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**Russia's Tactical Nuclear Weapons:
Posture, Politics and Arms Control**

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Executive Summary

1. The ratification of New START and its subsequent entry into force have raised expectations that the momentum generated would be maintained and result in even deeper cuts in nuclear arsenals than anticipated by the treaty itself. It also raised hopes that next steps towards nuclear disarmament would entail limitations and reductions of tactical (non-strategic or sub-strategic) nuclear weapons (TNW).

This prospect should not be taken for granted, however. The resolutions and statements that accompanied the ratification point rather in different directions. While the US Senate committed the President to seek an agreement on TNW in order to address the disparity in favour of Russia, the State Duma, the lower chamber of the Russian Parliament, reiterated the demand that the US withdraws all TNW to its national territory and eliminates the infrastructure for their forward deployment in Europe.

While the US government has expressed its intention to include TNW on the agenda of follow-on talks, and while NATO called upon Russia, in November 2010, to relocate nuclear weapons away from the territory of the Alliance's member states, Moscow remains hesitant to commit itself to any immediate subsequent measures.

2. The US and Russia maintain a legally binding commitment to nuclear disarmament. They subscribed to this ultimate goal in the 1968 Nuclear Non-Proliferation Treaty (NPT) and have repeatedly reconfirmed their obligation. They did so most recently at the 2010 NPT Review Conference. This commitment covers TNW no less than any other nuclear weapons, although it does so in a general way without specifying when and how these weapons should be reduced and eliminated.

The concept of TNW encompasses all nuclear weapons not covered by US-Russian nuclear arms control treaties – those governing reductions of strategic offensive arms (START) and the elimination of intermediate-range and shorter-range missiles (INF).

Although TNW are not covered by existing treaties, the US and Russia have significantly reduced their stockpiles over the past twenty years on the basis of parallel unilateral measures announced in 1991 and 1992. The remaining weapons are no longer operatively deployed and are stored separately from delivery systems. After those reductions, Russia still maintains a more sizeable and diverse arsenal of TNW than the US does. It is expected to be reduced further, however, with or without an agreement.

The concept of TNW thus includes non-deployed nuclear munitions (warheads) in nuclear storage facilities. It does not include TNW delivery systems (platforms) that are also assigned for conventional missions.

3. Notwithstanding the fact that TNW are no longer operatively deployed, concerns about them have continuously been raised, particularly with regard to nuclear munitions stored in the proximity of their delivery vehicles, which would thus be available for early deployment. Such concerns were largely fed by the lack of transparency with regard to the actual numbers of remaining TNW, their storage locations and deployment status.

TNW are also considered to be more vulnerable to theft or the risk of unauthorized use than strategic nuclear weapons.

The evolution of the international nuclear disarmament and non-proliferation discourse since the late 1990s, and particularly more recently in the context of the Global Zero debate, has largely contributed to elevating the TNW issue to the top of the nuclear disarmament agenda.

4. Moscow has a long record of championing the extension of arms control measures to TNW. Over the past decade and a half, however, it became increasingly hesitant to engage in talks addressing this category of weapons. Russia's reluctance has two main reasons – its increasing reliance on nuclear weapons in its defence posture against the background of the evolving strategic landscape, and the challenging complexity and sensitivity of verifiably monitoring non-deployed nuclear munitions.

5. Confronted with a declining conventional defence capability and a growing gap in advanced military capabilities, since the end of the Cold War, Russia has tended to rely increasingly on nuclear arms to offset its inferiority vis-à-vis more advanced military powers, particularly the US. In this context, TNW are seen as a means of deterring, terminating or even defeating not only a nuclear attack but also a conventional attack that exceeds Russia's conventional capability.

Russian defence analysts anticipate that the continued introduction of advanced conventional and non-conventional weapons technologies by major military powers will result in further increasing the role of nuclear weapons in the Russian defence posture. Although the reliance on TNW is considered to be of a temporary nature – until Russia has matched the advanced military powers or until the latter have agreed to limit their advanced military capabilities via arms control instruments – this general trend is expected to have a long-term effect on Russia's defence posture.

This is one reason why, under current circumstances, most Russian experts, and particularly the defence and the nuclear defence industrial establishments, are proceeding on the presumption that including TNW in arms control measures is not in the interest of Russia. Furthermore, there are virtually no significant Russian constituencies with a vested interest in reducing or limiting TNW.

This does not mean that Russia's existing TNW stockpile will not be reduced further. However, any reductions of this kind are more likely to happen unilaterally rather than on the basis of an international agreement.

6. This is also due to the fact that any internationally verifiable reductions of TNW represent an extremely challenging task. Such measures would require parties to open their nuclear depots for intrusive inspections of stored warheads. Since this is considered to be a very sensitive issue of national security, the introduction of the relevant measures requires an unprecedented level of mutual trust, which can hardly be presumed given the current state of Russo-US and Russo-Western relations.

It is worth noting that the most advanced cooperation between the US and Russia in exploring means for reliably monitoring the elimination of nuclear warheads and the disposal of fissile material, as well as information exchange with NATO concerning TNW reductions were terminated in the late 1990s after becoming hostage to mounting tensions in relations between Russia and the West.

7. Although Moscow has strong reservations, it is not entirely impossible that it will consent to talk about TNW. However, this challenging and time-consuming endeavour would require progress in other areas of arms control and is unlikely to yield tangible results any time soon. Its success would largely depend on whether Russian concerns that have been raised over the past decade are heard and acted upon.

Moscow no longer concentrates only on nuclear balance with the US or third nuclear powers. Apart from the conventional disparities that emerged in Europe after the collapse of the Soviet Union and the eastward extension of NATO, it includes in its strategic calculation advanced military capabilities, such as precision-guided munitions (PGMs), ballistic missile defence, long range conventionally armed weapons that can be assigned strategic goals, and the possibility of the weaponization of outer space.

Responding to the West's argument based on the disparity in TNW, Moscow points to asymmetries in other areas and finds it difficult to single out one specific asymmetry without addressing others in a comprehensive manner.

The Russian defence establishment anticipates that uncertainties in the evolution of Russia's strategic environment shaped by the development of advanced military capabilities, risks of nuclear proliferation in the proximity of Russia's borders and local and regional conflicts are unlikely to vanish in the next ten years during the lifetime of the New START treaty. It proceeds on the basis that the treaty is well designed to govern the US-Russian strategic relationship during this period but, being confronted with diverse scenarios regarding the future evolution of the strategic landscape, prefers to keep all options for the maintenance and the development of Russian nuclear capabilities open.

8. Should the US and Russia still decide to address TNW in their talks or consultations, they are most likely to do so on a bilateral basis, without involving, at least not at this early stage, any third parties.

The political constraints and challenging nature of TNW arms control make a gradualist approach more plausible than anticipating a comprehensive treaty providing for verifiable reductions to be negotiated in the near future. A gradualist approach would depart from making stockpiles, deployment status and, probably, storage locations of TNW more transparent by means of information exchange, while keeping the door open for step-by-step progress in introducing appropriate arms control measures.

- The US and Russia can begin by disclosing the quantity of deployable TNW (and strategic weapons) in their reserves and exchanging information on the number of strategic weapons and TNW destroyed since the early 1990s. They could also resume and expand the exchange of information on the implementation of the unilateral measures of 1991 and 1992.
- The NATO-Russia Council may provide a platform for multilateral consultations and reassuring information exchange, the discussion of nuclear postures, for updating Russia on the status of the intra-NATO consultations concerning the future of US nuclear assets in Europe and for the development of cooperative confidence-building measures.
- Measures based on geography, such as the introduction of "exclusion zones" adjacent to NATO-Russia or EU-Russia borders in which TNW should be neither deployed nor stored, appear impractical.

It is not clear how far Moscow is supposed to move its weapons in order to keep them away, in a reassuring manner, from the territory of NATO and EU member states. TNW delivery systems have different ranges with some of them being able to reach EU/NATO territory from well beyond the Urals. Most TNW delivery systems are mobile and can be forward deployed regardless of where they are usually deployed and where the relevant munitions are stored.

All or most Russian TNW are reportedly kept together with strategic weapons in central storage facilities, i.e. in depots controlled by the Ministry of Defence rather than at air or naval bases. Many of those facilities are reportedly located in the proximity of Russia's borders with EU/NATO countries. This makes the introduction of "exclusion zones" unverifiable unless all Russian nuclear storage facilities are moved to the Far Eastern part of Russia.

Needless to say that a demand that all Russian TNW be moved sufficiently far from EU/NATO borders that does not even touch on the issue of US and other NATO countries' TNW in Europe is unlikely to be appreciated in Moscow.

- Consolidating all TNW in central storage facilities regardless of their geographic location, however, could provide for a reasonable alternative to establishing geographic "exclusion

zones” by prohibiting the storage of TNW at air and naval bases, i.e. close the their delivery systems, which would also provide additional remedies to prevent the theft or unauthorized use of TNW.

- In the longer term, seeking verifiable reductions of TNW and non-deployed strategic weapons, as currently envisaged by the US government, could build upon the experiences jointly gathered by the US and Russian nuclear scientists in the late 1990s who, in what became known as a “lab-to-lab” dialogue, explored practical methods allowing the verification of the dismantlement, storage, transportation and disassembly of nuclear warheads as well as the disposal of fissile material in a non-intrusive but reassuring way.

Introduction

For the purposes of this study, the concept of tactical nuclear weapons (TNW), often also referred to as non-strategic or sub-strategic nuclear weapons, includes all types of nuclear weapons not covered by the US-Russian Strategic Offensive Arms Reduction and Limitation Treaty (START) and the 1987 Intermediate- and Shorter-Range Nuclear Forces (INF) Treaty.¹ Furthermore, whenever the concept of TNW is used in this study it means nuclear weapons (warheads) as opposed to their delivery systems.

The political and public debate over TNW has flourished over the past few years. This development was largely facilitated by the advance of the Global Zero campaign, which raised the question of a phased elimination of both strategic weapons and TNW, as well as by the revival of arms control as a topic in US-Russian relations, and particularly by the successful negotiation and the subsequent ratification of the New START treaty.

The recent resumption of nuclear arms control raised expectations of its eventual extension to TNW – the single category of nuclear weapons not covered by any agreement except for a series of unilateral parallel measures initiated by the Presidents of the United States, the Soviet Union and the Russian Federation in 1991 and 1992, known as Presidential Nuclear Initiatives (PNIs). These expectations materialized in a series of recent initiatives.

In February 2010, the need to address TNW in Europe was raised by the foreign ministers of Sweden and Poland. Ever since, the two ministers have promoted an arrangement that would commit Moscow to withdraw its TNW from – i.e. not to deploy or store them in – areas adjacent to the EU borders, particularly the Kola Peninsula and the Kaliningrad region. This initiative found a positive response in a number of other countries.

Following the 2009 debate on whether to include TNW on the agenda of the New START talks or not, the US government indicated in the 2010 Nuclear Posture Review that it would seek to address the issue in the follow-up negotiations to START.² The need to ensure security, transparency and verifiable reductions of TNW was an important issue during the New START ratification debates in the US Senate.³

In November 2010, the desire “to seek Russian agreement to increase transparency on its nuclear weapons in Europe and relocate these weapons away from the territory of NATO members” found its way into the new NATO strategic concept, which also called for further steps to “take into account the disparity with the greater Russian stockpiles of short-range nuclear weapons”.⁴

In 2010, initiatives were put forward within NATO suggesting that the US should withdraw its remaining TNW from Europe. Although the Alliance remained divided on this issue as well as on the matter of the future of the US extended deterrence policy, the withdrawal option gathered strong support within the US government and in many European capitals.

This recent burgeoning of debate over TNW echoes the discussions of early 1990s that followed the transfer of large numbers of TNW to Russia, first from the former Warsaw Pact countries, and

1 On the question of what TNW are and what they are not see, e.g., Gunnar Arbman and Charles Thornton, *Russia's Tactical Nuclear Weapons. Part I: Background and Policy Issues*, Stockholm: Swedish Defence Research Agency, 2003, pp. 9-11; Anatoli Diakov, Eugene Myasnikov and Timur Kadyshev, *Non-strategic nuclear weapons: Problems of control and reduction*, Center for Arms Control, Energy and Environmental Studies of the Moscow Institute of Physics and Technology, Dolgoprudny, 2004, pp. 7-10; Miles A. Pomper, William Potter and Nikolai Sokov, *Reducing and Regulating Tactical (Nonstrategic) Nuclear Weapons in Europe*, The James Martin Center for Non-proliferation Studies, Monterey, 2009, p. 9; Alexei Arbatov, *Non-Strategic Nuclear Weapons*, in: *NATO-Russia Relations (Prospects for New Security Architecture, Nuclear Reductions, CFE Treaty)*, IMEMO RAN, Moscow, 2010, p. 29.

2 Nuclear Posture Review Report, Department of Defense, Washington, D.C., April 2010, pp. xi, 47.

3 See: 111th Congress, 2nd Session, Senate, Exec. Rept. 111-6, *Treaty with Russia on Measures for Further Reduction and Limitation of Strategic Offensive Arms (The New START Treaty)*, October 1, 2010.

4 “Strategic Concept For the Defence and Security of The Members of the North Atlantic Treaty Organisation” Adopted by Heads of State and Government in Lisbon, pp. 7-8.

then from other once constituent parts of the disintegrating former Soviet Union. At precisely this moment in time, the PNIs aimed at increasing the safety and security of the TNW transported to and stored in Russia.

Particularly from 2000, the issue of TNW figured prominently on the agenda of Nuclear Non-Proliferation Treaty (NPT) Review Conferences. The most recent Conference of 2010 reaffirmed the commitment by the nuclear-weapon states “to *reduce and ultimately eliminate all types of nuclear weapons, deployed and non-deployed*, including through unilateral, bilateral, regional and multilateral measures”, and called upon those states “to *promptly engage* with a view to [...] address the question of *all nuclear weapons regardless of their type or their location*” (emphasis added).⁵

Over all those years, concerns were continuously raised with regard to TNW despite the fact that, reportedly, most or all those weapons are no longer operatively deployed but are kept in special depots separate from their delivery systems. Those concerns are largely fed by “the absence of any degree of transparency with regard to warheads that are stored adjacent to delivery vehicles” and thus are available for relatively early deployment. This is supposed to foster “crisis instability because each party could expand its nuclear arsenal on short notice without the knowledge of the other”.⁶

Apart from any crisis stability considerations, TNW are usually considered to be more vulnerable to theft and the risk of unauthorized launch than strategic weapons.

Moscow has a long record of championing arms control solutions aimed particularly at this class of nuclear weapons. Starting in the 1970s, it repeatedly insisted on including US TNW in Europe and in the Pacific in the strategic arms limitations (SALT) and reductions (START) frameworks. Early in the 1990s, the Russian government promoted the idea of converting the 1991-92 PNIs into a legally binding instrument.

Those efforts failed for multiple reasons. During the Cold War, the US showed little interest in including TNW in arms control arrangements, since it saw them as compensation for Soviet conventional superiority in Europe. It would not be wrong to assume that the 1991 decision by the United States to withdraw almost all TNW to its territory and to subsequently eliminate most of them was made much easier by the signing, in 1990, of the Treaty on Conventional Armed Forces in Europe (CFE), which envisaged the elimination of the conventional disparities.

The US never felt particularly threatened by Russian TNW. In the 1990s, it appeared more concerned with the security of the latter’s storage and transportation than with their verified reduction. It would not be fair, however, to blame only the US for earlier failures to address the issue. They were no less due to the complexity of the problem which, in contrast to “strategic” arms, implied verifiable reductions of warheads rather than of delivery vehicles.⁷ Neither the US, nor the Soviet Union or Russia identified appropriate means to solve this problem.

Over time, Russia, the US and NATO changed roles. Moscow became sceptical, to say the least, with regard to including TNW within an arms control regime. Russia is no less (and no more) legally bound than the US or any other nuclear-weapon state by its NPT commitment to nuclear disarmament, most recently reconfirmed in 2010 at the Review Conference. This commitment covers TNW along with all other nuclear weapons, although it does not specify when and how exactly these weapons are to be reduced and eliminated.

Moscow never rejected the prospect of TNW talks, but did formulate preconditions. Its insistence on prior withdrawal of American TNW from Europe as well as linkages to a broader set of issues

5 2010 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, Final Document, NPT/CONF.2010/50 (Vol. I), pp. 20-21, available at: [http://www.un.org/ga/search/view_doc.asp?symbol=NPT/CONF.2010/50\(VOL.I\)\(23/01/2011\)](http://www.un.org/ga/search/view_doc.asp?symbol=NPT/CONF.2010/50(VOL.I)(23/01/2011)).

6 Miles A. Pomper, William Potter, and Nikolai Sokov, *Reducing and Regulating Tactical (Nonstrategic) Nuclear Weapons in Europe*, p. 9.

7 Vladimir Belous, *Takticheskoe yadernoe oruzhie na rubezhe XXI veka (Tactical nuclear arms at the brink of the 21st Century)*, available at http://www.nasledie.ru/voenpol/14_15/article.php?art=3,17/6/2010.

relevant to the maintenance of strategic stability prevented, however, from properly addressing concerns raised with regard to TNW.

