

**UNCLASSIFIED**

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

<b>Appropriation/Budget Activity</b> 2040: Research, Development, Test & Evaluation, Army / BA 4: Advanced Component Development & Prototypes (ACD&P)					<b>R-1 Program Element (Number/Name)</b> PE 0604036A / Multi-Domain Sensing System (MDSS) Adv Dev							
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	-	-	50.548	49.932	-	49.932	10.482	4.310	1.583	1.599	Continuing	Continuing
BY9: Multi-Domain Sensing System Adv Dev	-	-	50.548	49.932	-	49.932	10.482	4.310	1.583	1.599	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

The Multi Domain Sensing System (MDSS) provides advanced aerial intelligence sensing capabilities for Multi-Domain Operations (MDO) against peer and near-peer adversaries. Initial MDSS development focuses on the High Accuracy Detection and Exploitation System (HADES) which is a globally deployable fixed-wing jet providing MDO-relevant sensing at extended ranges for indications and warnings, electronic order of battle, and patterns of life for the competition phase of MDO, and target development for the transition to conflict. During conflict, HADES operates at standoff distances for survivability against enemy integrated air defense systems (IADS) and anti-access/area denial (A2AD) systems. HADES sensors include electronic intelligence (ELINT), communications intelligence (COMINT), and synthetic aperture radar (SAR)/moving target indicator (MTI) in its first increment. Future increments will add cyber/electronic warfare (EW) systems and use air-launched effects (ALE) to extend sensing ranges. These capabilities will enable ground commanders to detect, locate, identify, track, and target critical enemy assets on the ground and support tactical consumers like Long Range Precision Fires (LRPF).

FY 2023 base dollars in the amount of \$49.932 million support the continued development and prototyping of ELINT, COMINT, and SAR/MTI sensors for HADES.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023 Base</b>	<b>FY 2023 OCO</b>	<b>FY 2023 Total</b>
Previous President's Budget	0.000	50.548	0.000	-	0.000
Current President's Budget	0.000	50.548	49.932	-	49.932
Total Adjustments	0.000	0.000	49.932	-	49.932
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	49.932	-	49.932

**Change Summary Explanation**

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

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Army										<b>Date:</b> April 2022		
<b>Appropriation/Budget Activity</b> 2040 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0604036A / Multi-Domain Sensing System (MDSS) Adv Dev				<b>Project (Number/Name)</b> BY9 / Multi-Domain Sensing System Adv Dev			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023 Base</b>	<b>FY 2023 OCO</b>	<b>FY 2023 Total</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
BY9: Multi-Domain Sensing System Adv Dev	-	-	50.548	49.932	-	49.932	10.482	4.310	1.583	1.599	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**A. Mission Description and Budget Item Justification**

The Multi Domain Sensing System (MDSS) provides advanced aerial intelligence sensing capabilities for Multi-Domain Operations (MDO) against peer and near-peer adversaries. Initial MDSS development focuses on the High Accuracy Detection and Exploitation System (HADES) which is a globally deployable fixed-wing jet providing MDO-relevant sensing at extended ranges for indications and warnings, electronic order of battle, and patterns of life for the competition phase of MDO, and target development for the transition to conflict. During conflict, HADES operates at standoff distances for survivability against enemy integrated air defense systems (IADS) and anti-access/area denial (A2AD) systems. HADES sensors include electronic intelligence (ELINT), communications intelligence (COMINT), and synthetic aperture radar (SAR)/moving target indicator (MTI) in its first increment. Future increments will add cyber/electronic warfare (EW) systems and use air-launched effects (ALE) to extend sensing ranges. These capabilities will enable ground commanders to detect, locate, identify, track, and target critical enemy assets on the ground and support tactical consumers like Long Range Precision Fires (LRPF).

FY 2023 base dollars in the amount of \$49.932 million support the continued development and prototyping of ELINT, COMINT, and SAR/MTI sensors for HADES.

