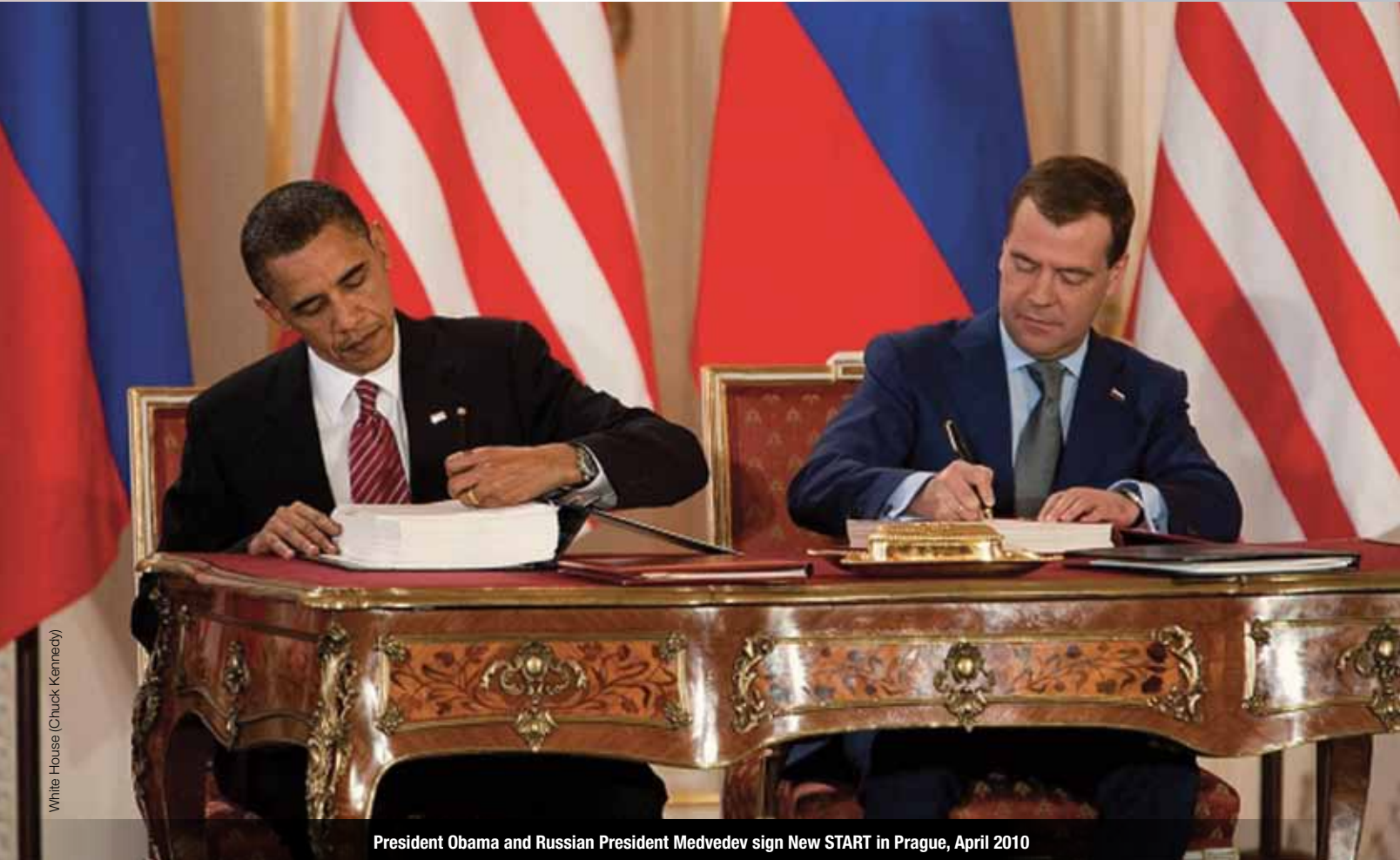


# Matrix OF Nonlinearity

Minimum Deterrence, Missile Defenses, and Nuclear Arms Reductions



White House (Chuck Kennedy)

President Obama and Russian President Medvedev sign New START in Prague, April 2010

By **STEPHEN J. CIMBALA**

**T**he strategic nuclear arms reductions of the Cold War era may have been procedurally painstaking, but they took place in a relatively uncomplicated technology and policy world compared to now. The New Strategic Arms Reduction Treaty (START), which entered into force in February 2010, is a possible bridge between the *sitzkrieg* era of nuclear superpower arms control and the more demanding requirements of the early 21<sup>st</sup> century. The context for post-New START is highly embedded in national security policy complexity, including:

- the possible, but uncertain, continuation of the “reset” in U.S.-Russian political relations
- U.S. interest in maintaining Russian political support for North Atlantic Treaty Organization (NATO) diplomatic and military actions in Afghanistan, and Russian-American convergent interests on the issue of preventing terrorism

■ Russia's declared intention to modernize its conventional and nuclear armed forces, including drastic reforms in conventional force structure and operations designed to leave behind the mass mobilization and conscript-based military of the past in favor of a smaller, more professional, and more deployable force

■ Russia's 2010 military doctrine that leaves the United States and NATO among the placeholders for threat assessment, but without attributing to either a proximate menace, while acknowledging that the threat of global or major coalition war is less immediate than that of local wars and unconventional conflicts.

