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ICBM MODERNIZATION

Air Force Actions
Needed to
Expediently Address
Critical Risks to
Sentinel Transition

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GAO-25-108466

September 2025

A report to congressional committees

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What GAO Found

The Air Force has developed planning documents for the transition from Minuteman III to Sentinel but has not developed a risk management plan. The transition was planned to begin in fiscal year 2025, but those plans are on hold while the Department of Defense (DOD) restructures the Sentinel program. The Air Force developed an overarching transition strategy and a site transition plan for F.E. Warren Air Force Base in Wyoming, the first base scheduled to convert to Sentinel. However, the Air Force has not yet developed a transition risk management plan, a leading project planning practice. A detailed risk management plan would help the Air Force establish an organized, methodical way to identify, assess, and respond to the myriad risks, and better position the Air Force for a successful transition from Minuteman III to Sentinel.

While the Air Force has taken some actions to prepare operators, maintainers, and security forces for the transition, the Air Force has not developed a schedule for construction of a Sentinel test facility. The test facility is necessary early in the transition as part of a multistep process to revise policy and instructions that will be needed to prepare security forces for the transition and concurrent operation of Minuteman III and Sentinel.

Air Force Missile Maintainer in a Missile Training Silo in Montana, March 2025



Source: U.S. Air Force/Senior Airman M. Bowers. | GAO-25-108466

DOD is assessing options to meet strategic deterrent requirements during the transition, but delays require prolonged operation of Minuteman III. Air Force officials are assessing options to potentially operate Minuteman III through 2050. However, prolonged operation presents sustainment risks. Addressing these risks in a transition risk management plan would help ensure the intercontinental ballistic missile (ICBM) system meets requirements during the transition.

This is a public version of a classified report that GAO issued in April 2025. This public version omits some information on plans and capabilities, the Sentinel test facility, and strategic deterrent requirements DOD deemed to be sensitive or classified.

Why GAO Did This Study

The U.S. has operated the land-based Minuteman III ICBM system for over 50 years, well past the original intended service life of 10 years. The system includes more than 600 facilities, including 450 missile silos, across five states. The replacement system, Sentinel, faces critical cost overruns and schedule delays. The Air Force must continue to operate and maintain the aging Minuteman III system to meet U.S. strategic deterrent requirements until Sentinel is fully fielded.

A report accompanying a bill for the National Defense Authorization Act for Fiscal Year 2024 includes a provision for GAO to review the Air Force's planning for the transition from Minuteman III to Sentinel ICBM. This report addresses the extent to which the Air Force (1) planned for the transition and concurrent operation of Minuteman III to Sentinel, (2) developed plans to prepare operators, maintainers, and security forces for the transition, and (3) developed plans to meet strategic deterrent requirements during the transition. GAO collected and reviewed relevant documents and interviewed DOD and Air Force officials about transition planning efforts.

What GAO Recommends

GAO is making six recommendations to the Air Force including that the service develop a risk management plan for the transition that addresses Minuteman III sustainment risks and other key transition risks, and establish a schedule for completion of the Sentinel test facility. DOD concurred with all six recommendations.

Contents

Letter		1
	Background	4
	Air Force Has Developed Plans for the Transition but Has Risk Management Gaps	11
	Workforce Planning Is Underway, but Air Force Faces Security Forces Training and Personnel Gaps	18
	DOD and Air Force Are Assessing Options to Meet Deterrent Requirements, but Risks Remain	22
	Conclusions	27
	Recommendations for Executive Action	27
	Agency Comments	29
Appendix I	Comments from the Department of Defense	31
Appendix II	Offices GAO Contacted	33
Appendix III	GAO Contact and Staff Acknowledgments	34
Related GAO Products		35
Table		
	Table 1: Status of Air Force Transition Planning Documents as of April 2025	12
Figures		
	Figure 1: Components of the Minuteman III ICBM System	5
	Figure 2: Locations of Minuteman III Missile Wings and Program Offices	10
	Figure 3: Project Risk Management Tools	16
	Figure 4: Steps to Achieve Necessary Security Forces Training for Transition from Minuteman III to Sentinel	19

Figure 5: Air Force Airmen Performing Maintenance on a
Minuteman III ICBM at a Colorado Launch Facility,
February 2024

23

Abbreviations

AFGSC	Air Force Global Strike Command
DOD	Department of Defense
ICBM	intercontinental ballistic missile
MIRV	Multiple Independently Targetable Reentry Vehicle
New START	New Strategic Arms Reduction Treaty
OIG	Office of Inspector General
PEO	Program Executive Officer
USSTRATCOM	U.S. Strategic Command

Classification Abbreviations

CUI	Controlled Unclassified Information
FRD	Formerly Restricted Data
NOFORN	Not Releasable to Foreign Nationals
S	Secret
U	Unclassified

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September 10, 2025

Congressional Committees

The United States has operated the land-based Minuteman III intercontinental ballistic missile (ICBM) system for over 50 years, well past the original intended service life of 10 years. The system includes more than 600 facilities, including 450 missile silos, across five states. Our prior work has found the replacement system, Sentinel, faces critical cost overruns and significant schedule delays.¹ The Department of Defense (DOD) estimates the Sentinel program will cost more than \$140 billion and be delayed by years. According to the Air Force, the service must continue to operate and maintain the aging Minuteman III system over the next decade and beyond to meet strategic deterrent requirements until Sentinel is fully fielded.²

The commanding general of Air Force Global Strike Command overseeing the transition testified before Congress in April 2023 that the transition “will be one of the major work projects our nation has undertaken probably in the last 50 plus years.”³ Air Force Global Strike Command officials told us that the transition is a very complex project that involves operating two weapon systems simultaneously while executing a massive military movement to convert the old system to the new system. The commander of U.S. Strategic Command (USSTRATCOM) testified before the Senate Armed Services Committee in February 2024 that

¹We are also reviewing the Sentinel acquisition and recently issued a report on the program. GAO, *Nuclear Modernization: Sentinel Program Taking Steps to Restructure After Cost Breach*, GAO-25-107615SU (Washington, D.C.: Apr. 24, 2025). For a complete list of our previous work in this area, see the Related GAO Products page at the end of this report.

²U.S. nuclear forces exist to deter strategic attack, including nuclear employment at any scale. With responsiveness and robust command and control, the ICBM force contributes to deterring a large-scale attack on the United States. Chairman of the Joint Chiefs of Staff (CJCS) Joint Publication (JP) 3-72, *Joint Nuclear Operations* (Sept. 29, 2024).

³*Dept. of Energy’s Atomic Energy Defense Activities and Dept. of Defense Nuclear Weapons Programs in Review of the Defense Authorization Request for Fiscal Year 2024 and the Future Years Defense Program; Hearing Before the Senate Committee on Armed Services, Subcommittee on Strategic Forces*, 118th Cong. (2023) (testimony of General Bussiere, Air Force Global Strike Command).

“Sentinel constitutes an incredibly complex megaproject to replace every facet of the Minuteman III weapon system.”⁴

Senate Report 118-58, accompanying a bill for the National Defense Authorization Act for Fiscal Year 2024, included a provision for us to review the Air Force’s planning for the transition from Minuteman III to Sentinel.⁵ We reviewed the extent to which the Air Force has (1) planned for the transition and concurrent operation of Minuteman III to Sentinel, (2) developed plans to prepare operators, maintainers, and security forces for the transition, and (3) developed plans to meet strategic deterrent requirements during the transition.

This report is a public version of a classified report that we issued on April 30, 2025.⁶ DOD deemed some information on plans and capabilities, the Sentinel test facility, and strategic deterrent requirements to be sensitive or classified. As a result, this public report omits information that DOD identified as sensitive or classified. Although the information provided in this report is more limited, the report addresses the same objectives as the classified report and uses the same methodology.

For objectives one and two, we collected and analyzed relevant Air Force transition planning documents, including the Sentinel Transition and Deployment Strategy Phase II (Phase II), as well as programming plans.⁷ We interviewed cognizant officials to understand the extent of the Air Force’s planning for the transition. We interviewed officials at Headquarters Air Force, Air Force Global Strike Command, and at the Air Force Nuclear Weapons Center.⁸ We also visited F. E. Warren Air Force

⁴U.S. Strategic Command and U.S. Space Command in Review of the Defense Authorization Request for Fiscal Year 2025 and the Future Years Defense Program; Hearing Before the Senate Armed Services Committee, 118th Cong. (2024) (statement of Anthony J. Cotton, Commander, U.S. Strategic Command). A very large project may be referred to as a megaproject. As a guideline, megaprojects cost \$1 billion or more, affect 1 million or more people, and run for years.

