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Strategic Missile Defense: A Reality Check

By Greg Thielmann, Senior Fellow

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The United States has spent over one hundred billion dollars to try to create a capability to intercept the strategic ballistic missiles of first Russia, then China, and now those that North Korea and Iran may deploy in the future. At first glance, this investment appears to be a logical response to the most dangerous vector of nuclear attack. Yet strategic missile defense never yielded a leak-proof defense during the Cold War and has not discouraged the active pursuit of ballistic missile programs since. Missing the most likely contemporary security threat to the United States—terrorist groups acquiring and using nuclear, radiological, or biological weapons—strategic missile defense has increased the overall threat by fostering Russian and Chinese offensive force enhancements and complicating negotiated reductions in offensive ballistic missile arsenals that would lower threat assessments all around.

Highlights

- Advances in both offensive and defensive technologies have not significantly altered the cost-exchange advantages held by strategic offensive forces.
- Just as the U.S. Safeguard anti-ballistic missile system fell victim to cost-effectiveness criteria and competing priorities in the mid-1970s, the new U.S. administration is shifting resources away from strategic missile defense programs. As traditional acquisition rules and operational test requirements are restored to strategic defense program management, this trend is likely to continue.
- The target of U.S. strategic ballistic missile defense efforts has shifted radically from Russia and China in the 1970s to North Korea and Iran today. But contrary to the claims of some, strategic missile defense efforts offer no disincentives to missile development by Pyongyang and Tehran.
- Moreover, U.S. strategic missile defenses cannot mitigate the new threats from terrorist groups and are likely to continue spurring quantitative and/or qualitative improvements in the offensive ballistic missile forces of Russia and China.

- The rationales for, and capabilities of, current strategic missile defenses are not as advertised.

Currently deployed ground-based midcourse defense (GMD) interceptors in Alaska and California are not adequate to defend against future North Korean and Iranian missiles with even simple countermeasures.

The GMD system that the Bush Administration proposed to deploy in Poland and the Czech Republic is intended primarily to protect the United States from possible future Iranian systems, but it could not defend southeastern Europe, which is already within range of existing medium-range Iranian missiles.

While the United States seeks to reassure China and Russia that limited U.S. strategic missile defenses are not threatening, improvements to make existing systems more credible undermine these assurances.

If states are deterred from contemplating use of their missiles, it is, as before, because of the near certainty of U.S. military retaliation, not the possibility of missile interception.

Background

Both the United States and the Soviet Union deployed limited numbers of strategic missile defense interceptors and radars in the middle years of the Cold War. These defenses were designed to cope with the intercontinental range (greater than 5,500 km) and intermediate-range (3,000-5,500 km) ballistic missiles, with which the two sides could threaten each other's homeland. The USSR went first, deploying nearly 100 nuclear-armed anti-ballistic missile (ABM) interceptors around Moscow in the 1960s. The United States began deploying a comparable number of nuclear-armed ABM interceptors at Grand Forks, North Dakota in 1974. The 1972 Anti-Ballistic Missile (ABM) Treaty had banned the U.S. and U.S.S.R. from developing nation-wide defenses as well as systems or components for sea-based, air-based, space-based, or mobile land-based ABM deployments. The treaty permitted the sides to build ABM systems at two fixed locations for defense of the national capital area and a land-based missile base with up to 100 interceptors at each site. A 1974 protocol to the treaty limited each side to only one site. The Soviets opted to maintain their system around Moscow while the U.S. elected to protect a missile field in North Dakota, until Congress cut off funding. A 1997 agreement on confidence-building measures, negotiated in the ABM Treaty's Special Consultative Commission, precisely demarcated strategic missile defense interceptors from those that were designed to intercept tactical and theater ballistic missiles. The latter systems were deemed incapable of overcoming the technical challenge of coping with the much faster reentry of ICBM and sea-launched ballistic missile (SLBM) warheads.

