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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Navy **Date:** April 2022

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0605520M / <i>MARINE CORPS AIR DEFENSE WEAPONS SYS</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	0.000	119.512	61.381	48.663	-	48.663	81.235	48.072	24.741	26.001	Continuing	Continuing
2278: <i>Air Defense Weapons System</i>	0.000	113.430	53.535	40.690	-	40.690	71.886	47.415	24.441	25.731	Continuing	Continuing
2578: <i>GBAD: Medium Range Intercept Capability (MRIC)</i>	0.000	0.000	7.846	7.973	-	7.973	9.349	0.657	0.300	0.270	Continuing	Continuing
9999: <i>Congressional Adds</i>	0.000	6.082	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	6.082

A. Mission Description and Budget Item Justification

This program element supports the Low Altitude Air Defense (LAAD) Battalion's missions of Short Range Air Defense (SHORAD), Medium Range Air Defense and provides the Marine Air Ground Task Force (MAGTF) to include; maneuver forces, bases, posts and stations, the necessary force protection to defeat the full spectrum of threats associated with the Marine Corps Low-Altitude Air Defense mission, to include hostile aerial threats from Unmanned Aerial Systems (UAS). With the proliferation of both military and commercial UAS platforms, the program is pursuing and acquiring more lethal and survivable air defense weapon systems platforms; such as JLTV's with armored protection and better maneuverability than a HMMWV, providing increased Counter-UAS capabilities now and continually spiraling out increasing capability for the foreseeable future. The Medium Range Intercept Capability (MRIC) will provide a capability to defend fixed and operationally fixed sites primarily against threat subsonic/supersonic cruise missiles; secondarily against UAS and other aerial threats that enter into the MRIC's Weapons Engagement Zone (WEZ). The system will be integrated into the Integrated Air Missile Defense (IAMD) Family of Systems (FoS) to facilitate a layered defense against aerial threats

B. Program Change Summary (\$ in Millions)

	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023 Base</u>	<u>FY 2023 OCO</u>	<u>FY 2023 Total</u>
Previous President's Budget	124.681	65.381	0.000	-	0.000
Current President's Budget	119.512	61.381	48.663	-	48.663
Total Adjustments	-5.169	-4.000	48.663	-	48.663
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-4.000			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-1.809	0.000			
• SBIR/STTR Transfer	-3.361	0.000			
• Program Adjustments	0.000	0.000	0.000	-	0.000
• Rate/Misc Adjustments	0.001	0.000	0.000	-	0.000
• Adjustments to Budget Year	-	-	48.663	-	48.663

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Appropriation/Budget Activity
 1319: *Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development*

R-1 Program Element (Number/Name)
 PE 0605520M / *MARINE CORPS AIR DEFENSE WEAPONS SYS*

Congressional Add Details (\$ in Millions, and Includes General Reductions)

Project: 9999: *Congressional Adds*
 Congressional Add: *L-MADIS Systems*

	FY 2021	FY 2022
	6.082	0.000
Congressional Add Subtotals for Project: 9999	6.082	0.000
Congressional Add Totals for all Projects	6.082	0.000

Change Summary Explanation

Marine Corps Air Defense Weapons Systems decreases \$12.845M from FY 2022 to FY 2023 due to the completion of development and integration of the MADIS Increment 1 Engineering Design Model (EDM) as well as completion of System Integration Test (SIT) #1 and #2 as depicted in the MADIS Increment 1 schedule. MADIS Increment 1 will reach a Milestone C in 2Q FY 2023.

MRIC increase of \$0.127M from FY 2022 to FY 2023 is due to completion of the MRIC prototype development and integration and movement into test and evaluation. Funds support the integration testing, safety testing and certification, as well as the required software and cybersecurity testing efforts.

The FY 2023 funding request was adjusted by \$8.450M to account for the availability of prior year execution balances.

 FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy										Date: April 2022		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0605520M / MARINE CORPS AIR DEFENSE WEAPONS SYS				Project (Number/Name) 2278 / Air Defense Weapons System			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
2278: Air Defense Weapons System	0.000	113.430	53.535	40.690	-	40.690	71.886	47.415	24.441	25.731	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Marine Corps Air Defense Weapons Systems includes multiple Commandant of the Marine Corps (CMC) Force Design priority items. It supports the Low Altitude Air Defense (LAAD) Battalion's mission of Short Range Air Defense (SHORAD) and provides the Marine Air Ground Task Force (MAGTF) to include; maneuver forces, bases, posts and stations, the necessary force protection to defeat the full spectrum of threats associated with the Marine Corps Low Altitude Air Defense mission, to include hostile aerial threats from Unmanned Aircraft Systems (UAS) and manned fixed wing/rotary wing aircraft. With the proliferation of both military and commercial UAS and platforms, the program is pursuing and acquiring more lethal and survivable air defense weapons systems platforms; such as JLTV's with armored protection and better maneuverability than a HMMWV, providing increased Counter-UAS (C-UAS) and FW/RW capabilities now and continually spiraling out increasing capability for the foreseeable future.

Based on an Urgent Universal Need Statement (UUNS), a Joint Urgent Operational Need (JUON), and a Joint Emergent Operational Need (JEON) the Marine Corps has aggressively pursued CUAS solutions in support of deployed Marines and critical facilities. The development of these solutions has been leveraged heavily by the Marine Air Defense Integrated System (MADIS) Increment 1 (Inc 1) on a Joint Light Tactical Vehicle (JLTV), the ACAT II Program of Record that initiated at MS B in 3Q FY 2021.

Marine Air Defense Integrated System Family of Systems (MADIS FoS): The MADIS FoS provides the Marine Corps with an organic, upgradable, and state of the art capability to protect MAGTF maneuver forces, installations and other designated defended assets from Fixed/Rotary Wing (FW/RW) aircraft and Unmanned Aircraft Systems. The MAGTF is at increased risk of lethal air attack and fires coordination from next generation aircraft as well as significant advances from small UAS (sUAS) threats due to their rapid development and proliferation by the commercial sector, which has increased their nefarious use by both state and non-state actors. To address these threats, the MADIS FoS consists of mission tailored variants designed for sustained operations ashore, afloat, and aboard installations.

The MADIS FoS includes the fielded Advanced Man Portable Air Defense System (A-MANPADS) which provides close-in, low altitude, surface-to-air fires and command and control in defense of the MAGTF. It also includes the MADIS Inc 1 which is accomplished with the development, test, and installation of Government Furnished C-UAS and air defense equipment on a Joint Light Tactical Vehicle (JLTV). The MADIS Inc 1 system is comprised of two vehicles; a MK 1 (stinger variant), and a MK 2 (CUAS variant). MADIS Increment 1 Block 2 will focus on the development of kinetic and non-kinetic capability supporting increased lethality. This includes the development of a high powered microwave capability to counter swarms and enhancements for a direct fire CUAS capability, and other yet to be identified technologies that can be integrated with the MADIS FoS. The MADIS Inc 1 will replace the A-MANPADS fielded systems. The MADIS FoS also includes the Light Marine Air Defense Integrated System (L-MADIS), which will be accomplished with the development, test, and installation of Government Furnished C-UAS equipment on a Ultra-Light Tactical Vehicle (ULTV). The L-MADIS Program of Record (PoR) system is comprised of two vehicles; a MK 1 (Command and Control vehicle), and a MK 2 (Early Warning / Electronic Warfare vehicle). The L-MADIS PoR will replace the systems fielded under a Joint Urgent and Emergent Operational Need Statement. The L-

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MADIS will provide the Marine Corps a capability different than that of the MADIS Increment 1. The L-MADIS is transportable within organic Marine Corps R/W aircraft, allowing Marines to face challenging operational scenarios during Marine Expeditionary Unit (MEU) operations. The L-MADIS will protect the maneuver force from threat of Unmanned Aircraft Systems (UAS), Fixed Wing and Rotary Wing (FW/RW), and other airborne threats throughout the operating environment while maintaining Marine Corps expeditionary requirements.

