

From Mutual Assured Destruction to Mutual Assured Stability

Exploring a New Comprehensive Framework for U.S. and Russian Nuclear Arms Reductions

A joint Report by the Natural Resources Defense Council (NRDC), Washington, D.C.,
and The Institute for USA and Canadian Studies (ISKRAN), Russian Academy of Sciences, Moscow

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Dedication

This report is dedicated with gratitude to the memory of Colonel Valery Yarynich, 2 June 1937 - 13 December 2012, who, as Bruce Blair articulated so well, was “a fearless, dogged, and smart colleague and friend who did more than anyone to bring us together to work to prevent nuclear disaster.”



In November 1983, during an autumn of Cold War tensions between the United States and the Soviet Union, a skilled Soviet military communications specialist struggled in secret for 10 days to send a radio signal from a waterlogged tunnel deep inside a mountain in the Urals. The code name of the redoubt was “Grot,” or grotto. Around him, construction crews blasted away at the rock, building a hardened command post for the Soviet Strategic Rocket Forces. The specialist’s goal was to find out if a radio signal could penetrate the mountain and reach the outside. If so, it would be from there that Soviet rocket commanders might manage a nuclear war.

The specialist was Col. Valery E. Yarynich, and he proved the radio would work. The next year, he got another difficult assignment: to perfect a troubled system, partially automatic, that would launch Soviet intercontinental ballistic missiles in a retaliatory strike if the Kremlin leadership were decapitated in a nuclear attack. One of the most creative, astonishing and dangerous projects of the Cold War, it was named Perimeter, although known informally as the Dead Hand. Yarynich succeeded at that assignment, too. Perimeter was put on combat duty in 1985.

Then Yarynich went to a think tank in the Soviet general staff. There, using modeling with new computer capabilities, he showed the critical importance of command-and-control systems in nuclear deterrence. He realized that, more than rockets and warheads, the brains of nuclear forces were most vulnerable and most important.

Yarynich was a son of the nuclear age. He served in the first Soviet ICBM division, carving a rocket base out of the forest north of Kirov. Later, he was on duty when Soviet forces went on alert over the Cuban missile crisis. In the early 1980s, he visited the deeply buried spherical concrete bunkers of Perimeter, where a handful of duty officers might someday make a doomsday decision about whether to launch a retaliatory nuclear strike.

In later years, Yarynich expressed grave doubts about the very systems of annihilation he had devoted his career to perfecting. He once told me it was utter stupidity to keep the Dead Hand secret; such a retaliatory system was useful as a deterrent only if your adversary knew about it. More broadly, he came to doubt the wisdom of maintaining the cocked-pistols approach to nuclear deterrence, the so-called hair-trigger alert, especially after the Cold War ended. He feared it could lead to an accidental or mistaken launch. Yarynich did not keep quiet. He decided to share his insights and worries with the world.

This took courage. Even after the Soviet collapse, discussion of such topics remained guarded in Russia. In the early 1990s, Yarynich cautiously shared key details about Perimeter with an inquiring Bruce Blair, then of the Brookings Institution, who revealed the existence of the quasi-automatic system in a New York Times op-ed. In 2003, Yarynich authored a book, “C3: Nuclear Command, Control, Cooperation,” which laid out more startling details. It was published not in Moscow but by Blair’s organization, the Center for Defense Information.

Yarynich harbored a dream that someday both the United States and Russia might share the secrets of command-and-control. He was certain it could lead to deterrence with far fewer nuclear warheads. He also favored taking missiles off launch-ready alert. He tirelessly expounded his logic, yet governments were not interested. The high priests of nuclear command-and-control could not envision opening up to each other, not here, nor in Russia.

In fact, the United States and Russia bickered for a decade over a plan to establish a joint early-warning and data-sharing center and failed to do so. Barack Obama promised in his 2008 campaign to take nuclear missiles off launch-ready alert but has failed to do so since his election. Many times while researching a book on the Cold War arms race, I witnessed reactions of disbelief and uncertainty to Yarynich’s entreaties. It was remarkable enough for a veteran of the Soviet rocket forces to speak so candidly, and doubly so that he would broach openness in a field that had long been closed.

Yarynich died Dec. 13 at age 75 in Moscow from complications following cancer surgery. His dream was unfulfilled. Nuclear-armed missiles are still ready to launch in both the United States and Russia within minutes after an order is given. Yarynich took personal risks to break down walls of secrecy and point out the dangers. He wanted to share a lifetime of experience in the shadow of nuclear war. He worked on the most frightening inventions of the Cold War and hoped to retire them, peacefully.

“Valery Yarynich, the man who told of the Soviets’ doomsday machine,” by David E. Hoffman appeared in the *Washington Post* on December 20, 2012.

INTRODUCTION

The Natural Resources Defense Council (NRDC) conducted two workshops with members of The Institute for USA and Canadian Studies (ISKRAN), Russian Academy of Sciences, Moscow, to examine questions surrounding the future of U.S.–Russian arms control. The first meeting was held in Washington, D.C., in late May and early June 2011, and the second meeting was held in Moscow in March 2012. Our primary goal was to describe a set of further arms control options for these two countries at a time when their national leaderships are in a period of potential change. The secondary goal was to facilitate a greater understanding of Russia’s perspectives on its national security and how nuclear weapons fit into the larger picture of Russian security planning. NRDC’s experience is that while intragovernmental debates on nuclear weapons policy are often fought out in public in the United States, it remains difficult to gauge the nature and extent of other states’ internal nuclear policy deliberations.

Several broad themes emerged from these workshops. First, the meetings captured the recognition that core aspects of the Cold War’s deterrent framework of nuclear mutual assured destruction (MAD) are still in effect for the United States and Russia, and participants at the meetings put forward the idea that both countries could move beyond MAD to a different paradigm: mutual assured stability, or MAS. Can each side’s enduring requirements for rough numerical parity in nuclear forces, counterforce targeting doctrines, concern over decapitating strikes, and reliance on early warning be relaxed or eliminated? This theme from the workshops seeks to formulate “strategic stability” between the United States and Russia in broadened terms—not just focused on stability with respect to ensuring continued mutual deterrence and the elimination of any possible “incentives” to limit damage by striking first with nuclear weapons.

Second, the workshops emphasized the importance of increased mutual understanding on a wider range of security issues that, certainly from Russia’s perspective, seem likely to play a role in future negotiated arms control agreements. In addition to a strategic nuclear balance, these associated security issues include missile defenses, tactical nuclear weapons, long-range conventional “global strike” weaponry, and the conventional military balance involving not just the conventional military forces of the United States and Russia, but also the entirety of military capabilities of NATO and the People’s Republic of China.

The NRDC-ISKRAN meetings frankly explored the question of whether the bilateral arms control process between Russia and the United States has been exhausted, or whether another agreement like the New Strategic Arms Reduction Treaty (New START) is achievable. Very broadly, meeting participants concluded that a further negotiated arms control agreement between the United States and Russia in the framework of the START process may be possible, but achieving future steps will require creative new thinking and collateral agreements or understandings on additional security issues that have not been part of the START process before. Exploring beyond a successor treaty to New START, meeting participants concluded that reducing nuclear weapons to very low numbers will likely require a multilateral approach, as the sizes of the nuclear arsenals of Russia and the United States approach those of China, France, and the United Kingdom.

Reflecting global changes over the two decades since the end of the Cold War, the principal forces at work internationally are now basically economic in character rather than geopolitical. Moscow and Washington have found it difficult to adjust their relationship to this new reality of the 21st century. Inter-state competition has shifted from the ideological domain, characterized by competing power blocs with radically different socioeconomic systems, to the domain of economic competition and cooperation between states within a single global market economy. Struggles for socioeconomic advancement and ethnic and political rights are now waged mainly within rather than between nations, which (with rare exceptions) participate in the global marketplace via some form of public-private mixed economy. State governments, national private-sector interests, and multinational corporations, in varying proportions, are now the important economic actors. The global Cold War between opposing systems, which spawned both vast nuclear arsenals and mutually destructive doctrines of nuclear deterrence, has faded into history, making the nuclear weapons themselves—and their future spread—the main threat to international security. With this perspective, the workshops sought to map a course from mutual assured destruction to mutual assured stability.

EXPLORING THE CONCEPT OF MUTUAL ASSURED STABILITY (MAS)

At these workshops NRDC and ISKRAN considered a basic underlying question: Can the United States and Russia fundamentally transform their relationship to move away from the Cold War model, which was formed decades ago but still dominates their nuclear postures? Unfortunately, strategic stability in Russian–American relations still remains narrowly defined as the deterrence of a surprise, massive nuclear attack. Both Russia and the United States behave as if a disarming, decapitating nuclear strike may really happen at any time, and the MAD paradigm includes reliance on early warnings of attack and a high readiness of nuclear forces.

Recently, the head of the U.S. Strategic Command, General C. Robert Kehler, said this about keeping strategic nuclear weapons on alert: “I also think that it’s important that we offer to the president, as long as he believes he needs this kind of capability, the ability to respond to a full range of scenarios, to include the very, very unlikely but not zero possibility in a future crisis of a very short-notice attack of some kind... [I]f I look at the capabilities inherent in other arsenals in the world, the capability to launch a short-notice attack continues to exist. As long as it does, my view is that we need to deter that. And part of our deterrence is a posture that allows the president, if he so chooses, to respond promptly if he if he needs to do that.”¹

The New Strategic Arms Reduction Treaty (New START), ratified by the United States on December 22, 2010, and by the Russian Federation on January 28, 2011, does not represent a step away from MAD, but rather is a means to make MAD more predictable and reliable for the United States and Russia by reducing the number of strategic missile launchers by half from previous levels. From the perspectives of U.S. and Russian participants in the NRDC meetings, however, the New START did not succeed in changing the narrow definition of strategic stability based on the Cold War security model. Very large strategic arsenals still remain, including many nuclear weapon types not covered by New START, and doctrines of launch on warning are still in effect.

Russia and the United States have to change the rules of the game to move forward on arms control. To make further reductions in nuclear arsenals, Russia wants assurances from the United States that it will not deploy large future missile defenses capable of compromising the credibility of Russia’s nuclear deterrent. Russia and the United States could abandon the long-standing distinctions between strategic and nonstrategic weapons, and between deployed and non-deployed weapons, to reduce their arsenals within a stronger comprehensive framework. To support this new, comprehensive approach to arms control, both countries could make changes to their declaratory nuclear policies rejecting counterforce targeting. When the security role of each nation’s nuclear weapons is confined solely to deterring potential nuclear use by others, this creates at least the logical and political possibility of continuing the arms reduction process toward some future goal that approximates nuclear abolition, effectively ending the threat to humanity of mass annihilation from an intercontinental nuclear armageddon from a sudden, large-scale intercontinental nuclear exchange.

But the need for a strong U.S.–Russian nuclear security partnership will endure, in concert with other disarming nuclear weapon states, to ensure that residual fissile material stocks and stocks for the nuclear energy industry do not become a source for nuclear terrorism or new nuclear weapon powers. Fundamentally, MAS reinforces the idea that there is no mutual enmity or common enemy for which numerically large, launch-ready nuclear forces are still needed. It reaffirms that the United States and Russia have rejected and moved beyond a framework for security that includes plans to wage war with nuclear weapons.

THE IMPACT OF MISSILE DEFENSES ON FUTURE BILATERAL ARMS CONTROL

Missile defense has become one of the most contentious issues obstructing the path to deep nuclear arms reductions; it cardinally affects the answers to many other questions regarding U.S. and Russian security relations. On June 13, 2002, the United States unilaterally withdrew from the 1972 Anti-Ballistic Missile (ABM) Treaty, after which it formed the U.S. Missile Defense Agency, adding to Russian distrust of the West that was already on the rise due to NATO’s 1998 involvement in the Kosovo conflict and its 1999 eastward expansion to Poland, Hungary, and the Czech Republic. Ironically, it was the United States that convinced the Soviet Union through protracted negotiations early in the Cold War that the ABM Treaty was necessary for strategic stability, only to pull out of the treaty 30 years later. Russia’s current concern regarding missile defense is that an American and European ABM system will enable the United States to intercept a Russian nuclear retaliation, and therefore compromise Russia’s nuclear deterrent. Russia believes the impact of missile defenses on its deterrent has been heightened by treaty-defined nuclear reductions, the aging and retirement of weapons systems, and the threat from U.S. cruise missiles and new conventional global-strike weapons.

This strong Russian concern persists despite substantial technical data demonstrating that simple decoys and other countermeasures can make missile defenses that intercept in the midcourse of their target’s trajectory largely ineffective.² The U.S. missile defense program called the phased adaptive approach (PAA) calls for the deployment, by 2018, of more than 500 interceptor missiles on 43 Aegis U.S. Navy destroyer ships and at two land sites in Europe.³ In March 2013 the United States announced that plans to install the fourth phase of missile defense interception system in Poland have been abandoned, instead installing 14 additional ground-based interceptors in Alaska. With respect to these Aegis-based antimissiles, Russia

is concerned about their potential deployment to the Arctic region, where Russia fears the Aegis cruisers could constitute a “firewall” against Russian ICBMs and Russia’s nuclear deterrent. Despite the withdrawal of the United States from the ABM Treaty, the treaty’s ceiling of 100 strategic interceptors represents a psychological and political “bright line” for Russia, with tensions over the PAA likely to increase as the missile defense system is constructed.

The possibility for U.S.–Russian cooperation on missile defenses is a potential way out of this conflict, however. There appear to be some basic threshold conditions on that cooperation for it to succeed. Russian participants at our conference said that there must be no intention for the United States to develop a space-based component for missile defense; that U.S. missile defense systems must not introduce any new physical principles into a missile defense system (e.g., nuclear explosive energy); and, in general, that there must be no technical conditions that create threats to Russia’s plan for a smaller but modernized nuclear deterrent. Russian participants in the NRDC-ISKRAN workshops asserted that it would be possible to create a cooperative missile defense system that would allow countries to use the capabilities of national missile defense systems within a framework of interoperability. Such a proposed “functional scheme” would be a cooperative missile defense system that would carry out a joint assessment of threats at a shared center interoperable with regional defensive missile launch systems. In this Russian proposal, a European regional system could have two subsystems corresponding to a NATO and a Russian segment. It should be recognized that this functional scheme is a cardinal step involving cooperation with nations that currently see Russia as a threat. An interoperable European missile defense system would require a change in these states’ views of Russia’s nuclear arsenal, such that it is perceived as more like France’s.

But lack of cooperation on missile defense could lead to a future nuclear weapons buildup. For instance, Russian concern about the U.S. PAA can be linked to Russian engineering work on a new heavy liquid-fueled ICBM to replace the obsolete SS-18 missile. Russia may cancel this program if the United States offers guarantees on missile defenses. But if the current negative trend in the U.S.–Russian dialogue on missile defenses continues, Moscow may take other measures. The statement of work for the new Russian heavy liquid-fueled ICBM specifies that this missile should be capable of overcoming multilayer missile defense consisting of ground, air, and space echelons. In order to do so, this missile is intended to possess higher performance characteristics than its Soviet-made liquid-fueled counterparts; it is intended to be able to shoot not only on ballistic trajectories but also on non-ballistic trajectories, and the payload weight will total more than seven tons. High technical readiness for a launch will make the missile usable in different conditions.

Therefore Russia, the United States, and NATO currently face a historic choice on missile defenses: Either Russia will be told again that it is the state “outside of Western civilization, outside of Europe,” and the division between Russia and NATO will get deeper, or cooperation and assurances will emerge. What seems clear is that the United States and Russia cannot confine their efforts to nuclear arms reductions only. Missile defenses must be included in the equation.

TACTICAL NUCLEAR WEAPONS AND ARMS REDUCTIONS

From a Russian perspective, difficulties with the subject of tactical nuclear weapons begin with their very definition. Only the United States and Russia have an explicit—and in Russia’s perspective artificial—division between strategic and tactical nuclear weapons. It is often hard to distinguish tactical nuclear weapons from strategic ones, even based on the criterion of range; for example, sea-based cruise missiles have a range that is similar to those of strategic weapons.

Tactical nuclear weapons are not covered by New START. However, these weapons did enter into the U.S. ratification process for the treaty, with a December 2010 resolution by the U.S. Senate that negotiations with Russia on the reduction of tactical nuclear weapons should begin promptly. By contrast, the position of the Russian Duma on this matter was that the New START should be implemented first, followed by the potential for agreements that address tactical nuclear weapons. The asymmetry between the larger number of Russian tactical nuclear weapons and the smaller number of U.S. counterparts was a factor in the U.S. Senate’s resolution. But on the Russian side this was interpreted in a different way, as an attempt to open up an agreement in the only area of nuclear weapons where there is a disparity in Russia’s favor.

In contrast to strategic nuclear weapons, there is a large degree of uncertainty in the numbers and locations of U.S. and particularly Russian tactical nuclear weapons. Official government figures provide information only on the relative reductions in tactical nuclear weapons since the end of the Cold War. A 2010 U.S. Department of Defense Fact Sheet stated that the number of U.S. nonstrategic nuclear weapons declined by 90 percent from 1991 to 2009, and a statement by the president of the Russian Federation claimed that nonstrategic nuclear weapons had been reduced by a factor of four from the arsenal of the Soviet Union. Nongovernmental organizations estimate that the Russian tactical nuclear stockpile numbers about 5,500 weapons in naval, air force, and air defense forces, and that 500 U.S. tactical nuclear weapons are deployed in Europe, with additional nonstrategic nuclear weapons in storage at bases in the United States.⁴

For the United States, the issue at the forefront for tactical nuclear weapons is their deployment in Europe and their role in the NATO alliance, which recently reaffirmed their place in NATO defense planning. Russia seeks the redeployment of U.S. tactical nuclear weapons from NATO bases in Europe to within the territory of the United States. For Russia, judging from official government statements, there is a consensus that Russia must maintain tactical nuclear weapons in its arsenal. On the one hand, Russians understand that the use of nuclear weapons of any yield, especially the smallest yield, would erode

a threshold, a kind of taboo that emerged after the atomic bombings at Hiroshima and Nagasaki in 1945, and would create a great risk of escalating the conflict into a global nuclear catastrophe. On the other hand, Russia retains tactical nuclear weapons because of their potential to offset current NATO conventional military superiority, compensate for future gaps between Russian and U.S. strategic nuclear arsenals, and counter nuclear arsenals and conventional massed armor from other states, including China. The United States may seek redeployment of Russian nuclear weapons east of the Ural Mountains.

Indeed, at present Russian political and military leaders have concluded that Russia has no choice but to rely on a declaratory policy that includes potential first use of tactical weapons, thus creating ambiguity for potential adversaries. This perspective is a contributing factor in Russia's decision not to reciprocate U.S. declarations of total numbers of nuclear weapons; Russia wants to maintain uncertainty for other states. Only steps in the nonnuclear field strengthening mutual assured stability will impact the tactical nuclear weapons situation, and this is why for the present Russia is, in the words of one participant, "turning back to the nuclear trenches" regarding tactical nuclear weapons.

CONVENTIONAL MILITARY BALANCE AND RUSSIA'S VIEWS ON ITS NATIONAL SECURITY

There have been a variety of reforms in the Russian army and navy in recent years. In 2010 the Russian military was divided into four regional commands—West, South, Center, and East—and the Soviet organizational structure of military districts was abolished. Each military command has about 100,000 to 150,000 service members in about 8 to 10 army brigades. The western command faces NATO and its entire force is about 8 or 9 brigades; the southern command is larger. Under conditions of reform, Russian combat readiness is lower than in normal times, highlighting the residual importance of tactical nuclear weapons as a final resort. Russian conventional forces have been greatly reduced since 2009 by the most recent military reform, and the conventional military balance now favors NATO over Russia by a factor of 3 to 1. In military expenditures, the ratio of NATO to Russia is 20 to 1. Of course, the rationality and even basic plausibility of Russia's continuing to view its defense requirements as something to be "balanced" with the total defense requirements of 27 European sovereign states was a matter of recurring discussion at these two meetings.

Moreover, the issue is not just one of numerical imbalance; qualitatively, Russian forces are judged to be inferior to those of most NATO nations. For China, the qualitative gap with Russia is disappearing quickly, and in a decade the Chinese are expected to surpass the Russians. That is why, in military exercises conducted in 2009 and 2010, when the Russian command could collect some 10,000 to 12,000 soldiers, the final stage of each exercise included the simulated use of a tactical device. From a Russian perspective, as far as China or the West is concerned, mounting a purely conventional defense is out of the question. That explains Russia's preoccupation with tactical nuclear weapons and its change in declaratory policy. In the latest version of military doctrine, Russia gave up a declaratory posture of "no first use." Russia now perceives NATO in the very manner in which the U.S. once perceived the Warsaw Pact—as holding a conventional military advantage that must be offset by tactical and sub-strategic threats to use nuclear weapons against invading conventional forces.

At the two meetings, conference participants addressed potential regional scenarios of military conflict and conventional weaponry that influence Russia's perspectives on nuclear weapons. Geographically, these scenarios were divided into a consideration of Europe, China, central Asia, and the Arctic region. We summarize these regional scenarios of concern for Russia's national security below:

- **Europe:** Russia views the currently suspended Treaty on Conventional Armed Forces in Europe (CFE Treaty) as obsolete with respect to advances in military technology. For example, the CFE Treaty does not address high-precision weapons or unmanned aerial vehicles (UAVs) and has no mechanism for the verification of launchers. A primary Russian security concern with respect to Europe is that this agreement requires renewal and review.
- **China:** In the east the situation for Russian national security is viewed as challenging. The two most capable military districts of the Chinese People's Liberation Army border Russia: the Beijing Military Region, which is focused on Siberian Russia, and the Shenyang Military Region, which is focused on the Russian Far East. In general Russia's concerns relate directly to its views on the role of its nuclear weapons. In addition, Russia claims that a contributing factor in the difficulty of defending its border with China using conventional weapons is the elimination of weapons systems as a result of the 1987 Intermediate-Range Nuclear Forces (INF) Treaty. Russia is aware that China has emerged as a global power. Most people in the Russian government judge this principally as a matter of economic power, but there is an understanding that there will be a rising military component linked to China's dependence on foreign energy resources, notably an expansion over time of the Chinese navy.
- **Central Asia:** Russia's security concerns in this region focus on the lack of an effective mechanism for nonproliferation of weapons of mass destruction, and the lack of an effective mechanism for stabilizing the social and political environment. Russia also has specific concerns regarding destabilization of Pakistan with respect to its nuclear arsenal.

- **Arctic Region:** Russia and other states consider the Arctic to be a stockpile of significant oil and gas reserves, and new transcontinental sea and air routes have opened up due to the receding ice sheet. Military activity could escalate in the Arctic, and this presents problems and challenges to international stability. The shortest intercontinental route between the United States and Russia is across the North Pole, and so the region is ideal for strategic bombers, submarines, and missiles, but now with the shrinking of the polar ice cap, conventional military and navy forces will be able to operate in the Arctic during a significant portion of the year. Particularly of concern to Russia is whether the U.S. could deploy greater missile defense capabilities in the Arctic region as a result of changes to the polar ice.

Finally, Russia is concerned that military missions previously assigned to U.S. nuclear weapons could in the future be performed by conventional precision-guided weapons capable of attacking the entire range of Russian nuclear targets. “Conventional strategic weapons” is a phrase that is used more and more today by Russian military and political officials.

No easy solutions exist for these security issues for Russia, many of which are tied to nuclear weapons and arms control. In the early 1990s, peacekeeping was thought to be a suitable joint mission for the militaries of the United States and Russia, but “everything was spoiled by [the 1998 war in] Kosovo.” The decision in 1999 to enlarge NATO to include former Warsaw Pact states was viewed by Russia as reflecting a “winner-takes-all attitude”. With respect to regional problems and conventional military issues, Russia’s national security perspectives trend against reduction and elimination of nuclear weapons.

U.S. AND RUSSIAN NEXT STEPS IN THE ARMS CONTROL PROCESS

Today, more than 20 years after the end of the Cold War, the United States and Russia are building new strategic nuclear weapon delivery systems: new ballistic-missile-carrying submarines, a new Russian heavy ICBM, and a new NATO air-delivered tactical bomb. Can these two countries move away from simply repeating the patterns of their Cold War past? Since 1991, the United States and Russia have gotten stuck somewhere on the road between being opponents and becoming allies. Russia and the United States are now financially invested in one another, Russia is Europe’s largest supplier of natural gas, the U.S. depends on Russia for half of the enriched uranium that powers its reactors, and Russia has a large and permanent stake in the global market system that is led by the United States and its security alliance partners in Europe and Asia. Can arms control benefit from and draw upon these growing ties, which depend on stability in Moscow–Washington relations?

To further reduce the Cold War nuclear arsenals, our findings are clear. Russia and the United States must engage on a wider range of issues to promote mutual assured stability—MAS—and new thinking is required within the narrower traditional framework of nuclear arms control. In summary, as a result of our two meetings, ISKRAN and the NRDC put forward the following proposals, reinforced by the collected papers from the March 2012 Moscow meeting included in this report. Russia and the United States should:

- **Conduct Discussions on the Requirements for Small, Stable “Minimum Deterrent” Forces Pending Development of a Multilateral Mechanism to Verify Global Elimination of Nuclear Arsenals.** Given that the New START represents modest incremental progress in reducing deployed nuclear arsenals but does not change the basic Cold War model of deterrence, the United States and Russia should initiate dialogue on how much further they could progress in bilateral arms control before each side could no longer implement its nuclear counterforce targeting strategies and would encounter the need to transform its deterrence doctrines at lower numbers of nuclear weapons. There is likely at least one further such arms control treaty possible within the framework of the bilateral START process before each side would see the necessity of fundamental changes to deterrence, such as ending preemptive-strike and launch-on-warning postures. Reaching this threshold, both countries should pursue dialogue on what constitutes minimum deterrence—what targets do nuclear weapons hold at risk for deterrence at lower numbers, and how many nuclear weapons are required to deter a potential adversary. Russia and the United States should seek to achieve a further incremental step in arms control before necessarily moving to a broader and deeper discussion of a credible multilateral framework for overseeing deeper reductions and an eventual global phase-out by all powers of reliance on nuclear deterrence as a security strategy.
- **Clarify the Role of Missile Defenses in Relation to the Tasks of Reducing Nuclear Weapons.** A current source of tension and uncertainty in Moscow–Washington relations—the lack of assurances, transparency, and cooperation on missile defenses—puts at risk cooperative progress on nuclear weapons reductions. While the 1972 ABM Treaty is no longer in force, no common understanding and guidance on the relations between offensive and defensive missile forces for deterrence has replaced it, all the more important given new and emerging technologies. Such consultations and assurances on missile defenses should also involve China, whose nuclear program impacts U.S. and especially Russian nuclear policy. Involving China would also set the stage for multilateral agreements.

- **Negotiate on Conventional Weapons That Have an Impact on Nuclear Postures.** Not only missile defenses but conventional weapons such as sea-launched cruise missiles and global precision-strike ballistic missiles can plausibly impact nuclear deterrent forces, particularly at reduced numbers. While it may be that no single arrangement concerning these weapons systems could permit the United States and Russia to resolve all of these problems simultaneously, further joint dialogue will assist both countries in discovering the interrelationships between conventional weapons and deterrence at lower numbers of nuclear forces. Specifically, Russia believes that the opportunity for future nuclear arms reductions is contingent upon ensuring “strategic stability” in the broader context of an evolving balance of conventional forces, missile defenses, and high-precision weapons, including space-based weapons.
- **Create a Comprehensive Framework That Would Include Both Strategic and Tactical Weapons for Both a Deployed and Non-Deployed Status.** Within the parameters of New START lies the potential for Russia and the United States to “upload” additional stored nuclear warheads on their delivery systems, and the treaty does not address limitations on tactical nuclear weapons at all. The United States and Russia should negotiate with respect to hurdles and opportunities for a “big basket” approach to arms reduction that comprehensively includes weapons on alert, weapons in storage, and both shorter-range and longer-range weapons. Russia and the United States should pursue the idea of an arms control agreement with freedom to mix different categories of weapons under a common ceiling incorporated as a primary concept. Transparency, verification, and monitoring issues become more complex with a “big basket” approach; nevertheless, such a comprehensive framework would set the stage for eventually engaging China, France, and the United Kingdom in the negotiated, verified arms reduction process.

Unfortunately, from Russia’s perspective today, the combination of other states’ nuclear arsenals, conventional military forces, and prospectively capable missile defenses appears to be a possible equation for military dominance. Ironically, as numbers of nuclear weapons have declined through decades of arms control, the process of further progress appears to have become more difficult. Nevertheless, reducing and eventually doing away with the threat of nuclear war remains a pressing and enormously important objective for both Russia and the United States, and their continuing obligation to the community of nations under the Nuclear Nonproliferation Treaty.

1 Transcript: A Conversation with General C. Robert Kehler, May 30, 2012, Washington D.C., Council on Foreign Relations, www.cfr.org/united-states/conversation-general-c-robert-kebler/p28404.

2 For example, A. Sessler, et al., “Countermeasures: A Technical Evaluation of the Operational Effectiveness of the Planned U.S. National Missile Defense System,” Union of Concerned Scientists and the Security Studies Program at the Massachusetts Institute of Technology (April 2000), www.ucsusa.org/assets/documents/nwgs/cm_all.pdf.

3 *Ballistic Missile Defense Review* (BMDR), briefing slides, U.S. Department of Defense, February 2, 2010, www.defense.gov/bmdr/.

4 Hans. M. Kristensen, “Nonstrategic Nuclear Weapons,” Federation of American Scientists Special Report No. 3, May 2012, www.fas.org/_docs/Non_Strategic_Nuclear_Weapons.pdf.

APPENDIX I: MOSCOW CONFERENCE AGENDA



FUTURE OF INTERNATIONAL SECURITY, NUCLEAR DETERRENCE AND STRATEGIC STABILITY NRDC-ISKRAN—MARCH 13–14, 2012, MOSCOW

MARCH 13

- 10.30 Registration, welcoming coffee
- 11.00–12.30 *SESSION 1: A New Comprehensive Security Framework for the United States and Russia: Moving from Mutual Assured Destruction (MAD) to Mutual Assured Security (MAS)*
- Dr. Sergey Rogov**, Member, Russian Academy of Sciences; Director, Institute for the U.S. and Canadian Studies (ISKRAN): How to Move Past the Principal Components of Mutual Assured Destruction (MAD).
- Christopher Paine**, Director, Nuclear Program, National Resources Defense Council (NRDC), and **Jonathan McLaughlin**, Program Assistant, Nuclear/International Program, National Resources Defense Council (NRDC): Current Opportunities and Obstacles to Bilateral Initiatives Progress on Arm Control Ensuring Russian and American Security.
- Dr. Victor Kremenyuk**, Deputy Director, Institute for the U.S. and Canadian Studies (ISKRAN): Perspective on Security of Caucasus Regions, Central Asia and Middle East After the U.S. and NATO Withdraw Their Troops from Afghanistan.
- Ambassador Richard Burt**, Managing Director, McLarty Associates: U.S.–Russian Nuclear Arms Control and 21st-Century International Politics.
- 12.00–13.00 Lunch
- 13.00–15.30 *SESSION 2: Ballistic Missile Defense: Understanding Technical Capabilities, Implementing Security Assurances, and Engaging in Cooperative Efforts*



Ambassador Burt



Dr Ted Postol

David Hoffman, Contributing Editor, Foreign Policy: The Dangers of Mistrust and Misperception: A Case Study of the Strategic Defense Initiative, the United States and Soviet Union, 1983–1988.

Dr. Vladimir Dvorkin, Major-General (Ret.), Leading Research Fellow, Institute of World Economy and International Relations (IMEMO): European Ballistic Missile Defense—Cooperation Opportunities for Russia, USA/NATO.

Dr. Pavel Zolotarev, Retired Major General and former Section Head of the Defense Council of the Russian Federation, Deputy Director of The Institute for the USA and Canadian Studies (ISKRAN).

Dr. Ted Postol, Professor of Science, Technology, and National Security Policy, Massachusetts Institute of Technology: Implications of the Future U.S. PAA III/IV for Russia’s Strategic Deterrent.

15.30–15.45 Coffee break

15.45–17.30 *SESSION 3: Tactical Nuclear Weapons: Military Roles and Arms Control Proposals*

Dr. Viktor Esin, Retired Colonel General and former Chief of Staff of the Russian Strategic Rocket Forces, Leading Research Fellow at The Institute for the USA and Canadian Studies (ISKRAN).

Ambassador Steven Pifer, Director, Arms Control Initiative, The Brookings Institution: Nonstrategic Nuclear Weapons, Policy, and Arms Control.

Dr. Sergey Rogov, Member, Russian Academy of Sciences; Director, Institute for the U.S. and Canadian Studies: How to Include Tactical Nuclear Weapons in a Common Ceiling for All Deployed and Non-Deployed Warheads.

18.00 Conference dinner

MARCH 14

10.30 Registration, welcoming coffee

11.00–12.30 *SESSION 3: Conventional Military Forces and Deterrence: Security Concerns and Scenarios, Part 1*

Dr. Sergey Yermakov, Senior Research Fellow, Russian Institute of Strategic Studies (RISS): U.S.–Russian/NATO–Russian Military Cooperation: Transition to Nonconfrontational Model of Relations.

Dr. Valery Yarynich, Leading Research Fellow, Institute for the U.S. and Canadian Studies (ISKRAN), and **Dr. Ted Postol**, Professor of Science, Technology, and National Security Policy, Massachusetts Institute of Technology: Russian Concerns About Conventional Long-Range Precision Guidance Weapons and the Possible Failures of Deterrence Due to These Military Capability Developments.

Dr. Yuri Morozov, Leading Research Fellow, Center for Military-Strategic Studies, Institute for the U.S. and Canadian Studies (ISKRAN): The Possibility of an Arctic “Green Zone”—A Multilateral Regime for Deterring Conflict in the Arctic.

12.30–13.30 Lunch

13.30–15.00 *SESSION 4: Conventional Military Forces and Deterrence: Security Concerns and Scenarios, Part 2*

Dr. Igor Bocharov, Leading Research Fellow, Institute for the U.S. and Canadian Studies (ISKRAN): American Sea-Launched Ballistic Missiles: Russian Perception.

Dr. Bruce Blair, President, World Security Institute; Cofounder, GlobalZero: Conventional Forces for Extended Deterrence: Assessing the Lethality of U.S. Conventional Forces Against the Spectrum of Prospective Soft to Hard Targets.

Dr. Sergey Oznobishcev, Head, Division for Military-Political Studies, Center for International Security, the Institute for World Economy and International Relations (IMEMO): CFE Treaty Perspectives and Military Balance.

15.00–15.15 Coffee break

15.15–17.00 *SESSION 5, A Comprehensive Common Ceiling Approach to a Final Stage of Bilateral Arms Control*

Dr. Sergey Rogov, Member, Russian Academy of Sciences; Director, Institute for the U.S. and Canadian Studies: General Framework of the Comprehensive Ceiling Approach.



Dr. Bruce Blair

Dr. Anatoly Diakov, Director, Center for Arms Control, Energy, and Environmental Studies: Verification and Transparency Issues for Nuclear Weapons and Nuclear Materials.

Admiral Valentin Kuznetsov, Retired Vice Admiral and formerly Russia's chief military representative to NATO, Leading Research Fellow at The Institute for the USA and Canadian Studies (ISKRAN).

Dr. Thomas Cochran, Scientific Consultant, Natural Resources Defense Council: Conference Summary.

GENERAL DISCUSSION



APPENDIX II: MOSCOW CONFERENCE PARTICIPANT LIST

RUSSIAN PARTICIPANTS:

1. Sergey ROGOV, Member, Russian Academy of Sciences; Director, Institute for the U.S. and Canadian Studies
2. Pavel ZOLOTAREV, Retired Major General and former Section Head of the Defense Council of the Russian Federation, Deputy Director of The Institute for the USA and Canadian Studies (ISKRAN)
3. Victor KREMENYUK, Corresponding Member, Russian Academy of Sciences; Deputy Director, Institute for the U.S. and Canadian Studies
4. Tatiana ANICHKINA, Junior Research Fellow, Center for Political-Military Studies, Institute for the U.S. and Canadian Studies
5. Ambassador Anatoly ANTONOV, Deputy Minister of Defense, Russian Federation
6. Vladimir BATIUK, Head, Center for Political-Military Studies, Institute for the U.S. and Canadian Studies
7. Igor BOCHAROV, Senior Research Fellow, Center for the Problems of Military-Industrial Policy, Institute for the U.S. and Canadian Studies
8. Dmitry VOLODIN, Senior Research Fellow, Center for Political-Military Studies, Institute for the U.S. and Canadian Studies
9. Alexander DARCHIEV, Director, Department of North America, Ministry of Foreign Affairs of the Russian Federation
10. Vladimir DVORKIN, Leading Research Fellow, Center for International Security, Institute for World Economy and International Relations
11. Anatoly DIAKOV, Director, Center for Arms Control, Energy, and Environmental Studies
12. Sergey YERMAKOV, Senior Research Fellow, Department of Defense Policy, Russia's Institute for Strategic Studies
13. Victor ESIN, Retired Colonel General and former Chief of Staff of the Russian Strategic Rocket Forces, Leading Research Fellow at The Institute for the USA and Canadian Studies (ISKRAN)
14. Vladimir KOZIN, Leading Research Fellow, RISS
15. Sergey KONOPATOV, Senior Research Fellow, Center for the Problems of Military-Industrial Policy, Institute for the U.S. and Canadian Studies
16. Andrey KORTUNOV, President, New Eurasia Foundation
17. Admiral Valentin KOUZNETSOV, Retired Vice Admiral and formerly Russia's chief military representative to NATO, Leading Research Fellow at The Institute for the USA and Canadian Studies (ISKRAN)
18. Victor LITOVKIN, Executive Editor, Independent Military Review
19. Boris LOUKSHIN, Junior Research Fellow, Center for Political-Military Studies, Institute for the U.S. and Canadian Studies
20. Mikhail MARGELOV, Chairman, Foreign Affairs Committee of the Federation Council of Russia
21. Yuri MOROZOV, Leading Research Fellow, Center for Political-Military Studies, Institute for the U.S. and Canadian Studies
22. Vladimir NOVIKOV, Leading Research Fellow, Deputy Head, Department of Defense Policy, Russia's Institute for Strategic Studies
23. Sergey OZNOBISCHEV, Head, Division for Military-Political Studies, Center for International Security, Institute for World Economy and International Relations
24. Ambassador Sergey ORDZHONIKIDZE, Specialist, International Relations, Public Chamber of the Russian Federation
25. Ambassador Aleksander PANOV, Research Fellow, Institute for the U.S. and Canadian Studies
26. Pavel PODLESNY, Head, Russian-American Relations Center, Institute for the U.S. and Canadian Studies
27. Eugeny ROGOVSKY, Head, Center for the Problems of Military-Industrial Policy, Institute for the U.S. and Canadian Studies

28. Ambassador Sergey RIABKOV, Deputy Minister of Foreign Affairs of the Russian Federation
29. Evgeniy SAVOSTIANOV, Deputy Chairman of the Board, Center for Support of Russian-American Rapprochement; Senior Vice President, JSC Mass Media System
30. Nikolay SEMIN, Senior Research Fellow, Center for Political Studies, Institute for the U.S. and Canadian Studies
31. Yuri SOLOMONOV, Member, Russian Academy of Sciences; Chief Designer, JSC Moscow Institute of Heat Engineering Corporation
32. Grigory TISCHENKO, Head, Department of Defense Policy, Russia's Institute for Strategic Studies
33. Valery YARYNICH, Leading Research Fellow, Center for the Problems of Military-Industrial Policy, Russia's Institute for Strategic Studies

AMERICAN PARTICIPANTS:

34. Christopher PAINE, Director, Nuclear Program, Natural Resources Defense Council
35. Thomas COCHRAN, Scientific Consultant, Natural Resources Defense Council
36. Jonathan MCLAUGHLIN, Program Assistant, Natural Resources Defense Council
37. Matthew MCKINZIE, Senior Scientist, Natural Resources Defense Council
38. Ambassador Steven PIFER, Senior Fellow, Director, Brookings Arms Control Initiative, The Brookings Institution
39. Theodore POSTOL, Professor of Science, Technology, and National Security Policy, Massachusetts Institute of Technology
40. Ambassador Richard BURT, Chairman, Global Zero; Former Head of U.S. Delegation to START-1 Talks
41. Bruce BLAIR, Cofounder, Global Zero; President, World Security Institute
42. David HOFFMAN, Contributing Editor, Foreign Policy

INTERPRETERS:

43. Felix POPOV
44. Gennady EKONOMOV

APPENDIX III: MOSCOW CONFERENCE PRESENTATIONS AND PREPARED PAPERS



DR. SERGEY ROGOV

Member, Russian Academy of Sciences;
Director, Institute for the U.S. and Canadian Studies (ISKRAN):

A Comprehensive Security Framework for Strategic Stability
Without Mutual Nuclear Deterrence

STRATEGIC STABILITY

- *Broad Definition*: equilibrium, balance of power management
- *Intermediate Definition*: prevention of war between nuclear powers
- *Narrow (“the narrowest”) Definition*: prevention of use of nuclear weapons—crisis stability

The New Russian–American Agenda: From narrow to intermediate to broad definition of strategic stability

POLITICAL FUNCTIONS OF NUCLEAR WEAPONS

- *War fighting*—irrational
- *Deterrence*—rational

As long as nuclear weapons exist, deterrence will remain

MUTUAL ASSURED DESTRUCTION

- Numerical Parity
- Counterforce Capability
- Disarming and Decapitating Strike?
- Possibility of a Surprise Preemptive Attack
- Reliance on Early Warning
- Combat Readiness (Alert Status): Launch on Warning/Launch Under Attack
- Limitations on Strategic Defense
- Conventional Balance
- Unique for U.S.–Soviet/Russia Relationship

Director of National Intelligence Clapper: Russia is the mortal threat to the United States

Senator Carl Levin: The U.S. is the mortal threat to Russia

Can we get rid of MAD?

