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Contents

<u>Editorial</u>	3
US vs. CHINA: New Major Line of Global Conflict	
<u>Hot Topic</u>	4
European Nations Have no Intention to Convince the USA to Abandon NMD Plans	
<u>Interview</u>	5
Zinovy Pak: <i>'The Russian Munitions Agency Have Advanced Technologies for CW Dismantlement'</i>	
<u>Interview</u>	9
Yevgeny Adamov: Russian Initiative Paves Way to Nuclear Security and Curbs Proliferation	
<u>Analysis</u>	14
CW Dismantlement in Russia: Arduous Task. By Alexander Kalyadin	
<u>Analysis</u>	19
US NMD Plans: International Political Implications. By Vladimir Baranovsky	
<u>Commentary</u>	26
Iran: Are WMD out of Reach? By Anatoly Alimov	
<u>Commentary</u>	30
Feasibility of Putin's Initiative: Ways to Ensure Sustainable Energy Supply. By Nikolai Ponomarev-Stepnoi	
<u>Commentary</u>	35
Russian Arms Sales: Another Reform? By Vadim Kozyulin	
<u>Stories of the Past</u>	40
Underwater Radioactive Threat: How It Emerged. By Tengiz Borisov and Svetlana Kovaleva	
<u>PIR Center News</u>	45
<u>Summary</u>	48
<i>Yaderny Kontrol Journal</i> , No.2, 2001	
<u>PIR Recent Publications</u>	48

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Editorial

US VS. CHINA: NEW MAJOR LINE OF GLOBAL CONFLICT

Chinese policy of the United States is becoming tougher.

Colin L. Powell's critical statement before the US Senate Foreign Relations Committee has clearly demonstrated particularities of new approach. New Secretary of State argued with some reservations that China was the key threat to US hegemony, or, precisely, to system of geopolitical unipolarity formed after collapse of the Soviet Union.

Such criticism indicates dramatic changes in sentiments of the US elite, which has recently strived to expand political and economic cooperation with China and, like, for instance, Al Gore, even used Beijing's influence for domestic needs. Director of Central Intelligence George Tenet made even more symbolic statement before the Senate Select Committee on Intelligence. According to George Tenet, China is a major actor in proliferation of weapons of mass destruction and may attempt to destabilize situation in East Asia counter to the US interests. To contain China, the CIA proposes to continue its engagement in the World Trade Organization and to promote liberalization of its economy, as well as to preserve independence of Taiwan. However, despite all these reservations, primary message of new policy is that a possibility of nuclear deterrence between China and the USA may emerge soon. Is this process irreversible?

We believe that this is not deterrence of China yet. Current stage of US-Chinese relations can be compared with the first post-World War II years in US-Soviet relations. This was the time when Washington was slowly and not always logically drifting from Roosevelt's concept of united nations that regarded the USSR as a specific part of the then civilized world to Truman's concept of containing Communists. This period was characterized by evident *carrot-and-stick* policy.

In this connection, two things are significant. Firstly, there was no determined shift to confrontation and both parties had a chance to return to a prior strategy and pattern of relationship. But they did not want to, since

there were plenty of internal factors, which made confrontation acceptable, if not desirable.

Secondly, in that period the most dangerous step would have been to use vulgar bluff to exert pressure on Washington. Bluff would have been revealed and all declarations and promises of tough response would not have been taken seriously even if the other party had actually been ready to make a powerful strike back. Under such circumstances, the situation can easily get out of control. Let us remember that Chinese diplomacy has often used bluff as a foreign policy tool, e.g. during its struggle for Taiwan or within the framework of multipolarity implying strategic military partnership with Russia. Despite harsh statements, the United States had no illusions concerning Chinese non-readiness to return Taiwan under Beijing's control. Washington also realized that China used bugaboo of partnership with Russia to ease US pressure pertaining to human rights and terms of accession to the WTO.

Major problem of modern Chinese leadership is that it has economic legitimacy. Political stability is maintained by preserving Communist mechanisms of governance and ensuring real improvement of life standards of the population. Chinese achievements on international arena are quite modest, however. This explains Washington's strategy: Beijing is so much concerned about access to US market and foreign investments that any threat of confrontation fraught with loss of these advantages may help to *squeeze* concessions step by step. And to prevent any sudden turn of events, it is necessary to limit Beijing's access to advanced defense technologies (whose major, if not the only, source is Russia) and to keep Taiwan's independence.

The question is how long this tactics of *sticks* will work and how efficient it will be. The problem is that for Chinese leaders it is as important to save their political prestige as to maintain export of toys to the USA and Western Europe, since it is a matter of their political survival. It would be good for Washington not to be overzealous in using *sticks* and to remember implications of extra zeal with *carrots* in the Middle East.

Hot Topic

EUROPEAN NATIONS HAVE NO INTENTION TO CONVINCE THE USA TO ABANDON NMD PLANS

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Translation into English. Abridged version

In the recent weeks some European states have been giving unequivocal signs to Moscow concerning their unwillingness to convince US Republican administration to abandon NMD plans. This position is expressed even by those countries, which as Moscow believed, were strong opponents of the US NMD system.

We cannot preclude that a number of European nations will continue to make public statements against NMD or, at least, call into question advisability and effectiveness of the US plans. However, all these declarations will be mostly targeted at *domestic audience*.

Nowadays it becomes clear that European allies have practically come to a common ground, which implies that the US program should be neither facilitated nor resisted.

In this connection, Europeans are more and more concerned about Russia's uncompromising stand. They realize that Russia attempts to ensure its own security, but they apprehend that such protracted pertinacity may lead to serious confrontation. Thus, some large NATO members try to make Moscow understand that it should no longer resort to Europeans in its argument with Washington concerning the ABM Treaty and NMD issues. European nations or, at least, the majority of them, do not want Russia to have dangerous illusions that Europe will be able to hamper US decision on NMD deployment and, hence, will share Russia's views.

Lately Europeans has often been claiming that viability of the ABM Treaty is not so important for their countries. This is a bilateral US-Russian agreement; each party has the right to withdraw from the treaty or

to review it in accordance with its provisions. European nations see no significant reason for NMD deployment, but they do not understand why Russia should deny Washington the right to self-defense in the new security environment.

European states also commend US intentions to promote substantial strategic nuclear arms reduction. Such plans are regarded as positive and may outweigh possible negative consequences of the NMD development (such negative implications are mostly connected in European minds with China rather than with Russia). Europe would like to look at Russian compromise initiatives with respect to NMD. Europeans also assume that Putin's statement concerning nuclear arms reduction together with the United States or in parallel may significantly mitigate international security climate. On the contrary, tough Russian statements on ABM/NMD issues reiterating previous position will no longer be accepted with connivance and may even provoke some negative response.

It is noteworthy that the aforementioned signs come not only in the course of official visits (e.g. visit by German Foreign Minister Joska Fischer to Moscow on February 12-13), but through some other channels. Hence, it would be a mistake to believe that they originate from a particular European country (German, Italy, or France), since Berlin was nearly the last to give Moscow such a hint.

Thus, a number of large European nations give example to other states and keep aloof from further discussion with Russia on ABM/NMD matters, considering it to be a strictly US-Russian bilateral problem.

Interview

ZINOVY PAK: 'THE RUSSIAN MUNITIONS AGENCY HAVE ADVANCED TECHNOLOGIES FOR CW DISMANTLEMENT'

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*On January 19, 2001, the RF Security Council held its meeting in the Kremlin and discussed problems of coordinating efforts of federal and regional authorities in the area of CW dismantlement. Participants emphasized that the first stage of chemical disarmament as provided in the CWC had not been implemented for a number of economic reasons. To ensure comprehensive solution of the problem, the Security Council decided to establish the State Commission for Chemical Disarmament. Director-General of the Russian Munitions Agency Zinovky Pak in his interview with *Yaderny Kontrol* describes the situation with CW dismantlement.*

YADERNY KONTROL: Zinovky Petrovich, Russia has enormous CW stockpiles – 40,000 tons. What are the reasons for Russia's noncompliance with the CWC commitments? Can you agency actually accomplish this task?

ZINOVY PAK: I have pledged to the Russian Government and the President that the program for CW dismantlement in Russia will become cheaper by 30-50%. This is an extremely difficult task, but these figures can be achieved as a result of tremendous research and organizational activities. If we do not provide for such efforts, we will not be able to fulfill the program. Hence, we will do our best at technological and political level and involve both Russian participants and foreign countries - members of the OPCW, which today comprises about 140 states. They all wait for Russia's moves, since the United States have already destroyed more than 15% of its arsenal, whereas Moscow, which possesses the largest stockpiles, has not even started their elimination.

Let me remind you that in 1993, President Yeltsin signed the CWC and four years later the parliament ratified the document. Leading nations of the world then maintained that they would render maximum financial support to the program of CW dismantlement. The first step in this direction was US-Russian framework agreement containing US commitments to provide donor assistance. In 1998, the Russian Defense Minister and the US Secretary of Defense signed an agreement on US funding for construction of industrial zone in Shchuchye (\$192 million). Russian position was very weak at that time. The state budget provided only 500 million rubles per year for CW destruction. And the Congress decided to freeze the donor assistance, since Russia practically did not invest its own money in implementation of the program.

In the 2001 draft budget the Russian Government ensured six-fold increase in budgetary spending on CW dismantlement. The Ministry of Finance took this decision under influence of President Putin. The USA suspended ban on funding and tightened the terms of aid: Russia should allocate at least \$25 million a year for the facility in Shchuchye. There were many other conditions, but this financial requirement was the most important. Afterwards, Washington offered to appropriate extra \$95 million for Shchuchye; so, total amount of US funding for the CW dismantlement facility in Shchuchye was \$286,500,000.

According to US estimates, industrial construction in Shchuchye will cost Washington \$880 million. Russia will pay for engineering and social infrastructure, building of dwelling houses, gas pipeline, water pipe, and electricity grid (\$350-400 million, according to US estimates). This will be only the first stage of construction. To complete the second stage, funding should be doubled. And there are seven such facilities in Russia. We know how to diminish the costs by using advanced technologies. In the near future we are planning to sign with the United States a detailed schedule of construction of facilities in Shchuchye. This timetable has been developed for several months already and

design projects of the facilities will be made by *Giprosintez* (Russia) and *Parsons Engineering* (USA).

The USA has already submitted a schedule envisaging completion of construction by 2008. I suggested that CW stockpiles be eliminated by 2007 in accordance with the CWC provisions. This is a radical shift in the program and in our relationship. I have to admit that after signing this agreement, the USA has become very cautious.

