

Background

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Nuclear Weapons Modernization Priorities After New START

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Abstract: *In a world of multiple nuclear powers, the U.S. government should exchange Cold War–style deterrence for a policy of “protecting and defending” the U.S. and its allies against nuclear attack. Pursuing such a policy will require both maintaining a credible nuclear posture, which is modernized to meet the strategic needs of the 21st century, and expanding and improving U.S. strategic defenses, including missile defenses. Regrettably, the President and Congress have been underfunding both. Two decades of neglect have left the U.S. with a nuclear triad of ICBMs, submarine-launched ballistic missiles, and bombers that are aging and not adapted to meeting the requirements of the “protect and defend strategy.” To maintain a credible deterrent, the U.S. must modernize its nuclear arsenal, which must include developing and testing new nuclear weapons.*

Even after the Cold War, when nuclear weapons no longer play the central role that they did in the confrontation between the Soviet Union and the United States, they continue to play an essential role in U.S. national security. The 2009 congressionally mandated Commission on the Strategic Posture of the United States (the Schlesinger–Perry Commission) concluded that “as long as other nations have nuclear weapons, the United States must continue to safeguard its security by maintaining an appropriately effective nuclear deterrent force.”¹ Yet the U.S. has been underfunding its nuclear weapons enterprise since the end of the Cold War, and U.S. capability to produce new warheads and delivery systems to meet new security

Talking Points

- The U.S. nuclear force has been aging since the end of the Cold War, while the nuclear weapons complex has been atrophying.
- At the same time, proliferation of nuclear weapons and the means to deliver them has increased.
- Accordingly, the U.S. needs to modernize both its arsenal and its weapons complex in order to adapt the U.S. nuclear deterrent to the changing world and improve its overall quality, including in ways the Obama Administration has been unwilling to support.
- In the current strategic environment, the U.S. posture should be based on the protect and defend approach. This includes deploying a robust ballistic missile defense capability to protect the U.S. homeland and its allies against ballistic missiles.

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requirements and fulfill new military missions has atrophied.

In April 2010, the Russian Federation and the United States signed the New Strategic Arms Reductions Treaty (New START). To secure U.S. Senate support for the treaty, the Obama Administration pledged to increase funding for the U.S. nuclear weapons enterprise. It is critical that the Obama Administration fulfill its promise to fund the nuclear weapons enterprise to keep the nuclear weapons arsenal safe, secure, and reliable in the future. Equally important, the Administration should lift the restrictions it has imposed on the nuclear weapons enterprise to bar qualitative improvements in the weapons.

Nuclear Weapons: Then and Today

The United States maintains a triad of nuclear weapons: intercontinental-range ballistic missiles (ICBMs), submarine-launched ballistic missiles (SLBMs), and bombers. During the Cold War, U.S. nuclear forces were designed to deter a Soviet attack by guaranteeing that the U.S. could retaliate by inflicting unacceptable damage on the aggressor. The United States also extended its nuclear umbrella to its allies in Europe and to South Korea and Japan, promising to retaliate if they were attacked. This assured allies regarding the U.S. commitment to their security and provided an effective alternative to developing nuclear weapons or significantly expanding their nuclear arsenals. The U.S. nuclear

weapons continue to serve this important nonproliferation role today.

During the Cold War, the United States developed a nuclear enterprise suited for retaliation-based deterrence. Accordingly, the U.S. nuclear forces needed to be able to inflict devastating damage even if the Soviet Union attacked first. An unfortunate byproduct of this policy was an arms race, during which both countries significantly expanded their arsenals. At the end of the Cold War, the Soviets had operationally deployed more than 11,000 strategic and about 20,000 short-range nuclear warheads.² The United States had deployed more than 12,000 strategic and about 6,000 short-range weapons.³

With nuclear weapons, quality is as important as quantity. During the Cold War, the United States replaced its weapons every 10 to 15 years.⁴ The U.S. defense industrial base could meet these requirements relatively quickly. For example, the government could deploy a new B-52 bomber seven years after its request.⁵ The program to develop the Minuteman ICBM started in February 1958, and the first Minuteman IA was operationally deployed three years later.⁶ The Minuteman III, which is still the backbone of the U.S. ground-based nuclear deterrent, was developed and deployed in about six years.⁷ The last Minuteman III was deployed in 1976, more than 30 years ago. In short, the U.S. nuclear weapons infrastructure was quite responsive to developments in the threat.

