**ASPEN INSTITUTE CONGRESSIONAL PROGRAM**
**MANAGING THE U.S.-RUSSIAN NUCLEAR RELATIONSHIP**

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April 2011

## What Comes Next after New START

Reducing strategic nuclear arms has played a central role in the Obama administration's "reset" policy with Moscow. The administration believes the United States and Russia—which between them control more than 90 percent of the world's nuclear weapons—can significantly reduce their arsenals in a way that promotes a more stable nuclear balance. The administration also believes that such reductions will bolster the credibility of its efforts to discourage the proliferation of nuclear weapons.

The New Strategic Arms Reduction Treaty (New START) entered into force in February. It provides that, by 2018, U.S. and Russian strategic forces will each be limited to no more than 700 deployed intercontinental ballistic missiles (ICBMs), submarine-launched ballistic missiles (SLBMs) and nuclear-capable bombers, and 1550 deployed strategic warheads.[1] The United States will reduce more strategic delivery vehicles—missiles and bombers—while the Russians reduce more deployed strategic warheads.[2]

The Obama administration seeks another round of U.S.-Russian negotiations. President Medvedev has agreed in principle to a step-by-step process of nuclear reductions, though Moscow does not appear enthusiastic about engaging in early negotiations on further cuts and has said that other questions, such as missile defense, should be dealt with first. Any new negotiation will be a more complex process than the one that produced the New START Treaty. Third-country nuclear forces, missile defense and long-range conventional strike systems could also arise. In parallel, Washington and Moscow might consider cooperating to strengthen the broader nuclear non-proliferation regime.

## Further Reductions in Deployed Strategic Forces

In a new negotiation, one issue will be whether to reduce the limit on deployed strategic warheads. Some suggest, for example, that New START's 1550 warhead limit could be reduced to 1000.[3] Many analysts believe that the retirement of aging Russian systems will cause Russian deployed strategic warheads to fall to a level of 1000-1300, and that Moscow might then consider building back up to the 1550 limit.

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[1] "Deployed" systems include ICBMs in silos and SLBMs on submarines. The treaty also limits each side to 800 deployed and non-deployed launchers and bombers. "Non-deployed" launchers are empty ICBM silos and empty SLBM tubes. Typically, two U.S. Trident submarines are in port undergoing long-term maintenance and carry no SLBMs; their SLBM tubes count as "non-deployed" launchers.

[2] At the beginning of 2010, the United States deployed 832 strategic delivery vehicles with 1968 warheads. Russia deployed an estimated 566 strategic delivery vehicles carrying some 2600 warheads. Tables 1-4 provide more information on U.S. and Russian nuclear weapons numbers.

[3] Others would argue for deeper cuts, below 1000 deployed strategic warheads, but the Russians may not be prepared to go lower, at least not without bringing in third-country nuclear forces.

A closely related issue will be counting rules. New START counts the actual number of warheads on ICBMs and SLBMs.[4] The Pentagon has in the past considered putting conventional warheads on strategic missiles, a plan called "Prompt Global Strike." New START would count any conventional warheads on ballistic missiles under its 1550 limit. The administration does not see this as a problem; it says that it would deploy at most only a handful of conventional ballistic missile warheads. The sides might want to reconsider the bomber weapon counting rule; New START provides that each deployed bomber counts as only one warhead under the 1550 limit, even though bombers can carry many bombs or air-launched cruise missiles.[5]

The United States will implement much of its New START reductions by "downloading" warheads from ICBMs and SLBMs.[6] It will maintain 700 deployed ICBMs, SLBMs and bombers.[7] Russia, by contrast, will under New START reduce its deployed strategic delivery vehicles to 500 or fewer, due to the aging of its strategic ballistic missiles and the modest rate at which it is building new missiles. It does not appear that the Russians will download missiles; they will likely keep full warhead loads.

In a new negotiation, Moscow will almost certainly seek to reduce New START's limit of 700 deployed strategic delivery vehicles; any reduction of that limit would initially affect only U.S. strategic forces. Washington will not be enthusiastic but will likely have to consider bringing down the 700 limit if it wants an agreement.

**Non-Strategic Nuclear Warheads**

After the U.S. Navy retires the nuclear warheads for its sea-launched cruise missiles, as announced by the 2010 Nuclear Posture Review, the U.S. non-strategic nuclear arsenal will comprise 500 B-61 tactical bombs.[8] President Obama has stated that the next round of negotiations should address non-strategic nuclear weapons, and the Senate resolution of ratification for New START requires the administration to seek to initiate negotiations to reduce the disparity in U.S. and Russian non-strategic nuclear weapon numbers.