⁵S. Rep. No. 118-58, at 291 (2023).

⁶GAO, *ICBM Modernization: Air Force Actions Needed to Expediently Address Critical Risks to Sentinel Transition*, GAO-25-107048C (Washington, D.C.: Apr. 30, 2025).

⁷Air Force Global Strike Command, *Sentinel Transition and Deployment Strategy Phase II* (June 26, 2023).

⁸In 2025 the Air Force plans to strengthen the support to nuclear forces by expanding the Nuclear Weapons Center to become the Air Force Nuclear Systems Center within Air Force Materiel Command.

Base in Wyoming, the first base to transition to Sentinel, and interviewed 20th Air Force and 90th Missile Wing officials. We compared the Air Force's planning efforts with leading practices contained in *A Guide to the Project Management Body of Knowledge* (PMBOK® Guide) and GAO's *Schedule Assessment Guide: Best Practices for Project Schedules*.⁹ We compared the Air Force's plans to prepare military forces for the transition against GAO's *Key Principles for Effective Strategic Workforce Planning*.¹⁰

For objective three, we met with officials at USSTRATCOM to understand the strategic deterrent requirements for the ICBM force, any risk to meeting these requirements during the transition, and any options they are considering to mitigate potential risk. We met with officials at Air Force Global Strike Command and reviewed the Air Force's plans to meet strategic deterrent requirements during the transition and manage any risks resulting from the delays to Sentinel. We compared the Air Force's plans to meet strategic deterrent requirements during the transition against project risk management leading practices.¹¹ We also determined that the risk assessment component of internal control was relevant to this objective, along with the underlying principle that management should identify, analyze, and respond to risks related to achieving the defined objectives.¹² To understand the risks to meeting strategic deterrent requirements during the transition stemming specifically from Minuteman III sustainment, we met with the Minuteman III Program Office at the Air Force Nuclear Weapons Center.

We also interviewed officials with the DOD Office of Inspector General (OIG) who recently evaluated the Air Force's actions to sustain the

⁹Project Management Institute, Inc., *A Guide to the Project Management Body of Knowledge*, 7th Ed. (Aug. 1, 2021); GAO, *Schedule Assessment Guide: Best Practices for Project Schedules*, [GAO-16-89G](#) (Washington, D.C.: Dec. 22, 2015). PMBOK is a trademark of Project Management Institute, Inc. The Project Management Institute is a not-for-profit association that, among other things, provides standards for managing various aspects of projects, programs, and portfolios.

¹⁰GAO, *Human Capital: Key Principles for Effective Strategic Workforce Planning*, [GAO-04-39](#) (Washington, D.C.: December 2003).

¹¹*PMBOK® Guide*, 7th Ed.

¹²GAO, *Standards for Internal Control in the Federal Government*, [GAO-14-704G](#) (Washington, D.C.: September 2014).

Minuteman III ICBM, and we reviewed the DOD OIG’s final report.¹³ To better understand options DOD may be considering to mitigate risks to meeting strategic deterrent requirements during the transition, we interviewed officials at the offices of the Under Secretary of Defense for Policy; the Under Secretary of Defense for Acquisition and Sustainment; the Under Secretary of Defense for Personnel and Readiness; the Deputy Assistant Secretary of Defense for Nuclear Matters; the Joint Chiefs of Staff; and the Director, Cost Assessment and Program Evaluation. See appendix II for a complete list of offices we met with during our review.

The performance audit upon which this report is based was conducted from September 2023 to April 2025 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. We subsequently worked with DOD from May 2025 to August 2025 to prepare this unclassified version of the original classified report for public release. This public version was also prepared in accordance with these standards.

Background

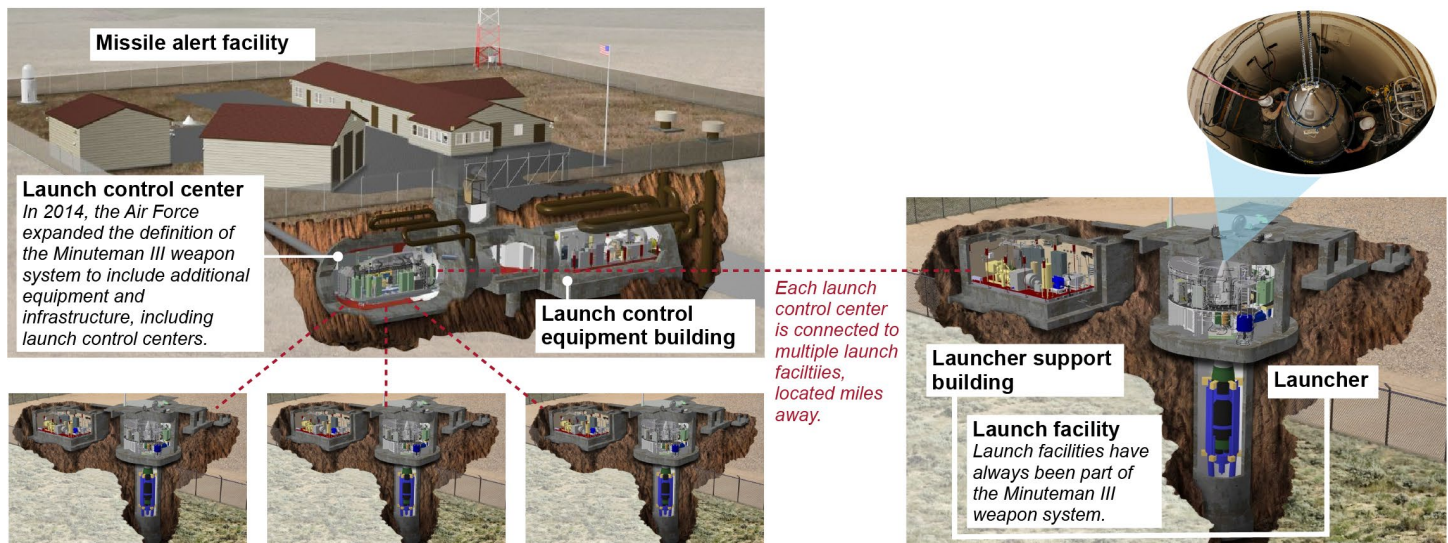
Strategic Nuclear Deterrence Concepts and Key Organizations

The U.S. strategic nuclear deterrent consists of a triad of ICBMs, submarine-launched ballistic missiles, and nuclear-capable bomber aircraft. Minuteman III is a strategic ICBM weapon system that represents the land leg of the nation’s nuclear triad. First deployed in 1970 with a planned service life of 10 years, the Minuteman III weapon system consists of missiles as well as 450 launch facilities and 45 launch control centers. The Air Force extended the Minuteman III service life since its deployment by various service-life extension programs. The weapon system can deliver one to three nuclear warheads at intercontinental ranges.

¹³DOD Inspector General, (U) *Evaluation of the Air Force’s Actions to Sustain the Minuteman III Intercontinental Ballistic Missile*, DODIG-2024-137 (Sept. 18, 2024) (SECRET//NOFORN//FORMERLY RESTRICTED DATA).

Minuteman III missiles are dispersed in hardened silos, known as launch facilities, to protect against attack.¹⁴ They are connected to underground launch control centers through a system of hardened cables. A launch facility is an uncrewed site that houses the missile and all equipment required to maintain the missile in a launch-ready configuration. These underground facilities have been considered part of the Minuteman III weapon system since 2014. Missile alert facilities are crewed compounds that encompass the launch control center, a launch control equipment building, and support buildings. Missile alert facilities are crewed by security personnel, a cook, a facilities manager, and a launch crew. Each launch control center controls 10 hardened launch facilities and is crewed by two officers, also known as a two-person alert team, on 24-hour alert. See figure 1 for components of the Minuteman III weapon system.

Figure 1: Components of the Minuteman III ICBM System



Source: U.S. Air Force (information), U.S. Air Force photo by Airman 1st Class Braydon Williams (photo), and Northrop Grumman (images). | GAO-25-108466

Air Force Global Strike Command, hereafter referred to as Global Strike Command, is responsible for worldwide strategic deterrent operations and is the lead Air Force organization responsible for the transition from Minuteman III to Sentinel ICBM. Global Strike Command is led by a four-star general officer. A provision in the National Defense Authorization Act for Fiscal Year 2023 directed Global Strike Command to

¹⁴Launch control centers and launch facilities are hardened against overpressure; electromagnetic pulse; and chemical, biological, and radiological attack.

establish an office led by a general officer to guide the transition.¹⁵ In 2023, responding to this provision, Global Strike Command established the ICBM Modernization Directorate (A10). Led by a two-star general officer, Global Strike Command A10 is working to fill positions and develop the procedures and processes the office will use to carry out its mission, according to officials.¹⁶ This new directorate is responsible for oversight and coordination of the transition from Minuteman III to Sentinel. This responsibility does not include acquisition authorities, which are retained by the Air Force Nuclear Weapons Center.

