

UNCLASSIFIED



CLEARED
For Open Publication

Sep 18, 2024

Department of Defense
OFFICE OF PREPUBLICATION AND SECURITY REVIEW

Modernized Selected Acquisition Report (MSAR)

Mk21A Reentry Vehicle (Mk21A RV)

FY 2025 President's Budget

Effective: December 31, 2023

Defense Acquisition Visibility Environment

UNCLASSIFIED

Table of Contents

Common DoD Abbreviations	3
Program Description	5
Responsible Office	6
Executive Summary	7
Schedule	9
Performance	11
Acquisition Budget Estimate	12
Unit Costs	14
Life-Cycle Costs	16
Technologies and Systems Engineering	18
Performing Activities and Contracts	19
Production	21
Deliveries and Expenditures	22
International Program Aspects	23

(U) Common DoD Abbreviations

\$B	Billions of Dollars
\$K	Thousands of Dollars
\$M	Millions of Dollars
ACAT	Acquisition Category
Acq O&M	Acquisition-Related Operations and Maintenance
ADM	Acquisition Decision Memorandum
APA	Additional Performance Attribute
APB	Acquisition Program Baseline
APPN	Appropriation
APUC	Average Procurement Unit Cost
BA	Budget Authority or Budget Activity
Blk	Block
BY	Base Year
CAE	Component Acquisition Executive
CAPE	Cost Assessment and Program Evaluation
CARD	Cost Analysis Requirements Description
CCE	Component Cost Estimate
CCP	Component Cost Position
CDD	Capability Development Document
CLIN	Contract Line Item Number
CPD	Capability Production Document
CY	Calendar Year or Constant Year
DAB	Defense Acquisition Board
DAE	Defense Acquisition Executive
DAES	Defense Acquisition Executive Summary
DAVE	Defense Acquisition Visibility Environment
DoD	Department of Defense
DSN	Defense Switched Network
EMD	Engineering and Manufacturing Development
EVM	Earned Value Management
FD	Full Deployment
FDD	Full-Deployment Decision
FMS	Foreign Military Sales
FOC	Full Operational Capability
FRP	Full-Rate Production
FY	Fiscal Year
FYDP	Future Years Defense Program
ICD	Initial Capabilities Document
ICE	Independent Cost Estimate
Inc	Increment
IOC	Initial Operational Capability
IT	Information Technology
JROC	Joint Requirements Oversight Council
KPP	Key Performance Parameter
KSA	Key System Attribute

LRIP	Low-Rate Initial Production
MDA	Milestone Decision Authority
MDAP	Major Defense Acquisition Program
MILCON	Military Construction
N/A	Not Applicable
O	Objective
O&M	Operations and Maintenance
O&S	Operating and Support
ORD	Operational Requirements Document
OSD	Office of the Secretary of Defense
PAUC	Program Acquisition Unit Cost
PB	President's Budget
PE	Program Element
PEO	Program Executive Officer
PM	Program Manager
POE	Program Office Estimate
R&MF	Revolving and Management Funds
RDT&E	Research, Development, Test, and Evaluation
SAR	Selected Acquisition Report
SCP	Service Cost Position
T	Threshold
TBD	To Be Determined
TY	Then Year
U.S.	United States
U.S.C	United States Code
UCR	Unit Cost Reporting
USD(A&S)	Under Secretary of Defense (Acquisition and Sustainment)

(U) Program Description

Full Name Mk21A Reentry Vehicle	Short Name Mk21A RV
PNO 576	Milestone Decision Authority Component Acquisition Executive
Lead Component Department of the Air Force	Program Executive Office Air Force Program Executive Officer/ Intercontinental Ballistic Missiles
Joint Program No	Acquisition Type Major Defense Acquisition Program
Adaptive Acquisition Pathway Major Capability Acquisition	Acquired Systems Mk21A RV
Acquisition Category IB	
Acquisition Status Active Acquisition	

Mission

The Mk21A Reentry Vehicle (RV) program will design, develop, produce, and deploy an integrated RV. The Mk21A program will provide needed performance and security enhancements over the Mk21 RV to meet upgraded requirements for interdependent programs while ensuring the time certain delivery of the programs. The Mk21A will also meet the requirements laid out in interdependent weapon system Capability Development Document?s (CDD?s) as directed by Air Force Global Strike Command. The Mk21A RV includes: shape stable nose tip; high impulse transducer; arming and fuzing subsystem (AFS); aeroshell forward section, body section, and rear cover; radio frequency subsystem with antennas; RV spin subsystem; in-flight disconnect cable; and other electrical cables.

