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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 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0101126F / <i>B-1B Squadrons</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	-	19.456	12.619	17.939	0.000	17.939	1.976	0.000	0.000	0.000	0.000	51.990
675344: <i>B-1B Modernization</i>	-	19.456	12.619	17.939	0.000	17.939	1.976	0.000	0.000	0.000	0.000	51.990
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

The B-1B Lancer is a swing-wing, supersonic, long-range conventional bomber. It carries the largest payload of both guided and unguided weapons in the AF inventory. The multi-mission B-1B is the backbone of America's long-range conventional bomber force and can rapidly deliver massive quantities of precision (and non-precision) weapons against any adversary, anywhere in the world, at any time. The B-1B modernization projects alleviate aircraft obsolescence issues due to Diminishing Manufacturing Sources and Material Shortages (DMSMS) while at the same time providing improved capabilities to the B-1B weapon system that require significant hardware and software development and testing.

RADIO-CRYPTO MODERNIZATION:

The B-1B Radio Crypto program originates from JROCM 040-11, VACM Cease Key CED-026-11, UHF SATCOM (Ultra-High Frequency Satellite Communication) Decommission and Cease Key for Demand Assigned Multi Access (DAMA) Orderwire, HAVE QUICK II Cease use date, and DoD CIO Mobile User Objective System (MUOS) transition directive. If the requirements/directives are not met, B-1B will lose its secure line of sight, beyond line of sight, and anti-jam communication with ground and air forces. The initiative will replace the existing ARC-210 (Gen 3/4) with ARC-210 (Gen 6) next generation radios. Additionally, the program will provide MUOS Satellite Communication capability that supports the DoD Chief Information Officer (CIO) directive to move all DoD assets to MUOS constellation (70% by FY26). This effort will lay in Ethernet cable required by MUOS Data (J-REAP C), install MUOS ancillaries (HPA/LNA) and additional software to execute MUOS capability on the aircraft. The B-1B Radio Crypto program received an updated Acquisition Decision Memorandum (ADM) in March 2023 approving an updated acquisition strategy that combined the program increments into one technical baseline and accelerated the schedule. A further updated ADM signed January 2024 accelerated the full production lot buys. Preliminary Design Review (PDR) was completed in Q4 FY23, and Critical Design Review (CDR) approval is on schedule for Q2 FY24.

HYPERSONIC INTEGRATION:

The FY22 and FY23 Conference Appropriations, detailed in the Congressional Conference Reports of Interest, added \$20M (\$10M in FY22 and \$10M in FY23) RTD&E appropriation for B-1B hypersonic weapon integration. This appropriation develops an external carry-enabled B-1B as a testbed to facilitate rapid integration of priority hypersonic weapons to support national security objectives leading to a potential investment opportunity for weapons programs. This program provides an opportunity to significantly reduce risk for an operational external carry capability on the B-1B if directed.

GAP AND INTEGRATION ANALYSIS:

Program funds cover engineering/planning studies, related engineering efforts, and the auxiliary equipment needed for development projects that have not yet been fielded. Funds may be used to resolve emerging safety of flight and DMSMS issues, accommodate technology insertion, and fulfill FAA (or other) mandates necessary to ensure continued aircrew safety and mission effectiveness. Costs include PMA costs, total ownership cost, as well as initiatives for anticipated weapon system

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enhancements (to include efforts for improving weapon system operational capabilities, safety, supportability, maintainability, reliability, digital engineering and total cost of ownership). B-1B funding also supports innovation activities to include studies, analyses, requirements definition, digital engineering initiatives and quick-reaction capability prototypes/demonstrations to accelerate planning for technology transition, technology insertion, and future acquisition programs. Funds may be used to resolve emerging safety of flight and DMSMS accommodating technology insertion and fulfilling FAA or other mandates necessary to ensure continued aircrew safety and mission effectiveness.