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

	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
<b>Title:</b> SAR/MTI Development and Prototyping	-	26.320	21.300
<b>Description:</b> SAR/MTI development and prototyping to expand sensor performance to address HADES requirements and ability to exploit near-peer threats.			
<b>FY 2022 Plans:</b> Development of software for Range Enhancement, Automatic Target Recognition (ATR), and Electronic Protection (EP) capability, continued development of prototypes, and conduct of experimentation, integration, and test.			
<b>FY 2023 Plans:</b> Acquisition of SAR/MTI test articles, critical spares, and long lead items and Original Equipment Manufacturer (OEM) engineering support to integrate SAR/MTI sensors into the HADES Mission Equipment Package (MEP).			
<b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> The FY 2023 decrease is due to completion of SAR/MTI enhancements in FY 2022.			
<b>Title:</b> Prototype Component Acquisition	-	-	4.082

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Army		<b>Date:</b> April 2022		
<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604036A / Multi-Domain Sensing System (MDSS) Adv Dev	<b>Project (Number/Name)</b> BY9 / Multi-Domain Sensing System Adv Dev		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
<p><b>Description:</b> Acquisition of Processing, Exploitation, and Dissemination (PED) Communications and Workstation prototype components.</p> <p><b>FY 2023 Plans:</b> Acquisition of required PED software, radios, satellite communications equipment, operator workstations, server equipment, and ground station equipment components in support of system integration in a secure sensor integration lab.</p> <p><b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> The FY 2023 increase provides for the acquisition of additional components.</p>				
<p><b>Title:</b> Architecture Development</p> <p><b>Description:</b> Development of the HADES integrated systems architecture to ensure end-to-end compatibility and sensor fusion.</p> <p><b>FY 2022 Plans:</b> Develop an Integrated systems architecture design to ensure all components functionally and physically integrate into the HADES system.</p> <p><b>FY 2023 Plans:</b> Manage and enforce the integrated systems architecture design to ensure all components functionally and physically integrate into the HADES system.</p> <p><b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> The FY 2023 decrease is due to the completion of the initial system architecture design in FY 2022.</p>		-	1.796	0.500
<p><b>Title:</b> SIGINT Development and Prototyping</p> <p><b>Description:</b> ELINT/COMINT (SIGINT) development, prototyping, and demonstration to expand sensor performance and sensitivity to address HADES requirements and ability to exploit near-peer threats.</p> <p><b>FY 2022 Plans:</b> Development of SIGINT sensor enhancements to increase capability and sensor sensitivity to close identified HADES capability gaps while in parallel developing prototypes and conducting experimentation, integration, and test.</p> <p><b>FY 2023 Plans:</b> Acquisition of ELINT/COMINT test articles, critical spares, and long lead items and Original Equipment Manufacturer (OEM) engineering support to integrate ELINT/COMINT sensors into the HADES Mission Equipment Package (MEP).</p> <p><b>FY 2022 to FY 2023 Increase/Decrease Statement:</b></p>		-	18.064	17.800

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Army		<b>Date:</b> April 2022		
<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604036A / <i>Multi-Domain Sensing System (MDSS) Adv Dev</i>	<b>Project (Number/Name)</b> BY9 / <i>Multi-Domain Sensing System Adv Dev</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
The FY 2023 increase is due to acquisition of ELINT/COMINT spares and components to support HADES prototyping.				
<b>Title:</b> Engineering Support		-	2.214	2.040
<b>Description:</b> Engineering Support for MDSS development and prototype demonstration efforts.				
<b>FY 2022 Plans:</b> Support SIGINT, SAR/MTI, and Open Architecture development, prototyping, and demonstration.				
<b>FY 2023 Plans:</b> Engineering support for HADES prototype development and prototyping.				
<b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> The FY 2023 decrease is due to staffing adjustments.				
<b>Title:</b> Program Management		-	2.154	2.550
<b>Description:</b> Program Management support for MDSS development and prototype demonstration efforts.				
<b>FY 2022 Plans:</b> Support SIGINT, SAR/MTI and Open Architecture development, prototyping, and demonstration.				
<b>FY 2023 Plans:</b> Program Management support for HADES prototype development and prototyping.				
<b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> The FY 2023 increase is due to staffing adjustments.				
<b>Title:</b> Secure Sensor System Integration Lab (SIL)		-	-	1.660
<b>FY 2023 Plans:</b> Establish a secure SIL environment to support integration and testing of Mission Equipment Package (MEP) sensors and Processing, Exploitation, and Dissemination (PED) equipment as a coherent whole.				
<b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> The FY 2023 is the first year a SIL will be required.				
<b>Accomplishments/Planned Programs Subtotals</b>		-	50.548	49.932

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Army	<b>Date:</b> April 2022
--	-------------------------

<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604036A / <i>Multi-Domain Sensing System (MDSS) Adv Dev</i>	<b>Project (Number/Name)</b> BY9 / <i>Multi-Domain Sensing System Adv Dev</i>
--	---	--

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

<b>Line Item</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023 Base</b>	<b>FY 2023 OCO</b>	<b>FY 2023 Total</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• 0603766A: <i>Tactical Electronic Surveillance System - Adv Dev</i>	182.400	113.365	72.314	-	72.314	64.799	37.048	36.646	37.072	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

