Section 7.8

MEDIUM TACTICAL VEHICLE REPLACEMENT



Medium Tactical Vehicle Replacement (MTVR)

Program Background

The Medium Tactical Vehicle Replacement (MTVR) family of 6-wheel, 7-ton, all-terrain multi-purpose vehicles serves as the Marine Corps' key means of moving supplies and equipment across severe environments. Manufactured by Oshkosh Corporation, the vehicles were first fielded in 2001. The platforms have an on-road cruising range of 300 miles (483 kilometers), the ability to ford five feet (1.5 meters) of water, and traverse 60% gradients and 30% side slopes with the maximum cross-country load. Operational performance is further enhanced by advanced technologies such as the Oshkosh TAK-4® independent suspension system and integrated control and diagnostics system. MTVR variants include: Standard Cargo and Extended Wheel Base Cargo Trucks, dump trucks, tractors, wreckers, and High Mobility Artillery Rocket System Resupply Trucks. Approximately half of the vehicles are armored, and some possess a reducible height capability.

More than 8,000 MTVRs are in service with the Marine Corps. The Navy Expeditionary Combat Command also possesses more than 1,800 MTVRs that are used in riverine and combat engineering missions. To improve the vehicle's level of protection against mines and IEDs, the MTVR Armor System was designed as a permanent modification to the vehicle. It provides complete 360-degree protection as well as overhead and underbody protection for the cab occupants.

The MTVR was designed with a 22-year service life. Recently, the USMC extended the life of the vehicles to 2042. The program now has a requirement for a Service Life Extension Program which will begin in FY19.

Program Status

The MTVR has been in service since 2001. More than 2,000 MTVRs have seen service in Iraq and Afghanistan. With its 70% off-road mission profile and highly survivable armor package, the MTVR has been used heavily in theater for logistics missions as well as for other missions as assigned. The MTVR is currently in sustainment.

MTVR's Top Technical Issues

1. Fuel Consumption

Given the MTVR's fuel consumption rate and the fully burdened cost of fuel, even moderate increases in the fuel efficiency of the MTVR can potentially save lives and millions of dollars. Practical, cost-effective technologies are required to increase the fuel efficiency of the MTVR while maintaining payload capacity and mobility.

2. Increased Survivability

Technologies are required that maintain or increase survivability of the vehicle and occupants from emerging threats, including technologies that can increase armor protection while maintaining or reducing current weight; improvements in blast resistant seats; crew egress systems; and advanced fire-suppression systems. New methods to mitigate or repair current protection systems issues such as transparent armor delamination are critical to the ongoing sustainment of the Armored MTVR fleet.

3. Safety

Safety technologies are required to increase vehicle-to-driver feedback, vehicle control and vehicle stability. They are also needed to mitigate the effects of vehicle rollovers while maintaining the ability of the MTVR to achieve its 30% on-road/70% off-road mission profile.

MTVR

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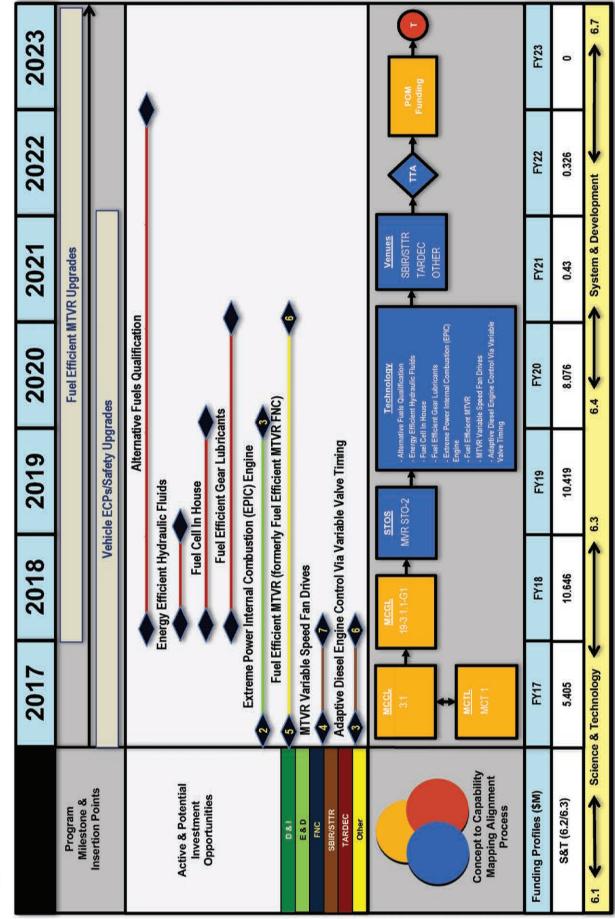
Description The Medium Tactical Vehicle Replacement (MTVR) is a medium lift tactical vehicle capable of transporting 7.1-ton off-road, 15-ton on-road and is available in six variants: cargo, extended wheelbase cargo, dump, tractor, wrecker and HIMARS Resupply Vehicle. Variants come both armored and unarmored. Some armored variants have reducible height armor for greater shipboard transport flexibility.