In some way, Russian TNW policy is as ambivalent as its policy on Global Zero. In April 2009, responding to President Obama's speech in Prague, Russian President Dmitry Medvedev supported his pledge for nuclear disarmament. At the same time, he made progress towards this goal conditional upon progress in a number of other areas of arms control.⁸

In October 2010, the Russian foreign ministry compiled a list of conditions,⁹ whose fulfilment was required to make nuclear disarmament possible. It included:

- a continuous nuclear disarmament process to gradually include all nuclear weapon-states,
- the prevention of the weaponization of outer space,
- abandoning of any nuclear “upload capability”,
- refraining from deploying conventionally armed long-range systems capable of performing strategic missions,
- refraining from developing strategic missile-defence capabilities without prior coordination with affected states,
- prosecuting any attempts by non-nuclear weapon-states to abuse their participation in the NPT for the purposes of developing clandestine military nuclear programs, and removing incentives that encourage states to seek to obtain a nuclear capability,
- refraining, in a verifiable manner, from any increases in conventional capabilities, as well as settling existing international disputes including regional conflicts, and
- ensuring the viability of the cornerstone arms control and non-proliferation instruments.

In other words, from the Russian perspective, further progress in the area of nuclear disarmament is conditional upon substantial progress in many other areas of disarmament.

The first question this study asks is why Moscow has become so reluctant to engage in arms control talks over TNW and what developments could encourage it to reconsider this policy. It further asks the question of what arms control solutions could be realistically anticipated should such talks begin in the foreseeable future.

The study opens, in Part I, with an inventory of Russian TNW stockpiles. While acknowledging that multiple assessments of the size and composition of those stockpiles vary significantly, it neither pretends nor intends to produce new evidence. Instead, its objective is to systematize existing assessments in order to provide a sufficient background on the subject.

Given the diversity of TNW it is also important to further differentiate between their various types, i.e. between the longer-range or, according to the Russian classification¹⁰, the operatively strategic and the shorter range tactical or operatively tactical weapons systems.

In Part II, the study explores the alleged utility of TNW through the prism of the evolution of the Russian nuclear posture. While doing so, it pays particular attention to the assessment of the potential theatres and missions assigned to TNW.

8 Vystuplenie v universitete Helsinki in otvety na voprosy (Statement in the University of Helsinki and questions and answers), 20.4.2009, <http://news.kremlin.ru/transcripts/3805> (23/12/2009). On the Russian debate over Global Zero see also: Andrei Zagorski, Global Zero: Eine Utopie oder ein praktisches Ziel der Politik? Zur russischen Debatte über Global Zero, in: Reinhard Meier-Walser (ed.), Eine Welt ohne Atomwaffen? „Global Zero“ – Realisierungschancen einer Vision, Hanns-Seidel-Stiftung, Munich, 2010, pp. 83-93.

9 O rossiiskikh podkhodakh k probleme yadernogo razoruzheniya (On Russian approaches to the problem of nuclear disarmament), a background information available at: <http://www.mid.ru/ns-dvbr.nsf/8329e2a2d0f85bdd43256a1700419682/77e35c66f48bc072c32577c200342596?OpenDocument> (24/12/2010).

10 V.I. Levshin, A.V. Nedelin, M.E. Sosnovskii, O primeneniі yadernogo oruzhiya dlya deeskalatsii voennykh deistvii (On the use of nuclear weapons for the purposes of de-escalation of military confrontation), in: Voennaya Mysl' (Military Thought), Moscow, January 1999, available at: <http://dlib.eastview.com/browse/doc/2449543>, 04/06/2010.

In Part III, the study addresses the political aspects shaping Russian approaches to TNW arms control. While doing so, it seeks to identify incentives and disincentives for Russian decision makers to engage in relevant talks.

In Part IV, the study examines practical aspects of improving transparency and building confidence between parties before a tangible result has been achieved in arms control negotiations. It also addresses challenges to any verifiable agreement on TNW.

The conclusions summarize the main findings of the preceding analysis as relevant for further discussion of establishing a TNW arms control regime.

Part I. The Inventory of Russian TNW

In the PNIs of 1991 and 1992, the US and the Soviet Union followed by the Russian Federation unilaterally but reciprocally announced that they would remove their TNW from active service and significantly reduce their numbers. TNW were supposed to no longer be operatively deployed. Instead, both sides declared they would be moved to storage facilities, while part of them would be disassembled and destroyed¹¹.

In particular, the US declared it would:

- withdraw to its territory and eliminate all TNW for ground forces (land-based missiles and artillery shells) including those which were deployed in Europe and South Korea, and halt the development of a new short-range missile for tactical attack aircraft;
- remove all and destroy half of naval TNW including nuclear depth bombs for naval land-based aviation;
- reduce the number of US (and UK) nuclear gravity bombs in Europe from 1,400 to 700.

The Soviet Union in 1991 and the Russian Federation in 1992 committed itself to:

- eliminate all TNW for ground force weapons systems (land-based missiles, artillery shells and mines);
- remove all nuclear warheads for antiballistic and air defence to central storage and destroy half of them;
- store all air force TNW in central depots and destroy half of them;
- remove all TNW from surface ships and submarines and eliminate one-third of them;
- destroy half of TNW for tactical naval aviation.

Neither Russia nor the US disclosed data on the exact numbers of TNW they had in their possession at the time the PNIs were announced, let alone providing a breakdown of those numbers into more specific categories. Nor do they disclose such information today. However, both have reported and are believed to not only have implemented the PNIs but, also, to have cut their TNW stock deeper than it had been envisaged in 1991 and 1992.

Due to the lack of official comprehensive and verifiable data, the current arsenals of US and Russian TNW are subject to diverging assessments. The US is supposed to have reduced its stockpile from estimated an 11,500 TNW to some 500-800 and has retained only a small nuclear capacity for the purposes of forward deployment: the B-61 gravity bombs stored in several countries in Europe, and sea launched cruise missiles (SLCMs) for possible deployment in the Pacific region. The latter, however, is to be retired under the 2010 Nuclear Posture Review, while the gravity bombs, whether withdrawn to US territory or not, will be maintained. So will be the nuclear capability of the US Air Force when the F-16 is replaced with the F-35 Joint Strike Fighter.¹²

Russia is reported to have reduced its TNW stockpile from about 22,000 to some 2,000 deployable weapons.¹³ It still maintains not only a larger total stockpile but also a much greater variety of such weapons and delivery systems than the US does. Those include a fleet of intermediate-range Tu-22M aircraft which can carry nuclear gravity bombs and air-to-surface missiles (ASMs); land-based frontal and naval nuclear-capable aviation for short range ASMs, gravity and depth bombs; anti-ship, anti-submarine, air defence nuclear weapons and torpedoes deployable on general pur-

11 See, e.g., Alexander Pikayev, Nonstrategic Nuclear Weapons, in: Alexei Arbatov and Vladimir Dvorkin (eds), *Nuclear Proliferation: New Technologies, Weapons, Treaties*, Carnegie Moscow Center, Moscow, 2009, p. 117; Miles A. Pomper, William Potter and Nikolai Sokov, *Reducing and Regulating Tactical (Nonstrategic) Nuclear Weapons in Europe*, pp. 5-6.

12 Nuclear Posture Review Report, April 2010, pp. xiii, 27-28.

13 Alexei Arbatov, *Non-Strategic Nuclear Weapons*, pp. 33-34.

pose navy surface ships and submarines, as well as SLCMs. Russian TNW continue to include nuclear antiballistic and air defence weapons.

All those weapons are generally believed not to be operatively deployed but to be stored in depots except for a few naval missiles and torpedoes loaded on ships and submarines while on sea patrol.¹⁴

Assessments of the Russian stockpiles

Since the PNIs were announced, Russian officials have only commented on the process of their implementation in relative terms without providing absolute figures. Reportedly, the US and Russia used to update each other on the progress of reductions of TNW and, from 1997, exchanged relevant information within the former NATO-Russia Permanent Joint Council.¹⁵ This practice was terminated, however, in 1999, in the wake of the Kosovo war and was apparently never resumed.

It is not surprising, therefore, that existing assessments of the Russian stockpile, which all are based on indirect methods, are vague and vary significantly. It is even more difficult to disaggregate the overall figures in terms of weapons that can be *operatively deployed* (mated to their delivery systems) and those held *in reserve*. The latter category includes weapons stored near the deployed forces at an air or naval base, in a central storage facility of the 12th Main Directorate of the Ministry of Defence (12th GUMO of the MOD), at an assembly and disassembly site, or in transit between sites.¹⁶ Reportedly, nuclear weapons move across the country between sites by rail in three to four trains a month.¹⁷

In order to highlight these differences, Norris and Kristensen differentiate between active deployed (operationally deployed), active non-deployed (those that can be fielded quickly to increase the number of deployed warheads), and warheads that have been removed from active service and are in the process of being fully retired.¹⁸

Russian TNW, in accordance with the PNIs, are not supposed to be operatively deployed. They all are considered to be – in one state or another – in reserve. For the purposes of this study, we therefore differentiate between two categories of weapons: those which remain *operative* but are kept apart from their delivery systems (active non-deployed), and those *in reserve*. The latter category, whenever necessary, can be further disaggregated into weapons in central storage and those stored at assembly/disassembly plants.

Current assessments of the *overall Russian TNW stockpile* summarized in table 1 below range from some 2,000 to 8,000 warheads. But the real gap between those assessments is much narrower.

The figures at the low end of this range (between 2,000 and 3,000 warheads) refer only to the operative (active non-deployed) weapons which can be relatively quickly returned to the forces, while the figures at the higher end also include weapons in reserve.

Despite the inevitable inaccuracies of the existing assessments, it appears realistic to proceed on basis of the general assumption that *the grand total of the Russian TNW is between 5,000 and 6,500. While some 2,000 of them are active but non-deployed, the rest remains in reserve*. This differentiation narrows the gap in the existing assessments, although it is unknown how many of those weapons considered to be in reserve are stored at central sites of the 12th GUMO and how many await disassembly.

14 International Commission on Nuclear Non-proliferation and Disarmament Report, “Eliminating Nuclear Threats: A Practical Agenda for Global Policymakers”, Canberra, Tokyo, 2009, p. 21.

15 Miles A. Pomper, William Potter, and Nikolai Sokov, *Reducing and Regulating Tactical (Nonstrategic) Nuclear Weapons in Europe*, p. 6.

16 See, e.g. Gunnar Arbman, Charles Thornton, *Russia’s Tactical Nuclear Weapons. Part I: Background and Policy Issues*, p. 8.

17 Dmitrii Litovkin, *Rossia predlagaet kontrolirovat’ yadernye miny* (Russia suggests to control nuclear mines), in: *Izvestiya* (Moscow), 4 September 2007.

18 http://www.nrdc.org/nuclear/stockpile_2007-2012.asp (19/09/2010).

Table 1: Assessments of the stockpiles of Russian TNW

Source	Operative	In reserve	Total
National Resources Defense Council (NRDC), 2010	2,000	3,300	5,390
International Commission on Nuclear Non-proliferation and Disarmament, 2009	2,000-3 000	3,400	5,400-6,400
Pomper, Potter, Sokov (CNS), 2009			5,000-6,700
SIPRI, 2008	2,100	Several thousands	Several thousands
Swedish Defence Research Agency (SDRA), 2003			8,000
Diakov et al., 2002	3,300-4 000	no data	no data

Sources: Robert S. Norris, Hans M. Kristensen, Russian nuclear forces, 2010, in: Bulletin of the Atomic Scientists, January/February 2010, pp. 76, 79; International Commission on Nuclear Non-proliferation and Disarmament Report, “Eliminating Nuclear Threats: A Practical Agenda for Global Policymakers”, p. 20; Miles A. Pomper, William Potter, and Nikolai Sokov, Reducing and Regulating Tactical (Nonstrategic) Nuclear Weapons in Europe, p. 44; World Armaments, Disarmament and International Security: SIPRI Yearbook, Oxford: Oxford University Press, 2008, pp. 373-375; Gunnar Arbman, Charles Thornton, Russia’s Tactical Nuclear Weapons. Part I: Background and Policy Issues, p. 17; Anatoli Diakov, Eugene Myasnikov, Timur Kadyshev, Non-strategic nuclear weapons: Problems of control and reduction., pp. 15, 17.

While discussing the divergence of existing assessments, it is important to note that they all are indirect and often differ from each other either in the presumed baseline, or method, or both.

One method, applied in particular by the Swedish Defence Research Agency (SDRA) and the Monterey (California)-based Center for Nonproliferation Studies (CNS), departs from a baseline assessment of the Soviet TNW stockpile and its breakdown into different categories (general purpose ground forces, air force, navy and ballistic and air defences) as published by Alexei Arbatov in 1999.¹⁹ According to the latter, in 1991 Russia disposed of a total of 21,700 TNW both deployed and in different types of reserve.

Analysts deduct from those figures the cuts anticipated by the Russian PNIs and reported by Russian officials (see Table 2). In 2004, Moscow officials reported that Russia had “practically implemented” the PNIs and, in 2005, 2006 and 2007, that their implementation even exceeded the PNIs’ goals after 75 per cent of the total TNW stock had been destroyed.²⁰

19 Gunnar Arbman, Charles Thornton, Russia’s Tactical Nuclear Weapons. Part I: Background and Policy Issues, p. 16–17; Miles A. Pomper, William Potter, and Nikolai Sokov, Reducing and Regulating Tactical (Nonstrategic) Nuclear Weapons in Europe, p. 8.

20 Miles A. Pomper, William Potter, and Nikolai Sokov, Reducing and Regulating Tactical (Nonstrategic) Nuclear Weapons in Europe, p. 7.

Table 2: Reduction of Russian TNW as anticipated by the PNIs

Categories	Stockpile 1991	Anticipated reductions	Remaining
Ground forces			
Missiles	4,000	4,000	0
Artillery	2,000	2,000	0
Engineers	700	700	0
Missile/Air defence	3,000	1,500	1,500
Air force	7,000	3,500	3,500
Navy			
Ships, submarines	3,000	1,000	2,000
Naval aviation	2,000	1,000	1,000
Total	21,700	13 700	8,000

Source: Alexander Pikaev, *Nonstrategic Nuclear Weapons*, p. 120 (corrected as far as the number of warheads for naval aviation is concerned).

This method gives some proper sense of the magnitude of actual TNW holdings in Russia, while the difference in the numbers given by the SDRA (8,000) and the CNS (5,000 to 6,700) is easily explained. By the time the SDRA assessment was made, Russian PNIs were not yet fully implemented, not to speak of their reported over-implementation, which is accounted for in the CNS assessment.

The accuracy of these calculations, however, is not unchallenged. Since the Russian government never released any baseline figures or their breakdown but only indicated the ratio of anticipated and performed reductions in percentage, most analysts tend to rely on the accuracy of Arbatov's data. This should, however, not be taken for granted. Indeed, assessments of appropriate baseline figures vary significantly.²¹ Another baseline figure of between 15,000 and 17,000 weapons instead of 21,700 is taken for the correct one by a number of analysts.²²

But even those experts who take Arbatov's data as the baseline admit that it is not perfect. Pomper, Potter and Sokov note, for instance, that "when percentages of reduction in each category supplied" by the Russian military "are put against the breakdown by category in 1991 according to figures provided by Arbatov, serious discrepancies emerged". "This discrepancy could stem from possible inaccuracies in Arbatov's account of the breakdown by category, or the rounding of numbers" by Russian officials, "or any other reason".²³ This explains the relatively large span in the CNS assessment of the total numbers of Russian TNW from 5,000 to 6,700.

Other analysts (NRDC) seek to remedy this inaccuracy by adding an assessment of the maximum load of nuclear-capable tactical delivery systems, or a third criterion – the reduced Russian capacity to refurbish old warheads and supply new ones. The latter method is based on the fact that all Russian nuclear warheads have relatively short warranty times of a maximum of fifteen years. This implies that all of them must have been replaced in the last twenty years. Thus industrial capacity, which has reduced by a factor of approximately ten due to the implementation of conversion programs, sets a limit to the maintenance of the size of both the Russian strategic and TNW arsenals.²⁴

21 For the diversity of those assessments see: Gunnar Arbman, Charles Thornton, *Russia's Tactical Nuclear Weapons*. Part I: Background and Policy Issues, pp. 14-15.

22 General (ret.) Vladimir Belous, for instance, estimates the Soviet stock of tactical nuclear weapons at the end of 1980s at 15,000-17,000. See: Vladimir Belous, *Tactical nuclear arms at the brink of the 21st century*.

23 Miles A. Pomper, William Potter, and Nikolai Sokov, *Reducing and Regulating Tactical (Nonstrategic) Nuclear Weapons in Europe*, p. 43.

24 For more on this see: Anatoli Diakov, Eugene Myasnikov, Timur Kadyshev, *Non-strategic nuclear weapons: Problems of control and reduction*, pp. 16-18.

Neither of those remedies, however, distinctly improves the accuracy of existing assessments of the total Russian TNW stock.

Breakdown by category

For a better understanding of the background of the issue, the total numbers of Russian TNW need to be broken down in different ways.

Firstly, a breakdown on the basis of the assignment of different weapons to different types of general purpose forces (ground, air, navy) as well as missile/air defence is not only important for specifying the variety of operational weapons but also for better understanding the particular interests of individual groups within the defence establishment, as manifested in the evolving Russian TNW discourse.

Secondly and particularly against the background of the generic definition of TNW as weapons not covered by existing nuclear arms control instruments, it is important to distinguish between their types based on range and possible missions. In this regard, three classes of such weapons are identified in this study: those for longer-range (operatively strategic) or intermediate delivery systems; those for short-range (operatively tactical or tactical) delivery systems; and antiballistic and air defence munitions, which represent a special class of TNW of their own. This distinction is important for the discussion of the evolution of the Russian nuclear posture in the second section of this study.

As revealed in Table 3 below, existing assessments of the numbers of TNW assigned to different types of forces vary no less than those of the total stockpile. But they reveal similar features.