Even within the narrower spectrum of arms control per se, as between Russia and its arms control interlocutors, there is no obvious or uncontested next step after New START. On one hand, prominent experts, including former Russian and American foreign policy officials, have urged a speedup in implementing the New START reductions, perhaps by as much as 4 years ahead of the agreed treaty schedule.<sup>1</sup> In addition, the Obama administration has already directed the Department of Defense (DOD) to consider the feasibility of additional reductions below New START levels.<sup>2</sup> On the other hand, some American politicians might be leery about revisiting the spirited New START ratification debates in a post-New START framework any time soon.

U.S. and NATO plans to deploy missile defenses in Europe increase the uncertainties related to post-New START reductions in long-range offensive nuclear weapons and launchers. The Obama administration plan for future ballistic missile defense (BMD) deployments in Europe, although less provocative to the Kremlin than the earlier proposal by George W. Bush, roiled the debate over New START and promises to figure into any post-New START negotiations.<sup>3</sup> On the other hand, NATO and Russia in March 2011 began high-level talks on possible cooperation in developing and operating a European regional missile defense system.<sup>4</sup> Can a possible path to minimum deterrence, based on post-New START reductions in offensive nuclear weapons, coexist peacefully with joint or singular missile defense deployments in Europe by NATO and Russia? This article considers some of the political and military backdrop

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### *minimum deterrence might be acceptable to military planners who want to maintain a viable U.S. nuclear deterrent at an acceptable cost*

for any transition to a post-New START regime of minimum deterrence by the United States and Russia compared to the currently shrink-wrapped version of assured destruction or assured retaliation. Second, it analyzes whether a minimum deterrence regime at either of two levels could provide for U.S. and Russian nuclear security and deterrence stability. Third, it discusses how defenses might complicate the picture of offensive force reductions as described.

#### **Everything Old Is New Again**

The idea of minimum deterrence has caught fire among civilian and military policy analysts and other close students of nuclear arms control. Minimum deterrence might seem an acceptable alternative to the more utopian construct of nuclear abolition, endorsed in principle by President Barack Obama and a number of leading former policymakers and military commanders. Minimum deterrence might also be acceptable to military planners who want to maintain a viable U.S. nuclear deterrent at an acceptable cost. In addition, experts on nuclear nonproliferation might favor minimum deterrence as a way station toward multilateral nuclear arms reductions and further measures of cooperative threat reduction, as among nuclear weapons states as well as nuclear-threshold or nuclear aspiring powers.<sup>5</sup>

However, discussion of minimum deterrence can bring participants into the land of mystery and confusion, unless the discussion is disciplined by political and military-strategic clarity. A nuclear deterrent force can be described as “minimum” or “maximum” depending on the security dilemmas facing various states, including their expectations about probable opponents' security objectives, military capabilities, and decisionmaking styles. Pakistan, Great Britain, and Israel are all regarded as nuclear weapons states, but their perceived security dilemmas, expectations about deterrence requirements, and decisionmaking patterns vary markedly. Minimum deterrence is not one remedy that fits all states, but a conceptual framework

that could induce helpful expectations about deterrence stability and security cooperation, given favorable political winds. From the same perspective, the “adequacy” of a minimum or larger deterrent cannot be defined by numbers of weapons alone, but by the political and military-strategic context within which they might be used—for deterrence or otherwise.

Defining minimum deterrence for a plurality of worlds poses a potentially open-ended research agenda. The present international system, or possible iterations of it during the first quarter of the 21<sup>st</sup> century, offers a sufficient number of uncertainties and unknowns to challenge theorists and planners. What might minimum nuclear deterrence mean in the present and near term,



U.S. Air Force (Angelina Drake)

Ground-based interceptor is launched from Vandenberg Air Force Base during test of ground-based interceptor system

given the inexorable weight of precedent on policymakers and on their available options? How viable might any minimum deterrence regime be, even if agreed to by the leading nuclear weapons states or all of them?

