



SACEUR and Chairman of NATO military committee visit missile defense exhibition

NATO (Thorsten Bohlmayr)

Russia and European Missile Defenses Reflexive Reset?

By STEPHEN J. CIMBALA

The U.S.-Russian “reset” appeared to be in free fall in December 2011 as a result of both foreign and domestic policy issues that had dampened enthusiasm for further momentum. Among the forces resisting progress on nuclear arms control was the issue of missile defenses. The following discussion examines European (and other) missile defenses from the Russian perspective, with obvious implications for current and future U.S. and North Atlantic Treaty Organization (NATO) policies. The article first considers whether the outlook of

the Russian government and military leadership on missile defenses and nuclear arms control is driven by realistic fears and/or resistant forces in Russian domestic politics. It then discusses the possibility that aspects of Russian public diplomacy on missile defenses consist of a “reflexive control” or other influence operation, directed at both foreign and domestic audiences. The article then performs data analysis to determine the viability of Russian and U.S. strategic nuclear deterrents, including scenarios that assume antimissile defenses are available.

Russian Rethinking

Medvedev Stokes Fears. On November 23, 2011, then-Russian President Dmitry Medvedev issued a somber address in which he declared that Russia had been unable to

reach agreement with the United States and NATO over the future of missile defenses in Europe.¹ Accusing the United States and the Alliance of undermining Russia’s security, Medvedev censured Washington for its unwillingness to provide a legal guarantee that the Obama administration’s European Phased Adaptive Approach (EPAA) to European missile defenses would not be directed against Russia.² The outgoing Russian president presumably spoke with the approval of the current prime minister and probable future president Vladimir Putin.

Facing an imminent election in Russia that might have prompted his tougher line with respect to national security issues, Medvedev outlined a number of responsive measures that Russia would take if the United States and NATO continued to stiff Russia

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on missile defense talks. First, Russia would develop capabilities for “the destruction of information and control means of the missile defense system” deployed in Europe, meaning, in plain English, cyberwar. Second, the protection of Russian facilities for strategic nuclear weapons and launchers would be increased. Third, nuclear strategic ballistic missiles would be equipped with new countermeasures to overcome U.S. and NATO ballistic missile defenses. Fourth, Russia might deploy advanced attack systems in its western and southern districts capable of striking elements of the U.S. and NATO missile defense system, including Iskander ground-to-ground missiles in the Kaliningrad exclave.³ Fifth, Russia might suspend further cooperation on arms control and disarmament, and, according to Medvedev, “There might be grounds for our country to withdraw from the New START [Strategic Arms Reduction Treaty].”⁴ As Medvedev spoke, doubtless the Russian General Staff was loading his PowerPoint file with even more talking points for future briefings.

Although it was apparent that some of Medvedev’s rhetoric was intended for domestic political consumption, it would be mistaken to infer that his *démarche* was mainly or entirely campaign fodder. Russia’s political and military leaders have, from their perspective, genuine security needs and concerns that are evoked by the U.S. and NATO missile defense plans.⁵ For example, although the Duma had previously cautioned against jettisoning the entire reset process over missile defenses, the first deputy chairman of the Duma’s foreign affairs committee, Leonid Slutsky, warned of inevitable connections:

*The biggest success of this new chapter in Russian-U.S. relations was the signing of the New START treaty. But this treaty links strategic offensive weapons to missile defense. But the American administration, acting in circumvention of all agreements, is now trying to deploy systems near Russian borders that threaten our strategic nuclear deterrence forces.*⁶

Additional Challenges for Russia. In addition to the relationship between nuclear offensive retaliatory forces and antimissile strategic defenses, there is the fact that strategic nuclear deterrence per se is but one element in the Russian geopolitical security calculus.⁷ Russia faces the need to modernize its conventional military forces in order

to meet exigent and prospective threats to its security from conflicts near or within its borders, including terrorist attacks.⁸ Besides growing a more professional military for low- and mid-intensity wars, Russia must prepare for a world in which major powers and others can exploit the information highway for military purposes.⁹ As Jacob W. Kipp has noted:

*If the strategic nuclear arsenals have been the backbone of deterrence and strategic stability for the last half century, it appears that they are no longer sufficient to set the general line of relations in part because of the reduced threat perceptions of each side, but also because other military capabilities have taken on greater importance.*¹⁰

These other military capabilities include, according to Dr. Kipp, nonstrategic nuclear weapons, missile defenses, conventional systems for prompt, long-range offensive strikes, and military transformation in conventional armed forces driven by developments in C4ISR (command, control, communications, computers, intelligence, surveillance, and reconnaissance).¹¹ The United States, having mastered the information technology revolution and applied it to military affairs in the most comprehensive manner, has arguably provided its commanders the military-strategic equivalent of a trump card in information-based warfare. The Russian military leadership has also sought to exploit the electronic spectrum and cyberspace for military advantage, as Russia’s war against Georgia in August 2008 demonstrated. In that conflict, attacks on Georgian government and other Web sites appeared to have been well coordinated with Russian kinetic force operations, including suspiciously coincidental timing of starts and stops in activity.¹²

