guide the final development of the AAV, ACV, and MPC requirements.**



Message to Industry

(AAV/MPC/ACV Commonality)

- **Your responses relative to our thoughts are not limited and we welcome any and all ideas, proposals, and statement of capabilities. Be as specific as possible.**
- **It is highly desired that any Industry/vendor capability responses/statements be accompanied with a schedule that addresses your timelines for demonstration of Technology Readiness and Manufacturability maturity. Timeline to provide responses is NLT 22 April, 2011.**



Assumptions & Guidelines

(AAV/MPC/ACV Commonality)

- **MPC and ACV will be based on existing technology with minimal development to address specific capability shortfalls.**
- **Government desires Industry to focus on enduring solutions, not capability bridges.**
- **Government believes that commonality will enhance our LCC sustainment posture.**
- **Government believes that commonality will enhance manufacturing capability.**



Assumptions & Guidelines

(AAV/MPC/ACV Commonality)

- **Government accepts the premise that commonality may drive higher NRE cost born of cross-system integration.**
- **Government accepts the premise that commonality may drive reduction in balanced approach for each major systems (weight, cost, performance).**
- **Government desires use of an open architecture/modularity construct to the maximum extent possible.**
- **Government desires exploration in using industry standards to promote use of standard mechanical/electrical/hydraulic interfaces and design guidelines/requirements.**



How we Identified Common Areas to Share with Industry

- **WBS vertically reviewed and dissected by EFV, AAV, and MPC Program Offices.**
- **WBS horizontally analyzed with applicability to ACV, AAV, and MPC using the Relative Commonality Potential Tool – Ranking and weights applied to:**
 - **Technology Readiness Level (TRL)**
 - **Integration Complexity**
 - **Manufacturing Readiness Level (MRL)**
 - **NRE Cost**
 - **Subsystem Cost**
 - **Favorable O&S Impact**



Relevant to Industry Potential Common Areas of Focus

- 1. Auxiliary Power Unit**
- 2. Hull Armor and Recipe**
- 3. Fire Control Systems**
- 4. Fire Control Processors**
- 5. Compact Modular Sight System**
- 6. Remote Weapon Station (25-40 mm) Cannon**
- 7. Remote Weapon Station (50Cal./7.62/or MK-19)**
- 8. Processors, Controls, Displays, & Applications**
- 9. Land Suspension System**
- 10. Primary Engine System**
- 11. Transmission System**
- 12. Navigation System**
- 13. Vetronics (Vehicle Electronics)**
- 14. Mount and Interface for "CREW"**



Relevant to Industry

Potential Common Areas of Focus

15.Driver's Automotive Controls System

16.Automatic Fire Extinguishing System

17.Universal Main Weapon Mount/Interface

18.Vehicle Health Monitoring/Diagnostics & Prognostics

19.Software Development Environment

20.Primary Vehicle Application & System Software

21.Hull Accommodations (Seats)

22.External Wireless Intercom System

23.Environmental Control System

24.Hydraulic System

25.Engine Exhaust

26.Hull Hatches & Panels



**Following Pages
Contain
Detailed Information
For each of the
26 Common Areas of Interest**



Vendor Guidance

The pages to follow contain generic WBS “dictionary” type descriptions in rank ordered precedence of each of the areas we believe can attain commonality. Vendors should feel free to use these descriptions to begin formulating questions (RFI) to the government. Vendors are encouraged to expand or otherwise develop alternate descriptions to open the government’s aperture.



Details

Potential Common Areas

- 1. The APU System element contains those hardware components that provide an alternate power source. This summing element includes the APU engine and its integral subassemblies, the APU controller, air intake and exhaust, APU exhaust fan, fuel plumbing from the APU engine to the vehicle fuel system interface, and mounting hardware.**
- 2. Hull Armor provides ballistic protection to the crew, embarked Marines, and interior critical components to ensure the survivability of occupants and maintain mission essential functions.**
- 3. The Fire Control System (FCS) provides target sensing and tracking, sighting, primary weapon stabilization, and the ballistic solution computation necessary to engage targets with gunfire or other weapons. The Fire Control System is comprised of: Stabilization System; Fire Control Drive Systems; Auxiliary Sight System; Other Fire Control Parts & Systems.**
- 4. The Fire Control Processors, Displays & Controls element provides the main central processing capabilities of the Fire Control (FC) system and also provides the hardware interface for processing of the Fire Control Computer Software Configuration Item (CSCI).**



