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* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0603851F / *Intercontinental Ballistic Missile - Dem/Val*

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	-	44.751	45.319	119.197	0.000	119.197	91.584	73.250	136.982	126.651	0.000	637.734
641020: *ICBM Guidance Applications*	-	1.500	0.000	39.757	0.000	39.757	44.480	44.299	25.306	10.563	0.000	165.905
641022: *ICBM Reentry Vehicle Applications*	-	15.766	0.000	62.044	0.000	62.044	42.289	25.789	97.905	101.950	0.000	345.743
641024: *ICBM Command & Control (C2) Applications*	-	0.000	0.000	10.044	0.000	10.044	4.008	1.002	0.000	0.000	0.000	15.054
644209: *Long Range Planning (LRP)*	-	27.485	45.319	7.352	0.000	7.352	0.807	2.160	13.771	14.138	0.000	111.032

A. Mission Description and Budget Item Justification

The Intercontinental Ballistic Missile (ICBM) Demonstration/Validation (Dem/Val) program ensures the development of strategic capability in response to the Nuclear Posture Review, recommendations of the United States Strategic Command (USSTRATCOM) Strategic Advisory Group, USSTRATCOM Commander Guidance, and the Defense Science Board Task Force on Nuclear Deterrence.

ICBM Dem/Val provides responsive solutions to address emerging threats and issues through technology insertion and technology application for legacy and future ICBM systems, and other common strategic deterrent mission areas. The ICBM Dem/Val program conducts technology maturation and risk reduction activities for new capabilities to support Minuteman (MM) III sustainment, MM III-to-LGM-35A Sentinel weapon system transition, and future ICBM systems development. ICBM Dem/Val conducts advanced component development and prototyping to validate emerging strategic technologies and future upgrades to the ICBM enterprise. Efforts will identify methods to improve system performance, develop potential future Reentry Vehicle (RV) designs, mitigate evolving threats, reduce life-cycle costs, and develop/expand modeling and simulation. Additionally, ICBM Dem/Val will provide experimental platforms for weapon qualification activities, improve nuclear safety and surety, ensuring both the viability and durability of strategic missile systems.

The ICBM Dem/Val program will develop key enabling engineering tools for the ICBM mission to include Model Based Systems Engineering (MBSE), test software, and modernization of existing analytical tools. This program will leverage modular system, open architecture, and agile software development to build key enabling engineering tools and future upgrades to ICBMs.

Please note: All FY24 funding in ICBM Dem/Val in the FY24 PB was consolidated into the Long Range Planning (LRP) Project 644209. In this FY25 PB budget submission, the Air Force has distributed funding across all Projects within this PE to support ongoing activities and better align projects to their purpose and increase clarity in this portfolio for FY25.

The FY 2025 funding request was reduced by $1.685M to account for the availability of prior year execution balances.

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* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0603851F / *Intercontinental Ballistic Missile - Dem/Val*

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 FY 2023, 0.000M was expended for civilian pay expenses in this program element, and in FY 2024, 0.000M is forecasted for civilian pay expenses in this program element.

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	46.100	45.319	56.756	0.000	56.756
Current President's Budget	44.751	45.319	119.197	0.000	119.197
Total Adjustments	-1.349	0.000	62.441	0.000	62.441
• 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	-1.341	0.000			
• Other Adjustments	-0.008	0.000	62.441	0.000	62.441

Change Summary Explanation

FY25 budget increase reflects investment in this portfolio's technology maturation efforts to deliver future ICBM capabilities.

FY25 funding request was reduced by $1.685M to account for the availability of prior year execution balances.

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force			Date: March 2024
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603851F / *Intercontinental Ballistic Missile - Dem/Val*	Project (Number/Name) 641020 / *ICBM Guidance Applications*	

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
641020: *ICBM Guidance Applications*	-	1.500	0.000	39.757	0.000	39.757	44.480	44.299	25.306	10.563	0.000	165.905
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Guidance Applications Program (GAP) any necessary studies and assesses both legacy and future ICBM Guidance System technology applications. Efforts are focused on current and future requirements and technologies, reduced life-cycle costs, and increased nuclear safety and surety. Activities leverage the efforts of the science and technology community and are coordinated with the Navy strategic applications program to enhance synergy and avoid duplication. Key elements include developing responsive technologies with common applications for future strategic guidance capabilities. This program also includes any needed nuclear surety, certification, and system vulnerability assessments.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program's funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY 2023, 0.000M was expended for civilian pay expenses in this program element, and in FY 2024, 0.000M is forecasted for civilian pay expenses in this program element.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
Title: Guidance Applications Program	1.500	0.000	39.757
Description: Develop and mature advanced guidance technologies and concepts, including improved inertial measurement units, other sensors, and associated electronics to support future ICBM guidance requirements.			
FY 2024 Plans: The following projects were executed out of LRP (644209) for FY24, but are applicable to Guidance Applications: •Continue Revolutionary Radar research for prototyping and test navigation aids. •Continue radiation-hardened advanced microelectronics to ensure availability of electronics that can provide state-of-the-art performance and survive strategic radiation environments. •Continue development of a micro-electro mechanical system for potential insertion into the future ICBM systems.			
FY 2025 Plans: •Continue Revolutionary Radar research for prototyping and test navigation aids. •Continue radiation-hardened advanced microelectronics to ensure availability of electronics that can provide state-of-the-art performance and survive strategic radiation environments. •Continue development of a micro-electro mechanical system for potential insertion into the future ICBM systems.			

