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Expert Commentary on the 2022 Missile Defense Review

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Preface

This *Occasional Paper* provides a compilation of views on the Biden Administration's *2022 Missile Defense Review* (MDR). The unclassified version of the *Missile Defense Review* was publicly released in October 2022. Along with the 2022 *Nuclear Posture Review*, the MDR was integrated with the administration's 2022 *National Defense Strategy of the United States of America*. The MDR provides insight into the Biden Administration's approach to missile defense in light of adversary missile capabilities, which it characterizes as posing "an expanding and accelerating risk to the U.S. homeland, U.S. forces abroad, and our Allies and partners."

The commentaries contained in this *Occasional Paper* reflect the personal views of well-respected subject matter experts in the field of missile defense and do not necessarily represent the opinions of the U.S. government or any entity or organization with which the authors may be affiliated. Many of the contributors have a distinguished record of service at senior levels of the U.S. government and their views are informed by years—in some cases, decades—of public service dealing with strategic-level national security issues, including missile defense. In addition, perspectives from foreign experts are also included.

This volume begins with commentary from James Anderson, who argues that the MDR is a "mixed bag," containing some positive statements, but lacking specificity on how to match policy aims with fiscal resources. Azriel Bermant provides an Israeli perspective on the value of missile defenses in the context of the MDR. Matthew Costlow argues that the MDR fails to move the needle sufficiently on homeland missile defense, making the case that a more robust homeland missile defense posture can reduce the risks of accidental, unauthorized, or "third party" attacks and contribute to crisis stability—goals that missile defense critics generally support. Peppi DeBiaso

sees some positive movement in the MDR's call for defending the homeland against cruise missile threats from major nuclear-armed adversaries but notes that Washington should re-examine continued U.S. vulnerability to Russian and Chinese ballistic missile threats. Michaela Dodge contends there is a gap between the MDR's aspirational goals and the Biden Administration's missile defense plans and programs. Robert Joseph calls for a new commitment at the highest levels of the U.S. government to defend the American people from coercive nuclear attacks on the homeland. Tom Karako notes areas of continuity with prior MDRs but also highlights some unaddressed issues, including policy and procurement shortcomings that require additional attention. Steven Lambakis sees a lack of "vision" in the MDR for strengthening missile defenses through the application of advanced technologies and the exploitation of space. David Lonsdale provides a British view, arguing that the MDR demonstrates a lack of integration with the administration's other strategy documents and that its continued emphasis on mutual vulnerability and "stability" with Russia and China undermines U.S. strategic objectives. Henry "Trey" Obering sees the MDR's lack of attention to space-based defenses as evidence of the Biden Administration's lack of seriousness in defending the homeland against Russian and Chinese missile threats. Sugio Takahaski offers a Japanese perspective, arguing that the MDR "falls short" in addressing missile threats from China by ignoring the strategic and regional implications of Beijing's expanding nuclear missile arsenal. David Trachtenberg concludes that the MDR fails to offer a responsible roadmap for countering the growing missile threats to the homeland and suggests that Congress act to modify missile defense policy. And Christopher Williams argues that the MDR represents a "hodgepodge" of inconsistent themes without the necessary prioritization of

programs or funding levels necessary for the fielding of an effective missile defense.

In short, while recognizing some positive statements in the MDR, many of the expert commentaries contained in this volume point to a strategy document that is seriously flawed—one that contains internal inconsistencies, is poorly integrated with the administration's other strategy documents, perpetuates Cold War theories of stability, ignores significant technological advances, refuses to adopt the necessary missile defense programs to keep pace with growing missile threats, and reflects a "business as usual" approach to defending the homeland.

We thank the Sarah Scaife Foundation for making this *Occasional Paper* possible and hope you find the perspectives reflected here both novel and informative.

David J. Trachtenberg
Editor

The 2022 Missile Defense Review: Business as Usual Approach Falls Short

by James H. Anderson

Introduction

The *Missile Defense Review* (MDR) released in October 2022 merits close examination as the Pentagon's most important document outlining its plans to protect the homeland and U.S. interests abroad. Released nearly two years into the Biden Administration, the 2022 MDR is a mixed bag of positives and negatives.

First, let's consider the positives. The MDR's emphasis on Uncrewed Aircraft Systems (UAS) is timely, since these weapons present a rapidly evolving lower-tier threat to the United States and its allies. To the extent the MDR raises awareness of UAS threats in Congress and among the general public, so much the better. Likewise, the review's stress on the importance of sensors is welcomed. No missile defense architecture can survive, let alone be successful, absent a robust network of sensors to track and identify air and missile threats in an accurate and timely manner.

The People's Republic of China (PRC) receives a lot of attention in the MDR, and rightly so. Here the MDR emphasizes Guam's geostrategic importance and reiterates the United States' unequivocal commitment to defend it. This commitment does not break any new ground—the United States has always defended its overseas territories—but given the PRC's expansive territorial claims, there is deterrent value in restating the obvious.

Another positive is the Department's intent to include the *Nuclear Posture Review* and the *Missile Defense Review* as part of the *National Defense Strategy*. Departmental strategy documents have proliferated in recent years, which

increases the potential for confusion and misalignment, so the effort to bring these documents into greater alignment is welcomed.

Despite these positives, the 2022 MDR falls short on several fronts, to include a lack of specificity and urgency combined with internal inconsistencies.

Adjectival Aspirations

The MDR is laden with desired attributes, consistent with its aspirational orientation. According to the review, "The Department must develop…systems that are *integrated*, *interoperable*, and *sufficiently mobile*, *flexible*, and *affordable*…."[1] Further, "The United States requires *responsive*, *persistent*, *resilient*, and *cost-effective* joint IAMD sensor capabilities…"[2] The MDR is not the first Pentagon document saturated with adjectives; and nor will it be the last. But word fluff is not without cost, since it crowds out space that could otherwise be used to outline more concrete measures to advance missile defense.[3]

Lack of Specificity

At twelve pages, the 2022 MDR is approximately one-seventh the length of the 2019 MDR. Short is not necessarily a negative. The 2018 *National Defense Strategy* was concise, but consequential, given how well it refocused the national

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[1] U.S. Department of Defense, *2022 Missile Defense Review* (Washington, D.C.: Department of Defense, 2022), p. 8, available at https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-NATIONAL-DEFENSE-STRATEGY-NPR-MDR.PDF.

[2] Ibid.

[3] The 2022 MDR's choice of diction hits some errant notes. For example, it calls for a "pliable missile defense network," which is presumably not what the authors intended since "pliable" connotes something easily bent or twisted out of shape. Ibid., p. 12.

security community's attention on the dynamics of great power competition. It is not the MDR's brevity per se, but its lack of specificity which is most concerning.

For starters, the MDR barely pays lip service to key missile defense systems. For example, it mentions the PATRIOT system just once, and then only in passing.[4] The THAAD system is not mentioned at all, which is peculiar given key U.S. deployments in Asia and the Middle East, as well as its potential to strengthen national missile defense efforts. The MDR is also silent on the F-35's boost phase intercept potential.[5]

Also troublesome, the MDR says nothing specific about what the actual resources required are to make comprehensive missile defense a reality. This is a glaring omission since the DoD Press Release on the *National Defense Strategy, Nuclear Posture Review,* and *Missile Defense Review* announced that, "by weaving these documents together, the entire Department is matching resources to goals."[6]

While frameworks are not expected to provide detailed budgetary assessments, the MDR would have benefitted, at a bare minimum, from a general explanation of how the

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[4] Ibid., p. 11.

[5] The 2019 *Missile Defense Review* addressed the F-35's potential contributions to missile defense efforts. See U.S. Department of Defense, *2019 Missile Defense Review* (Washington, D.C.: Department of Defense, 2019), pp. 55-56, available at https://media.defense.gov/2019/Jan/17/2002080666/-1/-1/1/2019-MISSILE-DEFENSE-REVIEW.PDF.

[6] Press Release, U.S. Department of Defense (Washington, D.C.: Department of Defense, 2022), "Department of Defense Releases its 2022 Strategic Reviews – National Defense Strategy, Nuclear Posture Review, and Missile Defense Review," October 27, 2022, available at https://www.defense.gov/News/Releases/Release/Article/3201683/department-of-defense-releases-its-2022-strategic-reviews-national-defense-stra.

department intends to match policy aims with fiscal resources.

Threat Review

As is customary for reviews, the 2022 MDR begins with a threat assessment. The language is stark, as the following examples illustrate:

- "Since the release of the last MDR in 2019, missile-related threats have *rapidly expanded in quantity, diversity, and sophistication*."[7]
- "Over past two decades, the PRC has *dramatically advanced* its development of conventional and nuclear-armed ballistic and hypersonic missile technologies and capabilities…."[8]
- "[Adversary] air and missile capabilities pose an *expanding and accelerating risk* to the U.S. homeland…"[9]
- "The evolution of offensive air and missile threats has *accelerated greatly*…"[10]
- "U.S. national security interests are *increasingly at risk* from wide ranging missile arsenals…"[11]
- "Hypersonic weapons….pose an *increasing and complex* threat…."[12] (emphasis added).

Non-state actors are mentioned briefly in the report. However, the MDR does not identify any of these actors by

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[7] *2022 Missile Defense Review*, op. cit., p. 1.

[8] Ibid., p. 2.

[9] Ibid.

[10] Ibid., p. 12.

[11] Ibid., p. 1.

[12] Ibid., p. 2.

name, even though terrorist groups such as ISIS have had access to man-portable surface-to-air missiles.[13] The report's generic characterization here is not helpful. The United States must defend itself against real enemies, not abstractions.

While this report mentions the PRC's development of hypersonic missile technologies, senior defense officials have emphasized this threat in far more dramatic terms. For example, after the PRC's hypersonic glide vehicle test in July 2021, Chairman of the Joint Chiefs of Staff Mark Milley remarked, "I don't know if it's quite a Sputnik moment, but I think it's very close to that."[14]

In August 2021, Admiral Richard, then Commander of U.S. Strategic Command, took the extraordinary step of formally declaring that the PRC has a "strategic breakout" capability regarding its growing nuclear arsenal.[15]

Lack of Urgency

Despite a growing appreciation of missile threats, the MDR is notable for its lack of urgency with respect to its prescriptions. Its "business as usual" approach explains the emphasis on *continuity*, as evident in the following excerpts from the MDR:

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[13] See "Weapons of ISIS," www.militaryfactory.com, available at https://www.militaryfactory.com/smallarms/weapons-of-isis.php.

[14] General Mark Milley, Chairman of the Joint Chiefs of Staff, quoted in Sara Sorcher and Karoun Demirjian, "Top U.S. general calls China's hypersonic weapon test very close to a 'Sputnik moment,'" *The Washington Post*, October 27, 2021, available at https://www.washingtonpost.com/nation/2021/10/27/mark-milley-china-hypersonic-weapon-sputnik.

[15] See Aaron Mehta, "STRATCOM Chief Warns of Chinese 'Strategic Breakout,'" *Breaking Defense*, August 12, 2021, available at https://breakingdefense.com/2021/08/stratcom-chief-warns-of-chinese-strategic-breakout.

- "To address intercontinental-range nuclear threats from Russia and the PRC, the United States will *continue to rely* on strategic deterrence…."[16]
- "…*continued modernization and expansion* of the Ground-based Midcourse Defense (GMD) system will remain an essential element of our comprehensive missile defeat approach."[17]
- "It is a strategic imperative for the United States to *continue investments and innovation* in the development of full spectrum missile defense capabilities…."[18]
- "The United States will *continue to seek ways* to integrate and interoperate with Allies and partners…."[19]
- "…the United States *will also continue* to improve defensive capabilities…."[20] (emphasis added)

As several analysts have emphasized, there are no timelines or targeted dates in the MDR.[21] Their absence is concerning, but not surprising given the MDR's business as usual orientation.

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[16] *2022 Missile Defense Review*, op. cit., p. 5.

[17] Ibid., p. 1.

[18] Ibid., p. 12.

[19] Ibid., p. 7.

[20] Ibid., p. 1.

[21] See, for example, Jen Judson, "Pentagon's missile defense review lacks execution plan, analysts say," *DefenseNews*, October 27, 2022, available at www.defensenews.com/pentagon/2022/10/27/pentagons-missile-defense-review-lacks-execution-plan-analysts-say/.

Integrated Deterrence

The MDR draws on the framework of *integrated deterrence*, which is the Department's signature strategic concept. The basic idea behind this concept is sound. In pursuit of policy goals, senior leaders should always strive to integrate different elements of national power for maximum impact. The Department has seized upon this theme with its attempt to integrate the *National Defense Strategy, Nuclear Posture Review*, and *Missile Defense Review*. Yet there is a difference between co-locating the 3 documents, and actually integrating them. Aside from a couple of paragraphs in the report that touch on the relationship between offensive and defensive weaponry, it is hard to see how the *Missile Defense Review* is "integrated" with the *National Defense Strategy* and the *Nuclear Posture Review*.

The integrated deterrence framework posits a frictionless bureaucratic environment—a conception that is neither realistic nor helpful for addressing real-world organizational issues relating to the division of labor among services, combatant commands, and agencies regarding missile defense responsibilities. The U.S. Navy, for example, has a history of complaining about its role in the missile defense mission, fearing this has come at the expense of its other missions.[22]

Internal Inconsistencies

The 2022 MDR also suffers from internal inconsistencies. In discussing rogue threats, the review states that tailored deterrence works to "dissuade attacks on the United States

[22] For example, see David Larter, "The US Navy is fed up with Ballistic Missile Defense Patrols," *DefenseNews*, June 16, 2018, available at www.defensenews.com/naval/2018/06/16/the-us-navy-is-fed-up-with-ballistic-missile-defense-patrols.

from states like North Korea…."[23] The MDR also admits, however, that North Korea has undertaken an aggressive slate of missile flight tests since the Biden Administration took office. A deterrence by denial policy *may* prove effective over time, though this cannot be proved given the methodological problems involved in explaining why something has not happened. But this much is clear: North Korea is expanding its ability to attack the United States and, because of this, U.S. efforts to deter a future attack will become more difficult.

Even more problematic is the MDR's inconsistency in describing what measures the United States will take to defend itself against ballistic missiles and cruise missiles. The review states that, "as part of this comprehensive approach, the United States will also continue to improve defensive capabilities to address the threat of evolving cruise missile strikes by any adversary against the homeland."[24]

The phrase "by any adversary" here is key. Recall the MDR states that the United States will "continue to rely on strategic deterrence" against China and Russia to address the ICBM threats.[25] Against this backdrop, the reader is left to conclude that the United States will take steps to protect against Russian and Chinese cruise missiles, but not Russian and Chinese ballistic missiles.

This misalignment raises a much larger question that lies at the heart of deterrence and missile defense. *When will the United States commit to defending the homeland from ballistic and cruise missile attacks from all potential aggressors, not just rogue states*? Unfortunately, Russia's egregious invasion of Ukraine has not prompted a reassessment of this question. Moreover, neither President Putin's stream of nuclear threats against NATO and the United States, nor the

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[23] *2022 Missile Defense Review*, op. cit., p. 5.

[24] Ibid., p. 1.

[25] Ibid., p. 5.

growing air and missile threats that the MDR itself has outlined, have spurred the current Administration to give this question the serious attention it deserves.

Allies and Partners

The MDR acknowledges that "cooperation with like-minded nations is crucial." The MDR mentions Japan, the Republic of Korea (ROK), and Australia in the Pacific; NATO partners in Europe; and Israel in the Middle East. The MDR is on safe and well-trod ground here. A more forward-looking document would have also admitted the merits of seeking out new partners to enhance missile defense efforts. Even with its business as usual approach, however, there are some glaring omissions. For example, the MDR does not even mention Taiwan, even though the Administration has committed to upgrading the island's missile defense.[26]

The MDR also notes that an "ongoing, longer-term goal with the GCC [Gulf Cooperation Council] and other regional states is to establish a network of air and missile defense capabilities across the Middle East to facilitate greater cooperation while bolstering defense through a layered approach." This language is a rhetorical nod to a very longstanding Departmental goal.[27] If the growing threat of a nuclear-armed Iran, bristling with missiles, has not spurred a greater effort to develop such a network by now, it is unclear what will.

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[26] "US Approves $95 Million Sale of Defense Support to Taiwan," *The Defense Post*, April 5, 2022, available at https://www.thedefensepost.com/2022/04/05/us-sale-taiwan-patriot/.

[27] The author recalls lengthy discussions on this topic in the early 2000s while working in the Office of the Secretary of Defense, International Security Affairs.

Hints on Arms Control?

The *2022 Nuclear Posture Review* commits to a "renewed emphasis on arms control."[28] Just what this might mean for missile defense is left unstated in the MDR, although there is a reference to "strengthening mutual transparency and predictability" with respect to offensive arms and defensive systems.[29] This appears to be an oblique reference to arms control, or possibly "Confidence Building Measures."

The prospects for achieving meaningful arms control measures with North Korea, Iran, China, and Russia appear bleak. North Korea has expressed zero interest in resuming any sort of arms control negotiations. The Administration's efforts to revive the 2015 nuclear deal with Iran have collapsed. Russia's record on "transparency" is poor. Indeed, its violations of the 1987 INF Treaty prompted the United States to withdraw from this agreement in 2019. For its part, the PRC has not expressed any interest in strategic arms control with the United States. In fact, the PRC regards "transparency" as a trap.[30]

The United States must avoid self-imposed restraints when it comes to missile defense. The 2019 MDR was emphatic on this point:

> …The United States will not accept any limitation or constraint on the development or deployment

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[28] U.S. Department of Defense, *2022 Nuclear Posture Review* (Washington, D.C.: Department of Defense, 2022), pp. 1 and 16, available at https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-NATIONAL-DEFENSE-STRATEGY-NPR-MDR.PDF.

[29] *2022 Missile Defense Review*, op. cit., p. 6.

[30] For further discussion on this point, see United States China Commission, "China's Nuclear Forces: Moving Beyond A Minimal Deterrent," 2021, p. 346, available at https://www.uscc.gov/sites/default/files/2021-11/Chapter_3_Section_2--Chinas_Nuclear_Forces_Moving_beyond_a_Minimal_Deterrent.pdf.

> of missile defense capabilities needed to protect the homeland against rogue missile threats. Accepting limits now could constrain or preclude missile defense technologies and options necessary in the future to effectively protect the American people.[31]

The absence of any similar reassurance in the 2022 MDR, combined with the Administration's broader emphasis on renewing arms control, raises the question of whether it may be tempted to leverage potential missile defense advances as a bargaining chip in future arms control negotiations.

Conclusions

March 23, 2023 marked the 40th anniversary of Reagan's Strategic Defense Initiative (SDI) speech. President Reagan's bold vision of a future in which defensive weapons would dominate the deterrence equation jarred the Soviet Union by highlighting a technological battle they were likely to lose.

The 2001 U.S. withdrawal from the Anti-Ballistic Missile Treaty freed this nation to pursue national missile defense efforts. Significantly, over the past several decades a solid bipartisan consensus in Congress emerged to fund tactical and theater missile defense efforts. At the national level, however, the Ground-based Midcourse Defense system in Alaska and California represents a very modest effort given the potential to develop a more comprehensive architecture to defend the homeland. This could include, for example, the integrated deployment of proven systems such as THAAD and Aegis BMD, along with future air and/or space-based interceptors.

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[31] *2019 Missile Defense Review,* op. cit., p. IX.

Yet the 2022 MDR's modest, "business as usual" approach closes off discussion of such possibilities, effectively consigning them to the back burner of defense priorities. This approach is unfortunate, because much hinges on the shoulders of fallible decision makers. As former defense official Fred Iklé noted:

> Deterrence is based on the premise that people in control of nuclear weapons wish their country to survive. Yet there has never been a period in history without men acquiring positions of power who were willing to die, and to see others die, for causes that they themselves invented and which were espoused by only a few of their henchmen.[32]

Iklé's trenchant analysis identifies the inescapable weakness of deterrence predicated on the threat of nuclear retaliation—namely, there is no guarantee this approach will work over the long haul. Absent the commitment to develop and deploy a far more robust national missile defense, Americans will remain living on borrowed time.

The Honorable James H. Anderson served from 2018 to 2020 as Assistant Secretary of Defense for Strategy, Plans, and Capabilities and as Deputy Under Secretary of Defense for Policy.

[32] Fred Iklé, *Annihilation from Within: The Ultimate Threat to Nations* (NY: Columbia University Press, 2006), p. xiii.

The Missile Defense Review and Israel's Perspective on Missile Defense

by Azriel Bermant

Since the early years of its existence, Israel has prepared for the possibility that its adversaries could obtain weapons of mass destruction. Israel's response to this danger was based mainly upon prevention and deterrence. In view of the unique existential threat facing the country, Israel has believed that it has a moral right to take action to prevent nuclear threats. According to this perspective, the best defense is attack. While prevention can mean the use of diplomatic, political and economic pressure, it can also involve military force. This policy has become known as the "Begin Doctrine," named after then-Israeli prime minister Menachem Begin, who famously authorized the bombing of Iraq's Osirak nuclear reactor in June 1981.[1] The doctrine has largely been upheld both before and after the Osirak raid. In 2007, then-prime minister Ehud Olmert authorized a raid that destroyed the Syrian al-Kibar nuclear facility.

Yet within Israel, there are growing questions over whether the Begin doctrine is still relevant today. As the strategist Lawrence Freedman noted in 2003: "The enthusiasm for pre-emption reflects a yearning for a world in which problems can be eliminated by bold, timely, and decisive strokes. Cases where this can happen today are likely to be few and far between."[2] This applies even more today in the case of Iran's nuclear program. Former Israeli prime minister Naftali Bennett, former defense minister

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[1] Azriel Bermant, *Margaret Thatcher and the Middle Eas*t (New York: Cambridge University Press, 2016), pp. 60-68.

[2] Lawrence Freedman, "Prevention, not pre-emption," *The Washington Quarterly*, 26:2, 2003, pp. 105-114, available at https://ciaotest.cc.columbia.edu/olj/twq/spr2003/twq_spr2003g.pdf.

Benny Gantz and Israel Defense Forces (IDF) Chief of Staff Aviv Kochavi have all declared that Israel is ready to carry out a military strike against Iran's nuclear sites, but this may be designed to reassure an anxious Israeli public. Israel would have to destroy dozens of nuclear sites which the Iranians have scattered throughout the country. The nuclear facilities are located in heavily reinforced underground sites and are protected by advanced air defenses. Many military experts believe this would be too risky for Israel at this point.[3] In the meantime, Iran is making irreversible progress with its nuclear program. The U.S. Special Envoy for Iran, Rob Malley, has stated that Iran is a few weeks away from obtaining the fissile material it needs for a bomb.[4]

For many years, Israel's military planners believed that long term strategic threats had to be addressed through the development of offensive capabilities. There were technological uncertainties regarding the development and deployment of the Arrow ballistic missile defense system. Yet during the 1980s, then-defense minister Yitzhak Rabin faced down objections from the IDF and approved the development of the Arrow.[5]

In the United States, ballistic missile defenses have long been considered a prime example of "deterrence by denial." The *2022 Missile Defense Review* (MDR) points out that "the

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[3] Yossi Melman, "Striking Iran's Nuke Sites Is an Impossible Mission for Israel. Here's What It Must Do," *Haaretz*, December 1, 2001, available at https://www.haaretz.com/israel-news/striking-iran-s-nuke-sites-is-an-impossible-mission-for-israel-here-s-what-it-must-1.10426152.

[4] Sima Shine & Eldad Shavit, "The Iranian Challenge Intensifies, while the International System seems Otherwise Engaged," *INSS Insight*, No. 1666, December 8, 2022, available at https://www.inss.org.il/publication/iran-and-global-arena/.

[5] Azriel Bermant and Emily B. Landau, "Iron Dome Protection: Missile Defense in Israel's Security Concept" in Anat Kurz and Shlomo Brom (eds.), *The Lessons of Operation Protective Edge* (Tel Aviv: Institute for International Security Studies, November 2014), pp. 37-42.

continued evolution and progress of missiles as a principal means by which adversaries seek to project conventional or nuclear military power makes missile defense a core deterrence-by-denial component of an integrated deterrence strategy."[6] They seek to damage the confidence of adversaries by heightening uncertainty and devaluing the military and political weight of offensive missiles.[7]

This approach has influenced Israel's security establishment. Missile and rocket defense has now become an important element of Israel's approach in defending the country, alongside offensive capabilities and passive defense. Israel is developing multiple layers of air and missile defense to address the growing threat of ballistic missiles, rockets and drones from Syria, Lebanon and Iran. Israel has forged an integrated system that will cover the entire country to address multiple threats, activating the different systems in an efficient and cost-effective manner. Israel's missile defense systems include Iron Dome for short-range rockets, Magic Wand (also known as David's Sling) for intermediate-range rockets, Arrow 2 for shorter-range ballistic missiles, and Arrow 3 for long-range ones, particularly from Iran. Israel is also connected to the American global missile-warning systems and potentially to American defenses, in the event that the United States decides, for example, to deploy Aegis ships in the region.[8] The model that is followed by the United States and NATO

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[6] U.S. Department of Defense, *2022 Missile Defense Review*, available at https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-NATIONAL-DEFENSE-STRATEGY-NPR-MDR.PDF.