Details

Potential Common Areas (Continued)

- 5.** The Compact Modular Sight (CMS) System provides the gunner with the ability to acquire targets during day, night, and reduced visibility conditions. The CMS is composed of advanced optics that enable detection, identification, and engagement.
- 6.** Remote Weapon Station 25-40 mm Cannon.
- 7.** Remote Weapon Station that can accept/interface with 50 Cal, 7.62, or MK-19.
- 8.** The Processors, Controls, Displays, and Applications are hardware and software that enable the vehicle to provide the means to process information and present the data on a display by the use of applications. This system includes the command and Control (C2) Displays, C2 Servers, and C2 Data Bus.
- 9.** The Land Suspension System cushions the vehicle from terrain vibrations by providing a stable platform and minimizing shock, which would otherwise be transferred to the vehicle's occupants and components. Ride quality may be enhanced with the use of damping system technologies. It is anticipated that the Land Suspension System may be comprised of subcomponents such as: Track System, Road Wheels, Sprocket Carrier, Support Rollers, and Track Tensioning System.
- 10.** The Primary Engine System element contains those hardware and software components that provide primary motive force. This element includes the primary engine, its integral subassemblies, and supporting components including engine mounts and engine hardware.



Details

Potential Common Areas (Continued)

- 11.** The Transmission System element contains those hardware and software components that transmit primary engine power to primary motive force. This element includes the transmission itself, transmission electronic controls unit, transmission shift selector, final drive to transmission interface hardware, and associated hull mounting hardware.
- 12.** The Navigation Systems consists of the Inertial Navigation System (INS) and the Global Positioning System (GPS).
- 13.** The Vetronics (Vehicle Electronics) element includes the hardware used to integrate the electronic subsystems and components of the vehicle, such as computer resources, data control and distribution, controls and displays, and power generation and management. Vetronics consists of: Electronic Vehicle Control Systems (EVCS); Vehicle Control Networks & Data Buses; Electrical Power Management; Lighting; Harness & Cabling; Sensors, Switches & Other Hardware such as NATO Slave receptacle.
- 14.** Mount and vehicle interface for the CREW (Counter RCIED (Remote Control Improvised Explosive Device) Electronic Warfare).
- 15.** The Driver's Automotive Controls System element contains those hardware components that provide braking, steering, and primary engine throttle control.



Details

Potential Common Areas (Continued)

- 16.** The AFES protects the crew, engine, transmission, and APU compartment from both slow growth and overmatching ballistic threat fast growth fires. The system is capable of automatically detecting and extinguishing combat-initiated petroleum, oil, and lubricant fires before the fires can cause greater than first degree burns to the crew and the embarked Marines or cause damage to the vehicle's components, wiring, or control devices. The system is also capable of manual activation.
- 17.** The Universal Primary Weapon Mount is intended to facilitate the ability of all vehicles (AAV, ACV, MPC) to use common Remote Weapon's Stations (RWS). The concept would allow a light RWS (7.62mm, .50 Cal, Mk19) to be readily swapped with a heavy RWS (25-40mm chain gun) while in a field environment to match mission and/or threat requirements. The Universal Primary Weapon Mount may share common hardware across vehicles such as; electronic interfaces, mounting plates and gunner's station/controls.
- 18.** The Diagnostics/Prognostics shall be Modular Open System Architecture (MOSA) compliant and designed to interface with logistics support systems, such as MERIT, GCSS-MC, and Autonomic Logistics. The diagnostics systems shall provide internal and external health monitoring and rapidly isolate faults at the system, subsystem, and component level. The prognostics system shall collect, store and analyze data and report the predicted remaining operational life of the system, subsystem, and component.



Details

Potential Common Areas (Continued)

- 19.** The Software Development Environment is the specific environment of the Systems Integration Laboratory (SIL) to enable the development and test of software applications.
- 20.** The Primary Vehicle Application and System Software include the set of applications that provide the primary functions of the vehicle for mobility; power management; auxiliary systems such as bilge, fire control, and user interfaces. It also includes the operating systems for the computers in the vehicle.
- 21.** Hull Accommodations may include Marine infantry and driver seating arrangement and stowage. Hull seating arrangements include a space for a Driver and for a Troop Commander (TC) and space for including embarked troops. Seat components may include frames, cushions, supports, mounts, shock mounts, vibration isolators, and restraints.
- 22.** The External Wireless Intercom System hardware provides information through transmitting and receiving communications between the vehicle crew and individuals external to the vehicle. The voice communications of remotely located individuals are essential for safe operation of the vehicle. This system consists of the radio and antenna.