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603851F / *Intercontinental Ballistic Missile - Dem/Val*	**Project (Number/Name)** 641020 / *ICBM Guidance Applications*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
•Begin Experimental Flight Test (EFT3) efforts to provide ICBM launches for testing experimental guidance technologies to support tech maturation. •Respond to evolving warfighter priorities and emerging requirements. ***FY 2024 to FY 2025 Increase/Decrease Statement:*** Funding increased due to Air Force realignment of funding between Projects to better align efforts within the Dem/Val portfolio.			
Accomplishments/Planned Programs Subtotals	1.500	0.000	39.757

C. 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
• RDTE 05 PE 0605238F: *Ground Based Strategic Deterrent EMD*	3,434.623	3,746.935	3,721.024	-	3,721.024	3,791.551	3,568.798	2,890.209	2,012.009	Continuing	Continuing

Remarks

D. Acquisition Strategy

Accomplish studies, analyses, concept development and engineering; efforts will be conducted using contracting strategies deemed most appropriate, generally using competitive contracts and/or other obligating documentation considered most appropriate by obligating and performing agencies involved. Current effort deliverables to include strategic grade guidance prototypes to support multiple ongoing Air Force initiatives.

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 0603851F / *Intercontinental Ballistic Missile - Dem/Val*	**Project (Number/Name)** 641020 / *ICBM Guidance Applications*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
GAP Micro-Electronic Module System, Advanced Fuzing	Various	Various : Various	-	1.500	Dec 2022	-		4.719	Dec 2024	-		4.719	Continuing	Continuing	-
GAP Revolutionary Radar	Various	Various : SNL	-	-		-		2.850	Dec 2024	-		2.850	Continuing	Continuing	-
GAP Radiation-Hardened Advanced Microelectronics	Various	Various : Various	-	-		-		11.679	Nov 2024	-		11.679	Continuing	Continuing	-
GAP EFT 3	Various	Various : Various	-	-		-		19.683	Feb 2025	-		19.683	Continuing	Continuing	-
GAP Rad Hard Non-Volatile memory	Various	Various : Various	-	-		-		0.576	Feb 2025	-		0.576	Continuing	Continuing	-
GAP Emerging Strategic Instrument Technology (Sparrow)	Various	Various : Various	-	0.000	Dec 2022	-		-		-		-	0.000	0.000	-
		Subtotal	-	1.500		-		39.507		-		39.507	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
GAP, Program Support Costs	C/Various	Various : Various	-	0.000	Dec 2022	-		0.250	Dec 2024	-		0.250	Continuing	Continuing	-
		Subtotal	-	0.000		-		0.250		-		0.250	Continuing	Continuing	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	-	1.500		-		39.757		-		39.757	Continuing	Continuing	N/A

Remarks

•EFTs require two years of funding prior to the launch year to support planning/execution activities. The EFT program provides a standing, enduring EFT capability for new ICBM technologies in relevant environments. The ICBM Dem/Val program anticipates executing EFT launches on a near-annual basis to support several developing technologies as well as to maintain a ready launch capability for new and emerging technologies for potential inclusion of future ICBM programs of record.
•EFT 3 will meet combined industrial technology demonstration needs between Dem/Val, other programs, and the national laboratories.

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 0603851F / *Intercontinental Ballistic Missile - Dem/Val*	**Project (Number/Name)** 641020 / *ICBM Guidance Applications*

