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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

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 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	99.949	10.736	41.856	0.000	41.856	44.109	65.582	66.944	68.165	Continuing	Continuing
641020: <i>ICBM Guidance Applications</i>	-	8.439	0.502	7.659	0.000	7.659	10.184	12.887	13.155	13.395	Continuing	Continuing
641021: <i>ICBM Propulsion Applications</i>	-	19.242	1.007	9.701	0.000	9.701	6.849	6.967	7.111	7.241	Continuing	Continuing
641022: <i>ICBM Reentry Vehicle Applications</i>	-	64.740	7.085	17.920	0.000	17.920	19.439	19.776	20.186	20.554	Continuing	Continuing
641024: <i>ICBM Command & Control (C2) Applications</i>	-	0.500	1.004	3.665	0.000	3.665	3.713	21.960	22.417	22.826	Continuing	Continuing
644209: <i>Long Range Planning (LRP)</i>	-	7.028	1.138	2.911	0.000	2.911	3.924	3.992	4.075	4.149	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program ensures a responsive design and development engineering infrastructure to address emerging issues and technology insertion/technology application on legacy Intercontinental Ballistic Missile (ICBM), future strategic systems/capability beyond the Ground Based Strategic Deterrent (GBSD) baseline, and other common strategic deterrent mission areas to develop enhanced multi-use capabilities. The ICBM Dem/Val program will provide technology maturation and risk reduction activities to support Minuteman (MM) III sustainment, MM III to GBSD transition, and future ICBM systems (non-GBSD) development. Efforts will identify methods to improve system performance, develop potential future RV designs, mitigate evolving threats, reduce life cycle costs, develop/expand modeling/simulation and experimental platforms for weapon qualification activities, improve nuclear safety and surety, and ensure both viability and endurability of strategic missile systems.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver ICBM Dem/Val capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, 0605833F, and 0605898F.

This program 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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force				Date: February 2018	
Appropriation/Budget Activity		R-1 Program Element (Number/Name)			
3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)		PE 0603851F I Intercontinental Ballistic Missile - Dem/Val			
B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	108.663	10.736	42.173	0.000	42.173
Current President's Budget	99.949	10.736	41.856	0.000	41.856
Total Adjustments	-8.714	0.000	-0.317	0.000	-0.317
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	-5.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	10.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-10.000	0.000			
• SBIR/STTR Transfer	-3.714	0.000			
• Other Adjustments	0.000	0.000	-0.317	0.000	-0.317
Change Summary Explanation					
FY 2017 funding reflects a Congressional directed reduction of \$5.000M for program growth and a Congressional add of \$10.000M for solid rocket motor technology. FY 2017 funding reflects \$10.000M in approved reprogramming from ICBM Dem/Val to higher priority Air Force programs (\$2.000 to Air Force Global Strike Command Global Assured Communications and \$7.999M to Long Range Stand Off weapon).					

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
641020: ICBM Guidance Applications	-	8.439	0.502	7.659	0.000	7.659	10.184	12.887	13.155	13.395	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Guidance Applications Program (GAP) 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. The program studies and assesses both legacy and future (non-GBSD baseline) ICBM Guidance System technology applications. Efforts are focused on current and future requirements and technologies, reduced life cycle costs, and increased nuclear surety and safety. 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 surety and certification and system vulnerability assessments.

