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(NUCLEAR CONTROL)

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Editorial

INTERNATIONAL SECURITY IN THE POST-ABM TREATY WORLD

The U.S. withdrawal from the ABM Treaty posed a number of serious questions. And it will not be easy to answer them. As far as the military aspect is concerned, the U.S. decision will not change the strategic balance between Russia and the United States in the next 10-20 years. The prospects for developing an effective missile defense system capable of assured interception of several dozens of modern warheads remain to be dubious, just as before the abrogation of the ABM Treaty. This results from the complicated technological issues, which, if not resolved, impede any efficient missile defense. Russia's strategic arsenal by the end of the decade may amount to 1,500 warheads capable of penetrating the missile defense shield. So, Vladimir Putin fairly stated on December 13, 2001, that President Bush's decision would not be 'a security threat to Russia'.

However, this is one of a few aspects of far more complicated mosaic of the global politics, which tends to emerge in the last few months. One cannot preclude that the U.S. withdrawal from the ABM Treaty is a beginning of dismantling of the entire system of arms control agreements negotiated mostly during the Cold War and reflecting the logic of bipolar US-Soviet confrontation. In this light, some of Washington's arguments seem convincing. For instance, the United States argues that the ABM Treaty was born during the Cold War, which was over a decade ago. And since Russia and the United States are no longer enemies, the agreement fixing mutually assured destruction, is irrelevant. The soft response of Moscow to the US withdrawal from the ABM Treaty is a practical evidence that Russia does not regard the United States and the West, as such, as an adversary. Vladimir Putin emphasized that "The current level of bilateral relations between the Russian Federation and the United States should not only be maintained, but used for the earliest possible development of the new strategic framework." It could be a key element of Putin's statement after the US declaration on the abrogation of the ABM Treaty.

Obviously, the process of bridging the gap between the arms control agreements and the new reality (the forming system of international relations) should not lead to the emergence of the legal vacuum in this sphere. Such vacuum may significantly destabilize the US-Russian relations and the international security on the whole, making them hostages of the political fluctuations. This is why it would be crucial to put the existing U.S.-Russian understanding regarding strategic arms reduction into a legally binding form. However, this would require the preservation of the U.S.-Russian relationship of the recent months, including full count of Russia's security interests, of course.

It would also be important to develop new NATO-Russia relations. In fact, if Russia is no longer a military and political adversary of the West, the activities of the Alliance should be targeted against new topical threats, notably terrorism in all of its forms, WMD proliferation, drug trafficking and organized crime. The stability of NATO-Russia relations should be ensured with a legally binding agreement naming the areas of cooperation and stating the mechanism of joint decision-making. In other words, the post-Cold War logic should persistently be realized in all spheres of Russia-West relations. This would be a positive basis to form new mutually beneficial strategic framework for Russia and the United States, since both parties are interested in such framework.

Hot Topic

DOES U.S. RECONSIDER ITS NUCLEAR DETERRENT STRATEGY?

by Alexander Saveliev
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[This article was originally published in Russian in *Yaderny Kontrol*, No. 2, Vol. 8, March-April, 2002]

The review of U.S. nuclear strategy was reportedly completed last January. The non-classified parts of Nuclear Posture Review prepared by the Department of Defense in cooperation with the Department of Energy upon request of the U.S. Congress were made public. This document contains the fundamental provisions of U.S. forward-looking nuclear strategy and specific plans for a new deterrent system, which allegedly would be more adequate to the international military strategic situation for the foreseeable future (10 years).

What is the Gist of the Review?
According to the published information, radical changes in theoretic approaches to the deterrent problem and the security role of nuclear weapons are due within the next ten years. One of the most important of the planned changes is the lowering of the strategic triad status (ICBM, SLBM and heavy bombers) from the central element of deterrent to one of *pinnacles* of the new structure of strategic forces. The two other pinnacles of the new strategic triad would be the defense system (including strategic missile defense) and so-called *responsive force* that would allow for a rapid reaction to a changing strategic situation and rapid build-up of military power in the areas that would be considered most sensitive in each particular case. The new triad would be integrated by an improved system of command, control, intelligence and operation planning.

According to the Pentagon officials, the United States is going to radically change the philosophy of deterrence and national security over the next ten years. Thus, while until recently the prevailing approach was the one of threat assessment, the crucial point now will be the assessment of one's own capabilities. It means that the United States will no longer build their deterrence forces in order to oppose a given *potential enemy* personified by the Soviet Union and the Warsaw Treaty countries during the Cold War years. In those conditions the emphasis was on *central deterrence* of the USSR, which was based on the strategic triad. The quantity and quality of strategic forces was dictated by the capability of the opposing Soviet forces and arms control agreements.

The strategic situation has changed and the relationship with Russia has changed taking on a very positive trend. At the same time, the United States is facing a wide range of new threats, some of which are difficult to predict. In particular, according to the Nuclear Posture Review, 12 states are carrying out nuclear weapons development programs, 28 countries have got ballistic missiles, 13 states have got biological weapons and 16 – chemical weapons. In these circumstances nuclear deterrent may be inefficient in terms of countering uncertain and unpredictable threats.

In view of the above, U.S. strategic planning will have to be based on its own capabilities, on a greater flexibility in the use of force, combination of nuclear and conventional weapons, defensive and offensive, rather than on potential threats.

Such a combination of defensive and offensive capabilities, nuclear and conventional forces is considered to be crucial for ensuring U.S. own security as well as that of its allies and friends. With this approach, missile defense is no longer considered a factor of destabilization, as it used to be in the period of axial opposition, but rather a critical element of a new deterrence system contributing to its enhancement.

Unilateral Approach to Reductions
Apart from this, one of the key elements of the new U.S. strategy will be a unilateral approach to strategic arms reduction. It is expected that by the end of the ten-year

period (by 2012) the U.S. would unilaterally reduce the number of nuclear warheads deployed on strategic carriers to 1,700-2,000 (3,800 by the beginning of 2007 fiscal year).

Within the next ten years, the United States are going to decommission all ICBM MX (50 units) equipped with 10 warheads each, reassign four SLBM Trident for deployment of sea-based cruise missiles with conventional warheads, reduce the number of warheads deployed at existing ICBM Minuteman-3 and SLBM Trident D-5 and waive the requirement that B-1 heavy bombers assigned for conventional missions be capable of being re-equipped with nuclear weapons.

One of the priorities of the U.S. security policy is the development of positive relations with Russia aimed at repudiation of the mutually assured destruction concept predominant during the Cold War. At the same time, the United States deems it inappropriate to continue entering into *Cold War* type of arms reduction treaties considered to be a vestige of the past.

Senior Pentagon officials stress, in their statements, the planned qualitative shift in the U.S. nuclear strategy. In particular, U.S. Secretary of Defense Donald Ramsfield, in his letter to U.S. Congress, said that the United States would no longer plan the qualitative and quantitative composition of strategic forces on the basis of presumption that Russia is merely a *smaller version* of the Soviet Union from the viewpoint of security threat for the United States.

Conflicting Reaction

In general, the new approach to security and deterrence gives rise to conflicting sentiments. On the one hand, there are certain merits, on the other hand – a number of demerits and ambiguities. The vagueness of certain important details can hardly be explained by the fact that certain parts of the Nuclear Posture Review are classified. Apparently, many of the issues to be dealt with hereinafter have been insufficiently elaborated by U.S. analysts, which gives rise to questions and serious doubts in the viability of transition of the United States to a new deterrence model, at least within the scheduled term.

As far as the positive side of the said transformation of the U.S. security policy is concerned, one should first of all note the exclusion of Russia from the list of potential enemies and desire to further improve U.S.-Russian relations. Such statements would have been declarative if they had not been supported by deep unilateral reductions in U.S. strategic arms. These reductions will be so significant that in ten years the number of arms in the U.S. strategic triad would be lower than stipulated under START II (3,000-3,500 warheads) or even Framework Agreement on START III (2,000-2,500 warheads) signed by the presidents of the two countries in New York in 1997. In aggregate, within the said period the United States intends to scrap at least 3,800 warheads.

It should be stressed that those reductions are voluntary on the part of the United States. They are not linked to any obligations or military technical, or economic reasons. Indeed, there is nothing that forces the United States to make such deep reductions within such term. Furthermore, given the worsening situation in Russia's strategic forces that makes inevitable their reduction to 1,500 nuclear warheads or even lower, the United States could have simply *come to a halt* at the level of the effective START II (6,000 warheads) and *without any efforts* gain at least quadruple superiority over Russia without any major programs of upgrading their own strategic forces.

U.S. experts also point out another important fact. In its proposals on the revision of nuclear strategy and unilateral reductions in strategic arms Pentagon managed to *step over* an important psychological threshold by agreeing, under certain conditions, to *go down* to less than 2,000 warheads. Until that time, this level used to be considered the bottom of any reductions in the U.S. strategic arms, whether bilateral or unilateral. Now, having *overcome this barrier,* Pentagon is actually willing to radically revise its plans of strategic targeting and warfare because it had been stated earlier that a level of lower than 2,000 warheads would make it difficult to plan nuclear warfare and would restrict *flexibility* in using nuclear weapons.

Upload Potential

As far as the negative side of the proclaimed revision of the U.S. nuclear strategy is concerned, it is the unilateral approach to strategic arms reductions that is unacceptable for Russia's military and political leadership. On the official level, Russia continues to insist that the planned reductions be in the form of a *binding document*, a treaty that would determine the time and scope of reductions, control over performance and a number of other important provisions.

One of such provisions, as evidenced by the statements of Russian officials, should be a restriction of the *re-deployment capability* of the removed warheads and an obligation on their dismantlement, i.e. actual elimination. The problem is that the United States intends to send the warheads removed from carriers (strategic sea-based and land-based missiles) to warehouses rather than destroy them.

By the way, this provision is one of the most vulnerable elements of the U.S. plan of unilateral reductions, which provokes apprehensions not only in Russia, but in the United States too. This is evidenced by the number of questions asked of Pentagon officials during a public briefing on the Nuclear Posture Review. Their explanation was that the warehoused warheads would be divided into two categories: *active* and *passive* stock. The active stock may be re-deployed if warranted by a radical change in strategic military situation and the passive stock would be waiting for dismantlement. At the same time, no reference was made to relative or absolute numbers of active and passive warheads, apparently for secrecy considerations.

As noted above, the U.S. plan does not provide for negotiating strategic arms control agreements with Russia. On the other hand, considering Russia's insistence, the United States agreed to consultations on future strategic arms reduction treaties that are held alternately in Washington and Moscow.

On the Russian part, representatives of the Ministry of Foreign Affairs and the deputy chief of the General Staff colonel general Yuri Baluyevsky participate in the talks. This fact is an evidence of certain streamlining of the system of preparing and making decisions on these issues and of the fact that the General Staff was reinstated as an important participant in the process.

It is not quite clear whether Russia would succeed in making the United States enter into a new treaty. Yet, judging by statements of officials and reports in mass media, a limited agreement that would determine, maybe in binding terms, the qualitative and quantitative parameters of the treaty is in the making. Although no details of the negotiations have been published yet, one may assume that Russian position is based on the proposals of President Vladimir Putin made last November, i.e. reduction of the strategic forces of both parties to 1,500-2,000 nuclear warheads on deployed strategic carriers. As for the *re-deployment capability,* the warehousing of dismantled warheads, according to Igor Sergeyev, 'is not a reduction process, but a certain operative maneuver…such an approach would be unacceptable to Russia' (*Nezavisimoye Voyennoye Obozreniye*, No.4, 2002, p. 1)

Since the United States has already made decision on the maximum reductions in their strategic nuclear forces and on warehousing of dismantled nuclear warheads, it is not clear how Russia could get its partner interested to such an extent as to abandon such plans and radically revise the approach developed and approved by the U.S. president and the U.S. Congress.

The point is that the extent of reductions in strategic forces, the deployment of a national missile defense and the warehousing of dismantled nuclear warheads fully fit in the new U.S. approach to deterrence and security developed in the process of the Nuclear Posture Review. The level of the remaining strategic forces is, as noted above, the «allowable minimum» from the Pentagon's viewpoint; the missile defense program is the core component of the second, defensive element of the U.S. new strategic triad and the warehoused stock of nuclear warheads is the key component of its third element, the *response forces*. The acceptance of Russia's proposals would be tantamount to a radical revision of the U.S. nuclear strategy and return to the abandoned deterrence

philosophy based on the assessment of threats and capability of the *potential enemy*.

This looks very unlikely. Therefore, Russian party's optimism concerning the chances of achieving specific strategic arms reduction agreements, limitation of the missile defense and destruction of dismantled nuclear warheads on the basis of it's own proposals looks unwarranted.

It cannot be excluded, of course, that the documents on strategic forces reduction would be signed at the May summit in Moscow in view of the general agreement reached in this respect. But, in our view, the U.S. party is unlikely to agree to such radical changes in its posture as proposed by Russia. Therefore, such documents are likely to reflect mainly the U.S. approach, i.e. a reduction of strategic nuclear forces of the United States and Russia, within the next 10 years, to 1,700-2,000 warheads deployed on strategic carriers without an obligation to destroy the dismantled warheads. As for the missile defense, it is hard to say whether the United States is ready to set limits to such systems, all the more so since the configuration of the future national missile defense is not clear today.

Missile Defenses

Another issue that gives rise to apprehensions is the prospective transition to a new *strategic triad*. The question is whether the two new *pinnacles* of strategic *triangle* would have approximately equal weight with the U.S. strategic nuclear forces, especially if coupled with conventional forces capable of fulfilling strategic missions.

Thus, the second element of the prospective system of strategic deterrence, according to the Pentagon, is the defense system, the *active* and the *passive* one. Presumably, it means a future system of defending the U.S. territory against limited ballistic missile attacks. Pentagon officials stress that in the current situation the deterrence based on a possible retaliation should be supplemented with a missile defense system capable of repulsing a possible attack as well as frustrating the aggressor's plans of launching the attack. These, presumably, were the considerations that forced the U.S. president George Bush to announce the withdrawal of the United States from the Russian-U.S. ABM Treaty of 1972, which was of unlimited duration.

The U.S. enthusiasm concerning the prospects of an efficient missile defense system is not easy to understand. Considering the experience of the Strategic Defense Initiative in the 80's one might wait walking out of this Treaty before realistic results of R&D and tests appear. Speaking of real threats to the territory of the United States and its allies, one should first of all be reminded of smaller range missiles, the systems of countering which are not prohibited by the ABM Treaty, rather than ballistic missiles. A chance for a tactical missile being launched from aboard a battleship or a cargo vessel in neutral waters is, in our view, no less realistic than an attack on the United States with ICBMs launched by so-called rogue states.

One of the few explanations for U.S. precipitous withdrawal from the ABM Treaty may be the need for the current administration to demonstrate to the electorate its enthusiasm and willingness to make every effort to protect the United States against any (actual or illusionary) threat. In this case one may agree with the opinion of the Russian president Vladimir Putin that the U.S. missile defense does not pose a threat to our country's security. It certainly cannot, since the chance for deployment of a really efficient strategic missile defense in the foreseeable future are very slim. Therefore, a national missile defense is to play mainly a psychological role from the viewpoint of protection of the U.S. population and 'frustration of plans of potential aggressors' referred to in the Nuclear Posture Review, as well as is to encourage budget expenditures for the benefit of those corporations that would be involved in the development of missile defense systems.

Responsive Force

What would be the third component of the new U.S. triad, the *response forces*, is not quite clear. Judging by explanations of Pentagon representatives, an important element of such *forces* would be a capability to rapidly restore U.S. nuclear potential by returning the *active* stock of nuclear warheads from warehouses to carriers in the event of a

dramatic worsening of military and political situation. It would be not too difficult to solve this from technical viewpoint. It is the practical viability of such actions that gives rise to doubts. On the one hand, it is hard to imagine a situation where about two thousand nuclear warheads on deployed carriers would be *insufficient* for the United States, on the other hand, such a measure (if taken in a time of peace) could be considered by other countries as a serious provocation. Rather than strengthening security and stability, such measure may instead jeopardize both.

Hence, the idea of creating and maintaining an active stock of nuclear weapons seems to have been a result of a compromise between civil administration and military officials who resisted deep reductions in strategic forces. The reduction and warehousing of part of U.S. nuclear weapons may be considered a final decision. Furthermore, such actions may become irreversible, i.e. the United States would never make a decision on the re-deployment of the *active stock*. Indeed, this stock would be ageing and gradually becoming *passive stock*, after which it would be destroyed.

The only thing that could *justify* a decision on rebuilding U.S. strategic arsenal might be a rapid build-up (to the U.S. level or higher) of Russia's strategic forces, which is highly unlikely, or those of China, which is equally doubtful.

The fundamental provisions of the new approach to security and deterrence advocated in the Nuclear Posture Review also gives rise to doubts. As noted above, the United States intends to build its deterrence system on the basis of their own capabilities rather than an assessment of the capabilities of a *potential enemy* (threat assessment). Politically, such transformation of the deterrence ideology sounds rather advantageously since the United States will not consider anybody its enemy, either real or potential. But in purely military sense, it is not clear how the new security system would exist without an assessment of potential threats, capability and location of weapon systems that could be used against the United States and its allies, strategy and tactics of potential enemies, be it certain nations or large terrorist organizations, including international ones.

The basic principles of military strategy have been the same for thousands of years. One of them, introduced by Sun Tsy, a great military leader and strategist of ancient China, more than two thousand years ago, requires an equally thorough knowledge of both one's own capabilities and those of the enemy. It is indispensable. Therefore, the U.S. new deterrence *philosophy* is likely to be mere propaganda meant for maximum political effect. As for the actual military plans, they are among the most sensitive state secrets in the United States as well as any other country and are not subject to disclosure even if they are not carried out. For example, Groza, the plan of assault of the USSR on Nazi Germany: the fact of its development was denied in the USSR for over sixty years and is being denied in Russia on official military and political levels even though many documents and facts point to its existence.

In conclusion, I would emphasize that the questions above concerning certain elements of the Nuclear Posture Review should not be considered as its complete repudiation. It certainly makes a very important attempt to reconsider the basic Cold War postulates, the postulates of confrontation and rivalry of the two ideologically irreconcilable centers of power that dominated the world for the second half of the last century. Today, the United States is trying to prove in practice that the nuclear confrontation era is over. Such an attempt, in our view, deserves at least certain understanding and serious analysis on the Russian part.

Indeed, it would be good if we borrowed the U.S. practice of making our own reviews of nuclear policy, which would introduce an element of systemic approach to security problems. Some time ago there was much talk in Russia about the importance of developing new framework for strategic relations with the United States, including a revision of the nuclear deterrence policy, considering the transition from confrontation to cooperation. The deterrence was to remain an element of such policy until the parties agree upon a new format of relationship.

Unfortunately, Russia has failed to make even a first step in this direction and continued to embrace the idea of strengthening strategic stability as a universal means of ensuring security unwilling to understand that strategic stability is based exactly on the principle of enhancing nuclear deterrence. In other words, Russia's policy of the past years continued to move in a vicious circle by upholding the approaches to ensuring security, that typical of Cold War period, which no longer meets political, military or economic realities.