Air Force Nuclear Weapons Center is the nuclear-focused center within Air Force Materiel Command synchronizing all aspects of nuclear materiel management on behalf of Air Force Materiel Command and in direct support of Global Strike Command.¹⁷

Deputy Chief of Staff of the Air Force for Strategic Deterrence and Nuclear Integration (Headquarters Air Force A10) serves as the Air Staff lead for nuclear operations policy, strategy, plans, and requirements.¹⁸ This office directs and guides efforts pertaining to all elements of Air Force nuclear-related capabilities that produce strategic deterrence effects, including ICBMs. Headquarters Air Force A10 also coordinates with Office of the Secretary of Defense, Joint Staff, combatant command, military services, and interagency partners on all matters related to the Air Force nuclear mission.

USSTRATCOM is the U.S. combatant command responsible for the strategic deterrence and nuclear operations missions. To execute its nuclear deterrence mission, USSTRATCOM has unique operational planning requirements for ICBMs.

¹⁵James M. Inhofe National Defense Authorization Act for Fiscal Year 2023, Pub. L. No. 117-263, § 1638 (2022).

¹⁶As of August 2024, Global Strike Command A10 identified a need for 107 personnel for the new organization. Global Strike Command A10 has received funding for 100 of these positions and is working to fill them, according to officials.

¹⁷Air Force Materiel Command includes centers responsible for acquisition of existing and future weapon systems and their components.

¹⁸Headquarters Air Force Mission Directive 1-60, *Deputy Chief of Staff of the Air Force Strategic Deterrence and Nuclear Integration* (Dec. 6, 2019).

Sentinel Program Restructuring

In January 2024, the Air Force notified Congress that the Sentinel program breached a statutory unit cost threshold—known as a Nunn-McCurdy breach, which triggered a statutorily required review process.¹⁹ At the time it declared the breach, the Air Force identified cost growth of 37 percent, although current estimates for the program project total cost as much higher. After a critical breach, like the one Air Force declared for Sentinel, DOD must assess the program and make a determination whether to certify the program to continue; a program that is not certified will be terminated.

In July 2024, DOD certified the Sentinel program to continue, but rescinded the Sentinel program's Milestone B approval and directed the Air Force to revalidate all operational requirements.²⁰ DOD also directed the Air Force to restructure the program to address root causes of the critical cost growth and ensure the program has an appropriate management structure. DOD issued a report of these findings to Congress.²¹ Essentially, DOD determined that the root causes of the Sentinel program's cost growth were

- an unrealistic delivery schedule,
- ineffective systems engineering and incomplete basic system design,²² and
- an atrophied ICBM industrial base.

DOD also reported that the Air Force's organizational construct was insufficient for a program of the Sentinel ICBM program's size, cost, and complexity.

¹⁹The Nunn-McCurdy statute, recodified at 10 U.S.C. ch. 325, is a tool for Congress to use to hold DOD accountable for unit cost growth on major defense acquisition programs. The threshold for a critical breach is at least 25 percent above the original baseline. 10 U.S.C. § 4374(c)(1) and § 4371(a)(3)(A).

²⁰Milestone B approval is an approval decision allowing major defense acquisition programs to enter into system development and demonstration, but not production or deployment. 10 U.S.C. § 4252; 10 U.S.C. § 4172. DOD officials said in July 2024 that the process to achieve a Milestone B decision for Sentinel could take 18 months.

²¹DOD, Office of the Under Secretary of Defense for Acquisition and Sustainment, *Root Cause Analysis of the LGM-35A Sentinel Unit Cost Breach* (July 8, 2024).

²²DOD stated that ineffective systems engineering combined with untested assumptions had led to an immature technical baseline. Technical baselines are the formally controlled definitions of the characteristics of a system that enable the underlying design to progress using a common reference.

To increase oversight, in August 2024 the Air Force established the new ICBM Systems Directorate, formerly the ICBM Modernization Directorate, within the Air Force Nuclear Weapons Center, merging both the Sentinel Systems Directorate and the Minuteman III Systems Directorate. The leader of the ICBM Systems Directorate also serves as the Program Executive Officer (PEO) ICBMs.²³ PEO ICBMs is responsible for the life-cycle management, inception to retirement, of the Minuteman III and Sentinel acquisition programs, and coordinates with Global Strike Command A10 to ensure a successful transition from Minuteman III to Sentinel ICBM.²⁴ The Air Force has also proposed upgrading the Commander of the Air Force Nuclear Weapons Center, currently a two-star position, to a three-star general officer.

Minuteman III Age-Out and Attrition

As we reported in 2019, according to Air Force officials, Minuteman III is experiencing challenges related to aging facilities, aging infrastructure, and parts obsolescence.²⁵ Diminishing manufacturing sources, materiel shortages, and obsolescence issues are additional contributing factors because they cause difficulty in maintaining a credible supply chain for Minuteman III parts. The timeline for Sentinel is driven in part by the need to address Minuteman III's anticipated attrition and age-related failure. Prior to the current Sentinel restructuring, the Air Force had planned to sustain Minuteman III through 2030 and gradually draw down the weapon system before its anticipated retirement in 2036.²⁶ The Air Force is developing a new timeline to account for delays to Sentinel.

Concurrent Operation of Minuteman III and Sentinel During the Transition

The Air Force plans to continue operating Minuteman III while also fielding Sentinel. The Air Force will need to coordinate Sentinel deployment activities with Minuteman III operations, depot maintenance, and sustainment activities to ensure that ICBM operations are not

²³The PEO position for ICBMs was established in April 2024.

²⁴A PEO executes oversight of an assigned portfolio of programs, accomplishing objectives for development, production, sustainment, and disposal.

²⁵GAO, *Defense Nuclear Enterprise: Systems Face Sustainment Challenges, and Actions Are Needed to Effectively Monitor Efforts to Improve the Enterprise*, [GAO-20-296](#) (Washington, D.C.: Mar. 26, 2020).

²⁶GAO, *Nuclear Triad: DOD and DOE Face Challenges Mitigating Risks to U.S. Deterrence Efforts*, [GAO-21-210](#) (Washington, D.C.: May 6, 2021).

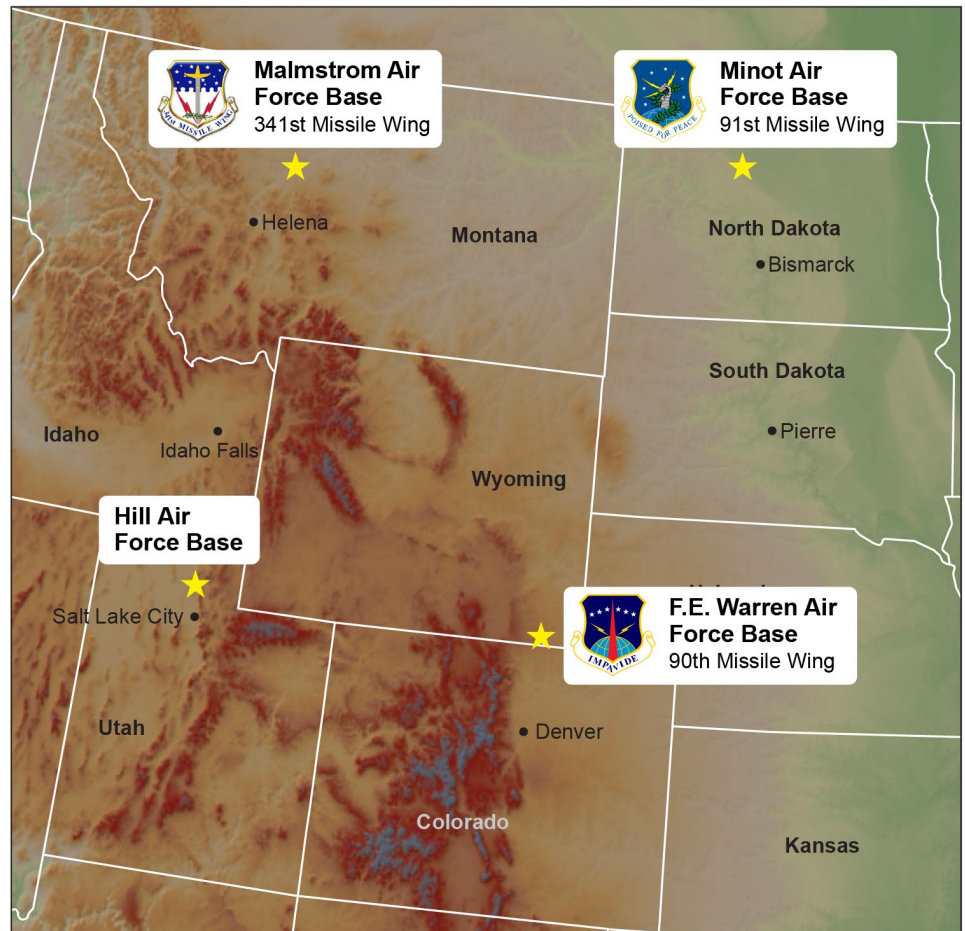
interrupted.²⁷ As part of Sentinel restructuring, the Air Force is reassessing all aspects of its plan to field Sentinel, including the extent to which Sentinel will use the existing Minuteman III launch facilities. The Air Force has yet to finalize the design for Sentinel launch facilities.