During the Engineering and Manufacturing Development (EMD) phase, the Mk21A program will include prime contractor development of a critical RV design, applicable support equipment, data, flight test hardware, infrastructure, and training materials while examining and mitigating weapon system integration risks, nuclear surety, hardness and certification, and system vulnerability assessments. Additionally, the program will develop test assets to ensure the integration and qualification of the Mk21A and interdependent programs.

(U) Responsible Office**Program Executive Officer**

Air Force Program Executive Officer/
Intercontinental Ballistic Missiles
Brig. Gen William S. Rogers
william.rogers.4@us.af.mil (primary)
(937) 713-2493 (commercial)

Program Manager

LGM-35A Sentinel
Col Charles A. Clegg
charles_a.clegg@us.af.mil (primary)
(801) 777-1776 (commercial)

(U) Executive Summary

Program Highlights Since Last Report

This is the initial MSAR submission for the Mk21A Reentry Vehicle (RV) program.

The Program received Milestone B approval from the Milestone Decision Authority in October 2023, and concluded Technology Maturation and Risk Reduction (TMRR) with prime contractor Lockheed Martin on December 2, 2023. In accordance with Department of Defense (DoD) Instruction 5000.85, the Assistant Secretary of the Air Force for Acquisition, Technology, and Logistics directed the Air Force to fully fund the Program to the Service Cost Position in the Acquisition Decision Memorandum. The Program did not fully satisfy the certification requirement to demonstrate the heatshield technology in a relevant environment as required prior to Milestone B approval. In accordance with 10 USC 4252, this Program received a technology waiver. The Mk21A RV uses similar materials and process as currently fielded and the Program expects to have the necessary data following the next flight test in June 2024 to certify the demonstration in 1st Quarter FY 2025. Developmental Test and Evaluations will commence in FY 2027.

The period of performance for the Engineering and Manufacturing Development (EMD) cost-plus-incentive-fee contract with prime contractor Lockheed Martin started on October 30, 2023, and runs through April 2029. Integrated Baseline Review completion and approval is expected End of Month April 2024 and a fully developed Integrated Master Schedule is expected 3rd Quarter FY 2024. As the Program progresses through EMD, the first benchmark of performance is the flight test from Vandenberg Space Force Base in June 2024 on the Minotaur platform. While Mk21A RV is a standalone Program, the schedule depends on other programs and entities for successful integration and capability fielding. Mk21A RV is actively working with those stakeholders to exchange the planning factors required to incorporate into the respective Programs' schedule data.

Mk21A RV utilizes a Modular Open System Architecture (MOSA) in its acquisition approach for all systems and subsystems, within the constraints of nuclear surety and cybersecurity. MOSA allows the Program to replace and compete subcomponents as required to meet Program objectives and enables the Program to leverage industry capabilities to maximize the industrial base to advance the Program.

Defense Cost and Resource Center and Cost and Software Data Reporting (CSDR) Compliance Rating: Green. There are no open CSDR compliance issues; the CSDR plan was approved February 2, 2024.

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

(U) History of Significant Developments Since Program Inception

Date	Description
October 2019	Milestone A ADM approved by MDA October 10, 2019.

Date	Description
October 2019	Mk21A RV successfully awarded a TMRR contract to Lockheed Martin October 22, 2019.
February 2020	Mk21A RV, Lockheed Martin, and stakeholders completed a System Requirements Review February 11, 2020 for the Mk21A RV program enabling initial system design to progress.
March 2020	An Integrated Baseline Review was conducted and successfully completed by Lockheed Martin and the Mk21A RV program March 18, 2020 confirming the program is ready for TMRR execution.
October 2020	System Functional Review completed by the MK21A program and Lockheed Martin October 7, 2020 evaluating functional baseline and ability to meet functional requirements support overall performance requirements.
March 2021	Lockheed Martin and Mk21A RV executed the TMRR Preliminary Design Review (Excluding Fuze) March 23, 2021.
December 2021	Acquisition Strategy Panel review of the detailed acquisition strategy approach was approved December 8, 2021.
May 2022	Development Request for Proposal Release Decision leading to the release to industry on May 24, 2022.
October 2023	The Mk21A RV APB was approved via the Milestone B ADM October 27, 2023.
October 2023	MDA granted Milestone B Approval October 27, 2023 enabling program entry into EMD per Milestone B ADM.
October 2023	Mk21A RV and Lockheed Martin succeeded in successfully awarding the EMD Contract October 27, 2023.