THE NEW START

START-7: SALT-1, SALT-2, START-1, START-2, START-3, SORT, New START

WARHEADS-TO-TARGETS RATIO

- Pre-START-1: 12,000 warheads vs. 2,000 launchers ~ 5/6 to 1
- START-1: 6,000 warheads vs. 1,600 launchers ~ 4 to 1
- New START: 1,550 warheads vs. 700/800 launchers ~ 2 to 1

FADING CONCERNS

- Throw-weight
- Mobile ICBMs
- Heavy Bombers (SALT-1) counting rules
- Production Facilities
- Early Warning?

PROBLEM 1: DEPLOYED/NON-DEPLOYED STRATEGIC WARHEADS

“Creative Accounting”

- U.S.: $1,550 + 2,500 = 4,000$ strategic warheads (START-1 accounting rules)
- Russia: $1,550 + 500 = 2,000$ strategic warheads (START-1 accounting rules)

U.S. Uploading Capability Superiority

- Warheads/Targets Ratio: 4,000 warheads vs. 400 targets = 10 to 1?
- Preemptive Strike Scenario?

Next Step

- All deployed and non-deployed warheads should be counted
- Verification and monitoring: All deployed and non-deployed warheads

PROBLEM 2: TACTICAL NUCLEAR WEAPONS

- Artificial Distinction: Strategic vs. Tactical Nukes
- After START-1: Approximately Equal Numbers of Strategic and Tactical Nuclear Weapons
- After New START: Russia's Superiority in Tactical Nuclear Weapons (2,000-4,000 vs. 500-1,000 warheads)

Disbalances

- Russia: Offensive and defensive (air defense, BMD) nonstrategic weapons (perhaps 50:50)
- Europe: U.S. (200) + France (300) + U.K. (160) = 700 nonstrategic weapons
- NATO–Russia conventional disbalance (3:1)
- CFE is not working
- NATO-Russia tactical nuclear disbalance (1:2 or 1:3)

- Asia: Russia vs. Asian nuclear weapons states: (3:1 or 4:1)
- No Separate TNW agreement is possible

PROBLEM 3: OTHER NUCLEAR POWERS

- 3 official nuclear weapon states: U.K. (160), France (~300), China (~200)
- 3 unofficial nuclear weapon states: Israel (~200), India (<100), Pakistan (100)
- ~1,000 warheads
- New START (1,550 deployed warheads)
- *For Russia*: 60% (~15% of the total arsenal)
- *For the United States*: 60% (~20% of the total arsenal)

CHINA AND INDIA: HOW MUCH IS ENOUGH?

Challenges to China:

- U.S. Strategic and Regional BMD
- India's Triad

Challenges to India:

- China
- Pakistan

Multilateral Nuclear Arms Race in a Multipolar World in 2020?

PROBLEM 4: U.S. CONVENTIONAL (NONNUCLEAR) CAPABILITIES

Precision Guidance Munitions

- U.S. SLCMs: 600, 4,000, 20,000?
- Prompt Global Strike: ICBMs/SLBMs or New Systems?

Space Weaponization

- Orbital Platforms
- Other Platforms (X-37B etc.?)

Cyber Security

- Defensive and Offensive Capabilities
- Cyber Deterrence?

PROBLEM 5: BMD

1. New START: The present BMD is not a threat to strategic stability:

- U.S. Strategic BMD is limited (less than 100 interceptors permitted by the 1974 Protocol)

2. European Phased Adaptive Approach:

- Phases 1, 2, 3: Regional BMD against short- and medium-range ballistic missiles
- Phase 4: Additional Strategic BMD Capabilities: SM-3 Block IIB in Poland and Romania or 2-stage GBI in 2018–2020

AEGIS BMD SHIPS

Aegis ships

- FY2011: 84 (22 cruisers, 62 destroyers)
- FY2020: 93 (22 cruisers, 71 destroyer)

Aegis BMD ships

- FY2011: 23 (5 cruisers, 16 destroyers)
- 23 with SM-3 Block IA and B
- FY2015: 38 (9 cruisers, 29 destroyers)
- 24 with SM-3 Block IA and B and 14 with Block IIA
- FY2020: 43 (10 cruisers, 33 destroyers)
- 18 with SM-3 Block IA and B and 25 with Block IIA and B

Each cruiser: 110 tubes

Each destroyer: 90 tubes

BMD 2011

The United States		
<i>Strategic BMD</i>	Three-stages GBI	30
<i>Nonstrategic BMD</i>	Patriot PAC-3	791
	SM-3 Block IA & IB	110
Russia		
<i>Strategic BMD</i>	A-135 interceptors	100 (68)
<i>Nonstrategic BMD</i>	S-300	~ several hundred?
	S-400	~ several dozen?

BMD 2015

The United States		
<i>Strategic BMD</i>	Three-stages GBI	30+8 in reserve
	Two-stages GBI	some?
	SM-3 Block IIA Ashore	24 (in Romania)
<i>Nonstrategic BMD</i>	Patriot PAC-3	~900
	SM-3 Block I A & IB	263
	THAAD	226
Russia		
<i>Strategic BMD</i>	A-135 interceptors	100 (68)???
<i>Nonstrategic BMD</i>	S-300	~ several hundred?
	S-400	~ several dozen?

BMD 2020

The United States		
<i>Strategic BMD</i>	Three-stages GBI	30+17 in reserve
	Two-stages GBI	10-20?
	SM-3 Block IIB Ashore	48 (in Poland, Romania)
	SM-3 Block IIB	several dozen?
<i>Nonstrategic BMD</i>	Patriot PAC-3	> 900
	SM-3 Block I A & IB	436 (in 2018)
	THAAD	> 431
Russia		
<i>Strategic BMD</i>	A-135 interceptors	100 (68+16)???
<i>Nonstrategic BMD</i>	S-300	~ several hundred?
	S-400	~ several hundred?
	S-500	~ several hundred?

BMD: OTHER COUNTRIES

- Israel (nonstrategic)
- Japan (nonstrategic)
- UAE (THAAD)
- NATO countries (ALTBMD)
- MEADS—canceled
- U.S. Ground Based BMD in NATO countries
- Aegis—sales to Japan, Korea, Spain, Netherlands, Norway
- China?
- India?

CHALLENGES

- MAD can not be disinvented (counterforce capability is to stay)
- Will MAD survive in the 21st century?
 - Cooperative retreat from MAD: Mutually Assured Security (BMD cooperation, etc.)
 - Unilateral Effort by the United States to Achieve Absolute Superiority in Nuclear and Nonnuclear Capabilities
- Multilateral Arms Race in a Polycentric World: U.S., Russia, China, India
 - Is MAD between China and U.S. possible?
 - Is MAD between China and India possible?

NATO: THE MOST SUCCESSFUL MILITARY ALLIANCE

Global Share:

- 11%—population
- 40%—GDP
- 70%—defense expenditures
- 80%—defense procurement
- 90%—defense R&D

CONVENTIONAL BALANCE IN EUROPE

	NATO	Russia
Tanks	12 thousand	4,5 thousand
APCs	24 thousand	9 thousand
Artillery guns	15 thousand	5 thousand
Combat aircraft	2500	1800
Attack helicopters	1200	400

NATO to Russia ~ 3 to 1

Military expenditures ~ 20 to 1

Both Nuclear Deterrence and Conventional Superiority + BMD = Military Dominance

NATO Power Projection Capability: Kosovo, Afghanistan, Libya

Lisbon: Russia is not a threat

Plans to defend Baltic states from a Russian attack

NONNUCLEAR CHALLENGES

1. CFE-2:

- All European countries
- Holdings as new ceilings
- No flank zones
- Transparency

2. SLCMs

3. Prompt Global Strike

4. Strategic BMD limitations

5. Cyber weapons limitations

6. Asia

POSSIBLE "RED LINES"

- Unilateral Strategic BMD Deployment > 100 interceptors
- Deployment of 2-stages GBI in Europe
- Deployment of SM-3 Block IIB in Black, Baltic and Barents Seas
- Prompt Conventional Global Strike > 20 missiles
- NATO Enlargement—Ukraine, Georgia
- China > 300 nuclear warheads
- India > 200 nuclear warheads
- Iran + "Shock Wave"—Turkey, Saudi Arabia, etc.
- Terrorist Attacks

CHANGING THE RULES OF THE GAME

1. Counting All Strategic Offensive and Defensive missiles

Example: 400 offensive and 100 defensive interceptors (GBI + SM-3 Block IIB)—*Unlikely*

2. Counting All Strategic and Nonstrategic Deployed and Undeployed Weapons—freedom to mix

Example: 1000 deployed and 2000 undeployed strategic and tactical warheads—*Possible*

3. From Counterforce to Countervalue Targeting?

Treating nuclear weapons as WMD, not as a military means: 50-100 urban/economic targets—*Possible*

4. No First Use and/or No Use of Force—*Possible*

5. No Build-Up by other nuclear weapon states—*Unlikely*

6. CTBT, Cut-off Treaty—*Unlikely*

BMD COOPERATION

1. Joint BMD (under single control) is impossible

2. Cooperative BMD between Russian and American (NATO) systems is possible:

- Integration of Informational Assets
- Zones of Responsibility
- Separate Fire Control
- Technology sharing
- Multilateral (NATO, Israel) possibilities

3. Is Executive Agreement before 2012 possible?

4. A Key Element of a Defense Partnership (Alliance?)

Fundamental Transformation of U.S.-Russia Strategic Relationship

1. From Mutual Assured Destruction to Mutually Assured Security

2. Is there a Common Enemy?

- North Korea
- Iran
- China
- Country X
- Taliban, El Qaida

3. Afghanistan Transit Precedent: An Element of a Military Alliance

4. BMD Cooperation

5. Mutual Security Treaty?



CHRISTOPHER PAINE

Director, National Resources Defense Council, Nuclear Program (NRDC)
and Jonathan McLaughlin, Program Assistant, NRDC

Curing the Collision of US and Russian “National Interests” From Within:
Can Parallel Internal Reforms Help the US and Russia Escape Their
Continued Reliance on Cold War Deterrence Doctrines and Economically
Dysfunctional Nuclear Weapon Complexes?

Christopher E. Paine
Nuclear Program Director
Natural Resources Defense Council (NRDC)
ISKRAN—NRDC Moscow Conference
March 13 -14, 2012

KEY QUESTIONS

- Do the problems we are now experiencing in our security relationship arise from a genuine and unavoidable clash of U.S. and Russian “national interests?”
- Are these allegedly conflicting national interests actually rooted in the objective conditions that each country faces in its external security environment? (I personally do not believe this to be true for either country.)
- Or, do these problems originate primarily from within each country’s domestic political economy, specifically in the interaction of each nation’s “national security complex” with its domestic political and economic situation?
- The Obama Administration is currently examining future deployed strategic nuclear force sizes ranging from 300 to 1100 weapons.
- Will Russia conduct a similar review in time to renew nuclear arms reduction negotiations early in 2013?

THE LIES WE TELL ABOUT EACH OTHER CAN HAVE SERIOUS CONSEQUENCES

- Jack Kennedy’s “missile gap” charge was a complete fabrication, but by 1967 resulted in the deployment of 1054 ICBM’s (the Air Force originally sought 10,000 ICBMs!), sparking a massive Soviet ICBM deployment in response.
- The charge of a “window of vulnerability” was a figment of Paul Nitze’s pocket calculator and fevered imagination, but the resulting politics of fear, jobs, and defense profits produced a huge program to deploy 200 MX missiles on mobile launcher “racetracks” that would have wreaked environmental havoc on the intermountain West.
- Deployment was stopped by a massive public campaign in opposition—only 50 MX were eventually deployed, in silos, but the program wasted tens of billions of dollars and intensified Soviet fears of a U.S. “first strike.”

SO DO THE LIES WE TELL OURSELVES...

“In March 1983, the Strategic Defence Initiative announced by Ronald Reagan was published in the foreign and Soviet media. Within two months, all the fiction that had been published, including X-ray and excimer lasers, particle beam weapons, laser guns and so on and so forth, instantly became part of the requirements issued by the Defense Ministry for new weapons.

This led to a drop in specifications across the board, and, in some cases, these absolutely mythical and hypothetical requirements complicated the designers’ work to such an extent that they became outright unfeasible and tied up huge intellectual, material and financial resources.”

– Yuri Solomonov, speaking to Prime Minister Putin in Sarov, 24 Feb 2012.

THE SDI MYTH AT REYKJAVIK, 1986

- If either Reagan and Gorbachev had not believed, each in their own way, in the mythical technological promise of SDI, either one could have given in to the other's position and (in principle) reached agreement to eliminate all ballistic missiles (or possibly even all nuclear weapons) within ten years.
- Instigating misperceptions about nuclear weapons, or the supposed intentions of governments who control them, is a costly and even dangerous business.
- We should seek to avoid fostering such misperceptions, or deliberately manipulating them for political advantage.

IDLE SPECULATION ABOUT NUCLEAR WEAPONS IS ALMOST AS CONSEQUENTIAL AS LYING ABOUT THEM

- In the late 1970's, German Chancellor Helmut Schmidt once speculated in public about how the Soviet deployment of the SS-20 intermediate range missile would open-up a "gap" in the "spectrum of deterrence" then protecting NATO nations from Soviet coercion in a crisis.
- The statement was seized upon U.S. weaponeers and hardliners as justification for a responsive NATO deployment of hundreds of ground-launched cruise and Pershing II missiles.
- The Pershing's II's extreme accuracy and short time of flight alarmed the Kremlin, which began to worry about "decapitating" strikes, and as David Hoffman recounts in his book, it compensated by ordering the development of dangerous modifications to the Soviet nuclear command and control system to ensure nuclear retaliation in the event decapitation occurred.
- The resulting outpouring of protests in Europe against BOTH missile deployments, but with the USSR pegged as the instigator, reportedly convinced Gorbachev that the Communist Party's military-strategic apparatus was deeply flawed and capable of grievous miscalculation, including missing the emergence of a newly independent European identity that was no longer willing to bend to the nuclear dictates of the United States.
- Fortunately for Europe, the costly and wasteful episode ended with the negotiated global elimination of all land-based intermediate range missiles. Moreover, it demonstrated that European publics would no longer passively accept the risks and financial burden of continuing the senseless nuclear arms race.

Before we plunge into details of whether a further arms control "bargain" is possible that might allow both sides to agree to a follow-on reduction agreement to New START, I want to step back for a moment and survey the problem of the U.S.-Russian security relationship from wider and more fundamental perspective.

In so doing so, I want to pose the following question to the group: Do the problems we are now experiencing in our security relationship really arise from a genuine and unavoidable clash of U.S. and Russian "national interests?" Are they rooted in the objective conditions that each country faces in its external security environment?

Or do these problems originate primarily from within each country's domestic economy and politics, specifically in the interaction of each nation's "national security complex" with the domestic political and economic situation in each country.

Ever since the collapse of the Warsaw Pact "threat" to Western Europe, followed by the breakup of Soviet Union itself, I have marveled at the resilience and staying power of the institutional interests in both our nations that attached themselves the Cold War, and attained great power, wealth, status, and influence from their positions atop the security infrastructure of built to wage a perpetual military confrontation. These institutions, which our respective societies created to carry on the Cold War, have survived far beyond its demise, and continue to impose their faded doctrines and exorbitant costs on a new generation of Russians and Americans.

We have to ask ourselves, how is it possible that the Great White Whale of the Cold War no longer roams the seas, and yet the many nuclear barnacles and frigate birds attached to him are still with us, and have not only survived, but spread to other host .

I remember well the astonishing fluidity of this transition in the United States, because at the time the Berlin Wall came down I was working for the late Senator Edward M. Kennedy of Massachusetts, a great friend and advocate of peaceful coexistence, arms control and human rights. We anticipated and began planning for a massive "peace dividend" from the conclusion of the Cold War, and the Senator began to work on a legislative program to accomplish this objective.

But the U.S. national security complex immediately recognized the danger to its long-range economic and political interests from a major restructuring designed and imposed by a Democratic Congress. To preempt this danger, the Bush 41 Administration moved swiftly to implement a limited restructuring of the Cold War weapons establishment, with a view to preventing more far-

reaching changes that might have challenged the primacy of military spending in the national budget, and the strategic necessity of perpetual U.S. weapons modernization via continuous spending on research and development of new weapon technologies.

In fact, when the Bush 41 Administration was turned out of office in late 1992, a number of senior officials took their inside knowledge of the Pentagon's restructuring plans with them and founded the Carlisle Group, an investment banking firm that then made hundreds of millions if not billions of dollars with well placed bets on the wave of mergers and acquisitions that consolidated the U.S. defense industry in the decade following the collapse of the Soviet Union.

To make matters worse, in what in retrospect seems a cruel twist of fate, just as the old bogeyman of Soviet communist expansionism was dying, new bogeymen presented themselves in the form of Saddam Hussein's Iraq, Muammar Qaddafi's Libya, Assad's Syria, and North Korea—the so-called “rogue regimes” in need of deterrence and possibly even preemption via explicit threats of “counter-proliferation” strikes. Saddam filled the desired role to perfection by, in a most timely fashion, actually transgressing international law and invading Kuwait. This allowed the Bush 41 Administration to stage a victorious little high-tech conventional war on television that provided a graphic demonstration of what U.S. conventional power projection forces could do in a very short time to a smaller country without a nuclear deterrent.

What I call the “Reliable Replacement Rogue” (RRR) threat also rode to the rescue of the Strategic Defense Initiative, which in the early 1990's was suffering from an inherent lack of technical credibility against the Russian or indeed any sizable strategic nuclear force. A simple intermediate range nuclear missile threat from first North Korea, and then Iran, fit the flawed technical capabilities of the U.S. ballistic missile defense companies far better than the large Soviet nuclear force, and so with the demise of the USSR the goal of the U.S. BMD program shifted to producing a capability against these lesser types of limited rogue threats. Moreover, given that the erratic authoritarian leaders of these states had seemingly few if any domestic legal or political constraints on their conduct, the missile defense lobby could posit the existence of supremely fanatical leaders willing to risk national suicide to order the launch of a few isolated nuclear armed ballistic missiles against the United States or its allies, and then pose the question, “why should we hold ourselves defenseless against such madmen?”

The early post-Cold War thinking, from Les Aspin, Paul Nitze, and others had favored an aggressive “de-nuking” strategy and diplomacy for the United States—on the grounds that a nuclear-disarmed world would leave America's overwhelming conventional power projection capability, possibly augmented by a limited theater missile defense capability, in a better relative position than a proliferated one to dictate events.

But this fresh thinking faded quickly within the U.S. security establishment, not only due to the recognition that certain classes of hardened and deeply buried counter-proliferation targets might actually require nuclear weapons to ensure their destruction, but also because a conventional military counter-proliferation policy in general, particularly against opponents with their own WMD capabilities, was a more credible threat if carried out under the “umbrella” of a U.S. nuclear strike capabilities.

To make a long story short, the effort to shift from the expansive “extended deterrent” policy of the Cold War era to a “minimum deterrent” policy failed twenty years ago, but it has recently resurfaced as a potential future direction under the Obama Administration April 2010 Nuclear Posture Review, and in the course of the current implementation study that is designed to support the next round of nuclear arms reductions.

Despite the lamentable persistence of this U.S. Cold War nuclear deterrence complex, I would like to point out a bright spot, which is often ignored by Russian analysts, and that is almost none of this retooled deterrence effort has been directed at Russia. In the 1990's the U.S. deterrence complex was preoccupied with the problems of WMD proliferation and countering “rogue states.” In the late 1990's, and then with increasing intensity after 9/11, the U.S. security establishment has focused on countering terrorist networks, and on clandestine military operations involving the failed states that willingly or unwillingly harbor terrorist organizations.

The disastrous U.S. intervention in Iraq was clearly not motivated, as it might have been during the Cold War, by a desire to counter Soviet/Russian influence in the Gulf region. Rather a wildly misplaced conviction that Saddam would somehow make common cause with Islamic terrorists to threaten the United States with weapons of mass destruction, along with a vastly inflated sense of the U.S. “unipolar moment,” are what propelled the Bush Administration to invade Iraq. Similarly, Russian politicians and analysts saw NATO's intervention in Kosovo as a deliberate affront to Russia's security interests. Bound for Washington, Prime Minister Primakov famously turned his plane around in mid air to protest the bombing campaign against Serbia. But the policy roots of that decision really had nothing to do with opposing Russian interests, but rather lay in the previous failure of the West European nations and NATO to prevent Serb atrocities in the Bosnian civil war, followed by their collective failure to do anything to contain the Rwandan genocide. Of course there were other policy options for protecting Kosovars short of bombing Serbia, and those should have been pursued, but that does not change the fact that the roots of the NATO policy towards Serbia were not designed with the intent of harming Russian interests, nor in the final analysis did they harm these interests.

But there is no doubt that Russians experienced the NATO intervention in Kosovo as a deliberate affront to their national interest. And this difference in perception is worth exploring in some detail, because it seems fundamental.

The Cold War legacy national security complexes in the United States and Russia, and the weapons-based “solutions” to national security problems they promote, are poorly adapted to the objective global economic, geopolitical, and environmental realities of U.S.-Russian and international relations today. A parallel process of far-reaching internal reform of these institutions

is necessary if the dangerous epoch of adversarial conventional power projection, backed by nuclear deterrent forces, is to be brought safely to a close, and replaced with cooperative U.S.-Russian and global “P-5 Plus” security partnerships, built upon the foundation of “common security” interests in nuclear nonproliferation, clean energy, environmental protection, human development, and the peaceful resolution of disputes.

DOES THE NATO ALLIANCE TODAY REPRESENT A PLAUSIBLE THREAT TO THE TERRITORIAL INTEGRITY AND INDEPENDENCE OF RUSSIA?

History would suggest “no”.

- Hungarian Revolution of 1956, Berlin Crisis of 1961, Soviet repression of 1968 “Prague Spring,” did not lead to NATO military incursions into Warsaw Pact territory.
- Collective defense by NATO under Article 5 requires an attack on a member state. Has been invoked only once in NATO’s entire history, after 9/11 attack on U.S.
- Other recent limited uses of NATO military power, under humanitarian “responsibility to protect,” to defuse crises, end civil wars, requires political consensus and an agreed legal basis for action among 28 states.
- This power is unlikely to be invoked easily or frequently, given NATO’s enlargement, the wide range of views now represented within the Alliance, and recent failed interventions by NATO member states in Iraq and Afghanistan.

NATO MEMBER DEFENSE BUDGETS ARE DECLINING

- **US** annual defense spending averaged \$626 .5 billion from FY05-09.
- Request for FY 13 is \$525 billion, to be followed by cuts of \$487 billion over ten years from currently planned programs, with an additional \$500 billion in “automatic cuts” possible by the end of this year.
- **UK** will cut its defense budget by 8 percent in real terms by 2015
- **Germany** plans reduction from \$45 billion in FY 10 to \$40.4 billion in FY 2015 (current dollars)
- **France** will reduce from \$58.3 billion (FY 05-09 avg. in 2011 \$) to projected \$43.1 billion in FY 12 (2011 \$)
- **Italy** will reduce from \$31.8 billion (FY 05-09 avg) to projected \$25.7 billion in FY 2015 (FY 11 \$)

NATO MEMBER STATES ARE DIVIDED ON FURTHER “OUT-OF-AREA” MILITARY OPERATIONS

- Many European social-democrats and greens believe that NATO unfairly stretched its “obligation to protect” humanitarian mandate in Libya to conduct a bombing campaign designed to end Qaddafi regime.
- Some NATO governments and publics are exhausted and disillusioned by the outcome of NATO operations in Iraq and Afghanistan
- Many are overwhelmed by domestic budget and structural unemployment problems .
- Zero funds and little political will are available to support more NATO foreign military adventures.

IS AN ALLEGED “NATO THREAT” TO RUSSIA’S VITAL INTERESTS IN THE FORMER SOVIET SPACE CREDIBLE ENOUGH TO WARRANT FOREGOING ANOTHER BILATERAL NUCLEAR ARMS REDUCTION AGREEMENT?

- NATO nations are among Russia’s largest trading and investment partners and sources of private investment capital;
- NATO nations are significantly dependent on Russian supplies of natural gas, oil, and uranium enrichment services;
- NATO nations are facing severe budget and employment problems, and their defense budgets are shrinking;
- Why on earth would NATO want to pick a fight with Russia?

NATO COUNTRIES ARE AMONG RUSSIA'S LARGEST TRADING PARTNERS

Russian exports—\$498.6 billion, (2011 est.) ranked 10th in the world

Other than China (5.4 percent), biggest export partners are in NATO:

Country	Share of Total Exports (%)
Germany	8.2
Netherlands	6.0
U.S.	5.6
Turkey	4.6

Russia's Major Import Partners

Russian Imports—\$310 billion (2011 est.)

World Rank—18th

Country	Share of Total Exports (%)
Germany	14.7
China	13.5
Ukraine	5.5
Italy	4.7
Belarus	4.5

Mutual Economic Dependence of the EU and Russia

- EU-27 dependence on energy imports from Russia (2009), percent of total:
 - Hard coal, 30.2 percent
 - Crude oil, 33 percent
 - Natural Gas, 34.2 percent
- EU's share of Russian exports is more than half: 56–61 percent for the period 2005-2008.
- EU's share of Russian imports is almost half: 44–46 percent for the period 2005–2008.

Russia Produces, Exports (and Wastes) Huge Amounts of Energy

- Natural Gas—Production (2010): 588.9 billion cu m, [Global rank: 2](#)
- Natural Gas—consumption: 414.1 billion cu m, [Global rank: 3](#)
- Natural Gas—exports: 199.9 billion cu m, [Global rank: 1](#)
- Oil—consumption: 2.199 million bbl/day, [Global rank: 11](#)
- Electricity consumption: 857.6 billion kWh, [Global rank: 5](#)
- Industrial Production growth rate (2011 est.): 5 percent, [Global rank : 69](#)
- GDP per capita: \$16, 700 (2011 est), [Global rank: 70](#)

FAREWELL TO SOCIALISM: RUSSIA NOW HAS U.S. LEVELS OF INCOME INEQUALITY

- Distribution of household income by percentage share (2008) from survey data:
 - Lowest 10 percent received 2.8 percent
 - Highest 10 percent received 33.5 percent
- Compare to “flatter” German social democracy (3.6 percent vs. 24 percent) or “French welfare state” (3 percent vs. 24.8)

- Russia is comparable to U.S. level (2 percent vs. 30 percent) of income inequality
- Since wealthy Russians have stashed many billions of dollars in Cyprus, Luxembourg, and other foreign tax havens, beyond the reach of Russian tax authorities, the actual income share of the top 10 percent is likely much higher.

ECONOMIC SECURITY FOR ORDINARY RUSSIANS IS NOT ASSURED: LOW LABOR PRODUCTIVITY, LOW FEDERAL REVENUE FROM TAXES AS PERCENT OF GDP

- GDP: \$2.4 trillion (2011 est.) Ranked 7th in the world
- Labor force: 75.41 million (2011 est.) Ranked 8th
- GDP per capita: \$16,700 (2011 est.) **Ranked 70th** (between Botswana and Argentina)
 - US GDP per capita is \$48K, EU is \$34 K
- Federal taxes and other revenues: 20.3 percent of GDP (2011 est.) compared to EU 35-45 percent.
 - Ranked 155th in the world, between Haiti and Paraguay, but ahead of #188 U.S., which falls between Yemen and Uganda.

THE WORLD'S LARGEST COUNTRY BY AREA, AND 9TH BY POPULATION, RUSSIA CURRENTLY RANKS 16TH IN THE WORLD IN CUMULATIVE VALUE OF FOREIGN DIRECT INVESTMENTS MADE BY OTHER COUNTRIES

- Value of FDI in Russia as of 31 December, 2011: \$343 billion
 - Ranked between Sweden (\$359.9 billion) and Mexico (\$321.5 billion)
- Value of Russian FDI in Other Countries: \$314.6
 - Ranked 16th (between #15 Sweden -\$362.3 billion and #17 Austria—\$259.8 billion).
- Billions in potential investment capital is sitting on the sidelines, waiting for the political/economic/judicial reforms that can spark a broad-based modernization of the Russian economy.
- Why hamstring this opportunity for increasing Russia's economic strength and influence in the global economy by keeping Russia apart from the EU/NATO social-democratic consensus?
- **Is it really the case that ordinary Russians, if given a choice, would choose to see trillions of their rubles spent on “defending” Russia from the dreadful prospect of becoming a prosperous European social democracy?**

WHAT IS THE REAL SOURCE OF RUSSIA'S CONCERN ABOUT NATO?

- It has historical roots in the differing Russian-NATO understandings of the meaning of “security,” dating back to the Helsinki Final Act of 1975.
- USSR emphasized Helsinki's broad declaration of principles guiding relations between states, including the “inviolability of international borders” and “non-intervention in internal affairs.”
- NATO emphasized Helsinki's promotion of human rights and the principles of democracy
- Helsinki included both sets of principles. USSR's prior Helsinki commitment and OSCE membership was a factor in Gorbachev's critical decision to let the Warsaw Pact nations go their own way, without military repression from the USSR.

If we look narrowly at U.S.-Russian relations during the last 21 years, and consider them apart from the larger global trajectory of U.S. security policies, we see a picture that has many positive elements, and that includes acts of U.S. good will and generosity. After the break-up of the Soviet Union, there was considerable bipartisan good will toward Russia—everyone across the spectrum of responsible U.S. political opinion at the time wanted a social-democratic, capitalist transition to succeed in Russia, and this still remains the majority view.

I was working in the U.S. Senate at the time, and I don't recall ever hearing a single person of either party suggest that this was a time for “payback,” or for instigating the breakup of Russia itself by fomenting separatism among its diverse ethnic groupings and autonomous Republics.

On the contrary, U.S. policy favored the territorial integrity of Russia and went to great lengths with diplomacy and economic assistance to ensure that Russia alone, out of the 15 states that emerged from the former Soviet Union, became the sole inheritor of the USSR's nuclear weapons. To make it politically and strategically easier for the Soviet military establishment to transfer and consolidate Soviet nuclear weapons, even before the breakup the Bush 41 Administration had announced a large and immediate unilateral withdrawal from overseas land and sea-based deployment, and retirement from the stockpile, of thousands of U.S. short-range tactical nuclear weapons. To their credit, the conservative U.S. politicians whom I had observed only weeks before strenuously arguing the case for modernizing such weapons dropped their demands and got on board the Bush-Powell-Cheney tactical warhead withdrawal and retirement program. Please imagine Russia's immediate security environment today, or the global security environment for that matter, if there had been multiple inheritors of the Soviet nuclear stockpile. The United States even bit its tongue hard and ignored the unfolding human rights catastrophe produced by the Russian Army's indiscriminate and brutal military operations in Chechnya in the mid-to-late 1990's, all in the interest of seeing the emergence of a stable, prosperous, and democratic Russia.

In Russia's near abroad, the economic and political situation was stabilized with economic assistance under the SEED Act of 1989 and the Freedom Support Act of 1992. With the aid and assistance provided by other G7 countries, the entire region, with the notable exception of the former Yugoslavia, was stabilized and effected a peaceful transition to the post Soviet era. While the loss of an empire is never easy to swallow, it remains the case that these stabilization efforts in both the nuclear and political-economic domains were objectively in Russia's emerging national interest, With the exception of the Caucasus, what emerged was a politically stable and in some cases relatively prosperous set of trading partners and potential consumers for Russia's oil and gas and other commodity exports and manufactured products.

THIS SOVIET-NATO DIFFERENCE IN EMPHASIS PERSISTS TO THE PRESENT DAY

- Russia still talks about “security” mainly in the military, geographic and geopolitical sense, just as the USSR did, and continues to stress “non-interference” in the “internal affairs” of states.
- NATO and EU are committed to a security framework that emphasizes the freedom of states to choose their own partners and mode of development within a framework of human rights and democracy.
- In this framework “universal” values guaranteed to all peoples under the UN’s Universal Declaration of Human Rights of 1948 must be defended both within, and sometimes beyond the borders of the Alliance.
- Russia (and China) do not share this broad approach to security. Russia maintains a narrower and unswerving geopolitical understanding of security:
 - it defends its right to a sphere of influence in its “near abroad” and demands that it views be accommodated, irrespective of the popular will in the country at issue;
 - Russia distrusts what its leaders have called the NATO “messianic impulse,” which seeks wider observance of universal human rights, rule of law, and democracy .

DOES THIS FUNDAMENTAL DIFFERENCE OVER THE MEANING OF “SECURITY” INFLUENCE RUSSIA’S PERCEPTION OF THE NUCLEAR ARMS CONTROL PROBLEM?

- *Imagine the following scenario from Russia’s perspective:* In the “near abroad,” pro-Russian and pro-NATO political factions in “Country A” are locked in a bitter political struggle that has become violent and arouses the NATO “messianic impulse.”
- Russia seeks to intervene militarily to “protect” the pro-Russian faction, but its local forces and command and control capabilities in the theater are paralyzed by pinpoint PGM attacks from NATO’s advanced tactical drones.
- Russia is faced with a choice of escalating its attack or backing away. Escalation involves a risk that it will be met with precision strikes from NATO/US conventional Global Strike capabilities that could disable Russia’s capability in theater to sustain its attack.

DETERRENCE VIA TAC-NUKES CANNOT REVERSE HISTORICAL TRENDS, OR PREVENT NEW ONES FROM TAKING ROOT

- In the scenario just described, Russia is faced with the unattractive choice between starting a wider war with NATO, backed by threats of disproportionately destructive tactical nuclear escalation, or backing down.
- THE OBVIOUS (AND SANEST) ALTERNATIVE:
 - ENSURE THAT LEGITIMATE DEMOCRATIC POLITICAL PROCESSES ARE IN PLACE FOR CITIZENS OF “COUNTRY A” TO PEACEFULLY DETERMINE THEIR OWN FUTURE, *and then respect the outcome, even when it occurs within Russia's traditional sphere of influence.*

TACTICAL NUCLEAR WEAPONS WON'T HELP RUSSIA ACHIEVE ITS GEOPOLITICAL OBJECTIVES IN THE FORMER SOVIET SPACE

- In the “Near Abroad” intervention scenario, Russian short-range nuclear weapons are not a credible strategic answer to NATO's long-range precision strike capabilities.
- Tactical nuclear weapons use would very likely harm the very populations Russia is trying to assist, as well as its own forces.
- Tac-nukes are a credible threat only in the context of a last-ditch defense against a massive ground invasion of Russian home territory that threatens the survival of Russia as a unitary independent state.
- The likelihood of such an attack coming from a very diverse “collective defense” alliance such as NATO is essentially ZERO.
- Today NATO and the EU are committed to a post-Cold War security order defined not by lines on maps but by the freedom of states to choose their partners and their mode of development. They also believe that there are occasions when ‘universal’ values must be defended beyond their borders. Russia does not share this tradition. It is an emphatically modern state without post-modern additives. It maintains a remorselessly geopolitical understanding of security, an unapologetic defence of spheres of influence, an unyielding belief in sovereignty and an undisguised distrust of ‘Western messianism’.

IF POLITICAL SELF-DETERMINATION IN THE “NEAR ABROAD” PROVIDES RUSSIA WITH INSUFFICIENT SECURITY....

- In the example just given, NATO would have no interest and no strategic need to invade Russia to accomplish its limited treaty objectives of ensuring the freedom and independence of “Country A,” so tac-nukes are of dubious value in this scenario.
- Is there a less-crazy alternative than tac-nukes to accepting Popular Sovereignty in the post-Soviet space:
 - Modernize Russia's conventional capabilities to provide a capacity for controlled use of precision-guided weapons in support of sharply limited political-military objectives, sufficient perhaps to alter NATO's calculations of prompt military success, and preferably resulting, from the Russian perspective, in a negotiated end to the crisis on terms more favorable to Moscow.

WHAT COULD A NEW BILATERAL ARMS CONTROL AGREEMENT DO FOR BOTH SIDES?

- Given Russia's opposition to pursuit of nuclear disarmament for the foreseeable future, the purpose of any new bilateral nuclear arms control agreement would be to:
 - Ensure reciprocal, stable nuclear deterrence at lower levels of forces;
 - Save hundreds of billions of dollars of socially useless expenditures, by avoiding larger than necessary or politically-driven investments in nuclear deterrent systems that would otherwise be made to “hedge strategic uncertainties” in the absence of an agreement;
 - Increase global cooperation with U.S.-Russian nonproliferation efforts by continuing to reduce nuclear weapons.