In addition, Russian military thinking about information operations (IO) and information warfare is quite sophisticated and has roots in Soviet-era discussions of topics such as electronic warfare, reconnaissance-strike complexes, and camouflage and concealment, among other subjects.¹³ Russian military writers distinguish between the information-technical and the information-psychological aspects of warfare and military operations.¹⁴ Information-technical aspects have to do with equipping the force with digital products and neutralizing the enemy’s information systems by means of electronic, cybernetic, or kinetic attacks. Information-psychological aspects

include use of the media and other sources to influence public and leadership opinion in other countries and in one’s own state. In addition to these two major categories of information operations, one might argue for a separate and specifically “cyber” aspect including “the use of military and surrogate computers to disrupt command and control” in countries in conflict with Russia.¹⁵ Timothy L. Thomas, U.S. expert on Russian information warfare, explains:

*If an information warfare element under consideration is a machine-driven, data-processor component (computers, sensors, satellites, reconnaissance-strike systems, etc.) then the category under consideration is information-technical. Electronic warfare would also be an element in this field. If the IO element is a human-based, data processor component (the brain, which can be influenced or manipulated by propaganda, psychotronics, nonlethal weapons, or special pharmaceuticals according to the Russian paradigm), then the issue under consideration is information-psychological. Thus, psychological operations (PSYOPS) are an element of this field.*¹⁶

Of course, the actual conduct of military operations or the prewar management of crises can involve both aspects of information operations as defined above. The point is to understand why and how Russia might be using what the United States would call “influence operations” or the Russians information-psychological operations to compensate for military-technical deficiencies in hardware, software, and command-control-communications “connectivity.”

If Russia is sincerely concerned about the possibility of U.S. full-spectrum dominance by means of offensive and defensive force modernization, network-centric warfare, and enhanced C4ISR, then it follows that Russia’s better strategic moves include both diplomatic forestalling and manipulation, as well as substantial investment in military modernization. However, Russia needs to nest these forestalling-manipulation and modernization initiatives within a broader geostrategic and diplomatic strategy that fits into present, and arguably future, reality.

Reflexive Control? An undiplomatic finger-pointing by Putin against Secretary of State Hillary Clinton over demonstrations in Russia in December 2011 was an obvious effort at distraction and buck-passing.¹⁷ But it

also contained elements of disinformation and misdirection familiar to students of Cold War Soviet military and intelligence practice. The concept of reflexive control appeared in Soviet military literature decades ago, referring to a means of conveying to another actor specially prepared information that would induce him “to voluntarily make the predetermined decision desired by the initiator of the action.”¹⁸ According to Thomas, reflexive control can be used against either human-mental or computer-based decisionmaking processors. Reflexive control is similar to the U.S. concept of “perceptions management” although it emphasizes control more than management of the target audience.¹⁹

Putin’s placement of blame on Secretary Clinton for demonstrations in Russia, unusually personal by normal diplomatic standards, had a reflexive control aspect for not only domestic but also foreign audiences, including Americans. The Russian prime minister was raising the cacophony bar, but in support of a familiar theme for his administration: Russian sovereignty imperiled by foreign sources, including nongovernmental organizations working in Russia and international media stories unsympathetic to Russia or to Putin. The sensitivity of Russian leaders on this point has been especially pronounced since the Rose and Orange revolutions in Georgia and Ukraine, respectively, and, more recently, Russia’s war with Georgia in 2008. Putin’s managed democracy or authoritarian capitalism, however one prefers to define it, is threatened by the very existence of grassroots dissidence on a large scale, especially if it escalates into an Arab Spring in Russia per the 2011 uprisings in North Africa and the Middle East. Thus, Putin’s pointer at Secretary Clinton was also a warning to domestic opponents not to push too far against the regime, despite its oligarchic and authoritarian tendencies. The Russian prime minister reiterated the same theme during his televised call-in show marathon of December 15, 2011, during which he noted that color revolutions “are special schemes to destabilize society” and added that Russian opposition activists were trained under Viktor Yushchenko, former president of Ukraine.²⁰

In the same fashion, Russian political leaders’ fulminations against U.S. missile defense plans for Europe have a reflexive control quality for domestic and international audiences, including the United States and NATO. Despite the U.S.-Russian reset and

the conclusion of the New START treaty on strategic nuclear arms reductions signed by Medvedev and President Barack Obama, European missile defenses have remained a serious bone of contention since 2007. This is so regardless of the uncertain technological capabilities of the proposed European missile defenses as first proposed by George W. Bush and then revised by President Obama.²¹

The reflexive control aspects of Medvedev’s and others’ opposition to U.S. and NATO European missile defenses include efforts to influence their government leaderships and public opinions in favor of either delaying or reconsidering the European missile defenses. A form of this message directed at Europeans partakes of intimidation. Russia threatens to move nuclear-capable missile strike forces closer to the locations of proposed missile defense installations. In addition, Russia might withdraw from the Intermediate Nuclear Forces Treaty and be free to deploy longer-range missiles pointed at NATO Europe for the first time since the 1980s. Russia’s threat of possible withdrawal from New START and follow-on negotiations spikes the blood pressure of not only U.S. advocates for nuclear arms reductions but also Europeans who might feel

detection, threat assessment, and choice of response. NATO has demurred at this proposal, preferring to have separately operated and maintained U.S.-NATO and Russian BMD systems that cooperate in selected areas, including a joint data center and shared information about missile warning. Russia has responded that, unless satisfied on this issue of joint participation in BMD, and unless reassured that planned NATO BMD interceptors are no prospective threat to its nuclear deterrent, Russia will take responsive measures unfriendly to the United States and NATO (as enumerated previously).