**Definitions and Measurements**

The meaning of *minimum* deterrence is not necessarily obvious without having addressed the question, “Compared to what?” Nuclear strategists would probably agree that minimum deterrence lies somewhere between assured destruction, as emphasized during Cold War discussions about nuclear strategy, and nuclear abolition. Exactly where is more debatable. At least four kinds of variables are in play in classifying nuclear strategies:

- political and military objectives for which forces are tasked
- specifics of nuclear targeting plans, related to retaliatory objectives but not necessarily reflecting the actual intent of policymakers
- numbers of weapons and launchers deployed and their assumed rates of survivability against first or later strikes
- command and control systems and operational protocols of the state’s nuclear forces including their dependency on high states of alert or prompt launch for survivability.

During the high Cold War, this might have led to a spectrum of possible nuclear deterrent strategies as summarized below.

The table cannot capture all the nuances or possible variations within and among these three kinds of strategies. In addition, states’ declaratory strategies are not always consistent with their operational policies.<sup>6</sup> But the table illustrates some of the qualitative and quantitative points of similarity and difference among these kinds of generic nuclear strategies.

For present purposes, minimum deterrence in today’s world implies that U.S. and Russian arsenals would be limited to a maximum of 1,000 operationally deployed strategic nuclear weapons, or fewer if possible. “Fewer if possible” means that for Washington and Moscow to go below 1,000 deployed weapons on transoceanic or intercontinental launchers, other acknowledged nuclear weapons states would have to commit to proportional reductions and/or limitations. Substrategic nuclear weapons, including tactical or operational weapons deployed on land or at sea or air delivered, have both political and military-operational contexts requiring separate discussion. There is certainly the possibility that, in any multilateral, constrained nuclear proliferation regime, some weapons of medium or intermediate range might have to be included as “strategic”



U.S. Navy  
Missile launched from Japanese Maritime Self-Defense Force destroyer successfully intercepted ballistic missile target fired from Hawaii

*minimum deterrence in today’s world implies that U.S. and Russian arsenals would be limited to a maximum of 1,000 operationally deployed strategic nuclear weapons*

Attributes of Generic Nuclear Deterrence Strategies			
	Counterforce-warfightin	Assured destruction	Minimum deterrence
Objectives and targeting	Victory or “prevailing” in a protracted conflict by imposing escalation dominance on the opponent at any phase	Inflicting retali tory strikes sufficient to impose “unacceptable” damage on any attacker, including its remaining forces; command, control, and communications (C <sup>3</sup> ); industry; and population	Imposing unacceptable damage to the attacker’s society and civilian population and/or national infrastructure, although with forces less than those required for assured destruction
Numbers of weapons launchers required	Numbers of survivable weapons capable of attacking or holding at risk military, C <sup>3</sup> , industry, and population targets, if necessary through phases of a protracted war. May also require antimissile defenses for protecting population and/or forces. Requires numbers of deployed warheads in the thousands, well above the threshold for assured destruction.	Numbers of survivable weapons capable of attacking military, C <sup>3</sup> , industry, and population targets and inflicting “unacceptable” damage. Allows for flexible targeting but does not envision fighting a protracted nu lear war to a successful conclusion. Requires numbers of deployed warheads in the thousands, fewer than required for counterforce-warfighting str tegies.	Numbers of survivable weapons sufficient to destr y major infrastructure and the sinews of a modern national economy, while not necessarily emphasizing the destruction of urban-industrial areas, but also not necessarily guaranteeing “city avoidance.” Requires numbers of deployed warheads in the hundreds.
Command-control and alert-launch protocols	Political and military C <sup>3</sup> must be not only survivable against initial attacks but enduring through various phases of a protracted conflict Some proportion of the force will be on hair trigger alert even in peacetime.	Political and military C <sup>3</sup> must be survivable for second-strike retaliation and for postattack negotiation for war termination. No forces on high alert required in peacetime but not precluded either.	Political and military C <sup>3</sup> must be survivable for second-strike retaliation. No forces on high alert in peacetime.

