Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-498

Air Force Intercontinental Ballistic Missile Fuze Modernization (ICBM Fuze Mod)

As of FY 2019 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

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Sensitivity Originator

No originator info Available at this time.

Common Acronyms and Abbreviations for MDAP Programs

Acq O&M - Acquisition-Related Operations and Maintenance
ACAT - Acquisition Category
ADM - Acquisition Decision Memorandum
APB - Acquisition Program Baseline
APPN - Appropriation
APUC - Average Procurement Unit Cost
$B - Billions of Dollars
BA - Budget Authority/Budget Activity
Blk - Block
BY - Base Year
CAPE - Cost Assessment and Program Evaluation
CARD - Cost Analysis Requirements Description
CDD - Capability Development Document
CLIN - Contract Line Item Number
CPD - Capability Production Document
CY - Calendar Year
DAB - Defense Acquisition Board
DAE - Defense Acquisition Executive
DAMIR - Defense Acquisition Management Information Retrieval
DoD - Department of Defense
DSN - Defense Switched Network
EMD - Engineering and Manufacturing Development
EVM - Earned Value Management
FOC - Full Operational Capability
FMS - Foreign Military Sales
FRP - Full Rate Production
FY - Fiscal Year
FYDP - Future Years Defense Program
ICE - Independent Cost Estimate
IOC - Initial Operational Capability
Inc - Increment
JROC - Joint Requirements Oversight Council
$K - Thousands of Dollars
KPP - Key Performance Parameter
LRIP - Low Rate Initial Production
$M - Millions of Dollars
MDA - Milestone Decision Authority
MDAP - Major Defense Acquisition Program
MILCON - Military Construction
N/A - Not Applicable
O&M - Operations and Maintenance
ORD - Operational Requirements Document
OSD - Office of the Secretary of Defense
O&S - Operating and Support
PAUC - Program Acquisition Unit Cost

PB - President's Budget
PE - Program Element
PEO - Program Executive Officer
PM - Program Manager
POE - Program Office Estimate
RDT&E - Research, Development, Test, and Evaluation
SAR - Selected Acquisition Report
SCP - Service Cost Position
TBD - To Be Determined
TY - Then Year
UCR - Unit Cost Reporting
U.S. - United States
USD(AT&L) - Under Secretary of Defense (Acquisition, Technology and Logistics)

Program Information

Program Name

Air Force Intercontinental Ballistic Missile Fuze Modernization (ICBM Fuze Mod)

DoD Component

Air Force

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References

SAR Baseline (Development Estimate)

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated September 29, 2014

Approved APB

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated September 29, 2014

Mission and Description

The Intercontinental Ballistic Missile Fuze Modernization (ICBM Fuze Mod) Program is providing a replacement Arming and Fuzing Assembly (AFA) for the Mk21/W87 Re-Entry Vehicle/Warhead. The program is executing a tailored acquisition utilizing Department of Defense Instruction (DoDI) 5030.55, Procedures for Joint DoD-Department of Energy Nuclear Weapons Life-Cycle Activities (Phase 6.X Process), as the governing acquisition directive for program milestones and activities while meeting MDAP statutory requirements.

Mission & Description: The ICBM Fuze Mod Program is providing a form, fit, and functionally equivalent replacement for the Mk21 AFA. These fuzes require recapitalization due to legacy fuze being three times past the original design life. In Minuteman III (MMIII) sustainment, there is an ongoing refurbishment program; however, this activity will not meet fuze quantity requirements under the current known force structure. The ICBM Fuze Mod is being developed with a 30-year design life to meet current and future Combatant Command ICBM needs for MMIII and a future Ground Based Strategic Deterrent. The Air Force is leveraging the Navy's Mk5 Alteration 370 program to develop and produce fuzes with common technology and components achieving cost savings and avoidance over the lifecycle.

Executive Summary

Program Highlights Since Last Report

The program plans for an FY 2022 First Production Unit and delivery of 693 War Reserve fuzes by FY 2030.

ADM dated September 22, 2015, directed the Air Force to continue to plan and execute the program based on Nuclear Weapons Council, Phase 6.X guidelines while also ensuring all MDAP statutory requirements are met. Since this decision was made after the Phase 6.X equivalent of Milestone B, the program continues to work to meet or determine equivalency for all 2366b relevant statutory requirements.

Several statutory documents remain in-work including the Section 2366b Certification. The CAPE memo dated October 5, 2017 accepted the 2017 Non-Advocate Cost Assessment (NACA) as the ICE. The JROC Memo was signed December 6, 2016. The independent Technical Readiness Assessment team has assessed all critical technologies at TRL 6 or above. Now awaiting final concurrence with Under Secretary of Defense for Research and Engineering (USD(R&E)).

