

# Ground-Based Interceptors 20 Years On: What Has the Missile Defense Agency Bought Us?

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## KEY TAKEAWAYS

It is time for a new course in missile defense that meets our evolving security needs and is designed specifically to deter Chinese and Russian missile attacks.

This new course will require a comprehensive understanding of today's threats and a coherent plan of action across multiple departments.

The Missile Defense Agency must move beyond intercepting rogue state missiles and focus on a broader spectrum of threats, to include limited strikes on the homeland.

Despite U.S. policymakers' allocation of more than \$170 billion over the past two decades to create a missile defense architecture,<sup>1</sup> the United States is unprepared to counter emerging nuclear missile threats. During that time, the global security environment, particularly the nuclear threat, has deteriorated: China's growing strategic nuclear arsenal is on track to reach numerical parity with the U.S. by 2035; Russia consistently threatens the West with nuclear strikes; and North Korea and Iran are expanding their missile programs and refuse to comply with international regulations and inspections.

A 20-year retrospective view of U.S. missile defense reveals a homeland defense capability that is largely unchanged from 2004, when the United States faced a far more benign security environment. This raises two questions:

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- After two decades and more than \$170 billion, has U.S. defense policy kept pace with the emerging missile threat to the American homeland?
- Is it time for United States' policymakers to redirect the Missile Defense Agency so that it will be more aggressive in fielding a multi-layered missile defense architecture that is suitable to the emerging threat environment?

## The Anti-Ballistic Missile Treaty

A product of the Cold War, the Anti-Ballistic Missile (ABM) Treaty of 1972 restricted both the United States and the Soviet Union to fielding a small ballistic missile defense architecture.<sup>2</sup> Prohibiting space-based and sea-deployed missile defenses, the treaty permitted each nation to maintain two ABM deployment areas—one protecting an Inter-Continental Ballistic Missile (ICBM) launch site and the other deployed at the nation's capital—with a maximum of 100 interceptor missiles and 100 launch systems per site. A 1974 agreement further reduced this number to only one ABM site apiece.<sup>3</sup> The United States chose to defend its missile fields; the Soviets concentrated their ABMs around Moscow.

Though the ABM Treaty sought to curb the strategic arms race and decrease the risk of nuclear conflict, President Ronald Reagan believed the treaty was not adequate to defend the United States. During a 1983 televised address, Reagan announced the Strategic Defense Initiative (SDI), designed to promote peace and secure the United States against nuclear threats by fielding robust missile defenses, to include space-based capabilities. "I call upon the scientific community in our country," Reagan declared, "those who gave us nuclear weapons, to turn their great talents now to the cause of mankind and world peace, to give us the means of rendering these nuclear weapons impotent and obsolete."<sup>4</sup> Sarcastically nicknamed "Star Wars" in the media, Reagan's program sought to create a space-based missile defense system capable of detecting and destroying enemy ICBMs at any phase of flight.<sup>5</sup> Critics protested that SDI was far-fetched and expensive and that it would escalate the nuclear arms race. Despite backlash, Congress devoted \$30 billion to the program over the next decade.<sup>6</sup> The Strategic Defense Initiative Organization (SDIO) researched and developed detection, tracking, and countering systems for a space-based missile defense layer.

Though Reagan's program did not survive the Clinton Administration, it set a precedent for missile defense by sea, land, and space. From the SDIO emerged several models for missile defense that have culminated in today's Missile Defense Agency (MDA).<sup>7</sup>

## Establishment of the Missile Defense Agency

The MDA is the third evolution in a series of missile defense organizations, succeeding the SDIO and the Ballistic Missile Defense Organization (BMDO).<sup>8</sup>

In 1994, President Bill Clinton replaced the SDIO with the BMDO. Secretary of Defense Les Aspin announced the termination of SDIO and transferred all missile defense responsibilities to the BMDO, marking the “end of the Star Wars era.”<sup>9</sup> Under President Clinton, the United States refocused its resources away from large-scale conflict and toward smaller-scale threats. After the fall of the Soviet Union, many in the American government believed that smaller-scale operations such as Operation Desert Storm, the threat from rogue states such as Iran and North Korea, and terrorist threats would represent the more likely threats to American security. Therefore, while the SDIO sought to field space-based missile defense systems, the BMDO would develop theater missile defenses, signaling a shift in policy-makers’ defense priorities.

With the election of President George W. Bush in 2000, the new Administration plotted a different course with regard to missile defense—one that was focused primarily on defending the American homeland from missile threats from rogue states like North Korea. Following the attacks of September 11, 2001, the Bush Administration revived missile defense research, development, and deployment. Bush withdrew the United States from the ABM Treaty and, deeming the treaty dated, announced that deterrence “can no longer be based solely on the threat of nuclear retaliation.... This treaty does not recognize the present or point us to the future. It enshrines us in the past” and “hampers our ability to keep the peace, to develop defensive weapons necessary to defend America against the true threats of the 21st century.”<sup>10</sup>

No longer focused on theater missile defense, homeland missile defense would dominate America’s post-ABM missile defense efforts. President Bush directed that missile defense would now focus on rogue states developing and harboring weapons of mass destruction. Signifying the mission change, the Ballistic Missile Defense Office became the Missile Defense Agency.