Ideally, the revision of the fundamental provisions of deterrence strategy should have been carried out by Russia and the United States *together*, by focusing on a wider reassessment of the new international situation rather than maintaining and enhancing strategic stability in the narrow sense of strategic relationship between the two leading nuclear powers. Once the United States and Russia have declared each other strategic partners, such statements should be supported by practical steps towards creating a stable and safe structure of international relations in the XXI century.

Polemics

HEADING OFF IRAN'S BOMB: THE NEED FOR RENEWED U.S.-RUSSIAN COOPERATION

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The United States and the Soviet Union had an effective partnership in the fight against the proliferation of nuclear weapons and other weapons of mass destruction. Ironically, U.S. cooperation with the Russian Federation on nonproliferation has been far less satisfactory, with serious frictions rising to the top of the bilateral agenda. In the last several years, the most persistent dispute has been over Russian assistance to nuclear and missile programs in Iran.

U.S. efforts to thwart Iran's ambitions to acquire nuclear weapons have been a key focus of U.S. nonproliferation policy for decades. Those efforts were given new urgency by President Bush's State of the Union speech, in which the President declared, in effect, that Iran's (and Iraq's and North Korea's) acquisition of nuclear weapons and missiles to deliver them was unacceptable. He pledged that the U.S. would not stand by while the peril grew closer and closer.

Notwithstanding the misleading image of an "axis" connecting Iraq, Iran, and North Korea, Bush Administration officials have made clear since the State of the Union that stopping weapons of mass destruction (WMD) programs would require different approaches for each of these three problem countries. In the case of Iran, where an "unelected few" still control the crucial levers

of state power, the Bush team may decide that halting WMD programs will require engaging what they hope will eventually become a reformist regime in Tehran and helping it reach the conclusion that its interests are better served by promoting the welfare of the Iranian people than by trying to bring its clandestine WMD programs to fruition.

But Iran's conservative clerics have so far blocked any engagement with the U.S., while continuing to press ahead with Iran's WMD and ballistic missile programs. When and if such engagement gets underway, it is not likely to produce positive results quickly. In the meantime, it is critical that Iran not present the world with the fait accompli of nuclear-armed ballistic missiles. Tehran is working very hard to do precisely that. It is making significant strides towards ensuring the autonomy of its nuclear and missile programs so that it will not be vulnerable to foreign pressures and interruptions of supply. Within the next few years, Iran could pass a point of no return – a point after which it could succeed in achieving nuclear and long-range missile capabilities without further foreign assistance.

Iran is not there yet. So, to gain the time needed for engagement and persuasion, it is essential that all external assistance to Iran's nuclear weapons and missile programs be terminated immediately. In part, this will mean convincing North Korea and China to stop selling missile technology to Iran. The key to buying time, however, will be Russia, which is the most important source of advanced technologies for Iran's nuclear and missile programs.

The record of efforts between Moscow and Washington to deal with Russian assistance to Iran's nuclear and missile programs – both during the Clinton Administration and the first year of the Bush Administration – has been mixed at best. Despite years of bilateral engagement at the highest levels, sensitive cooperation continues between Russian entities and Iran. But with heightened concerns post September 11 about the spread of WMD and with the prospect of a fundamentally transformed relationship between Washington and Moscow, there may now be an opportunity to find a solution to the issue of sensitive Russian assistance to Iran that not only removes a major corrosive element in bilateral relations between Russia and the U.S. but also restores their partnership in the global effort to arrest the proliferation of weapons of mass destruction.

A Decade of Uneven Results

The Nuclear Issue: Phase One

In 1992, the Clinton Administration inherited a policy of strong U.S. opposition to all nuclear cooperation with the Revolutionary Republic of Iran, even ostensibly peaceful nuclear cooperation under International Atomic Energy Agency (IAEA) safeguards. This virtual nuclear embargo was established by the Reagan Administration in the early 1980s because of concerns that Iran would misuse peaceful nuclear technology to pursue a nuclear weapons program. During the Reagan Administration, the primary U.S. focus was on Europe, especially Germany and France, which had peaceful nuclear cooperation agreements with the Shah's Iran, as did the United States. Despite some resistance in Paris and Bonn, Washington largely succeeded in persuading its European allies not to renew nuclear cooperation with revolutionary Iran, primarily because of genuine European distrust of the new regime in Tehran and the outbreak of the Iran-Iraq War (1980-88). Most importantly, the German government decided not to renew work on the Bushehr nuclear power plant project (twin 1300 megawatt light water reactors), which was under construction at the time of the Iranian revolution.

The George H. Bush Administration continued this strict U.S. policy of nuclear embargo, at one point even urging Australia not to cooperate with Iran in the use of medical and industrial isotopes. Because of U.S. success in cutting off Western assistance, Iran increasingly turned to Russia and China as alternative suppliers. In 1992, at the end of the Bush Administration, China agreed in principle to supply Iran with two nuclear power reactors, and Russia agreed in principle to complete the Bushehr nuclear power project. In addition, both countries began negotiating possible deals with Iran for research reactors and fuel cycle technology.[1]

As a result, the Clinton Administration faced a new concern that China and Russia would break the U.S. imposed embargo on nuclear cooperation with Iran. With China, the Clinton Administration eventually succeeded in convincing Beijing to forgo significant nuclear assistance to Iran, as part of a 1997 agreement to implement peaceful nuclear cooperation between the U.S. and China. Russia, however, insisted on retaining a nuclear relationship with Iran. With various ups and downs, this issue became one of the most contentious and frustrating bilateral problems between Washington and Moscow during the Clinton years, consuming vast amounts of time and energy and producing only limited results.

Soon after taking office, the Clinton Administration, like its two predecessors, decided on a policy of total nuclear embargo against Iran. Secretary Warren Christopher, who had a long and unhappy experience with revolutionary Iran dating back to his days as President Carter's Deputy Secretary of State, was especially adamant that the U.S. should continue to support a complete embargo. As a result, U.S. diplomats tried to persuade Moscow not to go ahead with the Bushehr project, on the grounds that Iran's NPT commitments couldn't be trusted and that the project would help Iran develop broad nuclear expertise that could indirectly assist a weapons program.

Moscow, however, wasn't listening. In January 1995, Russian Atomic Energy Minister Viktor Mikhailov and the head of Iran's nuclear program, Reza Amrollahi, signed an $800 million contract calling for Russia to complete one unit (1000 MWe) of the Bushehr project. In response to U.S. objections, Moscow countered that Iran was not in violation of its NPT commitments and that light water nuclear power technology under IAEA safeguards did not pose a serious proliferation threat. To support their case, the Russians pointed out that the light water reactor technology they were selling to Iran was essentially the same type of nuclear technology that Washington had agreed to provide North Korea in the October 1994 Agreed Framework. Finally, the Russians claimed that the Bushehr contract included provisions for Russia to supply fresh fuel for the life of the reactor and to take spent fuel back to Russia, thus denying Iran any potential access to the plutonium contained in the spent fuel.

In early 1995, however, the U.S. discovered that the Bushehr plant was only the tip of the iceberg. In a secret protocol to the January agreement, the Russian Ministry of Atomic Energy (Minatom) agreed to supply Iran with key fuel cycle facilities, including light water research reactors, fuel fabrication facilities, and – most sensitive of all – an uranium enrichment centrifuge plant. Washington was furious. Either the Russian government had lied about the extent of its nuclear relationship with Iran or Minatom was making extraordinarily sensitive commitments without Moscow's knowledge. Even worse, the secret protocol reinforced Washington's fear that Iran was pursuing nuclear weapons under the guise of a civilian nuclear energy program. When President Clinton heatedly protested to President Yeltsin at their May 1995 summit in Moscow, Yeltsin quickly retreated, promising to cancel any aspects of the agreement that could help Iran militarily.

The two Presidents assigned their deputies to work out the details and in December 1995, Prime Minister Chernomyrdin sent a confidential letter to Vice President Gore committing Russia to limit its cooperation with Iran to Unit 1 of the Bushehr plant and the supply of related fuel and training. The Russian commitment covered the period under which the Bushehr unit was under construction, which Moscow estimated to be five years. On paper, the agreement was a significant victory for Washington. The U.S. maintained its principled opposition to all nuclear cooperation to Iran, while Russia agreed not to provide fuel cycle assistance or additional power reactors to Iran for a period of at least five years. Many American experts believed that Bushehr would never be completed. Aside from the numerous technical, safety and financial problems that plagued Bushehr, these experts speculated that Iran would eventually lose interest in the "white elephant" project once they realized that Moscow was not willing to sweeten the deal with side deliveries of fuel cycle technology.

The Missile Issue Takes off

Even as Washington believed it had addressed the issue of Russian nuclear cooperation with Iran, a new problem arose. In the mid-1990s, the U.S. became aware that a number of Russian entities, including several major aerospace firms, were supplying substantial assistance to Iran's efforts to produce the Shahab-3 intermediate range missile (a knock-off of the North Korean No Dong missile) and to develop even longer range missiles. When President Clinton raised the issue with President Yeltsin at their March 1997 summit in Helsinki, Yeltsin stoutly denied that any assistance to Iran's missile program was taking place, but promised to order investigations.

Several months later, at the June 1997 summit in Denver, President Clinton and President Yeltsin agreed to set up a special "channel" to work on the missile issue. The U.S. team was initially headed by former Ambassador Frank Wisner (later replaced by former Ambassador Robert Gallucci and then Undersecretary of State John Holum), while Yuri Koptev, Director of the Russian Space Agency (RSA), headed the Russian side. In a series of meetings, the two sides discussed a set of specific "cases" of Russian companies that the U.S. believed was providing missile assistance to Iran. The U.S. threatened to impose sanctions against these Russian entities if Russia did not investigate and halt the activity and pressed the Russian government to enact stronger export control laws and regulations. To increase leverage with the Russian Space Agency, the U.S. linked expansion of U.S.-Russian commercial space cooperation, especially the quota on U.S. commercial satellite launches on Russian rockets, to Russian performance on stopping missile assistance to Iran.

By 1998, the issue of Russian assistance to Iran's missile program assumed even greater political importance as Congress (on a bipartisan basis) passed legislation (which President Clinton vetoed) that would have required sanctions against Russian entities suspected of assisting Iran's missile program. The Administration found itself fighting on two fronts. With Moscow, it argued that the Russian authorities must take strong measures to halt missile-related transfers and punish transgressors or Congress would override President Clinton's veto of the sanctions legislation. With Congress, the Administration argued that its diplomatic efforts (including the threat of sanctions) were moving Moscow in the right direction, but that the imposition of sanctions would create a political backlash in Moscow and make it more difficult for the Russian government to take corrective measures.

During this period, in which domestic politics and international diplomacy intersected, National Security Advisor Sandy Berger began to play an increasingly important role, working with his Russian counterparts – first Andrei Kokoshin and later Sergey Ivanov – to agree on actions against specific Russian entities and measures to strengthen export control laws and regulations. In fact, some progress was achieved. Beginning in January 1998, the Russian government took a series of steps to strengthen its export control system, including the establishment of "catch-all" controls to prevent the export of any items to assist WMD or ballistic missile programs, even if the items are not included on the various international control lists.

Grudgingly, the Russian government also cancelled several contracts between Russian companies and Iran's missile program, all the while denying that the contracts involved items on the Missile Technology Control Regime (MTCR) control lists. During the summer of 1998, Berger and Kokoshin worked intensely to head off a crisis in bilateral relations. In July 1998, Moscow published a list of Russian entities that were under investigation for assisting Iran's missile program, and (as previously agreed between Berger and Kokoshin), Washington promptly imposed sanctions against seven of these Russian entities. In turn, Congress suspended a vote to override President Clinton's veto of the sanctions legislation.[2] In July 1999, the Duma passed a new export control law that provided the government greater legal authority to investigate and punish entities engaged in illicit exports to foreign WMD programs.

In the last year of the Clinton Administration, Washington and Moscow continued to eke out progress on the missile issue. In April 2000, National Security Advisor Berger and his new Russian counterpart Sergey Ivanov agreed on joint action against the rector of Baltic State Technical University, who had defied Moscow's edicts and continued to offer missile-related courses to Iranian students. At the same time, Washington lifted sanctions against two Russian aerospace entities – INOR and Polyus – that had been sanctioned in July 1998, thereby demonstrating that Russian entities could be taken off the sanctions list if they halted assistance to Iran's missile program. In May 2000, President Putin reorganized the Russian government's export control apparatus with the intent of strengthening its implementation capabilities.

By the end of the Clinton Administration, Washington decided that there had been enough progress to justify a decision to let the quota on U.S. satellite launches on Russian rockets expire at the end of 2000, which was intended to give an economic boost to U.S.-Russia joint space cooperation. This decision reflected a U.S. judgment that the Russian Space Agency (by then called the Russian Aviation and Space Agency, or RASA) and its associated companies were making a serious effort to establish strong export controls and prevent unauthorized technology transfers. In particular, the major Russian aerospace firms that had been developing commercial relationships with Iran's missile program in the mid-1990's had apparently decided that their economic future lay in cooperation with U.S. firms.

Despite this progress, the missile issue was never completely resolved. Iran continued to seek missile technology from smaller Russian companies and individual scientists – apparently in violation of Russian law and policy. From Washington's perspective, although Russian leaders made clear political commitments to end all missile assistance to Iran, and the Russian government established strong export control regulations and laws on the books, implementation of these commitments seemed sporadic. Russian investigations were slow and inconclusive, and no one ever seemed to be punished. To many in Washington, it appeared that Moscow was trying to do just enough to relieve American pressure and the threat of sanctions without taking decisive measures that might damage Russia's overall relations with Iran. To many in Moscow, it seemed that the U.S. was exaggerating the problem, making accusations without providing any specifics, and trying to interfere in normal economic transactions and scientific exchanges between Russia and Iran.

The Nuclear Issue: Phase Two

Even as Washington and Moscow struggled to deal with the missile issue from 1997 onward, Russian nuclear cooperation with Iran re-emerged as a major problem. The Ministry of Atomic Energy had always resented Yeltsin's "surrender" to American pressure, and it sought to overturn or evade the 1995 commitment, especially after Evgeniy Adamov became Minister of Atomic Energy in March 1998. Previously, Adamov had served as director of the Research and Design Institute for Power engineering (NIKIET), a Russian civilian nuclear institute that was deeply involved in helping Iran on nuclear projects beyond the Bushehr nuclear power plant. Adamov openly advocated selling additional power and research reactors to Iran, and U.S. officials suspected that he was quietly encouraging (or at least tolerating) offers and transfers of fuel cycle technology to Iran, presumably to entice Iran to purchase additional power reactors. Certainly, after Adamov took over the Ministry, there appeared to be an upswing of cooperation between Russian nuclear institutes and Iran's nuclear program in sensitive technologies, including heavy water and nuclear grade graphite production, design of research reactors, and laser enrichment technologies.

Adamov, of course, denied that Minatom was assisting Iran in any sensitive nuclear technologies, and promised to investigate any information that the U.S. provided and halt any "unauthorized" transfers. Privately, Adamov, like many Russians, did not hold Iranian nuclear capabilities in high regard. Some U.S. experts speculated that he was trying to dangle enough fuel cycle technology to keep Iran buying power reactors, without actually giving away any

technology he considered sensitive enough to help Iran acquire nuclear weapons. In addition, some Russian officials explained that they could keep a better eye on what Iran was doing under cover of Russian-Iranian nuclear cooperation. Moreover, these Russians said, Moscow could threaten to terminate peaceful nuclear cooperation to discourage Tehran from violating its NPT commitments.

Starting in mid-1998, the Clinton administration responded to this renewed problem with the same three-pronged approach it used to deal with the missile issue. First – at the political level – the President, Vice President, Secretary of State, and National Security Advisor warned their Russian counterparts that nuclear assistance to Iran beyond the Bushehr project was helping Iran to acquire nuclear weapons and threatening to damage overall U.S.-Russian bilateral relations. Second – at the Minatom level – the U.S. linked cooperation on joint projects that Adamov highly valued – such as a full nuclear cooperation agreement between the U.S. and Russia, joint research on development of advanced power reactors and international spent fuel storage – to a termination of Russia's nuclear relationship with Iran.[3] Third – at the entity level – the U.S. tried to influence the economic calculations of individual institutes by sanctioning several entities that were providing sensitive assistance to Iran (three entities, including NIKIET were sanctioned in January 1999), and making clear that Russian organizations that provided assistance to Iran would be jeopardizing their participation in U.S.-Russia cooperative threat reduction programs.

Even compared to the missile issue, however, the results of this three-pronged approach were unsatisfying. On one hand, the Russian political leadership from Putin on down readily agreed that it shared the U.S. objective of preventing Iran from acquiring nuclear weapons, and gave firm assurances that Russia would not allow sensitive nuclear technology to be transferred to Iran. In fact, the GOR did step in and stop some of the specific transactions that the U.S. raised, such as a contract between Iran's nuclear program and the Yefremov Scientific Research Institute to provide experimental laser enrichment equipment and laboratories to Iran. On the other hand, Russian investigations often seemed half-hearted and the Russian government hardened its insistence on continuing civil nuclear power cooperation with Iran.

From this perspective, Putin's takeover from Yeltsin in March 2000 was a mixed blessing. Unlike Yeltsin, Putin was seen as more able to enforce the Kremlin's orders, certainly when it came to Federal Security Service (FSB) actions to plug leaks of technology. Some in the U.S. government believed that the FSB's failure to enforce Russian laws and policies effectively was one of the principal reasons that the problem persisted; the FSB, these officials believed, was either complicit or incompetent, or both.

While in a better position to enforce Russian commitments, however, Putin was also more prepared to assert Russia's national interests, even if it meant renouncing Yeltsin's political commitments to Clinton. By the time of the June 2000 Moscow summit, for example, Russia had all but renounced the December 1995 Gore-Chernomyrdin commitment on Russian nuclear cooperation with Iran. President Putin strongly reasserted Russia's right to provide Iran with nuclear power reactors as legitimate civilian commerce, and Minister Adamov aggressively sought to nail down additional sales, including, Washington suspected, side offers of fuel cycle facilities.

In contrast to the missile area, where RSA did not seek to forge a commercial relationship with Iran in peaceful space cooperation, Minatom was deeply committed to peaceful nuclear power cooperation with Iran. The difference was critical. Minatom's profitable commercial relationship with Iran gave it a stronger financial interest to keep its Iranian customers satisfied, and the extensive interactions between the nuclear establishments of Russia and Iran provided more cover for cooperation in sensitive areas.

U.S. leverage with RSA and Minatom also differed. In the missile area, the U.S. government had relatively more flexibility to use U.S.-Russia peaceful space cooperation as an incentive to encourage RSA to strengthen

export controls. In the nuclear area, however, many of the cooperative U.S. programs with Minatom to secure fissile material and employ Russian nuclear scientists were seen as too important to U.S. national security interests to be held hostage to the Iran issue. In essence, Adamov appeared to believe he could have it both ways: maintain cooperative threat reduction funding from the U.S., while continuing to sell nuclear technology to Iran.