ICBM Basing

Global Strike Command oversees three Minuteman III ICBM Wings at F.E. Warren Air Force Base, Wyoming (90th Missile Wing); Malmstrom Air Force Base, Montana (341st Missile Wing); and Minot Air Force Base, North Dakota (91st Missile Wing). The Minuteman III Program Office, Sentinel Program Office, and PEO ICBMs are located at Hill Air Force Base, Utah. See figure 2.

²⁷Depot maintenance includes inspection, repair, overhaul, or the modification or rebuild of end items, assemblies, subassemblies, and parts that, among other things, require extensive industrial facilities, specialized tools and equipment, or uniquely experienced and trained personnel that are not available in other maintenance activities. The Air Force performs depot maintenance for ICBMs on site because the missile sites are not mobile. [GAO-20-296](#).

Figure 2: Locations of Minuteman III Missile Wings and Program Offices



Source: GAO presentation of Air Force information; Map Resources (map). | GAO-25-108466

Each missile wing maintains 150 launch facilities and 15 launch control centers. The United States maintains 400 deployed ICBMs, with 450 operational and four test launch facilities.²⁸ Consistent with the New Strategic Arms Reduction Treaty (New START), the Air Force maintains

²⁸Test launch facilities are located at Vandenberg Space Force Base, California.

50 of the 450 launch facilities in a nondeployed status by the removal of the ICBM from these silos.²⁹

Missile Wing Organization and Personnel

Global Strike Command executes its responsibility for the three missile wings through its subordinate unit the 20th Air Force, headquartered at F.E. Warren Air Force Base. The 20th Air Force supervises the three missile wings, among other duties. Each missile wing contains subordinate groups organized by function: an Operations Group, a Maintenance Group, and a Security Forces Group. The 90th and 341st Missile Wings also contain a Mission Support Group and a Medical Group. In this report we focus on the three groups of military personnel with direct responsibility for ICBM operations: operators (missile launch officers who perform around-the-clock alert in launch control centers); maintenance personnel (missile maintenance technicians and nuclear weapons technicians); and security forces (airmen who are armed, trained, and certified to protect nuclear weapons).

Air Force Has Developed Plans for the Transition but Has Risk Management Gaps

Global Strike Command has developed planning documents for the transition but has not developed a risk management plan or other risk management tools consistent with leading project management practices. Sentinel delays present an opportunity to develop and integrate these risk management tools into transition planning to establish an organized, methodical framework for managing risk. Having a process in place to manage this megaproject's myriad risks will be critically important to ensure decision makers have a full understanding of transition risks and position the Air Force to successfully achieve intended outcomes.

Air Force Developed Strategic and Site-Specific Transition Planning Documents

Global Strike Command has developed or is in the process of developing several planning documents for the transition, including overarching guidance and guidance for specific sites (see table 1).

²⁹*Treaty Between the United States of America and the Russian Federation on Measures for the Further Reduction and Limitations of Strategic Offensive Arms*, Apr. 8, 2010, T.I.A.S. No. 11-205. Among other things, the New START limits Russia and the United States to 700 deployed ICBMs, submarine-launched ballistic missiles, and heavy bombers. New START entered into force on Feb. 5, 2011. The treaty expires Feb. 4, 2026. [GAO-21-210](#).

Table 1: Status of Air Force Transition Planning Documents as of April 2025

	Title of document (classification of document)	Responsible entity	Purpose of document	Last update
Strategic planning documents	AFGSC Sentinel Transition and Deployment Strategy Phase II (SECRET)	Air Force Global Strike Command (AFGSC) A10	Serves as the general plan outlining the transition	June 26, 2023
	Sentinel Intercontinental Ballistic Missile (ICBM) Site Activation Task Force (SATAF) Concept of Operations (CONOPS) (CUI)	AFGSC A10	Provides broad overview of responsibilities and function of the SATAF, as well as organizations with overall responsibility for operation and mission completion	September 20, 2024
	Sentinel Concept of Operations (SECRET//FRD//NOFORN)	AFGSC A10	Provides operational direction for the Sentinel Program Office and prime contractor	March 28, 2025
Site specific planning documents	Programming Plan 19-06 (CUI)	AFGSC A5 ^a	Provides guidance for the transition to Sentinel at Vandenberg Space Force Base, California	January 2024
	Programming Plan 21-04 (CUI)	AFGSC A5	Provides guidance for the transition to Sentinel at F.E. Warren Air Force Base, Wyoming	Under development
	Programming Plan 22-02 (CUI)	AFGSC A5	Provides guidance for the transition to Sentinel at Malmstrom Air Force Base, Montana	Under development

Source: GAO analysis of Air Force documents; interviews with Air Force officials. | GAO-25-108466

^aAir Force Global Strike Command A5 is the Directorate for Strategic Plans.

Transition and Deployment Strategy. The Transition and Deployment Strategy is the classified general plan for the transition from Minuteman III to Sentinel systems. It provides Global Strike Command senior leadership and other stakeholders comprehensive information about the modernization process. This strategy is living guidance that is updated and published in phases. Global Strike Command issued the original Transition and Deployment Strategy, referred to as phase I, in November

2020.³⁰ Phase I, among other things, describes expected preliminary roles and responsibilities for the transition. Global Strike Command issued the next iteration, referred to as phase II, in June 2023. Phase II describes responsibilities assigned to Global Strike Command A10, including continual risk assessment of missions and systems. As of April 2025, Global Strike Command officials stated they plan to develop a third iteration of the Transition and Deployment Strategy over the next year as new details emerge from the Sentinel restructuring.

Site Activation Task Force Concept of Operations. Global Strike Command issued the Site Activation Task Force Concept of Operations in September 2024. This concept outlines the roles and responsibilities for Global Strike Command A10 and PEO ICBMs, including how these new offices will coordinate efforts, an important step in managing complexity. Research shows that clearly defining roles and responsibilities at the outset of a megaproject can help lead to a successful outcome.³¹ For example, the Site Activation Task Force Concept of Operations explains that Global Strike Command is tasked with continuously assessing risk to the missions and systems related to the ICBM weapon systems and ensuring that risk is resolved in coordination with relevant supporting organizations, to include PEO ICBMs.

Sentinel concept of operations. Global Strike Command completed the Sentinel concept of operations in March 2025.³²

Programming plans. According to Global Strike Command officials, they plan to issue four individual programming plans—one for each of the three missile bases plus Vandenberg Space Force Base. Global Strike Command officials stated that because each base is unique, they decided to issue individual programming plans, rather than a combined plan. Global Strike Command has issued the programming plan for Vandenberg Space Force Base, and drafted two others, one for F.E.

³⁰Air Force Global Strike Command, *Ground Based Strategic Deterrent (GBSD) Transition and Deployment Strategy* (Nov. 23, 2020).

³¹Juliano Denicol, Andrew Davies, and Ilias Krystallis, "What are the Causes and Cures of Poor Megaproject Performance? A Systemic Literature Review and Research Agenda," *Project Management Journal*, vol. 51, no. 3 (2020).

³²We recently issued a report on the Sentinel ICBM acquisition program, GAO-25-107615SU, which more closely assesses the planning progress specific to the Sentinel ICBM weapon system.