Russia’s demand for a legal guarantee that the European PAA missile defenses system is not aimed at Russia seems to contradict its expressed desire to share in the management and operation of a European-wide BMD system. The apparent contradiction is reduced if we assume that both the demand for legal guarantees and the demand for shared operation of the European BMD system together constitute an example of “nested” reflexive control—one pointed at the diplomatic level and the other at the military-technical level of U.S. and NATO decision-making. As to the first, at the diplomatic

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unprotected in the midst of a revived U.S.-Russia nuclear arms race. These and other messages about nuclear arms control and missile defenses are intended to separate ranks within NATO as to the desirability or feasibility of missile defenses and further nuclear arms reductions, including proposals for reducing the numbers of Russian and NATO nonstrategic nuclear weapons in Europe.

In addition to sticks with respect to Russian messages on missile defenses, the Kremlin has offered carrots. The most obvious carrot was Russia’s expressed interest in joining NATO in the construction and operation of an all-European missile defense system, a principle endorsed by NATO at its Lisbon summit in 2010. However, Russia’s concept of shared operations and control over European missile defenses differs markedly from the NATO version. Russia wants an integrated ballistic missile defense (BMD) system with overlapping Russian and NATO components and shared control over missile launch

level, the Obama administration has already indicated its willingness to provide reassuring political statements to Russian leaders, indicating that the European missile defense system is intended to deflect attacks from so-called rogue states such as Iran and North Korea, not from Russia. More than this, the United States has also invited Russia to send observers to missile test launches to verify that SM-3 interceptor missiles lack the performance envelopes to threaten Russia’s strategic nuclear deterrent. Reportedly, U.S. officials have indicated a willingness to share some of the technical specifications of the SM-3 with Russia, although Republicans in Congress have threatened to oppose this idea.²²

Despite these apparent overtures of U.S. cooperation, Russia has insisted on legal guarantees against the European missile shield being pointed at Russia, although:

- such a legal guarantee would be meaningless in the face of uncertain technology

developments in missile defenses, including the possible improvement in interceptor velocities, sensors, and battle management and command and control

- Russia would be shooting itself in the foot if it withdrew from the New START agreement over disagreements about missile defenses, since New START enables Russia to preserve an image of nuclear-strategic parity with the United States without the expense of an open-ended offensive nuclear arms race

- departing New START and declaring arms control dead because of BMD would deprive Russia of important diplomatic and military-technical windows into U.S. policy planning and defense modernization, including performance enhancements in missile defense and offensive nuclear force modernization.

The other aspect of Russian participation with NATO in a European-wide missile defense system is the suspicion on the part of Russia that the European PAA system is merely a part of the eventual, and perhaps inevitable, U.S. global missile defense system that would be capable of nullifying Russia's nuclear deterrent. Therefore, Russia wants to monitor the technical characteristics of the NATO European missile shield in order to devise countermeasures, when and if the system evolves into something approaching a global Leviathan that would give the United States a preclusive first-strike capability against Russia or any other nuclear weapons state. This fear of evolving U.S. offensive and defensive force modernization combining to establish an American departure from U.S.-Russian nuclear-strategic parity, or the impression of nuclear-strategic parity, is as much a political as a military-technical preoccupation for Russia. The same concern motivates Russia's objections to U.S. conventional prompt global strike systems: Russia fears that conventional prompt global strike systems could be used as first strike weapons against other states' nuclear or conventional forces, backed up by expanded and improved American continental and worldwide missile defenses.

U.S. Ambassador to NATO Ivo Daalder indicated in December 2011 that U.S. and NATO plans for European missile defenses would go forward with or without Russia. According to Ambassador Daalder, Russian concerns were not as important as the accelerating Iranian missile threat: "We're deploying all four phases [of the EPAA] in order to deal with that threat."²³ He added

that, if the United States should decide to field missile defense systems against Russian nuclear weapons, those defenses would be deployed in the United States, not in Europe, on account of the physical principles of missile interception that make it "easier and better to approach an incoming missile from the opposite side than it is to try to chase it down."²⁴

However, the command-control and political decisionmaking aspects of PAA are more complicated than that. EPAA capabilities will support U.S. obligations to the defense of NATO as required under Article 5. But these capabilities will also be used to support U.S. forces deployed overseas and, with respect to the fourth phase of EPAA evolution, U.S. homeland defense. As Daniel Goure has explained:

*This means that in some instances the EPAA will operate under NATO's direction and rules of engagement but in others will be under direct U.S. command and control. When—or if—phase four capabilities are deployed to Europe, for the first time since ballistic missile defenses were deployed in the 1960s, the defense of the homeland against ballistic missile attack will rely, at least in part, on interceptors fired from outside the United States.*²⁵

Russia's need for reassurances against U.S. and NATO missile defenses is based on

Russia fears that conventional prompt global strike systems could be used as first strike weapons against other states' nuclear or conventional forces

worst-case analysis relative to the ability of Russia to maintain its image as a great power. The U.S. Missile Defense Agency (MDA) has acknowledged many technical challenges standing in the way of completing all four phases of the EPAA plan, including the possibility that the MDA will have to design an entirely new missile for the SM-3 IIB variant, together with a new launch system. And each phase of EPAA will require improvements in space-based and airborne sensors as well as in battle management and command and control systems.²⁶ Progress in technology development also assumes consistent funding from Congress, an uncertainty within the prevailing U.S. political climate of reducing deficits and shrinking defense budgets.