These institutional differences were reflected and perhaps reinforced by personal differences. While Koptev was seen as making a sincere effort to deal with the problem, Adamov was seen as part of the problem, which made the U.S. even more reluctant to share classified information on nuclear-related cases. To the extent that progress was made, it appeared to be over Minatom's objections. In the Yefremov laser case, for example, Minatom argued that the project should go ahead, on the grounds that the equipment could only produce insignificant amounts of enriched uranium. Other agencies of the Russian government, including the National Security Council, overruled Minatom's position, apparently recognizing that any type of enrichment assistance was directly contrary to Moscow's private assurances that it would not allow any sensitive nuclear transfers to Iran.

Towards the end of the Clinton administration, Washington made an effort to negotiate a new agreement with Moscow on nuclear cooperation with Iran, to replace the December 1995 Gore-Chernomyrdin understanding, which the Russian leadership had all but walked away from. In negotiations with DOE Undersecretary Ernie Moniz, Adamov indicated that Russia was prepared to commit in writing to prohibit cooperation with Iran in a number of specific fuel cycle technologies, including the most sensitive areas of enrichment and reprocessing. In return, Adamov wanted the U.S. not to take punitive actions against Russia if it proceeded with additional power reactor sales to Iran. Although the two sides appeared close to agreement on paper, the negotiations eventually collapsed over Washington's belief that Adamov could not be trusted to carry out the deal.

Bush inherits the issue

On taking office, the Bush administration identified the proliferation of WMD and ballistic missiles to "rogue states", such as Iran, as the primary security threat facing the United States. Like previous administrations, the Bush administration strongly opposed transfers of missile or nuclear technology from Russia to Iran, but the new administration was initially slow to engage in detail with Moscow on the issue. In part, the delay was due to the "normal" (and increasingly dysfunctional) pause that plagues every new administration as political appointees are confirmed and policy reviews grind their way through the system. In March 2001, for example, Alexander Rumyantsev replaced Adamov as the Minister for Atomic Energy, thereby creating an opening for progress on the nuclear issue. (Unlike Adamov, who had a strong personal commitment to expanding Russian civilian nuclear exports and came from an institute that was deeply engaging in nuclear assistance to Iran, Rumyantsev hailed from the Kurchatov Institute, which has focused on scientific cooperation with the U.S. and has little cooperation with Iran.) For months, however, Washington put off a meeting between senior officials and Rumyantsev, while it waited for the Russia policy review to be completed and the new political team to be put into place.

Aside from these normal delays, however, the new Administration was also pursuing a different agenda with Moscow. In its first few months, the Administration sought to downplay relations with Russia and focus instead on strengthening relations with U.S. allies. As it began to engage with Moscow, Washington's top priority was missile defense, which was seen as a critical response to the proliferation threat. Discussions between Presidents Bush and Putin focused on winning Moscow's agreement to modify the ABM Treaty or (as it turned out) acquiesce to a U.S. withdrawal from the Treaty. Immediately after September 11, Washington's focus with Moscow shifted to counter-terrorism cooperation with Russia and negotiations to formalize an agreement to reduce strategic offensive forces.

During this period, nearly the entire first year of the Administration, senior U.S. officials raised concerns about continuing Russian transfers to Iran in their meetings with Russian officials, but the issue was not worked aggressively or in detail. There were also different views within the Administration about what to demand of Moscow and what to offer in return. Noting that Washington was focusing less attention on the Iran issue, some Russians experts and officials speculated that the U.S. was taking a more tolerant view towards Russian transfers to Iran since, in this view, the Bush administration was confident it could rely on missile defense to deal with the proliferation threat. Some Russians even speculated that if Moscow acquiesced to missile defense, Washington would acquiesce to Russian deals with Iran.

In fact, with the pressure from Washington reduced, the problem did appear to be getting worse. In its January 2002 semi-annual report on proliferation trends, the CIA reported that Russia remains a significant source of supply to Iran's missile and nuclear programs and judged that "The Russian government's commitment, willingness, and ability to curb proliferation-related transfers remains uncertain." Testifying before the Senate Select Intelligence Committee, CIA Director George Tenet reinforced the point, saying, "Russia continues to supply significant assistance on nearly all aspects of Tehran's nuclear program. It is also providing Iran with assistance on long-range ballistic missiles."

The official Russian reaction was anger and denial. According to the Russian Foreign Ministry, "Perhaps for the first time in the recent period, an official American document makes an attempt to cast doubt on the 'commitment, desire, and ability' of Russia's government to prevent a 'leak' of sensitive goods and technology abroad. Such a formulation of the question is categorically unacceptable." Russian Foreign Minister Igor Ivanov subsequently said, "Russia's alleged supply of nuclear or missile technologies to Iran has been discussed for a long time, but it is nothing but a myth."

Although slow off the mark, the Administration has now begun to engage more actively with Moscow to halt missile and nuclear related transfers to Iran, especially after President Bush's State of the Union address speech in January 2002. In early 2002, Secretary of State Colin Powell raised the issue at length with Russian Foreign Minister Igor Ivanov. Afterwards, Undersecretary of State John Bolton and Assistant Secretary John Wolf traveled to Moscow on several occasions for detailed discussions with key Russian officials in the Ministry of Foreign Affairs, National Security Council, Prime Minister's office, Minatom, RSA, and Ministry of Economic Development and Trade. Unfortunately, now that Sergey Ivanov had moved from the Russian National Security Council to head the Ministry of Defense, it was more difficult for National Security Advisor Condoleezza Rice to play the same role that Sandy Berger did, in terms of bypassing the Russian bureaucracy and bringing Russia-Iran issues directly to the attention of the Kremlin.

As the administration has placed Russia-Iran issues higher on the bilateral agenda, it has followed the basic approach of the Clinton Administration on the nuclear issue, offering to cooperate with Russia on key projects, such as advanced reactor development and international spent fuel storage, if Russia cuts off all nuclear cooperation with Iran, including the supply of power reactors.

The Bush Administration is also considering sanctions against Russian entities that are believed to be assisting Iran's nuclear or missile programs, but it is extremely reluctant to share classified information with Russia about specific entities and transactions. Washington believes that Moscow already knows – or can find out – what is going on, and is not willing to risk compromising "sources and methods" by revealing classified information. In response to what they view as Washington's threats, the Russians demand that the U.S. side provide evidence to substantiate its charges.

Finally, the Bush Administration seems to realize that progress on the Russia-Iran issue will require engaging Moscow at the highest levels. Although President Bush reportedly

did not raise Russia-Iran concerns at the November 2001 Crawford summit, he is expected to discuss the issue with Putin at their next meeting in late May.

Why the problem persists

Many American officials are puzzled why – after years of high-level bilateral attention and numerous assurances from Moscow – Iran is still able to find Russian entities and individuals who are willing to provide equipment, materials, and technology for its nuclear and missile programs. Don't the Russians realize, the Americans ask, that Iran's acquisition of nuclear-armed, long-range ballistic missiles would jeopardize Russia's own security interests?

The Russians respond emphatically that of course they appreciate the dangers for Russia of Iran acquiring such capabilities. That is why, they claim, it is Russia's firm policy not to support Iran's nuclear weapons or long-range missile programs. They acknowledge that Russian organizations and individuals have occasionally provided assistance to Iran in contravention of Russia's policies and laws. But, they say, such "private proliferation" will be minimized and eliminated as Moscow's relatively new system of export controls grows stronger.

American officials find these explanations only partially persuasive. They welcome the steps Moscow has taken to adopt and implement stronger export controls; they appreciate that Russian authorities have intervened in a number of cases to halt sensitive cooperation; and they recognize that Russian export control and customs authorities lack the resources necessary to do a more effective job.

But they do not attribute the continuation of sensitive transfers entirely to deficiencies in Russia's export control system. They believe that, especially in the nuclear area, the problem is not only "private proliferation" but also cooperation that is taking place with the knowledge or approval of governmental or government-affiliated entities. They note that, while the Russian government has carried out investigations of possible export control violations, few if any Russian entities are found guilty and penalized. They find it hard to understand why Iranian procurement agents have managed to operate so freely and effectively inside Russia. And they are frustrated that, for every Russian entity that Moscow forces to stop assisting Iran, another seems to show up as a willing partner.

U.S. officials are convinced that, if Russia's leadership were determined to put an end to assistance from Russian entities and were prepared to give sufficient priority and resources to that objective, such assistance could be stopped, or at least slowed to a trickle. That doesn't mean the U.S. believes that Russia favors or is actively promoting Iran's acquisition of nuclear weapons or long-range missiles – only that Washington has reached the conclusion that, at a minimum, Russia is tolerating the continuation of assistance to those programs.

If that conclusion is correct, why does Moscow tolerate such Russian-Iranian cooperation? At the most fundamental level, the answer is Russia's economic and geopolitical interests, at least the way Moscow perceives those interests. With the Russian Government rarely placing orders today with Russian aerospace and nuclear entities, these entities must now look to foreign markets to survive. While a number of Russian missile and aerospace entities have engaged in lucrative projects with the West, other enterprises in that sector have had no contact with U.S. or other Western firms and have incentives to turn to partners in the Third World. In the nuclear industry, the situation is even worse. Minatom claims that it has no alternative but to sell its products to Iran and a few other countries because Western markets remain closed to it and it has been squeezed out of its traditional markets in Central and Eastern Europe.[4]

The value of Russian nuclear- and missile-related exports to Iran is small compared to overall Russian trade and the size of the Russian economy. But to the industrial sectors affected, the particular enterprises or other institutions involved, and the individuals themselves, the benefits can be significant. It is estimated, for example, that more than 300 Russian enterprises take part in the Bushehr project and that the project has created about 20,000 jobs.[5] For individual

Russian nuclear or missile scientists, the sale of technical information and assistance for only small sums is a significant income.

Moreover, the economic benefits for Russia of nuclear and missile exports to Iran are probably perceived by Moscow as greater than the direct impact of such cooperation on the nuclear and aerospace industries. Russia's willingness to proceed with sensitive sales in the face of strong American opposition has undoubtedly ingratiated Moscow to a Tehran regime that has few willing suppliers in those areas, and has put itself in a stronger position to win contracts in other lucrative commercial areas, especially conventional military sales.

Just as important as Russia's economic incentives for engaging in nuclear and missile cooperation is Russia's geopolitical interest in stronger bilateral relations with Iran. Moscow clearly calculates that Iran will be a key player in the future of the Gulf, the Middle East, and the Islamic world and therefore wants to be on good terms – and even enjoy a privileged position – with whoever rules in Tehran.

Given its acute concerns about Islamic extremism within Russia, Moscow sees close ties with Iran as a kind of insurance policy that can protect against unhelpful Iranian influences on Russia's Muslim communities. In this connection, Russian officials apparently believe that Iran has so far played a moderating role on Chechnya and do not want to put that at risk. In general, Moscow sees stronger ties between Iran and Russia as serving a variety of interests the two countries have in common, including the character of the government in Afghanistan, the role of Turkey in the region, and perspectives toward radical Islamic groups in Central Asia and the Caucuses.

These economic and geopolitical motivations make Russia predisposed toward cooperating with Iran unless there are compelling nonproliferation or foreign policy grounds for withholding cooperation. But they are not the whole explanation. To appreciate why Moscow continues to tolerate what Washington regards as very risky transfers to Iran, one must also understand several arguments put forward officially and unofficially by Russians – arguments which, depending on one's point of view, are either sound reasons or unconvincing rationalizations for approving (or failing to act resolutely to stop) such transfers. Following are some of those arguments:

- *Russian assistance is not militarily sensitive and cannot contribute to Iran's nuclear weapons and missile programs.* It is true that no Russians are accused of helping Iran directly in the design of nuclear weapons, and that much of the nuclear- and missile-related cooperation is dual-use and therefore applicable to civilian as well as military uses. But Russian assistance to "civilian" nuclear fuel cycle capabilities will give Iran the ability to produce fissile materials for nuclear weapons, and dual-use technologies with broad industrial uses are critical ingredients in today's missile programs.

- *Assistance to Iran is fully consistent with Russia's international obligations.* Moscow is right that nuclear cooperation with NPT parties in good standing is permitted and that the International Atomic Energy Agency has not (yet) found Iran in violation of its NPT commitments. But it is irresponsible to provide sensitive nuclear technology to countries believed to be pursuing nuclear weapons in violation of the NPT (and Russian officials will sometimes concede in private that they do not disagree with U.S. assessments about Iran's intentions).

- *American opposition to Russian cooperation with Iran stems from motives less lofty than nonproliferation.* At various times, Russians have argued that the U.S. is trying to cripple Russia's nuclear industry, protect Iran's nuclear energy market for itself, disrupt bilateral relations between Moscow and Tehran, carry out Israel's wishes, and perpetuate Iran's international isolation. By questioning U.S. motives, these mostly erroneous concerns serve in internal Russian deliberations to discredit American allegations and excuse Russia's own behavior. Some of the concerns may be sincere; some may be disingenuous. But they all fail to give due credit to the real reason why Russian assistance to Iran has been near the top of the U.S.-Russian agenda for close

to a decade – U.S. alarm at the prospect of a nuclear-armed Iran.

- *Russian assistance won't actually be responsible for Iran acquiring nuclear weapons and long-range missiles.* This argument comes in two forms. The first is that, notwithstanding Russian cooperation, Iran does not have the technological capability to produce what Washington most fears. According to one analyst, "Present-day level of Iranian industrialization with its overwhelming cottage industry and handicrafts [...] proves that Tehran hardly possesses technological potential for indigenous design and production of modern weapons, including nuclear arms and delivery systems."[6] The second form argues, somewhat contradictorily, that Iran's acquisition of nuclear weapons and long-range delivery systems is practically inevitable, and so the assistance it receives from Russia, whatever its utility, will not make a decisive difference. Both forms of this argument are highly questionable. It would be foolish to make sensitive transfers in the expectation that Iran will not eventually succeed in putting them to their intended use. And it would be equally foolish to make such transfers in the belief that Iran will inevitably succeed with or without them.

Of course, unless one is privy to deliberations within the Russian Government, it is possible only to speculate about the factors and arguments that have most influenced Moscow's attitude toward Russian cooperation with Iran. But whatever the combination of factors, the bottom line seems clear – sensitive cooperation continues between Russian entities and Iran's nuclear and missile programs, such cooperation continues to be a major divisive element in U.S.-Russian relations, and Iran continues moving closer toward the capability to produce nuclear weapons and long-range missiles to deliver them.

Overcoming the impasse

The Bush Administration apparently hopes that the recent improvement in U.S.-Russian relations and the strong personal ties between Presidents Bush and Putin will lead to a shift in Moscow's approach toward cooperation with Iran. Putin, according to this thinking, will recognize that Russia has far more to gain, both economically and politically, by aligning its policies with Washington than by continuing to support, or at least tolerate, risky cooperation with questionable regimes.

The Administration is right that heightened concerns about WMD and ballistic missile proliferation post September 11 and growing Russian-American friendship create new opportunities to resolve this long-standing dispute. But even in this more promising environment, Moscow is unlikely to calculate that the benefits of the deal the U.S. currently has on the table would outweigh its downsides.

In economic terms, Russia may find tempting what the U.S. is offering, including cooperation in the development of advanced nuclear reactors, U.S. support for a potentially lucrative plan to store spent reactor fuel in Russia, and a variety of other inducements, both nuclear-related and non-nuclear. But many of the benefits promised by these U.S. "carrots" are somewhat uncertain (e.g., the spent fuel storage plan faces strong opposition from Russian environmentalists) and, in any event, will not materialize for at least several years, while rewards from Russian cooperation with Iran are often more tangible and immediate (e.g., about $800 million for each Bushehr reactor).

In geopolitical terms, Russian leaders, especially Putin himself, appear to believe that good relations with the U.S. and the West are critical to Russia's future. But they probably see no reason why closer alignment with the U.S. should require that they cut off what they believe is legitimate and non-threatening cooperation with neighbors like Iran. They undoubtedly fear that terminating such cooperation at U.S. request will put Russia's bilateral relations with Iran, including the growing commercial relationship, in jeopardy.

In domestic political terms, Putin is already way out ahead of Russian policy elites in his readiness to be responsive to U.S. concerns. A solution to the Iran problem that could be portrayed within Russia as reneging on a long-standing commitment to a critical country, giving in to U.S. pressure, and

costing Russian workers thousands of jobs would expose him to strong criticism at home.

To be sustainable in Moscow, any solution must not be seen as undermining Russia's desire to have good bilateral relations with Iran or as damaging Russia's economic interests. To be sustainable in Washington, it must be seen as reliably terminating all assistance by Russian entities to Iran's nuclear weapons and long-range missile programs.

Modifying the U.S. approach on the nuclear issue

Such a solution requires some modifications of the current U.S. approach, especially its position on the sale of Russian power reactors to Iran. Both the Clinton and Bush Administrations have opposed all nuclear cooperation with Tehran, including the transfer of power reactors for the Bushehr project. They did so not because they believed Iran would divert plutonium from the spent fuel of IAEA-safeguarded light-water reactors, but because they were concerned that the Bushehr project would be used by Iran as leverage to pressure Russia to provide more sensitive assistance and as a justification for acquiring more sensitive fuel cycle capabilities (e.g., in order to produce their own fuel for the reactors). As a partial measure, both Administrations have tried, albeit without success, to hold Russia to its 1995 pledge to confine it nuclear cooperation to the supply of one power reactor and related fuel and training. But the primary incentives they offered to Moscow for nuclear restraint (e.g., conclusion of a U.S.-Russian agreement for full nuclear cooperation, joint work on advanced reactors, support for spent fuel storage in Russia) were available *only* if Russia was prepared to stop *all* nuclear cooperation, including on Bushehr.

The main problem with the current U.S. approach is that it is unlikely to work. Russian leaders, including Putin, have repeatedly reaffirmed not only their commitment to supply Unit 1 at Bushehr but also their intention to sell additional power reactors for the project. At this stage, the political and economic stakes are too high to expect Moscow to reverse course. If the U.S. sticks with its present approach, it could end up with the worst of all worlds – additional transfers of power reactors, continued clandestine and perhaps even overt Russian fuel cycle assistance, inadequate constraints on Iranian nuclear activities, and persistent U.S.-Russian tensions over the matter.

It is time to consider an alternative. Essentially, the U.S. should offer to "grandfather" the sale of Russian power reactors for Bushehr if Iran accepts more rigorous means of ensuring that it will not acquire nuclear weapons. More specifically, the U.S. should offer to conclude a bilateral nuclear cooperation agreement with Russia and embark on a range of mutually beneficial cooperative activities in both the nuclear and non-nuclear realms (including the projects Washington has already proposed), provided that Russia agrees, at the level of President Putin, to the following:

- Russia would commit to confine its nuclear cooperation with Iran to the supply of light-water power reactors for the Bushehr project and related operator training and fuel. It would commit explicitly not to assist Iran in any way (i.e., through the provision of equipment, materials, or technology) to acquire fuel cycle capabilities, including heavy water production, research reactors, uranium conversion, reprocessing, and uranium enrichment.
- Russia and Iran would agree that all fuel for the Bushehr reactors would be supplied by Russia, that all spent fuel would be sent back to Russia, and that no fuel would be stored in Iran longer than necessary for safe operations.
- Russia would insist on a public commitment from Tehran that Iran will not acquire fuel cycle capabilities, either indigenously or from any external source, and will dismantle any such facilities that exist or are under construction.
- Russia would insist that Tehran adhere to the International Atomic Energy Agency's Additional Protocol on strengthened safeguards, which obliges its adherents to supply extensive information about their nuclear programs and gives the IAEA

broader inspection rights to detect any undeclared nuclear activities.