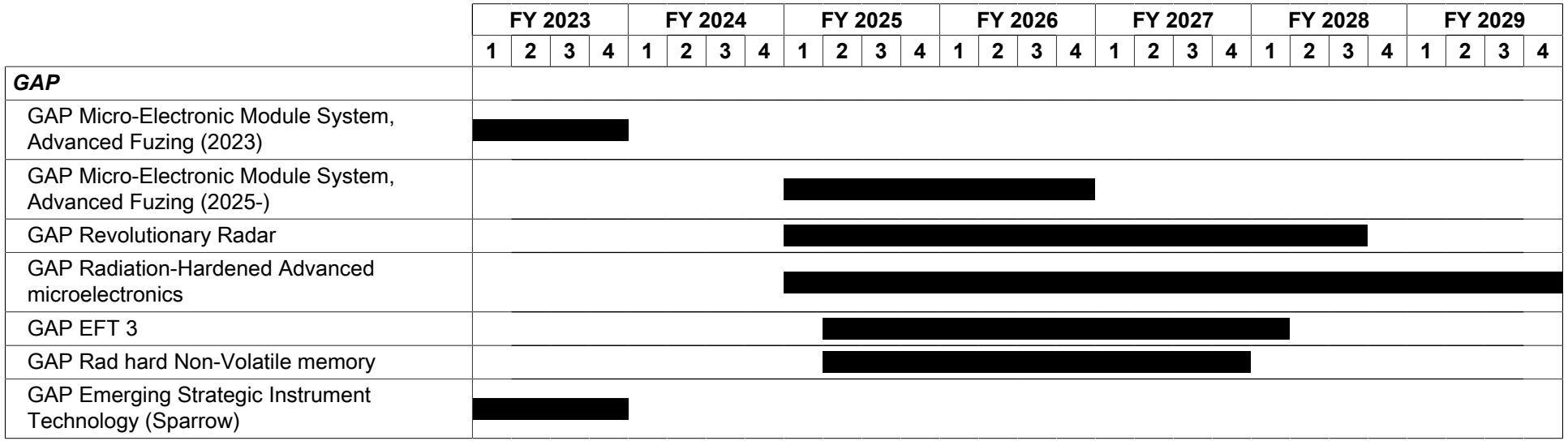

Exhibit R-4A, RDT&E Schedule Details: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603851F / *Intercontinental Ballistic Missile - Dem/Val*	**Project (Number/Name)** 641020 / *ICBM Guidance Applications*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
GAP				
GAP Micro-Electronic Module System, Advanced Fuzing (2023)	1	2023	4	2023
GAP Micro-Electronic Module System, Advanced Fuzing (2025-)	1	2025	4	2026
GAP Revolutionary Radar	1	2025	3	2028
GAP Radiation-Hardened Advanced microelectronics	1	2025	4	2029
GAP EFT 3	2	2025	1	2028
GAP Rad hard Non-Volatile memory	2	2025	4	2027
GAP Emerging Strategic Instrument Technology (Sparrow)	1	2023	4	2023

Note

•In FY2025, funding for some efforts was transferred to better align projects with their purpose and to increase clarity within this portfolio:
-Micro-Electronic Module System, Advanced Fuzing transferred from Project 644209 (LRP) to 641020 (GAP)
-Revolutionary Radar transferred from Project 644209 (LRP) to 641020 (GAP)
-Radiation-Hardened Advanced Microelectronics transferred from Project 644209 (LRP) to 641020 (GAP)
•EFT 3 will begin in FY25 and will meet the combined technology demonstration needs between Dem/Val, other programs, and the national laboratories.

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force			Date: March 2024
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603851F / *Intercontinental Ballistic Missile - Dem/Val*	Project (Number/Name) 641022 / *ICBM Reentry Vehicle Applications*	

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
641022: *ICBM Reentry Vehicle Applications*	-	15.766	0.000	62.044	0.000	62.044	42.289	25.789	97.905	101.950	0.000	345.743
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Reentry Vehicle Applications Program (RVAP) ensures the ICBM force is equipped with the safest, most reliable, most survivable reentry systems, and explores options for common, multi-mission capabilities. The program enables a responsive engineering infrastructure by developing modeling/simulation, ground and flight test platforms to support reentry system qualifications. The program ensures the availability of long-lead components and materials while identifying life-cycle cost reduction opportunities. In addition, the program matures and tests advanced reentry system technologies and designs to meet future capability requirements. This includes conducting any necessary studies and assessing technology applications relevant to Mk12A, Mk21, Mk21A and future ICBM reentry systems by maturing technologies and demonstrating/validating concepts and leveraging investments by the science & technology community and Navy reentry systems applications program. Testing may occur on a space-available basis on Air Force and Navy Force Development Evaluation (FDE) flights.

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 FY 2023, 0.000M was expended for civilian pay expenses in this program element, and in FY 2024, 0.000M is forecasted for civilian pay expenses in this program element.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
Title: Reentry Vehicle Applications Program	15.766	0.000	62.044
Description: Mature, evaluate, and test reentry system materials, technologies, and vehicles including modeling/simulation, and ground and flight test platforms for use in current and future strategic applications.			
FY 2024 Plans: The following projects were executed out of LRP (644209) for FY24, but are applicable to Reentry Vehicle Applications: •Continue the future system demonstrator effort to create telemetric equipment, collecting & transmitting various component performance test data throughout launch, flight, and reentry. •Begin Experimental Flight Test (EFT2) efforts to provide ICBM launches to test experimental payloads supporting tech maturation.			
FY 2025 Plans: •Continue the future system demonstrator effort to create telemetric equipment, collecting & transmitting various component performance test data throughout launch, flight, and reentry.			

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603851F / *Intercontinental Ballistic Missile - Dem/Val*	**Project (Number/Name)** 641022 / *ICBM Reentry Vehicle Applications*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
•Initiate payload prototype development research to build and demonstrate component/subsystem prototypes. •Continue Experimental Flight Test (EFT2) efforts to provide ICBM launches to test experimental payloads supporting tech maturation. •Respond to evolving warfighter priorities and emerging requirements. ***FY 2024 to FY 2025 Increase/Decrease Statement:*** Funding increased due to Air Force realignment of funding between Projects to better align efforts within the Dem/Val portfolio.			
Accomplishments/Planned Programs Subtotals	15.766	0.000	62.044

C. 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
• RDTE 05 PE 0605238F: *Ground Based Strategic Deterrent EMD*	3,434.623	3,746.935	3,721.024	-	3,721.024	3,791.551	3,568.798	2,890.209	2,012.009	Continuing	Continuing
• RDTE 07 PE 0101328F: *ICBM Reentry Vehicles*	112.282	475.415	629.928	-	629.928	740.334	955.013	710.312	332.728	Continuing	Continuing
• RDTE 03 0603273F: *Science & Technology for Nuclear Re-entry Systems*	27.031	70.321	95.200	-	95.200	126.990	164.077	170.016	173.586	Continuing	Continuing

Remarks

D. Acquisition Strategy

Studies, analyses, limited engineering, and pre-prototype hardware development will be accomplished; efforts will be conducted using contracting strategies deemed most appropriate, generally using competitive contracts and/or other obligating documentation considered most appropriate by obligating and performing agencies involved. Current effort deliverables include various technologies for ICBM re-entry vehicles including modeling and simulation software, alternate high temperature materials, advanced concepts, and radiation-hardened microelectronics.