Nevertheless, worst cases have a way of becoming standard talking points in the Kremlin, depending on the prevailing winds in domestic politics. Just now, these winds are pushing in the direction of more open political discontent against Putin as an icon and against Putin's form of managed democracy combined with oligarchic capitalism. This is not a supportive political milieu for NATO-Russia rapprochement over nuclear arms control, nonproliferation, or missile defenses. Both Russian and American political establishments will be tempted toward hunker-down, bunker-down reflexes in which they will be controlling themselves and their domestic political opponents more than they will succeed in controlling or influencing others.

Notwithstanding these toxic political waters, analysis can contribute to the modification of excesses in political prognostication and in military forecasting.

Analysis

In the analysis that follows, we generate hypothetical, but not unreasonable, strategic nuclear forces for the United States and for Russia that are within New START guidelines and counting rules for deployed weapons and launchers, circa 2018–2020.²⁷ In the figures that follow, we summarize the results of nuclear force exchanges between

the United States and Russia under four operational conditions for New START compliant forces with a peacetime deployment limit of 1,550 nuclear warheads on intercontinental launchers and for a smaller force with a maximum limit of 1,000 warheads. The four operational conditions for second strike retaliation are:

- forces are on generated alert and launched on warning (Gen/LOW)
- forces are on generated alert and riding out the attack (Gen/RO)
- forces are on day-to-day alert and launched on warning (Day/LOW)
- forces are on day-to-day alert and riding out the attack (Day/RO).