[7] Azriel Bermant, *The Russian and Iranian Missile Threats: Implications for NATO Missile Defense*, Memorandum No. 143 (Tel Aviv: Institute for National Security Studies, 2014), p. 31.

[8] Charles D. Freilich, *Israeli National Security: A New Strategy for an Era of Change* (New York: Oxford University Press, 2018), p. 219.

whereby deterrence is reinforced by defense has been adopted by Israeli military planners.[9]

The main threat to Israel's cities in a future war scenario comes from the large missile forces in the hands of Iran and Hezbollah in Lebanon. Israeli military planners have therefore placed an increasing emphasis on the development of multiple layers of defensive capabilities in facing missile and strategic threats from its enemies. Systems such as Iron Dome, David's Sling and the Arrow 3 are viewed in Israel as a means to protect key strategic installations and Israeli population centers as well as to enhance stability and de-escalation efforts. According to U.S. intelligence assessments, Iran would be most likely to deliver a nuclear weapon by means of a ballistic missile. Some of Israel's defense officials are now suggesting that the advancements in its anti-missile capabilities give Israel the upper hand in the race to counter Iran's missile development.[10] Thus, missile defense has become a core element of Israel's strategy alongside deterrence, acting as a hedge against a nuclear Iran.

Nevertheless, even as Israel reinforces its own missile defenses, it remains wedded to the principle of preventing its adversaries from acquiring nuclear weapons, including by force should this be necessary. Israel has stepped up its military readiness level and has taken measures to prepare a credible military threat against Iran's nuclear facilities. In late November 2022, the Israeli and U.S. air forces held a joint air drill simulating strikes against Iran's nuclear sites.[11]

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[9] Bermant and Landau, op. cit.

[10] Azriel Bermant, "Arrow 3 Missile Test Ties Israel's Hands on Striking Iran - Just as Trump Intended," *Haaretz*, August 3, 2019, available at https://www.haaretz.com/israel-news/2019-08-03/ty-article-opinion/.premium/arrow-3-test-ties-israels-hands-on-striking-iran-just-as-trump-intended/0000017f-e389-d568-ad7f-f3ebdb8d0000.

[11] "Israel, US to Hold Air Drill Simulating Striking Iran Nuclear Program," *The Jerusalem Post*, November 28, 2022, available at https://www.jpost.com/middle-east/article-723558.

The United States has a longstanding history of working in cooperation with Israel on the development of its missile defenses, and has invested vast sums of money in its various defense systems. As the 2022 MDR makes clear, "The United States has a long history of working with Israel and other partners in the Middle East to counter air and missile threats. With Israel, we have a longstanding relationship of robust cooperation on missile defense."[12] This cooperation now extends to joint work on the development of a ground-based laser system known as Iron Beam. Israel's Rafael Advanced Defense Systems is partnering with the U.S. defense firm Lockheed Martin to develop the laser-based system in order to provide a more effective response to the range of new threats facing Israel, including cruise missiles and drones.[13]

For many years, U.S. officials have expressed the view that their support for missile defenses is not just intended to protect allies in case of conflict but also to deter and discourage the use of military force in the first place. Thus, for Washington, its cooperation with Israel on missile defense—including the development and funding of the Arrow 3 system and the funding of Iron Dome—is not only a means to support a key ally but also intended to minimize the likelihood of war.[14]

Israel's missile defenses are intended to enable the public to continue living their daily lives with minimal disturbance and to protect the home front from economic disruption in the face of missile attacks, enabling Israel's military forces to carry out unrestricted wartime operations

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[12] *Missile Defense Review 2022*, op. cit.

[13] "Laser vs. Rocket: Israel's 'Star Wars 2' is One Step Closer to Reality," *Haaretz*, December 9, 2022, available at https://www.haaretz.com/israel-news/2022-12-09/ty-article/.premium/laser-vs-rocket-israels-star-wars-2-is-one-step-closer-to-reality/00000184-f311-d4c7-a786-fff739660000.

[14] Bermant and Landau, op. cit.

and protecting strategic installations and locations from missile attack.[15] There is a recognition, however, that improved missile defenses not only reduce the number of potential Israeli casualties but also provide leaders with greater time and flexibility for decision-making. If defenses are effective, they can prevent the need to respond at all to rocket fire or reduce the scope of the response and help safeguard Israel's international standing and legitimacy.[16] Washington believes that an Israel which feels more secure will come under less pressure to carry out a pre-emptive strike against Iran which could drag the United States into a wider war.

Arguably, it is this thinking which has underpinned U.S. support for the integration of Israel's missile defense systems with those of other Arab states in the Middle East through forging a network of radars, early warning systems and interceptors.[17] This is also reflected in the 2022 MDR:

> An ongoing, longer-term goal with the Gulf Cooperation Council (GCC) and other regional states is to establish a network of air and missile defense capabilities across the Middle East to facilitate greater cooperation while bolstering defense through a layered approach. Ongoing normalization efforts between Israel and key Arab states provide additional opportunities to strengthen regional air defenses given shared missile and UAS threats.[18]

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[15] Freilich, op. cit., p. 219.

[16] Ibid.

[17] Azriel Bermant, "Russia and Iran Threats Put Missile Defense Back on the Agenda," *Foreign Policy*, August 12, 2022, available at https://foreignpolicy.com/2022/08/12/missile-defense-russia-iran-europe-middle-east-israel-saudi-uae-nuclear-deal/.

[18] *Missile Defense Review 2022*, op. cit.

In recent months, the Biden Administration has stepped up its support for Integrated Air and Missile Defense (IAMD) in the Middle East. The normalization agreements that were signed between Israel and a number of Arab countries, as part of the Abraham Accords, has provided the impetus for enhanced regional security cooperation. Israel would have much to gain, for example, from the presence of sensors and radars in the Gulf states, providing advance warnings of a potential Iranian attack.[19] Benny Gantz has claimed that the de-facto partnership between Israel and several Gulf Arab countries has already resulted in the interception of missiles from Iran.[20]

Active U.S. support for the integration of air and missile defenses and activation of early warning systems in the region is a means of strengthening the credibility of its commitments to both Israel and its new regional allies while also helping to dispel fears regarding an American withdrawal from the Middle East. At the same time, the circle of normalization between Israel and certain Arab states is helping to create new opportunities for air and missile defense cooperation in the region, illustrated by Israel's recent sale of its Barak defense systems to the United Arab Emirates and Morocco.

Nevertheless, it could take many years until the political conditions are in place for a fully integrated air and missile defense system in the region. It will not be straightforward for former adversaries to share sensitive information. While countries such as Saudi Arabia and the United Arab Emirates share Israel's concerns regarding the Iranian nuclear and missile threats, they also maintain a dialogue with Tehran and are likely to be cautious about developing

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[19] Bermant, "Russia and Iran Threats Put Missile Defense Back on the Agenda," op. cit.

[20] "The Middle East Air Defense Alliance Takes Flight," *The Jerusalem Post*, July 15, 2022, available at https://www.jpost.com/middle-east-news/article-712150.

open missile defense cooperation with the Israelis. Some experts maintain that U.S.-sponsored security cooperation between Israel and the Gulf States could heighten the risk of a regional escalation, with the Iranians perceiving an air and missile defense alliance as a threat directed against it.[21]

There is also an argument that regional missile defense cooperation would be little more than "a band-aid over a seeping wound."[22] According to this perspective, the Iranians have the capabilities to fire dozens of missiles and develop countermeasures which would saturate missile defenses. Moreover, the cost of deploying these defensive systems is significantly higher than that of the production of missiles and drones, raising questions over their cost-effectiveness.

Nevertheless, it can be helpful to draw lessons from the role played by missile defenses in the war in Ukraine. Even though air and missile defenses are unable to provide hermetic protection for Ukraine amid intensive Russian missile and drone attacks, they have been successful in intercepting large numbers of missiles.[23] This strengthens Ukrainian resolve and resilience. The Patriot missiles that the United States plans to supply to Ukraine in the course of 2023 will have only a limited capability in defending the country from a Russian missile onslaught. Yet the move has

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[21] Cinzia Bianco, Ellie Geranmayeh and Hugh Lovatt, "Bide and Seek: The Dangers of US Support for a Gulf-Israeli Defense Pact," *European Council on Foreign Relations*, July 13, 2022, available at https://ecfr.eu/article/bide-and-seek-the-dangers-of-us-support-for-a-gulf-israeli-defence-pact/.

[22] Samuel M. Hickey, "An Israel-Arab Air Defense Coalition Could Harm the Middle East," *The National Interest*, July 18, 2022, available at https://nationalinterest.org/feature/israel-arab-air-defense-coalition-could-harm-middle-east-203631.

[23] "Russian Missile Barrage Staggers Ukraine's Air Defenses," *The New York Times*, December 29, 2022, available at https://www.nytimes.com/2022/12/29/world/europe/russia-strikes-ukraine.html.

political and psychological value in providing reassurance to the Ukrainian people and cementing Washington's commitment to the defense of Ukraine.[24] As well as saving lives and strengthening Ukrainian resilience, the Western supply of air and missile defenses to Ukraine is also designed to degrade Russia's missile threat over the long term.

As far back as the 1991 Gulf War, the United States transferred Patriot missiles to Israel in the belief they would have a stabilizing impact. Former U.S. missile defense policy chief Peppi DeBiaso has argued that although the Patriots were not particularly effective in intercepting Iraqi Scud missiles, it is widely believed that they helped to persuade Israeli prime minister Yitzhak Shamir to stay out of the U.S.-led war against Iraqi leader Saddam Hussein.[25]

Thirty years on, the MDR itself appears to reinforce this perspective:

> Missile defense capabilities add resilience and undermine adversary confidence in missile use by introducing doubt and uncertainty into strike planning and execution, reducing the incentive to conduct small-scale coercive attacks, decreasing the probability of attack success, and raising the threshold for conflict…. In the event of crisis or conflict, missile defenses offer military options that help counter the expanding presence of missile threats, and may be less escalatory than employing offensive systems. Damage limitation offered by missile defenses expands decision

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[24] Mark F. Cancian and Tom Karako, "Patriot to Ukraine: What Does it Mean?," *Center for Strategic and International Studies*, December 16, 2022, available at https://www.csis.org/analysis/patriot-ukraine-what-does-it-mean#:~:text=December%2016%2C%202022,air%20defense%20capability%20and%20capacity.

[25] Bermant, "Russia and Iran Threats Put Missile Defense Back on the Agenda," op. cit.

> making space for senior leaders at all levels of conflict….[26]

While the price of interceptor missiles might be exceptionally high, this must be weighed against the amount of damage caused by a rocket, missile or drone. Israeli policymakers recognize that its air and missile defenses cannot provide hermetic protection from a missile or drone onslaught. They must address the issue of how to prioritize the location of its missile defense systems. Does Israel prioritize the deployment of defense systems in civilian areas or in military installations?[27] In a situation of war, the protection of military bases and vital infrastructure will be prioritized over population centers.[28] Nevertheless, as well as defending the country from missile attacks, an increasingly sophisticated and advanced defense system is also designed to heighten uncertainty for the adversary, with the objective of raising the threshold of conflict. Israel's work on Iron Beam and its aspirations to develop an integrated air and defense system in the region demonstrate that it is in a race against time to ensure that it is well placed to defeat the missile threats of its adversaries.

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[26] *2022 Missile Defense Review*, op. cit.

[27] "Missile Defense: An Israeli Perspective," by Yaakov Amidror, *INSS Conference: Missile Defense: Asset or Liability for Regional and International Stability*, January 15, 2014, available at https://www.inss.org.il/wp-content/uploads/2017/01/INSS-MD-Conference-summary-1.pdf.

[28] Freilich, op. cit., p. 223.

Moving the Needle in the Missile Defense Debate

by Matthew R. Costlow

Introduction

It is difficult to congratulate a soldier who finally recognizes the potentially fatal downsides of refusing to wear body armor during a conflict, but who nevertheless is loath to put on his own vest. Such is the state of the debate over official U.S. policy for homeland missile defense—there is belated recognition that a vulnerable homeland makes a tempting target for China and Russia, but any agreement breaks down over what to do about it. The *2022 Missile Defense Review* (MDR) and the broader *National Defense Strategy* (NDS) quite correctly diagnose the growing threat of coercive missile strikes against the U.S. homeland, but then fail to offer a prescription other than to "examine" options.

Despite acknowledging that missile defenses are "critical to the top priority of defending the homeland and deterring attacks against the United States," why is the Biden Administration reluctant to strengthen and expand U.S. homeland missile defenses?[1] Although the national strategy documents do not say so explicitly, one can easily deduce that the documents were influenced heavily by President Biden and officials in his administration who have long histories of opposing strong U.S. homeland missile defenses because they believe such capabilities could start an arms race, lead to adversaries fearing U.S. preemptive strikes, or fail to be cost-effective at the margin.

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[1] U.S. Department of Defense, *2022 Missile Defense Review* (Washington, D.C.: Department of Defense, October 2022), p. 5, available at https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-NATIONAL-DEFENSE-STRATEGY-NPR-MDR.PDF.

Rather than answering these arguments, as I have done elsewhere at length, perhaps it is time to try a different approach in attempting to advance the debate over U.S. homeland missile defense.[2] Instead of debating the plausibility and severity of the potential adverse consequences critics claim that strengthened U.S. homeland missile defense might cause, it may be more fruitful to examine how such capabilities might contribute to end states that missile defense critics favor greatly. In short, it is time to show the authors of the 2022 MDR, and those missile defense skeptics of the same persuasion, that improved and expanded U.S. homeland missile defenses can contribute to attaining the very goals that they mistakenly believe missile defenses endanger.

Thus, this article will examine the ways in which improved and expanded U.S. homeland missile defense could contribute to a number of goals that homeland missile defense skeptics identify explicitly as valuable: reducing the risks of accidents, unauthorized launches, or "third party" attacks, as well as contributing to crisis stability. First, however, it is worth examining the languid nature of U.S. actions for homeland missile defense described in the *2022 Missile Defense Review*—establishing the Biden Administration's worse than tepid attitude toward strengthened homeland missile defense.

(In)action Speaks Louder than Words

Despite the 2022 MDR's rhetoric on the fundamental importance of homeland missile defense to the Department of Defense's top priority, the Biden Administration shows

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[2] Matthew R. Costlow, *Vulnerability is No Virtue and Defense is No Vice: The Strategic Benefits of Expanded U.S. Homeland Missile Defense* (Fairfax, VA: National Institute for Public Policy, September 2022), *Occasional Paper*, Vol. 2, No. 9, pp. 41-66, available at https://nipp.org/wp-content/uploads/2022/09/OP-Vol.-2-No.-9.pdf.

remarkable reluctance to advance those capabilities substantially. Instead of deciding the Next Generation Interceptor (NGI) (with its multiple kill vehicles) will fully replace the existing Ground-Based Interceptors (GBIs) (which have only a single kill vehicle), the 2022 MDR essentially punts, saying NGI could "augment and potentially replace" GBIs.[3] Questions about the total number of interceptors, the future of GBI service life extension, and the potential for improved homeland missile defense performance via additional space-based sensors all go unanswered. The three sentences in the 2022 MDR devoted to the ballistic missile defense capabilities of the homeland have only one saving grace: at least it is two more sentences than the topic of homeland cruise missile defense.

The Biden Administration would be hard-pressed to formulate a more weak-kneed response to the threat of China and Russia attacking the U.S. homeland with conventional cruise missile strikes than the one sentence found in the 2022 MDR: "To deter attempts by adversaries to stay under the nuclear threshold and achieve strategic results with conventional capabilities, the United States will examine active and passive defense measures to decrease the risk from any cruise missile strike against critical assets, regardless of origin."[4] Needless to say, Beijing and Moscow are unlikely to comprehend why they should be deterred in response to the United States saying it will "examine" measures. A public national strategy document is an excellent place for a deterrence message, a commitment of resolve, or at least conveying a sense of urgency—but instead, the Biden Administration's skepticism of the value of homeland missile defense is the most obvious takeaway for readers abroad, both allies and adversaries.

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[3] U.S. Department of Defense, *2022 Missile Defense Review*, op. cit., p. 6.

[4] Loc cit.

If the prospect of improving deterrence against attacks on the U.S. homeland is not reason enough for the Biden Administration to move out more smartly in improving homeland missile defenses, then what are some other desirable goals that missile defense skeptics might value, and which could benefit from improved homeland missile defenses? This article now turns to examine two.

Defending Against Accidental, Unauthorized, or "Third Party" Launches

Improved and expanded U.S. homeland missile defenses would be valuable options in reducing the risk of, and potential damage caused by, accidental or unauthorized adversary missile launches. The Biden Administration recognizes the potentially escalatory nature of such launches, stating in the *2022 Nuclear Posture Review*: "We also recognize the risk of unintended nuclear escalation, which can result from accidental or unauthorized use of a nuclear weapon."[5] However, the 2022 NPR's discussion of the issue focuses only on stopping and mitigating the consequences of such launches from the United States, not on mitigating the consequences of Russian or Chinese accidental or unauthorized launches. In this case, improved and expanded U.S. homeland missile defenses appear to be an appropriate contributor to reducing these risks, especially since deterrence may not apply in these situations, and other protective measures (open ocean targeting, warhead release procedures, etc.) might be bypassed. If missile defense skeptics believe, as the Biden Administration does, that accidental or unauthorized missile launches are a distinct possibility to guard against,

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[5] U.S. Department of Defense, *2022 Nuclear Posture Review* (Washington, D.C.: Department of Defense, 2022), p. 13, available at https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-NATIONAL-DEFENSE-STRATEGY-NPR-MDR.PDF.

then they must reckon with the role improved and expanded U.S. homeland missile defenses could play in reducing that risk.

Another risk that strengthened U.S. homeland missile defense might help reduce is the threat of "catalytic" or "third party" attacks against the United States. Herman Kahn described this threat in 1962, stating that a "catalytic war" is "based on the notion that some third party or nation might for its own reasons deliberately start a war between the two major powers."[6] From the perspective of the United States, Russia (the "third party") could conceivably in the future exploit an ongoing U.S.-China crisis by perhaps launching a submarine-based limited strike against the United States, potentially modifying its missiles to have performance characteristics similar to Chinese submarine-launched missiles. According to this "catalytic war" hypothetical, Russia's goal could be to start a war between the United States and China to weaken its two main rivals and improve its relative position in the balance of forces—an overwhelmingly risky gamble no doubt, but one leaders of a desperate country may be willing to take if they viewed conflict as inevitable eventually. China could also conceivably play the role of a "third party" provoking a "catalytic war" between the United States and Russia in the future—perhaps the ultimate expression of Sun Tzu's "winning without fighting" dictum.

While this threat never materialized between the United States and the Soviet Union during the Cold War, strategists such as Donald Brennan noted the uniquely valuable role U.S. homeland missile defenses could play in reducing the risk of miscalculation and meeting the threat of a third party attack: "… eliminating or greatly reducing the possible damage the [third party] attack might cause would greatly reduce the likelihood that the attack would trigger a near-

[6] Herman Kahn, *Thinking About the Unthinkable* (New York: Horizon Press, 1962), p. 57.

reflex catastrophic, and catastrophically mistaken, response."[7] In this emerging threat environment where China and Russia might someday have both the motive and the means for conducting such a strike against the United States in the hope that one of them will emerge in a better relative position, this scenario is a clear-cut case for guarding against the catastrophic effects of miscalculation—a goal that even missile defense skeptics must acknowledge could be usefully aided by expanded and improved U.S. homeland missile defenses.

Contributing to Crisis Stability

Another way U.S. homeland missile defenses could contribute to a goal that missile defense skeptics value is by reducing the risk of escalation in a crisis or conflict. To the 2022 MDR authors' credit, they acknowledge this benefit: "In the event of crisis or conflict, missile defenses offer military options that help counter the expanding presence of missile threats, and may be less escalatory than employing offensive systems."[8] This acknowledgement, however, does not go far enough in explaining to U.S. policymakers and the public why U.S. homeland missile defenses are unique capabilities that are ideally suited to reducing risks to the United States during a crisis.

First, expanded and improved U.S. homeland missile defenses can deter or defeat an adversary's attempt at a demonstrative attack, or "cheap shot," used to test U.S. resolve and signal the adversary's commitment. A U.S. homeland that is largely vulnerable to such an attack may in fact raise the risk of a crisis escalating to a conflict because

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[7] Donald G. Brennan, "The Case for Population Defense," chapter in, Johan J. Holst and William Schneider Jr., eds., *Why ABM? Policy Issues in the Missile Defense Controversy* (New York: Pergamon Press, 1969), p. 100.

[8] U.S. Department of Defense, *2022 Missile Defense Review*, op. cit., p. 5.

the adversary could rationally gamble that the United States will be unwilling to enter a protracted conflict knowing it could not stop further attacks on its homeland. In short, even skeptics of homeland missile defense should favor increasing the difficulty of an adversary purposely transforming a crisis into a conflict on terms and a timeline that it views as potentially advantageous.

Second, should the United States nevertheless find itself in a conventional conflict with an adversary, the presence of expanded and improved U.S. homeland missile defenses can help deter further escalation to nuclear war. As the strategist Donald Brennan recognized over 50 years ago, "… missile defenses (even light defenses) considerably complicate the planning of an attacker who would penetrate them; this phenomenon seems likely to serve as an additional 'firebreak' to the initiation of a strategic nuclear war."[9] The Biden Administration, skeptical as it is about the value of homeland missile defense, should recognize that making the transition from a conventional conflict to a nuclear conflict that much more difficult for an adversary contemplating that option is a useful role for U.S. homeland missile defenses.

Third, a more robust and effective U.S. homeland missile defense system could potentially decrease the risk of inadvertent escalation based on an adversary's misperceptions of U.S. actions. For instance, during a crisis or conflict, U.S. officials may view particular U.S. actions as prudent and limited, but the adversary may believe those same actions are in fact signals of unlimited U.S. intent. As one example, during the Cold War some strategists recognized that, "… in the course of a severe crisis, the absence of a heavy defense might create pressure on the President to relocate to 'secure' quarters. This action, however, would tend to heighten the crisis. The President,

[9] Brennan, "The Case for Population Defense," op. cit., p. 99.

moreover, is likely to be reluctant to relocate in the course of any crisis. An active defense of Washington would permit the President to continue in his accustomed working environment."[10]

Fourth and finally, expanded and improved active homeland missile defenses could potentially lessen the perceived need for preemptive action in the case of a North Korean attack scenario. As the North Korean intercontinental ballistic missile threat to the United States grows beyond U.S. homeland ballistic missile defense capabilities, the United States may need to rely more on "left of launch" capabilities as envisioned in the 2022 MDR.[11] These capabilities, indeed, are important for deterrence and damage limitation, but employing them necessarily imposes greater time pressures on a president during a crisis or conflict—pressures that more robust active homeland missile defenses can help relieve.

Conclusion

The 2022 MDR recognizes the growing set of missile threats to the U.S. homeland and, to some extent, even correctly diagnoses the multiple ways homeland missile defenses can deter and defeat those threats. Its major, perhaps fundamental, deficiency is failing to act with the sense of urgency required by its own findings on the threat. This failure, I believe, can be attributed to the pre-existing skepticism among Biden Administration officials, including President Biden himself, about the value and efficacy of robust U.S. homeland missile defenses. Since, self-evidently, the deterrence and damage-limitation roles for U.S. homeland missile defense were not valued highly

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[10] E. S. Boylan, D. G. Brennan, and H. Kahn, *Alternatives to Assured Destruction* (Croton-on-Hudson, NY: Hudson Institute, March 20, 1972), p. 28, available at https://archive.org/details/DTIC_AD0750722/.

[11] U.S. Department of Defense, *2022 Missile Defense Review*, op. cit., p. 8.

enough by the Biden Administration to induce greater action on improving U.S. homeland defenses, perhaps it is time the Biden Administration considers how improved and expanded U.S. homeland missile defenses can benefit two additional missions it values highly: reducing the risks and consequences of accidental, unauthorized, or "third party" attacks, and contributing to crisis stability. A more robust U.S. homeland missile defense capability can contribute to these two roles by providing additional options beyond offensive strikes, raising the threshold for conflict and nuclear escalation, and reducing perceived pressures for preemptive strikes.

Strategists from the Cold War onward have recognized that deterrence can sometimes require a balance between appearing threatening enough to the adversary that he does not attack, but not so threatening as to make an attack appear imminent, thus inadvertently prompting conflict. The Biden Administration clearly seeks to avoid the latter condition but, in doing so, overcorrects and misses the great strategic value that improved and expanded U.S. homeland defenses can provide. The Biden Administration and other skeptics of U.S. homeland missile defense should re-evaluate their opposition, however, and consider how Donald Brennan framed the value of defenses during the Cold War: "In view of the effectiveness of modern defense, we might better have used the U.S. resources committed to increasing our offensive forces to increase our defenses instead. By thus *reducing the Soviet threat*, rather than *increasing our own*, we should have reduced both the extent to which the Soviets might gain by attacking us, and the extent to which we are intensely motivated to deter the attack."[12] A robust set of U.S. homeland missile defense capabilities, therefore, offers supporters a chance to improve deterrence and damage limitation while also

[12] Brennan, "The Case for Population Defense," op. cit., p. 104. (Emphasis added.)

providing an opportunity for skeptics to reduce the risks of misperception and inadvertent escalation. The *2022 Missile Defense Review* failed to make this case adequately, but wider recognition of these points may improve the chance that a future MDR will.