Although the elimination of all TNW for ground forces is questioned by some analysts,²⁵ and despite the reports that the new land-based short-range missile “Iskander” being developed to replace the dual-capable “Tochka” missile may also be certified for nuclear missions,²⁶ the general departure point is that, as anticipated by the PNIs, all Russian land-based TNW have been removed from active service and destroyed.²⁷

Most Russian TNW are assigned to the air force and the navy. Although a large proportion of air force, navy and air defence TNW are reportedly no longer in active service and have been moved to central storage facilities deep inside Russian territory, a number of air force and navy nuclear weapons are still assumed to remain operative and to be kept in depots at air force and navy bases, i.e. close to the relevant delivery systems.²⁸ Thus, despite the significantly reduced alert readiness of the relevant nuclear weapon systems resulting from the implementation of the PNIs, an unspecified quantity of TNW is still available for relatively quick deployment.

In contrast to the US, Russia has maintained not only short-range (under 500 km) tactical (battlefield or frontal) dual-capable (conventional and nuclear) platforms, but also nuclear weapons for them, such as short-range air-to-surface frontal and naval aviation missiles, and anti-ship and anti-submarine depth bombs and torpedoes. The distinctive mission of such weapons, in contrast to the ones of longer range, is not to damage military, economic, or administrative targets, but to deter or repel large-scale attack operations on the battlefield.²⁹

25 See, e.g., Robert S. Norris, Hans M. Kristensen, Russian nuclear forces, 2010, in: Bulletin of the Atomic Scientists, January/February 2010, p. 79.

26 Anatoli Diakov, Eugene Myasnikov, Timur Kadyshev, Non-strategic nuclear weapons: Problems of control and reduction, p. 20. See also: International Commission on Nuclear Non-proliferation and Disarmament Report, “Eliminating Nuclear Threats: A Practical Agenda for Global Policymakers”, p. 21.

27 Miles A. Pomper, William Potter, and Nikolai Sokov, Reducing and Regulating Tactical (Nonstrategic) Nuclear Weapons in Europe, p. 7.

28 International Commission on Nuclear Non-proliferation and Disarmament Report, “Eliminating Nuclear Threats: A Practical Agenda for Global Policymakers”, p. 21.

29 Ibid., p. 18.

Table 3: Russian TNW by category

Delivery systems		Active		Including in reserve		
		NRDC 2010	SIPRI 2008	NRDC 2010	CNS 2009	SDRA 2003
Ground Forces	Missiles, artillery, mines	0	0	0	0	0
Air Forces	Total	650	524	2,000	3,500	3,500
	TU-22M (longer range)		124			
	SU-24 (frontal)		400			
Navy	Total	700	819	2,270	1,660	3,000
including:	naval aviation		295			1,000
	TU-22M (longer range)		116			
	SU-24		116			
	Il-38		63			
	SLCMs (longer range)		276			
	Antisubmarine (depth bombs, torpedoes), air defence		248			2,000*
Air/Missile Defence		630-700	733	1,120	1,200	1,500

* total TNW deployable on ships and submarines

Sources: Robert S. Norris, Hans M. Kristensen, Russian nuclear forces, 2010, p. 76, 79; Miles A. Pomper, William Potter, and Nikolai Sokov, Reducing and Regulating Tactical (Nonstrategic) Nuclear Weapons in Europe, p. 44; World Armaments, Disarmament and International Security: SIPRI Yearbook, 2008, pp. 373-375; Gunnar Arbman, Charles Thornton, Russia's Tactical Nuclear Weapons. Part I: Background and Policy Issues, p. 17.

At the same time, like the US, Russia has maintained longer-range (or intermediate) nuclear capabilities. Those are represented by sea-launched cruise missiles of up to 3,000 km range for nuclear attack submarines as well as by longer-range Tu-22M aircraft capable of carrying nuclear ASMs and gravity bombs. These platforms, although not of inter-continental range, are often considered capable of performing operatively strategic missions.³⁰ Indeed, they are a left-over from the INF Treaty, which prohibited all similar – but only land-based – weapons systems: intermediate- and shorter-range (from 500 km) ballistic missiles as well as ground-launched cruise missiles.

According to the SIPRI data (see Table 3), intermediate platforms comprise roughly one third of the TNW stockpiles of the Russian air force and about half of those of the navy.

Nuclear munitions for ballistic and air defence (including naval air defence) represent a distinct class of weapons that are unable to hit the territory of other states.

Storage sites location

For the purposes of this study, it is important to differentiate not only the locations but, also, the different categories of storage facilities in which TNW are or can be kept. Those include:

30 Ibid., p. 17.

- operational depots from which those weapons can be relatively quickly deployed;
- central storage facilities where they are kept in reserve, and
- storage facilities at factories in which nuclear warheads await disassembly or transportation to central storage or operational depots.

General or detailed information concerning nuclear storage facilities including their locations is considered to be one of the most sensitive issues by all nuclear states, and Russia is no exception. While, under strategic nuclear arms control treaties, Moscow provides information on the locations of deployed strategic nuclear weapons, locations of other nuclear weapons are not disclosed.

For this reason, any assessment of where TNW are stored after they have been removed from active service is almost impossible, while any publicly available relevant information is neither reliable, nor complete or conclusive.

The issue is further complicated by the fact that TNW in central storage facilities – i.e. not stored at separate air or naval depots – are believed to be kept together with strategic nuclear weapons, so that there appear to be no distinct central storage facilities for them.³¹

The publicly available information, however unreliable or inconclusive it is, nonetheless allows us to distinguish four types of Russian nuclear weapon storage facilities:

- air and naval bases at which only TNW (active non-deployed) are stored;
- storage sites specifically assigned to strategic weapons;
- national level (central) storage sites at which both strategic warheads and TNW are or may be stored; and
- storage facilities at warhead production plants, also for both strategic weapons and TNW.

Except for the facilities explicitly assigned to strategic weapons, the other three categories of depots either do or are likely to harbour TNW.

The overall number of Russian nuclear storage facilities is reported to have been reduced from some 500, early in the 1990s, to a total of 48 sites at which nuclear weapons are permanently stored. Many of them may comprise several individual depots.³²

Table 4 below presents a selection of storage facilities from the list compiled by Norris and Kristensen which are believed to possibly serve the purpose of permanently storing TNW. Facilities for the storage of strategic warheads are exempted from this list, while the remaining facilities are split into two main groups: a) those apparently assigned to the storage of TNW and b) national-level sites and/or production facilities assigned to the storage of warheads in reserve or retired. In each category, locations in the European part of Russia and beyond the Urals are listed separately.

The first group includes 13 sites. Nine of them are located in the European part of the Russia: three air bases (in the regions of Novgorod and Arkhangelsk in the Northwest of Russia as well as near Kaluga in the Central district), one central storage site for warheads for naval forces on the north-western Kola Peninsula, as well as five sites with nuclear munitions for ballistic defence systems near Moscow. Four sites – three air bases and one naval depot – are reportedly located beyond the Urals, either in Siberia (Irkutsk), or in the Far East (Khabarovsk and Primorsky regions).

The second group includes 18 national-level weapons storage sites and/or production facilities. Ten of them are located in the European part of Russia, four in the Urals (including two nuclear warhead production plants and one weapons design laboratory). A further four sites are located in Siberia and the Far East.

31 Alexei Arbatov, *Non-Strategic Nuclear Weapons*, p. 36.

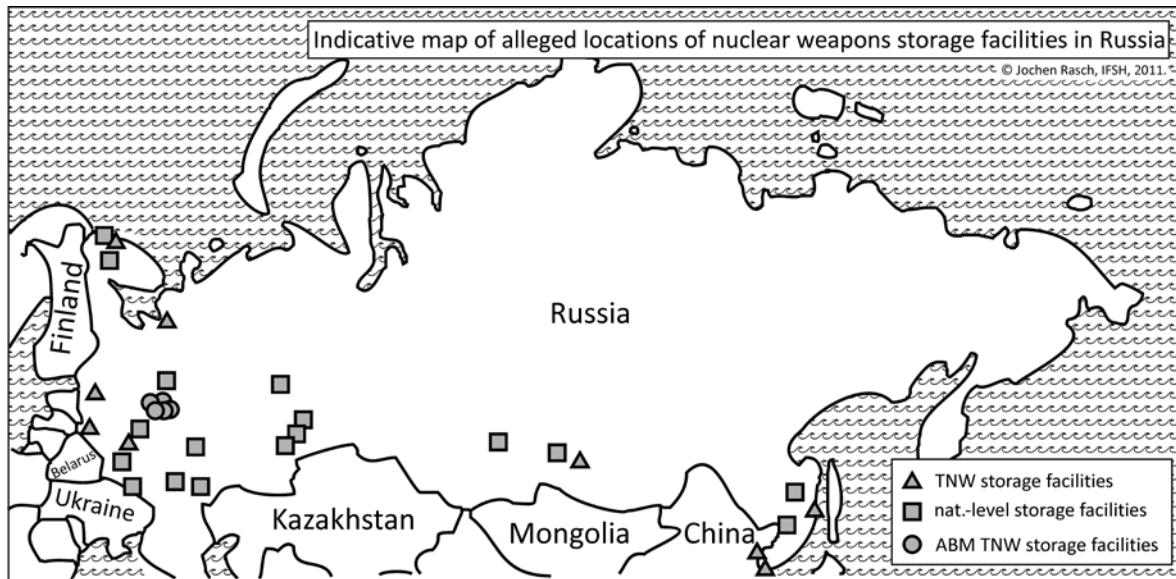
32 Robert S. Norris, Hans M. Kristensen, *Nuclear notebook: Worldwide deployments of nuclear weapons, 2009*, in: *Bulletin of the Atomic Scientists*, November/December 2009, pp. 86-88.

Table 4: Possible TNW storage sites

Location	Region	TNW	Weapons systems
a) For TNW			
In the European part of Russia			
Lakhta-Kholm Air Base	Arkhangelsk	AS-4 ASM, bombs	For TU-22M3
Vidyaevno naval base	Kola	Various	warheads for naval forces in central storage
Soltsy Air Base	Novgorod	AS-4 ASM, bombs	For TU-22M3
Shaykovka Air Base	Kaluga	AS-4 ASM, bombs	for TU-22M3
Korolev area	Moscow	Gazelle ABMs	ABM interceptors
Lytkarino area	Moscow	Gazelle ABMs	ABM interceptors
Skhodnyha area	Moscow	Gazelle ABMs	ABM interceptors
Sofrino area	Moscow	Gazelle ABMs	ABM interceptors
Vnukovo area	Moscow	Gazelle ABMs	ABM interceptors
Beyond the Urals			
Belaya Air Base	Irkutsk	AS-4 ASM, bombs	for TU-22M3
Mongokhto (Aleksievka) Air Base	Khabarovsk	AS-4 ASM, bombs	for TU-22M3
Vozdvizhenka Air Base	Primorsky	AS-4 ASM, bombs	for TU-22M3
Chazma	Primorsky	SLCMs, ASWs	naval weapons
b) Diverse weapons			
In the European part of Europe			
Chebsara	Vologda	Various	national-level weapons storage site
Nerpichya	Kola	Various	potential storage facility for naval weapons
Olenegorsk	Kola	Various	possibly two national-level storage sites
Sebezh-5	Pskov	Various	national-level weapons storage site
Mozhaysk	Moscow	Various	national-level weapons storage site
Rzhanitsa	Bryansk	Various	national-level weapons storage site
Borisoglebsk	Voronezh	Various	national-level weapons storage site
Golovchino	Belgorod	Various	national-level weapons storage site
Krasnoarmeyskoe	Saratov	Various	national-level weapons storage site
Sarov	Nizhny Novgorod	Various	former warhead production (ended in 2003), possible limited warhead storage
Urals and beyond			
Lesnoy	Sverdlovsk	Various	warhead production plant, national-level weapons storage site
Karabask	Chelyabinsk	Various	national-level weapons storage site
Snezhinsk	Chelyabinsk	Various	nuclear warhead design laboratory and national-level storage site
Trekhgornyy	Chelyabinsk	Various	warhead production plant
Dodonovo	Krasnoyarsk	Various	national-level weapons storage site
Korfovskiy	Khabarovsk	Various	national-level weapons storage site
Selikhino	Khabarovsk	Various	national-level weapons storage site
Zalari	Transbaykal	Various	national-level weapons storage site

Source: Robert S. Norris, Hans M. Kristensen, Nuclear notebook: Worldwide deployments of nuclear weapons, 2009, in: Bulletin of the Atomic Scientists, November/December 2009, pp. 92-94.

Map 1: Indicative map of alleged locations of nuclear weapons storage facilities in Russia



Visualization according to Table 4 by Robert S. Norris and Hans M. Kristensen, 2009.

Lacking further details, however, this review of possible geographic locations of TNW storage sites is of limited utility for the discussion of the Russian TNW posture in the following section of this study.

Consequences for arms control

1. It is the operative (active non-deployed) weapons and their storage facilities at the air and naval bases rather than weapons in central storage or those stored at assembly and disassembly plants that shall be the primary focus of any initial arms control measures. It is precisely those weapons that can be operatively deployed on relatively short notice without the knowledge of the other side. They are therefore the centre of concern and the potential cause of crisis instability, as they are considered more vulnerable to theft and/or unauthorized use than weapons kept in central storage.

2. Notwithstanding the inconclusive picture of the real locations of TNW depots, an overview of the publicly available information in Table 4 suggests that measures based on geography, i.e. moving the storage locations of Russian TNW away from the proximity to the Russia-NATO or Russia-EU borders, or moving them “deep into the national territory” are unlikely to provide a solution to concerns expressed by a number of countries.

Not only the operative depots at naval bases but also the known naval weapons central storage facilities are located relatively close to the potential areas of their deployment both in the North-West of the European part of Russia (particularly on the Kola Peninsula) and in the Far East (Primorsky region). As a result, the relocation of warheads from the former to the latter would not significantly change the geography of their storage unless the central facilities themselves are moved (new ones constructed) further away.

Apart from this, the very fact that TNW and their delivery systems are mobile makes the verification of geographic restrictions on their storage and deployment difficult and largely ineffective. This is particularly true with regard to intermediate-range weapons. For this reason, concentrating all TNW in central storage facilities regardless of their geographic location can be seen as an alternative method of addressing the issue, as opposed to the introduction of geographically defined “exclusion zones”, in which the storage of those weapons would be prohibited or restricted.³³

33 Steven Pifer, *The Next Round: the United States and Nuclear Arms Reductions After New START*. Brookings Arms Control Series, Paper 4, December 2010, p. 19.

Part II. Alleged Utility of TNW

During the Cold War, TNW were largely seen by the Soviet military establishment as a means of deterring NATO from using its nuclear assets deployed in Europe and, at the same time, as a means of increasing the firepower of the Soviet general purpose forces.

With the end of the Cold War, the Russian posture underwent a significant transformation which led it, firstly, to abandon the Soviet doctrine of no-first-use of nuclear weapons adopted in 1982, and, secondly, to identify new missions in the new security environment for TNW in particular.

A new role for TNW

The notion of the increasing role of TNW was already conventional wisdom among Russian and international experts in the early 1990s. Mirroring the US and NATO posture of the Cold War period, TNW are supposed to compensate for the continuous decline of the conventional forces of Russia, for the numerical and qualitative conventional superiority of NATO, as well as for the numerical inferiority of the Russian forces in the Far East vis-à-vis China.³⁴ In the 1990s, however, this thesis remained mainly a matter of theory. Only later in that decade was it elaborated in greater detail and received public articulation.

Based on the lessons learned by the Russian military establishment from the wars waged by militarily advanced nations over the past two decades, i.e. the war in the Gulf in 1991, the 1999 NATO air campaign in Kosovo-Yugoslavia, the campaign in Afghanistan in 2001 and 2002, and the war in Iraq in 2003, the two most recent Russian military doctrines (2000 and 2010) concluded that the likelihood of a large scale war³⁵ against the Russian Federation had diminished,³⁶ particularly the likelihood of a large scale nuclear war, which was becoming increasingly improbable.

At the same time, both doctrines accept the thesis that other types of warfare – armed conflict, local or regional wars³⁷ – remain a means of resolving inter- or intra-state disputes. Spillover effects between those types of military confrontation are not excluded. Defence analysts tend to be convinced that, in the time to come, inter-state conflict, military confrontation and war between states become increasingly likely and may well entail the use of nuclear weapons, which are perceived as an essential aspect of contemporary statecraft.³⁸

The military doctrine does not exclude the possibility that Russia may become involved into a local or regional war as a result of being attacked, through its mutual assistance obligations or as the consequence of a spillover of a local or regional military confrontation. In that context, particularly due to Russia's conventional weakness, defence analysts assign nuclear weapons a major role in deterring the enemy, in terminating the war by using or threatening to use nuclear weapons in a limited and selective manner, and in defeating the enemy. This concerns TNW first and foremost, though not exclusively.

34 For a review of the 1990s debate see, e.g., Gunnar Arbman, Charles Thornton, *Russia's Tactical Nuclear Weapons. Part I: Background and Policy Issues*, pp. 24-27.

35 A war between coalitions of states or between major military powers pursuing radical goals. The Military Doctrine of the Russian Federation, approved on 5 February 2010 (in Russian), Part I.6. (General provisions, main definitions), paragraph 3. Available at: http://news.kremlin.ru/ref_notes/461, 8/2/2010.

36 The 2010 Military Doctrine of the Russian Federation, Part II.7. (Military Risks and Threats to the Russian Federation).

37 Armed conflict – armed confrontation between states or between belligerent parties within a state; local war – a war between two or more states pursuing limited goals and waged within the borders of the states concerned; regional war – a war between two or more states pursuing important military-political goals and waged by national and coalition armed forces, which may use both conventional and nuclear arms. The 2010 Military Doctrine of the Russian Federation, Part I.6. (General provisions, main definitions), paragraphs д, е, ж.

