

Russia's Conventional Military Weakness and Substrategic Nuclear Policy

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Open Source, Foreign Perspective, Underconsidered/Understudied Topics

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PHOTO: President Barack Obama, center-left, and President Dmitry Medvedev of Russia, center-right, attend an expanded delegation bilateral meeting at Prague Castle for the new START Treaty. (Official White House Photo by Pete Souza via www.whitehouse.gov)



The transformation of the table of organization and equipment (TOE) of Russia's conventional armed forces and modernization program to 2020 signals a clear break from past reliance on mass mobilization. It marks a coming to terms with the strategic traumas to the military following the end of the Cold War and collapse of the Soviet Union, reorienting its force structure to the types of conflict Russia may face in the future. Combined with the “reset” in relations between Washington and Moscow and a gradual improvement of NATO-Russia relations since the Alliance froze ties for six months following the Russia-Georgia War in August 2008, hopes that a new era in nuclear disarmament may be approaching followed the ratification of the Strategic Arms Reduction Treaty (START III) in early 2011. Pressure towards further deepening disarmament regimes is growing, with calls in Washington and Europe to foster a new dialogue with Moscow.

This paper examines Russian nuclear policy in the context of its continued high premium on nuclear deterrence and the nexus between Moscow's stance on further reductions and the condition of its conventional armed forces.¹ It presents a range of Russian security perspectives, including the limits of determining nuclear policy with certainty through its doctrinal statements, and argues that the deep spasms experienced in the defense reform, yielding unpredictable setbacks, and the immense challenges facing its modernization plans will naturally induce reluctance to radically revise nuclear policy. Western policymakers face reconciling ambitious nuclear arms reduction aspirations to an uncomfortable Russian reality that acknowledges problems stemming from the weakness of Russia's conventional armed forces, and to emerging non-Western-centric patterns in the strategic environment.²

Slowing the Momentum towards “Substrategic” Nuclear Disarmament

President Dmitry Medvedev consistently refers to Russian anxiety over the development of strategic conventional systems and links this to the need to recalibrate strategic conventional military capabilities into future nuclear arms treaties. Linkage is also made between the US concept of “Prompt Global Strike” with conventional strategic weapons and US options on missile defense. These anxieties, combined with the potential militarization of outer space, are clearly present in Russia's National Security

Strategy (2009) and Military Doctrine (2010).³ These factors inevitably predispose Russian policy makers to seek concessions that will address these perceived growing imbalances, and raise skepticism about states proposing the reduction of substrategic nuclear weapons (SSNW), which is one area in which Moscow is recognized to possess an advantage.⁴ The term “substrategic” or “tactical” applied to nuclear weapons is also a controversial point. Moreover, there is considerable dispute over the nature of these weapons, which fall beyond the scope of strategic or intermediate range arms control; attempts to define them by range, yield or capability have failed.⁵

The official Russian Defense Ministry definition of these weapons in *Voyennyy Entsiklopedicheskiy Slovar'* states:

Nuclear Weapons (NW) (obsolete name – atomic weapons), one of the types of weapons of mass destruction, in which a direct means of destruction are *nuclear ammunitions*. Besides the various types of ammunition, it includes means of delivering them to the target (*nuclear delivery vehicles*) and means of combat command, control and security. Divided into strategic and non-strategic NW. Strategic NW have nuclear warheads with a capacity of up to several megatons and capability to reach every continent. They can rapidly demolish administrative centers, industrial and military targets deep in the rear, destroy main groupings of troops (forces), cause massive fires, floods and radioactive contamination. It forms the basis of *strategic forces*. Non-strategic NW have nuclear ammunitions with a capacity of up to several hundred kilotons, and are intended to engage targets at operational and tactical depth of the location of the enemy's troops (forces). This type of NW includes operational-tactical and tactical weapons of respective configuration and equipment: ground-based missile systems, cannon artillery, aerial bombs, ship-borne missile systems, torpedoes, anti-missile systems, controlled and naval mines.⁶

The military definition distinguishes such weapons from the strategic-level and subdivides them into operational-tactical and tactical weapons in various configurations, but clearly assigns a military utility to them. Indeed, the Russian military understanding of these weapons and reliance on them in certain scenarios suggests that they play a significant role in security thinking, which has grown and may continue to grow until Russia can successfully redress its conventional weaknesses. This is borne out in official statements, as well as in the role assigned to them during operational-strategic exercises. Moscow's points of neuralgia are the development of US global strike capabilities, the conventional forces imbalance in favor of NATO and the weakness of Russia's conventional capabilities, particularly its lack of high-tech precision-strike systems and advanced C4ISR (command, control, communications, computers, intelligence, surveillance and reconnaissance).⁷ It is therefore important to understand that Russia regards these weapons differently than the West: for Moscow they do not simply have political value, they play a role in military planning that compensates for conventional weakness, and in certain scenarios are considered to be operational systems.

In April 2010 Moscow indicated its reluctance to enter talks on the reduction of SSWN. In an article in *Rossiyskaya Gazeta*, on April 23, 2010, Sergey Karaganov, the Chairman of the Presidium of the Council on Foreign and Defense Policy, dismissed any move towards placing this issue on the agenda. Not only did Karaganov highlight the sensitivity of pursuing this at a critical time in the reform of Russia's conventional armed forces, but he also questioned what Russia might achieve from opening “Pandora's Box.”⁸ While Karaganov assumed that the US withdrawal of such weapons systems from Europe is the necessary precursor to any discussions with Moscow, he pointed to the risk that “new Europeans” would press the issue, based on presenting the Russian “threat” factor, which would hardly contribute to improving Russia's relations with either the US or NATO.⁹

Karaganov based his objections on the primacy of nuclear weapons in Russian security strategy, and what he considered as the utterly senseless and idealistic call for global zero. His assessment of Russia's

geopolitical position was bleak, with economic modernization impaired by corruption. Retaining Russia's geopolitical influence in the world depended on preserving nuclear deterrence, and in Karaganov's view the only purpose arms control talks serve for Moscow is to build trust and transparency among the world powers: "This is all Russia needs arms control talks for."¹⁰

He was scathing in his attack on the plausibility of Russia's reducing substrategic weapons, questioning its sense, and asking if the removal of such systems from European Russia to east of the Urals would help improve the country's relations with China.¹¹ The perception among the Russian security elite that the country possesses an advantage in this area immediately arouses suspicion about Western motives to correct this imbalance: pushing the agenda too far and too fast risks strengthening the hand of traditionalists in Moscow, still deeply suspicious of the West. Moscow also detects internal divisions within NATO over the issue of SSNW. The group of experts involved in preparing guidelines to revise NATO's Strategic Concept in 2010 supported the continued US deployment of SSNW in Europe in terms of "extended nuclear deterrence and collective defense." Confusing the issue, the same group advocated pursuing talks with Moscow aimed at the eventual elimination of these weapons.¹²

Therefore, in 2010 Moscow sent numerous signals of its reluctance and concern about the timing of a follow-up to START III, aimed at reducing stockpiles of SSNW. In fact, during a visit to Washington shortly after the ratification of START III, Deputy Foreign Minister Sergei Ryabkov was eager to dampen speculation that the question of SSNW would soon be discussed. Ryabkov told journalists that it was far too early to consider this: "We do not yet know how the implementation of the ratified START treaty will go. Until we see how the obligations taken within its framework are being carried out and to what extent the sides are acting in accordance with its letter and spirit, this question is altogether irrelevant and premature. Time is needed to at least acquire the initial experience in the field of implementing the START treaty." Far from setting out a hard bargaining position, Moscow wants to slow the momentum towards such talks. Despite statements in the US Senate that Washington wants discussions to commence within one year of ratifying START III, Moscow's response is lukewarm at best. Russian officials state that one option is to wait until the treaty is fully implemented; in other words, postpone any talks on the issue until 2018. Moscow, meanwhile, was raising a host of other issues and questions that it linked to sub-strategic disarmament. On the latter the message was "not now." Ryabkov stressed the premature nature of placing this on the agenda and, in terms of linkage, he implied that Moscow will try to extract maximum concessions from Washington: "It is too soon to address the question of tactical nuclear weapons and I do not think that we will be ready to deal with it until we solve the others."¹³

On March 1, 2011, Russian Foreign Minister Sergei Lavrov addressed the UN Conference on Disarmament in Geneva. Lavrov praised START III as a contribution to strengthening global security and the nonproliferation regime. The reduction of strategic nuclear weapons will be irreversible, verifiable and transparent, and, according to Lavrov, the principles of equality, parity and equal and indivisible security stipulated in the treaty denote a "gold standard" in reaching similar military-political agreements in future. On the one hand, Lavrov appeared to welcome global zero as an aspiration, characterizing proposals linked to the initiative as "reasonable and constructive." On the other hand, the Russian Foreign Minister set out a series of factors that makes talk of global zero speculative: "We use our contacts to present the Russian position on the prospects of nuclear disarmament in a very detailed way. This position is defined by the key principle of the indivisibility of security. We insist that there is a clear need to take into account the factors that negatively affect strategic stability, such as plans to place weapons in outer space, to develop non-nuclear armed strategic offensive weapons, as well



Sergei Lavrov during Disarmament Conference, By Jean-Marc Ferre, UN. [CC-BY-NC-ND 2.0 (www.creativecommons.org/licenses/by-nc-nd/2.0)], via Flickr.

as unilateral deployment of a global ballistic missile defense (BMD) system. Nor could we ignore the considerable imbalances in conventional arms, especially against the background of dangerous conflicts persisting in many regions of the world. It is not possible to talk about ‘global zero’ while disregarding all of these interrelated factors.” These factors and their interrelationships must be considered in any discussion on reducing tactical nuclear weapons. Lavrov then restated Moscow’s long-known precondition to such reductions, namely the “withdrawal of tactical nuclear weapons to the territory of the state to which they belong as well as *removal of the infrastructure for their deployment abroad* should be regarded as a first step towards the resolution of this problem.”¹⁴ Removal of the infrastructure represents a tightening of Moscow’s preconditions. Global zero is impossible, in Lavrov’s view, without addressing the potential to deploy weapons in space, and comprehensive talks on missile defense are required involving all parties; in the absence of this approach global zero is rendered as a dead-end.¹⁵



Deputy Prime Minister Sergei Ivanov,
By Veni Markovski. [CC-BY 2.0 (www.creativecommons.org/licenses/by/2.0)],
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During the same conference, Deputy Prime Minister Sergei Ivanov, appeared to hold out the prospect of Moscow entering talks on SSNW, though the strings attached were quickly revealed. Ivanov reiterated Lavrov’s statements that withdrawing such weapons from the territories of host states and destroying supporting infrastructure is the first step.¹⁶ The multiple strings attached to the issue were also emphasized by Ryabkov. In February 2011 Ryabkov said that Moscow cannot separate the possibility of agreeing to reduce substrategic weapons from other disarmament and security issues. “Negotiations on tactical nuclear weapons cannot go separately from issues such as a *lack of balance in conventional weapons*, plans by some countries to *deploy weapons in space*, plans to use *non-nuclear strategic weapons* and other issues,” Ryabkov said, adding that he had no solution to offer on this key issue.¹⁷

For Ryabkov, and as other Russian officials had expressed at various times, this meant the US must first withdraw its SSNW from Europe and dismantle the supporting infrastructure. “A whole host of capabilities the US have in the field of tactical nuclear weapons are, by their nature, by the results of these capabilities being projected onto the territory of the Russian Federation, of a strategic nature for us,” he told journalists in Moscow.¹⁸

On February 5, 2011, during the annual Munich Conference on Security, Ivanov stated that Moscow is willing to enter a dialogue with Washington, but the US must make the first practical moves. In Ivanov’s view, as long as tactical nuclear weapons exist in the world NATO will continue to use the nuclear restraint theory. “We have more than once called on the other nuclear powers to follow our example and place tactical nuclear weapons only on their territory; halt the preparations for their use; prohibit maneuvers with tactical nuclear weapons involving non-nuclear states; disassemble structures for prompt deployment of tactical nuclear weapons abroad,” Ivanov said. What is required, in his view, is a comprehensive approach that places this issue among a broader range of strategic issues.¹⁹

Untangling the Tactical Nuclear Web: Russian Military Doctrine and Strategic Uncertainty

The lack of official transparency concerning tactical nuclear weapons leads to estimates of numbers in the Russian inventory varying from 2,000 to 6,000.²⁰ One estimate in 2010 claimed that the Russian Ground Forces possess more than 1,100 tactical warheads, with over 2,200 available for naval deployment.²¹ An unofficial Russian estimate suggests Russia has up to 5,400 tactical warheads, with 2,000 in a combat-ready state, mostly west of the Ural Mountains.²² In the fall of 2010, the Russian Defense Ministry website confirmed the continued role of SSNW in the rocket troops and artillery of the Ground Forces, though in late 2010 the website briefly stopped displaying information on individual elements

of the Ground Forces.²³ By May 2011, a revamped Defense Ministry website defined their role as: “The Missile Troops and Artillery (MT & A) are an Arm of the Land Force, which is the primary means of fire and *nuclear destruction* of the enemy during conduct of combined-arms operations (combat actions).”²⁴

