

# **NON-STRATEGIC NUCLEAR WEAPONS**

**PROBLEMS OF CONTROL AND REDUCTION**



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**Non-Strategic Nuclear Weapons: Problems of Control and Reduction**

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## LIST OF ACRONYMS

AF	Air Force
ALCM	air-launched cruise missile
CEP	Circular Error Probable
CONOPS	Concept of Operations
CTBT	Comprehensive Test Ban Treaty
CTR	Cooperative Threat Reduction (Program)
EMS	Equipment Maintenance Squadron
FW	Fighter Wing
HLG	High Level Group (NPG)
ICBM	intercontinental ballistic missile
INF	Intermediate Range Nuclear Forces (Treaty)
MUNSS	Munitions Support Squadron
NPG	Nuclear Planning Group (NATO)
NPR	Nuclear Posture Review
NPT	Nuclear Non-Proliferation Treaty
NRC	NATO-Russia Council
NSNF	Non-Strategic Nuclear Forces
NSNW	Non-Strategic Nuclear Weapons
NW	Nuclear Weapons
PNI	Presidential Nuclear Initiatives
SALT	Strategic Arms Limitations Treaty
SFD	Strategic Forces of Deterrence
SLBM	submarine-launched ballistic missile
SLCM	sea/ship/submarine-launched cruise missile
SNF	Strategic Nuclear Forces
SORT	Strategic Offensive Reductions Treaty
START	Strategic Arms Reductions Treaty
TNW	Tactical Nuclear Weapons
USAFE	US Air Forces in Europe
WMD	weapons of mass destruction

## FOREWORD

The problems of tactical nuclear weapons (TNWs) addressed in this study have been discussed in negotiations on disarmament by the great powers and their allies for more than thirty years.

From the very onset of the strategic offensive arms limitation negotiations (START I), the USSR brought up a question about counting American forward-deployed nuclear capabilities in Europe and Asia. In view of their proximity to Soviet territory, the threat of which was virtually equivalent to that of US strategic nuclear arms. Later, TNW issues were raised in various ways in connection with non-strategic aircraft carriers at the SALT II negotiations and the negotiations on intermediate-range and shorter-range missiles. In early 1990s, TNWs became a subject of the USSR / RF and US parallel commitments on the reduction of tactical nuclear arms. These weapons were subsequently included in the agenda of START III and delimitation between strategic and tactical air defense systems and were a subject for cooperation in the Nunn-Lugar program and other projects.

Still, the views on the role and place of TNWs in international security have been substantially changing in the past years. In the Cold War years, the USSR viewed the TNWs of the US and its allies as an important supplement to their strategic nuclear forces (SNF), while Western countries were taking them as a critical element of the American nuclear guarantee to its allies and as a counterbalance to the East's superiority in conventional forces. Moscow regarded its own TNWs as an element of deterrence against the use of similar western arms and as a means of substantially reinforcing the striking power of its conventional forces in the theater of war.

After the end of the Cold War, dissolution of the Warsaw Treaty Organization and the breakup of the USSR, the situation changed radically. Moscow lost its superiority in conventional forces over NATO, China and the US and its allies in the Far East. Now it was Russia that looked at its TNWs as "a nuclear equalizer" of the growing weakness of its conventional forces relative to the West and China, and – in the near future – the shrinkage of its strategic nuclear forces relative to those of the US. The greatest concern in the 1990s of the US and its allies was the safe removal of Soviet TNWs from foreign countries to Russia and security of their transportation, storage and disposal.

As is noted in the publication below, today for various reasons neither the US nor Russia are interested in negotiations on tactical nuclear arms. The West desires the greatest possible transparency regarding the condition of Russia's TNWs along with their safe storage and gradual elimination.

However, endlessly ignoring this problem is rather short-sighted for both sides.

First, tactical nuclear weapons pose a much greater danger than strategic weapons in terms of the probability of their non-authorized use. Because of their deployment with conventional forces, in a crisis situation they may be involved from the very beginning of the conflict (even a local one) either as a target of the enemy's strike or as a weapon for striking the enemy, with a high likelihood of further escalation of an all-out nuclear war. This is the prospect suggested by the modern Russian strategic concepts of "repulsion of an aerospace attack" and simultaneous "solution of tasks in two local wars".

Second, an even greater threat is connected with the possibility of nuclear warhead theft by sub-national groups, including terrorists, since transportation and storage conditions, interlocking systems, and portability of many types of TNWs make them more vulnerable and promising targets as explosive devices or sources of nuclear weapon materials.

Third, the US tactical nuclear weapons remaining in Europe and a significant number of TNWs deployed with the Russian Army and Navy materially sustain the military confrontation between NATO and the RF as they are obviously intended to be used against each other. This strategic and operational reality has become even more pronounced due to NATO enlargement eastwards and Russia's assumed "asymmetric" reciprocation. This reality cannot be cancelled by any statements or "founding documents" on partnership and cooperation until TNWs become a subject of practical reciprocal disarmament steps by the RF and the US.

Views on the military and political value of Russian and NATO TNWs should be regarded with great skepticism, at least so far as their role on the European continent is concerned. These views represent a most blatant anachronism of the Cold War days. Ignoring TNWs – under the pretext that it is incredible that these arms will be used – is unwise and irresponsible. It will hardly be an exaggeration to state that the RF and NATO will continue to be opponents rather than true partners until the TNW problem is solved on a mutually acceptable basis. Until that happens, their cooperation in addressing the security problems in the European continent and beyond it, including the struggle against WMD proliferation and international terrorism, will be blocked.

At the same time it is obvious – as is explained in detail below – that reciprocal disarmament steps regarding TNWs cannot be patterned on strategic nuclear arms agreements – that is, by identifying the objects to be limited and verifying the limitations. In the case of strategic nuclear forces (SNF), there are a relatively small number of types of weapon systems. Dedicated launchers and delivery vehicles were controlled, and – later – the associated nuclear warheads. In the case of TNWs, it will be necessary to deal with a huge range of types of warheads, storage sites for these weapons, and even facilities carrying out assembly and dismantlement of nuclear warheads.

This study is an attempt at a first approach to the solution of these very complex problems, and we expect it to be controversial and vulnerable to criticism. However, the proposals made are also useful as a starting point for a serious and professional discussion of the problem.

The study below contains a detailed and very useful analysis of all aspects of the TNW issue, based on publicly available information in the domestic and foreign literature. The subject is shrouded in a thick veil of secrecy both in Russia and the US and this discussion is very likely to stir irritation and a "prohibitive" reflex among some Russian and American officials and agencies which are accustomed to making policy in isolation from critical public discussion. However, this is a legitimate and necessary subject for a scholarly gathering of open data, systematization, assessment and recommendations, as the subject of TNW holds an important place in Russian military political relations with the US and its allies.

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## INTRODUCTION

The transition from the strategic nuclear arms race to strategic arms reduction in the United States and Russia (USSR) has required the efforts of policy-makers, diplomats, scientists and the military for more than forty years. Although it would be incorrect to claim that the problem of nuclear arms reduction has been completely solved, nevertheless, considerable accomplishments have been achieved in this area. They include primarily START I, under which the parties have significantly reduced their strategic offensive arms, developed and approved mechanisms for verifying reductions, and created the basis for subsequent steps.

The situation regarding the reduction and control of non-strategic nuclear weapons (NSNWs), more frequently called tactical weapons (TNWs), is somewhat different, though in this area, too, concrete results have been achieved. They include the US-Soviet Intermediate Range Nuclear Forces (INF) Treaty of 1987, under which the parties destroyed, in a verified way, the intermediate-range and shorter-range missiles designed for the delivery of nuclear warheads. Another example of successful cooperation in NSNWs reduction is the 1991 Presidential Nuclear Initiatives (PNI). In fall 1991 US President George H.W. Bush and Soviet President Mikhail Gorbachev made a decision to unilaterally and reciprocally withdraw NSNWs from land and aviation formations, surface ships and multipurpose submarines, and to concentrate them in central storage sites. In addition, each party pledged to destroy a considerable number of the withdrawn non-strategic nuclear warheads.

The PNI are not legally binding and do not include measures to verify that commitments are fulfilled. For this reason, experts in the international nuclear arms control community repeatedly debate the subject of NSNW. There is a number of factors motivating such debates. One of them is intensification of the debate in Russia regarding the possible use of NSNWs as a counter-measure to NATO enlargement, and also a provision in the current Russian military doctrine on enhancing the role of nuclear weapons to ensure national security. Another factor is connected with the Western belief that Russia still has huge NSNWs stockpiles. These circumstances, combined with Russian economic difficulties (such as the banking default of 1998), the weakening influence of the federal center on the regions (seen in Yeltsin's second presidential term), and declining executive discipline at all levels in the late 1990s, boosted concerns that Russia could lose control over its nuclear arsenal and some of its tactical nuclear warheads might fall into the hands of other countries or even terrorists. Despite a number of positive trends in Russia, stereotypes of these sorts survive in the minds of Western countries.

It would be wrong to say that the governments of the two countries do not attach importance to NSNW-related issues,<sup>1</sup> however, there have been virtually no tangible results

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<sup>1</sup> For instance, the RF and US presidents agreed to explore "possible measures relating to nuclear long-range sea-launched cruise missiles and tactical nuclear systems, to include appropriate confidence-building and transparency measures" in the context of START II negotiations. (*Joint Statement on Parameters of Future Nuclear Reductions*, Helsinki, March 21, 1997). However, after the US renunciation of the ABM Treaty and Russia's reciprocal renunciation of START II, these Helsinki agreements lost their force.

from the end of 1991 until the present day. The lack of progress in establishing control over NSNWs as well as the lack of prospects for improvements undoubtedly leads to the question: **Do Russia and the United States have the desire to achieve mutually acceptable solutions in this area?**

This study is an attempt to find an answer to the above question. With this end in mind, we have analyzed the role and position of non-strategic nuclear weapons in the nuclear doctrines of the Russian Federation, the United States and NATO, carried out quantitative estimations of stockpiles of NSNWs, and also investigated the parties' approaches to the NSNW control issue.



## CHAPTER 1. NON-STRATEGIC NUCLEAR WEAPONS: PROBLEMS OF CLASSIFICATION

For a long time, the community of nuclear arms control experts has actively debated how to define the term "tactical nuclear weapons".<sup>2</sup> Attempts are also often made to define closely related terms, such as "non-strategic nuclear weapons" and "sub-strategic nuclear weapons".<sup>3</sup> There are several objective reasons for this debate.

Although the terms "tactical" ("operational-tactical") and "strategic" weapons have been long used in nuclear planning in Russia and the United States these terms have no consistent definitions within military communities in either Russia or the United States. **The first reason** for this has to do with the definitions used by military organizations, such as those of the Russian Ministry of Defense.

For example, a publication prepared by the Strategic Missile Forces<sup>4</sup> suggests the following classification:

*Strategic NWs – Nuclear weapons intended for strategic missions.*

*Tactical NWs – Nuclear weapons for destroying enemy tactical and operational targets. Tactical NWs include ground, aviation and ship based missile systems of various classes with ranges up to 1000 km which have a nuclear warhead; tactical airplanes and helicopters carrying nuclear air bombs; torpedo launching tubes, rocket launchers for anti-submarine warfare and artillery pieces firing nuclear shells, and nuclear mines (land mines).*

*Operational-tactical NWs – Nuclear weapons intended for operational-tactical missions in a theater of war.*

A publication prepared by the Military Academy of the General Staff of the Russian Armed Forces suggests the following definitions:<sup>5</sup>

*Weapons, nuclear strategic – Nuclear weapons deployed with Strategic Nuclear Forces intended for strategic deterrence, and in certain conditions strategic missions in war.*

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<sup>2</sup> See, for instance: John T. Cappello, Gwendolyn M. Hall and Stephen P. Lambert, *Tactical Nuclear Weapons: Debunking the Mythology*, INSS Occasional Paper <sup>1</sup> 46, USAF Institute for National Security Studies, USAF Academy, Colorado, August 2002; Andrea Gabbitas, "Non-Strategic Nuclear Weapons: Problems of Definition", in *Controlling Non-Strategic Nuclear Weapons: Obstacles and Opportunities*, ed. by Jeffrey A. Larsen and Kurt J Kligenberger, USAF Institute for National Security Studies, June 2001; *Briefing Book on Tactical Nuclear Weapons*, Center for Arms Control and Non-Proliferation, 2002; W. C. Potter, N. Sokov, H. Muller, A. Schaper, *Tactical Nuclear Weapons: Options for Control*, UNIDIR Research Report, Geneva, 2000.

<sup>3</sup> See, for instance, Yury Fedorov, "Substrategicheskoe Yadernoe Oruzhie i Interesy Bezopasnosti Ros-sii" (Sub-strategic Nuclear Weapons and Russia's Security Interests), in *Nauchnye Zapiski PIR-Centra* (PIR Study Paper) No 16, Moscow, November 2001.

<sup>4</sup> *Kratkiy Terminologicheskii Slovar' po Yadernomu Oruzhiyu* (Concise Terminology Dictionary on Nuclear Arms), RVSN, Moscow, 1996.

<sup>5</sup> *Slovar' Voennykh Terminov* (Dictionary of Military Terms, compiled by V.D. Zabolotin), Moscow, OOO NIITs KOSMO, 2000 (the dictionary was developed by a group of authors at the Military Academy of the General Staff of the Russian Armed Forces).

***Weapons, nuclear operational-tactical*** - Nuclear weapons not included in strategic nuclear arms but including nuclear warheads of intermediate and shorter range missiles with the Ground Forces, Air Forces, and Navy, as well as artillery shells and small nuclear land mines found in the Ground Forces and Navy.

***Weapons, nuclear tactical*** - Intermediate range nuclear weapons not included in the arms of the Strategic Nuclear Forces but including nuclear warheads of intermediate and shorter range missiles belonging to the Ground, Air and Naval Forces, as well as artillery shells and nuclear land mines found in the Ground Forces and Navy.

One can see that the first definition emphasizes the purpose of weapons: to accomplish strategic, or tactical (operational-tactical) missions. The second definition stresses the deployment of weapons with one or another military service. As is well known, the Russian Strategic Nuclear Forces (SNF) include missile systems of the Strategic Missile Forces, missile armament of strategic submarines, and weapons of strategic aircraft. However, the second case cannot exclude that, under certain conditions, the weapons classified as strategic may also be used for operational-tactical missions, and vice versa, that weapons defined as tactical may be used for strategic missions.

Russian military experts also suggest that NSNWs are classified according to wartime subordination, most specifically whether they belong to the Supreme High Command or to the Commander-in-Chief of the armed forces in the theater. In particular, there is a proposal to set apart a separate category of "operational-strategic weapons"; that is weapons included in operational-strategic nuclear forces (long-range bombers and long-range sea-launched cruise missiles deployed on attack submarines).<sup>6</sup> Similar to SNF, operational-strategic nuclear forces are usually used under the plans and decision of the Supreme High Command.

One can easily imagine that the difference in views on the classification of nuclear weapons is much greater between the Russian and American militaries, especially since the United States and Russia differ in terms of the classes of missions, the structure of the armed forces, and control of forces during a conflict.

**A second important reason** for the debate about the classification of nuclear weapons is that it is necessary to provide an accurate definition for arms that could become the subject of negotiations. Without such a definition, it is possible that the very act of generating a definition will itself introduce possible advantages into any future negotiations.

**A third reason** for this debate over definitions arises from the great practical difficulty of choosing objective attributes to clearly demarcate nuclear systems as either strategic or tactical. It would appear that yield could be a criterion, on the grounds that tactical nuclear weapons usually have smaller yields. However, even within the same category nuclear warheads may have different yields depending on their setting or how they are used. For instance, a B61-3 bomb designed for deployment on tactical aircraft can be used with four different yields: 0.3, 1.5, 60 or 170 kt.<sup>7</sup> In comparison, a W80 warhead deployed on a strategic air-based cruise missile reportedly has yield options ranging from 5 to 150 kt.<sup>8</sup>

A similar difficulty arises in using the range of delivery as a criterion. For instance, with

<sup>6</sup> V.I. Levshin, A.V. Nedelin, M.E. Sosnovsky, "O Primenenii Yadernogo Oruzhiya Dlya Deeskalacii Voennyh Deistviy" (On the Use of Nuclear Arms for De-Escalation of Military Actions), *Voennaya Mysl'* (Military Thought), No 3, 1999, pp. 34-37.

<sup>7</sup> "The B61 Family of Bombs", *The Bulletin of Atomic Scientists*, January-February 2003, vol. 59, <sup>1</sup> 1, pp. 74-76.

<sup>8</sup> "NRDC Nuclear Notebook: U.S. Nuclear Forces", *The Bulletin of Atomic Scientists*, May-June 2003, vol. 59, <sup>1</sup> 3, pp. 73-76.

aircraft the range of delivery will depend on bomber loading, the ALCM range, and also whether and how the aircraft is refueled during the mission. These variations, not surprisingly, led to an intense debate during SALT II negotiations in the 1970s over how to classify the Tu-221 Soviet bomber (Backfire).

The problem with classifying weapons according to the range of delivery is further complicated by factors such as the geography of nuclear weapons basing. For example, Russian military and policy-makers frequently argue that the US nuclear weapons deployed on the territory of NATO countries and intended for deployment on tactical bombers are viewed by Russia as strategic because the area of their potential coverage takes in a considerable part of Russia's European territory.

Finally, classifying TNW according to the technical characteristics of their delivery vehicles provides its own complications. Delivery vehicles for nuclear warheads designed for tactical missions usually constitute dual-capable systems, therefore, they can be equipped either with nuclear or conventional warheads.<sup>9</sup> Previous negotiations on the limitation and reduction of strategic armaments shows that elaborate verification measures for dual-capable delivery systems present great and often insurmountable difficulties, primarily because of negative US attitudes toward such measures.

There is one more reason impeding classification of the arms in question. There is an objective asymmetry between Russian and US tactical nuclear arsenals. A significant part of the Russian arsenal is still made up of nuclear warheads intended for relatively short-range weapons, such as use in a theater of war (for example, the missile arms of the Ground Forces, torpedoes, anti-ship cruise missiles, air-defense missiles). The US arsenal, on the other hand, retains only long-range SLCM nuclear warheads and bombs intended for deployment on tactical aircraft with a range above 1000 km. There is a numerical asymmetry, too. By various assessments, the Russian arsenal of tactical weapons is estimated as 3000-4000, whereas the US arsenal is about 2000 (including reserve warheads).

For the purposes of investigating the prospects of non-strategic nuclear weapons control, let us consider the feasibility of classification by focusing on delivery means rather than warheads. For instance, previous Soviet (Russian)-US agreements on the limitation, reduction and elimination of nuclear arms mostly embraced the delivery vehicles and said little about the nuclear warheads themselves.

Note the difference between the terms "nuclear arms" and "nuclear weapons". "Nuclear arms" includes both vehicles for delivering nuclear warheads as well as the nuclear warheads *per se*, while the notion "nuclear weapons" covers nuclear warheads only. For instance, "The Military Encyclopedic Dictionary" gives the following definitions:

*Arms* – Weapons and technical means ensuring their use<sup>10</sup>

*Weapons* – Means of destruction in combat<sup>11</sup>

It would be fair to note that the distinction stressed is not necessarily observed in the terminology used by the military. In military literature the term "weapons" often also

<sup>9</sup> It should be noted, however, that both the Soviet and the US Navies had anti-submarine weapon systems which could be used with nuclear warheads only (Alexandr Shirokorad, "Malaya Bomba Dlya Maloy Voyny" (A Small Bomb for a Small War), *Nezavisimoe Voennoe Obozrenie* (Independent Military Review), March 6, 1998, p.6.

<sup>10</sup> *Voenny Enciklopedicheskiy Slovar'* (Military Encyclopedic Dictionary), Vol. 1, Ed. A.P.Gorkin, V.A.Zolotarev, V.M.Karev et al., Moscow, Bol'shaya Rossiyskaya Encyclopediya, RIPOL CLASSIK, 2001, p. 355.

<sup>11</sup> *Ibid*, p. 240.

incorporates delivery vehicles.<sup>12</sup>

For the purposes of this study the following terminology will be used:

**Strategic nuclear arms** – *US and Russian arms falling under the limitations of START I, also including the nuclear warheads intended for equipping these arms;*

**Non-strategic nuclear arms** – *US and Russian nuclear arms not included in strategic arms;*

**Strategic nuclear weapons** – *Nuclear warheads intended for deployment with strategic nuclear arms;*

**Non-strategic nuclear weapons (NSNW)** – *Nuclear warheads intended for deployment with non-strategic nuclear arms.*

START I was intentionally chosen as a criterion. On one hand, it contains a detailed classification of the arms falling under its limitations. On the other hand, it will be in effect until at least 2009, and one cannot rule out that it will be extended. Unfortunately, the SORT Treaty cannot play a similar role, since its terms are vague and allow various interpretations. For instance, the SORT Treaty limits "strategic nuclear warheads", but this notion has not been defined by the treaty. To follow the spirit and the letter of START I, "a warhead" means "a unit of account used for counting toward the 6000 maximum aggregate limit and relevant sublimits as applied to deployed ICBMs, deployed SLBMs, and deployed heavy bombers".<sup>13</sup> However, unlike START I, the SORT Treaty does not specify the arms where "strategic nuclear warheads" belong. In interpreting SORT, the Russian side upholds a traditional approach in counting "strategic nuclear warheads" consolidated in START I, whereas the American side believes that this term should be construed as only operationally deployed nuclear warheads intended for equipping strategic arms.<sup>14</sup>

For the purposes of this study, it is necessary to define an additional term that is applied to US nuclear weapons: sub-strategic nuclear weapons. This term has been used in NATO documents since 1989 with regard to intermediate and short-range nuclear weapons, and is currently applied basically for the arms of dual-capable NATO aircraft and a small number of warheads of sub-strategic missiles on US and UK submarines.<sup>15</sup>

<sup>12</sup> For instance, *Kratkiy Terminologicheskiy Slovar' po Yadernomu Oruzhiyu* (The Concise Terminology Dictionary on Nuclear Arms, RVSN, Moscow, 1996) contains the following definition: Nuclear weapons – weapons of mass destruction, the destructive effect of which is caused by energy released as a result of explosive processes of nuclear fission or fusion. They include nuclear warheads, means of their delivery to the target (nuclear warhead carriers), means of guidance, etc.

<sup>13</sup> START Treaty. Definitions Annex, July 31, 1991.

<sup>14</sup> See, for instance Anatoly Diakov, Timur Kadyshv, Eugene Miasnikov, Pavel Podvig, "Ratificirovat' Nel'z'ya Otklonit'. Chto Delat' s Dogovorom o Strategicheskikh Nastupatel'nyh Potencialah Rossii i SShA?" (What to Do with the Treaty on Strategic Offensive Reductions?), *Nezavisimoe Voennoe Obozrenie* (Independent Military Review), September 20, 2002.

<sup>15</sup> *NATO Handbook*, 2001, <http://www.nato.int/docu/handbook/2001/pdf/handbook.pdf>.

