

# SORT-ing Out START

## Options for U.S.-Russian Strategic Arms Reductions

By STEPHEN J. CIMBALA



AP Images (Anatoly Maltsev)

Russian President Dmitry Medvedev and President Obama are committed to progress on strategic nuclear arms limitation

American and Russian presidents Barack Obama and Dmitry Medvedev have committed their administrations to progress on strategic nuclear arms limitation. A new agreement to replace the existing Strategic Arms Reduction Treaty I (START I) was drafted in July 2009 and may be ready for U.S. Senate ratification prior to the expiration of the treaty in December.<sup>1</sup> The favorable political winds on nuclear arms control between Washington and Moscow might open the door to further accomplishments in their agenda of shared security concerns. These possible areas of convergent interests include Afghanistan, Iran, and nonproliferation.

But nuclear arms control is more than a technical exercise. Embedded in the construction and negotiation of arms pacts are issues related to post-Cold War geopolitics, including North Atlantic Treaty Organization (NATO) enlargement, U.S. missile defenses deployed in Europe, and Russian military doctrine and reform. This article considers various options for U.S.-Soviet strategic nuclear arms reductions within this larger politico-military context and offers provisional but timely assessment of prospects for success.

### Reset

*START and Other Issues.* The Obama administration has indicated that it wants to “reset” the button on U.S. relations with Russia, in contrast with the upsurge of political disputes that characterized the latter years of the George W. Bush and Vladimir Putin presidencies.<sup>2</sup> The U.S. intention to move

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forward on Russia is a positive note for international relations. But the disagreements that characterized U.S. relations with Russia under Bush and Putin are not merely matters of tone. Instead, those areas of disagreement will carry forward into the Medvedev and Obama presidencies because they involve serious and substantive political and geostrategic differences.<sup>3</sup>

One area of possible and urgent security cooperation between Russia and the United States is the decision to either continue or replace the START I nuclear arms treaty, signed in 1991 and set to expire in December 2009. In part, START has been superseded by the Strategic Offensive Reductions Treaty (SORT) of May 2002, an agreement between the Bush and Putin administrations. SORT requires each state to reduce its operationally deployed strategic nuclear weapons to 2,200 to 1,700 warheads by the end of 2012.<sup>4</sup> However, SORT provides for none of the monitoring and verification protocols so characteristic of Cold War-era U.S.-Soviet arms control agreements. In fact, SORT has piggybacked on the START protocols in this regard, but the expiration of START would leave SORT a verification-free radical. The table summa-

rizes the START-accountable launchers and weapons for both the United States and Russia as of January 1, 2009.

Agreement on a post-START and post-SORT bilateral arms agreement is related to other important U.S. and Russian foreign policy objectives. Success or failure in nuclear arms control is also connected to broader issues that mark diplomatic and military fault lines, as between America and Russia. These issues include:

- NATO relations with Russia
- Russian cooperation with the United States and NATO over Afghanistan and Iraq
- U.S.-Russian leadership as an essential constituent of a viable global nuclear nonproliferation regime
- U.S. plans under Bush, now apparently under review by Obama, to deploy elements of the American global missile defense system in Poland and in the Czech Republic.

It would be impossible to do justice to each of these issues in a single article, but their connection to the progress or lack thereof in nuclear arms control is important to appreciate. Russia's objectives in restarting START

are both political and military. The military objective of stable deterrence is also a political objective: to create a U.S.-Russian security space in which Russia is recognized as a coequal nuclear partner and, with the United States, as occupying a singular tier in the hierarchy of nuclear weapons states.

Moscow needs this perception of its essential strategic nuclear parity with Washington to provide a foundation for the remainder of its policies in Europe and Asia. Russia's conventional military forces are only now being rebuilt from the locust years of the 1990s, but they are decades and many rubles away from being world class—or even NATO class. Nuclear weapons are Russia's tickets of entry into the geostrategic debates of the 21<sup>st</sup> century. And those debates involve the very definition of Russia's strategic perimeter and surrounding security spaces well into the remainder of the present century.

**The View from Russia.** For example, Russia is faced with a NATO expanded far beyond its Cold War boundaries. NATO's membership was expanded to 28 in April 2009 with the addition of Croatia and Albania. Although these two additions pose no particular threat to the Kremlin, interest

Russian Strategic Arms Reduction Treaty inspection team leaves Vandenberg Air Force Base after inspections



U.S. Air Force (Stephanie Longoria)

**Table. START Aggregate Numbers of Strategic Offensive Weapons  
(as of January 1, 2009)**

| UNITED STATES                                 |                                 |                |
|---|---------------------------------|----------------|
| Weapon  | Launchers/warheads per launcher | Total warheads |
| Intercontinental ballistic missiles (ICBMs)   |                                 |                |
| Minuteman III                                 | 550*                            | 1,250          |
| Submarine-launched ballistic missiles (SLBMs) |                                 |                |
| Trident I                                     | 96/6                            | 576            |
| Trident II                                    | 336/8                           | 2,688          |
| Heavy bombers                                 |                                 |                |
| B-1   | 56/1                            | 56             |
| B-2   | 19/1                            | 19             |
| B-52 air-launched cruise missiles             | 141/7                           | 987            |
| <b>U.S. Total</b>                             | <b>1,198</b>                    | <b>5,576</b>   |
| RUSSIA  |                                 |                |
| Weapon  | Launchers/warheads per launcher | Total warheads |
| ICBMs   |                                 |                |
| SS-25   | 180/1                           | 180            |
| Topol-M/SS-27 (mobile)                        | 15/1                            | 15             |
| Topol-M/SS-27 (silo)                          | 50/1                            | 50             |
| SS-19   | 120/6                           | 720            |
| SS-18   | 104/10                          | 1,040          |
| SLBMs   |                                 |                |
| SS-N-18                                       | 96/3                            | 288            |
| SS-N-20                                       | 40/10                           | 400            |
| SS-N-23                                       | 96/4                            | 384            |
| RSM-56 (Bulava)**                             | 36/6                            | 216            |
| Heavy Bombers                                 |                                 |                |
| Blackjack                                     | 14/8                            | 112            |
| Bear  | 63/8                            | 504            |
| <b>Russia Total</b>                           | <b>815</b>                      | <b>3,909</b>   |

Source: U.S. Department of State, "START Aggregate Numbers of Strategic Offensive Arms," fact sheet, April 1, 2009, available at <[www.state.gov/t/vci/rls/121027.htm](http://www.state.gov/t/vci/rls/121027.htm)>.

\*Minuteman missiles carry either one or three warheads.