Medium Range Intercept Capability (MRIC): The MRIC provides the Marine Corps Expeditionary Force Commander a capability to defend fixed and operationally fixed sites primarily against threat subsonic/supersonic cruise missiles; secondarily against UAS and other aerial threats that enter into the MRIC's Weapons Engagement Zone (WEZ). MRIC is designed as a system-of-systems and will be integrated with Marine Corps organic Command and Control (C2) and Joint Integrated Air and Missile Defense (IAMD) architecture. The program will enhance the expeditionary force ground based air defense (GBAD) capability to rapidly prosecute aerial threats and expand layered defense of the Expeditionary and Naval Forces. The MRIC Prototype Development will be completed 4Q FY 2022 and will be comprised of expeditionary missile launchers, intercept missiles, and a C2 system that are able to utilize available AN/TPS-80 G/ATOR radar for surveillance and fire control. FY 2023 focuses on integration testing leading to certification for deployment. This effort informs the investment to meet the Force Design requirements to field an MRIC Battery to each of the three LAAD Battalions in FY 2026, FY 2027, and FY 2028 to support operations including Expeditionary Advanced Based Operations (EABO).

Overall, Marine Corps Air Defense Weapons Systems decreases \$12.845M from FY 2022 to FY 2023 is due to the completion of development and integration of the MADIS Increment 1 as well as the completion of system integration test #1 and #2 (2a, 2b, and 2c) as depicted on the MADIS Increment 1 program schedule. MADIS Increment 1 reaches MS C in 2Q FY 2023.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: MADIS INC 1: Product Development	33.443	4.278	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2022 Plans:					
-Completed development of MADIS desktop training systems, which includes the development of the software that emulates the scenarios encountered by the Marines while operating the MADIS Inc 1.					
-Completed MADIS Inc 1 Engineering Development Model (EDM) integration by mounting a mix of legacy and technologically mature capabilities onto Joint Light Tactical Vehicles (JLTV), mitigating the risk of attacks from UAS and FW/RW aircraft, while maintaining pace with maneuver forces					
-Completed MADIS Inc 1 software development and integration efforts					
FY 2023 Base Plans:					
N/A					
FY 2023 OCO Plans:					
N/A					
FY 2022 to FY 2023 Increase/Decrease Statement:					

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Decrease of \$4.278M from FY 2022 to FY 2023 is due to the completion of the EDM integration and software development and subsequent Milestone C in 2Q FY 2023.							
Title: MADIS INC 1: Support Costs			11.491	10.815	10.092	0.000	10.092
Articles:			-	-	-	-	-
<p>Description: The Government Technical Support Team provides functions such as technical planning, execution and analysis across multi-disciplinary competencies to include; Systems Architecture, Radar/Jamming Software Engineering, Radar/Jamming Systems Engineering, Cyber Security/Information Assurance, Human Systems Integration, Safety, Configuration Management and the coordination necessary to enable a System of Systems interface with other programs in the slew to cue kill chain to ensure platform/software compatibility.</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> -Completed New Equipment Training (NET) development support efforts for MADIS Inc 1. -Continued full logistics supportability to include Independent Logistics Assessment (ILA), provisioning conferences,updates of manpower and training plan and manpower task lists for MADIS Inc 1. -Continued engineering, cyber security, information assurance, and safety support required in preparation of the Operational Assessment and system integration tests. <p>FY 2023 Base Plans:</p> <ul style="list-style-type: none"> -Continues full logistics supportability to include Independent Logistics Assessment (ILA), provisioning conferences, updates of manpower and training plan and manpower task lists for MADIS Inc 1 -Initiates engineering, cyber security, information assurance, and safety support required in preparation of the system verification tests and Initial Operational Test & Evaluation <p>FY 2023 OCO Plans:</p> <p>N/A</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p>							

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Decrease of \$0.723M from FY 2022 to FY 2023 is due to the completion of New Equipment Training (NET) development and subsequent Milestone C in 2Q FY 2023.							
Title: MADIS INC 1: Test and Evaluation			7.374	32.782	18.199	0.000	18.199
Articles:			-	-	-	-	-
FY 2022 Plans:							
<ul style="list-style-type: none"> -Completed lab testing of MADIS Increment 1, which tests configuration and enables subsystem evaluations and assessments in order to either mitigate risk, document state/status or support milestone requirements -Initiated and completed System Integration Test (SIT) #1 of MADIS Inc 1 -Initiated and completed System Integration Test #2a which tests network, infrastructure adequacy, interoperability, C4, Electromagnetic Environment Effects (E3)/safety, and human factors engineering -Initiated and completed System Integration Test #2b which tests Kill chain at the halt (detect, track, ID, kinetic and non-kinetic defeat), and Identification Friend or Foe (IFF) integration -Initiated and completed System Integration Test #2c which tests Kill chain on the move (detect, track, ID, non-kinetic defeat), C4 on the move, Cybersecurity, and IFF integration on the move -Initiated and completed planning, preparation, and range operations efforts for Operational Assessment (OA) of MADIS Inc 1 -Initiated and completed lead integrator integration and test efforts to support SITs and OA of MADIS Inc 1 							
FY 2023 Base Plans:							
<ul style="list-style-type: none"> -Initiates and completes the System Integration Test #3 of MADIS Inc 1 -Initiates and completes the System Verification Test #1 & #2 of MADIS Inc 1 -Initiates and completes the transportability and environmental testing of MADIS Inc 1 -Initiates the Initial Operational Test & Evaluation (IOT&E) of the MADIS Inc 1 -Initiates and completes the refurbishment of the MADIS Inc 1 Engineering Development Models (EDM) in order to ensure the systems are prepared for IOT&E 							
FY 2023 OCO Plans:							
N/A							
FY 2022 to FY 2023 Increase/Decrease Statement:							

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Decrease of \$14.583M is due to the completion of SITs #1 & #2a, 2b, and 2c, as depicted on the MADIS Increment 1 schedule, as well as completion of the planning, preparation, and range operations for the Operational Assessment of the MADIS Increment 1 and subsequent Milestone C in 2Q FY 2023.					
Title: MADIS INC 1: Management Services <p align="right">Articles:</p> <p>FY 2022 Plans: -Funded travel in support of the System Integration Tests (SITs) as well as the Operational Assessment planning and range operations in support of the MADIS Increment 1</p> <p>FY 2023 Base Plans: -Funds travel in support of the System Integration & Verification Tests (SIT, SVT) as well as the Initial Operational Test & Evaluation of the MADIS Increment 1</p> <p>FY 2023 OCO Plans: N/A</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Decrease of \$0.048M from FY 2022 to FY 2023 due to the completion of SIT #1 and #2 of the MADIS Increment 1.</p>	0.302	0.495	0.447	0.000	0.447
	-	-	-	-	-
Title: MADIS INC 1 (BLOCK 2) - INCREASED LETHALITY: Product Development <p align="right">Articles:</p> <p>FY 2022 Plans: N/A</p> <p>FY 2023 Base Plans: -Continue development and integration efforts associated with increased lethality to support constantly evolving threats to include a high powered microwave (HPM). (MADIS Inc 1 BLOCK 2)</p> <p>FY 2023 OCO Plans: N/A</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p>	10.319	0.000	4.000	0.000	4.000
	-	-	-	-	-

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)					
	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Increase of \$4.000M from FY 2022 to FY 2023 is to support the development of an increased lethality capability to include a high powered microwave to counter the evolving threat.					
Title: L-MADIS: Product Development					
	0.000	5.165	0.365	0.000	0.365
Articles:	-	-	-	-	-
FY 2022 Plans:					
-Initiated the design, architecture development and integration of a lightweight Counter Unmanned Aircraft System (C-UAS) mobile platform utilizing government furnished C-UAS equipment on a Ultra-Light Tactical Vehicle (ULTV).					
-Initiated the technical manual development in order to provide the Marines the procedures required to operate, maintain, and sustain the system.					
-Initiated curriculum development in order to train Marines on the inherent skill set required to operate and maintain the system.					
FY 2023 Base Plans:					
-Continues the technical manual development in order to provide the Marines the procedures required to operate, maintain, and sustain the system					
-Continues curriculum development in order to train Marines on the inherent skill set required to operate and maintain the system.					
FY 2023 OCO Plans:					
N/A					
FY 2022 to FY 2023 Increase/Decrease Statement:					
-Decrease of \$4.800M due to the completion of the design and architecture of a lightweight Counter Unmanned Aircraft (C-UAS) mobile platform and subsequent Milestone C in 3Q FY 2023.					
Title: L-MADIS: Support Costs					
	0.000	0.000	2.867	0.000	2.867
Articles:	-	-	-	-	-
FY 2022 Plans:					
N/A					
FY 2023 Base Plans:					