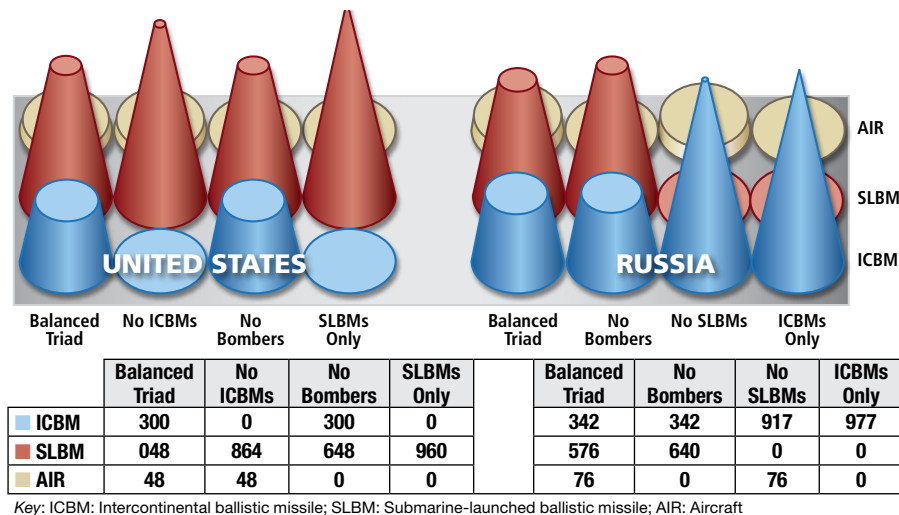
Sources: Author. See also Robert Jervis, *The Meaning of the Nuclear Revolution: Statecraft and the Prospect of Armageddon* (Ithaca: Cornell University Press, 1989), 74–106; Scott D. Sagan, *Moving Targets: Nuclear Strategy and National Security* (Princeton: Princeton University Press, 1989), esp. 58–97; Desmond Ball, “The Development of the SLOP, 1960–1983,” in *Strategic Nuclear Targeting*, ed. Desmond Ball and Jeffrey Richelson (Ithaca: Cornell University Press, 1986), 57–83; Robert Jervis, *The Illogic of American Nuclear Strategy* (Ithaca: Cornell University Press, 1984), esp. chapters 3 and 4; and Desmond Ball, “U.S. Strategic Forces: How Would They Be Used?” in *Strategy and Nuclear Deterrence*, ed. Steven E. Miller (Princeton: Princeton University Press, 1984), 215–244.

based on their potential effects against likely regional adversaries.

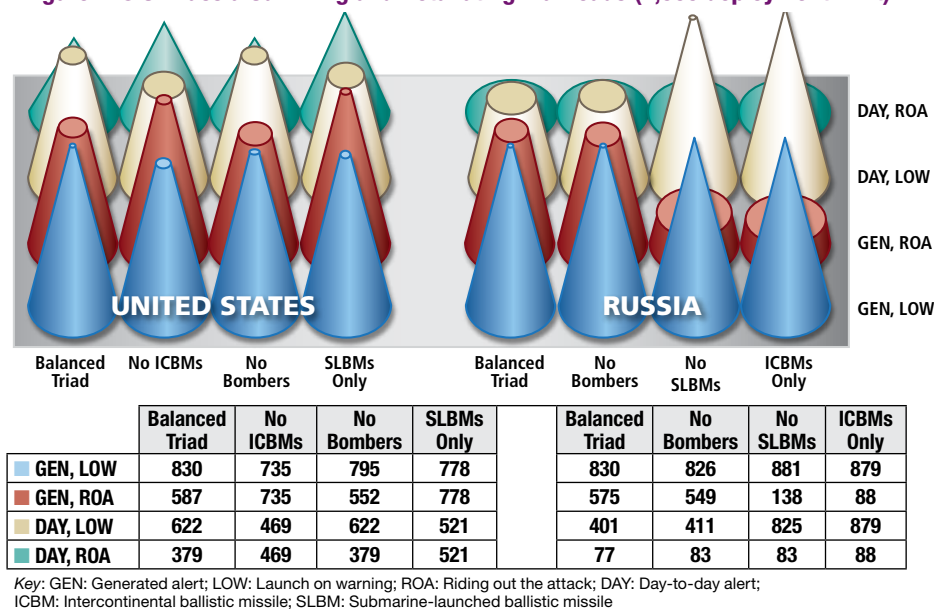
The figures that follow permit us to examine the deterrence stability of two minimum deterrence regimes.<sup>7</sup> In the first case, U.S. and Russian strategic nuclear forces are limited to a maximum of 1,000 operationally deployed weapons for each state. In the second case, a lower limit of 500 operationally deployed weapons is imposed on each. For these larger and smaller minimum deterrent forces, we calculate their expected numbers of second strike surviving and retaliating warheads under four operational options of alertness and launch protocols: generated alert and launch on warning; generated alert, riding out the attack, and retaliating; day-to-day alert and launch on warning; and day-to-day alert and riding out the attack. One might anticipate that, in general, the numbers of surviving and retaliating warheads would diminish as we proceed from the first to fourth option, but that progression is not necessarily automatic, depending on the specific circumstances of attack and response. In addition, for purposes of comparison, each state's 1,000 or 500 maximum deployed forces are deployed with four alternative force structures: for the United States, these include a balanced triad of intercontinental ballistic missiles (ICBMs), submarine-launched ballistic missiles (SLBMs), and bomber delivered weapons; a dyad of SLBMs and bombers without land-based missiles; a dyad of ICBMs and SLBMs without bombers; and a force made up entirely of SLBMs. For Russia, the alternative force structures include a triad of land- and sea-based missiles and bombers; a dyad of land- and sea-based missiles; a dyad of land-based missiles and bombers; and a force composed entirely of ICBMs. (Although triads might seem to have been decided upon by both states as their preferred configurations, Russia's current and prospective force modernization problems, as well as U.S. current and foreseeable deficits, make the consideration of alternative force structures more than a heuristic exercise.)