\*\*SLBMs are considered deployed once submarines with available launch tubes become operational. Presently, two submarines can carry RSM-56 missiles with a total of 36 tubes between them. Grateful acknowledgment is made to Dr. Pavel Podvig, Stanford University, for clarification of this issue.

on the part of Georgia and Ukraine is another matter. Russia's war with Georgia in August 2008 was not only a prompt response to alleged Georgian attacks on South Ossetia. Moscow was also motivated by its concerns about eventual Georgian membership in NATO. The Alliance had stated its clear intent to offer eventual membership to Georgia and Ukraine as recently as 2008. However, NATO has held back from an actual offer of any Membership Action Plan for either country due to Moscow's sensitivities. Russia also fears interest on the part of previously nonaligned states in Europe in obtaining membership, including Sweden and Finland. In the latter case, NATO's military guarantee would be extended to within a stone's throw of St. Petersburg—breathing down Russia's neck.<sup>5</sup>

*the military objective of stable deterrence is to create a security space in which Russia is recognized as a coequal nuclear partner and, with the United States, as occupying a singular tier in the hierarchy of nuclear weapons states*

NATO enlargement is tied directly to the issue of U.S. missile defenses deployed in Eastern Europe in two ways. First, the proposed radars for the Czech Republic and missile interceptors in Poland would increase the direct U.S. military presence in former Soviet security space. Second, the European missile defenses are a cause for concern on the part of Russian political and military leaders and other security experts. Although justified by the United States as necessary to deter an Iranian missile attack against European or American vital interests, that rationale is disputed on the grounds that the U.S. European-based ballistic missile defenses (BMD) could threaten the viability of Russia's nuclear deterrent. The argument by pessimists is not that the present small number of proposed interceptors and radars would do so, but that the system could be expanded to include many more BMD interceptors and radars, or even paired with offensive missiles for nuclear preemption or coercion.

Russia's concern about the viability of its deterrent against American missile defenses of undetermined proficiency and size is a worry about not only its strategic

nuclear forces (that is, those based on delivery systems with intercontinental ranges), but also the credibility of its nonstrategic nuclear weapons tasked for deterrence or defense in Europe. Russian military doctrine and leading spokesmen have insisted that a conventional war posing a strategic threat to Russia might prompt a first use of tactical or theater nuclear weapons in order to impose a deescalation of the fighting on terms favorable to Russia. In other words, the Kremlin will not lose a conventional war within, or near, its state ter-

ritory without reserving the option of nuclear first use against an attacker. U.S. or NATO missile defenses that did not include Russia as a player in the matrix of BMD deployments and monitoring systems could pose such a threat to Russia's regional military deterrent and, therefore, to its homeland security.

Indeed, more is at issue than allegedly broken promises or U.S. and NATO sensitivities to Russian concerns. Moscow's self-perception as a revived great power in Eurasia includes an assumed right to dominate former

Soviet security space politically. Political hegemony in this region includes military flexibility for Russia's use of power in its near abroad and for the deterrence of encroachment by foreign powers deemed hostile. From this perspective, Russia's expanded self image comes into conflict with present and possible future designs for NATO enlargement and, more specifically, with a heavier U.S. military footprint in Eastern Europe. But Secretary of Defense Robert Gates suggested in a March 2009 news briefing that Russian military modernization and reform were not necessarily threatening to the United States or NATO:

*They are looking at shrinking their conventional force by several hundred thousand. They are cutting a significant—perhaps as many as 200,000 or more officer billets. So I think that—and [Medvedev] is talking about—my impression of what he was talking about was a Russian military that is more expeditionary, and not so focused as in the past on taking on NATO.<sup>6</sup>*

Without endorsing the immediate past or present Russian perspectives on missile defenses or NATO enlargement, U.S. officials must take them into account to make progress on a new START agreement.

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*the end of the Cold War and the demise of the Soviet Union removed some of the disincentives for independent nuclear forces*

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As Stephen J. Blank has noted, trends in the U.S.-Russian security relationship, including their nuclear arms negotiations, have profound effects on the entire international order.<sup>7</sup>

**Nuclear Arms Reductions, Proliferation, and Geopolitics.** The outward reverberations from Russian-American nuclear arms control are especially pertinent to the larger issue of nuclear nonproliferation. The end of the Cold War and the demise of the Soviet Union removed some of the disincentives for independent nuclear forces that existed from the dawn of the nuclear age until 1991. In addition, the post-Cold War international systemic shift in the balance of military power, in favor of the United States and its prevalence in information-led conventional



Secretary of Defense views ground-based interceptor missile silo at Fort Greely, Alaska

U.S. Air Force (Jerry Morrison)

warfare, has generated both new incentives for nuclear weapons spread and new options for restraining proliferation.

On the incentive side, states with aspirations for regional hegemony or grudges against neighbors may seek weapons of mass destruction, including nuclear ones, in order to deter or deny access to American expeditionary forces that might otherwise be inclined to intervene in their neighborhood. On the disincentives side of the equation, new technologies might provide for limited defenses against light nuclear attacks, or for conventional and nuclear global strike capabilities to preempt aggression with nuclear or other weapons of mass destruction. For example, the Bush administration deployed missile defenses and defined a “new triad” that included conventional and nuclear deep strike, ballistic missile defenses, and improved national defense infrastructure.

Russia, on account of its economic and military stagnation, has not been able to match the United States in capabilities for long-range precision strike, command, control, communications, computers, intelligence, surveillance, targeting, reconnaissance, stealth, and other accessories of the information age. Although plans are in train for the modernization and reform of conventional forces, including an increase in the number of contract troops and the downsizing of a bloated officer corps, nuclear weapons will continue as the symbols and substance of Russian military respect abroad. For this and other reasons, Russia’s leaders might be more ambivalent about proliferation than their American counterparts.<sup>8</sup>

Oddly enough, the perspectives of the Russian political leadership during the presidential years of Vladimir Putin were in synch with those of the Bush administration. The issue with nuclear weapons spread was not so much the “what” of additional nuclear weapons states, but the “who” of their identity. For Washington, rogue states or others who might leak clandestine nukes to terrorists were to be kept below the nuclear threshold. For Moscow, the concern was to keep NATO and U.S. military power from the doorstep of Russia because American conventional deep strike might be used to attack its nuclear deterrent. In addition, certain countries in the former Soviet security space, especially in Eastern Europe and the Caucasus, must be denied any political resources, military capabilities, or alliances that would pose a fundamental threat.