In February 2011 another Russian source estimated that by 2000 all SSNW in the Navy and naval aviation were moved to storage facilities and 30 percent of these were later eliminated. In the Air Force and Air Defense Forces up to 50 percent of SSNW had been eliminated, with similar reductions in the warheads of the Ground Forces artillery, tactical missiles, and landmines. The same source cited the “majority” of expert assessments as indicating that Russia has 2,000 intermediate-range and tactical nuclear weapons, including 500 air-launched missiles and bombs for 120 Tu-22M medium-range bombers. There are 300 air-launched missiles, free-fall bombs and depth charges for naval aviation using 180 Tu-22M, Su-24, Be-12 and Il-38 aircraft. More than 500 tactical devices are antiship, antisubmarine and antiaircraft missiles, as well as depth charges and torpedoes. Some warheads are also believed to be in use as interceptor missiles in the Moscow Air Defense System and in other air defense systems. Moreover, Russian analysts note the secrecy involved in relation to such weapons in the inventories of other nuclear powers, including China, Israel, France, Pakistan, India, and North Korea.²⁵ In September 2010, an independent unpublished Moscow-based assessment argued that the numbers of SSNW in the Russian inventory will decline over the next decade, even in the absence of a disarmament regime.²⁶

Concern is expressed by NATO member states not only about the numbers of Russian SSNW, but also their possible deployment close to their borders. On February 8, 2011, Lithuanian Defense Minister Rasa Juknevičienė alleged that Russia had moved SSNW into Kaliningrad, bordering both Poland and Lithuania. “We want major nations to start negotiations on reducing the number of such weapons. It’s no secret that such weapons are deployed near us, in Kaliningrad. And to our east as well,” Juknevičienė told Lithuanian public radio. Moscow had dismissed similar allegations in November 2010. She made no reference to whether in Lithuania’s assessment may have been in response to NATO’s decision in January 2010 to extend its Eagle Guardian military exercises to the Baltic States to rehearse their defense.²⁷ In January 2011 Juknevičienė told *Interfax*: “The deployment of tactical nuclear weapons in the direct proximity to our borders is a natural source of concern. Certainly, we are concerned. This does not help develop neighborly relations and build up mutual understanding,” she said, adding “We are concerned that Russia’s military doctrine approved (I do not know at which level) the possible use of nuclear armaments in response to the use of conventional armaments. That looks highly disproportionate. Unfortunately, there are no international conferences to regulate the deployment of tactical nuclear weapons and to create a mechanism of verifications. We are interested in such agreements. We also think that their absence is a major flaw of the arms control system.”²⁸ While NATO members expected progress towards reducing such weapons, influential Russian officials were calling for the modernization of SSNW. European advocates of the removal of all SSNW from Europe, including European Russia, fail to answer how this would impact on Asia, or take account of the short timescale to redeploy them.

In an interview in *Nezavisimoye Voyennoye Obozreniye* in November 2010, on the 55th anniversary of the testing of the RDS-37 thermonuclear bomb in Semipalatinsk, Andrei Kokoshin, Duma member and former Secretary of the Russian Security Council, reaffirmed that for the foreseeable future nuclear deterrence will remain the keystone of Russian security policy. Kokoshin also affirmed that an alternative to nuclear deterrence will not be possible even in the distant future. On this basis, Kokoshin not only advocated the continued modernization of Russia’s strategic nuclear forces, but also specifically included “tactical and operational tactical nuclear weapons systems.” Kokoshin argued that nuclear deterrence must be supplemented by the development of a system of pre-nuclear (*pred yadernogo*) or nonnuclear deterrence based on precision-strike conventional weapons. Far from contemplating the elimination of SSNW, Kokoshin recommended that Moscow should include substrategic weapons in the overall modernization of Russia’s nuclear deterrent.²⁹ Such views, however, are by no means isolated and reveal deeper sensitivities within the security elite concerning the nuclear-conventional imbalance.

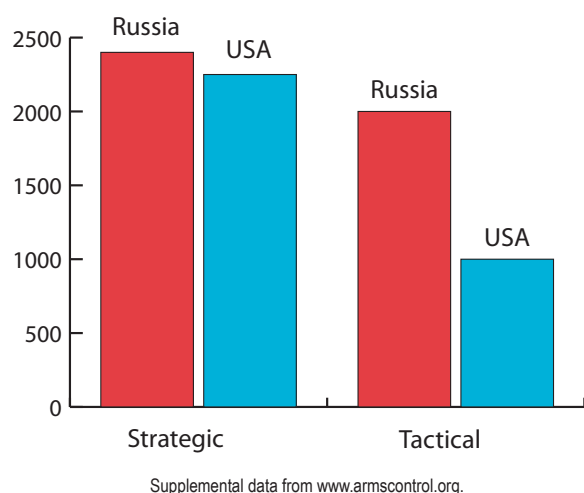
Elsewhere, Kokoshin consistently argues that, though the Russian conventional armed forces are being reformed and modernized, which in turn places fresh demands to reverse the decline in the domestic defense industry, this is unlikely to result in a rapid revision of Russia's nuclear posture. Moreover, modernizing Russia's armed forces will require not only the projected 20 trillion rubles in the State Armaments Program (*Gosudarstvennaya Programma Vooruzheniya* – GPV) to 2020, but also pay increases for the officer corps, contract personnel. Developing the air-space defense (*vozdushno-kosmicheskaya oborona*) as a branch of service will add additional burdens on federal budget expenditure. It is possible, given Kokoshin's vehement advocacy of nuclear modernization also extending to include SSNW, that this is already reflected in the GPV to 2020.³⁰

According to Kokoshin, modernizing the defense industry should be guided by the GPV. New tactical and technical requirements for weapons systems, support systems and specialized equipment will be demanded, and these complex processes also require sufficient research and development. Kokoshin mentions the need to mass produce new materials, particularly composite materials, develop the electronic components base, create new sources of electricity supply, and introduce various laser technologies and an entire range of support systems for information security, while transforming the defense industry, the military, command and control, and combat and combat support equipment. The task, in his view, is considerable: "When it comes to the scientific and technical groundwork in the defense industry sphere that was inherited from the Soviet Union, it could be described as invaluable. But, first, it is to a significant extent obsolete or close to obsolete; and second, the Soviet defense industrial complex also had a great many problems, particularly in the 'information component' of arms and military and specialized equipment, including integrated combat command and control systems operating on a real-time basis."³¹

During the second reading of START III in the Duma on January 14, 2011, Kokoshin stressed the treaty gives Russia the right to develop and deploy new weapons systems in the interest of its national security and strategic stability: "Therefore, the Russian Strategic Rocket Forces [*Raketnye Voyska Strategicheskogo Naznacheniya* – RVSN] can have new heavy intercontinental ballistic missiles with a substantial number of splitting warheads," Kokoshin concluded.³² Influential Duma deputies such as Kokoshin share a vision for the modernization of Russia's nuclear deterrent that does not foresee abandoning SSNW.

Indeed, some Russian defense specialists have suggested that advances in US military power have consequently compelled a *de facto* lowering of the nuclear threshold in Russia, and seem to read this into the 2010 Military Doctrine. Sergey Rogov, Director of the Russian Academy of Sciences Institute for USA and Canadian Studies, Colonel (retired) Valeriy Yarynich, Colonel-General (retired) Viktor Yesin and Major-General (retired) Pavel Zolotarev welcomed the progress in strategic arms reduction following the signing of the Prague Treaty. However, writing in *Nezavisimoye Voyennoye Obozreniye* in August 2010, the authors asserted that Moscow's concern over the large number of conventional sea- and air-launched cruise missiles Washington has at its disposal, combined with the potential to use these and other high-precision conventional weapons against strategic facilities, justifies lowering the nuclear threshold in Russia's military doctrine. Noting the reversal that had occurred compared with the Cold War era, in which NATO had countered the Soviet Union's overwhelming conventional superiority in Europe by relying on tactical nuclear weapons, Rogov, Yarynich, Yesin and Zolotarev said that the demands being advanced in the US and within other NATO countries for the reduction of SSNW ignore the significant asymmetry in conventional weapons: "While possessing an overwhelming superiority in the precision-guided conventional munitions sphere, the United States currently only relies to a slight extent on tactical nuclear weapons, although it maintains a small number of nuclear aircraft bombs in Western Europe in order to ensure its political leadership in NATO. Russia is compelled to rely on tactical nuclear weapons as an instrument of nuclear deterrence." The authors concluded that a separate agreement on reducing such weapons would be disadvantageous to Russia and would ignore the principle of parity.³³

Approximate Nuclear Weapons for U.S. and Russia



Rogov, Yarynich, Yesin, Zolotarev had also emphasized this sense of dependence on SSNW to counterbalance US military power in other ways. Noting that in May 2010 the Obama Administration declared that the US has a total of 5,113 “active” nuclear warheads, the authors suggested this includes approximately 2,000 deployed strategic warheads, 200-250 “nondeployed” strategic warheads and around 500-1,000 “tactical” warheads. They estimated that 60 percent of US warheads are in storage and within a given period of time could be brought up to high combat readiness level. Rogov, Yarynich, Yesin and Zolotarev summarized the views of Western specialists that Russia’s advantage in terms of the numbers of nuclear warheads would be reduced in 2015-16 as the old Soviet RS-18 (Scalpel) and RS-20 (Satan) missiles are removed from the inventory. However, Russia can retain a numerical

advantage based on “tactical nuclear weapons” and will likely retain these in large numbers. In their view these factors and the policy pursued by the Obama Administration raised the following issues:

- Would the future level of approximately 5,000 “deployed” and stored nuclear warheads prove optimal, or could strategic stability be guaranteed at a lower level?
- Should Russia and the US maintain an artificial differentiation of nuclear warheads into strategic and tactical categories in the future?
- Will it be possible to pursue a radical reduction in the combat readiness of nuclear weapons?
- What will be the impact on strategic stability of missile defense and precision-guided conventional weapons (sea-launched cruise missiles, unmanned aerial vehicles (UAVs), global strike weapons)?
- When and how should other nuclear states, official and unofficial, become involved in the nuclear disarmament process?
- Is global zero possible?³⁴

Touching upon the long-term uncertainties raised by advocating global zero, the authors kept returning to Russia’s dependence upon substrategic systems and inclined towards linkage to the creation of a “reliable international security system” meeting the realities of the 21st century, guaranteeing the prevention of nuclear and nonnuclear aggression as an alternative to the paradigm of mutual nuclear destruction.³⁵ Other Russian analysts are resigned to a long-term Russian dependence on nuclear deterrence and express reluctance to surrender a perceived advantage in the area of SSNW.

Alexey Fenenko, Senior Fellow in the Moscow-based Institute of International Security Problems, assessed the progress of the reset in US-Russian relations and highlighted potential areas of longer-term disagreement. He argued that US-Russian relations, despite the progress made in the “reset,” continue to face genuine strategic challenges. Mutual nuclear deterrence remains the basis of bilateral relations. While strategic arms reduction is conducted, this in no way implies that either side would risk a reduction to deny itself the option of inflicting “unacceptable damage” on the other side. Despite START III making a connection between strategic defensive and offensive arms, both sides interpret this differently. “In the event of a sharp increase in the US missile defense system, Moscow retains the right to pull out of the START III Treaty,” as Fenenko notes. Nuclear potential is also undergoing change within Europe,

as the UK and France signed a bilateral agreement on November 3, 2010, to share nuclear energy for military purposes and cooperate in the computer modeling of nuclear tests, while neither London nor Paris are parties to the 1987 treaty on the elimination of intermediate- or shorter-range missiles. Russia and the US have not agreed on any compromise over nonproliferation problems, despite stressing common positions on Iran and North Korea. Some observers see the realization of Washington's goals on Iran and North Korea as precedent-setting for a revision of the nuclear nonproliferation treaty (NPT), while Washington is irritated by Moscow's refusal to consent to a revision of the Strategic Offensive Reductions Treaty (SORT). However, Fenenko was particularly concerned about the intensification of calls by the US Congress to begin negotiations with Russia on reducing SSNW. His objections reflected a view widely held within the Russian security elite: "But tactical nuclear weapons are the only resource enabling Russia to compensate for NATO's superiority in the field of conventional weapons. Moscow is proposing a clarification of the wording of Article VII of the NPT on the stationing of nuclear weapons on allied states' territory. The fear in Washington is that the Kremlin is thereby seeking to undermine the mechanism of the US nuclear presence in Europe." The differences in approach between Moscow and Washington are also linked to the "German question," following Berlin, the Benelux countries and Norway proposing in February 2010 that the withdrawal of US tactical nuclear weapons from German territory be examined.³⁶