(U) Schedule**(U) Schedule Events**

Events		Development APB (Milestone) 10/27/2023 Objective	Admin Development Chg 1 (Current) 10/28/2023 Objective / Threshold		Current Estimate 12/31/2023	Actual
Milestone B(Start)	MS B	Aug 2023	Aug 2023	Dec 2023	-	-
Milestone B (Complete)	MS B	-	-	-	-	27 Oct 2023
Critical Design Review(Start)	CDR	Jan 2027	Jan 2027	Jan 2028	-	-
Critical Design Review (Complete)	CDR	-	-	-	Jan 2027	-
Arming and Fuzing Subsystem Production approval(Start)	Other	Nov 2029	Nov 2029	Nov 2030	-	-
Arming and Fuzing Subsystem Production approval (Complete)	Other	-	-	-	May 2029	-
Required Assets Available(Start)	Other	Oct 2031	Oct 2031	Oct 2032	-	-
Required Assets Available (Complete)	Other	-	-	-	Apr 2031	-

Notes

The Mk21A RV Program is dependent on the schedules of associated programs. Schedule dates may require updating once those programs have completed their schedules and fully integrated the Mk21A RV Program. Due to the programs acquisition approach, PDR and FRP do not provide an accurate reflection of the programs status. PDR occurred in the Technology Maturation and Risk Reduction phase. FRP does not provide insight into the performance of the program due to the extended LRIP period.

1. Approved timeframe between objective and threshold expanded to one year based on program complexity and dependencies on other programs.CHR(10)2. The Arming and Fuzing Subsystem Production Approval is in lieu of Milestone C.CHR(10)3. The RAA is in lieu of IOC.CHR(10)4. RAA includes a fully capable reentry vehicle, validated technical orders, test sets, & support equipment, type 3C trainers, and contractor first generation training.

Schedule Baseline Deviation Explanation

None

(U) Current Significant Schedule Risks and Risks Identified at Milestones/Decisions

Event	Date	Description
Current	1/3/2024	Risk: Mk21A RV must remain aligned to the development of interdependent programs for interface integration, combined flight test efficiencies, and joint

		<p>developmental objectives to meet program milestones. Delays in establishing technical discussions between the programs to collaborate on design and interface development will result in delayed integration and/or test activities such as flight testing. Focus continues to be applied to ensure the Mk21A RV remains aligned with interdependent programs and can execute to the APB set at Milestone B.</p> <p>Mitigation: Interdependent program schedules are driving the Mk21A RV program to reassess the program of record schedule to align with the current estimates. Anticipate delays to Mk21A RV validation/verification due to the delayed flights. A swing clause has been approved enabling other programs to engage with Lockheed Martin on Mk21A RV design & complete analysis to give interface control document feedback on Mk21A RV interfaces. Efforts help close the integration/analysis gap for Mk21A RV and the programs until full integration decision. Full integration contract continues to be worked within other programs. Based on separate program priorities, earliest full integration is expected 1st Quarter FY 2025.</p>
Current	12/31/2023	<p>Risk: If the Mk21A RV Arming and Fuzing Subsystem (AFS) design does not mature in time to support the Mk21A RV schedule, Then Mk21A RV test schedule will be delayed.</p> <p>Mitigation: Verify and approve Lockheed Martin (Technology Maturation and Risk Reduction) component characterization and compatibility activities. Monitor Lockheed Martin efforts, component characterization, and design progression. Providing feedback and direction as necessary (90% complete). Monitor Lockheed Martin efforts for scheduling and planning of qualification tests (20% complete). Analyze test reports for qualification of AFS components/modules (0% complete). Validate qualification test of full-system Lockheed Martin Fuze (0% complete). Analyze data from Developmental Joint Test Assembly #1 to validate Technology Readiness Level 7 achievement (0% complete).</p>
Current	12/31/2023	<p>Risk: If the Mk21A RV nose-tip supplier does not increase nose-tip production capacity by start of FY2028 to meet production unit quantity requirements, then the Mk21A RV cannot deliver the promised quantities outlined in the production schedule.</p> <p>Mitigation: Establish timeline and milestones for supplier to increase production capacity to meet Mk21A RV requirements. (40% complete). Air Force to work with Navy to provide funding supplier funding to increase production capacity (40% complete). Supplier provides evidence to Mk21A RV that the facility is qualified and capable of meeting production needs or is on track to meet Mk21A RV production needs in a way that doesn't impact Mk21A RV production schedule (0% complete).</p>
Current	12/31/2023	<p>Risk: If the Program Management Office does not receive an Joint Integrated Project Plan from the Lead Program Office, then the program will not have sufficient visibility of interdependent program schedule events to ensure Mk21A RV alignment with interdependent program.</p> <p>Mitigation: Re-establish regular interactions with the Planning and Scheduling Subgroup (0% complete). Determine status/path forward of interdependent program schedule data/information integration (0% complete). Establish ground rules and assumptions for capturing new Joint Integrated Project Plan data (0% complete). Deliver Integrated Master Schedule reports for program execution and integration with interdependent programs. Schedule reports for program execution and integration (0% complete).</p>

(U) Performance

Additional information for this section is provided in the classified annex to this submission.

