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## Iran's Missile Program And Its Implications For U.S. Missile Defense

Among the many man-made threats to U.S. security, one dwarfs all the others—a foreign attack on the U.S. homeland by nuclear-tipped ballistic missiles. Today two countries, Russia and China, potentially pose this kind of threat to the United States. Fortunately, neither Russia nor China is an enemy; each has significant overlapping interests with those of the United States. The two other countries that may be able to pose a long-range nuclear missile threat in the mid-term future, Iran and North Korea, have no such capability yet. North Korea is closer than Iran, even though last year's satellite launch was far short of an intercontinental ballistic missile (ICBM) test. Although plans for expanding U.S. strategic missile defense focus on Iran, Tehran has still not decided to build nuclear weapons and continues to focus on short- and medium-range rather than longer-range ballistic missiles.

### HIGHLIGHTS

- U.S. strategic ballistic missile defenses are intended to provide protection against the type of limited attack that countries such as **North Korea** or **Iran** might be able to threaten in the future.
  - **Iran** is the focus of current plans to expand U.S. strategic missile defenses.
  - But Iran's strategic missiles are emerging much more slowly than previously projected, if they are emerging at all.
- The only country that poses an unambiguous, existential threat to the United States from its strategic arsenal is **Russia**.
  - However, a deliberate Russian attack is very unlikely because Russia and the United States are not enemies, have many mutual interests, and have high confidence in the nuclear arms control regimes, which limit and monitor their nuclear force structure.
- **China** too could plausibly launch a devastating nuclear retaliatory strike against the United States.
  - Current U.S. plans to introduce strategic missile defenses in Europe are harming efforts to negotiate lower levels of Russian offensive strategic forces.
  - However, China also shares many mutual interests with the United States.
  - U.S. efforts to engage China in talks on nuclear arms control measures are hobbled by the size and characteristics of U.S. and Russian arsenals and the planned expansion of U.S. strategic missile defenses.
- U.S. plans to deploy strategic missile defenses in Europe to defend against Iranian ICBMs should be suspended pending indications that such a threat is beginning to emerge.

## Deterrence and Containment

Today, the prospect of the United States fighting a war with North Korea or Iran is much more likely than with Russia or China. The United States has sought to protect itself and its allies from hostile actions by Pyongyang ever since North Korea invaded South Korea in 1950 and from hostile actions by Tehran ever since the Islamic Republic was established in 1979. It has done so by using nuclear and conventional deterrence, by offering political and material support to regional friends, and by applying both unilateral and multilateral economic pressure on the two countries to delay or degrade any efforts they made to acquire nuclear weapons or the ballistic missiles to deliver them.

## U.S. Missile Defenses for Countering Limited Attack

Since 1999, it has also been official U.S. 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.”<sup>1</sup> Such defenses were intended principally to prevent North Korea and Iran (as well as Iraq, initially) from being able to credibly threaten the United States with ballistic missile attack and only secondarily to offer some means of defense against any accidental ballistic missile launch by Russia or China.

With the demise of the Soviet Union, concerns about “horizontal” nuclear and missile proliferation to third parties increased in relative importance. The 1998 report by the Commission to Assess the Ballistic Missile Threat to the United States (more commonly known as the Rumsfeld Commission) and the 1999 National Intelligence Estimate (NIE) on foreign ballistic missile threats helped stoke fears that North Korea, Iran, and Iraq would soon be able to deploy long-range ballistic missiles. Congress enshrined the urgent development and deployment of strategic missile defenses as U.S. policy in the National Missile Defense Act of 1999. (It has been largely forgotten that the act also stipulated that it was U.S. policy “to seek continued negotiated reductions in Russian nuclear forces.”<sup>2</sup>)



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**North Korea’s Unha-3 space launch vehicle lifts off from the Sohae launch facility on December 12, 2012. Experience in building and operating the rocket would be applicable to developing an intercontinental ballistic missile, although some experts doubt that a militarized version of this rocket would be powerful enough to reach the U.S. mainland with a nuclear payload.**

It was avowedly the fear of intercontinental ballistic missile (ICBM) capabilities among the countries he labeled “the axis of evil” that impelled President George W. Bush early in his administration to announce U.S. withdrawal from the 1972 Anti-Ballistic Missile Treaty, which had contributed to strategic stability for some 30 years, and to rush deployment of an inadequately tested strategic missile defense system in the fall of 2004.