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 0603851F / *Intercontinental Ballistic Missile - Dem/Val*	Project (Number/Name) 641022 / *ICBM Reentry Vehicle Applications*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
RVAP Support 1.0	C/FFP	BAE Systems : Clearfield, UT	-	2.539	Jan 2023	-		-		-		-	0.000	2.539	-
RVAP Support 2.0	C/FFP	TBD : TBD	-	-		-		-		-		-	0.000	0.000	-
RVAP Study Support	C/FFP	Aerospace : Various	-	-		-		-		-		-	0.000	0.000	-
RVAP Engineering Support	C/FP	JHU/APL : Various	-	1.727	Oct 2023	-		-		-		-	0.000	1.727	-
		Subtotal	-	4.266		-		-		-		-	0.000	4.266	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
RVAP EFT 2	Various	Various : Various	-	-		-		39.272	Jul 2025	-		39.272	Continuing	Continuing	-
RVAP Advanced payload technology demonstration	Various	Various : Various	-	-		-		8.585	Feb 2025	-		8.585	Continuing	Continuing	-
RVAP Future System Demonstrator	MIPR	Various : Various	-	3.667	Feb 2023	-		13.862	Nov 2024	-		13.862	0.000	17.529	-
RVAP Modeling and Simulation Programs	Various	Various : Various	-	0.500	Mar 2023	-		-		-		-	0.000	0.500	-
RVAP Advanced Concept Studies	Various	Various : Various	-	0.709	Dec 2022	-		-		-		-	0.000	0.709	-
RVAP Radiation-Hardened Advanced Microelectronics	Various	Various : Various	-	2.800	Mar 2023	-		-		-		-	0.000	2.800	-
RVAP Revolutionary Radar	Various	Various : Various	-	2.750	Feb 2023	-		-		-		-	0.000	2.750	-
RVAP Rad Hard Non-Volatile Memory	Various	Various : Various	-	-		-		-		-		-	0.000	0.000	-
RVAP Navigation Aids/ Instrumentation	TBD	Not specified. : TBD	-	-		-		-		-		-	0.000	0.000	-
		Subtotal	-	10.426		-		61.719		-		61.719	Continuing	Continuing	N/A

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 0603851F / *Intercontinental Ballistic Missile - Dem/Val*	**Project (Number/Name)** 641022 / *ICBM Reentry Vehicle Applications*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
RVAP Program Support Costs	Various	Various : Various	-	1.074	Nov 2022	-		0.325	Dec 2024	-		0.325	Continuing	Continuing	-
Travel	Various	Various : Various	-	-		-		-		-		-	Continuing	Continuing	-
		Subtotal	-	1.074		-		0.325		-		0.325	Continuing	Continuing	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	-	15.766		-		62.044		-		62.044	Continuing	Continuing	N/A

Remarks

•EFTs require two years of funding prior to the launch year to support planning and execution activities. The EFT program provides a standing, enduring EFT capability for new ICBM technologies in relevant environments. The ICBM Dem/Val program anticipates executing EFT launches on a near-annual basis to support several developing technologies as well as to maintain a ready launch capability for new and emerging technologies for potential inclusion of future ICBM programs.
•EFT 2 will meet combined technology demonstration needs between the national laboratories, the Dem/Val, and Mk21A programs, demonstrating critical industrial technologies.

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 0603851F / *Intercontinental Ballistic Missile - Dem/Val*	**Project (Number/Name)** 641022 / *ICBM Reentry Vehicle Applications*

