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Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Air Force **Date:** March 2024

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604327F <i>I Hard and Deeply Buried Target Defeat System (HDBTDS) Program</i>
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COST (\$ in Millions)	Prior Years	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
Total Program Element	0.000	113.552	19.266	154.417	0.000	154.417	48.300	0.000	0.000	0.000	0.000	335.535
645341: <i>Direct Strike Penetrator Systems</i>	0.000	113.552	19.266	154.417	0.000	154.417	48.300	0.000	0.000	0.000	0.000	335.535
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

Note
This program, BA 4, PE 0604327F, project 645341, Next Generation Penetrator, is a new start.

A. Mission Description and Budget Item Justification

The Direct Strike Penetrator Systems program develops and modifies a family of advanced precision-guided penetrator munitions to include evaluation of integrated technologies for the development/integration of advanced position, navigation, and timing (PNT) capabilities (i.e., Global Positioning System (GPS), non-GPS, optical, passive, active, etc.) and smart fuze systems, and all penetrator components, that will provide the Air Force with improved ability to attack Hard and Deeply Buried Targets (HDBT), such as bunker and tunnel facilities, using air-to-surface conventional munitions. Systems developed include, but are not limited to Massive Ordnance Penetrator (MOP), GBU-72 Advanced 5,000-lb Penetrator Weapon System (A5K), and Section 804 Rapid Prototype/Rapid Fielding activities. Systems developed will be integrated onto current and future platforms to reduce the number of weapons required to hold HDBTs at risk and will result in more targets engaged per mission flown. Direct Strike Penetrators will provide critical global strike capability not met by inventory conventional weapons and will hold at risk the best protected high value assets essential to an enemy's war fighting ability. The project also provides an opportunity to quickly insert emerging technologies into existing and developing aircraft munitions and fuzes.

A Hard Target Munitions (HTM) Analysis-of-Alternatives (AoA) was conducted in 2014 to determine the best weapons and/or development efforts for addressing the HDBT mission area. The HTM AoA determined that it was necessary to develop a family of HTMs in order to apply effects to the entire range of HDBT sets. The Air Force is using the AoA to develop, produce and modify HDBT weapons identified as the most effective and affordable. Modeling and simulation is used to assess and characterize current inventory and to drive design and explore the utility of new classes of penetrator munitions.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY24 0.0M was expended for civilian pay expenses in this program element, and in FY25 0.0M is forecasted for civilian pay expenses in this program.

This program leverages digital acquisition tenets of open, agile, and digital. Common component development, in collaboration with other weapon systems, to reduce redundant costs between systems with similar subsystems requirements. Invests in analytical, information management, data management, digital environments, networks, facilities, and security infrastructure upgrades directly supporting development and sustainment of this program's capabilities, while leveraging DoD and DAF enterprise IT solutions.

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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604327F I <i>Hard and Deeply Buried Target Defeat System (HDBTDS) Program</i>
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This requirement supports performance of a full financial audit as required by title 10 U.S.C. Chapter 9A, Sec 240-D.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

B. Program Change Summary (\$ in Millions)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
Previous President's Budget	141.826	19.266	0.000	0.000	0.000
Current President's Budget	113.552	19.266	154.417	0.000	154.417
Total Adjustments	-28.274	0.000	154.417	0.000	154.417
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-23.200	0.000			
• SBIR/STTR Transfer	-5.074	0.000			
• Other Adjustments	0.000	0.000	154.417	0.000	154.417

Change Summary Explanation

FY2023 Total Reprogramming 23.200M: one 13.200 Above Threshold Reprogramming and three Below Threshold Reprogramming totaling 10.000M.