Figure 1. U.S.-Russia Surviving and Retaliating Warheads New START Deployments

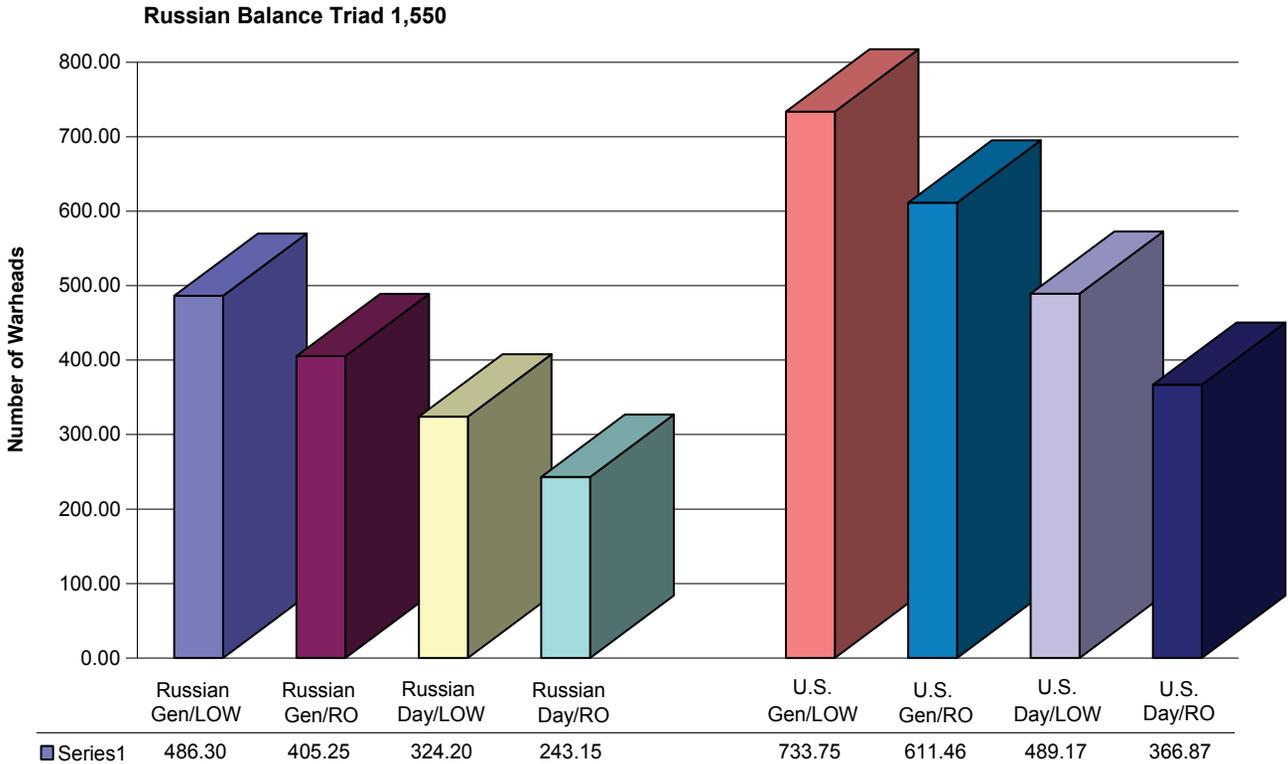


Figure 2. U.S.-Russia Surviving and Retaliating Warheads 1,000 Deployment Limit

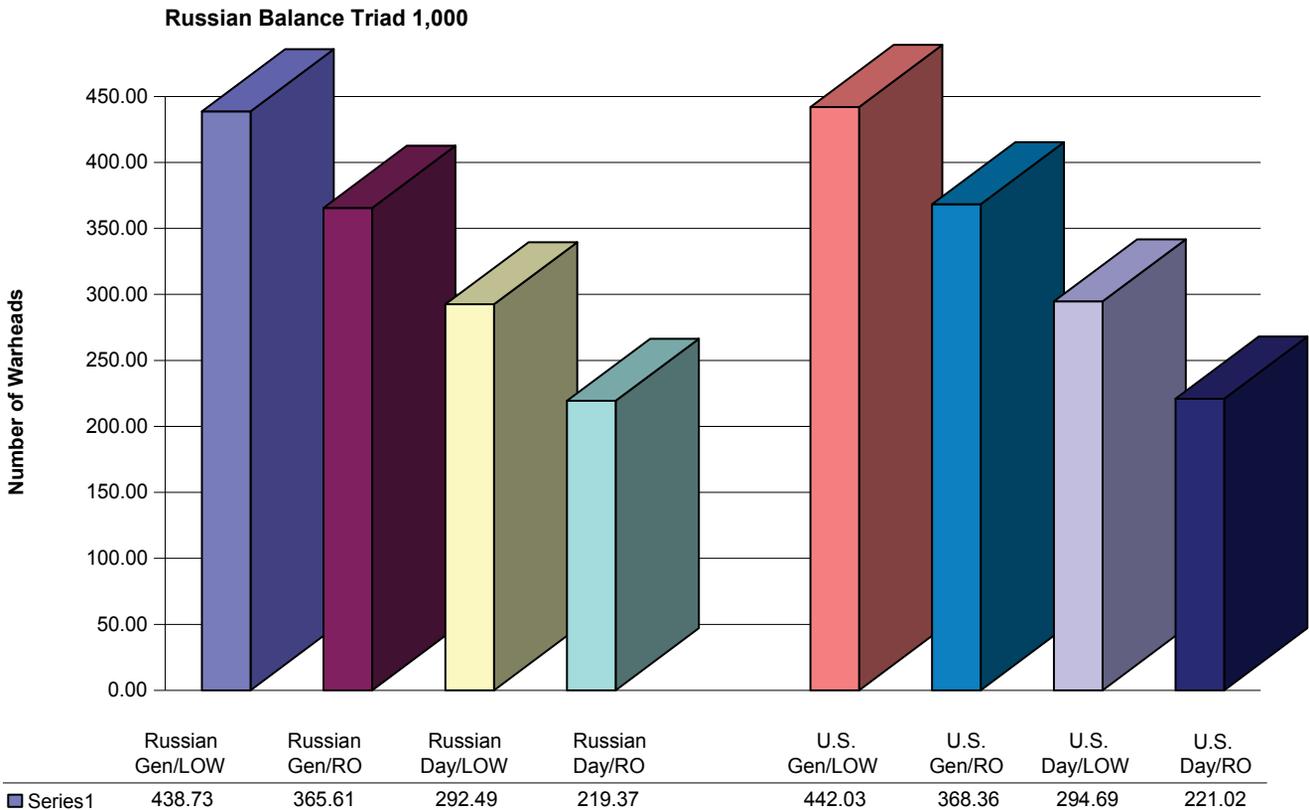


Figure 3. U.S.-Russia Surviving and Retaliating Warheads vs. Defenses New START Deployment