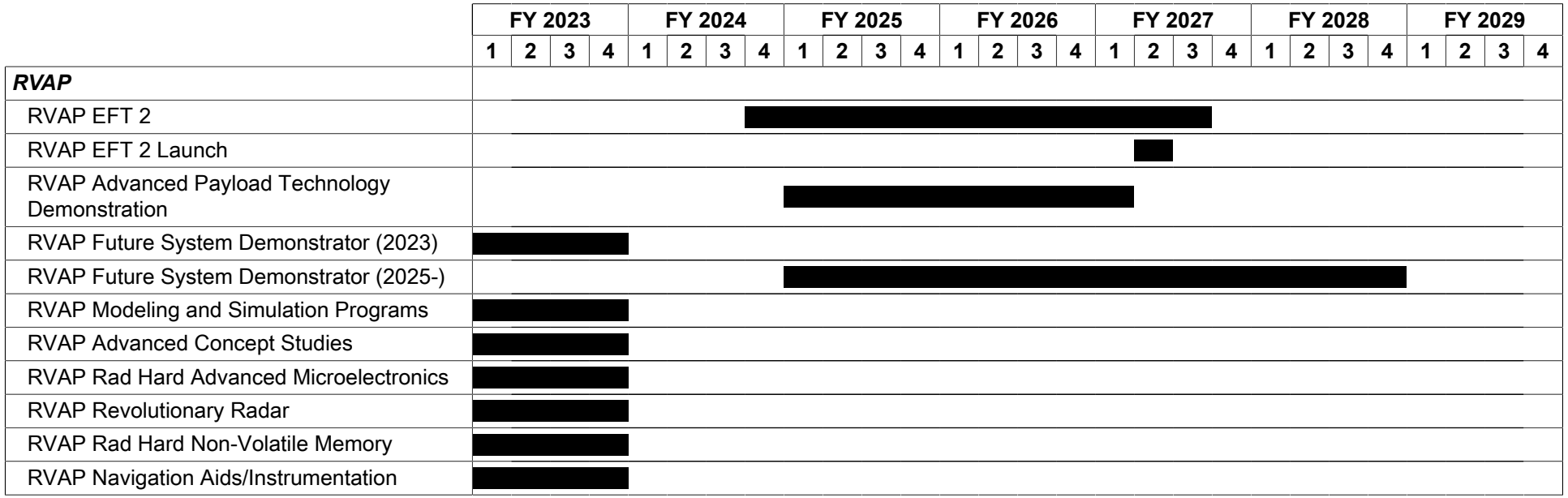

Exhibit R-4A, RDT&E Schedule Details: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603851F / *Intercontinental Ballistic Missile - Dem/Val*	**Project (Number/Name)** 641022 / *ICBM Reentry Vehicle Applications*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
RVAP				
RVAP EFT 2	4	2024	3	2027
RVAP EFT 2 Launch	2	2027	2	2027
RVAP Advanced Payload Technology Demonstration	1	2025	1	2027
RVAP Future System Demonstrator (2023)	1	2023	4	2023
RVAP Future System Demonstrator (2025-)	1	2025	4	2028
RVAP Modeling and Simulation Programs	1	2023	4	2023
RVAP Advanced Concept Studies	1	2023	4	2023
RVAP Rad Hard Advanced Microelectronics	1	2023	4	2023
RVAP Revolutionary Radar	1	2023	4	2023
RVAP Rad Hard Non-Volatile Memory	1	2023	4	2023
RVAP Navigation Aids/Instrumentation	1	2023	4	2023

Note

•EFT 2 award date above is pre-decisional and subject to change following the final contract award and range scheduling.
•In FY2025, funding for some efforts was transferred to better align efforts with their purpose and to increase clarity within this portfolio.
-EFT 2 transferred from Project 644209 (LRP) to 641022 (RVAP) to better align efforts to their purpose and increase clarity within this portfolio.
-Advanced payload technology demonstration (CM Lowrider) will begin in FY25.
-Future Systems Demonstrator (Corvus) transferred from Project 644209 (LRP) to 641022 (RVAP).

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force			Date: March 2024
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603851F / *Intercontinental Ballistic Missile - Dem/Val*	Project (Number/Name) 641024 / *ICBM Command & Control (C2) Applications*	

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
641024: *ICBM Command & Control (C2) Applications*	-	0.000	0.000	10.044	0.000	10.044	4.008	1.002	0.000	0.000	0.000	15.054
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Command and Control Applications Program (C2AP) supports ICBM weapon system connectivity to the President and National Command Authorities. C2AP studies and assesses both legacy and future C2 system technologies. C2AP evaluates and develops assured, survivable, and secure communications and battlespace awareness between the missile Launch Control Centers and Launch Facilities essential for mission execution. Efforts include identifying and developing current and future technologies, as well as concepts that exploit state-of-the-art communications and information transfer techniques to both current and future ICBM systems. Products include studies, demonstrations, and tests such as ICBM Weapon System C2 (WSC2) architectures, networks, and systems to meet nuclear cC2 requirements.

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 0605831F or 0605833F. In FY 2023 $0.000M was expended for civilian pay expenses in this program element, and in FY 2024 $0.000M is forecasted for civilian pay expenses in this program element.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
Title: Command and Control Application Program	0.000	0.000	10.044
Description: Examine and develop concepts for transforming ICBM WSC2 to meet current and future requirements. ***FY 2024 Plans:*** The following projects were executed out of LRP (644209) for FY24, but are applicable to Command & Control Applications: •Begin WSC2 research to build and demonstrate component/subsystems. ***FY 2025 Plans:*** •Continue WSC2 research to build and demonstrate component/subsystems. •Initiate end-to-end crypto effort to conduct a variety of cost-benefit studies to plan for future system upgrades and modifications. ***FY 2024 to FY 2025 Increase/Decrease Statement:*** Funding increased due to Air Force realignment of funding between Projects to better align efforts within the Dem/Val portfolio.			
Accomplishments/Planned Programs Subtotals	0.000	0.000	10.044

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603851F / *Intercontinental Ballistic Missile - Dem/Val*	**Project (Number/Name)** 641024 / *ICBM Command & Control (C2) Applications*

C. 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
• RDTE 05 PE 0605238F: *Ground Based Strategic Deterrent EMD*	3,434.623	3,746.935	3,721.024	-	3,721.024	3,791.551	3,568.798	2,890.209	2,012.009	Continuing	Continuing

Remarks

D. Acquisition Strategy

Studies, analyses, limited engineering, will be accomplished; efforts will be conducted using contracting strategies deemed most appropriate, generally using competitive contracts and/or other obligating documentation considered most appropriate by obligating and performing agencies involved.