Strategic ballistic missile defenses evolved out of strategic anti-aircraft development in both countries. However, the conceptual roots of the search for missile defenses in Washington and Moscow were different. In the case of the Soviet Union, ABM defenses flowed logically out of that country's experiences defending against German air attacks in World War II and its efforts to build defenses against the massive fleet of U.S. strategic bombers in the early Cold War years. With advances in rocketry and radar, the ability to arm interceptors with nuclear warheads, and a centralized society mobilized for military expenditures, the Soviets sought to be able to defend their capital and national leadership against the new American missile threat that emerged in the 1960s. They never succeeded; U.S. warheads and the options for countermeasures were too numerous and the radars on which the Moscow system relied too vulnerable. Yet bureaucratic inertia, vested interests, and the psychological desire to have some defense, however inadequate, have allowed vestiges of the system to survive even to the present time.

The United States was susceptible to the no less potent illusion that it could use technology to replace the defensive shield two oceans had historically provided for keeping enemies at bay. Nurtured by an almost un-

Table 1: Countries with Long-Range Ballistic Missiles (ICBMs/SLBMs*/IRBMs)

	Operational	Flight-Testing	Developmental
United States	X		
Russia	X		
France	X		
United Kingdom	X		
China	X		
Israel	X		
India		X	
North Korea		X	
Pakistan			X
Iran			X

Ballistic Missile Range Categories

Intercontinental Ballistic Missile (ICBM)	greater than 5500 kilometers
Intermediate-Range Ballistic Missile (IRBM)	3000-5500 kilometers
Medium-Range Ballistic Missile (MRBM)	1000-3000 kilometers
Short-Range Ballistic Missile (SRBM)	less than 1000 kilometers

* Sea-Launched Ballistic Missiles (SLBMs) usually have ranges comparable to ICBMs or IRBMs, but even shorter-range SLBMs can theoretically pose strategic threats, because the submarines from which they are launched can patrol covertly near an enemy's coast.

limited faith in technological solutions and the same natural reluctance to accept vulnerability exhibited by the Soviets, Washington plowed ahead until the inevitable logic of cost effectiveness caught up with strategic defenses in the mid-1970s when the Safeguard ABM system was cancelled and dismantled. Although a new vision of a defensive umbrella which would render nuclear weapons "impotent and obsolete" was articulated by President Reagan in 1983, the Strategic Defense Initiative (SDI) he launched two years later eventually fell victim to the "cost effectiveness at the margin" criterion advocated by his own special adviser, Paul Nitze. Strategic defense planning changed direction under Presidents George H.W. Bush and Bill Clinton, with robust research and development funding authorized, but no decisions on deployment made.

President Clinton announced in 2000 that strategic missile defenses, then under the rubric of the National Missile Defense (NMD) program, were sufficiently promising and affordable to justify continued development and testing, but that there was not sufficient information about the technical and operational effectiveness of the entire system to move forward with deployment. He noted that critical elements, such as the booster rocket for the interceptor, had not been tested and that there were questions about the system's ability to deal with countermeasures. The Department of Defense announced at the same

time that, while aiming for initial deployments by 2005, the program would be event-driven rather than schedule-driven.

In the fearful wake of the September 11 attacks, President George W. Bush was successful in supercharging strategic missile defense procurement and deployment. In spite of virtually unanimous international opposition, he announced withdrawal from the

from the urgent priority assigned to strategic missile defense by the Bush Administration. President Obama said in his April 5, 2009 Prague speech that he would only go forward with a missile defense system in Europe that was cost effective and proven. His revised request for the Missile Defense Agency in the Fiscal Year 2010 budget was \$7.8 billion, a \$1.2 billion funding cut in missile defense.²

Getting to ground truth on strategic missile defense is a bit like looking for a faithful reflection in the distorted mirrors of a carnival fun house—nothing is quite what it seems.

ABM Treaty in late 2001. By the end of two terms, the Bush administration was able to deploy a rudimentary set of 24 GMD interceptors at sites in Alaska and California, and to plan for deployment of another ten in Poland. The U.S.-based deployments and their “operational” designation were only accomplished after Defense Secretary Donald Rumsfeld suspended traditional acquisition rules and operational testing criteria, introducing an unconventional and controversial “spiral” development process.