Details

Potential Common Areas (Continued)

- 23.** The Environmental Control System (ECS) provides cooling, heating, and air circulation for both the crew and embarked Marines. The ECS may include: Controllers; Compressor Motor Units; Air Handling Units (AHU); Evaporators; Refrigerant piping; Macro Air Ducting. Heating may be supplied through a Supplemental Heating System (SHS).
- 24.** The Hydraulic System may include the Hydraulic Pumps; requisite manifolds; isolation valves and circuits; filtration system; actuators; accumulators as required; attenuators; and reservoirs.
- 25.** The Engine Exhaust System element contains those hardware components that exhaust the primary engine combustion by-products to atmosphere and exhaust the scavenge air products to the atmosphere. This may include interface hardware between the engine and the exhaust system, primary exhaust system components, scavenge air system components, interface hardware for the scavenge air components to the engine, and associated mounting hardware between the hull and the exhaust system and the hull and scavenge air system.
- 26.** The Hull Hatches & Panels provide ingress and egress for the vehicle hull to accommodate a fully combat equipped 95% Marine. They may include: Troop Hatches; Ramp Door; and Maintenance Hatches that do not require special tools to provide ease of access in combat/field environments for such components and systems as engine and Transmission.



BREAK



AAV

“Assault Amphibious Vehicle”





From AAV Survivability to SLEP

“A Capability & Capacity Bridge to ACV”

- **A portion of the current AAV fleet will undergo a Service Life Extension Program (SLEP) focused on survivability IOT bridge the amphibious forcible entry gap until the ACV reaches FOC**
- **The SLEP effort will be more comprehensive than the previously planned Survivability Initiative (Fall 2010 Industry Day)**
- **Previously the Service was willing to accept reduced water mobility in order to increase Force Protection. The requirement set for SLEP will not accommodate that compromise:**
 - ***Required water & land mobility will be maintained as will payload***
 - ***At a minimum SLEP will provide Protection Upgrades, Power-Train Replacement and Suspension Component Upgrade***



The Challenge

“Maintaining Performance While Increasing Protection”

- **The focus of the AAV SLEP will be Survivability / Protection Upgrade**
- **Survivability = Weight**
- **Weight = Suspension & Power Train Growth (= *more weight*)**
- **All of this impacts Water Mobility Characteristics (*safety and performance*)**
- **Water Mobility Requirements drive how survivability is approached (*Internal or External or combination? Bolt-on after landing or organic?*)**
- **Defining the trade space between Survivability and Water Mobility (*with cost as a Key Performance Parameter*) will drive attribute refinement**
- ***CD&I is working to convert the Legacy AAV Required Operational Capability (ROC) Document to a JCIDS compliant Capability Development Document (CDD) in support of a Milestone B Decision***



Key Performance Parameters (KPP)

“Draft Performance Requirements for a SLEP AAV”

- **Water Mobility**: *Possess an average water speed of 7.0 knots (T)-10 Knots (O) through water with a significant wave height of 3.0 ft for at least 90 minutes*
- **Force Protection**: *Provide protection against kinetic threats, indirect fire, improvised explosive devices and mines*
- **Survivability**: *Minimize the likelihood of being acquired, targeted, engaged, and/or hit. Given a hit by a single threshold threat, the system shall protect critical vehicle sub-systems against the catastrophic loss of capability/functionality*
- **Land Mobility**: *At combat weight shall permit effective employment with M1A1 main battle tanks in mechanized task forces across the mission profile*
- **Availability**: *Operational Availability will be 85% (T)- 90% (O)*



Key System Attributes (KSA)

“A Reinforced Rifle Squad is Defined as 17 Marines”

- **Lethality**: *“...capable of defeating dismounted personnel in the open, light weight material rolling stock (i.e., jeeps and trucks, lightly armored vehicles, armored personnel carriers, and lightly skinned infantry fighting vehicles out to 1,200m within an engagement time of 25 seconds....”*
- **Payload**: *“...shall be capable of effectively transporting 17 (T)/ 18 (O) Marine Infantrymen and three Crewmen, their assault loads, approach march loads, existence loads, one (T) two (O) additional day of supply (DOS), and mission essential equipment...”*



