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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Air Force										Date: March 2014		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0604933F I ICBM Fuze Modernization							
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	49.457	65.370	118.411	59.826	-	59.826	88.473	124.882	196.040	223.436	266.905	1,192.800
655082: ICBM FUZE SUPPORT	49.457	65.370	118.411	59.826	-	59.826	88.473	124.882	196.040	223.436	266.905	1,192.800
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

Note

A. Mission Description and Budget Item Justification

The ICBM Fuze program replaces the Mk21 (W87) fuze. The Mk21 replacement project scope includes the design and development of a form, fit, function replacement fuze associated with the legacy W87 warhead. The legacy Mk21 fuze is three times past its design life and ongoing Mk21 refurbishment does not meet Nuclear Weapon Stockpile Plan requirements.

The United States Air Force (USAF) will develop the Mk21 fuze in cooperation with the National Nuclear Security Administration (NNSA), US Navy (USN) and United Kingdom. The ICBM Fuze program will leverage technologies, parts, components and development/production capabilities resulting from extensive fuze work performed by the USN and NNSA. The ICBM Fuze program will also develop associated Minuteman III weapon system modifications, support equipment, data, flight test hardware, and training. It will also conduct required system testing (including ground and flight tests) and fielding efforts. The program coordinates USAF Mk21 Fuze replacement development efforts to synchronize USAF arming and fuzing and Department of Energy (DOE) warhead requirements. When prudent, the ICBM Fuze Modernization program will conduct trade studies and initiate conceptual designs to address operational system issues and meet future requirements.

As a cooperative USAF, USN and NNSA weapon sustainment acquisition, the USAF will implement joint Department of Defense (DoD)-DOE Nuclear Weapons Life Cycle Activities. The ICBM Fuze Modernization program will be tailored to use joint DoD-DOE phase 6.X processes for routine nuclear stockpile activities to align with USN and NNSA operations.

In FY15, the ICBM Fuze Modernization program was rebaselined due to fiscal constraints. The Mk21 (W87) Fuze Replacement design and development efforts were extended to shift the First Production Unit (FPU) delivery from FY19 to FY22. In addition, previous plans to integrate and test the Mk21 fuze replacement with the NNSA W78/88-1 Life Extension Program (LEP) warhead have been deferred beyond the Future Years Defense Plan (FYDP).

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B equivalent approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

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B. Program Change Summary (\$ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total	
Previous President's Budget	73.512	129.411	214.836	-	214.836	
Current President's Budget	65.370	118.411	59.826	-	59.826	
Total Adjustments	-8.142	-11.000	-155.010	-	-155.010	
• Congressional General Reductions	-0.098	-11.000				
• Congressional Directed Reductions	-	-				
• Congressional Rescissions	-	-				
• Congressional Adds	-	-				
• Congressional Directed Transfers	-	-				
• Reprogrammings	-	-				
• SBIR/STTR Transfer	-2.005	-				
• Other Adjustments	-6.039	-	-155.010	-	-155.010	
Change Summary Explanation						
FY 2013 funding reflects a decrease of \$0.098M due to Congressional reductions, \$2.005M due to SBIR transfer, and a decrease of \$6.039M due to sequestration.						
FY 2014 funding reflects a decrease of \$11.000M due to Congressional reductions.						
FY 2015 funding reflects a decrease of \$155.010 due to program restructure delaying Mk21 replacement fuze FPU to FY22 consistent with related NNSA and USN efforts, and deferring the NNSA W78/88-1 LEP warhead beyond the FYDP.						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2013	FY 2014	FY 2015
Title: Fuze Design and Development				42.588	83.189	48.694
Description: Design and develop the Mk21 fuze required to support the W87 warhead on the MM III weapon system. Coordinate design and development efforts with MM III weapon system integrator and support flight testing.						
FY 2013 Accomplishments:						
Continued conceptual design development of common parts, components, and technology for Mk21 fuze application and planned for design reuse applicable to the fuze for the W78/88-1 Life Extension Program. Analyzed and assessed customer requirements for the Mk21 replacement fuze. Conducted trades of nuclear surety themes as directed by National Security Presidential Directives (NSPD)-28. Provided development components, hardware and software for assessment. Developed and produced ground test integration test beds. Supported integration and flight test planning.						
FY 2014 Plans:						