In an interview with *Izvestiya* in late January 2011, Aleksey Arbatov, Head of the Center for International Security of the Russian Academy of Sciences' World Economy and International Relations Institute, discussed START III and its aftermath.³⁷ Asked about what might follow the new treaty, Arbatov highlighted the need to prioritize the issues that accompany strategic offensive arms, primarily BMD. For Arbatov it remained an open question as to whether agreement could be reached on missile defense. Arbatov described the second priority following START III as the need to limit strategic high-precision conventional systems and then noted that Washington links substrategic weapons to this issue: "They believe that we have great superiority. These attendant issues will determine whether we advance in the direction of a further reduction of strategic armament. There may be talk of third countries, for we must not constantly seek agreement bilaterally. But it is too soon for them to join in talks on strategic offensive arms. We have far more nuclear weapons than they do. If we take China, Britain, and France, then the three countries will account for no more than 500 warheads. You cannot make them subscribe to the treaty, since thereby they would have to recognize Russia's superiority. The most we can reckon on during the next few years is that they will adopt unilateral pledges not to build up their existing potential and will provide some kind of transparency measures."³⁸

The Elusive Search for Doctrinal Certainty

Major-General (retired) Vladimir Dvorkin, chief research officer at the Institute of World Economy and International Relations and former head of the Defense Ministry's 4th Central Research Institute, reflected on the ratification of START III in the context of Russia's National Security Strategy (2009) and Military Doctrine (2010),³⁹ and raised the question as to whether Russian nuclear strategy might be corrected in the foreseeable future.⁴⁰ Writing in *Nezavisimoye Voyennoye Obozreniye*, Dvorkin emphasized that the role, goals and missions of Russian nuclear policy are present in most of the sections of the 2010 Military Doctrine. The doctrine asserts that, despite the reduced risk of large-scale war using conventional and nuclear weapons against the Russian Federation, *opasnosti* (dangers) and *ugrozy* (threats) are increasing. These include the creation and deployment of strategic missile defense systems that may alter the balance of nuclear forces, the militarization of space, deployment of high-precision nonnuclear strategic systems, proliferation of weapons of mass destruction (WMD), missiles and missile technology, and an increase in the number of states possessing nuclear weapons. Threats may also arise from efforts to degrade the operation of state and military command and control systems or to disrupt the functioning of strategic nuclear forces. The doctrine notes that a large-scale or regional conflict fought with conventional

weapons that puts the existence of the Russian state at risk may involve an escalation to nuclear conflict. Nuclear weapons, according to the doctrine, will remain a vital factor in preventing nuclear and conventional conflicts.⁴¹

The 2010 Military Doctrine sets out the main condition for the use of nuclear weapons: “The Russian Federation reserves the right to use nuclear weapons in response to the use of nuclear and other types of weapons of mass destruction against it and (or) its allies, as well as in response to large-scale aggression utilizing conventional weapons in situations critical to the national security of the Russian Federation.” Dvorkin explains “To do this, the doctrine establishes the task of supporting the composition and state of combat and mobilization readiness and training of the strategic nuclear forces and the forces and assets that provide for their functioning and use, as well as the command and control systems, at a level that guarantees the infliction of assigned damage to an aggressor under any conditions or situations. Also established are tasks such as supporting the capabilities of nuclear deterrence at a proscribed degree of readiness, and comprehensive equipping of the strategic nuclear forces with modern models of weapons and military and special equipment.” The 2009 National Security Strategy outlines threats stemming from “the policy of a number of leading foreign countries aimed at achieving overwhelming supremacy in the military sphere, first of all in strategic nuclear forces, through the development of precision guided, information, and other high-tech means of conducting armed combat, strategic weapons with non-nuclear warheads, the formation of a global missile defense system on a unilateral basis, and the militarization of near Earth space.”⁴²

Noting that a “reactive flexibility” has featured in all three versions of Russian military doctrine since 1993, Dvorkin highlighted that the new Military Doctrine subjected the main condition for the use of Russian nuclear weapons to a correction “seemingly insignificant in form, but important in concept.” Dvorkin referred to this subtle distinction to argue that the nuclear threshold was raised at one level, but he questions this on another level: “In its final section, in place of the words ‘in response to large-scale aggression involving the use of conventional weapons in situations critical to RF national security,’ there is written ‘in the event of aggression against the Russian Federation using conventional weapons, when the existence itself of the state is put under threat.’ The latter wording, at least at the declarative level, raises the threshold on the use of nuclear weapons.”⁴³

The roots of the speculation on a possible doctrinal statement on the lowering of the nuclear threshold arose following comments in the fall of 2009 by Nikolai Patrushev, Secretary of the Security Council. On October 8, 2009, Patrushev explained further delays to the introduction of a new military doctrine in terms of the need to “fine tune” the document, and claimed it may include the right to use a “preventative nuclear strike.”⁴⁴ Patrushev also stated that he envisaged the military doctrine would extend the possible use of nuclear weapons to include local conflicts. Nuclear weapons could, in this case, be used in “regional and even in a local war. Moreover, in situations critical for national security, the inflicting of a preventive nuclear strike upon an aggressor is not excluded.” Several times Patrushev used the word *preventivnyy* (preventive), and only once the term *uprezhdayuschiy* (preemptive).⁴⁵ Within the Security Council, Army-General (retired) Yuri Baluyevskiy seemed to support Patrushev’s stance on the doctrine, which was even causing concern among Russia’s allies.⁴⁶ In his statements the following month, Patrushev did not repeat the lowering of the nuclear threshold comments, but specifically referred to Japan as a state with territorial claims on Russian territory (the southern Kuriles).

The controversy surrounding Patrushev’s remarks and the possible lowering of the nuclear threshold were given additional credence coming so soon after the simulated Russian nuclear strike on Poland during the operational-strategic exercise Zapad 2009. However, the continued delay to approving the doctrine seems linked to internal disagreement on the nuclear issue at a time when the START talks were still in progress.⁴⁷ When President Medvedev finally signed the new military doctrine on Febru-

ary 5, 2010, it contained no declaratory lowering of the nuclear threshold, and the doctrine was widely interpreted as a neutral compromise document, while any “clarity” on the nuclear issue was relegated to a classified addendum (The Foundations of State Policy in the Area of Nuclear Deterrence to 2020), despite objections being raised against this lack of clarity even by those working on the draft doctrine.⁴⁸

However, Dvorkin offers cause for caution in reaching fixed conclusions on Russian nuclear strategy on the basis of an analysis of its military doctrine. Indeed, Dvorkin argues that one of the deficiencies in Russian security documents, including the three military doctrines since 1993, is that the statements on nuclear policy are “partial” and “fragmentary,” rendering it impossible to evaluate the policy as a whole. Russian nuclear policy, in Dvorkin’s view, is not contained in the declarative formulations linked to dangers and threats and the conditions for the possible use of nuclear weapons; rather, it is in the state programs developed to support the nuclear triad and nonnuclear strategic systems and missile defense systems. This extends to financing all their components’ levels of combat capability (operational and technical characteristics) and the phases of withdrawal of and introduction of new systems into the combat component of the arsenal. Much of this information is available in the GPV; however, these carry a high security classification, which means they are not even revealed during closed sessions of the committees of the Duma and Federal Council. This level of secrecy conjures up the phrase “privileged persons,” which is evidently not extended to Duma or Federal Council members, as Dvorkin stated: “Moreover, as revealed by discussions with members of the State Duma, who are shown data on the state defense orders, the data does not provide them any kind of assessment from the point of view of its validity, other than consideration of the budgetary limitations for each year. And this is natural since the data consists of an annual sampling of the state weapons programs, and without knowing (the details) of which, it is practically impossible to evaluate the validity of the planned annual purchases of weapons, and the periods for completion of research and development.”⁴⁹ Dvorkin’s sober assessment of the limits of an analysis of Russian military doctrine to determine nuclear policy also raises questions about the classified addendum to the doctrine and whether it includes a clear statement of actual policy, let alone the identity of the privileged persons with access to it.

Dvorkin identified fast moving dynamics within the wider strategic context and questioned the reliability of long-term nuclear policy planning. The mere presence of the classified addendum to the military doctrine dealing with nuclear policy to 2020 does not imply any certainty. Indeed, there is so much in Russian defense planning in relation to the reform of its conventional armed forces and their modernization, as well as modernizing the strategic nuclear forces, that is subject to change that Dvorkin notes these uncertainties will face Moscow during the coming decade and beyond.⁵⁰

Russia’s conventional weakness, strategic environment and simulated use of nuclear weapons during operational-strategic exercises denote its deeper reliance on weapons of “de-escalation.” From a Russian military perspective, de-escalation of a conflict involving the use of SSNW has an internal logic. Hypothetical military intervention on the Russian periphery by a high-tech or more powerful conventional force would likely see early use of Russian SSNW. There are no credible conventional options. Within the security elite, the potential risk of NATO intervention on the Russian periphery may have conceptually declined, though the NATO bombing of Serbia in 1999 and NATO action in Libya in 2011 lend credence to those who argue that contingencies must be considered. In the Russian Far East, where its “hypothetical opponent” is no longer seen simply as a mass industrial-era military but one increasingly making high-tech advances, including in network-centric capabilities, Moscow’s options in a crisis are limited; this raises the potential utility of such weapons exponentially, especially as Russia lacks similar advanced conventional capabilities. Some Russian commentators question whether the use of SSNW against advancing PLA forces would prove successful; it would certainly make Beijing stop and think. Moreover, the presence of platforms such as the Tochka-U (SS-21 Scarab), inaccurate when armed with a conventional payload, may well be one of the platforms of choice to deliver a tactical nuclear strike.⁵¹

In an article in *Izvestiya* in October 2010, as the START III treaty was going through its ratification procedures and prior to the NATO Summit in Lisbon in November 2010, former Russian Prime Minister Yevgeny Primakov, Foreign Minister Igor Ivanov, President of the Kurchatov Institute Yevgeny Velikhov, and former Chief of the General Staff Army-General (retired) Mikhail Moiseyev offered an analysis of Russian nuclear policy and sketched the possible future parameters of nuclear disarmament. Significantly, the article argued that nuclear deterrence addresses the threat perceptions of the 20th century and is effectively powerless in terms of the new 21st century threats, ranging from international terrorism, transnational crime, and ethnic and religious conflict to the proliferation of WMD. Nuclear deterrence in this context may actually encourage nuclear proliferation and hamper cooperation on a broad range of transnational threats and the development of joint missile defense systems. Dvorkin highlighted the apparent opening this might offer, and noted the forward thinking in the thesis.⁵² Clearly, the questioning of the limits of nuclear deterrence in Russian security policy was by no means a signal of a policy shift in Moscow, but rather that the path outlined to pursuing such a disarmament agenda was fraught with difficulty.



Former Foreign Minister Igor Ivanov, By Carl Malamud [CC-BY 2.0 (www.creativecommons.org/licenses/by/2.0)] via Flickr

However, the article also argued that so long as the threat of direct force exists in international relations Russia must retain sufficient military, including nuclear, potential to defend itself, its allies and legitimate interests. The authors questioned the traditional Russian security perspective, which suggests nuclear weapons are essential to preserving the country's great power status and restricting US foreign policy options. Instead, they advocated the guaranteeing of Russia's international status primarily through economic modernization and increasing living standards, raising of social and political freedoms, and through science and culture. Warning that there was a risk of accidental launch and that much needed to be done in the area of strategic nuclear weapons, the authors asserted that the next stage in nuclear disarmament cannot be exclusively bilateral but must include other nuclear powers; in their view this reflects the fact that, unlike other nuclear powers, Russia is within reach of most, if not all, other nuclear armed states.⁵³

These arguments raise numerous problems for policymakers. Medvedev's modernization agenda has received widespread approval but yielded only a large dose of skepticism among key actors in the power vertical. Any advance towards achieving global zero, the authors argue, would demand the deep reorganization of the entire international system, though, if pursued, this may facilitate handling the key problems of the 21st century "related to the global economy and finance, energy supply, ecology, climate, demographics, epidemics, cross-border criminality, religious and ethnical extremism."⁵⁴ Given the lack of enthusiasm internationally for Medvedev's proposed new European security architecture, any linkage of global zero to a radical overhaul of the international system seems doomed from the outset.

Although there is no certainty on the precise nature of Russian nuclear policy, known fully only to the few "privileged persons," it is clear that SSNW play a role in Russian security policy; this is also demonstrated in the country's recent operational-strategic exercises. Zapad 2009 and Vostok 2010 both involved the simulation of nuclear strikes on enemy forces, consistent with the concept of using nuclear weapons to de-escalate a conflict. Despite official claims to the contrary, the multiple vignettes involved in the scenarios for Vostok 2010 in Russia's Far East likely envisaged China as the hypothetical enemy,⁵⁵ which makes more sense, as Russian forces rehearsed combat against enemy mechanized formations and submarines, neither of which is associated with terrorist organizations or pirates. Vostok 2010 reportedly witnessed the simulated use of SSNW, allegedly including the use of a nuclear land mine (*yadernyi fugaz*).⁵⁶ Moreover, the 2010 Military Doctrine refers to the utilization of "precision weapons" in the strategic deterrence context, which is unclear, since the armed forces currently lack such conventional options: "In

the context of the implementation by the Russian Federation of strategic deterrence measures of a forceful nature, provision is made for the utilization of precision weapons.” (III: 22).