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

	FY 2017	FY 2018	FY 2019
Title: Guidance Applications Program	8.439	0.502	7.659
Description: Develop and mature advanced technologies and concepts to support future requirements.			
FY 2018 Plans:			
<ul style="list-style-type: none"> • Continue risk reduction, evaluation and testing of strategic and space guidance-related commodities within market for potential use in a future strategic guidance system, and continue to leverage from the Navy Trident Life Extension Program. • Continue risk reduction initiatives involving component technologies and obsolescence for legacy and/or future ICBM applications. • Establish a Strategic Guidance Hardware independent validation & verification capability, perform guidance analysis, and Guidance technology studies. 			
FY 2019 Plans:			
<ul style="list-style-type: none"> • Continue the evaluation and testing of strategic and space guidance-related commodities within market for potential use in a future (non-GBSD baseline) strategic guidance system; coordinate with the Navy strategic applications program. • Continue initiatives involving component technologies and obsolescence for legacy and/or future ICBM applications. • Expand the Strategic Guidance Hardware independent validation & verification capability to include multi g and combined environments; perform Guidance analyses and Guidance technology studies. Identify emerging technologies for future strategic grade gyros and accelerometers to ensure appropriate test capability development. 			
FY 2018 to FY 2019 Increase/Decrease Statement:			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 4				R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>				Project (Number/Name) 641020 / <i>ICBM Guidance Applications</i>				
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2017	FY 2018	FY 2019
Funding increased due to phasing issue in FY18 and new studies in FY19												
Accomplishments/Planned Programs Subtotals										8.439	0.502	7.659
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost	
• RDTE 04 PE 0605230F: <i>GBSD</i>	109.260	215.721	345.041	-	345.041	570.373	1,527.545	2,539.060	3,018.653	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.												
E. Performance Metrics												
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.												

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force													Date: February 2018		
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>						Project (Number/Name) 641020 / <i>ICBM Guidance Applications</i>			
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
GAP Strategic Instrument Technology Readiness	C/CPFF	Draper : Various	-	4.130	Jan 2017	-		-		-		-	Continuing	Continuing	-
Subtotal			-	4.130		-		-		-		-	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
Non-Destructive Test Capability	Various	Holloman AFB/Little Mountain/Utah : Alamogordo, NM	-	3.204	Jan 2017	0.467	Jan 2018	5.459	Jan 2019	-		5.459	Continuing	Continuing	-
Emerging Strategic Instrument	C/TBD	TBD : TBD	-	-		-		1.100	Jan 2019	-		1.100	Continuing	Continuing	-
Subtotal			-	3.204		0.467		6.559		-		6.559	Continuing	Continuing	N/A
Remarks															
Specific efforts related to strategic sensors in previous fiscal years will not continue in 2018 to avoid duplication with planned GBSD Technology Maturation and Risk Reduction (TMRR) efforts.															
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
GAP, Program Management Administrative Support Services	C/Various	Various : Various	-	1.105	Jan 2017	0.035	Jan 2018	1.100	Jan 2019	-		1.100	Continuing	Continuing	-
Subtotal			-	1.105		0.035		1.100		-		1.100	Continuing	Continuing	N/A
Remarks															
Costs and services in support of program office management and administration processes such as: program oversight, resource justification, budget and programming, milestone and scheduling--PMA costs.															

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force											Date: February 2018				
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					
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	8.439		0.502		7.659		-		7.659	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force			Date: February 2018		
Appropriation/Budget Activity 3600 / 4		R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>			Project (Number/Name) 641020 / <i>ICBM Guidance Applications</i>

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	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
GAP																												
GAP Strategic Instrument/Component Technology Readiness																												
GAP Testing Capabilities Non-Destructive																												
Emerging Strategic Instrument Technology Requirements																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>	Project (Number/Name) 641020 / <i>ICBM Guidance Applications</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
GAP				
GAP Strategic Instrument/Component Technology Readiness	1	2017	4	2017
GAP Testing Capabilities Non-Destructive	1	2017	4	2023
Emerging Strategic Instrument Technology Requirements	2	2019	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0603851F / Intercontinental Ballistic Missile - Dem/Val				Project (Number/Name) 641021 / ICBM Propulsion Applications			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
641021: ICBM Propulsion Applications	-	19.242	1.007	9.701	0.000	9.701	6.849	6.967	7.111	7.241	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
The Propulsion Applications Program (PAP) develops and assesses strategic propulsion system technology applications for both legacy and future (non-GBSD baseline) systems through projects exploring improvements and/or alternatives to current propulsion systems, conducting studies assessing application of new technologies to meet future common propulsion systems requirements, and assessing opportunities for applying common materials and technology between the ICBM, submarine-launched ballistic missile (SLBM) propulsion systems, and other rocket motor propulsion capabilities. Efforts are focused on current and future requirements and technologies, reduced life cycle costs, and increased nuclear surety, safety, certification and system vulnerability assessments.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2017	FY 2018	FY 2019	
Title: Propulsion Applications Program									19.242	1.007	9.701	
Description: Assess, develop, evaluate, and demonstrate common solid and liquid propulsion technology and manufacturing leading up to a static fire and test of strategic propulsion systems; develop capability and explore improvements to current and future propulsion systems; and support the research and development industrial base and critical infrastructure.												
FY 2018 Plans:												
• Initiate Minuteman III mechanistic aging study, propulsion modeling & simulation development, and propulsion technology studies and analysis.												
FY 2019 Plans:												
• Continue Minuteman III mechanistic aging study development, propulsion nuclear environment modeling & simulation, and propulsion technology modeling and simulation.												
• Initiate trade studies and risk reduction of components and subsystem propulsion technologies for future ICBM program insertion.												
• Initiate propellant studies to develop propellant formulations with increased performance and efficiency for future ICBM program insertion.												
• Continue rocket motor certification technology.												
FY 2018 to FY 2019 Increase/Decrease Statement:												
Funding increased due to phasing issue in FY18 and new studies in FY19												
Accomplishments/Planned Programs Subtotals									19.242	1.007	9.701	

