

BRIEFING MEMO

The Missile Defense Agency's FY21 Budget: Positive Developments, Concerns, and Questions for Policymakers

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If enacted, the Missile Defense Agency's FY21 budget submission to Congress would make some improvements to the country's missile defense architecture, but it would fall short of what is necessary to balance near-term priorities and investments for future threats. To better sync up with the National Defense Strategy (NDS) and provide optimal protection of U.S. vital interests in an increasingly complex threat environment, policymakers should grapple with the threat assessments and U.S. strategies to deter and defend and adjust the direction of programs and funding levels accordingly.

The MDA FY21 budget request is \$9.187 billion. This is a decrease from both the FY20 president's budget request of \$9.431 billion and the enacted FY20 amount of \$10.450 billion.

This includes the delivery of a Long Range Discrimination Radar (LRDR) homeland defense radar in Alaska, procurement

of SM-3 Block IB and IIA missiles interceptors, Terminal High Altitude Area Defense System (THAAD) missile interceptors, ballistic missile defense system (BMDS) testing, and investments in the defense of hypersonic weapons defense including regional glide-phase weapon development.

The biggest changes over the previous years' enacted levels are in initiatives to bolster homeland missile defense by complementing the only homeland missile defense system, the Ground-based Midcourse Defense (GMD) system. Specifically, it calls for the completion of missile field 4 (MF 4) at Fort Greely, Alaska in anticipation of 20 aspirational Next Generation Interceptors (NGIs), the continued effort to develop the NGIs, and the initiation of a homeland defense "underlay" by adapting regional systems such as Aegis and THAAD to provide a layered homeland defense. The other changes are in what is absent—the MDA no longer has in its purview a single boost

phase defense program or the much ballyhooed Hypersonic and Ballistic Tracking Space Sensor (HBTSS) program.

Positive Developments

The Trump Administration's efforts to break down the regional vs homeland technical construct is laudable. The construct has been forced by policymakers and doesn't make sense for today's threat environment. Adversaries across the spectrum from peer competitors like China, the priority threat outlined in the NDS, and Russia, the close second priority threat in the NDS, and rogue nations like North Korea and Iran, are fielding diverse and expansive ranges of modern offensive missile systems. Adversaries are using various ranges and kinds of missiles to threaten U.S. vital interests abroad as well as the Americans on U.S. territory. Categorizing U.S. defensive systems as "regional/tactical" or "homeland/strategic" does not make sense anymore. Our adversaries do not coordinate their offensive missile arsenal in this way and making these distinctions on our side will hamstring the United States from providing optimal defenses for our nation.

Similarly, it is good that the Trump Administration is willing to squeeze capability out of current systems like the Aegis SM-3 IIA program as well as the THAAD program. Leveraging existing systems to bolster defenses across regions could offer a cost-effective means of developing integrated architectures across domains. MDA Director Vice Admiral Jon A. Hill explained how the country might employ Aegis for a homeland defense mission: "When we say layered homeland defense what we mean is we want to give the country options. We want Northern Command, INDOPACOM... to have the flexibility to say, I'm going to launch a GBI against this particular threat type. If I have NGIs downstream, I can now have a trade between those. If I want to do... a particular area that I'm really concerned about, I can park a ship there or I can build an Aegis Ashore site. And I can launch SM-3 Block IIAs."¹ VADM Hill went on to hint at ways THAAD can be improved, leveraging an FMS sale to Saudi Arabia, for a

potential homeland defense application. It is worth recalling that utilizing THAAD for homeland defense is not a novel concept. In 2009, when North Korea was threatening to launch an intercontinental ballistic missile (ICBM) towards the United States, then Secretary of Defense Robert Gates highlighted GMD's ability to take out ICBMs, and then he augmented defense of Hawaii with THAAD.² In theory, THAAD would take the final shots at any piece of a missile that leaked through the first layer of U.S. defenses.

The budget request also builds on the Trump Administration's shift to include defenses against missiles beyond those with ballistic trajectories. Adversaries are investing in cruise missiles and hypersonic glide vehicles that present new challenges to traditional ballistic missile defenses. And, even ballistic missiles are behaving in ways that obfuscate the categories of ballistic and non-ballistic. Missile defense systems and strategies must adapt to increasingly capable missile threats, which are improving due to proliferation of advanced technologies with more speed, maneuverability, and accuracy.