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Missile Defense and U.S. Strategic Competitors: An Evolving Approach?

by Peppi DeBiaso

Introduction

Recent *Missile Defense Reviews* (MDRs), including the Trump and Biden Administrations' MDRs, point to a shift in the role of missile defense with respect to U.S. strategic competitors—Russia and China. To be sure, this shift is still in a formative stage. However, the policy reviews call attention to changes occurring in the security environment in which the large powers are pursuing strategies that pose new threats to the U.S. homeland while jeopardizing the U.S. military's ability to counter regional aggression. These developments are related in large part to the growing prospect of Russian and Chinese non-nuclear strategic and limited nuclear missile-backed threats that raise new questions over long-standing U.S. policy that dismisses any role for missile defense against peer powers. In this context, the recent reviews make certain choices signaling an increased willingness to consider a role for missile defense within the broader U.S. military posture to address threats from Russia and China.

To gain a better appreciation of the potential implications of these choices, this essay begins with a brief review of where current U.S. policy stands on the matter of missile defense vis-à-vis the large nuclear powers. It then explores three related aspects: regional missile defense; homeland cruise missile defense (CMD); and homeland ballistic missile defense (BMD).

Foundation of Contemporary U.S. Policy

The foundation of contemporary American homeland missile defense policy is built upon the 1999 National Missile Defense (NMD) Act. The legislation set a national policy to "deploy as soon as is technologically possible an effective national missile defense system capable of defending the territory of the United States against limited ballistic missile attack, whether accidental, unauthorized, or deliberate." Since 1999, every administration has articulated policies within the broad framework of the NMD Act centered around the defense of the United States against nuclear-armed long-range ballistic missiles from so-called "rogue states."[1] This reflects the judgment that nuclear deterrence may not be fully reliable in preventing these unpredictable and unstable nuclear states from threatening a nuclear missile attack or employing such weapons in a crisis or conflict.

At the same time, each administration has also pursued a policy seeking to reassure the large nuclear powers that U.S. homeland missile defenses are not designed or intended to counter their strategic forces. The United States has consistently affirmed the policy that it relies on nuclear deterrence and the threat of retaliation to address the large and sophisticated Russian and Chinese nuclear ballistic missile capabilities. This declaratory policy is reflected in both the 2019 and the 2022 MDR.[2] Rejecting any role for

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[1] While the NMD Act of 1999 has been amended several times over the past 20 years, current U.S. policy remains aligned with the original legislation.

[2] *Missile Defense Review 2019* (Washington D.C.: Department of Defense, Office of the Secretary of Defense), p. 31, available at https://media.defense.gov/2019/Jan/17/2002080666/-1/-1/1/2019-MISSILE-DEFENSE-REVIEW.PDF; *2022 Missile Defense Review* (Washington D.C.: Department of Defense, Office of the Secretary of Defense), p. 5, available at

homeland missile defense against threats from large nuclear powers is rooted in the American Cold War view that vulnerability provides a basis for stable mutual deterrence and removes incentives to engage in offensive arms racing behavior. Moreover, this belief has been sustained by the arguments made by missile defense opponents that the technical feasibility and costs associated with countering large missile strikes would, at any rate, prove too difficult to overcome. For three decades, Republican and Democratic administrations endorsed this "tailored" approach to homeland ballistic missile defense that treated the established nuclear powers differently from rogue states on the matter of missile defense and deterrence.

American policy shaping the question of regional missile defense has been less differentiated. Such defenses have been viewed, generally, as essential to the conduct of modern conventional warfare in light of the substantial regional missile capabilities of potential U.S. opponents. Yet even here, U.S. policy has been ambivalent with regard to Russia and China. While it has not distinguished states against whom it would or would not build regional missile defenses, as it has done with its homeland strategy, for much of the post-Cold War period the focus of American missile defense policy and posture has been squarely on regional (not great power) adversaries. This is evident, for example, within the leading policy documents over the last three decades (e.g., *Quadrennial Defense Reviews*, *National Defense Strategies*, and *Ballistic Missile Defense Reviews*), which are largely silent on the question of the deterrence and operational benefits of missile defenses to counter Russian and Chinese regional missile threats.[3]

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https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-NATIONAL-DEFENSE-STRATEGY-NPR-MDR.PDF.

[3] The Obama Administration's *Ballistic Missile Defense Review* of 2010 did express concern with the "trends" in China's regional missile capabilities but only went so far as to suggest this was something to be

Changes are occurring in the security environment, however, and reflected in recent defense reviews that foreshadow a prospective role for missile defense in American strategy toward Russia and China.

Regional Missile Defense

Let's first consider regional missile defenses. As noted above, most official U.S. post-Cold War assessments did not conclude that either Russia or China posed a regional missile threat to U.S. interests warranting policy recognition as a risk to be addressed by missile defense. This assessment of the security landscape began to shift with the 2018 *National Defense Strategy*'s (NDS) acknowledgement of the return of long-term great power competition with Russia and China. One significant aspect of this competition was the recognition of the substantial strides Russia and China were making in developing new generations of longer-range offensive weapons. These include advanced ballistic missiles, cruise missiles, and hypersonic systems, to create anti-access/area denial (A2/AD) environments to degrade the U.S. ability to project military power, sustain combat operations, and support alliance security commitments during a crisis or conflict. These missile-centric A2/AD strategies are central to Russia and China's theory of victory, which depends on disrupting the flow of American forces into a region while quickly striking those already in place. In this context, a role for missile defense in responding to the expanding prominence of Russian and Chinese regional missile forces in their respective military postures is explicitly identified for the first time in the 2019 MDR. It asserts that the United States will strengthen its air

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"closely monitored," p. 5, p. 7, available at https://dod.defense.gov/Portals/1/features/defenseReviews/BMDR/BMDR_as_of_26JAN10_0630_for_web.pdf.

and missile defenses to deter and counter the regional offensive missile capabilities of Russia and China, in addition to those of rogue states.[4]

The Biden Administration appears to endorse this policy, with Pentagon officials conveying to Congress that the United States must strengthen its "regional missile defenses to counter all missile threats—*regardless of origin*."[5] The 2022 MDR adds additional specificity to countering Russian and Chinese regional missiles. This is reflected in DoD's FY23 budget request, which funds missile defenses to blunt China's regional missiles in Asia. The budget request invests around $800M to develop an Integrated Air and Missile Defense (IAMD) architecture to assist in the defense of Guam against a Chinese attack. The desired end state is a posture containing a mix of Army, Navy and Missile Defense Agency (MDA) systems beginning with the deployment of terminal air and missile defenses. As part of this IAMD framework, DoD is also developing a new program, the Glide Phase Interceptor (GPI). The GPI program, funded at $225M in the FY23 request, is focused on demonstrating a capability to provide the United States a more capable long-range system to defeat Chinese regional hypersonic glide vehicle (HGV) threats.

Homeland Cruise Missile Defense (CMD)

Concerning homeland missile defense and the large powers, there are also developments that raise new

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[4] *Missile Defense Review 2019*, op. cit., p. X, p. 46.

[5] Written Statement of Dr. John Plumb, ASD for Space Policy before the Senate Armed Services Committee Strategic Forces Subcommittee, "Missile Defense Strategy, Policies and Programs," May 18, 2022, available at https://www.armed-services.senate.gov/imo/media/doc/ASD%20Plumb%20SASC%20SF%20Missile%20Defense%20Written%20Statement%20-%20May,18%202022_FINAL.pdf.

questions about the policy of the past dismissing protection against missile backed threats from Russia or China. Recent defense reviews address the question of defending against at least some Russian and Chinese homeland missile threats.[6] The 2022 NDS *Fact Sheet* calls attention to this risk: "Recognizing growing kinetic and non-kinetic threats to the United States' homeland from our strategic competitors, the Department will take necessary actions to increase resilience—our ability to withstand, fight through, and recover quickly from disruption."[7] One area in particular associated with "growing kinetic threats" is Russia and China's development of advanced long-range cruise missiles. These weapons can be launched from air, land or sea to destroy targets *within the United States* in order to disrupt the U.S. ability to project military power, sustain combat operations, and support alliance security commitments across Europe and Asia.

The long-standing American operating model that assumes it can flow forces globally from a safe and secure homeland in order to undertake rapid interventions is eroding. U.S. officials have testified that Russia and China are developing the military capabilities necessary to extend their A2/AD reach to the homeland.[8] The significance of this assessment is affirmed in the 2022 MDR's recognition

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[6] The 2019 *Missile Defense Review* called attention to the growing risks of advanced cruise missiles and HGVs to the homeland and endorsed efforts to examine options to improve the detection, tracking and engagement of air breathing threats to the United States. See *Missile Defense Review 2019,* op. cit., pp. 44-45.

[7] *Fact Sheet: 2022 National Defense Strategy* (Washington, D.C.: Department of Defense), March 28, 2022, available at https://media.defense.gov/2022/Mar/28/2002964702/-1/-1/1/NDS-FACT-SHEET.PDF.

[8] Statement of Gen. Glen D. VanHerck, Commander United States Northern Command and North American Aerospace Defense Commander, Before the House Armed Services Committee, March 8, 2022.

of a shift in the strategic posture of Russia and China "to stay under the nuclear threshold and achieve strategic results with conventional [cruise missile] capabilities…."[9] The MDR endorses developing capabilities that begin to address these threats to the homeland with near-term priority given to improved warning of Russian long-range cruise missiles. In support of this mission, the FY23 budget request invests $287M for the procurement of several new Over-The-Horizon radars for all-domain awareness to detect and track air and cruise missile threats to the homeland.

Additionally, the MDR states that the "United States will examine active and passive defense measures to decrease the risk from any cruise missile strike against critical assets, regardless of origin."[10] In order to carry out this work, DoD has designated the U.S. Air Force as the Executive Agent for homeland CMD to examine, in conjunction with other agencies (e.g., MDA and the Services), architectures, including sensors, interceptors and command and control (C2) arrangements for CMD of critical military targets within the United States.[11] This analysis is in the early stages and specific architectural options have yet to be defined. While important questions must be addressed over the ultimate scope and scale of homeland CMD, the benefits of some defense capability here to deny Russia and China unchallenged pathways to exploit perceived vulnerabilities to the United States appear to be growing.

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[9] *Missile Defense Review 2022,* op. cit., p. 6.

[10] Ibid. p. 6.

[11] The assignment of an Executive Agent to oversee the development of architectural options for cruise missile defense of the homeland has strong bipartisan support in Congress. The FY2017 NDAA required the Secretary of Defense to designate a Service or Defense Agency to take responsibility for acquiring U.S. capabilities to defend the homeland against cruise missiles.

Homeland Ballistic Missile Defense (BMD)

The third issue which raises questions about retaining the missile defense policy of the past is coupled to the growing prospect of Russian and Chinese threats of limited first use of nuclear missiles against the United States. Here, the 2022 MDR did not take any decisions or actions to reassess the role of missile defense. However, in light of the changes occurring in the threat assessments identified in the administration's own defense reviews, the United States should be prepared to re-examine the extent to which missile defense presents new or additional opportunities to strengthen deterrence of limited threats to the United States.

The 2022 NPR itself points to these changes. It notes the need to deter limited nuclear attacks from strategic competitors who "have developed strategies for warfare that may rely on the threat of nuclear escalation in order to terminate a [conventional] conflict on advantageous terms."[12] Of particular concern is Russia's doctrine and capability that envisions the prospective escalation to limited nuclear strikes to coerce or compel the United States to halt its involvement in an ongoing conflict in order to salvage an otherwise failing Russian campaign. As the Director of the Defense Intelligence Agency (DIA) described it in 2017, Russia is "…the only country that I know of that has this concept of escalate to terminate or *escalate to deescalate*…. [T]hey have built this into their operational concept, we've seen them exercise it…."[13] While the precise application of this doctrine remains shrouded in ambiguity,

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[12] *2022 Nuclear Posture Review* (Washington, D.C.: Department of Defense, Office of the Secretary of Defense), p. 7, available at https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-NATIONAL-DEFENSE-STRATEGY-NPR-MDR.PDF.

[13] Lieutenant General Vincent R. Stewart, "Worldwide Threats," Hearing before the Committee on Armed Services, United States Senate, 115th Congress, May 23, 2017, p. 83.

the decision to threaten or carry out such strikes against either the United States homeland, European allies or Western forces in a regional conflict would likely be shaped by the scale and internal political consequences of Russia's collapsing efforts in the war.[14]

In this context, there may be potential deterrence and protection benefits provided by missile defense; namely, to deny the coercive value of missile-backed threats in a crisis or regional war by negating the political and military utility of limited strikes.[15] Under conditions of a rapidly deteriorating regional conflict, U.S. nuclear deterrence may be insufficiently reliable to prevent a threat of limited nuclear escalation with Russia calculating, or miscalculating, that the benefits of this course of action outweigh the risks of possible U.S. retaliation. In these circumstances, missile defenses sized to defeat limited nuclear coercive threats may provide a means to reinforce the credibility of broader U.S. deterrence threats.

Such defenses, to be clear, need not be capable of coping with large nuclear strikes, but rather focused on undermining Moscow's confidence that it could successfully resort to its policy of escalate to de-escalate.[16] A prospective U.S. policy shift along these lines would raise

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[14] Gerrard Kaonga, "Russian TV Says Nuclear Strike on U.K. Would Turn it Into 'Martian Desert'," *Newsweek*, September 19, 2022, available at https://www.newsweek.com/russia-nuclear-attack-united-kingdom-uk-germany-ukraine-war-conflict-nato-andrey-gurulyov-1744045.

[15] For further discussion and analysis on this topic see Brad Roberts, "Missile Defense: Fit for What Purpose in 2030?" in Brad Roberts, ed., *Fit for Purpose? The U.S. Strategic Posture in 2030 and Beyond* (LLNL: CGSR, 2020).

[16] This may apply to China as well, especially as it continues to build out their nuclear posture. The steady expansion of China's long-range nuclear missiles will soon provide it options to conduct a range of coercive/limited nuclear strikes in order to constrain a U.S. military response in a major crisis, e.g., Taiwan.

two significant issues. The first is the technical task of developing missile defenses against the more advanced long-range missile threats posed by Russia and China. For the last two decades the United States has chosen not to design or develop its homeland missile defenses to counter Russian or Chinese ICBMs. A shift in policy likely requires some adjustment in our approach to the types of technologies, systems and platforms to counter, even on a limited basis, more sophisticated missiles. The second issue that arises is related to the concern that this change in U.S. policy will undermine strategic stability and lead to a new arms race. This contention is problematic for a number of reasons. First, Russia possesses an unquestioned capability to overwhelm U.S. missile defenses, even in a modestly expanded form, given its large, diverse, and advanced strategic air-breathing and intercontinental-range missile platforms. Second, the United States has long accepted Russian homeland missile defenses, which include 68 nuclear-armed interceptors,[17] a force posture numerically larger than anything the United States possesses now or will have in the foreseeable future—and yet this has not led to U.S. "arms racing" behavior.[18] Third, with improved yet still limited defenses, the United States would be doing nothing more than acknowledging the importance of countering limited missile threats to the homeland—a position long understood by Russia which, incidentally, views its own missile defense and nationwide damage

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[17] *Missile Defense Review 2019*, op. cit., pp. VI, 20.

[18] Russian missile defenses are undergoing modernization with new interceptors and the current system is being expanded with the introduction of the S-500 system which will be capable in the future of intercepting long-range ballistic missiles. Department of Defense, Office of Public Affairs, *Chinese and Russian Missile Defense: Strategies and Capabilities*, July 2020, available at https://media.defense.gov/2020/Jul/28/2002466237/-1/-1/1/CHINESE_RUSSIAN_MISSILE_DEFENSE_FACT_SHEET.PDF.

limitation capabilities as wholly consistent with its conception of strategic stability.[19]

Conclusion

U.S. assessments over the last several years under both Republican and Democratic administrations point to the growing prominence of limited conventional and/or nuclear missile-backed threats within the strategic posture of Russia and China. Among other issues raised by these developments is the question over long-standing U.S. policy, which has largely dismissed a role for missile defense against peer competitors as a component of our military strategy to strengthen our ability to deny aggression. This policy increasingly lags behind the onset of a new set of strategic dilemmas Russia and China are creating for Washington by developing the capacity to erode deterrence by threatening the United States below the threshold of large-scale offensive strikes.

Recent defense reviews signal an increased willingness to consider a role for missile defense within the broader U.S. military framework to address missile threats from Russia and China—at least in the context of regional conflict and possibly to thwart conventional cruise missile strikes against the homeland. This is an important development in its own right. It begins to recognize defenses against missile-backed threats of our strategic competitors as a tool that can contribute to deterrence by denying adversaries confidence in their prospective escalation threats. However, to date, U.S. policy remains unchanged in its willingness to

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[19] Dr. Peppi DeBiaso, "Russia and Missile Defense: Toward an Integrated Approach," *Information* Series, No. 512 (Fairfax, VA: National Institute Press, January 18, 2022) available at https://nipp.org/information_series/peppino-debiaso-russia-and-missile-defense-toward-an-integrated-approach-no-512-january-18-2022/.

consider any role for missile defense to cope with coercive nuclear missile threats by Russia and China on the U.S. homeland. If American defense strategy is to continue to evolve to frustrate Russia and China's will and capacity to wage limited warfare, Washington should be prepared to re-examine the extent to which missile defense presents new opportunities to strengthen deterrence by denying the political and military utility of potential coercive missile threats and, if deterrence fails, signal it could limit damage to itself.

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Missile Defense Review: Too Much Review, Too Little Action

by Michaela Dodge

The Biden Administration published its long-awaited *Missile Defense Review* (MDR) at the end of October. The document sets the Administration's missile defense policy priorities and directs the Department of Defense and its interagency partners "on U.S. missile defense strategy and policy in support of the *National Defense Strategy* (NDS)."[1]

There is a gap between even the limited MDR's aspirations and the reality of programs and funding the administration has been dedicating to the missile defense mission. One of the document's most striking aspects is the lack of a sense of urgency when it comes to articulating concrete plans to counter missile threats. Less than a week after the document's release, North Korea launched more than 23 missiles, including one that landed off South Korea's coast.[2] Cruise missiles and short-range missile attacks have been an integral element of Russia's war in Ukraine, including the systematic destruction of critical civilian infrastructure with the intent to terrorize the Ukrainians.[3] The MDR notes that, "In Ukraine, Russia has

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[1] Department of Defense, *2022 Missile Defense Review*, p. 1, available at https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-NATIONAL-DEFENSE-STRATEGY-NPR-MDR.PDF.

[2] Josh Smith and Soo-Hyang Choi, "North Korea fires 23 missiles, one landing off South Korean coast for first time," *Reuters*, November 2, 2022, available at https://www.reuters.com/world/asia-pacific/north-korea-fires-ballistic-missile-says-south-korean-military-2022-11-02/.

[3] Kostan Nechyporenko, Olga Voitovych, Victoria Butenko and Lianne Kolirin, "Russian missiles bombard cities across Ukraine, hitting power and water infrastructure," *CNN*, October 31, 2022, available at https://www.cnn.com/2022/10/31/europe/russian-missile-strikes-ukraine-intl/index.html.

used thousands of air, land, and sea-launched cruise and ballistic missiles, including hypersonic missiles."[4] China has "the most active and diverse ballistic missile development program in the world."[5] Both countries have active missile defense programs of their own, which the MDR mentions only in passing. Yet, the MDR does not contain any deadlines for a corresponding necessary expansion of U.S. missile defense capabilities and achieving goals set forth in the document.

Missile threat developments warrant a discussion of strengthening not only U.S. missile defense systems and alliance cooperation, but also the capacity of the U.S. defense production base. Without deadlines and clearly defined milestones, it will be more difficult to spur the bureaucracy into action and assess whether the administration is meeting even its modest missile defense goals. That is concerning given the stated priority of defending the homeland in the *National Defense Strategy*. Missiles, along with Uncrewed Aircraft Systems, as the 2022 MDR notes, are clearly adversaries' weapons of choice.

While the document says the United States will rely on "strategic deterrence… to address and deter large intercontinental-range, nuclear missile threats to the homeland from the People's Republic of China (PRC) and the Russian Federation (Russia),"[6] the current state of the U.S. defense industrial base does not inspire confidence in the U.S. ability to counter their regional missile capabilities and keep up with the likely rate of interceptor consumption in a potential conflict. The United States will have a hard

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[4] *2022 Missile Defense Review*, op. cit., p. 2.

[5] Defense Intelligence Ballistic Missile Analysis Committee, *Ballistic and Cruise Missile Threat*, 2020, p. 3, available at https://media.defense.gov/2021/Jan/11/2002563190/-1/-1/1/2020%20BALLISTIC%20AND%20CRUISE%20MISSILE%20THREAT_FINAL_2OCT_REDUCEDFILE.PDF?source=GovD.

[6] *2022 Missile Defense Review*, op. cit., p. 1.

time backfilling ammunition provided to Ukraine, and it is not even directly involved in a conflict. The problem would likely be even more daunting if the United States had to fight a more capable adversary like the PRC.

With regard to North Korea, the MDR states that the United States will "continue to stay ahead of North Korean missile threats to the homeland through a comprehensive missile defeat approach, complemented by the credible threat of direct cost imposition through nuclear and non-nuclear means."[7] Does this wording mean the administration would increase its reliance on "strategic deterrence" to address and deter North Korea's long-range missiles as they get more capable and a missile defense system required to defeat them would have to become more capable against Russia and China's long-range missiles?[8] The administration leaves the question unaddressed, but the United States does not have time to ponder the answer much longer. There are excellent reasons for expanding U.S. missile defense capabilities, even if it means that they become capable of addressing more limited long-range attacks from Russia and China. In fact, it is desirable for the United States to develop missile defense capabilities that take away their "easy" shots against the U.S. homeland, even if the system cannot be comprehensive enough to take away the option entirely.[9]

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[7] Ibid.

[8] For more on the tension between missile defense against North Korea's long-range missiles and the system's capability against Russia and China's missiles see Michaela Dodge, "Missile Defense Reckoning is Coming. Will the United States Choose to be Vulnerable to All Long-Range Missiles?," *Information Series,* No. 465 (Fairfax, VA: National Institute Press, August 20, 2020), available at https://nipp.org/information_series/dodge-michaela-missile-defense-reckoning-is-coming-will-the-united-states-choose-to-be-vulnerable-to-all-long-range-missiles-information-series-no-465/.

[9] For an excellent discussion of this point see Matthew Costlow, *Vulnerability is No Virtue and Defense is No Vice: The Strategic Benefits of*

For all of the *National Defense Strategy*'s emphasis on utilizing modern technologies to compete better, the MDR discusses very little by way of plans to utilize modern technologies to improve missile defense to give it more capability against diverse threats, including unmanned vehicles. The discussion is general ("Future air and missile defense capabilities must also be more mobile, flexible, survivable, and affordable, and emphasize disaggregation, dispersal, and maneuver to mitigate the threat from adversary missiles.")[10], and largely confined to making the case for better sensor and command and control architectures.[11] The United States would find it difficult to develop a more comprehensive homeland missile defense capability using the Ground-Based Midcourse Defense system and the Next Generation Interceptors, options for defending against long-range missiles successive administrations have preferred. Many continue to consider the cost of long-range interceptors prohibitive, even though what these interceptors are defending is far more valuable than the cost per interceptor.[12]

The MDR quite correctly emphasizes the importance of working with U.S. allies to build more comprehensive missile defense architectures, particularly in a regional context. Allied cooperation on missile defense is a critical component of extended deterrence and assurance and can generate synergies that are not available to U.S. adversaries. U.S. homeland missile defense supports the goals of U.S.

Expanded U.S. Homeland Missile Defense, Occasional Paper, Vol. 2, No. 9, (Fairfax, VA: National Institute Press, September 2022), available at https://nipp.org/wp-content/uploads/2022/09/OP-Vol.-2-No.-9.pdf.

[10] *2022 Missile Defense Review*, op. cit., p. 9.

[11] Ibid, pp. 8-9.

