

Missile Defense and the Nuclear Posture Review

As missile defense capabilities have matured, they have become widely recognized for their contribution to broad strategic objectives and the US nuclear posture. The growing significance of missile defenses has been more broadly reflected in major national and military strategy documents across the last several administrations.¹ A capstone Joint Staff publication singles out missile proliferation as a challenge to US military strategy and notes that a strategic posture “predicated on global agility requires the ability to protect against such a threat.”² The 2001 Nuclear Posture Review (NPR) proposed a “new triad” in which conventional forces and nuclear strike forces represented one leg, active and passive defenses the second, and responsive infrastructure the third. Although the 2010 review did not retain the new triad vocabulary, the concepts and connections persisted and expanded, as did the prospect for missile defense to enhance deterrence and strategic stability. The 2017 NPR should give renewed attention to the role of missile defense in achieving and supporting deterrence, assurance, and damage limitation goals. Given the desire to reduce reliance upon nuclear means of deterrence, missile defense and conventional strike will likely remain central to the US strategic posture.

In January 2017, President Trump issued a National Security Presidential Memorandum on Rebuilding the U.S. Armed Forces, directing the secretary of defense to conduct several reviews of military and security policy. These included a new NPR to “ensure that the United States nuclear deterrent is modern, robust, flexible, resilient, ready, and appropriately tailored to deter 21st-century threats and reassure our allies,” and a Ballistic Missile Defense Review (BMDR) to “identify ways of strengthening missile-defense capabilities, rebalancing homeland and theater defense priorities, and highlighting priority funding areas.”³

The presidentially directed reviews are also being conducted in a statutory context. The National Defense Authorization Act for fiscal year 2017 contained several provisions bearing directly on the relation of missile defenses to such larger objectives. One section amended the

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1999 National Missile Defense Act with a policy statement broadening the policy objectives for missile defense. Changes include the description of future missile defenses as “effective, robust and layered,” emphasizing the importance of these attributes because the character of emerging threats is not static but rather “developing and increasingly complex.” The new language also broadened the object of defense to include not only US territory but also “allies, deployed forces, and capabilities.” Another section of the same law mandated a review of missile defeat policy, strategy, and capability, including the relationship of deterrence to missile defense and defeat capabilities. Together, these several directives represent a ripe opportunity to evaluate and adjust US missile defense efforts.

The Strategic Environment: A Missile Renaissance

The forthcoming nuclear and missile defense policy review process will begin in part with an intelligence assessment of the ballistic and cruise missile threats to the United States. Today, the United States and others face threats from missiles carrying both nuclear and conventional payloads. Despite various nonproliferation and counterproliferation efforts, the spread and evolution of such technologies are instead producing a kind of “missile renaissance.”

This new missile age of sorts is characterized by technological, commercial, and geopolitical trends contributing to a surge in the global supply and demand for a spectrum of unmanned, high-precision, and high-velocity delivery systems, including:

- guided and unguided rockets, artillery, and mortars;
- supersonic and long-range subsonic cruise missiles with improved guidance and evasion;
- guided and maneuvering reentry vehicles;
- depressed trajectory ballistic missiles;
- ballistic missile improvement in range, survivability, and mobility;
- anti-ship missiles of various kinds;
- missile-boosted hypersonic glide vehicles; and
- missile-boosted anti-satellite weapons.

In sum, this missile renaissance represents “a complex and nearly continuous threat spectrum across the characteristics of altitude, speed, propulsion type, and range.”⁴ As such, it has generated increased global supply and demand for missile countermeasures, both strike capabilities and air and missile defenses. Missiles have been used in numerous conflicts, sometimes with significant effect. The single greatest loss of American life during Operation Desert Storm came when a single Scud missile hit a US barracks, killing 27 and wounding 98.⁵ In the ongoing Yemen conflict, quasi-state actors successfully used an anti-ship cruise missile to attack an Emirati ship, and another single missile strike reportedly killed 60 Saudi, Emirati, and Bahraini military personnel.⁶ In June 2017, Iran fired a number of solid-fueled ballistic missiles into Deir el-Zour, Syria, targeting Islamic State militants.⁷ Precision-guided cruise and ballistic missiles have now become a significant means of denying access to a particular defended area.⁸