The results of this analysis appear in figures 1 and 2. Figure 1 shows the strategic nuclear retaliatory forces of Russia and the United States under a maximum limit of 1,000 deployed weapons for each state. Figure 2 summarizes the numbers of second strike surviving and retaliating warheads for the United States and Russia, under each of the operational conditions listed above, for the case of

**Figure 1. U.S.-Russia Total Strategic Weapons (1,000 deployment limit)**



**Figure 2. U.S.-Russia Surviving and Retaliating Warheads (1,000 deployment limit)**



**Figure 3. U.S.-Russia Total Strategic Weapons (500 deployment limit)**

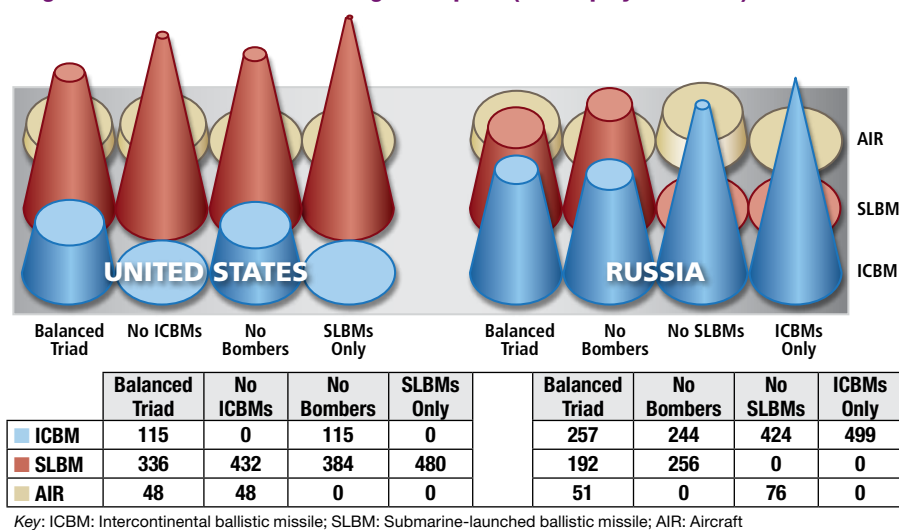
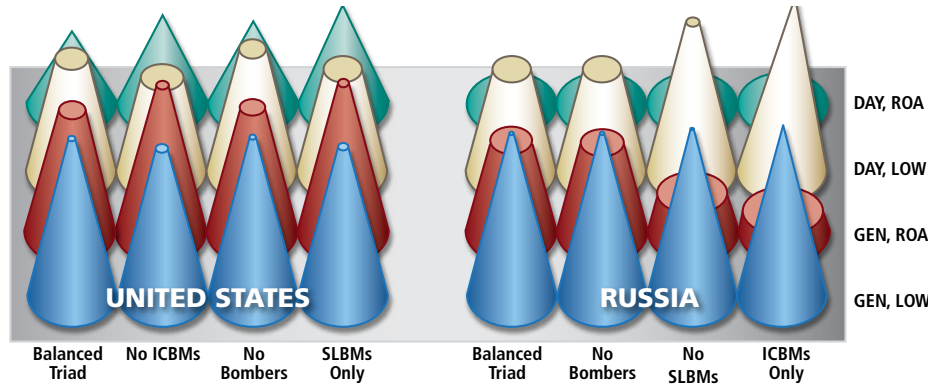


Figure 4. U.S.-Russia Surviving and Retaliating Warheads (500 deployment limit)



	Balanced Triad	No ICBMs	No Bombers	SLBMs Only		Balanced Triad	No Bombers	No SLBMs	ICBMs Only
GEN, LOW	411	385	415	389		424	427	437	449
GEN, ROA	318	385	321	389		238	229	94	45
DAY, LOW	286	234	312	260		262	261	382	449
DAY, ROA	193	234	219	260		39	43	38	45

Key: GEN: Generated alert; LOW: Launch on warning; ROA: Riding out the attack; DAY: Day-to-day alert; ICBM: Intercontinental ballistic missile; SLBM: Submarine-launched ballistic missile

1,000 maximum deployed weapons for each country. Figure 3 shows the peacetime forces of each state under a lower maximum limit of 500 deployed weapons, and figure 4 provides information equivalent to that summarized in figure 2, but for the more restrictive case in which maximum deployments are capped at 500 weapons for each.