38 Alexander Radchuk, *The Great Nuclear Game of the 21st Century: Disarmament or War?*, in: *Security Index*, Moscow, Issue 4, 2010, pp. 33-34, 37-38.

In order to maintain a credible nuclear deterrence effect under the conditions of a regional war, Russia believes it should not rely on strategic nuclear forces, or on them only, but must maintain a range of options for the limited or selective use of nuclear weapons in order to be able to *inflict a precisely set level of damage* to the enemy sufficient to convince him to terminate military confrontation by exposing him to the danger of further nuclear escalation. This is where TNW come into play, although, depending on which war scenarios one considers, the employment of one or more strategic weapons is not excluded either.³⁹

The ability to inflict a set level of damage to the attacker is the central element to the *doctrine of nuclear de-escalation* of an armed conflict, even if such a conflict begins as a conventional one.⁴⁰ The nuclear de-escalation doctrine was developed in a strategic and regional security environment characterized by three major developments affecting Russian defence policy thinking and planning.

Firstly and most importantly, it was the increasing weakness (many defence analysts speak of a virtual degradation) of the conventional general purpose forces of the Russian Federation which are considered unlikely to be able, in the time to come, to be fit to repel any large-scale or even limited regional conventional attack. This diagnosis has become commonplace in open publications by representatives of the Russian defence establishment. This has led defence analysts to believe that *nuclear weapons remain the single most important means of preserving Russia's and its allies' military security by deterring and preventing not only a nuclear but also conventional attacks.*⁴¹ Although most defence analysts admit that this is a temporary solution until the Russian general purpose forces have overcome the state of decline of the last twenty years, the questions of how long it will take Russian armed forces to recover and whether they will be able to match the most advanced military powers remain open.

Secondly, lessons learned by the Russian defence community from the wars of the last twenty years implied that any future war involving advanced military powers was most likely to entail stand-off warfighting via the deployment of long-distance precision-guided munitions, such as conventional ballistic and cruise missiles in conjunction with space-based intelligence and information systems.⁴²

It is believed that this will further complicate the task of Russian general purpose forces to respond appropriately to a stand-off conventional attack, thus almost automatically elevating nuclear arms to the weapons of choice for an (asymmetric) response to such an attack. It is believed that *it would be possible to anticipate a reduction of the role currently assigned to nuclear weapons only after the Russian forces have advanced in utilizing new military technologies,*⁴³ *or after military advanced nations have agreed to abandon or at least significantly limit them by means of arms control*, thus abandoning military options those technologies have opened or may open in the future.

39 In 1999, the then Commander-in-Chief of the Russian Strategic Rocket Forces, General Vladimir Yakovlev, formulated the doctrine of “expanded nuclear deterrence”, which did not limit the possible use of strategic forces to a nuclear or large-scale conventional war, but admitted the possibility of their use in regional and even local conflicts. This would require the capability of delivering high precision low-yield nuclear warheads to hit military facilities anywhere in the world. See: Yuri Fedorov, *Russia's Doctrine on the Use of Nuclear Weapons*. A paper delivered at the 279th Pugwash Meeting on No First Use of Nuclear Weapons, London, UK, 15-17 November 2002. Available at <http://www.pugwash.org/reports/nw/fedorov.htm>, 10/8/2010.

40 This is intensively discussed in, e.g., Nikolai Sokov, *Yadernaya doktrina Rissiiskoi Federatsii (The Nuclear Doctrine of the Russian Federation)*, [2004] http://www.nti.org/i_russian/i_e3_36.html#top, 04/06/2010; Yury Fedorov, *Russia: “New” Inconsistent Nuclear Thinking and Policy*, in: *The Long Shadow: nuclear weapons and security in 21st century Asia* / edited by Muthiah Alagappa, Stanford (California): Stanford University Press, 2008, pp. 148-149.

41 V.I. Levshin, A.V. Nedelin, M.E. Sosnovskii, *On the use of nuclear weapons for the purposes of de-escalation of military confrontation*.

42 Alexei Arbatov quotes statistics, according to which the share of guided ammunition used by the US and NATO countries grew from 2% in Vietnam in 1972 to over 8% in the 1991 Gulf war, 30% in the 1999 Kosovo campaign, 50% in the 2001-2002 campaign in Afghanistan and 60% in the 2003 invasion of Iraq. Alexei Arbatov, Vladimir Dvorkin, Sergei Oznobishchev, *Non-Nuclear Factors of Nuclear Disarmament*, Moscow: IMEMO RAN, 2010, p. 28.

43 V.I. Levshin, A.V. Nedelin, M.E. Sosnovskii, *On the use of nuclear weapons for the purposes of de-escalation of military confrontation*.

Thirdly, anticipating the possibility of either a massive or a limited conventional air and missile attack (or, to put it in the language of the Russian military doctrine, anticipating an attack “from air and outer space”⁴⁴) increases the priority given to the need to dramatically upgrade Russian air and outer space defence capabilities as envisaged by both the military doctrine and the long-term defence capabilities planning of the Russian Federation. This debate again raises the question of what systems, including whether conventional, nuclear or both, could better serve this purpose.

The nuclear de-escalation doctrine

The opening of a public debate over the nuclear de-escalation doctrine is usually dated with the publication, early in 1999, of an article by Major-General Levshin, Colonel Dr. Nedelin, and Colonel and Professor of the Academy of Military Sciences Sosnovskii in the major Russian military Journal “Voennaya Mysl” (“Military Thought”).⁴⁵ The concept must have been developed much earlier, however. For instance, in his introduction to a study on the future of Russian nuclear forces published in April 1999, Colonel-General Evgenii Maslin, former head of the 12th GUMO in charge of the Russian nuclear posture, referred to this concept as if it was already a well known to nuclear strategists.⁴⁶ It is therefore logical to assume that the concept matured within the Russian defence establishment at least from the mid-1990s, while the 1999 Kosovo war, in particular, offered a welcome opportunity to introduce it to the political leadership, which sought informed advice on what its strategy could be provided Russia was exposed to the threat of a similar attack.⁴⁷

Neither the first (2000), nor the second (2010) military doctrine of the Russian Federation explicitly spell out the concept of de-escalation, restricting themselves to the most general political principles governing decisions on the potential use of nuclear weapons, while operational issues translating those general principles into particular defence planning, training, policies and procedures are reserved for internal guidelines. Both doctrines, however, explicitly green-light a nuclear response to a conventional attack that exceeds Russia’s conventional defence capability, and resort to concepts, particularly to that of the “set level of damage” to be inflicted to the enemy,⁴⁸ which are closely associated with the de-escalation doctrine.

Levshin, Nedelin and Sosnovskii suggested that, provided nuclear deterrence has not worked and Russia has been attacked by conventional means, nuclear weapons should be regarded not only as a means of defeating the enemy but, first of all, as a means of forcing the opponent to de-escalate military confrontation. For this, the de-escalation posture anticipates the use of nuclear weapons either for demonstrative purposes (to show the determination to take the conflict to the nuclear level), or to directly attack the opposing forces. They suggested that this mission should be as-

44 The 2010 Military Doctrine of the Russian Federation, Part III (Military Policy of the Russian Federation), Section on the use of Armed and other Forces, paragraph 27r). For an intensive discussion of the issue see: Alexei Arbatov, Vladimir Dvorkin, Sergei Oznobishchev, Non-Nuclear Factors of Nuclear Disarmament, pp. 30-34.

45 V.I. Levshin, A.V. Nedelin, M.E. Sosnovskii, On the use of nuclear weapons for the purposes of de-escalation of military confrontation.

46 Yevgenii Maslin, Introduction, in: Ivan Safranchuk, Budushchee Yadernykh sil Rossii (The Future of the Nuclear Forces of Russia), Moscow: PIR-Center, Research Note 10, April 1999, p. 6.

47 In this context, most analysts emphasize the importance of the meeting of the Russian Security Council in April 1999, immediately after the termination of the Kosovo campaign, which, reportedly, basically agreed with the concept and gave a strong impetus to the finalization of the first (2000) Russian military doctrine, although it took another year to complete the work on it. See: Gunnar Arbman, Charles Thornton, Russia’s Tactical Nuclear Weapons. Part I: Background and Policy Issues, pp. 27–28; Nikolai Sokov, The Nuclear Doctrine of the Russian Federation.

48 See, e.g., The Military Doctrine of the Russian Federation, Part III, section on The Use of Armed and Other Forces, paragraphs 22 and 27 b. There is, however, a difference in the language of the two documents. While the 2000 Military Doctrine admits the possibility of using nuclear weapons to repel a conventional attack in “critical situations for the Russian Federation”, the 2010 Military Doctrine links this option to the emergence of an “existential threat to the state”. At the same time, while the 2000 Doctrine anticipates the use of nuclear weapons in response only to a “large-scale conventional attack”, the 2010 Military Doctrine does not establish a specific threshold for the size of the attack and stipulates that nuclear weapons may be used in case of any aggression against Russia (but not its allies), which opens the way for the de-escalation scenarios to apply in the context of a “regional” conflict.

signed explicitly and exclusively to TNW in order to avoid the risk of uncontrolled escalation to a large-scale nuclear exchange.⁴⁹

A limited, selective and tailored use of TNW is supposed to show the attacker Russia's determination to deny him a victory. Should the attacker be one of the major nuclear powers, it would have a choice of either terminating the hostilities and return to the *status quo ante bellum*, or to accept the risk of further escalation to the level of strategic nuclear weapons which, at the same time, would be deterred by the second-strike nuclear capability of Russia. Should the attacker be a non-nuclear state, a demonstrative nuclear strike, or a strike at its forces, military, administrative or economic targets is supposed to force him to terminate the military confrontation on the terms of the Russian Federation.

Thinking in terms of nuclear de-escalation has meanwhile become a commonplace within the Russian defence establishment. For about a decade, standard formulas related to this doctrine have been migrating from one article by defence analysts to another,⁵⁰ as if copied from unpublicized documents that make the official military doctrine operational. These formulas include two explicit points and presume a third.

Firstly, it is asserted that official Russian military doctrine – beginning in 1993 – has re-legalized the first use of nuclear weapons, which was banned by the Soviet Union in 1982. It also has legalized, with a few reservations, their first use in case of a non-nuclear attack on Russia.

Secondly, the doctrine presupposes that the Russian Federation should be able to precisely tailor the damage to be inflicted to the attacker by the use of nuclear weapons, as well as, if necessary, to increase the inflicted damage step by step in order to persuade the attacker to terminate military confrontation.

In order to be able to inflict the individually tailored level of damage in a landscape characterized by a great variety of potential war scenarios, the Russian Federation is required to have a wide choice of military options based on a large variety of available nuclear weapons of different ranges and yields.

Thirdly, when accused of adventurism or gambling capable of triggering a nuclear holocaust, the proponents of nuclear de-escalation assert that a very selective use of nuclear arms in a conflict does not exclude, but does not inevitably lead to further nuclear escalation or the mutual annihilation of the opponents.⁵¹

As a result, the concept of nuclear de-escalation explicitly *admits the possibility of a limited nuclear war* – military confrontation that entails limited use of nuclear weapons while avoiding further escalation to a global nuclear war.⁵² Thus the evolution of the nuclear posture of the Russian Federation over the past twenty years came to a paradoxical presumption that it was precisely the decreasing probability of a global (large scale) nuclear war that made a limited regional or local nuclear war at least thinkable if not possible.

49 V.I. Levshin, A.V. Nedelin, M.E. Sosnovskii, On the use of nuclear weapons for the purposes of de-escalation of military confrontation.

50 See, e.g., Mikhail Sosnovskiy, O yadernom sderzhivanii v sovremennykh usloviyakh (On Nuclear Deterrence in Contemporary Circumstances), *Obozrevatel' (Observer)*, Moscow, Issue 11, 2004. Available at <http://www.iss.niit.ru/pub/pub-48.htm>, 4/6/2010. For more recent examples of these continuously recirculated theses see, e.g., Sergei Sukhanov, Vladimir Grin'ko, Strategiya sderzhivania na sovremennom etape i rol' sistemy RKO v ee realizacii (The Strategy of Deterrence at the contemporary stage and the role of MSD [Missile and Space Defence. – AZ.] in its implementation), *Nacional'naya oborona (National Defence)*, Moscow, Issue 7, July 2010. Available at <http://www.oborona.ru/1739/1742/index.shtml?id=3693>, 4/9/201, 4/8/2010.

51 Mikhail Sosnovskiy, On Nuclear Deterrence in Contemporary Circumstances. It is important to note that Mikhail Sosnovskiy co-authored the article in "Military Thought" that originally introduced the concept of nuclear de-escalation.

52 Sergei Sukhanov, Vladimir Grin'ko, The Strategy of Deterrence at the contemporary stage and the role of MSD in its implementation.

Theatres and missions

The existing literature is not conclusive as regards the eventual theatres, missions and types of nuclear weapons which might be assigned for the purposes of nuclear de-escalation. Furthermore, the predominant view of the unpredictability of the unfolding security landscape along the perimeter of Russian borders rather suggests that the military planners are supposed to be prepared for any sort of contingencies and, for that reason, to prioritise the maintenance of a great variety of means to meet those contingencies, including TNW. This is particularly true against the background of the 1993 assessment by the Military Academy of the Strategic Rocket Forces of Russia that regional wars were most likely to emerge as a result of the escalation of domestic armed conflicts or local wars.

When introducing the concept of “nuclear de-escalation” in the late 1990s, the Russian defence establishment was obsessed with the possibility of a Kosovo-type US/NATO intervention in the war (“armed conflict”) in Chechnya, which resumed in 1999. It did not exclude the possibility that, in the event of such a case, Russia would be forced to resort to nuclear weapons.⁵³

Usually, analysts explore the likelihood of the application of the nuclear de-escalation doctrine in four possible *theatres*:

- Europe (an attack by the US and/or NATO)
- Northeast Asia (an attack by the US and/or Japan)
- Far East (an attack by China)
- The South (military interventions by Turkey or Iran)

The current preoccupation of the Russian military establishment with the threat of an air and missile (outer space) attack clearly points to the main addressee of the nuclear de-escalation doctrine, since the single power capable of triggering such an attack is the US. In 1999, Alexei Arbatov explicitly placed the possibility of the replication of the Kosovo campaign against Russia in conjunction with the de-escalation debate in Russia:

“Russia’s principle strategic mission is to exclude the possibility that selective air and rocket strikes by NATO would go unpunished for some protracted period of time [...] Russian selective strikes using tactical nuclear weapons would be justified [...] In this case the other side would be challenged by an awful dilemma: either to stop the aggression and recognize the defeat, or to respond with a nuclear strike, which would be followed by an escalation to strategic nuclear exchange with catastrophic consequences for all countries. Lacking anything better, Russia sees this strategy as reasonable.”⁵⁴

Most Russian analysts point out that the NATO’s eastward enlargement provided the military establishment with arguments in favour of a growing role for TNW to balance the numerical and particularly the increasing qualitative superiority of the Alliance.⁵⁵

Apparently, Russian defence strategists find themselves confronted with a similar dilemma in Northeast Asia since “no other state in the region [than the US] has large-scale landing capabilities with massive air and space components. Russia has no means, other than nuclear weapons, to prevent such landing operation”.⁵⁶

China is largely taboo in public Russian debates on military threat assessment, and in discussions of potential war theatres in which nuclear weapons could be deployed. There are, however, multi-

53 Nikolai Sokov, *The Nuclear Doctrine of the Russian Federation*.

54 Quoted after: Yury Fedorov, *Russia: “New” Inconsistent Nuclear Thinking and Policy*, p. 146.

55 See, e.g., Vladimir Belous, *Tactical nuclear weapons on the brink of the 21st century*. See also: Alexei Arbatov, *Yadernyi tandem kak garantiya ravnovesiya. Sily I doktriny dvukh sverkhderzhav (Nuclear tandem as a guarantee of equilibrium. Forces and doctrines of the two superpowers)*, in: *Nezavisimoe voennoe obozrenie (Independent military review)*, Moscow, 3 September 2010.

56 Yury Fedorov, *Russia: “New” Inconsistent Nuclear Thinking and Policy*, p. 144.

ple indications that the use of nuclear weapons, including TNW, is part of more complex considerations by Russian defence planners bearing in mind the numerical inferiority of the Russian troops deployed vis-à-vis the Chinese forces. One of the very rare open sources making the fears of the Russian defence planners explicit is a piece by the then head of the Center for Military-Political Studies of the General Staff of the Russian Armed Forces, General Vladimir Ostankov, who wrote in 2005:

“Despite a current stable relationship between the Russian Federation and the PRC, old suspicions about large scale armed non-nuclear conflict between the two countries have not disappeared [...] Prevention of such conflict by political methods only [...] or by conventional forces may be inefficient. Because of the Chinese factor, Russia’s policy is to be founded on nuclear weapons [...]”⁵⁷

Although the applicability of the Russian nuclear doctrine in the southern tier is questioned by most experts,⁵⁸ some Russian analysts speculate about the possibility of relying on TNW in order to “deter regional powers such as Iran or Turkey from expanding into the former Soviet Union”.⁵⁹ One hypothetical scenario considered by Russian experts implies, for instance, an intervention by Turkey in a potential war between Armenia and Azerbaijan, which would put at risk a small contingent of Russian forces in Armenia – the single most important Russian military outpost in the South Caucasus. The only means by which Russia could protect that contingent would be to deter any Turkish military intervention by the threat of the use of TNW.