It is also encouraging to see the Department of Defense better include missile defenses as it considers how best to deter adversaries. The Trump Missile Defense Review highlighted the role missile defense plays in deterrence, but it must improve in significant ways to do so more effectively. Admiral Charles A. Richard, Commander of U.S. Strategic Command, stated, "A robust and credible layered missile defense systems paired with our conventional and nuclear force capabilities provides the ability to deter strategic attacks, deny benefits, and impose costs against any potential adversary."³

Problematic Developments

The timeline for improving U.S. homeland defense leaves unacceptable capability gaps. Despite U.S. efforts to convince the Kim regime to make the strategic decision to forgo its nuclear missile program, North Korea continues to develop and improve its program. Adapting and improving homeland

missile defense in the near term to stay ahead of the North Korean missile threat is imperative. This is not in conflict with the NDS, which prioritizes efforts to compete with and deter countries with the ability to pose an existential threat to the United States: namely, China and Russia. To the contrary, sustaining and improving homeland defense will strengthen the hand of diplomats negotiating with adversary regimes, will help create a more credible deterrent to keep North Korean aggression at bay, and protect the American people if deterrence fails.

The Bush Administration prudently withdrew the United States from the outdated Anti-ballistic Missile (ABM) Treaty and then promptly deployed GMD in 2003. The government's intent was to field something quickly to provide the American people with a degree of defense against ICBMs and to improve the system over time. The Undersecretary for Research and Technology Michael Griffin recently lauded the improved effectiveness of GMD and pushed back on the criticisms and false assumptions about its reliability. The last flight test for GMD was on March 25, 2019. In that test, a threat-representative ICBM target launched from the Ronald Reagan Ballistic Missile Defense Test Site on Kwajalein Atoll in the Republic of the Marshall Islands and was successfully intercepted by two GBIs launched from Vandenberg Air Force Base, California. This was the first salvo test of GBIs and demonstrated a realistic and complex threat scenario.⁴

At Hudson Institute on August 13, 2019, referencing the test, Under Secretary Griffin said:

"But the last two high-speed intercept tests that we have done using the deployed system were extraordinarily successful. I mean, they were hit to kill in very aggressive scenarios with the deployed hardware...They were very successful. I have a great deal of confidence in the technical capabilities of that system. Now, if we want more rounds, we're -

*you know, as I like to say with all of these systems, you get to the point where you can't buy the parts anymore. You have parts obsolescence issues. So if we want more rounds, we're going to have to have a redesigned kill vehicle. And we are pursuing that but the system we have in the ground today is obviously quite capable."*⁵

Even before this test which bolstered confidence in the system, President Trump suddenly called for a boost in the country's GBI capacity, as part of his strategy to strengthen defense while the Kim regime underwent a rapid tempo of ICBM testing.⁶ In August 2017 President Trump called for additional deployments of 20 GBIs.⁷

On October 3, 2017, then Chairman of the Joint Chiefs of Staff, General Joseph Dunford, Jr., outlined the threat and agreed with the assessment that an increase in defense was a prudent decision. He stated:

*"Based on the current capacity of the North Korean threat, both the type and the amount of missiles that they possess, we can protect Hawaii today against an ICBM. We can protect the continental United States against an ICBM... As the capacity of the threat increases - that is the size, not just the lethality, of missiles that they may possess - we need to be concerned about ensuring that our ballistic missile defense capability keeps pace with that threat. We do think an increase is warranted."*⁸

The Department immediately began work on completing the silos for those missiles; however, the Pentagon abruptly canceled the GBI employment and those silos remain empty to this day. Pentagon leaders halted the employment of those GBIs because they deemed the Redesigned Kill Vehicle (RKV) program irredeemably flawed for reasons that have not been publicly disclosed.



To be sure, the RKV program was never intended to increase the capability of the GMD system against current or future threats; instead, its purpose was to make the EKV more producible. But now that that program is canceled, there are no EKVs to put atop additional GBIs. Consequently, the cancellation of that program significantly set back improvements to the system. If the U.S. government does not either restart the production line of the CEIIs, the kill vehicles that performed well in the last two tests, or pursue a new kill vehicle leveraging the research from the RKV program, there will be no qualitative improvement either in capability or capacity until the NGIs are deployed realistically in a decade or more. Due to the degree to which the RKV program was developed, it is entirely conceivable that a new kill vehicle could leverage research and development from that investment to produce something even more capable than the currently deployed kill vehicles. More than anything, there should be a greater sense of urgency to improve the system in the near term while the Department and industry work toward a solution to inevitable future threat sets.