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 4				R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>				Project (Number/Name) 641021 / <i>ICBM Propulsion Applications</i>				
C. Other Program Funding Summary (\$ in Millions)												
	<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u> <u>Base</u>	<u>FY 2019</u> <u>OCO</u>	<u>FY 2019</u> <u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
	• RDTE 04 PE 0605230F: <i>GBSD</i>	109.260	215.721	345.041	-	345.041	570.373	1,527.545	2,539.060	3,018.653	Continuing	Continuing
Remarks FY2017 reflects a Congressional add of \$10.000M to Propulsion Application Program.												
D. Acquisition Strategy Studies, analyses, limited engineering, hardware development and/or testing 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.												
E. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.												

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force												Date: February 2018			
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 0603851F / Intercontinental Ballistic Missile - Dem/Val				Project (Number/Name) 641021 / ICBM Propulsion Applications					
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
PAP Thrust Vector Control Study	C/CPFF	Moog : East Aurora, NY	-	1.513	Oct 2016	-		-		-		-	Continuing	Continuing	-
PAP Thrust Vector Control Study 2	C/CPFF	Honeywell : Tempe, AZ	-	0.753	Oct 2016	-		-		-		-	Continuing	Continuing	-
PAP Post Boost Study 1	C/CPFF	Moog : East Aurora, NY	-	0.552	Oct 2016	-		-		-		-	Continuing	Continuing	-
PAP Post Boost Study 2	C/CPAF	Orbital ATK : Elkton, MD	-	1.264	Oct 2016	-		-		-		-	Continuing	Continuing	-
PAP Post Boost Study 3	C/CPFF	Aerojet Rocketdyne : Sacramento, CA	-	0.774	Oct 2016	-		-		-		-	Continuing	Continuing	-
Subtotal			-	4.856		-		-		-		-	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
PAP Integration Support	C/FFP	BAE Systems : Clearfield, UT	-	2.030	Jan 2017	0.350	Jan 2018	0.950	Jan 2019	-		0.950	Continuing	Continuing	-
Subtotal			-	2.030		0.350		0.950		-		0.950	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
PAP Trade Studies/Risk Reduction	MIPR	SNL : Kirtland AFB, NM	-	1.021	Jan 2018	-		3.050	Jan 2019	-		3.050	Continuing	Continuing	-
PAP Propulsion and Solid Rocket Motor Studies	MIPR	AFRL; RSLP : Albuquerque, NM	-	10.000	Jan 2017	-		-		-		-	Continuing	Continuing	-
Propulsion Technology HPM Parametric Study	MIPR	SNL : Albuquerque, NM	-	-		0.200	Oct 2017	0.600	Oct 2018	-		0.600	Continuing	Continuing	-