However, if the assumed theatres for the deployment of Russian TNW are compared with the assumed location of the depots where those weapons are stored, as discussed in the previous section, it appears evident that the weapons operatively available at air and naval bases are located in a way that makes their deployment in the European and Far Eastern theatres more plausible. Many of those weapons are nonetheless designed for forward deployment in virtually any theatre.

Based on the great variety of potential contingencies and war scenarios, the *missions* to be performed by nuclear arms under the de-escalation doctrine also vary significantly. They directly depend on the definition of the level of damage to be inflicted in any particular situation.

On the one hand, this implies the possibility of deploying “demonstrative” nuclear strikes in order to convince the attacker of the determination of Russia to deny him a victory by escalating the war to the nuclear level. An example that is often quoted to highlight this option refers to the scenario of the “Zapad 99” military exercises conducted by Russian and Belarusian armed forces in June 1999. The alleged scenario of the exercises was that NATO launched massive non-nuclear air and missile strikes against Belarus and the Kaliningrad region. After the joint Russian-Belarusian forces had failed to stop further escalation or to repel the attack, Russia decided to launch a demonstrative limited nuclear strike against targets in remote northern areas of North America.⁶⁰

Another option considered under the de-escalation missions entails a limited strike against the enemy’s grouping of forces or select economic facilities by a relatively low-yield tactical nuclear weapon.⁶¹

A nuclear strike against an attacking air force or approaching missiles by nuclear air defence weapons is considered an almost perfect means of de-escalation, as it would not inflict bigger damage on the opponent and thus would not necessarily provoke further escalation of nuclear exchanges.⁶²

57 Quoted after: Yury Fedorov, Russia: “New” Inconsistent Nuclear Thinking and Policy, p. 142.

58 See, e.g., Gunnar Arbman, Charles Thornton, Russia’s Tactical Nuclear Weapons. Part I: Background and Policy Issues, Stockholm: Swedish Defence Research Agency, 2003, pp. 44-45.

59 Yury Fedorov, Russia: “New” Inconsistent Nuclear Thinking and Policy, p. 149.

60 Yury Fedorov, Russia: “New” Inconsistent Nuclear Thinking and Policy, p. 148.

61 Vladimir Belous (Major-General, ret.), Tactical nuclear weapons on the brink of the 21st century, http://www.nasledie.ru/voenpol/14_15/article.php?art=3, downloaded 17.06.2010 (the piece was published on 20 March 1999).

62 Mikhail Sosnovskiy, On Nuclear Deterrence in Contemporary Circumstances.

The same approach is suggested considering the potential arming with nuclear weapons of outer space defence systems under development.⁶³

Nuclear forces, including TNW, are supposed to perform missions against military instruments of the enemy. In particular, their role is to hit those military instruments which are located beyond the actual theatre of military confrontation and can be used in a stand-off attack on Russia. This is the conclusion of the “White book” published by the Russian Ministry of Defence in 2003.⁶⁴

This implies missions against remote locations or patrolling areas of the belligerent long-range air force or maritime forces and bases, particularly by means of longer-range air force or sea-launched cruise missiles. It is believed, for instance that, in 2003, while conducting naval exercises in the Indian Ocean, Russian forces were practising launches of SLCMs against targets located in the Ocean, thus simulating strikes against US warships as well as the Diego Garcia naval base.⁶⁵

The publicly available information and assessments, however, appear either too fragmented or are frequently speculative and thus hardly a sufficient basis for drawing firm conclusions about anticipated theatres and missions to be performed by TNW within the context of the de-escalation doctrine. In order to compensate for this inconclusiveness, several researchers have attempted to scrutinize Russian *military exercises* conducted from 1999. They believe that at least in some of those exercises practical application of the de-escalation doctrine was practised.

Despite the limited and often contradictory information available on Russian military manoeuvres,⁶⁶ the most comprehensive analysis of the exercises conducted between 1999 and 2004 enabled Nikolai Sokov to make several generalizations⁶⁷:

- In all or most exercises, Russian manoeuvres simulated regional war scenarios, all or almost all of which involved nuclear states, first and foremost the US. Earlier exercises simulated air and missile attacks on Russia, while the more recent ones sought to simulate the war in Iraq, or a massive conventional attack.
- In both basic scenarios of either a stand-off air attack, or a combined air and ground assault on Russia, the simulation of the use of nuclear weapons was delayed for a few days until the Russian air defence and/or ground forces failed to repel the attack.
- Whenever the use of nuclear weapons was simulated, it was most delivered via long- or medium-range aircraft: TU-95MC, TU-160 (both strategic and covered by START) and TU-22M3 (operatively strategic).
- The most common targets for nuclear strikes included: air bases and other military facilities of the European NATO member states which participated in the simulated attack on Russia, as well as, in at least one case, similar facilities in Japan; non-identified targets on the territory of the US; naval targets – aircraft-carrying groupings of ships in the Pacific, Baltic Sea, Indian Ocean and the Black Sea; land-based military facilities in the Indian Ocean.

This analysis brought Pomper, Potter and Sokov to the conclusion that a) it was not only TNW that could be assigned a de-escalation mission, but b) that the anticipated role of different classes of TNW needed to be further differentiated in the context of their utility for the purposes of de-escalation. They argue, in particular, that shorter-range weapons systems, such as tactical land-based missiles or tactical aircraft, have little or no role in the de-escalation doctrine as potential tar-

63 Sergei Sukhanov, Vladimir Grin’ko, *The Strategy of Deterrence at the contemporary stage and the role of MSD in its implementation*.

64 See: Nikolai Sokov, *The Nuclear Doctrine of the Russian Federation*.

65 Nikolai Sokov, *The Nuclear Doctrine of the Russian Federation*.

66 While analyzing, for instance, the “Zapad 99” exercises quoted above, Arbman and Thornton cite diverging, if not contradictory reports over whether the resort to nuclear weapons by Russia implied either a nuclear bomb strike on the battlefield delivered by strategic long-range aviation, or the use of the “Tochka” short range nuclear capable tactical missile, or a launch of a cruise missile to simulate a nuclear attack against the territory of the United States. Gunnar Arbman, Charles Thornton, *Russia’s Tactical Nuclear Weapons. Part I: Background and Policy Issues*, pp. 29-30.

67 Nikolai Sokov, *The Nuclear Doctrine of the Russian Federation*.

gets are too distant.⁶⁸ This finding is extended to both the European (US and NATO) and the Far Eastern (China) theatres, based on the assumption that deploying TNW against the manpower of Chinese armed forces makes little sense as long as more important targets in the rear could be envisaged.

For this reason, they claim that shorter-range weapons systems have low military utility while the de-escalating mission is primarily assigned to intermediate-range, or operatively strategic delivery systems (medium and heavy bombers carrying gravity bombs, ASMs and SLCMs). This would potentially allow Russia to considerably reduce the stockpiles of shorter-range TNW, if not to eliminate the whole class.⁶⁹

It remains uncertain, however, whether the evidence collected from the observation of a series of military exercises based on publicly available sources suffices to support these conclusions. Nonetheless, it is obvious that they contradict the declared posture explicitly anticipating the use of short range (operatively tactical) delivery systems not only for the purposes of terminating an armed conflict but also to defeat an opponent.⁷⁰ This is particularly true with regard to the Russian Navy which, for all sorts of reasons, got used to heavily relying on shorter range nuclear anti-ship, submarine and air defence weapons.

Consequences for arms control

1. The theory of the increasing utility of TNW, which are supposed to compensate for conventional weakness is not uncontested within the Russian security community. Nor is it universally accepted within the defence establishment. The opponents of the de-escalation doctrine suggest that defence planning, procurement and research and development should give priority to introducing modern command, control and communication systems as well as advanced conventional capabilities including PGMs, rather than to maintaining a large arsenal of nuclear weapons, and particularly TNW.⁷¹ This debate has been repeatedly waged and is closely linked to the discussion of the appropriate way of spending scarce resources.

For the time being, this debate remains of predominantly theoretical value, however. The proponents of the nuclear de-escalation posture formally don't disagree with the above conclusion and admit that the role of nuclear weapons, including TNW, in the Russian defence posture would decrease if Russia matched the advanced military powers or if the latter accepted restrictions on developing advanced capabilities by international agreements. But the bottom line of this debate suggests that Russia's reliance on nuclear weapons will remain as long as the existing gap has not closed.

Despite the formal priority given to the introduction of advanced weapons technologies in long-term research and development, procurement programs and defence planning, the anticipated time horizon for attaining this goal is rather long term. While, ten years ago, it was supposed that Russia would be able to close the gap within ten years⁷² (i.e. by now), it is now suggested that it will take no less than another fifteen years.⁷³ And it cannot be taken for granted that, fifteen years from now, this goal will be attained.

In following this logic, Moscow moves in the opposite direction to the trend highlighted by the 2010 US Nuclear Posture Review, which anticipates a further decrease of the role of nuclear weap-

68 Miles A. Pomper, William Potter, and Nikolai Sokov, *Reducing and Regulating Tactical (Nonstrategic) Nuclear Weapons in Europe*, p. 14.

69 *Ibid.*, p. 15.

70 V.I. Levshin, A.V. Nedelin, M.E. Sosnovskii, *On the use of nuclear weapons for the purposes of de-escalation of military confrontation*.

71 V.I. Slipchenko, *Voiny shestogo pokolenia. Oruzhie i voennoe iskusstvo budushchego (Wars of the sixth generation. Future arms and art of the war)*, Moscow: Veche, 2002, p. 384.

72 V.I. Levshin, A.V. Nedelin, M.E. Sosnovskii, *On the use of nuclear weapons for the purposes of de-escalation of military confrontation*.

73 Mikhail Sosnovskiy, *On Nuclear Deterrence in Contemporary Circumstances*.

ons as a result of the continued advance of conventional capabilities. Being confronted with a growing gap in developing and introducing advanced weapons technologies, Moscow finds itself in a trap and anticipates that the relevance of nuclear weapons for its posture is likely to grow further, while it may decline for the US.

These two distinct trajectories largely explain the differences in the two countries' views of the goals of the Global Zero campaign and their approaches to the TNW reductions.

2. As a result, the nuclear de-escalation doctrine became deeply rooted and now represents mainstream thinking within the Russian defence establishment. It is no surprise that it is also explicitly welcomed by the Russian nuclear industry, which is engaged in the manufacturing, maintenance, refurbishing and disposal of nuclear weapons. Thus it is likely that strong opposition will be generated by the defence and defence-industrial establishment to any significant cuts of the Russian TNW stock. This opposition would not remain without an echo among policy makers, either.

3. Suggestions that a compromise be sought between reducing the conventional superiority of NATO in traditional heavy weapons systems limited by the CFE and the reduction of the Russian stockpiles of TNW appear to miss the complexity of the issue. The declared rationale for maintaining Russia's reliance on nuclear weapons has only partly to do with the disparities that have emerged in Europe in the area of traditional heavy weapons. The Russian defence establishment appears increasingly concerned with the advanced conventional capabilities of the NATO states, and the US in particular, that are not covered by the CFE regime. Thus any openness towards reducing TNW is more likely to be tacitly or explicitly linked by the Russian defence establishment not only to progress in re-negotiating the CFE regime but, rather to progress in controlling advanced conventional warfare capabilities under relevant arms control accords.

4. Further differentiation of TNW is helpful for the purpose of better understanding their different missions and, hence, for the design of appropriate arms control solutions. It does not justify, however, a simple conclusion that progress can be relatively easily obtained in limiting and/or reducing some types of TNW (i.e. weapons for short range systems) while it would take longer to capture other types (i.e. weapons for intermediate-range or operatively tactical arms). The Russian defence establishment clearly prefers not to reduce *any* nuclear option.

5. It remains an open question whether the issue of TNW is better addressed in its entirety, regardless of where such weapons are geographically located in the Russian Federation. Including weapons stored in the European while excluding those in the Asian part of the country would have political disadvantages for Moscow, as it would discriminate against China by potentially allowing Russia to move excess warheads beyond the Urals. The recognition of the negative consequences of such an approach for Russo-Chinese and the US-Japanese relations is one of the reasons for Steven Pifer to give the preference to global rather than regional limits on TNW.⁷⁴

5. Nevertheless, the large stockpile of Russian TNW apparently exceeds the requirements of the nuclear de-escalation doctrine. This conclusion is supported not least by the fact that Moscow reduced it beyond its commitments under the PNIs, and the stockpile is expected to further shrink. This indicates that there is some room for converting ongoing unilateral reductions of US and Russian TNW into an agreement that would provide for greater transparency and, possibly, verification of this process.

74 Steven Pifer, *The Next Round: the United States and Nuclear Arms Reductions After New START*, p. 19.

Part III: Political Constraints

The Russian agenda for arms control is wide and comprehensive. TNW, however, do not figure on it except for the demand that, as a first step, the US should withdraw its remaining TNW from Europe.

This is not surprising. TNW is the single weapons category in which Russia maintains a numerical advantage over the US, not to speak of other nuclear powers. Powerful domestic constituencies, particularly the defence establishment, the nuclear industry and their representation in higher echelons of the government, are opposed to proposals to cut this advantage while there are virtually no politically relevant interest groups championing TNW reductions.

The past decade saw domestic developments that were not conducive to changing this picture. The increasingly rigid, non-transparent, uncompetitive and unaccountable political system that emerged in Russia over the last ten years does not leave much space for public debates in which policy options are openly examined. The growing compartmentalization of Russian politics, and particularly the security and defence sectors, resulted in the migration of key expertise and responsibility for informing and advising government decisions to those groups and agencies that have a vested interest in maintaining the status quo.

At the same time, the increasing incompetence in other “compartments” and at the higher levels of the government, as well as the lack of alternative opinions and opportunities to publicly articulate them from outside the government strengthened the monopoly of the defence establishment, leaving its political advice almost unchallenged.

The lack of proper rotation at the centre of political power in Moscow further strengthened the conservatism that tends to follow the path of previous decisions without questioning them or subjecting policies to regular review. It usually takes a strong shock to alter such entrenched positions.

All this affects the TNW discussions in Russia, which remain one of the least transparent areas of Russian defence policy. It caused powerful inertia in the extremely conservative approaches to TNW as they matured within the defence establishment from the late 1990s and were translated into politics.

As a result, the Russian government and the political class can hardly be expected to seek any changes to the existing status quo. One should not expect them to be open to various initiatives to that effect, nor to be prepared to abandon the prevailing scepticism or even hostility extended to any proposal that foresees “unilateral” reductions or limitations of Russian TNW.

Any strong incentives to challenge this inertia are highly unlikely to emanate from within the Russian Federation. They may come from outside the country, however, if the Russian leadership is sincerely and continuously engaged on the issue by its crucial partners, first and foremost by the US, and/or if the security environment in which Russia finds itself or the perception of this environment changes or starts changing dramatically, not least as a result of such engagement.

Vested interest in maintaining the status quo

Moscow resisted as premature the idea of including TNW in the 2009-2010 negotiation of the New START treaty. So did the US government. This resistance was largely due to the fear of complicating talks that were seen to be in the interest of the US and Russia and which became the single most important symbol of the re-set in Russo-American relations.

However, in Moscow it is considered common sense to believe that subjecting Russian TNW to limitations or reductions is not in the Russian interest. The general reluctance of the Moscow political class to give up any advantage against the background of an overall military inferiority vis-à-vis the West or China is cemented by firm opposition, particularly from the Russian *defence estab-*

lishment, to reducing or limiting any of the military options it associates with TNW, as discussed above in the second section of this study.

Pomper, Potter and Sokov made an attempt at differentiating among the individual actors within the Russian armed forces based on their policy on TNW.⁷⁵ They proceed on the basis of the assumption that the Russian Navy must be the main champion of TNW as it used to heavily rely on them (including anti-ship, anti-submarine and naval air defence weapons) when anticipating any encounter with the superior US Navy and thus considered itself the main victim of the PNIs. They also expect the Russian Air Force to be another champion of TNW for the simple reason that it maintains a significant nuclear capability.

Further development and expansion of the nuclear capability of both the Russian missile and air defence systems as well as outer space forces is actively campaigned for by the military establishment and military industries closely associated with this area of the Russian armed forces⁷⁶.

This assessment is partially true as far as the particular interests of the relevant sub-groups of the military establishment are concerned. It is also true, however, that despite continuous fighting over the distribution of budgetary appropriations between general purpose and nuclear forces, the military establishment – the MoD and the General Staff – usually represent a rather conservative TNW policy and communicate a consolidated message, as the former head of the 12th GUMO, General Vladimir Verkhovskii, has repeatedly done in recent years:⁷⁷

- the Russian Armed Forces shall retain TNW in their arsenals as long as other nations retain nuclear weapons, and
- although those weapons are now stored in the central storage facilities of the 12th GUMO, *Russian armed forces shall retain the option of redeploying them at any time, particularly to the Navy.*

Since the defence establishment appears to have regained its crucial role in determining Russia's position in arms control negotiations by exercising a veto power on what it does not want to see in an agreement (unless it is overruled by the president, which is highly unlikely under current circumstances), these two positions of the Russian nuclear defence establishment can be largely perceived as a bottom line for any TNW agreement.

The scepticism of the Russian defence establishment extended to any TNW arms control arrangements is shared by the *nuclear arms industry*, which resists the reduction of the total number of nuclear warheads employed by the Russian Armed Forces below an unspecified critical level, which would necessitate further reduction of the Russian industrial capacity to manufacture, refurbish, modernize and disassemble nuclear weapons, to dispose of fissile material and which would lead, over time, to budgetary cuts and reduced expertise.⁷⁸

As important for understanding how the machinery of the Russian government works as identifying the national TNW champions is to realize that the pursuit of their policy remains virtually *uncontested domestically*, since there are no relevant actors within the Russian government or society that are interested in (have a vested interest or otherwise anticipate any benefits to flow from an alternative policy) and capable of (have relevant political and/or administrative resources) challenging the

75 Miles A. Pomper, William Potter, and Nikolai Sokov, *Reducing and Regulating Tactical (Nonstrategic) Nuclear Weapons in Europe*, p. 17.