To intensify implementation of the CW dismantlement program, we hold regular meetings with the US State Department, US DOD, and the DTRA. US Congressmen have visited our CW storage facilities and they have left Russia with firm belief that Moscow did it best to ensure CW destruction.

Large amount of assistance comes from Germany. German experts supervise construction in Gorny, Saratov region. They work efficiently, although we cannot speak about immense investments. Total costs of Russian CW dismantlement for Germany is about \$50 million. Bundestag deputies visited facility in Gorny in early 2000. We showed them our construction site and suggested that the funding be increased, since we were going to start operation of the first stage of the facility. The plant in Gorny is experimental and it will help to develop technology for Kambarka in Udmurtia. Kambarka has the storage site for 6,500 tons of lewisite and this is really an enormous amount of chemical agents.

We agreed with the EU that in 2001 it would allocate about 6 million euro to support the CW dismantlement program in Russia. This money will be transferred via Germany in order not to create new bureaucratic structures. Other European nations also endorse the program. British Ambassador has recently informed us that the UK decided to appropriate \$18 million for three years and the money will be given in equal allotments. Sweden assisted in acquisition of equipment for Kambarka and invested money in Shchuchye and Gorny. Finland allocated \$1 million for Kambarka to provide analytical support and monitoring. Italy has appropriated funds for CW dismantlement and we now discuss how and where to use

them. The Netherlands and Canada also made their contributions. France considers the possibility of rendering financial assistance. Our task is to work in collaboration with the Foreign Ministry with all states signatories to the CWC to involve them in implementation of the Russian program.

I suggest that each state invest money in a long-term project with specific outcome. For instance, the United States committed to construct industrial zone of a facility. Great Britain pays for electricity supplies of Shchuchye, which has dozens of kilometers of networks, several powerful substations and complicated cable system. Finland leads in providing telecommunications, since we need stable connection with all storage facilities, arsenals and dismantlement facilities. These basic projects may engage other countries with more modest means. In 2001, Finland will start to supply for free the system of technical control over lewisite storage in Kambarka. These are devices to analyze atmospheric developments, etc. and they are one of the best in the world. We had to take emergency measures because Russia had delayed decision on these supplies.

The Agency is not only equipped with advanced devices. According to the presidential decree, the MOD military unit is placed under command of the Agency. Transition period is nearly over and the task has been accomplished smoothly. The MOD also transfers some money from its budget to the Agency. We have already agreed upon funds to be taken from the MOD budget to the Agency in 2001. This is not much in comparison with total defense expenditure. We will make up our own budget starting from 2002. Nowadays, all generals and officers of the military unit work in congruence with the Agency, the MOD and the General Staff. We sign orders and decisions together with the Defense Minister and submit joint initiatives and draft decrees to the President.

We have arranged another important matter. On November 17, the Government issued a resolution determining lanes of interaction among federal executive authorities to implement the CW dismantlement program.

Each agency and ministry has its clear role now. This is not merely an order, but a document approved by several dozens of governmental bodies and drafted by the Russian Munitions Agency. And today we have no questions about responsibilities. It was the only correct decision to charge a single federal authority with management and supervision of CW dismantlement activities in Russia, since the Agency has no other important missions, unlike the MOD.

We will have to solve one more problem – to get approval of people in the regions for our CW dismantlement program. We are happy that situation has changed a lot since 1992. Public and the Government have become cleverer and learned to understand each other. And I hope that decisions will be taken not the way it happened in Chapayevsk, when the locals threw the Government away from a completed facility and at present, it is at a standstill. This was the first CW dismantlement facility and the first failure of the program.

Q.: Zinovy Petrovich, you have just mentioned seven CW storage facilities, but spoke about operating only three of them. What is the fate of other sites?

A.: We realize that we will not be able to build seven facilities, since we have no money for that. This is why we try to construct three large-scale facilities in Gorny, Shchuchye and, perhaps, Kambarka, where the whole range of dismantlement activities will take place. Other sites – Kizner, Maradyk, Pochep and Leonidovka – will be operational only partly and will be charged with certain dismantlement activities. However, at any site our primary concern is safety and security. This is a rule for us and there can be no compromises or risks. The second principle will be optimization of costs. Russian CW stockpile should be eliminated by 2007, but the CWC allows to extending this term to 2012. We will obviously use this right, since it will significantly reduce the price of dismantlement.

Q.: Even when the MOD was in charge of CW dismantlement it repeatedly raised the issue of economic gains from such disarmament. What do you think about

efficiency of modern dismantlement technologies and can they help to convert resources from military to civilian uses?

A.: If we look at old approaches described in our regulations the program does not provide for any recycling and reimbursement of invested means. At the same time, there was parallel work at exploring the possibility of using bitumen mixtures to treat railway ties. There were hopes to obtain pure arsenic for use in microelectronics by applying technology of electrolysis for arsenic refinement (lewisite destruction). But even we start producing such arsenic we cannot be sure that it will have demand. The market is too small in comparison to possible amount of production. If we invest a lot of money in arsenic refinement technology our investments will hardly pay back soon. This is why we are against spending funds on such production.

Nonetheless, we have managed to find a rational way out. We will transform lewisite into arsenite, which will be stored as a state reserve of unique strategic material. When electronics develops, the demand emerges and cheaper refinement technologies appear, the Government will be able to allow commercial use of this raw material. We have taken this decision in collaboration with leading institutions and the MOD.

Q.: Has the MOD given enough troops for CW dismantlement and how well are they equipped?

A.: 10,500-strong unit has been formed for CW dismantlement in accordance with the presidential decree. This is enough to carry out the program. The military have good equipment to eliminate possible accidents, but they do not have sufficient information support capabilities for monitoring and maintaining communications. This will be extremely important when CW destruction starts and weapons are transported, since possibility of emergency situations may increase. We will have to reequip the unit, presumably, with the help of foreign specialists. Their assistance in the area of communications and analytical monitoring will be decisive. I believe that we will succeed in this area and will have

information from any storage facility at any time.

Q.: CW dismantlement is a dangerous process. The press has repeatedly mentioned unsatisfactory state of containers for liquid CW storage; besides, chemical munitions are aging. Are storage facilities protected enough against possible accidents?

A.: Yes, in principle there is a possibility of accident, but any situation is subject to analysis and control. Today we control every weapon and know its current state and its state in the future, in 2007 and in 2012. Risky projectiles are eliminated in safe environmentally-friendly manner or get additional protection and are repacked in hermetic containers to be stored for another 20 years without any harm for nature. We have ramshackle wooden storage facilities, but the program provides for their replacement with reinforced concrete buildings.

In fact, our major task is not to eliminate consequences of emergency situations, but to prevent such accidents. I have experience in this area. I designed and built plants for production of explosives. *Soyuz* - our primary company - operated dozens of enterprises. Pre-emergency situations occurred from time to time, and a special team of 10-15 people flew to the enterprise to prevent an accident. It is noteworthy that majority of our CW munitions have no explosives. In the United States 32,000 tons of chemical agents are in munitions with explosives. We also have such projectiles, but not many. They are under special control and their destruction will require new technologies. Thus, prevention of accidents is key strategy of our activities. And this is why comprehensive monitoring is so important. It is also significant to inform local population several times a day about water and atmospheric conditions and state of CW in the region.

Q.: There is no doubt that Russian leadership is committed to CW dismantlement. However, do you think that this may be a hasty step, which will make Russia lose one of its efficient means of defense?

A.: To my mind, Russian commitments concerning CW destruction are one of a few right decisions of the 1990s. However, upon signing the CWC, Russia made mistakes concerning schedule of dismantlement and formalization of international assistance. Moscow pledged to get rid of its arsenal in incredibly short term. According to our sources, US experts are not sure if Washington succeeds in CW dismantlement by 2012. I must say that US dismantlement technology is hazardous and more and more often the world community calls into question applicability of this technique. So, Russia will not have to regret about its choice, but it will have to suffer because the CWC dismantlement schedule is very hard for our economy and finance.

Q.: And how efficient is the governmental mechanism of financing CW dismantlement activities?

A.: I do not know it yet. It should be tested. If the Ministry of Finance continues to authorize the funds as it did with 500 million rubles, this will be a steady financing in good faith. I think that the Agency will come to mutual understanding with the Ministry of Finance and we will try to find money to accelerate dismantlement. The Agency asked for 3 billion rubles to implement the program. The MOD spoke about minimum 9.4 billion, the Ministry of Economics - 6.4 billion. I requested 3 billion not because this amount will be enough. Our construction industry is not ready for such amounts, there is no design documentation, technological solutions have not been tested yet.

As we launch our dismantlement activities, demand for funding will grow. We are making plans to expand construction in 2001; and I assure you that in 2002, the program will substantially expand. It will be an extremely expensive program, although we tend to cut the costs by 30-50%.

Q.: How are you going to use foreign assistance and how will such spending be supervised?

A.: We will not have to try hard in this area. Western legislation is so strict that donors must control expenditure of appropriated means. Tenders are obligatory to select contractor. Our goal will be to receive as much money as

possible and to make it work on the Russian territory. Nowadays developed states declare allocations but leave lion's share of money at home, whereas Russia gets political *bubble* and some intellectual and material values.

Q.: One of the objectives of the program is to attract as many locals to its implementation as possible. The Government promised new jobs to people as compensation for construction of hazardous facilities. Can Russian enterprises expect expansion of production?

A.: Obviously, new jobs will be given. Our schedule in Shchuchye provides for the stage, when 2,000 people will work at the construction site. Construction of dwelling houses will require \$2 billion. 90% of equipment for construction will be manufactured at Russian plants. These are multibillion projects. Electric companies and *Gazprom* will obtain enormous contracts, since it is necessary to build 100-km pipeline that will help to supply gas to the whole region. And we cannot do without gas. After destruction of chemical agents we must anneal storage containers and send metal for reprocessing. In fact, this is one of the ways to return materials to the industry.

Q.: If your forecast concerning CW dismantlement becomes true, Russia will soon get rid of all CW munitions. Hence, is there any program or general vision of the future of Shchuchye and other towns after successful implementation of the program? What can their citizens expect?

A.: None has built these towns to ensure security of CW storage facilities. There were military units, barracks. The program provides for construction of dwelling houses for employees of the plants, i.e. about 1,000 people. If we count their families as well this makes a town. Our principal position is to avoid settlement and to make this people work in shifts and with rotation. If we decide to encourage settlements and urban development, population of these towns will be unemployed when the program is completed. It is impossible to convert the plants. I myself was director of an enterprise and minister, I have a sound experience in conversion. Russia has today thousands of enterprises with empty buildings and stagnating capacity in regions that are rich of human resources and raw materials; even more so in Kurgan region. Hence, dwelling houses in Shchuchye and at other sites of CW dismantlement will be built for shift workers.