[12] Jen Judson, "Next-gen intercontinental ballistic missile interceptor estimated cost? Nearly $18B," *Defense News*, April 27, 2021, available at https://www.defensenews.com/pentagon/2021/04/27/next-gen-intercontinental-ballistic-missile-interceptor-estimated-to-cost-nearly-18-billion/.

allied cooperation in general because U.S. security guarantees are more likely to be credible if allies (and adversaries) know the United States does not have to commit national suicide in order to uphold them.[13]

Arms control hope springs eternal. The MDR echoes the preamble of the New Strategic Arms Reduction Treaty by recognizing "the interrelationship between strategic offensive arms and strategic defensive systems,"[14] and states that "Strengthening mutual transparency and predictability with regard to these systems could help reduce the risk of conflict."[15] The challenge has always been that since adversaries depend on missile threats for their coercive strategies, they do not welcome U.S. missile defense advancements and actively use the arms control process to impose limitations on the United States in an area in which the United States performed better than they do.[16]

Just as with any government document, getting it through the inter-agency process is only half the battle, and perhaps not the most important half at that. How the administration implements the MDR will in some ways matter more than what the MDR says. The Trump Administration said many appropriate things about missile defense in its *Missile Defense Review Report*, yet the surprising degree of programmatic continuity on missile defense among the last three administrations speaks

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[13] On the importance of missile defense in the context of extended deterrence and allied assurance, see Michaela Dodge, *Alliance Politics in a Multipolar World* (Fairfax, VA: National Institute Press, October 2022), *Occasional Paper*, Vol. 2, No. 10, pp. 38-40, available at https://nipp.org/wp-content/uploads/2022/10/OP-Vol.-2-No.-10.pdf.

[14] *2022 Missile Defense Review*, op. cit., p. 6.

[15] Ibid.

[16] See, for example, a discussion in David Trachtenberg, Michaela Dodge, and Keith Payne, *The "Action-Reaction" Arms Race Narrative vs. Historical Realities* (Fairfax, VA: National Institute for Public Policy, March 2021), pp. 21-30, available at https://nipp.org/wp-content/uploads/2021/04/Action-Reaction-pub.pdf.

volumes about the difficulties of implementing more ambitious missile defense policy shifts. The Biden Administration's MDR implementation and execution will determine how much the United States will lag its adversaries in the future. And lag it will, for the administration's proposed steps and funding have been incongruous with developments in the missile threat.

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Deterring Coercive Near-Peer Nuclear Threats Through Homeland Missile Defense

by Robert G. Joseph

Last October, the Biden Administration released a complementary set of documents conveying its views on the strategic challenges facing the United States. The first release was the *National Security Strategy* (NSS). Putting aside the predictable, now cliché-laden platitude about climate change as "the greatest and potentially existential" problem for all nations,[1] the NSS notes that the principal state threats facing the United States stem primarily from the determination of Russia and China to overturn the U.S.-led international order by force if necessary. Recognizing the fundamental challenges posed by Moscow and Beijing to U.S. security, the NSS rightly invokes a call to action, especially to develop and deploy the full spectrum of capabilities necessary to deter and defend against these two revisionist powers.

Unfortunately, the NSS and its implementing documents fail to acknowledge the need for, and make a commitment to, an effective missile defense capability that could contribute significantly to deterring Russia and China from threatening and conducting coercive nuclear attacks, including against the American homeland. Multiple recent threats from President Putin, explicit and implied, to use nuclear weapons make evident the need for such defenses. Nevertheless, while emphasizing the many contributions of missile defenses to deterrence of adversaries, and while noting that Russia has "upgraded its own missile defense

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[1] The White House, *National Security Strategy*, October 2022, p. 9, available at https://www.whitehouse.gov/wp-content/uploads/2022/10/Biden-Harris-Administrations-National-Security-Strategy-10.2022.pdf.

system designed to protect Moscow against a U.S. strike,"[2] the documents make clear the intention of the Biden Administration to design defenses only against states like North Korea and Iran, not the near-peer threats that pose the greatest danger to U.S. security.

Other than a vague reference to the "interrelationship" of strategic offensive and defensive systems,[3] the documents do not provide a rationale for the self-limiting redline restricting the application of missile defense to rogue states. Yet, the reason is clear. The administration's thinking about missile defenses remains grounded in outdated, Cold War-era concepts of strategic stability that are inconsistent with the contemporary threats facing the United States.

Deterrence plays a central role in all four of the interrelated Biden documents: the NSS, the *National Defense Strategy* (NDS), the *Nuclear Posture Review* (NPR), and the *Missile Defense Review* (MDR). The NSS states: "By the 2030s, the United States for the first time will need to deter two major nuclear powers."[4] Using the 2030s as a benchmark is unexplained and somewhat mystifying. With Ukraine and Taiwan in mind, it is evident that the United States must deter both Russia and China today, separately and in combination. But the more important policy point is that the administration recognizes the urgent need to develop and deploy effective capabilities to deter these and other threats to the American homeland, to U.S. forces abroad, and to those of our friends and allies.

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[2] Department of Defense, *2022 Missile Defense Review*, p. 3, available at https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-NATIONAL-DEFENSE-STRATEGY-NPR-MDR.PDF.

[3] Ibid., p. 6.

[4] The White House, *National Security Strategy*, October 2022, op. cit., p. 21.

The NSS notes that Russia "poses an immediate and persistent threat to international peace and stability."[5] In the NDS, Russia is assessed as an "acute" threat based on its war of aggression against Ukraine and its less than subtle threats to use nuclear weapons in that context.[6] But the most challenging, long-term threat is China. The NDS assesses China to be the greatest threat to U.S. security and calls for an urgent, comprehensive effort to build the needed military capabilities to deter and defend against this "most consequential strategic competitor for the coming decades."[7]

The NDS, in discussing the meaning and makeup of what it terms "integrated deterrence," accurately calls for a holistic response to the threats from Russia, China, and rogue states, North Korea and Iran.[8] Central to the notion of strengthening deterrence of these adversaries is building capabilities "that reduce a competitor's perception of the benefits of aggression relative to restraint."[9] And central to that task is the requirement for the Defense Department to "develop asymmetric approaches" that "optimize our posture for denial."[10] This, as the NDS points out, is especially important for Russia and China, countries "that could rapidly seize territory."[11] For deterrence by denial to work against Russia and China, the United States will build new capabilities "such as long-range strike, undersea, hypersonic, and autonomous systems" and will "improve

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[5] Ibid., p. 25.

[6] Department of Defense, *2022 National Defense Strategy of the United States of America*, October 2022, p. 2, available at https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-NATIONAL-DEFENSE-STRATEGY-NPR-MDR.PDF.

[7] Ibid., p. III.

[8] Ibid., p. 8.

[9] Ibid.

[10] Ibid.

[11] Ibid.

information sharing and the integration of non-kinetic tools."[12] Missile defenses to protect the U.S. homeland are notably absent from the list.

For North Korea and Iran, the NDS emphasizes that deterrence by denial requires effective regional and homeland missile defenses. The reason missile defense of the U.S. homeland is not listed as a component of deterrence by denial for Russia and China is left unsaid. Because defending U.S. territory and population centers against missile attack fits perfectly with the NDS narrative of integrated deterrence, especially deterrence by denial, one must ask why missile defenses strengthen deterrence of North Korea and Iran, but play no apparent role in deterring Russia and China? While obscured, the answer is revealed in the policy assertions contained in the MDR that are, in turn, driven by outdated assumptions concerning strategic stability. These assumptions trump essential national security requirements to the point of undercutting the prospects for deterring the two major threats identified in both the *National Security Strategy* and the *National Defense Strategy*. This is one of the greatest failings of the Biden Administration's efforts to deter Russia and China.

One could argue that the 2022 MDR nevertheless represents a step forward, at least in rhetoric, compared to past statements and actions taken by Democratic administrations. The Clinton Administration at every opportunity proclaimed the virtues of vulnerability as it repeatedly praised the Anti-Ballistic Missile (ABM) Treaty as the "cornerstone of strategic stability." Les Aspen, Clinton's first secretary of defense, on his first day in office stated that he was taking the stars out of Star Wars by cancelling the missile defense programs initiated by the Bush-41 Administration. The Obama Administration, coming into office following the U.S. withdrawal from the

[12] Ibid.

ABM Treaty, killed every Bush-43 development program intended to keep pace with the rogue state ICBM threat, cancelling the multiple kill vehicle project and the third Ground-Based Interceptor (GBI) site in Poland. The rationale was that U.S. defenses, if made capable against Russian and Chinese strategic forces, would upset strategic stability, leading to an arms race. President Obama in a famous off-mike remark to then-Russian President Medvedev indicated that he looked forward to negotiating limits on the two sides' defenses.

Never mind that the notion of strategic stability through accepting vulnerability had been long undermined by the facts. Following the signing of the ABM Treaty prohibiting the parties from developing and deploying territorial defenses, the United States and Soviet Union greatly expanded their offensive nuclear forces. And 30 years later, on the day that the United States withdrew from the Treaty, President Putin announced "with full confidence" that this action was not a threat to Russia and that Russia would continue to reduce its nuclear arsenal.[13] But with a blind eye to the facts, left-leaning defense analysts continued to promote the myth of strategic stability though vulnerability as an article of faith.

The Biden MDR builds on that of its two predecessors by providing a catalog of reasons why protecting the American homeland against missile attack through effective missile defenses strengthen deterrence. In the section titled "Strategy and Policy Framework," the MDR notes that: "Missile defenses…are critical to the priority of defending the homeland and deterring attacks against the United States." It goes on to note that missile defenses "deny the benefits of an attack by adversaries and limits

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[13] Vladimir Putin, "A Statement Regarding the Decision of the Administration of the United States to Withdraw from the Antiballistic Missile Treaty of 1972," December 13, 2001, available at http://en.kremlin.ru/events/president/transcripts/21444.

damage should deterrence fail" and that "missile defense is a core deterrence-by-denial component of an integrated deterrence strategy."[14]

The benefits of missile defense cited in the MDR are spelled out in detail:

> Missile defense capabilities add resilience and undermine adversary confidence in missile use by introducing doubt and uncertainty into strike planning and execution, reducing the incentive to conduct small-scale coercive attacks, decreasing the probability of attack success, and raising the threshold for conflict. Missile defenses also reinforce U.S. diplomatic and security posture to reassure allies and partners that the United States will not be deterred from fulfilling its global security commitments. In the event of crisis or conflict, missile defenses offer military options that help counter the expanding presence of missile threats, and may be less escalatory than employing offensive systems. Damage limitation offered by missile defenses expands decision making space for senior leaders at all levels of conflict and preserves capability and freedom of maneuver for U.S. forces.[15]

The above rationale for effective homeland missile defense dates back many years, drawing most recently from the Trump review that provided a sound rationale for protecting the homeland from all missile threats but did little to guide capabilities to provide that protection. The Obama MDR cited many of the same contributions as in the Biden MDR at the same time it cancelled most of the promising missile defense programs it inherited. The Bush-43 Administration highlighted these same benefits in

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[14] Department of Defense, *2022 Missile Defense Review*, op. cit., p. 5.

[15] Ibid.

consultations with allies and others in the process of withdrawing from the ABM Treaty. Before that, the Bush-41 Administration made similar arguments in advancing the GPALS program (Global Protection Against Limited Strikes). Even further back, many of the same benefits were cited in the debates over the Strategic Defense Initiative of the Reagan Administration. While mischaracterized at the time by opponents of homeland defense as an effort to create an impenetrable shield against a Soviet nuclear attack, the requirements set by the Pentagon called for defenses sufficient to create doubt in the minds of Soviet planners that their attack on the United States would be successful.

According to the Biden MDR, all of the contributions of missile defense to deterrence apply to North Korea and Iran. As the threat from North Korea evolves in size and sophistication, the review notes: "the United States is committed to improving the capability and reliability of the GMD [Ground-based Midcourse Defense] system…This includes the development of the Next Generation Interceptor (NGI) to augment and potentially replace the existing Ground-Based Interceptors (GBI)."[16] Unsaid is how the United States will stay ahead of the North Korean threat in the longer term, which is rapidly growing and may exceed the capacity of the NGI system even before initial deployment in 2028. This is a clear step back from the 2019 MDR that committed to investments in "advanced technologies to meet the increasingly complex threats posed by larger missile inventories and improved countermeasures."[17]

While touting the importance of homeland missile defenses to deter North Korea, the MDR is silent on how

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[16] Ibid., p. 6.

[17] Department of Defense, *2019 Missile Defense Review*, p. VIII, available at https://media.defense.gov/2019/Jan/17/2002080666/-1/-1/1/2019-MISSILE-DEFENSE-REVIEW.PDF.

such defenses can strengthen deterrence of Russia and China. Certainly, every benefit that homeland defenses play in strengthening deterrence of rogue states would apply as well to the deterrence of near-peer adversaries. Yet, the MDR proclaims that the GMD system "is neither intended for, nor capable of, defeating the large and sophisticated ICBM, air-, or sea-launched ballistic missile threats from Russia and the PRC." For those threats, the United States "relies on strategic deterrence," presumably, the threat of offensive retaliation.[18] While this carefully crafted formulation does not rule out the employment of homeland defenses against smaller-scale coercive strikes against the United States by Russia and China, it leaves unstated what could be an important contribution to deterrence and a guide to acquiring the defenses needed to deter contemporary and emerging threats.

As for intention, the role of missile defense in U.S. national security strategy has always been a policy choice. As for not having the capability, this is also a policy choice as the technology landscape has fundamentally changed in the last 20 years. In 2002, the George W. Bush Administration decided that U.S. homeland defense would be focused on rogue states. At the time, Russia and China were not considered threats. Twenty years later, the threat environment is fundamentally changed. As the Biden NSS notes, Russia and China are the primary threats. And their warnings of nuclear use, at least those of Putin, have caused expressions of concern by U.S. policy makers about nuclear escalation. In turn, these concerns have influenced U.S. policy choices involving military aid to Ukraine in a manner that may have forestalled an early Ukrainian victory. This is a clear incentive for the Biden Administration to rethink intentions.

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[18] Department of Defense, *2022 Missile Defense Review*, op. cit., p. 6.

With Russia and China increasing their reliance on the role of nuclear weapons in their defense strategies, and building new nuclear weapons and missiles, it is vital to reassess the role of missile defense in deterring Russian and Chinese coercive strikes against the U.S. homeland, as well as the specific capabilities needed to achieve U.S. security objectives. Attempting to finesse this important question by suggesting that deterrence of Russia and China is based solely on the threat of punishment will not work as the MDR contains inconsistencies that will force the issue. In time, the missile defenses needed to defeat the North Korean threat will exceed the expected capacity of the NGI. At that point the upgrades of those defenses may well have the capability to defend against Russian and Chinese coercive threats. And even before that, the defense of Guam, rightly considered an integral part of U.S. territory in the MDR, will require missile defenses that can be employed against Chinese coercive threats to hold American cities hostage.

When the current and planned GMD/NGI capacity is reached, those who espouse the virtues of vulnerability will likely argue that we can deter North Korea with the threat of nuclear annihilation—somehow reinventing the North as a rational actor. Defending against the North Korea missile threat will be considered less important than avoiding any perceived threat to Russia's or China's ability to destroy the United States—because that is what is at the core of the strategic stability argument.

There are, as noted, two major impediments to overcoming the MDR policy redline of not designing and fielding missile defenses sufficient to strengthen deterrence of Russian and Chinese coercive strikes. The first is the continued influence within the defense establishment of the counterfactual notion that homeland defenses are destabilizing and will lead to an arms race. While this is not stated explicitly in the MDR, it may explain why the Biden

MDR dropped the policy position contained in the 2019 MDR ruling out any "limitation or constraint" on U.S. defenses.[19] Both the Clinton and Obama Administrations sought such negotiations and, had Russia not invaded Ukraine, it is likely the Biden Administration would have pursued the same goal. The U.S. notion of strategic stability is one that has been used by Moscow and Beijing to achieve unilateral advantage through arms control but not one that either ever believed in or practiced.

The second is the similarly flawed assessment that developing such defenses are beyond current technological capabilities. As noted, the facts are contrary. To strengthen deterrence, it is not necessary to create an impenetrable shield capable of intercepting every Russian and Chinese ballistic and hypersonic missile. Rather, the goal is to strengthen deterrence through the deployment of defenses that increase the uncertainties in the calculations of the attacker—to undermine his confidence that he will achieve the objectives of the attack. This is clearly achievable with available technology. As demonstrated on a daily basis in the commercial world, through companies like Space X and Uber, the technology for effective and affordable defenses exists.[20] While some U.S. defense experts and planners inside and outside of government continue to argue that strategic defenses are neither technically feasible nor affordable, the only limiting factor is policy. It's interesting to note that there is no such debate in Russia or China, which are both seeking not only advantages in offensive strategic weapons but with defenses as well, including most notably in space.

Today, as the NDS points out, deterrence is more complex and uncertain than ever before. Russia and China—individually and in combination—present much

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[19] Department of Defense, *2019 Missile Defense Review*, op. cit., p. VII.

[20] For example, Uber uses peer-to-peer communication networks and artificial intelligence when determining who responds.

greater challenges to deterrence than those posed by the Soviet Union. Because deterrence is more problematic, we must act to strengthen it—in part through the deployment of effective strategic defenses, which in turn means going to space not just for sensors, but for interceptors as well. The 2019 MDR moved in this direction, noting that "space-basing of interceptors also may provide significant advantages, particularly for boost-phase defense." It went on to state that "DoD will identify the most promising technologies, and estimated schedule, cost, and personnel requirements for a possible space-based defensive layer that achieves an early operational capability for boost-phase defense."[21] The Biden MDR is silent on space defenses, suggesting another self-limiting redline which does not apply to ongoing Russian and Chinese efforts.

Looking at the recent *National Security Strategy*, it is clear that there is no chance to do so with the Biden Administration. Moving beyond the self-imposed redline will require a new president committed to new concepts of deterrence and to protecting the American people from missile attack. In turn, the new president must appoint a team that will overcome institutional resistance in all national security departments and engage with Congress, the allies and others to win the intellectual argument by explaining the strategic-level benefits of deploying effective defenses not only against rogue states but Russia and China.

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[21] Department of Defense, *2019 Missile Defense Review*, op. cit., p. XVI.

The 2022 Missile Defense Review: Still Seeking Alignment

By Tom Karako

The Biden Administration released its unclassified *Missile Defense Review* in October 2022, as part of the *National Defense Strategy* (NDS).[1] As policy guidance to an increasingly broad enterprise, the 2022 MDR represents an opportunity to achieve greater alignment between U.S. air and missile defense (AMD) efforts and the strategic competition with China and Russia.

The new MDR is a step forward from past reviews in several respects. Gone is the primary focus on rogue state ballistic missiles that defined the 2010 review. It also corrects the 2019 MDR's insufficient attention to integration, air defense layering for cruise missile and unmanned aerial system (UAS) threats, and survivability.[2] Although the public version of the review leaves much to be desired, it nevertheless advances several critical mission areas: a comprehensive approach to missile defeat, homeland cruise missile defense, the defense of Guam, and distributed operations.

This MDR has three parts: the first addresses the evolving air and missile threat environment; the second, the

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[1] U.S. Department of Defense, "2022 National Defense Strategy of the United States of America," available at https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-NATIONAL-DEFENSE-STRATEGY-NPR-MDR.PDF.

[2] Tom Karako, "The Missile Defense Review: Insufficient for Complex and Integrated Attack," *Strategic Studies Quarterly*, available at https://www.airuniversity.af.edu/Portals/10/SSQ/documents/Volume-13_Issue-2/Karako.pdf.

U.S. strategy and policy framework; and the third, ways to strengthen international cooperation. Following the overarching theme of the 2022 NDS, the MDR describes missile defenses as a critical component of "integrated deterrence," defined as a framework bringing together all instruments of national power.

The 12-page, 4,700-word document is dramatically shorter than the 2019 version, which came in at 28,834 words and 100 pages. While brevity can bring readability and concision, it can do so at the expense of what is unsaid and of questions left open.

Despite the *National Defense Strategy*'s emphasis on this as the "decisive decade," the MDR does not specify dates or timelines, and budget documents suggest that key new capabilities appear to be pushed to the 2030s. Other notable absences include the usual reference to arms control limitations, the need for increasing production quantities, the need for maintaining flexible acquisition authorities, and specifics on who exactly will manage this new "missile defeat" enterprise.

Weapons of Choice

One of the strengths of the 2019 MDR was its broader description of missile threats, to include ballistic, cruise, and hypersonic missiles. The Trump Administration's actual programmatic and budgetary implementation of hypersonic and cruise missile defense, however, was quite modest. The 2019 review also neglected UAS as a species of air defense, or what the new review calls "missile-related" threats. As seen in the Nagorno-Karabakh conflict, Iranian attacks in 2019, and the Ukrainian war this past year, that neglect is no longer tenable.[3]

[3] Shaan Shaikh and Wes Rumbaugh, "The Air and Missile War in Nagorno-Karabakh: Lessons for the Future of Strike and Defense," *CSIS*

The 2022 review draws attention to the more complete spectrum of air and missile threats. It describes UAS as an "inexpensive, flexible, and plausibly deniable" means to "carry out tactical-level attacks below the threshold for major response, making them an increasingly preferred capability." Still, other delivery systems must also be contemplated going forward, including spaceplanes and fractional or multiple orbital delivery systems "that move in and out of the atmosphere."

The threat description in the MDR is, however, less sharply put than that conveyed by the May 2022 congressional testimony of Assistant Secretary of Defense John Plumb: "Offensive missiles are increasingly weapons of choice for Russia, China, North Korea, and Iran, for use in conflict and to coerce and intimidate their neighbors."[4]

Strategic Deterrence and Defense

Like the Obama and Trump Administration reviews, the Biden MDR notes that "the United States will continue to rely on strategic deterrence . . . to address and deter large intercontinental-range, nuclear missile threats to the

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Critical Questions, December 8, 2020, available at https://www.csis.org/analysis/air-and-missile-war-nagorno-karabakh-lessons-future-strike-and-defense; Ian Williams, "Uncomfortable Lessons: Reassessing Iran's Missile Attack," *CSIS Commentary*, February 6, 2020, available at https://www.csis.org/analysis/uncomfortable-lessons-reassessing-irans-missile-attack; Ian Williams, "Russia Doubles Down on Its Failed Air Campaign," *CSIS Commentary*, October 13, 2022, https://www.csis.org/analysis/russia-doubles-down-its-failed-air-campaign.

[4] John Plumb, Senate, Armed Services Committee Strategic Forces Subcommittee, *Missile Defense Strategy, Policies, and Programs*, 117th Cong., 2nd Sess., available at https://www.armed-services.senate.gov/imo/media/doc/ASD%20Plumb%20SASC%20SF%20Missile%20Defense%20Written%20Statement%20-%20May,18%202022_FINAL.pdf.

homeland." Given the continuity on this issue across three administrations, any effort to modify it will require a substantial discussion. Questions about the meaning of "strategic stability" can and should be asked anew, now that the Ukraine conflict has further shaken some past assumptions about such things. Germany's apparent interest in the Arrow-3 exoatmospheric ballistic missile defense system for its homeland defense, for instance, suggests how old policy fault lines could be fading.

While this distinction and disavowal may apply specifically to Chinese and Russian intercontinental ballistic missiles, it need not apply to other delivery systems, to non-nuclear strategic attack, or to the likes of North Korea. Even as threats increase, the new MDR states, "the United States will also continue to stay ahead of North Korean missile threats to the homeland through a comprehensive missile defeat approach, complemented by the credible threat of direct cost imposition through nuclear and non-nuclear means." The use of "missile defeat" represents a seemingly subtle but, in fact, important shift which applies broadly to the missile defense enterprise. A broad defense and defeat-dominant posture toward North Korea remains intact, but attack operations and more novel measures left of launch will help size the requirements for active missile defense interceptors within the comprehensive missile defeat enterprise.

The recent appearance of larger numbers of North Korean ICBMs on parade have renewed questions about the viability and capacity of homeland missile defense to contend with this growing threat.[5] Framing the problem in terms of missile defeat rightly helps to defray suggestions

[5] Josh Smith and Soo-Hyang Choi, "North Korea shows off largest-ever number of nuclear missiles at nighttime parade," *Reuters*, February 9, 2023, available at https://www.reuters.com/world/asia-pacific/north-korea-shows-off-possible-solid-fuel-icbm-nighttime-parade-analysts-2023-02-09/.

that missile defenses are pointless or easily overwhelmed. Attack operations have always rightly been part of the posture towards the North Korean threat and remain so in any integrated approach to air and missile defense.[6] Missile defenses do not exist in a vacuum, but together with broader U.S. joint and combined force capabilities. It is not unreasonable that the force-sizing metric for missile defenses should take those capabilities into account.

Homeland ballistic missile defense is here to stay. The Ground-based Midcourse Defense (GMD) system is "an essential element" of missile defeat, and its "continued modernization and expansion" is necessary to maintain both "a visible measure of protection for the U.S. population" and an assurance to "allies and partners that the United States will not be coerced by threats to the homeland." The Biden Administration initiated a competitive development process to procure 20 Next Generation Interceptors (NGIs) in March 2021. The MDR notes that the NGI may not merely "augment" but "potentially replace" today's fleet of 44 Ground-Based Interceptors.