UNCLASSIFIED

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
Mature development of common parts, components, and technology for application to Mk21 replacement fuze. Implement nuclear surety themes informed by trades as directed by NSPD-28. Support integration and flight test planning. Conduct trade studies and initiate conceptual designs to address operational system issues and meet future requirements.				
FY 2015 Plans: Continue to mature development of common parts, components, and technology for application to Mk21 replacement fuze. Continue component conceptual design development of common and unique parts. Continue to perform the required systems engineering tasks associated with fuze design, development, test, and the required documentation. Implement nuclear surety themes informed by trades as directed by NSPD-28. Support integration and flight test planning. Conduct trade studies and initiate conceptual designs to address operational system issues and meet future requirements.				
Title: Weapon System Integration Description: Design and develop MM III weapon system modifications to support Mk21 fuze and warhead designs. Integrate Mk21 fuze and warhead designs and the MM III weapon system. Validate designs through ground test and integration test beds. Plan and conduct necessary ground and flight testing. Coordinate design, development and flight test efforts with fuze developer.		14.481	20.638	9.011
FY 2013 Accomplishments: Finalized conceptual designs for MM III weapon system hardware and software modifications to support Mk21 replacement fuze and application of this fuze to the W78/88-1 LEP program. Assessed MM III weapon system modification requirements to support the Mk21 replacement fuze and W78/88-1 LEP warhead. Coordinated activities in preparation for integration and future flight testing of fuzes and related weapon system modifications.				
FY 2014 Plans: Continue developing MM III weapon system hardware and software modifications to support Mk21 replacement fuze designs. Create a flight test plan for fuze related developmental hardware including extended range tests.				
FY 2015 Plans: Continue to provide Systems Engineering, Integration, and Management expertise in support of USAF and Sandia National Lab (SNL) development of the Mk21 replacement fuze.				
Title: Systems Engineering Description: Provide Systems Engineering/Technical Assistance (SETA), support and training to the ICBM Fuze Modernization program in performing development, integration, sustaining engineering, and program management.		3.458	4.087	2.121
FY 2013 Accomplishments:				

UNCLASSIFIED

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C. Accomplishments/Planned Programs (\$ in Millions) Provided engineering analyses and support services to ICBM Fuze Modernization program working groups, including systems engineering and integration, requirements, test and evaluation, and planning and assessment support. FY 2014 Plans: Provide engineering analyses and support services to ICBM Fuze Modernization program working groups, including systems engineering and integration, requirements, test and evaluation, and planning and assessment support. FY 2015 Plans: Provide engineering analyses and support services to ICBM Fuze Modernization program working groups, including systems engineering and integration, requirements, test and evaluation, and planning and assessment support.		FY 2013	FY 2014	FY 2015
Title: Lead Project Office (AFNWC) Description: Coordinate USAF ICBM Fuze Modernization program efforts with NNSA W78/88-1 LEP developmental efforts. Synchronize USAF arming and fuzing and DOE warhead requirements. Study and assess weapon system cost, schedule and performance impacts. FY 2013 Accomplishments: Continued to evaluate performance requirements, physical characteristics, logistical and operational concepts and physical environments. Continued to develop common Military Characteristics and Stockpile-to-Target Sequence requirements. Continued to develop and validate modeling and simulation and support developmental planning. Continued to develop engineering design models and examined nuclear surety themes as directed by NSPD-28. Conducted Mk21 Conceptual Design Review and Integrated Baseline Review. Prepared for W78/88-1 LEP Customer Requirements Review. FY 2014 Plans: Continue to evaluate performance requirements, physical characteristics, logistical and operational concepts and physical environments. Continue to develop common Military Characteristics and Stockpile-to-Target Sequence requirements. Continue to develop and validate modeling and simulation and support developmental planning. Continue to develop engineering design models and examine nuclear surety themes as directed by NSPD-28. Support Mk21 Conceptual Design Review and Sandia Baseline Review. The Sandia Baseline Review will serve as the tailored 6.X process for an Integrated Baseline Review. Conduct W78/88-1 LEP Customer Requirements Review. FY 2015 Plans: This effort has been discontinued as a result of the deferral of the W78/88-1 LEP effort beyond the FYDP.		4.843	10.497	-
Accomplishments/Planned Programs Subtotals		65.370	118.411	59.826