## CHAPTER 2. RUSSIAN NON-STRATEGIC NUCLEAR WEAPONS

The opinion prevailing among the Russian military's political leadership is that nuclear weapons today play a key role in ensuring Russia's military security especially in the current situation where conventional forces have degraded due to the deep economic crisis and the incompetent implementation of reforms in the 1990s. This state of affairs will probably continue for another 15-20 years. The main reason for this problem is the extremely limited capacity of the country to equip its Armed Forces with state-of-the-art weapons, while the armies of the United States and other leading powers experience a true revolution in military matters, with large-scale deployment of high-precision weapons and information technologies.<sup>16</sup> Possession of nuclear weapons allows Russia, to a certain extent, to delay the beginning of the costly process of equipping its military with modern weapons until stable economic growth begins again.

Until recently only two official documents describing the nuclear policy of the country have been publicly available: the Concept of National Security of the Russian Federation<sup>17</sup> and the Military Doctrine of the Russian Federation.<sup>18</sup>

According to the Military Doctrine:

*"...The nuclear weapons with which the Russian Federation Armed Forces are equipped are seen by the Russian Federation as a factor in deterring aggression, safeguarding the military security of the Russian Federation and its allies..."*

The Military Doctrine also states that:

*"...The Russian Federation proceeds on the basis of the need to have a nuclear potential capable of guaranteeing a set level of damage to any aggressor (state or coalition of states) under any circumstances."*

Both of these documents also define a situation where the Russian Federation can use nuclear weapons:

*"...The Russian Federation reserves the right to use nuclear weapons in response to the use of nuclear and other types of weapons of mass destruction against it and (or) its allies, as well as in response to large-scale aggression*

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<sup>16</sup> In the Russian Armed Forces, advanced weapons and military hardware account for only 20-30 percent of the total amount, whereas in the world's leading armies the share of up-to-date weaponry exceeds 70 percent. . The Russian Ministry of Defense plans to raise the share of advanced weapons and hardware in the Armed Forces to 35 percent by 2010 and to 40-50 percent by 2015. By 2020-2025 the Armed Forces and other troops of the Russian Federation will be completely re-armed and re-equipped (*Aktual'nye Zadachi Razvitiya Vooruzhennyh Sil Rossiyskoy Federacii* (The Priority Tasks of the Development of the Armed Forces of The Russian Federation), RF Ministry of Defense, 2003, <http://www.mil.ru/articles/article5005.shtml> ).

<sup>17</sup> National Security Concept of the Russian Federation, approved by the Presidential Decree dated January 10, 2000, No 24.

<sup>18</sup> Military Doctrine of the Russian Federation, approved by the Presidential Decree dated April 21, 2000, No 706.

*utilizing conventional weapons in situations critical to the national security of the Russian Federation..."*

When explaining some aspects of the new edition of the Concept of National Security, Sergey B. Ivanov (Secretary of the Russian Security Council at that time) noted: "Russia never declared and does not declare a possibility of the first use of nuclear weapons. At the same time Russia also makes no commitment of no first use of nuclear weapons".<sup>19</sup>

The above documents contain no distinction between strategic and non-strategic nuclear weapons. As for Russia's strategic nuclear arms, complete and objective information is publicly available. For instance, the document *"The Priority Tasks of the Development of the Armed Forces of the Russian Federation,"* published in October 2003, contains ample information on the objectives of Russian strategic nuclear forces and the requirements they should meet.<sup>20</sup> In particular, it uses the notion of Strategic Forces of Deterrence (SFD), which include the Strategic Missile Forces, Aviation Strategic Nuclear Forces, and Naval Strategic Nuclear Forces. The above document also defines the prospects of evolution of each SFD component and a set of measures to maintain their readiness. However, it contains no mention of non-strategic nuclear weapons, let alone a definition of their role, requirements for them to meet, or prospects of their development. At the same time, the document hints that the Russian nuclear forces are a somewhat broader notion than SFD. In particular, it states that

*"...Russia will define the structure of its Nuclear Forces at its own discretion. In doing so, it will be guided solely by its national security interests, its international and allied commitments, and necessity to maintain global strategic stability..."*

Therefore, any analysis of the policy and approaches of the Russian Federation regarding non-strategic nuclear weapons, or their quantitative and qualitative structure, is by necessity based on the limited and informal information that is available. Because of the virtually complete absence of official information, any analysis may be prone to incorrect assumptions which may result in significant errors.

## **2.1. The Purpose and Role of NSNWs in the Russian Federation**

As noted above, there is no demarcation between strategic and non-strategic nuclear weapons in the Russian Military Doctrine and the Concept of National Security. This is additional evidence that the division of nuclear weapons into "strategic" and "non-strategic" is rather provisional. However, there is also an alternative point of view. According to Dr. Nikolai Sokov, the fact that the category of "non-strategic" nuclear weapons is not mentioned in the doctrinal clauses indicates that the political leaders of the Russian military have no detailed guidelines to determine the specific purpose and scenarios for the use of NSNW.<sup>21</sup>

Publications on the possible roles of NSNWs by domestic military experts in the publicly available press show that there are various points of view on the subject in the

<sup>19</sup> "O Novoy Redakcii Konceptii Nacional'noy Bezopasnosti Rossiyskoy Federacii" (On the New Edition of National Security Concept of the Russian Federation), introductory statement by the Secretary of the Russian Security Council at a briefing for the Ambassadors of the foreign states accredited in Moscow, *Rossiyskaya Gazeta*, February 16, 2000.

<sup>20</sup> *The Priority Tasks of the Development of the Armed Forces of the Russian Federation*, RF Ministry of Defense, 2003, <http://www.mil.ru/articles/article5005.shtml>.

<sup>21</sup> [Nikolai Sokov](#), "The Russian Nuclear Arms Control Agenda After SORT", *Arms Control Today*, April 2003.

depths of the Ministry of Defense.

Some experts believe that the role of nuclear weapons, especially non-strategic ones, is growing because of the specific geostrategic position of Russia and an increase in the threat of regional conflicts involving the use of weapons of mass destruction.<sup>22</sup> Experts usually consider the far eastern, southern and western directions as threatening ones.

In particular, there is a widely shared opinion that in case of a large-scale military conflict between the Russian Federation and China, Russia today will not be able to guarantee the security of its Far East without nuclear weapons. Taking into account China's fast economic growth, the rising imbalance in populations in the frontier territories, and the change in parity of the two countries' military forces, the situation will get worse for the next 20-30 years.<sup>23</sup>

The situation in the western direction is also unfavorable for Russia. The Russian Armed Forces are considerably inferior to NATO armed forces. Quantitatively, NATO conventional arms are 3-4 times more numerous than those of Russia, and qualitatively, this superiority is even more significant.<sup>24</sup> With NATO's enlargement and incorporation of the Central and East European states, NATO's armed forces will have considerable opportunities to inflict damage on Russian SNF in case of a military conflict with Russia.<sup>25</sup> The military action in Yugoslavia that demonstrated NATO's willingness to use force outside the area of its authority has only strengthened Russia's concerns.

Consequently, according to some Russian military experts, non-strategic nuclear weapons enable regional nuclear deterrence.<sup>26</sup> If this deterrence turns out to be inefficient, NSNWs, in addition to the mission of decisively defeating the enemy, can be also used for de-escalation of a military conflict.<sup>27</sup>

The domestic literature also presents an opposite viewpoint on the possibility of using non-strategic nuclear weapons for regional deterrence, localization of a conflict, or de-escalation of military actions. Dr. Sokov comes to the conclusion that non-strategic nuclear weapons "...are unable to contribute to Russia's security under any conditions, and more likely will even undermine it..."<sup>28</sup> Probably Army General Makhmut A. Gareyev was driven by similar thinking when he called for "complete elimination of tactical nuclear weapons, including airborne".<sup>29</sup> Even more radical is the stand of Major-General Vladimir I. Slipchenko, who virtually denies a deterrent role of nuclear weapons in pre-

<sup>22</sup> Vladimir Belous, "Sredstvo Politicheskogo i Voennogo Sderzhivaniya" (Means of Political and Military Deterrence), *Nezavisimoe Voennoe Obozrenie* (Independent Military Review), September 26, 1996.

<sup>23</sup> S.M. Rogov, *Ekonomicheskie Realii i Prioritety Oboronnoy Bezopasnosti* (Economic Realities and Priorities of Defense Security), Centr Strategicheskikh Razrabotok (Center for Strategic Research), <http://www.csr.ru/conferences/rpgov.html>.

<sup>24</sup> *Ibid.*

<sup>25</sup> Alexei Arbatov, *The Nuclear Turning Point – A Blueprint for Deep Cuts and De-Alerting of Nuclear Weapons*, Brookings Institution, Washington, D.C., 1999, p. 320.

<sup>26</sup> P.I. Dubok and N.A. Zakaldayev, "O Nekotorykh Voprosakh Upravleniya Raketnymi Voyskami i Artilleriyey pri Osuschestvlenii Regional'nogo Yadernogo Sderzhivaniya" (Some Aspects of Control of Missile Forces and Artillery in Implementation of Regional Nuclear Deterrence), *Voennaya Mysl'*, No 6, 1999, pp. 42-44.

<sup>27</sup> In particular, such opinion is offered in V.I. Levshin, A.V. Nedelin and M.E. Sosnovsky, "O Prime-nenii Yadernogo Oruzhiya Dlya Deeskalatsii Voennykh Deistviy" (On the Use of Nuclear Arms for De-Escalation of Military Actions), *Voennaya Mysl'*, No 3, 1999, pp. 34-37.

<sup>28</sup> Nikolai Sokov, "Takticheskoe Yadernoe Oruzhie: Novye Geopoliticheskie Real'nosti ili Starye Oshibki?" (Tactical New Weapons: New Geopolitical Realities or Old Mistakes?), *Yaderny Kontrol*, N 26, February 1997.

<sup>29</sup> M.A. Gareyev, *Esli Zavtra Voyna* (If War Breaks Out Tomorrow?), Moscow, VlaDar, 1995, p.108.

sent day conditions.<sup>30</sup>

It is necessary to note one more important aspect of the debate about the role of NSNWs for Russia. A frequently voiced opinion is that the available strategic nuclear weapons are quite sufficient for addressing the whole range of military missions. However, the Russian nuclear arsenal – unlike the US one – as a matter of fact contains the types of non-strategic nuclear arms designed for those missions, which are not assigned to strategic arms. For instance, nuclear torpedoes and anti-ship missiles on naval ships and submarines used to be some kind of "equalizing" factor in a potential confrontation with the US Navy at sea, and withdrawal of naval NSNWs to storage in 1991 has actually disarmed the Russian Navy relative to the US one.<sup>31</sup> Domestic experts also frequently express an opinion that in conditions of potential massive hostile air attack with conventional high-precision weapons (i.e. capable of saturating air defenses), the use of nuclear surface-to-air missiles would be more effective.<sup>32</sup>

## 2.2. Russian NSNWs: Types and Numbers of Warheads and Delivery Vehicles

### *Nuclear warheads*

Official data on the types and numbers of non-strategic nuclear warheads available in Russia has never been published. As a result, the range of estimates from both western officials and non-governmental experts is very broad: from 3000 to 20,000 warheads. For instance, according to former US Under Secretary of Defense Walter Slocombe, Russia possesses at least 10 times more nuclear non-strategic warheads than the United States.<sup>33</sup> According to other data,<sup>34</sup> Russia currently has from 7000 to 12,000 NSNW warheads. At the same time, the American non-governmental experts Joshua Handler and Hans Kristensen estimate that the Russian NSNW arsenal is approximately twice as large as the US arsenal.<sup>35</sup>

Table 1 shows the published data on the number of nuclear warheads intended for Russian general purpose forces. Arbatov's and Diakov's estimates are dated 1996-98, and those by Handler are dated 2002.

We estimate that at the end of 2002 the total number of operationally ready non-strategic nuclear warheads in Russia did not exceed 4000. The following paragraphs explain how we got to this figure.

The USSR had 21,700 nuclear warheads designated for ground forces (6700), tactical air forces (7000), the Navy (5000), ABM and air defenses (3000)<sup>36</sup> at the time of its

<sup>30</sup> V.I. Slipchenko, *Voyny shestogo pokoleniya. Oruzhie i Voennoe Iskusstvo Budushego* (Wars of the Sixth Generation. Weapons and Military Art of the Future), Veche, 2002, p.384.

<sup>31</sup> See, for instance: *The Future of Russian-US Arms Reductions: START III and Beyond*, Cambridge, MA, February 2-6, 2003, Conference Summary, p. 39; <http://www.armscontrol.ru/transforming/day3.htm#session10>.

<sup>32</sup> See, for instance, Alexandr Shirokorad, "Malaya Bomba Dlya Maloy Voyny" (A Small Bomb for a Small War), *Nezavisimoe Voennoe Obozrenie* (Independent Military Review), March 6, 1998.

<sup>33</sup> Walter B. Slocombe, Under Secretary of Defense for Policy, Statement before the Senate Governmental Affairs Subcommittee on International Security, Proliferation and Federal Services, Hearing on Nuclear Weapons and Deterrence, 12 February 1997.

<sup>34</sup> Amy F. Woolf, *Nuclear Weapons in Russia: Safety, Security, and Arms Control*, CRS Issue Brief for Congress, Congressional Research Service, Foreign Affairs, Defense, and Trade Division, The Library of Congress, updated June 25, 2003.

<sup>35</sup> Hans Kristensen and Joshua Handler, "Appendix 10A. Tables of Nuclear Forces", *Non-proliferation, Arms Control, Disarmament. SIPRI Yearbook, 2002*.

<sup>36</sup> A. Arbatov, *Op. cit.*



breakup. Under the unilateral commitments of the Soviet Union (Russia) on tactical weapons, a considerable part of the above warheads should have been eliminated.<sup>37</sup> The number of warheads to be eliminated (as percentages) and also the planned timeframe to fulfill these commitments are shown in Table 2.<sup>38</sup>

**Table 1. Data on the Number of RF Tactical Nuclear Warheads**

Category of Warheads	Number		
	Arbatov <sup>39</sup>	Diakov <sup>40</sup>	Handler <sup>41</sup>
Ground Forces	200	0	0
Air Forces	1000	2060	1540
Navy	2000	2400	640
ABM and Air Defenses	600	1250	1200
<b>Total</b>	<b>3800</b>	<b>5710</b>	<b>3380</b>

According to a statement from April 2000 made by Igor S. Invanov, Russian Minister for Foreign Affairs, Russia was about to complete implementation of the destruction of nuclear artillery shells, nuclear mines and warheads for operational tactical missiles.<sup>42</sup> At the first session of the Preparatory Committee of the 2005 NPT Review Conference the Russian delegation announced that Russia planned to complete destruction of warheads on ground-based operational tactical missiles in 2004, as a fulfillment of its unilateral commitments.<sup>43</sup>

**Table 2. Number of Nuclear Warheads to be Eliminated and Timeframe**

Warhead category	Percent of the arsenal to be dismantled (%)	Timeframe
Nuclear mines	100	1998
Artillery shells	100	2000
Naval NSNWs	30	1995
ABM and air defense systems	50	1996
Tactical aviation systems	50	1996

<sup>37</sup> Statement of the USSR President Mikhail S. Gorbachev dated October 5, 1991, Statement of the RF President Boris N. Yeltsin dated January 29, 1992.

<sup>38</sup> Presentation of Vitalii. N.Yakovlev at a workshop organized by the Federation of American Scientists, Natural Resources Defense Council and the Center for Arms Control, Energy and Environmental Studies at MIPT, Washington, USA, December 18, 1993.

<sup>39</sup> A.Arbatov, "Sokraschenie Nestrategicheskikh Yadernyh Vooruzheniy, Takticheskoe Yadernoe Oruzhie" (Reduction of Non-Strategic Nuclear Arms, Tactical Nuclear Weapons), in *Yadernye Vooruzheniya I Bezopasnost' Rossii* (Nuclear Arms and Security of Russia), ed. A. Arbatov, Moscow, IMEMO RAN, 1997, pp. 51-57.

<sup>40</sup> A.S. Diakov, E.V. Miasnikov, "Sokraschenie Yadernyh Vooruzheniy i Voprosy Transparentnosti" (Reduction of Nuclear Arms and Questions of Transparency), *Nezavisimoe Voennoe Obozrenie* (Independent Military Review), No 34, September 11-17, 1998.

<sup>41</sup> Hans Kristensen and Joshua Handler, Op. cit.

<sup>42</sup> Statement of the RF Minister for Foreign Affairs Igor. S. Ivanov at the NPT Review Conference, New York, April 25, 2000, *Rossiyskaya Gazeta*, April 29, 2000; David S. Yost, "Russia and Arms Control for Non-Strategic Nuclear Forces", in *Controlling Non-Strategic Nuclear Weapons: Obstacles and Opportunities*, edited by Jeffrey A. Larsen and Kurt J. Klingeberger, USAF Institute for National Security Studies, June 2001.

<sup>43</sup> Statement of the delegation of the Russian Federation at the First Session of the Preparatory Committee for the 2005 NPT Review Conference under Article VI of the Treaty, April 11, 2002; <http://www.mid.ru>.

Also take into account that according to experts, the lifetime of a Russian nuclear warhead does not exceed 15 years.<sup>44</sup> This implies that the overwhelming majority of the nuclear warheads inherited by Russia from the USSR have exceeded their lifetime and should have been deactivated.

Given that nuclear warheads have such a limited lifetime, the maintenance of the nuclear arsenal requires their continuous reproduction. In the Soviet Union nuclear warheads were produced at four facilities: "Elektrokhimpribor" in Lesnoy, Device-Building Plant in Tryokhgornyy, "Avangard" in Sarov and "Start" Production Association in Zarechnyy.<sup>45</sup> Assuming that the total number of nuclear warheads (strategic and tactical) available in the USSR in late 1980s exceeded 30,000, it could be concluded that the combined production capacity of these facilities allowed manufacturing at a rate of about 3000 warheads a year.<sup>46</sup>

In the Russian Federation, production of new nuclear warheads has been considerably reduced. In 1997 the Russian government adopted the subprogram "Restructuring and conversion of the nuclear industry enterprises (nuclear weapons complex) in 1998-2000" within the framework of the Federal Program "Reforming and development of defense-industrial complex in 1997-2000".<sup>47</sup> Later this subprogram was extended until 2001.<sup>48</sup> Since the beginning of 2002, the conversion of the enterprises of the Ministry of Atomic Energy has been carried out under the subprogram "Reforming of the nuclear industry enterprises (nuclear weapons complex) in 2002-2006".

Currently manufacturing of new warheads is concentrated at two of the four assembly-disassembly enterprises: "Elektrokhimpribor" in Lesnoy and the Device-Building Plant in Tryokhgornyy. The two other enterprises ("Avangard" in Sarov and "Start" Production Association in Zarechnyy) have terminated production of new warheads. "Avangard" is being switched over to the manufacture of civilian products. It was planned that in 2003 the "Start" Production Association would finish dismantlement of the warheads made at this factory, with subsequent cleanout of its nuclear materials and equipment.<sup>49</sup> Production of nuclear warhead components from fissile materials is currently concentrated only at one enterprise, the "Mayak" Production Association.<sup>50</sup> The 2002 budget for implementing the military program of the Ministry for Atomic Energy was only 13,993.5 million rubles,<sup>51</sup> and implementation of the restructuring and conversion program resulted in a ten-fold or more reduction in the annual production of nuclear weapons compared with Soviet times.<sup>52</sup>

Taking all this into account, and also considering quantitative estimations of delivery vehicles still in active deployment,<sup>53</sup> we assessed the number of the Russian NSNW warheads in active reserve. These data are shown in Table 3. Note, that the data do not

<sup>44</sup> Oleg Bukharin, "A Breakdown of Breakout: U.S. and Russian Warhead Production Capabilities", *Arms Control Today*, October 2002.

<sup>45</sup> See, for instance, *Russian Strategic Nuclear Forces*, ed. Pavel Podvig, MIT Press, 2001.

<sup>46</sup> Oleg Bukharin, *Op. cit.*

<sup>47</sup> *Osnovnye Itogi Konversii Predpriyatiy Oboronno-Promyshlennogo Kompleksa Mintoma Rossii v 1998-2000 gg.* (Principal Results of the Conversion of the Enterprises of the Defense-Industrial Complex of the Minatom of Russia in 1998-2000), Ministry for Atomic Energy of the Russian Federation, 2002.

<sup>48</sup> Resolution of the Russian Government N 1034 dated December 30, 2000.

<sup>49</sup> Information of Lev Ryabev, First Deputy Minister for Atomic Energy of the Russian Federation, at the Conference "Helping Russia Downsize its Nuclear Complex: A Focus on the Closed Nuclear Cities", Princeton University, March 14-15, 2000.

<sup>50</sup> *Ibid.*

<sup>51</sup> Federal Law of the Russian Federation No194 "FZ" dated December 30, 2001.

<sup>52</sup> Information of Lev Ryabev, *Op. Cit.*

<sup>53</sup> The authors plan to publish these estimates in a separate paper.

include a significant number of deactivated warheads, which stay in storage awaiting dismantlement.

**Table 3. Number of NSNWs in the Russian Federation (Estimates)**

Warhead category	Number	
	1991 <sup>54</sup>	2002
Ground forces	2,700	~500
mines	700	0
missile forces and artillery	6,000	~500 <sup>55</sup>
Navy	5,000	~1,000
Air defense	3,000	~500
Tactical aviation	7,000	~1,300
<b>Total</b>	<b>21,700</b>	<b>~3,300</b>

### **Delivery Vehicles**

Despite significant reductions in the Russian non-strategic nuclear arsenal to comply with the 1991 PNI, the Armed Forces retain a wide range of nuclear-capable delivery systems. Non-strategic nuclear warhead-capable delivery vehicles are used in all services of the Russian Armed Forces: the Air Force, the Navy and the Ground Force, and also in the Missile and Space Defense forces,<sup>56</sup> which are organizationally subordinated to the Space Forces, a separate arm of service.

### **The Air Force**

Air Force NSNW carriers include long-range Tu-22M3 (Backfire) bombers, which along with the strategic Tu-160 (Blackjack) and Tu-95MS (Bear H) bombers make up part of the Long-Range Aviation of the Air Force and are able to accomplish some strategic missions. Tu-22M3 bombers can carry from 1 to 3 Kh-22 (AS-4 Kitchen) or up to 10 Kh-15 (AS-16 Kickback) air launched cruise missiles. Kh-22 and Kh-15 are air-to-ground missiles that can carry either conventional or nuclear warheads. In addition to missiles, long-range Tu-22M3 bombers are capable of using nuclear bombs, and there-

<sup>54</sup> A. Arbatov, "Sokraschenie Nestrategicheskikh Yadernyh Vooruzheniy, Takticheskoe Yadernoe Oruzhie" (Reduction of Non-Strategic Nuclear Arms, Tactical Nuclear Weapons), in *Yadernye Vooruzheniya I Bezopasnost' Rossii* (Nuclear Arms and Security of Russia), ed. A. Arbatov, Moscow, IMEMO RAN, 1997, pp. 51-57.