The Russian non-strategic nuclear inventory contains a wide range of weapons. While its geopolitical position may give Russia a greater need for non-strategic weapons, its current number—3700-5400, of which 2000 are considered readily deliverable—is hard

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[4] During inspections at ICBM bases or ballistic missile submarine ports, the inspected side informs the inspecting side of the number of warheads on *each* deployed missile at that base or port, and the inspecting side chooses one for inspection to confirm the count. This creates a risk of discovery that will dissuade cheating while minimizing the inspection's disruption of the base's normal operations.

[5] The logic for this "discount" rule is that bombers are less destabilizing, because they have flight times of eight-ten hours to target, compared to 15-30 minutes for SLBMs and ICBMs. As a result of this counting rule, once New START is fully implemented, the United States (and Russia) could have 1800-2000 warheads, though the treaty count would be 1550 or less.

[6] "Downloading" refers to removing warheads from missiles. The Minuteman III ICBMs, which can carry three warheads, will be downloaded to carry only one warhead each. Trident SLBMs will be downloaded to carry significantly fewer than their capacity of eight warheads.

[7] See Table 5 for the projected U.S. strategic nuclear force under New START.

[8] Hans M. Kristensen and Robert S. Norris, "Nuclear Notebook: U.S. Nuclear Forces, 2011," *Bulletin of the Atomic Scientists*, March/April 2011, pp. 66-76, http://bos.sagepub.com/content/67/1/64.full.pdf+html.

to justify.[9] The Russians show little interest in negotiating non-strategic weapons. They see these weapons as offsetting what they regard as conventional force disadvantages vis-à-vis NATO and China (this is nothing new; NATO during the Cold War saw its tactical nuclear weapons as offsetting the Soviet Union's superiority in conventional forces).

If they negotiate on non-strategic systems, Washington and Moscow would likely limit warheads, not delivery systems, as most tactical delivery systems—such as F-16s—have primarily conventional roles. Given the transportability of warheads, any limits should be global rather than regional.

Moscow will seek to require that all nuclear weapons be based on national territory. That would mean withdrawal of some 200 U.S. nuclear bombs from Europe. The U.S. military believes there is no military rationale for maintaining nuclear weapons in Europe, and some NATO members would support their removal. Others, however, see the weapons as an important political symbol of the U.S. commitment to NATO and oppose withdrawal. The United States will consult with NATO and other allies on the issue of non-strategic nuclear weapons, and NATO is currently conducting a Deterrence and Defense Posture Review that will include the Alliance's nuclear posture.

Short of a negotiated solution on non-strategic nuclear warheads, some suggest that the United States and Russia might consider other steps: confidence-building measures such as greater transparency on numbers or consolidation of weapons at storage sites away from NATO-Russian borders, and unilateral initiatives such as unilateral reductions, perhaps parallel equal percentage reductions. Such measures would tend to fall more heavily on the Russians, due to their larger non-strategic nuclear arsenal.

**Non-Deployed Strategic Warheads**

In addition to strategic warheads deployed on ICBMs and SLBMs, the United States and Russia each maintain non-deployed strategic warheads in storage. President Obama has said these should be included in the next negotiation, and the Russians will likely insist on it, because it is an area of U.S. advantage. The U.S. military could "upload" its Minuteman and Trident missiles, that is, return downloaded warheads to its strategic missiles, and significantly increase U.S. deployed strategic warheads beyond the New START 1550 limit. As Russia will not download its strategic missiles—and thus will have no empty spaces on its missiles on which to place additional warheads—the Russians will have no meaningful upload potential.

The U.S. military maintains non-deployed strategic warheads for use as spares, as a hedge against geopolitical surprise, and as a hedge against an unanticipated technical problem in a warhead type. The administration plans to spend $85 billion over the next ten years to make the nuclear infrastructure more robust and capable of faster fixes to technical problems. That could reduce the number of non-deployed strategic warheads the Pentagon desires as a hedge against a technical problem.

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[9] Hans M. Kristensen and Robert S. Norris, "Nuclear Notebook: Russian Nuclear Forces, 2011," *Bulletin of the Atomic Scientists*, May/June 2011 (forthcoming).

**A Single Limit on Nuclear Weapons**

If Washington and Moscow agree to bring non-strategic and non-deployed strategic warheads into the negotiation, they will for the first time be discussing limits on all nuclear warheads—except for those retired and in the dismantlement queue. The sides thus might consider whether it is time for a single limit covering all warheads. (There is broad interest in the U.S. government in this concept. The Russian government has not expressed a view, though some Russian non-governmental experts prefer that non-strategic nuclear weapons be dealt with separately.)