BOTH SIDES ARE PLANNING HUGE INVESTMENTS IN NEW NUCLEAR CAPABILITIES THAT HAVE MAJOR SOCIETAL “OPPORTUNITY COSTS”

- United States:
 - US Navy wants to spend \$110 billion to build, beginning in 2019, a new fleet of 12 nuclear ballistic missile submarines (SSBNs) with 16 tubes each to replace the Ohio class after 2027. Life cycle costs could reach \$350 billion through 2075.
 - US Air Force wants 80-100 new strategic bombers at a cost of \$55 billion, entering service in 2025.
 - Air Force is studying a new ICBM while planning another life extension of 420 single warhead Minuteman III's through 2030.

CAN WE AVOID WASTEFUL “ARMING-TO-DISARM,” AND SCALE-BACK OUR NUCLEAR WEAPON R&D/PRODUCTION COMPLEXES?

- To win New START ratification, Obama promised a 10-year \$85 billion modernization of the DOE/NNSA nuclear weapons R&D and production complex.
- Plan includes large new 50-year facilities for warhead HEU and thermonuclear component manufacturing—the “Uranium Processing Facility” (UPF) at the Y12 Site near Oak Ridge, TN,—and for plutonium chemistry and metallurgy—the CMRR Nuclear Facility (CMRR-NF)—at Los Alamos National Laboratory.
- The current funding squeeze means future NNSA budgets lack the funds to construct both facilities at the same time, so Obama has deferred construction of the CMRR-NF for five years.
- [Is this an opportunity to consolidate and scale-back our nuclear weapon complexes to levels that would support small stockpiles \(< 1000 total weapons\) and discourage large-scale warhead production in the future?](#)

RUSSIA’S STRATEGIC MODERNIZATION IS ALREADY IN PROCESS, BUT:

- At least two planned investments seem ill-advised and exceptionally wasteful:
 - A new heavy liquid-fueled ICBM, safe production of which may require a costly new factory;
 - Production of a new liquid-fueled SLBM (“Liner”)—an unsafe operational concept—for Delta IV SSBNs at the Makayev State Rocket Center, is justified as a hedge against U.S. BMD plans, but has also been tagged by Russian critics as wasteful “jobs program.”
- Could a new arms reduction agreement help both sides to avoid substantial parts of their costly nuclear modernization plans?
- [We need to keep asking ourselves the question, “Why are we still doing all this, 20 years after the end of the Cold War?”](#)



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Russian Views of the Security of the Caucasus, Central Asia, and Middle East After the Withdrawal of US Forces from Iraq and Afghanistan

The Cooperative Prevention of Military Conflicts Arising from Future Instability in Central Asia

How would the prospects of effective Russian-NATO-US security cooperation in this region affect all of Russia's security issues including future reliance on nuclear weapons?

A high level of tension exists over the vast space of Eurasia, beginning with Israel-Palestine in the West and ending with the Korean peninsula in the North-East. This tension may produce a big continental war or a sequence of smaller-scale wars. Israel and Palestine, Kurdistan, Iraq, Afghanistan, Pakistan and India, Taiwan, Korea—each of these situations is either already a war or can become one instantly. These cases may be joined by the instability in Central Asia, in Sri-Lanka, Myanmar—in the area of the “Golden Triangle.” If under the impact of the fears born by the expectations of the development of nuclear weapons in Iran, Israel and the USA (or Israel individually) attack the Iranian nuclear facilities, Iran will also join the “theater of war” in this area. From the point of view of international security, this region presents the number one problem as Europe, Korea, and Cuba did in the years of the Cold War.

The quality which unites all these cases is the strong belief that violence is the most reliable and desirable means of solution of all the controversial issues (maybe with the exception of India and Pakistan, who due to their nuclear status are obliged to demonstrate reserve and responsibility). The fact is that the end of the Cold War and of the threat of Communism which has produced such a positive effect in Europe did not have the same effect in Eurasia, and in a way even contributed to the growth of tensions and violence, including terrorism—both to the interests of the local powers and to the interests of bigger and more influential powers: USA, members of NATO, Russia, China, and India.

The danger of this state of affairs is in the evident fact that the wars conducted in Afghanistan, Pakistan, and Iraq by U.S. forces and their allies do not lead to a decisive victory by any contender which could bring either an end to the hostilities, or freeze these situations which could allow for a peaceful settlement. The wars become latent, unwinnable, exhausting of resources, and producing collateral crime: abuse of prisoners and victims, illegal arrests, trade in arms and human beings, and production and traffic of drugs. There is an evident danger that the whole area of the Middle East, Central Asia and the areas around them will one day become the subject of endless wars (as was China in 1920s).

Such a conclusion gives the possibility to suggest that the primary interest of the big and responsible nations which either directly participate in these wars (USA and its allies, India) or are engaged potentially (Russia and China) consists in the search of means which could allow them to keep under control the dynamics of the situation, to prevent the hostilities or escalation of the conflicts, to encapsulate the actions of the actors like the Taliban in Afghanistan or in Pakistan. And at the same time it is evident that no nation, even such powerful and omnipotent as USA, can do this job alone. And therefore the second part of the task is to try to find possibilities to achieve coordination of the policies of the great powers and possibilities to act together.

This is a point of view of many experts and responsible political leaders in the big powers. But, to make the positions more accurate, it should be recognized that this is not the only point of view. There are people in almost all of the great powers who still think in the terms of the Cold War that there is a chance of revenge in these areas, a reciprocal return for the failure in the Cold War, the chance to inflict losses on other big nations or, at the least, to prevent their success. USA and its allies are already deeply engaged in the wars in this region (and the decision to go to war there was prompted, among other considerations, by the desire to demonstrate the magnitude of the U.S. power after the disintegration of the Soviet Union) while Russia, China, and India still are looking for their way within the extremes between cooperation (Russian support of the NATO war effort in Afghanistan) and diplomatic confrontation (Russia's position on Iran and Syria).

This conduct is explained not simply by the desire to hunt for immediate success. The real problem is that the genuine mechanism of conflict creation and resolution, the real extent of the factors of escalation, the real picture of the interests of the great powers and their interdependence are so complicated and ill-studied, especially when compared to the much better known waters of Europe and the Middle East, that to find an appropriate way to take a rational decision in these conditions becomes hardly attainable or unattainable at all. Still there is no other way but to go back to the evaluation of the interests of Russia and USA as the two major players in this area and to try to find a possibility of common interest and of common action.

U.S. AND RUSSIAN INTERESTS IN EURASIA

Russia and USA are the two most active and interested actors in Eurasia. For the USA, as is evident from the papers of the Obama administration, the area is important because of at least two considerations: on one hand, a high probability of terrorist activities and the U.S. conviction of the necessity to fight them, and on the other hand, the threat of subversive activities by Russia, China, and Iran in the local nations still weak and incapable to defend themselves. At least this is the picture drafted by some official documents and political figures in the USA. For Russia the area has acquired a new importance after the withdrawal of the Soviet troops from Afghanistan (1988) and when U.S. President George W. Bush decided in 2002 to send his troops to Afghanistan to punish Al Qaeda for 9/11. The Russians, first, could not believe that after their dramatic failure in Afghanistan any nation would risk to do the same blunder, but had to swallow Washington's decision (with some sort of malice and bitterness).

Anyway, the fact was that the Cold War type of thinking prevailed in the area in 2002 and it was only after U.S. troops were caught in Iraq and the Afghani Taliban demonstrated its toughness that both Washington and Moscow decided to look differently at their interests and capabilities in the region.

Russia considered the U.S. behavior in this part of the world in the times of George W. Bush administration as highly incompetent and irresponsible. While U.S. actions showed its obsession about the fight against terrorism and even suggested a kind of an alliance in this area, Russia could not follow the U.S. logic both in Afghanistan and Iraq. In Moscow's eyes they were too unilateral, had no evident and distinctive political goal (that's why there were problems with the UN Security Council vote in 2003), and were not backed by the adequate military force and relevant doctrine of their use. As a result, there is nothing like a U.S. and NATO military victory, and the only thing we hear from Washington is the withdrawal of the troops from both fronts: from Iraq now and from Afghanistan by 2014.

There is a legitimate question: will the withdrawal of U.S. troops from the area (we do not speak of the U.S. naval forces in the Persian Gulf because it is the subject of another discussion) lead to something like a resolution or at least pacification of the conflict? We know that U.S. administration tries to demonstrate responsibility to its own population, something similar to its NATO allies, and much less to Pakistan, who is the only U.S. ally in the area. And the U.S. sees the current solution of the problem in withdrawal of its forces not because they have successfully completed their mission, but mainly because of the presidential election later this year. Whether that means that the U.S. leader has found another way to put an end to this conflict or not is still to be seen.

In the meantime Russia, China, and India have to reckon with the fact that the failure of the U.S. mission in the region has significantly changed the situation there. First of all, the Taliban movement has acquired new strength both in Afghanistan (where it will take control of the country as soon as the NATO forces leave it) and in Pakistan where it has managed at least to keep the Pakistani army in the state of exhaustion of its resources (and even threatening the Pakistani nuclear forces). Disregarding the differences between the two as they fight the western forces jointly, the relevant question is: where will the energy of the Taliban go after the withdrawal of forces: Central Asia, Caucasus, and Xinjiang, China? No one knows that for sure and it adds to the whole feeling of suspense in the area.

To put it in general terms: what will the situation in the region (and in the world) be once the U.S. is defeated? The answer to this question acquires special importance for Russia, China and India because of geostrategic inequality. The USA and its allies in NATO may fail: that will be a hard blow to their prestige and global positions, but they will survive, put their forces aboard the ships and aircraft and go back home. But what will Russia, China and India do (without mentioning smaller nations) if their allies, interests, investments and hopes continue to be here and may suffer from the victory of the extremists? Should they publicly and solemnly break with the USA and condemn its behavior? The situation becomes very similar to that of 1975 in South Vietnam when U.S. forces were driven out by the Vietcong.

The possible answer is only one: USA and Russia as well as U.S. allies (and potentially China and India) should work out a certain *modus Vivendi* in which their legitimate interests will be protected by special agreements and procedures once they are not prepared to become allies. This will be a typical conflict/cooperation arrangement as it existed in 19th century between Russia and Great Britain in this area. Both empires could have common interests in Europe (as in the days of Napoleonic wars or in the days of Entente cordial) but competed in Iran and Afghanistan where they found something like "acceptable peace." NATO and Russia will continue to compete in this area also (because it is not that important as Europe) but parallel to that they will have to work out a certain system of relations based on the attempt to sort out what unites them and what separates them and how to preserve that while simultaneously maximizing cooperation and minimizing competition to an acceptable level.

It is understood that the end of the NATO military mission in Afghanistan as well as of the U.S. forces in Iraq do not mean an end of the Western interest there. It also does not demand the discontinuation of the Russian interest. Both Russia and USA are interested in prevention of terrorist takeover of Iraq and Afghanistan. Both don't want to let Iran become a nuclear power. Both the U.S. and Russia would encourage the frozen state of affairs in Kashmir which would prevent the possibility of another conflict between India and Pakistan. Finally they agree that the interests of stability in Central Asia demand some sort of consultations with China.

Recognition of these facts demands to go a step further in their formalization if not as written documents but at least as some clear verbal commitments of the leaders of these nations which could incorporate:

- understanding that the controversial issues in this area have no military solution either by the “outsiders” or by the “insiders.” This understanding could be incorporated as follows: a) the refusal by the big powers to use force in the area and significant cuts in their forces in the region, including U.S. naval force in the Persian Gulf; b) changes in the security policies with the reduction of the role of the military force and increase in the use of non-military means; c) revision of the arms sales policy; d) resumption of searches for peaceful solution of the problems;
- confirmation of the non-proliferation regime (for Iran and North Korea) and strong prevention of nuclear weapons use (by India, Pakistan or Israel);
- return to the policy of tight control of the movement of both nuclear and missile technologies;
- encouragement of different dialogues between the nations of the region aimed at the discussions of the possibility of their resolution.

From a strict formal point of view neither Russia nor USA belong to this area (though they are participants of Organization of the Security and Cooperation in Europe which has some interests in the Central Asia and the Caucasus). Their territories are thousands of miles from this region. But the specifics of the current international relations, because of interdependence and globalization, leads to the legitimacy of their interest in this area where they have allies, vested interests, security concerns. And that's why their task and obligation in the area demands:

1. to determine clearly the sphere of their security concerns and to explain it in the appropriate form to the other side.
2. to compare these interests with the interests of the other side and to identify among them the interests which coincide and the interests which contradict to the others.
3. to build a joint structure of interaction: rules of engagement in those areas where their interests are the same and rules of conduct where they are different.

THE STRUCTURE OF THE RUSSIAN INTEREST

The geostrategic position of Russia identifies four major zones of security concerns: the West (mainly the Euro Atlantic zone where Russia interacts with USA and NATO); the East (where the major Russian problem is China but USA also exists because of its interest in Japan, Korea and Taiwan); the North (Arctic zone where USA also plays a visible role); and the South, the area which is discussed in this paper. Each of the regions has its specific security features and different agendas though there are issues which cross all because of their universal nature, like the U.S. factor which exists everywhere and plays an important role. Besides, there are such global issues as the balance of the strategic weapons, energy security, food and water supply, state of environment, life of the population.

If one looks attentively into the Russian documents of national security and foreign policy, not all of these issues are equally well worked out and analyzed. There are issues like Europe where the Russian position is more or less clear (e.g. NATO) but there are other areas where the Russian interest is still either poorly identified or is not identified at all. Much depends on the extent of changes which happened after the collapse of the Soviet Union, the importance of the relevant area, the factor of competition and many other things.

In particular when we discuss the security interests in the Southern zone there are some absolutely new problems which demand time for comprehension. New independent states in the former Soviet republics which were artificially created at the times when the Soviet Union was born: Azerbaijan, Turkmenistan, Uzbekistan, Kazakhstan, Kirghizstan, Tajikistan. All of them had almost no history as independent states and were created from neighboring areas by the diktat of the Communist party. No wonder some of them immediately turned into war zones where Russia had to intervene (Tajikistan) or has to think about it today (Kirghizstan). Russia had also to take responsibility for some points of hostility here (Nagorno-Karabakh) and issues of the division of the Soviet legacy (Caspian Sea).

Number two is the relations with the nations of the area with which the Soviet Union had normal working relations and which now change their role in the region: Turkey, Iran, and Pakistan. As the most important, the impact of the U.S. war in Afghanistan on the situation in the former Soviet republics. No doubt, the current Russian position in these countries does not bear typical Soviet features (ideology, anti-Americanism, support of the pro-Soviet forces and regimes) but still it has some anti-Western connotation because of the war in Afghanistan and the threat of war in Iran.

The Russian security effort in this part of the world consisted of two main thrusts: The Collective Security treaty of 1993 (The Tashkent treaty) signed with six post-Soviet states: besides Russia—Armenia, Kazakhstan, Uzbekistan, Tajikistan and Kirghizstan, and later joined by Georgia, Byelorussia, and Azerbaijan (Georgia now is again out). The treaty originally promised assistance to the members in case of domestic troubles but then reduced its responsibility to the assistance in case of foreign intervention. And the second mechanism which was already much more mature and balanced—the Shanghai

Organization of Cooperation (SOC) started in 2001 and including China and the Central Asian countries. Now India, Pakistan and Afghanistan are observers in the SOC, and Iran is also very much interested in becoming an observer.

These two mechanisms have helped Russia to stabilize to some extent the situation in the part of the region which is closer to the former Soviet space: domestic situation in the former Soviet republics (with the exception of Georgia but that is a separate story), relations between the former Soviet republics and the local nations: Turkey, Iran and even Afghanistan; and Russian interaction with China, India and Pakistan. So, despite the disintegration of the former Soviet space the interests of the Russian security took Russia much further along the way of regional expansion because the process of emancipation of the local players was not accompanied by the attempt to suggest a reliable regional security arrangement. And U.S. improvisations in Iraq and Afghanistan have only dramatized the state of affairs.

To a large extent the Russian security effort was successful. It allowed minimizing possible negative consequences of the domestic instability in Kirghizstan, Uzbekistan, and Tajikistan. It allowed organizing the necessary U.S. airlift network around Afghanistan. It helped to preserve the basic conditions for the joint anti-terrorist activity in the region. At the same time it has given ground to doubts about the genuine purposes of Russia in the area, primarily suspicions about the desire of Moscow to restore the Soviet empire in the Central Asia and the Caucasus. The argument that it is impossible to “get into the same river twice” does not work.

The Russian military doctrine identifies the threats to the Russian interest in the region as well as the threats to its allies as “limited” or even “insignificant”. The Russian military planners do not expect a big war in this part of the world and definitely no threat of a nuclear war. Even if Iran one day develops a limited nuclear capacity it will hardly use it for the intimidation of the local states. So, the nuclear option appears for Russia here in only one way: if Iran acquires nuclear capability that will add urgency to the problem of Russia-NATO talks on the joint anti-missile defense which in this case will become a must.

But there is another aspect of the nuclear weapons issue in the area and that is a threat of a nuclear war between India and Pakistan or the use of a nuclear device by Iran either against Israel or against U.S. naval contingent in the Gulf. Two possible responses are more or less clear: one, a joint reaction with USA to force Iran to stop its nuclear program (and it looks like the most probable option) and, two, deterrence of Iran in defense of the former Soviet republics.

To finish this essay on the positive note, it would be helpful to present the case as follows. There are two types of security problems in the region. One is very well known, trivial and absolutely clear is the type of the problems related to the division between the rich and the poor, “North vs South.” As long as a group of the nations in the Central Asia and the Middle East will continue to be poor the security landscape will be either overclouded by the threat of conflict or the threat of terrorism. The security planners in developed nations know perfectly well this type of challenges and will suggest something. The longer way out is the enhanced development and a combination of assistance and conflict control policies.

The other type, much less known but equally dangerous, is radicalism based not so much on poverty but on religious tradition. The most potentially dangerous cases in this area are the cases with the participation of the nuclear states or with the “future” nuclear states (Iran). This type looks like a far-away contingency now but what will the great powers do when this contingency becomes more tangible and urgent?



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The Dangers of Mistrust and Misperception:
A case study of Strategic Defense, the United States and Soviet Union

Prepared for a conference of the Natural Resources Defense Council
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Ships that pass in the night, and speak each other in passing, only a signal shown, and a distant voice in the darkness; So on the ocean of life, we pass and speak one another, only a look and a voice, then darkness again and a silence.

-Henry Wadsworth Longfellow, *Tales of a Wayside Inn*, 1863

1. INTRODUCTION

In the history of the Cold War nuclear arms race, one danger stands out: an excess of mistrust and misperception. The United States and Soviet Union, rooted in radically different history, geography, culture and experience, often wrongly judged each other's intentions and actions, from the "bomber gap" of the 1950s to "Star Wars" of the 1980s. They engaged in deceptions that only deepened the risks of error and miscalculation. Both nations were often driven by domestic pressures that weighed against compromise and favored inertia and stalemate.

As we consider the next steps in arms control between the Russian Federation and the United States, we can draw lessons from the past. The ideological confrontation has been over for two decades. The world has changed radically, and both nations confront new threats. Yet we are saddled with our inability to overcome outdated suspicions. It is vital that we now divest ourselves of the ideology, rivalry, mistrust and weapons of the Cold War.

Why does mistrust linger? Politics in both nations seems to reward confrontation, and our political leaders succumb to this temptation. Our policy-makers and intelligence agencies are driven toward worst-case scenarios. Our institutions are slow to relinquish missions and old thinking.

However, the interests of both countries, and our societies, have been transformed since the Cold War. We trade in each other's equity markets, have shared interests in nonproliferation and arms control and important stakes in regional conflicts. All of us are caught up in a global digital revolution. Russia has the largest audience of Facebook users in Europe, and is open to the world in a way the Soviet Union never was. We both carry responsibility for resolving such threats as cyber war, climate change and terrorism.

When it comes to arms control, the best antidote to mistrust is expanded transparency. Today, we have an urgent need for mutual confidence-building and openness. We ought to be more candid about the true strategic intentions and capabilities of the United States and Russian Federation, and examine those weapons and missions that are outdated, in order to avoid errors of judgment that could reverberate for many years to come. Such cooperation can start with missile defense, which has once again become an unwelcome source of confrontation and misunderstanding.

This presentation includes new documents as well as material published previously in my book, *The Dead Hand: The Untold Story of the Cold War Arms Race and Its Dangerous Legacy* (Doubleday, 2009) also translated and published in Russia. I will examine one case of mistrust and misperception involving President Reagan's Strategic Defense Initiative in the 1980s. There are still serious gaps in information and in the documentary record, but over the last two decades, previously secret materials on both sides have been released. Most recently, new documents have come to light in the United States which illustrate the Reagan administration's exaggeration of Soviet efforts in strategic defense. The history is relevant to our discussions today. The paper concludes with some recommendations for additional transparency by both nations.

2. A “BREAKOUT” THAT NEVER WAS

The Anti-ballistic Missile Treaty, signed by the United States and Soviet Union in 1972 and amended in 1974, prohibited nationwide missile defense. Each side was permitted one site with no more than 100 interceptors. The Soviet Union built its permitted system around Moscow. The United States dismantled its only facility in 1976 after concluding it was too expensive and ineffective to stop a Soviet missile onslaught.

The Soviet Union maintained a loose group of related programs that caused worry in the United States about a possible Soviet “breakout” from the ABM treaty—a sudden drive to create a nationwide defense. Such a breakout never occurred but a brief review of these related programs is necessary to understand the Reagan administration’s exaggeration of Soviet capabilities and intentions.

These related programs included:

- a.) The Moscow ground-based ABM system with nuclear-tipped interceptor rockets and radars.
- b.) A relatively primitive anti-satellite weapon, known as IS, first designed in the 1960s, which would be launched and then position itself into the same orbit as a target satellite, exploding into fragments to disable the target.¹ The system, upgraded in the 1970s, was intended to be launched and rendezvous with a target within a few hours. In 1983, testing was halted by General Secretary Yuri Andropov, although IS remained available for use and was later modernized further.²
- c.) Extensive research into directed energy weapons, including high-energy lasers. A testing ground was constructed for this work at Sary Shagan, near the eastern shores of Lake Balkhash in Kazakhstan, and other substantial facilities were built at Krasnoarmeysk, Troitsk and elsewhere. Scientists, designers and their military patrons dreamed of building powerful beams capable of striking satellites from space battle stations or stopping missiles in flight, and they worked on it from the early 1960s through the late 1970s, although they were never able to build a workable laser weapon.

The near-term goal was to track objects in space, with a longer-term interest in knocking out satellites and missiles. The first major project, known as LE-1, was a ruby laser, built at Sary Shagan, that eventually proved capable of tracking airplanes about one hundred kilometers away, but not in space, and the laser was not capable of shooting down objects. The LE-1 relied upon a cascade of 196 separate lasers and the precise movement of hundreds of optical elements, mirrors, lenses and plates.

A more advanced laser, code-named Terra-3, was also on the drawing boards for a decade, and the plan was to test it at the Sary Shagan site, where a structure was built for the power source and laser-beam-pointing system. Soviet scientists made advances in laser technology during Terra-3, and while they experimented with it for locating and studying trajectories of moving objects, it was never completed. The project was abandoned by 1978.³ A follow-up called Terra-3K was also planned, with a goal of using a high-power laser to attack low-orbit satellites, but it never worked.

Despite the Herculean efforts, the Soviet designers ran into difficulty when they reached the limits of their technology and innovation, and the vexing physics of missile defense. Laser weapons demanded enormous energy sources, superb optics and precision targeting. The designers and scientists struggled with the tendency of a beam to weaken as it shot into space. They could not muster the intense, directed energy needed to puncture a warhead. Warheads are hardened to withstand re-entry, making it nearly impossible to do damage with a laser. Missiles are a softer target, but a laser weapon would have to be close to the launch point, or in space, also nearly impossible.

In the end, the Soviet Union did not succeed in turning high-energy lasers into a sophisticated weapon. Nikolai Basov, who shared in the 1964 Nobel Prize in quantum electronics, said later of Terra-3:

“We established quite firmly that nobody could shoot down a missile RV by a laser, and we advanced our lasers a great deal.”⁴

d.) The construction of a large phased-array radar in Siberia north of the city of Krasnoyarsk. The radar was first detected by the United States in July, 1983. The Soviet Union decided to construct the radar to close a gap in its early-warning capabilities which left Moscow vulnerable to a surprise attack from U.S. submarines armed with highly-accurate SLBMs in the Pacific Ocean.⁵

The 1972 ABM treaty had permitted early warning radars as long as they were located at the perimeter of the country and facing outwards. The Soviet leaders had put this radar station inland, 1,669 miles from the Pacific Ocean and nearly five hundred miles north of the border with Mongolia, clearly not at the perimeter. The radar antenna faced northeast, too, which was not exactly outward. The Soviet Union insisted the radar was for tracking civilian space objects, which was a cover story. In fact, it was a legitimate early warning radar, but its location and direction were in violation of the treaty. The United States claimed for years the radar could assist in battle management in a nationwide ABM system, which was not the case, but the secrecy surrounding the radar and its location were in violation of the treaty, and deepened suspicions.

The related programs described here were a grab-bag of different ideas and goals. The Moscow ABM system may have been the most concrete accomplishment, but others suffered from technical setbacks and incomplete research and development. The sum of the parts never added up to a whole Soviet national missile defense system.

In 1981, the Reagan administration published the first in an annual series of reports, *Soviet Military Power*, intended to buttress the president's request for large increases in defense spending. The 1981 volume included a section titled Soviet Strategic Defense Forces. It noted the large investments in defenses, but never used the word "breakout" and made no claim that one was being contemplated. Also, the report offered a cautionary note, saying that "the technical problems associated with defense against air and missile attack are immense" and "Soviet defenses characteristically have fallen short of being able to handle fully the tasks they face..."⁶

3. THE GREAT EXAGGERATION

President Reagan announced in a nationally-televised address on March 23, 1983 that he was launching a long-term research program to determine the feasibility of a system that would stop incoming ballistic missiles before reaching their target, making "nuclear weapons impotent and obsolete."

Reagan's proposal did not originate from a thorough inter-agency review in the U.S. government. Rather, the president knitted together isolated strands of advice, responding to disparate influences and problems. One was frustration among the Joint Chiefs of Staff with congressional resistance to approving a basing mode for the MX missile, raising doubts about the future land-based leg of the strategic triad. Another was the argument made by some conservatives that advances in technology could make interception of ballistic missiles more feasible than it had been a decade earlier. Among those who made this argument was the physicist Edward Teller, who touted to Reagan a nuclear-pumped X-ray laser to shoot missiles out of the sky.⁷

Within a year of the 1983 speech, Reagan and his team embarked on a campaign to sell the missile defense plan to Congress and the American public by asserting that the Soviet Union also had a sizeable research program in strategic defense. To reach this conclusion, the administration took fragments of evidence about Soviet programs and inflated it into a larger threat.

The first CIA assessment

In 1983, Fred Ikle, the undersecretary of defense for policy, asked the CIA to assess how the Soviet Union might respond to Reagan's Strategic Defense Initiative. The study was originally assigned to the Defense Intelligence Agency for drafting, but in the end was written by a small group of CIA analysts with input and coordination from others in the intelligence community. When completed in September, 1983, the study provided a cautious and equivocal assessment. The authors noted large Soviet investments in related fields of directed energy research, but also speculated the Soviet Union was not likely to engage in a crash effort to match the United States, and instead might seek other ways—political, military, technical—to respond to the Strategic Defense Initiative.⁸

The study said:

"The Soviets can continue development and deployment of their own ballistic missile defense systems. The Moscow antiballistic missile system can be expanded and improved, and a more widespread system deployed, with additional launchers, improved missile detection and tracking capabilities, and more capable interceptors. The Soviets can expand their ongoing efforts on directed energy weapons, weapons which also provide antisatellite capabilities which could be used against some space-based elements of a U.S. BMD system. In most of the directed energy weapons technologies, the Soviets are now on a par with, or lead, the United States. They are likely to pursue these efforts regardless of whether the United States sustains its strategic defense initiative.

"We believe it is highly unlikely the Soviets will undertake a "crash" program in reaction to U.S. BMD developments, but rather will seek to counter them by steadily paced efforts over the decades the United States will need to develop and deploy its overall defense. They will look for solutions that are least disruptive to their way of doing business and involve the least possible change to their planned programs. The Soviets are not likely to embrace a fundamental shift in the strategic environment entailing reliance on strategic defenses by both sides."

The CIA analysts were hesitant to predict which way the Soviets would go. They believed the Soviets would have a broad array of options and would not give up on offensive capability. The analysts had a particularly difficult task in assessing the economic effects in the Soviet Union.⁹

However, the paper included an assessment of the state of Soviet directed energy systems, such as lasers:

"The Soviet Union has had a large, military-sponsored, high-energy laser weapon program since the 1960s. One of the primary motivations for this effort is probably the development of ballistic missile defense weapons. Our best evidence in this area concerns a major program to develop the technology necessary for a ground-based laser weapon for terminal ballistic missile defense.... The result of these longstanding and well-funded programs is that the Soviets are now on a par with, or lead, the United States in most of the directed-energy weapons technologies."

This statement provided fodder for U.S. claims over the next few years.

Inflating threats

The administration began to assert that Moscow was already well on its way to succeeding with a missile defense program.

For example, in December, 1983, George A. “Jay” Keyworth, the president’s White House science advisor, gave a briefing about the Strategic Defense Initiative to the JASONS, a group of preeminent scientists who advise the Defense Department and other government agencies. Keyworth felt that Reagan’s vision for SDI was being lost in a storm of public criticism. His “talking points” to the JASONS have now been made public.¹⁰

Keyworth described in his presentation the “circumstances” that led Reagan “to give the extraordinary challenge he did.”

Among these “circumstances,” Keyworth listed “the assessment that the Soviet techno-industrial capability has, in many areas, closely approached or matched our own.” In a list of examples, he included “BMD technology,” or ballistic missile defense technology, and cited upgrades to the Moscow missile defense system. Keyworth added another point that supported Reagan’s vision:

“The projection that the rate of Soviet systems improvement, while not revolutionary, is steady and continuous. And in some cases, such as advanced defenses and directed energy, the Soviets have dedicated tremendous resources whose payoff could be sudden and dramatic.”

The Soviets certainly had devoted large resources in directed-energy weapons. But in suggesting a payoff that “could be sudden and dramatic,” Keyworth went beyond what the CIA study had reported only weeks earlier. The CIA suggested that Soviet payoff might take a long time. Keyworth did not identify any sources for his assertion.

Later in the same briefing document, Keyworth said the president had contemplated two differing future outcomes. In the optimistic one, the United States would succeed in developing missile defense. In the pessimistic one, “the Soviets gain unilateral advantage in defense (For example, against ICBMs).”

Keyworth added, “The President has no illusions as to how the Soviets would use this advantage to intimidate the U.S.” and, “The President is aware the Soviets have already committed immense resources toward this capability.”

The first Reagan directive

A month after the Keyworth memo, on January 6, 1984, Reagan signed National Security Decision Directive 119, the first presidential order concerning the Strategic Defense Initiative. The NSDD was a high-level executive branch instruction. In the document, now fully declassified, the president said:

“There is a growing concern over a potential Soviet breakout from the ABM treaty. Evidence of Soviet efforts to develop a ballistic missile defense capability makes it incumbent upon the U.S. to do its utmost to acquire its own strategic defense options as one possible response to a Soviet breakout. Unilateral Soviet acquisition of an effective defensive capability would confront the U.S. and its allies with the real threat of nuclear blackmail and political/military coercion.”¹¹

However, the Soviet Union was not close to breaking out of the ABM treaty at the time. The April, 1984 edition of *Soviet Military Power* ramped up some of the alarms about Soviet ballistic missile defenses, saying that Moscow was working on a rapidly-deployable system that could “relatively quickly” become “a nationwide ABM system should they decide to do so.” The report did not assert such a decision had been made. It also offered a caution about lasers as a Soviet ballistic missile defense weapon: “The many difficulties in fielding an operational system will require much development time, and initial operational deployment is not likely in this century.”¹²

On July 8, 1984, Keyworth gave an interview to Voice of America. The Soviets, he said, “have developed a large program in technology development throughout the Soviet Union that will provide them with some significant options in the future. They have many of the very finest minds in the Soviet Union working on the development of advanced technology such as large-scale lasers that could give them a true, new, high-leverage capability in anti-satellite weapons.”¹³

After Reagan won re-election, the Soviet Union agreed to re-start arms control negotiations in early 1985. The exaggeration of Soviet capabilities continued to be included in justifications for SDI, both public and private.

Reagan’s National Security Decision Directive No. 153 of January 1, 1985, contained instructions for Secretary of State George Shultz in his forthcoming meeting with Soviet Foreign Minister Andrei Gromyko in Geneva. The document stated “the USSR has long had a vigorous research, development and deployment program in defensive systems of all kinds. In fact, over the last two decades the Soviet Union has invested as much overall in its strategic defenses as it has in its massive strategic offensive buildup. As a result, today it enjoys certain relative advantages in the area of defenses.” The directive also stated, “In the near term, the SDI program directly responds to the ongoing and extensive Soviet anti-ballistic missile effort, which includes all the actual deployments permitted under the ABM treaty. It provides a powerful deterrent to any Soviet decision to rapidly expand its ballistic missile [defense] capability beyond that contemplated by the ABM Treaty. This, in itself, is a critical task.”

Thus, SDI was being cast as a bulwark against a Soviet breakout threat that, in fact, did not exist. The urgent tones in the language of the document—that the Soviet Union might “rapidly expand” a missile defense effort—ran counter to the CIA’s 1983 conclusion that the Soviets were not likely to embark on such a crash effort.

A public relations campaign

In late 1984 and early 1985, Reagan aides began to worry they were losing support in Congress and the public for SDI. One of Keyworth’s White House staff members, Lt. Col. Michael Havey, who was the anti-missile defense analyst in the science office, wrote to Keyworth in October, 1984 that “we are losing the argument on the Hill before we even start. We simply will not tell anyone WHY we are doing this. WHAT are our goals? WHERE is the logic path that says it may be do-able?”¹⁴

In his second inaugural speech in early 1985, Reagan offered a high-flying description of his program, calling it a global shield to make nuclear weapons obsolete. “I have approved a research program to find, if we can, a security shield that will destroy nuclear missiles before they reach their target,” he said. “It wouldn’t kill people. It would destroy weapons. It wouldn’t militarize space, it would help demilitarize the arsenals of the Earth. It would render nuclear weapons obsolete.”

In the weeks that followed, a renewed effort to advance the case for SDI got underway. Keyworth wrote to the White House national security advisor, Robert C. McFarlane, on Feb. 27, urging a major presidential address and public relations campaign on the second anniversary of the SDI speech. McFarlane passed the suggestion on to Reagan, saying he totally agreed with Keyworth. Reagan said he liked the idea, and wrote in hand at the bottom of the McFarlane memo:

“I agree—argument for SDI is that it can make possible the elimination of nuclear missiles. I agree with Jay’s letter.”
RR 3/25/85¹⁵

The new CIA white paper

In March 1985, the CIA prepared a white paper on Soviet directed energy weapons. It is not known precisely why this paper was written at this time, or who authored the document. A preface said it was prepared to answer concerns about the impact of SDI on the U.S.-Soviet strategic balance. The preface added that both supporters and critics of SDI “should have a basic understanding and appreciation of the nature and magnitude of Soviet efforts in strategic ballistic missile defense.” The document enlarged the exaggerations about Soviet work on high-energy lasers.¹⁶

It said:

“The Soviet Union has been engaged in research on the directed energy weapons technologies for as long as the United States. Soviet efforts are under the leadership of some of the finest scientific minds in the USSR. The resources the Soviets have applied to these efforts are believed to be greater than those which the United States has applied.

“In directed energy technologies, the Soviets are in a comparable, or highly competitive position with respect to the United States. In laser technologies, there is an essential equivalence, though the Soviets are pursuing some types of lasers which the U.S. has either abandoned or has ignored for weapons applications...

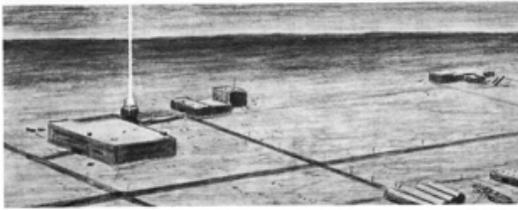
“The Soviets are believed to have progressed beyond the stage of pure or basic laboratory research in directed energy technologies; the Soviets have begun to develop and test laser weapons. The Soviets already have a ground-based laser capable of damaging some U.S. satellites and which may be used to investigate the feasibility of lasers for ballistic missile defense applications.

“Hostile Soviet reactions to the U.S. Strategic Defense Initiative (SDI) and lobbying against the SDI by high-level Soviet scientists must be tempered by the fact that the Soviet Union has not admitted its own long-standing counterpart research and the most vocal Soviet scientists have themselves been heavily involved in that weapons research.”

The CIA said it could not estimate the cost of the Soviet program, but it is “larger than that of the U.S.” and “clearly appreciable.” The paper noted that the Soviets had built “over a half-dozen major R&D facilities and test ranges” and “have an estimated 10,000 scientists and engineers associated with the development of lasers for weapons.”

Then the CIA paper added:

“Estimates have been made of the amount of floor space that the Soviets have allocated to laser weapons R&D. The growth was very rapid in the first decade; now it is leveling off with a growth rate of a few percent per year. Currently, the Soviets appear to have space for lasers that is comparable to that of a typical large Soviet missile or space design bureau.”



The directed-energy R&D site at Sary Shagan proving ground includes ground-based lasers could be used in an antisatellite role today and possibly a ballistic missile defense role in the future.

The Sary Shagan artist's conception appeared in numerous U.S. official publications, including *Soviet Military Power*.

This assertion was accompanied by a chart which purported to show the growth in floor space but did not contain any numbers, simply a rising line. "We believe the Soviets are generally capable of supplying the requisite prime power, energy storage, and auxiliary components for most laser (and other directed energy) weapons," the CIA concluded.

Under the heading "advanced developments," the CIA paper asserted, "The Soviets have progressed beyond basic technology research in some cases to the development of prototype laser weapons. They already have a ground-based laser that could be used to interfere with U.S. satellites." This assertion was accompanied by an artist's conception of the Sary Shagan site, where the Terra-3 laser buildings stood. The drawing (above) shows a beam as it is directed vertically into the heavens. The Terra-3 program had been abandoned in 1978, but the CIA caption declared, "This directed-energy R&D site at the Sary Shagan proving ground in the central USSR could provide some anti-satellite capabilities today and possibly ABM prototype testing in the future."

Nowhere in the entire CIA white paper is the possibility raised or considered that the Soviet investments and quest for laser weapons may have not succeeded. The assertions of progress appear to be based on inputs—numbers of scientists, floor space, articles in the open literature, and money—and not on actual results and accomplishments. In fact, while the Soviets did have a large program, they were lagging in computational power, optics and energy sources, all of which were necessary to achieve success in the field.

The CIA white paper concluded by saying that as a result of Reagan's SDI, "perhaps we are now on the threshold" of an effort by the Soviet Union "to compete with the U.S." in strategic defenses. The report quoted Nikolai Basov, the head of the Terra-3 project, as expressing a bit of bravado, saying that the Soviet Union "would have 'no technological difficulty' in matching the U.S. SDI program." The CIA added, "And from what we have observed thus far of Soviet capabilities in directed energy research, development and testing, his claim is not without foundation."