The Bush administration, despite many differences of political philosophy with its immediate predecessor, embraced with equal enthusiasm a robust concept of promoting the spread of democracy. After 9/11, this ideological emphasis was combined with a willingness to use the hard edges of military power to support it, including preemptive or preventive war. The invasion of Afghanistan to topple

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*encirclement by democracies in its near abroad combines with Russia’s relative weakness, compared to NATO, to reduce its ability to project military power beyond its borders*

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the Taliban was followed by the overthrow of the Saddam Hussein regime. Forcible regime change in Iraq was opposed by Russia as well as some European allies of the United States, but it proceeded anyway with a “coalition of the willing.” As well, the Bush administration continued the post-Cold War expansion of NATO until it totaled 26 member states, with others waiting in the wings.

What Russia feared was not the possibility of military invasion or conquest, as was on the table during the world wars of the 20<sup>th</sup> century. The objectives of NATO and the United States were not the military occupation of Russia, but the democratization of Russia as a path to its reliable membership in a pacified European and Central Eurasian security space. A strong Russia with a growing market economy and democratic polity was, in the American and NATO view, a potential stabilizer and security partner.

**NATO and Russia: Thinking Out of the Box?** NATO enlargement, missile defenses, and other security developments that threaten Russia’s current version of managed or sovereign democracy are thus components of a geostrategic threat—as seen from the Kremlin. Therefore, the Rose and Orange revolutions in Georgia and Ukraine shook windows in Red Square, especially when Russian efforts to delay or defeat those democratic movements came to naught. Encirclement by democracies in its near abroad combines with Russia’s relative weakness, compared to NATO, to reduce its ability to project military power beyond its borders. Russia’s war with Georgia from August 8 to 12, 2008, revealed serious

shortcomings in its command, control, communications, equipment, training, and other aspects of its preparedness for either military peace operations or war. Moscow’s recognition of South Ossetia and Abkhazia in the aftermath of its dustup with Georgia was an explicit reminder to NATO of its own decision to liberate Kosovo from Serbia. But this diplomatic move also signaled Russia’s frustration with its limited capability for power projection and with the Alliance’s boardinghouse reach into the vitals of its security space.

Nevertheless, NATO has options that might provide a *modus vivendi* for improved security cooperation, such as offering membership to Russia. This option, diplomatically unthinkable for many Russians and some Alliance members in the immediate post-Cold War years, now lays claim to a lower “giggle factor” among serious analysts and policymakers. Pushing NATO’s eastward and Caucasian borders farther and farther makes the line between what is NATO’s business and what is Russia’s business more urgent to determine and will require cooperation and partnership. There exists no demilitarized buffer zone between NATO and Russia—neither a political nor military nor economic no man’s land. If Ukraine becomes a member of NATO, the preceding point about the absence of buffer zones is even more emphatically true. There is no longer an “Eastern” as opposed to a “Western” Europe, but only a trans-Europa that is inclusive from Lisbon to the Ural Mountains, including southern Europe and parts of trans-Caucasus.

Even without Ukrainian membership in NATO, history is headed toward the creation of a Eurasian security community that should include Russia. This favorable-for-security development can be delayed, but not denied, unless states are foolish enough to allow hypernationalism, militarism, or ideology to compromise their decisionmaking—which, as the historical record shows all too clearly, they frequently do. A transcontinental European security space with Russia in NATO is not a necessary condition for progress in U.S.-Russian nuclear arms control, which is a matter of current importance and urgency regardless of the larger political outcome of NATO and Russian high politics. But leaders could do worse than provide a vision that inspires arms negotiations with the expectation that neither excessive numbers of nuclear weapons nor recidivism in Cold War policies

will hold back the migration of Europe into a non-zero-sum definition of its security challenges and into increased military cooperation across national borders.

History is not deterministic, however, and leaders must resolve upon taking the incremental decisions that cumulate to preferred, as opposed to dysfunctional, security outcomes. This implies getting meaningful reductions in U.S. and Russian strategic nuclear forces and connecting that accomplishment to successful leadership by Moscow and Washington in nuclear nonproliferation.

### Methodology

**Forces and Weapons.** In this section, we develop hypothetical, but not unrealistic, SORT-compliant and smaller forces for the United States and Russia going forward.<sup>9</sup> Each state is assigned a larger force with an upper limit of 1,700 operationally deployed warheads, or the lower end of the maximum SORT-compliant range. In addition, each is also assigned a smaller force of 1,000 deployed warheads. These forces will be tested for their second strike capability under four conditions of alertness and launch doctrine:

- forces are on generated, or ready, alert and launched on warning of attack
- forces are on generated alert and launched after riding out a first strike
- forces are on day-to-day alert and are launched on warning
- forces are on day-to-day alert and are riding out the attack.

In general, these conditions constitute a loss of strength gradient as we move from the first condition to the fourth above, but there are exceptional cases. Much depends on the mix of launchers used, as discussed below.

The model also allows us to test for the viability of different mixes of delivery systems, or launchers, for each state. For the United States, the alternative force structures include:

- a balanced triad of intercontinental ballistic missiles (ICBMs), submarine-launched ballistic missiles (SLBMs), and bomber-delivered weapons
- a dyad of SLBMs and bombers
- a dyad of ICBMs and SLBMs
- a force composed entirely of SLBMs.

For Russia, the alternative force structures analyzed here are:

- a balanced triad
- a dyad of ICBMs and SLBMs
- a dyad of ICBMs and bombers
- a force composed entirely of ICBMs.

Examination of the performance of different mixes of launch systems for each state also permits us to test the significance of “conventionalization” of one or more legs of the American or Russian nuclear triad. One of the disputes about probable counting rules for a follow-on START, as suggested earlier, is the Russian concern over U.S. plans to equip some formerly authorized nuclear launch systems with conventional warheads. The idea of global strike, as provided for in Bush policy guidance, included a mix of long-range conventional and nuclear weapons. U.S. planners saw this as increasing flexibility for distant attacks on time-urgent targets without reliance on only a nuclear option.

### *Russia regarded the mixing of conventional and nuclear strike options on the same launch systems as potentially provocative*

Russia, on the other hand, regarded the mixing of conventional and nuclear strike options on the same launch systems as potentially provocative of crisis instability. How would Russia know whether a missile flying over or near its state territory, or that of an ally, was carrying a conventional or nuclear warhead? Russia might assume the worst and respond to a conventional first strike with a “retaliatory” nuclear launch on warning.