Taking this performance and recent technological studies into consideration, Philip E. Coyle, former director of operational test and evaluation in the Pentagon, has called for the Defense Department to go “back to the drawing board” to review and reconsider the basic architectures of U.S. missile defense programs.<sup>4</sup> Even if current political and bureaucratic realities do not permit such a bold move, it should at least be possible to ensure

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During the past decade, both Bush and President Barack Obama have requested, and the U.S. Congress has appropriated, tens of billions of dollars to build and operate strategic missile defenses in Alaska and California and to build the infrastructure necessary for deploying strategic missile defense interceptors in Europe. Continuing congressional interest in expanding strategic defense deployments was evident in provisions of the latest National Defense Authorization Act, which passed in December 2012, requiring the Department of Defense to study East Coast basing schemes for strategic ballistic missile interceptors.

There is now, however, a growing consensus among independent experts that the existing strategic missile defense system does not measure up to the claims of its proponents. Two recent major studies, released by a Defense Science Board task force in 2011 and a committee of the National Academy of Sciences (NAS) in 2012 questioned key assumptions behind current U.S. strategic missile defense programs. For example, the NAS committee’s study characterized the current Ground-Based Midcourse Defense (GMD) system as “very expensive,” “fragile,” and “ineffective” against “any but the most primitive attacks.”<sup>3</sup>

Recent test activity by the Missile Defense Agency has given little reason to doubt the negative assessments of these comprehensive studies. Indeed, 2012 was notable for the complete absence of flight tests of GMD interceptors. In the two most recent attempts to intercept ICBM re-entry vehicle targets (in 2010), the interceptors failed to score hits, leaving an overall system record of achieving hits in only half of the highly scripted tests to date.

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### **Current Missile Threat Trend Lines**

North Korea is the emerging nuclear weapons state closest to being able to threaten U.S. territory with an ICBM. It has twice conducted underground nuclear tests. It is thought to have enough fissile material for four to eight nuclear warheads.<sup>5</sup> In December 2012, it finally placed a satellite in orbit on a space launch vehicle after 14 years of trying. Pyongyang’s defiant reaction on January 25 to the UN Security Council’s January 22 condemnation of this launch included threats to launch additional long-range rockets and to carry out a “higher level” nuclear test in a “new phase of the anti-U.S. struggle.”<sup>6</sup>

The December launch demonstrates North Korean capabilities applicable to building an ICBM and brings such a future threat closer, even if it does not make it imminent. But it is also necessary to note that the satellite placed in orbit in December appears not to be functioning, that some critical ICBM technologies (such as re-entry vehicles) are not tested in such a launch, and that it is doubtful that North Korea has yet been able to design a device suitable for an ICBM warhead. Moreover, missile experts such as Markus Schiller<sup>7</sup> and David Montague, former president of Lockheed Martin’s Missile Systems Division<sup>8</sup> are dubious that North Korea’s Unha-3 space launch vehicle would have the potential, even if it were adapted for military use, to deliver a nuclear weapon-sized payload to the U.S. mainland.

Whatever Pyongyang’s actual intentions and

capabilities, it is not the potential threat posed by North Korea that is generating demands for structural changes in the U.S. strategic missile defense program; it is Iran. The Standard Missile-3 (SM-3) Block IIB missile defense interceptors planned for the fourth phase of the European Phased Adaptive Approach—the Obama administration’s plan to deploy interceptors in Europe—and the proposed East Coast basing of an improved GMD interceptor are both intended to enhance defenses against an Iranian ICBM.

In the 1999 NIE on foreign ballistic missile threats, all U.S. intelligence agencies but one predicted that Iran would flight test an ICBM by 2015; some analysts judged it was likely before 2010.<sup>9</sup> But in 2009, when the Obama administration decided to deploy missiles in Europe rather than the “third site” GMD-based plan of the Bush administration, officials explained that Iran’s long-range ballistic missile capabilities were evolving more slowly than originally anticipated and that Tehran was concentrating instead on improving its medium-range ballistic missile capabilities.

Despite Iran’s evident emphasis on short- and medium-range weapons, some analysts still point to continuing progress by Iran in its space launch program. They note repeated successful satellite launches by Iran’s Safir space launch vehicle (SLV) and the announcements that

multiple additional launches are planned in successive years. Most relevant to Iran’s potential for building an ICBM was the appearance of the Simorgh SLV mockup in February 2010, larger than the Safir and potentially the kind of system that could be converted to military use as a long-range ballistic missile.