Russia’s Conventional Reform and Modernization to 2020

In the aftermath of the Russia-Georgia War, in August 2008 a document was quickly circulated in Moscow outlining an imminent systemic reform of the conventional armed forces, under the guise of giving the military a *novyy oblik* (new look). Of course, such a reform not only was long overdue but also undoubtedly planned prior to the war over Abkhazia and South Ossetia.⁵⁷ The choice of phrase reflected the negative connotations of “reform” at many levels in Russian society, particularly given the previously failed efforts in the armed forces. Putin had used the phrase in a speech in October 2003, and in early 2007 began calling for an “innovative army.” His appointment of Anatoliy Serdyukov in February 2007 as Defense Minister, a civilian with a background in the furniture business and in the finance ministry, signaled that words were giving way to action on the future of the military.⁵⁸ In September 2008 President Medvedev outlined a reform that would abandon cadre units and bring all formations to permanent readiness; overhaul and simplify command and control; improve officer training and education; introduce modern equipment and weapons, especially high-precision systems; and enhance pay, housing and social conditions for servicemen.⁵⁹ Serdyukov’s short broadcast on the Defense Ministry’s *Zvezda* TV on October 14, 2008, added a little more detail, but the nature of the reform only emerged gradually.⁶⁰



Anatoliy Serdyukov, Russia Defense Minister.

Photo by NATO via www.Nato.int.

Kommersant correspondent Ivan Konovalov summarized the reform agenda in the *Moscow Defense Brief*, showing the scope and radical nature of these plans. Framing the reform as the most radical experienced in the armed forces since the end of World War II, he explained that it would impact on numbers, structure, command and control and officer training. The reform planned to “accelerate the downsizing of the Armed Forces; reduce the number of officers and restructure the officer corps; establish a non-commissioned officer (NCO) corps; centralize the system of officer training; reorganize and downsize central command, including the MoD and the General Staff; eliminate cadre-strength (skeleton) formations and bring all units to permanent readiness status; reorganize the reserves and their training system; reduce the number of units, formations, and military bases; reorganize the Army into a brigade system, abolishing the division, corps, and army echelons; and reorganize the Airborne Troops, abolishing divisions.”⁶¹ Many of these aims were indeed radical, especially jettisoning mass mobilization in favor of permanent readiness brigades. Of course, the agenda quickly proved to be flexible, with revisions including preserving the division structure in the Airborne Forces and adjustments and delays to the original plans to introduce new strategic commands. There were also aspects of the initial reform agenda given no prominence or only passing reference, including the development of network-centric warfare capabilities and improving information warfare, as well as later additions to the shifting agenda, such as introducing official chaplains and reducing the number of military districts from six to four.⁶²

There is little doubt that the original agenda was highly ambitious in its aims and timescale, promising rapid reform. The proposed downsizing of the officer corps from 355,000 posts to 150,000 in the interests of streamlining and making the structures less top-heavy confirmed that the process would not be painless. Unlike previous reforms this was real and acted upon in earnest, as attested by the rapid culling of colonel posts. Serdyukov had the full political backing of the ruling tandem, and the *carte blanche* to make painful incisions where necessary. Charles K. Bartles, an analyst at the Foreign Military Studies

Office (FMSO), Fort Leavenworth, Kansas, highlighted the enormity of the tasks and distinct style of the Defense Minister:

Previous Defense Ministers have backed down from the top brass when large-scale overhauls of manpower and force structure were proposed. Serdyukov has solved this problem by purging opposition, bringing in supportive leadership, and charging ahead with his reforms. Serdyukov has approached the Defense Ministry from the perspective of a businessman, not a general. No clearer illustration of this could be given than Serdyukov's style of managing resources. Serdyukov has taken a hard look at the threats Russia will likely face and has discovered the Armed Forces are too top-heavy and bloated to meet these threats. Like a CEO of any large corporation in trouble he is downsizing, restructuring, and ridding the organization of toxic assets. If such a restructuring occurs as planned, the Russian military will likely emerge much leaner, and capable of existing on a budget which the Russian Federation can afford, instead of a budget the Armed Forces wants. These reforms, if successful, could substantially increase salaries and free up capital for the needed modernization programs.⁶³

Not only were inherent contradictions and planning weaknesses present in conducting the reform, there were also deeper and more serious underlying flaws. The contradictions were numerous, ranging from efforts to improve discipline while removing en masse political officers responsible for morale and other duties;⁶⁴ setting out to enhance the mobility and speed of deploying the brigades, only to find they were cumbersome and difficult to move (or control) during exercises; hoping that the pre-Serdyukov plan to move to a twelve-month conscription term would reduce *dedovshchina*,⁶⁵ only to find it worsened; to reforming the military education system while continuing to rely on teaching large-scale tank-heavy operations in the combined-arms academy.⁶⁶ The constant zigzagging between the Defense Ministry's preference for expanding contract service or shoring up conscription, the on-off relocation of the naval headquarters to St. Petersburg, planning to introduce military police, then postponing it, opening a new training center in Ryazan to train professional NCOs in a course lasting 34 months then realizing not enough NCOs were being prepared and consequently intensifying the preparation of conscript NCOs were all indications that the reform had become a massive, poorly planned experiment.⁶⁷ Most perplexing of all, after expending so much time and effort to justify and commence the officer corps' downsizing with the set target of 150,000 officers by February 2011 the Defense Ministry announced the suspension of the downsizing and the need for an additional 70,000 officers: 150,000 or "15 percent" of the TOE was no longer the optimum, offering instead "220,000," with careful avoidance of referring to a percentage. Officer reform was initiated without any changes envisaged to the promotion or recruitment system, and the generic aspiration to develop a new generation of officers to suit the reform was accompanied by lip service in relation to tackling corruption, while talk of developing a written code of conduct for officers was quietly "postponed."⁶⁸

The official deadline set to complete the transition to the brigade-centric structure of the armed forces was December 1, 2009, and Serdyukov duly reported to President Medvedev that "85 permanent readiness" brigades had been formed, capable of deploying within "one hour." Although the latter claim was most certainly far-fetched and some observers said this was open to interpretation, it appears the brigade numbers were subject to re-interpretation.⁶⁹

By April 2011 Arbatov calculated the numbers and strategic posture of the Ground Forces' brigades in the context of the new joint strategic commands (*Obyedinennoye Strategicheskoye Komandovanie* – OSKs). West and South OSKs deploy 30 brigades, Center OSK 20 brigades (excluding bases in Central Asia) and East OSK 14 brigades, advancing the concept that major regional conflicts with NATO remain the priority, with fewer brigades required for possible local conflict in Central Asia and fewer still for a regional war in the Far East. Arbatov arrived at the total number of brigades in the Ground Forces as 64, or 21 short of the original target in 2009.⁷⁰



Russian Gen. Nikolai Makarov, Chief of the General Staff of the Armed Forces of Russia, by Chairman of the Joint Chiefs of Staff. [CC-BY 2.0 (www.creativecommons.org/licenses/by/2.0)], via Flickr.

In February 2011 Army-General Nikolai Makarov, Chief of the General Staff, answered reform critics, who alleged the country had lost its mobilization potential, by saying that Russia can deploy up to “180 brigades.” Makarov offered no details on how this calculation was made, and also ignored the issues of manning or equipping such huge numbers of brigades. Colonel-General Alexander Postnikov, the Commander-in-Chief of the Ground Forces, told the Federation Council Defense and Security Committee on March 15, 2011, that by 2020 there would be 109 brigades. These “upper range” figures seem to include Ground Forces, airborne and mobilization brigades, in an effort to silence critics. On the actual numbers of Ground Forces’ brigades, Postnikov stated there are 70 (rather than Arbatov’s 64). The CINC of the Ground Forces explained that additional brigades will be formed annually and the brigade models will focus on light, medium and heavy. Postnikov spoke of 47 brigades formed on the principle of a “future type,” with 42 on Russian territory: these combined-arms brigades are the likely focus of modernization efforts.⁷¹

As brigade concepts, structures and numbers experienced constant turbulence and indecision, commanders suffered under the strain of attempting to raise combat readiness levels using fewer *kontraktniki* (contractors) and more twelve-month conscripts, the Defense Ministry preferred to manipulate figures to showcase the notionally “permanent readiness” of the brigades. Stop-gap ideas and temporary measures gained ascendancy while real solutions proved evasive. In early 2010 the Defense Ministry moved GRU Spetsnaz (*Glavnoye Razvedyvatel’noye Upravleniye* – GRU, *voyska spetsialnogo naznacheniya* – Spetsnaz) from its subordination to the General Staff, placing it under the Ground Forces. Of course, the structural issue was more complex in reality, since not all elements of GRU Spetsnaz had been subordinated to the General Staff in the first place, and, in turn, were not fully placed at the disposal of the Ground Forces. The controversy only emerged briefly in the Russian media after the Defense Ministry clumsily “announced” the move on October 24, 2010 (Spetsnaz Day), several months after implementing it. This issue festered in the background until the spring of 2011, when a proposal emerged to reverse the decision and the paperwork sat on General Makarov’s desk awaiting a decision. Setting aside the fact that all armed formations and security structures are subordinated to the OSKs during military operations, the tussle over the Spetsnaz seemed to some observers to indicate internal conflict over the reform. In reality, what was at issue was money: elements of the Spetsnaz seeking to change the earlier decision are paid according to their actual subordination.⁷² The reformers were startled each step along the path of reform to encounter unforeseen problems, and hoped that muddling through might yield progress. Agreement on the final goal of the reform had been completely shattered, its key aims proving to be so subject to modification, reversal or abandonment.⁷³

The decision by the Defense Ministry in February 2011 to readjust the target for officer downsizing from 150,000 to 220,000 effectively marked the failure of the reform launched in October 2008; what remain are the vestiges of that ambitious reform recalculated to fit a fluid modernization drive. This failure was long in the making and marked a correction to the single greatest error on the part of the reformers. The pre-Serdyukov decision to reduce the length of conscript service from two years to twelve months in an effort to address *dedovshchina*, combined with the rapid reduction of the officer corps in 2009-2010 in the absence of real NCOs, resulted in an unforeseen increase in *dedovshchina*, and the near collapse of military discipline. The 8,000 officers demoted to sergeant posts may have mitigated the potential disaster. Colonel (retired) Vitaly Shlykov characterizes this blunder as “irresponsibility” on the part of the Defense Ministry. Indeed, despite the high-profile drive to introduce professional NCOs by opening 34-month courses in the Ryazan Higher Airborne Command School (RVVDKU), the trickle of professional NCOs this will produce prompted Shlykov to dismiss the program as a PR exercise.⁷⁴

Since October 2010 the RVVDKU has also been training conscript sergeants in three-month courses. The course prepares conscript sergeants to enter the armed forces as technical, airborne subunit, combined-arms, reconnaissance (Spetsnaz), communications and maintenance specialists. A number of problems have been identified in the training of these personnel, including no decision on bringing the educational facility up to full strength in the training of platoon commanders, deputy platoon commanders and company first sergeants. There is a shortage of instructors for technical and weapons training, and a reduction of teaching hours due cutting the overall training period and a lack of simulators, training displays, and combat training equipment. Many conscripts have an insufficient level of education to be trained in selected specialties. In the “new look” army company first sergeants are civilians paid only 5,000 rubles per month. The persistence of these programs and the presence of conscript NCOs (from which contract NCOs are drawn) do not auger well for developing a high-tech force.⁷⁵

Redesigning the Reform: the Limits of Military Science

The role of Russian military science in these processes was unclear, given the level of confusion and error apparent in the reform. Some individuals close to the reform explained to the author that there was no need to conduct in-depth analysis prior to the reform, it was simply a case of blowing the dust off many reports long lying dormant. Unfortunately, this would only take reform efforts so far before the need for further scientific work was exposed. Major-General Igor Sheremet, the Executive-Secretary of the Defense Ministry’s Scientific-Technical Council (*Nauchno-Tekhnicheskiiy Sovet* – NTS) and Deputy Chief of the General Staff, publicly concurred with the view that there was no need for “new” research to underpin the reform. Existing reports and studies based on the experiences of operations ranging from Afghanistan to Chechnya had yielded sufficient materials upon which to base reform. Research and development (R&D) aspects of the State Defense Order (*Gosudarstvennyi Oboronnyi Zakaz* – GOZ) for 2011 were formulated under the control of the NTS. The NTS is a new body that ensures collective discussions at the highest levels, particularly on developing arms and military special equipment and their use in armed conflicts, and R&D on high-technology systems. The NTS receives and reviews proposals on R&D and then its results are included in the GOZ. General Sheremet highlighted the importance of the new body: “This is a new agency responsible for coordinating collective discussions at the highest level on the most important issues surrounding the development of weapons, military and special-purpose hardware, as well as its application during armed conflicts.” Sheremet also indicated that, among other areas, the NTS is involved in conducting research to support the new OSK structures. Forming policy and then searching out the scientific research basis to support it is a particularly curious approach to such issues. However, it has a long resonance, as one retired officer explained to the author that in 1999 then Defense Minister Marshal Igor Sergeyev told a meeting in the General Staff Academy: “The main mission of military science consists in the substantiation of *already accepted* decisions.” Appointments were made on this basis. Of course, not only did this reveal negative attitudes towards military science, but the politicized priorities it signaled were also part of a wider and more worrying malaise.⁷⁶