In effect, the alternative force structures provide a glimpse of what would happen to each state’s retaliatory capabilities, at higher and lower levels of weapons deployment, if one or more components of the triad of land-based missiles, sea-based missiles, and bombers were eliminated. Pertinent force structures for each state reflect their military doctrinal proclivities and past practices. For example, the U.S. illustration for a “monad,” or single type of nuclear launcher, is the SLBM fired from the fleet ballistic missile submarine. In that illustration, other types of launchers can be assumed to have been equipped with conventional warheads if deployed or else not deployed at all. In the Russian case, the emphasis on land-based missiles, compared to SLBMs or bombers, sug-

gests that their illustrative monad would be a force composed entirely of ICBMs.

Why bother to illustrate these hypothetical alternatives if, by all indications, both Russia and the United States are presently committed to a triad of nuclear-capable delivery systems? The benefits of looking at alternative mixes of launch systems are at least twofold. First, it may turn out that triads are redundant for the accomplishment of retaliatory missions under some conditions. Second, alternative mixes of launch systems provide a perspective on the question of distributing conventional and nuclear forces together. Present diplomacy suggests that one side (the United States) considers conventionalization of some launch platforms as an opportunity, while the other side (Russia) regards commingling of conventional and nuclear weapons as a danger. Both perspectives may be right or wrong—much depends on the political conditions leading up to a crisis in which the threat of first strike, by conventional or nuclear weapons, would be imminent.

If Russia’s budget problems preclude modernization of all three parts of its long-range nuclear triad, it might be receptive to a two-sided and verified conventionalization of one type of launcher for each state. Thus, for example, the United States might choose to conventionalize weapons deployed on its land-based missiles. Russia might then opt to equip its SLBMs with conventional warheads only. Each state would retain two types of launchers equipped exclusively with nuclear weapons. Such an arrangement would be easier to monitor or verify than a more complicated structure in which nuclear and non-nuclear weapons were mixed within a given type of launcher, whether land- or sea-based missiles or bombers.

Another possibility is that both the United States and Russia could retire their long-range bomber forces from nuclear missions and equip them with conventional weapons only. Bombers have some advantage for crisis management compared to missiles since they can be recalled after launch, and this was probably a meaningful asset during the tension of the high Cold War. However, in the present century with a declaredly nonhostile relationship between the United States and Russia, the ability to recall

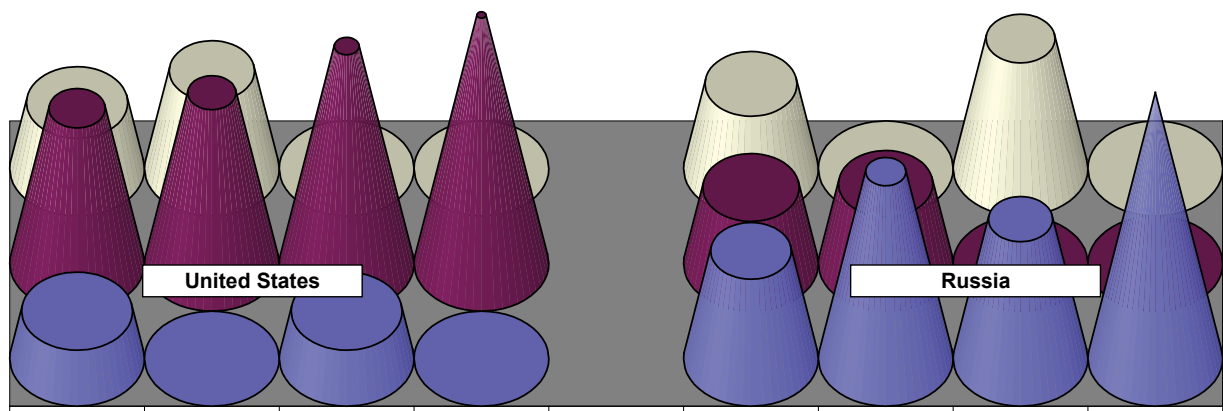
bombers after launch may be less important than other variables. The Russian bomber force has deteriorated markedly from the Soviet days, and most of it would probably be destroyed on the ground by a U.S. first or second strike. The U.S. bomber force is state of the art in

performance parameters, but growing numbers of conventional missions for the long-range bomber force compete with nuclear tasking. Finally, the command and control of nuclear bomber forces is complicated, and slow-flying bombers cannot compete with missiles for

prompt strikes against time-urgent targets. In a protracted nuclear war of the kind some envisioned during the Cold War, bombers offered a residual “postattack” force for bargaining for war termination. However, this type of nuclear war is inconceivable nowadays, even to the

Figure 1. U.S.-Russia Total Strategic Weapons Deployed (1,700 limit)

Total Strategic Weapons

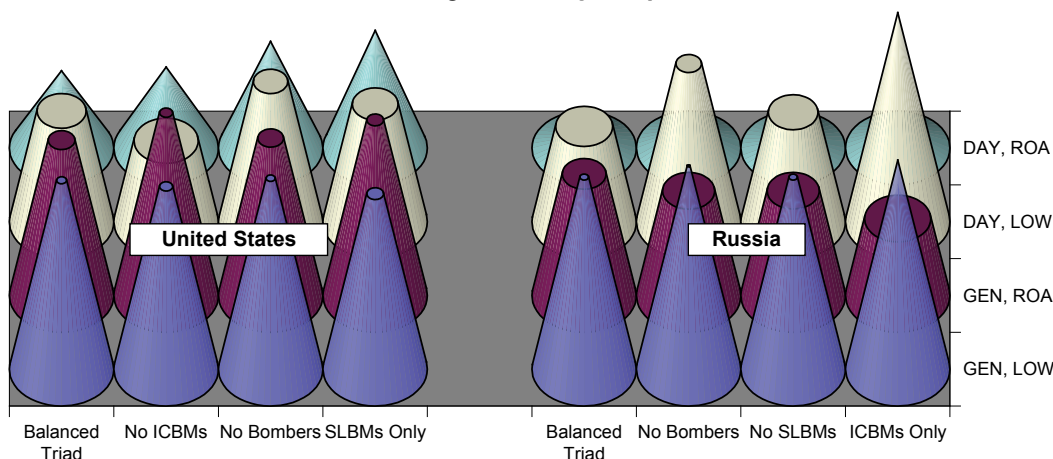


|        | Balanced Triad | No ICBMs | No Bombers | SLBMs Only |  | Balanced Triad | No Bombers | No SLBMs | ICBMs Only |
|--------|----------------|----------|------------|------------|--|----------------|------------|----------|------------|
| ■ ICBM | 300            | 0        | 300        | 0          |  | 680            | 1,180      | 880      | 1,680      |
| ■ SLBM | 980            | 1,078    | 1,372      | 1,568      |  | 480            | 504        | 0        | 0          |
| □ AIR  | 416            | 616      | 0          | 0          |  | 534            | 0          | 820      | 0          |

