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Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Air Force	DATE: April 2013
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APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 5: <i>System Development & Demonstration (SDD)</i>					PE 0604933F: <i>ICBM Fuze Modernization</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	0.000	0.000	73.512	129.411	-	129.411	214.836	275.952	353.256	396.568	Continuing	Continuing
655082: <i>ICBM FUZE SUPPORT</i>	0.000	0.000	73.512	129.411	-	129.411	214.836	275.952	353.256	396.568	Continuing	Continuing
Quantity of RDT&E Articles		0	0	0		0	0	0	0	0		

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

Note

In FY 2013, 655082, ICBM Fuze Support, efforts were transferred from PE 0604851F ICBM - EMD, 657006, ICBM EMD: Fuze Support, in order to distinguish the effort as an pre-ACAT I program.

Under FY13 CRA, FY13 execution is occurring in PEC 0604851F and will be transferred to PEC 0640933F when Appropriation Act is passed.

Prior Years funding includes \$9.740M from PE 0604222F in FY11 and \$42.114M from PE 0604851F in FY12.

A. Mission Description and Budget Item Justification

ICBM Fuze Modernization will provide a replacement Mk21 fuze associated with the W87 warhead and a Mk12A fuze associated with the W78/88-1 Life Extension Program (LEP) 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 Mk12A fuze must be modified to support the W78/88-1 LEP warhead incorporating enhanced nuclear surety capabilities required by National Security Presidential Directive (NSPD) 28.

The fuze modernization schedule was rebaselined to ensure Mk12A fuze development remains sychronized with the W78/88-1 LEP warhead first production unit delivery shift from FY21 to FY25.

The US Air Force will develop Mk21 and Mk12A fuzes in cooperation with the National Nuclear Security Administration (NNSA), US Navy and United Kingdom. ICBM Fuze Modernization will leverage technologies, parts, components and development/production capabilities resulting from extensive fuze work performed by the US Navy and NNSA. Currently it is estimated the Mk21 Fuze will be 72% common with the Navy Mk5 Fuze. Mk21 and Mk12A fuzes will be similar to the US Navy D5 fuze, but W78/88-1 LEP and W87 warhead requirements dictate some unique differences. The ICBM Fuze Modernization 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.

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

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The production phase MPAF funding is budgeted under M30MLG, Minuteman III Modifications, starting in FY18.						
BA5 - This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.						
B. Program Change Summary (\$ in Millions)		FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget		0.000	73.512	140.511	-	140.511
Current President's Budget		0.000	73.512	129.411	-	129.411
Total Adjustments		0.000	0.000	-11.100	-	-11.100
• Congressional General Reductions		-	0.000			
• Congressional Directed Reductions		-	0.000			
• Congressional Rescissions		0.000	0.000			
• Congressional Adds		-	0.000			
• Congressional Directed Transfers		-	0.000			
• Reprogrammings		0.000	0.000			
• SBIR/STTR Transfer		0.000	0.000			
• Other Adjustments		0.000	0.000	-11.100	-	-11.100
Change Summary Explanation						
Reduction of \$11.1M in FY 2014 reflects the rephasing of Mk12A related efforts to coincide with development of W78/88-1 Life Extension Program (LEP).						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2012	FY 2013	FY 2014
Title: Fuze Design and Development (SNL)				0.000	38.300	71.700
Description: Design and develop the Mk21 and Mk12A fuzes required to support W87 and W78/88-1 LEP warheads on the MM III weapon system. Coordinate design and development efforts with MM III weapon system integrator and support flight testing.						
FY 2012 Accomplishments: Reflected in PE 0604851F ICBM - EMD, 657006 Fuze Support						
FY 2013 Plans: Finalize conceptual design development of common parts, components, and technology for Mk21 fuze application and plan for design reuse applicable to Mk12A fuze. Analyze and assess customer requirements for the Mk12A fuze. Conduct trades of nuclear surety themes as directed by NSPD-28. Provide development components, hardware and software for assessment. Develop and produce ground test integration test beds. Support integration and flight test planning.						
FY 2014 Plans:						

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Mature development of common parts, components, and technology for application to Mk21 and Mk12A fuzes. Finalize conceptual design development of common parts, components, and technology for Mk12A fuze application. Implement nuclear surety themes informed by trades as directed by NSPD-28. Support integration and flight test planning.				
Title: Weapon System Integration Description: Design and develop MM III weapon system modifications to support Mk21 and Mk12A fuzes and warhead designs. Integrate Mk21 and Mk12A fuzes 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. FY 2012 Accomplishments: Reflected in PE 0604851F ICBM - EMD, 657006 Fuze Support FY 2013 Plans: Finalize conceptual designs for MM III weapon system hardware and software modifications to support Mk21 fuze. Assess MM III weapon system modification requirements to support the MK12A fuze and W78/88-1 LEP warhead. Coordinate 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 fuze designs. Finalize conceptual designs for MM III weapon system hardware and software modifications to support the MK12A fuze and W78/88-1 LEP warhead. Create a flight test plan for fuze related developmental hardware including extended range tests.		0.000	18.600	23.500
Title: Systems Engineering (ISC) Description: Provide Systems Engineering/Technical Assistance (SE/TA), support and training to the ICBM Fuze program in performing development, integration, sustaining engineering, and program management. FY 2012 Accomplishments: Reflected in PE 0604851F ICBM - EMD, 657006 Fuze Support FY 2013 Plans: Provide engineering analyses and support services to ICBM Fuze program working groups, including systems engineering and integration, requirements, test and evaluation, and planning and assessment support. FY 2014 Plans:		0.000	4.474	6.555