Warren Air Force Base and one for Malmstrom Air Force Base.³³ According to Global Strike Command officials, neither drafted programming plans have estimated time frames for final signature as they are on hold until Sentinel has completed its Milestone B decision. The programming plans capture Global Strike Command's overall strategy for the transition, containing detailed annexes covering logistics, operations, security forces, and other areas directed by Air Force policy.³⁴ According to Global Strike Command officials, drafting for the programming plan for Minot Air Force Base was scheduled to begin in March 2025.

Sentinel Delays Require Modifications to Transition Planning

While Global Strike Command has developed several transition planning documents, the Sentinel restructuring has delayed the start of the transition and will require the command to modify its transition planning and update planning documents accordingly. For example, prior to the Sentinel restructuring, Global Strike Command planned to begin transitioning Minuteman III missile silos and launch control centers in fiscal year (FY) 2025. Those plans are currently on hold while DOD restructures the Sentinel program. As of April 2025, Global Strike Command officials stated there is no updated schedule.

Air Force Is Taking Actions at 90th Missile Wing to Prepare for the Transition

Despite the delays stemming from the Sentinel restructuring, Global Strike Command has already taken some actions to prepare for the transition. The Air Force has shifted the locations of non-deployed launch facilities from an equal distribution across all three missile wings, to a majority distribution at the 90th Missile Wing at F.E. Warren Air Force Base.³⁵ In addition, Global Strike Command officials told us in August 2024 that they are preparing to exercise one non-deployed launch facility near F.E. Warren Air Force Base within a year, which will serve to

³³Air Force Global Strike Command, Directorate of Strategic Plans, Programs, and Requirements, *Programming Plan 19-06, LGM-35A Sentinel Test Operations, Vandenberg SFB* (Jan. 18, 2024).

³⁴Air Force Instruction 38-404, *Program Action Directives, Program Guidance Letters, Programming Plans, and Programming Messages* (Feb. 13, 2024). Chapter 6 outlines the specific process for developing programming plans, including functional annexes.

³⁵As described above, to comply with treaty requirements, the Air Force maintains 50 non-deployed (i.e., empty) launch facilities. The 2020 Transition and Deployment Strategy states that the Air Force will select launch facilities from the pool of 50 empty launch facilities for transition from Minuteman III configuration to Sentinel. Each empty launch facility gained at the 90th Missile Wing requires the 91st Missile Wing or the 341st Missile Wing to install a missile and bring the missile to alert status, thus reducing their number of empty launch facilities.

validate work concepts and provide valuable information and practice for the transition. A March 2025 Global Strike Command memorandum directed the transfer of the non-deployed launch facility from the 90th Missile Wing to the Site Activation Task Force effective April 3, 2025.³⁶

Sentinel Delays Present Opportunity to Enhance Air Force Transition Risk Management

The Sentinel-related delays to the start of the transition present an opportunity for Global Strike Command to enhance their risk management practices for the transition moving forward. According to Global Strike Command officials, they actively manage risk using multiple existing forums—working groups and corporate-level meetings—but we found they have not developed tools that specifically address risk management practices for the transition from Minuteman III to Sentinel. These officials told us the risk management process is spread across nine forums with a variety of documents produced by each forum to facilitate information sharing. They also said the transition planning documents identify risks and risk mitigation plans, but we reviewed these documents and, while they did identify risk and risk mitigation plans, we did not find evidence these documents specifically facilitate risk assessment or risk mitigation. The programming plan for F.E. Warren Air Force Base includes limited information on some individual project risks and their impact, but the plan does not include a summary of risks such as a risk register. The 2023 Transition and Deployment Strategy states that Global Strike Command A10 is to continuously assess risk to missions and systems, and elevate areas of concern when needed.

Project management leading practices identify a risk management plan, risk register, and risk report as important elements of project planning (see fig. 3).³⁷ Specifically, a risk management plan outlines how risk management activities will be accomplished. Importantly, a risk management plan outlines a continuous process that monitors a program's health. A risk register describes and tracks risks, and records specific risk mitigation strategies.³⁸ A risk report summarizes information

³⁶Air Force Global Strike Command, *Transfer of E10 (Francis E. Warren Air Force Base)* (Mar. 31, 2025).

³⁷(*PMBOK® Guide*), 7th Ed.; Under Secretary of Defense for Research and Engineering, *DOD Risk, Issue, and Opportunity (ROI) Management Guide for Defense Acquisition Programs* (September 2023).

³⁸Information in a risk register can include the person responsible for managing the risk, probability, impact, risk score, planned risk responses, and other information used to get a high-level understanding of individual risks. A risk register can also provide traceability of program risk and can be a source for lessons learned during or at the end of key program events.

on project risk to provide decision makers with a consistent method for managing and communicating risk to make data-driven decisions. Joint Staff guidance on risk analysis states that decision makers' judgment and experience are critically important within risk analysis, because the senior leader can often provide a distinct and broader perspective or apply strategic intuition that helps determine the appropriate risk decision.³⁹ Megaprojects are extremely risky ventures, notoriously difficult to manage, and often fail to achieve their original objectives.⁴⁰ Moreover, research has found that planners can better position a megaproject for success by investing appropriate time at the front end to develop the tools and processes to identify and manage risks.

Figure 3: Project Risk Management Tools



Source: GAO presentation of *PMBOK® Guide* Information. | GAO-25-108466

When we asked about a transition risk management plan, Global Strike Command officials told us that, as a newly established office, Global Strike Command A10 is still working to hire personnel and establish project management processes. Officials emphasized that all transition planning efforts are currently under review or undergoing changes due to the Sentinel delays. The officials stated that Global Strike Command will continue to identify transition risks and develop risk mitigation strategies

³⁹Chairman of the Joint Chiefs of Staff Manual 3105.01B, *Joint Risk Analysis Methodology* (Dec. 22, 2023).

⁴⁰Denicol, Davies, and Krystallis, "Causes and Cures of Poor Megaproject Performance."

as the program matures leading up to the Sentinel Milestone B decision. In July 2024, the Under Secretary of Defense for Acquisition and Sustainment directed the Air Force to evaluate options to ensure a transition between Minuteman III and Sentinel that considers risk, mitigations, and trades across cost, schedule, and performance prior to receiving Milestone B approval.⁴¹ Global Strike Command officials told us in August 2024 that they are working on this task as the Air Force restructures the Sentinel program. However, as of September 2024, Global Strike Command has not identified specific documents, such as a written risk management plan, risk report, or risk register, to be developed in the forthcoming risk management planning efforts.

While Sentinel delays have disrupted transition planning, it has also presented an opportunity for Global Strike Command A10 to incorporate strong risk management practices as they continue to fill personnel positions and establish project management processes. As they do so, Global Strike Command could use this occasion to implement a transition risk management plan and an accompanying risk register and risk report for the transition.

Together, the elements of a risk management plan, risk register, and risk report would establish an organized, methodical way to identify, assess, and respond to the myriad risks currently identified at multiple working groups and forums. Developing a risk management plan will provide clear direction for accomplishing risk management activities, which are the responsibility of Global Strike Command A10, according to the 2023 Transition and Deployment Strategy. Including a risk register in future updates to the site-specific programming plans will provide an organized and efficient process to summarize key individual project risks and promote accountability for managing each risk. A risk report could improve the process of communicating risk updates to leadership and program stakeholders.

⁴¹Under Secretary of Defense for Acquisition and Sustainment Memorandum. Due to the critical cost overrun, the Sentinel program's September 2020 Milestone B approval was rescinded.

Workforce Planning Is Underway, but Air Force Faces Security Forces Training and Personnel Gaps

While the Air Force has taken some actions to prepare operators, maintainers, and security forces for the transition, the Air Force has not started construction of the Sentinel test facility, which is necessary for security forces training, a key concern in preparation for the transition. Additionally, the Air Force is reassessing personnel requirements in light of the Sentinel delays. The delays present opportunities to enhance strategic workforce planning and mitigate risks at future stages in the transition.

Air Force Has Taken Some Actions to Prepare Operators, Maintainers, and Security Forces for the Transition

Operators. The 2023 Transition and Deployment Strategy indicates that current stipulations assume that missile launch officers—hereafter referred to as “operators”—will be assigned to either Minuteman III or Sentinel. Global Strike Command officials estimate a 19 percent increase in the number of operators will be required for the operator’s peak transition year, FY 2028, based on the January 2025 staffing estimates.⁴²

Maintainers. The Air Force developed specific guidance for maintenance personnel—hereafter referred to as “maintainers”—to deactivate launch facilities and launch control centers. Similar to operators, officials told us that maintainers will be responsible for either the Minuteman III system or the Sentinel system. Therefore, Global Strike Command officials estimate a 10 percent increase in the number of maintainers will be required for the peak transition year, FY 2029, based on January 2025 staffing estimates.