	FY21 FY22 FY23	
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Contract Data - FFP/IDIO Contractor Oshkosh Start - Complete May '12 - May '16 Next Contract: Engineering & Logistics Support & Services (ELSS) CPI = N/A SPI = N/A EAC = N/A CPI = N/A SPI = N/A EAC = N/A Integration Integration	FY19	
Contract Data - FFP/IDIO Contractor Oshkosh Start - Complete May '12 - Next Contract: Engineerin Support & Services (ELSS) CPI = N/A SPI = N/A EA CPI = N/A SPI = N/A EA Issues: OEM responsivenes Plan, Class IX Parts Block Pri Integration	7 FY18	
DFY17 - MTVR 5-yr ILA - FE ADM - FE Baseline Testing DFY18 - FE MTVR CDR DFY18 - FE MS C BD (Funding equired) MTVR Wheel Slings Transportability ECP ECP	FY1:	
 4QFY17 MTVR 5-yr ILA FE ADM FE ADM FE Baseline Te: 1QFY18 1QFY18 ECP 4QFY16 MTVR Wheel S MTVR Wheel S Test MTVR 	PRIOR	
Kev Milestones / Events Events - MTVR DMSMS - MTVR DMSMS - MTVR LUID Plan - MTVR LCCE - MTVR LCCE - MTVR LCCE - FE LRFS - MTVR PESHE - FE LRFS - MTVR Zonal Maintenance	MVGDUA	LIVDOVL

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Milestones & Phases				2										1											
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Contract Events	MTVR Prod						-	M	MHTV Production Contract	Pro	onp	ction	U CC	Dutr	act			-							
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MTVR Technical Issue #1 Fuel Consumption