Interview

RUSSIAN INITIATIVE PAVES WAY TO NUCLEAR SECURITY AND CURBS PROLIFERATION

**by Yevgeny Adamov,
Minister of Atomic Energy of the
Russian Federation**

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Abridged version

This is a report by Minister of Atomic Energy Yevgeny Adamov at the Moscow International Nonproliferation Conference held by the PIR Center and the Carnegie Endowment for International Peace on October 6-7, 2000. This is an abridged version of conference records.

On September 6, 2000 President Putin set forth an initiative aimed at preventing proliferation of nuclear weapons by excluding enriched uranium and plutonium of peaceful nuclear energy uses. Russia proceeds from the assumption that burning plutonium and other radioactive elements will facilitate final solution of the problem of radioactive waste and will give the planet new chance for secure life. Under these circumstances, Russia proposes to develop and implement an appropriate international project in collaboration with the IAEA.

Many Russian nuclear experts regard Putin's initiative as a possibility to meet the goals of energy production and environmental safety combining it with strengthening nonproliferation. And this is really so.

It is important to ensure nonproliferation of nuclear weapons, which have quite widely spread around the world. There is a danger that constraints envisaged in 1968-1970 may be revised and weakened. Perhaps, some experts who can take less official position may say that this framework has already been transformed and expanded.

We, nuclear energy specialist, believe that these issues can be tackled with *homeopathy*, since the latter cures fights fire with fire. But will this remedy be efficient? Is it possible to

prevent proliferation of nuclear weapons by blocking channels of proliferation, including those related to nuclear energy development?

To answer this question, one should bear in mind that this task will be accomplished in the 21st century in the presence of, at least, two challenges: acute energy shortages, which will only increase as the population grows; and a number of environmental problems.

I would like to focus on the opportunities to solve the problems of energy supply, environment and nonproliferation. I would say it this way: can nuclear energy become key source for meeting energy demand of mankind in new millennium without polluting environment? Can it, on the contrary, improve environmental situation and hamper proliferation of nuclear technologies at the same time?

I would say, yes, it can. However, nuclear energy must solve the following urgent problems left: safety; radioactive waste; nonproliferation.

I can also add that experience of nuclear community of such states as Russia, the United States, France, Japan and others, who take even more efforts to develop nuclear energy today, makes me conclude that all aforementioned problems can be resolved.

Safety can be achieved through preventing: reactivity accidents (core breeding ratio~1); accidents with the loss of coolant (pool design); fires and explosions (selection of materials).

As far as safety requirements are concerned one should take into account previous disasters with devastating consequences. The culminating point in this process, which started with Windscale and passed Three Mile Island, was Chernobyl. This was a reactivity accident and such problem can be solved only by deterministic methods, i.e. if reactor core has reactivity lower than the share of thermal neutrons. To achieve this, core breeding ratio characterizing processes in reactor's core must be about 1. In the recent years (R&D period in our country is about 15 years and our research is similar to efforts taken by aforesaid countries in the last 20 years), it has been proved that fast reactors

can operate with such ratio. For instance, in the Physics Energy Institute in Obninsk such experiments with plutonium fuel assembly were first conducted about five years ago.

It is also necessary to prevent such accidents as Three Mile. Hence, we have to get rid of loop constructions with numerous equipment and pipes around reactors hull and use pool design which has widely been applied in research reactors. The pool construction implies that even if there is no power, no cooling that requires active elements, it may endlessly (and not for 24, 36, 48, or 72 hours – this is the way requirements to current NPPs have been growing) provide for cooling down excessive heat with laws of nature and without any active elements.

Finally, some present-day reactors and plants used in nuclear fuel cycle, unfortunately, have many inflammable and highly explosive materials that may lead to accidents. The first large accident (not on an energy plant but on military reactor – Windscale) occurred because of burning graphite due to then unknown or neglected Wigner effect. We talk about fast reactors but we know well that existing fast reactors use sodium. We speak about thermic reactors but we know well that they use water. Sodium can be incinerated, water decomposes and produces detonating gas which may explode.

This is why all safety issues can be solved by profiting from engineering experience of nuclear energy sector of the last century. Unfortunately, this knowledge has not yet been used in real constructions. Besides, it has slim chances for realization if there is not enough political will and attention.

The industry has invested lots of money in existing technologies. These means were invested in conjunction with forecasts, e.g. IAEA estimates, which presumed that by 2000 total capacity of nuclear power plants would exceed 1,500 GWe (it turned out to be four times lower). The amount of investments rules out the possibility for Russian, US, French and other companies to accept new design and new technology. However, this does not mean that R&D activities should start from the very beginning as far as nuclear safety is concerned. One can use technological

solutions that have already been invented in nuclear engineering to provide for deterministic prevention of nuclear accidents and, hence, to ensure safety.

The second problem is the issue of waste. Nuclear energy sector has made much more progress in disposal of waste than any other sphere of technical activities.

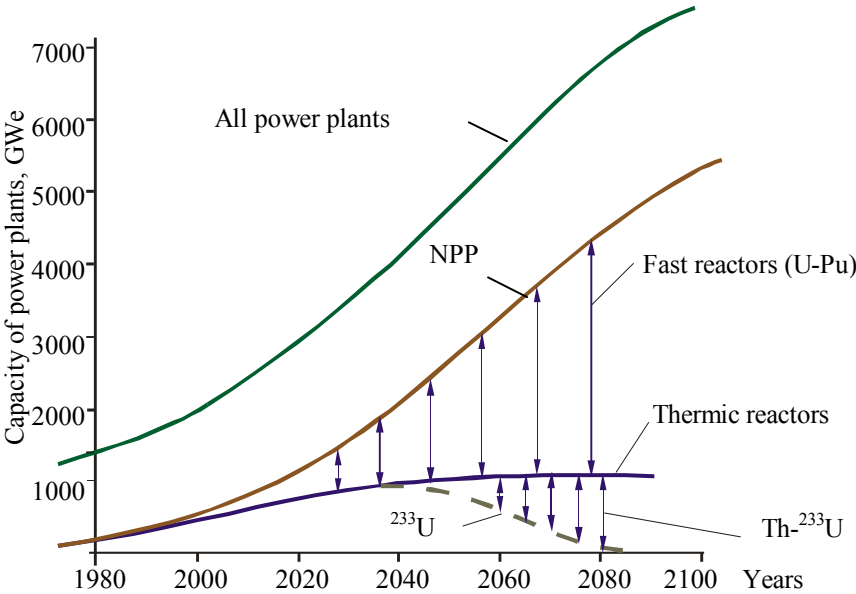
However, even vitrified or mineralized waste that is well-isolated from environment raises public concerns and protests. Public is very sensitive to any issues concerning directly or indirectly nuclear energy development.

I am sure that technologies in this area are more advanced than in any other technical sphere (there are certain industries that do not care about their waste) and there are ways to forge mutual understanding of nuclear experts and those, who are interested in nonproliferation and environmental safety.

It is a matter of closed fuel cycle, which provides for internal reactor transmuting of

the most hazardous isotopes and eventual burying of waste by mineralization (this chain – bitumenation, vitrification, and mineralization – is the most efficient way for isolating waste). As a result, waste will not be more active and toxic (I would like to emphasize the word “toxic”) than uranium ore. In this case I compare activity of uranium ore and isotopes it is extracted with and final activity of waste. Balance between radioactivity of extracted ore and toxic character of waste can be achieved in minimum 200 year, maximum – 400 years, depending on other factors, which I will not touch upon in detail right now. It is no longer a matter of hundred thousands of years of thorough monitoring; engineering facilities, whose long-term efficiency has been proved by years, can be used for storage. Besides, nuclear experts do not have to strive to enhance techniques of preventing access to nuclear material for geologically long periods to mitigate environmental and nonproliferation concerns.

Picture 1. Estimated growth of nuclear capacity, including fast reactors (with potential reserves of cheap uranium~10 million tons)



Source: Yevgeny Adamov's report at the Moscow International Nonproliferation Conference, October 6-7, 2000.

Thus, problem of radioactive waste can be solved in the following manner: radiation equivalent management of nuclear materials in nuclear fuel cycle; internal reactor

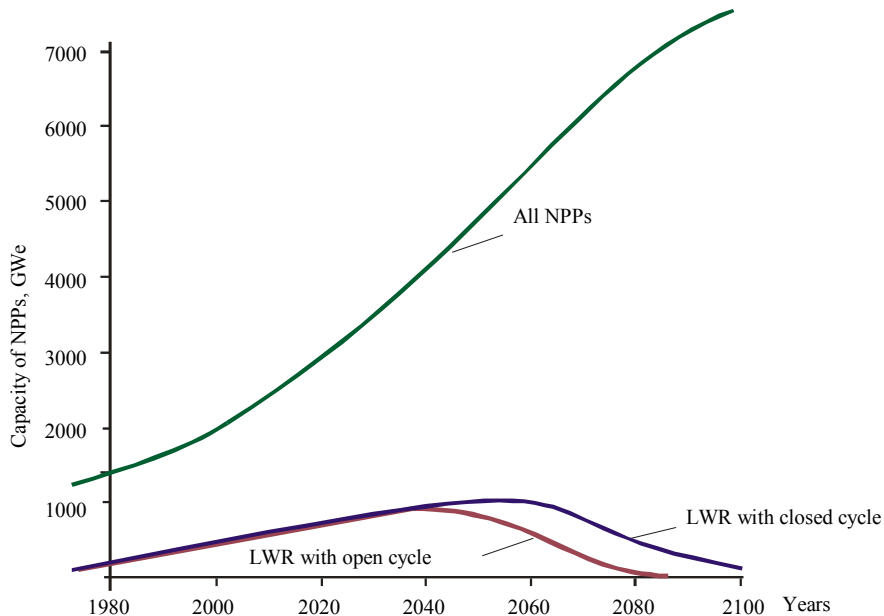
transmuting; mineralization of residual waste.

The third component is further promotion of nonproliferation regime. Are existing nuclear

technologies for energy sector and military activities (i.e. key ways of uranium enrichment and plutonium separation in nuclear chemistry) sufficient for nuclear energy sector? No, they are not enough. They

were spread in nuclear energetics only because they were available to those who were building NPPs and, naturally, tried to use them further in energy development.

Picture 2. Nuclear capacity growth (with potential reserves of cheap uranium~10 million tons)



Source: Yevgeny Adamov's report at the Moscow International Nonproliferation Conference, October 6-7, 2000.

If so, we can try to introduce new approaches to nuclear energy use and eventually exclude plutonium separation from fuel reprocessing, which is not needed for nuclear plants with closed fuel cycle. It is mainly technological issue: to enable fast reactors, which have been used for the last twenty years for research and power production, to exclude production of weapons-usable plutonium. Above all, it is a matter of eliminating uranium blanket in fast reactors that do such reprocessing automatically.