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 0603851F / *Intercontinental Ballistic Missile - Dem/Val*	**Project (Number/Name)** 641024 / *ICBM Command & Control (C2) Applications*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
C2AP WSC2	Various	Various : Various	-	-		-		9.475	Oct 2024	-		9.475	Continuing	Continuing	-
C2AP End to End Crypto	Various	Various : Various	-	-		-		0.500	Nov 2024	-		0.500	Continuing	Continuing	-
		Subtotal	-	-		-		9.975		-		9.975	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
C2AP Program Support Costs	Various	Various : Various	-	-		-		0.069	Dec 2024	-		0.069	Continuing	Continuing	-
		Subtotal	-	-		-		0.069		-		0.069	Continuing	Continuing	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	-	-		-		10.044		-		10.044	Continuing	Continuing	N/A

Remarks

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 0603851F / *Intercontinental Ballistic Missile - Dem/Val*	**Project (Number/Name)** 641024 / *ICBM Command & Control (C2) Applications*

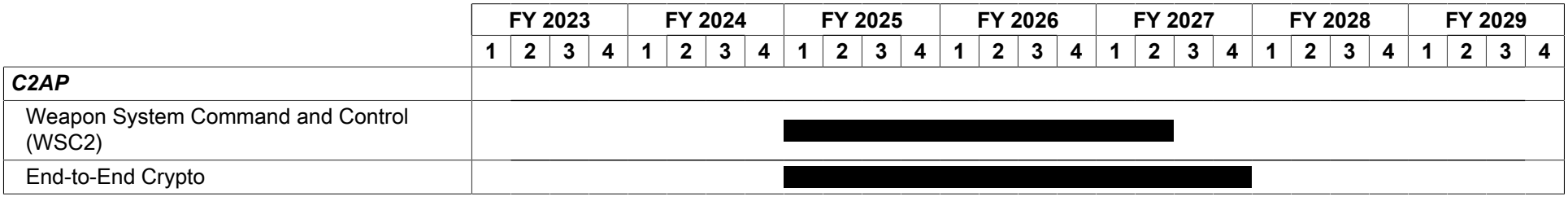

Exhibit R-4A, RDT&E Schedule Details: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603851F / *Intercontinental Ballistic Missile - Dem/Val*	**Project (Number/Name)** 641024 / *ICBM Command & Control (C2) Applications*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
C2AP				
Weapon System Command and Control (WSC2)	1	2025	2	2027
End-to-End Crypto	1	2025	4	2027

Note

•In FY2025, within PE 0603851F, Weapon System Command and Control, WSC2 will be transferred from Project 644209 to 641024 to better align efforts to their purpose and increase clarity within this portfolio.

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force			Date: March 2024
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603851F / *Intercontinental Ballistic Missile - Dem/Val*	Project (Number/Name) 644209 / *Long Range Planning (LRP)*	

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
644209: *Long Range Planning (LRP)*	-	27.485	45.319	7.352	0.000	7.352	0.807	2.160	13.771	14.138	0.000	111.032
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Long Range Planning (LRP) effort identifies, analyzes, and evaluates potential modifications to current and future ICBM Weapon Systems required to meet warfighter objectives related to executing flight tests, long-term sustainment, technology insertion, battle space awareness, employment, force structure, and future systems. The studies will focus on system supportability, operability, reliability, innovation, and maintainability. Options/concepts generated by these studies are evaluated for feasibility, system impacts, and cost. LRP supports and conducts testing in support of future weapon system development and deployment. Pre-milestone activities may be conducted for current and/or future ICBM weapon systems, which may include entry criteria for milestone activities enabling a rapid response to evolving warfighter priorities and emerging requirements.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY 2023, 0.000M was expended for civilian pay expenses in this program element, and in FY 2024, 0.000M is forecasted for civilian pay expenses in this program element.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
Title: Long Range Planning	27.485	45.319	7.352
Description: Analyze, study and plan current and future ICBM activities to meet requirements for long-term sustainment, novel technology insertion, employment force structure, and future systems.			
FY 2024 Plans: All funding in this program element is funded out of this project (644209), the following effort applicable to this project is: •Continue John's Hopkins University material support for thermal protection system solutions in addition to coordinated effort with future crypto solutions across the Air Force and OSD R & E partners.			
FY 2025 Plans: •Begin Small Business Innovative Research (SBIR) Phase III efforts. •Initiate Advanced Flight Test Demonstrator Dev & Integration Support to demonstrate RV and Counter measure tech in relevant flight environments. •Respond to evolving war-fighter priorities and emerging requirements.			