Key: ICBM: intercontinental ballistic missile; SLBM: submarine-launched ballistic missile; AIR: aircraft

Figure 2. U.S.-Russia Retaliatory Weapons (1,700 limit)

Arriving Retaliatory Weapons



|            | Balanced Triad | No ICBMs | No Bombers | SLBMs Only |  | Balanced Triad | No Bombers | No SLBMs | ICBMs Only |
|------------|----------------|----------|------------|------------|--|----------------|------------|----------|------------|
| ■ GEN, LOW | 1,367          | 1,322    | 1,381      | 1,270      |  | 1,390          | 1,470      | 1,390    | 1,512      |
| ■ GEN, ROA | 1,124          | 1,322    | 1,138      | 1,270      |  | 880            | 757        | 758      | 556        |
| □ DAY, LOW | 802            | 585      | 1,015      | 851        |  | 690            | 1,144      | 792      | 1,512      |
| □ DAY, ROA | 559            | 585      | 772        | 851        |  | 100            | 147        | 79       | 151        |

Key: ICBM: intercontinental ballistic missile; SLBM: submarine-launched ballistic missile; GEN: generation stability; LOW: launched on warning; ROA: riding out the attack; DAY: day-to-day alert

more energetic planners on the Russian and American general staffs.

**Analysis**

**U.S.-Russian Reductions.** The preceding conditions having been explained, we now proceed to the actual data analysis. Figure 1 summarizes the total strategic weapons deployed under a limit of 1,700 by the United States and Russia in a hypothetical post-START and post-SORT agreement. Figure 2 summarizes the numbers of retaliatory warheads for each state following a first strike by the other side.

The outcomes in figure 2 show that a post-START limit of 1,700 on the numbers of operationally deployed warheads allows each state a considerable second strike capability. The United States can under all conditions of alertness launch many hundreds of weapons, permitting retaliatory strikes against value as well as counterforce targets. Russia can do likewise, although its capabilities in the worst condition of prewar readiness (day-to-day alert and riding out the attack) are considerably less than those of the United States in similar conditions. Nevertheless, Russia can retaliate with at least 100 surviving and arriving warheads in three of its four force structures, even under the worst case for the defender. Interestingly, under some conditions for each state, a dyad or even a monad

provides for more surviving and retaliating warheads than does the traditional triad.

Would reducing the maximum limit on weapons deployments from 1,700 to 1,000 warheads change the viability of the U.S. or Russian strategic nuclear deterrent? Some American and even some Russian pessimists have expressed concerns to this effect, especially about Russia’s viability going forward if modernization lags.<sup>10</sup> Figure 3 summarizes

*the United States can under all conditions of alertness launch many hundreds of weapons, permitting retaliatory strikes against value as well as counterforce targets*

the numbers of strategic nuclear weapons deployed by Russia and the United States under a post-SORT and post-START limit of 1,000 operationally deployed warheads.

Figure 4 summarizes the numbers of retaliatory warheads for Russia and the United States under the various operational conditions that also obtained in figure 2. It shows that, under a maximum of 1,000 deployed weapons for each state, the United States can provide for several hundred surviving and arriving retaliatory weapons under all condi-

tions of operational readiness and launch doctrine and for all of its force structures. Russia can respond to a nuclear first strike with several hundred retaliating warheads, under all conditions of alertness and launch protocols, and regardless of its force structures—with the singular exception of the “day-to-day alert, riding out the attack” condition. However, Russia is unlikely to be caught in this condition of relatively lowest readiness for an attack during any crisis that would precede a nuclear war. It would more likely be at maximum readiness (generated alert and launched on warning) or on generated alert and riding out the attack, which is the U.S. declared but not necessarily operational posture.

Pessimists might conjure scenarios in which the United States struck Russia with a “bolt from the blue” and caught its forces in the lowest level of preparedness. But even then, Russia would provide for many tens of warheads striking American and/or European cities under the worst of conditions.

Nuclear force exchange modeling during the Cold War was arguably a stilted art form—frequently devoid of political common sense. In political reality, the United States would never consider it a “victory” or “success” if a nuclear war destroyed the capitals and other major cities of its European (or other) allies, even if the force-on-target outcomes were less devastating for North

Figure 3. U.S.-Russia Total Strategic Weapons Deployed (1,000 limit)



**Key:** ICBM: intercontinental ballistic missile; SLBM: submarine-launched ballistic missile; AIR: aircraft



America than they proved for Russia. European and therefore Western civilization cannot be divided into partial plates and survive. When Franklin Roosevelt and Winston Churchill were singing hymns together in Placentia Bay in 1941 aboard a British warship, they were affirming this fundamental truth. In addition, a deconstructed Russia would uncork chaos in Central Eurasia, the Middle East, and elsewhere.

Figure 4 tells of history, politics, war, common sense, and civilization. A post-START and post-SORT arms reduction agreement with an upper bound of 1,000 deployed strategic nuclear weapons would suffice to provide for deterrence. More important, it would provide for additional reassurance, as between Washington and Moscow, permitting them to get on with other mutually beneficial agendas, including the agenda of nonproliferation. The common interest of the United States and Russia is to move forward with this win-win agenda of controlling the spread of nuclear weapons before it becomes a lose-lose for them and for the entire nonproliferation regime. The surety of stable deterrence as between the two nuclear giants is the first step. The next step is to assess whether the more ambitious of the two preceding nuclear force reduc-