On March 26, 2011, General Makarov addressed the General Assembly of the Academy of Military Sciences. The academy was formed in 1995 under its President, Army-General (retired) Makhmut Gareev. In sharp contrast to the mainly positive overview of the academy’s achievements since 1995 offered by Gareev during the opening speech, General Makarov lamented the absence of an adequate theoretical basis prior to launching the present reform of the armed forces, an admission that partly explains the trial and error nature of the reform. “It was necessary to urgently pull the army out of the crisis we found ourselves in. As a result, we decided to reform the armed forces even though we did not have a sufficient scientific-theoretical base,” Makarov explained. Makarov also highlighted the decline of Russian military science since 1991. The revolution in military affairs essentially bypassed Russia, while Moscow watched the US taking that revolution to new heights. “It stems from the transition from the large-scale linear operations of multimillion-strong armies to the mobile defense of the only professionally-trained armed forces of the new generation and network-centric military operations.”⁷⁷

Makarov asserted that for twenty years the Russian military had languished in its fixation with mass industrial warfare, and effectively missed or underestimated that forces and means of modern warfare were being recast. He traced these indicators from “Desert Storm” to “Operation Iraqi Freedom” and the development of network-centric military operations. Meanwhile, the Russian military “continued to live with the views of the 1970s,” Makarov stated. The gap that had opened between modern Western approaches to warfare and Russia’s military trapped in the past now needed urgent correction. Makarov’s criticism was directed at the General Staff and the retired officers in the Academy of Military Sciences: “For the last two decades we have been unable to bring military art to a modern level and continued to live with old metrics. In this period as the whole world has developed space technology, information control systems and has made mass purchases of weapons we have placed our bet on a mass army and the procurement of obsolete weaponry. We have ignored the development of methods as well as the means of armed combat.” Writing in *Eurasia Daily Monitor*, Jacob W. Kipp, Adjunct Professor at the University of Kansas, noted the incongruence of Gareev’s speech compared with the address by the Chief of the General Staff:

Marshal Nikolai Ogarkov, who had warned of a coming “revolution in military affairs” and had been dismissed as the Chief of the Soviet General Staff, had become a prophet without honor in his own land. Military science was like an old Russian noble family living with its inherited title but with empty pockets. The inheritance that Gareev saw as so valuable was an empty relic good only for covering a chamber pot. The General Staff’s failure to foresee had undermined the most recent effort at military reform and left the fate of the “new look” under a cloud of improvisations without intellectual or organizational coherence. Gareev’s own remarks promised to look to the future but he kept returning to the same imperative of measuring future war against the criteria of the Great Patriotic War, which had been fought and won by a mass mobilization army at great cost.⁷⁸

Gareev lost no time in writing a response in *Nezavisimoye Voyennoye Obozreniye* against the coverage in the Russian media that had identified the wide disparity between these speeches. Gareev’s “all is well” self-justification, partly aimed to bolster his own academy, only underscored Kipp’s analysis.⁷⁹ Indeed, since the start of 2011 the Defense Ministry stopped tasking the Academy of Military Sciences with conducting studies or assisting in drafting documents. That contradicts Gareev’s claim that Makarov’s speech must not to be interpreted as criticism of the academy: the Defense Ministry’s actions are a clear expression of such criticism.⁸⁰

Arbatov also considers the current reform and modernization efforts hampered by ineffectual military science. This stems from the “weakness and purely formal character of the political monitoring of military policy in the country’s reform. Rational methods of evaluating the proposals of interested departments and corporations are absent. The mechanisms for the development of doctrinal, budgetary, programmatic and military-tactical decisions are out of alignment,” according to Arbatov.⁸¹ Andrei Kokoshin calls for a “new look” in the relationship between military science and the social sciences and refers to prominent military theorist Aleksandr Svechin’s contribution to this sphere in the 1920s: “In his opinion military science must and can be developed in close connection with political science, economics and with a series of disciplines in the natural sciences. In his time Svechin positively demonstrated that the theory of military strategy is a subject of sociology and had a role to play in the sciences that study society, namely political science and economics.”⁸²

In 1923 General Aleksandr Svechin (1878-1938) noted that German military historian Hans Delbrück (1848-1929) had broken the military monopoly on military science. Makarov’s approach appears to ignore these aspects of military science. Moreover, Kokoshin was drawing on the thinking of Soviet Army theorists. General Nikolai Golovine in 1938 said “a science about war could only be *the sociology of war*.”

Svechin said it in *Strategiya* in 1924, where he also coined the phrase *operativnoye iskusstvo* (operational art) and referred to the “integral commander,” who understood military art and science, politics, and economics: war was no longer linear, but nonlinear and complex.⁸³ Makarov’s March 26 speech scratched the surface of more systemic problems besetting Russian military science. Anecdotal evidence suggests that some scientific research is never published in complete form, owing to politicized peer review processes that compel papers to be reduced in content and sanitized to the point where they are deemed to be acceptable, but in the process losing their original value.⁸⁴

While some aspects of Russian military science are weaker than others, particularly in the teaching of military geography and military history, operational art, considered to be a stronger area, suffers from dated approaches and too much time devoted to large-scale warfare. Like reforming the officer corps, which entails addressing and changing the mentality of serving officers, transforming military science will take a concerted effort, as well as considerable time. During the protracted transition period facing the armed forces, as they are both reformed and modernized, Russian military science will continue to struggle to foster an innovative culture and meet the demands of an ambitious reform agenda: the twenty years it will take to close the gap. Russian military science is currently so dispersed and subject to having to conform to what military leaders want to hear that, without a revolution in its culture and greater investment and freedoms granted by the state, it will rely on recycling old analyses or insights culled from foreign sources. A military reform without the adequate support of military science is certain to fall victim to trial and error, correction and further drift.

Clothing the Reform: Procurement

If Moscow is open to persuasion on entering an SSNW disarmament regime, it must raise the combat capabilities and combat readiness of its conventional armed forces. This means that both the reform and modernization of its conventional armed forces will have a direct bearing on the extent to which the military remains reliant upon nuclear deterrence. To date, the level of combat readiness has declined, and at the outset of the reform in 2008 the proportion of new or modern weapons and equipment in the TOE was only 10 percent. By March 2011 CINC of the Ground Forces General Postnikov stated the level had risen to 12 percent, and nonofficial sources in Moscow questioned whether Medvedev’s target of 70 percent new weapons and equipment in the TOE by 2020 is realistic.

Despite the bungling of the previous GPV (2006-2015), the new GPV to 2020 offers potentially bright prospects for the Russian military. It vastly increases the level of spending from the initial target of 13 trillion rubles (\$460.25 billion) to 22 trillion rubles (\$778.88 billion) over the decade. Of this massive injection of finance into the modernization, the Defense Ministry will be allocated 19 trillion rubles (\$672.67 billion). As alluded to by Dvorkin, the GPV is shrouded in secrecy, with little or no public scrutiny involved in key areas. The secrecy goes beyond the remit of the Law on State Secrets and fits with an approach to security that allows minimal insight into the inner workings of the state defense and security machinery. Colonel (retired) Vasily Zatsepin, Senior Research Fellow in the Moscow-based Institute for the Economy in Transition, describes this tendency to prioritize secrecy as “security through obscurity.”⁸⁵

In a two-part article in *Nezavisimoye Voyennoye Obozreniye*, Colonel (retired) Vitaly Tsymbal, Head of the Institute for the Economy in Transition, and Colonel-General (retired) Eduard Vorobyov, Deputy Chairman of the Duma Committee on Defense, assessed the financial and economic implications of the reform and modernization plans. In particular, the authors noted that the Accounting Chamber found the projected budget allocations for 2011-2013 by the Defense Ministry were based on personnel figures taken from 2007. The numbers being reported by commanders and, in turn, by the Defense Ministry to the state bodies, as well as the media, did not match, and most probably also fail to reflect the actual numbers serving in the armed forces. Among the measures recommended by Tsymbal and Vorobyov to address corruption and develop transparency were to bring the defense budget in line with the content of the Law

on State Secrets, rather than the current practice, which distorts the law and throws a veil over much of the budget, and revive the publication of reliable military statistics, following the examples of countries such as France and the UK.⁸⁶

In February 2011 First Deputy Defense Minister Vladimir Popovkin said the GPV aims to vastly increase the proportion of modern weaponry, military and special hardware. Popovkin outlined the modernization priorities as: “The balanced development of strategic arms; the supply and standard sets of modern and advanced models of arms (in the first case to permanent readiness formations and line units); the creation of the basis of information-command-and-control systems, which provide for the use of high-precision weapons. Moreover, it is the creation of a scientific-technical reserve and providing for the development of the newest systems and models of arms; and the support of the existing arms in a combat ready status.”⁸⁷

The main priority remains the modernization of the RVSN. Tu-95 and Tu-160 long-range bombers, the air component of Russia’s Strategic Nuclear Forces, will be modernized, and replacement ICBMs will be introduced. Official statements seem to offer target figures against which the future success of the GPV may be measured, though there is plenty of scope for “adjustment” and a great deal that is unknown. Popovkin delineated details of the procurement of aircraft, to include T-50 (stealth fifth-generation) Su-35S and MiG-35 fighters, Su-34 frontline bombers, Su-25SM ground attack aircraft, and Il-7690A and An-70 military transport aircraft. Among the plans to procure helicopters, Mi28NM and Ka-52 attack, Mi-26, Mi-8MVT-5 transport and multipurpose helicopters feature, as well as vague references to “special” helicopters. The Navy will acquire Borey-class submarines, despite the continued problems over testing and introducing the Bulava SLBM, corvettes (mostly Steregushchiy corvettes), frigates (Project 22350 and Project 11356M), as well as multipurpose submarines (Project 885 Yasen-Class (Graney-class)

	Procure	Modernize
Fix-Wing Aircraft & Helicopters	1500	400 Aircraft
Submarines	20	—
Corvettes	35	—
Frigates	15	—
Ships	100	—

APL nuclear attack submarine). In terms of numerical targets, the GPV to 2020 aims to purchase 100 ships, including 20 submarines, 35 corvettes, 15 frigates, as well as supporting vessels. This may also include the planned procurement of the French Mistral-class Landing Helicopter Dock and amphibious assault ships. The main armaments of naval platforms will be the “Kalibr” unified ship missile complex (3M 54 anti-ship cruise missile, as well as the 3M 14 long-range cruise missile for the destruction of enemy ground targets). There are also plans to develop a hypersonic missile for the “Tsirkon-S” ship missile complex.⁸⁸

Air defense and missile defense formations and units will receive S-500 (SAM system) battalions (in development) and S-400 (SAM complex) battalions to replace approximately half of the existing S-300s by 2016, as well as the Iskander operational-tactical missile complex.⁸⁹ Popovkin stated that the modernization of the Ground Forces will involve 2 trillion rubles (\$70.80 billion), and that the missile attack warning system will be modernized by 2018. Reportedly, R&D will account for another 2 trillion rubles (\$70.80 billion). However, there are some puzzling features in the statements made by the top brass and defense officials on the types of platforms that may be procured during the modernization. For instance, why did Popovkin include Su-25SM (among others) in his list of “advanced” aircraft and specify as “new” the well-known military transport aircraft? This immediately raises questions as to how the Defense Ministry is framing the fundamentals of the modernization.⁹⁰

As more details of the GPV emerged in March 2011, Vladimir Shcherbakov highlighted the issue of whether the spending will be carried out fully: “According to information in official sources, the GOZ was

fully funded last year. According to expert evaluations, however (we are kept from evaluating everything openly by secrecy surrounding certain items of the GOZ and GPV), the GOZ planned for 2010 was fulfilled by no more than 70 percent, and we will recall that a year earlier the Accounting Chamber discovered that the GOZ had been 41.9 percent fulfilled in terms of the number of assignments and 64.9 percent in the amount of work.”⁹¹ Boris Nakonechnyy, a high-ranking official in the Defense Ministry Department of Armaments, linked the disruption of the 2010 GOZ to “poor organization of the work of prime performers and ineffective work of the institution of federal designers.”⁹² General Sheremet, pointing to the efficiency of the new NTS, said that it reviewed 1,500 R&D proposals and only adopted 146 into the 2011 GOZ, accounting for around 20 billion rubles (\$697.44 million). Weaknesses in R&D alluded to by General Makarov are likely to lengthen the timescale for the introduction of high-tech systems.⁹³