Security forces. The 2023 Transition and Deployment Strategy states that security forces manning must maintain persistent, simultaneous support for both Minuteman III and Sentinel through deployment and transition. Global Strike Command officials estimate a 5 percent increase in the number of security forces will be required for the security forces’ peak transition year, FY 2030, based on January 2025 staffing estimates. Global Strike Command officials told us they are working on a security forces concept of operations.

⁴²Global Strike Command officials stated that the estimates for additional operators, maintainers, and security forces for their respective peak transition years are “snapshots in time” and could be subject to change as the program develops. Additionally, they emphasized that these estimates are also subject to change following the Sentinel Milestone B decision.

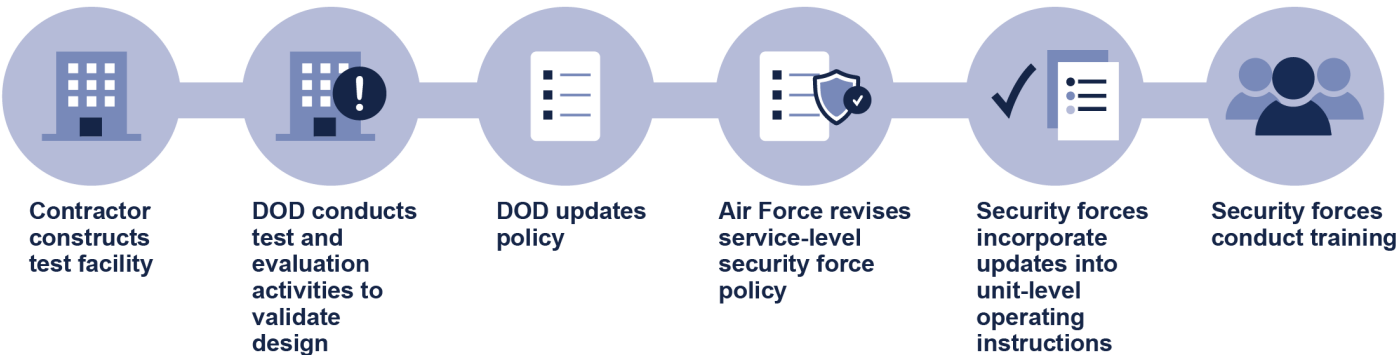
Additional information has been redacted because DOD deemed the information sensitive.

Sentinel Test Facility Will Be Needed for Security Forces Training

The Air Force has not started construction of a test facility that will be needed to inform DOD policy updates and subsequent preparation for security forces. The Sentinel restructuring presents an opportunity for the Air Force to establish a schedule for construction of this facility.

The Sentinel contractor is exploring options for the construction of the Physical Security System Test Facility—hereafter referred to as the “test facility”—needed to begin a multistep process that will provide direction for security forces’ training necessary for early phases of the transition (see fig. 4).

Figure 4: Steps to Achieve Necessary Security Forces Training for Transition from Minuteman III to Sentinel



Source: GAO presentation of Air Force documentation. | GAO-25-108466

Planned for construction at Dugway Proving Grounds in Utah, the test facility is intended to be a physical representation of a Sentinel launch facility. Global Strike Command officials stated the test facility will enable completion of several test and evaluation activities. Additional information has been redacted because DOD deemed the information classified.

According to Global Strike Command officials, the test and evaluation activities are required to develop policy needed for security forces training, and the test facility is the only venue acceptable to conduct the necessary activities.

DOD is in the midst of a complete re-evaluation of all aspects of the Sentinel program including the design of the launch facility. Even so,

Security Forces Training
Dependent on Updated DOD
Policy

these steps must be completed as early as feasible in the transition to Sentinel.

Global Strike Command officials told us in August 2024 that there are options to conduct security forces training, but in order to prepare each individual unit, adequate time for training is necessary to complete multiple steps, and each step could take a year or more to complete.

The 2023 Transition and Deployment Strategy states that timely and comprehensive training of security forces is of key concern in preparation for transition and deployment activities, and that it is imperative that construction projects stay on time in order to support the on time delivery of Sentinel. GAO's *Schedule Assessment Guide: Best Practices for Project Schedules* states a project should develop a schedule that reflects all efforts (steps, events, work required, and outcomes) to accomplish the deliverables described in the program's work breakdown structure.⁴³ Schedule planning describes the order and timing of the components needed to produce the program benefits and estimates the amount of time required to accomplish each one.

Without establishing a detailed, logical, and sequenced schedule for construction of the test facility that aligns with Sentinel restructuring plans, the Air Force risks delays to the multistep process to develop revised policy and instruction that will be needed to train security forces for the transition.

Sentinel Delays Present
Opportunities to Enhance
Strategic Workforce
Planning

As the Air Force reassesses personnel requirements for the transition in light of the Sentinel delays, opportunities exist to apply additional strategic workforce planning principles to better address current and estimated future personnel gaps. According to Global Strike Command officials, the transition will require an increase in personnel, to include operators, maintainers, and security forces, due to concurrent operations, deactivation, and sustainment of Minuteman III, and the deployment and sustainment of Sentinel. This increase will require years of lead time to prepare these personnel; for example, about 6 years are required to fully train a missile maintainer, according to officials.

⁴³[GAO-16-89G](#).

Opportunities Exist for More Involvement of Headquarters Air Force on Transition Personnel Needs

Global Strike Command officials have conducted some strategic workforce planning, such as identifying critical skills and competencies needed for the transition, as well as related personnel gaps. To address personnel needs during the transition, senior leadership at F.E. Warren Air Force Base and Global Strike Command told us they are considering how the Reserve Component might augment active component military forces during the transition.⁴⁴ We asked Headquarters Air Force A10 officials about the prospect of using reserve component forces for temporary workforce needs during the transition. The officials told us that Global Strike Command has the authority to activate reserve forces already affiliated with their command for the transition. However, they said Headquarters Air Force A10 would need to get involved if Global Strike Command wanted to request reserve forces outside their command. Headquarters Air Force A10 told us they are not aware of any Global Strike Command plans to request reserve forces to assist with the transition.

DOD personnel management policy directs that the military services shall consider all available sources when determining personnel mix to include active and reserve military forces.⁴⁵ GAO's *Key Principles for Effective Strategic Workforce Planning* states that strategic workforce planning helps an agency to align personnel requirements with its current and emerging mission and programmatic goals, as well as with developing long-term strategies for acquiring, developing, and retaining personnel to achieve programmatic goals.⁴⁶ Specifically, it emphasizes, among other principles, (1) top leadership that is clearly and personally involved in strategic workforce planning can help provide stability as the workforce plan is being developed and ensure it is thoroughly implemented and sustained over time, and (2) when developing workforce planning

⁴⁴For example, the 219th Security Forces Squadron, a National Guard unit at Minot Air Force Base, currently provides additional security for the 91st Missile Wing.

⁴⁵DOD Directive 1100.4, *Guidance for Manpower Management* (Feb. 12, 2005).

⁴⁶[GAO-04-39](#).

strategies, the agency should identify existing flexibilities provided under current authority that they could use more extensively.⁴⁷

More direct involvement by Headquarters Air Force, including applying strategic workforce planning principles, could help ensure smooth implementation and sustainment of workforce planning over time. As previously stated, according to Headquarters Air Force A10, Reserve Component augmentation to Global Strike Command for reserve forces outside of their command would require the involvement of Headquarters Air Force. A transition workforce assessment of what personnel flexibilities are available under established authorities and where Global Strike Command needs the involvement of Headquarters Air Force would better position the service to assess options to mitigate personnel gaps. Such an assessment could help ensure missile wings have enough military forces for the transition, especially Minuteman III maintenance and security forces.

DOD and Air Force Are Assessing Options to Meet Deterrent Requirements, but Risks Remain

Sentinel delays mean the Air Force must operate the aging Minuteman III longer than planned—potentially significantly longer. The Air Force assessed that prolonged operation of Minuteman III is possible. However, limited parts supply is a risk to continued flight testing beyond 2030, and entire subsystems would need to be replaced to continue meeting operational requirements. DOD is currently assessing other operational risks as part of the Sentinel restructuring.

Strategic Deterrent Requirements Form the Basis for Air Force Transition Planning

USSTRATCOM officials told us the Air Force meets strategic deterrence requirements day-to-day. Specific details of these requirements were omitted because DOD deemed this information classified.