The unprecedented rate of North Korean missile testing over the past several years represents both an improvement in capability and a desire to acquire intercontinental ballistic missiles (ICBMs), an intent recently made explicit by Kim Jong-un.⁹ Should Pyongyang develop and begin serial production of an ICBM capable of threatening the US homeland, it could strain the level of homeland defenses currently fielded. Iran also continues to develop and test long-range missiles, working to improve their accuracy, range, and survivability. Iran appears to be putting more emphasis on solid-fueled rockets, permitting greater promptness and mobility. Russia continues to develop and conspicuously display more sophisticated conventional cruise missiles that threaten NATO.¹⁰ China, too, has fielded the DF-21 “carrier killer,” the DF-26 “Guam killer,” and many other shorter-range ballistic and cruise missiles as part of its anti-access and area denial strategy. Of course, both Russia and China also possess formidable arsenals of ICBMs capable of delivering nuclear weapons to the US homeland.

These and related trends contribute to the growing sense that missile defenses can support deterrence rather than undermine it. Whereas during the Cold War the United States codified virtually unmitigated vulnerability to Soviet missiles with the 1972 ABM Treaty, today there are simply too many missile-armed actors and too much uncertainty to forego defenses. Over 28 nations now possess ballistic missiles, and virtually no intelligence assessment suggests the threat is declining.¹¹

In the face of these new and emerging missile threats, demand for ways to counter them continues to grow. Recent years have seen demonstrated successes across all four families of systems currently deployed by the United States today: Patriot, the Aegis Weapon System, Terminal High Altitude Area Defense (THAAD), and Ground-based Midcourse Defense (GMD). Systems abroad include Israel's Iron Dome, David Slings, and Arrow programs; France's SAMP/T; and the nascent MEADS program being developed and under consideration by Germany. THAAD is also now operated by United Arab Emirates (UAE), and the Aegis weapons system has expanded to a number of partners. Russia likewise deploys the evolving S-300/S-400 family, and China the HQ-family.

Just as air superiority has long formed a major tenet of US operational planning, missile defenses may become a larger component of the defensive counterair mission. The expansion of missile defense capabilities and capacity, and their integration into operational planning, will lead beyond a mere responsive instrument to a more comprehensive and holistic effort.¹²

For good reason, the past several administrations have shared a discomfort about remaining wholly defenseless against ballistic missile attack. The refusal to rely on purely offensive deterrence or accept strategic vulnerability with countries like North Korea seems certain to be retained, but additional action will be required to maintain a defensive posture that outpaces such threats. A separate question concerns Russia and China. The 2010 BMDR observed that long-range homeland missile defenses would be used against missile attack from "any source," but also noted that interceptor capacity is insufficient to defeat large-scale attacks and furthermore is not "intended to affect the strategic balance" with Russia and China. The potential for active air and missile defenses might again be examined, however, to enhance the overall deterrence relationship with these actors as well.

Contributions to Deterrence

Perhaps the primary contribution of missile defense to US strategic posture concerns deterrence. The proliferation and advance of missile capabilities in the hands of potential adversaries creates real challenges for maintaining stability and deterring attack. The 2001 NPR observed that "offensive capabilities alone may not deter aggression in the new security environment of the 21st century," a critical part of the ratio-

nale for the withdrawal from the ABM Treaty. Even while declining to deploy national missile defense in 2000, President Clinton noted its potential: “Such a system, if it worked properly, could give us an extra dimension of insurance in a world where proliferation has complicated the task of preserving the peace.”¹³ The 2010 NPR likewise cited “conventional military preeminence and continued improvements in U.S. missile defenses” as means to reduce reliance upon nuclear weapons to deter nonnuclear attacks.¹⁴

While not substituting for the unique deterrent value of nuclear and other strike forces, missile defenses can contribute to deterrence in at least four ways: improving crisis stability, raising the threshold for attack, buying time and creating options for decision makers, and supporting military operations.