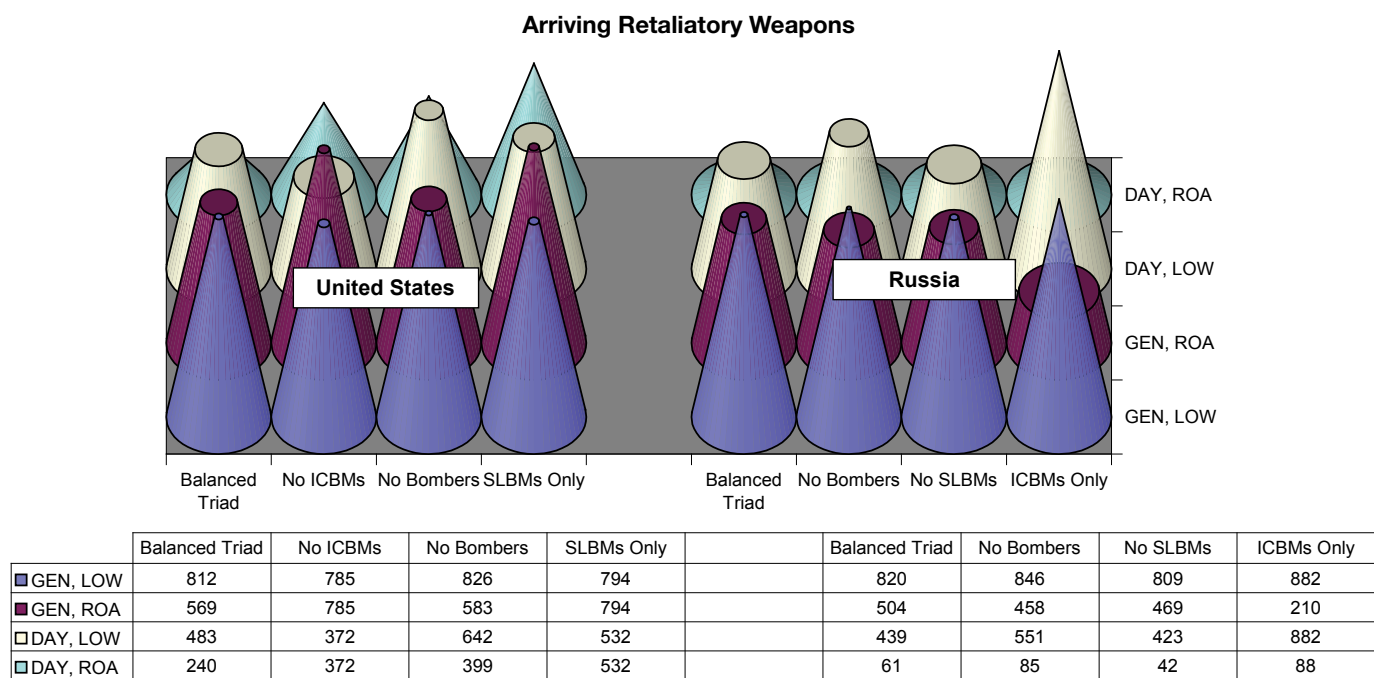
tions can be connected to a viable model of nonproliferation.

**Proliferation.** In figure 5, we establish a model of a constrained nuclear nonproliferation regime. In this model, nuclear weapons spread is limited to the currently acknowledged or de facto eight nuclear weapons states (with the exception of North Korea, whose status is a work in progress). The assumption is that Iran establishes a complete nuclear fuel cycle but, under international supervision, agrees not to become a nuclear weapons state. North Korea's existing nuclear weapons and infrastructure are verifiably dismantled, in return for economic and diplomatic emoluments negotiated with its five interlocutors on nuclear disarmament (South Korea, Japan, Russia, China, and the United States). The remaining nuclear powers are assigned ranks and maximum numbers of deployed nuclear weapons on various mixes of launchers, depending on national capabilities and proclivities. Tier 1 nuclear weapons states include Russia and the United States, with a maximum of 1,000 deployed warheads each. Tier 2 states, limited to 500 deployed warheads each, include China, France, and the United Kingdom. Tier 3 states, limited to 300 warheads, include India, Israel, and Pakistan. For purposes of the present discus-

sion, we will assume that the challenges of reliable monitoring and verification for these numbers have been surmounted, although the "real world" problems in this regard are compelling.<sup>11</sup>

Figure 5 also summarizes the total numbers of deployed nuclear weapons assigned to each state in the model. These assignments are made in generic categories: detailed specifications of weapons and performance parameters would be impossible and unnecessary. For example, weapons deployed on missiles or bombers of less than intercontinental range might not be considered by the Americans and Russians as "strategic" for their purposes (capable of inflicting unacceptable, and potentially decisive, effects). But for other nuclear weapons states, actual or potential enemies do not require weapons capable of covering such immense distances. Strategic threats can be posed to one another by states that share a common border or live within a regional neighborhood: India and Pakistan, China and India, and China and Pakistan offer cases in point. In addition, China and Russia, although both possess intercontinental delivery systems for nuclear weapons, could inflict serious damage on one another with strikes of shorter ranges.

**Figure 4. U.S.-Russia Retaliatory Weapons (1,000 limit)**



**Key:** ICBM: intercontinental ballistic missile; SLBM: submarine-launched ballistic missile; GEN: generation stability; LOW: launched on warning; ROA: riding out the attack; DAY: day-to-day alert

Figure 6 shows the numbers of surviving and retaliating warheads for each state after a notional first strike against its nuclear retaliatory forces. As one might expect, the larger deployed forces offer more survivable retaliatory power than do the smaller ones. But the difference is not as meaningful as one might

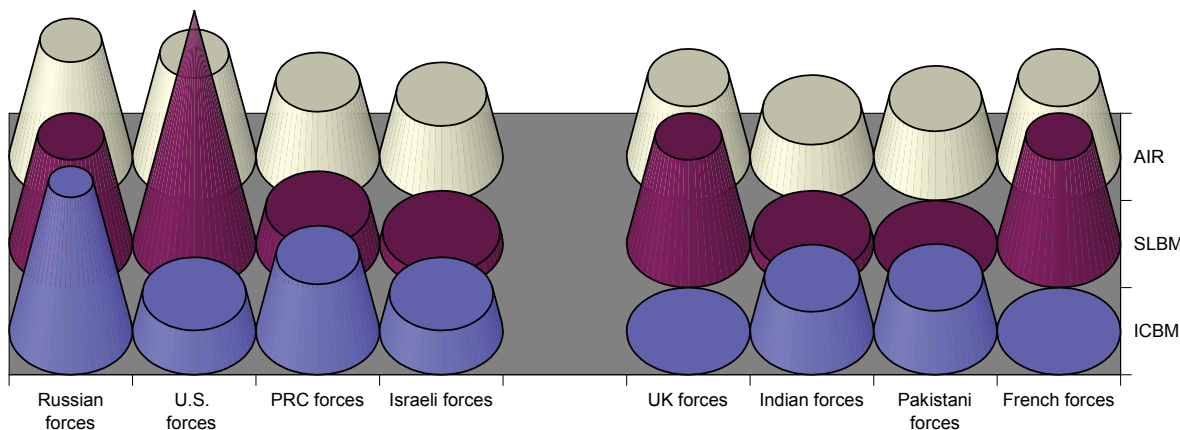
suppose. In the “generated alert, launched on warning” or “generated alert, riding out the attack” postures, all states can provide for over 100 second strike retaliatory weapons. Outcomes are less favorable for the smaller powers under both conditions of day-to-day or normal peacetime alert. But even then,

each can deliver enough retaliatory attacks to inflict unacceptable damage by any historical precedent or standard of human decency.