Key System Attributes (KSA)

“A Reinforced Rifle Squad is Defined as 17 Marines”

- **Underbelly Protection:** *“...shall prevent incapacitation to the crew and occupants against improvised and conventional anti-personnel and anti-tank) underbelly attacks”*
- **Armor Protection:** *“...the AAV will provide protection against a 155mm HEVT from all quadrants of the vehicle, provide protection against all calibers equal to and less than 14.5mm (T) 20mm (O), provide protection against anti-personnel mines and improvised explosive devices”*



PM AAVS RFI

- **There will be an AAVS capability upgrade/Service Life Extension Plan**
- **The full extent of the upgrade/s is yet to be determined**
- **This brief contains the most up to date information available**
- **It will be competitive**
- **Schedule will be aggressive**



PM AAVS RFI

Description:

- **Armored assault amphibious full-tracked landing vehicle**
- **Three variants in the AAV Family Of Vehicles (FOV):**
 - **AAVP7A1 – Personnel**
 - **AAVC7A1 – Command**
 - **AAVR7A1 – Recovery**
- **Primary Means of Armored Protected Mobility to the Ground Combat Element**
- **Mission Profile for**
 - **20% Operation in Water**
 - **80% on Land**



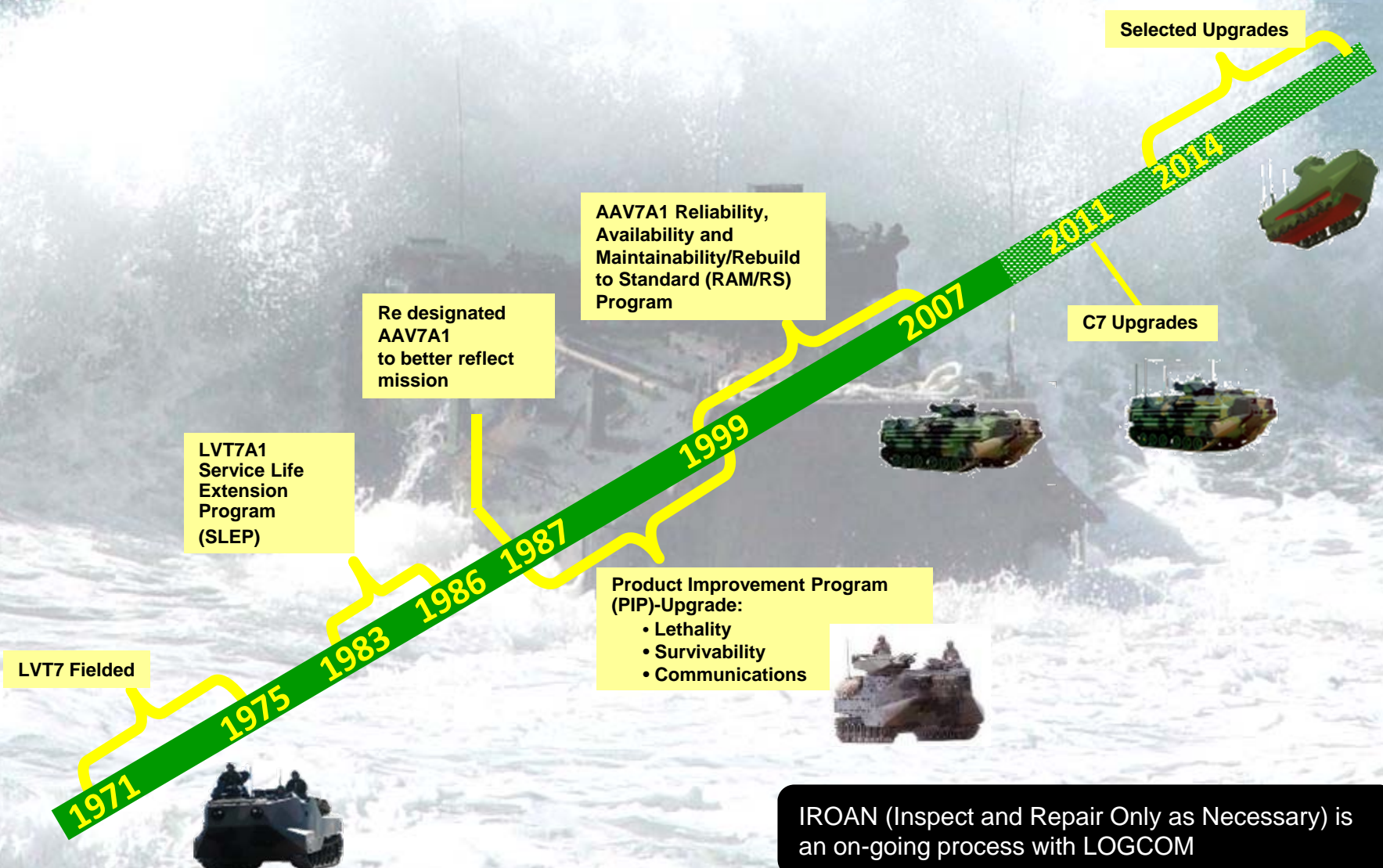
PM AAVS RFI

Mission:

- **To land and maneuver the surface assault elements of the landing force and their equipment in a single lift from assault shipping during amphibious operations to inland objectives and to conduct mechanized operations and related combat support in subsequent operations ashore.**



AAV Timeline



IROAN (Inspect and Repair Only as Necessary) is an on-going process with LOGCOM



PM AAVS RFI Scope

➤ Concept Exploration

- Includes Government led prototyping, developing, production of developmental components, subsystems and assemblies for the AAV7A1 FOV.**

➤ Implementation of Engineering Change Proposals

- Based upon Government directed concept exploration, or other Government direction, provide for the development, production, procurement, kitting, fielding, and implementation of engineering change proposals to the AAV7A1 FOV.**



PM AAVS RFI Scope

- **As an option to this effort, the Government may task the contractor to assist in the conduct of research, development, and acquisition of survivability enhancements to all or a portion of the AAVS fleet. Examples of potential enhancements include:**
 - **a. External Fuel Tank: To remove the internal fuel tank and relocate externally to limit the likelihood of loss of life and catastrophic vehicle damage due to penetration and resulting fires caused by overmatching threats and munitions, and to meet the range requirements of the current Required Operational Capability (ROC) for the AAV7A1 FOV (ROC No. MOB 1.13B).**