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 FY23, \$1.8M was expended for civilian pay expenses in this program element, and in FY24, \$2.1M is forecast for civilian pay expenses in this program element.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

B. Program Change Summary (\$ in Millions)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
Previous President's Budget	20.044	12.619	17.926	0.000	17.926
Current President's Budget	19.456	12.619	17.939	0.000	17.939
Total Adjustments	-0.588	0.000	0.013	0.000	0.013
• 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	0.000	0.000			
• SBIR/STTR Transfer	-0.588	0.000			
• Other Adjustments	0.000	0.000	0.013	0.000	0.013

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

Project: 675344: *B-1B Modernization*

Congressional Add: *HYPERSONIC INTEGRATION*

	FY 2023	FY 2024
Congressional Add Subtotals for Project: 675344	9.707	0.000
Congressional Add Totals for all Projects	9.707	0.000

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Change Summary Explanation

No Significant Changes

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

	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
Title: RADIO-CRYPTO	9.749	12.619	17.939	0.000	17.939
<p>Description: The B-1B Radio Crypto program originates from JROCM 040-11, VACM Cease Key CED-026-11, UHF SATCOM (Ultra-High Frequency Satellite Communication) Decommission and Cease Key for Demand Assigned Multi Access (DAMA) Orderwire, HAVE QUICK II Cease use date, and DoD CIO Mobile User Objective System (MUOS) transition directive. If the requirements/directives are not met, B-1B will lose its secure line of sight, beyond line of sight, and anti-jam communication with ground and air forces. The initiative will replace the existing ARC-210 (Gen 3/4) with ARC-210 (Gen 6) next generation radios. Additionally, the program will provide MUOS Satellite Communication capability that supports the DoD Chief Information Officer (CIO) directive to move all DoD assets to MUOS constellation (70% by FY26). This effort will lay in Ethernet cable required by MUOS Data (J-REAP C), install MUOS ancillaries (HPA/LNA) and additional software to execute MUOS capability on the aircraft. The B-1B Radio Crypto program received an updated Acquisition Decision Memorandum (ADM) in March 2023 approving an updated acquisition strategy that combined the program increments into one technical baseline and accelerated the schedule. A further updated ADM signed January 2024 accelerated the full production lot buys. Preliminary Design Review (PDR) was completed in Q4 FY23, and Critical Design Review (CDR) approval is on schedule for Q2 FY24.</p> <p>FY 2024 Plans: Continue EMD activities (EA-11468) through Flight Test to complete the EMD phase.</p> <p>FY 2025 Base Plans: Complete EMD activities (EA-11468) and transition into production.</p> <p>FY 2025 OCO Plans: N/A</p> <p>FY 2024 to FY 2025 Increase/Decrease Statement: Increase of \$5.32M between FY24 and FY25 supports SEPM/Integration, Trainers & Simulators (Software), Engineering Ground and Flight test, and Engineering Change Orders.</p>					
Accomplishments/Planned Programs Subtotals	9.749	12.619	17.939	0.000	17.939

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	FY 2023	FY 2024
Congressional Add: HYPERSONIC INTEGRATION	9.707	0.000
FY 2023 Accomplishments: Awarded Boeing Engineering Assignment for Load Adaptive Modular (LAM) Integration, continuing airworthiness analysis, and demonstration of ground and flight testing. In May 2023, Boeing delivered their IRAD (Internal Research & Development) Load Adaptable Modular (LAM) pylon to Edwards AFB to begin the test/evaluation process. In June 2023, the Load Adaptable Modular (LAM) pylon completed ground vibration testing at Edwards AFB. The ground test is completed. Captive Carry GBU-72 completed 31 October 2023 and Captive Carry #1 ARRW IMV-1 completed 14 December 2023.		
FY 2024 Plans: No FY24 activity		
Congressional Adds Subtotals	9.707	0.000

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

Line Item	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
• APAF 05 Line Item	0.102	0.501	0.513	-	0.513	0.521	0.533	0.890	0.908	0.000	3.968
B01B00: <i>Training Support to Units, Mods PE 0809731F</i>											
• APAF 05 B01B00: B-1B	36.313	12.757	13.406	-	13.406	13.154	1.003	1.370	1.397	0.000	79.400
• APAF 05 B00100: B-1	-	-	-	-	-	-	-	-	-	0.000	0.000
• APAF 05 Line Item B01B00	0.000	0.000	-	-	-	-	-	-	-	0.000	0.000
Spares: <i>B-1B Squadrons, Spares</i>											

Remarks

E. Acquisition Strategy

Radio Crypto acquisition strategy addresses National Security Agency (NSA) as well as DoD mandates and directives by executing EMD and production with a Sole Source (SS), Cost Plus Fixed Fee (CPFF), EMD contract effort followed by a two-year production and installation effort.