UNCLASSIFIED

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D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
• MPAF: BA05: Line Item # M30MLG: Minuteman III Modifications	-	-	4.700	-	4.700	6.800	4.300	6.900	13.847	695.353	731.900
Remarks											
Other Program Funding Summary reflects equipment buys in FY15-19 will address Diminishing Manufacturing Sources and Material Shortages (DMSMS) that will enable the ICBM Fuze Modernization program to continue leveraging from the Navy's design, development and production activities.											
E. Acquisition Strategy											
The Mk21 fuze will be modernized in a collaborative effort with the US Navy Mk5 fuze reducing total program cost and development time by leveraging potential compatibility and commonality of ICBM and Submarine Launched Ballistic Missile warheads and fuze components. The US Navy Mk5 fuze will be developed first, followed by Mk21. The US Navy Mk5 fuze entered Phase 6.3 Development Engineering in Aug 2012. USAF Mk21 fuze entered Phase 6.3 in Aug 2013. Both Services participate in all design and development efforts to ensure use of adaptable components, subassemblies and technology. Both services will use NNSA/SNL to perform fuze design and development. The USAF will separately compete and contract for MM III unique missile modification and fuze integration efforts utilizing a combination of the Integration Support Contract (ISC) for SETA and the Reentry System/Reentry Vehicle Integration Contract for weapons system integration. Both services will use Kansas City Production Plant (KCPP) to perform production and sustainment.											
F. 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.											

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2015 Air Force												Date: March 2014			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0604933F / ICBM Fuze Modernization				Project (Number/Name) 655082 / ICBM FUZE SUPPORT					
Product Development (\$ in Millions)				FY 2013		FY 2014		FY 2015 Base		FY 2015 OCO		FY 2015 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
Preliminary Design Development	MIPR	Sandia National Labs : Albuquerque, NM	23.660	38.112	Nov 2012	56.583	Nov 2013	29.855	Nov 2014	-		29.855	-	148.210	TBD
EMD	Various	Various : ,	0.000	2.006	Dec 2012	24.250	Dec 2013	16.076	Nov 2014	-		16.076	691.767	734.099	TBD
Weapon System Integration - ICBM Prime	C/CPAF	Northrop Grumman : Clearfield, UT	1.250	13.641	Nov 2012	18.054	Nov 2013	-		-		-	-	32.945	-
Weapon System Integration - RS/RV SSC	C/TBD	TBD : ,	0.000	-		2.000	Sep 2014	8.500	Nov 2014	-		8.500	111.274	121.774	TBD
Subtotal			24.910	53.759		100.887		54.431		-		54.431	803.041	1,037.028	-
Support (\$ in Millions)				FY 2013		FY 2014		FY 2015 Base		FY 2015 OCO		FY 2015 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
Integration Support - BAH	C/FP	Booz Allen Hamilton : Salt Lake City, UT	16.803	3.257	Nov 2012	-		-		-		-	-	20.060	TBD
Integration Support - BAE	C/CPAF	BAE : Clearfield, UT	0.000	-		3.971	Nov 2013	2.000	Nov 2014	-		2.000	17.969	23.940	TBD
Subtotal			16.803	3.257		3.971		2.000		-		2.000	17.969	44.000	-
Test and Evaluation (\$ in Millions)				FY 2013		FY 2014		FY 2015 Base		FY 2015 OCO		FY 2015 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
Lead Project Office Support	MIPR	NNSA : Albuquerque, NM	1.870	4.407	Nov 2012	9.460	Nov 2013	-		-		-	-	15.737	-
Finite Element Model Validation	C/CPFF	Little Mountain : , UT	0.620	0.155	Nov 2012	0.740	Nov 2013	-		-		-	-	1.515	-
Subtotal			2.490	4.562		10.200		-		-		-	-	17.252	-

UNCLASSIFIED

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Management Services (\$ in Millions)				FY 2013		FY 2014		FY 2015 Base		FY 2015 OCO		FY 2015 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
Cost and Financial Management	C/FFP	Tecolote : Salt Lake City, UT	1.000	0.350	Nov 2012	0.350	Nov 2013	0.395	Nov 2014	-		0.395	11.809	13.904	TBD
Program Management Administration	Various	Various : Various, UT	4.254	3.442	Dec 2012	3.003	Nov 2013	3.000	Nov 2014	-		3.000	66.917	80.616	TBD
Subtotal			5.254	3.792		3.353		3.395		-		3.395	78.726	94.520	-
			Prior Years	FY 2013		FY 2014		FY 2015 Base		FY 2015 OCO		FY 2015 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			49.457	65.370		118.411		59.826		-		59.826	899.736	1,192.800	-
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2015 Air Force