I would like to say more about this matter, since immobilization, which is preferred by some of our partners, contradicts the very logic of nonproliferation, for it is merely a good way to store plutonium for a long time. And if it can be immobilized it can be mobilized later again. Of course, you will argue that such mobilization will not be cost-efficient and energy-efficient. But as you know when it comes to weapon technologies it is no longer a matter of price. This is why when plutonium is burnt is more proliferation-safe

than immobilization and conservation, since it can be extracted back later.

In other words, to prevent proliferation we should exclude stockpiling of plutonium at storage sites; rule out plutonium separation during reprocessing of fuel; gradually abandon uranium enrichment technology; refrain from using uranium blanket; abandon plutonium immobilization; minimize transportation.

Thus, Russian initiative has resulted from integration of research and approaches developed in the last 20 years by nuclear expert community. Nuclear energy has full right to participate in increasing energy supply, since new technologies will rule out severe accidents and prevent proliferation.

One may argue that there are some other ideas concerning safe and proliferation-proof nuclear energy development.

I would like to emphasize that the initiative set forth by President Putin in New York was

not an improvisation. This was a political summary of R&D results and the fruit of several decades of the industrial use of nuclear energy and nuclear technology. In fact, this is a political initiative aimed at solving all key problems. Nowadays it turns out that it is impossible to ensure an energy supply adequate for mankind in the next century by using the nuclear energy technologies of a closed or open fuel cycle with MOX fuel, as many experts propose. According to our estimates of energy-usable uranium, 10 million tons of uranium will be exhausted in the next 80-100 years, depending on whether or not we use MOX fuel capabilities. Moreover, if we resort to MOX technology, we will leave no chances for nuclear energy development after 2100.

Only the use of a closed fuel cycle in fast reactors, use of thermic reactors until they have raw fuel, and the step-by-step transition to a uranium-thorium cycle once uranium resources have been exhausted will theoretically, as far as fuel availability is concerned, enable the nuclear energy sector to meet alone the high demand for energy and fulfill provisions of the Kyoto Protocol. If nuclear energy sector becomes in charge for growth in energy production this will stop any increase in burning organic fuel. If we solve in parallel the problem of safety and nonproliferation, this will be an essence of the presidential initiative in New York and his appeal to world community.

In conclusion, let me say that the Russian initiative, if implemented, will bear the following fruit to mankind. We will have energy supply with inexhaustible raw material reserves; preserve organics for non-energy use; protect environment; and technologically strengthen nonproliferation.

Yaderny Kontrol Staff Writer Dmitry Kovchegin addressed Minister Adamov with some questions during the Moscow International Nonproliferation Conference held on October 6-7 and at his press conference in Interfax News Agency held on October 11.

YADERNY KONTROL: Yevgeny Olegovich, which specific ideas will the Minatom propose to the IAEA Task Force?

YEVGENY ADAMOV: The Agency is preparing another discussion and negotiations.

Such discussions have often taken place in the last ten years and we are not going there to propose BREST project. One should not forget that the presidential initiative is not dealing with any specific reactor; it is aimed at realization of concepts that have been described in detail. This is why we suggest that debate have the following pattern: there are user characteristics and specific and now known ways for implementation. There are WWER reactors, pressurized and boiling, CANDU, RBMK, HTGR and fast reactors of old type. Let us see how each of these proposals can be fulfilled in compliance with these requirements. And we will understand that reactor must be fast, with heavy coolant and certain core characteristics, transmuting parameters and radiation equivalency settings. Are there any other ways to achieve this? This is the question. If there are other ways, OK. But there have not been any so far.

Q.: Suggested model of nuclear energy implies different organization of nuclear fuel cycle, i.e. deployment of nuclear fuel cycle enterprises at one site with nuclear power plant. How well has the future fuel cycle been developed with respect to Russia in comparison with detailed project of reactor?

A.: New fuel cycle will not substantially change the structure of Russian nuclear complex. NPPs that are planned to be built will be constructed closer to existing nuclear fuel cycle enterprises, e.g. PO Mayak (Ozerk, Chelyabinsk region) and the Mining Chemical Combine (Zheleznogorsk, Krasnoyarsk region).

Q.: The Minatom has recently convened its ministerial board to discuss public relations policy. What are the results of this meeting?

A.: The meeting stated that our public relations activities are ill-organized, and the public and media work with us better than we do. They are more active and bright, whereas we have no time for public relations. We had a very thought-provoking discussion. I hope that it will help to form the concept of information activities. I believe that such concept will appear in early 2001.

At the same time, I think it is absolutely normal: pressure on the Minatom helps it to verify how reasonable and stable its positions are. And pressure on me is also helpful, since I follow the rule that criticism is a fertilizer for personal and professional growth.

Analysis

CW DISMANTLEMENT IN RUSSIA: ARDUOUS TASK

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According to the CWC, parties to this convention should start elimination of their chemical arsenals no later than two years after its entry into force for this or that signatory. In Russia, the CWC became effective on December 5, 1997. Three years after this term, i.e. by April 29, 2000, the State Party undertakes to destruct no less than 1% of its Schedule 1 stockpiles¹. Therefore, Russia has to dismantle 400 tons of chemical agents out of 40,000 tons of Soviet chemical legacy. However, destruction of this amount was delayed and by April 29, 2000, Russia had eliminated far smaller share of its CW arsenal. As a result, Moscow did not comply with the CWC provisions concerning the first stage of dismantlement. In fact, there are three more stages left: April 29, 2002 (20% of CW stockpiles or 8,000 tons), April 29, 2004 (18,000 tons or 45%), and April 29, 2007 (dismantlement must be completed).

In early 2000, Russia addressed the OPCW and requested to defer implementation of its first stage commitments. The 19th session of the Executive Council (April 3-7, 2000, the Hague) endorsed Russian proposals concerning alteration of interim terms of dismantlement. The Council agreed with objective reasons for non-compliance and the Fifth Session of the Conference of the States Parties (May 2, 2000) decided to postpone fulfillment until 2002. At the same time, this postponement was stipulated with condition to complete the second stage of dismantlement in 2002 as well, i.e. to eliminate 8,000 tons².

Russia's delay in implementing the CWC has not resulted from any domestic political grievances and opposition, but from long-term negative consequences of the August 1998 financial crisis and lack of promised foreign assistance in CW dismantlement³.

In this connection, we have to note that Russia has no political forces striving to preserve CW arsenal. The Armed Forces have also lost interest in CW – the new military doctrine does not provide for any use of these weapons to maintain national security. As far as some environmentalists are concerned (who stand for Russia's withdrawal from the CWC), their main motivation is the need for safe and well-ordered dismantlement rather than willingness to keep chemical agents. It is important to emphasize that Russia has no desire to preserve CW stockpiles, since some Western media often mention alleged Russian *hawks*, whose intrigues impede timely CW dismantlement in Russia.

As a matter of fact, primary reason for delay was mere lack of money, for Russia had to satisfy some urgent domestic needs in the conditions of financial crisis and budgetary cuts. This affected funding for the federal special program concerning CW dismantlement in Russia adopted in March 1996. In 1999, the Government appropriated only 370 million rubles for CWC implementation (in 2000 – 500 million rubles). However, in 1999-2000, the money was not actually authorized and transferred for CW dismantlement.

This is why planned activities were not carried out. Total amount of feasibility studies and project works in 1999 was about 230 million rubles (more than 100 contracts), of which only 76 million rubles were paid. Debt of the MOD (state contractor for CW dismantlement) amounted to 150 million rubles.

By May 2000, the CW dismantlement facility in Gorny, Saratov region, was completed by half. Gorny has a storage facility for 1,160 tons of blister gases – mustard, lewisite and their mixture (2.9% of all CW stockpiles). Germany supplied Russia with industrial

equipment for the facility. It was planned to test this plant in 1998 and to start dismantlement in 1999. The same situation is in Shchuchye, Kurgan region, where another large dismantlement facility must be built. Shchuchye stores artillery projectiles (5,440 tons of chemical agents). The construction has not yet started and works are under way to prepare engineering and social infrastructure. Funding for this plant comes from US financial and technical aid and its planned capacity is 2,700 tons per year. In 1999 the United States began to curb assistance in construction and in 2000, Washington suspended funding. Preparatory activities at other five sites had also been far from completion by the end of the first stage⁴.

Positive Changes

2000 was characterized by changed political leadership in Russia and improving general economic situation (increasing revenues of the state, no-deficit budget, etc.). This created certain prerequisites for accelerating CW dismantlement. Sound legal basis for CW destruction emerged: the federal law pertaining to social security of citizens involved in CW activities was adopted in the second reading. This document was crucial to ensure public support for CW dismantlement activities. Since major social benefits affect citizens living or working in the protective areas, it is important to note the 2000 government resolution on such zones to be established around CW storage and dismantlement facilities in Gorny, Shchuchye, Kizner, and Kambarka. There were prepared some regulations concerning elimination and conversion of former CW production plants; usage of waste and products of disposal; compensations for damage to public health and property of individuals and corporations inflicted by toxic chemicals in the process of CW storage, transportation and destruction. So, a comprehensive system of legal, environmental and medical support has been set up and enables Russia to carry out specific CW dismantlement activities, though, evidently, such mechanisms should be further enhanced.

Thousands of civilian and military personnel, federal and regional authorities, non-governmental organizations are engaged in chemical disarmament. Universities train engineers and technicians to work at the CW dismantlement sites – about 8,000 people must be trained.

In April 2000, the Central Analytical Laboratory was established in Moscow to supervise CW dismantlement. It was constructed in accordance with agreement of July 30, 1992 between the Presidential Committee for Conventional Problems of Chemical and Biological Weapons (*Khimbiokom*) and the US DOD. The laboratory is capable of performing a wide range of chemical and technical tasks and complex research activities to secure CW dismantlement.

Russia regularly receives on-site inspections of the OPCW at its CW storage and production facilities. All disputes are settled in conformity with appropriate negotiation procedures and talks with the Technical Secretariat of the OPCW.

Vivid example of serious intentions of the new Russian leadership is planned increase in expenditure on elimination of CW stockpiles. In August 2000, the Government submitted to the State Duma the draft budget providing 3.085 billion rubles for CWC implementation (including 2.695 billion for construction of CW dismantlement plants; 320.4 million for R&D activities and feasibility studies; 69.64 million on inspections and other work). In October 2000 the State Duma approved the aforementioned draft in the first reading. Hence, in 2001 CW dismantlement will witness six-fold increase in funding (whereas total spending of the federal budget has grown by 40% only). This is an important factor that will facilitate chemical disarmament. At the same time, there are many other ways to improve situation in this area: much will depend on cost-efficiency, optimization of organization and management of CW dismantlement, technological support and other factors.