The program recently completed the major test event Ground Test Unit 1 (GTU-1) in September 2017. The test was successful with no major issues. The final test report was received in February 2018, with no significant issues. The next major program milestones are Prototype Design Review (PDR) and the Preliminary DoD Independent Peer Review scheduled for May 22-24, 2018.

Kansas City National Security Campus (KCNSC) will not be able to meet their delivery schedule for the Path Length Module Model XI Sensors to support full common qualification with the Navy's ALT 370 program. This was an ICBM Fuze production risk for contractor's ability to meet Model XI's production requirement. The production risk has now been realized and the program is working with KCNSC to resolve contracting, training, and material challenges with their sub contractor, Lockheed Martin Rotary Systems, for the Model XI sensor. The remaining Model XI sensor assets in Lot 1 were delivered in December 2017 and KCNSC placed a contract in August 2017 for Lot 2 (Sensors #41-80) which will start delivery in March 2018 and continue through August of 2019. KCNSC has issued a request for a quote to cover both long lead items and sensor builds for Lot 3 (#81-124). The response has been received and is under evaluation at KCNSC. These assets will be used for developmental testing.

There are no significant software-related issues with this program at this time.

History of Significant Developments Since Program Initiation

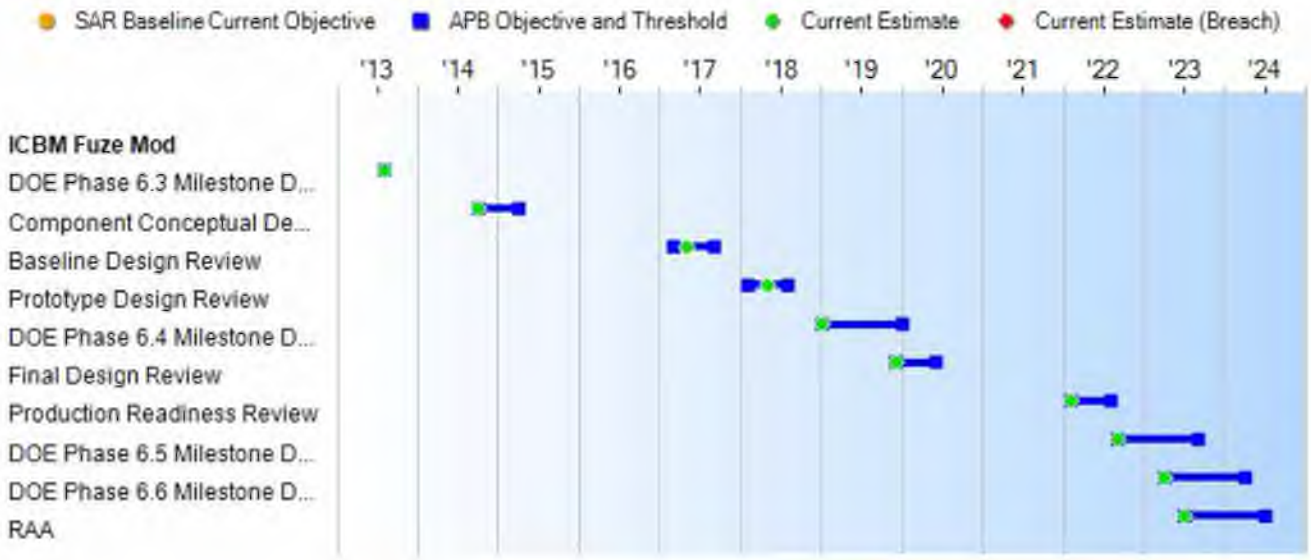
History of Significant Developments Since Program Initiation	
Date	**Significant Development Description**
August 2011	National Nuclear Security Administration's (NNSA) contractors are designing, developing, and producing the Mk21 2A3660 AFA. A Determinations & Findings (D&F) was signed on August 22,2011 to go to Sandia for the design of the 2A3660 AFA. The Production D&F was signed on December 28, 2012 indicating that the production of the fuze would be through NNSA's contractor NSC.
August 2013	The USD(AT&L), as the Chairman of the Nuclear Weapons Council, authorized use of the joint DoD/DOE Instruction 5030.55 for the implementation of the ICBM Fuze Mod program and entry into Phase 6.3 Development Engineering. This decision is documented in the ADM, dated August 18, 2013, entitled "Air Force Intercontinental Ballistic Missile Fuze Program Phase 6.3 Development Engineering Authorization.
December 2013	ICBM Fuze Modernization Program Requirements Traceability Memorandum, dated December 12, 2013. Established the performance parameters and capability characteristics objectives and thresholds. These fuze performance parameters were derived from existing Legacy Mk21 Fuze performance specifications/requirements, as well as from the requirements memorandum from Air Force Global Strike Command (AFGSC) A5/8 *ICBM Fuze Modernization Requirements,* dated July 8, 2011.
September 2014	DAE approved APB dated September 29, 2014.
February 2015	The government executed an Integrated Baseline Review jointly with the Navy from February 26, 2015 - March 6, 2015. Upon the final concurrence of the executable baseline, the Design Agent (Sandia National Laboratories) began to officially report EVM data.
September 2015	ADM dated September 22, 2015 directed the Air Force to continue to plan and execute the program based on Nuclear Weapons Council, Phase 6.X guidelines while also ensuring all MDAP statutory requirements are met. Since this decision was made after the Phase 6.X equivalent of Milestone B, the program worked to meet or determine equivalency for all Milestone B relevant statutory requirements.
May 2017	Program successfully executed the Baseline Design Review on May 25, 2017.