The NGI acquisition effort represents a third bite at the apple for long-range, ground-based interceptors for the ICBM defense mission. The previous two were the initial Exoatmospheric Kill Vehicle/Ground-based Interceptor deployment in 2004, and the post-2014 Redesigned Kill Vehicle, which the Trump Administration cancelled in 2019. There may well not be a fourth bite, if the NGI acquisition should not proceed successfully. Congress, USNORTHCOM, and other actors rightly highlight the desirability of increased capacity and accelerated schedule for NGI deployments, but it could be risky to rush either at

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[6] Joint Chiefs of Staff, *Joint Publication 3-01, Countering Air and Missile Threats* (Washington, D.C.: validated May 2, 2018), available at https://www.jcs.mil/Portals/36/Documents/Doctrine/pubs/jp3_01.pdf.

the expense of reliability and the overall acquisition strategy. MDA has rightly signaled its intent for a competitive process in its acquisition strategy to buy down such risk. There will be time to increase NGI numbers, but in the long term it is more critical that the acquisition be successful than that it be fast.

Air Defenses

The 2022 MDR corrects past inattention to aerial threats, including unmanned aerial systems and homeland cruise missile defense. The review says that "homeland and regionally forward deployed forces require the fielding of technical and integrated C-UAS [counter-UAS] solutions." The MDR acknowledges the increased salience of "lower tier" endoatmospheric "missile-related" threats. If that point was less obvious a few years ago, the Ukraine and other conflicts have erased any doubt. While not discussed in the review, the U.S. Army is moving out rapidly as the acquisition authority for countering UAS. Possible capability improvements are legion, but capacity and training for the mission remain paramount.

The new MDR likewise embraces cruise missile defense for the homeland (CMD-H), investments for which first appeared in the 2022 and 2023 budget requests. This development is no small change. The past focus on rogue state ballistic missile attacks should give way to a focus on a nonnuclear strategic attack by major powers: "To deter attempts by adversaries to stay under the nuclear threshold and achieve strategic results with conventional capabilities, the United States will examine active and passive defense measures to decrease the risk from any cruise missile strike against critical assets, regardless of origin." General Glen VanHerck of NORAD/USNORTHCOM and General Jacquelyn D. Van Ovost of USTRANSCOM have written and spoken forcefully on the need for air and missile

defense of the homeland, if for nothing else than to protect U.S. global power projection capabilities.[7]

The discussion of future technologies prioritizes sensors above all, followed by battle management and command and control (C2). The missions for AMD sensors are to "detect, characterize, track, and engage current and emerging advanced air and missile threats regionally, and to improve early warning, identification, tracking, discrimination, and attribution for missile threats to the homeland." Requiring engagement support for regional threats but not for attacks on the homeland seems especially odd since the document repeatedly highlights the specter of nonnuclear strategic attack on the homeland. CMD-H must also include engagement capabilities; its sensors must include those capable of combat identification and fire-control quality tracks.[8] That same paragraph in the 2022 MDR highlights modern over-the-horizon radars for "improving warning and tracking against cruise missile and other threats to the homeland."

The fire-control quality track criterion must be applied to the emerging constellation of space sensors. It is not good enough to provide "strategic and theater missile warning and tracking." Sensor architectures must also support fire control. Asked about the importance of fire control quality

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[7] Glen D. VanHerck and Jacqueline D. Van Ovost, "Fighting to get to the fight," *Military Times*, May 31, 2022, available at https://www.militarytimes.com/opinion/commentary/2022/05/31/fighting-to-get-to-the-fight/; "Rethinking Homeland Defense: Global Integration, Domain Awareness, Information Dominance and Decision Superiority," CSIS Event, August 17, 2021, available at https://www.csis.org/events/rethinking-homeland-defense-global-integration-domain-awareness-information-dominance-and.

[8] "The 2022 Missile Defense Review," CSIS Event, November 4, 2022, available at https://csis-website-prod.s3.amazonaws.com/s3fs-public/2023-01/ts221114_Plumb_Defense_Review.pdf?VersionId=Kn3hDt_jsRCpCEEmK2KDuB_9tYFEoJEn.

track for both space-based sensors and the CMD-H mission, Assistant Secretary John Plumb noted that it was an "ideal," to which we were on a "crawl, walk, run" path.[9] Lesser quality tracks are still critical for early warning and attribution, but fire-control quality track is necessary for active missile defense. These space sensors are being pursued in no small part due to the increasingly sophisticated hypersonic and ballistic threats. It will be important for their objective requirements to retain connectivity to missile defense requirements.

The 2019 review referenced "transregional" threats, which blur the legacy distinction between homeland and regional concerns. As it turns out, cruise missiles, UAS, and aerial threats that threaten U.S. forces and allies in other regions are a global concern. North America is a region, too, and cruise missile defense for the homeland is a capability the United States has neglected for too long.[10] Embracing the priority of homeland missile defense requires attention to more than just rogue state ballistic missiles. It remains to be seen whether the Air Force moves out to field not just sensors but active defenses for CMD-H. Such a mission will no doubt require joint effort, to be sure. The U.S. Army, to its credit, is soliciting information on a future interceptor for supersonic cruise missile threats.[11] Given that these are current threats, the Indirect Fires Protection Capability (IFPC) Increment 2 effort could soon take on renewed

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[9] Ibid.

[10] Tom Karako, Ian Williams, Wes Rumbaugh, Ken Harmon, and Matthew Strohmeyer, "North America is a Region, Too," *CSIS Report*, July 14, 2022, available at https://www.csis.org/analysis/north-america-region-too.

[11] United States Army Program Executive Office, Missiles and Space, Request for Information, "Seeking Interested Sources With Capability To Provide A Second Interceptor to the Indirect Fire Protection Capability Increment 2 (IFPC Inc 2) Program," January 12, 2023, available at https://sam.gov/opp/97f42f137b5a4849b274c31c138c58fb/view.

importance. The recent Chinese surveillance balloon over the United States has usefully highlighted capability and operational gaps in NORAD/USNORTHCOM's approach to air domain awareness, which have applications to cruise missile defense and air defense more broadly.[12] Over-the-horizon radars will be an important first step, but improved data algorithms, command and control, and actual ground-based air defenses will need to follow.

Complex and Integrated Attacks

The new MDR notably recognizes how various air and missile threats would be used in conjunction for complex and integrated attacks. The text places special attention on UAS: "Adversaries also are utilizing multiple types of missile salvos—such as one-way attack UAS in combination with rockets—in an effort to defeat missile defense systems." America's perceived birthright to air superiority is long gone. Recognition in a policy document of how adversary air and missile threats could suppress and disintegrate active defenses is long overdue. Its implications are profound.

It is critical to acknowledge that adversaries will attempt to suppress U.S. and allied AMD capabilities. The 2018 NDS endorsed dispersed basing and operations, but the 2019 MDR did not apply that logic to AMD. The 2022 review does so explicitly: "Future air and missile defense capabilities must also be more mobile, flexible, survivable,

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[12] Melissa G. Dalton, Pat Ryder, and Glenn VanHerck, "Melissa Dalton Assistant Secretary of Defense for Homeland Defense and Hemispheric Affairs and Gen. Glen VanHerck, Commander, North American Aerospace Defense Command and United States Northern Command, Hold an Off-Camera, On-The-Record Briefing," *DoD Press Briefing*, February 12, 2023, available at https://www.defense.gov/News/Transcripts/Transcript/Article/3296177/melissa-dalton-assistant-secretary-of-defense-for-homeland-defense-and-hemisphe/.

and affordable, and emphasize disaggregation, dispersal, and maneuver to mitigate the threat from adversary missiles."

Notably, AMD is said to be necessary not only for fixed infrastructure, but for "joint maneuver forces." It is all well and good to move swiftly around the battlefield, but loitering munitions and cruise missile targeting have dramatically improved. Mobility is no longer a panacea. That seemingly simple enough fact has been underweighted with the previous emphasis on air defense for the maneuver force. With limited room to move on a small island like Guam—where launchers have little place to be repositioned—it may not be worth the time and expense to require AMD elements to be fully mobile. When one must defend what one cannot move or hide, fixed emplacements may be good enough.

The defense of Guam is, indeed, one of the most—probably the most—important, new initiatives of the Biden Administration. Despite years of urging by U.S. Indo-Pacific Command, the matter only first appeared in the 2022 and 2023 budget requests. As with CMD-H, the problem of Guam further defies the homeland-regional dichotomy of yesteryear. Guam has a "unique status as both an unequivocal part of the United States as well as a vital regional location." The significance of Guam as a test case for full-spectrum, 360-degree AMD cannot be overstated. The future of air and missile defense could rise or fall with the success or failure of that effort, and success or failure is likely to hinge upon the successful integration or at least management or synchronization of numerous existing command and control systems.

International Cooperation

Three of the MDR's 12 pages are devoted to describing international missile defense cooperation. Its discussion of

cooperation with Canada is accompanied by reference to the "acute" (read: Russian) threat of "increasingly sophisticated conventional missile capabilities that are able to target critical infrastructure in North America." Again, the document commits to improving "early warning surveillance for potential incursions or attacks," but does not discuss the need for fire-control quality tracking and engagement support. The provision of air defenses to Ukraine has been one of the main features of U.S. aid to Ukraine over the past year, and it has been one of Kyiv's primary requests—ranging from Stingers to HAWKs to even Patriot.[13]

In the Indo-Pacific, the MDR highlights cooperation with Japan, Australia, and South Korea. Within NATO, the Patriot, NASAMS, and the SAMP-T systems get shout-outs in the endorsement of 360-degree AMD (read: to include Russia). The European Sky Shield Initiative may be an important element of this, although C2 and sensors for NATO probably deserve prioritization. Recent developments in Europe include Germany's consideration of Arrow-3, Poland's defense buildup across the board, and Finland and Sweden's likely accession to NATO. Slovakia, moreover, likely needs new defenses to replace the S-300 units it donated to Ukraine. The document recognizes the longstanding cooperative efforts with Israel, encourages Gulf Cooperation Council cooperation, and notes the "ongoing normalization efforts between Israel and key Arab states" to create new opportunities for AMD cooperation.

The global market for AMD capabilities continues to increase. The MDR notes how Russia uses "several lower-tier air defense systems for its own use and export as a foreign policy instrument." The sale of the S-400 to

[13] Mark F. Cancian and Tom Karako, "Patriot to Ukraine: What Does It Mean?" *CSIS Critical Questions*, December 16, 2022, available at https://www.csis.org/analysis/patriot-ukraine-what-does-it-mean.

countries like Turkey and India, for instance, has certainly been a wedge within the alliances.[14] How well Russia is able to maintain the operation and upgrades of those exports in the face of sanctions on its defense industry will remain to be seen.

Honorable Unmentions

The brevity of the 2022 review means that it leaves several issues unmentioned. One notable absence is timelines and phases. It is one thing to say that the United States must defend Guam, that it must have hypersonic defense, and that space sensors are critical, but there are no express milestones or dates to assess whether they will be available within the decade, let alone at the speed of relevance.

Also missing are the usual recitations about arms control. The 2010 review declared that "the Administration will continue to reject any negotiated restraints on U.S. ballistic missile defenses," and the 2019 review affirmed that "the United States will not accept any limitation or constraint on the development or deployment of missile defense capabilities needed to protect the homeland against rogue missile threats."[15] Instead, with language reminiscent of the 1972 Anti-Ballistic Missile Treaty's preamble, the 2022 document highlights "the interrelationship between strategic offensive arms and strategic defensive systems." Without going so far as to endorse limitations, the 2022

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[14] Tom Karako, "Coup-proofing? Making Sense of Turkey's S-400 Decision," *CSIS Commentary*, July 15, 2019, available at https://www.csis.org/analysis/coup-proofing-making-sense-turkeys-s-400-decision.

[15] Office of the Secretary of Defense (OSD), *Missile Defense Review* (Washington, D.C.: Department of Defense, 2019), IX, available at https://media.defense.gov/2019/Jan/17/2002080666/-1/-1/1/2019-MISSILE-DEFENSE-REVIEW.PDF.

MDR suggests "strengthening mutual transparency and predictability."

Another omission is any reference to acquisition authorities, the protection of which was affirmed in both the 2010 and 2019 reviews and in numerous legislative pronouncements. This may reflect the legacy of what is known as the "Trump DTM," the Directive Type Memorandum.[16] Even when the Pentagon was pushing acquisition authorities down across the services, the Trump Administration began to undermine the acquisition authorities of the Missile Defense Agency. The 2022 MDR does, however, acknowledge the need for "adaptive acquisition approaches." Rescinding the Trump DTM and restoring Milestone A and B decision authority to MDA would go a long way to implementing the Biden Administration's policy of addressing that stated need.

The document omits past discussions on directed-energy missile defense systems. Given the intensity of the air and missile threat spectrum, non-kinetic effects offer considerable promise. The Trump Administration removed directed energy from the Missile Defense Agency's budget. As technology has advanced in service and DoD-wide applications, concepts like high-powered microwaves, short-pulse lasers, and other types might now have applications for active defense missions.

The MDR's policy direction does not seem to address who will manage the department's missile defeat enterprise. While embracing the full means of countering and defeating missile threats has much to commend it, an unbalanced pivot to "missile defeat" could have pitfalls. A prudent "fly before you buy" approach should apply to exotic non-kinetic and left-of-launch capabilities just as it

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[16] David L. Norquist, Directive-type Memorandum 20-002, "Missile Defense System Policies and Governance," March 13, 2020, available at https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dtm/DTM-20-002.PDF?ver=0yQfTQ1VcPiZWos72PzLUw%3D%3D.

does to hit-to-kill interceptors. Reliance on highly secret solutions that sacrifice deterrence for warfighting may be necessary, but nonkinetic and left-of-launch capabilities could be unproven, untestable, incapable of demonstration, and unsusceptible to foreign military sales.

A final unmentioned item worthy of policy guidance relates to production. One of the many lessons of the Ukraine conflict is how quickly missiles and munitions are expended in a conflict with a major power. The necessity of mass-producing AMD elements must be addressed.[17] European countries who have given their air defenses to Ukraine, for instance, will no doubt be expecting a backfill. NATO's air defense initiatives signal a demand for significant procurement and the potential for collaborative and bulk approaches.[18]

When the annual defense authorization act was passed in December, one provision, Section 1244, included a multi-year procurement authority for tens and hundreds of thousands of antiship, antiair, and strike missiles, as well as artillery and air defense. Besides the provision of additional capacity for the U.S. joint force, there is considerable allied and partner demand signal for SM-6, Patriot, and other AMD capability, all the way from C-UAS to hypersonic defense.[19]

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[17] Seth G. Jones, *Empty Bins in a Wartime Environment: The Challenge to the U.S. Defense Industrial Base* (Center for Strategic and International Studies, Washington, D.C.: January 2023), available at https://www.csis.org/analysis/empty-bins-wartime-environment-challenge-us-defense-industrial-base.

[18] Thomas Karako, "Deterrence, Air Defense, and Munitions Production in a New Missile Age," Hoover Institution, December 23, 2022, available at https://www.hoover.org/research/deterrence-air-defense-and-munitions-production-new-missile-age.

[19] Ryo Nemoto, "Japan and U.S. Eye Joint Research on Hypersonic Glide Interception," *Nikkei Asia*, December 4, 2022, available at https://asia.nikkei.com/Politics/International-relations/Japan-and-U.S.-eye-joint-research-on-hypersonic-glide-interception.

Next Steps

As Assistant Secretary Plumb said in May, "Missiles have become a common and expected facet of modern warfare," which makes "missile defeat and missile defense efforts more important than ever."[20] If the Trump MDR foundered for disconnects from budgets and programs, the Biden MDR deserves similar scrutiny so that these capabilities do not remain paper programs.[21] While advancing certain mission areas on paper, taking the next steps requires implementing CMD-H, the defense of Guam, space sensors, and hypersonic defense with the seriousness they demand. The missile threat spectrum is not a boutique problem, but a central military challenge from China and Russia. Whether and how the Biden Administration will properly resource and implement the goals of its MDR and NDS is now the question.

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[20] "Written Statement of Dr. John Plumb, Assistant Secretary of Defense for Space Policy, Senate Armed Services Committee, Strategic Forces Subcommittee Missile Defense Strategy, Policies, and Programs," May 18, 2022, available at https://www.armed-services.senate.gov/imo/media/doc/ASD%20Plumb%20SASC%20SF%20Missile%20Defense%20Written%20Statement%20-%20May,18%202022_FINAL.pdf.

[21] Tom Karako, "Opinion: Trump's blind spot," *Politico*, September 6, 2019, available at https://www.politico.com/story/2019/09/06/opinion-missile-defense-blind-1480426.

Missile Defense (and Space) Gets a Hand Wave

by Steven J. Lambakis

The only vision for missile defense in the *2022 Missile Defense Review* (MDR) is that there must be less emphasis on it. This seems to be the message of the Defense Department for this iteration of the MDR, which focuses sharply on the "integrated deterrence" idea embedded in its *2022 National Defense Strategy* (NDS). The MDR is an addendum to the 2022 NDS as opposed to its own independent publication, which, in a sense, does reflect a deemphasis of missile defense in the overall defense strategy. Offensive missile defeat operations, strategic nuclear and conventional retaliatory capabilities, passive defenses and the strategy of "missile defeat" receive significant attention in this report. In the unclassified version of the report (i.e., the report most people will see), advocacy for missile defense is underwhelming. The MDR leans heavily on non-missile defense elements for defending the U.S. homeland, deployed forces, and international partners against missile attack. Not that we should ignore these capabilities, of course, since they have always been part of a solid defense strategy. But this is the "*Missile Defense* Review"—not the "Missile Defeat Review" or the "Integrated Deterrence Review."

The fundamental problem is there is no vision presented for enhancing missile defense, either through system or technology investments or consideration of different basing modes (moving some missile defense capabilities to space, for example). While the MDR supports ongoing missile defense development programs started by previous administrations, one gets the sense that there is no confidence within the current administration in the effectiveness or future promise of missile defenses,

especially for homeland defense, and especially for defeating Russian or Chinese ballistic missile attacks on the homeland.

The failure to address the Chinese demonstration of a game-changing hypersonic technology, the Fractional Orbital Bombardment System (FOBS), in the threat section of the MDR is indicative of the report's general neglect of the important role the space domain must play in the years ahead. FOBS is important for the current discussion because of the challenges it could pose to the integrated Missile Defense System. Should another country use a FOBS to target the United States homeland or forces and assets abroad, it would be able to take advantage of earth orbit to skirt around missile defense sensors to deliver the lethal payloads.[1] FOBS is designed to leverage approaches to the target that ballistic missiles cannot take. Left unaddressed in the MDR is that the nation will have to be in space to address this type of threat. While states will continue to develop and deploy ballistic missiles, the threat missiles of tomorrow will increasingly become more capable of undertaking unexpected maneuvers, which, with the current terrestrial missile tracking sensor architecture, would potentially cause the Missile Defense System to lose track of lethal payloads, rendering it incapable of intercepting them.

Other than passing mentions of military requirements for "sensor capabilities to detect, characterize, track, and engage current and emerging advanced air and missile

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[1] Written Statement, General Glen D. VanHerck, Commander, United States Northern Command and North American Aerospace Defense Command, *Hearing before the Senate Armed Services Committee*, March 24, 2022; Defense Intelligence Agency, *2022 Challenges to Security in Space*, March 2022, p. 18, available at https://www.dia.mil/Portals/110/Documents/News/Military_Power_Publications/Challenges_Security_Space_2022.pdf?emci=d66ab957-0ac0-ec11-997e-281878b83d8a&emdi=46671803-99c0-ec11-997e-281878b83d8a&ceid=194288.

threats regionally, and to improve early warning, identification, tracking, discrimination, and attribution for missile threats to the homeland,"[2] the MDR ignores the revolutionary contributions global and persistent missile defense tracking sensors *currently under development* can make. One of the most significant, force-multiplying advances in missile defense is taking place today with the development by the Missile Defense Agency (MDA) of Hypersonic and Ballistic Tracking Space Sensor (HBTSS) satellites and the Space Force development of missile tracking satellites. The MDR should have been used to explain why these satellite deployments and the objective sensor architecture are critical to the future defense against hypersonic and ballistic missiles.

The mission of the Space Development Agency (SDA), which is now part of the Space Force, is to develop elements of a new and responsive space architecture through the deployment of many satellites in Low Earth Orbit (LEO). This proliferated sensor and communications constellation (pLEO) will utilize commercial buses for a more resilient and affordable alternative to the very large, expensive satellites traditionally developed in the Department. The pLEO architecture will also give the country resilient capabilities that will be difficult for adversaries to interrupt or destroy. The Space Force and SDA vision is to turn the space sensor architecture into a networked web that allows the warfighter to use a beyond-line-of-sight targeting solution, to hit time-sensitive targets, detect, track, formulate a targeting solution, and send that data directly to a weapons platform to engage advanced missiles in flight.[3]

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[2] U.S. Department of Defense, *2022 Missile Defense Review*, p. 8, available at https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-NATIONAL-DEFENSE-STRATEGY-NPR-MDR.PDF.

[3] Author's interview with Dr. Derek Tournear, August 5, 2022. See also Amanda Miller, "SDA Joins the Space Force as Agency Looks Ahead to

MDA's HBTSS and SDA's LEO missile tracking satellite development seem to be similar efforts, yet they are different. MDA initiated the HBTSS program in 2018 to address the requirement to detect and track hypersonic threats and ballistic missiles and engage them using highly precise target data captured by its sensors. HBTSS is unique to the missile defense mission, and its place within the broader space architecture is being developed in coordination with the Space Force and SDA. MDA is working with Space Force to insert the HBTSS satellites using more sensitive medium field of view (MFOV) sensors into the LEO tracking layer beginning in the mid-2020s. SDA plans to develop wide field of view (WFOV) tracking satellites (which would track missiles soon after launch when they are the brightest), which would then cue HBTSS. HBTSS provides the more precise data to an interceptor as the target grows dimmer in the glide phase of flight. This precision data is required for reliable missile defense operations against a maneuvering hypersonic threat. When fully operational, HBTSS will be part of the Unified Overhead Persistent Infrared Enterprise Architecture and will detect hypersonic, ballistic, and other advanced threats much sooner than terrestrial radars, providing hypersonic threat-tracking data for hand-off through linked missile defense weapons.[4]

Space Force is also developing Medium Earth Orbit (MEO) satellites to do missile warning and tracking and provide extra eyes on enemy hypersonic missiles and additional opportunities to track them. When compared to

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Demos in 2023," *Air Force Magazine Online*, October 4, 2022, available at https://www.airandspaceforces.com/sda-joins-the-space-force-as-agency-looks-ahead-to-demos-in-2023/.

[4] Kelley M. Sayler and Stephen M. McCall, "Hypersonic Missile Defense: Issues for Congress," *Congressional Research Service*, January 26, 2022, pp. 1, 2, available at https://crsreports.congress.gov/product/pdf/IF/IF11623.

sensors in geosynchronous earth orbit (GEO), sensors in medium orbits would see from positions that are closer to Earth and be able to track a wider area than satellites in LEO.[5] The MEO spirals are called "Epochs." The timeline is to have Epoch 1 flying about a year after Tranche 1 (LEO satellites) is deployed, and then every two years in order to refresh the constellation.

The country is moving towards adding missile tracking satellites to its current constellations of dedicated early warning spacecraft in an effort to leverage some of the obvious advantages space offers missile defenders. The MDR does not tell its readers that these ongoing satellite development efforts promise to significantly improve the ability of the United States to defeat advanced emerging missile threats. The bottom line is that, with Space Force and SDA now in place and pursuing these development efforts along with MDA, the country has an architectural foundation for moving the country's missile tracking sensor center of gravity to space—a plan and vision which should have been reflected in the 2022 MDR.

The country still must move beyond development and initial deployments that will occur over the next few years to fill out the entire architecture that is envisioned. This not only requires continued funding and advocacy for satellite and ground system development, but the country also needs to put new emphasis on the development of responsive launch capabilities. If the missile tracking and discrimination capability is to be fully realized, the satellites to be deployed will need to be placed in orbit in sufficient numbers and then incrementally and periodically replaced with follow-on satellites.

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[5] Sandra Erwin, "Space Force tries to turn over a new leaf in satellite procurement," *SpaceNews Online*, October 20, 2022, available at https://spacenews.com/space-force-tries-to-turn-over-a-new-leaf-in-satellite-procurement/.

Yet this ambitious enterprise is going to require vision, strategy, and national commitment to achieve. The emergence of the space warfighting environment should be driving U.S. strategies for space technology and system development. The absence of a clear and unified vision aimed at where the nation should be heading in the defense space arena could become a stumbling block for the country. Lack of a clear vision of where the nation should be heading, and the role that space should play in that future, not only impedes development of important military systems that leverage the space environment to maintain the U.S competitive edge; the resulting inconsistent and uncoordinated public and private sector strategies should also be expected to negatively affect national investments in space defense. According to the *State of the Space Industrial Base 2022* report written by Air Force, Space Force, Air Force Research Laboratory and Defense Innovation Unit officials, the United States lacks a "North Star" to orient the government and commercial space sectors.[6] In other words, the country needs a clear and comprehensive long-term vision to guide a "whole-of-nation" strategy to direct economic and defense leaders over the coming decades.[7] This represents a missed opportunity for both the NDS and MDR.