The GPV to 2020 reportedly envisages procuring 1,500 fixed-wing aircraft and helicopters, aiming at increasing the proportion of new platforms in the Air Force and Air Defense to 80 percent and 75 percent respectively by 2020. Around 400 aircraft will be modernized and the number UAVs will increase sixfold to reach 30 percent of the total number of aircraft in the inventory.⁹⁴ This would include 70 T-50 fifth-generation fighters (ten planned in the development stage 2013-2015), 48 Su-35S fighters, 4 Su-30M2 fighters, 12 Su-27SM3 fighters, 28 Su-34 frontline bombers up to 2015, and 16 Su-25UBM ground attack aircraft.⁹⁵ Frontal aviation will witness the procurement of 50 percent “new” aircraft and 14 percent “advanced” by 2020. Army aviation will increase the number of modern platforms up to 70 percent. In 2011, Ka-52, Mi-28N, Mi-8AMTSh, Ka-226 and the Ansat-U trainer aircraft will be procured. Long-range aviation will focus on the modernization of the Tu-160, Tu-95MS, Tu-22M3, and Il-78M aircraft, which in the medium term must be upgraded to 80 percent of the inventory.⁹⁶ In *Krasnaya Zvezda* Aleksandr Aleksandrov stressed the ambitious targets for the modernization of the Air Force: “Based upon the experts’ preliminary calculations, the measures that are planned by 2020 will permit a nearly 18-fold increase of the fraction of state-of-the-art precision-guided munitions, a nearly 4.5-fold increase of the number of aircraft complexes, which are capable of operating round-the-clock and in all weather conditions, and a 10-12 percent reduction of aircraft and helicopter losses. All of this will provide the airbases with a 100 percent capability to effectively operate in a single reconnaissance-information management field under any conditions.”⁹⁷

A particularly opaque part of the GPV to 2020, however, is the re-equipping of the Ground Forces. The technological level of models, including those that featured in the GPV to 2015 ranging from the T-90 tank to the BMP-3, have been openly questioned by defense officials. Equally, the plans outlined in the previous GPV (to 2015) no longer fit the requirements of the “new look” Ground Forces. According to Popovkin “high-tech” elements of re-equipping the Ground Forces will link weaponry and communication systems in a combined network: “In the sections on intelligence collection and communications equipment the basic measures of the GPV-2020 are connected with realizing two major projects – equipping the Ground Forces and Airborne brigades with a single command and control system at the tactical level, as well as the creation of information-command-and-control systems to support the use of precision guided weaponry.”⁹⁸

Some additional light on the plans to re-equip the Ground Forces was shed by the Defense Ministry, confirming the existence of a blueprint for its modernization to 2025. The Ground Forces Main Command completed a blueprint to develop a “system” for arming the Ground Forces for the period to 2025. Lieutenant-Colonel Sergei Vlasov, the official spokesman for the Defense Ministry’s press service and information directorate, reported that the blueprint envisages sixteen integrated subsystems operating within a common information space. These include the subsystems of armored vehicles armament, artillery, multiple-launch rocket systems, antitank weapons, antiaircraft weapons, intelligence and information support, UAVs, automated command and control systems, combat equipment and close-combat weapons. It aims to ensure interdepartmental standardization, multifunctionality and the modular design

of weapons. Consequently, given the complexity of the systems and subsystems involved, this will be subject to constant adjustment. Equally, there is no clear consensus on precisely what the re-equipping will entail. However, this transition period will witness the introduction of the Sozvezdiye M2 automated tactical level joint command and control system (*yedinaya sistema upravleniya v takticheskoy zvene* – YeSU TZ). Although this has been field tested, design issues have delayed its introduction until late 2011 or 2012 at the earliest.⁹⁹

A conference held in the Combined-Arms Academy in Moscow on April 15, 2011, was devoted to the theory and practice of network-centric warfare operations and its impact on armaments and the structure of the armed forces. The conference discussed ways of applying network-centric principles in combined-arms brigades, and how this changes the tactics involved in operations, command issues, intelligence and information warfare. It was led by General Postnikov, the CINC of the Ground Forces, and attended by generals and officers in the Ground Forces, central commands, and Defense Ministry educational establishments and research institutes, as well as defense companies.¹⁰⁰

Although the Ground Forces' re-equipment blueprint provides evidence of generic planning and continued interest in network-centric capabilities, there is little indication of a measurable route map to modernization. Moreover, Makarov's reference to the General Staff assessment of the nature of future war in the period 2020 to 2025, combined with the Ground Forces' blueprint to 2025, may well indicate that hope lies in the next GPV (GPV 2016-2025), which allows more time to refine the precise needs of the Ground Forces and the nature of the procurement priorities. President Medvedev's approval of the future target of 425,000 contract personnel and 220,000 officers, and references to reducing the number of conscripts to 10 to 15 percent of the TOE and to "preserve" conscription for 10 to 15 years may support a timescale for reform extending to 2025. In other words, the "new look" Ground Forces may not fully emerge until 2020 to 2025.¹⁰¹

While there is no doubt that Russia's plans to modernize its armed forces are highly ambitious, this faces significant challenges. These include overcoming corruption in the Defense Ministry and among defense industry companies, fulfilling the GOZ annually and ultimately the GPV to 2020, reforming the domestic defense industry to meet the requirements of modernizing the armed forces, investing in modern electronics and nanotechnologies, entering joint ventures with foreign companies, and forming a close working partnership between the Defense Ministry and domestic defense industry and the private sector. If the conventional armed forces are to become high-tech, this will demand sufficient GLONASS satellite coverage, developing and procuring high-precision strike systems, introducing modern C4ISR and realizing plans to adopt network-centric rather than outdated tank-centric approaches to warfare. In turn, this will compel revision of the manpower structure and greater reliance in the future on professional, highly-trained and motivated personnel. Reforming the officer corps and training quality NCOs will prove to be major obstacles in this process.

Russian officials set out stalling tactics and impossible preconditions, and expect major concessions during any talks on reducing SSNW. At root, Moscow is concerned about the imbalance in conventional forces in its western and eastern strategic vectors, the possible militarization of space and the high-tech gap widening between Russia and other powers. Consequently, Russia is resigned to long-term dependence on nuclear deterrence and assigns a role to SSNW as part of this deterrence strategy. The lack of doctrinal certainty and secrecy relating to nuclear policy, as well as in relation to specific aspects of its plans to modernize its conventional armed forces, reflect deep uncertainty within the Russian security elite about the changing nature of the strategic environment.

While some in the security elite realize that nuclear deterrence may not adequately meet 21st century threats, the country's conventional weakness has not been reversed by either its latest reform or modernization plans. Its share of modern weapons and equipment in its inventory is low (12 percent in 2011), and

setting the ambitious target of reaching 70 percent by 2020 marks an aspiration to reverse the degradation of its conventional combat capabilities. Achieving significant progress towards such goals depends on the capacity of the state to adequately reform and invest in the domestic defense industry and, in turn, for those companies to produce the weapons needed by the armed forces. Anxiety expressed in Russian military doctrine and among the top brass over US global strike plans, conventional high-precision weapons and other high-tech developments mirrors the chronic shortages of such options at the disposal of Russian commanders. China looms larger in these calculations than NATO, and, though it poses no immediate security threat to Russia, Moscow as it looks East fears strategic isolation. As Russia's conventional reform and modernization struggle to raise combat capabilities and combat readiness, SSNW reduction or elimination is a gamble few in the General Staff would want to risk, and fewer in the security elite dare to contemplate. As Lieutenant-General Vladimir Chirkin, the former Commander of the Siberian Military District, said in reference to the presence of PLA armies close to the Russian Far East, Russia wants "friendly relations," with strong nations, but understands that to "quiet a friend down," in the view of the army command, "a conventional or nuclear club" is needed. With one club disproportionately compensating for the weakness of the other, the weapon of choice *in extremis* is all too clear.¹⁰²

NOTES

1. Paper prepared for the conference: "Adapting NATO's Deterrence Posture: The Alliance's New Strategic Concept and Implications for Nuclear Policy, Non-Proliferation, Arms Control and Disarmament," Tallinn, May 4-6, 2011.
2. For an excellent analysis of US-Russian positions on substrategic nuclear weapons: Amy F. Woolf, *Nonstrategic Nuclear Weapons*, Congressional Research Service: Washington, DC, <http://www.fas.org/sgp/crs/nuke/RL32572.pdf>, February 2, 2011.
3. Ye. Myasnikov, "Counterforce Potential of Precision Weapons," in *Yadernoye Rasprostraneniye. Novyye Tekhnologii, Vooruzheniya i Dogovory* (Nuclear Proliferation: New Technologies, Arms, and Treaties), A. Arbatov and V. Dvorkin (eds), Moscow Carnegie Center, Moscow: Rossiyskaya politicheskaya entsiklopediya (ROSSPEN), 2009, pp 105-128; "Speech by President Medvedev at the University of Helsinki," April 20, 2009, <http://news.kremlin.ru/transcripts/3805/print>; "Speech by President Medvedev at 64th UN General Assembly Session," September 24, 2009, <http://www.kremlin.ru/transcripts/5552>.
4. Malcolm Chalmers, Simon Lunn, *NATO's Tactical Nuclear Dilemma*, Royal United Services Institute: London, Occasional Paper, March 2010; *US Nuclear Weapons in Europe: A Review of Post-Cold War Policy, Force Levels, and War Planning*, Natural Resources Defense Council: Washington, February 2005.
5. Gunnar Arbam, Charles Thornton, *Russia's Tactical Nuclear Weapons, Part 1: Background and Policy Issues*, Swedish Defense Research Institute (FOI): Stockholm, 2003, p.9.
6. *Voyenny Entsiklopedicheskiy Slovar*, Ministry of Defense: Moscow, 2007, p.882. Definitions in earlier versions of *Voyenny Entsiklopedicheskiy Slovar* or other official sources are not as clear. In 2001, the Russian foreign ministry categorized nuclear forces into two broad categories: strategic weapons designed to strike targets in remote strategic areas (over 5,000 km) and "non-strategic nuclear weapons" which in turn fall into two categories: "tactical nuclear weapons" designed to strike enemy targets to an operational depth of 300 km and "operational nuclear weapons" to strike up to 600 km to accomplish an operational mission. See: Arbam, Thornton, "Russia's Tactical Nuclear Weapons."
7. For an overview of the issues involved and an outline of the "Baltic approach" to an arms control regime for SSNW see: Fredrik Lindvall, John Rydqvist, Fredrik Westerlund, Mike Winnerstig, *The Baltic Approach: A next step? Prospects for an Arms Control Regime for Sub-strategic Nuclear Weapons in Europe*, Swedish Defense Research Agency (FOI): Stockholm, February 2011.
8. Karaganov appears to draw on the briefing note published in London two months earlier: Franklin Miller, George Robertson, Schake, *Germany Opens Pandora's Box*, Centre for European Reform, Briefing Note, London, February 2010, p.3.
9. Sergei Karaganov, "Nuclear Free World is a Dangerous Concept That Ought to be Abandoned," *Rossiyskaya Gazeta*, April 23, 2010.
10. Ibid.
11. See: Miles Pomper, William Potter, Nikolai Sokov, *Reducing and Regulating Tactical (Nonstrategic) Nuclear Weapons in Europe*, The James Martin Center For Nonproliferation Studies, Monterey Institute of International Studies, Monterey, CA, December 2009.