<sup>55</sup> Proceeding from the statements of Russian officials, many independent experts came to a conclusion that even if the nuclear warheads of the Ground Forces of the Russian Armed Forces had not been eliminated, at least they had been withdrawn from the active arsenal and would be eliminated in the near future (see, for instance, Hans Kristensen and Joshua Handler, Appendix 10A. Tables of Nuclear Forces, *Non-proliferation, Arms Control, Disarmament, SIPRI Yearbook 2002*). However, a number of publications in recent years suggest that nuclear weapons continue to be viewed as promising payloads for tactical missiles of the Ground Forces (see, for instance: *Evolving U.S.-Russian Relationship*. A meeting with experts of the Institute for Applied International Research (IAIR), Moscow, Thursday, February 06, 2003, Carnegie Endowment for International Peace, <http://www.ceip.org/files/events/events.asp?pr=2&EventID=583> ; Oleg Falichev, "Bog Voyny v Zapas Ne Uhodit" (God of War Does Not Retire), *Voенно-Promyshlenny Kur'er* (Military Industrial Courier), No 11, November 19-25, 2003; Mikhail Khodoryonok, "V Otvet na Rasshirenie Nato Rossiya Dolzhna Sdelat' Stavku na Takticheskoe Yadernoe Oruzhie" (In Response to NATO Enlargement, Russia Should Stake on Tactical Nuclear Weapons), *Voенно-Promyshlenny Kur'er*, No 13, April 7, 2004).

<sup>56</sup> Missile interceptors of the Missile and Space Defense Forces are usually included in strategic arms. Here they are considered as non-strategic arms since the ABM Treaty, which limited their capabilities and number, has lost its force.

fore their maximal operational load can be as much as 24 tons.<sup>57</sup>

Also the Su-24 and Su-24M (Fencer) tactical bombers are carriers of non-strategic nuclear weapons and can be used to deliver bombs. Bombing attack functions can also be performed with Su-25 assault aircraft and MiG-29, MiG-31, and Sukhoy-27 fighters. Though these are not the primary missions for such aircraft, it would be logical to assume that the nuclear bomb capability had been also incorporated in their design and continues to be maintained.<sup>58</sup>

Russian military leaders see the future development of the Air Force through upgrading the existing fleet of aircraft and beginning commercial production of new Su-34 tactical bombers,<sup>59</sup> which are likely to become dual-capable aircraft as well.

With the merger of the Air Force with the National Air Defense Forces in 1998, the S-300 (SA-10 Grumble) anti-aircraft missile systems capable of using ground-to-air missiles with nuclear warheads were assigned to the Air Force.<sup>60</sup> In the future, the deployed S-300 systems are planned to be replaced with S-400 ("Triumph") surface-to-air missile systems, which are likely to retain a nuclear capability.

### The Navy

Compared with the other services of the Armed Forces, the Russian Navy, perhaps, possesses the broadest range of nuclear-capable means. Nuclear warheads can be carried by missiles, torpedoes, bombs, and they can be deployed on aircraft, coastal forces, submarines and surface naval ships.

The dual-capable bombers and fighters of naval aviation and the weapons they carry are very similar to the types deployed with the Air Force. An exception is the carrier-based Su-33 fighter used only in the Navy.<sup>61</sup> Naval NSNW carriers also include the Tu-142, the Tu-142M (Bear F) and the Il-38 (May) anti-submarine aircraft all capable of delivering nuclear depth charges.<sup>62</sup>

Naval coastal missile-artillery forces deploy two anti-ship systems, the "Utyos" and the "Redut" (SSC-1B Sepal), each equipped with the P-35B antiship missile.<sup>63</sup> the "Utyos" is a stationary system, and the "Redut" is mobile one. Probably, the mobile anti-ship system "Rubezh" (SSC-3 Styx) of the coastal missile-artillery forces can also be nuclear-capable.<sup>64</sup>

<sup>57</sup> See, for instance, "*Russian Strategic Nuclear Forces*", ed. Pavel Podvig, MIT Press, 2001.

<sup>58</sup> According to domestic sources, nuclear capability was envisaged at least for MiG-29 fighters (V.P. Kuzin, V.I. Nikolsky, *Voенно-Morskoy Flot SSSR 1945-1991* (USSR Navy in 1945-1991), Istoricheskoe Morskoe Obschestvo (Society of Naval History), 1996, pp.495-496).

<sup>59</sup> Up to 10 units are planned to be procured by 2006 (Nilolay Poroskov, "Razoruzhenie v Vozduhe" (Disarmament in the Air), *Vremya Novostey*, December 22, 2003).

<sup>60</sup> See, for instance, "*Russian Strategic Nuclear Forces*", ed. Pavel Podvig, MIT Press, 2001.

<sup>61</sup> V.P. Kuzin, V.I. Nikolsky, *Voенно-Morskoy Flot SSSR 1945-1991* (USSR Navy in 1945-1991), Istoricheskoe Morskoe Obschestvo, 1996, pp.495-496.

<sup>62</sup> I. Kasatonov, *Flot Vyshel v Okean* (The Navy Went to the Ocean), Moscow, Andreyevsky Flag, 1996, p. 89; A.M.Artem'yev, *Protivolodochnye Samolety* (Anti-Submarine Aircraft), Moscow, AST, 2002, p. 121.

<sup>63</sup> Thomas B. Cochran, William M. Arkin, Robert S. Norris and Jeffrey I. Sands, *Nuclear Weapons Databook, Vol. IV: Soviet Nuclear Weapons* (Ballinger, 1988), p. 160; A.V. Karpenko, "Beregovye Raketnye Kompleksy VMF" (Coastal Missile Systems of the Russian Navy), *Nevsky Bastion*, No 2, 1997, p. 33-39.

<sup>64</sup> The "Rubezh" system is equipped with P-15M missiles, which were also deployed on Project 56U (Mod. Kildin) and Project 61MP (Mod. Kashin) destroyers, hence, they probably allowed a nuclear variant (S.S.Berezhnoy, "Sovetskij VMF 1945-1995" (Soviet Navy in 1945-1995), *Morskaya Kollekcija*, N1, 1995; I. Kasatonov, *Flot Vyshel v Okean* (The Navy Went to the Ocean), Moscow, Andreyevsky Flag, 1996, p. 288).

Non-strategic nuclear arms on Navy submarines include long-range land attack submarine launched cruise missiles (SLCM),<sup>65</sup> anti-ship cruise missiles, anti-submarine missiles and torpedoes, and also anti-ship torpedoes. Carriers of long-range SLCMs include nuclear attack submarines of projects 971 (Akula), 945À (Sierra II) and 671RTMK (Victor III), which are capable of launching "Granit" SLCMs (SS-N-21) from 533 mm torpedo tubes.<sup>66</sup> "Granit" (SS-N-19) anti-ship cruise missiles are carried by project 949À (Oscar II) nuclear submarines. Practically all Navy nuclear submarines are capable of launching anti-submarine missiles. Anti-submarine missile systems "Veter" (SS-N-17), "Vodopad" (SS-N-16) and "Shkval" are currently deployed on Navy submarines.<sup>67</sup> Nuclear anti-submarine and anti-ship torpedoes can be deployed on all operational submarines of the Russian Navy, both nuclear and conventional.

Navy surface ships can launch nuclear variants of anti-ship missiles and anti-submarine missiles and torpedoes. In the Cold War years, nuclear capability was mandatory for all Navy ocean-going ships – aircraft carriers, missile cruisers, destroyers, and big anti-submarine ships. On a number of the naval sea-going ships – small missile ships, small anti-submarine and patrol ships – nuclear weapons could be also deployed.<sup>68</sup> Possibly, the anti-ship arms of missile craft also included nuclear variants.

The anti-ship missile systems currently deployed on Navy surface ships are "Granit" (SS-N-19), "Vulkan", "Bazalt" (SS-N-12), "Moskit" (SS-N-22), "Termit" (SS-N-2c), "Uran" (SS-N-25), "Malakhit" (SS-N-9), and also anti-submarine systems "Vodopad" (SS-N-16), "Metel", and "Rastrub-B" (SS-N-14).<sup>69</sup>

According to foreign experts, some ships carried nuclear warheads to be deployed on air defense missiles. Most likely, nuclear capability is available for the "Fort" (S-300F, SA-N-6) long-range air defense system whose missiles are standardized with the S-300PMU system deployed with the Air Defense Forces (now a branch of the Air Force).<sup>70</sup> The "Fort" system is deployed on the missile cruisers of projects 1144 ("Kirov" class), 11442 (mod. "Kirov" class) and 1164 ("Slava" class).

Along with naval ships, anti-ship and anti-submarine arms are also deployed on patrol ships and boats of the Federal Border Service. Under the operating plans of these forces in wartime, they will be under the command of their respective Naval fleet according to their basing.<sup>71</sup> Therefore, it would be logical to assume, that, if there are nuclear capabilities for the types of anti-ship and anti-submarine missiles used by Federal Border Service ships, they can be also categorized as NSNW carriers.

## Ground Forces

In 1991, to reciprocate the US initiative, the Soviet Union pledged to eliminate all nuclear artillery shells, warheads of tactical missiles, and mines assigned to the arms of the

<sup>65</sup> Long-range sea-based nuclear cruise missiles are usually considered as strategic arms. Here they are included in non-strategic arms since neither SLCM themselves nor the nuclear-powered submarines which carry them are limited by START I.

<sup>66</sup> V.P. Kuzin, V.I. Nikolsky, *Voенно-Morskoy Flot SSSR 1945-1991* (USSR Navy in 1945-1991), Istoricheskoe Morskoe Obschestvo, 1996, pp.78-80.

<sup>67</sup> A.B. Shirokorad, *Oruzhie Otechestvennogo Flota* (Arms of the Homeland's Navy), Minsk, Harvest, Moscow, OOO "Izdatel'stvo AST", 2001, pp. 322, 555.

<sup>68</sup> See, for instance: E.A. Shitikov, "Yadernoe Oruzhie" (Nuclear Arms), in: *Rossiyskaya Nauka Voенно-Morskoy Flotu* (Russian Science – to the Navy), ed. A.A. Sarkisov, Moscow, Nauka, 1997, pp. 293-296.

<sup>69</sup> A.B. Shirokorad, *Oruzhie Otechestvennogo Flota* (Arms of the Homeland's Navy), Minsk, Harvest, Moscow, OOO "Izdatel'stvo AST", 2001.

<sup>70</sup> *Ibid*, p. 634.

<sup>71</sup> Norman Polmar, *The Naval Institute Guide to the Soviet Navy*, 5-th edition, Naval Institute Press, Annapolis, MD, 1989.

Ground Forces.<sup>72</sup> Despite numerous subsequent statements by Russian officials about the commitment to the 1991 unilateral obligations,<sup>73</sup> a number of articles have appeared in the publicly available press in recent years showing that nuclear warheads continue to be viewed as a promising means to be deployed on tactical missiles of the Ground Forces.<sup>74</sup> Among dual-capable delivery vehicles of the Missile Forces and Artillery of the Ground Forces, the tactical missile system "Tochka" (SS-21) and its modifications remain deployed.<sup>75</sup> In the future, the tactical missile system "Tochka" is planned to be replaced with the new system "Iskander" (SS-26).<sup>76</sup> Though the designers of "Iskander" declared that it would be used only in a non-nuclear variant,<sup>77</sup> most likely nuclear missions will be retained for this system. Domestic experts also voice the opinion that the nuclear variant is retained for 152 and 203 mm artillery, 240 mm "Tyulpan" mortars as well as nuclear mines.<sup>78</sup>

According to foreign experts, dual-capable means also include the anti-aircraft missile systems S-300V (SA-12 Giant), deployed with the Air Defense of the Ground Forces.

### Space Forces

Space-Missile Defense Forces possess 53T6 (Gazelle) and 51Ö6 (Gorgon) missile interceptors for the Moscow ABM system A-135.<sup>79</sup>

Space-Missile Defense Forces, which used to be a part of the National Air Defense Forces, (and from 1997 were part of the Strategic Missile Forces) in 2001 became a part of the Space Forces. Originally missile interceptors of the A-135 system were equipped with nuclear warheads only. In February 1998, it was officially announced that Russia renounced the use of nuclear warheads, and that conventional warheads on the interceptors would be deployed in the nearest future.<sup>80</sup> However, the capability for deploying nuclear warheads on A-135 missiles is likely to be retained as well.

<sup>72</sup> Statement of USSR President M.S. Gorbachev dated October 5, 1991.

<sup>73</sup> See, for instance Statement of the RF President B.N. Yeltsin dated January 29, 1992, *Diplomaticheskoy Vestnik*, No 4-5, February 29 – March 15, 1992; Text of the speech of the RF Minister for Foreign Affairs I.S. Ivanov at the NPT Review Conference, New York, April 25, 2000, *Rossiyskaya Gazeta*, April 29, 2000; Speech of the RF delegation at the First Session of the Preparatory Committee of the 2005 NPT Review Conference for Article VI of the Treaty, April 11, 2002; <http://www.mid.ru>.

<sup>74</sup> See, for instance: Mikhail Khodoryonok, "V Otvet na Rasshirenie Nato Rossiya Dolzhna Sdelat' Stavku na Takticheskoe Yadernoe Oruzhie" (In Response to NATO Enlargement, Russia Should Stake on Tactical Nuclear Weapons), *Voенно-Promyshlenny Kur'er*, No 13, April 7, 2004; Oleg Falichev, "Bog Vojny v Zapas Ne Uhodit" (God of War Does Not Retire), *Voенно-Promyshlenny Kur'er*, No 11, November 19-25, 2003; *Evolving U.S.-Russian Relationship, A meeting with experts of the Institute for Applied International Research (IAIR)*, Moscow, Thursday, February 06, 2003, Carnegie Endowment for International Peace, <http://www.ceip.org/files/events/events.asp?pr=2&EventID=583>.

<sup>75</sup> See, for instance Mikhail Khodoryonok, "Vozmozhnosti Preventivnogo U dara" (Possibilities of a Preventive Strike), *Military-Industrial Courier*, No 15, December 17-23, 2003.

<sup>76</sup> Vladimir Mukhin, "Glavnoe Sredstvo Bor'by na Pole Boya – Artilleriya" (Principal Means in the Battlefield is Artillery), *Nezavisimoe Voенное Obozrenie* (Independent Military Review), November 28, 2003.

<sup>77</sup> Nikolay Gushchin, "'Iskander-E' – Raketnyj Kompleks XXI Veka" (Iskander-E Is a Missile System of the XXI Century), *Voенny Parad* (Military Parade), No 34, July-August 1999.

<sup>78</sup> Mikhail Khodoryonok, "V Otvet na Rasshirenie Nato Rossiya Dolzhna Sdelat' Stavku na Takticheskoe Yadernoe Oruzhie" (In Response to NATO Enlargement, Russia Should Stake on Tactical Nuclear Weapons), *Voенно-Promyshlenny Kur'er*, No 13, April 7, 2004.

<sup>79</sup> See, for instance *Strategic Defense*, <http://www.russianforces.org/eng/defense/>.

<sup>80</sup> *Aviation Week & Space Technology*, Mar 02, 1998, p. 21.

### 2.3. Assuring Secure Storage of Nuclear Weapons

In the Russian Federation, the Ministry of Defense is responsible for the reliable protection and safety of nuclear warheads in storage and transport. The activities of the Russian Ministry of Defense to assure nuclear safety are governed by the Resolution of the Government (September, 1996) that brought into force "The concept of assurance of nuclear weapons safety", "Regulations on the state system of assurance of nuclear weapons safety" and "Regulations on a functional subsystem of response and elimination of consequences of events involving nuclear weapons in the Russian Federation and the integrated state system of the prevention and elimination of emergency situations", as well as the Federal Program "Enhancement of nuclear weapons safety in 1997-2003".

These normative acts regulate activities for the assurance of nuclear and radiation safety, and take into account the current social and economic situation in the country including social tensions in society, the growth of crime and extremism, and the growth in the number of technogenic accidents. In these conditions the priority measures undertaken by the Ministry of Defense have been focused on more strict control of physical access to nuclear warheads in their holding and maintenance areas. Handling of nuclear warheads is subject to "the three person rule", i.e. the work is done by three persons, and access to any work must be authorized by an appropriate official. All stages of work and their result must be recorded, with a record of each operation, and the person in charge must sign the record. Continuous monitoring of the condition of nuclear warheads is in place, and all of their movements are registered in operation logs. To respond to potential accidents or emergencies involving nuclear warheads, permanent storage facilities have a regular special emergency team.<sup>81</sup>

The most vulnerable procedure, in terms of the assurance of safety of nuclear warheads, is their transportation. This factor became especially acute in the early 1990s, when hundreds and thousands of nuclear warheads had to be withdrawn to Russia. In these conditions Russian leaders accepted US, UK and France financial and technical assistance to support the safe transportation of nuclear warheads. In June 1992, Russia and the United States reached a framework "Agreement on safe transportation, storage and elimination of weapons and prevention of weapons proliferation." Since 1995, on the basis of this agreement, the Russian Ministry of Defense and the US Department of Defense have concluded a set of executive agreements on cooperation to enhance the security, safety, and control of nuclear weapons during storage and transportation. Within this agreement the Russian Ministry of Defense received Kevlar blankets and super containers for nuclear warheads protection, and modules with equipment for accident mitigation. US funds also were used to finalize development of 100 special railroad cars for the transportation of nuclear weapons and 15 cars for the accompanying security teams. The UK and France supplied 150 and 30 super containers, respectively. The assistance provided has considerably strengthened the safety and security system of Russian nuclear warheads in transit.<sup>82</sup>

The realization of negotiated and unilateral commitments on the reduction of nuclear arms has resulted in considerable reductions in the number of Russian nuclear warhead storage sites in comparison with the period before 1991. It allowed strengthening of the

<sup>81</sup> *Bezopasnost' Yadernogo Oruzhiya Rossii* (Safety of Russia's Nuclear Weapons), Ministry of Atomic Energy of the Russian Federation, 1998.

<sup>82</sup> Michael Demeo, *Sovmestnoe Umen'shenie Ugrozy* (Cooperative Threat Reduction), November 3, 1997; Roland Lajoie, *Proekty po Programme SUU v Ramkah Dogovorov SNV-2, SNV-3* (CTR Projects within START II and START III), February 1998.

whole security system of storage sites, and also improvement to the warhead accounting system. According to the existing requirements, nuclear warhead holdings shall be housed in isolated, carefully protected areas. Storage facilities are designed so they can sustain a direct bomb hit, and all of them are equipped with independent life-support systems.

In the last years measures have been undertaken for improvement of the security systems of nuclear warhead storage sites. Reinforcement of the external perimeter and installation of modern security systems has been done at more than 100 Russian storage sites. The 12<sup>th</sup> Directorate of the Ministry of Defense of Russia, which is responsible for the security of storage sites and accounting of nuclear warheads, has developed and implemented a computerized nuclear warhead accounting system, which allows real time tracing of the history of each nuclear warhead, from its fabrication to destruction. Polygraphs are being introduced to enhance confidence in the personnel who have access to warheads. All this work has been done with US financial support on the basis of the Russian-US agreement on safe transport and storage of nuclear warheads.



## CHAPTER 3. NON-STRATEGIC WEAPONS OF THE UNITED STATES

### 3.1. The US NSNW Arsenal After the End of the Cold War

Non-strategic nuclear weapons were deployed in the United States in the early 1950s. This class of arms included nuclear ammunition for tactical aircraft, ground-to-air and air-to-ground missiles, ground-based intermediate and shorter-range ballistic and cruise missiles, artillery, land mines, and nuclear arms for ships and submarines (anti-ship and anti-submarine missiles, long-range sea-launched cruise missiles, and torpedoes). By the mid-1950s, US non-strategic nuclear weapons were deployed in Europe (see Section 4.1, NATO Nuclear Forces) and in other countries.

In the late 1980s - early 1990s, in compliance with the 1987 INF Treaty and 1991 PNI, most NSNW types were retired, and a large part of them were eliminated (see Table 4). In particular, during 1990-1999 about 11,700 retired nuclear warheads were eliminated, including strategic ones.<sup>83</sup> The number of nuclear warhead storage sites decreased from 164 in 1985 to 50 in 1992, and by 2001 it reached 22.<sup>84</sup>

Revision of the structure of US nuclear forces in 1994 resulted in a complete withdrawal of nuclear missions from the US Army, and the spectrum of missions of the Air Force and the Navy was considerably narrowed. Nuclear capability was retained only for ground-based tactical aircraft (nuclear bombs) and for long-range sea-launched cruise missiles on attack submarines.<sup>85</sup>

### 3.2. The Role of NSNWs in Current US Nuclear Policy

With the end of the Cold War the views of political leaders of the US military on the role and use of NSNWs have changed. The primary goals for US non-strategic forces during the confrontation with the Soviet Union were the deterrence and defeat of potential large-scale aggression by the superior conventional forces of the Warsaw Pact. However, the fact that US NSNWs were deployed in the territories of 27 countries, including Morocco, Cuba, South Korea and Philippines,<sup>86</sup> indicates that the spectrum of missions to be accomplished was much broader.<sup>87</sup>

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<sup>83</sup> "NRDC Nuclear Notebook: Dismantling U.S. Nuclear Warheads", *The Bulletin of Atomic Scientists*, January – February, 2004, Volume 60, pp. 72-74.

<sup>84</sup> Joshua Handler, *The September 1991 PNIs and the Elimination, Storing and Security Aspects of TNWs*, Presentation for "Time to Control Tactical Nuclear Weapons," Seminar hosted by UNIDIR, CNS, and PRIF, United Nations, New York, 24 September 2001.

<sup>85</sup> *Nuclear Posture Review*, 1994; [http://www.fas.org/nuke/guide/usa/doctrine/dod/95\\_npr.htm](http://www.fas.org/nuke/guide/usa/doctrine/dod/95_npr.htm).

<sup>86</sup> Robert S. Norris, William M. Arkin, and William Burr, "Where They Were," *The Bulletin of Atomic Scientists*, November-December, Volume 55, 1999.

<sup>87</sup> In particular, there is documented evidence that in the mid-1960s the Nixon Administration considered an option to use tactical nuclear weapons in the Vietnam war (Peter Hayes and Nina Tannenwald, "Nixing Nukes In Vietnam", *The Bulletin of Atomic Scientists*, May – June, Volume 59, 2003).