1. Congressional Commission on the Strategic Posture of the United States, *America's Strategic Posture: The Final Report of the Congressional Commission on the Strategic Posture of the United States*, United States Institute of Peace Press, May 6, 2009.
2. Natural Resources Defense Council, "Table of USSR/Russian Nuclear Warheads," November 25, 2002, at <http://www.nrdc.org/nuclear/nudb/datab10.asp> (May 5, 2011), and Amy F. Woolf, "Nonstrategic Nuclear Weapons," Congressional Research Service Report for Congress, February 2, 2001, p. 11, at <http://www.fas.org/sgp/crs/nuke/RL32572.pdf> (June 15, 2011).
3. Amy F. Woolf, "U.S. Strategic Nuclear Forces: Background, Developments, and Issues," Congressional Research Service Report for Congress, p. 3, March 10, 2011, at <http://www.fas.org/sgp/crs/nuke/RL33640.pdf> (June 15, 2011), and Woolf, "Nonstrategic Nuclear Weapons," p. 8.
4. Thomas Scheber, "Reliable Replacement Warheads: Perspectives and Issues," United States Nuclear Strategy Forum, August 2007, p. 5, at <http://www.nipp.org/Publication/Downloads/Publication%20Archive%20PDF/RRW%20final%20with%20foreword%207.30.07.pdf> (April 18, 2011).
5. Kennedy Hickman, "Cold War: B-52 Stratofortress," About.com, at <http://militaryhistory.about.com/od/militaryaircraft/p/b52.htm> (April 26, 2011).
6. Andreas Parsch, "Boeing SM-80/LGM-30 Minuteman," Directory of U.S. Military Rockets and Missiles, at <http://www.designation-systems.net/dusrm/m-30.html> (April 26, 2011).
7. U.S. Air Force, "Minuteman III ICBM," at http://www.hill.af.mil/library/factsheets/factsheet_print.asp?fsID=5720 (June 22, 2011).

Similarly, the first *Ohio*-class submarine, the only active U.S. submarine class armed with SLBMs, was deployed in 1981, about seven years after its development began.⁸ The U.S. nuclear scientists found technological solutions to challenges in nuclear war-

Currently, the average age of these delivery platforms is 41 years for the Minuteman III, 21 years for the Trident II D-5 SLBM, 50 years for the B-52H bomber, 14 years for the B-2 bomber, and 28 years for the Ohio-class submarine.

head design and the construction and maintenance of nuclear weapons. Billions of dollars were devoted to ensuring qualitative U.S. nuclear superiority, and careers in the nuclear weapons industry attracted “the best and the brightest” of the U.S. scientists.

With the end of the Cold War, the recognition of the importance of nuclear weapons to U.S. national security declined as did the funding.⁹ The United States produced its last nuclear warhead in 1989.¹⁰ The country has not designed a new bomber, ICBM, or ballistic missile submarine since then. Currently, the average age of these delivery platforms is 41 years for the Minuteman III, 21 years for the Trident II D-5 SLBM, 50 years for the B-52H bomber, 14 years for the B-2 bomber, and 28 years for the *Ohio*-class submarine. Two decades of neglect have made the U.S. nuclear weapons enterprise less responsive. Reconstituting the U.S. capability to produce nuclear weapons in a way that is responsive to the new requirements for deterrence in the post-Cold War

world and the emergence of new capabilities and threats will require a substantial increase in funding.

According to George H. Miller, Director of the Lawrence Livermore National Laboratory, budget constraints have “delayed production schedules; postponed important deliverables in science, technology, and engineering; delayed resolution of identified stockpile issues; and hindered efforts to develop modern and efficient manufacturing processes.”¹¹ Engineers and scientists working on these issues have retired, and national laboratories have restructured to accommodate the lack of interest in new nuclear weapons designs and technologies.

A series of post-Cold War incidents have underscored the atrophy of the nuclear weapons arsenal and what is now recognized to be insufficient attention within the U.S. Air Force to the requirements for the nuclear mission. In 2009, a B-52 bomber carrying six nuclear-tipped cruise missiles that were not properly accounted for flew over the territory of the United States.¹² So far, the most dangerous incident was presumably the Air Force’s October 2010 loss of communication with a squadron of 50 nuclear-armed Minuteman IIIs, which are one-ninth of the U.S. ground-based nuclear deterrent.¹³

Budget Responsibility for Nuclear Weapons

The Department of Defense (DOD) and the National Nuclear Security Administration (NNSA) in the Department of Energy (DOE) share responsibility for maintaining nuclear weapons.¹⁴ The NNSA’s mission is to maintain a nuclear stockpile

8. Federation of American Scientists, “SSBN-726 Ohio-Class FBM Submarines,” 2010, at http://www.fas.org/programs/ssp/man/uswpns/navy/submarines/ssbn726_ohio.html (April 26, 2011).