The CIA white paper over-estimated what the Soviets had been able to accomplish. Steven Daggett and Robert English later pointed out the analytical error: measuring what was invested in the program did not reliably show what results were obtained. "In judging the magnitude of Soviet efforts, what really counts is not resource inputs, but product output," they said. "Although the Soviets have made a large investment in directed-energy technology, the lasers on which they have made the most progress are not useful for strategic defense applications."

"Thus," Daggett and English added, "the CIA paper and other official statements provide only a partial and highly misleading description of Soviet directed-energy weapons activities. Although the Soviet program is substantial, it is very far from developing operationally effective laser weaponry."

"Clearly the administration has not portrayed the Soviet strategic defense effort accurately. Rather, a sudden policy shift has led officials to distort seriously Soviet military capabilities for public and congressional consumption."¹⁷

'We do know the Soviets are working on it.'

Reagan then laid out a public relations strategy for SDI in a National Security Decision Directive, No. 172, signed May 30, 1985. The directive continued the alarmist approach to Soviet work on strategic defense. The directive stated, for example, that "the USSR has long had a vigorous research, development and deployment program in defensive systems of all kinds." Also, "For over two decades, the Soviet Union has pursued a wide range of strategic defensive efforts, integrating both active and passive elements. The resulting trends have shown steady improvement and expansion of Soviet defensive capability." Such trends "will continue apace for the foreseeable future," the president's directive declared.¹⁸

Soon after, Paul Nitze delivered a speech on Soviet strategic defenses in July in which the CIA white paper was adopted almost verbatim. Nitze, an experienced arms control negotiator, concluded of the Soviet Union, "Clearly, they see the potential applications for advanced defensive technologies; otherwise they would not be investing so much effort and so many resources in this area. It is not unreasonable to conclude that they would like to continue to be the only ones pressing forward in this field. At a minimum, they want to keep the United States from outstripping them in such technologies."¹⁹

Teller came to the White House to see Reagan on June 11, 1985. A memo by Keyworth to White House chief of staff Donald T. Regan expressed concern about the visit because Teller was expected to press Reagan for additional money for the nuclear-pumped X-ray laser, which Keyworth said had been deliberately kept in the shadows of the SDI program. One reason is that it was nuclear, and ran counter to the spirit of Reagan's program to make nuclear weapons obsolete. Also, it might have offensive uses, Keyworth said. "At the same time," Keyworth claimed, "we do know the Soviets are working on it."²⁰

The president also made the case in a Saturday radio speech on October 12, 1985. “The Soviets have for a long time been doing advanced research on their version of SDI,” the president said. “They’re doing so well, our experts say they may be able to put an advanced technology defensive system in space by the end of the century.”

In October, on the eve of the first summit meeting at Geneva between Reagan and the new Soviet General Secretary, Mikhail Gorbachev, the Departments of State and Defense jointly issued a report, “Soviet Strategic Defense Programs,” which attempted to justify Reagan’s vision on grounds that the Soviets were already moving ahead. The report adopted almost verbatim the CIA white paper from the spring.

It also included the pencil drawing of the Sary Shagan site with the laser beam shooting upwards. The document said the site is “estimated to include... a laser that may be capable of damaging some components of satellites in orbit; and a laser that could be used in feasibility testing for ballistic missile defense applications. A laser weapon program of the magnitude of the Soviet effort would cost roughly \$1 billion per year in the U.S.”

In the March report, the CIA had not put any such cost estimate on the Soviet effort. According to Daggett and English, the \$1 billion estimate was borrowed from an estimate made in 1979 by William Perry, then undersecretary of defense for research and engineering in the Carter administration.

In a cover letter to the October report, Defense Secretary Caspar Weinberger and Secretary of State George Shultz listed Soviet activities in strategic defense that they said were the basis of the conclusion that the Soviets were moving ahead. The list included the related programs outlined earlier in this paper. They were described as “important recent Soviet activities in strategic defenses.”

Cited in “Soviet Strategic Defense Programs”	Comment
Upgrading of the Moscow ABM system, the “world’s only operational” anti-ballistic missile system.	Permitted by ABM treaty. Upgrade did not exceed treaty.
“Construction of the Krasnoyarsk ballistic missile detection and tracking radar that violates the 1972 ABM Treaty.”	The radar was clearly a violation of the ABM treaty, but did not have the battle-management capabilities that the administration suspected.
“Extensive research into advanced technologies” such as laser weapons.	Much effort, but little success beyond tracking. No laser weapon that could kill warheads.
“Maintenance of the world’s only operational ASAT system”	Andropov stopped tests in 1983, but the system was still operational.
Modernization of air defenses, and passive defenses such as deep bunkers for key personnel.	Both correct, but not part of a national ABM system.

In sum, the Reagan administration had lumped together diverse programs and exaggerated them into a larger threat. At the end of a section on radars, the report stated:

“Taken together, all of the Soviet Union’s ABM and ABM-related activities are more significant—and more ominous—than anyone considered individually. Cumulatively, they suggest that the USSR may be preparing an ABM defense of its national territory.”

This analysis was incorrect. The Soviet Union was not headed for an ABM breakout. Actually, within six years, the country was headed for a breakdown.

4. THE SOVIET RESPONSE TO SDI

If Leonid Brezhnev had remained at the helm of the Soviet Union, some of the Reagan administration’s fears of a breakout or the appearance of a rival Soviet SDI might have become a self-fulfilling prophecy. Brezhnev admired the missile and space designers, and he might have built one. But by 1985, a new leader had taken charge in Moscow. Mikhail Gorbachev did not want another arms race. He did not build a Soviet SDI, although he was urged to do so.

Among many in the Soviet hierarchy, the reaction to Reagan’s plan was confusion. They did not think SDI could be actually deployed for another two decades, at the earliest, which raised the question of why the United States was spending so much money on it. They didn’t have a good answer, and they worried that Reagan wanted to force the Soviet Union into a new arena of the arms race for which it was ill-prepared.

Before Gorbachev

As noted previously, the Soviet scientists had worked hard to explore the complex technology that would be useful for missile defenses. In addition to the high-energy laser work with Terra-3 and LE-1, there were two other major efforts to study the issues in the late 1970s and early 1980s.

Both involved Yevgeny Velikhov, a physicist and deputy director of the Kurchatov Institute of Atomic Energy. Among other things, he had once worked on magneto-hydrodynamic engines as potential laser energy sources.

a. In 1978, Vladimir Chelomei, one of the legendary Cold War missile designers, near the end of his career, proposed to build and launch “baby” space shuttles carrying anti-satellite weapons. Velikhov, a rising star in a younger generation, served on a commission to examine Chelomei’s baby shuttle. The commission rejected it, and in the process Velikhov said, he gained a much deeper appreciation of the difficulty of missile defenses overall. “The Chelomei affair was killed,” Velikhov said. “And this was a very good inoculation for Russia against the Star Wars proposal by Reagan, because five years before, we had already had all these internal discussions, with a very detailed analysis on the technical engineering level.”

b. In late 1983, Velikhov was asked by the Kremlin to evaluate the Reagan missile defense proposal from a technical standpoint. The conclusion of the study, Velikhov said, was that Reagan’s dream would not work.

Gorbachev and ‘asymmetric’ response

When Gorbachev became Soviet leader in March, 1985, he faced, almost immediately, the problem of how respond to Reagan’s Strategic Defense Initiative.

That spring, the KGB put out a directive to its agents seeking intelligence about “American policy on the militarization of space.” The KGB was interested in the use of the American space shuttle for deploying weapons in space; the U.S. effort to build an anti-satellite weapon; and the Strategic Defense Initiative. Woven into the KGB’s instructions were details already plucked from newspapers about Reagan’s program, such as the budget sums and the broad direction, along with ample doses of fear and skepticism about the unknowns. Perhaps Reagan’s program would never work? Perhaps there was a hidden purpose? The KGB was “very anxious to know,” the instruction said, precisely what were the Reagan administration’s plans, how they were evolving, and the “targets, dates and expected financial outlay.” The KGB wanted to know what technical results were achieved in tests, whether it was possible to shoot down a missile using “kinetic weapons,” such as hitting it with another missile or solid object. And what were Reagan’s intentions for negotiating? Was Star Wars really a “large-scale disinformation operation” designed to force the Soviet negotiators into making concessions?²¹

Vitaly Katayev, deputy director of the defense department of the Central Committee, recalled that, starting in 1985 and continuing through the decade, about ten cables a day came through his offices on political-military and technical issues. Of them, 30–40 percent dealt with Star Wars and missile defense.²²

In an ironic twist, just as Reagan was exaggerating Soviet progress on strategic missile defense, the Soviet military revived the idea and demanded that Gorbachev, the new Soviet leader, approve it.

As the author documented in *The Dead Hand*, in the spring and early summer of 1985, the directors, designers and constructors of satellites, space boosters, radars and lasers produced a colossal new plan for Gorbachev’s approval. To build a Soviet Star Wars would mean enormous, lucrative new subsidies for work at the design bureaus, institutes and defense factories. The weapons chiefs pulled together a comprehensive plan for a Soviet missile defense system. According to Katayev’s notebooks and papers, there were two major umbrella programs, each of which included a sprawling array of separate projects ranging from fundamental exploratory research to building equipment ready for flight tests. The estimates of the costs ran into the tens of billions of rubles, enough to keep the design bureaus working full tilt into the late 1980s. For all the imposing scope and cost, the grand package concealed deep cracks in the system. Some of the programs, started years earlier, lacked results or purpose, or were starved for resources. Some of them were nearly abandoned or obsolete, hoping for a rebirth. One of them included virtually all the space launcher and satellite programs that were underway in the Soviet Union at that time.²³

Roald Sagdeev, a physicist and director of the Space Research Institute, recalled attending a small meeting in Gorbachev’s office. Gorbachev was still on a learning curve, asking questions and absorbing details about complicated arms control issues. According to Sagdeev, a top official of the Soviet space industry appealed to Gorbachev to build his own Star Wars. “Trust me,” the official said. “We are losing time while doing nothing to build our own counterpart to the American SDI program.”

“I almost died from suppressing my laughter,” Sagdeev recalled. He realized that the Soviet Union could not afford billions of rubles to do it and lacked critical technology, especially high-speed computers and precision optics.²⁴

These were still early days for Gorbachev, and he was clearly not yet fully in control. On July 15, 1985, the Central Committee approved the huge list of proposals for a Soviet missile defense. What is significant here is not so much the approval—most of the programs were years away from materializing—but the unbridled ambitions of the designers and builders.

A much different impetus came from Velikhov, who had entered Gorbachev’s circle of advisers. His specialty was nuclear and plasma physics. When the Soviet weapons designers gave Gorbachev their grand plan, Velikhov spotted the faults.

He urged Gorbachev *not* to build a Soviet version of Star Wars. Velikhov argued for an “asymmetrical response,” one that would answer Reagan but not be the same. One idea for “asymmetrical response” was to unleash so many speeding points—warheads, either real or fake—that the American defense system would be overwhelmed. According to Katayev’s records, Soviet engineers came up with methods to fool the American anti-missile system: launch decoys or chaff; spin and maneuver warheads to avoid detection; or blind the U.S. satellites and command centers.

Another method was more ominous: build more missiles and an avalanche of additional nuclear warheads. It would be easier and cheaper to double or triple the missile warheads than to build an entirely new defense against them. This approach

was hypothetical, but not entirely. Katayev recalled that the latest version of the SS-18 intercontinental ballistic missile carried ten warheads each. This was the biggest, most feared, multiple-warhead weapon in the Soviet arsenal. But if the missile's range was shortened somewhat, and the warheads made smaller, he wrote, the SS-18 could actually be modified to carry "up to 40 nuclear warheads. And this on one missile alone!" In a separate, more precise chart in his files, Katayev noted the modified SS-18 could carry 38 warheads. At the time, the Soviet Union deployed 308 of these missiles. If they were modified, the fleet would go from 2,464 warheads to a total of 12,084. This was only a concept that had been discussed in earlier years by missile designers, but it illustrated what could become a potent Soviet response to Reagan's Star Wars.²⁵

The Soviet confusion

Reagan's ardor for strategic defense puzzled the Soviet scientists, military and political leadership. To Velikhov's confident assertion that the Strategic Defense Initiative would not work, his Soviet colleagues often posed a difficult question: if it was not possible to create an effective missile shield with America's best technology, why was the United States devoting so much money to it, year after year?

Katayev, a witness to these debates, in a paper on the Soviet reaction to Reagan, recalled that Soviet analysts saw "a clear discrepancy between the goals and the means" of Reagan's announced intentions. "What is it being done for?" the Soviet specialists asked themselves, according to Katayev:

"In the name of what are the Americans, famous for their pragmatism, opening their wallet for the most grandiose project in the history of the United States when the technical and economic risks of a crash exceed all thinkable limits?"

"Or," Katayev wrote, "is there still something different behind this curtain?" To the Soviet specialists on strategic weapons, Katayev said, Reagan's zeal for his dream led them "from the very beginning to think about the possibility of political bluff and hoax." They pondered whether it was a "Hollywood village of veneer and cardboard." The question went unanswered.

According to Katayev, a few Soviet experts—he doesn't say exactly who—held an even darker view of Reagan's goals. They concluded that the Americans were always distinguished by their systematic approach to problems, that they "do nothing in vain." Rather than a hoax or bluff, they decided the Strategic Defense Initiative was a cover story for a gigantic, hidden effort to subsidize American defense contractors, save them from "bankruptcy" and produce a fresh surge of superior military high technology. Perhaps, Katayev said, this "was the major underwater part of the SDI iceberg."²⁶

This analysis was woefully misguided. While Reagan did fatten the defense contractors with record military budgets in the early 1980s, defense spending was a relatively small slice of the overall American economy. While there was a fresh surge of high technology, much of it was sprouting in the private sector, in the entrepreneurial spirit of Silicon Valley. And in the United States, defense contractors simply did not play the same role as the outsized military-industrial complex in the Soviet Union. The Soviet analysts were mistakenly applying their own experience—in which the military-industrial complex was at the center of decisions—to what they could not explain in the United States.

In the end, Gorbachev did not want to approve a new Soviet Star Wars, nor a huge offensive missile build-up. He did neither. Most of the projects proposed in 1985 never reached fruition. Gorbachev attempted to talk Reagan out of his "Star Wars" dream at the summits at Geneva and Reykjavik. At the last moment at Reykjavik, the issue of confining research on SDI to the laboratory blocked Reagan and Gorbachev from agreeing to what would have been the deepest cuts in offensive nuclear weapons ever attempted. Later, many of those weapons were eliminated by arms control treaties and the collapse of the Soviet Union.

Epilogue

After Reykjavik, Velikhov came up with the idea of showing a group of American scientists and journalists the actual facilities at Sary Shagan and Krasnoyarsk to expose the Reagan administration's exaggeration. Velikhov's initial request to the Central Committee was denied in early 1987 because of fears that it would reveal Soviet weakness. However, over the next two years, Velikhov went ahead and organized tours by American experts to both sites, and revealed the truth that the Soviet Union had not constructed a national missile defense system, nor did scientists succeed in developing laser weapons. The Soviet Union in 1989 admitted publically its error in locating the Krasnoyarsk radar, and it was eventually demolished.²⁷

5. CONCLUSION

The story of the great exaggeration of Soviet strategic defense underscores the peril of secrecy, suspicion and mistrust.

The author, who was a White House correspondent for The Washington Post in the Reagan presidency, believes that U.S. officials were driven by a need to justify Reagan's vision, not to challenge it. They borrowed selectively from intelligence reporting, taking those facts which suited the policy they were advocating.

It must be noted that the Soviet Union was a closed system, and information about weapons R&D very closely guarded. There was much that the United States did not know, and could not know. However, the documentary record suggests that Reagan administration officials were not impeded by the unknowns. The campaign they waged for SDI included almost no cautions or caveats that conclusions about Soviet strategic defense might be wrong. They failed to see beyond their own Cold War mindset.

The full scope of the U.S. intelligence reporting from this period has not been made public, but from the available evidence, there were problems with the methods and the analysis. The CIA white paper of 1985 used data points, such as floor space, estimated numbers of scientists and spending, which did not reveal the serious difficulties faced by the scientists working in those floor spaces. Both intelligence analysts and policy-makers seem to have accepted the worst-case scenario, in which Soviet laser weapon development was a success, without considering other outcomes. This is a very common and deeply flawed problem in United States policy-making; the worst-case scenario can drive government officials, journalists and others to erroneous or misleading decisions.

From the point of view of policy-makers, this case study points to a common quandary: making choices based on incomplete intelligence information. A decision-maker must weigh the degree of uncertainty, then act. It is not always possible to wait for more clarity or certainty.

In a review of declassified U.S. intelligence estimates on the Soviet threat throughout the Cold War, James H. Lebovic of George Washington University found at times that "critical inferences rested on assumptions with limited factual grounding." He added, "Different analysts drew different conclusions from the same evidence and held to these inferences despite new developments, acknowledged informational deficiencies, and an unenviable forecasting record. Rather than base assessments on adversary capabilities, analysts forged assessments around fairly crude assumptions about adversary intent."²⁸

Today, we are no longer locked in global ideological confrontation. However, Russia and the United States remain stuck in disputes that seem to echo the 1980s, such as the current impasse over missile defense. More transparency by both Russia and the United States might avoid costly miscalculations. The work on Cooperative Threat Reduction between the two countries has withstood the test of time—why can't the same approach work in arms control?

Here are four suggestions which could deepen confidence between Washington and Moscow and expand transparency:

a. Both nations should be more transparent about tactical nuclear weapons. There are many unknowns about the Russian arsenal, including numbers, location, and conditions. The tactical weapons have never been covered by any treaty. Russia could also provide a clear, updated statement of its intentions and military concepts covering these weapons. The United States, which has a far smaller arsenal, should do the same.

b. Both nations should exchange information on non-operational strategic weapons. The United States has thousands of warheads in this category, but has not been transparent about "hedge" created in 1994 to compensate for possible geopolitical uncertainty and technical replacements. Little is known about the status of such weapons in Russia.

c. Can the United States and Russia revive the idea of a joint early warning data center, which foundered in the last decade in disputes over logistics? The ICBMs in both countries are presumably still on launch-ready alert, so the rationale for such an early warning center remains intact. This idea could be wrapped into talks on missile defense.

d. Both the United States and Russian Federation are now putting on the drawing boards ambitious plans for modernizing strategic launchers, including all three legs of the triad in each country. To what extent is this process being driven by faulty assumptions about the other side? Why not start a long-term dialogue on modernizing submarines, missiles and bombers that would be intended to bring more transparency on both sides, perhaps leading to more realistic assessments of what is truly needed for future threats? In particular, this might be helpful in exposing the Cold War overhang, wherein both nations tend to plan against the other even though the original missions are long expired.

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- 1 IS is an acronym which stands for *Istrebitel Sputnikov*, or satellite fighter.
 - 2 For more on the IS see <http://www.russianspaceweb.com/is.html>
 - 3 P. V. Zarubin, "Academician Basov, high-powered lasers and the anti-missile defence problem," *Quantum Electronics*, No. 32, 2002, pp. 1048–1064. Also see: "From the History of High Energy Lasers and Laser Based Systems in the USSR," a presentation by Zarubin, P. V. and Polskikh, S. D., 2011, available at: http://www.physics-online.ru/php/paper.phtml?irnid=null&paperid=6337&option_lang=rus
 - 4 Zarubin and Polskikh, 2011, p. 41.
 - 5 "The Krasnoyarsk Radar: Closing the Final Gap in Coverage For Ballistic Missile Early Warning," Central Intelligence Agency, Office of Scientific and Weapons Research, June 19, 1986, SWM 86-20036, available at www.cia.gov.
 - 6 Soviet Military Power, 1981, p. 64. The report added that "the USSR has persevered and its today entering a period of weapons system development aimed at measurably improving capabilities, primarily in air defense," such as interceptor aircraft and surface-to-air missiles.
 - 7 For further details of the origins of the program, see *The Dead Hand*, chapter 10. Also see: Donald R. Baucom, *The Origins of SDI: 1944–1983* (Lawrence, Kansas: University Press of Kansas), p. 184. Baucom was staff historian for the U.S. Strategic Defense Initiative Organization.
 - 8 Central Intelligence Agency, "Possible Soviet Responses to the U.S. Strategic Defense Initiative," NIC M 83-10017, Sept. 12, 1983. The paper was prepared under the auspices of the National Intelligence Officer for Strategic Programs and analysts in the CIA's Office of Scientific and Weapons Research.
 - 9 Allen Thomson, who was part of a three-person drafting team that wrote the report, commented that the economic estimates were "placeholder no-brainer lines" because he could not get good estimates in the U.S. intelligence community about the potential burdens of a future Soviet strategic defense program. Thomson also said, "Even at the time, we asked ourselves, 'Why are the Soviets getting so spun up about SDI, which won't bear fruit for many years, even decades?' It could well be that they weren't driven into bankruptcy, but rather a lethal nervous breakdown." His comment was made on a newsgroup, archived at: http://www.fas.org/spp/starwars/offdocs/at_070900.htm
 - 10 Keyworth also gave the briefing to Brent Scowcroft, who was President Ford's national security advisor and would later head Reagan's commission on strategic forces. "Point Paper on the President's Strategic Defense Initiative," attachment to a memo sent by Keyworth to Defense Secretary Caspar W. Weinberger, Dec. 9, 1983, courtesy Jason Saltoun-Ebin and www.thereaganfiles.com. Saltoun-Ebin obtained the documents in a Freedom of Information Act request to the Ronald Reagan Presidential Library. Hereafter referred to as The Reagan Files.
 - 11 The Reagan Files.
 - 12 In the 1984 edition of *Soviet Military Power*, the administration claimed "the Soviets have developed a rapidly deployable ABM system for which sites could be built in months instead of years." The report added, "The Soviets seem to have placed themselves in a position to field relatively quickly a nationwide ABM system should they decide to do so." The assertion may have been based, in part, on a mobile Soviet radar known as the "Flat Twin," which was first developed in the 1960s, before the ABM treaty. The modules of the Flat Twin could be transported by truck, rail or air, and could be moved around in less than four months. Precisely why the Reagan administration viewed the Flat Twin as a sign of breakout potential is not known. But the CIA issued a report in 1991 which it pulled back from earlier assessments of the radar, saying the Flat Twin radar was, in fact, "much less capable" than had been thought, and that a widespread, rapid deployment of the radar for anti-missile defense is "unlikely." *Soviet Military Power* 1984, Department of Defense, March 1984, p. 34, and "The Flat Twin ABM Radar: Not as Capable as Previously Believed," a CIA technical intelligence report, SW 91-10069, October, 1991, partially released in 2000. Another possible reason for U.S. concerns about Soviet rapid breakout was the interpretation of satellite intelligence about a facility in Kazakhstan known as the Possible Nuclear Underground Test Site, or P-NUTS. Some U.S. officials thought the facility was the center of Soviet efforts to build a particle-beam weapon for use in missile defense. After the Cold War, however, the facility was revealed to be a center for building a nuclear-powered rocket for space exploration. See Michael Dobbs, "Deconstructing the Death Ray," *The Washington Post*, Oct. 17, 1999, p. F01.
 - 13 United States Information Service, transcript, Voice of America's program "Press Conference USA," July 8, 1984, p. 5, via The Reagan Files.
 - 14 "Memorandum for Jay Keyworth," Office of Science and Technology Policy, Executive Office of the President, from Mike Havey, Oct. 1, 1984, The Reagan Files.
 - 15 Robert C. McFarlane, "Memorandum for the President: SDI's Second Anniversary," March 20, 1985, The White House. The Reagan Files. Keyworth also wrote to the chief of staff, Donald T. Regan, to warn that in the two years since Reagan's speech launching the Strategic Defense Initiative, "a tremendous amount of opposition has developed" and "we are on a course that will erode the President's vision of a new defense strategy—and with it a major chunk of the Reagan administration's claim to history."
 - 16 "Soviet Directed Energy Weapons—Perspectives on Strategic Defense," March 1985. The document has no identifying number, nor information about authorship, and is missing a page referred to as "Bibliography" in the table of contents. It may be a draft. The document is contained in the collection "Ronald Reagan, Intelligence, and the End of the Cold War," released at a conference November 2, 2011, Ronald Reagan Presidential Library, Simi Valley, Calif. Also see <https://www.cia.gov/library/publications/historical-collection-publications/>
 - 17 Steven Daggett and Robert D. English, "Assessing Soviet Strategic Defense," *Foreign Policy*, No. 70, Spring 1988, pp. 129-149.
 - 18 National Security Decision Directive 172, May 30, 1985, The Reagan Files.
 - 19 "SDI: The Soviet Program," Address by Ambassador Paul H. Nitze, Special Adviser to the President and the Secretary of State on Arms Control Matters, before the Chautauqua Conference on Soviet-American Relations, Chautauqua, New York, June 28, 1985. See United States Department of State, Bureau of Public Affairs, Current Policy No. 717, Washington, 1985.
 - 20 Memorandum for Don Regan from Jay Keyworth, the White House, June 11, 1985, via The Reagan Files.
 - 21 Christopher Andrew and Oleg Gordievsky, *Comrade Kryuchkov's Instructions: Top Secret Files on KGB Foreign Operations, 1975–1985* (Stanford: Stanford University Press, 1991), pp. 107–115.

- 22 Katayev's papers are deposited at the Hoover Institution Library and Archives, Stanford University, Palo Alto, Calif. For additional information about the papers and Katayev's views of Soviet defense issues, see *The Dead Hand*.
- 23 The author is indebted to Pavel Podvig for his work analyzing the Katayev documents and notebooks on this point.
- 24 Roald Z. Sagdeev, *The Making of a Soviet Scientist* (New York: John Wiley & Sons, 1994), p. 273.
- 25 A chart showing thirty-eight warheads is from the Katayev collection, Hoover. Other data on the SS-18 is from Podvig, *Russian Strategic Nuclear Forces* (Cambridge: MIT Press, 2001), pp. 218–219. See "Multiple (as in 'up top 38') warheads," <http://russianforces.org>. Velikhov recollections are from an interview with the author.
- 26 Katayev, undated monograph, "Kakoi byla reaktzia v SSSR na zayavlenia R. Reagana o razvertyvanii robot v CShA po SOI," or "What was the reaction of the Soviet Union to the announcement of R. Reagan on the deployment of works in the United States on the SDI," 12 pp. Hoover.
- 27 For more about the Velikhov efforts, see *The Dead Hand* and also "The Glasnost Tours," Electronic Briefing Book 314 at The National Security Archive, available at <http://www.gwu.edu/~nsarchiv/NSAEBB/NSAEBB314/index.htm>
- 28 James H. Lebovic, "Perceptions and Politics in Intelligence Assessment: U.S. Estimates of the Soviet and 'Rogue State' Nuclear Threats," *International Studies Perspectives* (2009) 10, 394-412.



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EuroBMD: Opportunities for Russia–USA/NATO Cooperation

1. PLANNED ARCHITECTURE OF THE U.S. NATIONAL MISSILE DEFENSE (NMD) AND THE EUROPEAN MISSILE DEFENSE (EUROBMD) UNTIL 2020

In early 2012 the NMD and EuroBMD systems include:

- Four early warning radars: one L-band frequency radar in Shemya (Alaska), and three UHF radars in Beale (California), Fylingdales (Great Britain), and Thule (Greenland);
- Five transportable X-band forward-based radars AN/TPY-2, three of which are on high alert: at Shariki (Honshu Island, Japan), in Nevatim Desert (Israel), and district of Malatya (Turkey); one on Wake Island (the Marshall Islands) designed to test missile defense systems, and one in the U.S. Central Command area of responsibility;
- One sea-based X-band radar (SBX) on an offshore platform in the Pacific Ocean off Adak Island (Alaska);
- 30 ground-based interceptors (GBI), 26 of them—in Alaska at Fort Greely at a test (six GBI) and a launch (20 GBI) sites, and Four GBI at Vandenberg Air Force Base in California with the command and control centers at Fort Greely and Colorado Springs;
- 23 surface ships (five cruisers and 18 destroyers) with Aegis ballistic missile defense system version 3 (including two Aegis BMD version 4) carrying a total of 156 antimissiles of which 72 SM-2 Block IV and 86 SM-3 interceptors of which three are a new SM-3 1B modification. 16 ships (five in Yokosuka, six in Pearl Harbor and five in San Diego) are assigned to the U.S. Pacific Fleet. Six ships (five in Norfolk and one in Mayport), two THAAD systems with two AN/TPY-2 radars, six missile launchers of eight missiles each equipped at the moment with 18 interceptors, Patriot missile complexes with 56 launchers of 16 missiles each, and 903 PAC-3 missiles are assigned to the U.S. Atlantic Fleet;

By 2016 the global missile defense system will include:

- SBIRS missile warning satellite constellation (five satellites in geostationary and two in high elliptical orbits);
- A constellation of nine low-orbit PTSS satellites;
- Six early warning UHF radars including those at Clear (Alaska) and Cape Cod (Massachusetts);
- A sea-based X-band radar;
- Seven AN/TPY-2 forward-based radars;
- A UAV grouping with ABIR systems for target detecting and tracking;
- Up to 30 ground-based interceptors;
- A land base of interceptors with Aegis BMD Ashore with SPY-1D radar and SM-3 1B missiles;
- 38 ships with Aegis BMD (three of them with new AMDR radars) to build up the U.S. Atlantic Fleet to 13 ships (11 in Norfolk and two in Mayport);
- 341 SM-3 interceptors: 113 SM-3 Block 1A, 223 SM-3 Block 1B, and five SM-3 Block 2A;
- Seven THAAD complexes with seven AN/TPY-2 radars equipped with a total of 296 interceptor missiles;
- Patriot complexes with PAC-3 interceptor missiles;
- SM-2 Block IV and SBT 1 anti-missiles.

Thus, by 2016, 30 GBI on the U.S. territory and five SM-3 2A anti-missiles in Europe will acquire strategic capabilities.

By 2020 a second land base on the Polish territory, in Redzikovo, is to be deployed. Sea- and ground-based BMDs will get a new SM-3 2A anti-missile with a higher speed and capable of intercepting all types of ballistic missiles, including—with some reservation—ICBMs. After SM-3 1B unsuccessful test in September 2011, the SM-3 2A development cycle is likely to be prolonged by two years.

A constellation of nine PTSS satellites will be fully deployed at low earth orbits. An improved sea-based SBT 2 missile intended to intercept ballistic missiles at low altitudes will enter into service. The European missile defense system will reach a full operational readiness level. Additional capabilities will be provided by ABIR, an air-based system for UAVs designed for detecting launches and tracking missiles. Starting from 2018 all abovementioned elements will ensure protection of NATO and the EU against Iranian missiles. However it can be ensured with just two bases and two ships with Aegis systems instead of six ships.

Additional capabilities to protect the U.S. territory against ICBMs launched from the Middle East are to be implemented by 2020. Even more effective in terms of decoy discriminating and maneuvering at the terminal phase, SM-3 2B anti-missile is to be installed on ground-based complexes in Romania and Poland. In case its entering into service is delayed, a two-staged GBI missile will continue its flight testing until that time (the latest test was carried out in June 2010).

By 2020 strike systems of the U.S. missile defense will include 50 GBI silo launchers at two positioning areas with up to 40 GBI anti-missiles, 44 ships and two land bases equipped with Aegis BMD, no less than nine THAAD squadrons (27 launchers), and 15 Patriot squadrons (60 launchers). Up to 474 interceptor missiles including up to 40 GBI missiles, 21 SM-3 1A missiles, 373 SM-3 1B missiles, at least 25 SM-3 2A missiles, and 25 SM-3 2B missiles can be used to intercept missiles in their midcourse phase. At least 1770 missiles: 70 SM-2 Block IV missiles, 503 THAAD and 1198 PAC-3 missiles, can be used for interception in terminal phase.

Thus, by 2020 up to 40 GBI missiles on the U.S. territory and 50 SM-3 2A and SM-3 2B interceptor missiles in Europe will acquire strategic capabilities.

The impact of the European missile defense and the U.S. national missile defense on the Russian strategic nuclear forces is not covered in this paper as it has been previously demonstrated by independent experts and analysts that Russia's nuclear deterrence is not threatened by these missile defense systems.

2. OPPORTUNITIES FOR POLITICAL COOPERATION BETWEEN RUSSIA AND USA/NATO ON THE EUROBMD

The main impediments to reaching an agreement on U.S.-Russian cooperation on European missile defense are: the differences on the relevance of missile threats; the impact of the EuroBMD on the Russian nuclear deterrence; and Russia's demands for legal guarantees not to target European missile defense against Russian strategic nuclear forces. According to recent statements by Russian officials, of all these reasons the latter one seems the most important.

In this respect there is a valuable opportunity for a compromise on the basis of options for joint EuroBMD architecture at each phase agreed by Russian, U.S. and European experts within the Euro-Atlantic Security Initiative (EASI) project, which findings were presented on February 4-5, 2012 in Munich. The phases of the agreed architecture are shown on Figures 1-3.

Figure 1. Phase One, 2011. Russian sites are marked in red, U.S./NATO sites are marked in blue.



Figure 2. Phase Two, 2015. Russian sites are marked in red, U.S./NATO sites are marked in blue.



Figure 3. Phase Three, 2018. Russian sites are marked in red, U.S./NATO sites are marked in blue.



The figures presenting joint European missile defense architecture have no U.S. ships with missile defense systems in the Baltic and Black Sea and northern seas to ease the high concerns of Russian leadership. If such an architecture is formally agreed, the issue of guarantees that the European missile defense system is not targeted against Russia's strategic nuclear forces may be taken off the table.

3. ORGANIZATIONAL SPECIFICITY OF POSSIBLE COOPERATION IN MISSILE DEFENSE

Russia's possible contribution to the European missile defense with respect to anti-missile complexes is very limited until 2020. The A-135 missile defense system which defends the Moscow region retains a definite potential for future modernizations. But 51T6 high-altitude anti-missiles have been removed from service, while the current military and political situation has made combat employment of the remaining 53T6 interceptors with nuclear warheads inconsistent with the concept of inadmissibility of multiple nuclear explosions over one's own national territory in order to intercept warheads with an unknown payload or even without a payload, if one or several missiles have been launched as a provocation. The S-400 Triumph system is equipped with anti-aircraft missiles and there is no data on any successful tests of intercepting real ballistic targets.

As for S-500 complex which is to be developed by 2015-2017, the process of its development and testing is even more uncertain. It should be borne in mind that testing of the THAAD and Aegis complexes lasted ten to fifteen years and U.S. experts say their efficacy remains highly questionable. So the cycle of trial testing of the Russian BMD systems will take no less time than the U.S. ones. Therefore there are no grounds for expecting Russia to streamline mass production or deployment of its BMD systems comparable to the existing U.S. analogues before the end of this decade.

However, the absence of the means of interception of ballistic missiles that Russia might contribute in the foreseeable future to the U.S./NATO-conceived EuroBMD does not create any insurmountable obstacles to genuine cooperation.

A contribution on the part of the space-based echelons of Russia's ballistic missile early warning system will scarcely be substantial in the short term due to the current poor condition of these echelons, all the more so that the U.S. space-based early warning system has an advanced capability to forecast the trajectory of ballistic missiles where launches have been detected. But the ability of a space-based echelon to detect a launch depends on the density of clouds in a launching area and hence it cannot be 100 percent reliable. Radars of the Russian and the U.S. Ballistic Missile Early Warning Systems (BMEWS) are the most reliable instruments for spotting the launched missiles and computing their trajectories. U.S. specialists are well aware of the unique capabilities of the Russian BMEWS radars to identify missile launches from Iran. These radars are located in Mingacevir, Azerbaijan, and in the southern Russia town of Armavir. When Iran test launches its missiles from the northern testing site southeastwards, the Mingacevir radar detects them at approximately the 110th second of flight. And if a missile is launched northwestwards, the detection occurs even earlier. None of the U.S. radars has a comparable capability.

Unification of the Russian and U.S. early warning systems can be a first step in this direction. A joint Data Exchange Center (DEC) can be set up for this purpose. Its creation was envisioned back in 1998 by a joint decision of Russian and U.S. Presidents, but it was not put into service for a variety of reasons. The two Presidents reiterated the intention at the Moscow summit in 2009. In the future it would be reasonable to transform the DEC into a Center for Global Monitoring of Missile Launches and Early Warning on Missile Attacks. It should work in the real-time mode and have offices in Moscow and Brussels.

In this regard, one of the "countermeasures" announced by President Medvedev in response to the deployment of EuroBMD—the accelerated entry into service of an early warning radar station of high operational capacity, the Voronezh-DM in the Kaliningrad region, as well as other radars of this type—can be regarded as a very positive move in the context of cooperation between Russia and the USA/NATO on European missile defense. The matter is possible integration of two parties' early warning systems should not be limited to Gabala or Armavir. According to the mission and architecture of the joint DEC agreed earlier by the USA and Russia, the parties envisaged using all early warning radars able to detect launches of missiles and launch vehicles of the two states. Therefore the inclusion of new radar stations in the joint information system will only increase so far limited Russian contribution to this system making it more efficient.

As for the prospects of integrated information systems, a considerable amount of research work has been effectuated most recently by the Institute of World Economy and International Relations (IMEMO) of the Russian Academy of Sciences together with the Nuclear Threat Initiative, IMEMO and the Brookings Institution, and within the Euro-Atlantic Security Initiative. On the whole, the authors of the projects have formed a steady enough idea about the architecture of a joint European missile defense system and the essential initial steps.

In addition to the Russian and U.S. systems and means of early warning they found it reasonable to augment the architecture with up-to-date and quite efficient radars of the Russian A-135 BMD system—Dunai-3U, Dunai-3M and Don-2N, which allow to detect ballistic missiles at distances of up to 6000 km, track and target antimissiles, as well as with the radars to be deployed in Europe.

In general, this means creating two cooperative centers—a center for data integration from Russian and NATO radars and satellites, and a center hosting Russian and NATO officers who must carry around-the-clock planning and coordination of the two missile defense systems.

As far as we know, one of the reasons why the 1998 decision on the DEC has not been implemented was the intention of the U.S. side to filter some of the data from its early warning system.

Under the current conditions the issue of data filtering should be dealt with separately. Of course false signals of early warning systems can be filtered out in separate control rooms of the each side, but it requires at least an agreement on filtering algorithms prior to transmitting information to the joint center. However it would be advisable to filter information from the early warning systems in the joint center and not to be afraid of a large number of false alarms, as it is more important not to miss a real missile launch signal than analyze together a large number of false alarms.

The United States considers establishing a so-called virtual DEC which is different to the one agreed upon earlier that provided for hosting joint operating staff from both Russia and the USA. Now the U.S. proposes to exchange information between national operating staff via secure Internet channels. Such a virtual center has both advantages and disadvantages. But on balance, should the virtual center be looked at from the angle of information reliability and exclusion of havocs, working face to face seems to be the best option.

Urgent resumption of a suspended series of Russia-USA and Russia-NATO computerized exercises on theater missile defense with subsequent expansion beyond the theatre missile defense boundaries is a crucial field of cooperation. Nine training sessions have been held in the Russia-USA and Russia-USA-NATO format. The sides should revive practices which helped to achieve significant progress in straightening out BMD-related vocabulary, as well as in enhancing compatibility of information systems and means of interception. Long breaks in such exercises lead to a loss of accumulated experience, as specialists start leaving and new technologies develop. Along with that, it certainly stands to reason to hold joint research for a transition to full-fledged command staff exercises and subsequent real testing of Russian and U.S. missile defense systems at testing sites. Prefeasibility research and experts consultations involving specialists from Russia, the USA and NATO member-states will be necessary before implementing any steps in these two areas.