**Table 4. Quantitative Estimates of US Non-Strategic Nuclear Warheads<sup>88</sup>**

Type of warhead	Delivery vehicle	War-heads produced	Number Deployed as of 1991	Eliminated Since 1990 / Completely Eliminated by	Number Deployed as of 2004
<b>Deployed with the Army</b>					
B54	land mine	250	0 <sup>89</sup>	145 / 1991	0
W33	203 mm art.	1231 <sup>90</sup>	500	1231 / 1992	0
W48	155 mm art.	1000	500	759 / 1996	0
W50	Pershing I	280	0	160 / 1991	0
W70	Lance	1280	850	1170 / 1996	0
W71	ABM Interceptor Spartan	45	0	39 / 1995	0
W79	203 mm art.	550	300	? / 2003 <sup>91</sup>	0
W85	Pershing II	> 200	0	219 / 1991	0
<b>Deployed with the Navy</b>					
B28	Naval aircraft	5000	0	624 / 1992	0
B43	Naval aircraft	3000	0	258 / 1991	0
B57	Depth charge	3100	900	2242 / 1995	0
W44	ASROC	600	0 <sup>92</sup>	104 / 1991	0
W55	SUBROC	300	0 <sup>93</sup>	160 / 1996	0
W80-0	SLCM-N	350	350	~30 <sup>94</sup> / -	320 <sup>95</sup>

<sup>88</sup> If not indicated otherwise, the above estimates were taken from: 1) number of the warheads produced – *Atomic Audit: The Costs and Consequences of U.S. Nuclear Weapons Since 1940*, ed by Stephen I. Schwartz, The Brookings Institution, 1998, pp. 191-194; 2) number of non-strategic nuclear warheads deployed as of 1991 – Joshua Handler, *The September 1991 PNIs and the Elimination, Storing and Security Aspects of TNWs*, Presentation for "Time to Control Tactical Nuclear Weapons," Seminar hosted by UNIDIR, CNS, and PRIF, United Nations, New York, 24 September 2001; 3) number of warheads eliminated since 1990 and the year of elimination of particular warhead types were taken from the official information of the US Department of Energy (*Nuclear Weapons Disassembly (by Weapons Program) at Pantex Plant, Pantex Plant Nuclear Weapons Disassembly History by Weapons System*, March 1998, released under FOIA to Princeton University's Program on Science and Global Security); 4) all quantitative estimates for various modifications of B61 bomb – "NRDC Nuclear Notebook: The B61 family of bombs," *The Bulletin of Atomic Scientists*, January/February 2003, Vol. 59, No.1, pp. 74-76.

<sup>89</sup> Nuclear land mines were retired in 1989.

<sup>90</sup> Disassembly of W33 artillery shells and B28 bombs was completed in 1992 (*Transparency and Verification Options*, prepared by the Department of Energy Office of Arms Control and Nonproliferation, May 19, 1997). The number of eliminated warheads of these two types totaled 1856, with the total number of B28s destroyed being 624 (*Pantex Plant Nuclear Weapons Disassembly History by Weapons System*, March 1998, released under FOIA to Princeton University's Program on Science and Global Security).

<sup>91</sup> Elimination of W79 warheads was completed at the Pantex Plant in December 2003 (Jim McBride, Pantex Marks Milestone, *The Amarillo Globe-News*, December 13, 2003).

<sup>92</sup> Anti-ship missile torpedoes ASROC were retired in 1989.

<sup>93</sup> Anti-submarine missile torpedoes SUBROC were retired in 1990.

<sup>94</sup> From 1990 to 1997, 58 W80 warheads were disassembled, a part of which were likely intended for ALCMs (*Nuclear Weapons Disassembly (by Weapons Program) at Pantex Plant*, March 1998, released under FOIA to Princeton University's Program on Science and Global Security).

<sup>95</sup> According to the 2002 Nuclear Posture Review, W80-0 warheads will be retained in the reserve arsenal with 30-day readiness for deployment.

Type of warhead	Delivery vehicle	War-heads produced	Number Deployed as of 1991	Eliminated Since 1990 / Completely Eliminated by	Number Deployed as of 2004
<b>Deployed with the Air Force</b>					
W69	SRAM	1250	0 <sup>96</sup>	60 / 1999 <sup>97</sup>	0
W84	GLCM	400	400	4 <sup>98</sup> / -	~400 <sup>99</sup>
B61-0/1	Gravity bombs <sup>101</sup>	1200	0	500/ -	0
B61-2		235	0	215/ -	0
B61-3		545	545	25/ -	520
B61-4		695	695	15/ -	680
B61-5		265	0	236/ -	0
B61-10 <sup>100</sup>		215	215	0/ -	205
Total B61		3155		991 <sup>102</sup> / -	1405 <sup>103</sup>

In the 1994 Nuclear Posture Review, the role of non-strategic nuclear forces was emphasized as follows:<sup>104</sup>

*"...the United States extends the deterrent protection of its nuclear arsenal to its allies. Nowhere is this more evident than in the area of NSNF, which are not covered by START I and START II. For nearly 50 years, the United States has maintained a sizable military presence in regions deemed vital to American national interests.*

*Alliance commitments and the unique characteristics of non-strategic nuclear forces were primary considerations in the NPR's consideration of what the NSNF force structure should be..."*

The "uniqueness" of non-strategic nuclear forces is usually supported by the following arguments:<sup>105</sup>

Dual-capable aircraft possess almost all the advantages of strategic bombers. However, their deployment near a theater of war allows additional pressure on the enemy, thus raising the threshold of deterrence. Attack submarines carrying nuclear SLCMs pose similar characteristics, and their presence allows less dependence on non-strategic air-

<sup>96</sup> Tactical cruise missiles SRAM were retired in 1990.

<sup>97</sup> Elimination of W69 warheads for SRAM ALCMs was to be completed in 1999 (*Pantex Plant Nuclear Weapons Disassembly History by Weapons System*, March 1998, released under FOIA to Princeton University's Program on Science and Global Security).

<sup>98</sup> *Nuclear Weapons Disassembly (by Weapons Program) at Pantex Plant*, March 1998, released under FOIA to Princeton University's Program on Science and Global Security.

<sup>99</sup> According to the 2002 Nuclear Posture Review, W84 warheads will be retained in the inactive arsenal.

<sup>100</sup> The B61-10 bomb is a modification of the W85 warhead originally designed for Pershing II ballistic missiles.

<sup>101</sup> Before 1991, gravity bomb variants B61 -0, -1, -2 and -5 were also deployed with Naval tactical aircraft. According to independent experts, the US Navy deployed 625 B61 bombs, which were taken into account in the quantitative estimates presented (Joshua Handler and William M. Arkin, *Nuclear Warships and Naval Nuclear Weapons 1990: A Complete Inventory*, Greenpeace Neptune Papers, N5, 1990).

<sup>102</sup> According to official data, the total number of B61 bombs eliminated in 1990-1997 was 1159, including strategic bombs (*Nuclear Weapons Disassembly (by Weapons Program) at the Pantex Plant*, March 1998, released under FOIA to Princeton University's Program on Science and Global Security).

<sup>103</sup> According to experts, about 800 tactical bombs are in the active arsenal, the rest are in reserve.

<sup>104</sup> *Nuclear Posture Review*, 1994; [http://www.fas.org/nuke/guide/usa/doctrine/dod/95\\_npr.htm](http://www.fas.org/nuke/guide/usa/doctrine/dod/95_npr.htm).

<sup>105</sup> Doctrine for Joint Theater Nuclear Operations, Joint Pub 3-12.1, 9 February 1996.

craft, the deployment of which in a theatre of war will also depend on the consent of allies. Unlike dual-capable aircraft, nuclear attack submarines carrying SLCMs have high survivability, similar to the survivability of strategic submarines.

"Uniqueness" also means that NSNWs do not have some features inherent to strategic forces and undesirable in use of nuclear weapons in a theater of war. For instance, the use of ICBMs or SLBMs may require the consent of countries whose territories would be overflown by ballistic missiles. The use of ICBMs or SLBMs may also require preliminary notification of the Russian leadership, so that the use of these missiles is not assumed to be directed at Russia and thus lead to a response and to mutual nuclear war. These arguments are less applicable to SLBMs, as the desirable trajectory can be chosen by changing the missile's location. This latter possibility, however, would require modifications in the day-to-day plans for the deployment of nuclear-powered ballistic missile submarines (SSBNs) in patrol areas. Besides, the existing US SLBMs have multiple re-entry vehicles and they are intended to destroy 6-8 targets. With a single target to be destroyed, an SLBM launch would be an inefficient expenditure.

The Pentagon doctrines on nuclear weapons employment also indicate that the use of NSNWs enables prevention of the escalation of a conflict without resorting to the option of using strategic weapons.<sup>106</sup>

The provisions contained in the above-listed documents have also been consolidated in NATO's Strategic Concept adopted in 1999 (see Section 4.2, Nuclear Doctrines of NATO and the USA).

- In the late 1990s - early 2000s, two interrelated trends on the role of nuclear weapons can clearly be seen in the views of the military-political leadership of the US: the gradual elimination of distinctions between strategic and non-strategic nuclear weapons and a desire to lower the threshold of the use of nuclear weapons. Several reasons for and manifestations of these two trends can be seen
- With the end of the Cold War, the United States has lost the main adversary against which a huge nuclear arsenal had been created. It is increasingly more difficult for the US military industrial complex to justify the existence of this arsenal when the nuclear forces of Russia are rapidly shrinking. There is no other adversary with comparable capabilities, and the possibility of a large-scale nuclear war is rather unrealistic. The 2001 Nuclear Posture Review became a kind of compromise between the old contents of US nuclear policy and the new shape of its representation to the general public.
- The division of US and Soviet nuclear arms into strategic and non-strategic was mostly determined by the existence of a superpower dialogue on the limitation and reduction of these arms. This dialogue is currently at an impasse as the United States lost interest in negotiating in the previous format. Washington prefers to shape its future nuclear forces outside of any negotiated constraints.
- The United States sees the main threat to its security as coming from "rogue" states and international terrorism. Recognizing and emphasizing the deterrent role of nuclear weapons against this threat, the military-political leadership of the US realizes that the available nuclear arsenal is not adequate to the threat. For this reason, they see the solution of this problem in the creation of new types of nuclear weapons which could be used in a measured way and with a minimal collateral damage.<sup>107</sup>

<sup>106</sup> *Doctrine for Joint Nuclear Operations*, Joint Pub 3-12, 15 December 1995, II-2.

<sup>107</sup> These ideas were most completely developed by the heads of the largest DOE laboratories: Stephen M. Younger, *Nuclear Weapons in the Twenty-First Century*, Los Alamos National Laboratory Report, LAUR-00-2850, June 27, 2000; C. Paul Robinson, President and Director, Sandia National Laborato-

It is very symptomatic that many representatives of the US military industrial complex speak in favor of merging the notions of non-strategic and strategic nuclear weapons. In particular, according to Paul Robinson, the Director of Sandia National Laboratories, "...it also seemed abundantly clear that **any use of nuclear weapons is, and always will be, strategic...**" For this reason Robinson proposes to ban the term "non-strategic nuclear weapons" as a *non sequitur*.<sup>108</sup>

Due to these trends, and unlike the 1994 NPR, the 2001 Nuclear Posture Review does not differentiate between strategic and non-strategic nuclear forces. Moreover, the new document adopted a concept of building a new strategic triad, the components of which will be nuclear and non-nuclear strategic forces, anti-missile defenses, and a flexible, robust infrastructure for the testing, production and operational use of strategic weapons, brought together by a system of communication, intelligence, and command and control based on new information technologies. The structure and capabilities of this new triad should be such as to accomplish these missions, as defined in the "Quadrennial Defense Review Report", published in September, 2001:<sup>109</sup>

- Assuring allies and friends;
- Dissuading future military competition;
- Deterring threats and coercion against US interests; and,
- If deterrence fails, decisively defeating any adversary.

The 2001 Nuclear Posture Review defines a place for the new triad in addressing each of these goals, and non-strategic nuclear weapons are regarded as a component of the triad.

A logical follow-up to the "Quadrennial Defense Review Report" was also the approval of the "National Strategy to Combat Weapons of Mass Destruction" in December 2002, which allows the preventive use of nuclear weapons against WMD-armed adversaries.<sup>110</sup>

### 3.3. The Status of Non-Strategic Sea-Based Nuclear Forces

According to publicly available sources, the US arsenal contains about 320 nuclear Tomahawk SLCMs (TLAM/N), with an operational range of 2500 km.<sup>111</sup> The nuclear Tomahawk carries a W80-0 warhead with a pre-selected yield of 5 or 150 kt,<sup>112</sup> and its accuracy (CEP) is about 80 m.<sup>113</sup> Tomahawk missiles can be loaded either in vertical launchers or in the torpedo tubes of attack nuclear-powered submarines.<sup>114</sup>

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ries, *Pursuing a New Nuclear Weapons Policy for the 21st Century*, March 22, 2001, <http://www.sandia.gov/media/whitepaper/2001-04-Robinson.htm>.

<sup>108</sup> C. Paul Robinson, op. cit.

<sup>109</sup> *Quadrennial Defense Review Report*, Washington D.C., September 30, 2001.

<sup>110</sup> National Strategy to Combat Weapons of Mass Destruction, White House, December 2002.

<sup>111</sup> The range of Tomahawk SLCMs can be considerably increased through optimization of flight altitude and velocity. See, for instance: George N. Lewis and Theodore A. Postol, "Long-range Nuclear Cruise Missiles and Stability," *Science and Global Security*, Vol. 3, Nos. 1-2, pp. 49-100.

<sup>112</sup> Domestic sources often mention that the W80-0 warhead yield is 200 kt. See, for instance: "Krylatye Rakety Morskogo Bazirovaniya SShA" (US sea-based cruise missiles), *Daidzhest Zarubezhnoy Pressy po Voprosam Korablestroeniya* (Digest of Foreign Press on Shipbuilding), Issue 8, St. Petersburg, pp.71-79.

<sup>113</sup> Michael Kostiuk, "Removal of the Nuclear Strike Option from United States Attack Submarines", *Submarine Review*, January 1998, pp. 85-90.

<sup>114</sup> Most US Navy "Los Angeles" class attack nuclear-powered submarines have 12 vertical launchers. "Los Angeles" class submarines have 4 torpedo tubes, and "Seawolf" – 8 torpedo tubes. Besides that, each attack submarine can accommodate additional weapons in its torpedo compartment ("Los Angeles" – 22, "Seawolf" – 42).

In compliance with the current concept of operations (CONOPS) of nuclear SLCMs, they are maintained for 30-day readiness for deployment on submarines and are concentrated at coastal strategic nuclear weapons storage facilities in Bangor, Washington and King's Bay, Georgia.<sup>115</sup>

The current plans envision using as carriers of nuclear SLCMs only a small part of the 54 US attack submarines that were in the active force at the beginning of 2004. The submarines intended for nuclear missions undergo annual certification. By mid-2002 the US Navy totaled 14 attack submarines of this type.<sup>116</sup> Open sources also reported that less than half of the nuclear submarines in the US Pacific fleet have been certified for nuclear missions, and later nuclear missions were withdrawn from some of them because of a shortage of resources for conventional missions.<sup>117</sup> Attack nuclear submarines underwent training in nuclear missions during the Global Guardian annual joint exercises conducted by the US Strategic Command.<sup>118</sup>

Though the lifetime of TLAM/N will come to an end by 2010, there are no plans yet for extension, modernization or replacement of these missiles.<sup>119</sup> According to published data, the lifetime of the W80-0 nuclear warhead expires in 2008.<sup>120</sup> However, it is possible that the decision, in 2006-2010, about the future reassembly of about one third of the existing arsenal of W80 warheads<sup>121</sup> will include both air-based and sea-based cruise missiles.<sup>122</sup> Refurbishment of the remaining W80 warheads is planned for 2011-2017.<sup>123</sup>

### 3.4. The Status of Dual-Capable Aircraft

The nuclear arms of non-strategic US aircraft include B61-3, -4 and -10 bombs, the yield of which can vary from 0.3 to 170 kt, depending on the mission. The total number of these bombs in the active nuclear arsenal of the United States is estimated at 800, with about 500-600 bombs in reserve.<sup>124</sup> Most of them are concentrated at the Kirtland (New Mexico) and Nellis (Nevada) air bases. In addition, non-strategic nuclear bombs are kept at air bases in Seymour-Johnson (Northern Carolina), Cannon (New Mexico), and on the territories of six European countries who are US NATO allies (see Section

<sup>115</sup> "NRDC Nuclear Notebook: U.S. Nuclear Forces, 2002", *The Bulletin of Atomic Scientists*, May – June 2002, pp.70-75.

<sup>116</sup> Michele A. Flournoy, Clark A. Murdock, *Revitalizing the U.S. Nuclear Deterrent*, Center for Strategic and International Studies, 2002, p.96.

<sup>117</sup> "NRDC Nuclear Notebook: U.S. Nuclear Forces, 2003", *The Bulletin of Atomic Scientists*, May – June, Vol.59, 2003, pp.73-76.

<sup>118</sup> "NRDC Nuclear Notebook: U.S. Nuclear Forces, 2002", *The Bulletin of Atomic Scientists*, May – June, Vol. 58, 2002, pp.70-75.

<sup>119</sup> Michele A. Flournoy, Clark A. Murdock, *Ibid.*

<sup>120</sup> *Ibid.*

<sup>121</sup> *Statement of John A Gordon, National Nuclear Security Administration, Before The House Armed Services Committee Procurement Subcommittee*, June 12, 2002.

<sup>122</sup> Nuclear strategic air-launched cruise missiles ALCM and ACM carry W80-1 warheads, the characteristics of which are similar to W80-0 warheads.

<sup>123</sup> *Statement of John A Gordon, National Nuclear Security Administration, Before The House Armed Services Committee Procurement Subcommittee*, June 12, 2002.

<sup>124</sup> It is interesting that the same authors give different numbers of non-strategic B61 nuclear bombs in the US reserve arsenal. In particular, according to annual reviews of the US nuclear forces in 2002 and 2003 ("NRDC Nuclear Notebook: U.S. Nuclear Forces, 2003," *The Bulletin of Atomic Scientists*, May-June, Vol.59, 2003, pp.73-76; "NRDC Nuclear Notebook: U.S. Nuclear Forces, 2002," *The Bulletin of Atomic Scientists*, May-June 2002, pp.70-75) the number of reserve warheads was estimated as 500. According to a publication of early 2003 ("NRDC Nuclear Notebook: The B61 family of bombs," *The Bulletin of Atomic Scientists*, January/February 2003, Vol. 59, No.1, pp. 74–76), the number of reserve bombs B61 is 600.

4.4, US Nuclear Weapons in Europe).<sup>125</sup>

F-16 Ñ/D (Fighting Falcon) and F-15E (Strike Eagle) fighters can be used as delivery vehicles and are capable of carrying 1 or 2 non-strategic nuclear bombs up to a range of 1500 km without in-air refueling. As of mid-2002, the US Air Force possessed 10 squadrons of F-16 Ñ/D and F-15E fighters, certificated for nuclear missions, with a total number of about 240 planes.<sup>126</sup> The lifetime of the dual-capable aircraft fleet will expire in 2013, and today there are no plans for extension, or modernization of the planes.<sup>127</sup> In the future, the United States plans to add F-35 fighters (Joint Strike Fighter) to its arsenal, and they will begin to arrive in 2012. Most likely, the F-35 will be capable of delivering nuclear bombs and will replace the F-16.<sup>128</sup>

**Table 5. Arsenal of B61 Bombs as of Early 2003**<sup>129</sup>

Variant	Number deployed	Yield	Number produced	Years of fabrication
B61-3	520	0.3, 1.5, 60, 170 kt	545	1979-1989
B61-4	680	0.3, 1.5, 10, 45 kt	695	1979-1989
B61-10	205	0.3, 5, 10, 80 kt	215	1990-1991

Dual-capable aircraft also include the F-117A (Nighthawk) fighters, which are maintained in a lower readiness for nuclear missions compared with the F-16 and F-15E.<sup>130</sup>

### 3.5. Planning Non-Strategic Nuclear Operations

Though planning operations with the involved non-strategic nuclear weapons is an issue kept secret from the general public, one can understand the guidelines for this planning by looking at official information published by the US Department of Defense.<sup>131</sup> Pentagon guidance documents emphasize that the main principles and limitations on the use of US non-strategic nuclear forces are similar to the existing principles and limitations for US strategic nuclear forces.<sup>132</sup>

Likely targets for nuclear strikes include WMD and their delivery systems, ground combat units, air defense facilities, naval installations, combat vessels, non-state actors, and underground facilities.<sup>133</sup>

Though NSNW platforms may be deployed in a theater of war and directly subordinated

<sup>125</sup> "NRDC Nuclear Notebook: U.S. Nuclear Forces, 2003," *The Bulletin of Atomic Scientists*, May – June, Vol.59, 2003, pp.73-76

<sup>126</sup> Michele A. Flournoy, Clark A. Murdock, *Revitalizing the U.S. Nuclear Deterrent*, Center for Strategic and International Studies, 2002, p.97.

<sup>127</sup> *Ibid.*

<sup>128</sup> Though today the F-35 is designed as a plane for non-nuclear missions, its nuclear capability is retained. The plans for reduction of F-16s and withdrawal of their nuclear role fits into the prospect of deploying F-35s ("Obzor Sostoyaniya i Perspektiv Razvitiya Yadernyh Sil SShA" (Nuclear Posture Review), *Zarubezhnoe Voennoe Obozrenie*, No 4, 2002, p.14.).

<sup>129</sup> "NRDC Nuclear Notebook: The B61 family of bombs," *The Bulletin of Atomic Scientists*, January/February 2003, Vol. 59, No.1, pp. 74–76.

<sup>130</sup> Hans Kristensen and Joshua Handler, "Appendix 10A. Tables of Nuclear Forces," *Non-proliferation, Arms Control, Disarmament, SIPRI Yearbook 2002*, p. 537.

<sup>131</sup> See, in particular: *Doctrine for Joint Nuclear Operations, Joint Pub 3-12*, 15 December 1995; *Doctrine for Joint Theater Nuclear Operations, Joint Pub 3-12.1*, 9 February 1996; *Nuclear Operations, Air Force Doctrine Document 2-1.5*, 15 July 1998.

<sup>132</sup> *Doctrine for Joint Nuclear Operations, Joint Pub 3-12*, 15 December 1995, III-2.

<sup>133</sup> *Doctrine for Joint Theater Nuclear Operations, Joint Pub 3-12.1*, 9 February 1996, p. viii.

to the geographic combatant commander,<sup>134</sup> the use of NSNW can be authorized by the US president only. The Combatant Commander in the region also plans operations with the use of NSNW, and such planning is carried out continuously and in conjunction with planning operations for conventional forces present in the region. If the Combatant Commander in the region comes to a conclusion that the use of a nuclear weapon is expedient, he sends an appropriate request to the US National Command Authority. The latter directly controls and is responsible for:

- a decision to use nuclear weapons;
- the number, type and yields of weapons;
- the types of targets to be attacked;
- the geographical area for employment;
- timing and duration for employment; and,
- damage constraints.

Besides, existing treaties and agreements between the US and its allies may impose additional restrictions on the use of nuclear weapons. Specific consultation and coordination procedures are stated in treaties or developed by specific agreements prior to the deployment of nuclear forces in a theater.

In the event of a deteriorating military situation, the employment of NSNW must be capable of favorably altering the operational situation to the advantage of the user. The complete destruction of the enemy armed forces is not the principal task of a nuclear attack. A preferable option is deterrence and the demonstrated will to employ additional nuclear firepower. The employment of weapons and yields must be kept at the lowest level possible to reduce the possibility that the enemy will in turn escalate the conflict.