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603851F / *Intercontinental Ballistic Missile - Dem/Val*	**Project (Number/Name)** 644209 / *Long Range Planning (LRP)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
•Conduct any necessary road map studies. ***FY 2024 to FY 2025 Increase/Decrease Statement:*** Funding decreased due to Air Force realignment of funding between Projects to better align efforts within the Dem/Val portfolio.			
Accomplishments/Planned Programs Subtotals	27.485	45.319	7.352

C. 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
• RDTE 05 PE 0605238F: *Ground Based Strategic Deterrent EMD*	3,434.623	3,746.935	3,721.024	-	3,721.024	3,791.551	3,568.798	2,890.209	2,012.009	Continuing	Continuing
• RDTE 07 0101328F: *ICBM Reentry Vehicles*	112.282	475.415	629.928	-	629.928	740.334	955.013	710.312	332.728	Continuing	Continuing

Remarks

D. Acquisition Strategy

Studies, analyses, limited engineering, and pre-prototype hardware development will be accomplished; efforts will be conducted using contracting strategies deemed most appropriate, generally using competitive contracts and/or other obligating documentation considered most appropriate by obligating and performing agencies involved.

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 0603851F / *Intercontinental Ballistic Missile - Dem/Val*	**Project (Number/Name)** 644209 / *Long Range Planning (LRP)*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
LRP Support	C/CPFF	BAE : Various	-	0.196	Aug 2023	3.500	Feb 2024	2.149	Feb 2025	-		2.149	Continuing	Continuing	-
LRP Study Support	C/CPFF	Aerospace : Various	-	-		-		-		-		-	0.000	0.000	-
LRP Engineering Support	C/CPFF	JHU/APL : Various	-	0.000	Aug 2023	1.000	Feb 2024	0.000	Feb 2025	-		0.000	Continuing	Continuing	-
		Subtotal	-	0.196		4.500		2.149		-		2.149	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
LRP Advanced Flight test demonstrator Development & Integration Support	Various	Various : Various	-	-		-		1.675	Nov 2024	-		1.675	Continuing	Continuing	-
LRP SBIR Phase III	Various	Various : Various	-	-		-		1.770	Dec 2024	-		1.770	Continuing	Continuing	-
LRP Experimental Flight Test 1	C/CPIF	Northrop Grumman : Various	-	17.600	Feb 2023	-		-		-		-	0.000	17.600	-
LRP Experimental Flight Test 2	TBD	TBD : TBD	-	-		28.500	Feb 2024	0.000	Jan 2025	-		0.000	0.000	28.500	-
LRP Virtual Environment Trainer Launch Facility Prototype Development	C/CPAF	Various : Various	-	-		-		-		-		-	0.000	0.000	-
LRP Revolutionary Radar	C/CPAF	Sandia : Various	-	0.000	Jan 2023	2.000	Feb 2024	0.000	Feb 2025	-		0.000	0.000	2.000	-
LRP Terminal Tracking & Scoring	TBD	TBD : TBD	-	-		1.245	Feb 2024	-		-		-	0.000	1.245	-
LRP Future System Demonstrator	MIPR	Various : Various	-	-		1.000	Feb 2024	0.000	Feb 2025	-		0.000	0.000	1.000	-
LRP Radiation-Hardened Advanced Microelectronics	Various	Various : Various	-	-		4.717	Feb 2024	0.000	Feb 2025	-		0.000	0.000	4.717	-
LRP Modeling and Simulation Programs	Various	Various : Various	-	-		0.500	Jan 2024	0.000	Jan 2025	-		0.000	0.000	0.500	-

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 0603851F / *Intercontinental Ballistic Missile - Dem/Val*	**Project (Number/Name)** 644209 / *Long Range Planning (LRP)*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
LRP Micro-Electronic Module System, Advanced Fuzing	Various	Various : Various	-	-		1.500	Jan 2024	0.000	Jan 2025	-		0.000	0.000	1.500	-
LRP Weapon System Command and Control (WSC2)	TBD	TBD : TBD	-	9.189	Sep 2023	-		0.000	Nov 2024	-		0.000	0.000	9.189	-
LRP Strategic Indepndent Resilient Energy Systems (SIRES)	MIPR	Idaho National Lab : Idaho Falls, ID	-	0.500	Aug 2023	-		-		-		-	0.000	0.500	-
		Subtotal	-	27.289		39.462		3.445		-		3.445	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
LRP Program Support Costs	Various	Various : Various	-	0.000	Nov 2022	1.357	Jan 2024	1.758	Jan 2025	-		1.758	Continuing	Continuing	-
		Subtotal	-	0.000		1.357		1.758		-		1.758	Continuing	Continuing	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	-	27.485		45.319		7.352		-		7.352	Continuing	Continuing	N/A

Remarks

•Adv Flight test Demonstrator Dev & Integration Support and studies starts in FY25
•SBIR Phase III is to continue to fund Small Business Innovation Research (SBIR) projects that started as phase I and phase II projects with SBIR funding

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 0603851F / *Intercontinental Ballistic Missile - Dem/Val*	**Project (Number/Name)** 644209 / *Long Range Planning (LRP)*