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Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>						Project (Number/Name) 641021 / <i>ICBM Propulsion Applications</i>			
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
Propulsion Nuclear Environment Study	MIPR	SNL : Albuquerque, NM	-	-		0.200	Oct 2017	0.600	Oct 2018	-		0.600	Continuing	Continuing	-
MMIII Solid Propellant Mechanistic Aging Study	C/TBD	TBD : TBD	-	-		0.200	Apr 2018	2.000	Jan 2019	-		2.000	Continuing	Continuing	-
PAP Propellant Studies	TBD	TBD : TBD	-	-		-		2.100	Jan 2019	-		2.100	Continuing	Continuing	-
Subtotal			-	11.021		0.600		8.350		-		8.350	Continuing	Continuing	N/A
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
PAP Program Management Administration	Various	Various : Various	-	1.335	Jan 2017	0.057	Jan 2018	0.401	Jan 2019	-		0.401	Continuing	Continuing	-
Subtotal			-	1.335		0.057		0.401		-		0.401	Continuing	Continuing	N/A
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	19.242		1.007		9.701		-		9.701	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force			Date: February 2018		
Appropriation/Budget Activity 3600 / 4		R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>			Project (Number/Name) 641021 / <i>ICBM Propulsion Applications</i>

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	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
PAP																												
PAP Thrust Vector Control Study																												
PAP Post Boost Studies																												
PAP Propulsion and Solid Rocket Motor Studies																												
PAP Trade Studies/Risk Reduction																												
Propulsion Technology HPM Parametric Study																												
Propulsion Nuclear Environment Study																												
PAP MM III Solid Mechanistic Aging Study																												
PAP Propellant Studies																												
PAP Propulsion Modularity Updates																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force			Date: February 2018
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>	Project (Number/Name) 641021 / <i>ICBM Propulsion Applications</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
PAP				
PAP Thrust Vector Control Study	1	2017	3	2017
PAP Post Boost Studies	1	2017	4	2017
PAP Propulsion and Solid Rocket Motor Studies	1	2017	3	2019
PAP Trade Studies/Risk Reduction	2	2017	2	2019
Propulsion Technology HPM Parametric Study	1	2018	2	2019
Propulsion Nuclear Environment Study	1	2018	4	2019
PAP MM III Solid Mechanistic Aging Study	2	2018	4	2019
PAP Propellant Studies	2	2019	4	2021
PAP Propulsion Modularity Updates	1	2020	4	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
641022: ICBM Reentry Vehicle Applications	-	64.740	7.085	17.920	0.000	17.920	19.439	19.776	20.186	20.554	Continuing	Continuing
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 and 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 methods. In addition, the program matures and tests advanced Reentry System technologies and designs to meet future requirements. This includes studying and assessing Mk12A, Mk21, Mk21A and future ICBM Reentry System technology applications. The program leverages 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.

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

	FY 2017	FY 2018	FY 2019
Title: Reentry Vehicle Applications Program	64.740	7.085	17.920
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 2018 Plans: <ul style="list-style-type: none"> • Continue risk reduction studies to mature and evaluate future heatshield development, carbon phenolic replacements, modeling and simulation programs, manufacturing capabilities, reentry system technologies, threat development analysis and countermeasure technologies/strategies, and inform future reentry vehicle capabilities. • Continue thermal protection system testing and studies. • Conduct materials development, prototyping, and testing. 			
FY 2019 Plans: <ul style="list-style-type: none"> • Continue risk reduction studies to mature and evaluate future heatshield development, carbon phenolic replacements, modeling and simulation programs, manufacturing capabilities, reentry system technologies, threat development analysis and countermeasure technologies/strategies, and inform future RV capabilities. • Continue thermal protection system testing and studies. • Conduct materials development, prototyping, and test. • Development of a Micro-Electro Mechanical System for potential insertion into the Path Length Module. 			

