

Sentinel System: 'There is No Backup Plan'

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NATIONAL HARBOR, Maryland — As the Air Force works to replace the nuclear triad's aging land leg, a "completely changed" strategic climate has made the program more urgent than ever, officials said.

The nuclear triad is a three-legged arsenal positioned across sea, air and land — ballistic missile submarines from the sea, nuclear-capable bombers from the sky and intercontinental ballistic missiles from land.

Gen. Thomas Bussiere, commander of Air Force Global Strike Command, said the mission of the intercontinental ballistic missile "has been the most important mission since the advent of atomic weapons post-World War II."

The ICBM's widespread missile fields create a "dynamic of decision calculus for any potential adversary," requiring a "massive attack on the homeland" that "changes the calculus of any potential adversary leader before he or she makes a decision to hold at risk what we value," he said at the September Air and Space Forces Association's Air, Space and Cyber conference.

The LGM-35 Sentinel, formerly known as the Ground Based Strategic Deterrent, is part of a modernization effort to replace the triad's fading operational land leg — the Minuteman III — and address an altered strategic environment.

Michael Shoults, the Air Force's assistant deputy chief of staff for strategic deterrence and nuclear integration, pointed to the evolution of the Nuclear Posture Review over the past 13 years as an indicator, not only of a changing nuclear climate, but the difficulty in predicting it.

"If you go back to the 2010 Nuclear Posture Review, what you would see is the threat was not Russia or China. It was nuclear terrorism," Shoults said. "We were going to reset our relationship with the Russians, and China was an unknown, but there was still the belief that we were going to be able to figure out how to do strategic competition with China."

Nuclear weapons were being reduced, but "thankfully there were enough people that saw the need to continue on with the modernization efforts ... because they knew that the strategic environment was uncertain," he said.

Fast forward to 2022, and the only thing the Nuclear Posture Review got wrong was "how quickly things would change from 2022 to 2024," Shoults said.

“Luckily people have realized ... the imperative to modernize the ICBM and [transition] from Minuteman III to Sentinel,” he said.

The decision to replace Minuteman III came in 2014, when an Air Force analysis of alternatives named Sentinel as the system’s successor.

“The reality is the Minuteman III option left the station 10 years ago when we did the [analysis of alternatives] and we committed to [Ground Based Strategic Deterrent], which is Sentinel now,” Shoults said. “There is no backup plan for Sentinel.”

Minuteman III debuted in 1968, 10 years after the program initially began. It was the first of its class to carry multiple warheads, according to a January Congressional Research Service report, “Defense Primer: LGM-35A Sentinel Intercontinental Ballistic Missile.” But maintaining a system for more than 50 years inevitably becomes both expensive and unreliable.

The Air Force has replaced and updated “many of the component systems” on the missile — a process known as life extension — “several times” over the past 50 years, the report stated.

The Sentinel system, in contrast to Minuteman III, will use a modular design and open architecture, allowing for the replacement of aging and outdated components, the report said. Sentinel will be a “total system replacement of the intercontinental ballistic missile system’s 400 missiles, 450 silos and more than 600 facilities over a 31,900 square-mile landmass,” according to program office comments noted in the Government Accountability Office’s “Weapon Systems Annual Assessment,” released in June.

The Sentinel program officially began in 2016 and is being developed by Northrop Grumman in cooperation with Air Force Global Strike Command. Along with improved range, accuracy and survivability, a key upgrade for Air Force personnel is its modular design.

Modularity essentially means a system’s components can be separated and combined, offering flexibility for maintainers and sustainment, Bussiere said. Shoults added the design will reduce workload on airmen, saying it will cut down trips to the field and make changing components easier, reducing risk.

Maj. Gen. Michael Lutton, commander, 20th Air Force, Air Force Global Strike Command, said there are tasks today that take “four to five times more airmen” to accomplish than the squadron he operated in during the 1985 to 2005 Peacekeeper era — an inefficiency Sentinel will eliminate, he said.