FY2025 increase due to Next Generation Penetrator New Start, 125.606M.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2023	FY 2024	FY 2025
Title: Next Generation Penetrator	0.000	0.000	125.606
Description: Next Generation Penetrator (A20K) is the development and demonstration of an advanced large penetrator concept to augment Combatant Command (CCMD) capability against hard and deeply buried targets. Utilize subscale, sled, and phenomenology testing in concert with modeling and simulation efforts to design necessary warhead components that meet current lethality, survivability, and penetration performance parameters. Culminating in full scale testing and delivery of a prototype technical data package.			
FY 2024 Plans: N/A			
FY 2025 Plans:			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Air Force		Date: March 2024		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)		R-1 Program Element (Number/Name) PE 0604327F I Hard and Deeply Buried Target Defeat System (HDBTDS) Program		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2023	FY 2024	FY 2025
Modeling and simulation for weapon design development, test & evaluation, long lead target design/construction, and ground test support for subscale and full-scale test execution. FY 2024 to FY 2025 Increase/Decrease Statement: Next Generation Penetrator will be a new start in FY25.				
Title: Massive Ordnance Penetrator (MOP) Modification (Mod) Description: Modification of Smart Fuze functionality to enhance MOP weapon performance, holding additional hard and deeply buried targets (HDBT) at risk in multiple CCMD. Construct relevant HDBTs for testing. Execute MOP testing in support of modification efforts to include sub-scale and full-scale ground and flight tests. Analyze MOP weapon effectiveness. FY 2024 Plans: Continue long-lead target build and test & evaluation of MOP Mod for enhanced capability as well as accuracy enhancement efforts to hold HDBTs at risk. FY 2025 Plans: Continue extensive target build(s) and test & evaluation of MOP Mod for enhanced capability as well as accuracy enhancement efforts to hold HDBTs at risk. FY 2024 to FY 2025 Increase/Decrease Statement: Funding increased due to continued target build and test & evaluation of MOP Mod for enhanced capability.		112.484	19.016	28.811
Title: Advanced 5,000 lb (A5K) Penetrator Description: GBU-72 Advanced 5,000 lb (A5K) Penetrator is an improved 5,000 lb class penetrator to address capability gaps identified in the HTM AoA. Conduct A5K design, development, integration, modeling and simulation, and testing to improve performance against increasingly hardened targets. This effort utilizes existing and improved technologies to field an integrated penetrator weapon system to include: an improved penetrator warhead, a smart fuze system that can detect layers/voids, and a modified Joint Direct Attack Munition (JDAM) tail kit for all weather, precision guidance, navigation, and control. FY 2024 Plans: Continue conducting A5K integration, modeling and simulation, and testing to improve performance against increasingly hardened targets to include DT/OT through -5 execution and data analysis. Closeout activities for DT/OT -3 through -5. Captive Carry flights by AFSEO for fielding recommendation. FY 2025 Plans:		1.068	0.250	0.000

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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604327F I <i>Hard and Deeply Buried Target Defeat System (HDBTDS) Program</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2023	FY 2024	FY 2025
N/A			
<i>FY 2024 to FY 2025 Increase/Decrease Statement:</i> Funding decrease due to A5K development completing.			
Accomplishments/Planned Programs Subtotals	113.552	19.266	154.417

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u> <u>Base</u>	<u>FY 2025</u> <u>OCO</u>	<u>FY 2025</u> <u>Total</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>FY 2029</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• PAAF 01 353190: <i>Massive Ordnance Penetrator (MOP)</i>	19.743	14.074	8.750	-	8.750	0.000	0.000	0.000	0.000	0.000	42.567
• PAAF 01 353020: <i>General Purpose Bombs</i>	148.102	142.118	144.417	-	144.417	180.390	176.466	180.278	183.851	0.000	1,155.622

Remarks
Program Support Costs (PSC) Other Government Costs: Travel, Government Purchase Card (GPC), Program Support Personnel.

E. Acquisition Strategy
MOP uses sole source cost type contracts to complete development, test, and evaluation activities.