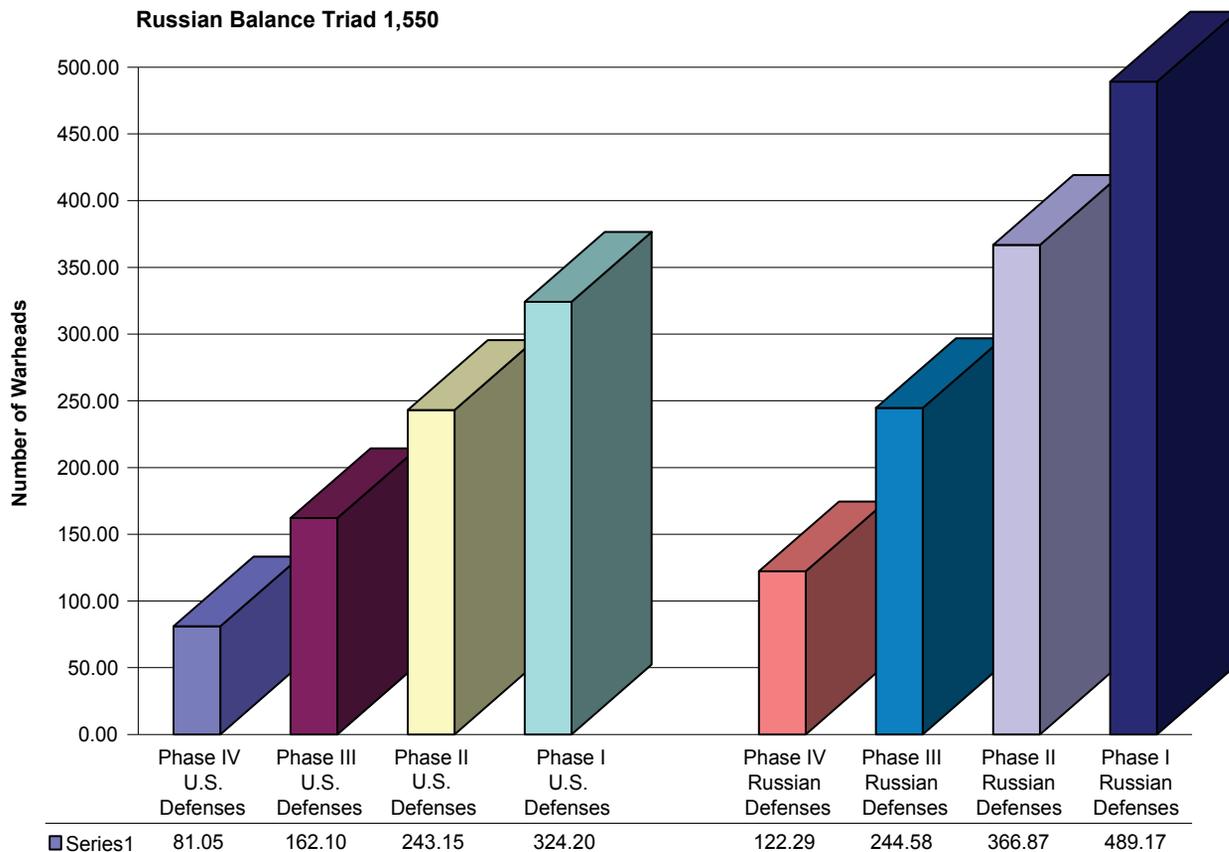


Figure 4. U.S.-Russia Surviving and Retaliating Warheads vs. Defenses 1,000 Deployment Limit

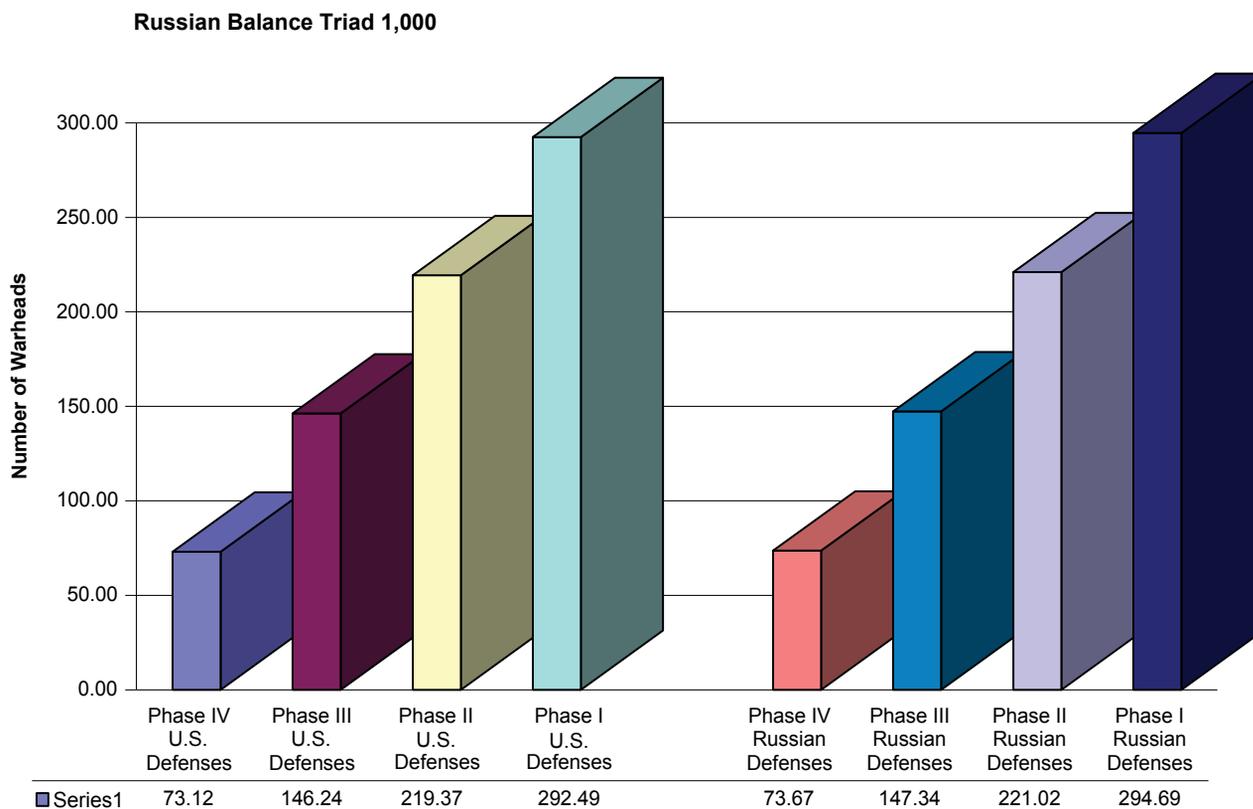


Figure 1 summarizes the outcomes for the 1,550 weapon deployment limit. Figure 2 provides similar information for the 1,000 warhead limit.²⁸ For the sake of completeness in analysis, the results for U.S. and Russian balanced triad force structures are compared with the outcomes for alternative force structures for each state.²⁹

The results summarized in figures 1 and 2 show that the United States and Russia can fulfill the requirements for stable deterrence based on assured retaliation at, or even below, New START deployment ceilings. In either case, sufficient numbers of surviving and retaliating warheads exist to destroy unacceptable numbers of the first striker's major cities and/or national infrastructure. The 1,000 deployment ceiling limits the options for attacking nuclear counterforce targets in retaliation more than does the 1,550 deployment limit, but especially in the most likely retaliatory postures during a crisis (generated alert and launch on warning, or generated alert and riding out the attack). Surviving and retaliating land- and sea-based forces and bomber delivered weapons provide some leverage against that target class. In addition, since the model is following New START counting rules that count each heavy bomber as only one weapon, it understates the number of surviving and retaliating weapons for each state, but especially for the better equipped U.S. bomber force.