Unresolved Problems

Russia initially planned in 1995 to eliminate CW stockpiles of the former Soviet Union by 2005. In 1997, this schedule was revised and Moscow decided to complete CW dismantlement by 2007 as provided for in the CWC. In April 2000, Col.-Gen. Stanislav Petrov, then Commander of the Radiation, Chemical and Biological Defense Forces, argued that this process would not be finished earlier than 2013⁵. In fact, the CWC envisages the possibility of extending the term of CW destruction to five years (under special decision of the Executive Council), i.e. until 2013.

However, it will not be easy to comply with CWC commitments. The State Duma passed Resolution No. 4096-II GD of July 11, 1999 and expressed its concern about implementation of the convention. The document pointed out that Russia did not ensure timely construction of CW dismantlement facilities and did not secure social benefits for population of CW storage and dismantlement areas. The Duma recommended the Government to adjust the program, taking into account existing capabilities for its fulfillment. The parliament also proposed to increase funding for related activities and to tighten control over spending, to promote participation of public in decision-making concerning deployment of sites and other relevant issues.

As we have mentioned above, by 2000 Russia had no operating large-scale facility to destroy chemical agents. Total planned capacity of seven CW dismantlement plants is 10,500 tons per year. Even if they all became operational by spring 2001 (a hypothetical hint), they would eliminate only 3,500 tons in 12 months, since their capacity in the first year of work would be 30% of planned. Hence, Russia would hardly carry out its obligations under the second stage (8,000 tons by April 29, 2002). During the second year CW dismantlement facilities would destroy 7,500 tons (70% of output) and only in the third year (by April 2004) they would work with full capacity and Russia could be ready to implement the third stage (18,000 tons). Construction of seven CW dismantlement facilities will cost about 40

billion rubles and it is clear that Russia will not find or even use such amount of money in one or two years.

Problems with international assistance to Russia also had negative impact on CW dismantlement activities. In 1992 Russia and Western states parties to the CWC came to a gentleman agreement beyond the CWC framework. Given its economic potential, Russia committed itself to destroy chemical arsenals of the former Soviet Union, whereas Western nations concerned pledged to render long-term assistance in chemical disarmament. Main idea of this deal was that Russia shared responsibility for dismantlement of 40,000 tons of CW with other states. However, contribution of foreign donors leaves much to be desired.

One of the positive examples is German assistance in the form of services, including manufacture, testing and delivery of equipment for CW dismantlement facility in Gorny. Monetary equivalent of this aid is not large. Before 1998 Germany allocated \$18 million, in 1998-1999 – \$10 million. In August 1999 Germany declared that it would grant DM44 million (\$23 million) for CW destruction in Gorny beside DM21 million (\$11 million) which it had appropriated earlier. On January 21, 2000, Italy promised to authorize \$8.3 million to construct infrastructure for Kambarka and Kizner in Udmurtia. Canada, Norway, Sweden, Great Britain and the Netherlands also made their small contributions in 2000.

Meanwhile, the United States, which was the largest donor in the 1990s, suspended its assistance to Russia in chemical disarmament. Washington accounted for more than 70% of declared foreign aid – about \$200 million (this money was mainly spent on feasibility studies and other preparatory activities in Shchuchye). The USA appropriated \$20 million for FY2000 to ensure secure storage of chemical agents and not to build CW dismantlement facilities, but even this money was not expended. For FY2001 (which started on October 1, 2000) the Congress did not authorize any allocations for Russian CW destruction. Thus, while Russia was planning to intensify

preparatory activities (social and engineering infrastructure), the USA stopped to fund the construction in Shchuchye. Washington resumed it only after certain Russian promises and there is a hope that construction will be finished.

Role of the Russian Munitions Agency

One may conclude that approach envisaged in the 1996 program of chemical dismantlement makes it unrealistic for Russia to comply with interim schedule of CW dismantlement. As we have said, the program provided for construction of seven large and costly enterprises near CW storage sites. This is why Russian policymakers had to generate two alternative positions on chemical disarmament.

Proponents of the first approach believed that Russia would not be able to implement its commitments under the CWC and to destroy 8,000 and 18,000 tons by 2002 and by 2004 respectively. They proposed to extend the time of complete dismantlement to 10-15 years (depending on schedule of construction of all seven CW dismantlement facilities and their capacity). They suggested that budgetary expenditure be sharply increased in 2001-2004 (in 2001 – 6 billion rubles; 2002 – 13 billion; 2003 – 13 billion; 2004 – 12 billion). Total costs of CW dismantlement in 2001-2013 would have amounted to 100 billion rubles⁶.

The second scenario implies that Russia must fulfill its obligations of the second and the third stage with lower budgetary spending. New concept must have been submitted to top political leadership by the Russian Munitions Agency. The latter became the National Authority and replaced *Khimbiokom* disbanded on May 25, 1999. On April 7, 2000 Director-General of the Agency Zinovy Pak argued that Russia would implement its commitments and destroy 8,000 tons by May 2002. He maintained that it would be possible if CW dismantlement funds were raised to 2-3 billion rubles per year and Russia got adequate foreign assistance. Moscow plans to accomplish this task without waiting for large-scale CW dismantlement facilities. Chemical agents will be detoxified and transformed into

reactant compounds. These products will not be weapons anymore, they can be transported and stored, whereas the CWC objective is achieved, i.e. irreversibility of decay of CW toxic components. Such project does not provide for full cycle of CW dismantlement⁷.

New approach towards CW destruction resulted in changes of the state system of control over chemical disarmament and redistribution of powers among federal bodies participating in this process. The Russian Munitions Agency is in charge of activities aimed at implementing CWC commitments. It also performs duties of state contractor, whereas the MOD is responsible for safe storage of chemical agents.

Such reforms make sense: the Agency has elaborated new concept of accelerated CW dismantlement and it will be good at elimination of decommissioned chemical munitions, while the MOD will be able to concentrate on other important missions related to combat readiness of the Armed Forces. The problem is to ensure smooth transfer of powers and duties, so that CW dismantlement process may avoid new inter-agency contradictions, bureaucratic intrigues and conflicts of corporate and personal interests. There are some difficulties of objective character concerning efficiency of inter-ministerial coordination; and there are apprehensions that such reorganization may impede implementation of the CWC and settlement of practical issues.

Vital Importance of Public Opinion

Russia has to conduct a number of complicated organizational and propagandistic activities, change legal basis, review design documentation, improve coordination with authorities and population of the regions, etc. This task cannot be accomplished with traditional bureaucratic tools. Moscow has to solve technological, organizational and management problems, but it should also ensure public support for CW dismantlement plans and to engage more Russian civil society (expert community, non-governmental organizations and movements, mass media).

It is a matter of grave concern that, like in previous years, important decisions pertaining to chemical disarmament are taken in information vacuum, without appropriate involvement of academic community and non-governmental associations. Majority of mass media are not informed either.

The State Duma cannot pass the bill “*On Establishment and Activities of Public Consultative Commissions on CW Destruction*” introduced by N. Bezborodov, B. Gromov, V. Ilyukhin, N. Sapozhnikov, and O. Shinkarev on June 1, 1999! The bill contains some excellent ideas, whose realization would facilitate new efforts to destroy chemical agents. The document is aimed at adequate consideration of public opinion in protective areas and promotes public control over CW dismantlement activities. For that purpose, consultative commissions of citizens must be established. They will unite representatives of civil society, officials of regional executive bodies and members of local self-governance administrations. These commissions will meet twice a year representatives of the state contractor and executive officers concerned. The latter will provide the commissioners with complete and reliable information concerning CW dismantlement.

The main shortcoming of this bill is that it regulates only supervising procedures on the part of regional and local authorities. However, we must say that CW destruction affects interests of Russian public in general and raises all-Russian, let us say, federal concerns.

Federal authorities and the state contractor should take these fears into account. Low public awareness of governmental projects of chemical disarmament may cause speculations about consequences of dismantlement activities and result in growing social tension. Hence, negative public attitude may undermine trust of international community in intentions of Russian leadership.

Dismantlement of chemical arsenals of the former Soviet Union is not only the matter of compliance with CWC commitments,

confidence-building and prestige of the country. It is important to maintain national security. More than 30% of chemical munitions were produced 40 years ago and earlier. Their service life has expired and there is a threat of accidents and leakage. Stockpiled weapons make potential target for terrorist attacks and proliferation risks. Thus, it becomes the problem of maintaining international stability and global security.

Russia and the CWC State Parties must take concerted efforts to eliminate chemical legacy of the 20th century in accordance with the CWC provisions and on the basis of international solidarity to ensure stability of global regime of chemical disarmament and nonproliferation.

¹ Schedule 1 contains chemical agents of high risk for the object and purpose of the CWC. They include lewisite, nitrogen and sulfur mustards, ricin, saxitoxin, and nerve gases. Schedule 2 comprises all other chemical weapons based on different chemical agents. Schedule 3 unites equipment for CW employment and related non-assembled munitions and devices. Elimination of Schedule 2 and 3 weapons must be completed no later than five years after CWC entry into force, i.e. by April 29, 2002.

² *V/DEC/CRP.12; Nezavisimaya gazeta*, 2000, April 7.

³ See: A. Kalyadin, “Russia and International Regime of Chemical Disarmament”. *Mirovaya ekonomika i mezhdunarodnye otnosheniya*, 2000, No. 3, pp. 27-37.

⁴ As far as five CW dismantlement plants are concerned (Pochep, Bryansk region; Kambarka and Kizner, Udmurtia; Leonidovka, Penza region; Maradyk, Kirov region) construction sites have been selected and approved, feasibility studies have been completed, investment assessments and design documentation have been elaborated.

⁵ *Nezavisimaya gazeta*, 2000, April 7.

⁶ *Nezavisimaya gazeta*, 2000, May 5.

⁷ Report by Alexander Gorbovsky, Deputy Head of the Department for Conventional Problems of Chemical and Biological Weapons, the Russian Munitions Agency, at the Moscow International Nonproliferation Conference, 2000, October 6.

Analysis

US NMD PLANS: INTERNATIONAL POLITICAL IMPLICATIONS

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Abridged version

This article studies the key international political implications of the NMD deployment. The paper focuses on the attitudes of the key global actors whose security interests may be affected by this potential US program.

The Response of the International Community

A clear vision of the international reaction to the US NMD plans can be obtained by analyzing the voting results from the UN General Assembly meeting of December 15, 1999. On that day, the overwhelming majority of the UN members adopted a resolution calling for the parties to the ABM Treaty to refrain from territorial missile defense deployment. Even close US allies did not dare to oppose this document; France publicly expressed its support of the resolution.