The ABM Treaty constituted a tacit acknowledgment by both sides that unlimited strategic defenses constituted a threat to the stability of the balance in offensive forces. Each side further demonstrated by its subsequent actions (albeit at different times) that offenses and defenses were inextricably connected. In 1988, the United States demanded that the Soviet Union dismantle the large, phased-array radar Moscow was constructing at Krasnoyarsk before Washington would agree to any new offensive arms control limits.¹

In response to U.S. withdrawal from the ABM Treaty on June 13, 2002, Russia announced one day later that it would no longer consider itself bound by START II, consistent with the Duma’s ratification terms in 2000, which were contingent on continuation of the ABM Treaty. Thus, not for the first or last time, U.S. determination to escape from strategic missile defense strictures led to loss of an opportunity to secure lower limits and stabilizing measures in strategic offensive forces.

By 2004, the Bush administration began talks with central European states to explore the potential use of their territory for deployment of U.S. GMD interceptors and a sophisticated mid-course X-band radar. By the end of his administration, President Bush had secured agreements with the Czech Republic for hosting the radar and Poland for hosting the missile interceptors, but the agreements remain to be ratified with the host governments. Meanwhile, on the American side, the pendulum again seems to be swinging away

Missing the Threat

Ironically, just as the Bush administration was ramping up efforts to deploy strategic ballistic missile defenses, a new consensus was forming in U.S. intelligence and security circles that the worst threats emerging from “rogue states” and non-state terrorist actors would not be in the form of strategic ballistic missiles. In assessing foreign ballistic missile threats, the National Intelligence Officer for Strategic and Nuclear Programs testified to Congress in 2000 that “...in the coming years, U.S. territory is probably more likely to be attacked with weapons of mass destruction from non-missile delivery means (most likely from non-state entities) than by missiles.”³ Almost nine years later, the Graham-Talent Commission on Prevention of WMD Proliferation and Terrorism highlighted the threats from bio and nuclear terrorism and offered thirteen recommendations, none of which included missile defenses.⁴ On March 10, 2009, National Intelligence Director Dennis Blair did not even mention North Korean or Iranian strategic ballistic missiles in his prepared statement to the Senate Armed Services Committee, “Current and Future Worldwide Threats to the National Security of the United States.”⁵

The most prominent projections in the late 1990s of newly emerging long-range ballistic missile threats set the stage for acceleration of U.S. strategic missile defense efforts, but what actually unfolded on the threat side was considerably less alarming. The 1998 Rumsfeld Commission Report to Assess the Ballistic Missile Threat to the United States predicted that North Korea and Iran would be able to inflict major destruction on the U.S. within about five years of a decision to acquire an ICBM capability and that even then those states were pursuing advanced ballistic missile capabilities in order to pose a direct threat to U.S. territory.⁶ The National Intelligence Council picked up the theme the following year in a National Intelligence Estimate which warned that either Iraq or Iran could test an ICBM that could deliver a lighter payload to the United States in

a few years based on North Korea's Taepo Dong-1 design. The same estimate assessed that North Korea itself could test a Taepo Dong-2 ICBM at any time.⁷ Seven years later, North Korea conducted its first flight test of the Taepo Dong-2 ICBM, which failed 40 seconds into the flight. In 2009, North Korea tried and failed to launch a satellite on a space rocket based on the Taepo Dong-2 missile. Iran had made one failed satellite launch attempt in 2008 and one successful satellite launch with a two-staged system in 2009, but it has not yet flight-tested a long-range missile.

Nothing is as it seems

Getting to ground truth on strategic missile defense is a bit like looking for a faithful reflection in the distorted mirrors of a carnival fun house—nothing is quite what it seems.

Performance details are shrouded in secrecy on both strategic ballistic missile defenses and the countermeasures that would be used to defeat them. Neither strategic ballistic missile offenses nor defenses have been used in combat. Many experts to whom the public has access have a vested interest in spinning evaluations of their capabilities. Governments themselves have a security interest in deceiving potential enemies about deficiencies in system performance.