The new system will also benefit from improved security, Bussiere added. An open systems architecture will allow the Air Force to control the intellectual property of the system, including the system’s source code, the CRS report said.

Nearly 10 years after the need for Sentinel was established, it's still an open question as to when the new missiles will be loaded into silos.

Air Force representatives said in an email they were unable to comment on the status of the program, citing pending decisions from the Office of the Secretary of Defense. However, the GAO report placed critical design review in 2024, with production beginning in 2026 and initial capability and the full-rate production decision in 2030.

At the time of the GAO report, the program had successfully completed developmental tests of its new rocket motor and other missile components, and Sentinel's first flight and "full functional tests" are expected to occur in fiscal years 2024 and 2025.

In March, the Air Force and Northrop Grumman conducted a static fire test for Sentinel at a Northrop Grumman facility in Promontory, Utah, according to an Air Force release. The open air test was the first in a series of static fire tests intended to validate the design and performance of Sentinel's three-stage propulsion system.

Maj. Gen. John Newberry, Air Force Nuclear Weapons Center commander and Air Force program executive officer for strategic systems, said in the release that the test "shows that the Sentinel program is now in the phase of its development where physical hardware is being tested in real-world conditions" and "is further evidence that [the Air Force Nuclear Weapons Center] will successfully deliver this capability to the warfighter."

While the program's leaders are confident in the system's delivery, the timeline is less certain.

The GAO report said Sentinel's schedule is behind due to "staffing shortfalls, delays with clearance processing and classified information technology infrastructure challenges." Supply chain disruptions were contributing to the delay and there was concern over the sheer size and complexity of the project, the report also noted.

Citing the program office, the report said Sentinel's master schedule contains "many deficiencies and cannot be used to effectively manage the execution of the program" and that a "high-level review" and discussions on potential changes to the schedule are being conducted.

Retaking control of the schedule is just one challenge facing Sentinel's deployment. Once it reaches production, Minuteman III will need to be maintained while simultaneously transitioning to Sentinel.

"We're going to have to maintain that alert requirement," Shoults said. "We're going to have airmen out in the field, some supporting Minuteman III, some supporting Sentinel. And it's going to be a huge task" that the nation is counting on to be done "seamlessly," he said.

But they're ready, Lutton said. The past three years have been spent "setting the conditions for Sentinel deployment," from operators to maintainers, he said.

"Whenever that word comes to us, we are ready today to do that," he said. Operators have been conducting experimentation and simulated exercises over the last several months aimed at tactical problems they may encounter during transition, he added.

Operational procedures are also being revised, when possible, to be weapons system agnostic, he added. "So, we don't have a Minuteman III procedure when in fact we don't need a Minuteman III procedure. We need a security procedure."

As the Air Force prepares for Sentinel, support for the new system has been voiced across the Defense Department and the federal government — including \$3.6 billion for the program from the Biden administration in the fiscal year 2023 enacted budget and an endorsement in its Nuclear Posture Review, according to the CRS report.

Yet the program is not without its critics.

Bussiere said a "small subset" of both the American public "and some of our leaders on the Hill ... maybe don't understand the nature and value of the system." Some have questioned the need to invest "so much money in a capability that's never going to be used," he said.

"I would offer to you [it] gets used every day of every week, every second of every hour. It's used right now," he said. "The value and power and strength of this force is in its existence, in the message and the stabilizing factor it has across the fabric of the globe, for any potential adversary that has bad intentions."

"I'm not going to debate whether or not there are different positions because there are," Bussiere said. "But we need to completely understand that this nation has made a decision that we need it."

Sentinel is essential, Bussiere said, and "the journey is going to be difficult because it's probably one of the most complex capabilities and force changes that we've done in at least 50-plus years. And the unique aspect of that is not only caused by its size and scope, but it's caused by the requirement that we have to maintain full operational capability for our nation while we transition.

"That's not something we can take lightly," he continued. "It's going to take everyone in this room, effort and energy to make it happen. And quite frankly, it's a challenge we want." ND

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