Problems and obstacles occurring in the way of building a full-fledged cooperation between Russia and the USA/NATO on the European and global missile defense systems arise from excessive reciprocal mistrust between the sides which stems from the surviving rudiments of the Cold War. The doubts of the Russian side, which fears that its consent to take even the initial steps towards information cooperation would furnish the USA/NATO with a pretext for a further deployment of the missile defense system in Europe without accounting for Russia's interests, seem to have no grounds, all the more so that an alternative to this unfavorable scenario—should it be implemented—is still worse. USA/NATO might deploy the European and the global BMD without looking back at Russia at all. Russia's involvement in the information exchange in the foreseeable future will help coordinate and thwart the emergence of some undesirable elements in the EuroBMD architecture.

When taking a political decision on cooperation on missile defense systems, it would be reasonable for Russia to take into account that such cooperation can play a decisive role in promotion of a genuine strategic partnership between the two nuclear superpowers and NATO's leading European member-states as it will encompass other spheres of security as well and will flesh out with real programs the new architecture of Euro-Atlantic security proposed by the Russian President. Such cooperation may be critical for transforming mutual nuclear deterrence which is irrelevant to the new system of military-political relations and does not meet security interests neither of Russia, nor the United States, nor Europe.

Equally important is the fact that the state-of-art experience in the field of software for tracking down attacking missiles, decoy discrimination, and other research products can be utilized with much success for the development of means of missile interception. Also, Russia has a well-developed testing infrastructure with a network of radars, optoelectronic and telemetric stations which are non-existent in Europe.



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Joint Projects In Missile Defense: Current Events, New Offers, Final Outlook.

The issue of cooperation on missile defense between Russia and the United States has a long history and dates back to the “Cold War” between Soviet Russia and the United States. The fact that the question of cooperation despite its age is still in its infancy indicates the presence of a number of conditions that must be executed in order to implement such cooperation. Some of these conditions are considered below.

Necessary conditions for cooperation:

1. Compliance of the declared purpose of system construction to real targets;
2. The technical need for cooperation to achieve the goal;
3. The presence of political will for cooperation in military and political leadership;
4. The absence of internal barriers to the implementation of the intentions of the military-political leadership;
5. Mutual profitability of technical cooperation.

We will examine each of those conditions below.

COMPLIANCE OF THE DECLARED GOAL OF CREATING SYSTEM WITH THE REAL GOALS

a. The aim is declared—to protect the United States and its allies and partners in Europe, in North-Western Pacific and the Middle East from possible nuclear missile attack. Sources of threat of nuclear missile attacks:

Iran—in the regions of Europe and the Middle East;

North Korea—North-East Pacific.

b. The decision of the phased deployment of regional missile defense systems on the one hand is logically linked to the fact that countries such as Iran and North Korea cannot create missiles of intercontinental range immediately. On the other hand, a regional missile defense of the first stage is actually a system for the theater of war designed primarily to protect the military factions. With regard to the European missile defense of the first stage, this means that NATO will increase its military capabilities in relation to modern military conflicts. As it is well known the modern military conflicts are characterized by widespread use of precision weapons, including missiles. Thus, in the absence of an actual treaty to limit conventional arms (a CFE treaty), without developing cooperation with Russia on missile defense, NATO continues to increase the military advantage of the North Atlantic alliance against Russia, deepening the dividing line between Russia and NATO.

c. Possible nuclear missile threats from other nuclear states, including Russia and China, are not mentioned as targets of the missile defense system under creation. At the same time it is obvious that missile defense of any state must provide the repulse of the missile threat coming from any country that obtains the missile capabilities of appropriate range. In particular a possible missile threat from the states belonging to the allies and partners should not be excluded. From any state with missile capabilities of necessary range the threat of unauthorized missile launches should not be excluded. If the state has not only missiles, but also nuclear capability, then the missile defense system have to be focused on such a threat.

The fact that such threats do not appear in the official aims of the creating U.S. missile defense system, generate distrust of the declared goals.

d. Anti-satellite capability inherent to the creating missile defense system may be attributed to aims of this system that are not publicly discussed. It is a known fact that on February 21, 2008, the U.S. fired the SM-3 missile from the cruiser Lake Erie in the Pacific Ocean, and after three minutes upon launch the missile hit the emergency spy satellite USA-193 at an altitude of 247 kilometers which was moving at a speed of 27,300 km/h (7580 m/s). According to many experts the creation of a purely anti-satellite weapon in modern conditions is not reasonable. However the similarity of the technologies, including the use of space and the multi-functionality of modern systems and components of ensuring make them good for multiple use. This

means that, for example, missile defense is able to solve problems of anti-satellite warfare (anti-space defense), and vice versa. Actually, in the U.S. program "Strategic Defense Initiative" (SDI) the development of missile defense and anti-satellite systems was conducted in parallels.

Considering the mobility of the naval missile defense systems, this "train" of spacecraft destruction may have a global reach that will allow it to implement the interception of low-orbit spacecraft over the full range of inclinations of the orbits. The prospect of modernization of "Standard-3M" missiles with bringing the heights of intercept up to 500 km gives a good reason for rethinking of the existing level of security for almost all low-orbit space infrastructures.

The priorities of space and space-related activities of the United States are to ensure the status of the freedom to operate in outer space and protecting the interests of national security. The conditions of the new space policy declare the right of free fly-over and unimpeded functioning in outer space of the U.S. space systems as a national U.S. property.

The document proclaims the peaceful direction of U.S. space activities. At the same time it emphasizes that Americans will strongly thwart any threat to its space systems as well as their hostile actions in space from other countries. The new doctrine makes these actions more rigid and one-sided. According to a new space doctrine the U.S. stipulate in advance the possibility to impede the space plans of other countries. There is every reason to believe that security in outer space is one of the goals for ballistic missile defense system that does not appear in official documents.

THE TECHNICAL NEED FOR COOPERATION TO ACHIEVE THE GOAL

The reality of the declared intentions of the U.S. and Russian cooperation on missile defense is largely dependent on the need for such cooperation not only in the political field, but also in the technical one.

If officially declared goal—repulsing of possible nuclear missile threats from Iran and North Korea—can be effectively achieved without cooperation with Russia, then the political need for cooperation can be reduced to a minimum—i.e. cooperation for the sake of cooperation. Or, if the creating of missile defense system could pose a threat to Russian security, the content of cooperation should be aimed to the neutralization or elimination of such threats.

If the set goal of missile defense cannot be achieved without cooperation with Russia, or, if the cooperation with Russia allows to increase the effectiveness of achieving the goal, then the cooperation should be filled with specific technical areas of such cooperation.

The current situation with the real promoting of cooperation issues between Russia and the United States on missile defense corresponds to an option of absolute lack of technical necessity of cooperation. But, according to the official opinion of the Russian side, the new system could threaten Russia, and there is need for cooperation or other forms of neutralizing potential threats. In particular, Russia wants (in the absence of real cooperation) to be given the legal guarantees that the system will not threaten its security. But if it is true that there is no technical need for cooperation?

If we consider (as an option) the trajectory of a missile launched from Iran to the United States, the ground projection of the shortest path shown in Figure 1 will go over the territories of the following countries:



- Iran
- Azerbaijan
- Georgia
- Russia (Krasnodar Territory)
- Ukraine
- Belarus
- Kaliningrad region.
- Sweden-Norway
- Canada
- United States

The defeat of the attacking missile warheads should be foreseen as occurring over the territory of Russia as well. As we know, there may be several options for the destruction of warheads:

1. Full mechanical destruction of ICBM warhead;
2. Damage to undermine the system of the warhead;
3. Warhead detonation initiation;
4. Changing the trajectory of the ICBM (with nuclear warhead).

Full mechanical destruction of ICBM and its warhead with a nuclear warhead can only occur by the exact interceptor hit to the head of an ICBM. In this case, the destruction of the ICBM warhead will cause the ingress of radioactive substances into the atmosphere.

In case of damage undermining the system of the warhead, it is possible that either the nuclear warhead will self-destruct with radioactive contamination of the atmosphere and the territory underneath, or the self-destruction of the nuclear warhead will occur by its detonation. In the latter case there will occur a high-altitude nuclear explosion with a corresponding impact on terrestrial objects.

With respect to the change of the trajectory of the warhead, its effects can be hard to predict. It is hard to predict the area where the missile falls down, its impact area, and the possibility of the detonation of the warhead at that moment cannot be excluded.

When considering as an option a trajectory of a missile with a warhead from North Korea to the United States, the situation will be somewhat simpler, but nevertheless will affect the territory of other states. For example, launched from North Korea to Seattle, the trajectory will take over the following states:



- North Korea
- Russia (Vladivostok–Sakhalin Island–Kamchatka)
- The Southern part of Alaska
- Pacific Ocean along Canada
- USA

When it comes to the territory of states that are part of the North Atlantic alliance, i.e. U.S. allies, for whom the European missile defense system is a mutual system, for them the problem with the implications of missile defense is an internal issue within NATO.

For Azerbaijan, Georgia, Ukraine, Belarus and Russia it is a problem of external threat. The use of missiles defense system with impact on the Iranian missile warheads is not possible without the collaboration and cooperation with Russia. In addition to the direct threat to Russia, such actions may cause a threat of a nuclear conflict between Russia and the United States. The implications of missile defense could lead to unintended effects on the critical infrastructure objects of the country, including major military installations, the system of state and military control. Possible high-altitude nuclear explosions may cause an electromagnetic impulse that could disable objects of communication systems and electronic control circuits of massive scale. Such an effect may occur not over the European part of Russia only. Simulations with the launch of missiles against missiles launched from North Korea, shows that in this case, it may be a threat to some important objects on Russian territory.

Thus, it appears that the need for technical cooperation for United States with Russia exists. In principle, it may be considered the option of constructing the Euro-missile defense system, which eliminates the need for destroying warheads over the territory of Russia. In this case, the missile defense systems should be located on the territory of the other members of NATO but not in Poland. But in this case the destruction efficiency will be significantly lower. In the absence of weapons in the boost phase, reducing the passive portion of the trajectory will inevitably reduce the likelihood of destruction of warheads. Therefore, the optimal variant is associated with the cooperation of Russia and the United States on missile defense. The only question is the content and the specific technical solutions.

THE PRESENCE OF POLITICAL WILL FOR COOPERATION IN THE MILITARY AND POLITICAL LEADERSHIP

Official statements by the Presidents of the Russian Federation and the United States provide a basis for assumptions about the political will to cooperate on missile defenses. But the actual content of political action causes doubt about the true purpose of the declared intentions of cooperation. So, whatever the sharp rhetoric of the Russian president at the announcement of measures to respond to the deployment of the Euro-missile defense, it concludes, as a rule, by expressing the hope to find a compromise version of the cooperation. The only problem is that the proposed options for cooperation by each side do not converge. It seems that the political will of the presidents are modulated by the forces who have desire to prevent this kind of cooperation between our two countries.

On the Russian side it is viewed that the intention to use the theme of cooperation is for the inhibition of a U.S. missile defense system. The first proposals made by the Russian president in 2008 contained the idea to set up two data exchange centers—in Moscow and in Brussels. In fact, these ideas were incorporated in the framework of the current U.S. proposals. But the Russian side has forgotten about them, and put forward a proposal to establish a mutual Euro-missile defense system on a sectoral basis; a proposal that was absolutely unrealistic. Offering an option under which NATO countries have to put their

safety in a dependence on Russia to defend them from ballistic missiles was either not reasonable or due to other purposes. That is to be able to state—we have offered an option to you, and you did not want to—and by this the blame for lack of cooperation on missile defenses was put on the United States and NATO in general. After the failure of proposals for a sectoral missile defense became apparent, Russia put forward a new impracticable condition: the requirement to provide legally binding assurances that the U.S. missile defense system is not aimed against Russia; a condition that cannot be qualified as executable. What kind of assurances can we talk about? That a U.S. missile defense system should not be able to shoot down a Russian missile, which is delivering a blow to the U.S.? If so, then we need also to give assurances that the missile defense system of Moscow is not to shoot down attacking warheads of American missiles. It is a strange logic at least.

There was a time when this requirement was tied to the problem of maintaining strategic stability. In this version there is more logic, but not much. The problem of Russian repulse of a massive nuclear impact is not put forward as the purpose for constructing missile defense systems, primarily because this problem cannot be solved in the foreseeable future. This capability requires some new breakthrough technologies, concepts of which do not even exist. In fact, it is a legal guarantee that the U.S. would not make that impossible. At the Deauville meeting in May 2011, Russian President said: "... We need to have a guarantee that this is not against us. Nobody has given us those guarantees." In Deauville, it became obvious that the level of misunderstanding will not allow us to find mutually acceptable solutions in the short term. After a meeting with Medvedev, U.S. president Obama stated that the U.S. is committed to jointly develop an approach and configuration of missile defense, "which would be consistent with the interests of both countries in the field of security." And the president of Russia has assumed that maybe everything will be decided no earlier than 2020. By that year, according to the U.S. plans, work on the creation of the SM-3 Block IIB missile capable of striking Russia's strategic missiles is concluded. By this date of 2020 the Russian president marked the deadline for a mutually acceptable solution to be found on missile defense assurances. If by that time the solution is not found, then it is unlikely to be possible in future. Moreover, Medvedev said that "After 2020, if we would not have agreed, a real arms race will begin." Michael McFaul, former senior adviser to U.S. President for Russia at that time, noted that the problem comes from the Russian side—"They do not believe us." The next step of the Russian side was made in late November of 2011: the Russian Head of state declared about the failure of negotiations with the United States and announced retaliatory military measures. In essence, these measures are symbolic and have a very indirect relation to the issue of Euro-missile defense.

The radio locating station in Kaliningrad, was necessary to have been built in any case. Improving our system of early warning corresponds to both Russian and American interests. In addition, this type of radar has many more features that go beyond the missile attack warning. This radar is essential to the general purpose forces in the region, which borders with NATO.

Improving the means to overcome missile defense is a natural process that accompanies the development of new missile systems. Surely the United States, where the replacement of old missile systems will begin with their defense systems, equip new missiles with better tools to overcome missile defense, regardless of the absence of such systems in other countries.

The Russian missile systems "Iskander" should come into service with troops, regardless of whether or not the U.S. and NATO decide to deploy missile defense system.

The symbolic nature of the response to the President accompanied by some explanation of the requirement of legal safeguards, in particular, he said: "They must be formulated in such a way as to Russia ... for the objective, namely the military-technical criteria could be judged ... not affected by whether our interests are not broken by a strategic parity." It can be seen an attempt to link with the requirement to ensure strategic stability, which was mentioned earlier.

Overall, so far we have seen the lack of sufficient political will to implement the cooperation between Russia and the United States on missile defense. To some extent this is due to internal factors. As mentioned earlier, the lack of internal confounding factors is one of the conditions of cooperation between the two countries.

THE ABSENCE OF INTERNAL BARRIERS TO THE IMPLEMENTATION OF THE INTENTIONS OF THE MILITARY-POLITICAL LEADERSHIP

Unfortunately, in Russia and the United States, it is domestic policy factors that impede the realization of the intentions of the military-political leadership of each country.

Opponents of the reset of U.S.-Russian relations have issued a number of limitations on arms control at the time of the ratification of the new strategic arms reduction treaty. Senators are actually banned by their president from accepting the Russian-American documents concerning the possibility of a restriction of missile defense systems, even if such features are classified as inaccessible. The President of the United States works against this background of an on-going attack by the U.S. Republicans over the course of the reset of relations with Russia, forcing restraint or a negative response even at very reasonable requests by the Russian side.

And in the United States and in Russia is the rather significant potential for anti-Russian and anti-American sentiment, respectively. In addition, the onset of the pre-election period adds constraints on cooperation. In Russian society there

has developed an anti-American sentiment that emerged not as a consequence of Russia's official state policy, but as a consequence of U.S. policy after the "Cold War." It is enough to identify only the main points of this U.S. policy:

- the behavior of the U.S. in the 90s, as the winner in the "Cold War," rudely ignored the opinions of Russia, and expanded NATO to states that were formerly part of the socialist camp;
- the collapse of Yugoslavia with openly anti-Serb actions, and dismemberment of Serbia in favor of Kosovo;
- an active policy of ousting Russia from the former Soviet Union, and attempts to pull in Georgia and Ukraine into U.S. and NATO influence;
- the creation of conditions that provoked Georgia into a military operation in South Ossetia and support from the NATO for this action;
- active intervention in the internal affairs of Libya and Syria in the next round of consolidation of U.S. global influence for the sake of leadership in a multipolar world.

All this led within Russian society to a level of anti-American sentiment, which has to influence political leaders, especially during an election period.

But at the Russian state level we can see strange instances when high-ranking government officials claim the presence in the U.S. right now of 1000 interceptor missiles, or instead of taking measures to address the obvious problems in the Russian missile and space defense-industrial area as a whole, begin to look for culprits, as if they entered the territory of the Russian defense enterprise through a hole in the fence, and declare that it is the American radar that knocked out our spacecraft.

Unfortunately, the political situation in our countries prejudices the possibility to reach a breakthrough in negotiations on missile defense by the Chicago NATO summit. A lot will depend on the position of the new President of Russia in the first months after the elections and on the results of elections in the United States subsequently.

The last in the list of conditions necessary for the implementation of the U.S.-Russian cooperation on missile defense, was mentioned the mutual benefit of technical cooperation. At first glance, this condition is identical to the presence of appropriate technical cooperation, but it is not so. There may be a technical need, and mutual profitability may be missing.

MUTUAL BENEFIT OF TECHNICAL COOPERATION

First, the necessary content of technical cooperation on missile defense should be determined.

Obviously, the priority is the joint assessment of missile threats (launch areas and types of missiles, the possible flight trajectories of missiles and warheads, and the timing of missile threats, which sets the requirements for the missile defense system to get in readiness for immediate use). This stage of technical cooperation requires an assessment of the possible impacts of missiles in other countries, and legal implementation of appropriate regulating arrangements.

The next stage in technical cooperation on missile defense is connected with specification of the involved means of missile defense (radiolocation and missile firing); coordination of the necessary structure and areas of deployment of additional mobile missile defenses; coordinated distribution of responsibilities, taking into consideration the existing agreements governing the admissibility of antimissile use in the relevant areas; the order of organization management and interaction at the time of the repulse of a missile attack. The order of organization management should secure that all elements of missile defense system, attracted to repulse a probable missile threat, will act in accordance with the preliminary plan worked out in advance, regardless of nationality. The interaction should foresee information on the results of detecting and destroying targets exchanged between national authorities. This means that cooperation on missile defense should provide an interface between information systems.

Thereby, the required technical level of cooperation fits into the idea of setting up two mutual (joint) data exchange and decision-making centers at least. One such center should be established for advance planning, and the other to solve strategic issues of repulsing the nuclear threat in accordance with the plans developed earlier. Such a level of cooperation is sufficient to respond to a possible threat, but gives no risk of infringement of strategic stability.

All this belongs to the necessary level of technical cooperation. At the same time the level of trust that can be achieved at this stage will make it possible to start the wider cooperation for mutual benefit in several directions, such as:

- Resumption of RAMOS program (joint development and launch of satellites with infrared sensors detecting missile launches);
- Joint radar development;
- Joint development of ground-based missile defense version for destroying of missiles in the gain zone (such systems can not pose a threat to Russia taking into account geographical factors).

In summary on the perspective of cooperation, however, crucially depends on a number of key conditions that are not fully performed:

- compliance of the declared and real goals of the system;
- the real presence of the political will for cooperation in military and political leadership of both countries;
- lack of internal factors that can impede the development of cooperation.



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Tactical Nuclear Weapons: Their Modern Military Role and Arms Control Proposals

First of all it should be noted that, today, there are no universally-accepted criteria that unambiguously define what types of nuclear weapons fall into the tactical nuclear weapons (TNW) category. At the same time, precision of language is very important for this matter, because otherwise it is next to impossible to substantively examine the contemporary military role for TNW, or propose relevant arms control measures.

In October 2011, Moscow hosted the 35th meeting of the Committees on International Security and Arms Control of the Russian Academy of Sciences and the U.S. National Academy of Sciences. They agreed upon a U.S.-Russian glossary of nuclear-weapons related terms. This glossary gives the following definition of TNW: tactical nuclear weapons are all types of nuclear weapons not covered by the USSR/Russia-U.S. treaties on strategic offensive arms.

If we accept this definition, however contestable it may be, we can assume that the following types of nuclear weapons belong to the TNW category:

- ground-based intermediate-range (1,000-5,500 km), medium-range (500-1,000 km) and short-range (less than 500 km) ballistic and cruise missiles;
- submarine-launched ballistic missiles with ranges less than 600 km;
- airborne bombs (including depth bombs) and rockets with ranges less than 600 km;
- air-defense missiles and missile defense interceptors;
- anti-ship and anti-submarine missiles, torpedoes, and mines;
- army artillery munitions and mines (landmines).

However even such a broad definition of TNW leaves open a number of questions. For instance, in what category do sea-launched nuclear cruise missiles (for surface vessels and multi-role submarines) with ranges in excess of 600 km belong? Their technical specifications are similar or even identical to nuclear air-launched long-range (more than 600 km) cruise missiles. However the latter are covered by U.S.-Soviet/Russian agreements on strategic offensive arms, while the former are not. Although according to the START-1 Treaty, the parties undertook to limit the number of their deployed sea-launched nuclear cruise missiles with ranges more than 600 km to 880 or fewer units each year, but the missiles themselves were not covered by the definition of strategic offensive arms. The new U.S.-Russian START Treaty signed on April 8, 2010, in Prague, and put into effect on February 5, 2011, does not mention the afore-cited sea-launched nuclear missiles.

Apart from Russia and the USA nuclear weapons of intermediate, medium, and short ranges are owned by France, China, Israel, India, Pakistan, and apparently North Korea. But many of these countries do not consider such weapons tactical. For instance French nuclear forces include Mirage 2000N and Rafale F3 strike aircraft and Super Etendard carrier-borne fighter-bomber. They carry ASMP and ASMP-A air-to-surface nuclear cruise missiles with maximum ranges of 300 and 500 km respectively. According to the above cited classification they are to be referred to as TNW, however France considers them the air component of its strategic nuclear forces.

However for the purpose of this analysis it would be correct to classify the above mentioned Russian and U.S. sea-launched nuclear cruise missiles (since their ranges are less than 3200 km) as well as France's ASMP and ASMP-A nuclear cruise missiles as TNW.

Now when we have defined the types of TNW we can move to estimating the TNW arsenals owned by nuclear states and the role those weapons play in the military strategy and national security of states, and to considering chances to put TNW under multilateral control.

1. MODERN MILITARY ROLE OF TNW

1.1. United States

According to some expert estimates by the early 1990s the USA possessed 11500 tactical nuclear warheads kept at active storage with roughly half of which stored in Western Europe and Turkey. 4000 more units of this type were held in reserve.

US President George H.W. Bush initiated reducing of the arsenal on September 27, 1991, when he announced unilateral deep cuts of the U.S. TNW. 10 days later on October 5, 1991, Soviet President Mikhail Gorbachev announced similar measures in respect of Soviet TNW. After the collapse of the Soviet Union (December 1991) those measures were not only maintained but also expanded by Russian President Boris Yeltsin. Those initiatives are widely known as the Presidential Nuclear Initiatives (PNIs) of 1991-1992. Following its commitments the USA withdrew to the national territory all ground-launched tactical nuclear warheads deployed overseas and destroy them; ceased deployment of tactical nuclear weapons including Tomahawk nuclear sea-launched cruise missiles (with a range of maximum 2500 km) on surface ships, attack submarines, and land-based naval aircraft and stored them solely on the national territory (half of these weapons were later destroyed).

By 2011 the U.S. TNW stockpile reduced more than 10 times compared with a 1991 level. According to unofficial data, today the USA retains approximately 500 active nonstrategic nuclear warheads including 400 B61-3 and B61-4 gravity bombs and 100 W80-0 warheads for Tomahawk sea-launched cruise missiles. Approximately half of the air bombs are deployed at six U.S. airbases in five NATO member states: Belgium, Germany, Italy, the Netherlands, and Turkey. Another 750 nonstrategic warheads including 160 W80-0 warheads are in inactive storage. Some of them can be immediately redeployed, but most warheads are held in long-term storage or are awaiting dismantlement.

There are no reliable enough data on TNW storage regime and storage sites on the U.S. national territory. They are supposedly stored at a number of the Air Force and Navy bases, special centralized storage facilities, and storage facilities at Pantex Plant (Amarillo, Texas).

Air bombs can be carried by certified F-15 and F-16 fighter-bombers of the U.S. Air Force as well as by NATO allies' aircraft. Among the latter are Belgian and Dutch F-16 and German and Italian Tornado combat aircraft. It is also possible that under certain circumstances a number of U.S. B-2A heavy bombers can be used to carry 61-3 and 61-4 nuclear air bombs. Tomahawk sea-launched nuclear cruise missiles are deployed at the U.S. multirole Los Angeles and Virginia Class nuclear submarines as well as at some types of surface ships.

The 2010 Nuclear Posture Review Report stated that “The role of nuclear weapons in U.S. national security and U.S. military strategy has been reduced significantly in recent decades... It keeps only a limited number of forward deployed nuclear weapons in Europe, plus a small number of nuclear weapons stored in the United States for possible overseas deployment in support of extended deterrence to allies and partners worldwide”.

Given this we can safely assume that today TNW have virtually no military value for the USA and serve merely as a symbol of U.S. political commitments to provide a nuclear umbrella for those of its allies who do not possess nuclear weapons, as well as for those partners who do not have mutual defense treaties with the USA. It is quite understandable as the U.S. predominance in conventional weapons coupled with increasing efficiency of its air and ballistic missile defense provides Washington with ample capacity to carry out any military defense mission.

However the same U.S. Nuclear Posture Review Report emphasizes that the “fundamental role of U.S. nuclear weapons, which will continue as long as nuclear weapons exist, is to deter nuclear attack on the United States, our allies, and partners”. In accordance with this aim the following measures affecting the prospects of the U.S. TNW are set out:

- the Air Force dual-use fighter-bomber (capable of carrying both conventional, and nuclear weapons) will be kept in service after F-15 and F-16 aircraft have been replaced with F-35 Joint Strike Fighter;
- B61 nuclear air bomb will undergo a full-scale life extension program to make it compatible with F-35 aircraft and to enhance operational safety, security, and use control to increase confidence in it;
- Tomahawk sea-based nuclear cruise missile will be retired (this weapon has been declared redundant in the U.S. nuclear inventory and it has not been deployed since 1992).

1.2. Russia

In the late 1980s the Soviet TNW were located on the territory of all 15 Soviet republics, as well as of those Eastern European member states of the Warsaw Pact Organization which hosted Soviet military bases. According to some reports, there were about 800 TNW in the Baltic republics (Latvia, Lithuania, Estonia), about 600 TNW in the Caucasus republics (Azerbaijan, Armenia, Georgia), over 700 TNW in the Central Asian republics (Kazakhstan, Kirgizstan, Tajikistan, Turkmenistan, Uzbekistan), 90 TNW in Moldova, just under 1200 TNW in Belarus, over 2300 in Ukraine. But most TNW—12320 units—were located on the territory of Russia. The overall Soviet arsenal at that time included around 22000 TNW.

Aggravation of the internal political situation in peripheral Soviet republics in 1990 and looming threat of collapse of the Warsaw Pact Organization instigated the decision taken by leaders of the Soviet Armed Forces to withdraw tactical nuclear weapons from the Baltic, Caucasus, and Central Asian (except for Kazakhstan) republics, Moldova, and Soviet military bases in East Germany, Hungary, Poland, and Czechoslovakia to the Russian territory. By late June 1991 all Soviet TNW were consolidated on the Soviet soil. After President Gorbachev joined in October 1991 President Reagan's initiative on deep cuts in tactical nuclear weapons, the process of TNW withdrawal from the Baltic and Caucasus republics, Kirgizstan, Tajikistan, Turkmenistan, Uzbekistan, and Moldova to the Russian territory speeded up significantly. By the time of the final collapse of the Soviet Union (December 25, 1991) all those weapons were already in Russia. In the same December 1991 Russia, Belarus, Kazakhstan, and Ukraine signed an Agreement on Joint Measures with Respect to Nuclear Weapons. Article VI called for the transfer of all TNW from the three republics to Russia by July 1, 1992. This transfer was completed by the schedule date and after that Russia with the U.S. assistance embarked on the elimination of those TNW which Russian President Boris Eltsin declared redundant in his address to the nation on January 27, 1992. All nuclear artillery munitions and nuclear warheads for ground-based tactical missiles, a third of sea-based tactical nuclear weapons and half of ground-to-air nuclear missile warheads and 50 percent of airborne tactical nuclear weapons stockpile were subject for elimination. At the same time Russian President suggested to the USA on a bilateral basis taking out of service the other half of airborne tactical nuclear weapons stockpile and place them in central storage depots. But Washington ignored this proposal as U.S. President George H.W. Bush earlier (in his statement of September 1991) announced that he would retain effective U.S. nuclear airborne potential in Europe.

The destruction of the TNW stockpiles declared redundant by Boris Eltsin extended until 2005 (due to the shortage of production capacity for dismantlement and destruction of nuclear weapons and tough economic situation in Russia in the 1990s).

By 2011 Russia has significantly reduced its TNW arsenal. Today Russia is estimated to have approximately 2000 active TNW (those are weapons that can be deployed if needed). Among them there are up to 80 warheads for ground-based short-range missile systems Tochka-U and Iskander, around 500 tactical airborne missiles and bombs for Air Force's strike aircraft (TU-22 3, Su-24M, Su-27IB), approximately 280 air delivered weapons, including depth charges, for Navy's aircraft (Tu-22M3, Su-24M, Be-12, Il-38), around 240 warheads for sea-launched cruise missiles such as Granat (with a maximum range of 3200 km) and others, around 100 warheads for antisubmarine missiles and as many warheads for torpedoes, also a total of up to 700 warheads for S-300 and S-400 missile systems and for air-intercept missiles 53T6 of A-135 BMD system defending Moscow. There is no open source data on the number of Russian TNW in inactive reserve. On the basis of indirect evidences it can be estimated that it does not exceed 2000 weapons a large part of which is awaiting dismantlement.

According to numerous statements by Russian politico-military leadership today all TNW are stored at centralized storage sites of the 12th Head Department of the Ministry of Defense. Although it is not quite clear whether those statements refer to the storage facilities of Air Force and Navy maintenance bases which in the first years of the XXI century were moved under the 12-th Head Department control, or they refer solely to special centralized storages built earlier (so called "S" sites). It should be mentioned here that Russia stores both its tactical and strategic nuclear weapons together at "S" sites.

In accordance with "The Foundations of State Policy in the Area of Nuclear Deterrence to 2020" signed by Russian President Dmitri Medvedev on February 5, 2010 (simultaneously with the new Military Doctrine of the Russian Federation), nuclear weapons is a leading contributor to the Russian national security. Nuclear weapons enable Russia to maintain nuclear deterrence which essential goal is to prevent nuclear armed conflict as well as any other armed conflict.

As for the military role of Russian TNW, Moscow considers them a major nuclear deterrent on a regional level against states (or coalition of states) that would use military means to settle disputes with Russia, or in case of a large-scale aggression—an instrument to repulse (or to halt) it while avoiding disastrous effects of using strategic nuclear weapons. Such an approach to the TNW mission is driven by a change in the balance of military power to Russia's disfavor in every strategic direction exacerbated by overall weakening of Russian conventional Armed Forces.

At the same time Russia demonstrates moderation in developing and modernizing its TNW. Over the last 20 years it has developed only one new Iskander missile complex (with a range up to 500 km) equipped with both nuclear and conventional warheads. The State Armaments Program for 2011-2020 adopted in late 2010 does not provide for development of fundamentally new types of TNW. The main efforts are aimed at modernization of weapons currently in service as well as reduction of the variety of weapon types and optimization of the Soviet-era nuclear weapons inventory.

1.3. United Kingdom

The United Kingdom is the only member of the "nuclear club" that does not own any TNW. In the early 1990s the UK withdrew its TNW from the territory of Germany and completely eliminated them.

1.4. France

Today France does not possess any tactical nuclear weapons except for airborne ones. Pluto, a ground-based nuclear tactical missile, and S3D, medium range ballistic missile (they were deployed in 18 silos on the Albion plateau in Southern France), were withdrawn from service and destroyed in the end of the last century.

The French arsenal of TNW consists of 80 TN81 warheads of ASMP and ASMP-A “air-to-surface” cruise missiles carried by 60 Mirage 2000N and Rafale F3 land-based strike aircraft (each carries 50 nuclear missiles) and 24 Super Etendard carrier-based fighter-bombers (each carries 10 nuclear missiles). The latter serve on the aircraft carrier “Charles de Gaulle”.

According to the 2008 White Paper on Defence and National Security, France will continue to rely on the “principle of strict sufficiency” as a guarantor of its national security. This principle means that France will remain a self-sufficient nuclear power capable of pursuing a “minimum deterrence” policy.

The air component of the French nuclear forces is assigned with a so-called “substrategic mission”: in case of contingency they are to launch preventive selective nuclear strikes against an adversary as a final warning of France’s readiness to deliver a full-scale nuclear attack if the adversary encroaches upon France’s vital interests.

To enhance the ability of the Air Force to perform its mission the French political and military leadership has an ongoing program of phased replacement of outdated Mirage 2000N and Super Etendard aircraft with new Rafale F3 and Rafale MK3 aircraft respectively. At the same time France is developing a new superior TNA nuclear warhead to equip a latest modification of ASMP-A cruise missile.

1.5. China

Estimation of the Chinese nuclear arsenal is hindered not only by rather scarce data but also by the Chinese classification of missiles according to range which differs from that in common usage: up to 1000 km—short-range missiles, 1000–3000 km—medium-range missiles, 3000–8000 km—long-range missiles, over 8,000 km—intercontinental-range missiles.

In our estimation of the Chinese nuclear arsenal we will follow the classification proposed in the introductory section of this paper.

As of early 2011 China was estimated to have up to 500 TNW including up to 100 warheads for delivery by DF4 (with a maximum range of 5200 km), DF-21 (with a maximum range of 2000 km), and DF-21A (with a maximum range of 2800-3000 km) ballistic missiles, about 80 warheads for land-based DH-10 cruise missile (with a maximum range of 1500-2000 km), and around 320 B-4 gravity bombs earmarked for delivery by certified nuclear-capable Qian-5 fighter-bombers and other attack aircraft.

The official Chinese position on the mission of its nuclear weapons is set forth in a white paper titled “China’s National Defense in 2008”. It states that the Chinese nuclear forces are “responsible for deterring other countries from using nuclear weapons against China”. The White Paper says nothing of what military role Beijing assigns to its TNW. But judging by the location these weapons are designated mainly for regional deterrence, first of all against India, China’s historic rival. However it is entirely possible that Beijing has broader plans for its TNW such as demonstrative deployment in order to intimidate Taipei against fighting to gain full independence or Tokyo against taking by force disputed islands in the East China Sea.

Today China continues modernizing its nonstrategic nuclear weapons. For instance Beijing is developing DF-25, a new two-stage solid-fuelled multiple-warhead ballistic missile (with a maximum range of 4000 km), while new nuclear equipment (capable of missile defense penetration) is developed for DF-21A ballistic missile.

1.6. Israel

Tel-Aviv continues to maintain its traditional policy of nuclear ambiguity, neither officially confirming nor denying that it possesses nuclear weapons. Nevertheless the international community strongly believes that today Israel possesses nuclear weapons which come within the definition of “tactical nuclear weapons”.

Expert estimates about the size of Israel’s nuclear inventory range from 100 to 200 plutonium warheads. More credible estimates are based on the assessment of the amount of military plutonium produced by IRR2, the only Israeli commercial heavy water nuclear reactor (located in the Dimona Nuclear Research Center). As of January 2011 the reactor could produce 650-700 kg of weapons-grade plutonium or the equivalent of 130-140 warheads assuming that each contains up to 5 kg of military plutonium. Given that only part of this plutonium may have been used to produce nuclear weapons, it is estimated that Israel may have 100-120 warheads of which up to 50-60 warheads for Jericho I (with a maximum range of 500 km) and Jericho II (with a maximum range of 1500-1800 km) ballistic missiles, around 20 warheads for Popeye Turbo guided cruise missiles carried by Dolphin Class diesel-electric submarines, and 30-40 nuclear gravity bombs for delivery by specially modified U.S.-built F-15I and F-16I fighter-bombers.

Therefore Israel possesses a classic nuclear triad consisted of dual-use delivery systems (can be equipped with both nuclear and conventional warheads). During peace time Tel-Aviv conveniently use them as nonnuclear weapons carriers, while in case of a crisis they can be quickly converted into nuclear forces rather efficient on a regional scale.

Tel-Aviv's nuclear policy rests on the assumption that it has to maintain such a nuclear stockpile that would enable it to tacitly deter all the Arab states hostile towards Israel. Among advanced development programs there is a new nuclear-capable ballistic missile Jericho III (with a maximum range of 4000-5000 km). At the same time Israel is building up the naval component (as the most robust one) of its nuclear triad: under the order of Israel two more—in addition to those three that Tel-Aviv already has—Dolphin Class submarines are under construction at German shipyards.

1.7. India

New Delhi, just as Islamabad, keeps information related to its nuclear arsenal a closely guarded secret. The only thing we can be certain about is that all Indian nuclear weapons fit into the TNW category.

The available expert estimates of the Indian nuclear arsenal differ significantly. According to conservative ones as of January 2011 India possessed 60-80 nuclear weapons for operational deployment. On the basis of an upper bound estimate of the same period India had around 100 nuclear weapons

Most of these weapons are nuclear gravity bombs carried by French-produced Mirage 2000N and British-produced Jaguar certified strike aircraft. Also Russian-produced Su-30MKI and MiG-29 aircraft are reportedly suitable for the nuclear role.

The ground component of the Indian nuclear forces consists of road-mobile missile systems capable of delivering Prithvi I (with a maximum range of 150 km), Prithvi II (with a maximum range of 350-500 km), Agni I (with a maximum range of 700 km), and Agni II (with a maximum range of 1800-2000 km) ballistic missiles. These missiles can carry both nuclear and nonnuclear warheads. Agni III, a new two-stage solid-fuelled ballistic missile (with a maximum range of 3500 km), is taking its final test flights, while research is underway on the development of a ballistic missile with a range up to 5000 km.

In recent years New Delhi has put much effort in developing the naval component of its planned "triad" of nuclear forces. There is a program of building nuclear-powered ballistic missile submarines (SSBNs). The first of them, SSBN Arihant, was launched in July 2009, and is expected to enter service in late 2012 on the condition that the testing of K-15 ballistic missile (with a maximum range of 700 km) has been completed and its large-scale production has started by that time. This missile is to carry both nuclear and conventional warhead.

Key principles of the Indian nuclear strategy are minimum credible deterrence and reliable ability to inflict unacceptable damage upon an aggressor. New Delhi considers Pakistan and China to be the most likely adversaries.

Measures taken by India's political and military leadership demonstrate its persistence in developing a nuclear arsenal comparable at least with that of China. According to the available information, the plans for development of Indian nuclear forces envisage that by 2030 India will have approximately 400 nuclear weapons and no less than 300 delivery vehicles.