PM AAVS RFI Scope

- b. Underbody/ Sponson Armor Kit: (with mounting provisions and storage) To provide protection to the crew and occupants against Improvised Explosive Devices (IEDs) and conventional (anti-personnel and anti-tank mine) underbelly and roadside attacks.**
- c. Spall liner: To mitigate the behind armor affect caused by the penetration from munitions and to increase crew survivability.**
- d. Blast Attenuating Seats: To mitigate shock transmitted through the vehicle to the occupants from an underbelly attack**



PM AAVS RFI Scope

- e. Lethality: Lethality enhancements to be applied to a portion of the AAVP7A1 fleet. Options being considered include but are not limited to replacement of the current Up-Gunned Weapons Station with a 30mm Remote Weapons Station.**
- f. Propulsion System and Transmission: Upgrade of the propulsion system and supporting components to provide better performance in terms of reliability, availability and maintainability, along with improved range and mobility and reduced Total Ownership Cost.**
- g. Command and Control: Improved Command, Control and Communications (C3) Systems that may include integration of digital systems architecture along with upgraded intercom, operator displays and other components.**



PM AAVS RFI Scope

- h. Litter: Provide the capability to mount litters/stretchers inside the vehicle to support medical personnel when the vehicle is utilized as a mobile aid station and/or medical evacuation (MEDEVAC) vehicle.**
- i. Habitability: Improve the environmental conditions within the troop compartment in order to maintain the combat effectiveness of embarked Marines during ship-to-shore and landward operations.**
- j. Water Mobility: Provide mature technical modifications to the legacy water jet system in order to increase system efficiency and vehicle water speed**



MPC

“Marine Personnel Carrier”





MPC Capability / Initiative Status

“Materiel Solution – Advance Generation Wheeled APC ”

➤ Overarching CD&I Objective:

- *Field a complementary system to our heavy fully-amphibious APC***
- *Shape the requirement to provide a balance of performance, protection and payload***
- *Be effective across the full range of military operations***
- *Procure and field an advanced generation APC that will provide general support lift to Marine infantry units in our Ground Combat Element (GCE) based maneuver task force***