While offering Russia a variety of incentives for accepting such an arrangement, Washington should also make clear that, in the absence of the arrangement, the U.S. will be obliged to implement its sanctions laws and take other steps against those Russian entities that continue to engage in nuclear cooperation with Iran. If the cooperation continues, the U.S. may need to consider broader punitive measures against the Russian government. By the same token, if the Russians agree to the new approach, the U.S. should be prepared to seek modifications in U.S. laws so that the Russian Government and Russian entities are not penalized for continued cooperation on Bushehr, as long as they abide by the arrangement.

An arrangement along these lines would appear to meet the essential requirements of both Russia and the United States. For Russia, the deal would be consistent with its 1995 Bushehr-only pledge, would not require it to renege on the most important (and lucrative) of its commitments to Iran, and would open up areas of cooperation with the U.S. that, over time, could be much more valuable to Russia than its current transactions with Iran. For the U.S., it could mean the termination of sensitive Russian assistance outside Bushehr that Washington always found to be the most dangerous elements of Russian-Iranian nuclear cooperation. Moreover, Tehran's acceptance of a ban on developing indigenous fuel cycle capabilities would establish a clear bright line between permitted and prohibited nuclear activities in Iran, and its adherence to the IAEA's Additional Protocol would provide more effective means of verifying that boundary.

Notwithstanding these positive features, we can expect objections to be raised in both Moscow and Washington. In Moscow, some will fear that U.S. grandfathering of Russian power reactor sales in Iran will open the door to competitors (including in the U.S.) who will try to displace Russia in Iran's nuclear energy market. The U.S. should be prepared to assure Moscow, in this connection, that the U.S. itself will not engage in any nuclear cooperation with Iran and that, while it will no longer dissuade others countries from sub-contracting with Russia on the Bushehr project, it will continue to discourage them from entering independently into other cooperative nuclear arrangements with Iran.

Another fear in Moscow would be that Russian cooperation with the U.S. to impose additional limits on Iran's nuclear program could jeopardize overall relations between Moscow and Tehran. Specifically, Tehran could reject forswearing its own fuel cycle capabilities and adhering to the IAEA Protocol, and it might threaten to cancel the Bushehr deal if Russia insisted on those requirements.

It is hard to predict the likelihood of Tehran making such a threat and carrying it out. After all, the proposed arrangement takes at face value the Iranian assertion that it needs nuclear reactors to diversify its sources of energy, and it assures Iran that it would have a reliable source of fuel for the life of the reactors and no spent fuel storage or waste disposal problems. For a country genuinely seeking to expand its use of nuclear energy, it would be very hard to look this gift horse in the mouth, and Tehran might feel under pressure to go along. But if Iran rejected the Russian offer on the grounds that it needed its own fuel cycle capabilities for "energy independence" and said that it was prepared to incur huge additional costs in order to acquire them, then Russia and the rest of the world would draw the obvious conclusion: Iran is determined to obtain nuclear weapons. In these circumstances, Russia hopefully would decide that a nuclear connection with Iran was too risky.

In Washington, the main hesitation about the proposed arrangement would be a concern about Russian compliance. Why, some Americans would ask, should we expect Russia to abide by this new arrangement when it did not keep its 1995 pledge to confine nuclear cooperation to Bushehr or its other private commitments not to provide sensitive assistance to Iran? It's a legitimate question, but there are several valid responses, including that Putin's personal involvement this time would make a

difference, that the incentives for Russian compliance could be greater, and that the combination of the ban on indigenous fuel cycle activities in Iran and its adherence to the IAEA Protocol would facilitate verification. But just to err on the side of caution, the U.S. side may wish to delay dispensing any "carrots" until it has monitored the situation for some period to make sure that all cooperation outside Bushehr has stopped. And in any event, the U.S. would want to structure its new cooperation with Russia in such a way that it can be interrupted if Moscow is found not to be meeting its commitments.

Another possible objection in Washington is that U.S readiness to grandfather the Bushehr power reactors would give the signal to nuclear suppliers in Europe, China and elsewhere that it is "open season" on nuclear cooperation with Iran, and that this would open the floodgates to transactions unrelated to Bushehr that could conceal sensitive interactions or be sensitive themselves. While this is undoubtedly a risk, it is likely that the U.S. could persuade other potential vendors of nuclear technology that there were sound nonproliferation reasons for grandfathering Bushehr and that they should continue their embargo on cooperation outside the Bushehr project.

Another objection in Washington might arise from the apparent inconsistency between labeling Iran a member of the "axis of evil" and revising the U.S. position on Russian reactor sales to Iran. While U.S. readiness to grandfather Bushehr would surely provoke some opposition on those grounds, the Administration would have to take the lead in explaining publicly – and to Congress and U.S. allies – why continued opposition to the power reactors would be self-defeating and why the revision in the U.S. approach will increase the likelihood of heading off an Iranian nuclear weapons capability.

Resolving the Missile Issue

Unlike in the nuclear issue, the basic framework for resolving the missile issue is already in place. The Russia government has already established the laws and regulations necessary to halt transfers of materials, equipment, and technology to assist foreign ballistic missile programs. The RASA has already taken measures to strengthen export controls among the aerospace entities under its supervision, and the U.S. has responded by seeking to expand opportunities for peaceful U.S.-Russian space cooperation.

What is needed is better enforcement. Primarily, this requires convincing Russia to commit the resources necessary to detect, investigate, and punish unauthorized missile assistance by Russian individuals and companies and to raise the priority of this mission for key agencies, such as the FSB. Although no export control system is perfect, the Russian government could do a better job with more resources and a higher priority.

The starting point is a clear political commitment from Moscow. Given the good personal relationship between the two Presidents, and the closer ties between Washington and Moscow post September 11, President Bush should urge Putin to give his personal attention and commitment to preventing leakage of missile assistance to Iran (or other countries). Given perceptions in Moscow that Washington's interest in this issue has waned, President Bush needs to make clear that resolution is important to him and essential to overall bilateral relations. In return, Putin is likely to ask for U.S. assistance in helping to identify Russian individuals and companies that are transferring missile technology.

Sharing of intelligence is always a difficult call. No doubt, the Russian services and police agencies know more than they are prepared to admit to the U.S., and one of their motivations in asking for more information is to discover what U.S. intelligence agencies know and how they know it. But, it is also plausible that the U.S. has a better picture of transactions underway than the Russian government in a significant number of cases. After all, if Russian entities and individuals are acting in violation of Russian laws, they will make every effort to conceal their activities from Russian authorities and stonewall official investigations. In some cases, the provision of information from Washington has led Russian authorities to take concrete actions to stop transactions.

This standoff on information sharing – with the U.S. making charges without substantiating them and the Russians denying the charges and asking for proof – poses a real dilemma for Washington. On one hand, the U.S. needs to protect sources and methods, if only to ensure that it retains an ability to monitor continuing transfers. On the other hand, if Washington truly wants to develop a cooperative relationship with Moscow to resolve this issue, it needs to take some chances with sharing information. One avenue for resolving this dilemma is to strengthen areas of contact and cooperation between the CIA and FSB, which have already established closer cooperation in combating terrorism. In addition, it would be helpful to establish a direct channel of communication between senior Kremlin and White House officials, who would be empowered by their respective Presidents to deal with sensitive and urgent matters.

Conclusion

Despite years of high-level U.S.-Russian engagement, Russian entities continue to provide assistance to Iran's nuclear and missile programs. The approach suggested here – distinguishing between more sensitive and less sensitive nuclear cooperation with Iran and then rigorously enforcing that distinction – may provide a way out of the frustrating pattern of charges and denials, assurances and backsliding. But adopting such an approach will not be easy for either side. For Washington, it may be difficult to abandon its longstanding "zero tolerance" for cooperation with Iran, even in relatively non-sensitive areas. For Moscow, it may be difficult to insist that Iran accept tighter restrictions on its nuclear activities, especially restrictions that go beyond Iran's international treaty commitments. And even if the two sides can agree to modify their framework for addressing the issue, the key will be effective implementation, both in the nuclear and missile areas. Too many previous bilateral understandings have unraveled at the stage of implementation, as the Russian Government failed to act decisively enough to ensure compliance with its laws and policies.

That is why the current impasse can only be overcome at the most senior levels, especially on the Russian side. President Putin will need to engage personally with President Bush to find a solution, and will then have to issue clear directives to Russian agencies and provide them the resources necessary to carry out those directives.

Faithful implementation of a new U.S.-Russian approach would go a long way toward impeding Iran's access to materials, equipment, and know-how it seeks for its WMD and missile programs. Of course, it would have to be accompanied by efforts to get North Korea, China, and other potential suppliers to put a halt to their assistance to Iran's missile program. Together, these efforts could slow and complicate Tehran's pursuit of its nuclear and long-range missile ambitions.

Would curtailing or even halting external assistance prevent Iran from achieving its goals? The truth is that we don't really know. Given the wide dissemination today of sensitive know-how and the growing availability of relevant equipment and materials, much of them dual-use, it is hard to prevent a determined and resourceful country like Iran from eventually acquiring nuclear weapons and long-range missile delivery capabilities. Over the long term, the only reliable way of heading off the acquisition of those weapons will be to persuade or otherwise induce Iran to reach the conclusion that its own national interest is best served by living without them.

The prospects for bringing Iran around to that conclusion depend on a variety of factors. A critical one will be whether Iran's arch-rival Iraq can be prevented from regenerating its own nuclear and other WMD programs. If Iraq cannot be thwarted, it will be next to impossible to stop Iran. Another key factor will be the evolution of domestic politics in Tehran. If the reformers eventually succeed and give priority to economic and social welfare goals, then the priority now given to destabilizing weapons may recede. Also central will be the future security environment in the Gulf and the Middle East more generally as well as the future of U.S.-Iranian relations. An Iran that doesn't feel threatened by developments in its region and that doesn't believe that it needs unconventional weapons to deter U.S.

intervention in its affairs will be more likely to decide that it can afford to do without those weapons.

The likelihood of heading off Iranian nuclear-armed missiles will also depend on U.S.-Russian cooperation, not just agreement in the short run on a way to stop the flow of sensitive technology but also cooperation in the longer term to dissuade Iran from remaining on the dangerous course it is now pursuing. Even as Washington and Moscow work to overcome the current impasse over assistance to Iran's nuclear and missile programs, they should begin to collaborate on a strategy for engaging Iran and exercising a positive influence on its future security choices. The rewards from such cooperation might not only be a major gain for security in the Gulf region and beyond but also the reinvigoration of a nonproliferation partnership that once made an important contribution to international stability and must do so again if the world is to be spared a future of many nuclear-armed states.

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[1] Fuel cycle technology refers to both "front end" technology (refinement and conversion of uranium, enrichment, fuel fabrication) and "back end" technology (handling spent nuclear fuel, including reprocessing to separate plutonium from spent fuel.

[2] A toned down version of the sanctions legislation became law in 2000.

[3] Potentially worth tens of billion dollars, the spent fuel project involved Minatom's willingness to store spent nuclear power reactor fuel from Europe and Asia. Because much of this fuel is U.S.-origin, the U.S. retains legal rights over the transportation and storage of this fuel in Russia, and, under U.S. law, cannot permit the shipment of the fuel to Russia in the absence of a full nuclear cooperation agreement between the U.S. and Russia. Although the Duma amended Russian law in 2001 to permit the project, it faces strong environmental opposition in Russia.

[4] Pikayev, Alexander. "Strategic Dimensions of the Russo-Iranian Partnership." *The Monitor: International Perspectives on Nonproliferation.* Winter 2001, Vol. 7, No. 1.

[5] Khlopkov, Anton. "Iranian Program for Nuclear Energy Development: The Past and the Future. " *Yadenry Kontrol Digest,* Summer 2001, Vol. 6, No. 3 (19).

[6] Alimov, Anatoly. "Iran: Are WMD Out of Reach? " *Yaderny Kontrol Digest*, Spring 2001, Vol. 6, No. 2 (18).

Analysis

SUB-STRATEGIC NUCLEAR WEAPONS: THEIR ROLE IN MILITARY DOCTRINES TODAY[1]

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Translation into English. Abridged version

The Western Powers and China: Approaches to Sub-Strategic Nuclear Weapons

The end of the bipolar confrontation changes the role of nuclear weapons in global politics significantly. In fact, their key mission of deterrence against the massive aggression is called into question. Nowadays and in the foreseeable future the prospects for such aggression, especially nuclear aggression, are minimal, if any. Under the current circumstances, nuclear weapons are considered a symbol of the *privileged* international status of nuclear-weapon states. Nukes may also serve as security assurances against unpredicted challenges – improbable today, but quite dangerous and theoretically possible in the future. Western nations see the resumption of military-political confrontation with Russia (due to the turns in the Russian domestic political situation) as one of such challenges. In this case, the West will have to revive the policy of nuclear deterrence typical of the Cold War. A matter of particular concern is China's status in the future international system. The Western analysts do not rule out the need for countering potential Chinese expansion and for using nuclear deterrence for this purpose.

Western nations preserve their nuclear arsenals to this end, but in the late 20th century and in the wake of the 21st century their military policy is targeted against the challenges caused by local and regional conflicts and instability. This requires a substantial or even deep transformation of the military machine in order to enhance conventional armed forces and non-nuclear weapon systems. Much importance is attached to the development of effective rapid deployment of forces capable of conducting conventional operations in the

local conflict zones. The matter of high priority is not nuclear buildup, but the enhancement of combat readiness, the enhanced capability to move the forces to the theater of war (sometimes even far from the national territories), the introduction of the information revolution achievements, and some other measures to raise the combat efficiency of the non-nuclear forces.

In new strategic environment the Western nuclear-weapon states, notably the United States and the UK, have reduced their nuclear (above all, sub-strategic) arsenals. Sub-strategic weapons have become less important for the military planning. Many experts believe that nuclear deterrence against Chinese expansion or Russian aggression may be fulfilled by strategic forces. Nonetheless, sub-strategic weapons still make up part of the US and French nuclear arsenals.

China, India, Pakistan, and presumably Israel have a different view on nuclear weapons. China is modernizing its nuclear forces and is developing three new types of strategic missiles (one of them is sea-launched), new intermediate-range missiles, and two new sub-strategic dual-use missile systems. Israel considers nuclear weapons to be a reliable deterrent against WMD attacks on the part of Islamic states. India regards its missile and nuclear arsenal as the means to contain China in case of war with Pakistan and as the means to eliminate Pakistan's nuclear might. Pakistan resorts to nuclear weapons as a tool to deter India against conventional or nuclear aggression.

The United States

In the 1990s, the US military and political leadership paid particular attention to the so called revolution in military affairs – mass introduction of the latest scientific and technological achievements in the armed forces. As a result, the U.S. Armed Forces should gain information superiority by developing an assemblage of systems, including land-, air- and space-based systems of reconnaissance, target-designation, guidance, command and control, and communication working in nearly real-time mode. The United States attaches much importance to stealth technologies and high-precision weapons in order to dominate the enemy. A doctrinal document of the Joint Chiefs of Staff ("*Joint Vision 2020*") maintained that the spread of information technologies would change the nature of combat operations, while the domination in the information sphere would be decisive for unified command and control.[2]

The end of the Cold War, dramatic changes in military-political settings and a deep and irreversible reduction in the Russian nuclear arsenal (for economic reasons) have diminished the significance of nuclear weapons in military construction and military policy of the United States. As a result, the USA reduced its nuclear arsenal. In the 1990s, the number of nuclear warheads attributed to U.S. strategic launchers decreased twice and now amounts to 7,000 warheads. If START II is implemented, this amount will decrease twice again. If Russia and the United States negotiate and fulfill START III (as they agreed in the early 1990s), the parties will possess 2,000-2,500 strategic warheads. US political leadership does not rule out more significant reductions in the strategic arsenal, but the military still opposes these plans. This would enable Russia to equalize the potential large disparity in the number of operational strategic nuclear warheads.

Table 1. The numerical strength of US strategic nuclear forces

	Cold War	After START I	After START II
The number of ICBMs	1,000	550	500
The number of SLBMs	568	432	336
The number of heavy bombers	324	97*	97*
Total	13,498	6,000**	3,500***

Notes: * - B-52 and B-1B heavy bombers equipped for nuclear missions;
** - according to the calculations under START I; actual number – about 7,300 warheads;
*** - actual number.
Source: Table 2-3. Strategic Forces. FY 2002 Economic Outlook. Washington, GPO, 2001, p. 49.

The mission of the U.S. strategic nuclear forces is laid down in directives approved in the 1990s by the U.S. senior political leadership. Nuclear weapons, above all strategic forces, are regarded as a deterrent against the use of nuclear weapons by the potential enemy. The United States is no longer inclined to conduct limited nuclear wars. "*A National Security Strategy for a New Century*" approved in October 1998 maintains that nuclear weapons protect from the uncertainty of the future, ensure the implementation of allied security commitments and dissuade those who try to acquire WMD. U.S. nuclear planning, according to the document, is aimed at preventing nuclear war and winning in the long exchange of nuclear strikes. The United States strives to ensure the survivability of nuclear forces and infrastructure in pre-emptive strikes and to have capability to retaliate. Nuclear weapons should show any state that attempts to obtain nuclear superiority over the United States are doomed to failure.[3]

The changes in strategic planning have led to some transformations in the amount and structure of U.S. defense expenditures. For instance, in the late 1990s, the strategic forces obtained about $7 billion per year (in FY2001 fixed prices), or 5.5 times less than in the mid-1980s, when average expenditures exceeded $37 billion (in FY2001 fixed prices). The share of this expenditure in the US defense budget decreased from 9% during the Cold War to 2.5% in the late 1990s.[4]

Meanwhile, the strategy based on the accelerated introduction of new technologies also has some weak spots. The U.S. military and other experts believe that a potential enemy will not necessarily copy the U.S. experience and principles of military construction (i.e. will not pursue a *symmetrical* response strategy). On the contrary, potential and current adversaries of the United States will more likely concentrate on these weak spots. Among them are:

- vulnerability of information systems, especially their space echelon;
- different terrorist operations against the U.S. troops deployed at the theater of war or near the combat zone, and against the U.S. territory;
- use of WMD, above all biological and chemical weapons (rather than nukes);
- proliferation of missiles and missile technologies (acquisition of such weapons by rogue states).