1.8. Pakistan

The key mission of the Pakistani nuclear arsenal is to prevent India from gaining any advantage over Pakistan. So Islamabad does its best to increase production of weapon-grade fissile material and to enhance its nuclear capability.

According to unofficial data in 2011 Pakistan had more nuclear warheads for operational deployment than India did. It is estimated to have an arsenal of 110-120 tactical nuclear weapons.

The Pakistani nuclear forces include ground and air components. The former consists of road-mobile missile systems armed with Shaheen I (with a maximum range of 650 km), Ghauri I (with a maximum range of 1300 km), and Shaheen II (with a maximum range of 2400-2500 km) ballistic missiles. These missiles can carry either nuclear, or conventional payload. The air component consists of U.S.-produced F-16, Chinese-produced F-7, French-produced Mirage III and Mirage V aircraft.

Islamabad is aimed at developing the naval component of its nuclear forces. So far its efforts have been focused on Babur nuclear-capable cruise missile to be deployed on diesel submarines and surface ships.

1.9. DPRK

After leaving the Nuclear Non-Proliferation Treaty in 2003 Pyongyang decisively embarked on a program to build a nuclear weapons arsenal. Having conducted two nuclear weapons tests in 2006 and 2009, North Korea became a de facto nuclear weapons state. The leadership of the country sees this status as a major guarantee of national security and existence of the incumbent political regime. That is why though Pyongyang agreed—under China's pressure—to participate in the talks on the Korean peninsula denuclearization which since 2003 have been conducted in the six party format (China, the USA, Russia, Japan, South Korea, North Korea) and despite of all the preferences promised to it in exchange for closing its military nuclear program, in the foreseeable future North Korea is unlikely to agree to dismantle its existing nuclear weapons. Started in October 2008 a long delay in the six-party negotiation process (as a result of North Korea's suspension of its participation in the talks for largely contrived pretexts) implicitly indicates Pyongyang's reluctance to move forward towards nuclear disarmament.

Pyongyang has never made any official statements on the number of nuclear warheads at its disposal. However in December 2007 Pyongyang as a part of North Korean declaration of its nuclear activity reportedly informed Washington

that 30 kg of plutonium was separated from spent fuel at the only North Korean graphite-moderated reactor in Yongbyon. According to expert estimates, the reactor could have produced much more plutonium—approximately 50 kg. This would be sufficient to produce 6-10 nuclear weapons. One of them was used for North Korea's nuclear test in October 2006. Thus in 2008 North Korea could have no more than 9 nuclear weapons (with some margin of error). At that there was reasonable doubt whether North Korea was able to produce reliable deliverable nuclear warheads out of those weapons.

In late 2008 Pyongyang reactivated its graphite-moderated reactor in Yongbyon (it was shut down in 2007). This move indicates North Korean potential to build up its nuclear capabilities, at an estimated pace of 2-3 nuclear weapons a year. It is also possible that by now North Korea has produced nuclear weapons in form of gravity bombs for delivery by current North Korean Air Force Hong-5 bomber (a Chinese replica of the Soviet Il-28 bomber). This aircraft has a bomb capacity of 3000 kg.

Most analysts consider it unlikely that North Korea has mastered skills to develop a nuclear warhead for ballistic missiles.

1.10. Conclusions

The above analysis of nuclear policy of states holding nuclear weapons leads to the following five conclusions.

First conclusion. TNW have lost is military utility only for Great Britain.

Second conclusion. TNW's military utility has substantially declined for the USA and to some extent for France.

Third conclusion. For China and especially for Russia TNW remain a major factor of providing regional deterrence.

Fourth conclusion. All four de-facto nuclear states (Israel, India, Pakistan, and North Korea) possess only TNW which they consider the major guarantor of their national security.

Fifth conclusion. In the foreseeable future none of the eight states currently possessing TNW is likely to abandon them. So the issue of establishing a multilateral control over TNW is coming to the forefront.

2. TNW ARMS CONTROL PROPOSALS

First of all it needs to be emphasized that TNW control is a control over tactical nuclear warheads. Almost all delivery platforms with rare exceptions are dual-use technologies with important conventional missions assigned to them. Setting ceilings for such delivery platforms would require extremely difficult and prolonged negotiations with a very uncertain outlook for reaching an agreement. It means that the approach which is currently used within the framework of the U.S.-Russian strategic nuclear arms control is irrelevant for TNW. Besides the history of nuclear arms control has no record of control over non-deployed (i.e. stored) weapons, which even more complicates the problem of establishing control over TNW that under normal circumstances are stored separately from delivery vehicles. As a rule they are kept in storages and in many cases together with strategic nuclear weapons held in reserve.

Although the above-noted issues are difficult to settle, in the presence of political will they can be solved. Here the leading part belongs to political and military leadership of the USA and Russia as two nuclear superpowers. It is Washington and Moscow that must set an example of establishing mutual control over their TNW stockpiles. Otherwise the process of creating a system of multilateral TNW control will not get off the ground.

The starting point in the process of establishing a bilateral U.S.-Russian system of TNW control should be a signing of an agreement between the USA and Russia on TNW storage (or maintenance) procedure. The agreement should provide for withdrawal of all U.S. TNW from operational combat bases in Europe to national storages on U.S. territory in exchange for withdrawal of all Russian TNW from Air Force and Navy combat bases to national storages (so called "S" sites). It would not be difficult to verify the implementation of the agreement as the parties know quite well the sites of military bases and it would be sufficient for a visiting inspection to make sure that the facilities designed to store nuclear weapons are empty.

Providing the favorable development of politico-military relations between Russia and the USA/NATO, as well as real progress in reduction and limitation of conventional forces and arms in Europe and satisfactory agreement on the BMD problem, a next step could be U.S.-Russian negotiations on deeper cuts in their nuclear arsenals. These negotiations should cover all types of nuclear weapons both strategic and tactical, both deployed and non-deployed. At that each party is free to mix its holdings of strategic and tactical weapons in any proportion it desires. For example, one party may prefer to reduce strategic weapons, while the other prefers to reduce tactical weapons. Indeed the parties will have to broaden significantly the scope of transparency in respect to their nuclear weapons and introduce such verification measures that would allow monitoring the elimination of nuclear warheads.

Successful completion of the negotiations and conclusion of a relevant agreement between the USA and Russia will help to create conditions for a next important step—involvement of China and other nuclear states in multilateral negotiations on nuclear weapons for the first time in history.

To that end the international community will have to overcome a certain psychological barrier created by the existing nuclear non-proliferation regime based on the Nuclear Non-proliferation Treaty, as it is necessary to involve into this

negotiation process those states which have not obtained de-jure recognition of their nuclear weapons status, first and foremost India and Pakistan. Without India's participation in the process China is unlikely to agree to limit and reduce its nuclear arsenal. While absence of Pakistan at the negotiation table will be insurmountable obstacle to getting India to limit and reduce its nuclear weapons stockpile.

The case of Israel is more complex. To involve this state into the multilateral negotiations on nuclear weapons does not seem possible as Tel-Aviv refuses to confirm that it possesses nuclear weapons. The problem of nuclear Israel can be solved only within the framework of establishing a zone free of weapons of mass destruction in the Middle East.

As for North Korea's nuclear disarmament this problem is better to be tackled within the framework of the Korean Peninsula denuclearization process drawing upon the arrangement already made. Utilizing the change of leadership in North Korea it is necessary to create political environment favorable for resuming the stalled six-party talks and to provide Pyongyang with some reasonable security guarantee in exchange for halting its nuclear weapons program.

Establishing the system of multilateral control over tactical nuclear weapons is a difficult challenge that requires substantial political will and commitment from all parties involved. Progress towards this goal can only be achieved within the multilateral format of negotiations on all types of nuclear weapons. To take the idea of multilateral system of TNW control to the practical level first of all it is necessary to create a discussion forum for topical issues. The high-level meeting of representatives from the USA, Russia, Great Britain, France, and China held in June 2011 which discussed behind closed doors long-standing nuclear issues can serve as a prototype for such a forum.



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Nonstrategic Nuclear Weapons, Policy and Arms Control:
Issues for the United States, NATO and Russia

INTRODUCTION

Nonstrategic nuclear weapons—also referred to as tactical or sub-strategic nuclear weapons—have long been elements of the U.S. and Soviet/Russian arsenals. Thousands of these weapons on both sides were eliminated as a result of the “presidential nuclear initiatives” in 1991 and 1992, and the 1987 Intermediate-Range Nuclear Forces (INF) Treaty banned the sides’ ground-based ballistic and cruise missiles with ranges between 500 and 5500 kilometers. Aside from the INF Treaty’s ban, however, nonstrategic nuclear weapons are not constrained by current U.S.-Russian arms control agreements.

The United States and Russia have different views of the roles of nonstrategic nuclear weapons (NSNW—the term in this paper is used to apply to warheads, not delivery systems, and covers all nuclear warheads except for those for strategic delivery vehicles). The U.S. government and NATO regard U.S. NSNW deployed forward in Europe as having only marginal military utility; their value is seen primarily in political terms, symbolizing the link between the United States and NATO Europe. NATO is currently reviewing its nuclear posture as part of its deterrence and defense posture review.

The precise role of NSNW in Russian military strategy is less clear. The Russian General Staff appears to assign them more of a military role in terms of offsetting what the Russian military regards as conventional force imbalances in comparison with NATO and, though it is rarely mentioned, China. The rationale for the large number is unclear.

Washington has stated that it wishes to include NSNW, along with non-deployed strategic warheads, in the next round of nuclear arms reduction negotiations with Russia. Moscow has said that other issues—such as missile defense, long-range conventional strike and the fate of the Conventional Armed Forces in Europe (CFE) Treaty—must be addressed before it would consider further nuclear reductions. Russian officials have also stated that the withdrawal of U.S. NSNW to national territory should be a precondition for any negotiations covering NSNW.

Should the sides agree to put NSNW into an arms control context, there are a range of options that they could pursue. These include confidence-building measures, unilateral steps and negotiated outcomes. They might choose some combination of these options as well.

BACKGROUND

The United States and Soviet Union/Russia have long had NSNW in their nuclear arsenals, and the U.S. military has since the mid-1950s deployed NSNW forward on the territory of NATO allies in Europe. The number of U.S. NSNW in Europe reportedly peaked at some 7100 in the early 1970s, at a time when NATO saw NSNW as the means to offset large Soviet and Warsaw Pact conventional force advantages.

With the end of the Cold War, Washington and Moscow dramatically reduced their NSNW holdings. In September 1991, President George H. W. Bush announced that the United States would eliminate all nuclear artillery shells and all nuclear warheads for short-range ballistic missiles, and withdraw all nonstrategic nuclear warheads from naval vessels and land-based naval aircraft. He said the United States would eliminate “many” of them.

In October 1991 and January 1992, Soviet President Mikhail Gorbachev and Russian President Boris Yeltsin announced the Russian initiatives. These included elimination of all nuclear artillery shells, nuclear mines and nuclear warheads for land-based tactical missiles; the consolidation in central storage sites and elimination of half of the nuclear warheads for air defense; and the removal of NSNW from surface ships and attack submarines, along with nuclear weapons for land-based naval aircraft, and elimination of one-third of those.

The presidential nuclear initiatives resulted in the elimination of thousands of nuclear warheads on each side. The United States continued after 1991 to reduce the number of its NSNW, including the number deployed forward in Europe. The 2010 Nuclear Posture Review announced that all nuclear warheads remaining in storage for sea-launched cruise missiles would be retired and placed in the dismantlement queue. As a result, the only NSNW currently in the U.S. stockpile is the B61 gravity bomb.

While some in the West questioned whether Moscow fully fulfilled its 1991 and 1992 initiatives, there is no doubt that Russia has eliminated many thousands of NSNW over the past 20 years—perhaps as much as 75 percent of the estimated 15,000-21,700 weapons that it had in 1991.¹ Russia is still believed to deploy a significantly larger number than does the United

States, with estimates ranging from 3,700-5,400, of which 2,100 could be delivered with readily available delivery systems. The Russian arsenal contains a wider variety, including gravity bombs, nuclear warheads for air defense and anti-ballistic missile systems. It may also include nuclear torpedoes and depth charges, and nuclear warheads for short-range missiles.

Current NSNW Balance²		
	U.S.	Russia
Air-delivered	500	800
Anti-missile/air defense	0	700
Ground-based	0	?
Naval	0	600
Total	500	~2100

It is believed that the United States currently deploys some 200 B61 gravity bombs at six NATO airbases in Belgium, Germany, Italy, the Netherlands and Turkey for potential use by the U.S. air force and, under programs of cooperation, the Belgian, German, Italian and Dutch air forces.³

There are no good estimates of the number of Russian NSNW deployed in Europe. The Russian government has indicated that all NSNW have been separated from their delivery systems and are in storage. Many of these are believed to be in “centralized storage” under the custody of the 12th GUMO (Main Directorate of the Ministry of Defense) as opposed to individual services.

U.S./NATO POLICY

The 2010 Nuclear Posture Review called for a reduction in the role of nuclear weapons in U.S. security policy. At the same time, it reaffirmed that the United States would maintain a forward-deployable fighter-bomber capability to deliver NSNW. It deferred on the issue of U.S. nuclear weapons in Europe to NATO. In the run-up to the November 2010 Lisbon summit, NATO allies took a variety of views regarding the need for continued deployment of U.S. nuclear weapons in Europe. Some allies believe that there is no territorial threat to NATO that requires a U.S. nuclear presence, while other allies feel more exposed to external threats and favor continued deployment of U.S. nuclear weapons in Europe. For the U.S. government, this may be less an issue of deterring a threat to NATO Europe than it is of reassurance for the latter group of allies.

NATO allies found language to bridge their differences in the Strategic Concept announced in Lisbon. It noted that the Alliance would maintain “an appropriate mix of nuclear and conventional forces” and broad participation in the nuclear role. At the same time, the concept adopted the goal of a world free of nuclear weapons and said that NATO would seek “to create conditions” for further nuclear arms reductions. It stated further the specific objectives of seeking Russian agreement to increased transparency, relocation of NSNW away from the NATO-Russia border, and inclusion of NSNW in future U.S.-Russian arms reduction talks.

The Lisbon summit also tasked the preparation of a deterrence and defense posture review (DDPR), which has the goal of identifying the “appropriate mix” of nuclear, conventional and missile defense forces for the Alliance. The DDPR is due to be completed by the May NATO summit in Chicago. It is not clear whether the DDPR will come to final conclusions on NATO’s nuclear posture or address the question of the replacement of NATO dual-capable aircraft.

Most though perhaps not all NATO allies believe that U.S. NSNW in Europe offer little marginal military utility, i.e., there are virtually no missions that these weapons could perform that could not be carried out by U.S. strategic nuclear forces or conventional strike forces. The primary value of these weapons is political: they are seen—particularly by those NATO allies that feel exposed to Article 5 threats, such as the Baltic states and Poland—as symbolizing the link of the United States and U.S. strategic forces to their defense.

The potential use of NSNW is seen as less important in military effect than as a signal of possible escalation to use of strategic forces. Their peacetime role is seen as equally important. While allies may differ on whether there is a potential adversary that needs to be deterred, most if not all agree on the need to reassure allies. Allies are also agreed that any steps on NATO nuclear posture and NSNW should be taken by the Alliance as a whole, not unilaterally.

RUSSIAN POLICY

The precise role of NSNW in Russian military strategy is less clear. The 2010 Russian military doctrine drew no distinction between strategic and nonstrategic nuclear weapons. The new doctrine does appear, compared to the 2000 version, to narrow the circumstance in which Russia might resort to nuclear weapons. The 2010 doctrine indicates that Russia would employ nuclear weapons in response to a nuclear, chemical or biological attack on it or its allies or in the event of a conventional attack in which “the very existence of the state is under threat.”

The current Russian doctrine seems to incorporate elements of NATO’s “flexible response” policy from the Cold War period, in which NATO envisaged possible escalation to nuclear weapons as a response to a failed conventional defense against the Soviet Union and Warsaw Pact. Many analysts believe that, given the degradation of Russian conventional force capabilities since 1991, the Russian General Staff sees NSNW as offsetting what Russia regards as conventional force imbalances in comparison with NATO and, though it is rarely mentioned, China. Moscow thus appears to assign more of a military role to NSNW than do the United States and NATO.

Moscow is engaged in a reform of its armed forces. It also has announced a goal of modernizing 70 percent of the military’s weapons and equipment by 2020, and Prime Minister Vladimir Putin recently reaffirmed the importance of modernizing Russian military forces. It is unclear at this point how successful these programs will be and whether—and if so, how soon—they might alleviate the General Staff’s concerns about Russian conventional force weakness.

As long as the perception of conventional weakness persists, the Russian military will likely attach greater importance to nuclear weapons, including NSNW. However, even if the Russian military attaches more military utility to NSNW than do the United States and NATO, the Russians have not offered an understandable rationale for the overwhelming size of their NSNW arsenal, with the low estimate being some 2000 weapons. Were Russia trying to stop a conventional invasion, how many NSNW would it use—particularly against targets on Russian territory—before it succeeded in forcing the invader to withdraw or escalated to strategic nuclear strikes against the adversary’s homeland? In either case, the number of NSNW would seem to be far below the level that Russia currently maintains.

U.S., RUSSIAN AND NATO VIEWS ABOUT ARMS CONTROL REGARDING NSNW

When he signed the New START Treaty in April 2010, President Barack Obama called for a new round of negotiations and proposed that they address nonstrategic and non-deployed strategic nuclear weapons as well as deployed strategic weapons. Were Moscow to accept this proposal, it would mean that, for the first time, U.S. and Russian negotiators would address all nuclear weapons in their stockpiles (perhaps with the exception of those that have been retired and are awaiting dismantlement, which could be dealt with separately). As the New START Treaty entered into force in February 2011, the U.S. interagency group began to prepare for a possible follow-on negotiation, including with the establishment of a working group on NSNW. U.S. officials have suggested that transparency regarding numbers, types and locations could be a first step regarding NSNW.

Foreign Minister Sergey Lavrov and other Russian officials have taken a different approach. They stated throughout 2011 that further nuclear arms reductions would depend on other issues, such as missile defense, long-range conventional strike, the CFE Treaty regime and outer space. Russian reluctance to proceed on future nuclear reductions is also explained by the upcoming U.S. presidential election. Senior Russian officials have said privately that, before going too far on a new negotiation, they wish to know who will be the U.S. president in 2013.

Russian officials have also stated that withdrawal of NSNW to national territory should be the first step in addressing such weapons. (The only NSNW deployed outside of national territory are U.S. B61 bombs deployed in Europe.) U.S. officials indicate privately that a requirement that NSNW be based on national territory is not acceptable as a precondition for negotiations but could be acceptable as an outcome, depending on other elements of the treaty.

The United States and Russia are currently conducting no negotiations, but they consult in State Department-Foreign Ministry and Defense Department-Ministry of Defense channels on issues related to strategic stability, nuclear reductions, the offense-defense interrelationship and missile defense. U.S. officials do not believe negotiations will be possible in 2012 but hope that discussions could lay a basis for resuming negotiations in 2013. At present, the stalemate over missile defense cooperation appears to overshadow all arms control questions.

In its 2010 Strategic Concept, NATO called for inclusion of NSNW in the next round of U.S.-Russian nuclear arms negotiations. While the DDPN may not reach a consensus position regarding the long-term presence of U.S. nuclear weapons in Europe, it likely will reiterate NATO calls for greater transparency, relocation away from the NATO-Russian border, and inclusion in the next round of U.S.-Russian negotiations and suggest that reductions in U.S. NSNW should take place in the context of reciprocal reductions by Russia.

NSNW ARMS CONTROL ISSUES

If/when the United States and Russia agree to negotiations—or confidence-building or reciprocal unilateral steps—regarding NSNW, several issues would arise. First, they would have to decide whether to address nonstrategic warheads and the delivery systems for such weapons—as does New START, which limits both deployed strategic warheads and deployed strategic delivery vehicles—or to address nonstrategic nuclear warheads alone. It is very likely that both sides would prefer to address just warheads, as the delivery systems are in almost all cases dual-capable and have primarily conventional roles and missions.

Second, the sides would have to decide whether to approach NSNW on a global or regional (Europe) basis. While some steps might initially be considered on a regional basis, the small size and transportability of nonstrategic warheads would argue for a global approach. Any limitation regime that applied to Europe only (Atlantic to the Urals) could be circumvented with relative ease by Russia moving in NSNW from Asia or the United States bringing in NSNW from the United States. Moreover, a regional approach that had the effect of pushing nuclear weapons out of Europe into Asia would cause diplomatic problems for both Washington and Moscow. The Japanese government has already lobbied Washington and NATO to convey its strong view that arms control measures in Europe should not raise the nuclear threat in Asia, and China could be expected to raise the question with Moscow, should it become a possibility.

Third, any regime that constrains NSNW, because it would be limiting warheads, would introduce significantly more difficult monitoring and verification challenges than the sides have dealt with in the past. While New START applies limits to and allows inspection of warheads, that applies to “deployed” warheads that are on “deployed” ICBMs and SLBMs. The ballistic missiles and their launchers are far easier to track with national technical means than separated warheads. Limits on NSNW would likely require that the sides agree to allow inspections inside warhead storage areas. While Washington reportedly was prepared to allow access to warhead storage areas at heavy bomber bases in the New START negotiations, this would be new ground for both sides. They would have to develop new and more intrusive verification measures. Even with very intrusive measures, the sides would likely not have the same degree of confidence in their ability to monitor limits on stored nonstrategic warheads—or on non-deployed strategic warheads—as they do with limits on deployed strategic warheads.

ARMS CONTROL APPROACHES

If the United States and Russia decide to apply arms control approaches to NSNW, they have a variety of options, ranging from confidence-building measures to unilateral steps, perhaps taken in parallel, to negotiated outcomes. They might choose to pursue some steps in combination, for example, they could apply confidence-building measures and perhaps even take some unilateral steps while engaging in negotiations aimed at achieving legally-binding constraints.

The first category of approaches is confidence-building measures.

Transparency. U.S. officials have suggested transparency regarding numbers, types and locations of NSNW as a first step, and a number of NATO members have suggested that transparency might be expanded to include the operational status of NSNW and the command and control arrangements governing them. Russian officials have not responded publicly to these proposals but have privately suggested that transparency might be a first step.

Demate Warheads from Delivery Systems. This could be a relatively easy step for the U.S. and Russian militaries, as most if not all NSNW are already demated or separated from their delivery systems or delivery platforms. The U.S. air force does not maintain B61 bombs on delivery aircraft, though those weapons deployed in Europe reportedly are stored in hangars that can also house delivery aircraft. On the Russian side, it is believed that most if not all NSNW have been separated from their delivery systems, and many are believed to be in centralized storage.

The sides could formalize this arrangement by announcing that, as a confidence-building measure, they would not maintain NSNW on delivery systems. This could have a positive political effect, though it likely would be difficult to verify. Transparency measures, such as exhibitions, might be considered to demonstrate demating.

Relocate/Consolidate NSNW Away from NATO/Russian Border. NATO has called for relocating NSNW away from NATO members. This could have a positive political effect, particularly on NATO states that fear they may be targeted by short-range Russian NSNW. If, as some analysts believe, Russian NSNW numbers will decrease over the next ten years as Russia replaces retired weapons at a less than one-for-one rate, that could open storage space at locations removed from the NATO-Russian border. As with demating, however, the sides would likely have difficulty verifying this. One possible approach would be to allow visits to confirm the absence of nuclear weapons at sites where they previously were, but no longer are, stored.

It could be difficult for NATO to reciprocate, as U.S. B61 bombs are believed to be stored at only six locations, the closest of which is some 800 kilometers from Russia. NATO officials worry that any consolidation by NATO could cause a cascade that might leave no B61s in Europe. While a desirable outcome from the Russian point of view, concern about managing this within NATO leaves Washington and many allied capitals wary of consolidation.

A second set of approaches is unilateral measures, some of which might be taken in parallel by the United States and Russia.

Unilateral U.S. Withdrawal of NSNW. Under this measure, the United States would unilaterally withdraw its B61s from Europe. The unilateral withdrawal of some bombs might be possible; since NATO regards its NSNW as having primarily political value, withdrawal of some weapons—provided that the withdrawal was spread among all five basing countries and still left a significant number of weapons—might not be controversial within the Alliance. It would not be possible, however, for NATO to reach consensus now on the withdrawal of all U.S. NSNW; a proposal to do so would be opposed by a substantial number of allies and would likely prove controversial within the U.S. Congress. Moreover, NATO believes that further reductions of U.S. NSNW should take place in the context of reciprocal Russian actions.

No-Increase Commitment. A relatively easy step for the United States and Russia would be for each to declare that it had no intention to increase the number of its NSNW. Neither appears to have plans or any need to do so. Were the sides to consider this, they would want to ensure that the measure did not prevent life extension programs (on the U.S. side) or replacement of old warheads with new warheads (on the Russian side). While this would be a relatively easy step to take, it would be hard to verify, and its political and practical impact would be limited given the numbers of NSNW already deployed. This might be combined with a commitment not to modernize, but that would likely prove difficult for both and all but impossible to verify.

Parallel Unilateral Reductions. The 1991-1992 presidential nuclear initiatives eliminated as many nuclear warheads as any other U.S.-Russian arms control initiative and could offer a model for a future step by Washington and Moscow. For example, the sides might decide to reduce their NSNW arsenals by an equal percentage such as 50 percent. To have full impact, the sides might want to take this step together with transparency and other measures that would give some confidence that the announced reductions were being implemented.

A third set of approaches is negotiated outcomes.

Negotiated Limit Applying to NSNW Only. The United States and Russia could decide to launch a negotiation that would apply only to their NSNW (warheads, not delivery systems). The biggest obstacle would be the large numerical disparity between the U.S. and Russian NSNW arsenals. The United States could be expected to insist on de jure equal limits; achieving those would not be easy and would likely leave one side or both subject to criticism. For example, were the sides to agree to a limit of 1000 NSNW each, critics in Washington would complain that, since the United States had no plans to increase its NSNW, the agreement would codify a de facto Russian advantage. At the same time, critics in Moscow would complain that only Russia had to eliminate weapons to reach the limit and that the U.S. had the possibility, even if only theoretical, to increase the number of its NSNW. This numerical disparity makes it difficult to envisage a negotiation on NSNW alone (just as the U.S. numerical advantage in non-deployed strategic warheads makes it difficult to envisage a negotiation of that category alone).

Single Limit Covering All Nuclear Warheads. If Moscow accepted the U.S. proposal to bring nonstrategic nuclear and non-deployed strategic warheads into the next negotiation, the sides could work toward a treaty that would limit all nuclear weapons (possibly with separate treatment for retired warheads awaiting dismantlement). For example, a treaty might allow each side no more than 2500 deployed strategic warheads, non-deployed strategic warheads and nonstrategic nuclear warheads, perhaps with a sublimit of no more than 1000 deployed strategic warheads (that would amount to about a 30 percent reduction in New START's limit). Such an agreement might also reduce the New START limits on deployed strategic delivery vehicles and deployed and non-deployed strategic launchers, but it would not limit NSNW delivery systems.

This approach might be more easily negotiated than separate limits on strategic warheads and NSNW, because it would create bargaining possibilities between different categories of warheads. While Russia has a large numerical advantage in NSNW, the United States has a large numerical advantage in non-deployed strategic warheads. Moreover, it appears that far more U.S. ICBMs and SLBMs will be downloaded than Russian strategic missiles, giving the U.S. military more spaces to upload strategic warheads should New START break down. The Russian government presumably would want to constrain or reduce this U.S. advantage. A single limit covering all warheads would allow each side to choose its preferred mix of non-deployed strategic and nonstrategic warheads above the 1000 sublimit; the United States would likely opt for more non-deployed strategic warheads, while Russia maintained more NSNW.

Limit NSNW to Centralized Storage Sites. Some Russian nongovernmental analysts have suggested that NSNW be treated by a requirement that they be demated and limited to declared centralized storage sites, perhaps with provisions that would allow monitoring of the sites to assure the other sides that weapons were not being removed. They note that this approach would obviate the requirement for monitoring provisions to verify the number of stored weapons that would be difficult to negotiate. The objection to this approach is that the weapons would exist without numerical constraint and could, if the treaty broke down, be easily moved out of storage sites to augment the sides' nuclear potential. Moreover, centralized storage sites could be a difficult concept for NATO, given the current deployment of B61 bombs at operational air bases.

Limit to National Territory. Russian officials have called for the withdrawal of NSNW to national territory, and New START requires that strategic delivery vehicles be based on national territory. It is likely that, were the United States and Russia to get into a negotiation on NSNW, the Russians would insist on a requirement that all NSNW be based on national territory. U.S. officials do not exclude this as a possible outcome of a negotiation, noting that its acceptability would depend on other provisions of the agreement and consultations with NATO allies.

A RECOMMENDED APPROACH FOR REDUCING NSNW

The United States and Russia should take several confidence-building and parallel unilateral steps while beginning negotiations aimed at a legally-binding treaty that would cover NSNW. The steps should include:

- **Transparency:** The sides should exchange information regarding their total numbers of NSNW, the numbers of NSNW by type, and the locations of all NSNW storage sites. The more detailed information should be exchanged on a confidential basis. The sides should also exchange detailed historical data regarding implementation of the 1991 and 1992 presidential nuclear initiatives, including the numbers, types and locations of weapons affected, and the numbers of weapons eliminated each year as a result. This transparency would be useful in assisting the sides to follow the implementation of other confidence-building or unilateral measures and could lay the basis for a possible treaty data exchange.
- **Demating:** The sides should codify what already appears to be operational practice by declaring that, as a matter of policy, they will not maintain NSNW on delivery systems.
- **Relocation:** As the sides draw down their NSNW, they should seek to relocate remaining NSNW to sites further removed from the NATO-Russia border (this measure would fall mostly on the Russian side).
- **Exhibitions:** The sides should discuss exhibitions that could demonstrate that NSNW have been demated from delivery systems and that they have been removed from certain storage sites where they had been previously maintained. This would include former storage sites on the territory of NATO countries.
- **Verification:** The sides should launch and continue in parallel with negotiations a joint effort to develop measures for monitoring the number of NSNW. This should include procedures for checking the numbers of NSNW at declared facilities (perhaps with a provision similar to New START's "type one" inspection procedures for checking the number of warheads on a deployed ballistic missile) and for ascertaining whether a weapon, perhaps in a canister, is in fact a nuclear weapon. (Such procedures would likely also prove useful in monitoring any future limits on non-deployed strategic warheads.)
- **Parallel Reductions:** The United States and Russia should come to early agreement on parallel unilateral steps to reduce their holdings of NSNW, say, by 50 percent.

Negotiated Treaty Limits. The ultimate objective should be a legally-binding treaty covering NSNW. The best approach would be for the United States and Russia to begin a follow-on negotiation to New START that would include all nuclear weapons—deployed strategic, non-deployed strategic and nonstrategic—and aim to produce a treaty that would constraint all of those weapons under a single limit, perhaps accompanied by a sublimit on deployed strategic warheads. The agreement would include limits on strategic delivery vehicles and launchers as in New START but would not limit delivery systems for NSNW.

As part of this treaty, the sides would agree to limit all NSNW (and non-deployed strategic warheads) to centralized storage sites. Assuming that the treaty produced a substantial reduction in Russian NSNW, the United States should be prepared to accept a requirement that all nuclear warheads be based on national territory.

1 Hans M. Kristensen and Robert S. Norris, "Russian Nuclear Forces, 2011," *Bulletin of the Atomic Scientists*, vol. 67, no.3, May 2011, pp. 67-74.

2 Robert S. Norris and Hans M. Kristensen, "U.S. Tactical Nuclear Weapons in Europe, 2011," *Bulletin of the Atomic Scientists*, vol. 67, no. 1, January 2011, pp. 64-73 and "Russian Nuclear Forces, 2011."

3 "U.S. Tactical Nuclear Weapons in Europe, 2011."

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Could the NATO-Russian cooperation ensure the transition to a non-confrontational model of interaction?

Today, we must note that there is still not possibility to achieve a sustainable and stable non-confrontational model of interaction both between the U.S. and Russia, and between Russia and the West in general. Just as during the Cold War, nuclear deterrence issues continue to occupy a central place in the discussion of problems of international security.

During the period of exacerbation of pre-election rhetoric the attention increases to these issues. Thus, in his keynote article on the problems of defense and security, Vladimir Putin has directly declared that “we [Russia] under any circumstances not give up the potential of strategic deterrence, and will strengthen it. It has helped us to maintain sovereignty in the most difficult period of the 90s, when, let’s be frank, other powerful arguments did not exist.”

Thus, it is evident that nuclear deterrence, which is based on the concept of mutual assured destruction, will continue to determine the nature of the relationship between the leading countries of the world. According to some experts, the system of mutual nuclear deterrence remains the basis of the Russian-American relations and predetermines their cyclical nature, characterized by the transition from detente to tension.

At the same time, discussions mainly revolve around the need to update and to limit the role of nuclear weapons and to introduce comprehensive security approach. Indeed the role of nuclear weapons reduces for some of the leading countries, such as the USA, Great Britain and France, and some of its functions are being transferred to modern precision-guided weapon. But for Russia there is another trend when because of conventional forces imbalance with potential adversaries some parts of functions of conventional armaments goes to nuclear forces.

At the same time, it must clearly understand the limits of strategic deterrence. A pronounced trend is the emergence of the new common security threats and challenges that humanity is facing today or will face in the foreseeable future. And in this connection the following questions arise. What new security threats and challenges could be eliminated by nuclear deterrence? How will nuclear deterrence be transformed in the new military-strategic environment and how it will impact on the development of Russian-American and Russian-NATO relations?

It should be recognized that today the expert community has not single view on the nuclear deterrence issue. However, the point of view that is now shared by a significant number of Russian and Western investigations is the rejection of the pattern of nuclear deterrence can go in two directions. The first direction is the emergence of a new type of weapon comparable in its tactical and technical characteristics with nuclear weapons but could become more acceptable from a political point of view. And the second one is the transition to a security model in the framework of which we could radically increase the degree of trust and confidence among its participants. The first approach, that is the substitution of nuclear weapons by other weapon types, fundamentally will differ little from the traditional nuclear deterrence. Thus, if we really want to move to a new non-confrontational paradigm of the relationship, we should build an appropriate security model and significantly increase the level of mutual confidence.

It might be naturally assumed that further steps to reduce nuclear weapons should occupy an important place in such a security model. These steps should help to strengthen mutual trust and partnership of Russia, the United States and NATO. At the same time they should not be destabilizing as in the bilateral relations, as well as in the broader context of multilateral relations.

In this connection a question is bound to arise in what format should states continue negotiations for reduction of nuclear weapons? Until now this process was implemented in the form of bilateral reductions in strategic nuclear forces of the United States and Russia and was based on the principle of equal and indivisible security. However, we cannot be limited in the discussion of the next steps for the reduction of nuclear weapons by the strategic offensive weapons only. There needs to be addressed at least three issues—missile defense systems, nonstrategic nuclear weapons (NSNW) and conventional (nonnuclear) strategic (long-range) weapons.

Obviously, this requires an expansion of areas and subjects of the negotiation process. It is therefore no coincidence that the process of strategic arms control is more actively included in the Russian-NATO agenda.

In this connection it should be noted that Allies participate actively in international arms control, disarmament and non-proliferation treaties and agreements. NATO itself does not belong to any treaty as an entity but it continues to encourage its members, partners and other countries to implement their international obligations fully. In the new NATO's Strategic Concept adopted by Heads of State and Government in Lisbon in 2010 declared that "Arms control, disarmament and non-proliferation contribute to peace, security and stability, and should ensure undiminished security for all Alliance members. We will continue to play our part in reinforcing arms control and in promoting disarmament of both conventional weapons and weapons of mass destruction, as well as non-proliferation efforts." This is proved by the newly-formed WMD Control and Disarmament Committee.

The new Strategic Concept revises NATO's main threats and challenges to Alliance security. So, along with the proliferation of weapons of mass destruction and international terrorism also non-traditional threats such as cyber-terrorism, energy security issues, etc. have been included in NATO agenda.

In order to assure their security and counter new threats and challenges the Alliance will continue fulfilling effectively three essential core tasks: collective defense, crisis management and cooperative security. Despite the assertion that the Alliance does not consider any country of the world to be its adversary, nevertheless, NATO leaves a full freedom of maneuver, while reserving the right to "resolve if the security of any of its members were to be threatened."

The new Strategic Concept commits NATO "to the goal of creating the conditions for a world without nuclear weapons—but reconfirms that, as long as there are nuclear weapons in the world, NATO will remain a nuclear Alliance." In the document declares that "deterrence, based on an appropriate mix of nuclear and conventional capabilities, remains a core element of the [Alliance's] overall strategy". "The supreme guarantee of the security of the Allies is provided by the strategic nuclear forces of the Alliance, particularly those of the United States; the independent strategic nuclear forces of the United Kingdom and France, which have a deterrent role of their own, contribute to the overall deterrence and security of the Allies."

Although the circumstances in which any use of nuclear weapons called "extremely remote", it is not spoken anywhere about the rejection of the doctrine of nuclear first strike. NATO pledges to "ensure the broadest possible participation of Allies in collective defense planning on nuclear roles, in peacetime basing of nuclear forces, and in command, control and consultation arrangements." This indirect reconfirmation of the importance of nuclear sharing does not reflect the positions of host nations Belgium, Germany and the Netherlands. In February 2010 these countries had urged NATO Secretary-General Anders Fogh Rasmussen to initiate "comprehensive discussions" of NATO's future nuclear policy. Also the new Strategic Concept does not change NATO's declaratory policy, despite the fact that the United Kingdom and the United States have recently declared that they will not use or threaten the use of nuclear weapons against nonnuclear members of the NPT that are in compliance with their non-proliferation obligations.

At the Lisbon summit, NATO allies tried to formulate the main principles of nuclear arms reductions in Europe. In particular, the new Strategic Concept commits the Alliance to the goal of creating conditions for further reductions in nonstrategic nuclear weapons (NSNW). The task for NATO will be to find the right mix of reassurance for Allies and reset with Russia to create the conditions for additional NSNW reductions on the part of both NATO and Russia. However, NATO makes reductions of tactical nuclear weapons dependent on Russian reciprocity, by stating that "our aim should be to seek Russian agreement to increase transparency on its nuclear weapons in Europe and relocate these weapons away from the territory of NATO members', and "any further steps must take into account the disparity with the greater Russian stockpiles of short-range nuclear weapons." Although, the new Strategic Concept does not explicitly mention the need for the continued deployment of U.S. nuclear weapons in Europe and it also does not specify force requirements, there is not a clear signal that the U.S. is ready to withdraw its NNW from Europe to its own territory and to take an equal start negotiating position with Russia, which has long brought its tactical nuclear weapons on its own territory.

The new Strategic Concept contains a very brief statement on achieving a world without nuclear weapons. Moreover, this formulation is veiled, since it clarify only the goal—"to create the conditions for a world without nuclear weapons"—and not given at least approximate dates, and other additional conditions.

At the same time clearly prescribed formula to "develop the capability to defend [NATO's] populations and territories against ballistic missile attack as a core element of collective defense. And here in general terms, without the detail and specificity, there is a provision to actively seek cooperation on missile defense with Russia and other Euro-Atlantic partners. With regard to our country identified three basic principles of cooperation in the sphere of missile defense: reciprocity, transparency and trust. However, the question arises about the practical content of these principles, from which the development of cooperation will depend.