A single limit might offer a way to trade off the Russian advantage in non-strategic nuclear warheads and the U.S. advantage in non-deployed strategic warheads. For example, if the sides were to agree on a limit of 2500 total nuclear warheads each with a sublimit of 1000 deployed strategic warheads, they would be free to choose how to allocate the difference of 1500 (assuming that each took full advantage of its 1000 allotment for deployed strategic warheads). The Russians might choose to keep more non-strategic warheads, the United States more non-deployed strategic warheads.

**Verification and Monitoring Confidence**

If the sides agree to limit non-strategic and non-deployed strategic nuclear warheads, they will face new verification challenges. Under New START, monitoring the limit on deployed strategic warheads is straightforward, since the warheads are associated with deployed ICBMs and SLBMs in launchers, which are difficult to hide. Limits on non-strategic and non-deployed strategic nuclear warheads would raise issues such as inspections in warhead storage bunkers—new territory for both sides' militaries.

A new agreement could result in a two-tiered verification system. Using procedures building on New START, each side should be able to have high confidence in its ability to monitor limits on deployed strategic warheads and strategic delivery vehicles. However, assuming the sides are not prepared for "anytime, anywhere" challenge inspections, they would have less confidence in their ability to monitor limits on non-strategic and non-deployed strategic warheads. The U.S. government, and later the Senate, would have to judge whether the advantages of achieving some limits on Russian non-strategic nuclear warheads and some verification measures outweighed the lesser confidence in the ability to monitor those limits.

**Third-Country Nuclear Forces**

Britain, France, China, Israel, India, Pakistan and North Korea have nuclear arsenals, though the largest—either France or China at about 300 nuclear warheads—is just a fraction of the U.S. and Russian arsenals. At some point, however, the United States and Russia will not be inclined to continue reducing their nuclear forces without involving third countries. The Obama administration hopes that there can be one more agreement applying only to U.S. and Russian forces before engaging other countries.

In parallel with their bilateral negotiations, however, Washington and Moscow might begin consulting with Britain, France and China on those countries' nuclear forces and doctrines. That would inform the U.S.-Russian negotiation and begin to accustom those

countries to the idea that their nuclear forces would at some point become subject to the reductions process. The five countries are scheduled to meet in Paris in June to discuss nuclear weapons issues.

**Missile Defense and Long-Range Conventional Strike**

There are a number of other issues that will likely influence a future U.S.-Russian nuclear reductions negotiation. New START's preamble acknowledges the interrelationship between offense and defense: one side's defenses can affect the other side's offenses. The Russians worry that U.S. missile defenses could counter Russian strategic ballistic missiles and erode the Russian deterrent, even though U.S. policy seeks to defend only against *limited* ballistic missile threats posed by rogue states such as North Korea. New START imposes no meaningful limits on missile defense.[10] The Russians ultimately accepted that because they concluded that U.S. missile defenses would not threaten their strategic forces over the treaty's ten-year term.

The Russians remain concerned about future U.S. missile defenses. This concern could complicate the negotiation of further reductions. Given that the next treaty could extend to 2025 or 2030, and there is less clarity about U.S. missile defense plans in that period, Moscow will likely raise missile defense limits in the next START negotiation. The Obama administration opposes such limits. And, as was seen during the New START ratification debate, the Senate would likely reject a treaty limiting missile defense.

NATO-Russia missile defense cooperation—which is now under active discussion—may offer a way out of this potential conundrum. Real cooperation on missile defense would give Moscow significant transparency about U.S. missile defenses, and might help reassure the Russians that those defenses are not aimed against Russia.

The Russians also worry about the potential of long-range, precision-guided conventional strike systems—an area of U.S. advantage—to carry out missions that previously required strategic nuclear weapons. It might be useful to discuss the implications of such conventional weapons for the nuclear balance, with a view to increasing transparency and providing reassurance that such systems will not undercut a nuclear arms agreement.[11]

**Deep or Incremental Reductions?**

President Obama in April 2009 articulated the goal of a world free of nuclear weapons. He made clear, however, that much had to happen first and that, until that time, the United States would continue to maintain a robust nuclear deterrent. One issue for the next negotiation is how far the sides should reduce. It would be possible to design a stable balance in which the United States and Russia each had 1000 or even just 500 *total*

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[10] The one limit in New START on missile defense is a ban on placing missile defense interceptors in converted ICBM silos or SLBM tubes. There is no rationale for placing interceptors on submarines, and it costs $20 million less to build a new silo for a missile interceptor than to convert an existing ICBM silo.