## The Ground-Based Interceptor Approach

To boost American defenses against “rogue states,” Bush directed the Department of Defense (DOD) to field sensor-supported initial homeland missile defense capabilities by 2004. In compliance with these directives,

the MDA established the Ground-Based Midcourse Defense (GMD) system, designed to intercept incoming intercontinental ballistic missiles.<sup>11</sup> Over the next few years, the MDA placed 30 ground-based interceptors (GBIs) at military bases in Fort Greely, Alaska, and Vandenberg Air Force Base, California, complete with sensors across 15 time zones on land, at sea, and in orbit. In 2013, amid growing North Korean threats, President Barack Obama had another 14 interceptors installed at Fort Greely, bringing the GBI total to 44.<sup>12</sup>

The GBIs are a beneficial and necessary step in creating a U.S. missile defense architecture, but with their high cost and limited defense capabilities, they are not the solution to the problem of ensuring the U.S. against nuclear threats. In 2011, MDA Director Lieutenant General Patrick O'Reilly testified that each GBI cost "around \$70 million."<sup>13</sup> This number, however, fails to include the additional cost of refurbishing deployed interceptors or the cost to fix issues discovered during test failures. For instance, a 2012 Government Accountability Office report estimated that refurbishments would cost "from \$14 million to \$24 million."<sup>14</sup> Ultimately, each GBI costs closer to \$90 million.

In addition to their costs, the current generation of GBIs do not provide sufficient protection against future threats both from rogue states and from great powers such as China and Russia. In fact, they soon may not even be capable of countering an ICBM attack from North Korea alone. Since 2012, North Korea has conducted about 220 missile tests. Satellite images suggest a strategic nuclear arsenal of over 40 nuclear weapons, which may be mated to 11 Hwasong-17 ICBMs, each of which is capable of carrying four nuclear warheads.<sup>15</sup> According to a U.S. Northern Command assessment, North Korea's sustained expansion of its missile and nuclear programs could enable it to overwhelm the U.S. GMD by 2025.<sup>16</sup>

Compounding rogue state concerns, the Iranian missile program also continues unchecked. So far, Iran is not known to possess a nuclear weapon, but it likely possesses ballistic missiles that are able to carry a nuclear warhead. Violating the Nuclear Non-Proliferation Treaty (NPT),<sup>17</sup> Iran is also stockpiling uranium "enriched up to 60% purity,"<sup>18</sup> and a former lead official in Tehran's program claims that "the Islamic Republic has all the pieces for a weapon 'in our hands.'"<sup>19</sup> In September 2023, the Islamic Republic de-designated and expelled eight IAEA inspectors. According to IAEA Director General Rafael Mariano Grossi:

The Agency has lost continuity of knowledge in relation to the production and inventory of centrifuges, rotors and bellows, heavy water and uranium ore concentrate. It has been more than three years since Iran stopped provisionally

applying its Additional Protocol and therefore it is also over three years since the Agency was able to conduct complementary access in Iran.<sup>20</sup>

### **United States envoy to the IAEA Ambassador Laura Holgate testified on March 7, 2024, that:**

After five years of only limited, last minute cooperation by Iran; five years of failure by Iran to follow through on its commitments; and five years of unresolved questions related to the presence of nuclear material at undeclared locations in Iran, we cannot allow Iran's current pattern of behavior to continue. We must consider further action in an effort to gain the assurances that the international community needs about the nature of Iran's nuclear program, especially as Iran continues to build nuclear capacity that could be relevant to a nuclear weapons program should Iran decide once again to take up such an effort.<sup>21</sup>

North Korea and Iran have proven their willingness to bypass nuclear treaties. Law is not enough to bring nuclear protection, and words are not enough to deter our adversaries. Capabilities and, ultimately, action are needed as well.

## **The Low-Escalation Pathway Temptation**

While rogue state threats still merit concern, they are not the most pressing national security threat facing the United States today. Russia and China are already challenging American hegemony and potentially upsetting strategic stability in the process. Russia has attempted through nuclear coercion to force a Ukrainian surrender and has hinted at pursuing a low-escalation pathway.

In a low-escalation nuclear conflict scenario, an enemy would attack American homeland sites and military assets with a limited number of low-yield nuclear weapons, limiting civilian casualties.<sup>22</sup> The idea is that should an actor (such as China or Russia) find itself on the losing end of a conventional conflict with the United States, a series of limited (such as a dozen) nuclear strikes at key targets could prompt cease-fire talks without leading to an all-out nuclear conflict. This low-escalatory pathway of forcing a nation to negotiate has not been tested, but the logic is sound, and there is some indication that our adversaries are considering such a strike. China is building a nuclear arsenal that in the coming years could enable it to carry out such a strike, and Russia openly hints at the prospects of limited nuclear strikes against targets in the West.