At the November 2010 Summit in Lisbon, NATO's leaders decided that the scope of the current Active Layered Theatre Ballistic Missile Defense (ALTBMD) programme's command, control and communication capabilities will be expanded beyond the capability to protect forces to also include NATO European populations and territory, and recognized the link between the NATO missile defense system and the the U.S. European Phased Adaptive Approach (EPAA), adopted in September 2009 by the current U.S. administration.

Several provisions of the new Strategic Concept is directly devoted to the relations between NATO and Russia. In particular, it was emphasized that NATO-Russian cooperation is of strategic importance as it contributes to creating a common space of peace, stability and security. And the Alliance wants to see a true strategic partnership between NATO and Russia based on mutual confidence, transparency and predictability. Among the possible areas for such practical cooperation are called: missile defense, counter-terrorism, counter-narcotics, counter-piracy and the promotion of wider international security.

However, in spite of such recent, generally positive phenomenon, as the expansion of political and military-political dialogue between Russia and NATO, a number of issues important to our country in terms of its national security and strategic stability at the regional and global dimension still remain.

In this regard the completion of the Joint Review of 21st Century Common Security Challenges, which has identified practical cooperation projects on Afghanistan, including counter-narcotics; non-proliferation of weapons of mass destruction and their means of delivery; counter-piracy; counter-terrorism; and disaster response acquires particular importance for the development of partnership between Russia and NATO.

One may note in passing that at the level of basic documents Russia and NATO demonstrate a similar understanding of threats. For example, if you compare the National Security Strategy of the Russian Federation and the Alliance's new Strategic Concept, we can see that the list of threats is almost identical, including their hierarchy. The difference lies in the fact that the spread of ballistic missiles is a high priority issue for NATO, unlike Russia more concerns about nationalism, separatism or extremism.

One could conclude that NATO and Russia have a common area of interest for constructive joint action to counter new common threats and challenges and establish non-confrontational relationship. At the summit in Lisbon in 2010 NATO-Russia Council leaders pledged to "work towards achieving a true strategic and modernized partnership based on the principles of reciprocal confidence, transparency, and predictability, with the aim of contributing to the creation of a common space of peace, security and stability in the Euro-Atlantic area," endorsed the Joint Review of 21st Century Common Security Challenges and agreed on a joint ballistic missile threat assessment and to continue dialogue in this area and developing a comprehensive Joint Analysis of the future framework for missile defense cooperation. It also agreed a number of initiatives to help stabilize the situation in Afghanistan and the region.

Due to some reasons, however, Joint Review of 21st Century Common Security Challenges adopted in Lisbon has not open character and therefore it has not received a wide circulation among experts and the public. However, as it seems, this document should have an open part, which have been set out general approaches of Russia and the Alliance to the definition of threats and challenges to security. This would allow the expert community more effectively and substantively involve in the work on search of optimal ways of development cooperation and, of course, would be an important contribution to the strengthening of mutual trust between Moscow and Brussels.

At the same time in the perception of the Alliance and Russia about each other there is a significant degree of mistrust. This is largely due to the fact that within the counteraction of traditional security threats, i.e. strategic military threats, the two sides, solving separately tasks on their own territorial and collective defense, are forced to consider each other as a potential risk, based on the assessment of military capabilities and the lack of allied relations.

It seems that the state of the Alliance continues to regard Russia as a military threat to its security. In this regard, the lack of progress in resolving the problems connected with the creation of the common missile defense system in Europe is estimated by the Russian leadership as the reluctance of NATO to take into account Russia's concerns to ensure its security prospects in the new environment. This is confirmed by the statement of Russian President Dmitry Medvedev concerning the intentions of the United States and its NATO allies to continue to work to create a European missile defense without regard to its impact on strategic stability at the regional and global levels. The measures listed in the Russia's President Statement are justified reaction of the Russian leadership for more than probable negative consequences of the actions of the Alliance on missile defense for Russia's national security.

Thus, one has to state that, unfortunately, the NATO-Russian cooperation has not adopted a comprehensive sustainable nature. Fundamental persistent divergences between Russia and NATO in the sphere of military security do not allow the strengthening cooperation in various fields. First of all, this concerns the deployment of European missile defense system.

It should be noted that missile defense issue was added to the list of the main directions of cooperation between Russia and NATO after the Lisbon. At the beginning the joint missile defense system seemed to be an essential criterion of assessment of the NATO-Russian partnership.

However, subsequent developments showed that the rapid progress in this issue is unlikely to be achieved. In this regard, the Alliance started to make statements that it is not worth the overall NATO-Russian partnership agreement to make a hostage of the missile defense, and it is possible to build successful partnerships in other areas of cooperation. Thus, the disputable issues should be resolved in parallel.

However, post-Lisbon period showed that the lack of agreement on key issues such as missile defense, leads to a shortage of trust between the partners, which cannot be offset by the successful co-operation in other areas. It should be noted that examples of successful cooperation occur predominantly in areas with secondary importance, which do not directly impact on national or collective defense and security issues. The exception to this is cooperation on Afghanistan. Indeed, the transit

of NATO cargoes through the Russian territory makes an invaluable contribution to the ISAF NATO-led operation. This is an illustrative example of the strategic partnership between Russia and NATO. But, unfortunately, this one probably is not enough to get closer to the non-confrontational model of bilateral relations.

Thus, the experience of NATO-Russian cooperation has shown that there is currently no long-term strategy of constructive cooperation between Russia and the Alliance in key areas. In NATO's policy towards Russia is increasingly evident trend towards the use of elements of the previous strategy of deterrence (militarily and politically, in the space of the CIS).

At the upcoming Chicago summit in May 2012, NATO allies are expected to revise the Alliance's policy of deterrence for the future in the framework of Deterrence and Defense Posture Review (DDPR). The DDPR entails a fundamental review NATO's nuclear policies. The DDPR is a political process under the guidance of the North Atlantic Council and thus broaden the debate on NATO's nuclear posture, which was previously dominated by military considerations. During the discussions in the context of the DDPR a number of western experts have proposed concrete steps, some of which, as it seems, will allow transforming the Alliance's nuclear policy and, possibly, increasing the level of trust between Moscow and Brussels.

It seems, NATO Allies should acknowledge that U.S. nonstrategic nuclear forces deployed in Europe and assigned to NATO do not serve a deterrence or retaliatory function that cannot be provided by the strategic nuclear forces or conventional military assets of Alliance members. In this connection can be noted that senior U.S. officials, both military and political, have repeatedly stressed that from a military perspective, there is no requirement to continue basing of U.S. nuclear forces in Europe. Accordingly, there are no reason for modernization of the U.S. nuclear assets stationed in Europe and the dual-capable aircraft designated to carry them. Also, some western experts consider that Allies should clarify that the fundamental purpose of nuclear weapons for the Alliance is to deter a nuclear attack by a potential adversary. NATO should pledge not to use or threaten to use nuclear weapons against nonnuclear members of the NPT. The fact that NATO's current nuclear doctrine is more permissive than the doctrine of the United States and the United Kingdom undermines the credibility of efforts by NATO and member states to prevent the spread of nuclear weapons. Moreover, the Alliance's refusal of the doctrine of the application of nuclear assets in the first strike will contribute to increasing confidence between NATO and Russia.

It is obvious that the rapprochement of positions on missile defense would contribute to the solution of the problems in the bilateral relations. In turn, the lack of progress on missile defense will close the way for a dialogue on strategic and nonstrategic nuclear weapons and undermine the dialogue on strategic nuclear arms reductions.

At this stage in the current political atmosphere the parties have made to each other patently impossible demands. Nevertheless, a solution to the missile defense problem is possible. It is necessary that both sides refrain from fixing on ambitious goals and try to determine narrower, specific technical tasks in which they could cooperate substantively and to mutually advantage. Furthermore the solution of the missile defense problem would open up the opportunity to begin a substantive dialogue with respect to nonstrategic nuclear weapons.

Unfortunately, there is no reason to talk about progress on the missile defense issue. There is hardly any hope for a successful solution of the NATO-Russia missile defense conflict at the forthcoming summit in Chicago. Moreover, in the NATO seminar in Washington in February 2012, NATO Secretary General Anders Fogh Rasmussen recognized that indeed we have not seen much progress in NATO-Russia negotiations on missile defense. And "if we haven't reached a kind of agreement on missile defense, then there won't be a meeting [NATO-Russia summit] in Chicago." However, NATO Secretary General emphasized "that Chicago is obviously not the end of life... And NATO negotiations with Russia can and will continue also beyond Chicago." In turn, the Deputy Minister of Foreign Affairs of the Russian Federation Sergei Ryabkov noted that the relations with NATO are "not so bad" and in accordance with the agreement in Lisbon, both sides are going to hold exercises on theater missile defense.

One has to agree that consultations on long-term problems are really necessary. They are especially needed in the periods of aggravation of relations, in order to prevent a slide to confrontation.

Thus, despite certain difficulties, Russian-NATO cooperation has the potential to bring stability to Russia's relations with the West. In modern terms, apparently, Russia in its relations with the Alliance should follow the principle of "pragmatic partnership." So a constructive dialogue is realistic in such areas as the fight against international terrorism, piracy, proliferation of WMD, and drug trafficking. And in areas such as countering missile threats and cooperation on missile defense, Russia should adequately react to the actions of NATO while maintaining the format of the Russia—NATO Council as an important negotiating platform.



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Prospects and Possibilities for the Creation of an “Arctic Green Zone”
in the Interests of Prevention of Conflicts in the Arctic Regions

Value of the Arctic Regions for the World Community in the XXI Century

It is necessary to notice, that the characteristic feature in the begging of the XXI century is the strengthening of the international competition for access to energy resources, as these resources define a condition of the modern State economy. And in the foreseeable future such a dependency will remain in place, despite intensive searches for alternative energy resources. Known stocks of energy resources have long been actively developed and oil fields are close to its exhaustion.

With respect to these conditions, the Arctic region as a “pantry” of considerable stocks of hydrocarbons, and also as an area of the arrangement of convenient transcontinental sea (in case of global warming) and air routes, begins to draw to itself the attention of developed states from around the world. Already today mining operations in a number of Arctic areas have become more and more profitable and that is why the number of international actors, with their actively intended to master the Arctic region, grows.

A collision of interests that aggravates disputes, concerns the borders of economic zones between the subarctic states, and the desire of other countries for the right of use of the Arctic. In this connection in the zone of the Arctic regions there are a number of problems and challenges connected with them that demands the development of measures directed to preventing crises.

The discovery in the Arctic region of a wide variety of minerals has become the reason of potential disputes, because some of these stocks of minerals have sufficient volumes for industrial development today. By the estimations of the Geological Service of the USA, in the zone of the Arctic ocean is to 20 percent of the world’s reserves of hydrocarbons, and potential stocks of oil make 90 billion barrels, gas 47.3 billion cubic meters, and gas condensate more than 44 billion barrels. Therefore the Arctic shelf in the long term can become an important and even basic source of hydrocarbon raw materials in the world. Besides this, there are considerable open deposits of various ores, including rare-earth metals.

And finally, there are the large biological resources in the Arctic, including the concentration of more than 150 kinds of fish species, some of which play a leading part in world fishing.¹

However, in general, natural resources development in the Arctic regions impose its own restrictions because of difficult and even extreme climatic conditions, first of all, a low temperature background, a powerful constant and seasonal ice cover on water areas, permafrost on a land, and polar nights. Therefore the economic and daily activity there is connected with high energy inputs and dependence on external delivery of fuel and industrial equipment, foodstuffs and essential commodities. Such activity carries a fragmentary character, being localized in places of the important working sites for economy and manufacture.

Another restriction on natural resources extraction is the high vulnerability of the Arctic region ecological system, caused by the extreme deficiency of solar heat. At the same time this region plays a special role in global meteorological and hydrological processes which define the climate on the Earth. It influences the movement of air currents in the atmosphere and on water circulation in the world oceans, defining the weather in all of the northern hemisphere. Therefore the scale of the human activity there should be carried out with extreme care.

The Arctic region has also a large military-strategic value. Here there are convenient launch positions for ballistic missiles for all possible purposes of their application, and also systems of antimissile defense, the early warning prevention systems about a rocket attacks, and other strategic elements of systems that are important for national State security.

Also through this region there are the shortest passages by sea and air routes connecting North America and Europe, and the eastern and western areas of the Eurasia continent. For example, the distance from Petersburg to Vladivostok on the Northern sea way is 14. 8 thousand km; through the Suez channel-23.20 thousand km; and around Cape of Kind Hope -29.4 thousand km.² Therefore the northern sea route is rather important for commercial navigation between America, Europe and Asia.

However, their use is constrained by serious complexities of sailing and flying in high latitudes, and also a weak transportation infrastructure of the region as consequence of severe climatic conditions hindering its development. And the predicted softening of the climate on the planet is not so unequivocal. For example, a strong and early-arrived cold occurred several years ago that prevented Russia from executing in a necessary volume the plan of “northern delivery” of raw materials, foodstuffs and the goods in the appointed points of the Polar region.

However, time and generations will pass before very significant changes in climate, therefore in the foreseeable future navigating in the Arctic waters will be still only be possible within several warm summer months, and sea travel between distant points, for example, between Wrangle Islands and New Land (over 3 thousand km) will be prevented by ice for some times of the year. In addition special equipment for transport ships (strengthening of cases around a waterline, installation of heating systems of office, inhabited and cargo premises, etc.) will be unavoidable for navigating in the North.

Such factors will considerably reduce the speed of transition of ships (for example, additional vessel equipment reduces its speed by 15 percent, floating ices reduces speed by a factor of two, transport by caravan is conducting three times slower), that reduces to nothing the advantage in distance for the given route in comparison with the alternative southern route. Besides it is necessary to consider possibility of an icing of ships that would reduce the maximum size of cargoes accepted by them, and also raises the expense of fuel, increases in the rates of the insurance for higher risk, the fee of ice breaker service, the material stimulation of members of crews, etc. These and other circumstances accompanying use of a sea way along the coast of Siberia as the international transport corridor are therefore not so economically attractive in comparison with a southern corridor. The same it is possible to say about a route along North American continent which passes hundreds of kilometers closer to the North Pole.

According to the United Nations Convention on marine law of 1982, the subarctic countries (Russia, Canada, the United States of America, Norway and Denmark) in this region possess exclusive economic zones (up to 200 miles) and a continental shelf (up to 350 miles) in which limits they possess the sovereign right to mining.³ The principle of sectorized division of this region has become a recognized reality, and only recently is it appealed for revision.

The strategic importance of this region and the attempt to initiate discussions on revision of principles and the operating international norms defining an order of differentiation of possessions in it of the subarctic States contain a serious crisis potential. Its initiation will cause destabilization both regional, and for the global security situation. Besides this, there are other problems, and challenges of the Arctic region.

Russian National Interests in the Arctic Region, Challenges and Problems in the Sub Polar Area of the Earth

In connection with growth of the importance of the Arctic region for Russia, at the end of 2008 a Strategy of its development has been accepted in Moscow.⁴ It defines the main principles of the Russian policy in Arctic region till 2020 and urges an optimization of the monitoring system behind conditions in this area where Russia has intentions to co-operate with other subarctic States.

Russian national interests in the Arctic region are: use of the Arctic zone of the Russian Federation as the strategic resource base of the State, contributing to social and economic development of the country; preservation of Arctic regions as a cooperation zone; preservation of its unique ecological system; and use the Northern sea way as uniform national transport communications. The decision of these problems is planned to realize stage by stage.

At the first stage (2008–2012) it was provided: work on preparation of materials for a substantiation of external border of the Russian Arctic zone; expansion of possibilities of international cooperation for the effective development of natural resources in the region; and realization of investment projects within the limits of State-private partnerships according to the strategy of its development.

At the second stage (2011–2015) it is planned: conduct an international legal registration of the external border of the Arctic zone of Russia with decisions on the problems of its structural optimization.

At the third stage (2016–2020)—the transformation of the Arctic zone of Russia into a leading strategic resource base of the State should be realized. Further it is planned to carry out a complex escalating of competitive advantages in this zone, with the consolidation of international security and maintenance of stability in all Arctic regions.

Thus all the complex of the specified actions is planned to be carried out taking into account features of the Arctic zone of Russia which influences formation of its State policy in Arctic regions and on success of the decision of the basic challengers and problems of this region.

Ecological Challenges

The nature in Arctic regions is extremely sensitive to the human activity and is very slowly restored after harsh intervention.

Human economic activities there especially have a negative influence on the environment which was considered earlier as pure. The basic atmospheric motion, sea currents and outflow of river waters of the northern hemisphere bring to a convergence their harmful substances in the north. In the winter and in the spring in this region the air grows heavily polluted from sources in the remote areas of Eurasia.

For example, in the Arctic zone of Russia there are now accounted for 27 areas which have received the name “impaired” where pollution processes have already led to strong transformation of the natural geochemical background, resulting in pollution of the atmosphere, degradation of a vegetative cover and pollution of the soil.

Urgently there is the problem of the recycling of industrial wastes, in a considerable quantity collecting around these enterprises. Officially it is believed that at half of these industries there are emergency leaks of pollutants.⁵ There is also a

potential danger of radioactive pollution of region. Its reason is an unsatisfactory technical condition of objects of storage of radioactive waste, and the spent nuclear fuel. In only the nuclear submarines of the Russian Northern fleet of the Russian Federation which are in sediment and in coastal storehouses of the Kola Peninsula there is concentrated about 250 active zones of reactors.⁶

Similar examples of negative influence on the ecology of the Arctic regions can result from the activity of other subarctic States. Therefore environmental problems of Arctic regions cannot be considered as especially national or regional as they are the indicator of global tendencies. Besides ecological balance disruption consequences overstep the bounds sooner or later of the separate countries.

Problems of Trans-arctic Transportation

The beginning of the regular use by Russia for the Arctic dates from the middle of the 1930s. It came about as a result of efforts of the State to develop northern areas of the country within several centuries.

In 1991 Moscow opened Northern Sea Way (NSW) for the conduct of foreign ships, having established thus some restrictions as its route passes basically through waters which are under jurisdiction of the Russian Federation. Thus, by some estimates, the potential volume of transit through the NSW could reach 8–12 million tons in a year. And Russia is interested in expansion of the transit of cargoes through the NSW as an additional source of currency receipts for development of its infrastructure.

With this as background for Russian interests, the aspiration to “internationalize” the Northern Sea Way (or at least some of its segments) looks destructive. The greatest activity in this area is exhibited by the USA, Canada, Scandinavian countries and some other States.

Under this pretext the European Union, for which the overwhelming majority of member countries have a rather remote relation to the Arctic region, insists on an expansion of a circle of actors which would participate in the solving of region problems and maintain their mineral rights. The EU is also trying to bring legal bases under the idea of internationalization of the Northern Sea Way, ignoring its existing standard—legal basis which arises because the route of the Northern Sea Way passes through water areas with specific legal status, such as internal waters, territorial seas, and also the areas designated as an exclusive economic zone of Russia.

Problems of Differentiation of National Polar Borders

In 2008 President of Russia has put before the government and legislative authorities this task: to generate the strong standard-legal base regulating activity of the Russian Federation in the Arctic regions, and to provide fastening of external border of the Russian continental shelf in this area.

That is why in the nearest future, Russia should present to the special scientific commission of the United Nations an acknowledgement of the Lomonosov and Mendeleev underwater ridges, as well as the Makarov hollow located between them, as components of the Asian continental outlying area of Russia.

The activity of Russia in the Arctic regions induced U.S. President G. W. Bush to sign one of the last National Security Presidential Directives in January, 2009 concerning the policy of the USA in the Arctic region.⁷ The special point of this document urges the American Senate to ratify quickly the United Nations Convention on a marine law of 1982. As the last remaining country which was not ratifying this treaty, the USA is in an inconvenient position to participate in multilateral discussions of questions of zoning of the Arctic regions within the general platform of states which have ratified it.

Also it is necessary to mention, that in the positions of each subarctic State on some questions of activity in their sectors, there are contradictions with other regional countries. Canada, for example, does not wish that the Northwest Passage connecting Pacific and Atlantic oceans to have international status, which the United States of America insists on. Denmark cannot agree with Canada concerning the jurisdiction of borders on water areas dividing their possession. There are disagreements on a number of problems of use of Arctic regions also with Norway and Russia.

Mentioning questions of contradictions between the subarctic countries, it is impossible to ignore that fact, that all of them, except Russia, are members of a military-political alliance—NATO. That is why Moscow cannot exclude the possibility of a display by them to some extent of alliance solidarity, especially on problems concerning security subjects.

It adds disturbing “notes” in the polemic concerning possible directions of the further development of Arctic region. And also it generates aspiration of the States located here to take certain measures for protection there national interests in this region with the use of military forces.

Militarization of the Region

Following in the tide of such fears, the Scandinavian countries declared plans of creation of their own military block outside of NATO, including Denmark, Iceland and Norway, and also Finland and Sweden, which until recently had policies of non-alignment to military-political alliances. These countries plan to organize a constant patrol of the Arctic zones and air space over them up to Iceland for which forces for rapid reaction will be generated, and the cosmos satellite system will be created.

In that regard it is necessary to recall that the main aim of any military block is preparation for carrying out the use of military actions as the objective of such preparations. If one looks at a map of the North of a planet, there is no one to choose as an object for military actions by this alliance except for Russia.

Under this pretext the "Scandinavian block" is intending to create a "military fist" whose capabilities will compete and even prevail over Russian general purpose forces in the Arctic region. The total strength of fleet forces of this "military fist" will be about 600 warships, 24 submarines and over 30 combat ships of the basic classes, and up to 220 number smaller ships and boats, plus 600 combat aircrafts. The Arctic orientations of this military block as well as its mainly orientation against Russia are obvious enough.

The United States is also engaging in the militarization of the Arctic regions. One factor in the increase of American military activity in this region is the fact that the areas of the Arctic ice sheet are being steadily reduced and by 2050 are predicted to become 30 percent thinner, and their volume will decrease for this time for 15 to 40 percent. Thanks to this the USA Navy will have an opportunity to operate in Arctic regions throughout a considerable part of year. There are suggestions that the United States is planned to attain military superiority over other actors in sub-polar areas. In opposition to the undefended Russian Chukotka region is the "Alaska bastion" where the USA increase its military possibilities. In the territory of the State of Alaska are military-air bases, army and sea bases and 54 more other military objects are already located.

And as it has been counted up in the General Staff of Russia, in the conditions of thawing of the Arctic ices, the Pentagon can constantly hold in high latitudes operative rocket groups as a part of three-four cruisers and four-six destroyers. Its total strength of military arms (more than 1000 anti-aircraft guided missiles "Standart-SM3"), are capable effectively shooting down intercontinental ballistic missiles (IBM), and their combat elements. It will be enough to guarantee the security of the USA against attacks from the North.

Besides, the American Air Forces and the submarines which are carrying out combat patrol in a zone of Arctic Ocean possess high-precision weapons which, in the case of the unleashing of military conflict, can destroy submarines and bombers of the opponent forces. The Ministry of Defense of the USA also prepares units of ground forces for actions in the climate of the Arctic regions. Since 2009 there are deliveries to the Army of multi-purpose helicopters "Black Hawk" adapted for actions in the conditions of Arctic regions. Also the decision on building of two new advanced bases of a coast guard on Alaska (in Barrow and in Nome) is accepted. Anti-submarine defense and maintenance of landing operations amplifies are also increased.

Canada is not behind the USA also. It is planned to construct two additional military bases in the Canadian Arctic regions. Also Canada strengthens its military presence in the North by placing their additional units of rangers and building of 8 Arctic patrol ships besides 17 ice breakers already available in a coast guard. Ottawa increases the number of special rangers units to 5 thousand, forming them from representatives of the local people and indigenous peoples.

In these conditions Russia also plans to create grouping of Armed Forces in Arctic region which urged to provide security of the Russian Federation Arctic zone in various military-political conditions.

The Russian authorities entirely realize the responsibility for security maintenance in Arctic region and are ready for joint actions with all other interested States with a view of the decision of the general problems. However if partners are not ready to joint to such actions, Russia for protection of the national interests will be compelled to operate independently, but always on the basis of international law.⁸

It is necessary to mention, that now in Arctic regions relative stability is observed. But it is impossible to exclude, that if in the future "power repartition" of this region will begin, the scenario of an interstate confrontation with weapon application there is possible. Both the American and Russian experts speak about such possibility.

That does not serve as a "reset" and improvement of relations between the United States and Russia, including their cooperation in the Arctic region. Unfortunately because of the beginning of pre-election race in Russia and in the USA, "reset" of relations between these countries has been "frozen".

Again national interests of one party (West) are tried to reach by means of infringement of national interests of other party (Russia). Also many contradictions of existing international relations in Arctic regions purposefully become aggravated Brussels for a substantiation of increase in military presence of NATO in region.

Prospects of the International Cooperation within the Frame of Creation "an Arctic Green Zone"

In connection with these reality and fears at the international level began to express offers to sign the international Treaty on Arctic regions, establishing international control mode by analogy to the present Treaty on Antarctic. However much in these plans does not coincide with economic, geopolitical and defensive interests of the subarctic States.

That is why the Russian Federation considers that the precondition for mutually advantageous cooperation in Arctic region is the objective account of interests of all actors operating there, and development of undisputed methods of their interaction on the basis of already reached arrangements, taking into account prospects of development of a situation in region. It is possible with the creation of "an Arctic green zone".

Russian experts believe that in a basis of development of integration processes in a Polar region of the general interests of the subarctic States should establish, including the ability to increase resistance to threats of various characters at the expense of joint reaction to their occurrence. Thus primary goals in the field of the creation of “an Arctic green zone” can be:

- International legal registration of borders of possession in region according to the United Nations Convention on a marine law of 1982;
- Maintenance peace and stability in the region, based on the decision of nature protection and other problems in the Arctic zone with joint efforts;
- Organization of transit flights in Arctic regions and use of Russian Northern sea way for the international navigation;
- Creation uniform regional system of search and rescue, and also the system for prevention of technogenic accidents and liquidation of its consequences, including coordination of activity of national rescue forces.
- For the decision of the above mentioned specified problems in the framework of the creation of “an Arctic green zone” it sees necessary:
 - To strengthen both on a bilateral basis, and within the limits of the regional organizations, good-neighborhood interstate relations;
 - To carry out mutually advantageous economic, scientific and technical and other cooperation in the areas representing the general interest;
 - To solve disputes by negotiations, not supposing occurrence in Arctic regions areas of confrontation;

By preparation of the international documents, the concerning Arctic regions to spend a line on granting to the subarctic countries of the leading part in this region and the special rights in comparison with not Arctic States;

- To abstain from wide internationalization at development of decisions on the Arctic problems and interfere with attempts of revision of existing international legal base across it;
- To promote the organization of transit flights in Arctic regions, and also to use of Northern sea way for the international navigation provided that it will be carried out according to rules of the subarctic States.
- Realization of the specified problems causes necessity of research of forms and ways not confrontational cooperation of the international actors operating in region, and also a scientific substantiation of their structural mutual addition. In this area cooperation between the subarctic States can be rather multilane and fruitful.

The reality of change of a climate as a result of global warming makes appreciable impact on prospects of activity of many countries conducting active economic development of this sub polar area of the Earth. Displacement of ice floes is a risk factor for sea transportations, extraction of hydrocarbons and fishing. It once again proves all, that the decision of many problems of Arctic regions probably only on the basis of wide international cooperation. In 1990 for the purpose of development of dialogue and development of programs of cooperation of the countries having interests in Arctic regions, the International Arctic Scientific Council has been created, and in 1991 Northern Forum was founded. Then, in 1996 the USA, Russia, Canada, Norway, Finland and Sweden have formed the Arctic Council. Its main attention is concentrated to preservation of the environment of Arctic regions and maintenance of a sustainable development of it. Within the limits of these organizations numerous materials are collected and the many proved offers are put forward. The realization of which should become practical activities priority, first of all, the subarctic States.

1 Steve Robinson & Ben DiPietro. Seafood International. [www. Fish online.ru](http://www.fishonline.ru).

2 Svend Aage Cristensen. Are the northern sea routs really the shortens? www.diis.dk/sac <http://www.diis.dk/sac>.

3 Finland, Sweden and Iceland apply for this status also.

4 “Bases of a State policy of the Russian Federation in Arctic regions for the period till 2020 and on the further prospect” have been confirmed on December, 17th, 2008 by the President of the Russian Federation

5 Arctic regions: development prospects. Information-analytical bulletin RISI 4, 2008, www.riss.ru.

6 Arctic regions segodnja.-<http://www/arctictoday.ru>.

7 National Security Presidential Directive and Homeland Security Presidential Directive. NSPD-66 / HSPD-25. January 9, 2009.

8 The concept of foreign policy of the Russian Federation from July, 12th, 2008.

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A Russian Perspective on U.S. Sea-Launched Cruise Missiles

The history of military cruise missiles has its roots in the period of World War II, when German scientists designed and launched mass production of the FAU-1 “aircraft missile” to attack London (in the United Kingdom). However, without research and development of jet engines, and importantly guidance control systems, Germany could not effectively use this brand new kind of weapon.

Due to irreconcilable controversies between the West and the East—the USA and the Soviet Union—the period after the end of World War II gave impetus to development of this new kind of weapon. But only by the 1970s was some significant success achieved in the creation of highly accurate long-range cruise missiles (CMs). It is well known that the United States was most successful in simultaneous development of nuclear and conventional CMs. Accomplishments of the Soviet Union in this area were less impressive as it put a special emphasis on nuclear capable CMs.

By the late 1970s the United States put into service long-range air- and sea-launched CMs that could carry either nuclear or conventional payload. Given a high level of self-sustainability of the U.S. Navy which allowed it to maintain global presence in all of the world’s oceans, sea-launched cruise missiles (SLCMs) were deployed on both surface ships and nuclear-powered attack submarines (SSNs).

It is important to mention that today the U.S. Navy has acquired the leading strategic role in implementing both nuclear and general military policy of the United States. This leading strategic role of the U.S. Navy is represented by its three missions.

First—the U.S. Navy has an ability to maintain long-term global presence in various water zones of the world ocean due to a high level of self-sustainability, independence from service and support bases, as well as to a large number of ship personnel.

Second—due to the overseas presence, the U.S. Navy has the ability to globally project power operationally and strategically by projecting firepower from the sea against targets deep ashore using SLCMs and carrier aircraft, and by deploying a global mobile ballistic missile system.

Third, the U.S. Navy plays a key role as a reliable nuclear deterrent through a significant quantitative shift within strategic nuclear forces towards intercontinental submarine-launched ballistic missiles (SLBMs) deployed on strategic nuclear-powered submarines (SSBNs). According to New START Treaty, by 2017 1090 out of 1550 nuclear warheads allowed by the treaty will be deployed on SLBMs.

Obviously the Russian Navy maintains relative parity with the U.S. Navy only when it comes to this last mission.

The USA possesses overwhelming superiority on global scale in high-precision conventional weapons for delivery mainly by SLCMs. At the regional level of military operations U.S. SLCMs have gained strategic importance and proved to be efficient.

1. U.S. SLCMS OPERATIONAL PERFORMANCE

Since the early 1980s U.S. SLCMs specifications have been widely available through printed media and now on the Internet.

US SLCMs, generically called “Tomahawk”, are known for their long ranges, all-weather capability, subsonic speed about 880 kilometers per hour (kph) at a height less than 100 meters, and terrain following flight trajectory. Small radar reflecting area and low flight height make SLBM a rather difficult weapon to detect and intercept by missile defense systems. Both nuclear and conventional explosives can be used as a warhead.

The Tomahawk-class missiles are currently presented by the following types of long-range SLCMs:

BGM-109A Tomahawk Land Attack Missile-Nuclear (TLAM-A) is used for land attack warfare with a maximum range of 2500 km, equipped with W80 nuclear warhead with a yield of 5 to 200 kt.

BGM-109C Tomahawk Land Attack Missile-Conventional (TLAM-C) is designed to attack ground targets with a unitary conventional warhead of 450 kg within a range of up to 1300 km, and of 340 kg within a range of up to 1700 km. It is deployed at U.S. Navy surface ships with a MK-41 multi-mission vertical launching system.

BGM-109D Tomahawk Land Attack Missile-Dispenser (TLAM-D) is designed to attack surface targets at a range of up to 1300 km with a conventional warhead of 450 kg. It is deployed at the U.S. Navy attack submarines and four Ohio Class SSGNs converted from SSBNs. Underwater launch of this cruise missile is possible either from special vertical launch tubes or from horizontal torpedo tubes.

RGM/UGM-109B Tomahawk Anti-Ship Missile (TASM-B) is designed to attack surface ships with conventional warheads at a maximum range of 460 km.

In the early 1980s BGM-109C ground-launched CMs with W84 nuclear warhead were deployed in Western Europe. Later they were retired under the 1987 Intermediate-Range Nuclear Forces (INF) Treaty between the USA and the Soviet Union.

According to available data, there is an operational reserve of 290 W80 nuclear warheads stored separately from CMs on naval bases on the territory of the United States for uploading onto BGM-109A SLCMs.

Tomahawk affiliation with the category of high-precision conventional weapons is dependent upon its target approach accuracy.

A guidance system of such SLCMs as BGM-109C and BGM-109D is complex. It includes an inertial navigation system (INS), GPS-based in-flight alignment, and a basic TERCOM (Terrain Contour Matching) system. TERCOM uses a pre-recorded contour map of the terrain that is compared to measurements made during flight by an on-board radar altimeter. TERCOM installed on a BGM-109D comes into operation at the moment when a CM crosses the coastline. Guidance in the terminal stage is provided by the Digital Scene Matching Area Correlation (DSMAC) system which verifies that the images of a target that it has stored correlates with the real image. According to available information, it produces an accuracy of about 10 meters or less.

Tomahawk TLAM-N SLCM (BGM-109A) is not equipped with DSMAC. However it features target accuracy of approximately 80 meters.

SLCMs are believed to be able to destroy semi-hardened targets. As for hard and deeply buried targets, SLCMs can inflict only limited surface damage to such targets.

2. THE CONTEXT OF RUSSIA'S SLCMS THREAT PERCEPTION

Russia's—on the part of certain politico-military leaders and expert circles—perception of a threat posed by U.S. long-range SLCMs to Russian strategic nuclear forces is based to some extent on aggressive provisions of the U.S. military policy.

Two days before the U.S. and Russian presidents signed New START Treaty in Prague on April 8, 2010, the Pentagon released the 2010 Nuclear Posture Review (NPR).

There are multiple evidences that the development of the 2010 NPR which was initially expected in the second half of 2009 was marked by fierce debates and compromises. As the result the 2010 NPR turned out to be mostly declarative document lacking details. It attracts much less attention of U.S. and global analysts than the 2001 Nuclear Posture Review published by the George W. Bush administration.

Without going into details it is important to mention that the 2010 NPR doesn't exclude first use of nuclear weapons, i.e. a preventive counterforce strike against other nuclear countries. During the election campaign and after taking the office President Obama avoided any mention of this fundamental issue of the U.S. nuclear doctrine. He just promised to work with Russia towards reducing operational readiness of ICBMs. However the 2010 NPR concluded that “the current alert posture of U.S. strategic forces—with heavy bombers off full-time alert, nearly all ICBMs on alert, and a significant number of SSBNs at sea at any given time—should be maintained for the present”.

However the problem of first use of nuclear weapons is gradually becoming a serious obstacle in the way towards the goal of a nuclear-weapons-free world declared by President Obama.

The appeal to give up preventive use of nuclear weapons as a holdover from the Cold War is reiterated by many research papers, reports, statements made by officials and pundits both in the United States and other countries.

This critical for international security issue is especially urgent in the context of U.S. deployment of global mobile missile defense system, along with Washington's overwhelming superiority in precision-guided conventional weapons. The United States is fully responsible for destabilizing international situation by deploying global mobile BMD system under the conditions allowing preventive use of nuclear weapons.

Russia's negative response to the following provision of the U.S. Ballistic Missile Defense Review Report released in February 2010 is only natural: “While missile defenses play an important role in regional deterrence, other components will also be significant. Against nuclear-armed states, regional deterrence will necessarily include a nuclear component (whether forward-deployed or not). But the role of U.S. nuclear weapons in these regional deterrence architectures can be reduced by increasing the role of missile defenses and other capabilities”. Against which nuclear-armed state the USA can use nuclear deterrence or a preventive strike with nuclear weapons deployed in Europe under the missile defense shield? Can it be Great Britain or France? No doubts, it can only be Russia. This is the only way to interpret the deterrence architecture in Europe. It is evidently the reason why the new Russian Military Doctrine identifies NATO as a military threat. It should be mentioned that according to unofficial sources, while preparing the Doctrine its authors discussed including a statement on Russia's preventive nuclear strike. However the new Russian Military Doctrine adopted by a presidential decree of February 5, 2010, does not envisage first use of nuclear weapons and states the right to retaliate with a nuclear strike to a large-scale aggression posing a threat to Russia's existence as a sovereign state, even if the aggressor uses only conventional weapons.

Within the context of the nuclear doctrine which provides for the U.S. nuclear weapons first use, Russia naturally feels suspicious about the global mobile BMD and its European segment because of concerns over the efficiency of Russian nuclear deterrence. Without removing the provision on a preventive nuclear strike from strategic documents of states the U.S. global mobile BMD system is yet another threat to the international stability.

A roundtable hosted by the Institute for the U.S. and Canadian Studies of the Russian Academy of Sciences in early 2010 concluded that “the world community has a chance to take security to a new level where it would be a common practice to openly discuss strategic defense documents within the framework of international debate, genuine complementarity would emerge, and real life dialogue would be in tune with official written statements”.

The United States should lead the international community in its attempt to implement this chance by calling for all nuclear weapons countries to hold a summit at the highest level. Such a summit should address issues of giving up a preventive nuclear strike policy by all nuclear weapons countries.

It is important to mention that there is a historic precedent of an agreement to abandon first use of nuclear weapons policy. An article by Hu Yumin in China Daily of March 10, 2010 reads: “In 1992, China and Russia agreed, though temporarily, not to be the first to use nuclear weapons against one another... In 2001 China and Russia finally signed a treaty on no-first-use of nuclear weapons against one another... In fact if the nuclear powers agree not to be the first to use nuclear weapons, it would be conducive to realizing the ultimate goal of complete non-proliferation and total destruction of nuclear weapons.”

The preventive nature of American military policy on both nuclear weapons and high-precision conventional weapons contributes to a wide spread of scenarios of a strategic massive preventive strike by SLCMs in Russian media.

3. IRRATIONAL THREAT ASSESSMENT OF MASSIVE SLCM STRIKE FOR RUSSIAN MILITARY-ECONOMIC POTENTIAL

First of all it should be mentioned that the decision made by U.S. military-political leadership to withdraw four Ohio Class SSBNs from the U.S. strategic nuclear forces and to convert them into SSGNs to deliver 154 Tomahawk SLCMs each further aggravated Russian perception of threat posed by U.S. SLCMs.

Given this decision, the basic scenario of massive SLCM attack against Russia is a preventive strike at Russian strategic nuclear forces bases and their operational support infrastructure in order to prevent a retaliatory counterstrike. After or probably during the SLCM strike will follow a counterforce strike by ICBMs and SLBMs targeted at the survived Russian strategic nuclear forces thus enabling the BMD system to intercept the remaining few Russian ballistic missiles and prevent retaliatory strike.