[11] Russian analysts worry, for example, that U.S. cruise missiles with conventional warheads could destroy Russian ICBMs in their silos. U.S. Strategic Command officers, however, doubt that those warheads are powerful enough to disable Russian silos.

nuclear warheads. It is hard to see such reductions, however, without bringing in third-country nuclear forces, which would increase the complexity of the negotiation.

Moreover, the Russians appear to put greater weight on nuclear weapons for both military purposes and political prestige (nuclear weapons represent Moscow's last real claim to superpower status). Absent a paradigm shift in the two capitals, an effort to negotiate deep cuts would run the risk of bogging down. Washington and Moscow thus will likely pursue a more incremental approach to reductions.

**U.S.-Russian Cooperation on Non-Proliferation**

The Obama administration believes that New START strengthens its diplomatic hand in working against nuclear proliferation. To be realistic, neither New START nor a subsequent agreement is likely to change minds in North Korea or Iran; other strategies will be needed to persuade those countries to forgo nuclear weapons. But U.S. reductions may increase Washington's ability to mobilize other countries to work to dissuade Country X—the next country that considers proceeding down the nuclear weapons path.

New START, signed in April 2010, had a positive effect at the May review conference of the nuclear Non-Proliferation Treaty (NPT). The review conference produced a final document that reflected several key U.S. goals. (By contrast, the 2005 NPT review conference produced no final document, and the United States was seen as part of the problem.) If the United States and Russia begin new negotiations this year, they might achieve a successor agreement to New START providing for further reductions in U.S. and Russian nuclear forces by 2014. That would position Washington and Moscow to press, either before or at the 2015 NPT review conference, for expanding the nuclear arms reduction process to include third countries.

The United States and Russia might work together in other areas. For example, the April 2010 nuclear security summit in Washington resulted in a road-map under which all countries are supposed to carefully secure their stocks of plutonium and highly-enriched uranium by 2014. The United States and Russia have cooperated extensively over the past 15 years—including under the Nunn-Lugar Cooperative Threat Reduction Program—to improve the security of nuclear weapons and materials. They might jointly design a "gold standard" model for other countries. Washington and Moscow might also consider ways in which they could work together against possible nuclear terrorism.

Likewise, U.S.-Russian diplomatic cooperation could be important to launching a negotiation on a multilateral agreement to end the production of fissile materials for nuclear weapons. Finally, were the United States to ratify the Comprehensive Test Ban Treaty, Washington and Moscow might work together to persuade other countries to sign and ratify the agreement as well.

**Table 1: U.S. Strategic Nuclear Forces, 2010**[12]

| | Delivery Vehicles | Warheads |
|---|---|---|
| Deployed ICBMs/warheads | | |
| Minuteman III | 450 | 500 |
| Deployed SLBMs/warheads | | |
| Trident D-5[13] | 288 | 1152 |
| Nuclear-capable bombers/warheads | | |
| B-2 | 18 | 100 |
| B-52H | 76 | 216 |
| Total strategic delivery systems/warheads | 832 | 1968 |

**Table 2: U.S. Nuclear Warhead Numbers**

| | |
|---|---|
| Total number of nuclear warheads | ~9100 |
| Total nuclear arsenal[14] | 5113 |
| Deployed strategic warheads[15] | 1968 |
| Deployed non-strategic nuclear warheads[16] | 500 |
| Non-deployed strategic and non-strategic warheads | ~2600 |
| Warheads retired and awaiting dismantlement | ~4000 |

[12] Unless otherwise cited, numbers on this page are drawn from Robert S. Norris & Hans M. Kristensen, "U.S. Nuclear Forces, 2010," *Bulletin of the Atomic Scientists*, May/June 2010, pp. 57-71.

[13] This figure tallies 12 Trident ballistic missile submarines, each with 24 Trident D-5 SLBMs. The U.S. Navy also typically has two other Trident submarines in long-term overhaul; the SLBMs are removed from those submarines, and the SLBM tubes are thus considered "non-deployed."

[14] This is the number of U.S. nuclear warheads as of September 2009, as announced by the Department of Defense in May 2010. It includes all warheads except those retired and awaiting dismantlement.