The options for using NSNW in a particular situation may vary according to the number of weapons used and the set of targets. There is a wide spectrum of options: from the limited use of few weapons against carefully chosen targets, up to a massive use of NSNW against a broader group of targets. A demonstration nuclear strike can be employed to warn the enemy that the US is prepared for more resolute actions.

### **3.6. Debates on the Practicality of Maintaining US NSNWs**

The expediency of maintaining nuclear SLCMs and non-strategic aircraft is brought up quite frequently. Usually the following arguments are used against retaining NSNW:<sup>135</sup>

- NSNWs are not needed after the end of Cold War because all nuclear missions can be accomplished either by strategic nuclear forces, or through use of advanced conventional arms;
- with the end of Cold War there is no need to continue deploying dual-capable aircraft in Europe, where they are seen as increasingly controversial;
- NSNWs concepts of operations calling for 30 days deployment delay do not bring significant contributions to nuclear deterrence;
- NSNWs increase the cost of and impose additional requirements on the Air Force and Navy to effectively operate and maintain dual capable platforms.

Those who favor maintaining NSNWs usually make the following counterarguments:<sup>136</sup>

<sup>134</sup> "Plan of the Joint Commands", which entered into force in October 1, 2002, defined the areas of responsibility of the 5 Joint Commands: European Area, Pacific Area, Joint Central Command (Middle East, Central Asia), North America, and Central and South America.

<sup>135</sup> Michele A. Flournoy, Clark A. Murdock, *Revitalizing the U.S. Nuclear Deterrent*, Center for Strategic and International Studies, 2002, p.97.

<sup>136</sup> *Ibid*, p.98.



- NSNWs could provide more flexible options for deterring or countering regional WMD threats and conducting limited nuclear operations in other situations (for instance, in potential regional contingencies with China). In addition, NSNWs decrease requirements for strategic nuclear forces;<sup>137</sup>
- forward deployment of dual-capable aircraft in NATO is critical to demonstrating continuous political support and extended deterrence to Europe;
- if necessary, planning NSNW concepts of operations could be changed to meet short time deployments;
- NSNWs are a counterbalance against the superior NSNW arsenal of Russia, and can be used as a means of political bargaining in possible negotiations with Russia on the further reduction of nuclear arms.

It is worth mentioning that representatives of the US Armed Forces themselves often propose the full elimination of NSNWs. For instance, it is known that when the Nuclear Posture Review was prepared in 1994, representatives of the Air Force, including the Chief of Staff of the Air Force, actively lobbied for withdrawal of nuclear missions from dual-capable aircraft.<sup>138</sup> The expediency of further basing US nuclear bombs in Europe also became one of the most controversial issues, and, prior to adoption of the NATO Strategic Concept in 1999, some experts even voiced a hope for ending this practice.<sup>139</sup> However, this hope has not materialized, and the resulting trade-off has lowered the alert status of dual-capable aircraft.

Similar discussions are also underway among the US Naval community.<sup>140</sup> In particular, the task of considering the expediency of maintaining long-range nuclear SLCMs was also set in the Nuclear Posture Review of 2001. A committee set up by the Pentagon came to a decision at the end of 2003 to maintain the current status of nuclear SLCMs.<sup>141</sup>

### 3.7. Low Yield Nuclear Warheads

In discussing the prospects for the evolution of the US non-strategic nuclear arsenal and its use, it is necessary to consider the development of new low-yield nuclear warheads, which in recent years have become the subject of broad-scale discussion both in the United States and other countries. An interest in low yield weapons emerged in the late 1990s, and it is primarily connected with the search of new roles for nuclear weapons in the post-Cold War period where the large-scale nuclear conflict for which the nuclear arsenals of the superpowers were built up is practically ruled out. Proponents of the development of mini-nukes claim a number of advantages of new types of nuclear arms, mainly the possibility of accomplishing a set of missions with much lower or even neg-

<sup>137</sup> *Rational and Requirements for U.S. Nuclear Forces and Arms Control*, Vol. II, National Institute for Public Policy, 2001, p.75.

<sup>138</sup> William L. Norris, "What is TLAM/N and Why Do We Need It?," *Submarine Review*, January 1998, pp. 80-84.

<sup>139</sup> Martin Butcher, *NATO Nuclear Policy: Between Disarmament and Pre-Emptive Nuclear Use*, BASIC Report, November 18, 1999; [http://www.basicint.org/nuclear/NATO/1999\\_mbutcher.htm](http://www.basicint.org/nuclear/NATO/1999_mbutcher.htm).

<sup>140</sup> See, for instance: William L. Norris, "What is TLAM/N and Why Do We Need It?," *Submarine Review*, January 1998, pp. 80-84; Michael Kostiuk, "Removal of the Nuclear Strike Option from United States Attack Submarines," *Submarine Review*, January 1998, pp. 85-90; David R. DiOrio, "The Role of Nuclear Sea-Launched Cruise Missiles in the Post Cold War Strategy," *Submarine Review*, January 1998, pp. 93-97; Douglas Reckamp, "Tactical Nuclear Deterrence by the Naval Reserves," *Submarine Review*, January 1999, pp. 80-84.

<sup>141</sup> Christopher J. Castelli, "Navy To Retain Cold War-Era, Nuclear-Tipped Tomahawk Missiles," *Inside the Navy*, December 8, 2003.

ligible collateral damage.<sup>142</sup>

In this connection, deeply buried hard targets are mentioned most frequently as the targets for which mini-bombs are preferable.<sup>143</sup> According to 1998 estimates by US intelligence, the total number of such targets in the world is approximately 10,000, and approximately 1100 of these are assessed as strategic (WMD, ballistic missile silos, command and control installations of political and military leaders).<sup>144</sup> According to the most recent data from the Defense Intelligence Agency, the number of underground facilities is now over 1400.<sup>145</sup>

In July 2001, the Secretaries of Defense and Energy submitted a joint report to Congress on the defeat of hard and deeply buried targets. This report reached the unambiguous conclusion that a number of missions for the destruction of such targets cannot be accomplished with conventional weapons only.<sup>146</sup> For this reason the 2001 Nuclear Posture Review emphasized an urgent need for the development of new nuclear warheads, which could be used for defeating hard and deeply buried targets.<sup>147</sup>

Until recently, the main obstacle to the development of mini-nukes was the Spratt-Furce amendment adopted in 1994 by the US Congress, which forbade research and development that could lead to the production of warheads with a yield below 5 kt. In 2003 the amendment lost force, but subsequent US legislation allowed for the production of mini-nukes only with the consent of Congress. The US Congress appropriated funds for 2004 under the following programs dealing with the development of new nuclear warheads:

#### *Robust Nuclear Earth Penetrator*

The three-year R&D program, launched in 2003 for creating a Robust Nuclear Earth Penetrator, is intended to "...examine whether or not two existing warheads in the stockpile – the B61 and the B83 – can be sufficiently hardened through case modifications and other work to allow the weapons to survive penetration into various geologies before detonating..."<sup>148</sup> A bomb's penetration into soil allows for a reduction in collateral damage and also increases the effect of a nuclear explosion on underground structures. This claim about reduced collateral damage often brings criticism from program opponents, as there are fundamental limitations on the depth to which a bomb can penetrate in free fall and still result in little or no collateral damage. In other words, critics claim the use of a nuclear mini-bomb will always be "dirty".<sup>149</sup> In particular, according to in-

<sup>142</sup> Stephen M. Younger, *Nuclear Weapons in the Twenty-First Century*, Los Alamos National Laboratory Report, LAUR-00-2850, June 27, 2000; C. Paul Robinson, President and Director, Sandia National Laboratories, "Pursuing a New Nuclear Weapons Policy for the 21st Century," March 22, 2001, <http://www.sandia.gov/media/whitepaper/2001-04-Robinson.htm> .

<sup>143</sup> The American military also discusses other targets for future nuclear warheads (For more details see: N.Sokov, "Evolyuciya Yadernoy Politiki SShA: Vozrastaet li Rol' Yadernogo Oruzhiya?" (Evolution of the US Nuclear Policy: Is the Role of Nuclear Weapons Growing?), *Yaderny Kontrol*, No 3, 2003, pp.71-86).

<sup>144</sup> Nuclear Posture Review, <http://www.globalsecurity.org/wmd/library/policy/dod/npr.htm> .

<sup>145</sup> *Ibid.*

<sup>146</sup> *Report to Congress on the Defeat of Hard and Deeply Buried Targets*, Submitted by the Secretary of Defense in conjunction with the Secretary of Energy, July 2001. [http://www.nukewatch.org/nwd/HiRes\\_Report\\_to\\_Congress\\_on\\_the\\_Defeat.pdf](http://www.nukewatch.org/nwd/HiRes_Report_to_Congress_on_the_Defeat.pdf) .

<sup>147</sup> Christine Kucia, "Congress Authorizes New Weapons Research," *Arms Control Today*, December 2003.

<sup>148</sup> *Prepared Statement of Linton F. Brooks before the Senate Committee on Appropriations, Subcommittee on Energy and Water Development*, April 10, 2003.

<sup>149</sup> See, for instance: Robert W. Nelson, "Low-Yield Earth-Penetrating Nuclear Weapons," *Science and Global Security*, Vol. 10, 2002, pp. 1-20; Christopher E. Paine, Thomas B. Cochran, Matthew G.

dependent experts, the penetration depth of a 1 kt warhead into dry rock soil must be greater than 70 m to contain radioactive fallout, while the theoretical limit that any such bomb can penetrate is 15 m.<sup>150</sup>

It is necessary to note that the variant of the B61-11 strategic bomb, which was developed in the mid-1990s, constitutes a penetrating warhead. However, it has a rather high yield and insufficient penetrating capacity.<sup>151</sup> Though the Bush administration requested \$15 million in 2004 to fulfill the RNEP program, Congress passed a resolution to appropriate only half of this amount.

#### *Advanced Weapons Concept Initiatives*

Research and development under this program is focused on studying new nuclear warhead concepts which could be produced if a need for them arises in the future.<sup>152</sup> Congress appropriated the 6 million dollars requested by the Administration for 2004 to fulfill this program on the condition that 4 million dollars from this amount would be allocated only after Congress receives a report on the revised nuclear stockpile plan in light of reductions in the existing arsenal as outlined in the US-Russian SORT Treaty.<sup>153</sup>

#### *Enhanced Nuclear Test Readiness*

Though the United States continues to adhere to the declared moratorium on nuclear testing, representatives of the Bush Administration do not exclude the possibility that such tests may become necessary in the future. The 2002 Nuclear Posture Review called for reducing the time for preparation of the Nevada test site for nuclear tests from the current 24-36 months to 18 months. The Administration's request identified \$24.9 million for exactly this purpose. Congress appropriated the requested amount on the condition that the funds are primarily used to guarantee test readiness within 24 months, prior to pursuing shorter deadlines of preparation.

It is necessary to note that Bush Administration officials believe that the above program has nothing to do with the development of mini-nukes. In particular, according to the US Secretary of Energy Spencer Abraham, the United States does not plan either to resume tests or to reduce the time needed to prepare for tests as a step toward the development of new nuclear warheads.<sup>154</sup> According to weapon designers, the construction of mini-nukes may be much simpler than that of deployed types, and they can be very reliably maintained even in the absence of nuclear tests.<sup>155</sup>

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McKinzie and Robert S. Norris, *Countering Proliferation or Compounding It?*, National Resources Defense Council, May 2003.

<sup>150</sup> Christopher E. Paine, Thomas B. Cochran, Matthew G. McKinzie and Robert S. Norris, *Countering Proliferation or Compounding It?*, National Resources Defense Council, May 2003.

<sup>151</sup> "NRDC Nuclear Notebook, The B61 Family of Bombs," *Bulletin of the Atomic Scientists*, January - February 2003, pp. 74-76, <http://www.thebulletin.org/issues/nukenotes/jf03nukenote.html>.

<sup>152</sup> *Prepared Statement of Linton F. Brooks before the Senate Committee on Appropriations, Subcommittee on Energy and Water Development*, April 10, 2003.

<sup>153</sup> Christine Kucia, "Congress Authorizes New Weapons Research," *Arms Control Today*, December 2003.

<sup>154</sup> Spencer Abraham, "Facing a New Nuclear Reality," *The Washington Post*, July 21, 2003.

<sup>155</sup> See, for instance: Stephen M. Younger, *Nuclear Weapons in the Twenty-First Century*, Los Alamos National Laboratory Report, LAUR-00-2850, June 27, 2000. A similar argument was put forward by Russian Former First Deputy Minister for Atomic Energy L.D. Ryabev in his speech at MIPT in November 28, 2003.

## CHAPTER 4. NATO NUCLEAR POLICY

### 4.1. NATO Nuclear Forces

The United States began deployment of nuclear weapons in Europe in the early 1950s.<sup>156</sup> Up to the end of the Cold War these weapons were viewed by the US and its NATO allies as essential to preventing a large-scale war with the countries of the Warsaw Treaty Organization, and – if such a war were launched – of stopping and defeating the supposedly superior conventional forces of the Warsaw Treaty. In 1955, the US and NATO reached an agreement on the exchange of information regarding US nuclear weapons in Europe, which was the beginning of the involvement of non-nuclear-weapon NATO member countries in preparation for implementation of the alliance's nuclear operations.<sup>157</sup> At the end of 1962 the US and UK decided to put part of their strategic nuclear forces at NATO's disposal, and in December 1966 the Committee for Nuclear Defense and the Nuclear Planning Group (NPG) were set up within NATO.

Up until the mid-1970s there was a quantitative buildup of the American nuclear arsenal in Europe which reached more than 7000 warheads. The arsenal included bombs, nuclear land mines, artillery shells, anti-aircraft warheads, warheads for intermediate-range and shorter-range ballistic missiles, ground and air based cruise missiles, and depth bombs (see Fig. 1).

However, from the mid-1980s, as a result of the agreement on intermediate-range and shorter-range missiles and implementation of the 1991 PNI, the rate of reduction of both the delivery systems and number of American NSNW deployed in Europe notably increased. The dynamics of these reductions is shown in Fig. 2 and Table 6.

Implementation of the 1991 Presidential Nuclear Initiatives by the end of 1993 resulted in an 85% reduction of NATO nuclear forces in Europe. All warheads of ground-based carriers, including ground-to-ground missiles, artillery, land mines, as well as depth bombs, anti-aircraft missiles and air-to-ground missiles were eliminated. SLCMs were removed from operational ships and submarines. The number of storage facilities was also reduced by 80% (see Fig. 3), and more reliable security systems were installed in the remaining sites. The level of readiness of dual-capable aircraft was also considerably reduced.

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<sup>156</sup> The first 40 specially modified B-45 bombers configured to carry Mark 5, Mark 6 and Mark 8 fission bombs were deployed at Sculthorpe Air Base (UK) in May-June 1952 (William M. Arkin, Robert S. Norris and Joshua Handler, *Taking Stock. Worldwide Nuclear Deployments 1998*, March 1998, p.17).

<sup>157</sup> William M. Arkin, Robert S. Norris and Joshua Handler, *Taking Stock. Worldwide Nuclear Deployments 1998*, March 1998, p.17.

	1971	1981	1987	1991	1999
• Mines	x	x			
• Nike Hercules SAM	x	x	x		
• Honest John SSM	x	x			
• Lance SSM	x	x	x	x	
• Sergeant SSM	x				
• Pershing IA	x	x	x		
• Pershing II			x		
• GLCM			x		
• 155mm Howitzer	x	x	x	x	
• 8-inch Howitzer	x	x	x	x	
• Walleye ASM	x				
• ASW Depth Bombs	x	x	x	x	
• DCA Bombs	x	x	x	x	x
Total Systems	11	9	9	5	1

Fig. 1. Nuclear Systems Deployed in Europe<sup>158</sup>

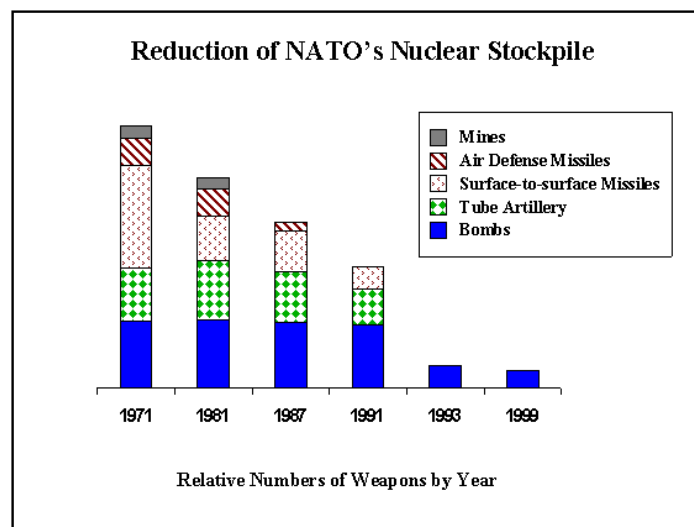


Fig. 2. Reduction of NATO's Nuclear Stockpile<sup>159</sup>

By 2003 there were US nuclear bombs only left in Europe, and these bombs could be delivered by the dual-capable tactical aircraft of NATO countries. Together with part of the naval strategic nuclear forces of the US and UK,<sup>160</sup> which in a crisis situation can operate under NATO command,<sup>161</sup> dual-capable tactical aircraft are the basis of NATO's current nuclear sub-strategic forces.

<sup>158</sup> NATO's Nuclear Forces in the New Security Environment, NATO Basic Fact Sheets, Updated January 27, 2000; <http://www.nato.int/docu/facts/nfnfse.htm>.

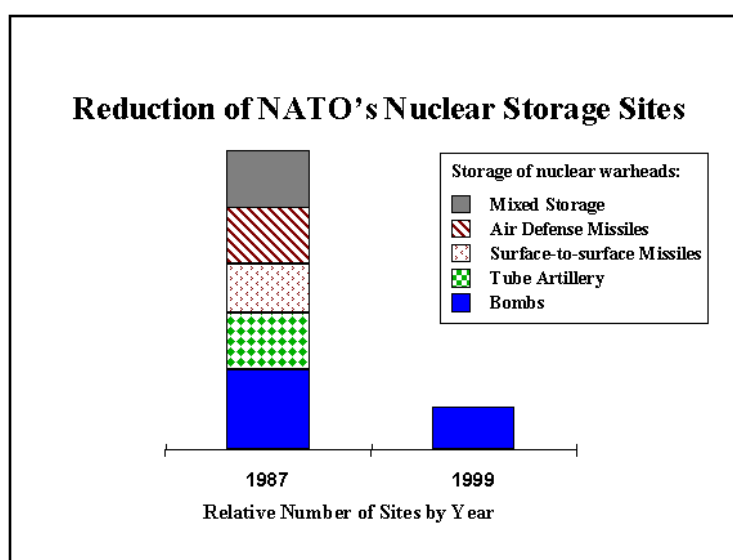
<sup>159</sup> *Ibid.*

<sup>160</sup> Though France is a nuclear power and a member state of the North Atlantic Alliance, it does not take part in planning nuclear operations.

<sup>161</sup> NATO's Nuclear Forces in the New Security Environment, NATO Basic Fact Sheets, Updated January 27, 2000; <http://www.nato.int/docu/facts/nfnfse.htm>.

**Table 6. Dynamics of US NSNW Reductions in Europe**<sup>162</sup>

Country	1975	1985	1992	2002
Germany	5116	3396	325	45
UK	1018	1268	300	30
Italy	439	549	150	30
Belgium	40	25	10	10
Turkey	467	489	150	15
The Netherlands	96	81	10	10
Greece	232	164	25	0
<b>Total in Europe</b>	<b>7406</b>	<b>5972</b>	<b>970</b>	<b>140</b>

**Fig. 3. Reduction of NATO's Nuclear Storage Sites in Europe**<sup>163</sup>

## 4.2. NATO and US Nuclear Doctrines

Despite the end of the Cold War, the disintegration of the Warsaw Treaty Organization, and the fact that NATO came to possess superiority over Russia in conventional arms, the North Atlantic Alliance continues to rely on nuclear weapons in its defense policy. The Alliance's Strategic Concept, adopted in 1999, explains the reasons for the continuing NSNW presence in Europe as follows:<sup>164</sup>

*"...The existence of powerful nuclear forces outside the Alliance also constitutes a significant factor which the Alliance has to take into account if security and stability in the Euro-Atlantic area are to be maintained..." (Item 21)*

The Concept also emphasizes:

<sup>162</sup> The data in the first three columns were taken from William M. Arkin, Robert S. Norris and Joshua Handler, *Taking Stock. Worldwide Nuclear Deployments 1998*, March 1998, p.16; the 2002 data are estimates of the authors of this study.

<sup>163</sup> NATO's Nuclear Forces in the New Security Environment, NATO Basic Fact Sheets, Updated January 27, 2000; <http://www.nato.int/docu/facts/nfnfse.htm>.

<sup>164</sup> The Alliance's Strategic Concept, Press Release NAC-S(99)65, April 24, 1999; <http://www.nato.int/docu/pr/1999/p99-065e.htm>.

*"...The fundamental purpose of the nuclear forces of the Allies is political: to preserve peace and prevent coercion and any kind of war. They will continue to fulfill an essential role by ensuring uncertainty in the mind of any aggressor about the nature of the Allies' response to military aggression. They demonstrate that aggression of any kind is not a rational option. The supreme guarantee of the security of the Allies is provided by the strategic nuclear forces of the Alliance, particularly those of the United States; the independent nuclear forces of the United Kingdom and France, which have a deterrent role of their own, contribute to the overall deterrence and security of the Allies..." (Item 62)*

The Report on Options for Confidence and Security Building Measures, Verification, Non-Proliferation, Arms Control and Disarmament<sup>165</sup> published by NATO in December, 2000 stresses that deployment of American NSNW in Europe:

*"...is consistent with the Alliance's fundamental guiding principle of common commitment, mutual co-operation and collective security, the burden and risks of providing the nuclear element of NATO's deterrent capability should not be borne by the nuclear powers alone..." (Item 98)*

The NATO Strategic Concept also asserts that<sup>166</sup>

*"...A credible Alliance nuclear posture and the demonstration of Alliance solidarity and common commitment to war prevention continue to require widespread participation by European Allies involved in collective defense planning in nuclear roles, in peacetime basing of nuclear forces on their territory and in command, control and consultation arrangements...." (Item 63)*

Decisions on NATO nuclear deployments and development of nuclear policy are made through an advisory body, the NATO Nuclear Planning Group (NPG), the members of which are Ministers of Defense of both the nuclear-weapon and non-nuclear-weapon states of the Alliance (except France). The NPG reviews a broad scope of issues regarding nuclear weapons policy, including the safety, security and survivability of the nuclear weapons, communication and information systems, deployment of nuclear forces, as well as broader questions of general concern, such as nuclear arms control and the proliferation of nuclear weapons. Work for the Nuclear Planning Group is prepared by the NPG Staff Group composed of national representatives of the NPG countries. The Staff Group carries out practical work on behalf of the NPG standing members. Its sessions are held on a regular basis once a week or more often, if necessary.

The NPG High Level Group (HLG) was established as a senior advisory body to the NPG on nuclear policy and planning issues. The HLG, chaired by the US is composed of national policy makers and experts. Its sessions are held several times a year to discuss aspects of NATO nuclear policy, planning and force posture, and matters concerning the safety, security and survivability of nuclear weapons.