76 See, e.g., Mikhail Sosnovskiy, *On Nuclear Deterrence in Contemporary Circumstances*; Sergei Sukhanov, Vladimir Grin'ko, *The Strategy of Deterrence at the contemporary stage and the role of MSD in its implementation*.

77 Vladimir Verkhovtsev: *Rossiia ne otkazhets'a ot takticheskogo yadernogo oruzhiya* (Russia will not give up tactical nuclear weapons), The Orthodox News Agency "Russkaya Liniya", 31 October 2007: <http://rusk.ru/newsdata.php?idar=173972> (13/08/2010). Verkhovtsev retired in December 2010.

78 The former Head of the 12th GUMO General (ret.) Evgenii Maslin refers to the strong opposition from the Arzamas nuclear weapons manufacturing plant to the Global Zero for the simple reason that it wishes to remain in the business and continue receiving secure state funding. See: *Nuclear arsenals in 25 years*, in: *Security Index* (Moscow), Vol. 15, No 1 (86), Winter 2008/2009, p. 73.

existing status quo and the bureaucratic consensus based on the propositions of the defence and defence-industrial establishments.

Against this background, the few Russian non-governmental experts who develop options for TNW arms control almost never claim that such an agreement would be in Russia's interest by minimizing the risks of the unauthorized use or theft of TNW, and/or by helping to overcome the legacy of confrontation with NATO. They rather claim that Moscow should be prepared to face increasing pressure from the US and NATO, in particular, which, at some point in time, may make the maintenance of the current rigid position no longer possible.⁷⁹

TNW as part of a comprehensive arms control agenda

Some relatively recent Russian statements admitting the possibility of including TNW on the agenda of the follow-on nuclear arms control negotiations⁸⁰ raised expectations that Moscow's policy may be undergoing a revision. In 2009, however, such statements merely served the purpose of preventing the integration of TNW into the New START talks.

By now, the pressure from the US Senate and the declared intention of the Obama administration to cover this class of weapons in the forthcoming round of talks may well have strengthened the argument that it would be difficult to keep this issue off the agenda. But even the most optimistic official statements sound as if Moscow conceptualized potential TNW discussions as "talks about talks"⁸¹ without prejudicing their outcome.

More recent statements indicate that Moscow has not abandoned its reluctant stance on TNW negotiations. It continues putting forward preconditions it had formulated at an earlier stage and has apparently even toughened its position after the ratification of the New START treaty by the US Senate. The initial preconditions included the following:

- prohibiting nuclear states to deploy TNW beyond their national territory, i.e. withdrawing US nuclear assets from Europe, which, according to the Russian Foreign Minister Sergei Lavrov, is seen as an "absolutely indispensable first step in any discussion of the issue",⁸² and
- "fully and irreversibly" eliminating the entire infrastructure that can serve the purpose of deploying US nuclear weapons in Europe⁸³ including in the new NATO members – former Warsaw Pact countries and the Baltic States from which Soviet TNW have been withdrawn.

In January 2011, while ratifying the New START treaty, the Russian State Duma reconfirmed both demands.⁸⁴

The list of conditions seen as critical for Moscow to consider TNW reductions can be extended further. It is the Russian defence establishment, in particular, that insists on including third nuclear powers in any TNW talks.⁸⁵ While Russian foreign ministry officials used to refrain from referring

79 Alexei Arbatov, *Non-Strategic Nuclear Weapons*, p. 28.

80 *Obsuzhdat' s SShA yadernoe oruzhie nado posle peregovorov po PRO* (Nuclear weapons should be discussed with the US after having negotiated ballistic defenses), RIA Novosti, 8 October 2009: <http://rian.ru/politics/20091008/188016463.html> (14/07/2010).

81 "Dialogue over the possibility of reducing tactical nuclear weapons", to put it in the words of the former MFA spokesman Andrei Nesterenko. *Ibid.*

82 *Yadernoe oruzhie ne dolzhno nakhodit'sya na territorii tret'ikh stran* (Nuclear weapons should not be deployed on the territory of third countries), RIA Novosti, 26 March 2010: http://www.rian.ru/defense_safety/20100326/216625933.html (13/08/2010).

83 So the spokesman of the Russian foreign ministry Andrei Nesterenko on 5 February 2010: *MID Rossii prizval vyvesti iz Evropy takticheskoe yadernoe oruzhie SShA* (Russian MFA calls for withdrawal of US tactical weapons from Europe), <http://www.glavred.com/archive/2010/02/05/013825-14.html> (14/07/2010).

84 *25 yanvarya 2011 goda Gosduma ratifitsirovala Dogovor ob SNV* (25 January 2011, the State Duma ratified the START Treaty), <http://www.duma.gov.ru/news/273/62856/> (25/01/2011).

85 Vladimir Verkhovtsev: *Russia will not give up tactical nuclear weapons; Oruzhie umolchaniya* (The silent weapons), in: *Nezavisimaya Gazeta*, Moscow, 2 June 2010, http://www.ng.ru/editorial/2010-02-05/2_red.html (13/08/2010).

to this desire, Foreign Minister Sergei Lavrov surprisingly supported it in his press conference on 13 January 2011.⁸⁶

Furthermore, while the prospects for addressing TNW in arms control talks are widely associated with the follow-on negotiations to the New START treaty, Lavrov questioned the very rationale of beginning such negotiations any time before the treaty has been fully implemented,⁸⁷ i.e. within seven years from its entry into force, or before 2018.

This statement, which may appear surprising, reflects Moscow's complex approach to the future of arms control. It seeks to integrate several issues which, until now, have been dealt with in a rather compartmentalized manner, or have not been properly addressed at all.

While the preconditions and caveats above appear to justify the tactic of delaying discussions of TNW, as early as in March 2010 Foreign Minister Lavrov claimed that *any TNW negotiations should be put into the wider context of a comprehensive arms control and disarmament agenda*.⁸⁸ This implied that any further progress in nuclear arms control, including progress on TNW, is considered in Moscow in conjunction with progress in discussing other issues.

This approach gradually matured in Russia from the late 1990s.⁸⁹ The resulting consensus was based on the underlying assumption that further reduction of nuclear arms including TNW could put Russia's national security in jeopardy if it was not accompanied by the inclusion of advanced non-nuclear weapons technologies in arms control arrangements.

From the 2000s, Moscow pursued a complex and extensive arms control agenda which included in particular:

- banning weapons from outer space;
- preventing the deployment of US ballistic missile defence and of new bases in Europe;
- overhauling (modernizing) the CFE regime;
- seeking to include advanced conventional weapons technologies, and particularly PGMs, the NATO Response Force and naval activities, under arms control and confidence- and security-building measures, and, last but not least,
- preventing the conversion of former US strategic nuclear delivery vehicles for conventional missions and the development of a Prompt Global Strike capability.

TNW is not seen in Moscow as an isolated issue or a simple function of US-Russian arms control. It is rather perceived as one tile in the complex mosaic that is the comprehensive security environment in which Russia sees itself. Speaking at the second State Duma hearings on the ratification of the New START treaty on 14 January 2011, Lavrov made this way of thinking explicit by emphasizing that it is impossible to single out one issue – that of TNW – from the complex agenda of maintaining “strategic parity” without addressing such issues as the development of *conventionally armed long-range strategic weapons systems, the weaponization of outer space, ballistic missile defences and the disparities in conventional forces*.⁹⁰

86 Vystuplenie i otvety Ministra inostrannykh del Rossii S.V. Lavrova na voprosy SMI na press-konferentsii po itogam deyatelnosti rossiiskoi diplomatii v 2010 godu (Statement by foreign minister S.V. Lavrov and answers to questions from mass media in a press conference on the record of the activities of the Russian diplomacy in 2010), Moscow, 13 January 2011. http://www.mid.ru/brp_4.nsf/0/02105390C32B1239C3257819003FF6A3 (16/01/2011).

87 Ibid.

88 Nuclear weapons should not be deployed on the territory of third countries, RIA Novosti, 26 March 2010.

89 See, e.g., Vladimir Belous, Anatolii Diakov et al. Sokrashchenie yadernogo oruzhiya. Protsess i problemy (Reductions of nuclear arms: Process and problems), Center for Arms Control, Energy and Environmental Studies, Dolgoprudnyi, 1997, sub-chapter 4.4.3. on Tactical nuclear weapons and advanced conventional weapons. NATO enlargement. Available at: <http://www.armscontrol.ru/rus/reductions/ch4.htm#4.4.3> (15/07/2010).

90 Stenogramma vystupleniya Ministra inostrannykh del Rossii S.V. Lavrova na plenarnom zasedanii Gosudarstvennoi Duma Federal'nogo Sobraniya Rossiiskoy Federatsii po novomu Dogovoru o SNV (Script of the statement by foreign minister of Russia S.V. Lavrov in the plenary meeting of the State Duma of the Federal Assembly of the Russian Federation on the new START Treaty), Moscow, 14 January 2011. <http://www.mid.ru/nsdubr.nsf/50ce23af9ceacf46432569ea00361254/432569d800226387c3257818005cdbc2?OpenDocument> (24/01/2011).

Consequences for arms control.

1. Despite the ratification of the New START treaty, it shall not be taken for granted that it is going to be followed by another round of nuclear arms control negotiations between the US and Russia in the near future. Nor should it be taken for granted that Moscow would give its consent to begin negotiations with the objective of limiting and reducing TNW, particularly not before consultations within the NATO have produced a consensus on whether US TNW will be withdrawn from Europe, further reduced or remain.

It is not unlikely, however, that the US and Russia will continue less formal consultations on all the issues that include TNW within the existing mechanism for discussing strategic issues in the context of US-Russian relations or in another format. Those consultations would serve the purpose of identifying a complex agenda and architecture of future nuclear arms control negotiations, as well testing the two sides' approaches to open issues, not least concerning the possibility of agreement on TNW.

2. It should not be taken for granted that those consultations will be smooth and will yield tangible results any time soon. They will have to address current preconditions and they may be further complicated and delayed at any stage, not least by developments only indirectly related to TNW. Any discussion of approaches to a potential agreement on TNW will be affected by exhausting debates over definitions and technical details before it can proceed to the core issues.

There is no guarantee either that those negotiations would end with an agreement effectively allowing for transparent and verifiable reductions of those weapons. Within seven years of the implementation of the last treaty, it appears unlikely that any consultations will lead to substantive progress. There is little or no room to expect TNW talks or consultations to proceed fast.

3. A particular issue addressed in this section will be of particular importance for any consultations on TNW. That is the strong desire of the Russian defence establishment that those weapons should remain available for re-deployment regardless of where they are stored. This desire is reciprocated by the US, at least in part, which intends to keep its remaining TNW available for forward deployment, even if they are stored in the US, not least in order to reassure allies and/or to maintain the credibility of nuclear deterrence in the regional contexts.

4. Progress across a wide range of arms control and other security-relevant political issues and concerns raised by Moscow, including those related to more general questions of the European security architecture, would be an important element of any strategy of engaging Moscow and creating a more positive security environment as well as building trust and thus increasing the chances of TNW talks becoming a success story.

Part IV. Arms Control Options

Any potential agreement on verifiable transparency measures (data exchange), limitations and reductions (elimination) of TNW would differ significantly from other nuclear arms control regimes due to the former's specificity.

The specificity of TNW

Any agreement on TNW would concentrate on *warheads* (weapons) instead of delivery systems since all platforms certified to deploy those weapons are of dual use and can carry both nuclear and conventional weapons.

Previous nuclear arms control agreements avoided addressing the issue of warhead control. The START treaties relied on rather indirect methods of reducing deployed warheads by limiting or reducing the relevant delivery systems. At the same time, they did not provide for either the elimination or monitoring of non-deployed warheads. There are only few exemptions from this pattern.

The New START treaty, for instance, allows for the inspection of individual deployed missiles (one per inspection) in order to verify the declared number of re-entry vehicles they carry. However, this measure, yet to be tested, is of limited utility for TNW since it applies to deployed weapons and not to those which have been separated from delivery systems.

The 1987 INF Treaty was the first nuclear arms control instrument that provided for the elimination not only of the missiles but also of their front sections, including re-entry vehicles, which were crushed or flattened.⁹¹ The treaty established procedures for the observation of the destruction of warhead shells after nuclear devices and guidance elements had been removed.⁹² Should any agreement on TNW provide for their verifiable elimination, the experience gathered through the implementation of the INF Treaty would provide a solid basis for the relevant procedures.

The 1992 agreement between Russia and Ukraine governing the transfer of nuclear munitions from the territory of Ukraine to temporary storage at disassembly plants in Russia allowed Ukrainian representatives to observe the disassembly and elimination of transferred nuclear warheads as well as the disposal of the fissile material which, under another agreement, was converted into fuel for Ukrainian nuclear power stations.⁹³

While they are of some utility, previous nuclear arms control agreements do not provide a blueprint of how to proceed with TNW. Any new instrument addressing the issue would have to elaborate a new set of procedures if the agreed limitations and/or reductions were to be verifiable.

Such measures would have to be *extremely intrusive* and are seen by either side as very *sensitive*.

Under the PNIs, no TNW are operationally deployed. This means that, in contrast to strategic arms subject to the START treaties, they are kept in depots separate from their platforms. This makes their status similar to that of the non-deployed strategic warheads kept in reserve, which are neither accounted for under the New START treaty, nor subject to verification.

The precise location of warheads – whether in storage or transit – cannot be monitored by national technical means. For this reason, any verifiable TNW agreement would require inspections of:

91 Protocol on procedures governing the elimination of the missile systems subject to the Treaty between the United States of America and the Union of Soviet Socialist Republics on the elimination of their intermediate-range and shorter-range missiles, Section II, paragraph 10. <http://www.state.gov/www/global/arms/treaties/inf4.html> (23/01/2011).

92 Protocol regarding inspections relating to the Treaty between the United States of America and the Union of Soviet Socialist Republics on the elimination of their intermediate-range and shorter-range missiles, Section VIII, paragraph 1. <http://www.state.gov/www/global/arms/treaties/inf5.html> (23/01/2011).

93 For the Agreement, as well as the relevant Protocols and Attachments thereto see: Rossiya – Urkaina, 1990-1993. Sbornik dokumentov (Russia – Ukraine, 1990-1993. Collected documents) / Edited by Andrei Zagorski, MGIMO, Moscow, 1996, pp. 197-206.

- nuclear weapons storage facilities, both at military bases and central locations,
- the movement of warheads in and out, as well as between the relevant nuclear sites, and
- temporary depots at nuclear weapons production (assembly/disassembly) plants.

Russia and the US have not gone that far in their previous agreements, but have instead proceeded on the basis that the disclosure of the locations of nuclear sites, or of the presence of nuclear weapons at specific locations was too sensitive, not to speak of the intrusive inspection of such locations.

Remarkable progress was achieved during the 1990s while implementing the US-Russian Cooperative Threat Reduction program which included a set of cooperative measures aimed at upgrading the security status of Russian nuclear weapon storage facilities. The underlying presumption remains, however, that the US and Russia have not yet reached the level of mutual trust that would allow them to agree on such a set of highly intrusive measures as outlined above, let alone to grant other nuclear powers access to the relevant information and particularly to nuclear sites.

The general framework

While Russia remains hesitant on the issue of a potential TNW agreement, the US Government has revealed the main features of its future approach. This sets the stage for the time to come, making the discussion of alternative formats for negotiations less relevant, particularly as Moscow has not proposed any vision of TNW arms control of its own.

Firstly, the US intends to include TNW on the agenda of the next round of *bilateral negotiations with Russia*. At this stage, the US does not intend to engage third nuclear powers.

Secondly, the particular objectives of the US remain ambiguous and comparably moderate. Secretary of State Clinton emphasized that the US would “seek Russian agreement to increase transparency” on TNW in Europe,” and “relocate these weapons away from the territory of NATO members”.⁹⁴

In its Resolution of Advice and Consent to Ratification of the New START treaty, the Senate went a step further by suggesting that, in the anticipated negotiations, the US should seek an agreement “to address the disparity” between the TNW stockpiles of the Russian Federation and of the United States “and to secure and *reduce* tactical nuclear weapons *in a verifiable manner*”⁹⁵ (emphasis added).

At the same time, the Senate emphasized the importance not only of negotiating verifiable reductions of TNW but also of improving the security and transparency of existing stockpiles by “establishing cooperative measures to give each Party to the New START treaty improved confidence regarding the accurate accounting and security of tactical nuclear weapons maintained by the other Party”.⁹⁶

Thirdly, at a relatively early stage, the Obama administration took a decision on the method by which it will seek to address the issue. The 2010 US Nuclear Posture Review envisaged combining the negotiations over non-deployed strategic weapons and those concerning TNW (also non-deployed), thus *making the reduction of US strategic weapons in reserve conditional upon the reduction of the stockpile of Russian TNW*.⁹⁷

Although the US Government has not yet presented a detailed proposal to this effect, the US arms control community anticipates that it may seek to complement limits on strategic delivery vehicles and deployed strategic weapons with a single limit on all US and Russian nuclear warheads – de-

94 111th Congress, 2nd Session, Senate, Exec. Rept. 111-6, October 1, 2010, p. 60.

95 US Senate Resolution of Advice and Consent to the ratification of the New START Treaty of December 22, 2010, Condition 12 (A) (i). Available at: <http://thomas.loc.gov/cgi-bin/ntquery/z?trty:111TD00005>: (27/12/2010).