The initial GBU-72/A5K penetrator design was accomplished through modeling, simulation, and analysis producing potential designs. The designs were developed based on the performance parameters of survivability, lethality, accuracy and penetration. The Government determined the optimum A5K design to then manufacture production representative prototypes to include warheads, fuzes and modified JDAM kits. These assets will be used to conduct and successfully complete qualification testing and integration.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Air Force												Date: March 2024			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
3600 / 4				PE 0604327F / Hard and Deeply Buried Target Defeat System (HDBTDS) Program				645341 / Direct Strike Penetrator Systems							
Product Development (\$ in Millions)				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 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
MOP Modification and Integration	SS/ Various	Boeing : St Louis, MO	0.000	-		-		1.000	Oct 2024	-		1.000	Continuing	Continuing	-
MOP Test Asset, Replenish (Cong Add \$)	SS/CPFF	Boeing : St Louis, MO	0.000	35.000	Sep 2023	-		-		-		-	0.000	35.000	-
Next Generation Penetrator Product Development	TBD	Not specified. : TBD	0.000	-		-		124.000	Dec 2024	-		124.000	0.000	124.000	-
Subtotal			0.000	35.000		-		125.000		-		125.000	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 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
MOP System Contractor Support	MIPR	DOTC : Albuquerque, NM	0.000	-		2.143	Dec 2023	1.000	Oct 2024	-		1.000	Continuing	Continuing	-
A5K System T&E Contractor Support	MIPR	DOTC/ARA/NGIS : Albuquerque, NM	0.000	-		-		-		-		-	0.000	0.000	-
A5K System T&E Government Support	MIPR	MCAAP : McAlester, OK	0.000	-		-		-		-		-	0.000	0.000	-
DCA Civ Pay	Allot	AFLCMC/EBD : Eglin AFB, FL	0.000	-		-		-		-		-	0.000	0.000	-
Subtotal			0.000	-		2.143		1.000		-		1.000	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 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
MOP Test & Evaluation	Various	AFLCMC : Eglin, Holloman, Edw, FL	0.000	25.634	Dec 2022	4.419	Dec 2023	1.000	Oct 2024	-		1.000	Continuing	Continuing	-
MOP Target Construction and Instrumentation	Various	DTRA : Albuquerque, NM	0.000	48.630	Jan 2023	11.204	Jan 2024	24.311	Oct 2024	-		24.311	Continuing	Continuing	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Air Force **Date:** March 2024

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604327F / <i>Hard and Deeply Buried Target Defeat System (HDBTDS) Program</i>	Project (Number/Name) 645341 / <i>Direct Strike Penetrator Systems</i>
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Test and Evaluation (\$ in Millions)				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 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			
A5K Developmental Test & Evaluation	Various	96 TW, 780 TS : Eglin, Holloman, FL	0.000	0.508	Jan 2023	0.225	Mar 2024	-		-		-	0.000	0.733	-
A5K Operational Test & Evaluation	Various	96 TW, Det 1 : Eglin, WSMR, FL	0.000	0.416	May 2023	-		-		-		-	0.000	0.416	-
Subtotal			0.000	75.188		15.848		25.311		-		25.311	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 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			
MOP Program Support Costs	Various	AFLCMC/EBD : Eglin AFB, FL	0.000	3.220	Oct 2022	1.250	Dec 2023	1.500	Dec 2024	-		1.500	Continuing	Continuing	-
A5K Program Support Costs	Various	AFLCMC/EBD : Eglin AFB, FL	0.000	0.144	Jan 2023	0.025	Nov 2023	-		-		-	0.000	0.169	-
Next Generation Penetrator Program Support Costs	Various	ALFCMC/EBD : Eglin AFB, FL	0.000	-		-		1.606	Dec 2024	-		1.606	0.000	1.606	-
Subtotal			0.000	3.364		1.275		3.106		-		3.106	Continuing	Continuing	N/A

Remarks
MOP Modification program support costs funding increased to support additional testing activities.

	Prior Years	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	113.552	19.266	154.417	-	154.417	Continuing	Continuing	N/A

Remarks
Program Support Costs (PSC) Other Government Costs: Travel, Government Purchase Card (GPC), Program Support Personnel.
MOP Target Construction & Development increased due to target set requirements.

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Exhibit R-4, RDT&E Schedule Profile: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604327F / <i>Hard and Deeply Buried Target Defeat System (HDBTDS) Program</i>	Project (Number/Name) 645341 / <i>Direct Strike Penetrator Systems</i>

FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028				FY 2029			
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

<i>Direct Strike Penetrator Systems</i>	
MOP Modification Analysis and Testing	[REDACTED]
A5K Design, Development and Testing	[REDACTED]
Next Generation Penetrator Modeling & Simulation, Design, Product Development, Integration and Test	[REDACTED]

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Exhibit R-4A, RDT&E Schedule Details: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604327F / <i>Hard and Deeply Buried Target Defeat System (HDBTDS) Program</i>	Project (Number/Name) 645341 / <i>Direct Strike Penetrator Systems</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Direct Strike Penetrator Systems</i>				
MOP Modification Analysis and Testing	1	2023	4	2027
A5K Design, Development and Testing	1	2023	1	2025
Next Generation Penetrator Modeling & Simulation, Design, Product Development, Integration and Test	1	2025	4	2026