Analysts have also emphasized Iran’s progress in developing solid-fuel, multistage systems, which would be more suitable for military missions than the large and vulnerable liquid-fuel systems used in the space program.<sup>10</sup> The solid-fuel Sajjil medium-range ballistic missile (MRBM), a follow-on to the less capable liquid-fuel, single-stage Shahab-3 MRBM, has been flight-tested several times and was expected to enter series production and operational deployment in the near term.

However, Iran’s long-range ballistic missiles did not achieve anticipated milestones in 2012. There was no flight test of the Simorgh SLV or of any long-range ballistic missile—that is, one with a range over 3,000 kilometers—that could put significant portions of Europe or North America at risk of attack from Iranian territory. There were no reported launches of the Sajjil MRBM.

There was also no change in the assertions of Iranian political and military leaders, who deny any intention of or political-military requirement for developing either nuclear weapons or long-range missiles. The clerical



Atta Kenare/AFP/Getty Images

An Iranian Sajjil medium-range ballistic missile is paraded through Tehran on September 12, 2012. The longest-range and most survivable missile Iran has tested to date, the Sajjil is still not operational and has not flown since February 2011.



## Figure 1: Russia and China—The Existing Long-Range Ballistic Missile Threats

For many years during the Cold War, the United States kept the threat from the Soviet Union and China at bay through nuclear and conventional deterrence, supplemented by an expanding network of mutual arms control agreements. Since the end of the Cold War, the probability of violent conflict with either Russia or China has significantly receded as a result of political changes and deepening economic ties, even though the disastrous consequences of any nuclear use have not.

Russia maintains a strategic nuclear arsenal of around 1,500 operationally deployed warheads (under the counting rules of the New Strategic Arms Reduction Treaty) on nearly 500 delivery vehicles. Most of these weapons are ballistic missiles; at least some of them remain on hair-trigger alert. China maintains an estimated 50-70 nuclear-armed intercontinental ballistic missiles (ICBMs)—a sufficient number to target multiple U.S. cities, even after absorbing a first strike. Its two new ballistic missile submarines are not yet considered operational.

The figures below show each country's combined total of ICBMs and submarine-launched ballistic missiles (SLBMs).

| Russian ICBM/SLBM Forces <sup>1</sup> |       |           |     |
|---------------------------------------|-------|-----------|-----|
| Deployed Warheads                     | 1,487 | Launchers | 466 |

  

| Chinese ICBM/SLBM Forces <sup>2</sup> |       |           |       |
|---------------------------------------|-------|-----------|-------|
| Deployed Warheads                     | 50-75 | Launchers | 50-75 |

### ENDNOTES

1. Hans M. Kristensen and Robert S. Norris, "Russian Nuclear Forces 2012," *Bulletin of the Atomic Scientists*, 2012 68:87.

2. U.S. Department of Defense, "Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2012," May 2012.

leadership in Tehran continues to challenge the rationale and morality of nuclear weapons. Although such policy statements are hardly determinative of actual intentions, they do stand in stark contrast to the declaratory policies of other governments of proliferation concern, such as North Korea or Pakistan. Moreover, even as Iran exaggerates (or fraudulently represents) its capabilities with regard to short- and medium-range missiles, it continues to disavow the need for longer-range systems.

The absence of discernible Iranian activity during 2012 in pursuit of long-range ballistic missiles suggests either that Tehran is not especially interested in fielding an ICBM or that problems with the solid-fuel MRBM program it would use as the most likely stepping-stone toward such an objective have delayed its efforts. It is possible that this pause is a consequence of the November 12, 2011 disaster at a major missile-testing site near Tehran. The Iranian government acknowledged that the head of Iran's missile program, General Hassan Tehrani Moghaddam, was killed

in an explosion at the site. Western sources also report that the blast leveled much of the facility.

Whatever the explanation for Iran's quietude on the long-range missile front, the timeline forecast by U.S. security experts for Iran's long-range missile development is clearly slipping. A December 2012 Congressional Research Service report by Steven Hildreth judged it "increasingly uncertain whether Iran will be able to achieve an ICBM capability by 2015," as previously forecast by the intelligence community. Michael Elleman of the International Institute for Strategic Studies has expressed doubts about whether an operational Iranian ICBM is even likely within the current decade. Elleman does not rule out a flight test of such a system before 2020, but notes that such a test would provide a three- to five-year warning that Iran was developing a military capacity to field an ICBM.<sup>11</sup>

## Strategic Arms Control Intercepted by Strategic Missile Defense

Unfortunately, although neither Iran nor North Korea has deployed ICBMs, ambitious U.S. missile defense efforts to counter them have helped dim immediate prospects of negotiating additional limits on the countries that potentially pose the greatest threats to the United States—Russia and China.