The results summarized in figures 2 and 4 show that either the 1,000 maximum-minimum deterrence regime or the 500 maximum alternative provides for sufficient numbers of second strike surviving and retaliating warheads to guarantee unacceptable retaliation under each of four operational conditions. Russian and American forces provide for several hundred retaliating weapons under a deployment limit of 1,000 with the exception of Russian forces under the “day-to-day alert, riding out the attack” configuration. However, under the conditions of any political crisis in which the United States and Russia were actually considering the use of nuclear weapons, both states’ forces would doubtless be raised to higher alert levels and/or poised for prompt instead of delayed launch. In the canonical case often used for analysis (but

not necessarily reflecting the likelihood of actual operations), either Russia or the United States, under conditions of “generated alert, riding out the attack” could provide for some hundreds of retaliating weapons across various force postures. When the prewar deployed forces are reduced to a maximum of 500 weapons, each state still retains enough second strike retaliatory power to inflict socially and politically unacceptable damage regardless of the force posture or condition of operational readiness.

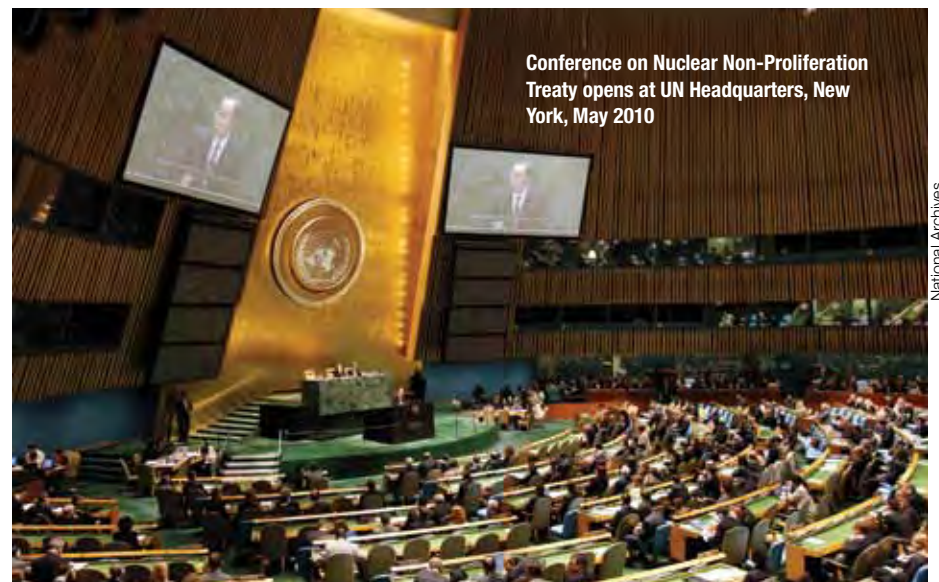
**Missile Defenses—Again**

The preceding figures are necessarily hypothetical outcomes for nuclear force exchanges under each of the two regimes.

However, proposals to reduce U.S. or Russian forces to these post-New START levels may fail in politics despite the claims of analysts. One of the obvious speed bumps for Russia is the revised U.S. plan to deploy phased adaptive missile defenses in Europe.<sup>8</sup> Russian leaders have insisted that they must be involved in U.S. and NATO missile defense planning, deployments, and operations. During the NATO-Russia Summit in Lisbon in November 2010, Russian President Dmitry Medvedev agreed to future talks with NATO about joint missile defense deployments. In February 2011, Medvedev appointed Russian ambassador to NATO Dmitri Rogozin as the special presidential envoy for missile defense, adding to the presumed diplomatic status of the issue.<sup>9</sup> On the other hand, both Medvedev and Russian Prime Minister Vladimir Putin warned in November 2010 that any U.S.-NATO European missile defense plan that excluded Russia could lead to a nuclear arms race, including new deployments by Russia of offensive nuclear weapons and “strike forces.”<sup>10</sup>

Russia’s objections to U.S. missile defenses deployed in Europe under the NATO aegis have more to do with politics than with the logic of nuclear deterrence.<sup>11</sup> The inferiority of Russia’s conventional forces to those of NATO makes Russia more reliant on its nuclear forces for missions other than deterrence of a U.S. or NATO nuclear first strike. Russia’s military doctrine allows for the first use of nuclear weapons by Russia in a conventional war that includes attacks near Russia’s periphery or into Russia’s state territory with the potential to jeopardize its vital interests

*Russian leaders have insisted that they must be involved in U.S. and NATO missile defense planning, deployments, and operations*



Conference on Nuclear Non-Proliferation Treaty opens at UN Headquarters, New York, May 2010

National Archives

*it can be argued that deploying U.S.–NATO or Russian missile defenses is necessary to help deter or defeat attacks from nuclear hostiles such as Iran or North Korea*

and sovereignty.<sup>12</sup> Russia in particular fears NATO capabilities for conventional deep strike missions and the Alliance's relative superiority in information-based technologies for conventional warfare. However improbable or illogical these Russian concerns might seem from a U.S. or NATO perspective, Russia's sense of conventional military inferiority invites its military planners to fill in the gap with its nonstrategic nuclear weapons for deterrence and escalation control.