9. International Security Advisory Board, “Report on Discouraging a Cascade of Nuclear Weapons States,” October 17, 2007, p. 2, at <http://belfercenter.ksg.harvard.edu/files/ISAB%20-%20Nuclear%20Cascade%20Report.pdf> (November 22, 2010).

10. Bradley A. Thayer and Thomas M. Skypek, “The Perilous Future of U.S. Strategic Forces,” *The Journal of International Security Affairs*, No. 16 (Spring 2009), at <http://www.securityaffairs.org/issues/2009/16/thayer&skypek.php> (April 26, 2011).

11. George H. Miller, testimony before the Committee on Armed Services, U.S. Senate, July 15, 2010, p. 2, at <http://foreign.senate.gov/imo/media/doc/Miller.pdf> (June 21, 2011).

12. Josh White, “In Error, B-52 Flew over U.S. with Nuclear-Armed Missiles,” *The Washington Post*, September 6, 2007, at <http://www.washingtonpost.com/wp-dyn/content/article/2007/09/05/AR2007090500762.html> (April 25, 2011).

13. Matthew Foulger, “New START, Nuclear Modernization, and Command and Control,” *The Foundry*, November 18, 2010, at <http://blog.heritage.org/?p=46872> (April 25, 2011).

14. Office of the Deputy Assistant to the Secretary of Defense, *Nuclear Matters: A Practical Guide*, 2008, pp. 5.2, at <http://www.acq.osd.mil/nbcdp/nm/nmbook/chapters/ch5.htm> (April 26, 2011).

sufficient to ensure the safety, security, reliability, and military effectiveness of the nuclear arsenal. The NNSA's budget is a part of the DOE budget. The Defense Department and the military services are responsible for acquiring the delivery vehicles and operating the arsenal. The Navy is responsible for the submarines. The Air Force operates the bombers and ICBMs.

"[T]here is absolutely no way we can maintain a credible deterrent and reduce the number of weapons in our stockpile without either resorting to testing our stockpile or pursuing a modernization program."

The division of responsibility between the DOD and the DOE complicates the budget process in Congress. For example, some Members of the House of Representatives do not view the NNSA's accounts as part of the broader national security budget because they are funded through the appropriations bills for energy and water development and related agencies.¹⁵ Funding nuclear modernization projects through this committee is difficult because they compete against local projects, such as improving water quality and building dams essential for boosting local economies.

Nuclear Modernization and the New START Debate

Prior to New START's entry into force in February 2011, the Obama Administration promised to increase funding for the nuclear weapons enterprise. Under substantial pressure from the U.S. Senate, the Administration made this promise to secure votes for the Senate's advice and consent to the ratification of the treaty. Because congressional appropriators

attempted to condition the \$624 million increase in NNSA funding "upon the Senate giving its advice and consent," it remains to be seen whether Congress will support modernization on its own merits in the long term.¹⁶

The Administration committed to adding nearly \$600 million in funding for NNSA's weapons activities in the fiscal year (FY) 2012 budget and increasing nuclear weapons modernization funding by \$4.1 billion over the next five years above the level outlined by the report mandated by Section 1251 of the National Defense Authorization Act for Fiscal Year 2010. Congress received the report in May 2010 and proposes to spend more than \$85 billion for NNSA's weapons activities over the next decade.¹⁷

The Problems with President Obama's Modernization Plan

The Obama Administration's nuclear modernization plan has substantial problems, especially in the long-term funding for the U.S. nuclear weapons enterprise. It is essential that the United States develop and test new nuclear weapons for the 21st century, rather than rely on systems designed to respond to a massive Soviet nuclear weapons attack.

