

Next-Generation Interceptor Needed in Greater Quantities to Stay Ahead of the North Korean Missile Threat

Patty-Jane Geller

KEY TAKEAWAYS

The North Korean missile threat to the homeland is increasing and will likely be able to overwhelm U.S. homeland missile defenses in the future.

In response, DOD is developing the Next Generation Interceptor (NGI) to enhance U.S. homeland defense capabilities, but its addition of 20 NGIs will not suffice.

Instead, the DOD should plan to buy at least 64 NGIs to ensure the U.S. can continue to stay ahead of the rogue state threat and deny an attack on the homeland.

The Department of Defense (DOD) is pursuing the Next Generation Interceptor (NGI) program to add capacity and capability to the existing Ground-based Midcourse Defense (GMD) system, which defends the entire U.S. homeland against rogue state ballistic missiles. The DOD currently plans to buy 20 NGIs that will fill 20 existing empty silos in Fort Greely, Alaska, to augment the existing fleet of approximately 44 ground-based interceptors (GBIs). Yet as it becomes apparent that the nuclear missile threat from North Korea continues to grow in quantity and complexity and Iran is coming closer to a nuclear weapon, the United States will need to deploy more than 20 NGIs to outpace the threat beyond this decade. The DOD should instead plan to buy at minimum 64 NGIs to ensure protection against this threat into the future, enable

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options for a uniform or larger fleet of interceptors, and save money by taking advantage of economic order quantities.

Background

The United States relies on the GMD system consisting of four GBIs at Vandenberg Space Force Base, California, and around 40 at Fort Greely to defend the homeland from rogue state ballistic missiles. This capability aligns with long-standing U.S. policy for homeland missile defense to outpace the threats posed by rogue states, including North Korea and Iran.¹ The GMD system was initially deployed beginning in 2004 with 24 GBIs by 2008 and has grown to around 44 GBIs since then. (The precise number became classified in January 2023.²) In 2017, Congress approved a White House request to increase the number of GBIs from 44 to 64 to keep up with the advancing North Korean ballistic missile threat.³ The Missile Defense Agency (MDA) intended to produce Redesigned Kill Vehicles (RKVs) and mate them with 20 additional interceptors to eventually replace the rest of the GBI fleet, which is at risk of becoming obsolete due to aging. However, the RKV program was canceled in 2019 because of technological difficulties, and, instead, the DOD initiated the NGI program to build an entirely new interceptor.⁴

The NGI is envisioned to provide a substantial capability upgrade compared to the GBIs. Unlike the GBI, the NGI will include multiple kill vehicles, meaning that a single NGI can intercept multiple objects released from a single incoming missile—including warheads and decoys.⁵ A multiple kill vehicle capability is increasingly important as North Korea may, at some point, be able to arm its intercontinental ballistic missiles (ICBMs) with multiple warheads and decoys. In contrast, the current GBIs carry only a single kill vehicle, meaning they can only intercept one object—be it a lethal reentry vehicle, a decoy, or a piece of debris. The NGI is also being designed as a single system, an “all-up-round” specifically tailored to the missile defense mission. In contrast, the GBIs were rushed into service due to operational needs and, as a result, employ parts originally designed for other missions, including commercial off-the-shelf rocket stages, which adds complexity to maintenance and upgrades.

To achieve the greatest capability and value for the NGI, the MDA plans to fund two alternative designs—one by Lockheed Martin and another by Northrop Grumman/Raytheon—through the Critical Design Review phase of the acquisition process.⁶ Then, the contractors will submit a proposal for one test article and the production of 20 NGIs, broken into two production lots.⁷ The MDA plans to begin fielding the NGI by 2028, if not sooner in 2027.⁸

20 NGIs Is Not Enough

The NGI program has thus far received sufficient budget requests by the Biden Administration that Congress has fulfilled. However, as the North Korean (and potential Iranian) threat has increased since the program's initiation, 20 NGIs will likely not suffice.

In 2020, U.S. Northern Command (NORTHCOM) assessed that North Korea could challenge the GMD by 2025.⁹ Even three years after that assessment, North Korea has steadily improved both the quality and quantity of its missile and nuclear arsenals.¹⁰ It has successfully tested several ICBMs capable of reaching the continental United States, including the Hwasong-17, which will reportedly be able to carry three to four nuclear warheads at once.¹¹ Its February 2023 military parade featured at least 11 Hwasong-17 missiles.¹² North Korea also revealed a containerized missile, likely a prototype of a solid-fuel ICBM. Pyongyang conducted a static solid-fuel rocket engine test in December 2022 that it claimed produced more thrust than any U.S., Russian, or Chinese ICBM.¹³

North Korea's growing ICBM force with potential multiple warheads, along with the ability to indigenously produce large transporter-erector launchers for ICBMs, poses a credible threat of overwhelming U.S. missile defenses, a threat that will only continue to grow. In March 2023, NORTHCOM Commander General Glen VanHerck stated his concern that the North Korean capacity and capability "could exceed my ability to defend against a limited attack."¹⁴ According to a recent RAND report, North Korea could have 200 nuclear weapons and several dozen ICBMs by 2027.¹⁵ Given that the current GBIs can intercept only one object at a time, the GMD system could likely not address the North Korean threat should those projections come to fruition—even with an additional 20 NGIs.