Crisis stability. Missile defenses may improve crisis stability by providing the United States courses of action other than preemption or retaliation. In the days prior to North Korea’s 2006 Taepodong-2 launch, some former senior officials recommended a preemptive US strike against the North Korean missile site.¹⁵ The existence of a limited US homeland missile defense capability, however, provided President Bush with an alternative to preemptively striking North Korea’s launch facilities. Such a defensive posture creates options for decision-makers that can contribute to stability. A more recent example of missile defense contributing to crisis stability occurred in October 2016, when two or more anti-ship cruise missiles reportedly were fired at the *USS Mason* as it sailed off the coast of Yemen. Instead of being hit, the ship employed defensive systems and was unharmed.¹⁶ Absent these active defenses, the United States could have been drawn further into the conflict. Instead, the United States was able to assess what had taken place and limit its response to a reprisal with a cruise missile strike.¹⁷

Raising the threshold for attack. Missile defenses also serve the purpose of raising the threshold for aggression for an adversary wishing to pursue coercive escalatory threats or actual strikes against the United States. Denying adversaries a “cheap shot” option against the American homeland or military forces may deter them from taking such actions. Missile defenses therefore can change the calculus of potential adversaries. They can create uncertainty about the effect of an escalatory threat or attack and thereby help thwart adversary escalation strategies.

Buying time and creating options. Missile defense also buys time and creates otherwise unavailable options for decision-makers. Even limited and imperfect defenses create time and space for diplomacy or to attrite adversary missile forces with other means.¹⁸ In so doing, pressure to strike adversary launchers prior to launch is thereby relaxed.¹⁹ Difficulties of Scud hunting during the Gulf War demonstrated that relying on preemption alone, in addition to potentially creating instabilities, may be unreliable, especially if an adversary deploys mobile missiles.²⁰

Supporting operations. While deterrence rests in part upon the perception and the credibility of threats, it also requires the perceived technical ability to execute deterrent threats. Point defense of strike assets, air bases, aircraft carriers, or points of debarkation can ensure the possible introduction and surging of forces into a theater.²¹ The 2010 BMDR notes this more tactical quality by observing that missile defenses support “military freedom of maneuver, by helping to negate the coercive potential of regional actors intent on inhibiting and disrupting U.S. military access in their regions.”²² The presence or absence of such tactical advantage can have a strategic effect. An adversary’s recognition that defenses help shape conflicts in a favorable manner for the United States can thus help deter conflict. In the words of Herman Kahn, “Usually the most convincing way to look willing is to be willing.”²³

Other Potential Goals for Supporting Deterrence

In terms of more specific deterrence goals, future decision-makers will have to identify a set of goals for both smaller powers like North Korea and Iran and larger powers like Russia and China. In both cases, objects of defense might be either broader territorial defense or more targeted point or preferential defenses for military bases, strategic forces, or select highly populated areas.

One possible path would be to retain a bifurcated strategy and posture similar to that currently in force, which would involve near-complete vulnerability of US territory and military forces to Russian and Chinese missiles, even of limited quantity, and relying upon an offense-dominant posture to deter such major powers. At the same time, the United States could continue to work to outpace Iranian and North Korean missile threats, retaining an advantageous and relatively defense-dominant position relative to short- and long-range missiles from both.

Alternatively, the objects of US missile defense efforts could be revised to include protection against not only attacks from North Korea and Iran, but to provide a “thin” defense against certain kinds of limited missile attack from whatever source, including Russia and China. This level of protection, as noted above, could contribute to the deterrence of coercive escalatory threats or attacks. Such a posture could prioritize protection for US population centers or for nuclear and other strategic forces so as to enhance strategic stability. The objectives of homeland defense also might be expanded to include non-ballistic missiles. Hypersonic boost-glide vehicles have recently garnered more research and development attention, but progress has been slow and much remains to be done. There also remains virtually no capability to defend against cruise missile attack on the National Capital Region. Potential options for modifying the goals of missile defense efforts upwards include:

- Increased protection of US territory and population against a limited attack from whatever source, thereby raising the threshold for attack, coercion, or blackmail. Indeed, previous US missile defense architectures have focused on thin territorial defenses or point defenses to support deterrence and enhance strategic stability, such as Sentinel and GPALS.
- Defense for NATO and other alliance territory, or perhaps preferential defense of military forces, against cruise missile and short-range ballistic missile attack—what is sometimes called “theater” missile defense. One person’s theater missile defense is another’s national missile defense, however, and even “nonstrategic” and limited missile defenses could support the strategic defense of NATO or other allies. Such an architecture might prioritize air or sea ports of debarkation/embarkation to enhance deterrence by making more credible the surging of allied forces in the face of Russian aggression.²⁴
- Defense of US nuclear and other strategic forces against ballistic, cruise, and maneuvering glide vehicles in the interest of improving survivability and thereby enhancing deterrence. This might include additional air and missile defense protection of SSBN ports, bomber bases within the United States and abroad, or ICBM fields, as well as other passive defense measures. Previous US missile defense architectures have focused on this limited defensive goal, including Safeguard and LoADs.