No Clear Commitment to Nuclear Modernization. Current U.S. policy is just to study options for ensuring the safety, security, and effectiveness of nuclear warheads on a case-by-case basis. The 2010 Nuclear Posture Review clearly states that it favors the Stockpile Management Program for extending the life of U.S. nuclear weapons over the development of new nuclear warheads or further nuclear testing.¹⁸ This appears to be a shift away from the 2008 position of outgoing Secretary of Defense Robert Gates, who stated "there is absolutely no way we can maintain a credible deterrent and reduce

15. Baker Spring, "The FY 2012 Defense Budget Proposal: Looking for Cuts in All the Wrong Places," Heritage Foundation Backgrounder No. 2541, April 5, 2011, at <http://www.heritage.org/Research/Reports/2011/04/The-FY-2012-Defense-Budget-Proposal-Looking-for-Cuts-in-All-the-Wrong-Places>.

16. Baker Spring, "The Illusory Linkage Between Nuclear Modernization and New START," The Foundry, December 21, 2010, at <http://blog.heritage.org/?p=48793> (April 25, 2011).

17. The White House, "An Enduring Commitment to the U.S. Nuclear Deterrent," November 17, 2010, at <http://www.whitehouse.gov/the-press-office/2010/11/17/fact-sheet-enduring-commitment-us-nuclear-deterrent> (April 25, 2011).

18. U.S. Department of Defense, "Nuclear Posture Review Report," April 2010, at <http://www.defense.gov/npr/docs/2010%20Nuclear%20Posture%20Review%20Report.pdf> (April 25, 2011).

the number of weapons in our stockpile without either resorting to testing our stockpile or pursuing a modernization program.”¹⁹ The plan to modernize delivery vehicles does not fare much better. Although studies for replacing bombers and ICBMs are underway, it is unclear when the United States will actually begin developing systems, especially in the current fiscal environment.²⁰

The Administration Cannot Guarantee Modernization. Furthermore, the Administration does not have the final say on how and at what levels the NNSA’s nuclear weapons program is funded. While the President proposes the budget to Congress, the Senate and House have the final say on appropriations. The President can only sign or veto the spending bill; he does not write it. Additionally, the proposed major increases in the nuclear modernization funding extend well beyond the term of this Administration and even the next Administration’s term.²¹ The current President cannot even propose, much less require, that future Congresses fund nuclear weapons modernization once he is out of office.

Defense Budget as a Source for Modernization. The Administration proposes to transfer \$4.6 billion through FY 2012 from the DOD budget to the NNSA.²² The department will also bear the costs of maintaining delivery vehicles; the costs of implementing New START, especially transferring, storing, and dismantling nuclear warheads and delivery vehicles and conducting the inspections required

under the treaty; and some of the costs of maintaining nuclear warheads. It is unclear how the department plans to fund the treaty’s implementation and which programs it will scale down to free up the necessary funds.²³ This shift will increase strain on an already overstretched military and comes in addition to the \$400 billion in defense cuts proposed by President Obama in April 2011.²⁴ Apparently, the defense budget is one of the few areas in which the President is willing to reduce spending.

The Changing Strategic Environment

After the Cold War, the threat of a major nuclear confrontation between the two superpowers has largely disappeared. This does not mean that the world has become a safer place—quite to the contrary. Proliferation of ballistic missile and nuclear weapons technologies is the most dangerous feature of today’s strategic environment. In addition, the United States remains largely unprotected against this threat.

Proliferation of Ballistic Missiles. Ballistic missile proliferation has been growing both qualitatively and quantitatively since the end of the Cold War. More than 30 countries in the world have ballistic missile technology.²⁵ Both U.S. allies and enemies work tirelessly to improve the accuracy, range, and delivery payload of their ballistic missiles.

Iran launched a satellite into orbit in 2009.²⁶ This is particularly worrying because the same technology used to place a satellite into orbit can essentially deliver a nuclear warhead to the United States,

19. Robert Gates, “Nuclear Weapons and Deterrence in the 21st Century,” Carnegie Endowment for International Peace, October 28, 2008, at http://www.carnegieendowment.org/files/1028_transcrip_gates_checked.pdf (April 25, 2011).

20. Stew Magnuson, “U.S. Studying Options for New Generation of ICBMs,” *National Defense*, April 13, 2011, at <http://www.nationaldefensemagazine.org/blog/Lists/Posts/Post.aspx?ID=373> (April 28, 2011).

21. The White House, “An Enduring Commitment to the U.S. Nuclear Deterrent.”

22. Robert M. Gates, statement before the Committee on Armed Services, U.S. Senate, June 17, 2010, at <http://armed-services.senate.gov/statemnt/2010/06%20June/Gates%2006-17-10.pdf> (April 25, 2011).