MPC Capability / Initiative Status

“Materiel Solution – Advance Generation Wheeled APC ”

➤ Status:

- Multiple near term analytical efforts underway to further develop & refine requirements documentation in preparation for a Milestone B Decision**
- MPC Technology Demonstrator is being exploited to inform requirements and procurement documentation, gauge system performance potential and stoke vendor interest / investment**
- CD&I is drafting a JCIDS compliant Capability Development Document (CDD) informed by the Pre-Milestone A Technology Demonstrator Effort and an eventual Milestone B Decision**



Key Performance Parameters (KPP)

“No Significant Changes Since November 2010 Industry Day”

- **Mobility**: ***“...effective employment with M1A1 across the mission profile...employment with Marine wheeled vehicles on improved roads and in urban environments...”***
- **Payload**: ***“...effectively transport occupants and associated sustainment and mission essential loads...”***
- **Force Protection**: ***“...blasts, fragments and incapacitating acceleration effects of attack from kinetic threats, indirect fire, improvised explosive devices and mines...”***
- **Survivability**: ***“...maintain degraded mobility after an attack...to travel 25 miles within 60 minutes, with a dash speed of 30 miles/hour, across the mission profile”***
- **Availability**: ***“Operational Availability for a unit of 90% (T) 92% (O)”***



Key System Attributes (KSA)

“System Must be Tactically Mobile in the Water”

- **Swim**: *“...effectively maneuvering rivers and inland water obstacles as well as swim from shore-to-shore...at 6 knots...with significant wave height (SWH) of 2ft with a 4 ft plunging surf (T) a SWH of 3ft and 6ft plunging surf (O)...”*
- **Reliability**: *“...MMBOMF of 2187 (T) 2764 (O) and a MTBOMF of 570 hours (T) 720 hours (O)...”*
- **Energy Efficiency**: *“...half the fuel consumption of an AAV at GVWR (T)... one less fuel SIXCON (900 Gallons) to refuel the MPC Company after completing the mission profile than an AAV Company (O)”*
- **System Training**: *“...shall incorporate existing training techniques, methods and resources (T) as well as incorporating embedded and collaborative training (O)”*



MPC Family of Vehicles

“Base Vehicle & Two Supporting Mission Role Variants”

➤ **Personnel: (Base Vehicle)**

- ***Manned by a crew of three – Driver, Vehicle Commander, Gunner***
- ***Equipped with either a .50 cal/40mm RWS or a medium caliber cannon***
- ***Two MPC-P will carry a Reinforced Rifle Squad***

➤ **Command & Control: (Mission Role Variant)**

- ***Two MPC-C replace communications capability of one AAVC7***

➤ **Recovery & Maintenance: (Mission Role Variant)**

- ***Two MPC-R replace one AAVR7 in the T/E due to the greater quantity of MPC in the MPC company***



Additional Requirements Definition

“Transportable with MRAP Level Protection”

➤ Protection:

- Protection will be “MRAP-level” or greater***
- Provided as a combination of Hull (A-Kit), Appliqué (B-Kit), and Add-on (C-Kit) Armor***

➤ Weight:

- Two MPC shall be capable of being transported by one Ship to Shore Connector (SSC)***
- The possibility of transporting three MPC on one SSC, at a degraded payload, performance, and protection, will be explored***

➤ Digital Backbone:

- Communications systems will provide for a “Plug-and-Play” capability allowing for future system improvements***



MPC Request For Information

- **CD&I has a draft Capabilities Development Document**
 - **Synopsized in RFI annex plus classified appendix**
 - **ALL KPP requirements MUST be met with production vehicles**
 - **EMD (baseline) vehicles need not exhibit all required capabilities. However, if not, then a plan must be identified for downstream incorporation.**



MPC Request For Information

- **RFI requests cost and schedule estimates on:**
 - **Delivery of 7 EMD (baseline) vehicles**
 - **Schedule (only) for delivery of 7 PVT vehicles**
 - **Part of initial production lot**
 - **Not separately priced**
 - **Delivery of two production lots**
 - **1st increment = 50 vehicles**
 - **2nd increment = 56 vehicles**



MPC Request For Information

- **Responses due COB Friday 22 April 2011**
- **Government responses to Industry questions are being posted**
 - **Anticipate posting of final set NLT 13 Apr**
- **POC: Mike Suhy,**
- **michael.suhy@us.army.mil**