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Appropriation/Budget Activity 3600 / 4				R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>			Project (Number/Name) 641022 / <i>ICBM Reentry Vehicle Applications</i>				

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
<ul style="list-style-type: none"> • Develop designs and production concepts for trusted strategic radiation-hardened, advanced microelectronics including Application Specific Integrated Circuits (ASIC) and Field Programmable Gate Arrays (FPGA). • Develop new modeling/simulation and ground and flight test platforms for future weapon qualification activities. • Support the Joint Technology Demonstrator program • Develop advanced sensors for surveillance and flight test diagnostics. • Design future RV concepts. <p><i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> Funding increased due to phasing issue in FY18 and new studies in FY19</p>			
Accomplishments/Planned Programs Subtotals	64.740	7.085	17.920

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• RDTE 04 PE 0605230F: <i>GBSD</i>	109.260	215.721	345.041	-	345.041	570.373	1,527.545	2,539.060	3,018.653	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.											
E. Performance Metrics											
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force												Date: February 2018			
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>						Project (Number/Name) 641022 / <i>ICBM Reentry Vehicle Applications</i>			
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
RVAP Support	C/FFP	BAE Systems : Clearfield, UT	-	1.840	Mar 2017	0.500	Mar 2018	1.309	Mar 2019	-		1.309	Continuing	Continuing	-
RVAP FFRDC Support	MIPR	Various : Various	-	4.451	Jan 2017	1.000	Jan 2018	2.546	Jan 2019	-		2.546	Continuing	Continuing	-
Subtotal			-	6.291		1.500		3.855		-		3.855	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
Joint Technology Demonstrator	Various	Various : Various	-	5.625	Jan 2017	0.250	Jan 2018	2.300	Jan 2019	-		2.300	Continuing	Continuing	-
RVAP TPS Testing and Analysis	Various	Various : Various	-	1.854	Jan 2017	0.255	Jan 2018	0.400	Jan 2019	-		0.400	Continuing	Continuing	-
RVAP Flight Testing	TBD	TBD : TBD	-	32.665	Feb 2018	0.400	Feb 2018	0.300	Feb 2019	-		0.300	Continuing	Continuing	-
RVAP Countermeasure Study I	C/CPFF	Textron : Wilmington, MA	-	1.078	Dec 2016	-		-		-		-	Continuing	Continuing	-
RVAP Countermeasure Study II	C/CPFF	Lockheed Martin : King of Prussia, PA	-	1.191	Dec 2016	-		-		-		-	Continuing	Continuing	-
RVAP TPS Materials	C/CPFF	Intermat : Biddeford, ME	-	1.610	Jun 2017	0.500	Nov 2017	-		-		-	Continuing	Continuing	-
RVAP Mk21 MIRV/Shroud	C/CPFF	Lockheed Martin : King of Prussia, MA	-	0.797	May 2017	-		-		-		-	Continuing	Continuing	-
RVAP Modeling and Simulation Programs	TBD	TBD : TBD	-	1.063	Feb 2018	0.980	Feb 2018	1.900	Sep 2019	-		1.900	Continuing	Continuing	-
RVAP Manufacturing Capabilities Study	TBD	TBD : TBD	-	4.600	Feb 2018	1.300	Feb 2018	3.933	Sep 2019	-		3.933	Continuing	Continuing	-
RVAP Future Vehicles Studies	TBD	TBD : TBD	-	5.671	Feb 2018	1.300	Feb 2018	3.932	Sep 2019	-		3.932	Continuing	Continuing	-
Subtotal			-	56.154		4.985		12.765		-		12.765	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force												Date: February 2018			
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>				Project (Number/Name) 641022 / <i>ICBM Reentry Vehicle Applications</i>					

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
RVAP Program Management Administration	Various	Various : Various	-	2.295	Jan 2017	0.600	Jan 2018	1.300	Jan 2019	-		1.300		Continuing	Continuing	-
Subtotal			-	2.295		0.600		1.300		-		1.300		Continuing	Continuing	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total		Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		-	64.740		7.085		17.920		-		17.920	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force			Date: February 2018		
Appropriation/Budget Activity 3600 / 4		R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>			Project (Number/Name) 641022 / <i>ICBM Reentry Vehicle Applications</i>