The "European Capability Initiative," which envisions U.S. deployment of a GMD radar in the Czech Republic and interceptors in Poland, is often presented principally as a program to defend Europe. For example, according to the Missile Defense Agency's mission statement, the first part of the mission is: "to provide a defense of Europe against a limited intermediate and long-range ballistic missile attack from the Middle East" (emphasis added).⁸



Department of Defense

Russia's SS-27 (Topol M) Intercontinental Ballistic Missile has characteristics specifically designed to defeat future U.S. anti-ballistic missile defenses.

However, the proposed European deployment would not offer Europe protection against either existing or near-term Iranian missiles. According to the latest Report to Congress from the National Intelligence Council: "...Iran currently is focusing on producing more capable MRBMs (medium-range ballistic missiles)."⁹ The only Iranian missiles projected by the U.S. intelligence community to be able to target Europe during the next few years have ranges of 2000-2500 kilometers—putting Turkey and Balkan states under the potential threat of missile attack. No additional U.S. plans have been announced for protecting these countries from Iranian missiles.

The Poles and Czechs, who would be America's partners, seem much less concerned about the possible future Iranian threat than the United States. Speaking in Washington at the start of 2008, Polish Foreign Minister Radek Sikorski said that his country "does not feel directly threatened by Iran."¹⁰ It is reasonable, therefore, to conclude that the second mission of the European Capability Initiative—"to provide additional capability to the current missile defense system located in Alaska and California to defend the United States"¹¹—is not only more salient, but indeed the real reason for the program.

Many American experts are reluctant to take at face value Moscow's protestations that the U.S. deployments would threaten Russia's strategic forces. It is difficult to see how the proposed midcourse radar in the Czech Republic and the ten-interceptor site in Poland would fundamentally alter the nuclear balance between the United States and Russia or even justify Russia's threat to respond by deploying short-range ballistic missiles in Kaliningrad on Poland's border. Certainly, Russia's strong desire to avoid forward-basing of U.S. forces and facilities near the borders of the former USSR contributes to the vehemence of Moscow's reaction. Poland's response to Russian intervention in Georgia in 2008 tended to validate Moscow's underlying political-military concerns. Soon after the invasion of Georgia, Warsaw signaled its willingness to sign a declaration on strategic cooperation and a missile defense basing agreement, which included an American commitment to base a U.S. Patriot surface-to-air missile battery in Poland—relevant to protecting Poland from shorter-range Russian missile threats, not longer-range threats from Iran.

The U.S. government explains that the Alaska- and California-based GMD system is designed to meet the future North Korean threat. Any relevance to scenarios involving China is officially disavowed, even though the more enthusiastic proponents of strategic missile defense trumpet the system's potential for blunting any future attempt by China to attack U.S. territory. The State Department's International Security Advisory Board recommended in a 2008 report that: "To avoid the emerging creep toward a Chinese assured destruction capability, the United States will need to pursue new missile defense capabilities, including taking full advantage of space."¹²

What is Beijing to make of such expressions? When

the basic GMD system architecture first emerged in the late 1990s, it became obvious that radars and interceptors oriented toward North Korea would also be in an ideal location to defend against land-based missiles from China. Considering that China had maintained a minimalist nuclear deterrent against the United States of some 20 single-warhead ICBMs for many years, the 44 Pacific interceptors planned by the Bush Administration would presumably have been of concern to Beijing. This would be especially true if one takes into account the first-strike potential of the numerous and highly accurate U.S. D-5 sea-launched ballistic missile warheads on U.S. Trident submarines in the Pacific. In fact, China began efforts in the 1980s to modernize its strategic missiles by supplementing and eventually replacing its older fixed-site ICBMs with modern, solid-fuel, mobile ICBMs, but is only now deploying the first modern missile able to target all of U.S. territory, the DF-31A.¹³