Assurance

A second objective that missile defense complements in the US nuclear posture is the assurance of allies. The viability of US security commitments presupposes that the United States will remain willing and able to come to the defense of its allies and avoid becoming decoupled from them. In this respect, both defenses of the American homeland and regional defenses can support assurance. In the absence of defenses, the United States might have to face the proverbial choice between trading New York for Berlin, or Los Angeles for Taipei. Military action against regional threats from Libya and Iraq, for instance, might have carried a significantly greater degree of risk had they possessed intercontinental-range missiles. Even some limited protection of the United States against long-range missile blackmail might therefore stiffen American resolve. Such a risk to the basic international order and US projection of power informs the long-standing US opposition to Iranian and North Korean ICBMs. By reducing the costs of conflict with an ICBM-capable adversary, strong homeland missile defenses can improve the credibility of US security guarantees to allies.²⁵

Regional defenses likewise can support the assurance of allies facing significant threats from states armed with missiles. The 2010 NPR noted that missile defenses reinforce regional security architectures by assuring nonnuclear allies and partners of the US security commitments, thereby helping to dissuade them from acquiring nuclear capabilities of their own—a point repeated in the 2010 BMDR.²⁶ Greater assurance and protection of allies may reduce pressure to yield to adversary threats and correspondingly may become increasingly important in the context of continued proliferation and Russian and Chinese expansionism. The 2010 NATO Strategic Concept also established missile defense as a core Alliance mission.²⁷ Defenses for NATO territory as well as other US forces deployed abroad can directly support allied confidence in the seriousness of US presence in a militarily credible way.

The deployment of THAAD to South Korea, for instance, will help protect the survivability and credibility of US and ROK retaliatory forces. In a similar manner, increased air defenses in Eastern Europe as part of the European Reassurance Initiative raise the cost of attack on alliance forces. The expense, military significance, and even symbolism of such systems may even serve, along with other presence, as a tripwire to help deter aggression.²⁸ Increased defenses for Saudi Arabia, the UAE,

and others in the Gulf may similarly provide assurance in the face of Iranian missiles.

Restrictions on the numbers, locations, and capabilities of missile defenses in Europe are sometimes floated as an attractive bargaining chip for Russian cooperation on arms control, but the Bush and Obama administrations carefully avoided formally including restrictions on missile defense in such agreements. The 2010 NPR specifically excluded missile defenses from arms control negotiations, preserving the value of missile defense to regional deterrence and assurance.

Furthermore, the cooperative process of developing and deploying missile defense systems helps build stronger alliance relationships and gives the United States a larger perceived stake in the security of allies.²⁹ Stronger relationships can in turn contribute to a sense that strategies to split regional coalitions are likely to fail, deterring their use.

With these benefits increasingly recognized by allies and combatant commands, demand for US missile defense forces is outstripping their supply. One possible way to alleviate strain on US missile defenses in a crisis is increasing acquisition of such capability by allies and partners. Japan has acquired its own Aegis BMD capability, and the UAE became the first nation other than the United States to deploy THAAD. Besides the United States, 12 other nations deploy and operate Patriot. All this serves to augment joint force projection while demonstrating alliance solidarity.

Damage Limitation

A third goal served by missile defenses is damage limitation in the event deterrence should fail.³⁰ Escalation by means of missile attack could occur against forces or allies within a region, or against the US homeland. Protection against missile attacks can both discourage an adversary from escalating a conflict and provide a kind of insurance against attack. Missile attacks occur with considerable speed, and other means of limiting damage may be unavailable. Should an adversary believe it can escalate its way out of a conventional conflict by nuclear or other means, missile defenses can buy protection for societal targets in some scenarios and time for other US forces to be brought to bear.

Missile defense can also provide protection in the event of an accidental or unauthorized missile attack. The 1999 National Missile Defense Act declared it US policy to defend its territory against limited ballistic missile

attack, whether “accidental, unauthorized, or deliberate.”³¹ Such concerns emanated in part from the prospect of a rogue commander after the dissolution of the Soviet Union, but a similar prospect could recur with another unstable or failing regime, perhaps with the delegation of launch authority down to field commanders. While the 2016 NDAA revision dropped the reference to “whether accidental, unauthorized, or deliberate,” a policy of missile defense adaptability should presuppose it within the pursuit of effective, robust, and layered homeland and regional defenses.