MDSS development continues ELINT/COMINT and SAR/MTI sensor and open architecture development and prototyping efforts that began in FY 2021 on 0603766A Tactical Support Development - Adv Dev and transitioned in FY 2022 to 0604036A MDSS - Adv Dev. MDSS-HADES requirements were approved by the Army Requirements Oversight Council (AROC) on 26 August 2020 and signed by the Commanding General, Army Futures Command on 18 September 2020. An Acquisition Decision Memorandum directing sensor prototyping activities for HADES was signed on 16 November 2020. With the funding and acquisition authority allocated for HADES in FYs 2021 and 2022, the MDSS program office has pursued an agile acquisition strategy, maximizing prototyping and experimentation to choose best-of-breed sensors, and leveraging a non-proprietary, open system architecture to enable easy upgrades of software and hardware. The MDSS program office will take advantage of lessons learned from past and current quick reaction HADES-like capabilities to develop operational context and validate the capabilities described in the HADES requirements. These "path of learning" efforts, and others, will collectively inform MDSS subsystem development and integration. The MDSS program's demonstration and development cycle will be executed in parallel to the path of learning above and will be informed by those efforts and related Army strategic decisions. Prototyping will include Soldier touchpoints throughout the process in order to help refine requirements.

**UNCLASSIFIED**

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army												Date: April 2022			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 4				PE 0604036A / Multi-Domain Sensing System (MDSS) Adv Dev				BY9 / Multi-Domain Sensing System Adv Dev							
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering Support Services	TBD	ACC APG : APG, MD	-	-		2.214	Jan 2022	2.040	Nov 2022	-		2.040	Continuing	Continuing	-
<b>Subtotal</b>			-	-		2.214		2.040		-		2.040	Continuing	Continuing	N/A
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
SAR/MTI Development and Prototyping	C/IDIQ	DMEA : Sacramento, CA	-	-		26.320	Jun 2022	21.300	Dec 2022	-		21.300	Continuing	Continuing	-
SIGINT Development and Prototyping	SS/TBD	ACC APG : APG, MD	-	-		18.064	Jun 2022	17.800	Jan 2023	-		17.800	0.000	35.864	Continuing
PED Software and Component Acquisition	Various	ACC APG : APG, MD	-	-		-		4.082	Dec 2022	-		4.082	Continuing	Continuing	-
Architecture Development and Management	TBD	AVMC : Redstone, AL	-	-		1.796	Mar 2022	0.500	Nov 2022	-		0.500	0.000	2.296	-
Secure Sensor SIL	C/TBD	APG ACC : APG MD	-	-		-		1.660	Oct 2022	-		1.660	Continuing	Continuing	-
<b>Subtotal</b>			-	-		46.180		45.342		-		45.342	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management	RO	Various : APG, MD	-	-		2.154	Nov 2021	2.550	Nov 2022	-		2.550	Continuing	Continuing	-
<b>Subtotal</b>			-	-		2.154		2.550		-		2.550	Continuing	Continuing	N/A
<b>Project Cost Totals</b>			-	-		50.548		49.932		-		49.932	Continuing	Continuing	N/A



**UNCLASSIFIED**

<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2023 Army</b>			<b>Date: April 2022</b>		
<b>Appropriation/Budget Activity</b> 2040 / 4		<b>R-1 Program Element (Number/Name)</b> PE 0604036A / Multi-Domain Sensing System (MDSS) Adv Dev		<b>Project (Number/Name)</b> BY9 / Multi-Domain Sensing System Adv Dev	

Event Name	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
SAR/MTI Development and Prototyping																												
SIGINT Sensor Evaluation																												
SIGINT Development and Prototyping																												
HADES Systems Architecture Development																												
Prototype System Acquisition and Integration																												
Prototype System Qualification, Test, and Evaluation																												
Military User Assessment																												

**UNCLASSIFIED**

<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2023 Army		<b>Date:</b> April 2022
<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604036A / <i>Multi-Domain Sensing System (MDSS) Adv Dev</i>	<b>Project (Number/Name)</b> BY9 / <i>Multi-Domain Sensing System Adv Dev</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
SAR/MTI Development and Prototyping	2	2021	4	2023
SIGINT Sensor Evaluation	2	2021	2	2022
SIGINT Development and Prototyping	4	2021	4	2023
HADES Systems Architecture Development	3	2021	4	2023
Prototype System Acquisition and Integration	2	2023	4	2027
Prototype System Qualification, Test, and Evaluation	2	2024	2	2026
Military User Assessment	2	2026	4	2028