23. Baker Spring and Michaela Bendikova, “Congress Must Demand Details of New START Implementation,” Heritage Foundation *WebMemo* No. 3230, April 18, 2011, at <http://www.heritage.org/Research/Reports/2011/04/Congress-Must-Demand-Details-of-New-START-Implementation>.

24. Baker Spring, “President Obama’s Disconnect on the Defense Budget,” Heritage Foundation *WebMemo* No. 3226, April 15, 2011, at <http://www.heritage.org/Research/Reports/2011/04/President-Obamas-Disconnect-on-the-Defense-Budget>.

25. Anders Fogh Rasmussen, speech at the 11th Herzliya Conference, Herzliya, Israel, February 9, 2011, at http://www.nato.int/cps/en/natolive/opinions_70537.htm (April 27, 2011).

26. Lewis Page, “Iranian Rocket Puts Satellite into Orbit,” *The Register* (London), February 3, 2009, at http://www.theregister.co.uk/2009/02/03/iran_satellite_launch/ (April 27, 2011).

Europe, or anywhere in the world. Iran has been sharing advanced ballistic missile technologies with other rogue states and terrorist organizations, posing a direct threat to Israel, America's most important ally in the Middle East.²⁷

More than 30 countries in the world have ballistic missile technology.

Iran's ballistic missile program would not have advanced so quickly without the cooperation of North Korea. In January 2011, Secretary of Defense Gates stated that "North Korea is becoming a direct threat to the United States" and that North Korea will develop the capability to target the U.S. territory within the next five years.²⁸ This further strengthens the case for credible nuclear deterrent forces and ballistic missile defense to protect the United States and its allies if deterrence fails.

Proliferation of Nuclear Technologies. The increasing demand for nuclear power and uranium enrichment technology is also shaping the post-Cold War environment. The International Atomic Energy Agency (IAEA) regulates both because the technology to enrich uranium for nuclear reactors can also provide material for nuclear weapons. In the past, India, Pakistan, and North Korea developed their own nuclear weapons under the aegis of civilian nuclear programs.

Iran's nuclear weapons program is a major worry to the United States and could become an existential threat to U.S. allies and friends in the region. The IAEA is unable to determine whether Iran's nuclear

facilities are for civilian or military purposes. The latest IAEA report concluded that Iran is continuing to enrich uranium and is constructing an additional nuclear reactor.²⁹ Not even the latest round of U.S. sanctions has persuaded Iran to stop its nuclear program and increase its transparency.³⁰ In April 2011, the IAEA confirmed the international community's suspicions by announcing that the Israeli strike in 2007 destroyed a Syrian reactor designed to produce material for nuclear weapons.³¹

These unsettling events have sparked concern around the world. The United States cannot afford to overlook the growing proliferation concerns of U.S. allies and friends because the U.S. has provided direct security guarantees to many of them.

President's Flawed Approach to National Security. President Obama's declared policy of nuclear disarmament stipulates that arms control is the holistic solution to nuclear security. In the current proliferated environment, this approach is wrongheaded for many reasons. The President's commitment to nuclear disarmament does not appear to be based on any particular concept of deterrence. It just assumes that, if the United States reduces its number of nuclear weapons, other countries will follow. However, nothing can be further from reality. Since the Cold War, the United States and Russia have eliminated more than 80 percent of their arsenals of strategic nuclear weapons, but India, Pakistan, and North Korea have tested nuclear weapons. In addition, the smaller the U.S. nuclear arsenal, the more attractive it is to existing and even future nuclear players, especially China, to attempt to achieve nuclear parity with the United States.

27. Yossi Melman and Hagar Mizrahi, "Iran Providing Hamas with Smuggle-Ready Rockets, Says IDF," *Haaretz*, April 15, 2011, at <http://www.haaretz.com/print-edition/news/haaretz-wikileaks-exclusive-iran-providing-hamas-with-smuggle-ready-rockets-says-idf-1.356049> (April 27, 2011).

28. Phil Stewart, "U.S. Sees North Korea Becoming Direct Threat, Eyes ICBMs," Reuters, January 11, 2011, at <http://www.reuters.com/article/2011/01/11/us-usa-korea-gates-idUSTRE70A1XR20110111> (April 27, 2011).