ACV

“Amphibious Combat Vehicle”

***Rule # 1:
Weapons are not
the most important
ingredient in
winning wars.
People come first;
Ideas second and
hardware is only
third.***





ACV: Why and How

“A Self-Deploying ACV is Required”

Amphibious Combat Vehicles, as AAV replacements, will be the only mobility assets in the inventory that can transition from sea to land against opposition

- **6 January 2011: EFV Program Cancellation Announcement**
- **Our Nation’s amphibious capability remains a Marine Corps priority**



ACV: Why and How

“A Self-Deploying ACV is Required”

- **In today’s complex security environment, the execution of amphibious operations requires the use of the sea as maneuver space**
- **A modern amphibious combat vehicle is the means towards this end**
- **Service imperative / OSD (AT&L) supportive of fielding ACV capability rapidly:**
 - ***Process may be tailored to reach target fielding ACV in 7 to 10 years***
 - ***AAV upgrade initiatives will complement and mitigate risks of future ACV development***



ACV: Why and How – Continued

“Self-Deploying from Over-the-Horizon”

- **ACV is a new development and fabrication of units; not a rebuild of current AAV fleet**
- **The Marine Corps intends to mitigate risks associated with a new vehicle program and to maximize value by the use of an integrated acquisition portfolio approach**
- **Development would start using the known data and performance of the AAV and EFV to leverage work completed to date**
- ***CD&I is drafting a JCIDS compliant Capability Development Document (CDD) in support of a Pre-Milestone A Technology Demonstrator Effort and an eventual Milestone B Decision***



Desired Capability Parameters

“Effective in Permissive, Uncertain & Hostile Operational Environments”

- Move: Self deploying, fully amphibious combat vehicle to deliver a reinforced Marine infantry rifle squad from over-the-horizon (minimum of 12 NM) with speed to enable the element of surprise in the buildup ashore and to provide combat-ready Marines at the objective. The vehicle must be able to maneuver with a mechanized task force during sustained operations ashore***
 - Water speed and land mobility balanced with survivability parameters that enable operations across the range of military operations (ROMO)***
 - Absent the requirement for a planing hull, trade space between survivability and water mobility (with cost as a Key Performance Parameter) will drive attribute refinement***



Desired Capability Parameters

“Effective in Permissive, Uncertain & Hostile Operational Environments”

- ***Shoot: Engage/destroy threat peer vehicles and provide direct fire support to dismounted infantry in the attack***
 - ***Weapons systems can range from heavy machine gun to medium caliber cannon; manned or remote***
 - ***Weapons system commonality across the portfolio of combat vehicles is desired***



Desired Capability Parameters – Continued

“Providing Armored Protected Mobility to the Infantry”

- ***Carry: With a crew of 3, effectively transport a reinforced infantry rifle squad with associated sustainment and mission essential load***
- ***Protect: Protection characteristics applied to direct fire, indirect fire, and mines/IED threats. In order to address the spectrum of operating environments, this protection can be modular***
 - ***Provided as a combo of Hull (A-Kit) and Appliqué (B-Kit)***
- ***Communicate: Communications systems will provide for a “Plug-and-Play” capability allowing for future system improvements***
 - ***Integrated Vehicle Electronics, Navigation, Blue Force Situational Awareness (BFSA), Modern C4I***
- ***Availability: Operational Availability of 85%***



What an Amphibious Combat Vehicle Does

Critical Link – the ACV gains access from the sea for the joint forcecrosses the surf zone ...gets off the beachto the objective



- Rolls out of the well deck of a landing ship combat ready
- Transitions without pause at the water line ready to fight
- Breaches natural and man-made water & land obstacles



– An Amphibious Combat Vehicle will successfully cross ground where other vehicles get stuck



- Gets the landing force off the beach
- Protects the force during offensive & defensive operations

– An Amphibious Combat Vehicle protects combat ready cohesive units and delivers them into the fight without pause



- Expands a commanders maneuver options
- Maneuvers combat power in a single lift to defeat the enemy or deter aggression

– An Amphibious Combat Vehicle delivers mass and lethality in the attack ...reduces the risk by quick build-up of force during a lodgment ashore



- Carries the supplies and gear to sustain that combat unit through the assault





ACV

Primary Message to Industry

Formal planning is currently ongoing for the Amphibious Combat Vehicle program, a replacement for the Expeditionary Fighting Vehicle, and the Marine Corps seeks information on vendor capabilities in an effort to better inform the requirements and acquisition strategy.