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Provide engineering analyses and support services to ICBM Fuze program working groups, including systems engineering and integration, requirements, test and evaluation, and planning and assessment support.				
Title: Lead Project Office (AFNWC) Description: Coordinate USAF Mk12A and Mk21 fuze modernization and NNSA W78/88-1 Life Extension Program (LEP) development efforts. Synchronize USAF arming and fuzing and DOE warhead requirements. Study and assess weapon system cost/schedule/performance impacts. FY 2012 Accomplishments: Reflected in PE 0604851F ICBM - EMD, 657006 Fuze Support FY 2013 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. Conduct Mk21 Conceptual Design Review and Integrated Baseline Review. Prepare and conduct Phase 6.3 decision review. Conduct 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. Conduct W78/88-1 LEP Conceptual Design Review.		0.000	5.325	11.656
Title: Program Management Administration (PMA) Description: Direct unique program cost required for program management and oversight. FY 2012 Accomplishments: Reflected in PE 0604851F ICBM - EMD, 657006 Fuze Support FY 2013 Plans: Program support, travel, printing, supplies, Advisory and Assistance Service. FY 2014 Plans: Program support, travel, printing, supplies, Advisory and Assistance Service.		0.000	6.813	16.000
Accomplishments/Planned Programs Subtotals		0.000	73.512	129.411

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D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
• RDTE: BA05: 0604815F: <i>ICBM - EMD</i>	39.717	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.000	39.717
• MPAF: BA05: Line Item # M30MLG: <i>Minuteman III Modifications</i>	0.000	0.000	0.000		0.000	0.000	0.000	0.000	50.000	1,892.200	1,942.200
Remarks											
E. Acquisition Strategy											
Mk21 and Mk12A fuzes 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 and Mk12A. The US Navy Mk5 fuze entered Phase 6.3 Development Engineering in Aug 2012. USAF Mk21 fuze will enter Phase 6.3 in Mar 2013. Both Services participate in all design and development efforts to ensure use of adaptable components, subassemblies and technology. Both Services will use NNSA/SAndia National Laboratories to perform fuze design and development. The USAF will separately compete and contract for MM III unique missile modification and fuze integration efforts.											
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.											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Air Force												DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 5: System Development & Demonstration (SDD)						R-1 ITEM NOMENCLATURE PE 0604933F: ICBM Fuze Modernization						PROJECT 655082: ICBM FUZE SUPPORT			
Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All 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	0.000	0.000		39.600	Nov 2012	57.400	Nov 2013	-		57.400	Continuing	Continuing	TBD
EMD	Various	Various.,	0.000	0.000		2.274	Dec 2012	23.942	Dec 2013	-		23.942	0.000	26.216	
Subtotal			0.000	0.000		41.874		81.342		0.000		81.342			
Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All 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	0.000	0.000		0.350	Dec 2012	0.350	Dec 2013	-		0.350	Continuing	Continuing	TBD
Subtotal			0.000	0.000		0.350		0.350		0.000		0.350			
Test and Evaluation (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All 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	0.000	0.000		5.325	Nov 2012	6.656	Nov 2013	-		6.656	Continuing	Continuing	
ICBM Prime	C/CPFF	Northrup Grumman:Clearfield, UT	0.000	0.000		18.150	Nov 2012	24.063	Nov 2013	-		24.063	Continuing	Continuing	
Finite Element Model Validation	C/CPFF	Little Mountain:, UT	0.000	0.000		1.000	Nov 2012	1.000	Nov 2013	-		1.000	Continuing	Continuing	
Subtotal			0.000	0.000		24.475		31.719		0.000		31.719			

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Management Services (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Administration & SPO Support	Various	Various:Various, UT	0.000	0.000		6.813	Dec 2012	16.000	Nov 2013	-		16.000	Continuing	Continuing	TBD
Subtotal			0.000	0.000		6.813		16.000		0.000		16.000			

	All Prior Years	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000	73.512	129.411	0.000	129.411			