Moscow is concerned about the potential impact of expanding U.S. strategic missile defenses on its ability to maintain the overall strategic balance negotiated in the New Strategic Arms Reduction Treaty. Russia has said that it will not agree to missile defense cooperation or additional strategic offensive reductions in its large nuclear arsenal unless the United States makes a legal commitment not to use the interceptors deployed in Europe against Russian targets.

Beijing is worried about the future adequacy of its own minimum deterrent. Resisting any participation in nuclear arms control while U.S. and Russian arsenals are so much larger than its own, China is said to be weighing future U.S. missile defense deployments in shaping the modernization of its own strategic deterrent (fig. 1).

Although often dismissed in the West as disingenuous in expressing concerns about U.S. missile defense, Russian and Chinese security officials are not immune to the kind of "worst-case" analysis frequently demonstrated by the U.S. officials with regard to Soviet strategic missile defense capabilities throughout the Cold War.<sup>12</sup> Russia's principal present focus is on the negative implications of SM-3 IIB interceptor deployments, now planned for 2021. Moscow's

stated fears are no doubt exaggerated to influence both foreign and domestic audiences. However, the specific anti-ICBM performance parameters of the SM-3 IIB have not yet been determined. Moreover, the U.S. Government has made clear that it will not negotiate treaty limits on this system's capabilities.

## Seizing an Opportunity

Given the high costs of expanding strategic missile defenses and the negative impact such plans are having on prospects for reducing Russian and Chinese strategic offense forces, close scrutiny of the alleged reason for proceeding is merited.

An understanding that the Iranian ICBM threat is less acute than previously depicted dovetails with the growing realization that U.S. strategic defense capabilities are less robust than previously portrayed. A logical response to these developments would be to suspend the deployment of a new, more advanced SM-3 interceptor in the fourth phase of the planned European deployment until the Iranian ICBMs against which it is directed start to materialize. Indeed, such a suspension would corroborate Obama's pledge that his "phased" approach would also be "adaptive."

If properly communicated to Moscow and Beijing, such a U.S. policy adjustment—a suspension rather than a cancellation—could give Russia and China additional incentives to help restrain Iran's missile program. It could also open a pathway to progress in negotiating further reductions in Russia's excessive strategic nuclear forces and reduce the likelihood that China will substantially increase its long-range ballistic missile forces. Instead of sacrificing arms control in the pursuit of nonproliferation, both interests could thus be advanced at the same time.

## ENDNOTES

1. National Missile Defense Act of 1999, Sec. 2, Public Law 106-38,

106<sup>th</sup> Congress.

2. *Ibid.*, Sec. 3.

3. Committee on an Assessment of Concepts and Systems for U.S. Boost-Phase Missile Defense in Comparison to Other Alternatives, National Research Council, "Making Sense of Ballistic Missile Defense," National Academy of Sciences, 2012 (hereinafter NAS committee report).

4. Philip E. Coyle, "Back to the Drawing Board: The Need for Sound Science In U.S. Missile Defense," *Arms Control Today*, January/February 2013.

5. Frank V. Pabian and Siegfried S. Hecker, "Contemplating a Third Nuclear Test in North Korea," *Bulletin of the Atomic Scientists* (web edition), August 6, 2012.

6. Korean Central News Agency, Statement of The National Defense Commission of the DPRK, January 24, 2013.

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8. The National Research Council Holds a Teleconference on Missile Defense Report," CQ Transcriptions, September 11, 2012.

9. Robert D. Walpole, Statement for the Record to the Senate Foreign Relations Committee on Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015, September 16, 1999.

10. See, for example: Lauren Gelfand and Alon Ben-David, "New Missile Marks 'Significant Leap' for Iran Capabilities," HIS Jane's, November 14, 2008, <http://www.janes.com/products/janes/defence-security-report.aspx?id=1065927438>.

11. E-mail exchange with author, January 22, 2013.

12. For an elaboration of this history, see: Greg Thielmann, "Strategic Missile Defense: A Threat to Future Nuclear Arms Reductions?" *ACA Threat Assessment Brief*, January 26, 2011.