Though NATO official documents and statements declare the principle of consensus in decision-making, NATO nuclear doctrine in many respects follows US nuclear doctrine, and development of US nuclear doctrine is a prerogative of the US itself. Consider, for example a 1999 answer to US Senator Tom Harkin by DOD: "US national nuclear policy is established by the President of the United States and is in no way influenced by allies... NATO nuclear policy has historically been consistent with US nuclear pol-

<sup>165</sup> Report on Options for Confidence and Security Building Measures (CSBMs), Verification, Non-Proliferation, Arms Control and Disarmament, Press Communiqué M-NAC-2 (2000)121, December 14, 2000; par. 91; <http://www.nato.int/docu/pr/2000/p00-121e/home.htm> .

<sup>166</sup> The Alliance's Strategic Concept, Press Release NAC-S(99)65, April 24, 1999; <http://www.nato.int/docu/pr/1999/p99-065e.htm> .

icy."<sup>167</sup> Moreover, in subsequent comments the Department of Defense states that "US strategic and theater nuclear doctrine is established by the President and set forth in a series of increasingly detailed documents... US nuclear doctrine applies equally to US forces stationed or deployed anywhere in the world, to include those in Europe"<sup>168</sup>

### 4.3. Planning Nuclear Operations and Readiness of NATO Nuclear Forces

Noting a radical change in the security situation in Europe and considerably increased NATO abilities to defuse crises through diplomatic means or conventional defense, the NATO Strategic Concept proclaims:<sup>169</sup>

*"...The circumstances in which any use of nuclear weapons might have to be contemplated by them are therefore extremely remote. Since 1991, therefore, the Allies have taken a series of steps which reflect the post-Cold War security environment. These include a dramatic reduction of the types and numbers of NATO's sub-strategic forces including the elimination of all nuclear artillery and ground-launched short-range nuclear missiles; a significant relaxation of the readiness criteria for nuclear-rolled forces; and the termination of standing peacetime nuclear contingency plans. NATO's nuclear forces no longer target any country..." (Item 64)*

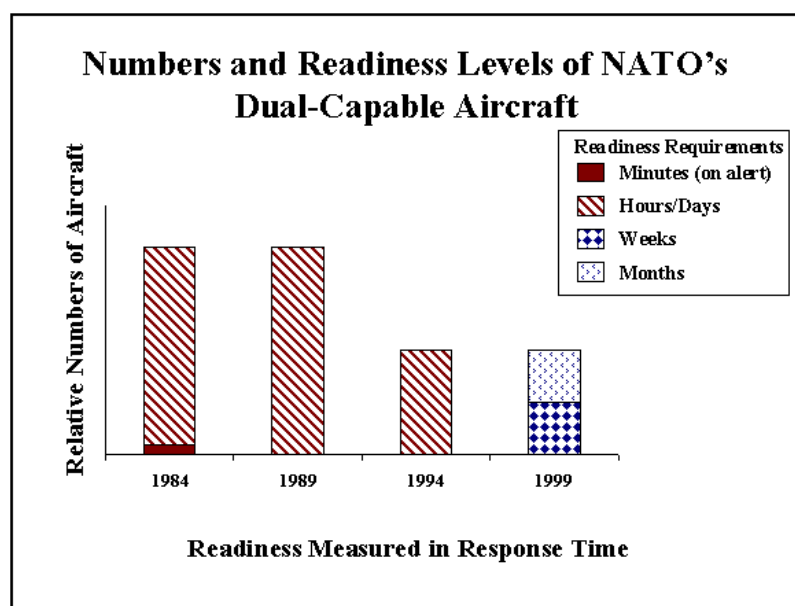


Fig. 4. Numbers and Readiness Levels of NATO's Dual-Capable Aircraft<sup>170</sup>

According to official NATO data, the level of readiness of dual-capable aircraft has been substantially reduced since 1995 (see Fig. 4). In particular, official NATO infor-

<sup>167</sup> Answer to Question 39, asked by Senator Harkin during a Senate Armed Services Committee Hearing, 11 May 1999 (Martin Butcher, Otfried Nassauer, Tanya Padberg and Dan Plesch, *Questions of Command and Control: NATO Nuclear Sharing and NPT*, PENN Research Report 2000.1) <http://www.basicint.org/pubs/Research/2000nuclearsharing1.htm> .

<sup>168</sup> *Ibid.*

<sup>169</sup> The Alliance's Strategic Concept, Press Release NAC-S(99)65, April 24, 1999; <http://www.nato.int/docu/pr/1999/p99-065e.htm> .

<sup>170</sup> NATO's Nuclear Forces in the New Security Environment, NATO Basic Fact Sheets, Updated January 27, 2000; <http://www.nato.int/docu/facts/nfnfse.htm> .



mation published in 2000 states that while "...at the height of the Cold War, NATO maintained a portion of these aircraft, together with other nuclear systems, on peacetime quick-reaction alert, capable of launching within minutes... nuclear readiness is now measured in weeks rather than in minutes..."<sup>171</sup> In June 2002, the NATO Nuclear Planning Group passed a resolution on further reducing the level of readiness of dual-capable aircraft, and a year later NATO officially declared that the decision had been implemented.<sup>172</sup>

NATO's Strategic Concept also maintains that the practice of nuclear operation planning in peacetime has been terminated and that "NATO's nuclear forces no longer target any country."<sup>173</sup> In practice this means a transfer from NATO "rigid" deliberate planning, to "adaptive" planning. Deliberate planning creates executable war plans, prepared in advance, for anticipated contingencies. Adaptive planning is used to generate war plans quickly in time-critical situations. Deliberate planning provides the foundation for adaptive planning by identifying individual weapon/target combinations that could be executed in crises. It should be noted that the new Nuclear Posture Review of 2001 allocated a leading role to adaptive planning for US future nuclear strategy:<sup>174</sup>

*"...The current nuclear planning system, including target identification, weapons system assignment, and the nuclear command and control system requirements, is optimized to support large, deliberately planned nuclear strikes. In the future, as the nation moves beyond the concept of a large, Single Integrated Operational Plan (SIOP) and moves toward more flexibility, adaptive planning will play a much larger role..."*

Situations for which plans have not been prepared, if they occur, will require adaptive planning activities at full scale. Presently 12-48 hours are required to develop a plan to attack a single new target, depending on the weapon system to be employed.<sup>175</sup> The new US nuclear strategy sets an objective of transformation and upgrading of the existing nuclear command and control system to make the Strategic Warfare Planning System more responsive to adaptive planning scenarios.<sup>176</sup>

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<sup>171</sup> *Ibid.*

<sup>172</sup> *Final Communique of Ministerial Meeting of the Defence Planning Committee and the Nuclear Planning Group held in Brussels on 6 June 2002*, <http://www.nato.int/docu/pr/2002/p02-071e.htm> ; *Final Communique of Ministerial Meeting of the Defence Planning Committee and the Nuclear Planning Group on 12 June 2003*, <http://www.nato.int/docu/pr/2003/p03-064e.htm> .

<sup>173</sup> The Alliance's Strategic Concept, Press Release NAC-S(99)65, April 24, 1999; <http://www.nato.int/docu/pr/1999/p99-065e.htm> .

<sup>174</sup> *Nuclear Posture Review* [Excerpts], <http://www.globalsecurity.org/wmd/library/policy/dod/npr.htm> .

<sup>175</sup> *Ibid.*

<sup>176</sup> *Ibid.*

#### 4.4. US Nuclear Weapons in Europe

According to NATO's Strategic Concept<sup>177</sup> and resolutions passed by the Nuclear Planning Group:<sup>178</sup>

*"...Nuclear forces based in Europe and committed to NATO provide an essential political and military link between the European and the North American members of the Alliance. The Alliance will therefore maintain adequate nuclear forces in Europe. These forces need to have the necessary characteristics and appropriate flexibility and survivability, to be perceived as a credible and effective element of the Allies' strategy in preventing war. They will be maintained at the minimum level sufficient to preserve peace and stability..." (Item 63)*

*"... NATO will maintain, at the minimum level consistent with the prevailing security environment, adequate sub-strategic forces based in Europe..." (Item 64)*

NATO official documents suppose that all members of the alliance are equal partners, hence they should bear equal responsibilities. However, the key role in defining NATO's nuclear policy is assigned to the United States. This fact is manifested both in nuclear planning policy, and in how nuclear weapons deployment and control is practiced.

In particular, the allies are to be ready to deploy nuclear weapons on their territories should such a need arise. Documents confirm that the decision about whether a country is prepared to deploy nuclear weapons on its territory is made even before this country joins NATO – such decisions are made on the basis of a bilateral agreement with the United States. For example, "The Agreement on the Status of the US Armed Forces in a Host Country" handed over by the US Embassy to the Government of the Slovak Republic in 1996 states: "...The government of the country will allow the US forces to deliver nuclear weapons to its territory and to deploy them in convenient positions..."<sup>179</sup>

NATO adheres to the practice of not announcing the locations of US nuclear weapons or the number of deployed weapons. Nevertheless, there are strong reasons to believe that today they are deployed on the territories of six NATO member states: Belgium, the UK, Germany, Italy, the Netherlands and Turkey (see Table 7).<sup>180</sup> Until 2001, nuclear weapons were also deployed in Greece (Araxos airbase).<sup>181</sup>

In the 1990s, construction of Weapons Storage and Security System vaults began. The vaults are highly secure, locked, underground mini-bunkers to house nuclear bombs and

<sup>177</sup> *The Alliance's Strategic Concept*, Press Release NAC-S(99)65, April 24, 1999; <http://www.nato.int/docu/pr/1999/p99-065e.htm>.

<sup>178</sup> *Final Communiqué of Ministerial Meeting of the Defence Planning Committee and the Nuclear Planning Group on 5 December 2000*, <http://www.nato.int/docu/pr/2000/p00-115e.htm>; *Final Communiqué of Ministerial Meeting of the Defence Planning Committee and the Nuclear Planning Group on June 7, 2001*, <http://www.nato.int/docu/pr/2001/p01-087e.htm>; *Final Communiqué of Ministerial Meeting of the Defence Planning Committee and the Nuclear Planning Group held in Brussels on 6 June 2002*, <http://www.nato.int/docu/pr/2002/p02-071e.htm>.

<sup>179</sup> Russian translation of the Agreement was published in *Zarubezhnoye Voyennoye Obozreniye* (Foreign Military Review) journal, No 10, 1996, pp.14-15.

<sup>180</sup> William M. Arkin, Robert S. Norris and Joshua Handler, *Taking Stock. Worldwide Nuclear Deployments 1998*, March 1998, p.25.

<sup>181</sup> "NRDC Notebook: U.S. Nuclear Forces," *Bulletin of Atomic Scientists*, May/June 2003, Vol. 59, No.3, pp. 73–76). Hans Kristensen, one of the authors of the article referred to, told the authors of this study that the 731 Munitions Support Squadron of the 31 FW 16 USAFE were disbanded and withdrawn in 2001. That squadron was responsible for maintenance of nuclear weapons in Araxos.

are located in the floors of hardened aircraft shelters.<sup>182</sup> Thus, it is not necessary to wheel bombs from the vaults out onto the tarmac; the bombs can, instead, be loaded on planes inside the shelters and out of view. This modernization is to be completed by 2005, with the intention to operate the vaults until 2018.<sup>183</sup>

Storage facilities and nuclear bombs are serviced by American Munitions Support Squadrons, normally made up of 100-130 people, which are subordinated to the corresponding wings of the USAFE Third Air Force and Sixteenth Air Force.<sup>184</sup>

**Table 7. Geography of US Nuclear Bomb Deployments in Europe**<sup>185</sup>

Air base	Number of sites built in the 1990s	Number of bombs deployed <sup>186</sup>	Maximum number of bombs <sup>187</sup>	Unit supporting the site	Subordination of the air base
Kleine Brogel, Belgium	11	10	22	52nd MUNSS <sup>188</sup> (52ndFW, <sup>189</sup> 3 AF <sup>190</sup> )	Belgium Air Force
Buechel, Germany	11	10	22	817th MUNSS (52nd FW, 3AF)	Germany Air Force
Memmingen, Germany	11	0	22	-	Germany Air Force
Noervenich, Germany	11	0	22	-	Germany Air Force
Ramstein, Germany	54	15	108	86 <sup>th</sup> Airlift Wing, 3 AF	US Air Force
Schpangdalem, <sup>191</sup> Germany		20		52 <sup>nd</sup> FW, 3 AF	US Air Force
Araxos, Greece	6	10	12	-	Greece Air Force
Aviano, Italy	18	20	36	31 <sup>st</sup> Fighter Wing, 16 AF	US Air Force
Gheddi-Torre, Italy	11	10	22	831 <sup>st</sup> MUNSS <sup>192</sup> (31 <sup>st</sup> Fighter Wing, 16 AF)	Italy Air Force
Volkel, Netherlands	11	10	22	752 <sup>nd</sup> MUNSS (52 <sup>nd</sup> FW, 3 AF)	Netherlands Air Force
Balikesir, Turkey	6	0	12	-	Turkey Air Force
Murted, Turkey	6	0	12	-	Turkey Air Force
Incirlik, Turkey	25	15	50	39 <sup>th</sup> MUNSS (39 <sup>th</sup> FW, 16 AF)	US Air Force
Lakenheath, UK	33	30	66	48 <sup>th</sup> EMS <sup>193</sup> (48 <sup>th</sup> Fighter Wing, 3 AF)	US Air Force

<sup>182</sup> William M. Arkin, Robert S. Norris and Joshua Handler, *Taking Stock. Worldwide Nuclear Deployments 1998*, March 1998, p. 25.

<sup>183</sup> Otfried Nassauer, *NATO's Nuclear Posture Review: Should Europe end nuclear sharing?*, BITS Policy Note 02.1, April 2002, <http://www.bits.de/public/policynote/pn02-1.htm>.

<sup>184</sup> William M. Arkin, Robert S. Norris and Joshua Handler, *Taking Stock. Worldwide Nuclear Deployments 1998*, March 1998, p. 25.

<sup>185</sup> *Ibid*, pp.25, 72-80.

<sup>186</sup> *Ibid*.

<sup>187</sup> Otfried Nassauer, *NATO's Nuclear Posture Review: Should Europe end nuclear sharing?*, BITS Policy Note 02.1, April 2002, <http://www.bits.de/public/policynote/pn02-1.htm>.

<sup>188</sup> MUNSS – Munitions Support Squadron

<sup>189</sup> FW – Fighter Wing

<sup>190</sup> AF– Air Force

<sup>191</sup> Schpangdalem AFB in Germany was the only one where no holdings were constructed for new types of bombs in the 1990s. However, the existing storage facilities can be used there (Martin Butcher, Otfried Nassauer and Stephen Young, *Nuclear Futures – Western European Options For Risk Reduction*, British American Security Information Council, Basic Research Report 98.5, Endnote 3 at p. 54).

<sup>192</sup> For the history and functions of 831st MUNSS see: <http://www.globalsecurity.org/wmd/agency/831munss.htm>. The official web page of the 831<sup>st</sup> MUNSS is at <http://www.aviano.af.mil/Gheddi/index.htm>.

<sup>193</sup> EMS – Equipment Maintenance Squadron



Fig. 5. Nuclear Weapons Storage Vaults (reserve storage underlined)<sup>194</sup>

In addition to the air bases where US nuclear bombs are currently deployed, storage facilities of the new type were also constructed in the 1990s in air bases at Araxos in Greece (6), Balikesir (6) and Murted (6) in Turkey, Memmingen (11) and Noervenich (11) in Germany. To date, nuclear weapons have been withdrawn from these storage sites and their munitions support squadrons have been disbanded, but they continue to be maintained in reserve and could be used in case of a military conflict.<sup>195</sup>

#### 4.5. NATO Dual-Capable Aircraft

US nuclear bombs deployed on the territories of European countries can be delivered by F-16 Ñ/D (Fighting Falcon) and F-15E (Strike Eagle) tactical fighters which are operated by the US Air Force and also by some NATO European countries. Dual-capable aviation also includes F-117A (Nighthawk) fighters, which are maintained in lower readiness for nuclear missions than the F-16 and F-15E planes.<sup>196</sup> Nuclear bombs can also be delivered by Tornado fighters deployed with German and Italian Air Forces.

US dual-capable planes are now included in three fighter wings deployed in Europe with the Third and Sixteenth Air Forces (AF):<sup>197</sup>

- two F-15E squadrons<sup>198</sup> (492<sup>nd</sup> and 494<sup>th</sup>)<sup>199</sup> with the 48<sup>th</sup> Fighter Wing, 3rd AF, based in Lakenheath (UK);
- two F-16 squadrons (22<sup>nd</sup> and 23<sup>rd</sup>)<sup>200</sup> with the 52<sup>nd</sup> Fighter Wing, 3rd AF, based in Spangdahlem (Germany);

<sup>194</sup> Otfried Nassauer, *NATO's Nuclear Posture Review: Should Europe end nuclear sharing?*, BITS Policy Note 02.1, April 2002, <http://www.bits.de/public/policynote/pn02-1.htm>.

<sup>195</sup> William M. Arkin, Robert S. Norris and Joshua Handler, *Taking Stock. Worldwide Nuclear Deployments 1998*, March 1998, p.25; Martin Butcher, Otfried Nassauer and Stephen Young, *Nuclear Futures – Western European Options For Risk Reduction*, British American Security Information Council, Basic Research Report 98.5, p. 32.

<sup>196</sup> Hans Kristensen and Joshua Handler, Appendix 10A. Tables of Nuclear Forces, *Non-proliferation, Arms Control, Disarmament, SIPRI Yearbook 2002*, p. 537.

<sup>197</sup> USAF Third Air Force, official web page <http://www.mildenhall.af.mil/3af/index.html>; USAF Sixteenth Air Force, official web page <http://www.aviano.af.mil/hh/16af.html>.

<sup>198</sup> Since 1999, a standard US Air Force squadron includes 24 operational planes: <http://www.globalsecurity.org/military/agency/usaf/31fw.htm>.

<sup>199</sup> See: <http://www.globalsecurity.org/military/agency/usaf/48fw.htm>.

<sup>200</sup> See: <http://www.globalsecurity.org/military/agency/usaf/52fw.htm>.

- two F-16 squadrons (510<sup>th</sup> and 555<sup>th</sup>)<sup>201</sup> with the 31<sup>st</sup> Fighter Wing, 16th AF, based in Aviano (Italy).

Besides, dual-capable planes may be deployed with the 16<sup>th</sup>, 31<sup>st</sup>, and 39<sup>th</sup> Expeditionary Wings deployed on a rotational basis with the 16th AF.<sup>202</sup>

Formations of NATO's European members capable of delivering nuclear bombs include:<sup>203</sup>

- Tornado tactical fighters of the 33<sup>rd</sup> (Buechel AFB, South Group), 34<sup>th</sup> (Memmingen AFB, South Group), and 31<sup>st</sup> (Noervenich AFB, North Group) Fighter Bomber Squadrons, German Air Force;<sup>204</sup>
- Tornado tactical fighters of the 102nd and 154th squadrons of the 6th Fighter Bomber Wing, Italian Air Force, based at Ghedi-Torre AFB;<sup>205</sup>
- F-16 tactical fighters of the 10th Tactical Wing, Belgium Air Force, based in Kleine Brogel;
- F-16 tactical fighters of the 1st Fighter Bomber Wing, the Netherlands Air Force, based in Volkel;
- F-16 tactical fighters of the 9th 206(Balikesir) and 4th 207(Muried) bases under the 1st Tactical Air Command, Turkish Air Force;<sup>208</sup>
- A-7E tactical fighters of the 335<sup>th</sup> and 336<sup>th</sup> squadrons, 116<sup>th</sup> Fighter Bomber Wing, Greece Air Force, based in Araxos.<sup>209</sup>

NATO dual-capable aircraft regularly undergo scheduled procedures of certification for nuclear missions.

Though dual-capable aircraft undergo modernization during their service life,<sup>210</sup> a significant part of the existing NATO allies' aircraft fleet will be de-activated after 2010. The US plans to deploy the F-35 Joint Strike Fighter, which will become operational in 2012. Most likely, the F-35 will be capable of delivering nuclear bombs and will replace the F-16.<sup>211</sup> Germany intends to replace the Tornado with the Eurofighter Typhoon in

<sup>201</sup> 31 Fighter Wing official web page <http://www.aviano.af.mil/hh/31fwp.html>.

<sup>202</sup> USAF Sixteenth Air Force, official web page <http://www.aviano.af.mil/hh/16af.html>.

<sup>203</sup> Martin Butcher, Otfried Nassauer and Stephen Young, *Nuclear Futures – Western European Options For Risk Reduction*, British American Security Information Council, Basic Research Report 98.5, p. 33.

<sup>204</sup> Tornado tactical fighters are assigned to the North Group (117 planes) and South Group (119 planes) of the German Air Force. German Air Force squadrons usually include 2-3 smaller units (20 planes each). According to Russian experts, the German Air Force possesses 108 carriers of nuclear weapons. (V.Fedoseyev, "Voенно-Vozdushnye Sily Germanii" (Germany Air Force), *Zarubezhnoe Voенnoe Obozrenie*, No 3, 2001, pp. 31-38).

<sup>205</sup> As of 1996, 102<sup>nd</sup> and 154<sup>th</sup> Fighter Bomber Squadrons of 6<sup>th</sup> Fighter Bomber Wing had 29 Tornado planes (A. Gorelov, "Voенно-Vozdushnye Sily Italii" (Italy Air Force), *Zarubezhnoe Voенnoe Obozrenie*, No 4, 1996, pp. 29-34).

<sup>206</sup> The 9<sup>th</sup> Air Base includes 191<sup>st</sup> and 192<sup>nd</sup> aircraft squadrons (I. Krymov, "Voенно-Vozdushnye Sily Turtsii" (Turkey Air Force), *Zarubezhnoe Voенnoe Obozrenie*, No 10, 1996, pp. 30-35).

<sup>207</sup> The 4<sup>th</sup> Air Base includes 141<sup>st</sup> aircraft squadron and "Onju" aircraft squadron (I. Krymov, "Voенно-Vozdushnye Sily Turtsii" (Turkey Air Force), *Zarubezhnoe Voенnoe Obozrenie*, No 10, 1996, pp. 30-35).

<sup>208</sup> As of 1996, 40 fighter bombers F-16 within two squadrons of the Turkish Air Force were capable of delivering nuclear weapons (I. Krymov, "Voенно-Vozdushnye Sily Turtsii" (Turkey Air Force), *Zarubezhnoe Voенnoe Obozrenie*, No 10, 1996, pp. 30-35).

<sup>209</sup> As of March 2003, these wings deployed 30 fighter bombers A-7E (A. Alexeyev, "Voенно-Vozdushnye Sily Gretsii" (Greece Air Force), *Zarubezhnoe Voенnoe Obozrenie*, No 3, 2003, pp. 26-32).