The United States is especially concerned about the proliferation of missiles and missile technologies. The Rumsfeld Commission report published in July 1998 states that the U.S. Armed Forces are armed with new weapon systems and concepts based on the revolution in military affairs. This makes the potential enemies develop new asymmetric strategies to prevent the United States from gaining superiority over the enemy. Such asymmetric strategies, according to the report, include the use of ballistic missiles against ports, airstrips, communication points, urban and industrial centers. The strikes against ports and airstrips used by the U.S. forces may significantly impede their progress and bring to naught the advantages of new technologies.[5]

In the course of the 2000 presidential campaign, the Republicans criticized the Clinton administration for lowering living standards of military employees and for neglecting their interests. President Clinton was accused of underestimating the missile challenge coming from the rogue states, of not paying enough attention to NMD plans. The Republicans also called into question the practice of wide use of U.S. soldiers in peacekeeping and humanitarian operations abroad. After coming to power, President Bush confirmed the U.S. strategic course of gaining technological superiority over any possible enemies by introducing IT, stealth systems, and other advanced weapon systems. He backed the idea of preserving nuclear deterrence, but said that America should review its nuclear deterrence stance and that deterrence should be based on the combination of offensive and defensive capabilities.[6]

Normally such statements are interpreted as an intention to reduce the U.S. strategic nuclear arsenal if reliable missile defense is developed and deployed to protect all 50 states of the United States, its allies, and U.S. forces abroad (as soon as this is technologically possible). The United States has made this idea the key component of their

military construction. Washington has established a special task force to devise recommendations and corrections to the current nuclear strategy. It is a matter of defining new quantitative parameters of U.S. strategic forces (a transition from 2,500 to 1,000-1,500 warheads). This implies a dramatic change in the plans of combat employment of the U.S. strategic forces, above all, the reduction in the number of targets situated on the Russian territory and thus subject to destruction by U.S. nuclear missiles in case of war.

Under these circumstances, the United States significantly reduced its sub-strategic nuclear arsenal in the 1990s and updated some strategies related to TNW. During the Cold War the U.S. Armed Forces possessed about 20,000 tactical and sub-strategic nuclear munitions; nowadays, according to unofficial estimates, there are only 1,670 warheads.

Table 2. Assessments of the capabilities of the rogue states and China to develop an ICBM for nuclear strikes against the U.S. territory

North Korea	Pyongyang may test at anytime the Taepodong-2 missile capable of delivering a several-hundred-kilogram warhead to the US territory. This corresponds with the characteristics of the primitive nuclear explosive device. The delay in tests is caused not by technical, but mostly political reasons.
Iran	Tehran may use Russian technologies and assistance and test an ICBM with a several-hundred-kilogram warhead capable of hitting a significant part of the U.S. territory. There are different estimates concerning the schedule of such tests replicating the North Korean technologies – before 2010 (probably) to before 2015 (more probably) and after 2015 (low probability).
Iraq	Baghdad may test an ICBM of the North Korean type in the late 2010s with substantial foreign technological assistance. Without such aid, Iraq may fail to test such ICBM before 2015.
China	By 2015, Beijing will presumably have several dozens of land-based mobile missiles and sea-based ballistic missiles armed with MIRVs capable of hitting the U.S. territory.

Source: Foreign Missile Developments and the Ballistic Missile Threat to the United States through 2015. National Intelligence Council, September 1999, fas.org/spp/starwars/congress/2000_h/index.html

Table 3. US sub-strategic nuclear weapons

	The number of delivery systems	The range of delivery systems	Yield	The number of munitions
Tomahawk SLCM	325	2,500	5-170 kt	320
B61 air bombs	-	-	0.3-170 kt	1,350

Source: SIPRI Yearbook 2001. Armaments, Disarmament and International Security. Stockholm International Peace Research Institute, Oxford University Press, 2001, p. 476.

The list of the U.S. sub-strategic weapons has shrunk. In the 1970s, the U.S. Armed Forces possessed nuclear mines, artillery projectiles, warheads for land-based and sea-launched cruise missiles, and medium-range ballistic missiles and tactical surface-to-surface and air-to-surface missiles, warheads of air defense rockets and missiles, gravity bombs, and air bombs. At present, the United States is armed only with Tomahawk SLCMs and B61 series air bombs, including the B61-11 (capable of penetrating the ground and hitting fortified underground targets). These bombs may be delivered by F-15E, F-16 and F-117A fighter-bombers.[7] Tomahawk missiles are not deployed on surface ships, but on attack submarines. The United States shut down projects for the development of new operational-tactical and tactical missiles. The U.S. nuclear presence in Europe has decreased by 15 times – from 7,000 warheads to 150 air bombs in 2000.[8] As we have already mentioned, U.S. TNW were withdrawn from South Korea in 1991. All these measures have been implemented in accordance with the 1991 Bush unilateral initiative followed by a reciprocal decision of the Soviet leadership and later endorsed by Boris Yeltsin.

There are several reasons for such changes in the U.S. sub-strategic arsenal. The end of military confrontation in Europe eliminated the threat of large-scale war between NATO and Russia, including limited nuclear war. Hence, there is no need for thousands of sub-strategic nuclear weapons for such a war. Moreover, the experience of hostilities in Iraq proved the rightfulness of military construction aimed at developing and using hi-tech conventional weapons in regional wars. Such weapons may be no less efficient and may accomplish strategic missions with smaller casualties. Finally, some categories of TNW, notably artillery projectiles and mines, are no longer used in combat operations, for the dynamics of modern war may lead to the destruction of friendly forces rather than the enemy, if such weapons are used.

U.S. doctrines (as well as NATO documents) give a traditional interpretation of the sub-strategic nuclear forces – a link between strategic nuclear and conventional forces. For instance, the Nuclear Posture Review published in 1994 noted that even after the Cold War the United States should preserve its sub-strategic nuclear capabilities in Europe in order to ensure the credibility of defense commitments. The recent reports by the Secretary of Defense to the President and the Congress maintain that the theater of nuclear forces, above all the dual-use aircraft deployed in the United States and assigned to NATO, make a significant link between the strategic nuclear forces and conventional forces. They also make one of the responses to deter the aggression. Such reports argue that the United States will continue to preserve such weapons in NATO, but at the lower levels – nuclear weapons will be removed from surface ships, but submarines will be armed with Tomahawk SLCMs to hit ground targets.[9]

Such principles, in fact, replicate the logic of the Cold War and are based on a few factors. The United States is afraid of unpredictable developments in the global military-political situation. The events of the late 1980s and early 1990s convinced the Western military, political, and intellectual elite of the advisability of taking even the most surprising turns in the world arena into account. Among them may be challenges that can be neutralized only with the threat or use of nuclear weapons.

The Russian and Chinese nuclear arsenals are regarded in the United States as an important potential threat. The end of the Cold War, and dramatic social and political changes in Russia have minimized the possibility of U.S.-Russian armed conflict, let alone nuclear war. Both the previous and the current U.S. leadership have emphasized that Russia is no longer an adversary for the United States. However, Washington assumes that Russia's mighty missile and nuclear arsenal (with its uncertain future) is a sufficient argument to preserve U.S. nuclear deterrents.

The development of Russian approaches, above all the growing anti-Western, anti-U.S. and anti-NATO rhetoric (especially before Vladimir Putin's statements supporting the antiterrorist coalition) are also a matter of concern for the United States. Washington's apprehensions are exacerbated by the increasing role of nuclear weapons in Russia's military policy. All this affects the U.S. attitude toward sub-strategic nukes. Nowadays (unlike during the Cold War) the mission of the U.S. sub-strategic forces in Europe is not to deter against Russia's conventional aggression, but to deter against the use of Russia's nuclear weapons (or threats) if NATO-Russia relations deteriorate. This is not mentioned in the U.S. official documents, but is often reflected in the statements of U.S. top military officials. In 1994, former Deputy Secretary of Defense John Deutsch gave the following arguments for preserving U.S. nuclear forces in Europe, "Russia has little prospect of returning to the kind of conventional force structure that they had at the height of the Cold War due to the collapse of their economy and the change in their political situation. It is a less expensive and less demanding matter for them to return to a much more aggressive nuclear posture. If something does go wrong in Russia, it is likely that it is in the nuclear forces area that we will face the first challenge."[10]

It is presumed that a U.S. nuclear presence in Europe will depreciate Russia's capability to use its sub-strategic nuclear arsenal as the means to exert military-political pressure on Europe. Possible confrontation with China is another reason for maintaining a substantial

nuclear arsenal. After the successful completion of its economic and military modernization China may recourse to external expansion and challenge the United States.

The need for preserving U.S. sub-strategic weapons also results from the proliferation of WMD and delivery systems. According to some sources, Presidential Directive PDD-60 provided for the use of nuclear weapons to deter or prevent not only nuclear, but chemical and biological attacks against the United States by extremist Third World regimes. Ian Lodal wrote in 2001, "Today the focus of such plans [nuclear weapons use – **Auth**.] is on deterring the use of chemical or biological weapons. […] There is evidence that this strategy has worked: During the 1991 Persian Gulf war, the threat of nuclear retaliation was used to deter Saddam Hussein's use of chemical or biological warheads on Scud missiles."[11]

Finally, some U.S. analysts argue that a U.S. nuclear presence in Europe prevents German and Turkish (in the distant future) attempts to acquire nuclear weapons. They maintain that the German elite cannot be completely sure of French and British nuclear assurances, if the situation on the continent changes dramatically.

The aforementioned U.S. approaches toward sub-strategic nuclear weapons are harshly criticized by some influential U.S. political and intellectual circles. They believe that in the post-Cold War environment this category of nuclear weapons is irrelevant. If the situation in Europe deteriorates, the threat of a nuclear strike may be neutralized with U.S. strategic forces, as well as with French and British nuclear arsenals. Under these circumstances, the United States should strive the earliest possible agreement with Russia on banning nuclear weapons in Central Europe. For instance, William Potter, Director of the Center for Nonproliferation Studies of the Monterey Institute of International Studies, said, "Withdrawing tactical weapons would not diminish the U.S. nuclear guarantee; instead, it would strengthen deterrence by removing a provocative category of weapons from the region and raising the firebreak between conventional and nuclear arms."[12]

A similar situation is found in the Far East. The balance of power on the Korean Peninsula does not require a U.S. TNW presence. And sub-strategic nuclear weapons no longer have any advantages in comparison to U.S. strategic forces to deter a possible Chinese or North Korean nuclear strike against U.S. allies.[13]

At the same time, there is a different approach towards sub-strategic weapons in the United States. An influential group of politicians, military, and nuclear weapon complex tycoons promote the idea of developing new generation tactical nuclear munitions with low yield and highly accurate launchers. They call for the abolishment of the 1994 act prohibiting the development of nuclear munitions with yields lower than 5 kt (for such weapons eliminate the difference between non-nuclear and nuclear warfare). The proponents of new super low-yield TNW maintain, as per Paul Robinson, Director of the Sandia Laboratory, that "[…] yield of nuclear weapons…"[14]

In other words, these low-yield munitions should be used to destroy the stockpiles of WMD in the Third World if there is a threat of their use against the United States. There is a more detailed version of this concept. It is sometimes said that the existing types of nuclear weapons are too powerful to be used in local or regional wars in the Third World. Therefore, it is necessary to develop and commission the sub-kiloton warheads suitable for the new post-Cold War conflicts. As early as in 1991 Thomas Dowler and Joseph Howard wrote, "Would policymakers employ nuclear weapons to protect U.S. contingency forces if conventional weapons proved inadequate, or would the nature of our present nuclear arsenal 'self-deter' policymakers from using those weapons? … One possible answer to these questions might be the development of nuclear weapons of very low yields… The existence of such weapons – weapons whose power is effective but not abhorrent – might very well serve to deter a tyrant who believes that an American emphasis on proportionality would prevent the employment of the current U.S. arsenal against him. "[15]

Thus, in the recent decade the academic and military-political community of the United States has formulated two concepts

concerning sub-strategic nuclear weapons. The first concept implies that strategic forces can effectively accomplish the mission of deterrence and sub-strategic weapons are redundant. The second approach supports the further improvement of sub-strategic munitions by reducing their yield, so that they may be used in local conflicts (e.g. for destroying WMD and delivery systems available to the rogue states).

NATO

NATO nuclear force comprises U.S. strategic forces and U.S. dual-use aircraft armed with nuclear air bombs and deployed in Europe. The UK nuclear arsenal may also be employed under NATO plans, but the details of their interaction with NATO structures are kept secret.

During the Cold War NATO deployed a large arsenal of sub-strategic nuclear weapons, including nuclear mines, land-based and air-based missiles (including air defense systems), gravity bombs, cruise missiles and air bombs. The reductions started in the 1980s. In October 1991, NATO decided to reduce the sub-strategic weapons deployed in Europe by 80% (this process was completed in 1993). Dual-use aircraft are maintained at low alert. In 1984, there were 5-10 aircraft with nuclear weapons that were on high alert; others could be mobilized within hours or days. In 1999, about half of NATO dual-use aircraft could be mobilized within weeks and the rest only within months.[16] Particular attention is drawn to the use of dual-use aircraft for non-nuclear missions. After the Cold War the Alliance declared that its nuclear forces were not targeted at any facilities in other states. NATO's current nuclear posture provides for neither the buildup of sub-strategic nuclear weapons in Europe nor for their deployment on the territories of new member states.

Table 4. Dynamics of the structure of NATO nuclear munitions deployed in Europe

Type of munitions	1971	1981	1987	1991	1999
Mines	+	+			
Nike Hercules warheads	+	+	+		
Honest John warheads	+	+			
Lance warheads	+	+	+	+	
Sergeant warheads	+				
Pershing IA warheads	+	+	+		
Pershing II warheads			+		
Warheads of land-based cruise missiles			+		
155mm artillery projectiles	+	+	+	+	
203mm artillery projectiles	+	+	+	+	
Warheads of air-launched Walleye missiles	+				
Gravity bombs	+	+	+	+	
Air bombs	+	+	+	+	+

Source: NATO's Nuclear Forces in the New Security Environment. NATO Basic Fact Sheets, 27 January 2000, nato.int/docu/facts/nnfnse.htm

The strategic settings of NATO mostly reiterate the U.S. doctrines, as far as nuclear weapons are concerned. Gregory L. Schulte, Director of NATO Nuclear Planning, maintained, "The fundamental role of NATO's remaining nuclear force is political – to preserve peace and to prevent violence. By helping to realize the senselessness of large-scale war in Europe, NATO's nuclear forces contribute to maintaining peace and stability in Europe. Thanks to them, a possible aggression in Europe becomes so unpredictable and unacceptable, as it would never be with conventional arms. Moreover, NATO's nuclear forces cause uncertainty for the country that may attempt to gain political or military superiority with threat or use of WMD."[17]

Meanwhile, NATO documents are more specific than those of the United States, as far as the role of sub-strategic and strategic weapons in deterrence are concerned. The 1999 Strategic Concept points out that "the supreme guarantee of the security of the Allies is provided by the strategic nuclear forces […] 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."[18]

United Kingdom

Since the end of the Cold War the British nuclear policy has changed. The UK eliminated nearly its entire sub-strategic arsenal. In 1998, WE-177 nuclear air bombs were decommissioned and dismantled. The bombs were attributed to Tornado fighter-bombers. The only UK nuclear weapons since then are four nuclear-powered submarines armed with 48 D-5 Trident II missiles with a range exceeding 7,400 km. According to the 1998 Strategic Defense Review, in the modern dynamically changing and unpredictable world the UK should have a minimal deterrent. A particularity of the British nuclear policy is that its sea-based nuclear forces have to accomplish both strategic and sub-strategic missions. Sub-strategic missions are a demonstrative strike aimed at proving the country's resoluteness to use nuclear weapons as appropriate to prevent a massive nuclear attack against the UK. The official definition of the sub-strategic strike is the following: "a sub-strategic strike would be the limited and highly selective use of nuclear weapons in a manner that fell demonstrably short of a strategic strike, but with a sufficient level of violence to convince an aggressor who had already miscalculated our resolve and attacked us that he should halt his aggression and withdraw or face the prospect of a devastating strategic strike."[19]

France

In 1996, the French leadership decided to reform its nuclear forces within the next five years. The major component of the French nuclear forces is sea-based strategic forces (four SSBNs with 64 SLBMs armed with 384 nuclear warheads). The share of nuclear force expenditure in the defense budget decreased from 33% in 1988 to 24% in 1995. The key element of this reform was the elimination of 18 systems equipped with S3D missiles (3,500 km) deployed at D'Albion. The program of deployment of Hades tactical missiles (480 km) was cancelled. These missiles should have replaced Pluton tactical missiles, whose shelf life had expired. As a result, at present the French sub-strategic forces comprise aircraft with ASMP air-launched ballistic missiles (300 km) with a payload of 300 kt.

In the near future Mirage 2000N (land-based) and Super Etendart (sea-based) aircraft will be replaced with a new multi-purpose fighter-bomber, the Rafale. By 2007, ASMP missiles are planned to be replaced with ASMP-A missiles (500 km).

The changes of the 1990s in the French nuclear policy resulted from the disappearance of the major target of deterrence, i.e. the Soviet Union. This is why Hades missiles, which might have been used against the Soviet troops approaching French borders, have turned out to be irrelevant in military terms. Medium-range ballistic missiles also seemed redundant from the point of deterrence. Their missions might have been accomplished by strategic forces, notably by SLBMs with the range of 6,000 km.

Meanwhile, the guidelines of French nuclear policy have not undergone significant changes. According to the French analysts, nuclear weapons may be used if there is a realistic threat jeopardizing France's vital interests. The massive retaliatory strike should destroy the territory comparable to the territory of France. The French doctrine implies that the sea-based strategic nuclear forces are a minimal deterrent, whereas the air-based component is the last warning weapon – a signal before the employment of the entire strategic nuclear arsenal. A particularity of the French nuclear strategy is the negation of the possibility of using battlefield nuclear weapons at the theater of war.[20] In other words, sub-strategic weapons are designated for strategic missions. In

Table 5. French sub-strategic nuclear weapons

Launcher	The number of launchers	The range of launchers	Nuclear munitions	The number of nuclear munitions
Mirage 2000N	60	2,750	ASMP 300 kt	50
Super Etendart	23	650	ASMP 300 kt	10

Source: SIPRI Yearbook 2001. Armaments, Disarmament and International Security. Stockholm International Peace Research Institute, Oxford University Press, 2001, p. 472.

political terms, the French leadership regards nuclear weapons as a Great Power attribute and as a factor ensuring true independence of the country in the area of national security.

China

While the leading nations of the world have been reducing their nuclear arsenals, especially sub-strategic forces, in the recent decade, China has followed a different trend – modernization of strategic weapons, development, commissioning and buildup of sub-strategic systems. Currently, China has about 10-20 ICBMs, but by 2010 it plans to deploy several dozens of new DF-31 and DF-41 MIRVed ICBMs, as well as to build four to six new nuclear-powered submarines armed with JL2 missiles (equipped with MIRVs).[21]

Moreover, China actively develops sub-strategic missiles and nukes. At present, Beijing possesses 108 nuclear ballistic missiles with a range of 1,800-4,750 km. One of them is a relatively new DF-21 mobile solid-propellant missile deployed in the mid-1980s. Its modification – DF-21 Mod 2 – has been developed, but has not yet been deployed. There are reports about DF-25 missile with a range of 1,700 km (though it may be a different name for the same DF-21 Mod 2).[22] China is working at cruise missiles with the range of 1,500-2,500 km, which in theory can carry nuclear warheads.