(U) Performance Attributes

No Data

(U) Requirement Source:

Sponsor(s): United States Air Force

1. Capability Development Document, *Ground Based Strategic Deterrent (GBSD)*

Validated By: Joint Requirements Oversight Council, June 18, 2019

Notes: Ground Based Strategic Deterrent (GBSD) Joint Requirements Oversight Council (JROCM 058-19)

Capability Development Document (CDD) for, approved by General Paul J. Selva, Vice Chairman of the Joint Chiefs of Staff, VJCS,

Notes

None

Performance Deviation Explanation

None

(U) Acquisition Budget Estimate

(U) Total Acquisition Estimates and Quantities

Category (\$M) Base Year: 2023	Development APB (Milestone) 10/27/2023 CY\$ obs Objective	Admin Development Chg 1 (Current) 10/28/2023 CY\$ obs Objective / Threshold		Current Estimate PB 2025 CY\$ obs / TY\$ obs	
RDT&E	3,722.4	3,740.8	4,114.9	3,844.0	4,179.5
Procurement	1,965.7	1,965.7	2,162.3	1,963.4	2,416.2
Total Acquisition	5,688.1	5,706.5	-	5,807.4	6,595.7
Program Acquisition Unit Cost	12.447	12.487	13.736	12.708	14.433
Average Procurement Unit Cost	4.614	4.614	5.075	4.609	5.672
Program End-Item Quantity					
Development	31	31		31	
Procurement	426	426		426	
O&M-Acquired	-	-		0	

Budget Notes

Current estimate incorporates new FY 2025 PB indices.

Quantity Notes

None

Cost Baseline Deviation Explanation

None

(U) Risk and Sensitivity Analysis

Current Procurement Estimate Risks (12/31/2023)	
1	<p>Risk: Mk21A RV must remain aligned to the development of interdependent programs for interface integration, combined flight test efficiencies, and joint developmental objectives to meet program milestones. Delays in establishing technical discussions between the programs to collaborate on design and interface development will result in delayed integration and/or test activities such as flight testing. Focus continues to be applied to ensure the Mk21A RV remains aligned with interdependent programs and can execute to the APB set at Milestone B.</p> <p>Mitigation: Interdependent program schedules are driving the Mk21A RV program to reassess the program of record schedule to align with the current estimates. Anticipate delays to Mk21A RV validation/verification due to the delayed flights. A swing clause has been approved enabling other programs to engage with Lockheed Martin on Mk21A RV design & complete analysis to give interface control document feedback on Mk21A RV interfaces. Efforts help close the integration/analysis gap for Mk21A RV and the programs until full integration decision. Full integration contract continues to be worked within other programs. Based on separate program priorities, earliest full integration is expected 1st Quarter FY 2025.</p>

Current Baseline Risks (10/28/2023)
None
Original Baseline Risks (10/27/2023)
None

(U) Unit Costs

(U) Current Estimate Compared with Current Baseline

Category (CY\$M) Base Year: 2023	Current Baseline 10/28/2023	Current Estimate PB 2025	% Change
Program Acquisition Unit Cost			
Acquisition Cost	5,706.5	5,807.4	
Program Quantity	457	457	
PAUC	12.487	12.708	1.77%
Average Procurement Unit Cost			
Procurement Cost	1,965.7	1,963.4	
Procurement Quantity	426	426	
APUC	4.614	4.609	-0.12%

(U) Current Estimate Compared with Original Baseline

Category (CY\$M) Base Year: 2023	Original Baseline 10/27/2023	Current Estimate PB 2025	% Change
Program Acquisition Unit Cost			
Acquisition Cost	5,688.1	5,807.4	
Program Quantity	457	457	
PAUC	12.447	12.708	2.10%
Average Procurement Unit Cost			
Procurement Cost	1,965.7	1,963.4	
Procurement Quantity	426	426	
APUC	4.614	4.609	-0.12%

(U) Cost Growth Details

Impacts of Schedule Changes on Unit Cost

Not Applicable.

Impacts of Performance Changes on Unit Cost

Not Applicable.

Actions taken or Proposed to Control Future Cost Growth

Not Applicable.