However, various different motivations, at times diametrically opposite, drove the members of the international community to vote in favor of such a resolution. At the same time, there are some common concerns and overall caution surrounding the eventual US NMD deployment.

Russia's concerns are the most pressing: aforementioned US plans have been sharply criticized by Russian experts, in both official statements and through diplomatic channels and debate on possible countermeasures is under way. Less, but not the least, active is China, who has demonstrated a similar view of the situation. Leading European states are passively discontent and stand in latent

opposition to the US plans, while expressing their dissatisfaction at the political level. It would not be an exaggeration to say that the US NMD plans have become an incentive for deep speculations concerning existing trends of world development and changes in the military-political parameters of the international security regime.

This problem should be considered separately from the purely military aspects of the issue. The military matters concerning NMD plans, as we all know, have already encouraged heated debate among experts. Many of them, above all, in the USA, have called into question the feasibility of the US NMD program, its economic expediency and efficiency. The failure of the tests, which were one of the major reasons for postponing the deployment decision by President Clinton, only heightened these doubts.

It is noteworthy that some Russian experts have made skeptical assessments of the situation, although Russia generally tends to take a more alarmist stand. Those who find these alarmist sentiments inept often compare the current US plans with Reagan's SDI activities. Indeed, the military results of the SDI efforts were incomparable to expectations of the US policymakers. Moscow's fear of *Star Wars* caused the USSR to overextend itself to ensure an adequate political and military response. These efforts might have been fatal for the Soviet Union and contributed to its collapse.

In other words, the political effect of SDI was far more serious than its military impact. The situation may be repeating today. It is not clear whether or not US NMD plans will be fulfilled, how they will be implemented, or whether they will accomplish their mission. It is a paradox, but none of this will affect the international situation or the assessment of its strategic consequences by key global actors. The US initiative has already had its impact on the world system and this effect may even strengthen.

The 1972 ABM Treaty

Russia likes to emphasize that the US plans run counter to the 1972 ABM Treaty. Moscow believes that the treaty cannot be violated and therefore rejects any proposal to modify the agreement and stresses its utmost

importance for maintaining strategic stability. Many would agree with Russia that the treaty should be preserved. Before the Okinawa summit of the G-8, all members of this international group, except the USA, backed this idea.

Meanwhile, the logic of preserving the *sanctity* of the 1972 ABM Treaty has many weak points. The treaty was signed more than 25 years ago. Hence, any attempts to appeal to its *eternal* significance and to treat it as a historical monument, which may not undergo any changes, are not entirely convincing. Besides, the treaty itself provides for the possibility of agreed modification. Finally, one can hardly insist on US abidance by the treaty over the pursuit of its own national security interests.

On the other hand, there are some weighty arguments in favor of the treaty. The 1972 ABM Treaty is one of a few documents that have a certain symbolic meaning not only for US-Russian relations, but for arms control in general. Thus, it is extremely important to avoid the collapse of the treaty, which would be fraught with grave international political consequences.

These arguments can be used against Russia to make its position more flexible concerning modification of the treaty. But since the USA is playing a leading role in this story, Washington would be more responsible for such collapse. Therefore, the US debate on the NMD issues seeks to solve a dilemma: how to implement NMD deployment plans while preserving the 1972 ABM Treaty.

The possible negative ramifications resulting from the collapse of the treaty were eventually important enough for the Clinton administration to delay a decision and justified Russia's uncompromising position (at least, at this stage of debate). Nonetheless, with the new US administration such emphasis may be less efficient (since it is impossible to fire the same bullet twice).

Reasons for the NMD Development

The USA justifies its NMD plans with grave warnings about the missile programs of non-democratic states (North Korea, Iraq, Libya, etc.), which reportedly tend to irrational behavior. One cannot rule out the possibility

of the development of a threat against the US territory if these regimes acquire the appropriate technology. The US administration, however, no longer calls them *rogue states* and prefers to use a new term – *states of concern*.

Nonetheless, the linkage between NMD deployment and the potential threat on the part of these states seems unrealistic or exaggerated to many outside the United States. Japan may be an understandable exception, since North Korean missile tests demonstrated the vulnerability of the Japanese territory. But for the French or the British such vulnerability is more hypothetical than real. Europe, unlike the USA, tries to be less hysterical about this problem and not to exaggerate it.

Sometimes the USA is accused of using overestimates of the missile capabilities of the *rogue states* as a political disguise for NMD plans. Many in Russia believe that this is merely a matter trying to *sell* this project to the US public and international community. They presume that the real long-term goal of the US plans is not to protect its territory from possible North Korean (or similar states) launches, but to deploy a fully-fledged missile shield against a large-scale ballistic missile attack (which, at present, can be performed only by Russia). They believe, moreover, that US outcry over *rogue states* is being used to justify the first steps in this direction, which violate the letter and spirit of the 1972 ABM Treaty.

Although Europe tries not to insult the USA with such accusations, the problem of adequately assessing threats still emerges. Besides, many in Europe believe that even if these threats are realistic an adequate response would be not to develop a *shield* against *irrational* states, but resort to political, economic, and other instruments, including coercion.

The NMD logic is often regarded as an example of applying a simplified technical solution to existing problems. This action is further exemplifies situation where a party tries to build a wall to protect itself from not very pleasant realities without taking into considering the reasons for those realities or how best not to exacerbate them with one's

actions. This isolationist pattern is incompatible with both globalization and the idea of a responsible leader, a role the US, as a world leading power, is to play.

International Political Context

Even if the USA believes its pro-NMD arguments are rational from the point of national security, this does not necessarily provide for the positive or neutral attitude to this project of other states. On the contrary, NMD deployment plans are perceived as yet another proof of the US desire to ensure its indisputable technological superiority and political domination. In any case, none of the world's nations can develop something similar to the NMD system, which would provide for a unique position for the US (with corresponding military and political consequences).

As far as military aspects are concerned, this will mean a further enhancement of US might, which none will dare to challenge or resist. Existing US military superiority will become an absolute advantage for the United States. As NMD and TMD systems are integrated into one complex, the USA will acquire capabilities to make a disarming first strike, thus nullifying the credibility of Russian and Chinese retaliatory strike potential. The pattern of «mutually assured destruction» will be replaced by «assured survival» for only the USA (this will inevitably tip the military-strategic situation in favor of Washington).

Undeterred and *intoxicated* with huge military capabilities and virtual invulnerability, the USA will be more than ever susceptible to the syndrome of *power conceit*. In other words, the USA, assured of protection, will be less cautious overseas in resorting to force and will prefer force even when other means are possible and reasonable. This is not always exhibited in public, since international political etiquette makes it impossible to speak about the *cowboy* behavior of Washington. However, concerns about the possible intensification of US interventionism and a willingness to use military force are one of the reasons for a prudent reaction to US NMD plans.

The political consequences of NMD deployment would be an increasing *uni-*

polarity of the world system, which is often taken for granted, although without any enthusiasm. Anyway it is arguable whether the current situation of the world arena reflects uni-polarity or multi-polarity (and Russia's morbid emphasis on this issue is sometimes bewildering). Meanwhile, there is no doubt that the US NMD program will impede or even block the world's movement towards a multi-polar system (which is supported not only by Moscow, but by Beijing and Paris, as well as some other states).

The US persistence in developing and deploying a NMD may affect the placement of key international actors in the system of their political interaction.

It is evident what changes US-Russian relations would undergo. Moscow will presumably try to refrain from overreaction, which could end its cooperative relationship with the USA and could pave the way for a new cycle of global confrontation. At the same time, it is obvious that the *cold world* of bilateral relations will become even cooler. The anti-American sentiments alive within Russian political circles and society, which have been raised by NATO expansion to the east and the war in Yugoslavia, may reach a critical stage.

This attitude may be expressed in Russia's effort to achieve an alliance or quasi-alliance with other US opponents. China is a matter of special concern here, especially because of the Russian-Chinese rapprochement concerning US NMD plans. These US plans have led to the formation of an anti-American front between these two states for the first time since the historic falling out between Beijing and Moscow in the 1950s. This reconciliation has its objective limits; both parties have vested interests in developing relations with the USA (sometimes these interest contradict and compete); finally, there are (or there should be) different views of the strategic consequences of NMD and different visions of proper response to such consequences. Nonetheless, the US NMD promises to give a new impetus to Russian-Chinese cooperation and the targeting of this alliance against the USA. If such a coalition is consolidated it

may become an important element of the world balance of power in the early 21st century.

US NMD plans may have an impact on allied ties within NATO. Some experts even speak about a coming crisis. Even if such assessments are mere exaggerations, it is useful to bear in mind the following urgent issues.

Firstly, the US European allies have been continually discontent with the US unwillingness to provide them with enough information and consultations in developing American policy in strategically important areas, which relate to NATO on the whole. Europe may put up with the US missile concerns, but it wants a clear explanation of how US plans correspond with other aspects of international political development, e.g. with arms control efforts. In other words, US European partners want to be in the know of specific problems and possible solutions, i.e. they insist on more transparency among the allies.

Moreover, they would not only like to obtain more information about US decisions, but to influence them as well, when their interests may be affected. For instance, radars on the territory of allied powers become a potential target for the enemy if US NMD is deployed. Hence, such states should be involved, at least, in the process of shaping NMD policy.

Secondly, and this seems to be the most important thing, the allies are concerned with the threat of *de-coupling* within NATO if the US plans are implemented. This act would promote the emergence of unequal security zones with a high level of security for the USA and a lower level of security for their partners, who would not be protected by the NMD *shield*.

All this will result in a new round of traditional debate concerning strategic transatlantic relations. One can say that these issues are eternal and, in principle, cannot be solved but, rather, are now and then attached with more or less political significance depending on the international atmosphere. This was the case in the late 1970s and early

1980s (in reference to intermediate-range missiles) and in the 1980s (US SDI). Nowadays, NMD issues may provoke a new round of heated discussion among the allies.

As before, Germany is the most active in raising the issue of possible *de-coupling*. Britain is more concerned with NMD impact on NATO's solidarity, credibility, and the efficacy of its military policy. For two European nuclear weapon states (Britain and France), it is important to know how the US NMD deployment and Russia's response will affect their national deterrence capabilities.

Among other issues emerging in this context are those that replicate Cold War polemics but with respect to new actors. The major question is whether a US missile *shield* will deter possible aggressors or will make such states switch to less protected US allies. Therefore, it is logical to speak about the advisability of developing a European missile defense. This conclusion corresponds well with European common defense and security policy.