In 1995, China began to deploy two new types of ballistic missiles – the DF-15 (CSS-6 or M-9) and the DF-11 (CSS-7 or M-11).[23] These are modern solid-propellant short-range missiles capable of carrying both nuclear and neutron warheads available to China. The Chinese Air Force has about 160-180 obsolete medium-range bombers copying the Soviet aircraft of the 1950s. The Su-27, which China actively purchases in Russia, can hit ground targets, but cannot deliver nuclear weapons.[24]

The official Chinese nuclear policy is often unclear and mostly propagandistic. For instance, the 2000 White Book on Defense Policy maintains that China has a small nuclear arsenal solely for self-defense and in order to deter nuclear aggression on the part of other states. Any such strike would trugger a Chinese retaliatory nuclear attack. At the same time, the scale, structure and development of the Chinese nuclear forces is determined by the Chinese military strategy of active defense.[25]

At first, Beijing built up its sub-strategic weapons to conduct war against the Soviet Union. In 1982, the Chinese Armed Forces held a large-scale military exercise and simulated the use of TNW by China. At present, there is no official statement concerning the mission of China's sub-strategic nuclear arsenal. Meanwhile, the development and deployment of sub-strategic systems capable of delivering nuclear and neutron warheads indicates Beijing's preparations for armed conflicts in the neighboring zones, which may take the form of a limited nuclear war. China even attempted to acquire Russian Backfire medium-range bombers, but Moscow rejected this idea.[26] The statements by some Chinese military officials also hint that Beijing is

Table 6. China's medium-range ballistic missiles

System	Number	Range, km	Warhead
DF-3A	40	2,800	3.3 Mt nuclear warhead
DF-4	20	4,750	3.3 Mt nuclear warhead
DF-21	48	1,800	200-300 Kt nuclear warhead; mobile

Source: Chinese Nuclear Weapon Programs, Start of 2000. Arms Control Reporter, 2000, IDDS, 615e5NUC00; Frank W. Moore. China Military Capabilities. IDDS, June 2000.

Table 7. China's ballistic short-range and shorter-range missiles

System	Number	Range	Warhead
DF-15	100-300	Up to 600 km	10 Kt neutron or 20 Kt regular nuclear warhead
DF-11	40-100	Up to 300 km	N.A.

Source: SIPRI Yearbook 2001. Armaments, Disarmament and International Security. Stockholm International Peace Research Institute, Oxford University Press, 2001, p. 477.

preparing for limited nuclear wars. According to Maj.-Gen. Wu Jianguo, deterrence and actual hostilities are closely connected and complement each other. The military strategy of all states has a dual character of deterrence and war. Before the war, the country attempts to deter against the aggression, but as deterrence fails, the country tries to win in actual hostilities. The importance of nuclear weapons is that they may be used as both a deterrent and as a combat means.[27]

Russian Policy with Respect to Sub-Strategic Nuclear Weapons

Russia has yet to formulate a coherent nuclear policy that would adequately meet its economic capabilities and security challenges. This results from the contradictions between different groups of the military elite and related military-political, industrial and academic circles, became even more obvious in 2000 during the conflict between Defense Minister Igor Sergeyev and the General Staff commanders.

The so-called nuclear and missile lobby has proclaimed nuclear deterrence with strategic forces as nearly the only way to maintain national security. Hence, the priority of military construction is to preserve an efficient strategic arsenal. Another group in the Russian military establishment wants to focus on the crisis of conventional forces, which may be employed in low-intensity conflicts in Russian territory and in the neighboring states in the south of Russia.

The clashes between these two groups mix with the rivalry among different armed services – the SMF, the Navy, the Army and the Air Force – for funding and material resources, including those appropriated for nuclear weapons. At the same time, the Russian military, political, and intellectual elite has recently been noting that sub-strategic nuclear systems may better compensate for deteriorating conventional armed forces and reduced strategic arsenals. The implementation of this concept requires significant expenditures on the modernization of appropriate munitions and delivery systems. Under these circumstances, Russia's senior political leadership has to identify key priorities for military construction, including the role and mission of nuclear weapons (sub-strategic and strategic). However, this task has not yet been accomplished. The reductions of the 1990s were not accompanied with concepts and documents characterizing the mission and principles of their use. Perhaps, this is evidence of the unchanged missions and principles of the Soviet Union and the Cold War.

Sub-Strategic Nuclear Arms Reduction in Russia in the 1990s

One cannot analyze the security mission of sub-strategic weapons in Russia without assessing the quantity and the quality of this arsenal. However, there is no open official data on this topic. This may result from the old Soviet tradition of secrecy, or from a serious discrepancy between the actual state of affairs and the expert estimates (based on indirect data and calculations). Despite some differences, these estimates show that Russia, as well as the United States, radically reduced its sub-strategic arsenal in the 1990s and changed its structure. The most comprehensive analysis of figures concerning the reduction is mentioned in several works by Alexei Arbatov. Among the Western assessments of the Russian nuclear might the most reliable and often turned to source is SIPRI. As seen in Table 8, there are serious discrepancies concerning the number of certain types of sub-strategic weapons. But the general picture is the same.

The data mentioned in Table 8 corresponds with the information of other Western sources. They indicate that in the 1990s, Russia's sub-strategic nuclear arsenal was reduced by 4.5-5 times. They presume that in the beginning of the new century, the Russian arsenal amounted to 3,500-4,000 warheads. Moscow possesses about 1,200 warheads for air defense missiles, and about 1,500 aircraft munitions and remaining warheads are attributed to sea-based weapons, including SLCMs, antisubmarine warfare systems, etc.[28]

There are several reasons for such reductions. One of them was the political decision of President Gorbachev, who declared radical reductions of TNW in October 1991 in reciprocity to U.S. measures. In fall 1991, immediately after the failed coup and the collapse of the Communist regime, the reactionary military were frustrated and could not resist this decision. Three months later President Yeltsin announced even more

Table 8. The number of Russian sub-strategic nuclear munitions in the early and late 1990s

	According to Alexei Arbatov		SIPRI
	Early 1990s	Late 1990s	As of January 1, 2001
Warheads of the land-based tactical missiles	3,000-4,000	No	No
Artillery projectiles	2,000	No	No
Nuclear demolition devices	700	200[29]	No
Warheads of air defense missiles	3,000	600	1,200
Warheads of sea-based antiship, antisubmarine and sea-to-surface missiles	3,000-5,000	2,000	660
Air bombs and air-to-surface missiles	3,000-7,000	1,000	1,730 (with naval aircraft)
Total	14,700-21,700	3,800	3,590

Sources: Alexei Arbatov, "Reduction of TNW: From Unilateral Steps to International Commitments". In.: A. Arbatov, O. Bykov, A. Kalyadin et als. *Disarmament and Security. 1997-1998. Russia and International Arms Control: Development or Collapse*. M., 1997, p. 303; Alexei Arbatov, *Security: Russia's Choice*. M., 1999, p. 471; *SIPRI Yearbook 2001. Armaments, Disarmament and International Security*. Stockholm International Peace Research Institute, Oxford University Press, 2001, p. 466.

radical reductions. The major argument was the vanished threat of large-scale war in Europe (including a long phase of limited nuclear warfare) and it was senseless to keep the huge arsenals. In this respect, one has to remember the decision to eliminate the warheads was attributed to land-based tactical missiles and stopping their production.

Another important factor was the downsizing (by 3 times) of the Russian Armed Forces in the 1990s. So, the sub-strategic nuclear weapons were also reduced, since their amount was related to the numerical strength and structure of the Armed Forces. Besides, like in the United States, the nuclear artillery projectiles and mines could be quite dangerous for friendly troops due to the quickly changing combat environment. No one wanted to risk soldiers and expose them to radiation or nuclear strike by friendly units.

The 1990-1992 reductions in the Soviet sub-strategic nuclear arsenal coincided with the process of TNW withdrawal from the Russian territory. The demise of the Warsaw Pact resulted in the accelerated withdrawal of nuclear weapons from Central and Eastern Europe. This process ended in June 1991, when the last train with tactical nukes left for the Soviet Union. Similarly, TNW were removed from the former Soviet republics to the territory of the Russian Federation. The growing tensions and conflicts in a number of regions of the Soviet Union and the uncontrollable collapse of the latter could have resulted in nuclear theft and other abuses, especially as far as TNW was concerned. Thus, to prevent the seizure of TNW by extremists or criminals and later to ensure Russia's post-Soviet nuclear monopoly, it was decided to remove all TNW to Russia. In 1991, all TNW were withdrawn from Central Asia and the Caucasus. By early 1992, TNW were deployed only in Russia, Belarus, and Ukraine. There were certain difficulties concerning the removal of TNW from Ukraine. The Ukrainian Government decided in March 1992 to suspend the transportation of munitions due to the lack of credible information on their dismantlement. The conflict, typical of the first stage of Russian-Ukrainian relations, was settled by signing an agreement entrusting Ukraine with broad verification powers to verify the elimination of TNW. In May 1992, all TNW from Ukraine (about 3,000 warheads) were withdrawn and since then all TNW of the former Soviet Union have been deployed or stored on the Russian territory.[30]

Further progress in Russian tactical arms reduction followed the patterns and commitments declared in October 1991 by Mikhail Gorbachev and extended in January 1992 by Boris Yeltsin.

Despite the significant (4-5 times) reduction in sub-strategic weapons, the Russian arsenal

Table 9. Russian sub-strategic nuclear arms reduction

System	Amount of reductions, %	Implementation, year
Munitions attributed to naval aircraft and sea-launched tactical systems	33	1995
Warheads of air defense missiles	50	1996
Air bombs of tactical aircraft	50	1996
Nuclear mines	100	1998
Warheads of land-based tactical missiles	100	2000-2001
Artillery projectiles	100	2000-2001

Source: Vladimir Yakovlev. The First Steps of TNW Reduction in Russia and the Role of TNW at Nuclear Arms Reduction Talks. Unpublished manuscript submitted to the PIR Center.

exceeds the aggregate amount of such weapons in all other nuclear-weapon states. This may mean that sub-strategic weapons continue to play an important part in the Russian military policy and military construction. If it is so, Moscow has to elaborate and officially approve the coherent guidelines concerning the development and potential use of sub-strategic weapons in armed conflicts under the current military-political circumstances. If there is no such concept, the maintenance of large sub-strategic arsenals may be accounted for by inertia of military construction and adherence to the Cold War legacy.

Russia's Official Policy with Respect to Sub-Strategic Nuclear Weapons

Russia's official nuclear policy is stated in a number of official documents. Besides, some important views and military concepts concerning practical approaches towards these weapons are reflected in the scenarios of military exercises. Finally, the official policy of the states in the area of defense is reflected in the state decisions on key matters of military construction.

The most important directives – the National Security Concept and the Military Doctrine developed and approved by Vladimir Putin in early 2000 – establish the general framework of the Russian nuclear policy, but do not answer some key questions (including those related to sub-strategic nukes). The particularity of these documents is that they do not cover separately the issues pertaining to strategic and sub-strategic nuclear forces (with one exception). They normally speak about nuclear arms in general. This may imply that officially stated missions and guidelines for nuclear weapons relate both to strategic and sub-strategic arms. One cannot rule out that Russia has yet to formulate new concepts concerning sub-strategic nuclear forces and follows the Cold War principles.

The aforementioned documents reiterate some basic principles formulated in the early 1990s. They name the countries against which Russia will not use its nuclear weapons. These are non-nuclear weapon states party to the NPT, which have no allied commitments to nuclear-weapon states and do not act together with them against Russia or its allies. Nuclear weapons are regarded as the means to deter aggression against Russia and its allies (both nuclear and large-scale conventional aggression). Russia's nuclear arsenal should be sufficient to inflict pre-set damage to any aggressor under any circumstances. For instance, the National Security Concept notes, "The most important mission of the Russian Federation is to ensure deterrence in order to prevent aggression of any scale, including nuclear, against Russia or its allies. The Russian Federation should possess nuclear forces capable of inflicting pre-set damage to any aggressor – a state or a coalition of states – under any circumstances."[31]

This formula is reiterated in the Military Doctrine. However, in a different section of the document (the mission of the Armed Forces) the doctrine focuses on other issues. The strategic forces are charged with the mission of inflicting pre-set damage. Among key missions of the Armed Forces are "maintenance of the structure, strength, combat and mobilization readiness and training of the strategic nuclear forces, forces and means that ensure their functioning and use command and control systems at a level enough to inflict pre-set damage to an aggressor under any circumstances."[32]

In other words, one may assume that the Russian sub-strategic nuclear forces are charged with a different mission, rather than with inflicting pre-set damage. However, these missions are not stated in the Military Doctrine or any other open source. At the same time, one has to note that the 2000 National Security Concept and the Military Doctrine were stripped of some provisions present in the earlier versions. For instance, the Major Guidelines of the Military Doctrine of November 1993 maintained that "any, even limited, use of nuclear weapons in warfare even by one of the parties may provoke a massive use of nuclear weapons and lead to devastating consequences."[33]

This provision was left out in 2000 and this proves the opinion of the experts who assume that the Russian military thinking recognizes the possibility of limited nuclear strike, which will not automatically escalate to large-scale nuclear war. It is not clear, however, if such a strike should be made with sub-strategic weapons or it is a matter of limited use of strategic arms.

Russia's official documents approved in early 2000 do not clarify the issue of nuclear threshold, i.e. the terms and criteria for nuclear weapons use. Meanwhile, the evolution of the appropriate provisions indicates that the Russian military elite thinks about limited use of nuclear weapons and even about first use of nukes. In 1993, this issue was not covered at all. The document contained only negative assurances and listed the categories of states not subject to Russia's nuclear strikes. But the 1997 National Security Concept spoke about the terms of nuclear weapons use, "Russia keeps the right to use all means available to it, if the aggression against Russia threatens its very existence as an independent sovereign state."[34]

Although the criteria for "existence as an independent sovereign state" were not mentioned in the 1997 National Security Concept, such a provision provides for a quite limited number of cases of nuclear weapons use. Besides, this provision must have spoken about strategic weapons. The threat to the existence of Russia may occur if the enemy intends to use nuclear weapons and, hence, there is a need for deterrence or a pre-emptive strategic strike. However, the new National Security Concept gave different a interpretation and argued that Russia might use "all means available to it [Russia – **Auth**.], including nuclear weapons, if it is necessary to repel the armed aggression and if all other crisis management measures have been exhausted or turned out to be inefficient."[35]

This formula, in fact, expanded the opportunities for using nuclear weapons in conflict. It did not define "crisis", "management", and did not identify any criteria for the efficiency or non-efficiency of crisis management measures, etc. The absence of such definitions enables Russia to regard the measures as exhausted or inefficient at any stage of the military confrontation. Such uncertainty makes us assume that Russia may resort to strategic and sub-strategic nuclear weapons.

The same conclusion can be made if one analyzes the 2000 Military Doctrine, which states, "The Russian Federation retains the right to use nuclear weapons in response to the use of nuclear weapons or other WMD against Russia or its allies, as well as in response to large-scale conventional aggression in critical situations for the Russian national security."[36]

This formula narrows the spectrum of conditions in which Russia is ready to use nuclear weapons. However, some questions arise. Firstly, there is no clear notion of the "critical situation for the national security" and this term may be interpreted differently. Secondly, it is not clear whether Russia is ready to use its nuclear weapons if one of its allies (like Belarus) is under WMD attack or suffers from a large-scale conventional aggression. Thirdly, it is not clear what the correlation between "the critical situation" and a large-scale aggression against the ally is. Fourthly, WMD include chemical and biological weapons and the aforementioned formula may imply that Russia is willing to use the nukes against a small-scale use of chemical weapons in local conflicts involving one of the Russian allies. Finally, the very fact that two documents approved nearly simultaneously have different provisions concerning the principal component of state

military strategy seems strange. Meanwhile, Russia's willingness to use nuclear weapons against large-scale conventional aggression replicates the logic of non-strategic nuclear deterrence typical of the Cold War.

This analysis, however, is not based on the particularities of the aforementioned formulas, which may reflect strategic thinking of the Russian military commanders. But it is clear that these provisions reflect an intra-agency compromise. Actually, these documents state that Russia is ready to use nuclear weapons first in armed conflicts (if Russia or its allies are involved in such conflicts) and there are some uncertain terms for the use of nuclear weapons. This might demonstrate Russia's desire to preserve the freedom of maneuver (including the choice of nuclear weapons) if the military-political situation worsens. Thus, Russian official documents indirectly confirm the possibility of limited nuclear war with the use of sub-strategic nuclear weapons, although they do not mention this issue directly.

Some different conclusions can be made after analyzing the results of the large-scale military exercise *West-99*. The exercise took place in June 1999 immediately after NATO's operation against Yugoslavia. According to some open sources, in the course of this exercise Russia practiced the use of nuclear weapons in the new military-strategic environment. The scenario of this command and staff exercise reflected some established views of the Russian military. According to the scenario, NATO allied forces launched a massive air and missile strike (non-nuclear) against the territory of Belarus and the Kaliningrad district. The Russian-Belarusian group cannot stop the escalation and repel the aggression of the enemy (who enjoys superiority in conventional forces). Under these circumstances, the Russian leadership decides to make a demonstrative nuclear strike against the targets in the deep rear of the enemy. This task was performed by the strategic bombers.[37]

A similar scenario was typical of the fall 1998 exercise. In response to a NATO offensive the Russian Air Force makes air strikes. However, the enemy tries to escalate the conflict. The Russian strategic bombers make a demonstrative limited strike and use "more powerful weapons". These measures do not inflict casualties to the enemy, but he has to stop the hostilities and to commence the negotiations.[38]

Thus, the known examples of conditional use of nuclear weapons in the military exercise (normally reflecting the actual views of the military leadership) indicate Russia's readiness to use strategic weapons for demonstrative strikes. The latter is a certain form of a limited nuclear war. At the same time, there was no information of using sub-strategic nuclear weapons in the course of the exercise. To a certain extent, this approach is similar to the British concept of the sub-strategic strike.

The decisions of the Russian leadership also indicate that strategic weapons have certain priority over sub-strategic arms. Practically all decisions concerning nuclear weapons deal with strategic forces. For instance, soon after the appointment of Marshal Igor Sergeyev, the Defense Minister in May 1997, the SMF took over the Aerospace Military Forces (charged with the development, launches and maintenance of military spacecraft) and the Space Defense Forces, including the early warning systems.