Congress has expressed its discontent⁹ with the Pentagon's decision to permit the GMD program to remain as-is until the aspirational NGI program is possibly deployed. But the Pentagon has shown resistance to pursuing a dual-path approach: improving the GMD system for the near-term threats and investing in a greatly improved interceptor concept to meet much more difficult requirements set by the kinds of complex threats the intelligence community is anticipating.

And although the NGIs could be housed in those silos, and the MDA is optimistic that it will, it is reasonable to assume that a more capable interceptor designed to meet very ambitious requirements will also necessarily increase in size.

With this context in mind, the judgment of the Defense Department to invest in the Next Generation Intercept (NGI) \$664.1 million in FY21 for NGI, a sketch of a concept at

this point, and with hopes for testing and possible initial deployment at the end of the decade, without a plan for an interim improvement to the GMD system, is problematic. To be sure, the NGI sounds appealing. The Department aspires to develop a "super GBI," capable of handling far more complex and challenging threat sets including from countries beyond the threats posed by North Korea. Also, due to the proliferation of technology, it would be a mistake to count on North Korea's missile program remaining qualitatively inferior to that of China and Russia.

The budget also did not include a robust space sensor architecture. Without an updated sensor architecture, the layered system is not adequately prepared to detect, track, and kill its targets. While there are some positive developments related to sensors in the MDA budget, there are holes. In order to truly transform the missile defense architecture, there must be a space tracking layer and eventually a space intercept layer. The MDA budget did include a request of \$32.1 million for Missile Defense Space Programs, which includes a Space-based Kill Assessment (SKA) project, and \$34.1 million for the Space Tracking and Surveillance System (STSS) to sustain two satellites in low earth orbit that could one day contribute to a future operational missile tracking and surveillance constellation. Neither of these programs signal a serious effort to realize what has long been a missile defense priority: a robust space tracking sensor layer able to provide birth-to-death tracking of both ballistic and hypersonic missiles. There is roughly \$99.6 million for the Hypersonic and Ballistic Tracking Space Sensor (HBTSS) program in the Space Development Agency (SDA), an embarrassingly and inexcusably small amount in light of the chorus of voices from senior Pentagon officials expressing this program as a priority for missile defense in the era of great power competition.

Last, the budget also cancels important work for boost phase defense. It may be the case that directed energy research and development are in other program lines outside the MDA

portfolio, but it is concerning that they may no longer be viewed as integral to the missile defense mission.

Questions for Congress as it considers the MDA's plans and programs and seeks to provide the nation with a robust missile defense architecture that makes sense.

1. When rolling out his Missile Defense Review, President Trump stated: "Our goal is simple: to ensure that we can detect and destroy any missile launched against the United States anywhere, anytime, anyplace." This is consistent but more explicitly forward-leaning than the MDR that the president was introducing.¹⁰ This ambitious initiative would require directed energy programs and a space-enabled intercept capability, none of which is included in this budget. The Congress has also been amending the National Defense Authorization Act to strengthen or weaken U.S. policy. As Dr. Michaela Dodge persuasively argued, "[T]he Administration will have to get on the same page consistently if it wants to effectively communicate the value of ballistic missile defense to the American people and members of Congress who represent them. The American people deserve to be protected, regardless of the origin of missile threats, and protection against limited missile threats appears to be feasible."¹¹ **In an era of explicit competition with China and Russia, is the United States developing a defense against limited strikes from those countries with a sense of urgency and purpose? Why did the Department choose not to pursue these programs? If the Department remains committed to directed energy concepts but has removed them from the MDA purview, what is their application?**
2. Senior Pentagon officials have repeatedly told Congress that a sensor layer consisting of a network of satellites to detect and track ballistic and non-ballistic weapons flying at hypersonic speeds is a top priority. General John Hyten, then serving as the Commander of Strategic Command,

now serving as the Vice Chairman of the Joint Chiefs of Staff, has called for the Department to move faster in its mission to develop, test, and deploy an initial capability. In early 2019 said:

"Put some sensors on some satellites, fly them cheap, fly them fast, see what they can do and then figure out what you need to actually go build... If you do that we'll go infinitely faster, save enormous amounts of time, enormous amounts of money, and you'll get the capability faster. But that's not the way we do it. We try to study the heck out of it to get a perfect answer before we start something. I think that's crazy."¹²