12. *NATO 2020: Assured Security; Dynamic Engagement, Analysis and Recommendations of the Group of Experts on a New Strategic Concept for NATO*, NATO: Brussels, May 17, 2010, p. 43.
13. "Too Soon To Discuss Tactical Nuclear Arms With USA - Russian Senior Official," *RIA Novosti*, January 29, 2011.
14. "Russian Foreign Minister's Speech at UN Conference on Disarmament," *Ministry of Foreign Affairs of the Russian Federation*, March 1, 2011.
15. "Issues of Strategic Stability Must Be Considered As A Whole - Russia's Lavrov," *Interfax*, March 1, 2011.
16. "Tactical Nuclear Weapons Must Not Be Deployed Abroad – Lavrov," *Interfax*, March 1, 2011.
17. Author's emphasis; "Tactical Nuclear Weapons Talks Cannot Be Held Separately From Other Issues - Russian Foreign Ministry," *Interfax*, February 7, 2011.
18. "Russia Urges US to Withdraw Tactical Nuclear Weapons From Europe," *Interfax-AVN Online*, February 7, 2011.
19. "Ivanov Calls for Russia-US Talks on Tactical Weapons Reduction," *Interfax-AVN Online*, February 7, 2011; "Tactical Nuclear Weapons Should be Moved to National Territories – Ivanov," *Interfax-AVN Online*, February 7, 2011.
20. The Strategic Posture Commission stated that Russia has "around 3,800 operational nonstrategic nuclear weapons." See: William J. Perry, Chairman and James R. Schlesinger, Vice Chairman, *America's Strategic Posture*, The Final Report of the Congressional Commission on the Strategic Posture of the United States, Washington, D.C., April 2009, p.111. http://www.usip.org/files/America's_Strategic_Posture_Auth_Ed.pdf
21. Miles Pomper, William Potter and Nikolai Sokov, *Survival: Global Politics and Strategy*, vol. 52, no. 1, February–March 2010, pp. 75–96.
22. Joshua Handler, "The 1991-1992 PNI's and the Elimination, Storage and Security of TNW," in Alexander, Brian and Alistair Millar, editors, *TNW* (Washington D.C.: Brassey's Inc., 2003); Robert S. Norris and Hans M. Kristensen, "Russian Nuclear Forces, 2010," *Bulletin of the Atomic Scientists*, January/February 2010, p79; "US Nuclear Development Concerns Russia," *Interfax*, November 26, 2003; "Russian Military Chief Defends Nonstrategic Nukes," *Interfax*, December 17, 2008; Andrea Gabbitas, "Non-strategic Nuclear Weapons: Problems of Definition," in Larsen, Jeffrey A. and Kurt J. Klingenger, editors, *Controlling Non-Strategic Nuclear Weapons: Obstacles and Opportunities*, United States Air Force, Institute for National Security Studies, July 200; Robert S. Norris and Hans M. Kristensen, "Nuclear Notebook: Russian Nuclear Forces, 2009," *Bulletin of the Atomic Scientists*, May/June 2009; William J. Perry, Chairman and James R. Schlesinger, Vice Chairman, *America's Strategic Posture*, The Final Report of the Congressional Commission on the Strategic Posture of the United States, Washington, D.C., April 2009, http://www.usip.org/files/America's_Strategic_Posture_Auth_Ed.pdf; Commentary by Sergey Karaganov, "The Echo of the Past War or Strategic Confusion," *Rossiyskaya Gazeta*, March 17, 2010.
23. I am indebted to Fredrik Westerlund in Stockholm for drawing my attention to this; <http://www.mil.ru/848/1045/1272/1356/1357/20812/index.shtml>, accessed September 29, 2010.
24. Ground Forces' Structure, <http://eng.mil.ru/en/structure/forces/ground/structure/rvia.htm>, Accessed on May 9, 2011.
25. Sergei Ishchenko Interview with Colonel-General (retired) Leonid Ivashov, *Svobodnaya Pressa*, February 8, 2011.
26. Author discussions with Russian defense analysts, Moscow, October 2010.
27. In an excellent analysis of the Russian response and perspectives on Eagle Guardian Jacob W. Kipp noted the absence of any clarity on the possible Russian response Kaliningrad effectively being cut off were the scenario to be implemented. Citing an article by German Napolskiy in *Nizhegorodskiye Novosti*, Kipp explained that "What was talked about as a defensive operation had an implicit offensive content involving the conquest of the Russian territory, Kaliningrad, isolated from direct land lines of communication with Russia and facing a Baltic dominated by NATO naval power was more like an isolated island than an easily-defended part of Russia. How Russia would defend that territory was unquestionably a key topic for the Russian General Staff with implications for the use of both conventional and nuclear forces. But these plans would be kept within the safes of the General Staff and its operational headquarters." Jacob W. Kipp, "Eagle Guardian and the Strange Case of the Leak Without Legs (Part Two)," *Eurasia Daily Monitor*, Volume 8, Issue 9, January 13, 2011.
28. "Lithuania Claims Russia Deployed Warheads Near Border," AFP, February 8, 2011; "Vilnius Interested in International Regulation of Tactical Nuclear Missiles' Deployment – Minister," *Interfax*, January 17, 2011.
29. "Bomb Celebrates Anniversary: Celebrating 55 Years Since the Establishment of National Thermonuclear RDS-37," *Nezavisimoye Voyennoye Obozreniye*, http://nvo.ng.ru/history/2010-11-26/15_bomb.html, November 26, 2010.
30. Ibid.
31. Andrey Garavskiy, "Modernization Priorities," *Krasnaya Zvezda*, March 18, 2011.
32. Unattributed, "Strategic Armaments, Missile Defense Systems Must Be Monitored," *Interfax-AVN*, January 24, 2011; Unattributed, "Spheres of Armed Forces Development Defined for Intermediate and Long-Term – Kokoshin," *Interfax-AVN Online*, January 11, 2011.
33. Sergei Rogov, Colonel (retired) Valeriy Yarynich, Colonel-General (retired) Viktor Yesin, Major-General (retired) Pavel Zolotarev, "The Future of Strategic Weapons After Prague: What the Further Steps for the Reduction of the Nuclear Potential Could Be," *Nezavisimoye Voyennoye Obozreniye*, September 1, 2010.
34. Ibid.
35. Ibid.
36. Aleksey Fenenko, "After the Reset. 2010 Results in Russian-American Relations," *Nezavisimaya Gazeta*, January 17, 2011.

37. Addressing a conference in Moscow in April 2011 on the issue of tactical nuclear weapons Arbatov said: "Our regional aspect is completely different. Moreover, the superiority of the conventional forces of NATO, and in future, of China, makes tactical nuclear weapons a much more important deterrent for us, than for the US." *Interfax*, April 27, 2011.
38. Aleksey Fenenko, "After the Reset. 2010 Results in Russian-American Relations," *Nezavisimaya Gazeta*, January 17, 2011.
39. Russia's National Security Strategy, <http://www.scrf.gov.ru/news/436.html>, May 12, 2009; *Voyennaya Doktrina Rossiyskoy Federatsii* (Military Doctrine of the Russian Federation), February 5, 2010, <http://www.scrf.gov.ru/documents/33.html>.
40. For an excellent insight into Russian military doctrine since 1993, see: Stephen J. Blank (Ed), *Russian Military Politics And Russia's 2010 Defense Doctrine*, Strategic Studies Institute, US Army War College, March 2011.
41. Vladimir Dvorkin, "The Prague Border has been Crossed: What Are the Goals for the Future of Russia's Nuclear Policy?" *Nezavisimoye Voyennoye Obozreniye*, February 6, 2011.
42. Ibid; Russia's National Security Strategy, <http://www.scrf.gov.ru/news/436.html>, May 12, 2009; *Voyennaya Doktrina Rossiyskoy Federatsii* (Military Doctrine of the Russian Federation), February 5, 2010, <http://www.scrf.gov.ru/documents/33.html>.
43. Dvorkin.
44. Patrushev Interview, *Interfax*, October 13, 2009; Security Council's Patrushev Interviewed on Military Doctrine, *Izvestiya*, October 14, 2009.
45. Ibid.
46. www.lenta.ru, October 15, 2009; Author interviews with Central Asian diplomats, December 2009. "Patrushev: New Military Doctrine to Stipulate Preemptive Nuclear Strikes," www.segodnya.ru, October 14, 2009.
47. Jacob W. Kipp, "Medvedev Approves New Russian Military Doctrine," *Eurasia Daily Monitor*, Volume: 7 Issue: 26, February 8, 2010; "New Military Doctrine Unlikely To Provide for Preventive Strikes," *Vedomosti*, October 9, 2009; Kremlin 'Source' Outlines New National Security Strategy," www.gazeta.ru, April 29, 2009; "Russian Defense Minister Reports to Duma on Military Reform," *Zvezda Television*, February 11, 2009; "CGS Makarov Visits Abu Dhabi Arms Show, Talks of New Military Doctrine," *Nezavisimaya Gazeta*, February 25, 2009; *Krasnaya Zvezda*, May 14, 2009: <http://www.redstar.ru/2009/05/14--05/1--05.html>.
48. Army-General (retired) Makhmut Gareev openly opposed the decision to have a closed part of the Military Doctrine: www.prime-tass.ru, August 10, 2009.
49. Dvorkin, "The Prague Border has been Crossed," Op. Cit.
50. Ibid.
51. On Russia's military reliance on nuclear weapons, including SSNW, in the Russian Far East, see: Jacob W. Kipp, "Russia's Nuclear Posture and the Threat That Dare not Speak Its Name," in Stephen J. Blank (Ed), *Russian Nuclear Weapons, Past, Present, and Future*, Strategic Studies Institute, US Army War College: Pennsylvania, 2011.
52. Ibid; Mikhail Moiseyev, Yevgeniy Primakov, Igor Ivanov, Yevgeniy Velikov, "From Nuclear Deterrence to General Security," *Izvestiya*, October 15, 2010; "Russian Experts Propose Post-new SNF Treaty Arms Control Measures," *Interfax*, October 15, 2010; "Russia To Keep Up Its Nuclear Potential, Say Four Experts," *ITAR-TASS*, October 14, 2010.
53. Ibid.
54. Ibid.
55. Sergei Kazennov, a geopolitics expert in the Russian Academy of Sciences, and Vladimir Kumachev, from the Russian government's Institute of National Security and Strategic Research, objected to Khramchikhin presenting the People's Republic of China as a threat to Russia, though they did make a reference to "secret little boxes," a veiled allusion to nuclear weapons, as Russia's only plausible answer to China's conventional military power during a crisis. Though Khramchikhin portrayed China as a threat, he more pointedly highlighted Russia's relative isolation on this strategic axis. Speaking of the deployment of two new brigades near the Russian-Chinese border, Lieutenant-General Vladimir Chirkin, Commander of the Siberian Military District at that time, said these were deployed to counteract the presence of five PLA combined-arms armies across the border. Chirkin stated that the Russian military must station conventional forces there due to the presence of PLA armies, since Moscow could not afford to ignore this strategic direction. Chirkin said these were part of a deterrent force to remind China that, despite "friendly relations," the Russian "army command understands that friendship is possible only with strong countries" who recognize that sometimes to quiet a friend down "a conventional or nuclear club" is needed. "Russia Strengthens the Border with China," *Argumenty Nedeli*, March 4-10, 2010; "Novosti," *Voyenno Promyshlennyy Kuryer*, March 3, 2010; Sergei Kazennov, Vladimir Kumachev, "Ne Nado Absoliutizirovat 'Ugrozu s Vostoka,'" (No Need To Exaggerate 'Threat From The East'), *Nezavisimoye Voyennoye Obozreniye*, http://nvo.ng.ru/concepts/2010-08-13/12_menace.html, August 13, 2010.
56. Sergey Ishchenko, "Russia Won the All-Round Defense: Number 1 Threat – China," *Svobodnaya Pressa*, December 2, 2010; Oleg Falichev, "Vostok - 2010: Nachalo, Kulminatsiya, Epilog," (East - 2010: Beginning, Culmination, Epilogue), *Voyenno-Promyshlennyy Kuryer*, No. 29, July, 28-August 3, 2010, <http://www.vpk-news.ru/27-343/cis/vostok-2010-nachalo-kulminatsiya-epilog>. In late 2009 Lieutenant-General Sergei Skokov, Chief of the Ground Forces Main Staff, identified China as a potential enemy. Although he did not name China, he outlined three different types of war Russia may face on differing strategic axes. In the east, Skokov referred to facing a multimillion strong army, which could only refer