To be sure, the purpose of missile defense is not to merely sit and play catch but rather to support the larger strategic objectives of the United States. Missile defenses can especially support the defeat mission with improved integration of strike and defensive means, both left- and right-of-launch (or, alternatively, after an initial missile attack but before subsequent attacks). On this topic, the fiscal year 2017 National Defense Authorization Act includes a provision for a missile defeat review report by the Department of the Defense and the Joint Chiefs of Staff, to include a review of capability, policy, and strategy with respect to:

- (1) left- and right-of-launch ballistic missile defense for—
 - (A) both regional and homeland purposes; and
 - (B) the full range of active, passive, kinetic, and nonkinetic defense measures across the full spectrum of land-, air-, sea-, and space-based platforms;
- (2) integration of offensive and defensive forces for the defeat of ballistic missiles, including against weapons initially deployed on ballistic missiles, such as hypersonic glide vehicles; and
- (3) cruise missile defense of the homeland.³²

This report may serve to force better integration of missile defense into operational planning and in turn inform future missile defense requirements.

Missile defenses do not exist in a vacuum but rather should be integrated with the growing spectrum of US military force, including strike capabilities to counter missile threats prior to launch. A joint staff publication has observed that defeating missile threats prior to launch is the preferred means of countering missile threats, but such means are not a substitute for active and passive defenses.³³ As former vice chairman of the Joint Chiefs of Staff Adm James Winnefeld noted in 2015, “While we would obviously prefer to take a threat missile out while it’s still on the ground, what we would call left-of-launch, we won’t always have the luxury of doing so. And because it’s our policy to stay ahead of the

threat, we don't want there to be any doubt about our commitment to having a solid right-of-launch capability.”³⁴

In 2013, former Chairman of the Joint Chiefs of Staff Gen Martin Dempsey made a similar point in *Vision 2020*: “While these offensive actions can attrite portions of the air and missile threat, they cannot assure complete negation,” and as such “both active and passive defenses and offensive actions against air and missile threats should be part of the initial focus of every war plan.”³⁵

“Active and passive defenses will not be perfect,” noted the 2001 NPR, nor can defenses alone prevail, yet even imperfect defenses increase flexibility, help manage and mitigate risk, and support the overall effectiveness and credibility of military operations.³⁶

Shortfalls in the current BMDS include limitations with kill vehicle reliability and gaps in sensor coverage, most notably with the absence of a space-based sensor layer for persistent birth to death tracking and discrimination. Such overhead persistent coverage would close current gaps in terrestrial radar coverage, currently highly dependent on a handful of forward deployed TPY-2s and upgraded early warning radars.³⁷ A space-based sensor layer has been a feature of every missile defense architecture for the past five administrations, but none have been fielded, with the exception of two demonstration satellites. Missile Defense Agency (MDA) officials have recently emphasized the importance of making “a broader shift from a terrestrial-based system to a system that primarily plays from space in the next couple of years.”³⁸ Fielding a space sensor layer and renewing the space test bed for interceptors could dramatically improve performance across the BMDS and open new options for interceptor coverage.

Connected to damage limitation is the potential goal of dissuading adversaries from acquiring or fielding certain missile capabilities, a form of threat reduction. Such a strategy attempts to impose more costs upon the missile attacker than on the defender. The prospect of a relatively advantageous defensive posture position against long-range ICBMs from North Korea or Iran could, in principle, discourage their investment of scarce resources in such capabilities. Defenses for NATO, GCC partners, and other Asia-Pacific allies might likewise discourage investment in short- or intermediate-range missiles.

The effectiveness of dissuasion, however, seems uncertain in some difficult cases. Despite the success record of Israel's Iron Dome defenses

against rockets and mortars from Hamas and Hezbollah, for instance, considerable effort continues to be devoted to stockpiling, improving, and employing these relatively unsophisticated forces. Without greater insight into Iranian or North Korean deliberation on resource allocation, the potential dissuasive effect of missile defenses remains difficult to assess. North Korea and Iran continue to advance their missile programs, and thus far, the cost imposition has weighed just as heavily upon their neighbors to acquire missile defenses. Despite considerable progress, missile defenses appear not to have yet persuaded proliferators that missiles are, or will become, ineffective instruments. At this relatively late stage in their missile programs, the proliferation of defenses may not dissuade Iran or North Korea but could discourage other states from following a similar path. Dissuasion of further progress may require significant integration of active defenses with other strike forces to communicate a readiness to fight and win a conflict with such regional powers.