<sup>210</sup> A. Borisov, "Modernizatsiya Takticheskikh Istrebitelej F-16 VVS SShA" (Upgrading of the US Air Force F-16 tactical fighters), *Zarubezhnoe Voенnoe Obozrenie*, No 7, 2002, pp. 38-39.

<sup>211</sup> Though today the F-35 is designed as an aircraft for non-nuclear missions, an option to provide it with a nuclear capability is retained. The plans for reduction of F-16s and withdrawing their nuclear role

two phases until 2015. The Typhoon will be capable of conventional missions only. Italy has similar plans. Belgium and the Netherlands are considering various replacement options for their F-16s, one of which is the purchase of F-35 fighters from the US. The dual-capable A-7E planes of Greece have been deployed for a long time and also need replacement. Turkey's F-16  $\tilde{N}/D$  fighters have been deployed relatively recently and have a significant remaining lifetime.<sup>212</sup>

#### 4.6. Control Over and Legal Aspects of US Nuclear Weapons Deployment in the Territories of NATO Member Countries

In terms of control over sub-strategic nuclear weapons, the United States has a policy of "nuclear sharing" with its allies. All NATO allies are part of the Agreement between NATO member states dated 1964 for cooperation regarding atomic information, and are involved (except France) in the process of defining NATO's nuclear policy and planning nuclear operations.

Six non-nuclear weapon NATO member countries – Belgium, Germany, Greece, Italy, the Netherlands and Turkey – have concluded bilateral Agreements for Cooperation for Mutual Defense Purposes with the US under which exchanges of classified information take place for purposes of:

- developing defense plans;
- training personnel in the employment of and defense against atomic weapons and other military applications of atomic energy;
- evaluating the capabilities of potential enemies in the employment of atomic weapons and other military applications of atomic energy; and,
- developing delivery systems compatible with atomic weapons.<sup>213</sup>

In addition, countries deploying US nuclear weapons on their territories have signed confidential bilateral agreements defining each party's responsibility. The states deploying US nuclear weapons on their territory provide delivery systems, and are responsible for safety during transportation and storage, sites for storage, and infrastructure for the US personnel maintaining nuclear weapons. The US provides the personnel with all necessary equipment.

NATO allies take part in nuclear planning, but the decision to use nuclear weapons deployed in Europe is a US prerogative. Maintenance of these weapons is carried out by special US Air Force units in Europe, release codes belong to the US National Command Authority, and only the US President can authorize the use of these nuclear weapons. With the sanction of the US President, nuclear bombs can be also delivered to targets by dual-capable aircraft of other members of the alliance, which will operate within NATO multinational forces in case of a war. Thus, control over nuclear weapons can be transferred to non-nuclear weapons states.<sup>214</sup>

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are linked with the prospects of the deployment of the F-35 JSF (Nuclear Posture Review, *Zarubezhnoye Voennoe Obozrenie*, No 4, 2002, p. 14).

<sup>212</sup> Otfried Nassauer, *NATO's Nuclear Posture Review: Should Europe end nuclear sharing?*, BITS Policy Note 02.1, April 2002, <http://www.bits.de/public/policynote/pn02-1.htm>.

<sup>213</sup> Martin Butcher, Otfried Nassauer and Stephen Young, *Nuclear Futures – Western European Options For Risk Reduction*, British American Security Information Council, Basic Research Report 98.5, p. 34; the text was taken from the Agreement between the US and the Netherlands dated May 6, 1959, which is a typical agreement.

<sup>214</sup> Martin Butcher, Otfried Nassauer, Tanya Padberg and Dan Plesch, *Questions of Command and Control: NATO Nuclear Sharing and NPT*, PENN Research Report 2000.1.

## 4.7. NATO Enlargement and the Deployment of Nuclear Weapons in Europe

The problem of NATO sub-strategic nuclear weapons became most acute after the first wave of NATO enlargement was announced in the mid-1990s, and fears about the possible deployment of nuclear weapons in territories of the new NATO member countries were substantiated.

Such fears are voiced by Russia because the appearance of NATO air bases in Central Europe and, in particular in Baltic states, radically changes the geo-strategic situation. Practically all of the European part of Russia falls within reach of NATO tactical aircraft located at these bases (see Fig. 6).

The new member countries already possess infrastructures appropriate for the accommodation and maintenance of nuclear weapons on their territories. During the Cold War, Soviet nuclear weapons were deployed in Bulgaria, Hungary, the GDR, Poland, Czechoslovakia (see Fig. 7), and also in the Baltic republics.<sup>215</sup> Withdrawal of nuclear weapons in the late 1980s and early 1990s left behind well arranged and well protected storage facilities. In addition, the new NATO member countries have an extensive network of air fields, which can be used by NATO dual-capable aircraft.



Fig. 6. Reach of NATO Aircraft After NATO Enlargement Eastwards<sup>216</sup>

New NATO member countries do not hide their enthusiasm regarding their active integration into the military structure of the alliance, which includes the deployment of foreign military bases and procurement of military equipment from NATO countries, and in particular dual-capable aircraft. In the beginning of 2003, Poland signed a \$3.5 billion contract to procure 48 F-16 N/D fighters from Lockheed Martin Co., which is part of an investment agreement with the US. Delivery of the first lot of planes is planned for 2006.<sup>217</sup>

High-ranking officials of the US Department of Defense announced in a number of statements made in Spring 2003 that the question of moving U.S. military bases to East-

<sup>215</sup> *Soviet Military Power*, 1985, US Department of Defense, 1985, p.71.

<sup>216</sup> E.V. Miasnikov, *High-Precision Weapons and Strategic Balance*, Center for Arms Control, Energy and Environmental Studies at MIPT, Dolgoprudny, November 2000, 43 pages.

<sup>217</sup> Sgt. C. Todd Lopez, "U.S., Poland finalize deal on F-16s," *Air Force Print News*, April 22, 2003.

ern Europe was being considered.<sup>218</sup> Though specific plans or dates were not mentioned, press leaks suggest that US military bases may soon appear in Poland, Hungary, Romania and Bulgaria.<sup>219</sup>

**Map 5:** from CIA, *Warsaw Pact Forces Opposite NATO*, NIE 11-14-79, (Top Secret; partially declassified), 31 January 1979, p. 46.



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**Fig. 7. Soviet Nuclear Sites in Eastern Europe**<sup>220</sup>

<sup>218</sup> USEUCOM Defense Information Group Press Briefing with Commander, U.S. European Command, Gen. James L. Jones, Monday, March 3, 2003 - 10:30 a.m. CET; Pentagon Town Hall Meeting with Secretary of Defense Donald H. Rumsfeld, March 6, 2003 - 10:27 a.m. EST, [http://www.defenselink.mil/news/Mar2003/t03062003\\_t0306th.html](http://www.defenselink.mil/news/Mar2003/t03062003_t0306th.html).

<sup>219</sup> Ian Traynor, "How American power girds the globe with a ring of steel," *The Guardian*, April 21, 2003; Bradley Graham, "U.S. Military Plans New Bases in Eastern Europe," *Washington Post*, April 29, 2003.

<sup>220</sup> Source: U.S. National Archives, College Park, Maryland.



#### 4.8. NATO Nuclear Strategy and the Nuclear Non-Proliferation Treaty (NPT)

Both nuclear weapon and non-nuclear weapon NATO member states are participants of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT Treaty). NATO documents always stress the commitment of the alliance to the NPT Treaty and their determination to strengthen the Treaty.<sup>221</sup> Yet NATO nuclear planning practice contradicts the NPT Treaty.<sup>222</sup>

Article 1 of the NPT forbids nuclear weapon countries from transferring either nuclear weapons or control over nuclear weapons to non-nuclear weapons countries:

*"Each nuclear-weapon State Party to the Treaty undertakes not to transfer to any recipient whatsoever nuclear weapons or other nuclear explosive devices or control over such weapons or explosive devices directly, or indirectly; and not in any way to assist, encourage, or induce any non-nuclear weapon State to manufacture or otherwise acquire nuclear weapons or other nuclear explosive devices, or control over such weapons or explosive devices."*

Article 2 of the NPT, in turn, forbids non-nuclear weapon states to receive nuclear weapons or control over them from nuclear weapon states. Thus, the current NATO nuclear strategy, which assumes delivery of US nuclear bombs by the dual-capable aircraft of NATO allies that are not nuclear weapon states, contradicts the NPT.

The contradiction between NATO nuclear strategy and the commitments of its member nations under the NPT is one of most frequently discussed issues at the conferences of the Preparatory Committee for the NPT Extension. It is also discussed in a number of studies.<sup>223</sup> Positions of the parties to the NPT regarding this problem differ dramatically. The United States and other members of the alliance adhere to the position that there is no direct prohibition of the deployment of nuclear weapons in the territories of the non-nuclear weapon states in the Treaty, and also that there is no direct prohibition of participation of non-nuclear weapon states in planning nuclear operations or preparation of national armed forces for the use of nuclear weapons. At the same time, NATO allies recognize that the use of dual-capable aircraft for nuclear missions by the non-nuclear weapon states of the alliance in wartime will infringe on the NPT. In the days of the Cold War when NATO viewed the Soviet Union as the main threat, the United States justified such possible actions with the argument that observance of the NPT under such circumstances would not make any sense. The US argument was that the Treaty is directed at averting the danger of nuclear war, as declared in the NPT preamble, while

<sup>221</sup> *The Final Communiqué of Ministerial Meeting of the Defence Planning Committee and the Nuclear Planning Group on June 7, 2001*, notes, in particular, the cornerstone importance of the NPT for the non-proliferation regime, <http://www.nato.int/docu/pr/2001/p01-087e.htm>. A similar wording can also be found in former similar documents. It is indicative that this wording was omitted in *Final Communiqué of Ministerial Meeting of the Defence Planning Committee and the Nuclear Planning Group held in Brussels on 6 June 2002*, <http://www.nato.int/docu/pr/2002/p02-071e.htm>.

<sup>222</sup> Martin Butcher, Otfried Nassauer, Tanya Padberg and Dan Plesch, *Questions of Command and Control: NATO Nuclear Sharing and NPT*, PENN Research Report 2000.1.

<sup>223</sup> See, for instance: R.M.Timerbaev, *Rossiia i Yadernoe Rasprostranenie 1945-1968* (Russia and Nuclear Proliferation in 1945-1968), Moscow, Nauka, 1999; Martin Butcher, Otfried Nassauer, Tanya Padberg and Dan Plesch, *Questions of Command and Control: NATO Nuclear Sharing and NPT*, PENN Research Report 2000.1; Anatoly Anin, "DNYaO i Koncepciya NATO po 'Sovmestnomu Upravleniyu' Yadernym Oruzhiem" (NPT and NATO Concept of Nuclear Sharing), *Yaderny Kontrol*, No1, Vol. 10, Spring 2004.

NATO can use nuclear weapons only when nuclear war begins or becomes inevitable, i.e. when the NPT fails to fulfill its mission. Now that the Cold War is over and NATO is unable to identify one common enemy, these arguments make no sense – if they ever did.

It is important to emphasize that neither the USSR nor the Russian Federation have ever agreed with the US arguments. Even during preparation of the Treaty, the USSR declared that it would not be bound by any unilateral interpretation of the NPT. At the same time, the Soviet Union did not object to the substance of the US interpretation *per se*.<sup>224</sup>

A radical solution of the existing contradiction could be a commitment by nuclear weapon powers not to deploy their nuclear weapons outside their national territories. This would not only rule out the deployment of US nuclear weapons on European territory, but would also practically rule out the transfer of nuclear weapons or control over them to non-nuclear-weapon states. Russia put forward such a proposal in 1995 and actually made it a prerequisite for the beginning of negotiations on the reduction of TNWs. As follows from the above analysis, Russia's proposal was governed not only by a concern about its own national security, but also a desire to strengthen the NPT and the existing international legal regime.

One more contradiction between NATO nuclear policy and the NPT regime is also notable. Under the Treaty, the nuclear weapon states have pledged not to use nuclear weapons against non-nuclear weapon states. Parties to the NPT consider such guarantees as one of the basic agreements that serve as the foundation for the NPT and its continued existence. However, current nuclear doctrines of both the US and NATO allow for the possible use of nuclear weapons against third countries threatening them with chemical or biological weapons, as well as against non-governmental groups (terrorists, transnational organized crime, etc.).

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<sup>224</sup> See, for instance: R.M.Timerbaev, *Rossiya i Yadernoe Rasprostranenie 1945-1968* (Russia and Nuclear Proliferation in 1945-1968), Moscow, Nauka, 1999; p. 267.

## **CHAPTER 5. VERIFIED REDUCTIONS OF NSNWs: PROs AND CONs**

### **5.1. Attitudes Regarding the Verified Reduction of NSNWs**

Establishing a regime for the verified reduction of NSNWs has been discussed and put on the agenda many times over the years, but the process has made no progress since the 1991 unilateral Presidential Initiatives.

In the beginning of this study, we mentioned the objective circumstances that significantly complicate the establishment of a NSNW control regime. At the same time, there is the recognition that, if ever a negotiated regime of control of non-strategic nuclear weapons is attained, it will need to include verification measures over nuclear warheads. However, implementation of verification measures over nuclear warheads is considerably more difficult than that over the delivery vehicles. National technical means of verification cannot be applied here, as dimensions of warheads are much smaller than those of delivery vehicles, and they are easier to hide from means of surveillance. Simultaneously, a problem of demarcation between non-strategic and strategic warheads will arise. For some types of warheads, for instance air bombs, it will not be always possible to determine the category to which they belong. Control over all categories of nuclear warheads – both non-strategic and strategic – therefore will be necessary. Taking into account the obvious sensitivity of the production, transportation and storage of warheads, to come to an agreement on NSNW control would be extremely difficult.

However, at the present stage the main reason for the stagnation in the field of control over non-strategic nuclear arms stems from the unwillingness of the parties to address this issue.

Russia views the US nuclear arms remaining in Europe as actually strategic arms, as they are capable of covering a significant part of Russian territory and thus threaten the security of key assets. Many Russian and foreign experts express the opinion that the US nuclear bombs deployed in European territory have no other targets but those in Russia, as it is difficult to think of another scenario requiring the use of these weapons on the European continent. For this reason, the position of Russia is that, prior to the beginning of any negotiations on mutual reduction of Russian and US non-strategic nuclear weapons, all nuclear weapons should be consolidated within their owner's national territories.

The refusal of NATO to conclude a legally binding agreement on the non-deployment of nuclear weapons on the territories of the new member states of the alliance is an additional argument strengthening Russia's stand. The Founding Act on Mutual Relations, Cooperation and Security between NATO and the Russian Federation signed in 1997 reads:

*"...The member States of NATO reiterate that they have no intention, no plan and no reason to deploy nuclear weapons on the territory of new members, nor any need to change any aspect of NATO's nuclear posture or nuclear policy - and do not foresee any future need to do so. This subsumes the fact that NATO*

*has decided that it has no intention, no plan, and no reason to establish nuclear weapon storage sites on the territory of those members, whether through the construction of new nuclear storage facilities or the adaptation of old nuclear storage facilities. Nuclear storage sites are understood to be facilities specifically designed for the stationing of nuclear weapons, and include all types of hardened above or below ground facilities (storage bunkers or vaults) designed for storing nuclear weapons... "*

It is noteworthy that the above language was not included in the text of the 1999 NATO Strategic Concept. NATO explains its refusal to make the statements with the assertion that a commitment not to deploy nuclear weapons in territories of the new NATO member states would put the latter in an unequal position compared with the other members of the alliance.

It is interesting that when the question on the possibility of the deployment of American nuclear weapons on the territory of NATO new member countries was brought up in the US Congress in 1997 during the discussion of NATO enlargement, Secretary of State Albright and Secretary of Defense Cohen declared that the United States had no intention to:

- train new member states' pilots in nuclear missions during peacetime;
- nuclear certify these countries' aircraft; or,
- transfer equipment or infrastructure to support these countries' dual-capable aircraft in a nuclear role.<sup>225</sup>

Moreover, officials of the Clinton Administration declared that the United States is not going to conclude bilateral agreements on nuclear cooperation with the new NATO member states or demand that the latter purchase dual-capable aircraft.

Nevertheless, it was declared that the new NATO member states would become full-fledged participants of the Nuclear Planning Group and, like other allies, will take part in development of the NATO nuclear strategy and participate in relevant exercises.

The above shows that at the current stage NATO does not regard Russia's proposal to end the foreign deployment of nuclear weapons as acceptable because such an approach requires key changes in the Alliance's Strategic Concept (see Section 4.4, US nuclear weapons in Europe). According to informal statements leaked in the mass media before the adoption of the 1999 NATO Strategic Concept, the need for the continued basing of US nuclear bombs in the territory of Europe became one of the most controversial issues discussed by members of the alliance.<sup>226</sup> However, contrary to numerous hopes, in the end the block was unprepared to discontinue this practice.

It is important to note that NATO does not have any external incentives for changing its nuclear policy. Unlike Russia, NATO does not see a military threat from Russian tactical weapons. NATO documents stress their concern about the security of the Russian nuclear arsenal and the wish to see more transparency in this area. In particular, "The Report on Options for Confidence and Security Building Measures, Verification, Non-Proliferation, Arms Control and Disarmament" published by NATO in December, 2000,

<sup>225</sup> *Question for the Record Submitted by Senator Harkin to Secretary of State Albright*, Senate Appropriations Committee, Washington DC, 21 October 1997. See also, *Questions for the Record Submitted by Senator Harkin to Secretary of Defense Cohen*, Senate Appropriations Committee, Washington DC, 21 October 1997.

<sup>226</sup> Martin Butcher, *NATO Nuclear Policy: Between Disarmament and Pre-Emptive Nuclear Use*, BASIC Report, November 18, 1999; [http://www.basicint.org/nuclear/NATO/1999\\_mbutcher.htm](http://www.basicint.org/nuclear/NATO/1999_mbutcher.htm) .

suggested that NATO should:<sup>227</sup>

- enhance and deepen the dialogue on matters related to nuclear forces;
- exchange information regarding the readiness status of nuclear forces;
- exchange information on safety provisions and the safety features of nuclear weapons; and,
- exchange data on U.S. and Russian sub-strategic nuclear forces.?

NATO believes that these questions should be addressed within the NATO-Russia Council (NRC), the scope of which was defined in the Rome Declaration.<sup>228</sup> In particular, regarding arms control and confidence-building measures the Rome Declaration states the intention of the parties to "...continue the NATO-Russia nuclear experts consultations..."<sup>229</sup> Almost two years have passed since the signing of the Rome statement, but apparently discussions on nuclear issues do not go beyond the safety and physical protection of nuclear weapons. The statement of the NATO-Russia Council at the level of the Ministers of Foreign Affairs, dated June 4, 2003, only mentioned that the parties reiterated the "...determination to take practical steps to further implement the NATO-Russia Nuclear Experts Consultations Work Plan, with a focus on activities related to nuclear weapons safety and security..."<sup>230</sup> A similar statement dated December 4, 2003 mentioned "...ongoing dialogue and co-operation on a range of nuclear issues, including Russia's invitation to NRC countries to observe a field exercise on safe handling procedures for nuclear weapons..."<sup>231</sup>

It is symptomatic that Russian officials, commenting on disputes with NATO, in the last year were mostly focused on such questions as the coming into force of the adapted Treaty on Conventional Armed Forces in Europe, adherence of the Baltic countries to the Treaty, approaches to the Iraq problem, etc., but did not mention the necessity of a complete withdrawal of US nuclear weapons from the territory of Europe.<sup>232</sup>

Perhaps an exception was the statement of the Russian delegation at the Second Session of the Preparatory Committee for the 2005 NPT Review Conference in Geneva in April 28, 2003, declaring:<sup>233</sup>

*"... removal of the tactical nuclear weapons...from Europe and elimination there of respective infrastructure would become an important practical step ultimately overcoming the vestiges of the cold-war period. Such a decision in our opinion could serve the purposes of strengthening of the Nuclear Non-Proliferation Treaty... "*

<sup>227</sup> Report on Options for Confidence and Security Building Measures (CSBMs), Verification, Non-Proliferation, Arms Control and Disarmament, Press Communique M-NAC-2 (2000)121, December 14, 2000; par. 91; <http://www.nato.int/docu/pr/2000/p00-121e/home.htm> .

<sup>228</sup> NATO-Russia Relations: A New Quality. Declaration by Heads of State and Government of NATO Member States and the Russian Federation, Rome, May 28, 2002; <http://www.nato.int/docu/basicxt/b020528e.htm> .

<sup>229</sup> Ibid.

<sup>230</sup> Statement of the Meeting of the NATO-Russia Council at the level of Ministers of Foreign Affairs, June 4, 2003; <http://www.nato.int/docu/pr/2003/p030604e.htm> .

<sup>231</sup> Statement of the Meeting of the NATO-Russia Council at the level of Ministers of Foreign Affairs, December 4, 2003; <http://www.nato.int/docu/pr/2003/p031204e.htm> .

<sup>232</sup> See, for instance Interview of the spokesman of the Russian Ministry of Foreign Affairs A.V. Yakovenko to Novosti News Agency in relation to the forthcoming meeting of the NATO-Russia Permanent Joint Council, May 8, 2003, <http://www.mid.ru> ; Transcript of Russian Minister of Foreign Affairs Igor Ivanov Remarks at Press Conference Following Russia-NATO Council Meeting, Prague, November 22, 2002, <http://www.mid.ru> .

<sup>233</sup> Statement by the delegation of the Russian Federation at the second session of the Preparatory Committee for the 2005 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons (Geneva, April 28, 2003), <http://www.mid.ru> .

However, slightly more than a month later at a press conference after a session of the NATO-Russia Permanent Joint Council in Madrid, the Russian Minister for Foreign Affairs, Igor. Ivanov, answering a question about Russia's attitude toward the moving of NATO bases to its borders, did not repeat the demand about the withdrawal of US nuclear weapons, but just mentioned NATO's declarations in the Founding Act of 1997: "... I would like to recall the substance of the NATO countries' restraint obligations. First, nuclear weapons will not be deployed in the territories of the NATO states, nor will places of storage of nuclear weapons be created there or any other infrastructure for these purposes...."<sup>234</sup>

Coming back to the statement of the Russian delegation in Geneva, it is important to emphasize that new aspects in the position of Russia towards NSNWs have also appeared:<sup>235</sup>

*"... Russia proceeds from the understanding that it is impossible to consider the issues of tactical nuclear weapons separate from other kinds of armaments. This is why the well-known unilateral Russian initiatives in the sphere of disarmament in 1991-1992 are comprehensive in nature and besides the TNW touch upon other important issues, which have an essential influence on strategic stability.*

*...Quite naturally the elaboration of specific proposals to reduce and limit nuclear weapons should be accompanied by the adoption of specific measures also to limit other types of weapons including non-nuclear, as well as including the prohibition or limitation of activities with such weapons within reach of each other's territories..."*

Thus, it could be assumed that US NSNW withdrawal from Europe is not the only condition for Russia's entry into negotiations. NATO superiority in conventional arms may be another obstacle.