The Hypersonic Weapons Integration strategy addresses national security objectives and is designed to achieve the end result of an external carry-enabled testbed facilitating rapid integration of priority hypersonic weapons through a two-year Sole Source (SS), Cost Plus Fixed Fee (CPFF), Engineering Assignment effort. An additional 18-month SS CPFF term Engineering Assignment effort will continue the integration of Load Adaptive Modular (LAM) pylon for demonstrating carry and release capability of various stores and works toward utilizing additional hardpoints. Two LAM pylon prototypes are being purchased for future testing.

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

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0101126F / B-1B Squadrons	Project (Number/Name) 675344 / B-1B Modernization
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Product Development (\$ 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			
Radio Crypto Compliance (EA- 11468)	SS/CPFF	Boeing : OKC, OK	-	5.568	Apr 2023	1.282	Nov 2023	-		-		-	0.000	6.850	35.000
Radio Crypto Compliance (EA-11468)	SS/CPFF	Boeing : OKC, OK	-	2.347	Aug 2023	7.597	Mar 2024	14.632	Nov 2024	-		14.632	Continuing	Continuing	-
Hypersonic Weapons Integration	SS/CPFF	Boeing : OKC, OK	-	6.035	Sep 2023	-		-		-		-	0.000	6.035	-
Subtotal			-	13.950		8.879		14.632		-		14.632	Continuing	Continuing	N/A

Support (\$ 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			
Hypersonic Weapons Integration (Travel)	TBD	Travel : TBD	-	0.200	Sep 2023	-		-		-		-	0.000	0.200	-
Hypersonic Weapons Integration (BAH A&AS)	MIPR	GSA: OKC, Ok : TBD	-	0.412	Jun 2023	-		-		-		-	0.000	0.412	-
Radio Crypto Compliance (OGC)	TBD	POS, Travel : OKC, OK	-	-		0.381	Aug 2024	0.611	Aug 2025	-		0.611	Continuing	Continuing	-
Radio Crypto Compliance (Trainer/Simulator Software)	TBD	Trainers & Simulators : OKC, OK	-	-		-		2.069	Nov 2024	-		2.069	Continuing	Continuing	-
Subtotal			-	0.612		0.381		2.680		-		2.680	Continuing	Continuing	N/A

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			
Hypersonic Weapons Integration (DT/OT)	PO	Edwards : CA	-	3.060	Sep 2023	-		-		-		-	0.000	3.060	-
Radio Crypto Compliance (DT/OT)	PO	Edwards : CA	-	-		1.305	Mar 2024	-		-		-	0.000	1.305	-
Subtotal			-	3.060		1.305		-		-		-	0.000	4.365	N/A

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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			

Remarks
Radio Crypto Project Order (PO) for Flight testing is to the 419th Test Squadron.

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			
PMA/DCA - Radio Crypto Compliance	Various	Various : OKC, OK	-	1.834	Jan 2023	2.054	Oct 2023	0.627	Oct 2024	-		0.627	0.000	4.515	-
Subtotal			-	1.834		2.054		0.627		-		0.627	0.000	4.515	N/A

			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			-	19.456	12.619	17.939	-	17.939	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2025 Air Force **Date:** March 2024

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0101126F / B-1B Squadrons	Project (Number/Name) 675344 / B-1B Modernization
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	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>Hypersonic Integration</i>	
Demo Planning	
Demo Ground Test	
Demo Flight Test	
Additional Hardpoint Development	
<i>Radio Crypto</i>	
EMD	
PDR/CDR	
DT/OT	
MS-C	

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Exhibit R-4A, RDT&E Schedule Details: PB 2025 Air Force **Date:** March 2024

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0101126F / B-1B Squadrons	Project (Number/Name) 675344 / B-1B Modernization
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Hypersonic Integration</i>				
Demo Planning	1	2023	2	2023
Demo Ground Test	2	2023	3	2023
Demo Flight Test	4	2023	2	2024
Additional Hardpoint Development	2	2024	2	2025
<i>Radio Crypto</i>				
EMD	1	2023	3	2025
PDR/CDR	4	2023	2	2024
DT/OT	4	2024	2	2025
MS-C	4	2025	4	2025