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	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
RVAP																												
RVAP Countermeasure Studies I & II																												
RVAP MIRV/Shroud																												
RVAP TPS Materials																												
RVAP FFRDC Support																												
RVAP TPS Testing and Analysis																												
RVAP Flight Testing																												
RVAP Future Vehicle Studies																												
RVAP Modeling and Simulation																												
RVAP Manufacturing Capabilities Study																												
RVAP Countermeasure Studies III																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force			Date: February 2018
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>	Project (Number/Name) 641022 / <i>ICBM Reentry Vehicle Applications</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
RVAP				
RVAP Countermeasure Studies I & II	1	2017	3	2017
RVAP MIRV/Shroud	1	2017	3	2017
RVAP TPS Materials	1	2017	3	2018
RVAP FFRDC Support	1	2017	4	2019
RVAP TPS Testing and Analysis	1	2017	2	2019
RVAP Flight Testing	1	2017	4	2019
RVAP Future Vehicle Studies	2	2017	4	2022
RVAP Modeling and Simulation	2	2017	2	2020
RVAP Manufacturing Capabilities Study	1	2017	2	2021
RVAP Countermeasure Studies III	2	2020	4	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
641024: ICBM Command & Control (C2) Applications	-	0.500	1.004	3.665	0.000	3.665	3.713	21.960	22.417	22.826	Continuing	Continuing
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 (non-GBSD baseline) C2 System technology applications. 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 command and control requirements.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2017	FY 2018	FY 2019	
Title: Command and Control Application Program									0.500	1.004	3.665	
Description: Examine and develop concepts for transforming ICBM WSC2 to meet current and future requirements.												
FY 2018 Plans:												
• Continue risk reduction studies to identify, assess, and preserve unique strategic command and control skills and technologies to meet current and future system requirements.												
• Develop Electronic Technical Orders prototype for ICBM platforms.												
FY 2019 Plans:												
• Continue risk reduction studies to identify, assess, and preserve unique strategic command and control skills and technologies to meet current and future system requirements.												
• Continue Electronic Technical Orders prototype for ICBM platforms.												
FY 2018 to FY 2019 Increase/Decrease Statement:												
Funding increased due to phasing issue in FY18 and new studies in FY19												
Accomplishments/Planned Programs Subtotals									0.500	1.004	3.665	

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force			Date: February 2018
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>	Project (Number/Name) 641024 / <i>ICBM Command & Control (C2) Applications</i>	

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

<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u> <u>Base</u>	<u>FY 2019</u> <u>OCO</u>	<u>FY 2019</u> <u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTE 04 PE 0605230F: <i>GBSD</i>	109.260	215.721	345.041	-	345.041	570.373	1,527.545	2,539.060	3,018.653	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.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force												Date: February 2018			
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>						Project (Number/Name) 641024 / <i>ICBM Command & Control (C2) Applications</i>			
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
C2AP Technical Services	C/FFP	BAE Systems : Clearfield, UT	-	-		0.273	Jan 2018	0.265	Jan 2019	-		0.265	Continuing	Continuing	-
Subtotal			-	-		0.273		0.265		-		0.265	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
C2AP Studies	Various	Various : Various	-	0.490	Jan 2017	0.667	Jan 2018	3.300	Jan 2019	-		3.300	Continuing	Continuing	-
Subtotal			-	0.490		0.667		3.300		-		3.300	Continuing	Continuing	N/A
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
C2AP Program Management	C/FFP	Various : Various	-	0.010	Jan 2017	0.064	Jan 2018	0.100	Jan 2019	-		0.100	Continuing	Continuing	-
Subtotal			-	0.010		0.064		0.100		-		0.100	Continuing	Continuing	N/A
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	0.500		1.004		3.665		-		3.665	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force			Date: February 2018		
Appropriation/Budget Activity		R-1 Program Element (Number/Name)			Project (Number/Name)
3600 / 4		PE 0603851F / Intercontinental Ballistic Missile - Dem/Val			641024 / ICBM Command & Control (C2) Applications