Politics as well as military art also dictate that Russia hold fast to its image of strategic nuclear parity with the United States. This perception of Russia and the United States sharing a singularity in strategic nuclear capabilities compared to other powers carries political overbite for Russian negotiators in various international forums and provides Russia a toehold on great power military status. Russia's sensitivities about U.S. missile defenses are as much about this perception of Russian-American strategic nuclear equivalence regardless of military-technical realities. Thus, fears expressed by Russia's politicians and military divas about a creeping U.S. nuclear first strike capability are not based on realistic perceptions of American intentions. Instead, these sentiments perform two functions in Russian domestic politics. First, the Russian general staff can continue to use NATO and the United States as bell ringers in threat assessments. Second, NATO-centric threat assessments help to forestall the transition from a

mass mobilization army based on conscripts to a professional army, the latter structured around brigades manned with voluntary contract soldiers and trained for rapid deployment into hybrid wars with conventional and/or unconventional features.

Politics excepted, are Russian concerns about future NATO missile defense capabilities entirely self-serving? By the last phase of Obama's European missile defense plan in 2020, U.S. BMD technology will presumably have improved over present models. Fourth-generation SM-3 interceptors and supporting command, control, communications (C<sup>3</sup>), computers, intelligence, surveillance, and reconnaissance could conceivably have some intercept capabilities against intercontinental missiles launched from Russia or elsewhere, especially if the missile defense launchers were widely deployed across terrestrial and maritime space. On the other hand, whether the Obama plan provides "game changing" missile defenses depends upon Russia's fulfillment of its offensive missile modernization plans, including possible countermeasures against defenses. An additional complication is that futuristic antimissile defenses will have some commonality with technologies also contributory to air defenses against bomber attack. Further uncertainty exists in the politics of NATO decisionmaking with respect to which member states will host missile interceptors or other components of the regional missile defense system—with the possibility that those hosts



U.S. Army (Lawree Roscoe Washington, Jr.)

**Soldier trains Polish servicemembers to maintain Patriot missile system during first-ever rotational training program held in Poland**

will feel Russian pressure or even threats of targeting by Russian nuclear forces.

It can be argued that deploying U.S.–NATO or Russian missile defenses is necessary to help deter or defeat attacks from nuclear hostiles such as Iran or North Korea. Defenses can provide insurance against the consequences of light attacks, although those same technologies could not preclude an American or Russian second strike, thereby leaving a mutual deterrence relationship between Washington and Moscow intact. Devils remain in the details, including whether a Euro-zone BMD would be managed and operated as a unified structure with NATO and Russian substations, or as a collaborative endeavor with shared early warning and launch detection systems but separately operated NATO and Russian C<sup>3</sup> and launch decisions. Whether politically fused or decentralized, a Euro-zone missile defense system based on NATO-Russian partnership invites hubristic proposals from software consultants.

A U.S.-Russian minimum deterrence regime with a maximum of 1,000 or 500 deployed long-range nuclear warheads could certainly provide for adequate numbers of surviving and retaliating weapons to ensure

**Admiral Mullen meets with South Korean defense officials in Seoul to confirm strength of U.S.–South Korea alliance during tensions with North Korea**



U.S. Navy (Chad J. McNeelley)



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## FEATURES | Matrix of Nonlinearity

deterrence and crisis stability. If political relations between the two states continue to improve, the probability increases for an agreed minimum deterrence standard that becomes the new benchmark for bilateral negotiations (and, perhaps, for multilateral excursions into strategic nuclear force reductions or arms limitations). On the other hand, the overlap of minimum deterrence and missile defenses is sufficiently complicated to keep NATO and Russian arms control negotiators engaged in continued technical and political skirmishing. Additional nonlinearity in the post–New START arms control equation will be introduced by U.S. interest in reducing the numbers of nonstrategic nuclear weapons deployed in Europe and by Russia's equally strong interest in rearranging the Treaty on Conventional Forces in Europe in view of its conventional military inferiority relative to NATO. **JFQ**

### NOTES

<sup>1</sup> For example, see Scott Sagan, "After the Nuclear Posture Review: Obama's disarming influence," *Bulletin of the Atomic Scientists*, April 19, 2011, available at <[www.thebulletin.org/print/web-edition/features/-after-the-nuclear-posture-review](http://www.thebulletin.org/print/web-edition/features/-after-the-nuclear-posture-review)>; Robert Bridge, "Albright and Ivanov make the case for early US-Russian strategic arms cuts," April 8, 2011, available at <<http://rt.com/politics/russia-america-albright-ivanov-start/>>.