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
-Initiate engineering, cyber security, information assurance, and safety support required in preparation of the system integration and verification tests. FY 2023 OCO Plans: N/A FY 2022 to FY 2023 Increase/Decrease Statement: Increase of \$2.867M from FY 2022 to FY 2023 is due to the initiation of the SITs and associated support required to ensure the L-MADIS is properly integrated and configured prior to the Initial Operational Test & Evaluation in FY 2024.					
Title: L-MADIS: Test and Evaluation Articles:	0.000 -	0.000 -	4.700 -	0.000 -	4.700 -
FY 2022 Plans: N/A FY 2023 Base Plans: -Initiates and completes System Integration Test #1 and #2 of the Light-Marine Air Defense Integrated System (L-MADIS) -Initiates and completes System Verification Test #1 of the Light-Marine Air Defense Integrated System (L-MADIS) -Initiates and completes transportability and environmental testing of the L-MADIS FY 2023 OCO Plans: N/A FY 2022 to FY 2023 Increase/Decrease Statement: Increase of \$4.700M from FY 2022 to FY 2023 is due to the initiation of L-MADIS SITs #1 & #2 is required to ensure complete integration of the detect, track, identify, and defeat kill chain to support a successful Milestone C in 3Q FY 2023.					
Title: L-MADIS: Management Services Articles:	0.000 -	0.000 -	0.020 -	0.000 -	0.020 -
FY 2022 Plans: N/A FY 2023 Base Plans:					

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
-Initiates travel required to support the System Integration Tests (SITs) of the Light Marine Air Defense Integrated System (L-MADIS) FY 2023 OCO Plans: N/A FY 2022 to FY 2023 Increase/Decrease Statement: Increase of \$0.020M from FY 2022 to FY 2023 is due to the travel requirements and Fleet support required with the initiation of SIT #1 & #2					
Title: MED RANGE INTERCEPT CAP (MRIC): Product Development Articles:	39.495 -	0.000 -	0.000 -	0.000 -	0.000 -
FY 2022 Plans: FY 2022 Product Development Plans are included in RDTE,N Project 2578. FY 2023 Base Plans: N/A FY 2023 OCO Plans: N/A					
Title: MED RANGE INTERCEPT CAP (MRIC): Test and Evaluation Articles:	7.253 -	0.000 -	0.000 -	0.000 -	0.000 -
FY 2022 Plans: FY 2022 Plans are included within RDTE,N Project 2578. FY 2023 Base Plans: N/A FY 2023 OCO Plans: N/A					
Title: MED RANGE INTERCEPT CAP (MRIC): Support Articles:	3.753 -	0.000 -	0.000 -	0.000 -	0.000 -
FY 2022 Plans: N/A FY 2023 Base Plans:					

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
N/A					
FY 2023 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	113.430	53.535	40.690	0.000	40.690

C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• PMC/3006: <i>Ground Based Air Defense (GBAD)</i>	17.686	9.349	173.801	-	173.801	196.319	193.781	263.738	393.270	0.000	1,536.127
• RDTEN/0605520M/2578: <i>GBAD: Medium Range Intercept Capability (MRIC)</i>	0.000	7.846	7.973	-	7.973	9.349	0.657	0.300	0.270	Continuing	Continuing

Remarks

D. Acquisition Strategy

Marine Corps Air Defense Weapons Systems: The Marine Corps Air Defense Weapons Systems capability will be developed in increments per the Capabilities Development Document (CDD). Increment 1 modernizes the existing air defense legacy systems (A-MANPADS) by mounting a mix of legacy and technologically mature capabilities (leveraging UUNS related efforts) onto the Joint Light Tactical Vehicle (JLTV), mitigating the risk of attacks from UAS and FW/RW aircraft, while maintaining pace with maneuver forces. The MADIS full Increment 1 capability will be achieved via a 2 block approach. The first block will include a remote weapon station (RWS) with a direct fire 30MM gun, non-kinetic (via electronic attack) UAS defeat capability, and a dual launch stinger. The second block introduces additional kinetic and non-kinetic C-UAS capability. Each MADIS Inc 1 system built to the block 1 configuration, to include Low Rate Initial Production (LRIP), will be retrofitted to include block 2 capabilities. The Marine Air Defense Integrated System (MADIS Inc 1) has been designated an ACAT II program. The MADIS Inc 1 development leverages JUON and JEON development efforts and initiated at Milestone B in 3Q FY 2021.

Medium Range Intercept Capability (MRIC) is an additional component of the layered defense approach to aerial threats. (MRIC) is designed to defend fixed/operationally fixed assets against Cruise Missiles (CM), group 3+ UAS, Rockets, Artillery, and Mortars (RAM), and Fixed Wing / Rotary Wing threats that enter the MRIC's Weapons Engagement Zone (WEZ). To support an MRIC Material Support Decision, a concept demonstration of a proposed counter cruise missile (CM) defense system occurred in 4Q FY 2019. The MRIC received an approved Middle Tier Acquisition decision in 3Q FY 2020 placing the system into Rapid Prototyping. Design and integration efforts for a single prototype cruise missile defense capability are underway. Once the capability is successfully tested and evaluated during live fire events, a Certification Decision will occur in 4Q FY 2022.

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<p>L-MADIS is fully leveraging JUON efforts and has an approved CDD annex as of 1Q FY 2022. The L-MADIS will develop a C-sUAS capability on the new Ultra-Light Tactical Vehicle (ULTV) and produce Low Rate Initial Production (LRIP) vehicles for testing in FY 2023. The L-MADIS is designated as an ACAT IVT program with MS C scheduled for 3Q FY 2023.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy **Date:** April 2022

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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
MADIS Inc 1 SW Development	C/IDIQ	MCSC : Quantico, VA	0.000	8.494	Jun 2021	3.178	Jun 2022	0.000		-		0.000	0.000	11.672	-
MADIS Inc 1 EDM Integration	Various	NIWC : Charleston, SC	0.000	18.302	Nov 2021	0.000		0.000		-		0.000	0.000	18.302	-
MADIS Inc 1 Desktop Trainer Development	Various	NSWC : Dahlgren, VA	0.000	1.658	Mar 2021	1.100	Mar 2022	0.000		-		0.000	0.000	2.758	-
MADIS Inc 1 Remote Weapon Station Integration	C/CPFF	MCSC : Quantico, VA	0.000	4.989	Nov 2020	0.000		0.000		-		0.000	0.000	4.989	-
MADIS Inc 1 Blk 2 Kinetic Kill Development	MIPR	ARL : Adelphi, MD	0.000	1.919	Jun 2021	0.000		4.000	Jul 2023	-		4.000	0.000	5.919	-
MADIS Inc 1 Blk 2 Common C2-SW Develop	C/IDIQ	MCSC : Quantico, VA	0.000	2.979	Jun 2021	0.000		0.000		-		0.000	0.000	2.979	-
MADIS Inc 1 Blk 2 Common C2 - Test Asset	MIPR	DLA : Philadelphia, PA	0.000	2.954	Sep 2021	0.000		0.000		-		0.000	0.000	2.954	-
MADIS Inc 1 Blk 2 Common C2 - Integration	Various	NSWC : Crane, IN	0.000	2.467	May 2021	0.000		0.000		-		0.000	0.000	2.467	-
L-MADIS Design and Architecture	Various	NSWC : Crane, IN	0.000	0.000		5.165	Mar 2022	0.365	Dec 2022	-		0.365	0.000	5.530	-
MRIC SW Architecture (PSR Mode)	C/FFP	DMEA : McClellan, CA	0.000	5.845	Nov 2021	0.000		0.000		-		0.000	0.000	5.845	-
MRIC System Develop & Integration/HW	C/IDIQ	DMEA : McClellan, CA	0.000	30.907	Aug 2021	0.000		0.000		-		0.000	0.000	30.907	-
MRIC C2 SW Integration	C/FFP	MCSC : Quantico, VA	0.000	2.743	Jun 2021	0.000		0.000		-		0.000	0.000	2.743	-
Subtotal			0.000	83.257		9.443		4.365		-		4.365	0.000	97.065	N/A

Remarks
 Overall decrease of \$5.078M is comprised of the following:
 Decrease of \$4.278 due to the completion of the integration of the MADIS Inc 1 Engineering Development Models (EDMs) and completion of the MADIS Inc 1 Desktop Trainer system development.
 Increase of \$4.000M due to the requirement to continue development of an increased lethality capability to include a high powered microwave to counter evolving threats.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy **Date:** April 2022

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0605520M / MARINE CORPS AIR DEFENSE WEAPONS SYS	Project (Number/Name) 2278 / Air Defense Weapons System
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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			

Decrease of \$4.800M due to the completion of the design of the Light Marine Air Defense Integrated System (L-MADIS). The L-MADIS Program of Record (PoR) reach Milestone C in 3Q FY 2023.

Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			

MADIS Inc 1 HSI	Various	NSWC : Dahlgren	0.000	1.000	Nov 2020	0.599	Nov 2021	0.576	Nov 2022	-		0.576	0.000	2.175	-
MADIS Inc 1 NET Development	C/FFP	Lumbee Tribe Enterprises : Pembroke, NC	0.000	2.646	Feb 2021	2.240	Feb 2022	2.167	Feb 2023	-		2.167	0.000	7.053	-
MADIS Inc 1 Test Support	C/FFP	MCSC : Quantico, VA	0.000	0.000	Mar 2021	0.611	Jan 2022	0.622	Jan 2023	-		0.622	0.000	1.233	-
MADIS Inc 1 Integrated Logistics Spt	Various	Various : Various	0.000	1.113	Nov 2020	1.730	Nov 2021	1.947	Nov 2022	-		1.947	Continuing	Continuing	Continuing
MADIS Inc 1 Eng/Cyber Support	Various	NSWC : Dahlgren, VA	0.000	2.030	Mar 2021	2.619	Nov 2021	2.201	Nov 2022	-		2.201	0.000	6.850	-
MADIS Inc 1 Engineering Spt	C/FFP	Lumbee Tribe Enterprises : Pembroke, NC	0.000	4.171	Feb 2021	2.138	May 2022	1.938	May 2023	-		1.938	0.000	8.247	-
MADIS Inc 1 Eng/Cyber Support	Various	NSWC : Crane, IN	0.000	0.000		0.878	Nov 2021	0.641	Nov 2022	-		0.641	0.000	1.519	-
MADIS Inc 1 Technical Spt	C/FFP	MCSC : Quantico, VA	0.000	0.531	Apr 2021	0.000		0.000		-		0.000	0.000	0.531	-
MRIC Threat Analysis Spt, M&S	Various	Various : Various	0.000	1.512	May 2021	0.000		0.000		-		0.000	0.000	1.512	-
MRIC IA/Safety/Eng Spt	Various	NSWC : Dahlgren, VA	0.000	2.241	Jun 2021	0.000		0.000		-		0.000	0.000	2.241	-
LMADIS IA/Safety/Eng Spt	Various	NSWC : Dahlgren, VA	0.000	0.000		0.000		1.236	Dec 2022	-		1.236	0.000	1.236	-
LMADIS Eng/Cyber Support	TBD	TBD : TBD	0.000	0.000		0.000		1.148	Mar 2023	-		1.148	0.000	1.148	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy **Date:** April 2022

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0605520M / MARINE CORPS AIR DEF ENSE WEAPONS SYS	Project (Number/Name) 2278 / Air Defense Weapons System
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Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
LMADIS Technical Support	C/FFP	MCSC : Quantico, VA	0.000	0.000		0.000		0.483	Feb 2023	-		0.483	0.000	0.483	-
Subtotal			0.000	15.244		10.815		12.959		-		12.959	Continuing	Continuing	N/A

Remarks
Total increase of \$2.144M from FY 2022 to FY 2023 is required to provide engineering, cybersecurity, information assurance, and safety support during the L-MADIS System Integration Tests (SITs). This support ensures the systems are integrated in order to properly detect, track, ID, and defeat threats.

Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
MADIS Inc 1 Component/ Lab Testing/SIT/SVT	MIPR	NSWC : Corona, CA	0.000	0.676	Mar 2021	0.545	Mar 2022	0.456	Mar 2023	-		0.456	0.000	1.677	-
MADIS Inc 1 System Integ Test	MIPR	NSWC : Crane, IN	0.000	0.250	Jul 2021	0.650	Nov 2021	0.565	Nov 2022	-		0.565	0.000	1.465	-
MADIS Inc 1 Safety Certification Test	MIPR	ATC : Aberdeen, MD	0.000	0.523	Jul 2021	0.150	Nov 2021	0.000		-		0.000	0.000	0.673	-
MADIS Inc 1 Test Pilots	MIPR	NAWCWD : China Lake, CA	0.000	0.505	Mar 2021	1.169	Jan 2022	0.172	Jan 2023	-		0.172	0.000	1.846	-
MADIS Inc 1 MCOTEA	MIPR	MCOTEA : Quantico, VA	0.000	0.000		0.631	Mar 2022	0.500	Jan 2023	-		0.500	0.000	1.131	-
MADIS Inc 1 Component/ Lab Testing/SIT/SVT	Various	NSWC : Dahlgren, VA	0.000	5.420	Nov 2020	3.100	Nov 2021	2.438	Nov 2022	-		2.438	0.000	10.958	-
MADIS Inc 1 Live Fire Test Range	Various	YPG : Yuma, AZ	0.000	0.000		1.057	Mar 2022	3.258	Dec 2022	-		3.258	0.000	4.315	-
MADIS Inc 1 SIT/SVT/OA/IOTE Test Spt	C/FFP	Lumbee Tribe : Pembroke, NC	0.000	0.000		3.864	May 2022	2.408	Nov 2022	-		2.408	0.000	6.272	-
MADIS Inc 1 Integrator Spt to OA/IOTE	Various	NIWC : Charleston, SC	0.000	0.000		21.616	Apr 2022	8.402	Jan 2023	-		8.402	0.000	30.018	-
MRIC Test Ranges	MIPR	WSMR : White Sands, NM	0.000	0.325	Jun 2021	0.000		0.000		-		0.000	0.000	0.325	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy **Date:** April 2022

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0605520M / MARINE CORPS AIR DEFENSE WEAPONS SYS	Project (Number/Name) 2278 / Air Defense Weapons System
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Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
MRIC Missiles (QTY 20) & Canisters (QTY 7)	C/FFP	DMEA : McClellan, CA	0.000	5.122	Aug 2021	0.000		0.000		-		0.000	0.000	5.122	-
MRIC Expeditionary Launcher	C/FFP	DMEA : McClellan, CA	0.000	1.806	Sep 2021	0.000		0.000		-		0.000	0.000	1.806	-
LMADIS Test Pilots	MIPR	NSWC : China Lake, CA	0.000	0.000		0.000		0.386	Dec 2022	-		0.386	0.000	0.386	-
LMADIS System Integ Test	Various	NSWC : Crane, IN	0.000	0.000		0.000		2.599	Nov 2022	-		2.599	0.000	2.599	-
LMADIS Test Range	MIPR	YPG : Yuma, AZ	0.000	0.000		0.000		1.043	Dec 2022	-		1.043	0.000	1.043	-
LMADIS System Integ Test	Various	NSWC : Dahlgren, VA	0.000	0.000		0.000		0.672	Dec 2022	-		0.672	0.000	0.672	-
Subtotal			0.000	14.627		32.782		22.899		-		22.899	0.000	70.308	N/A

Remarks
Overall decrease of \$9.883 due to the completion of integrator efforts tied to system integration test #1 & #2a, 2b and 2c as depicted on the MADIS Increment 1 program schedule. MADIS Increment 1 reaches MS C in 2Q FY 2023.

Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
MADIS FoS Travel	Various	Various : Various	0.000	0.302	Sep 2021	0.495	Sep 2022	0.447	Sep 2023	-		0.447	Continuing	Continuing	Continuing
LMADIS Travel	Various	Various : Various	0.000	0.000		0.000		0.020	Sep 2023	-		0.020	0.000	0.020	-
Subtotal			0.000	0.302		0.495		0.467		-		0.467	Continuing	Continuing	N/A

Remarks
Overall funds decrease of \$0.028M from FY 2022 to FY 2023 due to the completion of System Integration Test #1 & #2 as depicted on the MADIS Increment 1 program schedule. MADIS Increment 1 reaches MS C in 2Q FY 2023.

	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	113.430	53.535	40.690	-	40.690	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy							Date: April 2022			
Appropriation/Budget Activity 1319 / 7			R-1 Program Element (Number/Name) PE 0605520M / MARINE CORPS AIR DEFENSE WEAPONS SYS			Project (Number/Name) 2278 / Air Defense Weapons System				
	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract	

Remarks
 Overall, Marine Corps Air Defense Weapons Systems decreases \$12.845M from FY 2022 to FY 2023 due to the completion of development and integration of the MADIS Increment 1 Engineering Development Models (EDMs) as well as the completion of system integration test #1 and #2 (2a, 2b, and 2c) as depicted on the MADIS Increment 1 schedule. MADIS Increment 1 reaches MS C in 2Q FY 2023.