Global Strike Command officials said their transition plans are predicated on Minuteman III meeting the strategic deterrent requirements until Sentinel is fully operational. This will require balancing the need to deactivate Minuteman III missiles in silos for conversion to Sentinel with the need to keep a sufficient number of Minuteman III missiles on alert to

⁴⁷GAO-04-39 states that agency approaches to strategic workforce planning can vary with each agency's particular needs and missions, and that the success of the workforce planning process can be judged by its results, not by the type of process used. Nonetheless, existing strategic workforce planning tools and models and our own work suggest that the key principles identified should be addressed irrespective of the context in which planning is done.

meet requirements. Missile maintainers perform regular maintenance on ICBMs, as figure 5 shows.

Figure 5: Air Force Airmen Performing Maintenance on a Minuteman III ICBM at a Colorado Launch Facility, February 2024



ICBM intercontinental ballistic missile

Source: U.S. Air Force/Senior Airman S. Post. | GAO-25-108466

Starting in 2021 Global Strike Command developed models to better understand risk during the transition, officials said. The “alert availability” model includes planning factors to balance Sentinel program delivery and meet U.S. strategic deterrent requirements, according to officials.

Air Force Is Evaluating Options for Prolonged Operation of Minuteman III Through 2050

The Air Force reported to Congress in 2021 that Minuteman III would reach the end of its service life in 2036.⁴⁸ Now, facing delays to Sentinel, the Air Force is evaluating options to continue operating Minuteman III through 2050.

The Minuteman III Program Office concluded that operation of Minuteman III until 2050 is feasible.

⁴⁸Department of the Air Force, Report to Congressional Committees, *Transition from Minuteman III to Ground-Based Strategic Deterrent* (March 2021).

Limited Supply of Parts Is a Risk to Minuteman III Sustainment

As noted earlier, parts obsolescence is a continuing and increasing concern as the Air Force faces the prospect of prolonged operation of Minuteman III. A limited and diminished supply of parts may affect the Air Force's ability to continue Minuteman III flight tests. Global Strike Command officials told us that flight tests are a critical source of data on the missile's reliability and accuracy, especially as the system continues to age, and must be continued until Sentinel takes over the mission. Moreover, the tests are an important signal of U.S. resolve to allies and partners and demonstrate U.S. ability to maintain a strong, credible nuclear deterrent, according to the Air Force.

According to Global Strike Command officials, prior to the Sentinel delays announced in 2024, the Air Force was exploring courses of action to sustain Minuteman III operational test launches past 2030. With delays to Sentinel, the Air Force will need to flight test Minuteman III through 2045, according to Minuteman III program office officials.

USSTRATCOM officials told us in April 2024 that the Minuteman III program conducts multiple operational flight tests per year to provide confidence in weapon system performance. In March 2020 the Secretary of Defense granted the Air Force a waiver to conduct fewer flight tests per year to conserve parts for future tests, USSTRATCOM officials told us.

The Air Force has not developed a plan for continued Minuteman III flight testing as a result of the Sentinel delay. The Air Force will need sufficient time to ensure necessary parts and range support to continue testing.

A coordinated ICBM flight test plan would enable the Air Force to determine the quantity and type of parts the service needs to be able to test Minuteman III beyond 2030, and therefore to assess the reliability of the Minuteman III system beyond 2030.

Air Force Identified Minuteman III Sustainment Risks

According to Minuteman III program officials, prolonged operation would require overhaul of specific subsystems.

Global Strike Command officials said they plan to address launch control center sustainability in upcoming annual budget requests.

Officials at the Minuteman III program office told us the missile itself is performing well. They have enough available assets to sustain the required ICBMs on alert to 2050, but there are sustainment risks. Specific details on these risks were omitted because DOD deemed this information classified.

Air Force officials told us that although they are confident that Minuteman III can be used beyond 2030, even out to 2050, they acknowledged there are unknowns such as ground electrical subsystems and electronics—for example, diodes, resistors, and capacitors—which could degrade to unacceptable levels. We omitted a table detailing specific sustainment risks that could impact the transition because DOD deemed this information classified.

The 2023 Transition and Deployment Strategy states that the Air Force will manage the Minuteman III and Sentinel fleet in such a manner to meet USSTRATCOM alert requirements, stating that requirements for on-alert sorties must be maintained through transition to Sentinel. Federal internal control standards state that management should identify, analyze, and respond to risks related to achieving the defined objectives.⁴⁹ As previously stated, Global Strike Command A10 has not developed a risk management plan for the transition including risks resulting from prolonged operation of Minuteman III. A risk management plan is a leading practice that provides a structured and efficient process for identifying risks, assessing their effect, and developing ways to reduce or eliminate risk.

By specifically addressing Minuteman III sustainment risks in its overall transition risk management plan, the Air Force could increase the probability that the service will meet strategic deterrent requirements during the transition as Sentinel is delayed. Developing and updating a risk report could provide an organized and efficient mechanism to communicate Minuteman III sustainment risks to key stakeholders, including the Office of the Secretary of Defense and USSTRATCOM, during the transition. A risk report could help the Air Force and USSTRATCOM understand the myriad risks to meeting strategic deterrent requirements during the transition, take timely action to mitigate these risks, and address emergent risks.

⁴⁹[GAO-14-704G](#).

DOD Could Consider a Multiple Warhead Configuration to Mitigate Risk During the Transition

Multiple Independently Targetable Reentry Vehicle

According to the Air Force, each missile has one reentry system that can hold up to three warheads. Each warhead is housed in a reentry vehicle within the reentry system. As of January 2025, each Minuteman III intercontinental ballistic missile (ICBM) is equipped with one warhead (see photo).



Multiple Independently Targetable Reentry Vehicle (MIRV) indicates a missile contains more than one warhead (see photo). A MIRV configuration would increase the number of warheads to cover more targets, even if the total number of ICBMs available is reduced, because each warhead can be sent to a different target.



Source: GAO review of Air Force documentation; GAO-20-87C; U.S. Air Force (top photo); GAO (bottom photo). | GAO-25-108466

A Multiple Independently Targetable Reentry Vehicle (MIRV) configuration could help mitigate risk of potential Sentinel delays during force transition by adding more operationally deployed warheads to the Minuteman III alert forces (see sidebar).

Global Strike Command's 2020 Transition and Deployment Strategy presented the option to re-MIRV all or some Minuteman III ICBMs during the transition to Sentinel as desirable but acknowledged it would require a U.S. policy change.⁵⁰ Global Strike Command officials emphasized they would prefer as much lead time as possible to implement any potential re-MIRV decision due to the complexity of operations and additional logistical workload required to accomplish such a requested change.

Additional information in this section was omitted because the DOD deemed the information to be classified.

Project management leading practices include the use of a risk management plan to identify risks, assess their effect and develop options to mitigate the risks. By assessing the implications of a decision to re-MIRV the ICBM fleet and including such an assessment in its overall transition risk management plan, the Air Force could better position ICBM forces to manage the materiel and personnel impacts of such a decision. By including this risk in its overall transition risk report, the Air Force could better position itself to communicate and effectively characterize the risk to senior decision makers across DOD.

⁵⁰In the 2022 Nuclear Posture Review, DOD noted that while the United States retains the capability to upload a portion of the ICBM force, the United States continues to configure these missiles with only one warhead day-to-day, thereby reducing adversary incentive to launch a first strike. DOD, *National Defense Strategy of the United States of America Including the 2022 Nuclear Posture Review and the 2022 Missile Defense Review* (Oct. 27, 2022).

Conclusions

The transition from Minuteman III to Sentinel involves a complex, total ICBM weapon system replacement. The Under Secretary of Defense for Acquisition and Sustainment has cautioned the Air Force not to overlook or understate this complexity in future decisions. As the start of the transition is delayed, the Air Force has the opportunity to invest appropriate time to develop the tools and processes to manage complexity. While the Air Force has laid a foundation of plans for the transition, the service could build on this foundation to focus on the myriad risks involved in this megaproject. A transition risk management plan, to include a risk report and a risk register in future site-specific programming plans, could help ensure the success of the transition.

The Air Force faces workforce challenges from the transition, particularly for maintainers and security forces, according to officials. Moreover, these forces are already overburdened, and demand on them will increase as the transition begins. More direct involvement by Headquarters Air Force to assess options for workforce planning, to include how the Reserve Component may fill gaps, could help ensure the missile wings have the workforce they need for the transition.

The Air Force also faces challenges in preparing security forces for the transition. As part of the efforts the Air Force already has underway, a detailed schedule for the completion of the Sentinel test facility that is coordinated with the Sentinel program could help ensure that the multistep process to revise policy leading to preparation and training of security forces stays on track.