Very indicative in this context is an interview by Yury Baluevsky the First Deputy Chief of the General Staff of the Armed Forces of the Russian Federation regarding the situation around the ratification of the adapted Treaty on Conventional Armed Forces in Europe. He declared that:

*"...Russia has a sufficient arsenal of forces, means and ways for assurance of security and achievement of national interests..."<sup>236</sup>*

Together, all these facts produce an impression that Moscow has taken a passive position and is not interested in negotiations on control over non-strategic nuclear weapons in the framework of the NATO-Russia Permanent Joint Council.

The current US administration, for its part, essentially has also taken a waiting position concerning achievement of a NSNW control regime. However, the reasons here are somewhat different.

A point of view, which became very common and is most frequently cited by American governmental and non-governmental experts, is that with the fundamental change in the nature of Russian-American relations, it is not Russian NSNWs themselves that pose a

<sup>234</sup> Transcript of Russian Minister of Foreign Affairs Igor Ivanov Remarks at Press Conference Following Russia-NATO Council Meeting, Madrid, June 4, 2003, <http://www.mid.ru> .

<sup>235</sup> Statement by the delegation of the Russian Federation at the second session of the Preparatory Committee for the 2005 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, Geneva, April 28, 2003, <http://www.mid.ru> .

<sup>236</sup> Yury Baluevsky, "Rasshirenie NATO Naneset Smertel'ny Udar po Dogovoru ob Obychnyh Vooruzhennyh Silah v Evrope" (NATO Enlargement Will Strike a Deadly Blow on the Treaty on Conventional Forces in Europe), *Izvestia*, March 2, 2004.

threat to the United States but the loss of control over them by Russia. According to this view, a large arsenal of tactical nuclear warheads possessed by Russia, in combination with insufficiently reliable systems for its protection and control, may result in the loss of NSNWs and their falling into the hands of terrorists.<sup>237</sup> Russian non-strategic nuclear warheads are supposedly most attractive to terrorists as they have a small weight (hence, they are easier to transport) and they do not have adequate systems of protection against non-authorized use.

We will not discuss whether the above arguments in support of this particular concern are objectively grounded. Clearly, the events of September 11, 2001 add new seriousness to the possibility that nuclear weapons might fall into the hands of terrorists and this threat cannot be ignored. Publications in the Russian mass media confirm that terrorists do have an interest in acquiring nuclear warheads.<sup>238</sup>

Statements concerning the insufficiently reliable protection of Russian nuclear warhead holdings are also objectively backed by a number of examples from the area of Russian-American cooperation. In particular, they include the Agreement between the United States and the Russian Federation on the Safe and Secure Transportation and Storage of Warheads.<sup>239</sup> The agreement was signed in 1992, and in 2000 it was extended for five years. Under this agreement, the United States had been rendering technical assistance and financial aid to the Ministry of Defense of Russia to improve the security systems of its nuclear storage facilities and its arrangements for the safe transportation of nuclear warheads. Information on specific projects and the scope of this assistance is available in a number of documents published in the United States.<sup>240</sup> For instance, US Senate hearings mention American funding for the improvement of security systems of Russian Navy nuclear weapons storage facilities, which, according to U.S. estimates, accommodate 1,200 nuclear warheads.<sup>241</sup>

Though objectively the American assistance in the framework of the agreement is focused on ruling out a possible loss of control over nuclear warheads by the Russian military, the very fact that Russia is accepting this assistance provides reason to believe that there is something out of order here. As long as Russia continues to accept this assistance, all statements by the Russian military, and even the American military,<sup>242</sup> – that Russian nuclear warhead security system meet all necessary requirements – will not clear up these doubts.

It should also be noted that Russian-American cooperation under the Cooperative

<sup>237</sup> *CIA Report on the Safety and Security of Russian Nuclear Forces, 2002; A Report Card on the Department of Energy Nonproliferation Programs with Russia* (Baker-Cutler Task Force), January 10, 2001; *Beyond Arms Control: How to Deal with Nuclear Weapons*, by Rose Gottemoeller, Carnegie Endowment Policy Brief, February 23, 2003.

<sup>238</sup> Vladimir Bogdanov, "Propusk k Boegolovkam Nashli u Terrorista" (A Warheads Pass Card Found on a Terrorist), *Rossiyskaya Gazeta*, November 1, 2002; Pavel Korchagin, *Rossiyskoe Yadernoe Oruzhie Nadezhno Ohranyaetsya* (Russian Nuclear Weapons are Reliably Protected), ITAR-TASS, October 25, 2001.

<sup>239</sup> Agreement between the United States and the Russian Federation Concerning the Safe Transportation, Storage and Destruction, and the Prevention of Weapons Proliferation dated July 17, 1992.

<sup>240</sup> *Testimony of Lisa Bronson Deputy Under Secretary of Defense for Technology Security Policy and Counterproliferation before the Senate Committee on Armed Services Subcommittee on Emerging Threat and Capabilities*, March 10, 2004, <http://armed-services.senate.gov/statemnt/2004/March/Longsworth.pdf>.

<sup>241</sup> Statement of Linton F. Brooks before Subcommittee on Strategic Forces of U.S. Senate, April 8, 2003.

<sup>242</sup> See, for instance: General Eugene E. Habiger, Commander in Chief, US Strategic Command, Interview With Defense Writer's Group, Washington, D.C., 31 March 1998. ( <http://www.fas.org/news/usa/1998/03/980331-dwg.htm> ); Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2005, January 2004. ( <http://armedservices.house.gov/issues/FY05CTR.pdf> ).

Threat Reduction program (CTR) has so far not stimulated the American side to achieve new agreements on the control and reduction of nuclear arms,<sup>243</sup> which was especially evident during consultation on the SORT Treaty signed in May, 2002. While previously Americans could receive reliable information about the condition of the Russian nuclear weapon complex only through verification procedures stipulated by the nuclear arms control agreements, today they are fairly well informed about the condition of Russian arsenals due to the CTR program.<sup>244</sup> The CTR program enables the United States "to take the pulse" of the Russian nuclear complex without resorting to the development of mutual verification measures that require, in turn, both an increase in the transparency of the American nuclear arsenal, significant efforts, and time.

Simultaneously, an opinion is also expressed in the United States that it makes no sense for the United States to enter into any negotiations with Russia on NSNWs.<sup>245</sup> There are a number of arguments advanced to support this position. One of them is the assertion that the time of hostile relations is gone, and neither country views the other as an enemy. Deterrence-based strategic relations would only resume the old suspicions and fears. This, in turn, adds some value to nuclear weapons in Russian-American relations and thus increases the weight of Russia, which has essentially nothing besides nuclear weapons to make others take it into account. Another argument is that if the US enters into negotiations on NSNWs, this will create an opportunity for Russia to use this issue to achieve a number of political goals, the most important of which will be connected to NATO enlargement.<sup>246</sup> Further, negotiations are not encouraged by the notion that NSNWs may just disappear from Russia's nuclear arsenal in the coming ten years, due to the end of their lifetime and a lack of funds in Russia for their reproduction.<sup>247</sup>

US officials explain the refusal to fully withdraw nuclear weapons from Europe by the fact that the US allies in NATO strongly object to such a decision.<sup>248</sup> Therefore, in their opinion, Russia should address this issue together with NATO, not with the United States alone. Indeed, there has been no open demand from official representatives of NATO European countries for the United States to withdraw. Moreover, official NATO statements continuously emphasize the importance of the presence of American nuclear weapons in Europe. A recent statement by the NATO Ministers of Defense and the NPG is an example.<sup>249</sup>

The current US administration gives priority to unilateral actions in reducing nuclear arms, puts the development of low-yield nuclear warheads on the agenda, and opposes ratification of the Comprehensive Test Ban Treaty (CTBT), thus showing no interest in the development of NSNW control measures.

<sup>243</sup> In particular, a similar conclusion is drawn in *U.S.-Russian Relations in Nuclear Arms Reductions: Current State and Prospects* (in Russian), ed. A.S. Diakov, publication of the Center for Arms Control, Energy and Environmental Studies at MIPT, 2001.

<sup>244</sup> This aspect was indicated by Rose Gottemoeller in her paper *Beyond Arms Control: How to Deal with Nuclear Weapons*, by Rose Gottemoeller, Carnegie Endowment for International Peace, Policy Brief, February 23, 2003.

<sup>245</sup> Robert Joseph, "Nuclear Weapons and Regional Deterrence," in *Controlling Non-Strategic Nuclear Weapons: Obstacles and Opportunities*, ed by Jeffrey A. Larsen and Kurt J Klingenberg, USAF Institute for National Security Studies, June 2001.

<sup>246</sup> John A. Woodworth, Additional commentary, in *What should be done about tactical nuclear weapons?* by George Lewis and Andrea Gabbitas, Atlantic Council of the United States, March 1999.

<sup>247</sup> Edward L. Rowny, Additional commentary, in *What should be done about tactical nuclear weapons?* by George Lewis and Andrea Gabbitas, Atlantic Council of the United States, March 1999.

<sup>248</sup> Remarks by Robert Gromoll, Director Office of Strategic Transition Bureau of Arms Control at the U.S. State Department in interview to Anatol Diakov, Washington, April 24, 2003.

<sup>249</sup> Final Communiqué of Ministerial Meeting of the Defense Planning Group and the Nuclear Planning Group held in Brussels on Monday, 1 December 2003, <http://www.nato.int/docu/pr/2003/p03-147e.htm>.



Thus, the above analysis shows that there is no hope for a breakthrough in the NSNWs control issue either in the framework of bilateral Russian-US relations or Russia-NATO relations in the near future. The impasse in Russian-American negotiations on the reduction of strategic nuclear arms is an illustration of this conclusion. As was mentioned previously, governments of the NATO countries have no motivation to be active on the NSNWs issue, although public opinion in the NATO European countries is rather more against the presence of nuclear weapons on their territory than in favor of it.<sup>250</sup> However, today this issue is not as important in the public life of the European states as, for instance, was the problem of the deployment of US intermediate-range missiles in Europe in the 1980s. As a result, there is virtually no public pressure on NATO member governments on this issue.

There is the impression that the current impasse suits all parties – in Washington, Moscow and Brussels. The deployment of American nuclear weapons in Europe allows European NATO countries to keep the symbol of defense solidarity between the United States and its allies. It enables Washington to retain decisive influence in defining the alliance's military strategy. Taking into account the radical improvement in the political situation in Europe, Washington has no interest in opening a discussion with the allies about NATO's nuclear weapons.<sup>251</sup> For Moscow, nuclear weapons play a key role in ensuring national security, and this gives the Russian government an easy excuse for withdrawing from discussions on NSNW control.

These considerations suggest the obvious question: is progress on the NSNW problem really necessary? We argue below that advancing towards the solution of this problem would meet the interests of all sides involved.

**First**, if the US and Russia keep significant non-strategic nuclear arsenals, this fact will not escape the attention of the international community. This is unambiguously underscored in the Final Document of the 2000 NPT Review Conference where for the first time the necessity of NSNWs reduction was underlined as a component of the nuclear disarmament process.<sup>252</sup>

The fact that US and Russian NSNWs arsenals are not covered with verification measures and transparency creates natural obstacles for further progress to lower levels of nuclear arms as well as obstacles to involving other nuclear weapons states in the process of nuclear weapons reduction. For non-nuclear weapon countries the lack of progress in this area will continue to generate doubts regarding the commitment of the two major nuclear powers to fulfill their NPT obligations to nuclear disarmament. Given that NSNWs cannot be viewed as a deterrent in US-Russian relations but rather are intended to counter threats from third countries, these arguments become even weightier.

Moreover, statements by the current US Administration that support the use of preventive unilateral military actions for the purpose of preventing WMD proliferation to the so called "axis of evil" paradoxically strengthens the attractiveness of nuclear weapons as a means of protection against a U.S. attack. Together with US and Russian policies on the nuclear deterrence of non-nuclear weapon states at a regional level, this in es-

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<sup>250</sup> For the discussions in the parliaments of Belgium and the Netherlands see, for instance Karel Koster, *Belgian, Dutch Parliamentarians Confront NATO Tactical Nuclear Weapons*, BASIC Report, May 10, 2001; [http://www.basicint.org/nuclear/NATO/1-NATO\\_nuclear\\_series\\_May01.htm#No.3](http://www.basicint.org/nuclear/NATO/1-NATO_nuclear_series_May01.htm#No.3).

<sup>251</sup> Robert H. Gromoll, Dunbar Lockwood, "Non-Strategic Nuclear Weapons: Defining U.S. Objectives" in *Controlling Non-Strategic Nuclear Weapons: Obstacles and Opportunities*, edited by Jeffrey A. Larsen and Kurt J. Klingenberg, USAF Institute for National Security Studies, June 2001.

<sup>252</sup> The Final Document of the 2000 NPT Review Conference.

sence pushes other countries toward the possession of nuclear weapons.<sup>253</sup>

Such a policy not only undermines the foundation of the non-proliferation regime, but also considerably reduces US and Russia opportunities in the struggle against international and nuclear terrorism. Certainly, these problems undermine the national security interests of both Russia and the United States and their interests in maintaining a stable system of relations in the world. Sooner or later Moscow and Washington will have to undertake concrete steps towards establishing transparent and verifiable measures for NSNWs. It is clear that there is little time left for progress. The two countries should aim to show concrete results by the time of the 2010 NPT Review Conference.

**Second**, the presence of large stockpiles of nuclear weapons not covered by transparency and verification measures will continuously poison and impede the development of good bi-lateral Russian-US relations.

The United States – despite its opinion that NSNWs do not give Moscow any advantages in its ability to influence strategic stability – is obviously interested in NSNW reduction.<sup>254</sup> Currently the US interest is focused on the need to ensure reliable storage and control over nuclear warheads in Russia. However, tomorrow it may again be called forth by the quantitative advantage, which Russia has over the United States in this type of arms.<sup>255</sup> Therefore, while recognizing that Russian NSNWs do not pose a direct military threat to the United States and its allies today or in the near future, the United States will want to exclude any potential threat caused by the existence of Russian NSNWs which may arise in the future.

Such threats may develop in response to the current US political, economic and military dominance in the world, NATO enlargement, the unilateral use of military force by the United States evidenced in Yugoslavia and Iraq, the deployment of a US national missile defense, etc.<sup>256</sup>

Russia, for its part, cannot ignore the presence of US NSNWs in Europe. Moscow is interested in their withdrawal both for military and political reasons. However, Russia will hardly be able to solve this problem without offering something in exchange. Hence, its current passive position on NSNWs does not meet Russia's long-term interests. Statements such as the following are unlikely to be regarded as productive or as promoting a solution of this problem:

*"...If NATO is preserved as a military alliance with its present-day offensive doctrine, this will require a cardinal amendment of Russia's military planning and the principles of developing the Russian Armed Forces, including changes in the nuclear strategy of the country..."*<sup>257</sup>

Thus freezing "the NSNW problem" and the unwillingness to solve it work in favor of the "strategic uncertainty of the future" do not meet the interests either of Russia, the United States, or the countries of Europe. Decreasing the level of uncertainty and de-

<sup>253</sup> Nikolay Sokov, "Takticheskoe Yadernoe Oruzhie: Novye Geopoliticheskie Real'nosti ili Starye Oshibki?" (Tactical New Weapons: New Geopolitical Realities or Old Mistakes?), *Yaderny Kontrol*, No 26, February 1997.

<sup>254</sup> "Non-Strategic Nuclear Weapons: Defining the U.S. Objectives," by Robert H. Gromoll and Dunbar Lockwood, in Jeffrey A. Larsen and Kurt J Klingenger, eds., *Controlling Non-Strategic Nuclear Weapons: Obstacles and Opportunities*, USAF Institute for National Security Studies, June 2001.

<sup>255</sup> General Henry H. Shelton, USA Chairman Joint Chiefs of Staff Testimony Before Senate Armed Services Committee, May 23, 2000.

<sup>256</sup> "Non-Strategic Nuclear Weapons: Defining the U.S. Objectives," by Robert H. Gromoll and Dunbar Lockwood, in Jeffrey A. Larsen and Kurt J Klingenger, eds., *Controlling Non-Strategic Nuclear Weapons: Obstacles and Opportunities*, USAF Institute for National Security Studies, June 2001.

<sup>257</sup> *The Priority Tasks of the Development of the Armed Forces of The Russian Federation*, RF Ministry of Defense, 2003, <http://www.mil.ru/articles/article5005.shtml> .

parting from the ideas of the Cold War require developing measures of transparency, verification and reduction for NSNW arsenals.

## 5.2. Possible Approaches to the Solution of the "NSNW Problem"

The above considerations bring us to the question of whether it is possible to get out of the present stagnant situation for NSNWs and what approaches would be workable.

The obvious approach would be initiation of negotiations to discuss the transformation of the 1991 commitments to NSNW reductions from unilateral commitments to negotiated agreements. However, there currently is no pressure for such negotiations, and even if they begin, a constructive result would hardly be possible in the near future for a number of reasons. One obstacle is that any agreement on NSNW reduction will necessarily require implementation of verification measures. But as has been already mentioned, implementation of verification procedures for NSNWs will necessarily require the development of verification measures for warheads. Today neither Russia, nor the United States is ready to introduce such verification measures due to their extreme sensitivity.

Another obstacle may be asymmetry of NSNW arsenals – types and numbers of non-strategic nuclear warheads – and the fact that Russia may have more of them than the United States. Therefore, it cannot be ruled out that, even if an agreement on NSNWs reductions were concluded, it would apply exclusively to Russia. What then would be the interest of Russia in these negotiations if the United States did not offer anything to reciprocate?

Thus, the path to negotiations is not attractive either for Russia or the United States. Taking into consideration the general attitude of the current US administration to negotiations on arms control, it is unlikely that negotiations will begin in the near future.

The option left is unilateral actions, including the possible renunciation of unilateral commitments and the absence of verification measures, even though such measures have many drawbacks.<sup>258</sup> However, coordinated unilateral initiatives can be extremely useful. Their implementation could demonstrate to the international community the continuing commitment of the two nuclear weapon superpowers to adhere to their obligations under the Non-Proliferation Treaty. Finally, unilateral initiatives could work to prepare a basis for introducing negotiated verification measures.

In our opinion, unilateral initiatives should be primarily aimed at the development of transparency measures. We particularly stress that, if Russia introduced transparency into its NSNW policy, this could undercut the justification for maintaining US NSNW deployments in Europe. Simultaneously, it would serve to demonstrate the renunciation of Cold War concepts and would reaffirm Russia's wish to become a full-fledged member of the community of European states.

Transparency measures could be implemented in two phases. First, all US and Russian NSNW arsenals could be divided into two categories. The first category could include those NSNW warheads which stay in storage but can be deployed in case of need. The second category could include warheads whose lifetime is over and which are programmed for elimination.

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<sup>258</sup> Nikolay Sokov, "Takticheskoe Yadernoe Oruzhie: Novye Geopoliticheskie Real'nosti ili Starye Oshibki?" (Tactical New Weapons: New Geopolitical Realities or Old Mistakes?), *Yaderny Kontrol*, No 26, February 1997.

**In the first phase,** Russia, the United States and NATO could:

- Declare total numbers of the first category warheads and their storage locations. Concurrently, the sides should commit that the warheads in this category will stay only in the declared storage sites;
- Declare the absence of plans to transfer warheads in the second (to-be-eliminated) category to the first (available-for-deployment) category;
- Exchange information about the numbers and types of nuclear warheads that have been completely disassembled under the 1991 PNI (for instance, nuclear mines and artillery shells);
- Exchange information about the total number of NSNW warheads eliminated from 1992 to date; and,
- Exchange information about the principles and plans of nuclear planning used by Russia and the United States regarding NSNWs.

Clearly, implementation of this phase will require signing an agreement on the protection of sensitive information, which the sides will provide to each other (for instance, on the location of storage facilities).

At the second phase the sides could:

- Permit visits to the facilities where active NSNW warheads are stored. The purpose of these visits would be to confirm that the number of warheads at the visited sites do not exceed the declared numbers;
- Provide evidence of the elimination of second category warheads; and,
- Permit visits to the second category warhead storage facilities after all warheads kept in these storage facilities have been eliminated.

In parallel with the implementation of the above initiatives, Russian and US experts could work jointly on the development of technical means and procedures for nuclear warhead verification. If an agreement on the control of nuclear warheads is reached, the sides would have means of verification and procedures for their implementation which could guarantee the protection of "sensitive" information regarding the design of warheads, while simultaneously providing high enough confidence of control.

One more initiative, which could significantly facilitate progress in the establishment of a NSNW control regime, could be unilateral commitments by Russia and the United States not to carry out research, development and production of new types of nuclear NSNW warheads.

## CONCLUSION

1. Nuclear weapons are an important tool of foreign policy and will likely continue to be so during the coming decades. At the same time, with the end of the Cold War an armed conflict that includes nuclear attacks is extremely unlikely between Russia on the one hand, and NATO and the United States on the other. From this point of view, the arsenals of strategic and non-strategic nuclear weapons possessed by Russia and the United States are excessive for maintaining their military security levels. Deterrence capability, including that at a regional level, can be effectively achieved with a much smaller number of non-strategic nuclear warheads.
2. The continued existence of Russian and U.S. arsenals of non-strategic nuclear weapons that are not subject to formal arms control agreements has a negative effect on WMD non-proliferation policy. This fact cannot be ignored by countries of the world community and it can stimulate third countries to possess WMD and means of their delivery. Hence, the transparent reduction of NSNW arsenals could be a step towards strengthening Russian and US leadership of efforts to reduce the threat of nuclear use.
3. Russia cannot and should not reduce NSNWs entirely on a unilateral basis. Reductions in its stockpile should be linked with the solution of a number of issues. In our opinion, the principal issue is the withdrawal of US nuclear weapons from Europe. In view of present day realities, the paramount importance of such a step for Russia would not be so much its military but rather its political value. Withdrawal of US nuclear weapons from Europe will be a major step toward eliminating the Cold War nuclear confrontation in Europe, and will open a new page in relations between Russia and its NATO neighbors.
4. In the near future there is little chance that a legally binding agreement will be concluded between Russia and the United States that results in the withdrawal of US nuclear weapons from Europe. However, this does not mean that Russia should take a passive position on this question. Russia has enough means at its disposal to launch discussion of this issue and seek the solution it needs. Obviously, at the initial stage priority can be assigned to unilateral actions which, on the one hand, would not significantly reduce Russia's defense potential and, on the other hand, would really demonstrate Russia's interest in achieving progress in this area. Most desirable would be steps aimed at creating an atmosphere of openness and transparency; for instance, the announcement of the number of NSNW warheads destroyed and still subject to destruction under the 1991 PNI. Simultaneously, it seems expedient to turn down US assistance in improving the security systems of storage sites for nuclear warheads, their transportation and destruction. Given the improved condition of its state budget, Russia can and should independently solve the issues relevant to its own national security.
5. It will be reasonable to continue the joint Russian-American science-and-technology program for the development of verification measures for nuclear warheads and their destruction, while simultaneously protecting sensitive information. This program could create the basis for a mechanism for control over the nuclear warheads remaining in the arsenal of each side when, in the future, the sides are prepared to exchange information about the number of nuclear warheads and their deployment sites.

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