It is undeniable that there is a growing warfighter requirement for integrated space sensors, not simply to meet the newest missile and space threats, but also to

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[6] J. Olson, S. Butow, E. Felt, and T. Cooley, *STATE OF THE SPACE INDUSTRIAL BASE 2022: Winning the New Space Race for Sustainability, Prosperity and the Planet*, August 2022, available at https://assets.ctfassets.net/3nanhbfkr0pc/6L5409bpVlnVyu2H5FOFnc/7595c4909616df92372a1d31be609625/State_of_the_Space_Industrial_Base_2022_Report.pdf.

[7] Michael Marrow, "U.S. still lacks 'whole-of-nation' vision for space, report warns," *InsideDefense.com*, August 24, 2022.

replace increasingly obsolete terrestrial sensors.[8] A space-based sensor layer would enable the United States to use its interceptor inventory more efficiently and effectively to counter a broad array of threats.[9] Yet efforts to deploy "eyes" in space to enable global and persistent tracking of the less challenging (when compared to the hypersonic missile threats) in-flight ballistic missile threats have been on-again off-again and, in the end, have not resulted in the deployment of a new operational constellation. While the absence of a cohesive missile defense vision affects the entirety of the mission, this absence of focus on the long-term purpose of the mission may be expected to stunt the growth of missile defense space development efforts.

Despite the fact that space sensors are not weighed down by the baggage associated with space-based interceptors, political problems stemming from the absence of a coherent vision still may hinder their development and deployment. The lack of vision and advocacy could derail current programs currently under development, prevent them from reaching their full potential, and stunt long-term acquisition efforts and strategy development. The arguments for space arms control could unduly restrain important sensor developments, particularly as those sensors could be used to help improve Space Domain Awareness and execute counterspace operations. The absence of a clear, coherent, national vision is a drag on the political momentum needed to support defense space activities, which will necessarily impact funding of these important programs. Yet, as these threats are not expected to go away or diminish, this vision will be needed to fund the Space Force at the appropriate level and maintain stable

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[8] Lieutenant General John E. Shaw, Deputy Command, U.S. Space Command, *Testimony before the House Armed Services Committee, Strategic Force Subcommittee*, May 11, 2022 [draft].

[9] VADM Jon A. Hill, *Written Statement: Hearing before the House Armed Services Committee, Strategic Forces Subcommittee,* June 15, 2021.

programs. Along with that funding, Space Force must continue to fund the missile defense mission work (i.e., missile tracking sensor development and production), which is not necessarily in its mission portfolio. Should attention to the missile defense mission wane in Space Force or the Department, funding and authority to continue the necessary space sensor development work may be compromised.[10]

As has been the case with previous missile defense reviews, the 2022 MDR embraces the steady policy that the nation should not do anything to improve the performance of the missile defense system to defend against the missile forces of Russia or China, at least not to directly do so. We are informed that defense against Russian or Chinese missile attack will occur through strategic nuclear deterrence.[11] While the 2022 MDR did not step away from this strategy, the 2019 MDR did place the missile defense enterprise in the context of great power competition against Russia and China for the first time (facing a strategic reality), and it was the Trump Administration that gave birth to the HBTSS program, the Space Development Agency, and the Space Force, a military service established to give the country a decisive advantage in space.

It is unfortunate that the Defense Department has not leaned into this vision for missile defense and the role space must play. The 2022 MDR does not call for any major shift from the capabilities the Defense Department has previously advanced through, for example, acceleration of system development efforts or the proposal of new starts. Moreover, the emphasis on integrated deterrence (and underwhelming treatment of missile defense) could have

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[10] Courtney Albon, "Space Force budget presents a bridge strategy for missile warning, tracking architecture," *C4ISRNET.com*, April 19, 2022, available at https://news.yahoo.com/space-force-budget-presents-bridge-165954127.html.

[11] *2022 Missile Defense Review*, op. cit., pp. 1, 6.

even worse consequences for investments in missile defense and space capabilities in general. The policy documents give the Department some room to forgo costly investments in critical defense space technologies, missile defense-related weapons, sensors, and Command and Control, Battle Management and Communications systems. Where is the advocacy for the space sensors and the enhanced and revolutionary weapon systems (kinetic and non-kinetic) required to meet 21st century defense requirements? While the 2022 MDR reiterates the historically proven idea that deterrence can fail, it does not advocate for the investments required to afford protection once deterrence has failed.

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2022 Missile Defense Review: A Failure in Integration

by David J. Lonsdale

Introduction

The *Missile Defense Review* (MDR) is advertised as part of an integrated approach to the Biden Administration's broader review of strategy. The other two parts include the *Nuclear Posture Review* (NPR) and the *National Defense Strategy* (NDS). However, as this paper will argue, in some important areas there is a distinct lack of integration. This is especially the case regarding the relationship between the MDR and NPR, the latter of which does not include a single mention of missile defense. Moreover, when attempting to read all three documents from an integrated perspective, the U.S. position on certain key issues is not clear; at times one must infer. Furthermore, if one does read the documents in a fully integrated manner, certain tensions, one might say contradictions, are apparent amongst them. This is especially the case in the areas of damage limitation, integrated deterrence, and providing freedom of action for America's Joint Force in a regional conflict. Said tensions seem to emanate from the administration's fixation on mutual vulnerability and stability, both of which can be conceptually challenged.

The analysis here presented is structured in the following way. The paper begins with a discussion of mutual vulnerability and stability. From here, the paper outlines the resulting tensions in the strategy documents. In conclusion, the paper suggests that the core objectives of the so-called integrated review could be more readily met if mutual vulnerability and stability were modified or dropped as guiding principles.

Conceptual Problems

Mutual Vulnerability

The authors of the MDR present a compelling picture of a developing missile threat environment. Specifically, the MDR mentions developments in ballistic, cruise, and hypersonic missiles, plus the rise in unmanned aircraft systems (UAS). The review starkly concludes that "[s]ince the release of the last MDR in 2019, missile-related threats have rapidly expanded in quantity, diversity, and sophistication."[1] In terms of sources for these threats, the MDR singles out China (PRC), Russia, North Korea and Iran for attention. However, the MDR takes different approaches to these four countries. When dealing with the latter two, and explicitly in relation to North Korea, the MDR takes a "missile defeat" approach. Missile defeat is defined as encompassing non-proliferation measures, damage limitation and active defenses.[2] In turn, the latter includes Ground-based Midcourse Defense (GMD) and cruise missile defense for the homeland defense mission, as well as Integrated Air and Missile Defense (IAMD) for regional defense and deterrence. In contrast, the MDR explicitly states that missile defense is not intended for, nor capable of, defeating Russian and PRC missile attacks on the U.S. homeland.[3] Instead, when facing the nuclear arsenals of

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[1] Department of Defense, *2022 Missile Defense Review* (Washington, D.C., 2022), p. 1, available at https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-NATIONAL-DEFENSE-STRATEGY-NPR-MDR.PDF.

[2] This approach to missile defeat is described as comprehensive. See Tom Karako, "The 2022 Missile Defense Review: Still Seeking Alignment, Centre for Strategic & International Studies," *Commentary* (October 27, 2022), available at https://www.csis.org/analysis/2022-missile-defense-review-still-seeking-alignment.

[3] Department of Defense, 2022 MDR, op. cit., p. 6.

Russia and China, the United States relies upon so-called "strategic deterrence."

The upshot of this position is, although it is not explicitly mentioned in the MDR, that mutual vulnerability, which dominated nuclear posture in the Cold War, is back.[4] That is, that the United States accepts and promotes the notion that it is vulnerable to Russian and Chinese nuclear attack, and relies entirely for its deterrence of these threats upon its retaliatory forces. In essence, and in relation to the two biggest missile threats, the United States takes a deterrence via punishment approach, rather than a deterrence posture that additionally encompasses denial.

Stability

This perception of a commitment to mutual vulnerability is further enhanced by the administration's fixation on stability. As evidenced most clearly in the NPR, the current administration warns against the deployment of so-called destabilising weapons, the adoption of destabilising postures, and the need for arms control to prevent renewed arms races. Indeed, in a 25-page document the word "stability" appears 20 times in the NPR. The conclusion to the review explicitly states that the United States will adopt "a posture that contributes to stability…."[5] This harks back to debates of the Cold War when it was argued that defensive systems were destabilising because they

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[4] See Keith B. Payne, "Deterrence Via Mutual Vulnerability? Why Not Now?," *Information Series*, No. 536 (Fairfax, VA: National Institute Press, 2022), available at https://nipp.org/information_series/keith-b-payne-deterrence-via-mutual-vulnerability-why-not-now-no-536-october-19-2022/.

[5] U.S. Department of Defense, *2022 Nuclear Posture Review* (Washington, D.C., 2022), p. 25, available at https://s3.amazonaws.com/uploads.fas.org/2022/10/27120404/NPR2022.jpg.

threatened the potency of retaliatory offensive forces and incentivised first-strike postures. Consequently, it was claimed that missile defenses undermined the stability of Mutual Assured Destruction (MAD) and would lead to an arms race between offensive and defensive systems. Such an approach was enshrined in the 1972 ABM Treaty and SALT I, when defensive and offensive systems were limited. [6]

From this, it appears that the Biden Administration subscribes to the notion of stability based on technology and mutual vulnerability. Indeed, on the former, the administration is quite explicit when it states that it will "pursue responsible technology innovation that enhances stability."[7] There are two obvious conceptual problems with this approach. The first is that technological stability is theoretically problematic. As noted by Colin Gray, if war is the continuation of policy by other means, then logically stability must be premised on political concerns, not technological issues.[8] Although weapons development and deployment can signal political intent, the weapons themselves are politically neutral. To quote the title of Gray's book, "weapons don't make war."[9] That being the case, rejecting missile defense on the basis that it is a destabilising technology, is rejection based on a false premise. Mutual vulnerability suffers from the same problem. Leaving oneself vulnerable, with the attendant risks and disadvantages, does not guarantee stability nor security, precisely because stability and security are

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[6] See Lawrence Freedman and Jeffrey Michaels, *The Evolution of Nuclear Strategy*, 4th Edition (London: Palgrave Macmillan, 2019), pp. 231-242.

[7] U.S. Department of Defense, *2022 Nuclear Posture Review*, op. cit., p. 25.

[8] Carl von Clausewitz, *On War* (Princeton, NJ: Princeton University Press, 1978), and Colin S. Gray, *Nuclear Strategy and National Style* (Lanham, MD: Hamilton Press, 1986).

[9] Colin S. Gray, *Weapons Don't Make War* (Lawrence, KS: University Press of Kansas, 1993).

premised on politics. To put it bluntly, Russia or China, assuming that they are rational actors, would only attack the United States if it served their policy objectives. They would not launch a nuclear attack on the United States as a consequence of weapons deployment. As correctly noted by Richard Burt in a Cold War context,

> Central strategic war … is not likely to stem from mechanistic instabilities within the super-power military relationship, but rather from real and enduring differences between competing political systems and national interests.[10]

Some may argue that certain weapons or postures can contribute towards misperception or miscalculation, and thereby negatively affect stability. Indeed, the NPR itself discusses the subject of misperception in relation to crisis stability and management. However, and at the risk of repetition, Burt's analysis still reigns supreme. Logically and conceptually, even in the midst of a crisis, war emanates from policy choice, not as a response to weapons deployment. Even if weapons deployment and force postures appear to heighten tensions in a crisis, they are still reflections of policy positions. In the absence of political motives, there is no route from weapons to war. Policy is a necessary foundational basis for war. To cite a contemporary example, should war occur between NATO and Russia, it would not have been caused by Russian nuclear exercises or U.S. forward deployment of nuclear weapons. Rather, it would emanate from Russia's policy challenge to the existing geopolitical balance, and NATO's response.

In addition to these general conceptual problems with stability and mutual vulnerability, these underpinnings of

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[10] Quoted in Gray, *Nuclear Strategy and National Style*, op. cit., pp. 157-58.

the MDR create specific issues for the desired integrated approach to strategy, as outlined below.

Failures in Integration

Damage Limitation

To its credit, and following on from the 2018 NPR, the 2022 NPR discusses deterrence failure. Specifically, the review stipulates that, in the event of deterrence failure, U.S. nuclear forces will be used to achieve presidential objectives and end the conflict at the lowest possible levels of damage. However, the use of nuclear weapons would also comply with the Laws of Armed Conflict (LOAC). Taken together, these two positions suggest that any use of U.S. nuclear forces would be restricted to limited counterforce strikes, with damage limitation as one operational objective. It is here that the stance of the MDR towards Russia and China causes issues. In addition to counterforce strikes to degrade enemy offensive capability, one obvious way to achieve damage limitation is through active defenses. However, the United States does not intend to deploy a missile defense system that can engage in missile defeat of Russian or Chinese ICBMs. As a consequence, for the sake of maintaining mutual vulnerability and a false sense of stability, the United States would deny itself a capability that could be used in support of one of its key nuclear war objectives (damage limitation). Thus, integration between the MDR and NPR seems lacking. The latter seeks damage limitation as a goal in nuclear conflict, but is denied an important method for this by the former.

Integrated Deterrence (Denial)

Integration is also missing in action when it comes to deterrence by denial. Specifically, the MDR seems to

undermine the integrated deterrence posture that all three reviews seek to promote. Indeed, the NDS describes integrated deterrence as "a centerpiece of the 2022 NDS."[11] In Section 3, *Strategy and Policy Framework*, the MDR acknowledges that missile defenses are an important component of an integrated and multi-layered deterrence posture: "Missile defense capabilities add resilience and undermine adversary confidence in missile use by introducing doubt and uncertainty into strike planning and execution, reducing the incentive to conduct small-scale coercive attacks, decreasing the probability of attack success, and raising the threshold for conflict."[12] This is a good sales pitch for missile defenses, but by the MDR's own reckoning cannot and should not be applied to Russia or China. It seems, therefore, that in relation to these two main competitors, the Biden Administration is denuding itself of an effective component of integrated deterrence. Again, this is being done, one reasonably assumes, for the sake of maintaining mutual vulnerability and a false sense of stability.

In defense of the administration's position, one might argue that integrated deterrence is still subject to tailoring. In which case, an active defense element is not necessary or advisable in every situation. However, the advantages of missile defense are so clearly stated that it would take a compelling reason not to deploy such a denial capability. As already noted, mutual vulnerability and stability are not theoretically compelling.

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[11] U.S. Department of Defense, *2022 National Defense Strategy of the United States of America* (Washington, D.C., 2022), p. III, available at https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-NATIONAL-DEFENSE-STRATEGY-NPR-MDR.PDF.

[12] Department of Defense, 2022 MDR, op. cit., p. 5.

Joint Force Freedom and Reassuring Allies and Partners

A final problem occurs in relation to the aim of reassuring allies of U.S. commitment and the associated requirement for maintaining freedom of action for U.S. Joint Forces in regional conflict. This is especially problematic because, as Keith Payne notes, both Russia and China seek to leverage the threat of nuclear war to deter the United States from intervening against their expansionist policies.[13] With homeland missile defenses in place, the United States would be less susceptible to coercion or to being physically prevented (by force attrition and/or interdiction) from deploying and maintaining forces to protect allies and partners in the face of coercion or attack. Moreover, the MDR regards missile defense as less escalatory than offensive forces.[14] In the absence of missile defense in a nuclear stand-off, the United States may have to reach for offensive nuclear forces more rapidly, thereby charging escalation.

The problem created by the MDR is primarily with the process of escalation, that which links regional conflict with attacks on the homeland. It seems that regional missile defense and force protection is designed to include shorter range attacks from Russia and China: "The United States will continue to strengthen defenses for U.S. forces, and with Allies, and partners against all regional missile threats from any source."[15] However, in the absence of homeland missile defense, the United States may be subject to escalation dominance by Russia or China. Regionally deployed U.S. forces may be protected from missile attack, but with the homeland left intentionally vulnerable, the

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[13] Payne, op. cit., p. 3.

[14] Department of Defense, 2022 MDR, op. cit., p. 5.

[15] Ibid., p. 7.

United States may be unwilling to stand its ground if the conflict escalates to threats against the continental United States. This escalation imbalance is even more troubling because the 2019 and 2022 MDRs acknowledge that Russia and China are developing or improving their own homeland missile defensive systems.

Conclusion

The 2022 MDR makes a strong case for the continued development and deployment of missile defenses in U.S. security policy. Missile defenses, it is claimed, contribute to allied reassurance, freedom of force manoeuvre, integrated deterrence, and damage limitation should conflict occur. All these benefits are readily applied to some potential enemies, such as North Korea. However, these same benefits are rejected in the face of the most substantial geostrategic threats faced by the United States, namely China and Russia. Reading between the lines of the integrated strategy reviews, it seems that this half-hearted approach to missile defense stems from an unjustified fixation on mutual vulnerability and technologically based notions of stability. As noted in the first part of this paper, these two hangovers from the Cold War are built on conceptually shaky ground. Moreover, in the second half of the paper it was shown that continued loyalty to mutual vulnerability and stability undermine the integrated nature of U.S. strategic policy and weaken the ability of the United States to achieve its stated strategic objectives.

This paper is not suggesting that missile defense should be the sole basis for deterrence against Russian and Chinese threats to the U.S. homeland. The potential imbalance between offensive and defensive forces is such that it would be unwise to put all one's eggs in the denial basket. However, if true integrated deterrence is to be achieved, then missile defenses provide an important denial

capability working alongside the retaliatory threat of offensive forces. This may be particularly important when facing limited Russian or Chinese coercive threats or strikes.[16] In this way, missile defenses complicate the enemy's decision making and undermine his confidence in his attack plans. Moreover, they provide a responsible contingency in the event of deterrence failure. If the U.S. defense community moves beyond the cult of mutual vulnerability and stability, then it can more fully realise the strategic advantages of missile defense.

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[16] See Keith B. Payne and Matthew R. Costlow, *Vulnerability is No Virtue and Defense is No Vice: The Strategic Benefits of Expanded US Homeland Missile Defense*, *Occasional Paper*, Vol. 2, No. 9 (Fairfax, VA: National Institute Press, 2022), available at https://nipp.org/wp-content/uploads/2022/09/OP-Vol.-2-No.-9.pdf.

A Real Missile Defense Review

by Henry "Trey" Obering, III

The Biden Administration recently released its *National Security Strategy*, *Nuclear Posture Review*, and *Missile Defense Review* (MDR) outlining how this nation will address the myriad of threats it faces into the future. The environment into which these documents were released includes Russian missiles raining down on Ukraine, threats of nuclear war by Putin, reports of China's President Xi Jinping preparing his military and civilian population for war over Taiwan, North Korea launching dozens of missiles and reportedly preparing for another nuclear test, and Iran continuing its march to nuclear missile capability. Unfortunately, the Biden Administration's strategy falls far short of even beginning to address these threats, especially in the area of missile defense.

While the MDR describes continuing efforts to develop missile defenses against North Korea and Iran, instead of directing the development of any type of defense against the missile threats posed by Russia and China, the MDR states that,

> The United States will continue to rely on strategic deterrence—underwritten by a safe, secure, and effective nuclear arsenal, and reinforced by a resilient sensor and Nuclear Command, Control and Communications (NC3) architecture—to address and deter large intercontinental-range, nuclear missile threats to the homeland from the

> People's Republic of China (PRC) and the Russian Federation (Russia).[1]

So, in essence, it directs the United States to continue to rely solely on the judgment of the Russian and Chinese leaders not to attack the U.S. homeland. How comfortable should the American public feel after what has been demonstrated in Ukraine by Mr. Putin's judgment and his declarations of intent to use nuclear weapons if necessary? Or how comfortable should Americans feel about the reports of China's Xi Jinping directing his military to prepare for war?

Given this environment, the MDR should have stated that to protect the U.S. homeland, our deployed forces, and allies and friends, the United States must have the missile defense capability and capacity to defeat any and all missile threats from North Korea and Iran. And the United States must have the missile defense capability to defeat any Russian or Chinese missile threat (to include hypersonic missiles) and enough missile defense capacity to fortify our strategic deterrence.

Going back to basics, one of the primary functions of the U.S. government is to "*provide for the common defence*" as stated in the Constitution. It does not say provide limited defense or defense against only certain national threats. But that is precisely what the *Missile Defense Review* attempts to do.

By not developing defenses against the Russian and Chinese missile threats, it leaves the U.S. president with only two military options in the crisis situations which we will certainly face in the future: an escalatory pre-emptive strike or retaliation if attacked. Both of which will involve catastrophic effects.

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[1] Department of Defense, *2022 Missile Defense Review,* p. 1, available at https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-NATIONAL-DEFENSE-STRATEGY-NPR-MDR.PDF.

In fact, President Biden should be demanding more options in times of crisis instead of tying his own hands with his missile defense policies limiting them. President Reagan clearly understood this when he launched his Strategic Defense Initiative in 1983 to attempt to provide a defense against the Soviet missile threat instead of relying on the mutual assured destruction policy which had been in place previously.

Not having defenses against these strategic Russian and Chinese threats also allows adversaries to use nuclear blackmail to achieve their regional or theater objectives. This was demonstrated effectively by Mr. Putin in the Ukraine War and can be expected to be put into play in the South China Sea and Taiwan Strait region by Xi Jinping as well.

So, why does the MDR rely solely on our offensive nuclear capability for deterrence and not direct the development of missile defense capabilities to protect the U.S. homeland against Russia and China?

There are typically two reasons for not supporting this development…the false premises that strategic missile defenses are destabilizing, thereby undermining strategic deterrence, and that they are not cost effective. But what are the facts?

In 2006, President George W. Bush relied on the Ground-Based Midcourse Defense (GMD) system to protect U.S. territory, if needed, from North Korea's Taepo-Dong 2 multi-stage, long-range missile. Several former senior defense officials at the time were calling on the United States to pre-emptively strike the North Korean launch pad.[2] Which option would have been more "destabilizing?" By the way, the United States would not have had this defensive option for the President if the Congress and DoD

[2] Ashton B. Carter and William J. Perry, "The Case for a Preemptive Strike on North Korea's Missiles," *TIME.com*, July 8, 2006, available at https://content.time.com/time/world/article/0,8599,1211527,00.html.

had listened to the very vocal critics of missile defense in the 1990s and early 2000s.

The United States has spent less than $60 billion total on the GMD system, which is the only system today that can defend the U.S. homeland against long-range North Korean or Iranian missiles.[3] Compare that spending to the costs of the 9/11 attacks on the United States, which killed nearly 3,000 people. According to an analysis in *The Geopolitics*:

> …$60 billion was the estimated cost of the World Trade Center towers site damage, including damage to surrounding buildings, infrastructure and subway facilities. $123 billion was the immediate estimated economic loss during the first 2-4 weeks after the WTC collapsed in New York City, as well as decline in airline travel over the next few years. Even though the immediate impact of the 9/11 attack was to reduce real GDP growth rate of US in 2001 by just 0.5%, the losses to the world economy, stock market crash, increased homeland security costs and war expenses were in trillions.[4]

And these attacks did not involve nuclear warheads, which would have made the cost in lives, infrastructure, and economic impact even more astronomical. So, what is more cost effective: to have a defense against such weapons or not?

The fact is that strategic missile defenses do not have to be foolproof or perfect to actually bolster strategic deterrence as opposed to undermining it. Ironically, the

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[3] U.S. Government Accountability Office, *Missile Defense: Observations on Ground-based Midcourse Defense Acquisition Challenges and Potential Contract Strategy Changes*, October 21, 2020.

[4] V. Venkateswara, "The Economic and Human Costs of 9/11 Attacks," *The Geopolitics.com,* September 11, 2021, available at https://thegeopolitics.com/the-economic-and-human-costs-of-9-11-attacks/.

MDR recognizes the value of missile defense in this capacity, stating:

> Missile defenses can raise the threshold for initiating nuclear conflict by denying an aggressor the ability to execute small-scale coercive nuclear attacks or demonstrations. Further, the presence of missile defense complicates adversary decision-making by injecting doubt and uncertainty about the likelihood of a successful offensive missile attack.
>
> Missile defense systems such as the GMD [Ground Based Midcourse Defense] offer a visible measure of protection for the U.S. population while reassuring Allies and partners that the United States will not be coerced by threats to the homeland from states like North Korea and potentially Iran. In the event of crisis, globally integrated domain awareness capabilities increase warning and allow for flexible decision-making to respond, as necessary and appropriate, with escalatory options such as kinetic strike. Should deterrence fail, missile defenses can help mitigate damage to the homeland and help protect the U.S. population.[5]

Some critics may point out that since the Bush Administration, the United States has only developed missile defenses against limited rogue nation threats and has not addressed the Russian and Chinese threats. The primary reasons were that the state of the art of technology was not sufficient to address these strategic threats effectively, and both China and Russia were not acting as aggressively as they are today…but that has certainly changed.

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[5] *2022 Missile Defense Review,* op. cit., p. 6.

To deter and defend against missile threats from Russia and China, as well as the accelerating missile threats from Iran and North Korea, the United States must expand its missile defenses much more vigorously. The United States should certainly continue its Next Generation Interceptor program to provide more robust defense in the near- to mid-term. Expanding the deployment of SM-3 Block IIA interceptors would also strengthen missile defense capabilities, especially against ICBMs.