Status of Each Major Contract and Significant Factors Contributing to Cost and Schedule Variance; Projected Effects on Future Program Costs

See Contracts section.

Notes

None

(U) Life-Cycle Costs**(U) Operating and Support and Disposal Cost Estimates Compared with Baseline**

No Data

(U) Current Cost Estimate Sources

None

Operating and Support Baseline Deviation Explanation

None

Cost Notes

The July 2023 Milestone B Component Cost Position developed an O&S cost estimate and disposal estimate for informational purposes only and are not included in this Program's APB. Mk21A RV will be fielded with a separate weapon system, the O&S and disposal costs are incorporated in that system's cost estimate. To avoid duplicate accounting of costs, the Mk21A RV O&S and disposal costs are not included in the Mk21A RV APB.

O&S and Disposal Cost Sources: For Programs with an O&S Cost estimate or Disposal Cost estimate the O&S Cost Source and Disposal Cost Source listed in the MSAR are inaccurate due to a system limitation. See MSAR Supplement for corrected source(s).

(U) Operating and Support Variance with Prior Estimate

No Data

(U) Operating and Support Cost Element Structure Estimates by Acquired System

No Data

(U) Annual Operating and Support Costs per Unit Compared with Antecedent System

No Data

(U) Operating and Support Cost Estimate Assumptions

No Data

Additional O&S Estimate Assumptions

None

Antecedent Estimate Assumptions

None

O&S Annual Cost Calculation Memo

This Program has no identified Antecedent System. The July 2023 Milestone B Component Cost Position developed an O&S cost estimate and disposal estimate for informational purposes only and are not included in this Program's APB.

(U) Technologies and Systems Engineering

(U) Current Significant Technical Risks and Risks Identified at Milestones/Decisions

Event	Date	Description
Current	12/31/2023	Risk: If there is a failure at a sole provider of critical material(s) or process(s) in the RV industrial base, then a schedule slip will be incurred as new providers are selected and qualified. Mitigation: LM is to provide a schedule to the Air Force outlining the second source qualification timeline (50% complete). Air Force to work with the Navy and provide supplier funding to aid location move and equipment procurement (0% complete). Air Force to review status and plans after facility is completed (0% complete). Acceptance to be staggered depending on item produced and process step being qualified (0% complete). Develop a quick turn process to arcjet test materials produced at the new location (0% complete).

(U) Performing Activities and Contracts

(U) External Government Activities

None

(U) Contracts and Efforts

Contract Title	Contract Number / Effort	Contractor	Phase
Mk21A EMD & Early Production and Deployment Contract	FA821924C0001	LOCKHEED MARTIN CORP	Development

(U) Contract and Effort Identification, Price, Quantity and Performance

Contract Number: FA821924C0001 **Order Number:** -

Contract Title: Mk21A EMD & Early Production and Deployment Contract **Strategy:** FAR 15: Negotiated Contracts

CAGE: 79272 - LOCKHEED MARTIN CORP **Contracting Office:** AFNWC/NX - Sentinel Systems Directorate

City, State/Province: KING OF PRUSSIA, PA

Effort Number: - **Supported Phase:** Development

Type: Cost Plus Incentive Fee (Cost Based) **Award Date:** October 27, 2023

Latest Modification Date: - **Definitization Date:** October 30, 2023

Latest Modification No.: 006 **Work Start Date:** October 27, 2023

Technical Data Rights: -

Notes: Design, develop, model, integrate, test, verify, validate, qualify, deliver, and document the Mk21A RV and support equipment in support of the Engineering and Manufacturing Development phase of the program. Contains unpriced options for the Production and Deployment phase of the program.

General Variance Explanation

This data reflects the contractor's second month of reporting on this effort, and the data is still pre-IBR closeout. Therefore, the data is still immature and should not be relied on heavily because variance trends have not been established yet, and the IBR has not been closed out. The current favorable variances shown reflect a disconnect with the contractor's subcontracts. The contractor is in the process of producing BCR with their suppliers, and should be aligned by next month.

Initial Price (TY\$M) Target / Ceiling		Current Price (TY\$M) Target / Ceiling		Estimate at Completion (TY\$M) Contractor / PM		Initial Quantity	Current Quantity	Delivered Quantity
996.2	1,022.3	996.2	1,022.3	996.2	1,006.1	-	-	-

Work Completed (%): 4.33%

Cost Variance (TY\$M): +0.2

Schedule Variance (TY\$M): +2.3

Factors Contributing to Cost Variance and Projected Effects on Program Costs

This data reflects the contractor's second month of reporting on this effort, and the data is still pre-Integrated Baseline Review (IBR) closeout. Therefore, the data is still immature and should not be relied on heavily because variance trends have not been established yet, and the IBR has not been closed out. The current favorable variances shown reflect a disconnect with the contractor's subcontracts. The contractor is in the process of producing Baseline Change Requests (BCR) with their suppliers, and should be aligned by next month.