[15] This is the number of deployed warheads on ICBMs/SLBMs and deployed at air bases for use by B-2s and B-52Hs as of the end of 2009, as disclosed by the Department of State in its annual report to Congress on implementation of the 2002 Strategic Offensive Reductions Treaty.

[16] "Deployed" has a different meaning for strategic and non-strategic warheads. In the former case, the New START Treaty defines "deployed" strategic warheads as those actually on ICBMs and SLBMs. Few if any non-strategic nuclear warheads are actually on their delivery systems, so "deployed" in this regard refers to readily usable non-strategic weapons, regardless of location. The U.S. number of 500 includes an estimated 200 B-61 bombs deployed at air bases in Europe for use by U.S. and allied aircraft.

**Table 3: Russian Strategic Nuclear Forces, 2010**[17]

| | Delivery Vehicles | Warheads |
|---|---|---|
| Deployed ICBMs/warheads | | |
| SS-18 | 50 | 500 |
| SS-19 | 60 | 360 |
| SS-25 | 150 | 150 |
| SS-27 (includes RS-24/Topol M) | 71 | 80 |
| Deployed SLBMs/warheads | | |
| SS-N-18 | 64 | 192 |
| SS-N-23 | 96 | 384 |
| SS-N-32 (Bulava) (in development) | 16 | - |
| Nuclear-capable bombers/warheads | | |
| Tu-95 Bear | 62 | 682 |
| Tu-160 Blackjack | 13 | 156 |
| Total strategic delivery systems/warheads | 566 | ~2600 |

**Table 4: Russian Nuclear Warhead Numbers**[18]

| | |
|---|---|
| Total nuclear warheads | ~11,900 |
| Deployed strategic warheads | ~2600 |
| Deployed non-strategic nuclear warheads | ~2000 |
| Non-deployed strategic and non-strategic warheads (includes warheads retired and awaiting dismantlement) | ~7300 |
| Non-deployed/retired Russian strategic warheads | ~4000 |
| Non-deployed/retired non-strategic warheads | ~3300 |

[17] Unless otherwise cited, numbers on this page are drawn from Robert S. Norris & Hans M. Kristensen, "Russian Nuclear Forces, 2010," *Bulletin of the Atomic Scientists*, January/February 2010, pp. 74-81.

[18] Tables 2 and 4 are not strictly comparable. Table 2 breaks out U.S. warheads that have been retired and are in the dismantlement queue; we do not have a comparable number for Russian warheads.

**Table 5: Notional U.S.-Russian Strategic Balance under New START**

| | U.S.[19] | Russia[20] |
|---|---|---|
| Deployed ICBMs | 420 | 192 |
| Warheads on deployed ICBMs | 420 | 542 |
| Deployed SLBMs[21] | 240 | 128 |
| Warheads on deployed SLBMs | 1090 | 640 |
| Deployed nuclear-capable bombers | 40 | 76 |
| Warheads attributed to nuclear-capable bombers | 40 | 76 |
| Total deployed ICBMs, SLBMs and nuclear-capable bombers | 700 | 396 |
| Total warheads counted/attributed[22] | 1550 | 1258 |

[19] The Pentagon has said that, under New START, the United States will deploy 240 SLBMs, up to 420 ICBMs and up to 60 nuclear-capable bombers. Given New START's limit of 700 deployed strategic delivery vehicles, if the United States chooses to deploy 420 ICBMs, it can only deploy 40 bombers; if it chooses to deploy 60 bombers, it can only deploy 400 ICBMs. This table assumes the former.

[20] The Russian numbers are based on calculations by Pavel Podvig, Russian Strategic Nuclear Forces, "New START Treaty in Numbers," russianforces.org/blog/2010/03/new_start_treaty_in_numbers.shtml. Hans Kristensen projects a slightly different Russian force: 403 deployed delivery systems capable of carrying 1349 warheads. DOD officials question whether the Russians will reduce their numbers so low, noting that Russia resisted a U.S. proposal to set the deployed strategic warhead level at 1500.

[21] The U.S. deployed SLBM number is arrived at as follows: the U.S. Navy intends to convert four launch tubes on each Trident ballistic missile submarine so that each submarine will be capable of carrying only 20 SLBMs. Twelve submarines with 20 SLBMs each totals 240 SLBMs (two additional Trident submarines are typically in long-term overhaul and carry no SLBMs).

[22] New START counts the actual number of warheads on ICBMs and SLBMs but attributes one warhead to each bomber, regardless of the number of bombs or air-launched cruise missiles the bomber may carry. Due to the attribution rule, it is possible that each side will have more than 1550 warheads on its deployed strategic force.