The Russian Security Council at its meeting of July 3, 1998, discussed the status and development prospects for the Russian SNF. Although the decisions were classified, some of their open excerpts were published. The Security Council decided that Russia would preserve the nuclear triad, but land-based and sea-based ballistic missiles will make the core of the SNF. The share of SLBMs should increase from 30% to 50%. The nomenclature of missiles should be downsized and the service life of existing missile systems should be extended. By 2010, Russia should have the number of strategic warheads as provided for in the Helsinki agreements (2,000-2,500 warheads after the conclusion of START III). Finally, the Moscow Heating Engineering Institute was charged with developing a unified missile for land-based and sea-based strategic forces.[39]

On November 10, 1998, President Yeltsin reportedly signed a decree concerning the

priorities and development prospects for the Russian SNF. According to Gen. Vladimir Yakovlev, then Commander-in-Chief of the SMF, among these priorities were the extension of the service life and the commissioning of new Topol-M ICBMs.[40] In spring 1999, then First Deputy Secretary of the Security Council Vyacheslav Mikhailov stated that President Yeltsin had approved the "*Guidelines of Russian Nuclear Weapon Policy*". The document referred to nuclear weapons as the "guarantor of national security and the means to deter aggression against Russia and its allies."[41] Finally, on April 29, 1999, another meeting of the Security Council took place. The meeting discussed nuclear weapons and reportedly adopted the program for TNW development. Other approved documents were devoted to improving the experimental and testing basis of the nuclear weapon complex and the development of Russian supercomputers to ensure the reliability of the Russian nuclear arsenal.[42]

In general, the set of decisions approved in Russia in 1998-1999 reflected the interests of the SNF and their leaders. The latter attempted to extend the service life of missile systems and urged for priority implementation of the Topol-M program. The willingness to reduce the number of warheads to 2,000-2,500 by the end of the first decade of the 21st century implied the mass production of new weapons to replace the aging strategic missile systems. There was no more discussion about the triad and dyad options. The very idea of dyad raised serious concerns of the Russian military elite, for it would mean the elimination of the air- or sea-based components of the SNF. The concept of preserving the triad resulted from a bureaucratic compromise between the military-political and military-industrial groups. However, this would inevitably lead to the dispersal of scarce resources and could hardly meet the interests of the SMF.

Besides, according to some analysts, the April 1999 decisions of the Security Council did not only lead to a substantially increased role of nuclear weapons in Russia's military policy, but also indicated the desire for limited use of strategic nukes in armed conflicts (including local conflicts) within the concept of expanded nuclear deterrence. Vladimir Yakovlev gave the following definition to this term, "[…] Expanded nuclear deterrence […] means that the interests of the SMF and strategic nuclear forces will not only include nuclear and large-scale conventional warfare, but regional and even local conflicts."[43]

Such ideas, according to the Russian press, were typical also of Victor Mikhailov, former Minister of Atomic Energy, who tried to change the view of nuclear weapons only as a WMD. Pavel Felgengauer, a Russian analyst, wrote in 1999, "Their logic is simple: nuclear weapons will again become an effective policy tool if the threat of nuclear strikes is more realistic. For this purpose they need the opportunity to make *point* low-yield nuclear strikes against the military facilities in any part of the world. It is presumed that such *point* strikes will not lead to an immediate nuclear war."[44]

These views are widely reflected in the everyday activities of the Russian Defense Ministry and have some serious consequences. There was a substantial shift in military construction in favor of developing strategic nuclear forces and this exacerbated the crisis of the general-purpose forces. There was no certainty regarding sub-strategic nuclear weapons. Presumably, the only clear point of the Russian official attitude towards sub-strategic nukes was their inclusion in the list of counter-measures to be taken after the U.S. withdrawal from the ABM Treaty. Among these counter-measures were the possible rejection of the 1991-1992 unilateral commitments and the abrogation or review of the INF Treaty.[45]

Discussions in Russia Concerning the Sub-Strategic Nuclear Weapons

Russian military and civilian experts mostly agree that Russia's conventional forces are not able and will not be able in the foreseeable future to ensure reliable national security and, therefore, the role of nuclear weapons increases. This opinion was formed in the mid-1990s, whereas in the early 1990s the priority was the reform and enhancement of the conventional forces, and the development of mobile forces for local wars and conflicts. Such an approach largely

coincided with the approaches towards military development and missions of the armed forces in the West. For instance, in early 1994, Andrei Kokoshin, then First Deputy Defense Minister, stated that at the Russian Security Council meeting of January 1994 "the major guidelines and priorities for the long-term armament program have been approved. Among the most probable armed conflicts are low-intensity conflicts and local wars, which will not involve mass armies. This was reflected in the Military Doctrine. However, such an assessment relates to the new type of operations – counter-terrorist activities. […] The top priority will be the re-equipment of mobile rapid deployment units."[46]

Two years later Kokoshin's tone changed. He emphasized that nuclear might, especially strategic forces, played an important part in ensuring Russia's status in the global arena. Moreover, he noted that nuclear forces, including sub-strategic weapons, could compensate for the weakness of conventional armed forces. In mid-1996, he pointed out that "an important component of nuclear deterrence is not only strategic nuclear force, but operational-tactical and tactical nuclear weapons and delivery systems. Under the current circumstances, when there is no opportunity to build substantial general-purpose force at all azimuths, the nuclear shield becomes even more important to prevent aggression."[47]

The increasing role of nuclear weapons in Russian military planning is normally explained with the deterioration of general-purpose forces. There is no doubt that such deterioration takes place. But it cannot be a sufficient explanation for the goals of Russia's nuclear policy – among potential enemies to be neutralized with nuclear deterrence are NATO and the United States, but not China. For instance, Gen. Victor Yesin, former Chief of the Directorate of Military Construction of the Security Council's staff, maintained, "In large-scale war Russia will never (and this is scientifically forecasted, regardless of what economic growth is) be able to oppose such organizations, as NATO, with conventional weapons only. It will not be able to repel massive conventional aggression on the part of this bloc. This accounts for our focus on using nuclear weapons to ensure Russia's security against external threats."[48]

Anti-Western sentiments in Russian strategic thinking were reflected in official documents. For instance, the 2000 National Security Concept identifies the NATO expansion to the east as one of the security threats. It also notes that Russia may be threatened by the "emergence in proximity to Russian borders of the foreign military bases and large military units". The document emphasized that NATO's practice of force operations beyond its territory and without authorization of the UN Security Council approved in the strategic doctrine of the Alliance "is fraught with destabilization of entire strategic situation in the world". The Military Doctrine names as one of security threats "the establishment (buildup) of groups of forces leading to the disruption of the existing balance of power near the state borders of the Russian Federation and the borders of its allies, as well as the adjacent seas."[49] The only source of such threats may be the activities of the leading Western nations and NATO in general. Thus, the majority of the Russian elite regards a new stage of confrontation with the West as an inevitable or, at least, a probable scenario. This conclusion can be made after analyzing the documents approved in early 2000. On the one hand, this reflects the adherence to the intellectual and psychological legacy of the Soviet period. On the other hand, this meets the interests of some groups connected with the huge missile and nuclear complex formed in the Soviet Union during the Cold War. The situation starts to change in late 2001, especially after Vladimir Putin's decision to support the U.S. antiterrorist operation in Afghanistan.

The majority of the Russian expert community shares these anti-Western views, but cannot agree on the role of sub-strategic nuclear weapons in deterring the potential threat from the West, or on the terms and principles of their use. There are two major opinions concerning this issue.

The first group of experts presumes that sub-strategic nuclear weapons have lost their significance, since there is no threat of a

large-scale confrontation between the armed forces of two blocs in Central Europe and, hence, a long limited nuclear war without the use of strategic weapons is not probable anymore. Therefore, strategic forces should be responsible for deterrence and can prevent the conflict or ensure the de-escalation of hostilities. Sub-strategic weapons may only be regarded as a supplement to the strategic nuclear forces. For instance, Sergei Rogov, Director of the Institute for U.S. and Canadian Studies, argued that "in the case of war against a nuclear-weapon enemy enjoying military superiority, TNW may be regarded as the means to demonstrate Russia's readiness for nuclear escalation if the aggression continues. TNW by themselves cannot determine the result of the war between nuclear-weapon states or coalitions."[50]

The natural consequence of such an approach is the idea of seeking new balance of strategic nuclear weapons with the United States, probably by adding some defensive systems to this equation. The establishment of a new parity is regarded as the major way to ensure strategic stability in its traditional sense (mutual nuclear deterrence).

The second group of experts believes in the special role of sub-strategic nukes in deterring large-scale aggression against Russia. They presume that the greatest danger originates from possible NATO actions replicating the operations against Yugoslavia or Iraq (at the early stage of operation in 1991). Alexei Arbatov mentioned, "[…] The key strategic mission of the Russian Federation is to rule out the possibility of NATO's unpunished series of selective missile and air strikes of long duration. […] It would be justified if Russia made a selective nuclear strike with the use of TNW against the facilities that serve for the aggression […]. Then the other side will have to face a difficult dilemma: to stop the aggression and to accept the defeat, or to respond with a nuclear strike, which will be followed by escalation up to the level of strategic nuclear exchange with devastating consequences for everybody. Since there is no better option, in the foreseeable future this will be an affordable and credible concept of expanded nuclear deterrence."[51]

According to Alexei Arbatov, to accomplish this mission, Russia needs several hundreds of air-launched and sea-launched tactical munitions and missiles (such as Iskander-type missiles).[52] The principal distinction between the two concepts is that the second group of experts recognizes the possibility of conducting limited nuclear war with sub-strategic weapons and achieving victory with a relatively mass use of such weapons. It is presumed that NATO will put up with large but acceptable casualties and will not escalate the conflict further in order to avoid catastrophe. However, the implementation of this stratagem may involve Russia in a quite risky situation. What if NATO decides to prevent the selective use of TNW by Russia?

Some Russian experts give a more detailed description of limited nuclear war. For instance, Col. Vladimir Sivolob and Col. Mikhail Sosnovsky have developed a certain algorithm of using sub-strategic nuclear weapons. They assume that the use of strategic nuclear weapons for demonstrative strikes heightens the risk of the enemy's strategic retaliatory strike, bearing in mind that any decision will be taken under time pressure. They maintain, "Under the current circumstances, the role of sub-strategic nuclear forces in maintaining our defense is growing. They make a significant complementary deterrent against waging wars against Russia and its allies. Such a situation will continue, at least, until 2010-2015, since the Russian Armed Forces will hardly be equipped with high-precision conventional weapons earlier, due to economic difficulties. High-precision weapons would make an alternative to sub-strategic nukes."[53]

Their pattern of escalation of the limited nuclear war contains three stages of sub-strategic nuclear weapon use – *demonstration, deterrence, and retaliation*:

- *demonstration* is a warning to the enemy that the party is ready for large-scale use of nuclear weapons at the theater of war by making *point* selective strikes with non-lethal consequences. This may include the destruction of mountain passes, transport and communication nodes, as well as other activities to impede the enemy's

progress and to disrupt the enemy's command and control;

- *deterrence* is aimed at deterring the enemy against further escalation of hostilities. It provides for a number of limited nuclear strikes in order to force the enemy to stop the aggression. Deterrence includes the disruption of command and control, air superiority, neutralization of the theater nuclear forces, changes in the balance of power, destruction of reserves, disruption of logistics and supplies, etc.;
- *retaliation* means a large-scale use of sub-strategic nuclear weapons at the theater of war in order to defeat the enemy and destroy his forces and facilities. An unacceptable damage will be inflicted, the command and control of invasion will be disrupted, the friendly forces will enjoy fire and nuclear superiority, the enemy's attack groups will be defeated and his reserves will not be able to reach the combat zone. The enemy's energy and industrial facilities will suffer from the attack.[54]

The most radical proponents of sub-strategic weapons suggest that Russia abandon the INF Treaty and equip the troops with tactical missiles armed with nuclear warheads. In 1999, Nikolai Voloshin, Head of the Department of Design and Testing of Nuclear Munitions of the Russian Ministry of Atomic Energy, argued that the designers of SS-12M and SS-20 missiles were still working in the design bureaus and "the signature of the INF Treaty in 1987 resulted in a diminishing level of Russian security. While our troops were in Germany and NATO borders were relatively far away, one could agree with the reciprocal elimination of such missiles. Then we had the ability to make a counter-strike, had some outposts. After the demise of the Soviet Union the flight time of tactical weapons to reach our borders has shortened. The role of strategic and tactical nuclear weapons in Russia and in the United States is different. Nowadays tactical weapons targeted against us play a strategic role, since they are deployed in vicinity to our borders […]. But the situation may change and the United States will probably also have something to regret."[55]

Thus, the key point of discussion on the role of sub-strategic nuclear weapons is the issue of the possibility and prospects for limited nuclear warfare at the Western theater of war. The use of such weapons is regarded as a stage in escalating the conflict to a strategic level, or as an instrument of preventing the aggression, notably massive missile and bomb attacks. It is presumed that the potential enemy will not run the risk of escalation, which may result in his total destruction.

However, one should not forget about a fundamentally different approach, which is quite widespread in the Russian elite. Its supporters believe that the *absolutization* of nuclear weapons is counter-productive in terms of Russia's security, for its scarce resources are diverted from some really serious problems. According to *Kommersant-Vlast*, "In the last ten years Russia has been trying to convince everybody of its peaceful intentions, but the military strategy has not changed a lot. The major mission of the armed forces is still the retaliation of the large-scale aggression with the help of nuclear weapons and inflicting devastating damage to the enemy. However, no one, including the generals, has ever believed in the possibility of large-scale aggression. It has always seemed unlikely that someone would ever dare to attack Russia, protected with the nuclear umbrella. […] Russia will not be able to focus on nuclear weapons. The major threat to the national security today are Chechen militants and Islamic fundamentalists, rather than NATO with its new members."[56]

Such an approach, perhaps, coincides with Putin's position. In April 2000, he spoke before the State Duma on the ratification of START II and noted that the SNF were the "guarantor of national security". But he emphasized that "[…] major challenges to Russia, taking into account the global situation, today will originate from local conflicts. Russia will be pulled apart not with nuclear weapons or nuclear threat. We witness today the attempts of pulling Russia apart – local conflicts."[57]

Nonetheless, the Russian military, military-economic, and partly academic communities

believe that nuclear weapons (strategic, or strategic and sub-strategic together) can ensure national security under the current circumstances, and compensate for the weakness of conventional forces and deter the aggressor.

As we have mentioned above, nuclear weapons can compensate for the enemy's conventional superiority, unless the enemy possesses nuclear weapons. If one threatens with sub-strategic or any nukes to a nuclear-weapon enemy, one has to take into account his reaction. And the target for such a demonstrative strike will not wait for it and will attempt to make a pre-emptive strike. This may transform a limited nuclear war into a conflict with devastating consequences for Russia. The proposals to abandon the INF Treaty or the 1991-1992 unilateral initiatives are also quite dangerous. As a result, the missile crisis of the 1970s and 1980s may be repeated and its consequences will be more serious for Russia than they were for the USSR.

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[1] The second article in the series of three articles on sub-strategic nuclear weapons written by Yuri Fedorov. The first article, entitled *Control of Sub-Strategic Nuclear Weapons: Problems and Prospects* was published in the Spring (2002) issue of *Yaderny Kontrol Digest*, and the final one to be published in the Fall (2002) issue.

[2] *Joint Vision 2020*. Washington, GPO, June 2000, pp. 3-4.

[3] *A National Security Strategy for a New Century*. The White House, October 1998, p. 12.

[4] See Table 6.5. Department of Defense Total Obligational Authority by Program. National Defense Budget Estimates for FY 2001. Washington, GPO, February 2000, p. 67.

[5] Executive Summary of the Report of the Commission to Assess The Ballistic Missile Threat To The United States. July 15, 1998. fas.org/threat/missile/ index.htmlMISSILE PROLIFERATION THREATS.

[6] Ibid.

[7] Greg Mello, "New bomb, no mission". *The Bulletin of the Atomic Scientists,* May/June 1997, Vol. 53, No. 3, pp. 28-32.

[8] *SIPRI Yearbook 2001. Armaments, Disarmament and International Security*. Stockholm International Peace Research Institute, Oxford University Press, p. 465.

[9] William S. Cohen, Secretary of Defense. Annual Report to the President and the Congress. Washington, GPO, 2000, p. 72.

[10] John Deutsch, Deputy Secretary of Defense. Comments at Press Conference. News Released by the Office of Assistant Secretary of Defense for Public Affairs. September 22, 1994, p. 7.

[11] Jan Lodal. "The Price of Dominance". Council on Foreign Relations, 2001, p. 25.

[12] William C. Potter, "Unsafe at any size". *The Bulletin of the Atomic Scientists*, May/June 1997, Vol. 53, No 3, p. 13.

[13] Such concept was set forth in *The Future of US Nuclear Weapons Policy*. Committee on International Security and Arms Control, National Academy of Science, Washington, 1997.

[14] Quotation from Robert W. Nelson. "Low-Yield Earth Penetrating Nuclear Weapons", FAS Public Interest Report, Vol. 1, 2001.

[15] Greg Mello, "New bomb, no mission". *The Bulletin of the Atomic Scientists*, May/June 1997, Vol. 53, No 3, p. 30.

[16] "NATO's Nuclear Forces in the New Security Environment". NATO Basic Fact Sheets, Updated January 27, 2000. nato.int/docu/facts/nnfnse.htm

[17] Gregory Schulte, "The Myth on Nuclear Forces and Means of NATO". *Nezavisimoye Voennoye Obozreniye*, February 15, 1997, p. 6.

[18] The Alliance's Strategic Concept. Approved by the Heads of State and Government participating in the meeting of the North Atlantic Council in Washington DC on 23 and 24 April 1999, par. 62 and 63.

[19] *SIPRI Yearbook 2001. Armaments, Disarmament and International Security*. Stockholm International Peace Research Institute, Oxford University Press, p. 471.

[20] Yuliya Zheglova, "Key Element of the French Military Strategy". *Nezavisimoye Voennoye Obozreniye*, February 8, 1997, p. 6.

[21] *Nuclear Disarmament, Nonproliferation and National Security*. Sarov-Moscow, 2001, p. 71.

[22] Ibid., p. 71.

[23] There are three common names for Chinese missiles. DF is an acronym from Dong Fen (Wind from the East), which is used for land-based missiles. CSS is more usual in the United States (China Surface-to-Surface). M is used for the export modifications of the missile. JL is used for sea-based missiles (Big Wave in Chinese). The U.S. variant would be CSS-N.

[24] "Chinese Nuclear Force". *The Bulletin of Atomic Scientists*, Nov/Dec 2000, Vol. 56, No. 6, p. 78.

[25] *White Paper on Defense Policy*. Beijing, Press Office of the State Council, 2000.

[26] *Ming-yen Tsai, Associate Research Fellow, Division of Strategic and International Studies, Taiwan Research Institute. – "China's Acquisitions of Russian SU Fighters: A Great Leap Forward?"*

[27] Major General Wu Jianguo. "Nuclear Shadow on High-Tech Warfare". In: Michael Pillsbury (Ed). *Chinese Views on Future Warfare*. Revised edition, National Defense University, 2000. fas.org/nuke/ guide/china/doctrine/chinaview/chinapt3/htm3.

[28] Nuclear mines were completely eliminated in 1998.

[29] *The Bulletin of the Atomic Scientists*, May/June 2001, Vol. 57, No. 3, p. 72; *The Bulletin of the Atomic Scientists,* May/June 2000, Vol. 56, No. 4, p. 70.

[30] Vladimir Yakovlev. The First Steps of TNW Reduction in Russia and the Role of TNW at Nuclear Arms Reduction Talks. Unpublished manuscript submitted to the PIR Center.

[31] National Security Concept, January 10, 2000.

[32] Military Doctrine of the Russian Federation. *Nezavisimaya Gazeta*, April 22, 2000, p. 6.

[33] Key Provisions of the Military Doctrine of the Russian Federation (Summary). *Krasnaya Zvezda*, November 19, 1993, Appendix, p. 5.

[34] National Security Concept of the Russian Federation, December 17, 1997.

[35] National Security Concept, January 10, 2000.