Threshold Breaches

APB Breaches		
Schedule		☐
Performance		☐
Cost	RDT&E	☐
	Procurement	☐
	MILCON	☐
	Acq O&M	☐
O&S Cost		☐
Unit Cost	PAUC	☐
	APUC	☐

Nunn-McCurdy Breaches		
Current UCR Baseline		
	PAUC	None
	APUC	None
Original UCR Baseline		
	PAUC	None
	APUC	None

Schedule



Schedule Events					
Events	SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Current Estimate	
DOE Phase 6.3 Milestone Decision (Program Initiation)	Aug 2013	Aug 2013	Aug 2013	Aug 2013	
Component Conceptual Design Review	Oct 2014	Oct 2014	Apr 2015	Oct 2014	
Baseline Design Review	Mar 2017	Mar 2017	Sep 2017	May 2017	
Prototype Design Review	Feb 2018	Feb 2018	Aug 2018	May 2018	(Ch-1)
DOE Phase 6.4 Milestone Decision (Production Engineering)	Jan 2019	Jan 2019	Jan 2020	Jan 2019	
Final Design Review	Dec 2019	Dec 2019	Jun 2020	Dec 2019	
Production Readiness Review	Feb 2022	Feb 2022	Aug 2022	Feb 2022	
DOE Phase 6.5 Milestone Decision (First Production)	Sep 2022	Sep 2022	Sep 2023	Sep 2022	
DOE Phase 6.6 Milestone Decision (Full Scale Production)	Apr 2023	Apr 2023	Apr 2024	Apr 2023	
RAA	Jul 2023	Jul 2023	Jul 2024	Jul 2023	

Change Explanations

(Ch-1) Prototype Design Review (PDR) current estimate changed from February 2018 to May 2018 to align with the Preliminary DoD Independent Review. This is to accommodate and ensure key stakeholders and panel members attendance. PDR remains within threshold, no impact to program.

Notes

1/ The USD(AT&L), as the Chairman of the Nuclear Weapons Council, authorized entry into Phase 6.3 Development Engineering in a memo dated August 18, 2013, titled "Air Force Intercontinental Ballistic Missile Fuze Program Phase 6.3 Development Engineering Authorization." For the purpose of acquisition oversight and the APB, the Phase 6.3 milestone is roughly equivalent to Milestone B. During Phase 6.3, the program is executing a LOPB strategy as authorized in the FY 2015 National Defense Authorization Act to maintain commonality with the Navy's Mk5 Alteration 370 program. The production funding supporting LOPB is only being utilized to procure materials and sub-parts to reduce nuclear qualification costs during Phase 6.3.

2/ Phase 6.4, "Production Engineering," does not have an equivalent milestone under DoDI 5000.02. The purpose of Phase 6.4 is to adapt the development design into a design suitable for quantity production. At this point, the provisioning of spares also occurs in conjunction with the DoD. At Phase 6.4, the program will seek authorization from the MDA to execute production funding to build components and fuzes supporting test. Two LRIP lots will be ordered in FY 2020 and FY 2021. The LRIP lots will produce a total of 26 units. An LRIP quantity ADM is in coordination for approval. In addition, the program will brief the Nuclear Weapons Council on plans to enter Phase 6.4. Between Phase 6.4 and Phase 6.5 "First Production" the program will execute production funding to support build-up, production process prove-in, and nuclear certification of the ICBM Fuze.

3/ Milestones with threshold dates of 12 months beyond the objective dates reflect the nominal time to recover from an ICBM flight test failure.

4/ RAA is being used as a surrogate for IOC. RAA is defined as 10 Mk21 fuzes available for deployment with the technical data, test equipment, and technical training materials required to support wing operations.

Acronyms and Abbreviations

DOE - Department of Energy
LOPB - Life of Program Buy
PDR - Prototype Design Review
RAA - Required Assets Available

Performance

Performance Characteristics				
SAR Baseline Development Estimate	**Current APB Development Objective/Threshold**		**Demonstrated Performance**	**Current Estimate**
System Qualification Attribute 4: Fuze Replacement Design Life				
30-year service life upon DoD custody.	30-year service life upon DoD custody.	20-year service life upon DoD custody.	TBD	30-year service life upon DoD custody.