What do these figures show? Simply put, just as there exists a lot of potential for ruin, so, too, there is a great deal of stability in nuclear weapons. The larger forces offer

Figure 5. Total Strategic Weapons: Constrained Proliferation Model

Total Strategic Weapons

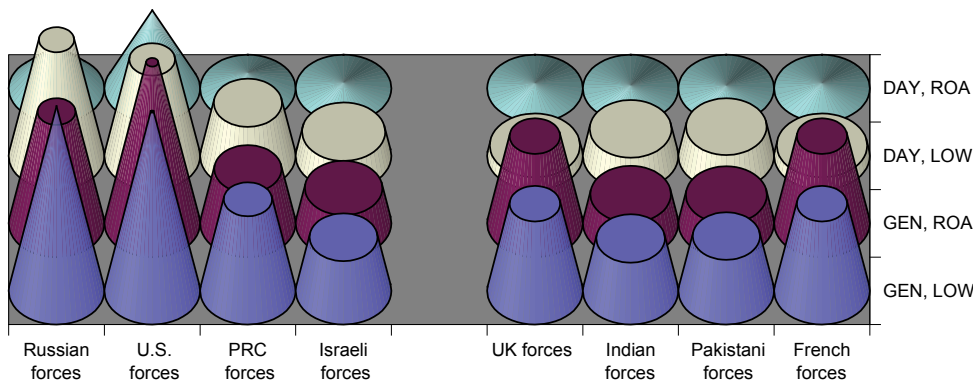


|        | Russian forces | U.S. forces | PRC forces | Israeli forces |  | UK forces | Indian forces | Pakistani forces | French forces |
|--------|----------------|-------------|------------|----------------|--|-----------|---------------|------------------|---------------|
| ■ ICBM | 400            | 100         | 204        | 100            |  | 0         | 142           | 144              | 0             |
| ■ SLBM | 288            | 624         | 96         | 32             |  | 288       | 32            | 0                | 288           |
| □ AIR  | 312            | 276         | 200        | 168            |  | 212       | 126           | 156              | 212           |

Key: ICBM: intercontinental ballistic missile; SLBM: submarine-launched ballistic missile; AIR: aircraft

Figure 6. Retaliatory Weapons: Constrained Proliferation Model

Arriving Retaliatory Weapons



|            | Russian forces | U.S. forces | PRC forces | Israeli forces |  | UK forces | Indian forces | Pakistani forces | French forces |
|------------|----------------|-------------|------------|----------------|--|-----------|---------------|------------------|---------------|
| ■ GEN, LOW | 821            | 797         | 407        | 238            |  | 388       | 233           | 243              | 388           |
| ■ GEN, ROA | 497            | 716         | 242        | 157            |  | 388       | 129           | 127              | 388           |
| □ DAY, LOW | 516            | 429         | 236        | 107            |  | 47        | 120           | 130              | 47            |
| □ DAY, ROA | 192            | 348         | 70         | 26             |  | 23        | 14            | 13               | 23            |

Key: GEN: generation stability; LOW: launched on warning; ROA: riding out the attack; DAY: day-to-day alert

more redundancy than the smaller forces, and this provides some additional measure of assurance in a crisis. However, smaller forces are not necessarily less crisis-stable than larger ones under all conditions. Much would be scenario dependent: who is attacking whom? Both smaller and larger forces can be used for provocation, for coercion, for deterrence, or for reassurance. Nor does the model take into account the impact of alliances—pre- and postattack. If, for example, Russia were to attack Britain or France, this would automatically involve a war against the United States. On the other hand, the role of other states would be more ambiguous if China launched a nuclear first strike against Russia or vice versa. America, Britain, and France would support Israel if Israel were subjected to a nuclear first strike by Iran. But British or French support for an Israeli nuclear or conventional preemption to destroy a nascent Iranian nuclear weapons capability would be less certain, and Russia would strongly oppose.

Another finding that emerges from the preceding discussion is that the attributes of

launchers or delivery systems, and the mix of launch systems deployed by each state, are important contributors to the state's degree of crisis stability. Submarine-launched weapons offer greater prelaunch survivability, and therefore increased crisis stability, compared to land-based missiles and bomber-delivered weapons. At least this was the assumption during the protracted U.S.-Soviet confrontation of the Cold War years. However, SLBMs

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*larger deployed forces offer more survivable retaliatory power than smaller ones*

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can also be used as first strike weapons; at least, American SLBMs have significant hard-target kill capabilities. Moreover, bombers, at least in theory, can be sent aloft and armed, but they can still be recalled before they complete their missions. They can also be equipped with air-launched cruise missiles fired from standoff ranges, thus increasing platform survivability compared to directly overflying the target.

**Beyond the Numbers.** Even more important than the operational performance attributes of weapons systems, significant as they are, are the psychological messages they convey relative to military deterrence, coercion, or reassurance. Think of the sizes and attributes of nuclear forces as an “influence operation” (in military jargon) or as an exercise in nonmessage diplomacy or military persuasion. Nuclear weapons have, as persuaders, an oxymoronic mission; they must convince other states that, under some exigent conditions of attack or threat, they will be used. On the other hand, other states must have confidence that this decision for nuclear first use or first strike (tactical versus strategic) will not be taken hastily. And that decision should certainly not be driven into a cul-de-sac by deployments that restrict policymakers' options in a nuclear crisis to an all-or-nothing response, or to preemptive or preventive war.

If nuclear weapons spread beyond the existing acknowledged and “accepted” eight nuclear weapons states, there is another issue related to stability and to proliferation. This



U.S. Air Force (John McDowell)

B-52s destroyed as part of 1991 Strategic Arms Reduction Treaty at Davis-Monthan Air Force Base, Arizona

study has not dealt with nuclear command and control systems, but they have two aspects that bear scrutiny. First, they must be designed to be survivable against enemy first strikes. Second, they must be proofed against two potentially lethal internal disabilities. The first possible disability is that the command and control system allows a mistaken launch either by unauthorized persons or through a technical malfunction. The second is the risk of a responsive failure in the circumstances of an actual attack from human fallibility, technical glitches, or both.<sup>12</sup>

The United States, Russia, and other permanent members of the United Nations Security Council have years of experience in the operation of nuclear forces. Future nuclear powers will have less. In addition to the fidelity of nuclear command systems against mistaken launches or response paralysis, there exists a deeper and more Clausewitzian problem for new nuclear states. Who is actually in charge? This question has three parts: who actually has the authority to order the release of nuclear weapons, who possesses the enabling codes or other protocols to unlock the nuclear weapons so they can be loaded and fired, and who will actually command and control the combat use of nuclear weapons once war has been authorized?