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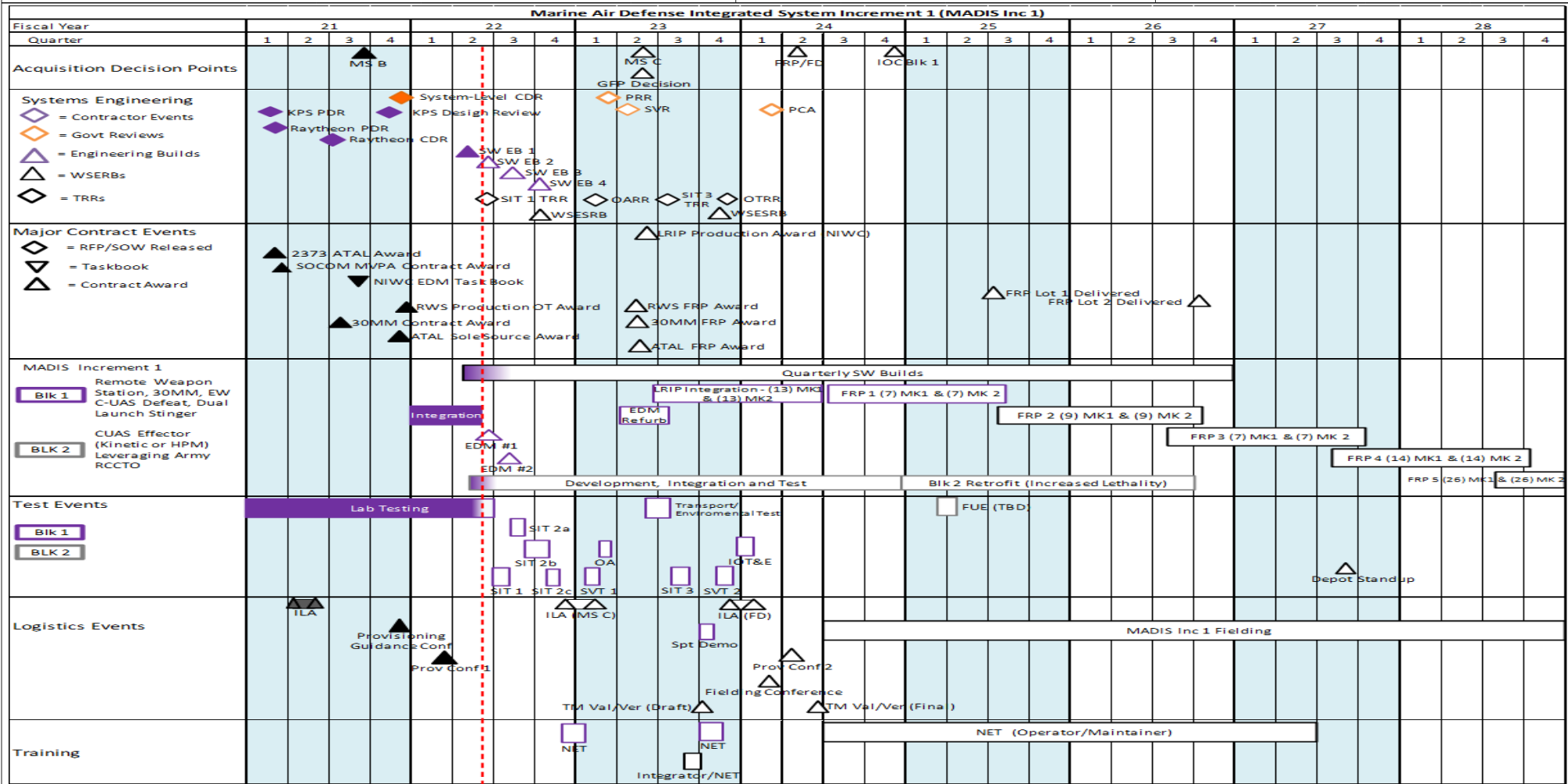
Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy

Date: April 2022

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0605520M / MARINE CORPS AIR DEFENSE WEAPONS SYS

Project (Number/Name)
2278 / Air Defense Weapons System



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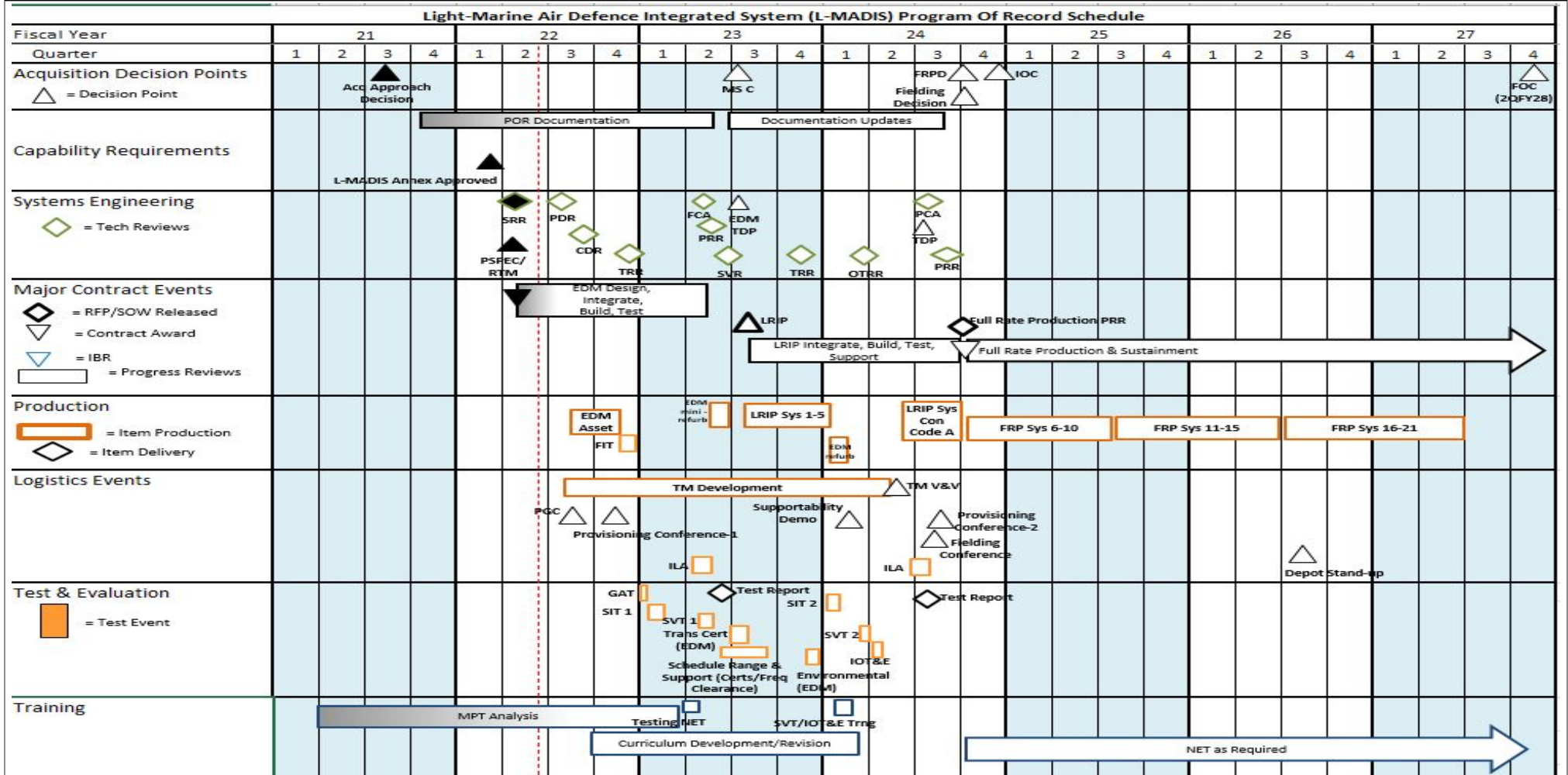
Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy

Date: April 2022

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0605520M / MARINE CORPS AIR DEF
ENSE WEAPONS SYS