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	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
C2AP																												
C2AP Studies																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>	Project (Number/Name) 641024 / <i>ICBM Command & Control (C2) Applications</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
C2AP				
C2AP Studies	1	2017	4	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
644209: Long Range Planning (LRP)	-	7.028	1.138	2.911	0.000	2.911	3.924	3.992	4.075	4.149	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
Long Range Planning (LRP) effort identifies and analyzes potential modifications to current and future Intercontinental Ballistic Missile (ICBM) Weapon Systems required to meet objectives relative to 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. The LRP also lays the groundwork for analysis supporting future weapon systems development and deployment. Pre-milestone activities may be conducted for current or future ICBM weapon systems to include entry criteria for milestone activities.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2017	FY 2018	FY 2019	
Title: Long Range Planning									7.028	1.138	2.911	
Description: Analyze, study and plan current and future ICBM activities to meet requirements for long-term sustainment, technology insertion, employment force structure and future systems.												
FY 2018 Plans:												
• Continue analysis on launch facility technical drawings and understand the MMIII and GBSD Technical Baseline.												
• Continue Long Range Planning studies to assess ongoing MMIII Sustainment and GBSD transition.												
• Develop Virtual Instructor Prototype for ICBM Platforms.												
FY 2019 Plans:												
• Continue MMIII vulnerabilities, reliability, and survivability studies for Ground, Communication, and Flight Systems.												
• Long Range Planning studies to assess ongoing MMIII Sustainment and GBSD transition.												
• Continue Virtual Instructor Prototype for ICBM Platforms.												
FY 2018 to FY 2019 Increase/Decrease Statement:												
Funding increased due to phasing issue in FY18 and new studies in FY19												
Accomplishments/Planned Programs Subtotals									7.028	1.138	2.911	

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018	
Appropriation/Budget Activity 3600 / 4				R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>				Project (Number/Name) 644209 / <i>Long Range Planning (LRP)</i>			
C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u> <u>Base</u>	<u>FY 2019</u> <u>OCO</u>	<u>FY 2019</u> <u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTE 04 PE 0605230F: <i>GBSD</i>	109.260	215.721	345.041	-	345.041	570.373	1,527.545	2,539.060	3,018.653	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
Analysis 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.											
E. Performance Metrics											
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force												Date: February 2018			
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>						Project (Number/Name) 644209 / <i>Long Range Planning (LRP)</i>			
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
LRP LF Assessment	C/FFP	BAE : Warren, WY	-	1.247	May 2017	0.150	Apr 2018	-		-		-	Continuing	Continuing	-
Subtotal			-	1.247		0.150		-		-		-	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
LRP Integration Support	C/FFP	BAE Systems : Clearfield, UT	-	0.210	Jan 2017	0.275	Jan 2018	0.275	Jan 2019	-		0.275	Continuing	Continuing	-
Subtotal			-	0.210		0.275		0.275		-		0.275	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
Launch Systems Tests	C/CPFF	AFRL : Kirtland AFB, NM	-	1.087	Jan 2017	0.116	Nov 2017	-		-		-	Continuing	Continuing	-
LRP Studies	C/FFP	BAE Systems : Clearfield, UT	-	4.100	Jan 2017	-		-		-		-	Continuing	Continuing	-
LRP Studies II	C/FFP	TBD : TBD	-	-		0.520	Apr 2018	2.361	Jan 2019	-		2.361	Continuing	Continuing	-
Subtotal			-	5.187		0.636		2.361		-		2.361	Continuing	Continuing	N/A
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
LRP Program Management	Various	Various : Various	-	0.384	Jan 2017	0.077	Jan 2018	0.275	Jan 2019	-		0.275	Continuing	Continuing	-
Subtotal			-	0.384		0.077		0.275		-		0.275	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force											Date: February 2018				
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)					
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	7.028		1.138		2.911		-		2.911	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force												Date: February 2018			
Appropriation/Budget Activity 3600 / 4								R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>				Project (Number/Name) 644209 / <i>Long Range Planning (LRP)</i>			

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	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
LRP																												
Launch Facilities Assessment																												
Long Range Planning Studies																												
Launch Systems Tests																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>	Project (Number/Name) 644209 / <i>Long Range Planning (LRP)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>LRP</i>				
Launch Facilities Assessment	1	2017	4	2018
Long Range Planning Studies	1	2017	4	2023
Launch Systems Tests	1	2017	4	2018