96 Ibid., Condition 12 (C) (i).

97 Nuclear Posture Review Report, April 2010, pp. xi, 47.

ployed and non-deployed, strategic and tactical. An overall limit would leave each party the flexibility to decide on the particular mix of weapons it holds in reserve.⁹⁸

This approach seeks to exploit the Russian preoccupation with the large number of US strategic warheads in reserve. At the same time, the US does not seek linking the reduction of TNW to either the modernization of the CFE regime or the withdrawal of the US nuclear assets from Europe, as suggested by numerous experts.⁹⁹

Indeed, it seeks to offer stronger incentives to Moscow, which reveals no interest in a deal involving a few hundreds of American and several thousands of Russian TNW. Such an asymmetric trade off is rejected in Moscow. The Russian demand that the US withdraws its nuclear assets from Europe prior to TNW talks serves precisely the purpose of preventing any consideration of such a deal.¹⁰⁰

The modernization of the CFE regime would be seen as an important step in response to Moscow's concerns but not sufficient compensation for the inclusion of Russian TNW under an arms control regime. As discussed in the second and third sections of this study, the Russian defence and political establishment is concerned not only with NATO's numerical superiority in the area of heavy weapons covered by the CFE regime. It is more concerned with the growing superiority of the US and NATO in advanced weapons technologies. This significantly expands the number of areas in which the US and NATO are expected to compensate Moscow for its cooperativeness on TNW.

Fourthly, as, even according to the most optimistic view, US-Russian follow-up talks are unlikely to open any time soon, and since the inclusion of TNW on the agenda of those talks would depend, not least, on the progress and outcome of consultations within NATO concerning the possible withdrawal of American TNW from Europe, the US Government is likely to explore a *phased approach* that seeks to improve transparency regarding the size, location and deployment status of TNW as well as their security before a formal agreement is reached.¹⁰¹ It would probably also explore the feasibility of other early measures, such as establishing exclusion zones.

The US proceeds on the assumption that each party would gain from such an approach by offering Moscow several incentives. It presumes that further reductions of strategic nuclear arms, which are supposed to be in the Russian interest, are unlikely if TNW is not addressed.¹⁰² At the same time, it would grant Moscow transparency and some control over the non-deployed US strategic weapons which, for a long time, has been subject of Russian concern.

The issue thus boils down to two main questions: will Moscow

- accept the link between its TNW and further reductions of strategic arms as well as the US strategic warheads in reserve, and
- agree to take early measures, particularly those increasing transparency and/or introducing geographic restrictions regarding the storage of those weapons, before a more comprehensive agreement with the US has been reached?

The Russian debate over TNW does not provide any clearly affirmative responses to either of those questions.

Should Moscow agree to include TNW in any arms control regime, a bilateral instrument negotiated with the US is considered to be the most appropriate first step to deal with the issue,¹⁰³ despite

98 Steven Pifer, *The Next Round: the United States and Nuclear Arms Reductions After New START*, p. 25.

99 See, e.g., Miles A. Pomper, William Potter, and Nikolai Sokov, *Reducing and Regulating Tactical (Nonstrategic) Nuclear Weapons in Europe*, pp. vii, 3; as well as: International Commission on Nuclear Non-proliferation and Disarmament Report, "Eliminating Nuclear Threats: A Practical Agenda for Global Policymakers", p. 192.

100 Moscow insists on the withdrawal of the US' tactical nuclear weapons from Europe, Interfax, 4 May 2010. See: <http://www.interfax.ru/politics/news.asp?id=135356> (13/08/2010).

101 This issue is considered an "early priority" by the Senate. See: 111th Congress, 2nd Session, Senate, Exec, Rept. 111-6, October 1, 2010, p. 61.

102 See: *ibid.*, p. 61.

103 Alexei Arbatov, *Non-Strategic Nuclear Weapons*, pp. 38-40.

the insistence of the Russian defence establishment on including third parties' nuclear forces in the arrangement.

It is not unlikely that Moscow will continue reducing its TNW, since Russian stockpiles, as reviewed in the first section of this study, apparently exceed the requirements of the “nuclear de-escalation” doctrine considered in the second section. However, Moscow still has the choice of whether to continue to reduce TNW as part of an agreement with the US or unilaterally. Opting for the latter would leave Russia more freedom of action, while limiting this freedom does not offer sufficient benefits. Up to now Moscow has preferred to maintain its freedom of action.

The interest of Russia in further reductions of strategic nuclear arms is often overestimated. The Russian establishment proceeds on the basis that the New START treaty is the best possible negotiable deal and sets an acceptable framework for the US-Russian “strategic stability equation” for the next ten years.¹⁰⁴ At the same time, anticipated uncertainties regarding the transformation of the security landscape beyond the New START time horizon make Moscow hesitant to predict how this equation could look like ten years from now. For this reason, it hesitates to enter a commitment to any further reductions any time soon. These hesitations manifested themselves in Lavrov's doubts regarding the advisability of launching any new negotiations before the New START treaty is fully implemented.¹⁰⁵

The major source of current concern remains the evolution of the US ballistic missile defence policy. The New START lifetime nearly coincides with the first phase of the current planning for deploying US ballistic missile defence systems in Europe. The latter is considered less problematic in Moscow now that it has been revised by the Obama administration. However, should the next phase anticipate the deployment of silo-based interceptor missiles, Moscow might feel forced to reconsider its policy and refrain from further reductions of its nuclear arsenal below the New START provisions.

The US Senate resolution on the ratification of the treaty, which emphasizes the understanding that the US is not restricted by the New START provisions, in any way, in deploying ballistic missile defence systems or in developing new conventionally armed weapons systems of strategic importance, has only strengthened Moscow's concerns and hesitation as regards follow-up steps.

The attractiveness of the proposal to grant Moscow control over non-deployed strategic weapons at the price of subjecting its TNW to an arms control regime also appears to be overestimated. The main cause of concerns expressed by the Russian defence establishment is not the total number of weapons the US holds in reserve or the possibility of monitoring their state but, rather, the “spare capacity” of US strategic delivery vehicles allowing the deployment of additional warheads and thus increasing the operationally deployable strategic capability of the US. The New START treaty has limited the US upload capability to about 100 “spare” delivery vehicles, thus reducing it to a level relatively acceptable to the Russian defence establishment.¹⁰⁶

Should Moscow seek to further reduce the upload capability of the US strategic forces, it will most likely concentrate on additional reductions of delivery vehicles rather than warheads in reserve. Thus the added value of a trade-off between non-deployed strategic weapons and TNW is not obvious for Moscow either.

The hesitations of the defence establishment may eventually be outweighed in Moscow by political considerations, i.e. the interest to maintain the recent positive dynamics in relations with the US. Arms control negotiations are traditionally seen in Russia as the most natural tool for engaging the US.

104 On this see: SNV podpisan – chto dal'she? (START is signed – what is next?). A roundtable discussion in: Index Bezopasnosti, Issue 4, 2010, pp. 105 – 112. See particularly deliberations by General Buzhinskiy, former Head of the International Treaties Department of the Russian MoD, pp.106, 107, 109.

105 Statement by foreign minister S.V. Lavrov and answers to questions from mass media in a press conference on the record of the activities of the Russian diplomacy in 2010, Moscow, 13 January 2011.

106 General Buzhinskiy called the respective provisions of the New START Treaty a “partial solution” although not the ultimate one. Ibid., p. 110.

However, here again voices urging caution are strong,¹⁰⁷ as negotiations in the remaining few years of the Obama administration are not expected to yield tangible results or a breakthrough, while there is a great deal of uncertainty about what policy Obama's eventual successor may pursue. Regardless of whether the succession takes place two or six years from now, the most important decisions defining the future US posture, e.g. on ballistic missile defence, will be taken by another president.

The plausible conclusion from this argument is that further nuclear arms control consultations are seen in Moscow as an important means of continuous communication on strategic issues with the US. However, any Russian government is likely to commit itself to further steps, including on TNW, after it has a better idea of what the US policy on arms control, ballistic missile defence and the development of the conventional Prompt Global Strike capability is going to be after the New START treaty expires.

As long as the consultations proceed, early measures, for instance those on improving transparency on TNW stockpiles, may well be the subject of US-Russian deliberations. The added value of such measures for Russia, however, is not obvious, since they would require Moscow to commit itself to particular actions while it would have to wait for any benefit from them – if any was forthcoming – until after an agreement had been reached.

Thus the balance sheet of the current arms control offer by the US is at best ambiguous from the Russian perspective. At the same time, the constituencies with a vested interest in maintaining the status quo on TNW, as discussed in the third section of this study, have powerful arguments to prove that any early progress in dealing with those weapons would unilaterally disadvantage the Russian Federation.

Transparency and confidence-building measures

The need to arrange for the confidential exchange of data on the quantity, storage locations and the deployment status of TNW is a *sine qua non* of any negotiations, particularly since knowledge regarding this class of weapons remains inconclusive and unreliable. The first package of transparency measures could anticipate the declaration, by each side, of their existing stockpiles as well of the respective storage locations. An exchange of data of this kind is sometimes considered helpful even if it precedes the negotiation of a full-scale legally binding and verifiable treaty.¹⁰⁸

While representing a welcome first step to building confidence between the parties, the practical utility of an early set of transparency measures as applied to TNW would be limited for several reasons.

Firstly, it would depend on the *agreed definitions* and the *common categorization* of TNW setting the parameters for both the data exchange and the elaboration of further arms control and verification measures.

As referred in the first section, there is no commonly accepted definition of TNW (e.g. based on range, yield, missions or other criteria) except for the one that includes in this category every single nuclear weapon not yet covered by existing nuclear arms control instruments. Before applying any transparency measures, it would be particularly useful to agree on the categorization of the deployment status of TNW (e.g. active non-deployed, deployable in reserve, or non-deployable awaiting disassembly) and to agree which categories would be covered by what transparency measures.

Some experts suggest, for instance, that the initial data exchange should not include information on the entire TNW stockpile but only on those weapons stored at air and naval bases, i.e. on active

107 Ibid, p. 109.

108 See, e.g., Miles A. Pomper, William Potter, and Nikolai Sokov, *Reducing and Regulating Tactical (Nonstrategic) Nuclear Weapons in Europe*, p. 33-34.

non-deployed weapons, excluding deployable weapons held in central reserve or awaiting disassembly.¹⁰⁹

The negotiations over the relevant definitions and categories are supposed to be the first part of the TNW negotiations proper, and not the easiest part. Since the American approach foresees negotiating with regard to the entire stockpile of non-deployed warheads, both strategic and tactical, it is legitimate to ask whether the US would be prepared to include data on its reserve strategic weapons in the data exchange.

Since the structure of data exchange is expected to be first defined and agreed in negotiations, it is unlikely that a properly conclusive and comprehensive exchange of information will precede the TNW talks proper. Indeed, Moscow is reportedly reluctant to engage in data exchange on TNW *prior* to the beginning of official negotiations.¹¹⁰

Secondly, on its own, data exchange, although welcome and helpful as a first step, would be considered inconclusive and not fully reliable if not supported by the appropriate *verification* measures. This is a reason why many experts do not separate the transparency issue from that of verification. However, it is unlikely that an appropriate package of verification measures could be developed before negotiations were considerably advanced. Given the sensitivity of the issue and other difficulties associated with designing appropriate measures, any verification mechanism is likely to result from the TNW talks rather than precede them. It is, moreover, more likely than not that any verification measure adopted would be imperfect.¹¹¹

The parties will thus have to decide whether they are prepared to engage in unverifiable data exchange at the beginning of the talks, or would rather wait until an imperfect verification regime is established at the end of the talks.

The most elaborate proposal concerning how the data exchange on TNW could be organized in conjunction with forthcoming verification measures was submitted several years ago by a group of Russian experts from the Center for Arms Control, Energy and Environmental Studies at the Moscow Institute of Physics and Technology.¹¹² They suggested that a relevant set of *transparency measures* could be implemented in two steps.

Firstly, Russia and the US would declare the quantity of operationally deployable TNW (active non-deployed as well as deployable weapons in central storage) and their locations. They would commit themselves not to convert weapons that had been retired back into deployable weapons, and would provide each other with data on the number of weapons destroyed on the basis of PNIs since 1991 and on of all nuclear weapons destroyed since 1992. They would also exchange information and discuss with each other their nuclear postures involving TNW.

Secondly, they would allow visits to storage facilities for deployable weapons in order to provide reassurances that their quantity did not exceed the declared numbers. They would provide each other with evidence of the destruction of the weapons retired at the first stage, and would allow visits to storage facilities for weapons awaiting disassembly once all weapons retired during the first phase had been destroyed.

The parties also could significantly improve mutual confidence in their knowledge about each other's arsenals of TNW if they agreed to share and were able to sufficiently verify information on their annual production and elimination of nuclear weapons thus allowing, at least over some time, for a more precise assessment of their actual holdings.¹¹³

109 Alexei Arbatov, *Non-Strategic Nuclear Weapons*, p. 39.

110 Vladimir Rybachenkov, *On prospects of the US-Russian disarmament dialogue*, December 1, 2010, pp. 1-2. The Russian text of the paper was released on 6 November 2010.

111 Steven Pifer, *The Next Round: the United States and Nuclear Arms Reductions After New START*, p. 32.

112 Anatoli Diakov, Eugene Myasnikov, Timur Kadyshev, *Non-strategic nuclear weapons: Problems of control and reduction*, pp. 57-58.

113 Steven Pifer, *The Next Round: the United States and Nuclear Arms Reductions After New START*, p. 32.

As a gesture of goodwill, parties could consider implementing the first step of data exchange before or at an early stage of any forthcoming TNW talks. By contrast, transparency measures involving any sort of verification will only be feasible after the negotiations are completed.

The only instrument that appears to provide a basis for early, if limited information exchange between the US and Russia on the status of their TNW without waiting for the beginning or completion of formal talks are *the PNIs*.

Although the PNIs represent unilateral and not legally binding commitments, in the 1990s, the US and Russia used to update each other on their implementation, as referred to in the first section of this study. As a demonstration of goodwill, they could agree to resume the exchange of information based on the definitions of the PNIs. They could also potentially extend this exchange beyond discussing simply the implementation of the PNIs to include data on current holdings and the status of the warheads concerned as well as on destroyed weapons.

The PNI-related discussion could also provide a platform for launching a dialogue on the US and Russia's TNW postures, including their plans on how to further proceed with the existing stock-piles.

Since TNW are seen as an issue of political concern not only in the US but also in some European countries – some of which are NATO members and some not – it would be desirable to give those countries some reasonable reassurance that, while discussing the issue on a bilateral basis, the US and Russia do not neglect their concerns.

The resumption of the information exchange on TNW in the *NATO-Russia Council* (NRC), as practised in the former NATO-Russia Permanent Joint Council until 1999, could probably serve this purpose in the best possible way. The NRC would provide an appropriate platform for such an exchange, not least because it could also serve the purpose of updating Moscow on the progress of intra-NATO consultations concerning the possible withdrawal of US nuclear assets from Europe.

Looking forward and preparing the ground for an agreement on TNW, the NRC could also be instrumental in addressing, in a multilateral format, issues concerning the security of nuclear weapons, transparency and mutual confidence-building by developing cooperative joint measures. As suggested by Sam Nunn, this would require no new treaty or formal agreement.¹¹⁴

Consolidation of TNW in central storage facilities

As concluded in the first section of this study, the introduction of specific geographic nuclear “exclusion zones”, which, as anticipated by the new NATO strategic concept of November 2010, or by proposals made by Poland, Sweden and the US, would keep storage facilities for Russian TNW away from the NATO-Russia border, appears impractical for various reasons.

It is not clear how far Moscow would be supposed to move its weapons in order to keep them away, in a reassuring manner, from the territory of NATO and EU member states. TNW delivery systems have various ranges; some of them are able to reach EU/NATO territory from well beyond the Urals. Apart from this, most TNW delivery systems are mobile and can be forward deployed regardless of where they are usually deployed and where the relevant munitions are stored.

All or most of Russian TNW are reportedly kept, together with strategic weapons, in central storage facilities controlled by the Ministry of Defence rather than at air or naval bases. Many of those facilities are reportedly located close to EU/NATO borders. This makes the introduction of “exclusion zones” unverifiable unless all Russian nuclear storage facilities are moved to the Far Eastern part of Russia.

114 I.e. a joint terrorist threat assessment to security of nuclear weapons, joint NATO-Russia recovery exercises, or at least symbolic mutual visits to nuclear bases where nuclear weapons are stored. See: Sam Nunn, NATO, Nuclear Security and the Terrorist Threat, in New York Times, 16 November 2010, available at: http://www.nytimes.com/2010/11/17/opinion/17iht-ednunn.html?_r=3&ref=global (30/11/2010).

Needless to say, a demand to move all Russian TNW sufficiently away from the borders of EU/NATO countries that did not even touch on the issue of US and other NATO countries' TNW in Europe is unlikely to be appreciated in Moscow.

An alternative approach focuses on reducing the availability of TNW instead of the geography of their storage locations. As suggested by a number of experts,¹¹⁵ the US and Russia could commit themselves to not keep their TNW together with operational units, i.e. not to store those weapons at forward-based locations at air and/or naval bases near the respective delivery systems (or to withdraw them if currently so stored). Instead, they would move such weapons to “deployable reserves”, i.e. consolidate them at central storage facilities.

Implementing such a measure would effectively imply the withdrawal of some 200 US nuclear gravity bombs from Europe, while Russia would move about 500 gravity bombs and ASWs (and, presumably, naval TNW) to central storage.

The implementation of such measures would be easier to verify through inspection of operational general purpose air and naval base storage facilities. Instead of verifying the correctness of the declared number of warheads kept at a site, as well as their types, the purpose of such inspections would be to reaffirm that no nuclear weapons are kept at operational bases.