Given the prowess exhibited by China in testing technologies relevant to penetrating missile defenses, and considering the vulnerability of U.S. battle management radars to Chinese missile attack, it is doubtful that the GMD interceptors deployed to date would have shaken China's confidence that its nuclear missile forces can deter U.S. attack. Chinese physicist and arms control expert Li Bin and his research assistant, Nie Hongyi, noted in a journal article last year that "...the actual fighting capability of the land-based kinetic interceptors the U.S. is currently developing is deserving of suspicion, the main drawback being the failure of the system's sensor recognition capability to meet the requirements and the adversaries' ability to employ appropriate countermeasures, making missile defense effectiveness even more unreliable."¹⁴ The authors' chief worry was that the U.S. missile defenses would cause "U.S. decision-makers to imagine they have a comparative strategic advantage and blindly adopt a policy of nuclear coercion."¹⁵

It is also reasonable to assume that U.S. strategic ballistic missile defenses have played a role in the pace and direction of China's nuclear missile modernization effort. The latest Pentagon report on China's Military Power notes that "China is both qualitatively and quantitatively improving its strategic missile forces."¹⁶ The Perry-Schlesinger Strategic Posture Commission opined that "China may already be increasing the size of its ICBM force in response to its assessment of the U.S. missile defense program."¹⁷

How the "Rogues" Reason

In protesting Defense Secretary Robert Gates' recent de-emphasis of GMD funding in the revised Fiscal Year 2010 defense budget proposal, strategic missile defense proponents lean heavily on Iran and North Korea. Alleging the "irrationality" (or at least "inscrutability") of the leadership in Tehran and Pyongyang, proponents argue that the characteristics of Kim Jong Il and Ayatollah Khamenei make them somehow immune to the deterrent effect of the huge U.S. nuclear arsenal. The

United States must therefore hasten to install (or improve) all layers of missile defenses before it's too late. Yet Western experts on North Korea and Iran portray both leaders as shrewd survivors who have used crises to strengthen their holds on power. Khamenei, in particular, is described as not moderate, but pragmatic. It is difficult to find examples in the past behavior of either leader which point to a willingness to entertain, let alone execute, the "Samson option" of bringing down the temple on their heads.

Some proponents contend that missile defense provides a disincentive for proliferators to continue their efforts since missile build-ups would be rendered futile. Former Missile Defense Agency Director Lt. General Henry Obering argued in 2005 that countries have to be encouraged not to invest in weapons of mass destruction: "You show them that it is not worth the investment. The ultimate missile defense is if we can dissuade a country from ever investing in ballistic missiles to start with. That is one of the primary objectives."¹⁸ Rep. Trent Franks (R-Ariz.), warning against delaying GMD deployments in Europe, argued that the value of the system was not just in defending against missiles but removing the incentive for Iran to build them in the first place.¹⁹

So far, however, the alarms raised by proponents about ongoing North Korean nuclear and missile activities make clear that U.S. missile defense deployments have not discouraged offensive deployments. Former Bush administration officials J.D. Crouch II and Robert Joseph tacitly admitted as much in a 2008 op ed:

[...] We can expect that rogue states such as North Korea and Iran are already looking at ways to counter our existing defenses. One way they might do this is to deploy decoys or other countermeasures on their existing offensive missiles that must be attacked, and could thus exhaust our limited supply of interceptors. Fortunately, we can now explore cost-effective solutions to this threat.²⁰

The solutions they proposed were multiple kill vehicles (cancelled by Defense Secretary Gates in 2009) and developing advanced discrimination techniques, acknowledging that none of these techniques were yet "fully proven."²¹ The other solutions they specified were "increasing the capabilities of existing assets" and "looking again at space as a place to deploy interceptors."²²

Additional examples of the inexorable offense-defense dynamic appear everywhere missile defenses are introduced. Taiwan deployed Patriot tactical missile defense systems; the enormous build-up in Chinese short-range ballistic missiles continued or accelerated. Israel achieved nation-wide coverage by the Arrow theater missile defense system; Iran continued building and upgrading Shahab-3 medium-range ballistic missiles. India conducted research and development of a ballistic missile defense system; Pakistan continued building and upgrading nuclear-armed offensive ballistic missiles.



The Sea-Based X-band Radar is deployed in the Pacific and used by the ground-based midcourse defense system for tracking and discrimination of incoming warheads. While highly capable, the radar is susceptible to attack.