But the major thrust and focus of a next generation missile defense architecture has to be the development and deployment of space-based capabilities, including space-based kill capabilities and other advanced means to defeat missile attack.

Ground-based and sea-based systems, while useful against today's threats from North Korea and Iran, cannot cost effectively be scaled to meet the advanced threats we face. A space-based kill capability is the necessary expansion to the layered missile defense architecture.

Moving to space is the only way to regain the ultimate high ground to defeat the growing quantity and quality of adversary threats. A robust space-based system could provide global coverage with multiple opportunities to destroy enemy warheads as they transit space. Space-based defenses could work synergistically with terrestrially based systems as well, even further strengthening our defensive posture. It is also the only potential means to provide an effective boost-phase missile defense capability to defeat future threats. There is simply no other technically feasible option.

Again, some critics will say the United States is "militarizing space" and that deploying space-based defensive weapons would violate current treaties. First, threat ballistic missiles today spend the majority of their trajectories in space except for those of very short range. In

addition, space-based missile defenses are just that, defensive, and cannot be used against targets on earth.

The development and deployment of space-based defenses do not constitute the militarization of space and there is no treaty that prohibits them. Space is already a highly contested environment in which the United States faces growing threats to its space assets from the counter-space capabilities of Russia, China, and others. U.S. space-based missile defenses will contribute to protecting existing and planned U.S. space assets, both military and commercial—making another contribution to strategic stability.

Some will also state that space-based missile defenses are not achievable or affordable. Again, both beliefs are wrong. Major progress has been made in every technological sector needed for moving to deployment to include sensor improvements, computer processing capability, artificial intelligence, peer-to-peer communications networks, nanosat capabilities and dramatically reduced space launch costs.

The technologies for space-based capabilities are similar to those currently being employed by Uber, Amazon, SpaceX, and other private sector enterprises. Space Force and Space Command have active space control portfolios that can and should be used synergistically with a space-based missile defense capability.

One example of a space-based architecture which could fill the role of sufficient defense against Russian and Chinese missiles would consist of 1,000 nanosatellites (10 flights of five nanosats in 20 sun-synchronous orbits). These satellites would be tightly integrated and self-organizing with each satellite having the same information as any other satellite in the constellation using the peer-to-peer networks and artificial intelligence mentioned earlier. They would certainly provide enough defensive coverage to challenge

an adversary and put into question how much of an offensive attack may survive.

The constellation should also be very cost effective with the advances in manufacturing and computer processing technologies as well as the dramatic reduction in space launch costs. As a comparison, SpaceX now has over 3,200 Starlink satellites in orbit, with *Forbes.com* estimating the launch costs for the constellation at approximately $600 million.[6] This would make the total cost of such a constellation much less than the $60 billion the United States has spent on the GMD system with its 44 interceptors.

As Dr. Michael Griffin, former Under Secretary of Defense for Research and Engineering, stated in an interview for *Breaking Defense* in August 2018, "The idea of space-based interceptors has been in some ways a victim of unrealistically high, uninformed cost estimates," adding, "I've made my own preliminary cost estimates… and I can't figure out a way to make them cost as much as some of the numbers I've seen tossed around the media (like) many tens of billions of dollars."[7]

In terms of risk reduction for such a constellation, the United States has already proven the concept of providing precision track of a threat warhead from space capable of being intercepted using the Space Tracking and

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[6] John Koetsier, "Starlink hits 250,000 Customers, Elon Musk Hints: SpaceX Booking over $300 Million/Year," *Forbes.com*, February 14, 2022, available at https://www.forbes.com/sites/johnkoetsier/2022/02/14/starlink-hits-250000-customers-elon-musk-hints-spacex-booking-over-300-millionyear/?sh=509c1ef47063.

[7] Sydney J. Freedberg Jr., "Space Based Missile Defense Can Be Done: DoD R&D Chief Griffin," *Breaking Defense,* August 8, 2018, available at https://breakingdefense.com/2018/08/space-based-missile-defense-is-doable-dod-rd-chief-griffin/.

Surveillance System satellites launched in 2009.[8] Moving forward with a test bed for space-based missile defense is the next step. This would follow the example used by the United States when it first deployed a small test bed for the GMD system, then expanded it to meet the North Korean and Iranian threats. This would also send a strong signal to our adversaries that we will not cede the high ground in this critical mission area.

The future technologies section of the MDR does not even address needed future advances in kill technologies. One glaringly absent area is that of directed energy or high energy lasers. Laser technologies have advanced significantly in recent years and are now becoming a promising sector for use in missile defense. In September of this year, Lockheed Martin delivered a 300-kilowatt laser for assessment to use in missile defense as part of a DoD laser power scaling initiative. The plan is to deliver a one-megawatt laser later in this decade.[9]

Space is tailor made for the use of high energy lasers for missile defense. This is primarily due to the absence of an atmosphere which can cause absorption or "blooming" of laser beams and the stability of space-based platforms to overcome beam jitter and provide precision beam targeting. In addition, the use of lasers in space would dramatically reduce the probability of generating debris in space which would occur with kinetic weapons.

In conclusion, the United States is facing real and growing missile threats from Russia, China, North Korea

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[8] Missile Defense Agency, *News Release*, "MDA Retires Space Tracking and Surveillance System after 12 Years, Thousands of Missions," March 14, 2022, available at https://www.mda.mil/news/22news0003.html.

[9] Loren Thompson, "Lockheed Martin Laser Breakthroughs Could Signal a Turning Point for Missile Defense," *Forbes*, 15 September 2022, available at https://www.forbes.com/sites/lorenthompson/2022/10/13/lockheed-martin-laser-breakthroughs-could-signal-a-turning-point-for-missile-defense/?sh=5959ebc82cf0.

and Iran. The nation must make missile defense across the entire spectrum a top priority for our national security and our national industrial base. The Biden Administration's recently released MDR falls far short of that goal by ignoring the need to provide active missile defenses against Russian and Chinese threats to our homeland, ignoring the major new warfighting arena of space-based missile defenses and omitting any reference to the use of high energy lasers for missile defense. It appears that the MDR should be returned for rewrite so that this nation could benefit from a real missile defense review.

Lt. Gen. Henry "Trey" Obering, III (USAF, Ret.) served as Director of the Missile Defense Agency from 2004-2008.

The 2022 MDR's Missed Piece: Two Fundamental Challenges from China's Missile Threats

by Sugio Takahashi

Introduction

Since the end of the Cold War, missile defense has been an indispensable component of a modern defense structure, particularly in the face of a serious threat of missile proliferation. Missile threats are now diversified, including ballistic missiles, cruise missiles, hypersonic missiles, and unmanned systems, and these threats are now treated in an integrated way under the rubric of integrated air and missile defense (IAMD). The *Missile Defense Review* (MDR) released in October 2022 is a policy review of the Biden Administration's approach to addressing these missile threats and publicly conveys the strategic thinking of the administration on developing countermeasures against these threats.

On ballistic missile threats, the current U.S. and allied framework concept of ballistic missile defense (BMD) was shaped between the late 1990s and the early 2000s, or at the time of the Clinton and Bush Administrations. The Clinton Administration proceeded with theater missile defense (TMD) overseas and national missile defense (NMD) for the U.S. homeland under the restrictions of the ABM Treaty, while the Bush Administration withdrew from the ABM treaty to allow for accelerated research, development, and deployment of an initial BMD system to defend the United States against "rogue state" missile threats.

More than two decades have passed since then. Just after the end of the Cold War, the threat from Russia was regarded as negligible and the notion that China would be

a "peer competitor" of the United States was seen as remote. The U.S. missile defense architecture was developed based on the strategic assumption that missile threats to the U.S. homeland from great powers were unlikely and that the more urgent missile threats would come from "rogue" states, with fewer missiles and less sophisticated technology. The current situation, however, suggests such views were too optimistic. From a military perspective, missile threats have worsened in a non-linear way. Maneuverable warheads and hypersonic technology are proliferating. North Korea has developed and deployed nuclear-tipped theater ballistic missiles and is working to develop long-range nuclear-tipped ballistic missiles. China has expanded its missile forces both qualitatively and quantitatively. In short, the strategic environment has distinctly deteriorated. Between the United States and its allies on the one hand, and Russia and China on the other, a renewed "great power competition" is unfolding, with an actual war in Ukraine and the shadow of war over Taiwan. Given the serious military and strategic changes posed by this situation, the United States and its allies require a fundamental review of missile defense strategy and posture. The Biden Administration's MDR was released at a strategically significant time.

In sum, the 2022 MDR has some positive aspects, such as acknowledging the complementary relationship between nuclear deterrence and missile defense, and confirming the importance of cooperation with allies and friends, but it fails to lay out an updated strategic framework to deal with contemporary missile threats magnified by great power competition. For example, it clearly places China in the same category as Russia by explicitly exempting China's missile forces from the category of threats the U.S. missile defense system is intended to counter. But China's emerging counterforce nuclear capability, at both the strategic and theater levels, requires not only a retaliatory

posture and strategy, but some preparation for damage limitation as well. The approach articulated in the 2022 MDR risks magnifying the stability-instability paradox and may also undermine the credibility of deterrence.

China's Strategic Missile Forces and China's "Assured Destruction" Capability

The rapid military modernization of China is transforming the global military landscape. The significant expansion of its strategic nuclear force is one aspect of this strategic transformation. For decades, China was expected to develop nothing more than an "assured retaliation capability," which would enable a retaliatory strike against the United States with high confidence, even after a U.S. first strike.[1] This would be a kind of enhanced minimum deterrent and would be reflected in the capability to conduct limited counter-city strikes. But China has expanded its strategic nuclear forces to exceed the requirements of even an enhanced minimum deterrence capability. Satellite images clearly show that China is building several hundred additional ICBM silos. If each new silo is loaded with the DF-41 ICBM, which reportedly can carry up to 10 warheads, China will have a significant counterforce capability against U.S. strategic nuclear forces.[2]

How China's nuclear forces should be addressed within the context of America's missile defense posture is an important issue. For a long time, the United States

[1] M. Taylor Fravel and Evan S. Medeiros, "China's Search for Assured Retaliation: The Evolution of Chinese Nuclear Strategy and Force Structure," *International Security*, Vol. 35, No. 2 (Fall 2010), pp. 48-87.

[2] National Institute for Defense Studies, "NIDS China Security Report 2018," (February 2018), available at http://www.nids.mod.go.jp/publication/chinareport/pdf/china_report_EN_web_2018_A01.pdf.

exempted Russia's strategic missile forces from efforts to counter missile threats to the U.S. homeland. Given the size of Russia's nuclear arsenal and its sophisticated technology, countering Russian missile threats by employing active missile defenses was considered impossible at the time. On the other hand, countering possible long-range ballistic missile threats from "rogue states" such as North Korea or Iran was considered more feasible, and the U.S. missile defense posture has focused on these threats on the assumption that the number of incoming missiles would be limited and would not employ sophisticated countermeasure technology.

For a while, China's nuclear missile force fell between these two parameters. The quantity and quality of China's missile force was not as significant as Russia's, but was definitely more capable than the missiles possessed by "rogue states." The issue of "mutual vulnerability" with China was ambiguous, akin to a policy of "neither confirm nor deny," suggesting that the United States did not accept the existence of "mutual vulnerability" in its declaratory policy (not confirmed), but recognizing that U.S. missile defenses were insufficient to counter a Chinese ICBM attack (not denied). But with China's rapid expansion of both its strategic and theater missile arsenal, the U.S. position was increasingly debated within the strategic community.[3]

The Biden Administration's strategic reviews, including the MDR and NPR, dispense with this "neither confirm nor deny"-like treatment. While the NPR does not explicitly mention "mutual vulnerability" with China, the MDR treats China similarly to Russia. It describes the Ground-based Midcourse Defense (GMD) system as "neither intended for, nor capable of, defeating the large and sophisticated ICBM,

[3] David Santoro, ed., U.S-China Mutual Vulnerability: Perspective on the Debate," *Issues and Insights*, Vol. 22, No. 2 (May 2022), available at https://pacforum.org/wp-content/uploads/2022/05/Issues-Insights-Vol.-22-SR-2.pdf.

air- or sea- launched ballistic missile threats from Russia and the PRC. The United States relies on strategic deterrence to address those threats."[4] This clearly demonstrates that the strategic relationship between the United States and China is based on the same deterrence theory of mutual vulnerability that governs the U.S. strategic relationship with Russia.

While China was assumed to develop an "assured retaliation" nuclear strike capability against the U.S. homeland, the estimated number of Chinese warheads—1,000 in 2030 and 1,500 in 2035—would greatly exceed the requirements for "assured retaliation." Though not all of these warheads may be deployed, 1,500 warheads is almost the same number of warheads allowed to be deployed by the New START Treaty. This means China could acquire a formidable strategic nuclear force as large as Russia's, and its capability would move beyond simply "assured retaliation," to "assured destruction." Within the next decade, a situation of Mutual Assured Destruction (MAD) could emerge with China, much like it did with Russia.

If China achieves an assured destruction capability, missile defenses surely would not be able to counter it, and relying on nuclear deterrence would be a sensible solution, much like U.S. nuclear strategy in the Cold War. In this sense, treating China similarly to Russia in the NPR would seem to reflect a cautious and sensible position from an arms control perspective. But this would not necessarily address the emerging threat from China, for two reasons.

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[4] Department of Defense, *2022 Missile Defense Review*, October 27, 2022, p. 6, available at https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-NATIONAL-DEFENSE-STRATEGY-NPR-MDR.PDF.

How to Counter China's Possible Limited Counterforce Option?

First, the MDR misses the potential significant implications of China's counterforce capability. At the time China was developing an "assured retaliation" capability, its nuclear strategy was assumed to be based on countervalue targeting. This MAD policy of mutual vulnerability was thought to provide strategic stability and was considered a sensible policy to reduce the possibility of nuclear war. But given improvements in China's theater missile accuracy and the quantitative expansion of its strategic nuclear arsenal, China's strategic nuclear force is shifting toward a counterforce posture. If China succeeds in developing a counterforce strategic nuclear capability, a MAD strategy would create a severe challenge to deterrence.

For a long time, China's decision makers could not choose a counterforce option, simply because China's long-range missiles lacked enough accuracy for selective strikes on military targets. The only nuclear use option for China's leaders would be to determine the number of U.S. cities that should be destroyed. But in such an event, regardless of the number of the cities to be targeted, China would need to consider the prospect of a full-fledged U.S. counter strike against China—an extremely high deterrent to a Chinese first strike against the U.S. homeland.

On the other hand, with the benefit of high levels of accuracy in its ICBM and SLBM force, the United States could choose a variety of options to retaliate against China, such as massive conventional strikes against mainland China, limited and selective nuclear strikes against military targets, limited and selective nuclear countervalue strikes, and all-out nuclear strikes. This is a significant asymmetry and such a wider range of options could result in operational advantages for the United States. While China's decision-makers' options would be limited to choosing

between an all-out nuclear exchange or nothing, the options for the President of the United States would be more numerous and include decisions that could lead to less than all-out nuclear war. This difference makes the American strategic deterrent more credible.

However, the new generation of China's strategic missiles is expected to be highly accurate and useful for conducting counterforce strikes; therefore, China's decision makers would have a wider range of targets beyond cities from which to choose. For example, China may choose selective strikes against ICBM silos located far from urban areas, or it might attack strategic bomber bases, or it might engage in demonstration attacks to signal resolve. Against such limited counterforce strikes with minimum collateral civilian damage, how should the United States respond? All-out nuclear retaliation would not be an option. And simple nuclear strikes against China's military targets, which raise the possibility of further nuclear escalation, would be an extremely difficult decision.

The 2022 MDR completely misses this strategic implication of China's emerging counterforce capability. Against such limited counterforce options, missile defense is not useless, unlike the difficulty of countering a massive nuclear attack. Actually, missile defense can mitigate the negative strategic impact of China's options. If the United States quantitatively and qualitatively improves its homeland missile defense posture to counter such strikes, limited strikes by China would become difficult because small numbers of warheads may not be able to penetrate the missile defense system. To defeat an enhanced American missile defense posture, China would need to launch many missiles to overcome U.S. defenses. By definition, this kind of strike would not be limited and the difference between counterforce and countervalue would be blurred, meaning the United States would be more likely to choose a full-scale counterstrike option. This would give China's leaders pause

and would reinforce deterrence. Were China to assess the strategic situation in this way, it would realize a limited strike is not an option. Therefore, even if it would be difficult to completely counter a massive missile strike by China, defeating a limited counterforce strike with an enhanced missile defense system could have a significant positive impact on reinforcing strategic deterrence. This consideration is missed by the 2022 MDR. This is also the case in a Russia scenario.

How to Deal With China's Theater Missile Threats?

In addition to strategic missile threats, the MDR also fails to address the threat posed by China's theater missiles. China has developed a significant theater ballistic missile force, which preceded efforts to expand its strategic nuclear force. Some of these missiles are estimated to be dual-capable. In the past, when China's theater ballistic missiles had poor accuracy, nuclear warheads were necessary to achieve certain military effects. However, recent significant improvements in accuracy have made China's theater ballistic missile force capable of conducting more missions using conventional warheads. In terms of expected effects against regional military targets, China does not necessarily require dual-capable missiles because its conventional ballistic and cruise missiles can inflict serious damage to the regional military facilities of the United States and allies.

With respect to regional issues, the MDR does not mention China's tremendous theater ballistic and cruise missile forces. But countering regional missile threats from China is not a negligible problem. Regrettably, the MDR's treatment of China, just as with Russia, accepts a mutual assured destruction relationship that magnifies the stability-instability paradox. As the stability-instability paradox worsens, regional deterrence becomes more

important, even though China enjoys a significant superiority in theater missile forces.[5]

The 2022 MDR, however, completely dismisses this missile threat as if it does not matter, while it emphasizes the significance of cooperation with allies and friends. Considering its size, China's theater missile force would be difficult to counter with missile defense. This suggests two options. First, much like its approach to the strategic missile problem, the United States can forgo missile defenses to counter China's theater missile threat and rely on nuclear deterrence instead. Or the United States can continue to work toward countering China's theater missile threat with missile defenses. If the former approach is chosen, the decision to cancel SLCM-N would be contradictory, because SLCM-N would be an effective theater strike capability to strengthen deterrence as a counter to China's dual-capable theater missile force. If the latter course is chosen, that would require new technology including directed energy, which is not even mentioned in the technology section of the MDR.[6]

Unfortunately, the MDR does not provide any clue about how the United States plans to deal with China's theater missile threats. This is the second major concern.

Conclusion

The United States and allies are standing at a strategic inflection point. The U.S. missile defense posture, the basic framework of which was built three decades ago, needs to be fundamentally updated. The most important role of the 2022 MDR is to recognize the significance of today's

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[5] About this issue, see Sugio Takahashi, "Strategic Stability and the Impact of China's Modernizing Strategic Strike Forces," in Paul J. Bolt and James M. Smith, *China's Strategic Arsenal: Worldview, Doctrine, and Systems* (Georgetown University Press, 2021).

[6] Department of Defense, *2022 Missile Defense Review*, op. cit., pp. 8-9.

strategic inflection point, address the current problems properly, and update the notion and posture of missile defense to deal with the growing and evolving missile threat in an era of renewed great power competition.

However, the MDR does not succeed in these tasks. The document seems to miss the significance of China's nuclear modernization program, including its acquisition of counterforce capabilities, and does not provide meaningful suggestions on how to deal with China's tremendous theater missile forces. The MDR emphasizes the importance of international cooperation with allies and friends, and the importance of such international cooperation cannot be overemphasized, but cooperation should be based on a proper assessment of the threat. Without an accurate diagnosis, the appropriate prescription cannot be made. In this context, the MDR unfortunately falls short.

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The Biden Administration's Missile Defense Review: A Disappointing Approach

by David J. Trachtenberg

Last October, after a lengthy delay, the Biden Administration finally released the unclassified versions of its *National Security Strategy* (NSS) and *National Defense Strategy* (NDS). Within the NDS were two other unclassified strategy documents—the *Nuclear Posture Review* (NPR) and the *Missile Defense Review* (MDR).

Consistent with the other strategy documents, the 2022 MDR acknowledges a more volatile and dangerous international security environment than that which existed only a few years ago, but it fails to articulate how the United States will defend itself against the growing missile threats it highlights.

For example, in describing the air and missile threat environment, the MDR states, "Since the release of the last MDR in 2019, missile-related threats have rapidly expanded in quantity, diversity, and sophistication."[1] Therefore, one would think that U.S. missile defense efforts would also expand in numbers, types, and capabilities. However, the Biden Administration apparently has no plans to counter the acknowledged expansion of adversary missile threats by moving beyond existing missile defense programs of record in any significant way. Indeed, the Missile Defense Agency's budget has remained relatively constant at approximately $10 billion annually and is expected to

[1] Department of Defense, *2022 Missile Defense Review*, p. 1, available at https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-NATIONAL-DEFENSE-STRATEGY-NPR-MDR.PDF.

remain at roughly that level through fiscal year 2027, according to projections.[2]

With respect to China and Russia—the most serious threats to U.S. national security identified by both the NSS and NDS—the MDR cites ominous developments. It notes that China "has dramatically advanced its development of conventional and nuclear-armed ballistic and hypersonic missile technologies and capabilities, through intense and focused investment, development, testing, and deployments."[3] Moreover, it acknowledges that "Russia has prioritized modernization of its intercontinental range missile systems and is developing, testing, and deploying new, diversified capabilities that pose new challenges to missile warning and defense of the U.S. homeland."[4] Yet, the Biden Administration refuses to overturn decades-long policy that leaves the U.S. homeland deliberately vulnerable to these threats. As the MDR states, "The United States will continue to rely on strategic deterrence…to address and deter large intercontinental-range, nuclear missile threats to the homeland from the People's Republic of China (PRC) and the Russian Federation (Russia)."[5]

In other words, despite the gathering storm of greater missile threats posed to the homeland by the most serious peer challengers to American security, the Biden Administration's approach to defending the homeland appears to be "business as usual"—namely, we will continue with current plans for a limited defense against

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[2] Wes Rumbaugh, "FY 2023 Missile Defense and Defeat Budget Tracker," *MissileThreat*, CSIS Missile Defense Project, June 17, 2022, available at https://missilethreat.csis.org/fy-2023-missile-defense-and-defeat-budget-tracker/#:~:text=President's%20Budget%20Request,%2421.9%20billion%20enacted%20in%202022.

[3] Department of Defense, *2022 Missile Defense Review*, op. cit., p. 2.

[4] Ibid., p. 3.

[5] Ibid., p. 1.

rudimentary threats such as those posed by North Korea but take no action to defend against the more serious missile threats posed by peer nuclear-armed powers.[6] Given that the MDR explicitly states that "Missile defenses…are critical to the top priority of defending the homeland and deterring attacks against the United States,"[7] Americans may be forgiven for wondering if the Biden Administration believes its own statements about defending the homeland being "the top priority" or if these words are simply a throwaway line meant to suggest nothing more than a platitude to make the public feel good.

To be fair, not even the Trump Administration's 2019 *Missile Defense Review* moved the needle much on defending the homeland against missile threats from Russia or China—a disappointment to some of us who wanted to see a more forward-leaning approach. Despite President Trump's statement that the United States would seek "to ensure that we can detect and destroy any missile launched against the United States anywhere, any time, any place,"[8] internal Pentagon opposition to overturning the long-standing U.S. policy of deliberate vulnerability to Russian and Chinese long-range missiles was fierce and proved

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[6] For a detailed analysis of why this policy should be rethought, see Keith B. Payne and David J. Trachtenberg, *Deterrence in the Emerging Threat Environment: What is Different and Why it Matters, Occasional Paper*, Vol. 2, No. 8 (Fairfax, VA: National Institute Press, August 2022), available at https://nipp.org/wp-content/uploads/2022/08/OP-Vol.-2-No.-8.pdf. Also see Matthew R. Costlow, *Vulnerability is No Virtue and Defense is No Vice: The Strategic Benefits of Expanded U.S. Homeland Missile Defense, Occasional Paper*, Vol. 2, No. 9 (Fairfax, VA: National Institute Press, September 2022), available at https://nipp.org/wp-content/uploads/2022/09/OP-Vol.-2-No.-9.pdf.

[7] Ibid., p. 5.

[8] David E. Sanger and William J. Broad, "Trump Vows to Reinvent Missile Defenses, but Offers Incremental Plans, *The New York Times*, January 17, 2019, available at https://www.nytimes.com/2019/01/17/us/politics/trump-missile-defense-pentagon.html.

impossible to overcome. Regrettably, missile defense was seen by the bureaucracy as nothing more than one of many defense priorities competing for limited resources. Building defenses against the more technologically sophisticated strategic arsenals of Russia and China was considered too hard, too costly, and too destabilizing in light of the prevailing view that deterrence is best assured by the Cold War notion of a "balance of terror" that leaves American society vulnerable and does not undermine the confidence of Russian and Chinese leaders in their own nations' strategic forces.