Project (Number/Name)
2278 / Air Defense Weapons System



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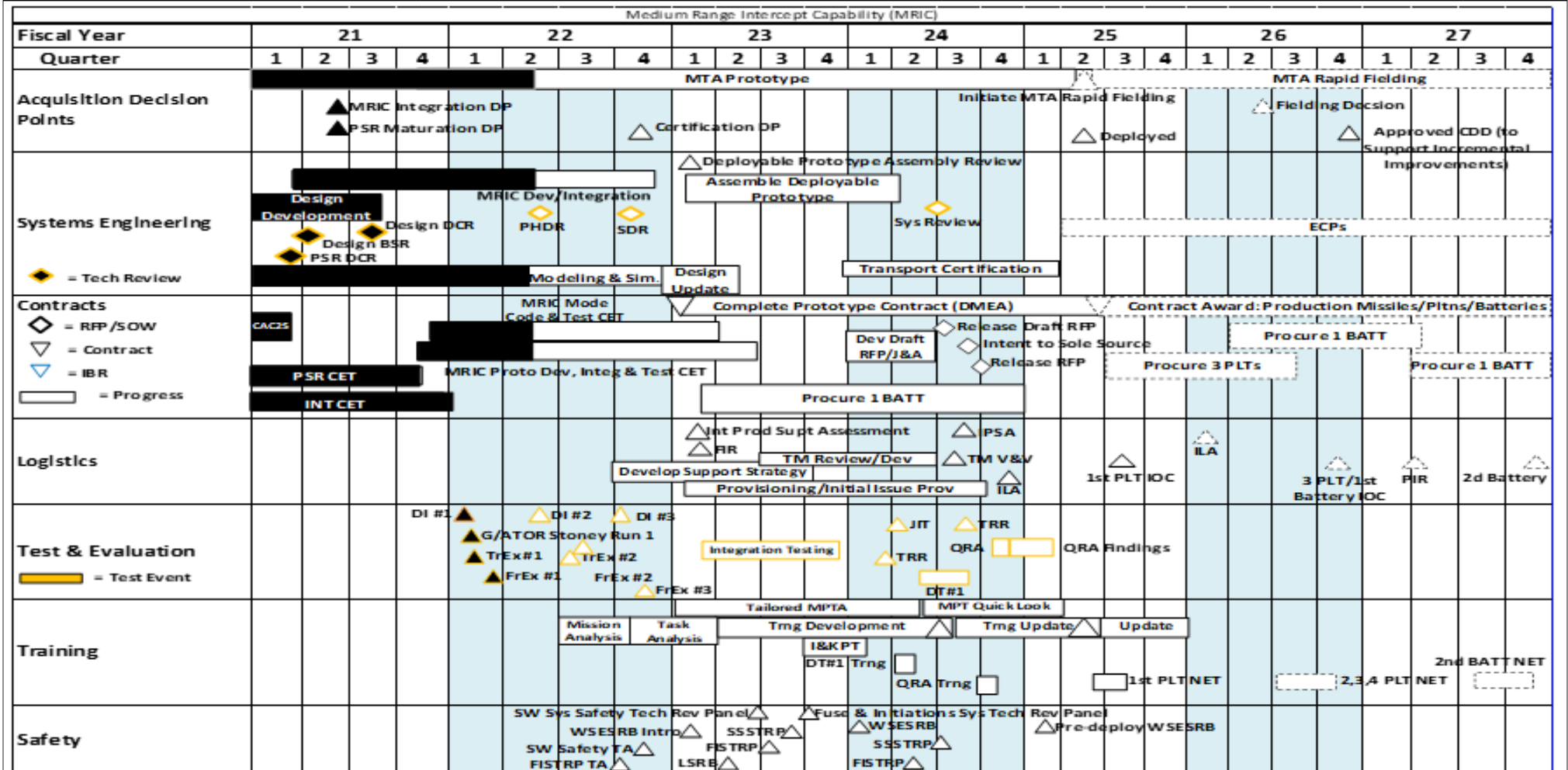
Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy

Date: April 2022

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0605520M / MARINE CORPS AIR DEFENSE WEAPONS SYS

Project (Number/Name)
2278 / Air Defense Weapons System



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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0605520M / MARINE CORPS AIR DEFENSE WEAPONS SYS	Project (Number/Name) 2278 / Air Defense Weapons System

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2278				
MADIS INCREMENT 1: MS "B"	3	2021	3	2021
MADIS INCREMENT 1: MS "C"/LRIP DECISION	2	2023	2	2023
MADIS INCREMENT 1: FRP GFP CONTRACT AWARD	2	2023	2	2023
MADIS INCREMENT 1: LRIP COMPONENT PRODUCTION INSTALLATION	2	2023	2	2024
MADIS INCREMENT 1: OPERATIONAL ASSESSMENT	1	2023	1	2023
MADIS INCREMENT 1: INITIAL OPERATIONAL TEST & EVALUATION	4	2023	1	2024
MADIS INCREMENT 1: FULL RATE PRODUCTION DECISION	2	2024	2	2024
MADIS INCREMENT 1: INITIAL OPERATIONAL CAPABILITY	4	2024	4	2024
MEDIUM RANGE INTERCEPT CAPABILITY (MRIC): MRIC DEVELOPMENT/ INTEGRATION	1	2021	4	2022
MEDIUM RANGE INTERCEPT CAPABILITY (MRIC): TRACKING EXERCISE (TR EX #1)	1	2022	1	2022
MEDIUM RANGE INTERCEPT CAPABILITY (MRIC): LIVE FIRE TEST (FIREX #1)	1	2022	1	2022
MEDIUM RANGE INTERCEPT CAPABILITY (MRIC): TRACKING EXERCISE (TR EX #2)	3	2022	3	2022
MEDIUM RANGE INTERCEPT CAPABILITY (MRIC): LIVE FIRE TEST (FIREX #2)	3	2022	3	2022
MEDIUM RANGE INTERCEPT CAPABILITY (MRIC): LIVE FIRE TEST (FIREX #3)	4	2022	4	2022
MEDIUM RANGE INTERCEPT CAPABILITY (MRIC): MRIC CERTIFICATION DECISION	4	2022	4	2022
L-MADIS: CRITICAL DESIGN REVIEW	3	2022	3	2022
L-MADIS: MILESTONE C	3	2023	3	2023
L-MADIS: DESIGN/DEVELOP/INTEGRATE/LRIP BUILD	3	2023	3	2024

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy **Date:** April 2022

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0605520M / MARINE CORPS AIR DEFENSE WEAPONS SYS	Project (Number/Name) 2278 / Air Defense Weapons System
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
L-MADIS: FULL RATE PRODUCTION DECISION	4	2024	4	2024
L-MADIS: INITIAL OPERATIONAL CAPABILITY (IOC)	4	2024	4	2024

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy										Date: April 2022		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0605520M / MARINE CORPS AIR DEFENSE WEAPONS SYS				Project (Number/Name) 2578 / GBAD: Medium Range Intercept Capability (MRIC)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
2578: GBAD: Medium Range Intercept Capability (MRIC)	0.000	0.000	7.846	7.973	-	7.973	9.349	0.657	0.300	0.270	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Prior to FY 2022 MRIC, was budgeted in PE: 0206313M/RDTE, N Project 2278. In support of increased program transparency; beginning in FY 2022 funds for MRIC have been moved to PE: 0605520M/RDTE, N Project 2578.

A. Mission Description and Budget Item Justification

The Medium Range Intercept Capability (MRIC) is a CMC Force Design program providing the Marine Corps Expeditionary Force Commander a capability to defend forward deployed forces primarily against threat subsonic/supersonic cruise missiles; secondarily against UAS and other aerial threats that enter into the MRIC's Weapons Engagement Zone (WEZ). MRIC is designed as a system-of-systems and will be integrated with Marine Corps organic Command and Control (C2) and Joint Integrated Air and Missile Defense (IAMD) architecture. The program will enhance the expeditionary force ground based air defense (GBAD) capability to rapidly prosecute aerial threats and expand layered defense of the Expeditionary and Naval Forces. The MRIC Prototype Development will be completed 4Q FY 2022 and comprised of expeditionary missile launchers, intercept missiles, and a C2 system that are able to utilize available AN/TPS-80 G/ATOR radar for surveillance and fire control. This effort informs the investment to meet the Force Design requirements to field an MRIC Battery to each of the three LAAD Battalions in FY 2026, FY 2027, and FY 2028 to support operations including Expeditionary Advanced Based Operations (EABO)

MRIC, previously budgeted in Project 2278, is moved to Project 2578 in FY 2022 to provide increased transparency.