Rather than wanting to employ nuclear weapons against the United States or its allies, it seems more probable that Pyongyang and Tehran want to be able to credibly threaten devastating retaliation for an attack on their regimes. Indeed, it seems that they have already been partially successful. Washington's uncertainty about either North Korea's nuclear retaliatory potential or Iran's intentions and future capabilities leave U.S. security officials with an increased propensity to be cautious in any crisis involving these states.

Thus far, interceptors deployed in Alaska and California do not appear to have convinced U.S. decision-makers that any ballistic missile attack would definitely be intercepted. Although the Missile Defense Agency declines to offer a confidence level on performance, citing classification of the information, it has never claimed 100 percent reliability. The Perry-Schlesinger Strategic Posture Commission stated that the GMD system: "...has demonstrated *some* capability against unsophisticated threats..." (emphasis added), but that it "...is now incapable of defending against complex threats."²³ The latest annual report of the Office of the Director of Operational Test and Evaluation provided a sobering evaluation: "GMD flight testing will not support a high level of confidence in its limited capabilities."²⁴

Therefore, it is unlikely that the leaders of countries contemplating nuclear attacks against the United States would be dissuaded by the prospect that some of their missiles might be intercepted—as much as by the near certainty that neither they themselves nor their regimes would survive the retaliation for such an attack. As with the Soviet Union during the Cold War, it is thus deterrence rather than missile defense that offers real security against missile attack.

ENDNOTES

1. Paul Lewis, "U.S. Ties Arms Deal to a Soviet Radar," *New York Times*, September 1, 1988.
2. "Pentagon seeks \$1.2 billion cut for missile defense," *The Washington Post*, May 7, 2009.
3. Robert Walpole, Testimony to the Senate Select Committee on Intelligence, February 9, 2000.
4. "World at Risk," Report of the Commission on the Prevention of Weapons of Mass Destruction Proliferation and Terrorism, December 2, 2008.
5. Dennis Blair, Testimony to the Senate Armed Services Committee, March 10, 2009.
6. Greg Thielmann, "Rumsfeld Reprise? The Missile Report That Foretold the Iraq Intelligence," *Arms Control Today*, July/August 2003.
7. Ibid.
8. "European Capability Initiative," Missile Defense Agency Fact Sheet, January 2009.
9. National Intelligence Council, "Unclassified Report to Congress on the Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions," Covering January 1 to December 31, 2008.
10. Wade Boese, "U.S. Edges Closer to Europe Anti-Missile Deals," *Arms Control Today*, April 2008.
11. Missile Defense Agency Fact Sheet, Op. cit.
12. Bill Gertz, "China's Strategic Modernization, Report from the ISAB Task Force," *Washington Times*, October 1, 2008.
13. "Strategic Missile Force," <http://www.sinodefence.com>, May 6, 2009.
14. Li Bin and Nie Hongyi, "An Investigation of China-US Strategic Stability," *World Economics & Politics*, Vol. 2, 2008, trans. Gregory Kulacki, forthcoming from the Union of Concerned Scientists.
15. Ibid.
16. Office of the Secretary of Defense, "Annual Report to Congress: Military Power of the People's Republic of China 2009," p.24.
17. William J. Perry, Chairman, James R. Schlesinger, Vice-Chairman, "America's Strategic Posture: The Final Report of the Congressional Commission on the Strategic Posture of the United States," May 2009, p.33.
18. Wade Boese and Miles A. Pomper, "Interview with Missile Defense Agency Director Lt. Gen. Henry Obering," *Arms Control Today*, November 2005.
19. Josh Rogin, "Missile Agency Under Fire," *CQ Weekly*, March 24, 2008, p. 784.
20. J.D. Crouch II and Robert Joseph, "Tough Calls, Good Calls," *Wall Street Journal*, January 22, 2008, p. 19.
21. Ibid.
22. Ibid.
23. Perry and Schlesinger, *ibid.*, pp. 32, 33.
24. Statement of Rep. Ellen O. Tauscher, Senate Armed Services Subcommittee on Strategic Forces, February 25, 2009.