29. Richard Weitz, "Getting Ever Closer: Iran's Nuclear Program Keeps on Coming," Second Line of Defense, March 10, 2011, at <http://www.sldinfo.com/?p=16696> (April 28, 2011).

30. "Iran's Nuclear Program," *The New York Times*, January 18, 2011, at http://topics.nytimes.com/top/news/international/countriesandterritories/iran/nuclear_program/index.html (April 28, 2011).

31. Associated Press, "Syria Secretly Tried to Build Nuclear Reactor, UN Watchdog Says," *Haaretz*, April 28, 2011, at <http://www.haaretz.com/news/international/syria-secretly-tried-to-build-nuclear-reactor-un-watchdog-says-1.358650> (April 28, 2011).

U.S. Strategic Posture in the New Environment

In a world of multiple independent nuclear powers, the proper concept of deterrence is for the federal government to seek to protect and defend the United States and its allies.³² Would-be adversaries must be convinced that any attempted strategic attacks will fail to achieve their political and military purposes. This is essential because the United States cannot depend on the deterrent effect of retaliatory threats against at least some new nuclear-armed states and must account for the greater confusion and complexity stemming from a proliferated setting.

In the current strategic environment, the U.S. posture should be based on the protect and defend approach. This includes deploying a robust ballistic missile defense capability to protect the U.S. homeland and its allies against ballistic missiles. In addition, the Administration needs to take steps to ensure that the U.S. nuclear weapons arsenal is safe, secure, reliable, and, most particularly, militarily effective in holding at risk the means of strategic attack on the U.S. and its allies. Specifically, the U.S. should:

- **Move away from retaliation-based deterrence.** It is essential for the United States to move away from the Cold War retaliation-based deterrence in which the threat of a devastating nuclear counterattack was the basis for preventing nuclear war. Just like during the Cold War, there is always a possibility that deterrence will fail. If this happens, the United States needs to be prepared to defend itself and its allies because consequences of a successful attack would be disastrous. Ballistic missile defense deployments are particularly

attractive because they provide the President with an alternative to using nuclear weapons in the crisis.

- **Preserve the nuclear triad.** The U.S. Congress needs to focus on preserving the strategic triad which has been essential to U.S. deterrence for decades.³³ This is unlikely to change. U.S. ICBMs increase an adversary's risks of launching a nuclear attack against the United States.³⁴ SLBMs are the most difficult to track and the most survivable leg of the triad.³⁵ Apart from their capability to carry out a vast array of conventional missions, U.S. strategic bombers are valued for their survivability and the ability to be recalled.³⁶ Only a thoroughly modernized combination of nuclear warheads and delivery systems will ensure a reliable nuclear capability. The targeting requirements under the changing strategic environment should hold at risk all the means of nuclear attack of potential U.S. adversaries. This is a departure from the Cold War approach to deterrence where the main population centers and economic infrastructure were key targets. This change is necessary because the United States faces more uncertainty on the identities of its possible future adversaries.
- **Recognize that other countries are not timid.** Of all the nuclear powers, only the United States is not modernizing its arsenal or developing new weapons. The Russian Federation is capable of adding two strategic bombers to its arsenal every three years.³⁷ Yet the United States unreasonably restrains its nuclear modernization programs. Current U.S. policy is to not conduct nuclear weapons testing, develop new nuclear warheads,

32. Baker Spring, "An Alternative to New START," Heritage Foundation *Background* No. 5471, September 21, 2010, at <http://www.heritage.org/research/reports/2010/09/an-alternative-to-new-start>.

33. Baker Spring, "Rocket Modernization Roadmap Needed Before New START Vote," The Foundry, December 16, 2010, at <http://blog.heritage.org/?p=48473>.

34. Adam B. Lowther, "Should the United States Maintain the Nuclear Triad?" *Air and Space Power Journal*, Summer 2010, at <http://www.airpower.maxwell.af.mil/airchronicles/apj/apj10/sum10/04lowther.html> (April 29, 2011).

35. Lieutenant Colonel William D. Siuru, Jr., "SLBM—The Navy's Contribution to Triad," 2008, at http://www.tonyrogers.com/weapons/navy_slbm_triad.htm (April 29, 2011).

36. Amy F. Woolf, "Strategic Nuclear Forces: Background, Developments, and Issues," Congressional Research Service *Report for Congress*, May 4, 2011, p. 6, at <http://www.fas.org/srgp/crs/nuke/RL33640.pdf> (April 29, 2011).

