

Congress of the United States

Washington, DC 20515

March 13, 2024

The Honorable Kristyn Jones
Assistant Secretary of the Air Force for Financial Manager and Comptroller,
Performing the Duties of the Acting Under Secretary of the Air Force
United States Air Force
1670 Air Force Pentagon
Washington, DC 20330-1670

Dear Ms. Jones,

The Sentinel (GBSD) program is in deep trouble. The program has a cost overrun of at least 37%, with an estimated future cost of at least \$130 billion and many years of delay.¹ The recent Nunn-McCurdy breach demands the Air Force provide long overdue clarity on the status of the entire program, including detailed reprogramming, estimated total expenditures, alternatives, timelines, as well as what other Air Force programs must be cut to continue to pay for the Sentinel.²

Senior Air Force officials have exhibited unconditional support for the Sentinel program,³ including saying they will “make the trades it takes” to keep the program funded.⁴ As you have pointed out, cost analyses at the beginning of this program were “not particularly valid.”⁵ The Department of Defense also rejected proposals for outside reviews of this program to obtain more accurate information about the costs and alternatives.⁶

The program has also lacked some of the basic building blocks for good program management. For example, the Department delayed the creation of an integrated master schedule until several years after the program was started.⁷ As the Government Accountability Office (GAO) has noted,

¹ Bloomberg, “New ICBM Is Seen Going 37% Over \$96 Billion Cost, Forcing a US Review,” Anthony Capaccio, January 19, 2024, <https://www.bloomberg.com/news/articles/2024-01-18/new-icbm-is-seen-going-37-over-96-billion-cost-forcing-a-us-review>.

² Congressional Research Service, “The Nunn-McCurdy Act: Background, Analysis, and Issues for Congress,” May 12, 2016, <https://crsreports.congress.gov/product/pdf/R/R41293>.

³ Washington Times, “Air Force sticks by Sentinel missile program despite cost overruns,” Mike Glenn, February 5, 2024, <https://www.washingtontimes.com/news/2024/feb/5/air-force-sticks-by-sentinel-missile-program-despi/>.

⁴ Defense One, “Air Force sticking with Sentinel despite huge cost breach, officials say,” Audrey Decker, January 24, 2024, <https://www.defenseone.com/technology/2024/01/air-force-sticking-sentinel-despite-huge-cost-breach-officials-say/393600/>.

⁵ *Id.*

⁶ Office of Senator Elizabeth Warren, “Warren to Pentagon Official: U.S. Nuclear Policy Should be Developed by Asking Tough Questions, Not Formulated in an Echo Chamber,” March 8, 2022, <https://www.warren.senate.gov/newsroom/press-releases/warren-to-pentagon-official-us-nuclear-policy-should-be-developed-by-asking-tough-questions-not-formulated-in-an-echo-chamber>.

⁷ Air & Space Forces Magazine, “USAF, Pentagon Take Steps to Make Sure Sentinel Hits Its Operational Service Date,” John A. Tirpak, September 18, 2023, <https://www.airandspaceforces.com/usaf-pentagon-sentinel-operational->

having an integrated master schedule for complex projects helps “anticipate risks to the program and plan mitigation strategies”⁸ and helps managers “determine if the program’s parameters are realistic and achievable.”⁹

The Air Force also pursued a “schedule [that] is aggressive and compressed” compared to prior Intercontinental Ballistic Missile (ICBM) programs,¹⁰ which relied on immature technology and, according to the GAO, created additional risks of “cost increases and schedule delays.”¹¹ Those management weaknesses have even led Under Secretary of Defense for Acquisition and Sustainment Bill LaPlante to point to Sentinel as an important example of how programs “can be smarter about doing [things that] potentially will save time later.”¹²

We have spent billions of dollars and a decade of time; yet we are no closer to a stable cost or schedule for the Sentinel program. The extraordinary cost and delay of the Sentinel program demands the Air Force properly and honestly provide clarity on every part of the program as the Department considers the requirements of the Nunn-McCurdy provisions. For the program not to be terminated under these provisions, the Secretary of Defense must certify that the program is essential to national security and that “there are no alternatives to the program which will provide acceptable capability to meet the joint military requirement...at less cost.”¹³ This analysis of alternatives must include a reassessment of assumptions made to this point.

In developing a comprehensive analysis, the Air Force must address the role the Minuteman III service life extension will have in maintaining the ground-based leg of the Nuclear Triad. This analysis must also consider more innovative solutions to safeguard the United States against the escalating nuclear threat posed by nations like China.