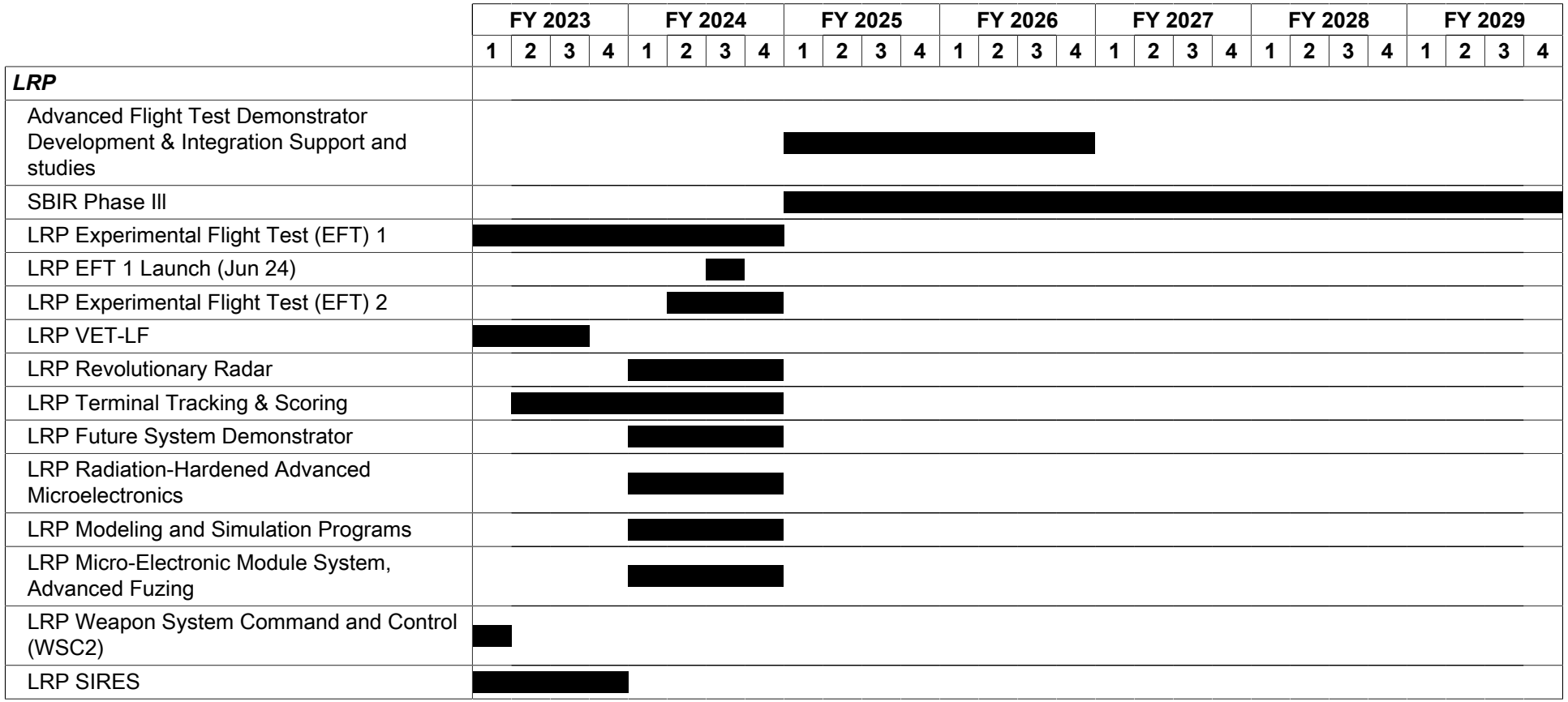

Exhibit R-4A, RDT&E Schedule Details: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603851F / *Intercontinental Ballistic Missile - Dem/Val*	**Project (Number/Name)** 644209 / *Long Range Planning (LRP)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
LRP				
Advanced Flight Test Demonstrator Development & Integration Support and studies	1	2025	4	2026
SBIR Phase III	1	2025	4	2029
LRP Experimental Flight Test (EFT) 1	1	2023	4	2024
LRP EFT 1 Launch (Jun 24)	3	2024	3	2024
LRP Experimental Flight Test (EFT) 2	2	2024	4	2024
LRP VET-LF	1	2023	3	2023
LRP Revolutionary Radar	1	2024	4	2024
LRP Terminal Tracking & Scoring	2	2023	4	2024
LRP Future System Demonstrator	1	2024	4	2024
LRP Radiation-Hardened Advanced Microelectronics	1	2024	4	2024
LRP Modeling and Simulation Programs	1	2024	4	2024
LRP Micro-Electronic Module System, Advanced Fuzing	1	2024	4	2024
LRP Weapon System Command and Control (WSC2)	1	2023	1	2023
LRP SIRES	1	2023	4	2023

Note

•In FY2025, funding for some efforts was transferred to better align efforts with their purpose and to increase transparency within this portfolio.
-EFT 2 transferred from Project 644209 (LRP) to 641022 (RVAP).
-Revolutionary Radar transferred from Project 644209 (LRP) to 641020 (GAP)
-Future Systems Demonstrator (Corvus) transferred from Project 644209 (LRP) to 641022 (RVAP)
-Radiation-Hardened Advanced Microelectronics transferred from Project 644209 (LRP) to 641020 (GAP)
-Micro-Electronic Module System, Advanced Fuzing transferred from Project 644209 (LRP) to 641020 (GAP)