Nevertheless, while the 2019 MDR declared that "the United States relies on deterrence to protect against large and technically sophisticated Russian and Chinese intercontinental ballistic missile threats to the U.S. homeland,"[9] this language did not rule out defending the homeland against more limited, smaller-scale strikes from either Russia or China. Interestingly, the 2022 MDR adopts similar language, noting that "The United States will continue to rely on strategic deterrence…to address and deter large intercontinental-range, nuclear missile threats to the homeland from the People's Republic of China (PRC) and the Russian Federation (Russia)."[10] While U.S. missile defenses are not currently capable of countering large-scale missile attacks from either Russia or China, the Biden Administration's MDR repeats the language of the 2019 MDR, which indeed leaves the policy door open to defending the homeland from limited, smaller-scale attacks from either adversary. This may not have been the intention of the Biden Administration's report, but such a capability

[9] Department of Defense, *2019 Missile Defense Review*, p. IV, available at https://media.defense.gov/2019/Jan/17/2002080666/-1/-1/1/2019-MISSILE-DEFENSE-REVIEW.PDF.

[10] Department of Defense, *2022 Missile Defense Review*, op. cit., p. 1.

likely is increasingly important for deterrence and defense in the emerging threat environment.[11]

Indeed, Russia and China are not standing still in their efforts to improve their ability to target the American homeland. Though not described in detail in the 2022 MDR, Russia has deployed numerous new intercontinental-range land-based, sea-based, and air-breathing strategic forces and the former head of U.S. Strategic Command, Adm. Charles Richard, has stated that the Russian strategic nuclear modernization program is "about 86 percent complete."[12] Similar statements have been made by Russian officials themselves, including Vladimir Putin.[13] (By contrast, the U.S. strategic modernization program is zero percent complete.) Moreover, in 2018 Putin unveiled a range of novel nuclear programs, including a huge new ICBM, a nuclear-armed hypersonic glide vehicle, a nuclear underwater autonomous vehicle, and a nuclear-powered cruise missile.[14] These "superweapons" are intended to defeat U.S. missile defenses and several of these systems are unaccountable under the New Strategic Arms Reduction Treaty (New START).

Meanwhile, China has engaged in what Adm. Richard has called a "breathtaking" expansion of its nuclear forces.[15]

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[11] Payne and Trachtenberg, op. cit.

[12] Speech by Adm. Charles Richard, 2022 Space and Missile Defense Symposium, August 11, 2022, available at https://www.stratcom.mil/Media/Speeches/Article/3126694/2022-space-and-missile-defense-symposium/.

[13] For example, see Putin's comments in "Expanded meeting of the Defence Ministry Board," December 21, 2020, available at http://en.kremlin.ru/catalog/persons/90/events/64684.

[14] Joseph Trevithick, "Here's The Six Super Weapons Putin Unveiled During Fiery Address," *The War Zone*, June 30, 2019, available at https://www.thedrive.com/the-war-zone/18906/heres-the-six-super-weapons-putin-unveiled-during-fiery-address.

[15] John Vandiver, "'Breathtaking expansion': US Strategic Command leader expects further revelations of China's nuclear weapons advancement," *Stars and Stripes*, October 18, 2021, available at

Construction of some 350 new ICBM silos is underway and, if China places the MIRVed DF-41 ICBM in each of these silos, the number of its ICBM warheads alone could greatly exceed the total number of deployed U.S. strategic nuclear weapons permitted under New START. As Adm. Richard stated, "We have never before in our history faced two peer nuclear capable, potential opponents that we have to deter at the same time, that we have to deter differently. And that threat is growing rapidly."[16] Yet the 2022 MDR appears to ignore the implications of such a rapid expansion in adversary nuclear capabilities directed at the U.S. homeland.

While noting that adversaries "are pursuing and demonstrating advanced, long-range space and missile systems" that "could increasingly blur the line between regional and homeland defense,"[17] the MDR is silent on developing U.S. space-based interception capabilities, focusing only on space sensors for the missile defense mission. Additional space-based capabilities, to include kinetic kill interceptors or directed energy systems, could provide useful benefits for defeating adversary missiles in their boost or ascent phases of flight. Moreover, the MDR notes that the United States "will continue to work closely" with allies and partners, "encouraging them to pursue ground- and space-based sensor systems for warning and tracking…."[18]

Finally, the MDR provides scant detail on how the United States will bolster its missile defense cooperation

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https://www.stripes.com/theaters/europe/2021-10-18/china-us-russia-nuclear-weapons-hypersonics-stratcom-3283272.html.

[16] Rebeccah L. Heinrichs, "Transcript: A Conversation with Admiral Richard," Hudson Institute, September 14, 2021, available at https://www.hudson.org/national-security-defense/transcript-a-conversation-with-admiral-richard.

[17] Department of Defense, *2022 Missile Defense Review*, op. cit., p. 7.

[18] Ibid., p. 10.

with allies and partners, simply noting that this "continues to be an important priority for the United States."[19] While the MDR notes that the United States has "a long history of working with Israel" and "a longstanding relationship of robust cooperation on missile defense,"[20] it is silent on the specifics of that cooperation or whether the administration will seek to intensify it. Indeed, the Department of Defense press release issued after the conclusion of the annual Defense Policy Advisory Group meeting in Israel in November 2022 made no mention of missile defense or missile defense cooperation.[21] In addition, the official DoD readout of the meeting between Under Secretary of Defense for Policy Colin Kahl and Israeli Minister of Defense Benjamin "Benny" Gantz noted that the two "discussed ways to advance cooperation to address the threats posed by Iran's nuclear program and its destabilizing activities across the region and beyond," but made no mention of missile defense or of any desire to increase and enhance the level of cooperation between the United States and Israel in missile defense activities.[22]

Israel has had great success in developing and deploying missile defense systems that have demonstrated their value in operational environments, and the level of bilateral U.S.-Israeli cooperation in this area has proven its worth. The "Iron Dome" system, in particular, has been

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[19] Ibid.

[20] Ibid., p. 11.

[21] Department of Defense, Press Release, "Readout of U.S.-Israel Defense Policy Advisory Group," November 17, 2022, available at https://www.defense.gov/News/Releases/Release/Article/3222185/readout-of-us-israel-defense-policy-advisory-group/.

[22] Department of Defense, Press Release, "Readout of Under Secretary of Defense for Policy Dr. Colin Kahl's Meeting With Israeli Minister of Defense Benjamin 'Benny' Gantz," November 17, 2022, available at https://www.defense.gov/News/Releases/Release/Article/3222204/readout-of-under-secretary-of-defense-for-policy-dr-colin-kahls-meeting-with-is/.

remarkably effective in defending Israeli territory from missile strikes launched from Gaza. In addition, Israel is developing a directed energy laser system, the "Iron Beam," which could revolutionize missile defense by substantially lowering the cost to defend against offensive missiles. This technology could be a game-changer for the United States as well, yet the MDR scrupulously avoids any discussion of exotic missile defense technologies, other than making a general statement that the United States "must seek new technologies and hedge against continuing adversary missile developments and emerging capabilities, such as hypersonic weapons, multiple and maneuvering warheads, and missile defense countermeasures."[23]

Indeed, the MDR concludes by declaring the need to develop "full spectrum missile defeat capabilities in order to maintain deterrence and offer protection, while hedging against uncertainty."[24] The reference to "full spectrum" capabilities is puzzling given the document's silence on capabilities that could be useful for defeating missile attacks in their early flight stages. And the reference to "hedging against uncertainty" is especially ironic in light of the fact that the administration, in its *Nuclear Posture Review*, has eliminated "hedging against an uncertain future" as an explicitly identified role for nuclear weapons. Why our missile defense posture should provide a hedge against uncertainty, but our nuclear posture should not, is left unexplained.

In short, the MDR acknowledges the growing missile threats to the U.S. homeland but fails to offer a comprehensive roadmap for countering them. It perpetuates the Cold War notion that continued societal vulnerability to peer nation nuclear missile threats is stabilizing. It fails to address the utility of space-based

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[23] Department of Defense, *2022 Missile Defense Review*, op. cit., p. 9.

[24] Ibid., p. 12.

capabilities beyond sensors that could prove valuable for boost-phase defenses. And it lacks any significant discussion of the administration's plans to enhance missile defense cooperation with allies and partners, especially Israel. Moreover, despite the MDR's acknowledgement that "missile defense and nuclear capabilities are complementary,"[25] the language on "hedging" in the *Missile Defense Review* is inconsistent with the *Nuclear Posture Review* and suggests otherwise.

In sum, the Biden Administration's *2022 Missile Defense Review* is disappointing. It now falls to the new Congress to consider modifications to U.S. missile defense policy that make it more responsive to emerging threats. The American people deserve no less.

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[25] Ibid., p. 5.

The Biden Administration's 2022 Missile Defense Review: Ambivalence and a Lack of Urgency

by Christopher Williams

The 2022 *Missile Defense Review* (MDR) report[1] provides important insights into the Biden Administration's thinking about the role and priority of missile defense in U.S. national security policy and strategy. While expressing rhetorical support of U.S. missile defenses, the report unfortunately falls far short in several key areas. Most notably, it exudes a continuing ambivalence about whether to commit the resources necessary to field highly effective defenses, particularly as it relates to defense of the homeland. Likewise, it displays an overall lack of urgency despite the fact that America's four principal adversaries are fielding increasingly sophisticated and deadly missile arsenals.

This brief assessment seeks to highlight certain aspects of the 2022 MDR that warrant additional attention. It is not intended to serve as a comprehensive review of all aspects of the review.

Role and Value of U.S. Missile Defense

To its credit, the 2022 MDR's discussion of the value of missile defenses is noteworthy and compelling. The following passage is an example of such cogent thinking:

> Missile defense capabilities add resilience and undermine adversary confidence in missile use by

[1] Department of Defense, *2022 Missile Defense Review*, available at https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-NATIONAL-DEFENSE-STRATEGY-NPR-MDR.PDF.

> introducing doubt and uncertainty into strike planning and execution, reducing the incentive to conduct small-scale coercive attacks, decreasing the probability of attack success, and raising the threshold for conflict. Missile defenses also reinforce U.S. diplomatic and security posture to reassure Allies and partners that the United States will not be deterred from fulfilling its global security commitments. In the event of crisis or conflict, missile defenses offer military options that help counter the expanding presence of missile threats, and may be less escalatory than employing offensive systems. Damage limitation offered by missile defenses expands decision making space for senior leaders at all levels of conflict, and preserves capability and freedom of maneuver for U.S. forces.[2]

Of course, these arguments are not new—indeed, similar policy pronouncements have been issued by prior administrations. Inclusion of these important statements indicates that the Biden Administration sees value in continuing to pursue several important missile defense programs and activities.

And for good reason. Adversary missiles of various ranges and capabilities pose a real and growing threat as they can inflict significant damage against critical military, economic and other targets in the U.S. homeland and on the territory of our friends and allies. Of particular concern, adversary missiles can delay and degrade the ability of senior U.S. leaders to make timely and informed decisions and impede integrated joint, multinational, and multi-domain military operations in a crisis or conflict. Hence, missile defense can and should play a more important role in U.S. defense strategy as we face multiple adversaries with

[2] Ibid., p. 5.

modern, large and increasingly sophisticated missile arsenals.

Recognizing the potential value and role of missile defenses is not enough, however. U.S. missile defense plans and programs must be aligned so as to anticipate and stay ahead of adversary missile threats. Unfortunately, neither the 2022 MDR report nor projected Department of Defense (DoD) plans, programs and budgets provide evidence of a credible plan to fully address these burgeoning threats.

Strategy-Resources Mismatch

The 2022 MDR states, "The Department's top priority is to defend the homeland and deter attacks against the United States…. Missile defenses…are critical to the top priority of defending the homeland and deterring attacks against the United States."[3] Yet, the proposed budget for missile defense has remained relatively flat since President Biden took the helm, despite the need for modernization and expansion of U.S. missile defense forces. There is no sense of urgency to the overarching U.S. missile defense program; as a result, we are falling further behind adversary threat developments.

This strategy-resources mismatch is painfully evident throughout the report. Likewise, the report fails to provide clear guidance for allocation of scarce resources—in fact, as noted below, it creates even more confusion and the potential for even greater competition for such resources.

Recent annual DoD budget submissions have been based upon highly constraining assumptions that do not reflect reality. Department planners and program officials are required to plan against the top-line budget number the president selects—which in this case has been far lower than what is needed to keep pace with known threats. Keep in

[3] Ibid., pp. 5, 6.

mind, the president's budget request for DoD in FY 2023 did not keep pace with the worst inflation in 40 years, whereas the Democratic-controlled Congress added tens of billions to the DoD budget in FY 2023 alone. Simply put, the inadequate FY 2022 and 2023 budget requests have forced DoD officials to constrain missile defense and other vital programs in order to stay within the Biden budget bogey. This strategy-resources mismatch is damaging not only for U.S. missile defense programs, but also in many other mission areas across the Department.

Homeland Missile Defense

The 2022 MDR repeats the mantra that U.S. ballistic missile defense (BMD) programs are not intended to defend against or defeat threats from Russia or China. One can understand the Biden Administration's desire not to further complicate rapidly deteriorating relations with both Moscow and Beijing via missile defense policy pronouncements. However, continuation of a policy that intentionally constrains the capabilities of U.S. BMD systems to ensure they cannot effectively deter or defeat even small-scale missile strikes (whether intentional, accidental or unauthorized) from Russia or China is a profound strategic mistake, especially when one takes into account the increasingly bellicose threats to launch nuclear strikes against the United States and its friends and allies. (For example, President Putin has on several recent occasions explicitly threatened nuclear strikes on the U.S. Nuclear Command Authority.)[4] A fully modernized U.S. strategic

[4] Dr, Mark B. Schneider, "While Massing Troops Against Ukraine, Putin Threatens the U.S. National Command Authority," *RealClear Defense*, December 15, 2021, available at https://www.realcleardefense.com/articles/2021/12/15/while_massing_troops_against_ukraine_putin_threatens_the_us_national_command_authority_807894.html.

nuclear force may be sufficient to deter large-scale nuclear attacks, but such a force will not be fielded for at least another decade. Meanwhile, small-sized attacks using nuclear and/or conventional strike systems—including and especially those aimed at decapitating U.S. leadership or disrupting or degrading U.S. nuclear command, control and communications capabilities—may be more difficult to deter solely by threatening large-scale nuclear retaliation. Therefore, a modest but highly effective missile defense capability against limited strikes is warranted.

A centerpiece of the Biden Administration's homeland missile defense program is the Next Generation Interceptor (NGI). While there is only a brief reference to NGI in the report, the 2022 MDR commits only to "development" of NGI "to augment and potentially replace" some unspecified number of existing Ground Based Interceptor (GBI) missiles.[5] Hence, it remains an open question as to whether or when the Department will make a production decision on NGI and, if so, for how many missiles. Ambiguity as to the future of such a critical program sends the wrong signal to friends and foes alike.

Because of age and reliability concerns, GBIs are unable to confidently defeat the increasingly sophisticated threat posed by North Korea, much less the advanced threats posed by Russia and China. Hence, the need for a robust inventory of modern NGI missiles that are far more effective against sophisticated adversary penetration aids and other countermeasures. In this regard, the Congress, on a bipartisan basis, took an important step in the right direction by including a provision in the recently enacted National Defense Authorization Act for FY 2023 (Public Law 117-263) that requires the Director of the Missile

[5] *2022 Missile Defense Review*, op. cit., p 6.

Defense Agency to submit a report on the funding profile necessary to acquire no fewer than 64 operational NGIs.[6]

More broadly, the Biden Administration should have used the 2022 MDR to announce a new, expanded mission statement for the U.S. homeland missile defense system—namely, establishing a robust capability to effectively defeat limited nuclear- and conventionally-armed ballistic and cruise missile attacks from China, Russia, North Korea and Iran. The failure of the 2022 MDR to endorse deployment of NGI and other needed capabilities and to establish an expanded homeland missile defense system mission statement can be read as further evidence of the Biden Administration's ambivalence towards this critical mission.

"Left of Launch"

The 2022 MDR report indicates a continuing rhetorical emphasis on and a seeming preference for "left of launch" solutions to various missile threats. Such solutions could include kinetic and non-kinetic attacks on adversary missile systems and associated command and control in peacetime, crisis or conflict. Without question, the Department must rapidly field a more robust set of prompt-strike capabilities in order to be able to hold at risk adversary missile systems, including mobile missiles that "shoot and scoot," as well as many other targets—and significant resources are being devoted to such programs. However, there are several reasons to question a strategy that relies primarily or exclusively on "left of launch" attacks on foreign missile systems for U.S. homeland and regional missile defense.

For example, can the U.S. Intelligence Community assure timely and convincing indications and warning that

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[6] Section 1654, "Next Generation Interceptors for Missile Defense of United States Homeland," *James M. Inhofe National Defense Authorization Act for Fiscal Year 2023*, available at https://www.congress.gov/bill/117th-congress/house-bill/7776/text.

a Russian, Chinese, North Korean or Iranian missile armed with a nuclear warhead is about to be launched against the United States? And, will this president (or any president) launch a preemptive strike—and thereby commit an act of war—against North Korea or Iran (much less Russia or China) in peacetime or a crisis based on what will likely be fragmentary intelligence? The 2022 MDR does not address these thorny questions.

It is worth noting that, to date, the U.S. record of being able to promptly find, fix, track and destroy mobile missiles has been mixed at best. (America's enemies are increasingly fielding mobile missiles which are harder to locate and target.) Also, while in theory cyber operations may be able to sabotage foreign missile systems, one probably cannot rely on such measures to defeat an imminent missile launch at a particular point in time. Given these uncertainties, reliance on "left of launch" capabilities to deter and defeat various missile threats to the United States entails great risk. Hence, even as U.S. offensive strike capabilities improve, effective homeland and theater missile defenses are needed.

Unmanned Aircraft Systems

The 2022 MDR report includes a lengthy discussion of the threat posed by unmanned aircraft systems (UAS). This is a new development; prior MDR reports did not include discussion of UAS threats and countermeasures. Without question, UAS pose a real and growing threat—indeed, such systems are being used by freedom's enemies on a daily basis in various conflicts across the globe (just ask the Ukrainians, Israelis, Saudis, and U.S. military forces in Syria, among others). While fielding Counter-UAS (C-UAS) capabilities is an urgent need and warrants continued significant investments, inclusion of C-UAS in the 2022 MDR can be read as pitting these important missions against one another. Such a competition could further

reduce resources available to field effective defenses against the most dangerous classes of offensive missiles: ballistic, hypersonic, and advanced cruise missiles armed with weapons of mass destruction.

Cruise Missile Defense

The 2022 MDR fails to endorse fielding of cruise missile defenses. Indeed, the report commits only to "examine active and passive defense measures to decrease the risk from any cruise missile strike against critical assets, regardless of origin."[7] This flies in the face of clear warnings by the Commander of U.S. Northern Command and North American Aerospace Defense Command, Gen. Glen VanHerck, of the damage and disruption that a small number of accurate and stealthy cruise missiles armed with nuclear or conventional warheads can inflict on high-value U.S. targets.[8] Much more needs to be done to position the Department to be able to effectively detect and counter the rapidly developing threat posed by Russian and Chinese advanced cruise missiles, especially to national leadership command capabilities, critical infrastructure, ports and air bases, and other key U.S. targets. This represents yet another missed opportunity to put America on a path to a limited but effective defense against adversary missiles.

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[7] *2022 Missile Defense Review*, op. cit., p. 6.

[8] Statement of General Glen D. VanHerck (USAF), Commander, United States Northern Command and North American Aerospace Defense Command, Before the Senate Armed Services Committee, March 24, 2022, available at https://www.armed-services.senate.gov/imo/media/doc/USNORTHCOM%20and%20NORAD%202022%20Posture%20Statement%20FINAL%20(SASC).pdf.

Directed Energy and Other Advanced Technologies

Major technological breakthroughs have taken place in the development of solid-state lasers, high-powered microwaves, and other advanced technologies that could contribute to defense against various extant and emerging missile threats. Yet, the 2022 MDR failed to sufficiently emphasize advanced technologies that could dramatically enhance U.S. missile defense effectiveness and lower costs.

Compact solid-state lasers for air and missile defense are becoming viable. For example, a 100 kilowatt (KW) laser recently shot down a target representing a subsonic cruise missile in flight at White Sands Missile Range.[9] In addition, a 300 KW-class solid-state laser will soon be integrated onto a mobile Army platform for testing.[10] Such systems are becoming more compact and can potentially engage various targets at significant ranges. Also, high-energy lasers in the megawatt class are beginning to mature. And high-powered microwave (HPM) demonstration projects are making solid technical progress, despite only modest funding over the past decade.[11] If current trends continue, lasers of increasing power levels and HPM systems could

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[9] Warren Duffie, Jr., Office of Naval Research, "Laser Trailblazer: Navy Conducts Historic Test of New Laser Weapon System," April 13, 2022, available at https://www.navy.mil/DesktopModules/ArticleCS/Print.aspx?PortalId=1&ModuleId=523&Article=2998829.

[10] Andrew Eversden, "Lockheed Martin Delivers 300-kilowatt laser to Defense Department," *BreakingDefense*, September 16, 2022, available at https://breakingdefense.com/2022/09/lockheed-martin-delivers-300-kilowatt-laser-to-defense-department/.

[11] John Keller, "Technological Foundations Laid for High-Power Microwave Weapons Effects for Next-Generation Electromagnetic Warfare," *MilitaryAerospace*, May 9, 2022, available at https://www.militaryaerospace.com/power/article/14276116/electromagnetic-warfare-highpower-microwave-weapons-effects.

play a key role in point defense against cruise and even some ballistic missiles.

The Biden Administration should take steps to assure U.S. dominance in the field of advanced missile defense and related technologies. Unfortunately, the 2022 MDR made no such commitments.

Space Systems

The 2022 MDR's lack of emphasis on the vitally important role played by space systems in missile defense is disappointing. (The only direct reference to space systems is the following sentence: "Because of their global nature, persistence, and greater access to denied regions, resilient space-based infrared, radar, and associated data transport systems will be critical to any future integrated sensor network.")[12] Important debates underway within the Department on issues such as space force design and measures to achieve space protection and resilience will have a significant impact on U.S. missile defense system performance. Yet, the 2022 MDR does not address these important matters.

Perhaps not surprising, but disappointing nonetheless, is the MDR's avoidance of the topic of the potential value of space-based interceptors (SBIs) to homeland and regional missile defenses. The last serious SBI project was the "Brilliant Pebbles" system, a key element of the proposed Global Protection Against Limited Strikes (GPALS) architecture during the presidency of George H.W. Bush.[13] Since then, dramatic advances have taken place in space system design, model-based engineering, miniaturization

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[12] *2022 Missile Defense Review*, op. cit., pp. 8-9.

[13] Department of Defense Inspector General, "Audit Report: Brilliant Pebbles Program," Report No. 94-084, April 14, 1994, available at https://media.defense.gov/1994/Apr/14/2001714824/-1/-1/1/94-084.pdf.

of critical components, microprocessing, enhanced communications, and more—much of it brought on as a result of commercial investments and fielding of small satellite mega-constellations such as SpaceX's Starlink broadband satellite internet network.

If the Biden Administration was truly serious about developing and fielding limited but effective missile defenses, the 2022 MDR would have directed the Missile Defense Agency and other DoD components to assess the current state of SBI-relevant technology, perform detailed architectural trade studies and cost analyses, conduct robust R&D to enhance the maturity of various SBI system components, and more. Yet, none of this is happening. This, despite the fact that a modestly sized and affordable space-based defense constellation can make a significant contribution to deterring and defeating limited ballistic missile attacks.

The Anti-Ballistic Missile Treaty, which was repeatedly violated by the Soviet Union and then Russia, is no longer in place to restrict U.S. space-based defenses. Indeed, the only thing that stands in the way of aggressively exploring the technological feasibility and cost of a limited space-based missile defense capability is an inordinate fear of "provoking" Russia and China. In fact, both Russia and China have made clear their desire to overturn the existing international political and economic order and expand their influence at the direct expense of the United States and its friends and allies, including through armed conflict. They have developed and fielded novel—some might say "destabilizing"—capabilities such as fractional orbital bombardment systems and hypersonic glide vehicles designed to evade U.S. ground-based radar coverage, counterspace systems to destroy U.S. missile warning satellite sensors, and more. Clearly, it is time to revisit America's self-imposed restraint and leverage key areas of

U.S. technological strength to advance our security interests.

Conclusion

In sum, the Biden Administration's 2022 MDR represents a hodgepodge of conflicting ideas, with little to no prioritization of activities, and a strategy-funding mismatch that inhibits effective planning for and fielding of effective missile defenses. The useful policy statements about the value of missile defenses are offset by a lack of urgency and a refusal to commit to fielding effective missile defense capabilities. Furthermore, the report misses numerous opportunities to promote and accelerate the Department's efforts to leverage modern technological advances and game-changing concepts to assure U.S. technological superiority in this important mission area.

Unfortunately, the Biden Administration's 2022 MDR cannot be read as a strong endorsement of a robust missile defense program so clearly needed to protect the nation and our friends and allies against increasingly diverse and sophisticated threats from enemies that are committed to our destruction.

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