Classified Performance information is provided in the classified annex to this submission.

Requirements Reference

AFGSC ICBM Fuze Program Requirements Traceability Memorandum dated December 12, 2013

Change Explanations

None

Notes

The ICBM Fuze Modernization Program is a form, fit, and functional equivalent replacement for the existing Legacy Mk21 AFA. AFGSC published the ICBM Fuze Modernization Program Requirements Traceability Memorandum documenting the requirements that must be met by the replacement fuze. In order to meet MDAP statutory requirements, the program briefed the JROC resulting in the JROC Memorandum providing "Validation of Operational Requirements for the Intercontinental Ballistic Missile Fuze Modernization Program" dated December 6, 2016.

Acronyms and Abbreviations

AFA - Arming and Fuzing Assembly
AFGSC - Air Force Global Strike Command

Track to Budget

RDT&E

Appn	BA	PE		
Air Force	3600	05	0604222F	
	Project		**Name**	
	654236		Engineering Analysis	(Sunk)
Air Force	3600	05	0604851F	
	Project		**Name**	
	657006		ICBM EMD: Fuze Support	(Sunk)
Air Force	3600	05	0604933F	
	Project		**Name**	
	655082		ICBM Fuze Modernization	

Notes

In FY 2011, program efforts began in PE 0604222F and are represented in the Joint Fuze major thrust of project 654236. In FY 2012, program efforts were assigned the unique project number 657006 and were transferred to PE 0604851F. In FY 2013, program efforts were assigned the unique project number 655082 and were transferred to the unique PE 0604933F. Funding remains in PE 0604933F throughout the remainder of the life of the RDT&E efforts.

Procurement

Appn	BA	PE		
Air Force	3020	03	0101213F	
	Line Item		**Name**	
	M30FLH		MM III Modifications	(Sunk)
Air Force	3020	03	0101328F	
	Line Item		**Name**	
	M30FLH		ICBM Fuze Mod	
Air Force	3020	03	0101213F	
	Line Item		**Name**	
	M30MLG		MM III Modifications	(Shared)
	Notes:		The ICBM Fuze Mod has an individual modification number of 5915 / ICBM Fuze Modernization (Service Life Extension).	

Notes

FY 2015 and FY 2016, program efforts are in PE 0101213F and are represented in the Minuteman III Modifications line item 5915 ICBM Fuze Modernization. FY 2017 and FY 2018 production documents reflect PE 0604933 but the funds remain in PE 0101213F. FY 2019 procurement funding is reflected in PE 0101328F.

Cost and Funding

Cost Summary

Total Acquisition Cost							
Appropriation	BY 2014 $M			BY 2014 $M	TY $M		
	SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Current Estimate	SAR Baseline Development Estimate	Current APB Development Objective	Current Estimate
RDT&E	1151.3	1151.3	1266.4	1183.0	1246.1	1246.1	1263.0
Procurement	663.5	663.5	729.9	673.0	829.6	829.6	825.4
Flyaway	--	--	--	673.0	--	--	825.4
Recurring	--	--	--	673.0	--	--	825.4
Non Recurring	--	--	--	0.0	--	--	0.0
Support	--	--	--	0.0	--	--	0.0
Other Support	--	--	--	0.0	--	--	0.0
Initial Spares	--	--	--	0.0	--	--	0.0
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	1814.8	1814.8	N/A	1856.0	2075.7	2075.7	2088.4

Current APB Cost Estimate Reference

Service Cost Position dated June 12, 2014

Cost Notes

In accordance with Section 842 of the National Defense Authorization Act for FY 2017, which amended title 10 U.S.C. § 2334, the Director of Cost Assessment and Program Evaluation, and the Secretary of the military department concerned or the head of the Defense Agency concerned, must issue guidance requiring a discussion of risk, the potential impacts of risk on program costs, and approaches to mitigate risk in cost estimates for MDAPs and major subprograms. The information required by the guidance is to be reported in each SAR. This guidance is not yet available; therefore, the information on cost risk is not contained in this SAR.

Total Quantity			
Quantity	SAR Baseline Development Estimate	Current APB Development	Current Estimate
RDT&E	88	88	88
Procurement	693	693	693
Total	781	781	781

Quantity Notes

The funded quantity of 781 includes all of the units necessary for development, qualification, certification, operational fielding, aging/surveillance, and replenishment spares.