Would missile defenses deployed by either or both sides change the outcomes depicted in figures 1 and 2? In figures 3 and 4, we examine the impact of antimissile defenses on retaliating U.S. and Russian second strike forces assuming an overall penetration capability for each side against opposed defenses of 40 percent (60 percent of the retaliators are intercepted or otherwise deflected away from their intended targets). This is a generous assumption for the effectiveness of missile defenses given present and foreseeable technologies. Figure 3 summarizes these results for the larger peacetime deployment limit of 1,550 warheads and figure 4 for the smaller peacetime deployment limit of 1,000 weapons.

The results summarized in figures 3 and 4 show that even the smaller (1,000 limit) of the two forces for each state can provide for numerous retaliating and arriving second strike warheads against opposed defenses of high competency by today's standards. Russian forces on day-to-day alert and riding

out the attack are limited to several tens of surviving and retaliating weapons, but Russian forces in a crisis will be alerted so this finding is an improbable worst case for them. On the other hand, if either the United States or Russia deployed advanced missile defenses in sufficient numbers to shift this equation, stable deterrence could be placed at risk—or, at least, the political perception of it.³⁰

Conclusions

There is nothing necessary or inevitable about the backsliding in the reset in U.S.-Russia relations, including the potential for additional strategic nuclear arms reductions. The United States and Russia could maintain stable deterrence based on assured retaliation at New START or lower levels, even in the face of highly competent defenses deployed by either state or by both states. Another reason for restarting the reset in U.S.-Russia nuclear arms control is

ping the New START ceilings on deployed warheads from 1,550 to 1,000 for each state creates a behavior space for launching a tiered multilateral nonproliferation regime among existing nuclear powers.³¹

As for missile defenses, allowing regional or continental missile defenses to become incubators of distrust or gridlock, as between Russian and U.S. or NATO negotiators, is politically shortsighted and militarily unjustified. The performances of future missile defenses are guesswork on a good day (including in this article). Their political effects are at least two-sided. First, they can support deterrence by denial by making it more difficult for attackers with small arsenals to accomplish their objectives. Second, to the contrary, as more states acquire missile defenses, their rivals or enemies may be motivated to pursue countermeasures—including more offensive weapons. In this second scenario, missile defenses can contribute to an



Secretary of State Clinton meets with Russian president outside Moscow

to create additional momentum for NATO-Russia negotiations on reducing or eliminating nonstrategic nuclear weapons deployed in Europe. Nonstrategic nuclear weapons talks need to get moving before Russia is tempted to abrogate the Intermediate Nuclear Forces Treaty and redeploy intermediate- and shorter-range missiles in Europe and in Asia. A third reason for post-New START reductions is to establish the United States and Russia as reliable leaders for multilateral nuclear arms reductions among the remaining nuclear weapons states. Drop-

eventual arms race even if they provide more reassurance against an imminent threat of nuclear first strike. Whether missile defenses become positives or negatives in U.S.-Russia relations therefore depends upon politics—including the vagaries of domestic politics in the United States and Russia. **JFQ**

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NOTES

¹ “Russia Warns of Response to U.S. Missile Shield,” VOA News, November 23, 2011, available at <www.voanews.com/content/medvedev-accuses-usnato-ignoring-russias-worries-134400498/148629.html>.

² Pertinent background appears in “Russia Profile Weekly Experts Panel: Medvedev’s Stance on Missile Defenses,” December 2, 2011, available at <http://russiaprofile.org/experts_panel/50357.html>.

³ “Missile shield remarks forced measure, not political rhetoric—Medvedev,” *RIA-Novosti*, December 1, 2011.

⁴ Alexander Golts, “Medvedev Mollifies the West,” *Moscow Times*, November 29, 2011.

⁵ Ruslan Pukhov, “Medvedev’s Missile Threats Are His Plan ‘B,’” *Moscow Times*, December 1, 2011.

⁶ “Duma wants reset between Russia and the US to be linked to MD talks,” *Itar-Tass*, November 28, 2011.

⁷ For important perspective on this, see Stephen J. Blank and Richard Weitz, eds., *The Russian Military Today and Tomorrow: Essays in Memory of Mary Fitzgerald* (Carlisle, PA: U.S. Army War College, July 2010); Anders Aslund and Andrew Kuchins, *The Russia Balance Sheet* (Washington, DC: Peterson Institute for International Economics and Center for Strategic and International Studies, April 2009); and Olga Oliker et al., *Russian Foreign Policy: Sources and Implications* (Santa Monica, CA: RAND, 2009).

⁸ See Roger N. McDermott, *The Reform of Russia’s Conventional Armed Forces: Problems, Challenges and Policy Implications* (Washington, DC: The Jamestown Foundation, 2011); and Dale R. Herspring, “Is Military Reform in Russia for ‘Real’? Yes, But,” in *The Russian Military Today and Tomorrow*, 151–191.

⁹ Russian military thinking and relevant traditions on this subject are explored in Timothy L. Thomas, *Recasting the Red Star: Russia Forges Tradition and Technology through Toughness* (Ft. Leavenworth, KS: Foreign Military Studies Office, 2011).

¹⁰ Jacob W. Kipp, “Deadlock on NATO-Russian Cooperation on European Missile Defense and a New Nuclear Arms Race (Part One),” *Jamestown Foundation Eurasia Daily Monitor*, November 30, 2011.

¹¹ Ibid.