37. Thayer and Skyppek: "The Perilous Future of U.S. Strategic Forces."

support new military missions, or provide for new military capabilities.³⁸ The Administration needs to take steps to develop new delivery systems and nuclear warheads to replace old, expensive, and high-yield nuclear weapons based on Cold War targeting requirements.

- **Expand the U.S. missile defenses.** The most effective way to counter the ballistic missile threat is to increase funding for the research, development, and deployment of the ballistic missile defense system. While President Obama's FY 2012 missile defense budget request is \$800 million higher than the FY 2011 budget, it is still not sufficient to keep pace with the growing threat and to offset cuts that President Obama made in his first year in office.³⁹ The Administration should rapidly move to develop and deploy space-based interceptors, which are the most cost-efficient and cost-effective way to protect the U.S. homeland and its allies against ballistic missiles of all ranges.⁴⁰ In addition, the United States should deploy Aegis sea-based missile defenses and their land-based counterpart (Aegis Ashore) to counter strategic missiles well before the current target date of 2020.⁴¹
- **Resume testing nuclear weapons as necessary.** It is essential that the United States test its nuclear weapons to meet new military requirements. The reliability of the U.S. nuclear weapons directly depends on the U.S. retaining the option to conduct explosive tests of its weapons.⁴² It would be unwise for the United States to ratify the Comprehensive Test Ban Treaty (CTBT), which would ban nuclear weapons testing under present and projected circumstances. Substantial reduc-

tions of the U.S. and the Soviet/Russian nuclear weapons since the end of the Cold War were not enough to persuade leaders of other countries to give up their nuclear ambitions. The expectation that U.S. ratification of the CTBT will convince them otherwise is simply unrealistic.

Conclusion

History shows that miscalculation has led to more wars than any other reason. For this reason, the United States needs to preserve the credibility of its nuclear deterrence. However, deterrence cannot be separated from plausible military plans and missions for nuclear weapons. The United States needs to be prepared if deterrence fails. As The Heritage Foundation's nuclear gaming exercise shows, ballistic missile defenses create conditions under which arms control and nonproliferation policy remain compatible.⁴³ Pursuing arms control without defending the United States and its allies creates instability and increases the chances of conflict. The Administration and Congress need to cooperate to provide for the U.S. nuclear weapons enterprise and to build new weapon systems to address the growing spectrum of threats in the current strategic environment.

The New START Implementation Act (H.R. 1750), introduced by Representative Michael Turner (R-OH), provisions of which have been incorporated into the National Defense Authorization Act for Fiscal Year 2012 (H.R. 1540), proposes an approach for sustaining funding for the U.S. nuclear weapons arsenal. The legislation would establish an operational link between modernization of the U.S. strategic arsenal and New START implementation

38. U.S. Department of Defense, "Nuclear Posture Review Report," pp. xiv.

39. Spring, "The FY 2012 Defense Budget Proposal."

40. Independent Working Group, "Missile Defense, the Space Relationship, & the Twenty-First Century," Institute for Foreign Policy Analysis, 2009, at <http://www.ifpa.org/pdf/IWG2009.pdf> (April 29, 2011).

41. Baker Spring, "Sea-Based Missile Defense Test Success a Major Step Forward," The Foundry, April 15, 2011, at <http://blog.heritage.org/2011/04/15/sea-based-missile-defense-test-success-a-major-step-forward/> (April 28, 2011).

42. C. Paul Robinson, testimony before the Subcommittee on Strategic Forces, Committee on Armed Services, U.S. House of Representatives, June 17, 2008 at http://www.nuclearfiles.org/menu/key-issues/nuclear-weapons/issues/policy/us-nuclear-policy/expenditures/Robinson_Testimony071708%5B1%5D.pdf (April 29, 2011).

43. Nuclear Stability Working Group, "Nuclear Games II: An Exercise in Examining the Dynamic of Missile Defenses and Arms Control in a Proliferated World," Heritage Foundation *Special Report* No. 83, at <http://www.heritage.org/research/reports/2010/07/nuclear-games-ii-an-exercise-in-examining-the-dynamic-of-missile-defenses-and-arms-control>.

so that the reduction in the numbers of U.S. strategic nuclear weapons under New START may proceed only in tandem with modernization.

It is essential for Congress to affirm its commitment to the U.S. nuclear weapons enterprise and protection of the U.S., its allies, and its forward-deployed troops.

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