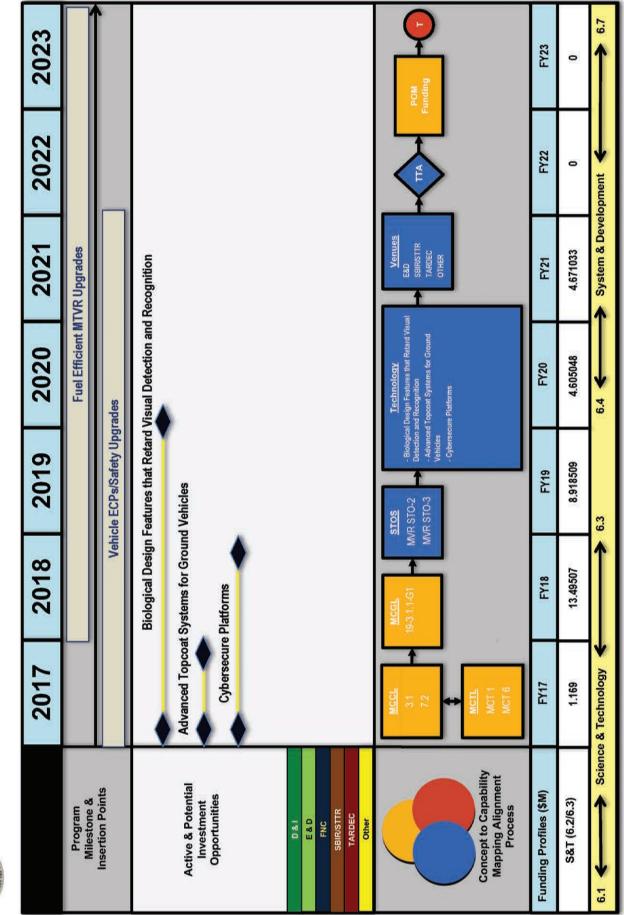


MTVR Technical Issue #2 Increased Survivability

	2017	2018	2019	2020	2021	2022	2023
Program Milestone &				Fuel Efficient MTVR Upgrades	VR Upgrades		
Insertion Points		Vehi	Vehicle ECPs/Safety Upgrades	rades			
		Proteus: Adaptive Ca	Proteus: Adaptive Camouflage in Organoids MARS : Sensor and Perceptio	tive Camouflage in Organoids MARS : Sensor and Perception sub-system development	slopment		
Active & Potential Investment		MARS : F	Perception and World	MARS : Perception and World Model sub-system development	evelopment		
Opportunities	MARS: Deliberative Planning		Reactive Control, Low-level Control MARS: Systems Integra	ntrol, Low-level Control MARS: Systems Integration and Testing	5		
		Materials Integ	Materials Integration & Application				
D & I E & D FNC	Multi-DOF Blast Effects Simulator	100	commodation Model	Accommodation Models and Boundary Manikins	kins		
SBIR/STTR TARDEC Other	Detection Avoidance Technologies	ice Technologies					
Concept to Capability Mapping Alignment Process	MCCL 3.1 7.2 MCT 1 MCT 6	19-3 1 1-61	STOS MVR STO-2 MVR STO-3 MVR STO-3 MARS: Sereception MARS: Deliberative Low-level Control Low-level Control Laterials Integration Marcs: Systems firth Marcs: Systems firth Marcs	Technology Proteus: Adaptive Camourlage in Organoids - MARS: Sensor & Petroption sub-sys devel - MARS: Preception and World Model sub- system development - MARS: Deliberative Planning, Reactive Control Low-level Control - Low-level Control - Materials Integration à Application - Materials Integration à Application - Muth:-DCF Blast Effects Simulator - Accomn Models and Boundary Manikins - Detection Avoidance Technologies	Venues E&D SBRASTTR SBRASTTR TARDEC OTHER		Funding
Funding Profiles (\$M)	FY17	FY18	FY19	FY20	FY21	FY22	FY23
S&T (6.2/6.3)	1.169	13.49507	8.918509	4.605048	4.671033	0	0
6.1 Contents Science	Science & Technology		6.3	6.4	System & Development	lopment	6.7



MTVR Technical Issue #2 Increased Survivability





MTVR Technical Issue #3 Safety

	2017	2018	2019	2020	2021	2022	2023
Program Milestone &				Fuel Efficient MTVR Upgrades	TVR Upgrades		
Insertion Points		Vehi	Vehicle ECPs/Safety Upgrades	rades			
Active & Potential Investment Opportunities	Panol Dynamic Vehicle Co	Panoptes: seek and we shall find cle Center-of-Gravity and Gross Weight Estimation Usi Sariable Stiffness Materials for Smart Tire Application	all find Cross Weight Estim Gross Maart Tire A	Panoptes: seek and we shall find Dynamic Vehicle Center-of-Gravity and Gross Weight Estimation Using Readily Available Sensors S Variable Stiffness Materials for Smart Tire Application	Available Sensors		
		Trafficability and Mo	bility Analysis from F	Trafficability and Mobility Analysis from Remote Sensing (TMARS)	ARS)		
D&I E&D FNC	A Predictive/Ada	Predictive/Adaptive Mobility (PAM) 5 Advanced Li-io	obility (PAM) 5 Advanced Li-ion Modular Battery (Energy Storage)	(Energy Storage)			
SBIR/STTR TARDEC Other	Aqueous Based AFES	ES 6					
Concept to Capability	MCCL 4.3 7.2 MCTL MCTL MCT 6	193.1.1.GT	STOS MVR STO-2 MVR STO-2 MVR STO-3 MPRication - TMARS - Application - Adv Lion	Technology - Panoptes: seek and we shall find Dynamic Vehicle COG & GW Est Using Ready Available Sensors - Variable Stiftness Materials for Smart Tire Application - PAM - PAM - Anueous Based AFES - Anueous Based AFES	Venues E&D D&I SBIR/STTR		Funding
Process							
Funding Profiles (\$M)	FY17	FY18	FY19	FY20	FY21	FY22	FY23
S&T (6.2/6.3)	1.36	4.2059	2.39	4.12	0	0	0
6.1 Contraction Science	Science & Technology		6.3	6.4	System & Development	opment	6.7