Of course, this measure would have limited utility as it would not provide any responses to questions relating to stockpiles of TNW. Nor would it necessarily significantly increase the time needed for operational deployment of Russian TNW, since “central” storage facilities are often located in the proximity of the operational bases and differ from the latter mainly in terms of command structures.

However, as an early step to be implemented before TNW talks have been launched or completed, it could have an important political confidence-building and reassuring effect. The consolidation of all non-deployed weapons in presumably more secure central storage facilities would certainly make them less vulnerable to theft or unauthorized use while, at the same time, preserving the possibility of returning some weapons – potentially subject to prior notification – to the operational bases in case of a contingency – an option which is considered important by the Russian – and probably also the US – defence establishment.¹¹⁶

Verification

While contemporary political and military posture constraints make the rationale of an agreement on TNW questionable from the Russian perspective, it is verification of such an agreement that is going to be the major challenge. Measures to control non-deployed nuclear warheads and/or weapons-grade fissile material were not anticipated by any US-Russian nuclear arms control treaty until they agreed, in 1994, to explore possible guarantees of the transparency and irreversibility of nuclear disarmament. These included exchange of information on nuclear warheads and fissile material, selective verification of this information, and the elaboration of non-intrusive measures to control and verify the elimination of nuclear warheads.

While the US initially envisaged that such an agreement was to cover all nuclear warheads in their various states as well as fissile material, upon the request of Russia, the elaboration of the relevant measures was restricted to those designed to apply only to excessive weapons and fissile material, i.e. to weapons being retired under arms control agreements, and not to those kept in storage.

It is important to note that, on launching this initiative, Russia and the US envisaged extending the application of the anticipated methods to both strategic and tactical nuclear munitions, particularly since the latter were supposed to be covered by the START 3 treaty, which never was negotiated.

115 See in particular: Alexei Arbatov, *Non-Strategic Nuclear Weapons*, pp. 39-40; Sam Nunn, *NATO, Nuclear Security and the Terrorist Threat*.

116 See. e.g., Steven Pifer, *The Next Round: the United States and Nuclear Arms Reductions After New START*, p. 20.

In 1994-1998, in an activity prepared jointly by Russian and American nuclear scientists, which became known as a Lab-to-Lab Program, significant progress was achieved in developing methods allowing each side to follow, in a reassuring way, the whole process from taking nuclear weapons to be retired either off their delivery vehicles or from storage facilities, transporting them to temporary depots at a disassembly site, to actual destruction of the weapons and the disposal of the fissile material without disclosing the most sensitive engineering or technological information.¹¹⁷

Although the Lab-to-Lab Program was interrupted in 1998, shortly before entering the final stage, its participants reached two important conclusions – apart from many practical findings.

Firstly, they believed they had proved the feasibility of the methods developed for the purpose of controlling warheads and fissile material. Those methods were designed to complement traditional nuclear arms control measures, which concentrate on delivery vehicles rather than munitions.

Secondly, being well aware of the sensitivity of the subject and the need to protect the relevant information, they came to the conclusion that the methods developed would only work in an environment characterized by a high level of mutual trust between the partners in cooperation. Suffice it to say that the work of the joint group from nuclear labs of the two countries mandated by two joint decisions of their presidents was interrupted in 1998 upon the intervention of the Russian Federal Security Service and was never resumed.

Two other findings stemming from joint work carried out by American and Russian scientists in the late 1990s are relevant for the purposes of this study.

The methods they developed are generally applicable to both strategic weapons and TNW. Although the experiments of the scientists were reduced to the verification of the elimination of excessive warheads, their results are in principle applicable to the verification of nuclear warheads in storage facilities and of those being transported from one nuclear site to another.

Still, the subject itself and the methods developed were considered so sensitive that, at least in the initial period of application, both the US and the Russian Federation would hesitate to share them with third countries. I. e., should TNW negotiations start and draw on the findings from the Lab-to-Lab Program, they are most likely to be limited to the US and Russia while leaving the possibility that other nuclear powers join the process at a later stage.

The US-Russian Lab-to-Lab was not the only project that explored options for the verifiable elimination of nuclear warheads. A series of other international projects, involving, for instance, the International Atomic Energy Agency and the UK and Norway, which were implemented during the 1990s and thereafter, provides evidence of the feasibility of identifying a proper set of methods to allow for sufficiently reassuring monitoring and verification of the elimination of nuclear weapons by means of a nuclear arms control agreement without revealing the most sensitive weapons-engineering information.¹¹⁸

This implies that the verifiable reduction of TNW is possible in principle and is mainly prevented by broader political considerations and the lack of trust that increases hesitation regarding the cooperative engagement in this rather sensitive area.

117 The progress and the findings of the Lab-to-Lab Program as well as their applicability to non-strategic nuclear arms control are intensively discussed by Anatoli Diakov in: Anatoli Diakov, *Yadernye boezaryady i oruzheynye materialy* (Nuclear warheads and weapons materials), forthcoming in 2011 in: *Yadernaya perezagruzka: sokrashchenie i nerasprostranenie vooruzhenii* (Nuclear reset: Arms Reductions and Nonproliferation) / edited by A.Arbatov and V.Dvorkin; Moscow Carnegie Center, Moscow: ROSSPEN, pp. 225-248.

118 For an overview of the relevant projects and their outcomes see: David Cliff, Hassan Elbahtimy, Andreas Persbo, *Verifying Warhead Dismantlement: Past, present, future*, VERTIC Research Report, Number 9, September 2010, particularly pp. 40–85.

Consequences for arms control

1. Should the most optimistic scenario materialize and TNW talks begin, the most feasible format for them would be bilateral US-Russian negotiations. Any multilateralization of talks to include third parties, at least in the initial phase until the first agreement is tested, would unnecessarily complicate the sharing of sensitive information and methods designed to exercise control over nuclear weapons rather than delivery vehicles.

This makes the suggestion that non-deployed strategic weapons and TNW be included on the agenda of the US-Russian New START follow-on negotiations appear to be an elegant solution, although it has yet to be accepted by Russia.

While anticipating acceptance of this by Russia, it is important to note that the incentives for Russia to address the TNW issue, particularly alongside further cuts in strategic arms and non-deployed US strategic warheads should not be overestimated. In order to convince Moscow, the US would be better advised to engage Russia on a wide range of other relevant issues across a broad arms control agenda, such as the revitalization of the CFE regime, ballistic missile defence or long-range conventionally armed precision-guided munitions. This would provide reassurance that it takes arms control seriously and that the interest in arms control can be sustained across changing US administrations.

2. Any negotiation of verifiable TNW limitations and reductions is likely to be an extremely challenging task and a lengthy process. Anticipating a time-consuming negotiation process, not only the parties to the talks (the US and Russia) but also concerned European states might explore the feasibility of early measures to improve transparency and build confidence in order to gradually establish an atmosphere conducive to a satisfactory outcome of the talks.

It is largely a matter of goodwill for Russia and the US to declare the quantity of deployable TNW in their reserves and to exchange data on the number of tactical weapons destroyed on the basis of PNIs since 1991 and of all nuclear weapons destroyed since 1992 without waiting for the beginning of official talks or for any progress to be made in them. However, every data exchange should be preceded by the elaboration of commonly agreed definitions and categories structuring TNW by type and deployment status.

3. One way of providing greater transparency on this class of weapons would be for the US and Russia to resume exchanges on the implementation of the PNIs. In parallel to this bilateral exchange, the NATO-Russia Council may provide, as it did for some time in the 1990s, an important platform for mutually reassuring TNW consultations to allow for reasonable confidential data exchange; discussion of TNW postures; updating Russia on the intra-NATO consultations concerning the future of the US nuclear assets in Europe. These consultations also could help facilitating cooperative NATO-Russia confidence-building measures.

4. While the introduction of nuclear exclusion zones appears a rather impractical measure, removal or reduction of TNW from/in forward air and naval bases to central storage facilities could be a helpful and reassuring first step. Although it would not necessarily mean that all such weapons are moved “deep into national territory”, such a measure could help further reducing the risks of theft or unauthorized use of TNW.

5. The next round of US-Russian nuclear arms talks, which is still waiting for Russian consent, will possibly combine the discussion of TNW and non-deployed strategic nuclear warheads. Reliable verification of any agreement to limit or reduce both types of weapons would pose the major challenge during those negotiations. The relevant arrangements, however, can build upon the joint findings of the US and Russian nuclear scientists who, between 1995 and 1998, developed non-intrusive methods allowing the observation, in a reassuring manner, of the dismantlement, storage, transportation and disassembly of nuclear warheads as well as the disposal of fissile material from

them. Such arrangements can also benefit from the broader international experience in monitoring the disassembly of nuclear warheads.

6. Any agreement on the application of those methods in a very sensitive area of the military or military-relevant nuclear infrastructure will be impossible without the restoration of mutual trust between Russia and the US as well as between Russia and the Transatlantic community of states and institutions, NATO included. Restoring and promoting mutual trust would necessitate progress not only across the broader arms control agenda but also in the discussion of wider political issues raised by Moscow, such as President Medvedev's initiative to consolidate and ratify a new European security order to be based on the mutual recognition of the political status quo and the institutionalization of a trilateral consultative process to involve Russia, the US and the European Union in preparing the most important decisions affecting the European security landscape.

Conclusions

1. Over the past twenty years, the Russian Federation has significantly reduced its arsenal of deployable and non-deployable TNW from around 22,000 to about 5,000 or 6,000 on the basis of unilateral US-Soviet/Russian Presidential Nuclear Initiatives of 1991 and 1992. While large parts of this arsenal have been destroyed, all remaining TNW are reported to have been moved to storage facilities, so that neither Russia nor the US now operationally deploy any such weapons.

However, Russia still maintains a far more sizable TNW arsenal than the US. Although little is known about actual numbers, breakdown by various criteria or deployment status, it is expected to be further reduced on the basis of either unilateral measures or by agreement, as it apparently exceeds the requirements of the Russian military doctrine and particularly those of the nuclear de-escalation posture.

2. Despite the ratification of the New START treaty, prospects for US-Russian talks on TNW remain vague, not least due to the Moscow's withholding of consent and the lack of consensus within NATO on the future of the US TNW in Europe. Even if these obstacles were to be overcome, the talks would be extremely complicated and unlikely to yield tangible results any time soon.

This is due to two reasons – political- and defence-posture-related hesitations particularly on the Russian side, which tends to increasingly rely on its nuclear arms in defence planning, and the specificity of the subject of forthcoming talks, which would have to concentrate on the very sensitive issue of controlling non-deployed nuclear munitions in storage facilities instead of deployed weapons systems.

3. Confronted with the decline of its conventional forces and a growing gap in advanced military capabilities, Russia is increasingly relying on nuclear arms to offset its growing inferiority vis-à-vis advanced military powers, particularly the US.

As a result, Russia and the US find themselves on different trajectories as regards their definitions of the future role of nuclear arms in their postures. While the US anticipates that the ongoing development of its conventional capabilities would lead to diminishing the role of nuclear weapons, it is precisely the advance of US non-nuclear capabilities that represents the major source of concern for the Russian defence establishment and causes it to project a growing role for nuclear weapons in the future.

4. While considering nuclear disarmament, Moscow no longer concentrates only on the “nuclear” balance with the US or third nuclear powers but tends to include in the strategic equation advanced military capabilities such as precision-guided munitions, ballistic missile defence, long range conventionally armed weapons that can be assigned to strategic missions, and the potential weaponization of outer space.

Since it appears unlikely that Russia will be able to match any of these developments any time soon, it seeks to compensate for its weakness in virtually every area by the reliance on nuclear weapons, assigning its various classes of nuclear weapons multiple roles in virtually any sort of contingency.

This thinking became deeply rooted in the Russian defence and nuclear defence-industrial establishments early in the 1990s. Ever since, they have constituted a powerful lobby for the maintenance of a sizable nuclear capability and have sought to win acceptance of their views in the political establishment. The 1999 Kosovo air campaign, the 2003 war on Iraq, and the 2008 Russo-Georgian war proved extremely conducive to anchoring this thinking among the Russian political establishment.

The strong resistance to applying arms control measures to TNW is therefore most likely to be broken from outside the Russian Federation if Moscow is engaged over time by those external partners that have the expressed interest in limiting and reducing TNW.

5. Should the most optimistic scenario materialize and TNW talks open, they would be bilateral US-Russian negotiations that would not involve any third parties, at least not in the early stages. In these talks, the US would seek to link START-type reductions of deployed strategic delivery vehicles and warheads with limitations and reductions of non-deployed weapons – both strategic and tactical.

This approach appears promising and more appealing for Russia than linking reductions of its TNW with the prospect of withdrawing a few hundred US nuclear weapons from Europe or that of overhauling the CFE regime. It offers Russia the benefit of further and deeper reductions of strategic nuclear arms as well as that of extending arms control measures to cover the non-deployed US strategic nuclear warheads.

The value of those benefits for Russia should not be overestimated, however. Russia has recognized the reluctance of the US to accept any restrictions on future phased deployments of its ballistic defence systems in Europe as well as on the development of conventionally armed systems that can be assigned strategic goals. The Russian establishment is therefore hesitant to commit itself to any particular further steps towards nuclear disarmament and seeks to keep all options for the maintenance and development of Russian nuclear capabilities open.

If it wants to convince Moscow, the US would be better advised to engage Russia on a wide range of non-nuclear arms control issues, such as the modernization of the CFE regime, ballistic missile defence or long-range conventionally armed precision-guided munitions. This would provide reassurance that it takes arms control seriously and that the interest in arms control can be sustained across changing US administrations.

6. Any negotiation over verifiable TNW limitations and reductions is going to be a challenging task and a lengthy process. Particularly since, in order to be verifiable, such measures would require the introduction of extremely intrusive and sensitive inspections of nuclear sites.

Anticipating time-consuming talks, the US and Russia, as well as the concerned European states, might explore the feasibility of applying a gradualist approach and of taking early measures to improve transparency and build confidence in order to facilitate the establishment of a more conducive atmosphere for the negotiation of a viable TNW agreement.

- It is largely a matter of goodwill for Russia and the US to disclose the quantity of deployable TNW and strategic weapons in their reserves and exchange information on the number of TNW destroyed on the basis of the PNIs as well as of all nuclear weapons destroyed during the past twenty years without waiting for the beginning of or progress in official talks.
- One way of providing greater transparency on the status of this class of weapons would be for the US and Russia to resume exchanges on the implementation of the PNIs even without formal negotiations.
- Parallel to this bilateral exchange, the NATO-Russia Council may provide another platform for multilateral consultations on TNW to allow for reasonable confidential data exchange; discussion of nuclear postures; updating Russia on the intra-NATO consultations concerning the future of the US nuclear assets in Europe. Such consultations could also facilitate cooperative NATO-Russia confidence-building.
- At the same time, measures based on geography, such as the introduction of “exclusion zones”, in which TNW should be neither deployed nor stored, appear rather impractical.

It is not clear how far Moscow would have to move its weapons in order to keep them away, in a reassuring manner, from the territory of NATO and EU member states. TNW delivery systems have a variety of ranges, and some of them are able to reach EU/NATO territory from well beyond the Urals. Most TNW delivery systems are mobile and can be forward deployed regardless of where they are usually deployed and where the relevant munitions are stored.

All or most of Russia's TNW are reportedly kept together with strategic weapons in central storage facilities, i.e. in depots controlled by the Ministry of Defence rather than at air or naval bases. Many of these facilities are reportedly located near to the borders of EU/NATO countries. This makes the introduction of "exclusion zones" unverifiable unless all Russian nuclear storage facilities are moved to the Far Eastern part of Russia.

Needless to say that a demand that all Russian TNW be moved sufficiently far from EU/NATO borders that does not even touch on the issue of US and other NATO countries TNW in Europe is unlikely to be appreciated in Moscow.

- For this reason, consolidating TNW in central storage facilities regardless of their geographic location can provide an alternative interim solution to the introduction of "exclusion zones". A measure of this kind would also further reduce the risks of theft or unauthorized use of those weapons.
- Otherwise, the US-Russian talks seeking to limit and reduce non-deployed strategic weapons and TNW could build upon the joint findings of the US and Russian nuclear scientists who, between 1994 and 1998, developed non-intrusive methods that allow the observation, in a reassuring way, of the dismantlement, storage, transportation and disassembly of nuclear warheads as well as the disposal of fissile material from them.

Abbreviations

ABM	Anti-Ballistic Missile
ASM	Air-to-Surface Missile
CFE	Treaty on Conventional Armed Forces in Europe
CNS	Center for Nonproliferation Studies, Monterey (California)
EU	European Union
12 th GUMO	12 th Main Directorate of the Ministry of Defence of the Russian Federation
INF	Intermediate-Range Nuclear Forces (Treaty on the Elimination of Intermediate-Range and Shorter-Range Missiles)
MoD	Ministry of Defence
NATO	North Atlantic Treaty Organization
NPT	Nuclear Non-Proliferation Treaty
NRC	NATO-Russia Council
NRDC	National Resources Defense Council
PGM	Precision-Guided Munitions
PNI	Presidential Nuclear Initiatives of 1991 and 1992
PRC	People's Republic of China
SALT	Strategic Arms Limitation Treaty
SIPRI	Stockholm International Peace Research Institute
SDRA	Swedish Defence Research Agency
SLCM	Sea-Launched Cruise Missile
START	Strategic Offensive Arms Reduction and Limitation Treaty
TNW	Tactical (or Non-Strategic, or Sub-Strategic) Nuclear Weapons
UK	United Kingdom
UNO	United Nations Organization

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