The United States' approach to missile defense, as enacted through the MDA, is not comprehensive; it cannot address low-escalation conflicts from China or Russia or compete with China's pacing challenge. According to the DOD's annual report on *Military and Security Developments Involving the People's Republic of China*:

In 2020, the DoD estimated China's operational nuclear warhead stockpile was in the low-200s and expected to at least double by 2030. However, Beijing has accelerated its nuclear expansion, and DoD estimates China's stockpile had more than 500 operational nuclear warheads as of May 2023. By 2030, DoD estimates that the PRC will have over 1,000 operational nuclear warheads, most of which will be fielded on systems capable of ranging the CONUS [Continental United States].<sup>23</sup>

The United States needs a comprehensive missile defense layer to counter an adversary's low-escalation pathway. A comprehensive missile defense layer that can destroy up to a hundred adversary nuclear-armed missiles—be they from North Korea, Russia, or China—would force leaders to fire over one hundred nuclear-armed missiles in the hope of achieving the same effects that would be achieved by a successful low-escalation pathway strike absent missile defense.

While adversaries might be tempted to execute a low-escalation pathway strike as a high-risk but potentially high-reward strategy to end a conflict on terms acceptable to them if it meant only firing a dozen nuclear-armed missiles at the American homeland, they would be far more cautious about firing over a hundred nuclear-armed missiles at the United States. Such a strike would almost certainly trigger the kind of massive nuclear retaliation by the United States that they would otherwise try to avoid. In this way, a credible and effective multilayered missile defense architecture could deter America's adversaries from pursuing an otherwise attractive low-escalation pathway.

## Recent MDA Successes

As noted, over the past 20 years, the MDA has devoted more than \$170 billion to developing and deploying sensors that can detect and intercept a limited number of ICBMs as well as a theater missile defense capability. Recent successes in the Middle East and Ukraine have shown the utility of theater missile defenses, and the MDA should be applauded for its role in developing such capabilities.

The newest addition to the midcourse defense system, the Next Generation Interceptor (NGI), offers the same capabilities as the legacy GBIs. Though the NGI program will add 21 interceptors to the current 44, it does little to expand the missile defense layer because the defensive capabilities that it offers, while improved, are ultimately similar to those of the existing legacy GBI layer.

American policymakers have directed the MDA to include over the next decade more spending on equipment that brings small improvements to American missile defenses. Following the installation of the 44th interceptor in 2017, President Donald Trump planned for 20 more interceptors at Fort Greely. These NGIs will cost almost \$18 billion over the life of the program, including \$13.1 billion in up-front costs. Once the interceptors are deployed, each operational interceptor will cost an estimated \$850 million. The NGIs, set to begin installation in 2028, will expand the ground layer—a necessary component of missile defense—but at an exorbitant cost and model that is financially impossible.

Though the NGIs do somewhat increase the number of missiles that the United States can intercept, they will not defend the nation from a joint attack or an attack from up to one hundred nuclear-armed missiles. This limited missile defense leaves the United States vulnerable to a limited nuclear strike and opens the door for adversaries to attempt nuclear coercion against the United States.

## How to Change Missile Defense

The United States is running a losing race. With North Korea alone capable of overwhelming U.S. missile defense systems, the United States must explore other feasible and cost-effective missile defense systems.

The fact of the matter is that in 2004, the MDA fielded the initial GBI capability. Twenty years later, despite spending billions every year on missile defenses, we still have functionally the same missile defense capability over North America. Moreover, the current MDA mission fails to identify a significant role in mitigating the threats from Chinese and Russian ICBMs. This should be rectified.

This is not to suggest that there should be an iron dome over North America, but missile defenses must be able to protect the United States from one hundred nuclear-armed missiles by denying an adversary the ability to exploit a low-escalation pathway strike. Ultimately, a larger but still limited multilayered missile defense architecture that can destroy adversary ICBMs would strengthen deterrence by denying our adversaries the benefits of such an attack.



How can we achieve this? We must implement a space-based missile defense overlayer. A space-based layer would enable the United States to detect and destroy incoming enemy ICBMs in the boost phase before they are exoatmospheric and at their highest speeds, effectively denying our adversaries a viable low-escalation pathway. The cost to implement such a layer is more affordable than it was even 20 years ago thanks to the private sector and individuals like Elon Musk who can launch satellites for \$1 million.<sup>24</sup> This would grant the United States the ability to field increasingly diverse missile defense capabilities.

In addition, the United States should bring the total number of NGIs up to one hundred, fielded at a third site on the East Coast, to expand the coverage of North America with missile interceptors and deter adversaries from attacking the American homeland.

To this end, the Missile Defense Agency should:

- **Develop** a five-year strategy to deploy a multilayered missile defense architecture with a space-based missile defense layer that can intercept adversary ICBMs globally in their boost phase.
- **Field** a third, East Coast missile defense site.

## Conclusion

For 20 years, the United States has devoted time, resources, and money to maintaining the same homeland missile defense capability that it had when George W. Bush was President. It is time for a new course in missile defense. This new course will require a comprehensive understanding of today's threats, a coherent plan of action across multiple departments, and a system that can be adapted to meet the nation's evolving security needs. Given the rhetoric, evolving doctrine, and expanding nuclear and missile arsenals of China and Russia, effective and expanded missile defenses will play an ever more critical role in America's deterrent posture.

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