The strain on the GMD system will further increase should Iran develop the capability to strike the U.S. homeland with nuclear missiles. According to Central Intelligence Agency Director William Burns, Iran could enrich uranium to weapons-grade within weeks of a decision to do so and is also improving the ability of its missile systems to deliver a nuclear weapon.¹⁶ Moreover, Iran's work on space launch vehicles indicates progress toward developing ICBMs, as they use many of the same technologies.¹⁷ Due to Iran's location on the globe and the trajectory its ICBMs would take, an Iranian missile threat to the U.S. homeland would particularly increase the difficulty of defending the East Coast given the location of the GMD system in the west.

As the threat continues to grow, replacing the entire GBI fleet with NGIs would provide a necessary boost in capability. Because the NGI can

intercept multiple objects at once, it would be better suited to address both a larger and more sophisticated—i.e., able to carry multiple objects at once—North Korean ICBM arsenal. While 20 NGIs will provide a useful capability and capacity boost to the GMD system in the short term, the steady growth in North Korean capabilities demonstrates that more will be needed in the future.

Otherwise, not only would the plan to purchase just 20 NGIs forgo needed capability, but it would also require continuing to sustain the aging GBIs, which is already proving costly and inefficient. After the cancellation of the RKV program, Congress authorized \$570 million in fiscal years 2020 and 2021 for a Service Life Extension Program to sustain the GBIs as the NGI is developed.¹⁸ This program enabled upgrades to existing interceptors and also resulted in the delivery of two additional GBIs to the fleet.¹⁹ Yet because the GBIs use commercial off-the-shelf parts and were not designed with long-term sustainment in mind, continuing to extend their service lives will not be simple or cheap. Some GBIs may even need to be retired without replacement, making it impossible to attain the goal of 64 total interceptors with only 20 NGIs to add to the total. Comparatively, a requirement for the NGI is for sustainment to be preplanned in the design. As a result, sustainment efforts for the NGI would be quicker, less frequent, and therefore less disruptive to the warfighting capability. In other words, it would increase the availability of the interceptors for the warfighter.

It is for these reasons that the Senate Armed Services Committee included a provision in its version of the National Defense Authorization Act (NDAA) for Fiscal Year 2023 requiring the DOD to provide a funding plan for no fewer than 64 NGIs in order to have a uniform fleet of interceptors, a plan that would provide the needed boost in both capacity and capability of the GMD system.²⁰ This provision was accepted by the full NDAA conference and signed into law.²¹

Implementing this plan would likely require building additional silo space at Fort Greely to accommodate a larger quantity of NGIs. The alternative process of directly replacing each GBI with an NGI one at a time would inevitably result in a decrease of interceptors available to the warfighter as interceptor replacement occurs. Instead of attempting to conduct removal and installation activities in the same area, additional silo space would minimize the number of interceptors that become unavailable to the warfighter until the transition process is complete. The MDA recognized this reality when it anticipated RKV deployment in 2019 by planning to add two missile silos to Missile Field 1 in order to ensure that the total number of GBIs did not drop during the transition to RKV.²² The Air Force has also

adopted this approach with its ICBM fleet of 400 Minuteman III missiles across 450 silos, allowing the service to refurbish empty silos and prepare them for the follow-on Sentinel missile.

The White House's Opposition

While DOD has not yet formally confirmed the instruction to NGI contractors to produce a total of 20 NGIs, the Biden Administration revealed its opposition to producing more than 20 interceptors in its Statement of Administrative Policy to the SASC's version of the NDAA, despite this plan's merits. The Biden Administration argued that purchasing at least 64 NGIs would be "extremely costly" and "inconsistent with both the 2022 NDS [National Defense Strategy] and 2022 Missile Defense Review."²³ However, both arguments are flawed.