In mature democracies equipped with nuclear weapons, we know some of the answers to these questions. Other details are left deliberately vague to deny enemy intelligence pertinent information about vulnerabilities. About future and currently aspiring nuclear weapons states, we can only guess. A priori, it may not be fair to assume that new nuclear powers will be less careful with their weapons than existing states have been.<sup>13</sup> On the other hand, states within the military-strategic reach of fledgling nuclear powers will want to be reassured that those states have political accountability—against nuclear usurpation by the military and against domination of the military profession by revenge-seeking or apocalyptically driven politicians. Prejudgment is not necessarily fair, but military optimism is often trashed by historical fact.

### Further Hypotheses

In the nexus among politics, war, and technology, much is nonlinear, and some things are even chaotic. No trajectory for Russian-American nuclear arms control after January 2009 can guarantee future success in

additional arms reductions. Nor, even if successful, can the same pattern of nuclear arms reductions be assumed as transitive to successful leadership in nuclear nonproliferation. On the other hand, it is past time for the stalemate in U.S.-Russian strategic arms reductions to end. Going the last step from nuclear limitation to nuclear abolition, as various senior dignitaries and some government leaders have called for, may be premature; governments can only move incrementally in the best of times. But no longer do arguments for inertia in strategic arms reductions need to prevail, as they have in the recent past.

It is also time to reconceptualize the U.S.-Russian and NATO-Russian security relationships as positive-sum, instead of zero-sum, activities. Within this more permissive context, progress on nuclear arms reductions, on nonproliferation, and on other security issues (including energy, Afghanistan, and Iran) becomes more probable. Positive-sum politics instead of zero-sum retro would, for example, hold back on NATO expansion (at least temporarily); include Russia in missile defense activities in Europe; and exploit mutual interests in stabilizing Afghanistan and fighting terrorism. Realism is not being thrown overboard in favor of denuclearized constructivism. *Realism* in this context means having enough nuclear weapons for the requirements of national strategy, including deterrence and reassurance, but not for post-latch, pretension, or preemption.

Two dangers loom for Presidents Medvedev and Obama if they want to move beyond nuclear stasis. The arms control process must not become the prisoner of the arms control aficionados and professional bean counters who can, without adult supervision, turn progress into inertia. The second is to rush to agreement for agreement's sake, as if arms control was a ceremonial platitude divorced from interstate relations. Instead, nuclear arms control is both political and military heavy lifting. But it is also possible, as the analysis here shows, without risking stable deterrence and while creating a more proliferation-resistant world. **JFQ**

### NOTES

<sup>1</sup> Peter Baker and Helene Cooper, "U.S. and Russia to Consider Reductions of Nuclear Arsenals in Talks for New Treaty," *The New York Times*, March 31, 2009, available at <[www.timesdaily.com/article/20090401/ZNYT03/904013001?Title=U-S-](http://www.timesdaily.com/article/20090401/ZNYT03/904013001?Title=U-S-)

and-Russia-to-Consider-Reductions-of-Nuclear-Arsenals-in-Talks-for-New-Treaty>.

<sup>2</sup> The phrase *press the reset button* was first used by U.S. Vice President Joseph Biden, and it received at least rhetorical approval in March 2009 from Russian President Dmitry Medvedev, who told a group of visiting American dignitaries: "The surprising term 'reset' . . . really reflects the essence of the changes we would like to see." See Mike Eckel, "Hitting reset: U.S., Russia face tough nuclear talks," Associated Press, March 28, 2009.

<sup>3</sup> See Jennifer Loven and Steven R. Hurst, "U.S., Russia call for nuke cuts in sweeping agenda," Associated Press, April 1, 2009; Steve Gutterman, "Analysis: Medvedev-Obama meeting a win for Russia," Associated Press, April 2, 2009.

<sup>4</sup> See Treaty between the United States of America and the Russian Federation on Strategic Offensive Reductions, Moscow, May 24, 2002, *Arms Control Today*, June 2002, available at <[www.armscontrol.org/documents/sort.asp](http://www.armscontrol.org/documents/sort.asp)>.

<sup>5</sup> See "Geopolitical Diary: NATO's Expansion and Russia's Fears," March 13, 2009, available at <[www.stratfor.com/geopolitical\\_diary/20090312\\_geopolitical\\_diary\\_natos\\_expansion\\_and\\_russias\\_fears](http://www.stratfor.com/geopolitical_diary/20090312_geopolitical_diary_natos_expansion_and_russias_fears)>.

<sup>6</sup> U.S. Department of Defense news briefing with Secretary of Defense Robert M. Gates, March 18, 2009, available at <[www.defenselink.mil/transcripts/transcript.aspx?transcriptid=4381](http://www.defenselink.mil/transcripts/transcript.aspx?transcriptid=4381)>.

<sup>7</sup> Stephen J. Blank, *Russia and Arms Control: Are There Opportunities for the Obama Administration?* (Carlisle, PA: U.S. Army War College Strategic Studies Institute, March 2009), viii and passim.

<sup>8</sup> Alexei Arbatov, "Terms of Engagement: Weapons of Mass Destruction Proliferation and U.S.-Russian Relations," in *Prospects for U.S.-Russian Security Cooperation*, ed. Stephen J. Blank (Carlisle, PA: U.S. Army War College Strategic Studies Institute, March 2009), 139–168.

<sup>9</sup> Grateful acknowledgment is made to Dr. James Scouras for use of his AWSM@ model in making calculations and drawing graphs for this study.

<sup>10</sup> For example, see Keir A. Lieber and Daryl G. Press, "The Rise of U.S. Nuclear Primacy," *Foreign Affairs* 85, no. 2 (March–April 2006), available at <[www.foreignaffairs.org/20060301faessay85204/keir-a-lieber-daryl-g-press/html](http://www.foreignaffairs.org/20060301faessay85204/keir-a-lieber-daryl-g-press/html)>.

<sup>11</sup> For purposes of this illustration, strategic weapons launchers may include those with less than intercontinental ranges, depending upon the intended targets.

<sup>12</sup> See Peter D. Feaver, *Guarding the Guardians: Civilian Control of Nuclear Weapons in the United States* (Ithaca: Cornell University Press, 1992), 12–21.

<sup>13</sup> For pertinent discussion of this and related issues, see Scott D. Sagan and Kenneth N. Waltz, *The Spread of Nuclear Weapons: A Debate* (New York: W.W. Norton, 1995).