Factors Contributing to Schedule Variance and Projected Effects on Program Schedule

This data reflects the contractor's second month of reporting on this effort, and the data is still pre-IBR closeout. Therefore, the data is still immature and should not be relied on heavily because variance trends have not been established yet, and the IBR has not been closed out. The current favorable variances shown reflect a disconnect with the contractor's subcontracts. The contractor is in the process of producing BCR with their suppliers, and should be aligned by next month.

(U) Production**(U) Low-Rate Initial Production**

	Original LRIP Determination	Current LRIP Determination
Total LRIP Quantity	290	290
Date	10/27/2023	10/27/2023
Reference	Mk21A Reentry Vehicle Milestone B Acquisition Decision Memorandum	Mk21A Reentry Vehicle Milestone B Acquisition Decision Memorandum
LRIP Period	FY 2027 - 2032	FY 2027 - 2032
Total Procurement Quantity	426	426
LRIP Percentage of Total	68.1%	68.1%

Rationale if LRIP Quantity Exceeds 10% of Total Procurement Quantity (Current Determination)

The program requires advanced procurement and the authority to begin early production in order to meet IOC and FOC requirements. Estimated production for an individual RV is approximately four years; the high LRIP quantity supports the IOC and FOC requirements. The Assistant Secretary of the Air Force for Acquisition, Technology, and Logistics was briefed and approved the acquisition strategy and the greater than 10% LRIP quantities.

LRIP Notes

None

(U) Deliveries and Expenditures

(U) Acquisition Funding

	Total Estimate	Actual to Date	Actual, Percent Complete
Years Appropriated	-	-	-
Appropriations (TY, \$M)	6,595.7	6,595.7	100.0%
Expenditures (TY, \$M)	6,595.7	376.5	5.7%

(U) End Items Delivered

	Total Required	Planned to Date	Actual to Date	Actual, Percent Complete
Development	31			
Procurement	426			
Total	457	-	-	-

Notes

None

(U) International Program Aspects

General Memo

The Nuclear Enterprise, including the Mk21A RV, does not include foreign cooperation or sales.

Exportability and Business Issues

The Nuclear Enterprise, including the Mk21A RV, prohibits all foreign cooperation or sales.

Is design for international exportability planned?	No	Industry/Partner Exportability Cost-Sharing?	No
If not, has the MDA approved an exportability waiver for a U.S.-only design?	Not Applicable		

Program Protection: Technology Security and Foreign Disclosure Issues

The Nuclear Enterprise, including the Mk21A RV, prohibits all foreign cooperation or sales.

(U) Agreements

No International Agreements have been defined for Mk21A RV



UNCLASSIFIED

**Modernized
Selected Acquisition Report
Supplement**

**Mk21A Reentry Vehicle
(Mk21A RV)**

FY 2025 President's Budget
As of: December 31, 2023

UNCLASSIFIED

MSAR Supplement Sections

Program Description

Program Use of the Adaptive Acquisition Framework

Technologies and Systems Engineering

Funding Sources (Acquisition)

Funding Sources (Operating and Support)

Acquisition Estimate and Quantity Summary

Annual Acquisition Estimates by Appropriation Account

Acquired System Annual End-Item Quantities by Appropriation Account

Nuclear Costs

Operational Fielding Plan

O&S Independent Cost Estimate

Annual Operating and Support Estimates by Cost Element

Program Description

Full Name

Mk21A Reentry Vehicle

Short Name

Mk21A RV

PNO

576

Lead Component

Air Force

AAF Pathway

MCA

Acquisition Type

MDAP

Acquired Systems

Mk21A RV

Related Programs

Full Name	PNO	Pathway	Type	ACAT/ BCAT	Acquisition Status	Costs in SAR?	
						Acq	O&S

Program Use of the Adaptive Acquisition Framework

This acquisition is accomplished by a single program in the Major Capability Acquisition Pathway.