The Path Forward

Several types of action should be considered to help improve the contributions of missile defense to US deterrence, assurance, and damage-limitation goals. Such steps include not merely capability, capacity, and reliability improvements but also adjustments to policy, doctrine, and concepts of operation. The scope of such changes will of course be informed, limited, and ultimately determined by the overall national security strategy, new threat assessments, and resource limitations.

At the level of policy, the objectives of missile defense efforts might be formulated to pursue effective, robust, layered, and adaptable homeland and regional missile defenses designed to outpace developing and increasingly complex ballistic and cruise missile threats. Such a shift would move from a sharp ballistic missile defense focus to integrated air and missile defense more broadly. Such efforts potentially could be expanded to include some capability of protecting US territory and military forces against cruise missile or ballistic missile attack from any source, whether accidental, unauthorized, or deliberate. Alternatively, increased active and passive missile defenses could be focused more specifically on improving the survivability of nuclear forces and other strategic capabilities, thereby enhancing deterrence and strategic stability. Efforts abroad might include increased integrated air and missile defense capability for US and

allied forces in Europe and other regions to protect against cruise missiles and short-range ballistic missiles.

In terms of the current program of record, natural next steps may include incremental or block development of all four families of interceptor capabilities—GMD, THAAD, Aegis/Standard Missile, and Patriot. Other steps would improve efforts across the BMDS, for both homeland and regional protection. Continued maturing of missile defense includes integrating it into operationally realistic plans and building resilience for a challenging environment. Such measures include improving the survivability and graceful degradation of kill vehicles, interceptor sites, sensors, ground and support systems, and the broad missile defense enterprise to hostile environments and direct attack. Specifically for homeland defense, the flexibility, capability, and reliability of today's GMD homeland missile defenses can be improved with a redesigned kill vehicle, more energetic and selectable-stage boosters, multi-object kill vehicles, and the ability to employ a shoot-look-shoot firing doctrine.

To outpace emerging threats and retain the ability to adapt to adverse future developments, Ground-based Interceptor (GBI) capacity should be expanded beyond the 44 currently intended for 2017, both for operational and testing spares and the number operationally deployed. Readiness efforts for an East Coast site should be continued, but construction of such a site should be weighed against alternative and more flexible concepts, including transportable GBIs and an alternative interceptor underlay for area defense. Additional sensors may also be required to track missile threats from the Middle East and to address gaps for missiles traveling from southern trajectories or from sea-launched cruise or ballistic missiles.

Even if a relative rebalance should be made in favor of homeland defense, regional missile defense should not be decreased. One potential way to achieve more cost-effective regional defenses is with new and more imaginative concepts of operation to permit more flexible and survivable capabilities, such as more distributed launcher deployments, increased mobility, a network-centric architecture, and mixed-load launchers.³⁹

Some areas of focus would yield broad benefits across every aspect of the BMDS, homeland and regional defense alike. Research and development efforts for compact lasers and other directed energy weapons could ultimately revolutionize the missile defense toolbox and in the near term

improve capability with such concepts as lasers mounted on high altitude unmanned aerial vehicles within range of boosting ballistic missiles. Doctrinal and planning priorities might include greater integration of left-of-launch missile defeat efforts with active and passive defenses, as well as improved integration of active defenses within the joint force and interoperability with allies and partners.

Perhaps the single most significant development to improve regional and homeland defense alike would be a space sensor layer for persistent “birth-to-death” missile tracking and discrimination. The vantage point of space will be especially important not only for ballistic threats but also for hypersonic boost-glide vehicles in the high endo-atmosphere. Finally, in terms of institutional readiness to organize for missile defense efforts, MDA’s special acquisition authorities should be retained to maximize flexibility and responsiveness. Congress and the Department of Defense should also correct the continued decline of research and development funding necessary to outpace growing threats.⁴⁰

These and other steps will go a long way to improving missile defenses and further weaving them into planning and operational concepts. The role of missile defense in prosecuting US strategic objectives has grown over the past two decades and will likely continue to grow. The evolution of integrated air and missile defenses against a wide spectrum of threats holds considerable promise to improve flexibility and resilience in a highly dynamic strategic environment. Much remains to be done, however, to actualize this potential and further integrate them into the larger security and deterrence architecture. **SSQ**

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Notes

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