Cost and Funding

Funding Summary

Appropriation Summary									
FY 2019 President's Budget / December 2017 SAR (TY$ M)									
Appropriation	Prior	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	To Complete	Total
RDT&E	555.0	179.0	172.9	161.2	132.9	60.0	2.0	0.0	1263.0
Procurement	35.5	6.3	19.8	19.5	45.7	104.7	119.3	474.6	825.4
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2019 Total	590.5	185.3	192.7	180.7	178.6	164.7	121.3	474.6	2088.4
PB 2018 Total	617.1	185.3	177.9	169.9	157.7	108.3	112.6	524.8	2053.6
Delta	-26.6	0.0	14.8	10.8	20.9	56.4	8.7	-50.2	34.8

Funding Notes

The ICBM Fuze Mod program is being executed via a "Work for Others" agreement with the National Nuclear Security Administration and is 100% funded by the Air Force. There are no Department of Energy funds being used to support the design and production of the ICBM Fuze Mod program.

Quantity Summary										
FY 2019 President's Budget / December 2017 SAR (TY$ M)										
Quantity	Undistributed	Prior	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	To Complete	Total
Development	88	0	0	0	0	0	0	0	0	88
Production	0	0	0	0	6	20	80	106	481	693
PB 2019 Total	88	0	0	0	6	20	80	106	481	781
PB 2018 Total	88	0	0	0	6	20	80	106	481	781
Delta	0	0	0	0	0	0	0	0	0	0

Cost and Funding

Annual Funding By Appropriation

Annual Funding 3600 | RDT&E | Research, Development, Test, and Evaluation, Air Force							
Fiscal Year	Quantity	TY $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2011	--	--	--	--	--	--	9.7
2012	--	--	--	--	--	--	39.7
2013	--	--	--	--	--	--	65.4
2014	--	--	--	--	--	--	82.4
2015	--	--	--	--	--	--	57.9
2016	--	--	--	--	--	--	136.7
2017	--	--	--	--	--	--	163.2
2018	--	--	--	--	--	--	179.0
2019	--	--	--	--	--	--	172.9
2020	--	--	--	--	--	--	161.2
2021	--	--	--	--	--	--	132.9
2022	--	--	--	--	--	--	60.0
2023	--	--	--	--	--	--	2.0
Subtotal	88	--	--	--	--	--	1263.0

Annual Funding 3600 | RDT&E | Research, Development, Test, and Evaluation, Air Force							
Fiscal Year	Quantity	BY 2014 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2011	--	--	--	--	--	--	10.1
2012	--	--	--	--	--	--	40.5
2013	--	--	--	--	--	--	65.6
2014	--	--	--	--	--	--	81.6
2015	--	--	--	--	--	--	56.8
2016	--	--	--	--	--	--	132.1
2017	--	--	--	--	--	--	154.9
2018	--	--	--	--	--	--	167.1
2019	--	--	--	--	--	--	158.5
2020	--	--	--	--	--	--	145.0
2021	--	--	--	--	--	--	117.2
2022	--	--	--	--	--	--	51.9
2023	--	--	--	--	--	--	1.7
Subtotal	88	--	--	--	--	--	1183.0

Annual Funding 3020 | Procurement | Missile Procurement, Air Force							
Fiscal Year	Quantity	TY $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2015	--	--	4.7	--	4.7	--	4.7
2016	--	--	13.7	--	13.7	--	13.7
2017	--	--	17.1	--	17.1	--	17.1
2018	--	--	6.3	--	6.3	--	6.3
2019	--	10.0	9.8	--	19.8	--	19.8
2020	6	16.6	2.9	--	19.5	--	19.5
2021	20	39.5	6.2	--	45.7	--	45.7
2022	80	90.2	14.5	--	104.7	--	104.7
2023	106	99.0	20.3	--	119.3	--	119.3
2024	118	96.3	24.2	--	120.5	--	120.5
2025	121	96.5	26.5	--	123.0	--	123.0
2026	121	76.8	30.4	--	107.2	--	107.2
2027	121	54.5	31.9	--	86.4	--	86.4
2028	--	--	16.8	--	16.8	--	16.8
2029	--	--	15.3	--	15.3	--	15.3
2030	--	--	5.4	--	5.4	--	5.4
Subtotal	693	579.4	246.0	--	825.4	--	825.4

Annual Funding 3020 | Procurement | Missile Procurement, Air Force							
Fiscal Year	Quantity	BY 2014 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2015	--	--	4.5	--	4.5	--	4.5
2016	--	--	13.0	--	13.0	--	13.0
2017	--	--	15.9	--	15.9	--	15.9
2018	--	--	5.7	--	5.7	--	5.7
2019	--	9.0	8.7	--	17.7	--	17.7
2020	6	14.6	2.5	--	17.1	--	17.1
2021	20	34.0	5.3	--	39.3	--	39.3
2022	80	76.1	12.2	--	88.3	--	88.3
2023	106	81.9	16.8	--	98.7	--	98.7
2024	118	78.1	19.6	--	97.7	--	97.7
2025	121	76.7	21.1	--	97.8	--	97.8
2026	121	59.9	23.7	--	83.6	--	83.6
2027	121	41.7	24.3	--	66.0	--	66.0
2028	--	--	12.6	--	12.6	--	12.6
2029	--	--	11.2	--	11.2	--	11.2
2030	--	--	3.9	--	3.9	--	3.9
Subtotal	693	472.0	201.0	--	673.0	--	673.0