President Putin's initiative concerning a joint non-strategic NMD in Europe might have addressed these sentiments. There is political and strategic logic in such approach. Naturally, it can be regarded as another Russian attempt to *divide and rule* and spoil US-European relations. Only if Russia can minimize this impression, can it make some progress in this area.

Only then would it become clear whether US NMD plans would eventually be a new incentive for better Russia engagement in the European security system. Such a scenario may seem paradoxical, but should not be discarded.

A New Arms Race

One of the most dangerous consequences of US NMD plans is the possibility of spiraling into a new large-scale arms race. This would not be only a matter of rivalry in the area of missile defense, although it might require enormous mobilization of resources and scientific-technological potential; there are, in addition, two other issues to be discussed.

First is the possibility of compensating for or neutralizing NMD breakthrough through active efforts in other spheres (above all, in the area of strategic offensive weapons). It is believed to be technologically easier and cheaper, which makes it attractive to China and Russia.

Second is the general direction of military efforts to ensure the security of the state. Is it possible to regard NMD as a shift in the understanding of the concept of deterrence: from offensive to defensive means? If one analyzes on-going military programs and plans of army reform by the world leading powers, he will hardly find many grounds for such a conclusion. On the other hand, the efficiency of deterrence based on nuclear missile response cannot be verified at a global level and may soon be put to the test in some regions (in South Asia). At the same time, ethical doubts about the advisability of using nuclear weapons in response become a more and more serious argument. Finally, the very goal of the total elimination of nuclear weapons (regardless of how distant such prospects may be) works in favor of missile defense and not to the benefit of nuclear deterrence.

Even if we presume that the aforementioned conclusions are merely speculative, possible decision on NMD deployment will make them more tangible. At the same time, Russia may waver between a symmetric and asymmetric response; but independent of Russia's choice, the arms race will get new momentum.

Parties to this arms race might start to expand it to areas where so far it has been limited or non-existent, e.g. to refuse to accept as legitimate flights of surveillance satellites over their territory and take some countermeasures (as forbidden by Article XII of the ABM Treaty), making outer space an arena of military confrontation. Another by-product of the NMD deployment could be Russia's decision to prepare its SNF for launch-on-warning or to increase the role of tactical nuclear weapons in military planning, abandoning any measures to limit tactical nuclear arsenals.

Another question is whether Russia could survive this new arms race. Perhaps, it would be more reasonable for Russia to refrain from engagement in new a competition if it is not completely sure of its capabilities. Presumably, Russia should allow for some serious political concessions and tolerate US NMD, regardless of it negative perception of the US plans. This question cannot be answered *a priori*; besides, one can hardly guarantee that Russia will follow this rational line (in fact, the very notion of «rational» in high politics is quite vague and easily changing). This means that the possibility of new large-scale military confrontation caused by US NMD plans should not, at least, be ignored.

On the part of the USA, which is at a stage of unprecedented economic growth, such scenario will not cause any particular concern. However, its allies may fear facing serious difficulties. For instance, Western European nations have two top priorities – the modernization of armed forces (in the light of analyzing the Kosovo experience) and the development of common European defense and security policy (within the EU). A new arms race resulting from NMD deployment might hamper these efforts. Meanwhile, Japan is concerned with future difficulties in pursuing a traditional policy of spending no more than 1% of GNP on defense.

The Nonproliferation Regime

If the USA pursues a policy of NMD development, this will ruin arms control, which has basically stalled in the post-Cold War era. Efforts aimed at seeking interaction in the area of military security maintenance can be discredited by the US refusal to follow some self-restraints and international agreements in the area of missile defense. These two processes head in opposite directions and arms control will be doomed to collapse if the mightiest military power in the world will takes steps running counter to and undermining arms control logic.

It is noteworthy that this issue is thoroughly considered by the US NATO allies. France, for example, emphasizes the existence of serious problems concerning the potential

impact of NMD deployment on the efficacy of arms control, in particular in the area of nuclear and missile nonproliferation. French officials argue that if the USA is ready to withdraw from the ABM Treaty, Washington should be ready to deal with other states' withdrawal from multilateral arms control regimes, including the NPT. At the same time, Paris points out that the very intention to develop a NMD system cannot but make the impression of refusing to combat nuclear and missile proliferation. Great Britain is also concerned about the implications of NMD deployment, especially after the US Senate's refusal to ratify the CTBT.

One should bear in mind that such criticism has some inner contradictions like any other vision of nuclear or non-nuclear aspects of military security. For instance, the possibility of undermining the nonproliferation regime may become a powerful incentive for the development and deployment of missile defense systems. Obviously, in this case, it is a matter of making counter arguments to NMD proponents. There are no absolute rationales in favor of treating the first logic as correct and the other as incorrect. Anyway, one of the key nonproliferation issues is to make nuclear weapon states eliminate these weapons, while missile defense rhetoric has been speaking about making nuclear weapons obsolete since Reagan's rule.

However, one can hardly disagree that the linkage between the NMD and nonproliferation makes it necessary to strengthen the latter. The erosion of the nuclear nonproliferation regime and the proliferation of missile technology will eventually increase the demand for means for protection on the part of the growing number of states. In connection with this, reproaches against Russia and China concerning their poor compliance with nonproliferation commitments shift the responsibility for US plans to seek missile defense onto them.

We will not try to assess how fair such reproaches are (neither China nor Russia accept them). However, such accusations are based on a relatively good plan of curbing political support for NMD deployment by

encouraging progress in the area on nuclear and missile nonproliferation.

This logic was used by President Putin during his visit to Okinawa after visiting North Korea. Pyongyang's decision to refrain from developing its missile might (if the DPRK gets an opportunity to use for non-military purposes the pertinent technologies from other states) would make any fears about North Korean missile threat (one of the major grounds for the US NMD deployment) untenable.

However, one can hardly verify this hypothesis. There are serious doubts about North Korean intentions concerning such a deal, which emerged several weeks after Kim Jong-il sensational statements. If it was a matter of a joke or improvisation on his part, the US skeptics were given yet another reason not to trust authoritarian rulers striving to acquire missile technologies. After all, their dangerous unpredictability is one of the reasons used to justify a NMD *shield*.

The Chinese Factor

Another matter of serious concern is the problem of China. Beijing believes that US plans are caused, neither by the threat of *rogue* regimes (as Washington argues) nor by a desire to diminish Russian second strike capabilities (as Moscow suspects), but by a ambition to diminish the effect of the Chinese nuclear and missile arsenal. The Chinese reaction is even more predictable than the Russian one. Beijing will probably abandon even minimal cooperative efforts, which it has carried out at multilateral and bilateral arms control forums. Major emphasis will be placed on the modernization and buildup of Chinese nuclear missile arsenal (e.g. by MIRVing strategic nuclear launchers and developing nuclear-powered submarines).

Obviously, China is following this path anyway, regardless of any US NMD plans. However, the latter legitimize Chinese endeavors and make them a part of better military-strategic logic. China seems to gain political profits, despite its assurance of the anti-Chinese character of the US plans.

China believes that it has to deal with another aspect of the US missile defense program as well – the development and deployment of regional missile defense in East Asia. Since such a system is designated to protect US key regional allies, including Taiwan, this makes it very sensitive for Beijing, regardless of any statements or explanations on the part of Washington. At the same time, the planned deployment of 100 interceptors in Alaska is also regarded as an attempt to hamper a Chinese assault on Taiwan. However, Beijing regards this possibility of intervention as its sacred and unalienable right. Hence, the US NMD plans provide for additional tensions in relations with China, forcing the latter to look for some response capabilities.

Indeed, the TMD system in East Asia will cover Japan from missile attack and will probably lessen Tokyo's desire, if any, to acquire nuclear weapons, making these plans more attractive for China. This can be regarded as an example of a positive international political effect of US NMD plans. However, the «missile defense to promote nonproliferation in East Asia» slogan is inept, due to Chinese concerns that the disruption of the fragile regional balance will drive Japan to acquire nuclear weapons (and Tokyo has both the economic and technological capabilities for that), as well Beijing's fears about Washington's inability to clearly divide between the US-Japanese TMD (and to intercept short and medium-range missiles) and the US NMD (against Chinese long-range ballistic missiles as viewed from Beijing).

Conclusion

News about the delayed NMD decision made Russia breathe a sigh of relief and encouraged many comments justifying the rigid and uncompromising approach to the problem. There are reasons for such assessments but they should not result in any euphoria or political mistakes.

In fact, the US position was influenced by many factors: Moscow's resistance, Chinese willingness to buildup its forces, and lack of support on the part of allies. But one should not forget about the importance of other

factors. The election campaign will soon be over, new tests may be more successful, the USA may continue believing in the fantastic capabilities of US technology, rank and file US citizens may yet realize that the *shield* would be better to protect their houses than a nuclear *sword* used to deter somebody (since the rogue states may neglect this threat).

In other words, discussion on missile defense is still under way. This issue may soon reemerge in the focus of global attention. It is important to minimize possible international political implications, which can be graver than the military ones.

It is useful to remember the story of IRBMs and SDI. There were many apocalyptic forecasts at that time, as well as hopes that the mobilization of international public opinion and opposition of the US allies would prevent a negative scenario.

These doomsday predictions and hopes turned out to be exaggerated. Other factors were eventually important for the development of the situation. Among them, the key factor was the promotion of cooperative interaction between the parties. As a result, the crisis with *Pershing-2* and SS-20 missiles resulted in the INF Treaty and the dramatic developments concerning *Star Wars* program led to strategic offensive arms reduction agreements.

Can this experience be extrapolated to the present situation? Certainly, yes. Such confidence is accounted for by the fact that even in times of heated polemics about Kosovo, Chechnya, and missile defense, world leading actors, above all Russia and the USA (during the June 2000 summit), have managed to find some common language in assessing the current situation with strategic stability and selecting ways to strengthen it. If the parties succeed in drifting from common language to joint actions, this will be crucial for the neutralization of the negative character of NMD issues. Besides, the two states may try to use this basis for the construction of a new model of cooperative relationship suitable for life in the 21st century.

Commentary

IRAN: ARE WMD OUT OF REACH?

by Anatoly Alimov

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Translation into English. Abridged version

After Islamic revolution Iran was regarded as a threshold state threatening stability and security in the Middle East. International experts have been examining Tehran’s strategic plans and military programs, paying particular attention to WMD and delivery systems. New political scandals and heated debate emerge practically every month and deal with Iranian military program or its cooperation with other states in the area of dual-use technologies. Hence, Iran is often mentioned in numerous publications pertaining to nonproliferation and export controls.