Technologies and Systems Engineering

Mk21A Reentry Vehicle

Major Software Efforts

Title	Status	Fielding Date	Description

Major Engineering Changes

Title	Original Need Date	Fielding Date	Description, Rationale and Program Impacts

Funding Sources (Acquisition)

Acquisition Funding Notes

Mk21A Reentry Vehicle

Category	Account	BA	Line Item	Program Element	RDT&E Project	Shared	Sunk
RDT&E	3600F	07	0101328F - ICBM Reentry Vehicles	0101328F	674920 - IW1/Mk21A		
Procurement	3020F	01	MK21A0 -	0101328F	-		
Procurement	3020F	XX	OTHER - Other or New 3020F Line Item	XXX	XXX - --		

Note: Line item 3020F, BA04, BLI 00098A, PE 0101328F. Budget line recently created, not currently available in Supplement database.

Funding Sources (Operating and Support)

Note: Budget lines fund activities executed by the Program Office or Sustainment Office.

Operating and Support Funding Notes

The July 2023 Milestone B Component Cost Position developed an O&S cost estimate and disposal estimate for informational purposes only and are not included in this program's APB. Mk21A RV will be fielded with a separate weapon system, the O&S and disposal costs are incorporated in that system's cost estimate. To avoid duplicate accounting of costs, the Mk21A RV O&S and disposal costs are not included in the Mk21A RV APB.

Mk21A Reentry Vehicle

Category	Account	BA	Line Item	Program Element	RDT&E Project	Shared	Sunk
----------	---------	----	-----------	-----------------	---------------	--------	------

Acquisition Estimate and Quantity Summary

Mk21A Reentry Vehicle

Acquisition Estimates

Category	PB 2025	TY (\$M)	Current Base Year	Original Base Year	Report Fiscal Year
			CY2023 (\$M)	CY2023 (\$M)	CY2024 (\$M)
RDT&E		4,179.5	3,844.0	3,844.0	3,936.1
Procurement		2,416.2	1,963.4	1,963.4	2,010.4
MILCON		-	-	-	-
O&M		-	-	-	-
Total Acquisition		6,595.7	5,807.4	5,807.4	5,946.5
PAUC		14.433	12.708	12.708	13.012
APUC		5.672	4.609	4.609	4.719

Acquisition End-Item Quantities

System	PB 2025	Development	Procurement
Mk21A RV		31	426
Total		31	426

Unit Description

Each Mk21A RV unit includes: shape stable nose tip, high impulse transducer, arming and fuzing subsystem; aeroshell forward section, body section, rear cover, radio frequency subsystem with antennas, RV spin subsystem, in-flight disconnect cable, and other electrical cables required to produce a fully functional RV.

Current and Future Years Defense Program Summary, TY(\$M)

Appropriation	Prior	2024	2025	2026	2027	2028	2029	To Complete	Total
RDT&E	414.4	459.9	613.8	690.3	904.0	610.2	231.0	256.0	4,179.5
Procurement	-	-	26.2	40.9	107.8	150.5	349.4	1,741.3	2,416.2
MILCON	-	-	-	-	-	-	-	-	-
O&M	-	-	-	-	-	-	-	-	-
PB 2025 Total	414.4	459.9	640.0	731.2	1,011.8	760.7	580.4	1,997.4	6,595.7

Annual Acquisition Estimates by Appropriation Account

(Aligned to Budget Position: PB 2025)

Mk21A Reentry Vehicle

Source for TY\$-CY\$ Conversion: SAF/FMCE Raw and Weighted Inflation Indices for DAF Accounts: 23 Feb 2024

3600F - Research, Development, Test & Eval, AF					
fiscal year		Other/ Unallocated	Total TY(\$M)	Weighted Rate	Total CY2023 (\$M)
Total		4,179.5	4,179.5	-	3,844.0
2019		13.728	13.7	0.869327	15.8
2020		63.474	63.5	0.891686	71.2
2021		108.625	108.6	0.933579	116.4
2022		116.263	116.3	0.983662	118.2
2023		112.282	112.3	1.018624	110.2
2024		459.880	459.9	1.044569	440.3
2025		613.806	613.8	1.066986	575.3
2026		690.272	690.3	1.089393	633.6
2027		903.999	904.0	1.112270	812.8
2028		610.194	610.2	1.135628	537.3
2029		230.990	231.0	1.159476	199.2
2030		137.549	137.5	1.183825	116.2
2031		94.956	95.0	1.208686	78.6
2032		23.522	23.5	1.234068	19.1

Annual Acquisition Estimates by Appropriation Account

(Aligned to Budget Position: PB 2025)

Mk21A Reentry Vehicle

Source for TY\$-CY\$ Conversion: SAF/FMCE Raw and Weighted Inflation Indices for DAF Accounts: 23 Feb 2024