For instance, Vladimir Belous, Leading Research Fellow at the Center for International Security of the Institute of World Economy and International Relations of the Russian Academy of Sciences, in his article in “Nezavisimoe Voennoe Obozrenie” of January 20, 2009, drew the following comprehensive picture of massive nuclear SLCMs strike: “A surprise attack of 50-60 nuclear SLCMs is capable to destroy all bombers stationed at airfields, missile-carrying nuclear submarines at bases, disrupt command, control and communication systems, which will compromise a retaliatory strike by nuclear forces, especially ICBMs. As few as 3-4 submarines are needed to accomplish this mission. An SLCM attack will be most effective in the absence of strategic warning. SLCMs are especially counted on for defeating road-mobile missile systems. For this mission SLCMs would need an upgraded guidance system to ensure enroute retargeting through a space-based surveillance and reconnaissance system”. Multiple scenarios of massive conventional SLCM attack are substantially equal to nuclear ones.

Alexander Khranchikhin, Deputy Director at the Institute for Political and Military Analysis, wrote in his article in “Nezavisimoe Voennoe Obozrenie” (No.6, 2010), that U.S. cruisers and destroyers operating in the Black Sea would be able to hit up to 60 percent of all Russian ICBMs in their deployment areas with conventional Tomahawk SLCMs. However the author wrongly estimated their maximum range as being of 2500 km which is true only for nuclear Tomahawks as a nuclear warhead is much lighter than conventional one.

As there is no space for quoting more likewise scenarios, we have to move on to analysis of some inaccuracies inherent in such scenarios.

First, a massive preventive counterforce strike can be fairly effective only if it is surprise and simultaneous (in respect to location and time) hitting all strategic nuclear forces bases or at least as many of them as possible. None of these can be ensured by slow SLCMs launched into trajectories of different lengths.

Second, a massive SLCM strike at Russian strategic targets can be launched only from the Norwegian, Barents, and Okhotsk Sea regions. Large U.S. surface fleets—let alone Ohio Class nuclear-powered submarines with SLCMs—can not enter the Black or Baltic Sea without immediate and harsh response followed from Russian political leadership and armed forces.

Third, the Russian Strategic Rocket Forces (SRF) consist of three missile armies: the 27th Guards Missile Army (Vladimir), the 31st Missile Army (Orenburg), and the 33rd Guards Missile Army (Omsk). The largest one is the 27th Missile Army located in the European part of Russia. Almost none of its missile divisions—much less the 31st and 33rd Missile Armies—is vulnerable to an attack of SLCMs deployed at nuclear-powered submarines (with a maximum range of 1300 km) in Norwegian

and Barents Sea. The only strategic targets reachable for SLCMs are the Russian SSBN bases on the Kola and Kamchatka Peninsula.

Fourth, the difficulty to detect an SLCM due to its low-altitude flight is overly exaggerated, particularly in case of a mass launch. It is irrational to think that hundreds of SLCMs coming from anticipated directions would take by surprise the Russian Aerospace Defense or politico-military leadership. Such situation would be unambiguously interpreted as a large-scale aggression against Russia and a threat to its sovereign existence. In accordance with the above-mentioned provision of the Russian Military Doctrine as well as international law, a massive nuclear strike would be launched against the U.S. territory. Why would U.S. political and military leadership take this risk? American people will never tolerate inept politicians or military leaders at the highest level of command and control.

A monograph “Russia and the Dilemmas of Nuclear Disarmament” by the Institute of World Economy and International Relations provides a detailed and impartial analysis of a potential massive SLCM strike against Russian strategic forces. The authors’ estimates of SLCMs capability to deliver such a strike state the following: “Indeed, some targets that in the past could be destroyed only by nuclear weapons, today can be destroyed by precision-guided conventional weapons. However there is no doubt that—contrary to a popular belief—no precision-guided conventional weapons is comparable to nuclear weapons when it comes to attacking major hard or mobile targets, let alone administrative-industrial centers”.

However, the United States relying on the Navy’s self-sustainability to maintain its global military presence continues to deploy and constantly build up effective sea-launched precision-guided conventional weapons such as BMD and SLCMs, which further compromises international stability. The U.S. military strategy allowing for preventive use of nuclear weapons and SLCMs creates a context for interpretation of such policy as a military threat to countries which are not formal U.S. allies or partners.

Besides, the Russian expert community expresses concerns (similar to those brought about by President Reagan’s Strategic Defense Initiative) that the real reason for U.S. development of prompt global strike capabilities is to impose pressure on the Russian economy.

For instance, Alexander Kalyadin, Leading Research Fellow at the Center for International Security of the Institute of World Economy and International Relations, in his article “Nuclear Uncertainty Trap” (“Nezavisimoe Voennoe Obozrenie”, No.50, 2011) points out that “it seems that while the United States and its NATO allies in Europe seek to climb out of the financial and debt crisis and have to cut their military programs, they try to make Russia (which at the moment has no federal budget deficit) sink into massive irrelevant spending”.

The United States will obviously seek to maintain its overwhelming global superiority in precision-guided conventional weapons. Yet another evidence is “Sustaining U.S. Global Leadership: Priorities for 21st Century Defense”, a White House document presented by President Obama in the Department of Defense in January 2012.

Russia legitimately considers U.S. overwhelming superiority in high-precision conventional weapons a challenge to its national security and will counterbalance it with reliable nuclear deterrence. As a result Russia will reject any further strategic offensive arms reductions as well as a dialogue with the U.S. on tactical nuclear weapons.

So a “nuclear dead end” is looming large on the horizon of the “reset” in the U.S.-Russian relations dimming Obama’s vision of a nuclear-free world. Meanwhile a road from mutual assured destruction to mutual assured security will be going in circles as for the foreseeable future nothing else but mutual assured destruction can guarantee mutual assured security.

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Prospects of the CFE Treaty and the Reductions of Conventional Armed Forces in Europe

There has been a long-term stalemate as regards the CFE Treaty due to the Western negotiating partners' denial—on insufficiently reasonable pretexts—to ratify the already signed arrangements on further reductions of conventional armed forces in Europe (the 1999 Agreement on Adaptation of the CFE Treaty also referred to as the CFE-2 Treaty). Recently this has occurred within a broader context of continuously deteriorating relations between Russia and the U.S. and NATO countries, that has become especially strained due to the U.S. plans to deploy missile defense in Europe.

THE CHALLENGES FACING THE CFE TREATY

Western countries have denied ratifying the adapted Treaty using as a pretext Russian-Georgian and Russian-Moldovan documents that appeared accidentally at the 1999 OSCE Summit in Istanbul and were subsequently mentioned in its final document.

The Russian-Georgian document set forth the terms of withdrawal of Russian Treaty-limited equipment (TLE) from the territory of Georgia and the Russian military bases, as well as the completion of talks on the terms and conditions of the functioning of these bases. According to its official position, Russia had fulfilled its obligations vis-à-vis Georgia before the 2008 conflict with this country burst out.

As for Russian-Moldovan arrangements, Russia undertook to consider the issues of weapons remaining in Moldova since the Soviet period and stockpiled in the territory of self-proclaimed Moldavian Republic of Transdniestria. The removal of these arms, the amount of which was almost 42,000 tons, proved a major technical and financial challenge. Still, these were successfully addressed to a great extent, and with regard to Moldova, Russia fulfilled all procedures directly related to the CFE limitations.

No doubt, both bilateral documents have certain legal weight and political significance. However, as compared to a truly immense task of strengthening European security, which had been the purpose of the CFE-2 Treaty, two short documents containing unspecified obligations and adopted, as diplomats say, “on the margins” of the Summit, should not have been considered as a serious obstacle that cannot be overcome in case there is sufficient political will.

As the Western countries delayed the ratification, the claims of the Russian side were increasing both in number and in scope. The situation went even worse after Russia announced a moratorium on the implementation of the CFE Treaty that has remained in force since 2007, and subsequently denied to provide information under the Treaty.

Recent years have seen an increasing role of NATO in searching for possible solutions to this situation. Most recently the role of the U.S. has become important, too. Active involvement of the U.S. already contributed to addressing the challenges to the CFE Treaty in the 1990s.

Besides the remaining differences between the parties, there are other obstacles to the implementation of the CFE Treaty-related arrangements. First, there is still existing uncertainty as far as the future of NATO expansion towards the East is concerned (which so far has been suspended, yet with no further guarantees) with all its negative implications for NATO-Russia relations and the prospects for the implementation of the Treaty.

Second, the sovereignty of Abkhazia and South Ossetia is not recognized by the West, and the newly emerging Russian military bases in these countries are regarded as bases in the territory of Georgia.

The very fact that in recent years NATO has practically replaced the OSCE as the European institution that serves as a venue for active search of negotiated solutions sends an additional powerful negative message to Russia. It is noteworthy that Russian policy-making and expert community continuously compares the numbers of NATO's and Russia's arms viewing these two parties as potential enemies.

In fact, this is a more fundamental matter than a mere checking of the balances. There is no other European country (except for Belarus) whose leadership, policy-makers and experts would think of comparing the numbers of their arms in five Treaty-limited categories (TLE) with the numbers of armaments of NATO as a whole.

By contrast, in Russia this balancing is a usual thing. What is more, one can count on fingers policy-makers and experts that dare to claim that such comparisons are irrelevant. In Russia, one should have an extraordinary political audacity to state that NATO poses no military threat to Russia. NATO threat is discussed in almost all Russia's national security papers, including

such recent ones, as the National Security Strategy (May 2009) and the Military Doctrine (February 2010). This shows that Moscow still tends to see the other party from a perspective that has changed little since the Cold War.

Such views are both a continuation of the Cold War thinking (the perception of NATO protection as a vestige of the Cold War), and a consequence of the selfish policy of NATO expansion towards the East pursued by the West in the 1990s despite Russia's protests.

One could tell from some recent statements that Russia's position as regards NATO has eased off. Meeting security experts in Sarov, Vladimir Putin said that "today, NATO is more a foreign policy tool than a military bloc. The United States is using NATO primarily as a tool to preserve its leadership within the Western community. Article 5 of this organisation is still there, of course, and this is still a military organisation, and we should keep that in mind."¹

With all the reservations, this was the first time Russian leadership has recognized that today NATO is a foreign policy tool, rather than a military one. However, it is too early to make far-reaching conclusions, as this may prove to be another ingenious maneuver of Putin's "declarative diplomacy".

One can only regret the failure of the CFE-2 Treaty. It is not possible to concur with some experts that believe that the Treaty "only fuels mutual distrust between NATO and Russia."² It has been shown above that this distrust emerged outside the CFE Treaty process, although the negotiating process could not be unaffected by the atmosphere of mistrust between the parties. The decisions made as regards the CFE Treaty have certainly been influenced by this atmosphere.

However, if CFE-2 arrangements were implemented, Europe would have been split into sections of national and territorial ceilings that virtually could not be exceeded but in a previously agreed temporary manner and only by small numbers.

Thus it could be possible to meet the objective of "eliminating, as a matter of high priority, the capability for launching surprise attack and for initiating large-scale offensive action in Europe"³ set forth as far back as in the CFE-1 Treaty (and even in the negotiating mandate). Besides (and this point is pivotal for both Western-Russian relations and political processes within Russia), it would render groundless the political phobias of NATO's growing military force posing a real military threat to Russia, that are so widely spread in Russian policy-making community.

THE FUTURE OF THE CFE PROCESS: POSSIBILITY OF AGREEMENT AND POSSIBLE COMPROMISES

However, the reality is that instead of a new stage that CFE-2 Treaty could serve, and a new really important step towards ensuring European security and enhancing the key European actors' feeling of safety, the Western policy-makers and experts dragged us into a tiring and pointless quest of 'the letter of the law', which has also led to deterioration of Russian-Western relations.

No political decision to this complicated issue, which would satisfy both sides, can be expected in the near future. Yet, with regard to the CFE Treaty, a technical solution in principle is possible. The issue of Russian military bases in the territories of the two republics might be "factored out", and a separate document might be adopted on this matter to govern the status of these bases. In future a "technical compromise" on this issue can be reached within a wider "package deal" on CFE, for instance, through linking this issue to an agreement on theater nuclear weapons (TNW).

Before the 2008 crisis in Russian-Western relations, NATO made a number of proposals on revitalizing the CFE Treaty regime. They still deserve attention and can partially serve as a basis for future practical solutions.

In August 2007, the U.S. on behalf of NATO countries, proposed the so-called "parallel actions package". According to it, NATO countries should commence ratification of the Agreement on Adaptation, while Russia was to renew the implementation of the CFE-I Treaty, complete the withdrawal of ammunition from Transdniestria, consent to the involvement of international forces in peacekeeping operation in Moldova, and resolve the issue of former Russian military base in Gudauta, Georgia. It was suggested that if Russia completed its steps in Autumn 2007, NATO countries could ratify the Agreement on Adaptation by Spring 2008.

That has not satisfied Russia. It believed that in order to revive the CFE Treaty, the adapted Treaty should be amended before its ratification, and not the other way round.

Certainly, NATO's plan to put the Agreement on Adaptation in force by summer 2008 was complicated by Russia's moratorium on the implementation of the CFE Treaty, which was announced by President Vladimir Putin in his annual address to the Federal Assembly in April 2007. NATO suggested to return to that plan on March 28, 2008, yet its further implementation was prevented by a serious crisis in relations, provoked by the conflict in Georgia. However, this plan still makes sense.

Yet, the West will hardly consent to this approach, as some politicians and experts there believe that due to NATO expansion and its military superiority vis-à-vis Russia, the latter should be more interested in the revitalization of the Treaty after its demarche with moratorium failed to make the expected impression on Washington and Brussels. The Western countries insist that now the priority task is to return to the basic version of the Treaty and its 1999 adaptation, rather than to overload it with Russia's new proposals. The latter might be discussed in the context of subsequent agreements, for which NATO may very well prepare its own proposals.

Another noteworthy point is the plan for provisional application of the adapted CFE Treaty as a step towards its ratification by all parties proposed by Russia and consisting of two stages. At the first stage (about six months) states parties are to observe political commitments to act in accordance with the object and the purposes of the adapted CFE Treaty, and comply with its ceilings. Then, the provisional application of the Agreement on Adaptation is to commence unless the Agreement enters into force.

For a long time Russia has raised the flank issue at different levels. Beside complete abolition of flank sub-ceilings, raising such sub-ceilings accompanied by enhanced transparency on the part of Russia would appear a promising option.

It should be reminded that in 1996, with Washington's active assistance the question of raising flank ceilings for Russia was resolved. It appears that today the U.S. could also play a decisive role in resolving the flank issue which Washington is trying to do. The signing of the new START Treaty has created favorable conditions for that.

More than a decade which elapsed since 1999 has seen notable changes in the situation around two issues which the Western side regarded as obstacles to the ratification of the Agreement on Adaptation. The situation with Moldova, where the remaining limited Russian military presence is justified by the needs of peacekeeping in the region may be solved on the basis of compromise if the other obstacles to the Treaty will be removed.

Legal arrangements, such as agreed statements, and in some cases, unilateral understandings, could facilitate resolution of issues pertaining to Georgia. The Western countries could, for instance, declare in the form of a unilateral statement their special position on the recognition of Abkhazia and South Ossetia. Russia, in its turn, could support its principal position on the independent status of these two republics.

It would be erroneous to claim, as some renowned Western experts do, that "if Russia is intent" on promoting its proposals on European security "without addressing lingering concerns over Georgia and the unresolved CFE Treaty issues... there is a significant risk that CFE will become a casualty of a Europe once again divided".⁴

The ratification of the adapted CFE Treaty even with territorial reservations (including, in addition to South Caucasus, the Baltic states, for instance) would in itself become a major achievement in strengthening European security and relieving Russia's concerns over NATO's superiority in conventional weapons and the prospects of its infrastructure moving closer to Russia's borders. It would hardly be advisable to 'overload' this process setting any additional conditions, if one is to aim at overcoming the deadlock rather than justifying it. This is especially true, as it is Russia, according to its official statements, who is interested most in resolving the issues brought about by NATO's eastward expansion.

The emergence of new types of weapons does not appear to be an obstacle as insuperable as some experts try to present.⁵ The development of arms has always been a challenge for negotiators, but they have always managed to address it. It would suffice to cite the 1972 ABM Treaty with its provisions that remained classified for many years and concerned the prospects of development of weapons based on new principles of physics. In that case the parties agreed to engage in new consultations with each other. Although the Treaty on Conventional Armed Forces in Europe failed to give a comprehensive 'one-for-all' definition of categories of TLE, a rather ingenious solution was found: the parties compiled a list of such TLE to be revised and updated on a regular basis.

The unclear prospects of applying new arrangements to combat drones, or conventional SLCMs should be an even lesser cause for panic. The issues related to expanding the scopes of the treaties to arms mainly in possession of one of party, have always been resolved through compromising and package deals. It appears that Russia's proposal to introduce bloc ceilings for the group of countries members of the North Atlantic Alliance could also be considered in this context.

As far as the basic reductions are concerned, in the situation of much more secure Europe than it could be considered when the CFE-1 was being prepared, the sides may consider for the follow-on agreement the decisively much lower ceilings than were presupposed by the CFE-2 Treaty. This concerns, in particular, considerable reductions of national and territorial quotas (by about 50 percent),⁶ which would harmonize them with real and planned levels of the armed forces of the parties and fundamentally new approaches to European security, recently voiced by Moscow. Such profound reduction of armaments and armed forces should logically be accompanied by abolition of flank ceilings and taking into account other Russia's concerns. In response to commitments on reducing collective ceilings of NATO countries' TLE Russia could agree to start talks on TNW limitations. Providing guarantees of suspending NATO expansion (on certain conditions) and substantive dialogue on Russia's proposals on new European security architecture would also be extremely helpful for shifting from traditional conventional arms control to integration of the armed forces of Russia, other post-Soviet states, NATO and the EU for common tasks and joint operations.

The author of the present article does not believe that the course towards conscious and complete renunciation of the CFE-2 and the transition to something completely new called to by many policy-makers and experts, is by all means justified and productive. As a participant in the 1989-1990 negotiations on CFE-1 Treaty the main initial elements of which were elaborated in the Institute of the U.S. and Canada Studies in advance to the negotiations, I believe it essential to start working upon the difficulties that should be surmounted not only during negotiating process, but also at the stage of elaborating and agreeing on the very concept of such arrangements.

The ideology of the CFE-2 Treaty based on individual yet jointly agreed and adopted states parties' perceptions of their security, has remained innovative up to the present moment. What is more, it has proven to bring the parties as close as possible to reaching an agreement. It is not the Treaty that failed, but an excessive rigorousness of the Western countries in matters that have been at best secondary for ensuring European security. Besides, the changing political environment accompanied by continuously re-emerging Cold-War phobia has proven to be an insuperable obstacle to the Treaty.

The 'factor of leadership' in Russia will be of considerable importance for foreign and security policy and the negotiating process, as well. However, one should not view Vladimir Putin's election as president as a certain obstacle to arms control, as some Western experts do. It should be remembered that it was Vladimir Putin who engaged in active search for ways to establish partnership with the West at the beginning of his first presidency. It would suffice to recall the first Russian-US Summit that took place in June 2001 in Ljubljana and was initiated to a great extent by Vladimir Putin, or the Declaration on "NATO-Russia Relations: a New Quality" adopted in May 2002 in Rome with his participation. The documents of the Russian-US Sochi Summit—that was the last one during Vladimir Putin previous presidency—also mentioned the parties' dedication "to working together... moving the U.S.–Russia relationship from one of strategic competition to strategic partnership".⁷ It appears, therefore, that many things could have been different, unless the Georgian-Ossetian conflict burst out and the U.S. and NATO adopted that particular position in it.

Despite rather complex relations with Washington and the fomenting of anti-American and anti-NATO attitudes during the presidential campaign in Russia, Vladimir Putin found it possible to declare that "if we had managed to achieve a breakthrough on missile defense, this would have opened the floodgates for building a qualitatively new model of cooperation, similar to an alliance [with the U.S.–Auth.]".⁸ Therefore, no opportunities are lost, including those related to arms reductions and limitations.

This comment by the Russian President elect stresses the importance of mutually supportive solutions. This ideology of an arms control process deeply embroiled in political environment in general (Russia-Western relations in this case) is fully applicable to the CFE Treaty process in Europe. The progress in this field is influenced as much as ever by the general dynamic of the relations between Russia and the U.S. and NATO countries, and the progress in other spheres of arms limitation and reduction.

1 Prime Minister Vladimir Putin meets with experts in Sarov to discuss global threats to national security, strengthening Russia's defences and enhancing the combat readiness of its armed forces. February 24, 2012. (<http://premier.gov.ru/eng/events/news/18248/>)

2 See, The CFE Treaty is dead and should not be revitalized, as it only fuels mutual NATO-Russian distrust / Voенно-promyshlenny kurier. No. 6 (423) of February 15, 2012 (<http://vpk-news.ru/articles/8620>, in Russian).

3 Treaty on Conventional Armed Forces in Europe (<http://www.osce.org/library/14087>).

4 Anne Witkowsky, Shermann Garnett, Jeff Mc Causland. Salvaging the Conventional Armed Forces in Europe Treaty Regime: Options for Washington. Brookings Arms Control Series, Paper 2, March 2010. p. 23.

5 See, The CFE Treaty is dead and should not...

6 The actual TLE holdings of the European countries have already been much lower than the CFE-2 Treaty ceilings.

7 US-Russia Strategic Framework Declaration. Adopted at the U.S.-Russian talks in Sochi on April 6, 2008 (<http://archive.kremlin.ru/eng/events/articles/2008/04/163213/163215.shtml>).

8 Russia and the Changing World. Article by Vladimir Putin for the Moskovskie Novosti newspaper (<http://premier.gov.ru/eng/events/news/18252/>).

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Monitoring and Verifying Nuclear Warheads or Materials in Containers

Deep reduction of nuclear weapons in Russia and in the United States, and involving other nuclear states in this process, are possible under conditions maintaining international stability and security. The participants in deep reductions of nuclear arms should be assured in this process that none of the parties have had hidden or have had withdrawn from the control regime even a small number of nuclear warheads or a small amount of nuclear weapons material. That is why it is extremely important to ensure the possibility of reliable mutual control of the reduction of nuclear weapons, to make sure that the nuclear warheads falling under these agreements on their liquidation have really been dismantled, and that the released quantities of highly-enriched uranium (HEU) and plutonium are not used for purposes of nuclear weapons any more.

Control measures directed at arsenals of nuclear warheads and nuclear materials require deep and comprehensive research. It is obvious in regards to the particular sensitivity of this issue, that the approach of each side in the arms control process will be determined by the actual legislative normative base regulating the treatment of nuclear warheads and weapon-grade fissile materials in each country. That is why the elaboration of the technical measures of mutual control will be inevitably complicated by not only the insufficient level of trust between the sides, but also by the differences in legislation and interpretation with respect to sensitive information. And implementation of these measures will only be possible upon achievement of related agreements. At the same time it is clear that reaching those related agreements is impossible without a preliminary experts' study on the options for technical solutions to the challenges of control issues.

LIFE CYCLE OF NUCLEAR WARHEADS DECLARED EXCESS TO ARSENALS

Russian experts have worked out the key steps of the life cycle of nuclear warheads during their controlled dismantlement and utilization of the released nuclear materials. These steps are:

- Removal of warhead from the delivery platform and its shipment to the maintenance base;
- Preparation of the warhead for transportation;
- Shipment of containers with warheads to the dismantlement facility;
- Disassembly of nuclear warhead with recovery of nuclear fissile materials (FM);
- Preparation of FM for shipment to the storage facility;
- Shipment of container with FM to the storage facility;
- Storing of containers with FM at the storage facility;
- Shipment of containers with FM to the facility that converts the FM to non-sensitive forms;
- Shipment to and storage of the converted FM at the storage facility;
- Shipment of the converted FM to facilities for their final utilization.

From a monitoring standpoint there is a need to have assurance that exactly the same warheads removed from a delivery platform or taken from a storage facility went through all the disassembly stages and exactly its nuclear materials were delivered for storage. Implementation of control over this process is possible by placing the nuclear warheads (or nuclear materials) in containers, because this is already an established way to move nuclear warheads and nuclear materials. This method prevents any unauthorized access to the container contents, and provides for non-intrusive control. It is obvious that increasing confidence in the control can be supplemented by methods which allow confirmation that the content in the container remains the same by recording and registration of the radiation characteristics of nuclear warheads and fissile materials placed in the sealed containers.

PROCEDURES THAT COULD BE IMPLEMENTED TO PROVIDE TRANSPARENCY TO THE WARHEAD DISMANTLEMENT PROCESS

As non-radiation control measures of objects conservation inside the container there can be used:

- Mechanical, chemical and isotopic marking;
- Mechanical and optical-fiber sealing;
- Placement of special locks;
- Placement of detectors to control physical parameters of the object;
- Placement of optical-fiber sensitive detectors;
- Remote video-TV monitoring.

These measures are non-intrusive and could be applied without delay. Their use allows efficiently monitoring the process of dismantling of nuclear warheads at a number of stages.

However to get assurance that the object arriving to the dismantlement facility is actually a nuclear warhead it is necessary to use radiation methods which can be either passive or active radiation monitoring methods.

Radiation signature of nuclear warheads (fingerprint)

This procedure is intended to confirm the safety of the container contents by measuring the immutability of its radiation characteristics. The fingerprint of warheads could be obtained by measuring and recording of gamma-ray spectrum and neutron flow from a control item using the standard set of equipment and according to strictly determined algorithm. This information is recorded to the file on the data storage device which is kept by the control side. At verification tests there must be performed the same procedures as at conservation strictly according to the same algorithm and using the similar sets of equipment. Then the newly received data is compared to the initially obtained. This method is not free from shortcomings since the comparison of the radiation signature with the control data is essentially a comparison of numerical values with inevitable statistics errors. However the main criterion of this method applicability is its assessment for non-intrusive. According to Russian side, measuring of gamma-ray spectrum and neutron flow by experts highly experienced in designing of the nuclear warheads allows to get sensitive design information. To avoid release of classified information a method of “information barrier” or a kind of agreement on sensitive information exchange is needed. Method of getting warheads fingerprints is practically developed and tested. The prototypes of full set of equipment were designed. It may be used as soon as necessary.

The use of radiation signatures and the unique containers labeling give the possibility to organize the process of warheads dismantling at the high transparency level.

FM components monitoring declared excess for defense needs

By today the sides have accumulated the certain experience in transparent released FM utilization. This experience could be used in inspections monitoring the irreversibility of the deep reduction of nuclear weapons. The basic political goal of monitoring nuclear components is to provide confidence that these components are not used in manufacturing of new nuclear warheads. Those inspections can be carried out at the storage facilities of each country. The basic technical goal of monitoring nuclear components resulting from dismantlement is to gain confidence for each side that dismantlement is really taking place and that items placed in the containers are exactly components correlated with their warheads of origin. FM component monitoring (HEU). In the period 1994–1996 the Russian and the U.S. experts have worked out several applications to the protocol. These applications regulate the monitoring procedures at the facilities involved in the implementation of the HEU-LEU Agreement.¹ In the framework of transparency measures the U.S experts, using the portable non-destructive sodium-iodine detectors, measure the level of HEU enrichment at every stage of its conversion to LEU:

- The enrichment of HEU components from dismantled warheads in a sealed storage containers that arrived to oxidation facility;
- The enrichment of HEU oxide in a shipping containers received from oxidation facilities;
- The enrichment of HEU hexafluoride coming out the fluorination reactor;²
- Continues monitoring of enrichment of HEU and LEU hexafluoride flow in the three pipe lines at the blending facilities.

FM component monitoring (Plutonium)

In September 1993 there was reached an agreement between the Russian Ministry of Atomic Energy and the U.S. Department of Defense on U.S. assistance in constructing of the storage for fissile materials released upon the reduction of nuclear weapons. The key condition for providing American assistance was announced the Russian side readiness to provide the regime of transparency of this storage. A working group was established in order to work out the Plutonium and released HEU monitoring procedures. It was assumed that these procedures could be used in future mutual inspections of the Enriched Nuclear Materials which are covered by existing and future agreements on nuclear weapons reduction.

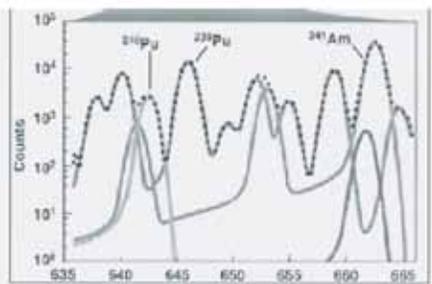
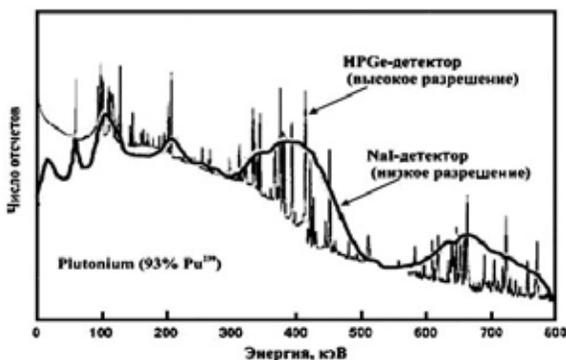
The main purpose for the experts working group was to coordinate and conform the inspection attributes in accordance to nuclear warhead components and define the technical methods of the monitoring procedures conducting. The procedures should satisfy two contradictory requirements. On the one hand, they must ensure a high degree of confidence for the monitoring side. On the other, to minimize the release of information about nuclear weapons components.

The conclusion of the two side's expert's consultations: no any reliable inspection is possible without measuring the component's parameters, which are classified as secret according to current law.

However sufficient accuracy of the inspection can be guaranteed if its methods and equipment allow to determine:

- The ratio of Pu-240 to Pu-239;
- The shape of plutonium component;
- The mass of plutonium component.³

Information exchange on the full range of the isotopic composition seems to be redundant because it can add nothing new to the weapon-origin issue of the examined plutonium. The content of isotope Pu240, if it fits into a weapon standard is a reliable sign of weapons-grade purpose of plutonium. To determine the isotopic ratio Pu240/Pu239 the method of registration of gamma quanta in the energy range of E=640 keV may be used (here are two lines of one and the other isotopes).



The weakening of these lines does not almost occur.

The shape of plutonium component could be determined by the use either of method of gamma-ray scanning or method of angle neutron (gamma) radiation scanning generated by the container. Comparison of the experimentally registered angular dependence to the reference sample allows to make a conclusion on the similarity of the detected component and the weapon component.

The total mass of plutonium component could be obtained by measuring of the neutron radiation which is proportional to multiplication of mass of plutonium by concentration of Pu-240. The concentration of Pu-240 is determined by measuring of the ratio of Pu-240 to Pu239 by registration of gamma-ray spectrum of plutonium.

The prototypes of hardware for such measurements (detectors) with using of “information barriers” to prevent the sensitive information release were also proposed and tested.

As a result of these studies it was concluded that effective control is impossible without sharing of the limited volume of classified information about nuclear weapons components. The amount of classified information recommended for mutual and confidential exchange during mutual inspections was determined as well. However the information recommended for exchange is regarded as secret according to the current legislation but it is not actually a secret for nuclear weapons experts. This data is mainly related to known physical laws and properties of nuclear materials. This classified information may confirm the weapon relation of the component placed in the sealed container but do not provide any specific design info about tactical-technical and other characteristics of nuclear warhead.

A successful example of transparency measures towards the weapon-grade plutonium is a Russian-American intergovernmental agreement on cooperation dated 1997 in respect of plutonium production reactors. The agreement provides for the shutdown of the three industrial reactors—two in Seversk and one in Zheleznogorsk. Since 1993 these reactors worked out electricity and heat only, but produced plutonium (without defense contract). The United States pledged to provide financial assistance for the construction of replacing facilities and Russia has pledged not to use plutonium, produced by these reactors and in nuclear weapons. In summer 2009 the reactors in Tomsk were shutdown after CHP plant was put into operation. The reactor in Krasnoyarsk was shutdown in April 2010.

The agreements contains a number of applications on monitoring measures including monitoring plutonium of newly produced by these reactors since January 1, 1997. The specified plutonium in dioxide form was placed in the containers and went to the storage. The Russian side has given permission to conduct surveillance at the storages to make American side sure that:

- The plutonium amount in the containers corresponds to the declared;
- The monitored plutonium is newly produced;
- The containers with plutonium do not leave the storage.

The monitoring procedures were also determined by the mutual commission for the Agreement implementation and observation.

To confirm that the plutonium was derived from the fuel with a low degree of burnout, i.e. is a result of reprocessing of industrial reactors fuel, the ratio of Pu-240 to Pu-239 concentration was measured. According to the Agreement it must not exceed the threshold value of 10 percent. The method of gamma-spectroscopy with high resolution and special software with “information barriers” is used for this testing procedure. The result of the measuring is display at “YES/NO” indicator.⁴

To control the real age of the produced plutonium, i.e. to confirm that it was really released in definite month and year according to the date declared by the Russian side the ratio of Am-241 to Pu-241 concentration to be determined. The measurement of this parameter was also carried out by the method of gamma-spectroscopy with high resolution and special software with “information barriers”.

To control the mass of the plutonium in sealed containers the combination of two measuring procedures is used. Using the integral neutron detectors they measure the intensity of neutron radiation which is in proportion to product of plutonium mass to Pu-240 isotope contents. And by gamma spectroscopy method it determines the effective isotope concentration of Pu-240 from measurement of ratio Pu-240 to Pu-239 isotopes. This method allows to be confirmed that the amount of plutonium in the sealed container is equal to the declared amount. This method has proved its efficiency already.

To facilitate progress on establishing a verification regime over non-deployed or nonstrategic nuclear warheads it would be quite desirable if the Russian and the U.S. experts could jointly proceed with further development of technical measures and procedures for monitoring nuclear warhead inventories and eliminating them while protecting sensitive information.

In case if Russia and the United States agree to negotiate on monitoring of non-deployed nuclear weapons they would have verification means and procedures at their disposal.

1 Warhead and Fissile Material Transparency Program: Strategic Plan, U.S. Department of Energy, Office of Nonproliferation and National Security, May 1999.

2 U.S. Transparency Monitoring of HEU Oxide Conversion and Blending to LEU Hexafluoride at Three Russian Blending Plants, by D. Leich, D. Thomas, D. Decman, J. Glaser, K. Lewis, J. Benton, A. Demenko, Lawrence Livermore National Laboratory, preprint UCRL-JC-131457, July 27, 1998

3 Safeguards for Nuclear Material Transparency Monitoring, by James K. Wolford, Jr. Lawrence Livermore National Laboratory and Duncan W. MacArthur, Los Alamos National Laboratory, 1999.

4 Safeguards for Nuclear Material Transparency Monitoring, by James K. Wolford, Jr. Lawrence Livermore National Laboratory and Duncan W. MacArthur, Los Alamos National Laboratory, 1999.



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Issues Involved the Transition from Bilateral to Multilateral Nuclear Arms Control

PART I

The topic which I was asked to reflect on in this presentation seems to me not very relevant at this time either for Russia or for our American colleagues. This conference, which is now coming to its conclusion, has demonstrated that there is a full complex of U.S./Russia and NATO/Russia problems that require their solution in the short term. The issues concerning the transition from bilateral to multilateral arms control do not affect these problems: these multilateral issues are in the sphere of tasks for the future.

In my opinion, the fact that multilateral arms control issues are in the sphere of tasks for the future may be explained first of all due to the lack of objective prerequisites for construction and implementation of such multilateral arms control. Here below are some points about why our situation does not allow us to be engaged in these multilateral problems now:

- an absence of will among the political and military leaders of the United States and Russia to prepare for multilateral agreements on nuclear arms control until all other nuclear countries demonstrate their commitment and determination to take the same steps;
- the inability of China, Great Britain and France to make any commitments regarding further disarmament and arms control before the nuclear arsenals of Russia and the United States become numerically similar to their arsenals; and
- the essential attitude of nuclear weapon states that their own systems of nuclear weapons are the basis of military security—this attitude of the nuclear weapon states would not permit other countries to have an influence on their nuclear arsenals.

In fact the issue of the right of access by the other countries to the nuclear arms control process, even at an elementary level, is now causing a negative reaction in nuclear weapon states, especially from military and intelligence services whose mission is to protect their countries' secrets. The sluggish progress of informal consultations within the framework of the Nuclear Five on multilateral arms control issues confirms the aforesaid point.

The absolute commitment of all nuclear weapons states to multilateral arms control may come about only when the issue of the total elimination of nuclear weapons is resolved. In fact, conversations on these issues seem to be meaningless while this main and principal question is not solved—How to achieve complete nuclear disarmament? However, at this time, according to the current public opinion, it is necessary to establish some form of multilateral arms control, in an elementary form at least. But the solution to this problem should be found not in the military but mainly in the political field. It is the political leadership of the countries that must initiate the decision-making regarding the development and initiation of multilateral arms control.

PART II

The conceptual development of multilateral arms control may be sketched out as follows. First of all, a direct transfer of the current nuclear arms control mechanisms from the U.S./Russian bilateral agreements on START to a multilateral approach is not a good idea at all. The essential question for multilateral arms control must be answered—What is such a control on nuclear arms necessary for? Answers like: “To Calm Down the Public Opinion;” or “Trust but Verify;” or “Arms Control for the Sake of arms Control!” do not correspond to the requirements of current international relations—such thoughts are more related to the period of the Cold War. Right now we need the arguments for multilateral arms control to be clear to everyone.

Here is a proposal as an option—to form at the present stage a new multilateral, long-term mechanism of trust-strengthening and predictability in the nuclear field, including removal of unnecessary tension among the nuclear states, as well as for the threshold nuclear states and nonnuclear states. An important question is—What do we want to have as a result of the future multilateral nuclear arms control agreements? What exactly should be the priority—the arms control limits themselves, the exchange of information, or the confidence-building measures? What is the type of information exchanged? What are the objectives, rates and degrees of arms limitations? And so on.

In my opinion, the optimal way to answer these and other questions is to use the experiences from existing multilateral nuclear arms control agreements. As one option the 1999 Vienna Document may be examined (the Vienna Document 1999: of the Negotiations on Confidence- and Security-Building Measures, Organization for Security and Co-operation in Europe). This document is the most important instrument in the field of the strengthening of measures concerning trust and security on conventional arms. I will briefly remind you about its obligations:

- Annual information exchange on military forces, including data on weapons systems and technology; deployment plans; and budgets;
- Notifications of basic kinds of activities, including maneuvers (exercises);
- Acceptance of inspections of military objects;
- Invitations of other countries to oversee (monitor) certain kinds of activities; and
- Consultation or cooperation of parties with each other in the case of non-traditional military activity or an increase of military tension.

The 1999 Vienna Document urges parties to invite the other countries to participate in military visits in order to remove concerns that may arise. The concept of this document can be taken as a basis for preparation of future multilateral nuclear arms control agreements. It is also possible to think over the participation of nonnuclear states representatives in certain nuclear weapon state events. All this should be discussed by nuclear states in a multilateral format. However the preparation of draft agreements that will be offered for further discussions are better to implement within the framework of bilateral Russian-American relations, as practice has shown.