Increase of \$0.127M from FY 2022 to FY 2023 is due to completion of the MRIC prototype development and integration and movement into test and evaluation. Funds support the integration testing, safety testing and certification, as well as the required software and cybersecurity testing efforts.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Medium Range Intercept Capability (MRIC) Test and Evaluation	0.000	2.881	7.973	0.000	7.973
Articles:	-	-	-	-	-
FY 2022 Plans: -Funded the planning, target operations, on site test efforts, range fees and post event analysis and reporting for live fire testing events (FrEX)					
FY 2023 Base Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0605520M / MARINE CORPS AIR DEFENSE WEAPONS SYS	Project (Number/Name) 2578 / GBAD: Medium Range Intercept Capability (MRIC)

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
-Initiates and completes the integration testing required prior to certification for deployment of the prototype capability. This includes software and cybersecurity testing. -Initiates safety testing and evaluation FY 2023 OCO Plans: N/A FY 2022 to FY 2023 Increase/Decrease Statement: Increase of \$5.092M is due to the required integration testing to include software, cybersecurity, and safety testing. Testing is required to provide a deployable prototype system for Developmental Testing (DT) in FY 2024.					
Title: Medium Range Intercept Capability (MRIC) Support Articles:	0.000	4.965	0.000	0.000	0.000
FY 2022 Plans: -Initiated support required for the tracking and live fire exercises. This support includes tracking simulations, radar modeling and simulation, information assurance, and safety support. FY 2023 Base Plans: N/A FY 2023 OCO Plans: N/A FY 2022 to FY 2023 Increase/Decrease Statement: Decrease of \$4.965M from FY 2022 to FY 2023 is due to completion of the MRIC prototype development and integration which will lead to a 4Q FY 2022 deployment decision.	-	-	-	-	-
Accomplishments/Planned Programs Subtotals	0.000	7.846	7.973	0.000	7.973

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• PMC/3006: Ground Based Air Defense (GBAD)	17.686	9.349	173.801	-	173.801	196.319	193.781	263.738	393.270	0.000	1,536.127

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0605520M / MARINE CORPS AIR DEFENSE WEAPONS SYS	Project (Number/Name) 2578 / GBAD: Medium Range Intercept Capability (MRIC)

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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Remarks

MRIC PMC begins in FY 2023 and is only a portion of the GBAD PMC funding line under BLI 3006.
MRIC FY 2020 RDT&E is only a portion of the GBAD RDT&E funding line under PU 2278.

D. Acquisition Strategy

To support an MRIC Material Support Decision, a concept demonstration of a proposed counter cruise missile (CM) defense system occurred in 4Q FY 2019. The MRIC received an approved Middle Tier Acquisition decision in 3Q FY 2020 placing the system into Rapid Prototyping. Design and integration development of a single prototype cruise missile defense capability are underway. Once the capability is successfully demonstrated during live fire testing events, a Certification Decision will occur in 4Q FY 2022. Prototype efforts support the anticipated development of a capability that meets Force Design requirements providing an MRIC Battery to each of the three USMC LAAD Battalions in FY 2026, FY 2027, and FY 2028, and to support Expeditionary Advanced Base Operations (EABO) planning.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy **Date:** April 2022

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0605520M / MARINE CORPS AIR DEF ENSE WEAPONS SYS	Project (Number/Name) 2578 / GBAD: Medium Range Intercept Capability (MRIC)
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Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
MRIC Radar Spt, M&S	Various	NSWC : Dahlgren, VA	0.000	0.000		2.905	Nov 2021	0.000		-		0.000	0.000	2.905	-
MRIC IA/Safety/Eng Spt	Various	NSWC : Dahlgren, VA	0.000	0.000		2.060	Nov 2021	0.000		-		0.000	0.000	2.060	-
Subtotal			0.000	0.000		4.965		0.000		-		0.000	0.000	4.965	N/A

Remarks
Decrease of \$4.965M from FY 2022 to FY 2023 is due to completion of the MRIC prototype development and integration which led to a 4Q FY 2022 certification decision.

Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Live Fire Test Event Range Operations	MIPR	WSMR : White Sands, NM	0.000	0.000		2.611	Dec 2021	0.000		-		0.000	0.000	2.611	-
Live Fire Test Event Planning/Reporting	Various	NSWC : Corona, CA	0.000	0.000		0.270	Dec 2021	0.000		-		0.000	0.000	0.270	-
Integration Testing	MIPR	WSMR : White Sands, NM	0.000	0.000		0.000		2.129	May 2023	-		2.129	0.000	2.129	-
Safety Testing	TBD	TBD : TBD	0.000	0.000		0.000		1.917	Nov 2022	-		1.917	Continuing	Continuing	Continuing
Software/Cybersecurity Testing	MIPR	Various : Various	0.000	0.000		0.000		3.927	Dec 2022	-		3.927	0.000	3.927	-
Subtotal			0.000	0.000		2.881		7.973		-		7.973	Continuing	Continuing	N/A

Remarks
Increase of \$5.092M is due to the required integration testing to include software, cybersecurity, and safety testing. Testing is required to provide a deployable prototype system for Developmental Testing (DT) in FY 2024.

	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000	7.846	7.973	-	7.973	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy							Date: April 2022			
Appropriation/Budget Activity 1319 / 7			R-1 Program Element (Number/Name) PE 0605520M / MARINE CORPS AIR DEF ENSE WEAPONS SYS			Project (Number/Name) 2578 / GBAD: Medium Range Intercept Capability (MRIC)				
	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract	

Remarks
 MRIC, previously budgeted in Project 2278, moved to Project 2578 in FY 2022 to provide increased transparency. Increase of \$0.127M from FY 2022 to FY 2023 is due to completion of the MRIC prototype development and integration and movement into test and evaluation. Funds support the integration testing, safety testing and certification, as well as the required software and cybersecurity testing efforts.

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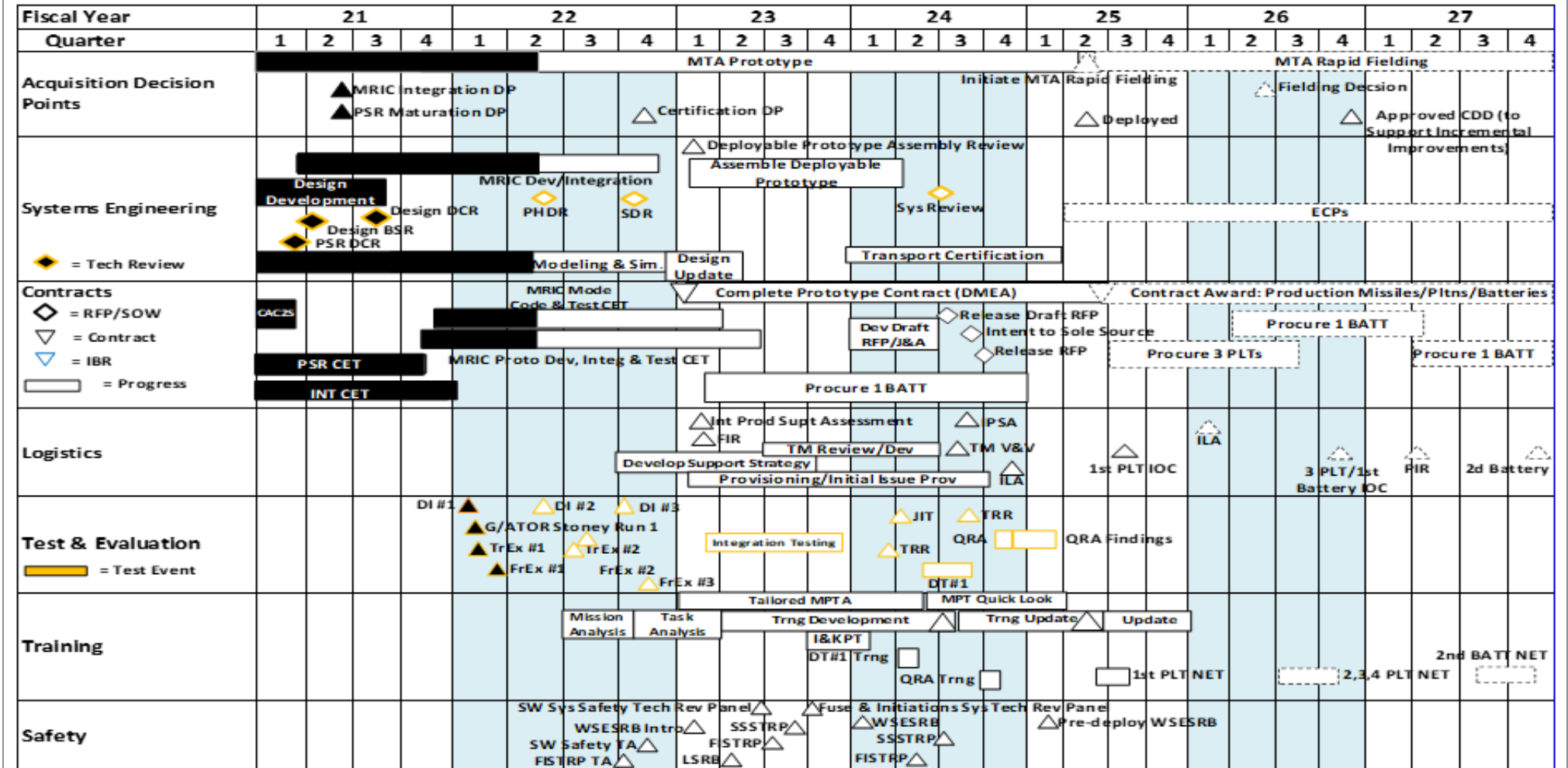
Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy

Date: April 2022

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0605520M / MARINE CORPS AIR DEF
ENSE WEAPONS SYS

Project (Number/Name)
2578 / GBAD: Medium Range Intercept
Capability (MRIC)



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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0605520M / MARINE CORPS AIR DEFENSE WEAPONS SYS	Project (Number/Name) 2578 / GBAD: Medium Range Intercept Capability (MRIC)

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2578				
Acquisition Decisions: Certification Decision	4	2022	4	2022
Systems Engineering: Design Development	1	2021	3	2021
Systems Engineering: Radar Modeling and Simulation	1	2021	4	2022
Systems Engineering: MRIC Development/Integration	1	2021	4	2022
Contracting: MRIC/PSR Mode Development and Test	4	2021	2	2023
Contracting: MRIC Prototype Develop, Integ, Test	4	2021	2	2023
Logistics: Integrated Product Support Assessment (IPSA)	1	2023	1	2023
Logistics: Facilities Impact Report (FIR)	1	2023	1	2023
Test and Evaluation: Digital Integration #1	1	2022	1	2022
Test and Evaluation: Target Tracking Exercise #1	1	2022	1	2022
Test and Evaluation: Live Firing Exercise #1	1	2022	1	2022
Test and Evaluation: Digital Integration #2	2	2022	2	2022
Test and Evaluation: Target Tracking Exercise #2	3	2022	3	2022
Test and Evaluation: Live Firing Exercise #2	3	2022	3	2022
Test and Evaluation: Live Firing Exercise #3	4	2022	4	2022
Test and Evaluation: Integration Testing	1	2023	4	2023
Test and Evaluation: Quick Reaction Assessment (QRA)	4	2024	4	2024

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy **Date:** April 2022

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0605520M / MARINE CORPS AIR DEFENSE WEAPONS SYS	Project (Number/Name) 9999 / Congressional Adds
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
9999: Congressional Adds	0.000	6.082	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	6.082
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Light-Marine Air Defense Integrated System (L-MADIS) is a part of the MADIS Family of Systems (FoS) and protects maneuver forces from the threat of unmanned aircraft systems (UAS), Fixed Wing and Rotor Wing (FW/RW), and other airborne threats throughout the operating environment while maintaining Marine Corps expeditionary requirements.

The L-MADIS utilizes non-kinetic counter-unmanned aircraft systems (C-UAS) capabilities, a beyond-line-of-sight (BLOS) gateway with radio frequency link-16 capability, and a 360 degree radar onto a fighting pair of MRZR's. L-MADIS is currently under a transition strategy endorsed on 26 Oct 2021 by the Combat Development & Integration division to provide the Marine Expeditionary Units (MEUs) a Counter small Unmanned Aircraft System (C-sUAS) capability until the Program of Record is fielded. L-MADIS is currently the only C-UAS forward deployed system within the MEU construct to have proven effects on targets.

The expeditionary nature that L-MADIS brings to the battlefield greatly increases the C-UAS capability, extending range well beyond other similar capabilities. The ability to transport L-MADIS via MV-22 Osprey or larger aircraft greatly increases tactical flexibility that a commander has to employ a C-UAS capability.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2021	FY 2022
Congressional Add: L-MADIS Systems	6.082	0.000
FY 2021 Accomplishments: -Completed purchase of components required to build (2) L-MADIS (2 systems = 4 vehicles) in order to meet requirements under Joint Urgent Operational Needs (JUON) CC-0558 -Integrates components onto (4) MRZR's in order to complete the build of (2) L-MADIS systems		
FY 2022 Plans: N/A		
Congressional Adds Subtotals	6.082	0.000

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023 Base</u>	<u>FY 2023 OCO</u>	<u>FY 2023 Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• PMC/3006: Ground Based Air Defense (GBAD)	17.686	9.349	173.801	-	173.801	196.319	193.781	263.738	393.270	0.000	1,536.127
• RDTE/0605520M/2278: Air Defense Weapons System	113.430	53.535	40.690	-	40.690	71.886	47.415	24.441	25.731	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0605520M / MARINE CORPS AIR DEFENSE WEAPONS SYS	Project (Number/Name) 9999 / Congressional Adds

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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Remarks

The L-MADIS Program of Record (PoR) initiated in FY 2022 and is only a portion of the Project 2278 and BLI 3006 budget FY 2022-2027.

D. Acquisition Strategy

Components will be procured via DLA orders and will be integrated onto the MRZR platform by NSWC Crane. The L-MADIS has an approved CDD annex and has initiated as a PoR under project 2278. Fully leveraging the JUON, the L-MADIS will develop a C-UAS capability on the ULTV and produce Low Rate Initial Production (LRIP) vehicles for testing in FY 2023. The L-MADIS is designated as an ACAT IVT program with Milestone (MS) C scheduled for 3Q FY 2023.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy **Date:** April 2022

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0605520M / MARINE CORPS AIR DEFENSE WEAPONS SYS	Project (Number/Name) 9999 / Congressional Adds
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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
L-MADIS Hardware (2 Systems)	MIPR	DLA : Philadelphia, PA	0.000	4.561	Sep 2021	0.000		0.000		-		0.000	0.000	4.561	-
L-MADIS Integration Labor	Various	NSWC : Crane, IN	0.000	0.956	Apr 2021	0.000		0.000		-		0.000	0.000	0.956	-
L-MADIS MoDI II ECP	WR	NSWC : Crane, IN	0.000	0.215	May 2021	0.000		0.000		-		0.000	0.000	0.215	-
Subtotal			0.000	5.732		0.000		0.000		-		0.000	0.000	5.732	N/A

Remarks
Decrease of product development from FY 2021 to FY 2022 in the amount of \$5.732M is due to the completion of L-MADIS builds tied to JUON CC-0558. In FY 2022 the L-MADIS PoR initiated under project 2278.

Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
MoDI II ECP Validation Test	MIPR	Yuma Proving Grounds : YPG	0.000	0.350	Sep 2021	0.000		0.000		-		0.000	0.000	0.350	-
Subtotal			0.000	0.350		0.000		0.000		-		0.000	0.000	0.350	N/A

Remarks
Decrease of testing from FY 2021 to FY 2022 in the amount of \$0.350M is due to the completion of L-MADIS builds tied to JUON CC-0558. In FY 2022 the L-MADIS PoR initiated under project 2278.

	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	6.082	0.000	0.000	-	0.000	0.000	6.082	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0605520M / MARINE CORPS AIR DEF ENSE WEAPONS SYS	Project (Number/Name) 9999 / Congressional Adds

FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Proj 9999	
Production: System Integration	████████████████████
Test and Evaluation: Government Acceptance Test (GAT)	████

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0605520M / MARINE CORPS AIR DEF ENSE WEAPONS SYS	Project (Number/Name) 9999 / Congressional Adds

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 9999				
Production: System Integration	2	2021	3	2022
Test and Evaluation: Government Acceptance Test (GAT)	3	2022	3	2022