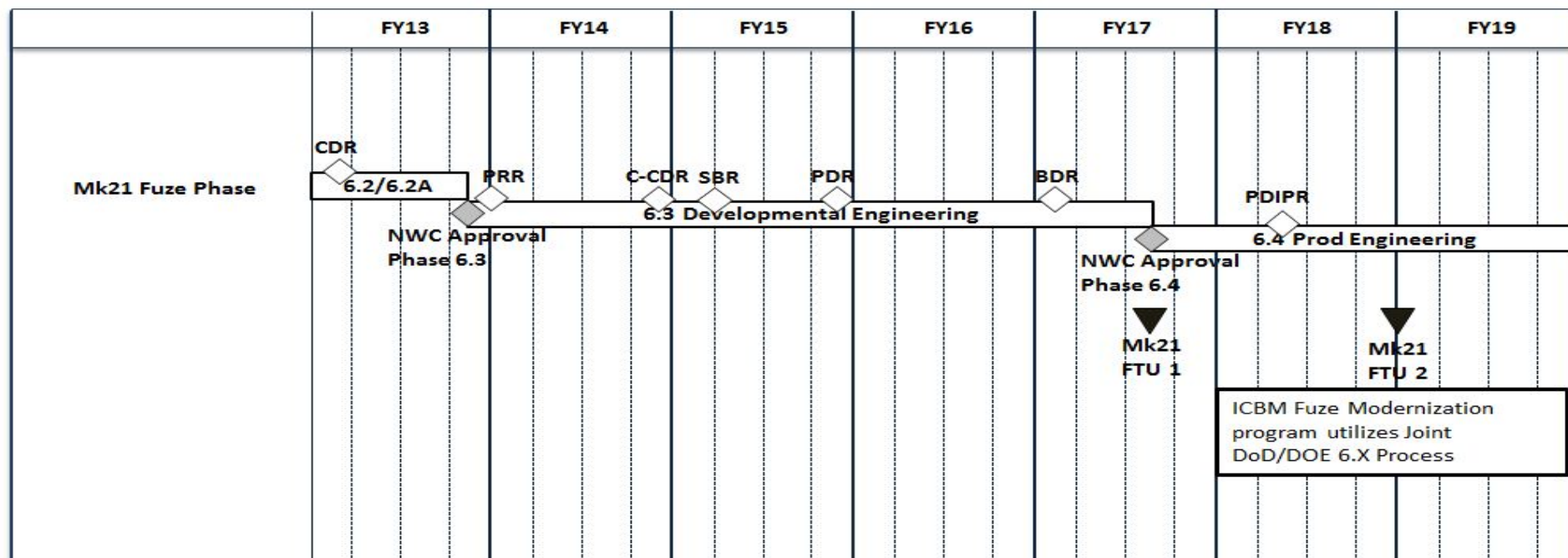
Date: March 2014

Appropriation/Budget Activity
3600 / 5

R-1 Program Element (Number/Name)
PE 0604933F / ICBM Fuze Modernization

Project (Number/Name)
655082 / ICBM FUZE SUPPORT

ICBM Fuze Modernization



◇ Review	BDR Baseline Design Review	FTU Flight Test Unit	PRR Performance Requirements Review
▼ Flight Tests	CDR Conceptual Design Review	NWC Nuclear Weapons Council	SBR Sandia Baseline Review
◆ Milestone	C-CDR Component Conceptual Design Review	PDIPR Preliminary DoD Independent Peer Review	
	CRR Customer Requirements Review	PDR Prototype Design Review	

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Exhibit R-4A, RDT&E Schedule Details: PB 2015 Air Force			Date: March 2014
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604933F / ICBM Fuze Modernization	Project (Number/Name) 655082 / ICBM FUZE SUPPORT	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Conceptual Design Review	1	2013	1	2013
Nuclear Weapons Council 6.3 Entry Approval	4	2013	4	2013
Developmental Engineering	4	2013	3	2017
Performance Requirements Review	1	2014	1	2014
Component Conceptual Design Review	4	2014	4	2014
Sandia Baseline Review	2	2015	2	2015
Prototype Design Review	4	2015	4	2015
Baseline Design Review	1	2017	1	2017
Nuclear Weapons Council 6.4 Entry Approval	3	2017	3	2017
Production Engineering	3	2017	4	2019
Flight Test Unit 1	3	2017	3	2017
Preliminary DoD Independent Peer Review	2	2018	2	2018
Flight Test Unit 2	1	2019	1	2019