¹² Ariel Cohen and Robert E. Hamilton, *The Russian Military and the Georgia War: Lessons and Implications* (Carlisle, PA: U.S. Army War College, June 2011), esp. 44–48. See also Thomas, *Recasting the Red Star*, 221–261; and Timothy L. Thomas, “Russian Information Warfare: The Consequences of August 2008,” in *The Russian Military Today and Tomorrow*, 265–300.

¹³ For an especially ambitious example, see V.V. Druzhinin and D.S. Kontorov, *Concept, algorithm, decision: Decision making and automation (a Soviet view)* (Moscow: Ministry of Defense of the USSR, 1972), trans. and published under the auspices of the U.S. Air Force. See also Thomas, *Recasting the Red Star*, 69–81.

¹⁴ Timothy L. Thomas, *Cyber Silhouettes: Shadows Over Information Operations* (Ft. Leavenworth, KS: Foreign Military Studies Office, 2005), 74, passim.

¹⁵ Thomas, *Recasting the Red Star*, 247.

¹⁶ Thomas, *Cyber Silhouettes*, 166–167.

¹⁷ See Kathy Lally and Karen DeYoung, “Putin accuses Clinton, U.S. of fomenting election protests,” *The Washington Post*, December 8, 2011, available at <www.washingtonpost.com/world/europe/putin-accuses-clinton-us-of-stirring-election-protests/2011/12/08/gIQA0MUDfO_story.html>.

¹⁸ Thomas, *Cyber Silhouettes*, 244.

¹⁹ Ibid. On perception, see Richards J. Heuer, Jr., *Psychology of Intelligence Analysis* (Washington, DC: Central Intelligence Agency, 1999), 7–16, 127–146.

²⁰ Nicholas von Twickel, “Putin Assails U.S. and Protestors,” *Moscow Times*, December 16, 2011.

²¹ Robert M. Gates, “A Better Missile Defense for a Safer Europe,” *The New York Times*, September 19, 2009, available at <www.nytimes.com/2009/09/20/opinion/20gates.html>. The Obama Phased Adaptive Approach to missile defense will retain and improve some technologies deployed by the George W. Bush administration, but shift emphasis to other interceptors, supported by improved battle management, command, control, and communications systems and launch detection and tracking. See the Unclassified Statement of Lieutenant General Patrick J. O’Reilly, USA, Director, Missile Defense Agency, Before the House Armed Services Committee, Washington, DC, October 1, 2009.

²² Kirill Belianov and Gennadi Sysoev, “U.S. Congress on Intercept Course. Washington Is Still Trying to Convince Russia that the Future European Missile Shield Will Pose No Danger to Its Strategic Nuclear Forces,” *Kommersant* (Moscow), November 21, 2011.

²³ Ivo Daalder, U.S. Ambassador to NATO, cited in “Russia Will Not Stop U.S. Missile Defense Plans, Envoy Says,” *Global Security Newswire*, December 5, 2011.

²⁴ Ibid.

²⁵ Daniel Goure, “The Obama Administration’s Phased Adaptive Architecture: Technological, Operational and Political Issues,” unpublished paper, December 2011, 15. Dr. Goure is not responsible for its use here, nor for any arguments or opinions in this study.

²⁶ Ibid., 11, passim. See also Unclassified Statement of Lieutenant General Patrick J. O’Reilly, Director, Missile Defense Agency, Before the House Armed Services Committee, Subcommittee on Strategic Forces, Regarding the Fiscal Year 2011 Missile Defense Programs, Washington, DC, April 15, 2010.

²⁷ Forces are notional and not necessarily predictive of actual deployments. For expert projections, see Arms Control Association, “U.S. Strategic Nuclear Forces Under New START,” October 2012, available at <www.armscontrol.org/factsheets/USStratNukeForceNewSTART>; Arms Control Association, “Russian Strategic Nuclear Forces Under New START,” available at <www.armscontrol.org/factsheets/RussiaStratNukeForceNewSTART>; Joseph Cirincione, “Strategic Turn: New U.S. and Russian Views on Nuclear Weapons,” June 29, 2011, available at <http://newamerica.net/publications/policy/strategic_turn>; and Pavel Podvig, “New START Treaty in Numbers,” April 9, 2010, available at <http://russianforces.org/blog/2010/03/new_start_treaty_in_numbers.shtml>.

²⁸ The author gratefully acknowledges Dr. James Scouras for use of his AWSM@ nuclear force exchange model in this study. Dr. Scouras is not responsible for its use here or for any arguments in this paper.

²⁹ For Russia, the alternative force structures are a dyad of intercontinental ballistic missiles (ICBMs) and sea-launched ballistic missiles (SLBMs) with no bombers, a dyad of ICBMs and bombers with no SLBMs, and a force composed entirely of ICBMs. For the United States, the alternative force structures are a dyad of SLBMs and bombers without ICBMs, a dyad of ICBMs and SLBMs without bombers, and a force composed entirely of SLBMs.

³⁰ These results are consistent with analyses completed by other researchers using different analytical models. See, for example, Bruce Blair et al., “Smaller and Safer: A New Plan for Nuclear Postures,” *Foreign Affairs* (September/October 2010), 9–16.

³¹ For example, a three-tiered system might establish maximum numbers of operationally deployed long-range nuclear weapons among nuclear weapons states as follows: 1,000 deployed weapons each for Russia and for the United States; 500 each for China, France, and the United Kingdom; and 300 each for India, Israel, and Pakistan.