3020F - Missile Procurement, Air Force									
fiscal year	End Item Recurring Flyaway	Non-End Item Recurring Flyaway	Non-Recurring Flyaway	Initial Spares	Depot Activation	Other/ Unallocated	Total TY(\$M)	Weighted Rate	Total CY2023 (\$M)
Total	2,170.9	65.0	69.0	111.4	-	-	2,416.2	-	1,963.4
2019							-	0.906522	-
2020							-	0.941751	-
2021							-	0.984252	-
2022							-	1.021218	-
2023							-	1.047565	-
2024							-	1.070970	-
2025	26.156						26.2	1.093616	23.9
2026	40.900						40.9	1.116582	36.6
2027	107.836						107.8	1.140030	94.6
2028	139.954	4.555	4.837	1.198			150.5	1.163971	129.3
2029	315.957	10.283	10.921	12.246			349.4	1.188414	294.0
2030	339.574	11.052	11.737	15.638			378.0	1.213371	311.5
2031	399.306	12.996	13.802	25.568			451.7	1.238852	364.6
2032	372.011	12.107	12.858	29.398		-	426.4	1.264868	337.1
2033	228.782	7.446	7.908	15.027		-	259.2	1.291430	200.7
2034	180.087	5.861	6.225	12.283			204.5	1.318550	155.1
2035	10.067	0.328	0.348				10.7	1.346240	8.0
2036	10.246	0.333	0.354				10.9	1.374511	8.0

Acquired System Annual End-Item Quantities by Appropriation Account

(Aligned to Budget Position: PB 2025)

Mk21A Reentry Vehicle

3600F - Research, Development, Test & Eval, AF				
fiscal year	Mk21A RV			Total
Total	31			31
Undistributed				-
2026	3			3
2027	12			12
2028	16			16

Acquired System Annual End-Item Quantities by Appropriation Account

(Aligned to Budget Position: PB 2025)

Mk21A Reentry Vehicle

3020F - Missile Procurement, Air Force				
fiscal year	Mk21A RV			Total
Total	426			426
Undistributed				-
2026				-
2027				-
2028	4			4
2029	40			40
2030	50			50
2031	80			80
2032	90			90
2033	90			90
2034	72			72

Nuclear Costs

Mk21A Reentry Vehicle

Program's Use of Department of Energy Resources

None

Operational Fielding Plan

Mk21A Reentry Vehicle

Some data for this section cannot be provided in an unclassified report

System: Mk21A RV

Fielding and Inventory Notes

This Program's Operational Fielding plan contains Controlled Unclassified Information (CUI) and has been removed per the Implementation Plan for the DoD's Modernized Selected Acquisition Report Process, dated June 2023, which required the SAR be submitted without any designation relation to dissemination control.

Mk21A RV Fielding Plan and Inventory

fiscal year	Store	Field	Expend/Loss	Decommission	Inventory
2023					
2024					-
2025					-
2026					-
2027					-
2028					-
2029					-

O&S Independent Cost Estimate

Mk21A Reentry Vehicle

Independent and Current Cost Estimate Comparison

Category	CY2023 (\$M)	Independent Cost Estimate	Current Estimate	Variance with ICE (%)
Unit-Level Manpower				-
Unit Operations				-
Maintenance				-
Sustaining Support				-
Continued System Improvements				-
Other				-
Total O&S		-	-	-

Independent Cost Estimate Source

Event:

Type:

Approved by:

Note: The July 2023 Milestone B Component Cost Position developed an O&S cost estimate and disposal estimate for informational purposes only and are not included in this Program's APB. Mk21A RV will be fielded with a separate weapon system, the O&S and disposal costs are incorporated in that system's cost estimate. To avoid duplicate accounting of costs, the Mk21A RV O&S and disposal costs are not included in the Mk21A RV APB.

Current Cost Estimate Source

Type:

Approved by:

Note: The July 2023 Milestone B Component Cost Position developed an O&S cost estimate and disposal estimate for informational purposes only and are not included in this Program's APB. Mk21A RV will be fielded with a separate weapon system, the O&S and disposal costs are incorporated in that system's cost estimate. To avoid duplicate accounting of costs, the Mk21A RV O&S and disposal costs are not included in the Mk21A RV APB.

Cost Estimate Variance Explanation

Annual Operating and Support Estimates by Cost Element

Mk21A Reentry Vehicle

System: Mk21A RV

Source for TY-CY Conversion:

Operating and Support Cost Elements							
fiscal year	1.0 Unit-Level Manpower	2.0 Unit Operations	3.0 Maintenance	4.0 Sustaining Support	5.0 Continuing System Improvements	Other	Total CY2023 (\$M)
Total	-	-	-	-	-	-	-