ACV Mission

**To maneuver embarked
Marine Infantry from ships
to inland objectives and to
provide armor protected
land mobility and direct fire
support during combat
operations.**



ACV Envisioned Requirements

Performance Parameter	AAV7A1	ACV Trade Space <i>(Pre-RFI Feedback/Assessment)</i>		EFV
Move – Water Speed	6 Knots	10 Knots	14 Knots	20-25 Knots
Move – Land Speed	45 mph	45 mph		45 mph
Move - Reach	185 Miles after a 5,000 yard transit	185 miles after a 12 NM transit	250 miles after a 12 NM transit	100 Miles after a 25 NM high speed transit
Combat Load	21 Combat Equipped Marines	15 Combat Equipped Marines	18 Combat Equipped Marines	17-18 Combat Equipped Marines
Shoot - Lethality	Heavy Machine Gun	Offensive Precision Weapon Mixed Fleet 50% Medium Caliber Cannon 50% Heavy Machine Gun	Offensive Precision Weapon, 100% Medium Caliber Cannon	Offensive Precision Weapon 100% Medium Caliber Cannon (30mm)
Protect	Direct Fire - 14.5mm w/ appl Indirect Fire - Limited Mine/IED - Very limited NBC - MOPP crew in mask	Direct Fire - 14.5mm w/ appliqué Indirect Fire - 155mm (Medium) Mine/IED - M-ATV w appliqué NBC - MOPP w crew in mask	Direct Fire - 30 mm w/ appliqué Ind Fire 155mm, (High) Mine/IED - MRAP w/ appliqué NBC - MOPP w crew in mask	Direct Fire - 14.5mm Ind Fire- 155 mm (High) Mine/IED- M-ATV w/ appliqué NBC - Overpressure System
Communicate	Legacy Systems w/ Upgrades	Stand-alone, baseline Navigational and Situational Awareness Systems	Integrated Vehicle Electronics, C4I Suite (Navigational and Situational Awareness Systems)	Integrated Navigational (GPS, Inertial Navigation System, Compass) and Situational Awareness Systems
Sustain	85% Operational Availability	85% - 90% Operational Availability		85% Operational Availability
Habitability	No Requirement (Operational Planning Factor: Not to exceed 1 Hr)	Sufficient environmental conditions to sustain the combat effectiveness of embarked Marines during ship-to-shore and landward operations		1 Hour for 25 NM transit
Quantity	1057	573		573

Horizontal and Vertical ACV Trade Space to be Assessed



ACV TECHNOLOGY DEMONSTRATOR

FY 11	FY 12	FY 13	FY 14
	Technology Integration Demonstrator (Design, Integrate & Test)		

- Purpose:
 - To reduce to program risk by validating assumptions associated with technical risk and affordability prior to initiating more costly competitive design activities
- Approach:
 - Produce and test one or more technology integration demonstrators based on initial set of requirements (result of CD&I and SE OPT work)
 - Integrate commercially available hardware to address capability shortfalls
 - Utilize AAV as baseline platform
- Outputs:
 - Preliminary component/subsystem cost data
 - Insight into costs and technical challenges associated with various hardware integration
 - Test data to support capability assessment (weight, useable internal volume, mobility, water speed, remote weapon station)

USMC Technology Demonstrators



MPC



CTV (JLTV)



MTVR



LVSR



AAV P7A1 Visits

- **Industry representatives who wish to examine an AAV P7A1 may schedule a 2 hour block of time at Building 28000, MCBQ, beginning 7 April 2011.**
- **Request for a time slot and coordinating instructions should be sent to Mr. William Schwenger william.schwenger@usmc.mil, cc the contracting officer, Mr. Edwin Wright Edwin.wright@usmc.mil.**



One-on-One Schedule

6 April 2011

Time	Company
1330	HWG Consulting LLC
1400	SKR
1430	Textron
1500	Meggitt
1530	Armorworks & Shockride
1600	DRS
1630	GDLS
1700	Lockheed & Patria
1730	Harris RF Comm
1800	MOOG
1830	BAE
1900	SAIC
1930	American Rheinmetall Munitions