Air Force leaders have stated that in its current state, the Minuteman III program is viable until the mid-2030s¹⁴ and that further extension of its service life is not feasible.¹⁵ While this 2030 deadline creates a sense of urgency, it is inconsistent with the actual intention of the Air Force to maintain the Minuteman III for the next 15 to 20 years while deploying the Sentinel in stages. Even before the breach and the inevitable delay, the Sentinel program was not expected to reach

service-date/.

⁸ Government Accountability Office, “Nuclear Weapons: NNSA Does Not Have a Comprehensive Schedule or Cost Estimate for Pit Production Capability,” January 12, 2023, p. 50, <https://www.gao.gov/assets/gao-23-104661.pdf>.

⁹ *Id.*, p. 2.

¹⁰ Government Accountability Office, “Nuclear Triad: DoD and DOE Face Challenges Mitigating Risks to U.S. Deterrence Efforts,” May 2021, p. 26, <https://www.gao.gov/assets/gao-21-210.pdf>.

¹¹ *Id.*, p. 27.

¹² Air & Space Forces Magazine, “USAF, Pentagon Take Steps to Make Sure Sentinel Hits Its Operational Service Date,” John A. Tirpak, September 18, 2023, <https://www.airandspaceforces.com/usaf-pentagon-sentinel-operational-service-date/>.

¹³ 10 U.S. Code § 4376.

¹⁴ Vandenberg Space Force Base, “Minuteman III Test Launch Showcases Readiness of U.S. Nuclear Force’s Safe, Effective Deterrent,” April 19, 2023, <https://www.vandenberg.spaceforce.mil/News/Article-Display/Article/3367425/minuteman-iii-test-launch-showcases-readiness-of-us-nuclear-forces-safe-effecti/>.

¹⁵ Air & Space Forces Magazine, “New GBSD Will Fly in 2023; No Margin Left for Minuteman,” John A. Tirpak, June 14, 2021, <https://www.airandspaceforces.com/new-gbsd-will-fly-in-2023-no-margin-left-for-minuteman/>.

initial operational capability until 2030¹⁶ and full operational capability until at least 2036.¹⁷ Even assuming the Air Force is able to meet its intended timeline, if the Air Force intends to have a minimum of 400 ground-based ICBMs in operation at all times, then the Air Force must rely on the Minuteman III until at least 2036.

In 2014, the U.S. Air Force completed an analysis of alternatives to explore a further Minuteman III service life extension.¹⁸ This analysis used a straight-line approach, which required the Minuteman III to last all the way to 2075.¹⁹ This obviously precluded any alternative that would allow the Minuteman III to be life extended for a shorter time and instead “relied on arguably arbitrary requirements.”²⁰ The inevitable result was the decision to develop a new Sentinel program with new rockets, silos, command and control, and a new nuclear bomb. A more appropriate study would have been to evaluate if the Minuteman III could be extended to 2030, 2040, and even 2050 and at what cost. Instead, “the Air Force has now admitted that the low-cost projection that was used to secure congressional approval and lock the program in was made with incomplete data.”²¹

The Air Force also argues that it must have a new system because there will not be enough ICBMs.²² This is a self-inflicted problem that can be addressed by changes in the Air Force’s approach to testing. The Air Force conducts an average of three to five live fire tests of the Minuteman III per year, destroying the rocket and critical parts, like solid rocket motors.²³ The Air Force should re-evaluate how it conducts reliability testing of the Minuteman III and explore opportunities associated with a shift in test procedures. The Navy has leveraged nondestructive testing methods on the Trident program for over 20 years, resulting in maintaining their rocket fleet and reliability.²⁴ If the Air Force used similar testing on their systems, fewer missiles would

¹⁶ Air & Space Forces Magazine, “USAF, Pentagon Take Steps to Make Sure Sentinel Hits Its Operational Service Date,” John A. Tirpak, September 18, 2023, <https://www.airandspaceforces.com/usaf-pentagon-sentinel-operational-service-date/>.

¹⁷ Congressional Research Service, “Defense Primer: LGM-35A Sentinel Intercontinental Ballistic Missile, January 10, 2023, p. 1, <https://crsreports.congress.gov/product/pdf/IF/IF11681>.

¹⁸ Congressional Research Service, “U.S. Strategic Nuclear Forces: Background, Developments, and Issues,” April 27, 2020, p. 18, <https://crsreports.congress.gov/product/pdf/RL/RL33640/62/>.