- to China: Alexander Khranchikhin, "Only 85 Combat Ready Brigades," *Nezavisimoye Voyennoye Obozreniye*, http://nvo.ng.ru/forces/2009-10-16/1_85brigad.html, October 16, 2009.
57. "Russian Defense Minister: Proposals on Army Development Expected Soon," *Agentstvo Voyennykh Novostey*, August 19, 2008; "Free Hand for Anatoliy Serdyukov," *Nezavisimoye Voyennoye Obozreniye*, May 21, 2008; Aleksandr Khranchikhin, Igor Plugatarev, "On the Agenda: Creating a New Army," *Nezavisimoye Voyennoye Obozreniye*, February 13, 2008.
 58. *Voyennoye stroitelstvo i modernizatsiya Vooruzhennykh sil Rossii* (The Development and Modernization of the Russian Armed Forces), SVOP: Moscow, April, 2004, www.svop.ru/live/materials.asp?m_id=8481&r_id=9303.
 59. "Medvedev Announces Key Points for Armed Forces Reforms," *Interfax*, 26 September 2008.
 60. "Russian Defense Minister Announces Overhaul of the Armed Forces Structure," *Zvezda Television*, October 14, 2008.
 61. Ivan Konovalov, "The 'New Look' Russian Army," *Moscow Defense Brief*, No. 4 (18), 2009, p. 12.
 62. "Russian Armed Forces Should be Capable of Network-Centric Warfare by 2015 – CGS," RIA Novosti, July 14, 2010; A. Kondratyev, "Realizatsiia Kontseptsii 'Setetsentricheskaya Voina' v VVS SShA," (The Realisation of the Concept 'Network-Centric Warfare' in US Army Aviation), *Zarubezhnoe Voennoe Obozrenie*, <http://pentagonus.ru/publ/24-1-0-1159>, No. 6, May 2009; V. Baulin, A. Kondratyev, "Realizatsiia Kontseptsii 'Setetsentricheskaya Voina' v VMS SShA," (The Realisation of the Concept 'Network-Centric Warfare' in US Naval Forces), *Zarubezhnoe Voennoe Obozrenie*, No. 6, June 2009.
 63. Charles K. Bartles, "Defense Reforms of Russian Defense Minister Anatolii Serdyukov," *The Journal of Slavic Military Studies*, Volume 24, Issue 1, 2011, pp.55-80.
 64. Dale R. Herspring and Roger N. McDermott, "Chaplains, Political Officers and the Russian Armed Forces," *Problems of Post-Communism*, July-August, 2010, pp.51-59.
 65. The institutionalized form of de facto discipline in the Russian Armed Forces, involving violence, bullying, intimidation, extortion conducted by officers or soldiers against their subordinates.
 66. Author discussions with Western military specialists, April 2011; Anatoliy Tsyganok, "Plastic Surgery: Triumphant Reports about the Success of the Formation of the Army's New Appearance Are Far From Reality," *Vremya Novostey*, December 3, 2009; "Russian Army to Cut Number of Brigade-Level Exercises in 2010," *Interfax*, December 1, 2009.
 67. Yuriy Gavrilov, "Nauchim! Stats-sekretar, Zamministra Oborony Nikolay Pankov: Kak Budut Gotovit Kadry Dlya Armii," (Interview with State Secretary-Deputy Defense Minister Nikolay Pankov), <http://www.rg.ru/2010/10/25/pankov.html>, *Rossiyskaya Gazeta*, October 26, 2010; "Russian TV Profiles Ryazan Center for Training Professional Sergeants," *Channel One TV*, December 20, 2009; Aleksandr Tikhonov, "Slovo 'Sergant' Zazvuchit Gordo. Na Voprosy 'Krasnoi Zvezdy' Otvechaet Pervyyi Zamestitel Ministra Oborony RF General-Polkovnik Aleksandr Kolmakov," (The Word 'Sergeant' Has a Proud Ring), http://www.redstar.ru/2009/08/18_08/1_01.html, *Krasnaya Zvezda*, August 18, 2009.
 68. Roger McDermott, "Gogol's 'Nose' and Reversing Russian Military Officer Downsizing," *Eurasia Daily Monitor*, Volume 8, Issue 26, February 7, 2011.
 69. Vitaliy Shlykov, "Tayny Blitzkriga Serdyukova," (Secrets of Serdyukov's Blitzkrieg) *Rossiya v Globalnoy Politike*, No. 6, December 2009.
 70. Interview with Arbatov, *Voyenno Promyshlennyy Kuryer*, <http://vpk-news.ru/articles/7384>, April 6, 2011.
 71. Viktor Myasnikov, "Ground Forces of Varying Severity," *Nezavisimoye Voyennoye Obozreniye*, http://www.ng.ru/nvo/2011-03-16/2_army.html, March 16, 2011; Reports in *Interfax*, March 15, February 10).
 72. "Under Whom Will Special forces Serve?" *Argumenty Nedeli*, <http://www.argumenty.ru/army/n281/98533>, March 23, 2011; "Defense GRUshnikov Hanging Around," *Moskovskiy Komsomolets*, <http://www.mk.ru/politics/article/2011/03/21/574383-minoboronyi-grushnikov-okolachivayet.html>, March 22, 2011; Author discussions with retired Russian officers, March 2011; Roger McDermott, "Bat or Mouse? The Strange Case of Reforming Spetsnaz," *Eurasia Daily Monitor*, Volume 7, Issue 198, November 2, 2010.
 73. Author interviews with reform architects, Moscow, October 27-28, 2010; Viktor Myasnikov, Vladimir Mukhin, "Naemniki ne Trebuetsya," (Mercenaries Are Not Required), http://nvo.ng.ru/forces/2008-10-03/4_naemniki.html, *Nezavisimoye Voyennoye Obozreniye*, October 3, 2010; Ruslan Pukhov, "Mezhdru Kontraktom i Prizyvom. Problemy Dostizheniya Zolotoy Serebry," (Between Contract and Conscription: Russia Cannot Afford a Professional Army), *Nezavisimoye Voyennoye Obozreniye*, http://nvo.ng.ru/realty/2010-07-23/3_prizyv.html, July 23, 2010; Aleksey Nikolskiy, "Professionalny Budut, no Pozzhe," (There Will be Professionals, but Later), <http://www.vedomosti.ru/newspaper/article/2010/06/10/237036>, *Vedomosti*, June 10, 2010; V. Ivanov, "The Image of No Combat Readiness: What Will 'Humanization' of Military Service Yield?" *Sovetskaya Rossiya*, June 3, 2010; "Major Cuts to Non-Conscript Personnel Underway in Russian Armed Forces," *Interfax*, May 27, 2010; Yuliya Kalinina, "Svyachennyi Dolg Oplatite, Pozhaluista," (Please Pay for the Sacred Duty), <http://www.mk.ru/politics/article/2010/05/13/487886-svyaschennyiy-dolg-oplatite-pozhaluista.html>, *Moskovskiy Komsomolets*, May 14, 2010; "Medvedev Opens Discussion on Conscription Changes," July 23, 2010, <http://kremlin.ru/news/8404>.
 74. Vitaliy Shlykov, "Spineless Army," *Voyenno Promyshlennyy Kuryer*, <http://vpk-news.ru/articles/7426>, April 12, 2011; Author discussions with retired Russian officers, March 2011.
 75. Conscript NCOs are trained for the following specialties: servicing, maintenance, and repair of motor transport, communications networks and switching systems, multichannel telecommunications systems, radio communications, radio

- broadcasting, and television. Military occupational specialties: combined-arms specialists for filling posts in motorized rifle platoons (rifle platoon, security platoon) as deputy commander, airborne subunit specialists to fill posts as airborne platoon deputy commander, airborne service specialists filling vacant post of deputy commander (squad commander) in airborne logistic support platoons, tactical reconnaissance specialists for vacancies in reconnaissance platoon as deputy commander, reconnaissance specialists (of Spetsnaz military units) vacant team commander posts. Combined-arms specialists to fill military positions: motor transport platoon commander (motor transport platoon deputy commander), maintenance platoon commander (maintenance platoon deputy commander), communications specialists for vacant senior technician posts, communications specialists for vacant posts of station chief, section chief, senior technician, communications specialists to fill vacant deputy platoon commander posts. Denis Mokrushin, "Ryazan Higher Airborne Command School. Part One. Three-Month NCO Courses," *Zapiski Russkogo Soldata*, February 11, 2011.
76. Private conversations with retired Russian officers. The NTS is chaired by the Defense Minister, the Chief of the General Staff serves as its deputy and the Deputy Chief of the General Staff is its executive-secretary. An expert group has been established under the NTS, chaired by the Deputy Chief of the General Staff, the Chief of the Armaments Department, Chief of the General Staff Main Operations Directorate, and the Head of the Department for Price Formation for Military Products (*Departament Tsenoobrazovaniya Produktii Voyennogo Naznacheniya*). The NTS is closely modeled on the US system. Roger McDermott, "Moscow Intensifies Military-Scientific Research in Modernization Drive," *Eurasia Daily Monitor*, Volume 8, Issue 51, March 15, 2011.
 77. Roger McDermott, "The 'Brain' of the Russian Army Degenerates," *Eurasia Daily Monitor*, Volume 8, Issue 67, April 6, 2011; Jacob W. Kipp, "The Emperor Has No Clothes: Military Reform Without Military Science," *Eurasia Daily Monitor*, Volume 8, Issue 66, April 5, 2011.
 78. Kipp, "The Emperor Has No Clothes," Op. Cit.
 79. Army-General (retired) Makhmut Gareev, "We Will Work Together: The Academy of Military Sciences and the General Staff Has No conflict, There Are Common Interests," *Nezavisimoye Voyennoye Obozreniye*, http://nvo.ng.ru/notes/2011-04-08/15_together.html, April 8, 2011.
 80. Reporting on Makarov's speech featured in official and non-official sources: *Nezavisimoye Voyennoye Obozreniye*, http://nvo.ng.ru/concepts/2011-04-01/1_science.html?insidedoc April 1, 2011; *Voyenno Promyshlennyy Kurier*, <http://vpk-news.ru/articles/7369>, March 30, 2011; *Krasnaya Zvezda*, www.redstar.ru/2011/03/30_03/1_08.html, March 30, 2011.
 81. Interview with Arbatov, *Voyenno Promyshlennyy Kurier*, <http://vpk-news.ru/articles/7384>, April 6, 2011.
 82. "Science in the Service of Defense," *Krasnaya Zvezda*, April 6, 2011.
 83. M.L. Belotskii, I.G. Klochko, E.A. Shilovsky, *Voyennaya Akadaemiya* (Military Academy), p.163; Igor, V. Obratsov, "Military Sociology in Russia: Origins, Traditions and Prospects," in Eric Ouellet (ED) *New Directions in Military Sociology*, Whitby, Ontario: de Sitter Publications, pp.73-74; See: Aleksandr A. Svechin, *Strategy*, Minneapolis: East View Publications, 1992.
 84. Author interviews with retired Russian officers, October, 2010/ March, 2011.
 85. Vasily, Zatselin, "The Economics of Russian Defense Policy: In Search for the Roots of Inefficiency," in Roger McDermott, Bertil Nygren and Carolina Vendil-Pallin (editors), *The Russian Armed Forces in Transition: Economic, Geopolitical and Institutional Uncertainties*, (Routledge: London), (forthcoming) 2011.
 86. Colonel-General (retired) Eduard Vorobyev, Colonel (retired) Vitaly Tsymbal, "Financial and Economic Aspects of Giving the Army a 'New Look,'" http://nvo.ng.ru/concepts/2011-03-11/1_army.html, March 11, 2011.
 87. Dmitriy Litovkin, "Triumph and Tsirkon Are Going into the Force: Deputy Defense Minister Vladimir Popovkin Explained, How to Rearm the Army," *Izvestiya*, March 11, 2011; Aleksandr Kiselev, "Ministry of Defense to Spend Trillions: In the Next Ten Years Substantial Weapon Modernizations are Planned," *Vzglyad*, March 7, 2011.
 88. Ibid.
 89. Ibid.
 90. Vladimir Shcherbakov, "Great Desire and Modest Capabilities: Russian OPK No Longer Keeps up With Its Defense Ministry's Growing Ambitions," *Nezavisimoye Voyennoye Obozreniye*, http://nvo.ng.ru/armament/2011-03-11/8_opk.html, March 11, 2011.
 91. Ibid.
 92. Ibid.
 93. McDermott, "Moscow Intensifies Military-Scientific Research."
 94. Aleksandr Aleksandrov, "Russia's Army: the 21st Century: The Russian Air Force Both in the Air and in Space," *Krasnaya Zvezda*, http://www.redstar.ru/2011/03/18_03/3_04.html, March 18, 2011.
 95. "Sukhoi Will Transfer a New Batch of Su-34 Bombers to the RF Air Force," *Rossiyskaya Gazeta*, November 12, 2010; <http://www.infpol.ru/newspaper/number.php?ELEMENT-ID>, accessed on April 6, 2011.
 96. Aleksandr Aleksandrov explained in *Krasnaya Zvezda* the structure of the "new look" Russia Air Force: "Represented by the aviation bases, and the aviation squadron remains a key tactical unit. Air bases are divided into two categories depending on the missions that are being accomplished, the number of organic tactical subunits in the composition (aviation and helicopter squadrons), and the number of attached airfields (permanent basing, operational, dispersal, and so forth). Aviation bases of the first category by status correspond to the tactical formations and have in their composition various types of aviation groups that are based at various airfields. Aviation bases of the second category by status

- correspond to an aviation regiment and have primarily single types of aviation groups.” Aleksandrov, “Russia’s Army: the 21st Century: The Russian Air Force,” Op. Cit.
97. Ibid.
 98. Litovkin, “Triumf and Tsirkon”; Kiselev, “Ministry of Defense to Spend Trillions.”
 99. Vladimir Mukhin, “Anatoliy Serdyukov Goes Digital,” *Nezavisimoye Voyennoye Obozreniye*, <http://www.ng.ru/nvo/2010-11-19/1--serdyukov.html>, January 19, 2011.
 100. “Russian Ground Forces Hold ‘Network-Centric Warfare’ Conference,” *Interfax*, April 15, 2011.
 101. Ibid; reports in *RIA Novosti*, *Interfax*, April 5, March 18.
 102. “Russia Strengthens the Border with China,” Op. Cit.