First, while the NGI program does come with a significant price tag (around \$13 billion²⁴), planning to buy more NGIs now will ultimately save money in the long run. As the threat increases, a fleet consisting of around 44 GBIs and 20 NGIs will likely not suffice to outpace the North Korean threat, and the United States will eventually need to order additional NGIs. Since the GBIs were first fielded in 2004, consecutive Administrations have ordered more GBIs in blocks of 20 as the North Korean threat worsened. The United States should move away from this incremental approach in anticipation of the need for a greater missile defense capacity in addition to the increased capability and mission effectiveness the NGI will deliver for the warfighter. Planning to order enough NGIs to replace the current fleet now will give the defense industry the predictability it needs to make capital and workforce investments prudently. In other words, planning for at least 64 NGIs now allows industry to optimize its business practices to achieve the full goal, rather than spending in increments. It could also allow for more efficient acquisition strategies, such as multi-year procurements or block buys. Rather than opting for lower costs in the short term by only planning to buy 20 NGIs, the Biden Administration should be transparent about the growing threat and plan now for a larger purchase of NGIs. In doing so, the DOD can employ a lesson learned from U.S. military support to Ukraine by ensuring that the industrial base is sufficiently sized now to meet a future threat.

Second, buying at least 64 NGIs would be consistent with the top priority of the NDS of "defending the homeland." The NDS rightly highlights the need for "deter[ring] attacks against the homeland" by "rais[ing] potential attackers' direct and indirect costs while reducing their expected benefits."²⁵ Upgrading the interceptor fleet to consist of at least 64 NGIs would instill

further doubt in the mind of Kim Jong-Un that striking the United States could succeed. If Kim believes his missile fleet can overcome U.S. missile defenses, he might become more confident in his aggressive behavior toward South Korea and the United States. This scenario increases in likelihood as the current GBIs continue to age and North Korea's missile fleet becomes increasingly capable of defeating these less capable interceptors.

Buying more than 20 NGIs also aligns with the Administration's Missile Defense Review, which states that the United States will stay ahead of the North Korean missile threats.²⁶ In fact, it explicitly favors developing the NGI "to augment and potentially replace" the GBIs.²⁷ Standing by this commitment would require planning to buy more NGIs.

Strengthening the GMD system would also help strengthen U.S. extended deterrence commitments to South Korea, which appear to be weakening as the Korean public—and even President Yoon Suk-yeol—discuss developing an indigenous nuclear capability. The better the United States can defend the homeland from a North Korean missile attack, the less North Korea is able to decouple the United States from its allies by threatening the homeland should the United States intervene on behalf of South Korea. The question of whether the United States would risk Los Angeles to save Seoul is moot if the United States can deny an attack on Los Angeles.

Recommendations

To ensure that the GMD system stays ahead of the rogue state threat, the DOD should:

- **Plan to buy at least 64 NGIs.** Upon completion of the funding plan to acquire at least 64 NGIs as required by Congress, the MDA should adjust its plans to buy at least 64 NGIs and implement this plan in its future budget requests. The MDA's plan should account for the growing threat while also considering the need for spare interceptors for routine test flights, potential threat pacing upgrades, replacement interceptors should any be employed against adversary missiles, and the need to retire existing GBIs due to aging. As a result, the total number of NGIs needed will likely exceed 64 in order to meet the goal to stay ahead of the North Korean threat.
- **Strive to keep NGI production lines open should more NGIs in the future be needed.** The lack of active GBI production lines had prohibited the DOD from simply procuring more GBIs after the RKV

program was canceled and created more risk as NGI goes through its development.

- **Begin evaluating options to construct a new missile field to accommodate additional NGIs.** Fort Greely currently has room to build out additional missile fields as it has the capacity to fit 100 total interceptors spread among several missile fields.²⁸ Today, there are around 40 GBIs deployed among three missile fields, and Missile Field 4 was recently constructed to hold the 20 new NGIs, which will total to around 60 interceptors, leaving room for 40 more interceptors.²⁹ Taking advantage of this space and constructing additional silos would allow for a more seamless transition between the NGI and current GBIs. No weapons system has 100 percent availability; having 60 silos at Fort Greely will not mean 60 interceptors are always available for the warfighter, as maintenance and sustainment activities will inevitably take interceptors offline. NGI is being envisioned to minimize the maintenance work required; however, this necessity will be exacerbated as NGI is deployed during the transition. Building additional silo space would help offset this reality.
- **Reevaluate the need for a third interceptor site on the East Coast.** The DOD has previously considered building an additional interceptor site on the East Coast of the United States to add capability to the GMD system. An East Coast site could provide better coverage of missile trajectories from Iran, in particular.³⁰ The DOD should assess whether an East Coast site to host additional NGIs would be an effective way to allocate resources against growing threats that could come from rogue nations in different locations around the world.

Conclusion

U.S. homeland missile defense not only contributes to deterrence of growing missile threats—it also provides protection for the American people should deterrence fail. As a result, the United States should prioritize making prudent decisions regarding the future for the NGI program to ensure that rogue actors cannot hold the U.S. homeland hostage.

Patty-Jane Geller is Senior Policy Analyst for Nuclear Deterrence and Missile Defense in the Center for National Defense at The Heritage Foundation.

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