¹⁹ Carnegie Endowment for International Peace, “Appendix A: Further Exploration of the Minuteman III Life Extension,” January 21, 2021, <https://carnegieendowment.org/2021/01/21/appendix-further-exploration-of-minuteman-iii-life-extension-pub-83643>.

²⁰ *The Hill*, “Nuclear weapons are expensive, but how much is too much?” Mackenzie Knight, March 1, 2024, <https://thehill.com/opinion/national-security/4500670-nuclear-weapons-are-expensive-but-how-much-is-too-much/>.

²¹ *Id.*

²² Arms Control Today, “Enough Already: No New ICBMs,” Daryl Kimball, March 2021, <https://www.armscontrol.org/act/2021-03/focus/enough-already-no-new-icbms>.

²³ Carnegie Endowment for International Peace, “Proportionate Deterrence: A Model Nuclear Posture Review,” Appendix A: Further Exploration of the Minuteman III Life Extension, July 21, 2021, <https://carnegieendowment.org/2021/01/21/appendix-further-exploration-of-minuteman-iii-life-extension-pub-83643>; Air Force Times, “Air Force test-launches unarmed nuclear missile with 3 warheads,” Rachel Cohen, September 7, 2023, <https://www.airforcetimes.com/news/your-air-force/2023/09/07/air-force-test-launches-unarmed-nuclear-missile-with-3-warheads/>.

²⁴ Carnegie Endowment for International Peace, “Proportionate Deterrence: A Model Nuclear Posture Review,” Appendix A: Further Exploration of the Minuteman III Life Extension, July 21, 2021, <https://carnegieendowment.org/2021/01/21/appendix-further-exploration-of-minuteman-iii-life-extension-pub-83643>.

be destroyed in destructive flight tests, and the existing stockpile size and longevity would increase, allowing for more parts to be salvaged from remaining missiles to refurbish others.

The scope and scale of this overrun requires thorough analysis. Among the many issues that must be addressed, to fully meet the requirements of Nunn-McCurdy, the analysis must also address these questions:

1. Why did the Air Force fail in 2014 to conduct a rational service life analysis of maintaining the Minuteman III for 10, 20, 30, and 40 years instead of an impossible 60 years?
2. Hundreds of Minuteman III missiles must undergo a service life extension to meet the 400 missile deployment requirement. Has the Air Force conducted a detailed analysis of the service life costs and viability of the Minuteman III system until 2037 and 2040, which are required to meet the 400 ICBM requirement?
3. How have manpower and equipment estimates for the program changed over time, particularly during maximum output?
4. Why does the Air Force continue to publicly state that the Minuteman III is too old and impossible to maintain while knowing that the Minuteman III must be maintained until at least 2037, the date Sentinel was expected to reach full operational capability?
5. Why does the Air Force continue to destroy its limited stockpile of missiles in destructive testing when the Navy's nondestructive testing methods have proven satisfactory and have been widely known and available for years?
6. Which Milestone B program assumptions proved to be incorrect?
7. How much risk remains in the remaining design stages?
8. Does the Air Force need additional authorities to reduce program costs?
9. The Air Force discovered new cabling was required to support Sentinel communications.²⁵
 - a. Was this concern raised during any earlier stages of the program?
 - b. Have any similar new problems been revealed during the planning and production of the Sentinel program?
10. When will an integrated master schedule be complete and will it be resource-loaded?

The recent Nunn-McCurdy breach underscores the critical need for dramatically improved planning, analysis, and transparency. It is imperative that the Air Force think critically and creatively about the way forward. Given its scale and expense, nothing about this program should be seen as predetermined and we must evaluate every decision to determine if the expense truly provides for the national defense.

²⁵ Federation of American Scientists, "'Critical' Overrun of Sentinel ICBM Program Demands Government Transparency," Mackenzie Knight, February 2, 2024, <https://fas.org/publication/critical-sentinel-overrun/>.

We are requesting a written response addressing these concerns, providing clarity on the Minuteman III service life extension program and its role in the transition to the Sentinel System by March 27. Many other issues demand comprehensive analysis so that the Department of Defense and Congress can make a logical and data-backed decision on how to move forward with the United States' nuclear security program. Thank you for your attention to this matter, and we look forward to your response.

Sincerely,



Elizabeth Warren
United States Senator



John Garamendi
Member of Congress
Ranking Member,
Subcommittee on Readiness