<sup>2</sup> See "Pentagon Studying Additional Nuke Reductions," *Global Security Newswire*, March 23, 2011, available at <[http://gsn.nti.org/siteservices/print\\_friendly.php](http://gsn.nti.org/siteservices/print_friendly.php)>.

<sup>3</sup> On current and prospective U.S. missile defense programs, see Unclassified Statement of Lieutenant General Patrick J. O'Reilly, Director, Missile Defense Agency, before the House Armed Services Committee (HASC), Subcommittee on Strategic Forces, Regarding the *Fiscal Year 2011 Missile Defense Programs* (Washington, DC: HASC, April 15, 2010). Arguments for a more ambitious program in missile defenses than the Obama plan appear in James Jay Carafano, "Resetting Missile Defenses," available at <[www.fpri.org/enotes/201104.carafano.missiledefense.html](http://www.fpri.org/enotes/201104.carafano.missiledefense.html)>.

<sup>4</sup> See, for example, "Russia, EU should set up expert group for missile shield talks," April 14, 2011, available at <<http://en.rian.ru/world/20110415/163535943.html>>; and Simone Baribeau and Henry Meyer, "Russia Wants 'Red Button' Rights on U.S. Missile-Defense Systems," April 8, 2011, available at <[www.businessweek.com/news/2011-04-08/russia-wants-red-button-rights-on-u-s-missile-defense-system.html](http://www.businessweek.com/news/2011-04-08/russia-wants-red-button-rights-on-u-s-missile-defense-system.html)>.

<sup>5</sup> See Center for Counterproliferation Research and Center for Global Security Research, *U.S.*

*Nuclear Policy in the 21<sup>st</sup> Century: A Fresh Look at National Strategy and Requirements: Final Report* (Washington, DC: U.S. Government Printing Office, 1998), especially 3.15–3.18, on the practicality of nuclear abolition or drastic reductions in the U.S. nuclear arsenal to hundreds of weapons.

<sup>6</sup> On this point, see especially Desmond Ball, "The Development of the SIOP, 1960–1983," in *Strategic Nuclear Targeting*, ed. Desmond Ball and Jeffrey Richelson (Ithaca, NY: Cornell University Press, 1986), 57–83; and Ball, "U.S. Strategic Forces: How Would They Be Used?" in *Strategy and Nuclear Deterrence*, ed. Steven E. Miller (Princeton: Princeton University Press, 1984), 215–244.

<sup>7</sup> Grateful acknowledgment is made to Dr. James Scouras for the use of his @AWSM model as modified by the author. He has no responsibility for its use here, nor for any arguments or conclusions in this study.

<sup>8</sup> "US launches new missile defense program for Europe," Associated Press, March 1, 2011, available at <[www.cbsnews.com/stories/2011/03/01/ap/business/main20038019.shtml](http://www.cbsnews.com/stories/2011/03/01/ap/business/main20038019.shtml)>; "U.S. Says Radar Ship Deployment Part of Missile-Defense Shield," Radio Free Europe/Radio Liberty, March 2, 2011, available at <[www.rferl.org/content/us\\_says\\_radar\\_ship\\_deployment\\_part\\_of\\_missile\\_defense\\_shield/2325314.html](http://www.rferl.org/content/us_says_radar_ship_deployment_part_of_missile_defense_shield/2325314.html)>.

<sup>9</sup> "Russia Profile Weekly Experts Panel: Russia Raising the Stakes on Missile Defense," February 25, 2011, available at <[http://russiaprofile.org/experts\\_panel/32937.html](http://russiaprofile.org/experts_panel/32937.html)>.

<sup>10</sup> "Warning of New Arms Race, Medvedev Calls for Cooperation with West on Missile Shield," Radio Free Europe/Radio Liberty, available at <[www.rferl.org/content/russia\\_medvedev\\_parliament/2234566.html](http://www.rferl.org/content/russia_medvedev_parliament/2234566.html)>.

<sup>11</sup> Yuri Solomonov, expert missile designer at the Moscow Institute of Thermal Technology, told a press conference in March 2011 that the proposed U.S. missile defense plan for Europe presented no threat to Russian strategic nuclear forces. He added that European missile defense agitation "is created by politicians on one side and the other for gaining certain concessions and resolving totally unrelated problems with package agreements." See "U.S. missile defense in Europe does not threaten Russia—Solomonov," *Interfax*, March 17, 2011.

<sup>12</sup> "The Military Doctrine of the Russian Federation," February 20, 2010, available at <[www.sras.org/military\\_doctrine\\_russian\\_federation\\_2010](http://www.sras.org/military_doctrine_russian_federation_2010)>.