[36] Military Doctrine of the Russian Federation. *Nezavisimaya Gazeta*, April 22, 2000, p. 5.

[37] *Nezavisimaya Gazeta*, June 24, 1999.

[38] Sergei Sokut, "Reliable Deterrence with Lesser Force". *Nezavisimoye Voennoye Obozreniye,* No. 039 (113), October 16, 1998, p. 2.

[39] Ivan Safranchuk, "The Future of Russia's Nuclear Forces". *PIR Study Paper* No. 10, 1999, pp. 33, 43; *Krasnaya Zvezda*, July 11, 1998; *Russky Telegraf*, July 8, 1998; *Nezavisimaya Gazeta*, April 7, 2000; Dmitry Safonov, "The Russian Navy Will Be Decorated with Topols". *Yadernaya bezopasnost*, No. 15-16, p. 7.

[40] Col.-Gen. Vladimir Yakovlev: "SMF Are the Shield of the State". *Yaderny Kontrol*, No. 6, Vol. 48, November-December 1998, p. 4.

[41] *Nezavisimaya Gazeta*, March 16, 1999.

[42] *Nezavisimaya Gazeta,* April 30, 1999.

[43] Sergei Grigoryev, "The Military-Political Trump Card of Russia. Interview with Vladimir Yakovlev, Commander-in-Chief of the SMF". *Nezavisimoye Voennoye Obozreniye*, No. 49, December 17–23, 1999, p. 1.

[44] *Segodnya*, May 6, 1999.

[45] In his speech at the International Conference "The Missile Threat and Plans for Ballistic Missile Defense: Technology, Strategic Stability and Impact on Global Security" in Rome in January 2001, Yury Kapralov, a senior Russian diplomat argued that if the United States abrogated the ABM Treaty, "The Russian Federation would discontinue the implementation of START-I Treaty…; The START-II Treaty would not be enacted…; further agreed upon reductions of strategic offensive arms would become impossible…; the on-going implementation of unilateral initiatives of 1991-1992 would be stopped and reviewed; the expedience of the INF Treaty … would be closely examined with more chances for the Treaty to be scrapped; even the CFE Treaty, recently adapted, would be put in doubt …". See: Yury Kapralov, Director of the Department for Security Affairs and Disarmament, Ministry of the Foreign Affairs of the Russian Federation. Presentation at the International Conference "The Missile Threat and Plans for Ballistic Missile Defense: Technology, Strategic Stability and Impact on Global Security", Rome, January 17-19, 2001.

[46] *Segodnya*, February 18, 1994.

[47] *Segodnya*, July 7, 1996.

[48] *Yaderny Kontrol*, No. 2, Vol. 6, March-April 2000, p. 33.

[49] National Security Concept, January 10, 2000; Military Doctrine of the Russian Federation. *Nezavisimaya Gazeta*, April 22, 2000, p. 5.

[50] Sergei Rogov, "Russia and Nuclear Weapons". *Nezavisimoye Voennoye Obozreniye*, No. 47, December 11, 1998, p. 4.

[51] Alexei Arbatov, *Security: Russia's Choice*. M., 1999, pp. 370-371.

[52] Ibid. It is noteworthy that by speaking about the possibility of arming Iskander missiles with nuclear warheads, Arbatov calls for actual abrogation of the 1991-1992 TNW initiatives.

[53] Vladimir Sivolob and Mikhail Sosnovsky, "The Reality of Deterrence". *Nezavisimoye Voennoye Obozreniye,* No. 41, October 22, 1999, p. 4.

[54] Ibid.

[55] *Krasnaya Zvezda*, October 16, 1999.

[56] Nikolai Petrov, "War against an Improbable Enemy". *Kommersant-Vlast*, July 25, 2000, pp. 18-19.

[57] *Kommersant*, April 15, 2000.

Commentary

NEW RUSSIA-US STRATEGIC RELATIONSHIP: PROBLEMS AND PROSPECTS

by Yuri Fedorov,
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Translation into English. Abridged version

Russian and U.S. experts at the PIR Center for Policy Studies in Russia and the Carnegie Endowment for International Peace have undertaken a joint project with a view to contributing to the concept of a new Russia-US co-operative strategic framework.

This memorandum is a product of their cooperative efforts. Topics related to the strategic framework were discussed with leading Russian and American experts, both independent and governmental. Their assessments and viewpoints helped the PIR and Carnegie experts to better understand the logic of US and Russian approaches to strategic arms reductions at the current stage. In this memorandum, however, experts from the PIR Center for Policy Studies in Russia and the Carnegie Endowment for International Peace are solely responsible for suggestions and conclusions discussed below.

New US-Russian Strategic Relations in the Security Area

The new US-Russian strategic relationship embraces a wide range of issues including the war against international terrorism and extremist political forces and movements; preventing the proliferation of weapons of mass destruction and means of their delivery; and the fight against transnational crime and other 'non-traditional' challenges and threats. Even with these new areas of cooperation, reductions in the strategic nuclear arsenals of both countries to agreed levels within the next decade remains an issue of the utmost importance for emerging US-Russian strategic relationship.

The developments in US-Russian relations in recent months, primarily the support offered by President Vladimir Putin for the anti-terrorist operation in Afghanistan, have opened doors for closer cooperation in all these areas. However, this cooperation is still at an early stage. There remains significant ingrained mistrust between political and military elites in both countries, exacerbated by different approaches to a number of important political and military problems, including the U.S. announcement of intent to withdraw unilaterally from the ABM Treaty.

Russia-US Summit in May 2002: What Should Be Done for its Success

The forthcoming summit of the Russian and U.S. Presidents could become a turning point in building new strategic relationship between the two nations, but its failure would deal a serious blow to Russia-American relations. Thus, it is of extreme importance that the two Administrations prepare this meeting in order to ensure a positive outcome for both parties.

In order to secure its positive results, to mitigate the mistrust that still exists between the two nations, and to assure further positive development of bilateral relations, the two countries must craft and sign a legally binding document that captures the present level of mutual understanding with regard to strategic weapons. Although the Bush Administration initially resisted this idea, their support of the notion has grown since the Washington-Crawford summit, based largely on the insistence of President Putin. As of this writing, it seems likely that a legally binding agreement will be finished in time for Presidents Putin and Bush to sign it at the Moscow-Petersburg summit at the end of May.

At a minimum, the agreement should include the ceilings on operationally deployed strategic offensive weapons that President Putin and President Bush previously announced. Putin called for reductions from 6000 to 1500-2200 deployed weapons; Bush called for reductions to 1700-2200, to be reached within the next decade. The agreement to be signed in May should also provide for the application of the START-1 confidence-building, transparency and

verification procedures to the new arms reductions. These procedures, however, could by mutual agreement be streamlined, simplified and made less costly. In this light, Russia and the USA may wish to agree to instruct experts of both sides to take steps to this effect.

To preclude a return to the Cold War period of mistrust and countermeasures, as well as to build a solid basis for a favorable international security environment, the two sides should also use the opportunity of the May summit to reaffirm the interrelationship between offensive and defensive strategic weapons, in the spirit of the Genoa political statement by the two presidents of July 2001.

Securing Implementation of Agreed Understandings

We, experts of the PIR Center and the Carnegie Endowment, have concluded that monitoring the elimination of nuclear warheads will not by itself assure the irreversibility of reductions, unless the elimination of launchers is also assured. Furthermore, such monitoring, to be comprehensive, would require coverage of the whole life-cycle of warheads, including their production, transportation, storage, deployment and dismantling. Russia and the United States, we believe, are not yet ready to undertake such a formidable task. However, ways to reach this important objective should be intensively explored.

Consequently, at this time monitoring should be applied to elimination of launchers, while new measures are explored for monitoring the elimination of warheads. In this connection, we believe that for the time being reductions can be adequately implemented by destruction and conversion of strategic nuclear delivery vehicles, i.e., launchers.

Further Measures

In addition to the legally binding agreement to be reached at the forthcoming summit, the Presidents should also adopt a joint political statement outlining efforts to be undertaken for the further development of a new strategic relationship. Such subsequent steps could include the following:

- development of new mutually acceptable confidence-building, transparency and verification measures relating to the reductions of nuclear weapons, with an emphasis on securing the irreversibility of these reductions;
- joint discussion of military doctrines and nuclear postures aimed at their eventual harmonization;
- cooperation in joint development of anti-ballistic missile defenses;
- addressing sub-strategic nuclear weapons with the objective of limiting and reducing them, including issues of concern to both sides;
- discussing legal arrangements for regulating the use of outer space;
- strengthening, upgrading and developing the international non-proliferation regimes covering weapons of mass destruction and their means of delivery;
- joint cooperative efforts to address existing regional proliferation challenges, including possible extension of threat reduction cooperation to new regions;
- developing and strengthening common efforts, including new technologies, for fighting non-traditional threats and risks.

As a start, the new strategic framework that will replace the Cold War reliance on nuclear deterrence with a new security order will be a bilateral Russia-US effort. However, in due time it should involve other states, in particular all states that have nuclear weapons or nuclear weapons capabilities, and also those countries that possess technologies enabling them to produce nuclear weapons if they choose to pursue a nuclear option.

PIR Center News

2002, February 1. The PIR Center held a regular meeting of the PIR Research Council *"Assessing Assistance Programs to Russia to Reduce Proliferation"*.

In the course of the meeting Major-General Vladimir Frolov, 12 Main Directorate MOD of the Russian Federation, Dr. Natalya Kalinina, Government Office of the Russian Federation, Petr Romashkin, the State Duma of the Russian Federation and other officials of the governmental agencies made reports on the topic.

The following issues were discussed during the meeting:

- Assistance Programs to Russian Ministry of Defense: evaluation and prospects;
- International Assistance to Russia on the Chemical Disarmament;
- Assistance Programs to Russia to Reduce Proliferation Risks: the Role of the State Duma;
- Results of the Modernization of the Fissile Material Physical Protection Systems: International Collaboration of *Gosatomnadzor*;
- US-Russian collaboration in the framework of the Cooperative Threat Reduction program (*Nunn-Lugar* plan): evaluation and prospects.

Among the participants were Donald Huges, *Becktel National;* Mark Clayton, *British Embassy;* Lora Schmidt, *US Embassy;* Aleksey Vladimirsky, *US DOE Moscow office;* Alexandr Kalyadin, *Institute of World Economy and International Relations;* Vasily Krivokhizha, *Russian Institute for Strategic Studies* (RISS); Aleksander Fedorov, *Russian Intelligence Service;* Vitaly Tsygichko, *Institute for System Analysis;* Gennady Khromov, *Glavkosmos;* Leonid Chumenko, *27th Central Research Institute of the MOD of the Russian Federation;* Andrei Zobov, *Carnegie Moscow Center;* Vladimir Novikov, *RISS;* Elina Kirichenko, *Institute of World Economy and International Relations;* Vladimir Orlov, *PIR Center;* Roland Timerbaev, *PIR Center;* Yuri Fedorov, *PIR Center;* Vladimir Dvorkin, *PIR Center;* Vassily Lata, *PIR Center;* Dmitry Kovchegin, *PIR Center;* Vitaly Fedchenko, PIR Center.

2002, February 8. US-Russian group of governmental and non-governmental experts held an informal meeting at the PIR CENTER to discuss: *"The Emerging Russian-U.S. Strategic Framework: The Structure of Transparency"*.

The meeting was organized and held by the PIR Center and the Carnegie Endowment for International Peace within the framework of their joint project.

The participants from PIR Center were Vladimir Dvorkin, Vasily Lata, Vladimir Orlov, Roland Timerbaev and Yuri Fedorov. Alexander Vetsko, Jon Wolfsthal, Rose Gottemoeller, Robert Nurik, and Alexander Pikaev represented Carnegie Endowment for International Peace. Among the other taking personal part in the meeting were representatives from the Defense Ministry, the Ministry for Foreign Affairs, Minatom, the Moscow Government, the Federal Security Service and the Kurchatov Institute.

The discussion focused on three reports: Rose Gottemoeller "The Structure of Transparency in the New U.S.-Russian Strategic Framework: The Structure of Transparency"; Vladimir Dvorkin "Proposal for the New Russian Strategic Offensive and Defensive Framework" and paper elaborated jointly by Yuri Fedorov and Roland Timerbaev entitled: "New Russia-U.S. Strategic Framework: Irreversibility Through Confidence-Building, Transparency and Verification Measures".

The topics of the reports are particularly timely, given the goal that President Putin and President Bush have expressed of achieving a new agreement of strategic nuclear weapon reduction by the time they meet in Russia in May 2002.

The first part of the meeting was chaired by Vladimir Orlov, Director of the PIR Center who delivered the opening address to the participants of the meeting. The second part was chaired by Alexander Pikaev, Scholar-in-Residence at the Carnegie Moscow Center. Deputy Director of the PIR Center Yuri Fedorov made concluding remarks.

The meeting of the working group was held off the record and the draft working paper has the same status.

Summary

Yaderny Kontrol (Nuclear Control) Journal of the PIR Center for Policy Studies Volume 8, No. 2, March-April, 2002

Alexander Rumyantsev, RF Minister of Atomic Energy, in his interview "The Issues of Nuclear Safety and Security Are Under Unabated Control of the Country's Top Leadership" says, that "Currently more than 40 nuclear-hazardous objects are under the jurisdiction of Minatom. Those and other objects need increased attention, especially after the horrible terrorist acts against the USA. That's why the leadership of Minatom is intently involved in issues of upgrading the nuclear-hazardous objects' physical protection, and nuclear materials accounting and control improvement."

Andrei Borisenko, Leonid Chumenko in their analysis "Negotiations on Tactical Nukes: Problems and Prospects" say, that "Further evolution of the negotiations process on the problems of strategic nuclear weapons limitation and reduction is impossible without considering issues linked with the limitation and abolition of tactical nuclear weapons (TNW). In order to solve the problem, it would be necessary to draw other states possessing nuclear weapons into the negotiation process. At this stage it would be possible to bring it into action in the form of taking on commitments by the states to keep themselves from raising their nuclear forces, and in future, probably, in the form of coordination and the setting up of national maximum levels for each nuclear power. When considering the issue of limiting TNW dual-use carriers, restrictions posed on them by the *Conventional Armed Forces in Europe Treaty* should be taken into account.

Both tactical nuclear munitions proper and their delivery systems may be the subject of future agreements on TNW limitation and reduction. The levels of quantitative and qualitative restrictions posed on them should be determined as a result of a thorough assessment of both the TNW types' contribution towards ensuring our state's military security and the actual capabilities of our industry to dismantle and dispose of the arms to be reduced. The agreements can pose quantitative and qualitative restrictions on tactical nuclear munitions, but as for TNW delivery systems, any restrictions should be placed only on their performance. For the purpose of controlling implementation of the assumed obligations concerning TNW limitation, all available measures and techniques of monitoring can be used.

In the near future a number of practical measures for TNW limitation, besides the existing unilateral initiatives of the USA and RF, may be implemented in order to consolidate international security."

Irina Kupriyanova in her article "The Assessment of Efficiency of US Programs in the Field of Nuclear Materials Protection, Control, & Accounting in Russia" reports, that "During the five years since its initiation, the cooperation evolved dynamically, and it was not always possible to reveal trends and to mark reefs. When developing the methodology of the assessment of US programs' efficiency, it seems to be important to single out the main *variables*, which should be measured in the process of feedback monitoring, i.e. the control for the performance of the upgraded (through US aid) MPC&A systems. In the first years of the cooperation, 'thoroughly structured systems of criteria' were not used, and this didn't allow a quantitative *measure of progres*.

The problems of management and training should attract the attention of both parties, so that in a case of success we'll get increasing devotion by the Russian nuclear objects personnel to observe of all set procedures instead of the trend of violating them for various reasons, as frequently occurs currently. This trend is directly related to issues of the safeguards culture.

Summing up the difference in the two states' cultures of conducting affairs and thoughts on the omnipresent w*hat is to be done* subject, I'd like to propose the first and foremost recommendation : that working out a joint cost estimate or a joint budget is necessary."

In the article "The US National Ballistic Missile Defense" by Vladimir Vasilyev, Vasily Lata, and Vladimir Maltsev the peculiarities of building the US National

ballistic missile defense are analyzed and main problems related to development, deployment, and funding of its information, as well as management and striking components are discussed on the basis of reference to the major global trends in military science and special features of formation in information & the combat technosphere of waging wars.

Alexander Kalyadin in his commentary "The Next Chance (as Regards Extension for Five Years of the Total Time Period of the Chemical Warfare Stocks' Destruction in the Russian Federation)" reports that "The new version of the 1996-approved Federal program 'The Chemical Warfare Stocks' Destruction in the Russian Federation' envisages the implementation of provisions of the *Chemical Weapons Convention* in full scale, ascertains the RF adherence to the goals of total chemical disarmament, and the RF Government's readiness to strain maximum efforts to fulfill the Convention's requirements. At the same time, the document offers new solutions in many respects and the attitudes of discharging Russian obligations under the *Chemical Weapons Convention.* First of all, this relates to the terms and stages of the chemical warfare (CW) stocks' abolition, the creation of a technical base for CW destruction, the program's resource support, a number of the main program measures, the role of international cooperation, and the program's implementation mechanism. In the new version of the program provisions regarding environmental monitoring, the ensuring of CW safe storage, transportation, and destruction are expanded and intensified. All of the common concerned participants of the former Soviet Union in the chemical arsenals' abolition process have to make appropriate conclusions from the unfortunate lessons of the past decade, go to a steady long-term partnership, and show an unabated political will to getting a joint solution of complicated problems left over from the 1990's."

Raisa Martynyuk, Sergei Netesov, Lev Sandakhchiyev in their commentary "International Centers as the Basis in the Fight Against Infectious Diseases and the Counteraction to Bioterrorism" report, that «in the last decade the attention of political, military, and civilian experts ragrading the problem of bioterrorism has been steadily increasing. Eventual biological agents of virus or bacterial natures are considered, and probable counteraction variants, the provision of anti-epidemic services with trained personnel, and diagnostic means and medicines are assessed.

As a rule, scenarios of bioterrorist incidents are extremely pessimistic, both from the viewpoint of human losses and procedures to minimize the direct consequences of such actions, and also for the compensation of damage due to disorganization of the region's economy and easing the psychological after-effects on the population. Terrorism today is a growing industry, and an eventual chemical or biological action forecast is more and more frequently discussed in terms of *not if, but when*."

An article by Vladimir Shustov "The Expert Meeting on Feasibility Study of Detecting Violations of the Agreement on Nuclear Tests Cessation" is devoted to the history of convening and conducting meetings of scientists from the East and West to study the issue of detecting nuclear weapons test explosions. The meeting was held in Geneva in July-August 1958. This precedent-setting meeting of scientists engaged in developing nuclear and thermonuclear munitions held a great historical significance. It allowed the conclusion in 1963 of a treaty banning nuclear weapon tests in the atmosphere, in space, and under water (the *Limited Test Ban Treaty*), putting an end to contamination of the environment by dangerous radioactive products from the experiments with nuclear weapons. In the end it allowed later agreement on the Comprehensive Tests Ban Treaty, underground explosions inclusive. After the Geneva meeting, scientists always took part in all negotiations devoted to nuclear arms race limitation, side by side with diplomats and military.