Finally, the Sentinel restructuring is an opportunity for the Air Force to assess and respond to key individual and overall project risks to meeting strategic deterrent requirements during the transition. These risks include parts for Minuteman III flight testing beyond 2030, Minuteman III sustainment, and the implications of a potential decision to re-MIRV ICBMs. Developing an overall transition risk management plan will help the Air Force manage these types of risks and better position the service for a successful transition from Minuteman III to Sentinel.

Recommendations for Executive Action

We are making a total of six recommendations to the Air Force.

The Secretary of the Air Force should develop a transition risk management plan for the transition from Minuteman III to Sentinel ICBM. The plan should include a transition risk report and a risk register in future Programming Plan updates. (Recommendation 1)

The Secretary of the Air Force should establish a detailed, logical, and sequenced schedule for completion of the Physical Security System Test Facility that aligns with Sentinel restructuring plans and reflects scheduling best practices. (Recommendation 2)

The Secretary of the Air Force should complete an assessment of personnel needs for the transition, including potential Reserve Component support for the transition. (Recommendation 3)

The Secretary of the Air Force should expeditiously develop a post-2030 Minuteman III operational test launch plan that is aligned with a Sentinel fielding plan and coordinated with the Department of Energy. (Recommendation 4)

The Secretary of the Air Force should specifically address Minuteman III sustainment risks in the overall transition risk management plan. (Recommendation 5)

The Secretary of the Air Force should specifically address the personnel and materiel implications of a decision to re-MIRV ICBMs as part of the overall transition risk management plan. (Recommendation 6)

Agency Comments

We provided a draft of the classified report to DOD for review and comment. In its written comments on the classified report, reproduced in appendix I as they were publicly releasable, the Air Force concurred with the report and recommendations but did not describe planned actions to address the recommendations. The Air Force did not provide technical comments.

We are providing copies of this report to the appropriate congressional committees, the Secretary of Defense, the Chairman of the Joint Chiefs of Staff, the Commander of U.S. Strategic Command, the Under Secretary of Defense for Acquisition and Sustainment, the Under Secretary of Defense for Policy, the Under Secretary of Defense for Personnel and Readiness, the Deputy Assistant Secretary of Defense for Nuclear Matters, the Director of the Office of Cost Assessment and Program Evaluation, the DOD Inspector General, and the Secretary of the Air Force. In addition, the report is available at no charge on the GAO website at <https://www.gao.gov>.

If you or your staff have any questions about this report, please contact me at kirschbaumj@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix III.

//SIGNED//

Joseph W. Kirschbaum
Director, Defense Capabilities and Management

List of Committees

The Honorable Roger F. Wicker
Chairman
The Honorable Jack Reed
Ranking Member
Committee on Armed Services
United States Senate

The Honorable Mitch McConnell
Chair
The Honorable Christopher Coons
Ranking Member
Subcommittee on Defense
Committee on Appropriations
United States Senate

The Honorable Mike Rogers
Chairman
The Honorable Adam Smith
Ranking Member
Committee on Armed Services
House of Representatives

The Honorable Ken Calvert
Chairman
The Honorable Betty McCollum
Ranking Member
Subcommittee on Defense
Committee on Appropriations
House of Representatives

Appendix I: Comments from the Department of Defense



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON DC

20 March 2025

Joseph Kirschbaum
Director, Defense Capabilities and Management
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

Dear Mr. Kirschbaum:

This is the Department of Defense (DoD) response to the GAO Draft Report, GAO-25-107048C, '(U) ICBM MODERNIZATION: Air Force Actions Needed to Expediently Address Critical Risks to Sentinel Transition,' dated February 27, 2025 (GAO Code 107048).'' The Department concurs with the report as written. We welcome the opportunity to support these efforts as one of the implementing agencies.

As the Department's lead agency for responding to the six recommendations made within the report, I provide the following comments in Attachment 1. My point of contact for this report is Col Mark Dmytryszyn, A10C, 703-692-3502, mark.e.dmytryszyn.mil@mail.smil.mil.

Sincerely,

SHOULTS.MICHAEL.R.1141829676
EL.R.1141829676
MICHAEL R. SHOULTS, SES, DAF
Assistant DCS, Strat Deterrence & Nuc Integration

Attachment:
Summary of Recommendations

UNCLASSIFIED

(U) GAO DRAFT REPORT DATED FEBRUARY 27, 2025
GAO-24-107048C (GAO CODE 107048)

(U) “ICBM MODERNIZATION: AIR FORCE ACTIONS NEEDED TO
EXPEDITIOUSLY ADDRESS CRITICAL RISKS TO SENTINEL TRANSITION”

(U) DEPARTMENT OF DEFENSE COMMENTS
TO THE GAO RECOMMENDATIONS*

(U) **RECOMMENDATION 1:** The Secretary of the Air Force should develop a transition risk management plan for the transition from Minuteman III to Sentinel ICBM. The plan should include a transition risk report, and a risk register in future Programming Plan updates.

(U) **DoD RESPONSE:** Concur

(U) **RECOMMENDATION 2:** The Secretary of the Air Force should establish a detailed, logical, and sequenced schedule for completion of the Physical Security System Test Facility that aligns with Sentinel restructuring plans and reflects scheduling best practices.

(U) **DoD RESPONSE:** Concur

(U) **RECOMMENDATION 3:** The Secretary of the Air Force should complete an assessment of personnel needs for the transition, including potential Reserve Component support for the transition.

(U) **DoD RESPONSE:** Concur

(U) **RECOMMENDATION 4:** The Secretary of the Air Force should expeditiously develop a post-2030 Minuteman III operational test launch plan that is aligned with a Sentinel fielding plan and coordinated with the Department of Energy.

(U) **DoD RESPONSE:** Concur

(U) **RECOMMENDATION 5:** The Secretary of the Air Force should specifically address Minuteman III sustainment risks in its overall transition risk management plan.

(U) **DoD RESPONSE:** Concur

(U) **RECOMMENDATION 6:** The Secretary of the Air Force should specifically address the personnel and materiel implications of a decision to re-MIRV ICBMs as part of the overall transition risk management plan.

(U) **DoD RESPONSE:** Concur

UNCLASSIFIED

Appendix II: Offices GAO Contacted

To obtain information for our review, we met with or obtained information from officials with the following organizations within the Department of Defense:

- Office of Under Secretary of Defense for Acquisition and Sustainment
- Office of Deputy Assistant Secretary of Defense for Nuclear Matters
- Office of Under Secretary of Defense for Personnel and Readiness
- Office of Under Secretary of Defense for Policy
- Office of Cost Assessment and Program Evaluation
- Joint Staff
- U.S. Strategic Command
- Department of Defense Inspector General
- Office of the Secretary of the Air Force, Air Force Acquisition
- Headquarters Air Force: Strategic Deterrence and Nuclear Integration (A10)
- Headquarters Air Force: Logistics, Engineering and Force Protection Security Forces (A4S)
- Air Force Nuclear Weapons Center
- Minuteman III Program Office
- Sentinel Program Office
- Air Force Global Strike Command
- 20th Air Force
- 90th Missile Wing

Appendix III: GAO Contact and Staff Acknowledgments

GAO Contact

Joseph W. Kirschbaum, KirschbaumJ@gao.gov

Staff Acknowledgments

In addition to the contact named above, Penney Harwell Caramia (Assistant Director); Herbert Bowsher (Analyst in Charge); Michele Fejfar; Evan Keir; Elisebet Lalisan; Amie Lesser; Felicia Lopez; and Kaitie Trabucco made key contributions to this report.

Related GAO Products

Nuclear Modernization: Sentinel Program Taking Steps to Restructure After Cost Breach. GAO-25-107615SU. Washington, D.C.: April 24, 2025.

National Security Snapshot: Oversight of the DOD Nuclear Enterprise. [GAO-24-106735](#). Washington, D.C.: October 2023.

Nuclear Enterprise: DOD and NNSA Could Further Enhance How They Manage Risk and Prioritize Efforts. [GAO-22-104061](#). Washington, D.C.: January 20, 2022.

Defense Nuclear Enterprise: DOD Can Improve Processes for Monitoring Long-Standing Issues. [GAO-21-486](#). Washington, D.C.: August 18, 2021.

Nuclear Security Enterprise: NNSA Should Use Portfolio Management Leading Practices to Support Modernization Efforts. [GAO-21-398](#). Washington, D.C.: June 9, 2021.

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