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2014 Air Force

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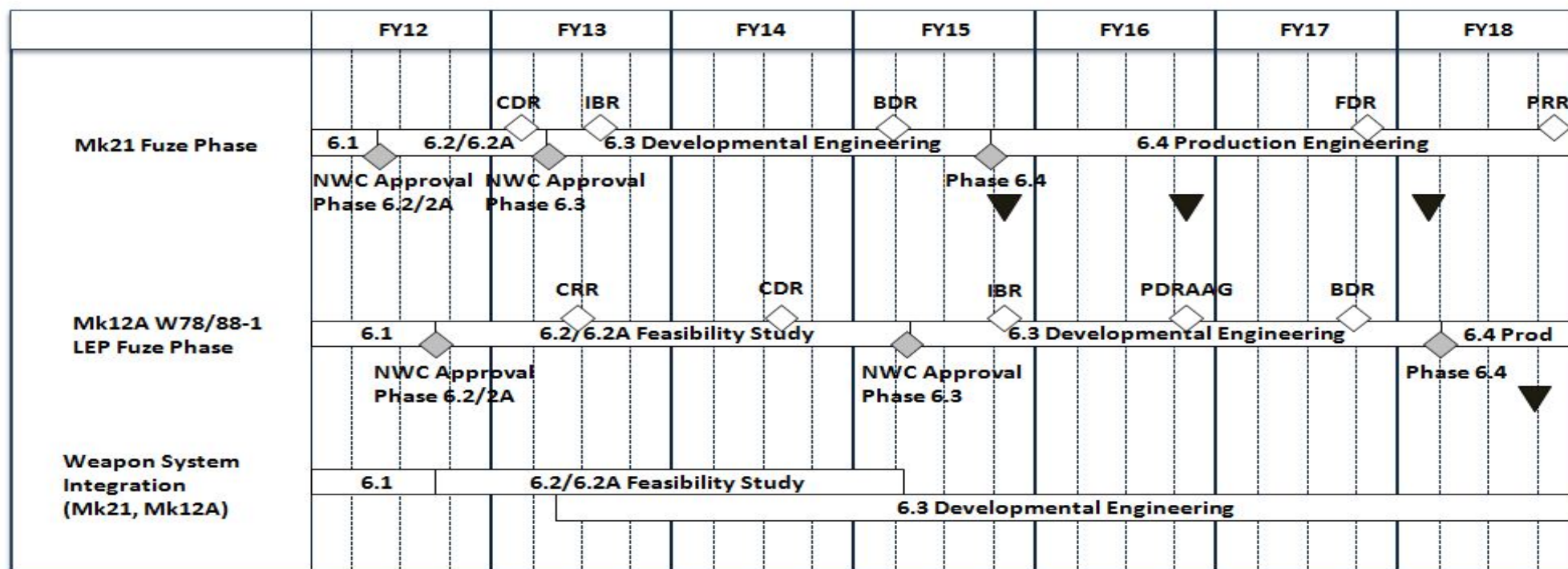
APPROPRIATION/BUDGET ACTIVITY3600: Research, Development, Test & Evaluation, Air Force
BA 5: System Development & Demonstration (SDD)**R-1 ITEM NOMENCLATURE**

PE 0604933F: ICBM Fuze Modernization

PROJECT

655082: ICBM FUZE SUPPORT

ICBM Fuze Modernization



	Review		Milestone	BDR	Baseline Design Review	FDR	Final Design Review	PDRAAG	Preliminary Design Review & Acceptance Group
	Flight Tests	CRR	Customer Requirements Review	IBR	Initial Baseline Review	FDRAAG	FDR & Acceptance Group	PRR	Production Readiness Review

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Exhibit R-4A, RDT&E Schedule Details: PB 2014 Air Force			DATE: April 2013
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Mk21 NWC Phase 6.2 Feasibility Study Approval	2	2012	2	2012
Mk21 Conceptual Design Review (CDR)	1	2013	1	2013
Mk21 NWC Phase 6.3 Development Engineering Approval	2	2013	2	2013
Mk21 Initial Baseline Review (IBR)	3	2013	3	2013
Mk21 Baseline Design Review (BDR)	1	2015	1	2015
Mk21 NWC Phase 6.4 Production Engineering	3	2015	3	2015
Mk21 Developmental Flight Tests	4	2015	4	2018
Mk21 Final Design Review (FDR)	4	2017	4	2017
Mk21 Production Readiness Review (PRR)	4	2018	4	2018
Mk12A NWC Phase 6.2 Feasibility Study Approval	3	2012	3	2012
Mk12A Customer Requirements Review (CRR)	2	2013	2	2013
Mk12A CDR	3	2014	3	2014
Mk12A NWC Phase 6.3 Development Engineering Approval	2	2015	2	2015
Mk12A IBR	4	2015	4	2015
Mk12A Preliminary Design Review & Acceptance Group (PDRAAG)	4	2016	4	2016
Mk12A BDR	3	2017	3	2017
Mk12A NWC Phase 6.4 Production Engineering	1	2018	1	2018
Mk12A Developmental Flight Tests	3	2018	4	2018