Cost Quantity Information 3020 | Procurement | Missile Procurement, Air Force		
Fiscal Year	**Quantity**	**End Item Recurring Flyaway (Aligned With Quantity) BY 2014 $M**
2015	--	--
2016	--	--
2017	--	--
2018	--	--
2019	--	--
2020	6	23.3
2021	20	35.7
2022	80	76.4
2023	106	82.2
2024	118	77.7
2025	121	76.1
2026	121	59.3
2027	121	41.3
2028	--	--
2029	--	--
2030	--	--
Subtotal	693	472.0

Low Rate Initial Production

Two LRIP lots will be ordered in FY 2020 and FY 2021. The LRIP lots will produce a total of 26 units. An LRIP quantity ADM is in coordination for approval.

Foreign Military Sales

None

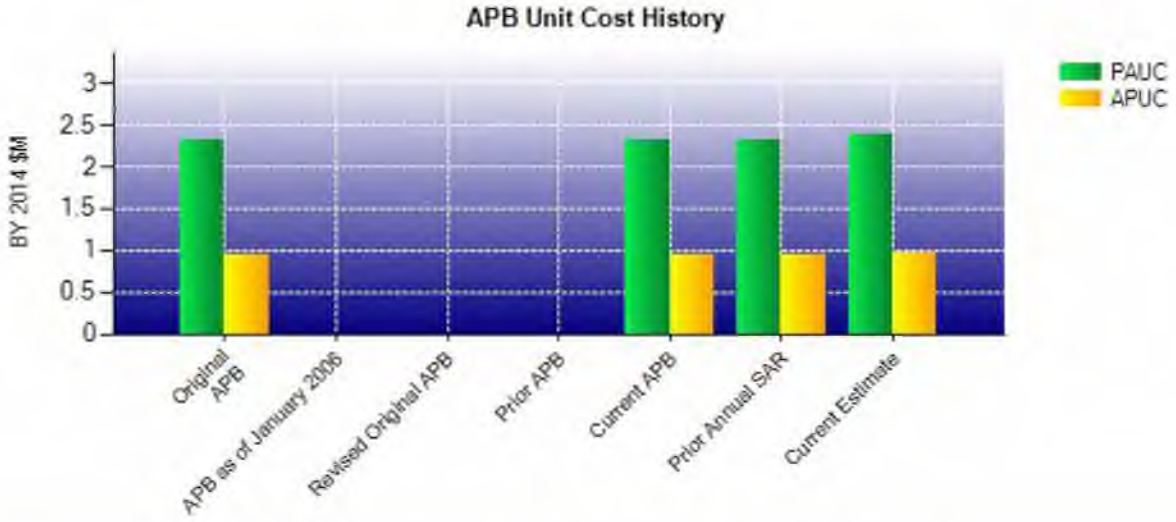
Nuclear Costs

None

Unit Cost

Current UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2014 $M Current UCR Baseline (Sep 2014 APB)	BY 2014 $M Current Estimate (Dec 2017 SAR)	% Change
Program Acquisition Unit Cost			
Cost	1814.8	1856.0	
Quantity	781	781	
Unit Cost	2.324	2.376	+2.24
Average Procurement Unit Cost			
Cost	663.5	673.0	
Quantity	693	693	
Unit Cost	0.957	0.971	+1.46

Original UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2014 $M Original UCR Baseline (Sep 2014 APB)	BY 2014 $M Current Estimate (Dec 2017 SAR)	% Change
Program Acquisition Unit Cost			
Cost	1814.8	1856.0	
Quantity	781	781	
Unit Cost	2.324	2.376	+2.24
Average Procurement Unit Cost			
Cost	663.5	673.0	
Quantity	693	693	
Unit Cost	0.957	0.971	+1.46



APB Unit Cost History					
Item	Date	BY 2014 $M		TY $M	
		PAUC	APUC	PAUC	APUC
Original APB	Sep 2014	2.324	0.957	2.658	1.197
APB as of January 2006	N/A	N/A	N/A	N/A	N/A
Revised Original APB	N/A	N/A	N/A	N/A	N/A
Prior APB	N/A	N/A	N/A	N/A	N/A
Current APB	Sep 2014	2.324	0.957	2.658	1.197
Prior Annual SAR	Dec 2016	2.322	0.957	2.629	1.189
Current Estimate	Dec 2017	2.376	0.971	2.674	1.191

SAR Unit Cost History

Current SAR Baseline to Current Estimate (TY $M)									
PAUC Development Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
2.658	-0.044	0.000	0.000	0.000	0.060	0.000	0.000	0.016	2.674