And yet, HBTSS has no money in the MDA budget, despite Congress's insistence that MDA should have this responsibility.¹³ Instead, there is a small amount in the Space Development Agency (SDA). **Why is HBTSS under SDA and why is the funding request so low? What is the timeline and what can the Department do to move at the speed advocated for by General Hyten? Are we making the error of trying to get a near perfect solution when a 50% solution is enough initially?**

3. Admiral Hill said: "We've worked very closely with NORTHCOM and with Strategic Command. And we've come through an Operational Forces Standing Committee. We have a JROC tomorrow. Release the RFP by the end of the months. Get the feedback from industry. And industry has been very responsive. We've had a number of industry days, a number of RFIs, great communications with industry. And they've all come back and said, we can build to that. So now the question is, what will they build? And what's the timeline? And what will we select in the endgame? So our intent is to go to award by the end of the year." **What is the realistic schedule for NGI, including for rigorous testing, which would be necessary for a brand new missile?**



Will restricting it to the size of the current silos be a problem for achieving its ambitious requirements?

4. The Administration's National Defense Strategy prioritizes the threats from large and sophisticated powers like China and Russia, and then second-tiered powers like North Korea and Iran, and then non-state terrorists. As the United States draws down its force presence in the Middle East and shifts to a greater focus on deterring large powers, the threats from rogue nations and terror states will continue. **Doesn't the missile attack from Iran underscore the importance of increasing the number of missile defense systems abroad**

to protect the smaller U.S. footprint?¹⁴ Shouldn't missile defense play a larger role in managing the U.S. strategy as laid out by the NDS in terms of U.S. deployments and a boost in foreign military sales (FMS)? As the MDR correctly argues, missile defense plays a significant role in deterrence. If the United States seeks to bolster the credibility of deterrence to avoid military conflict, there should be a significant increase in both the quality and quantity of missile defenses. The budget false woefully short and does not reflect a shift in priority or strategy. Why?

Endnotes

- 1 Missile Defense Agency Director, Vice Admiral Jon Hill, press conference on February 10, 2019.
- 2 Julian Barnes, "U.S. Heightens Hawaii's Missile Defenses, Chicago Tribune," June 19, 2009, at <https://www.chicagotribune.com/news/ct-xpm-2009-06-19-0906180526-story.html>.
- 3 Admiral Charles A. Richard, Commander of U.S. Strategic Command, briefing materials.
- 4 Missile Defense Agency, U.S. Department of Defense, press release on March 25, 2019, at https://www.mda.mil/news/gallery_gmd.html.
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- 6 Brad Lendon, "US slams North Korea missile test as Kim claims 'whole US mainland' in reach," July 30, 2017, at <https://www.cnn.com/2017/07/29/asia/north-korea-intercontinental-ballistic-missile-test/index.html>.
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- 9 Senate Report 116-103 on S.2474: "The Committee has been briefed by the Under Secretary of Defense (Research and Engineering) and the Director, MDA, about these proposed program adjustments and supports developing and fielding an operational NGI while continuing to sustain and modernize current GMD capabilities."
- 10 See also Rebecca Heinrichs's: "Missile Defense Needs Trump's Attention," Real Clear Defense, October 25, 2019, at https://www.realclearpolitics.com/articles/2019/10/25/missile_defense_needs_trumps_attention.html.
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- 12 Aaron Mehta "Hyten: Stop Studying The Heck Out of Space Systems and Get to Work," Defense News, January 17, 2019, at <https://www.defensenews.com/space/2020/01/17/hyten-stop-studying-the-heck-out-of-space-systems-and-get-to-work/>.
- 13 Public Law No: 116-92 Section 1683 says "the Secretary of Defense shall assign the Director of the Missile Defense Agency with the principal responsibility for the development and deployment of a hypersonic and ballistic tracking space sensor payload."
- 14 See Ian Williams' "Uncomfortable Lessons: Reassessing Iran's Missile Attack, Center for Strategic and International Studies, February 6, 2020, at <https://www.csis.org/analysis/uncomfortable-lessons-reassessing-irans-missile-attack>. And Rebecca Heinrichs's "Iranian Missiles and Americans Exposed," Real Clear Defense, February 10, 2020, at <https://www.hudson.org/research/15704-iranian-missiles-and-americans-exposed>.



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