Current SAR Baseline to Current Estimate (TY $M)									
Initial APUC Development Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1.197	-0.018	0.000	0.000	0.000	0.012	0.000	0.000	-0.006	1.191

SAR Baseline History				
Item	SAR Planning Estimate	SAR Development Estimate	SAR Production Estimate	Current Estimate
Milestone A	N/A	N/A	N/A	N/A
Milestone B	N/A	Aug 2013	N/A	Aug 2013
Milestone C	N/A	Sep 2022	N/A	Sep 2022
IOC	N/A	Jul 2023	N/A	Jul 2023
Total Cost (TY $M)	N/A	2075.7	N/A	2088.4
Total Quantity	N/A	781	N/A	781
PAUC	N/A	2.658	N/A	2.674

September 2022 is correct date for Milestone C. In the 2015 SAR, Milestone C was reported incorrectly on SAR Baseline History Schedule.

Cost Variance

Summary TY $M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Development Estimate)	1246.1	829.6	--	2075.7
Previous Changes				
Economic	-16.0	-5.7	--	-21.7
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	-0.4	--	--	-0.4
Other	--	--	--	--
Support	--	--	--	--
Subtotal	-16.4	-5.7	--	-22.1
Current Changes				
Economic	-5.8	-7.0	--	-12.8
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	+39.1	+8.5	--	+47.6
Other	--	--	--	--
Support	--	--	--	--
Subtotal	+33.3	+1.5	--	+34.8
Total Changes	+16.9	-4.2	--	+12.7
CE - Cost Variance	1263.0	825.4	--	2088.4
CE - Cost & Funding	1263.0	825.4	--	2088.4

Summary BY 2014 $M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Development Estimate)	1151.3	663.5	--	1814.8
Previous Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	-0.8	-0.6	--	-1.4
Other	--	--	--	--
Support	--	--	--	--
Subtotal	-0.8	-0.6	--	-1.4
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	+32.5	+10.1	--	+42.6
Other	--	--	--	--
Support	--	--	--	--
Subtotal	+32.5	+10.1	--	+42.6
Total Changes	+31.7	+9.5	--	+41.2
CE - Cost Variance	1183.0	673.0	--	1856.0
CE - Cost & Funding	1183.0	673.0	--	1856.0

Previous Estimate: December 2016

RDT&E	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-5.8
Revised estimate for Small Business Innovative Research. (Estimating)	-6.3	-6.6
Revised estimate due to realized flight test hardware efficiencies. (Estimating)	-19.0	-20.0
Revised estimate due to the incorporation of realized risk identified in the Non-Advocate Cost Assessment (NACA). (Estimating)	+52.4	+59.9
Adjustment for current and prior escalation. (Estimating)	+1.9	+2.0
Revised estimate to reflect application of new out year escalation indices. (Estimating)	+3.5	+3.8
RDT&E Subtotal	+32.5	+33.3

Procurement	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-7.0
Revised estimate for Advanced Procurement. (Estimating)	+38.9	+45.3
Revised estimate due to recoloring of funds for realized risk identified in the Non-Advocate Cost Assessment (NACA). (Estimating)	-34.5	-43.8
Adjustment for current and prior escalation. (Estimating)	+0.2	+0.2
Revised estimate to reflect application of new out year escalation indices. (Estimating)	+5.5	+6.8
Procurement Subtotal	+10.1	+1.5

Contracts

Contract Identification

Appropriation: RDT&E
Contract Name: ICBM Fuze Weapons System Integration (WSIC)
Contractor: Lockheed Martin Corporation
Contractor Location: 230 Mall Blvd
King of Prussia, PA 19406-2902
Contract Number: FA8214-14-D-0002/3
Contract Type: Cost Plus Fixed Fee (CPFF), Cost (CR)
Award Date: January 29, 2015
Definitization Date: January 29, 2015

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
96.2	N/A	0	101.5	N/A	0	97.5	97.7

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to addition of testing and material on the Aeroshell effort.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/24/2017)	+0.8	0.0
Previous Cumulative Variances	+0.2	0.0
Net Change	+0.6	+0.0

Cost and Schedule Variance Explanations

The favorable net change in the cost variance is due to efficiencies and less complexity in estimated testing for the Aeroshell. Positive cost performance can also be attributed to the need for less engineering support to complete test plan preparation, specifically tied to the trajectory work for Flight test 1.

Notes

The WSIC contract is in Option Year 3; the award date reflected is the base year award date. The contract cost and schedule variances only reflect the Option Year 2 status. The WSIC contract contains a trade studies CLIN; it is funded by multiple programs.

Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	25	25	88	28.41%
Production	0	0	693	0.00%
Total Program Quantity Delivered	25	25	781	3.20%

Expended and Appropriated (TY $M)			
Total Acquisition Cost	2088.4	Years Appropriated	8
Expended to Date	549.5	Percent Years Appropriated	40.00%
Percent Expended	26.31%	Appropriated to Date	775.8
Total Funding Years	20	Percent Appropriated	37.15%

The above data is current as of February 12, 2018.

The funded quantity of 781 includes all of the units necessary for development, qualification, certification, operational fielding, aging/surveillance, and replenishment spares.

Operating and Support Cost

Cost Estimate Details

Date of Estimate:	June 12, 2014
Source of Estimate:	SCP
Quantity to Sustain:	450
Unit of Measure:	Missile
Service Life per Unit:	30.00 Years
Fiscal Years in Service:	FY 2027 - FY 2060

ICBM Fuze Mod O&S costs are the additive costs for sustaining the Mk21 replacement fuze being delivered by this program. O&S costs for the Mk21 replacement fuze, and current Mk12A and Mk21 fuzes, will be collected as part of the overall Minuteman III weapon system. The funded quantity of 781 includes all of the units necessary for development, qualification, certification, operational fielding, surveillance, and replenishment spares. The sustainment strategy is built around sustaining the 450 operational missiles, not the total quantity of fuzes.

Sustainment Strategy

Throughout the O&S phase, National Security Campus (formerly Kansas City Plant) will provide aging/surveillance and depot level testing and support for the new fuze; Sandia National Laboratories will provide systems engineering, sustainment engineering support, and surveillance engineering support from both California and New Mexico.

It is anticipated that there will be annual shipments of Mk21 replacement fuzes from the three wings to the new National Security Campus depot each year for aging/surveillance, reliability testing and depot repair. As items are received at the depot from the wings, replenishment spares will be shipped to the wings from the depot on an annual basis.

The National Nuclear Security Administration will provide management and oversight support to the Intercontinental Ballistic Missile Systems Directorate for the Mk21 replacement fuzes throughout their 30-year life cycle.

Antecedent Information

No Antecedent

Annual O&S Costs BY2014 $K		
Cost Element	**ICBM Fuze Mod Average Annual Cost Per Missile**	**None (Antecedent) None**
Unit-Level Manpower	0.000	--
Unit Operations	0.000	--
Maintenance	6.873	--
Sustaining Support	11.994	--
Continuing System Improvements	0.000	--
Indirect Support	0.000	--
Other	0.000	--
Total	18.867	--

The fuze is a relatively small component within the framework of the much larger Minuteman III weapon system. Therefore, it is not expected that there will be any change to unit level manpower, continuing system improvements, or indirect support at the wings or depot.

Item	Total O&S Cost $M			
	ICBM Fuze Mod			None (Antecedent)
	Current Development APB Objective/Threshold		Current Estimate	
Base Year	259.0	285.0	254.7	N/A
Then Year	466.0	N/A	456.0	0.0

Disposal Cost is included in the Operating and Support Cost of the current APB objective and threshold for this program.

Equation to Translate Annual Cost to Total Cost

Average Annual Missile O&S Cost = Total O&S cost / number of missiles / service life of fuze
$18.9K = $254.7M / 450 / 30

O&S Cost Variance		
Category	**BY 2014 $M**	**Change Explanations**
Prior SAR Total O&S Estimates - Dec 2016 SAR	254.7	
Programmatic/Planning Factors	0.0	
Cost Estimating Methodology	0.0	
Cost Data Update	0.0	
Labor Rate	0.0	
Energy Rate	0.0	
Technical Input	0.0	
Other	0.0	
Total Changes	0.0	
Current Estimate	254.7	

Disposal Estimate Details

Date of Estimate: June 12, 2014

Source of Estimate: SCP

Disposal/Demilitarization Total Cost (BY 2014 $M): Total costs for disposal of all Missile are 4.3

Demilitarization and disposal will be a coordinated effort between the Air Force and the National Nuclear Security Administration Complex. Older fuzes that are no longer fielded will remain in storage in the Nuclear Materials storage facility located at Hill Air Force Base (AFB), Utah, until demilitarization begins in FY 2056.

Beginning in FY 2056, the Air Force will begin receiving shipments of aged-out fuzes for demilitarization and disposal. It is expected that quarterly shipments from each wing will be sent to the Nuclear Materials storage area at Hill AFB in preparation for demilitarization and disposal.

Demilitarization engineering support will be provided by a support contractor to coordinate removal of precious and environmentally sensitive material from the Mk21 replacement fuzes prior to disposal.

An environmentally protective container will be used to house the demilitarized fuzes for the disposal process. Each container is estimated to hold approximately 66 fuzes.

Fuzes ready for disposal will be transferred from the National Security Campus to the approved disposal site. The projected disposal process will consist of deep earth burial on the Utah Test and Training Range in demilitarized containers.