Under these circumstances, it is necessary to assess general level of Iranian economic development and its military-industrial might formed in the last 15-20 years. It is advisable to study actual achievements of Tehran in producing WMD and delivery systems. Such research should be devoid of political considerations of the moment, as well as evident provocative leakages of information in media and double standards practiced by the United States. It is even more important to make such estimates, taking into account speculations of the early

1990s concerning Iran’s ability to develop nuclear weapons within the next 10 years.

Analysis of macroeconomic indicators, statistical data and other information, including evidence by international experts concerning certain types of weapons, enables us to check and see how realistic some conclusions and forecasts of the 1990s were.

Iranian Economy and Industrial Development

It is known that military-strategic might of any country depends on its territory, population, access to natural resources, geographical situation, level of production, scientific and technological potential, cultural development, dependence or absence of dependence on import of resources and technologies, etc.

Bearing in mind all these indicators, Iran is considered to be a developing country and is highly dependent on foreign resources and technologies. Iran has failed to overcome this dependence, despite modernization policy pursued by its leadership before and after World War II and shah’s efforts to transform the country into the most powerful nation in the Middle East. After demise of the shah’s regime, Iranian Government continued this policy but focused on self-reliance and curtailed cooperation with Western countries. This course had some significant negative implications, led to long self-isolation and impeded economic development of Iran. In fact, self-reliance not only included self-production of consumer goods and equipment, but also covered arms and advanced materiel.

Iranian Imports in 1981-1997, tons

	1981/82	1986/87	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
Mineral raw materials, mineral oil, metal ore	990673	1564556	3746168	5744978	3366094	5978916	7319922	6172677
Chemical products	1952684	2111621	1034348	978343	1776877	1147167	1122347	1238076
Machines and equipment	439279	345021	1034348	378343	626125	392051	236648	367802
Transport, including aircraft and sea ships	179071	137799	414889	378168	274825	188416	45458	90158
Arms, ammunition, assemblies and spare parts	3314	1073	1663	282	4172	2271	2822	-

In the recent years Iran has managed to ensure tremendous GDP growth rate – 56.6% in 12 years or on average about 4.7% per year¹. Such high GDP growth rate should have reflected Iran's sweeping transformation into new Asian economic giant. Official Iranian statistics demonstrates that GDP per capita reached \$1,544 in 1995 (in current prices) and enabled Tehran to overtake Pakistan, China, and India; among Middle East nations, Iran only lags behind Turkey². However, in 1987-1999, Iran had high inflation rate and relatively rapid population growth rate (more than 2.5% a year). According to some estimates, in 2000 Iran had more than 72.6 million people³. Another indicator of social development is literacy rate and the number of university students: during 10-12 years Iran experienced 80% growth in literacy (from 23 million to nearly 42 million), whereas university population increased in four times.

Obviously, one should assume cautious approach towards Iranian official statistics, due to natural errors of technical character and lack of transparent public data on certain economic activities of governmental bodies, as well as confidential character of information concerning national defense. Besides, official statistics may exaggerate Iranian achievements to demonstrate successful efforts of Islamic Government in the area of economic development.

However, if one compares Iranian official figures with corresponding indicators of other states, one can hardly conclude that Tehran has or is close to acquire real potential for WMD production and development of delivery systems. For instance, Iran has the lowest defense expenditure among Middle East nations (2.6% of GDP), unlike Saudi Arabia, Israel, Syria, Pakistan, Turkey and Egypt. Even though information about military spending of Middle East states is quite unreliable and these countries widely practice barter deals and conceal arms import accounts, Iran has the least militarized in accordance with available data⁴. On the other hand, if Iran possesses nuclear weapon program one cannot preclude that it is financed from

economic development section of the budget rather than from defense spending.

Economic situation in Iran is directly connected with problems of modernization and country's dependence on foreign states. Thus, key task in assessing Tehran's ability to develop and produce WMD and delivery systems will be to examine probability of elimination of such technological dependence, including not only technologies themselves, but also personnel and equipment.

Iran has steadily been financing its economic development; the Government has gradually been increasing expenditure in this area. This may mean that economic and military-industrial potential of the state has slightly been growing. Majority of state investments have been made in oil industry, transport, energy, water (Iran suffers from shortage of water resources), and agriculture. Iranian authorities have traditionally supported development of these vitally important sectors, but paid lesser attention to industry and mining (excluding oil and gas). Present-day level of Iranian industrialization with its overwhelming cottage industry and handicrafts (96% of all industrial enterprises) proves that Tehran hardly possesses technological potential for indigenous design and production of modern weapons, including nuclear arms and delivery systems. Besides, even to manufacture advanced tanks or aircraft the country needs cooperation among several hundreds of adjacent and high-tech industries⁵, which do not exist in Iran.

Iranian industry also relies on import of raw materials and semi-finished products, component parts and assemblies.

The weakest point of Iranian industry is an extremely low level, if not to say inability, to manufacture means of production, especially high-tech equipment. Iran currently produces mechanic devices, simple equipment and mechanisms for construction, woodworking, and mining, makes some spare parts, manufactures certain kinds of metal cutters, etc.

Equipment and machines of Iranian industry are rapidly aging. Sometimes due to long time of industrial construction design technologies and ordered equipment become obsolete even before an enterprise starts to operate. Modernization and reconstruction are insufficient and there is a growing trend for accelerated technological aging of Iranian industry.

Other problems are low level of skills among industrial personnel, lack of adequate mechanisms to introduce knowledge and share experience, loose quality control (especially at small and medium-sized enterprises), underdeveloped system of standards, outdated equipment in testing laboratories and other appropriate institutions, etc.

To illustrate Iranian industrial and economic might, let us estimate development of arms production industry and give some examples.

For instance, in 1995, Iran argued that it had achieved self-reliance in arms and exported weapons, including technology, to 14 countries. Tehran also announced that it had launched production of 40-ton tank armed with 125mm laser-guided gun, night-vision equipment, 1,000-hp engine, etc. and was ready to export such tanks. According to this source, tank's design was based on prototype of a Soviet tank captured during hostilities with Iraq⁶. Two years later the Corps Commander of Islamic Guard maintained that Iran had begun to manufacture indigenous new light tank armed with 90mm gun and advanced guidance system. He also spoke about construction of a new tank plant and reiterated the fact of producing 105mm-gun tank on the basis of US M-48 and M-60 tanks⁷. In 1998, Russian experts on Iranian military and economic potential mentioned this tank again and called it a modified version of Russian T-72⁸.

If aforementioned facts are true, it would be logical to presume that by mid-1990s Iran had developed iron-founding production for tank armor from appropriate kinds of steel, had technology of making steel for running gear, caterpillar tracks, and powerful diesel engines, including plants for specialized alloys, bearing production plants, plants to

manufacture barrels, electronic and optical equipment, etc. Iran must have had developed design and R&D infrastructure, numerous qualified specialists and unlimited funding. Even if all these prerequisites had existed, it would have taken Tehran several years to test technology and another several years to start regular serial production of such tanks.

Thus, one can call into question indigenous character of Iranian military production, including tanks, artillery, aircraft and ammunition, since such development is impossible without foreign assistance, cooperation with foreign suppliers and involvement of foreign specialists, even though one cannot deny that Iranian authorities divert large amount of revenues from social to defense programs. Iran may produce certain assemblies and parts of modern tanks and other military equipment, but the state of its industrial potential proves that *fantastic* achievements result mainly from external cooperation and major components are imported.

The situation with missile weapons is presumably the same, although Iran has achieved significant progress in this area proved by occasional reports concerning successful launches of Shahab-3 (with the range of 1,300 km) and development of Shahab-4 (with the range of 2,400 km)⁹. Here Iran probably relies on Chinese assistance, since Beijing resists US pressure and does not refrain from selling military technologies to Tehran. China has recently refused to limit its arms supplies to Iran, including anti-ship missiles¹⁰.

Iranian achievements should not be underestimated, but dependent character of its military industry and its underdevelopment were reflected even in the Iranian program of defense industry development:

- 1) acquire and examine technologies; develop arms production, especially missile systems, on the basis of acquired samples;
- 2) intensify R&D by using results of foreign R&D activities;
- 3) master technologies to maintain and repair military equipment and arms;

- 4) expand the amount of production, enhance variety of manufactured spare parts and assemblies for complicated military equipment;
- 5) increase production of ammunition for all types of weapons¹¹.

Iranian Military R&D: Missile and Nuclear Programs

Iran is considered to be one of the major investors in military R&D and allegedly spends about \$200 million for that purpose. According to official Iranian sources, in 1996-1999, Tehran expended about \$150 million per year for scientific research, which is not much (0.001% of GDP) in comparison with international standards (1% of GDP on R&D to ensure sustainable development and technological progress)¹². Meanwhile, such official data is quite dubious, since Iran may afford not to publish real information about military R&D expenditure and has never submitted any reports of that kind to the UN.

However, Iranian defense R&D spending must be substantial. If one takes into account the 1998 statement by Iranian Defense Minister that Shahab-3 development cost \$600 million¹³, at least, 30% have been spent on R&D, beside expenditure on laboratories, multipurpose industrial complex and test ranges. Iranian annual spending on missile program is presumably comparable to budget of the Indian Ministry of Space (about \$178 million per year)¹⁴.

Obviously, this will only be a rough indicator of Iranian achievements as far as advanced technologies and indigenous missile production are concerned. But Iran takes enormous efforts to ensure scientific breakthrough and procure new technologies. In this connection, one should note Iranian brand new area of activities – space program.

In the early 1990s Iran constructed in suburbs of Tehran the Center for Space Studies – a large complex with research and production facilities. There is no statistics about budgetary allocations for this sector of Iranian industry, but there are some indications that Tehran has first achievements in this area. For instance, in mid 2000, Iran made two telecom satellites: one in collaboration with Russia and the

other together with eight Middle East nations¹⁵.

It is even more difficult to assess situation with nuclear R&D activities. In 1989-1994, Iran spent about \$110 million of its hard currency revenues on nuclear energetics. Since there was no Bushehr NPP construction at that time, one may presume that most of this money was expended on appropriate nuclear R&D. According to some experts, in that time Iran implemented a number of projects, constructed research reactors and laboratories¹⁶. However, even if one bears in mind that modern technological achievements and diminishing costs of R&D facilitate acquisition of nuclear weapons, with such funding Iran will hardly develop an A-bomb in several years, as it was predicted in 1992. Much has to be done to accomplish this task, if it has ever been set.

We believe that planned Russian supplies of laser equipment to Iran cannot be directly connected with implementation of Tehran's nuclear program. Washington and some Western media harshly criticized such supplies¹⁷, although capacity of these devices is no more than 40 W, i.e. they do not violate any bans on export of technologies.

According to available estimates and information, Iranian nuclear program has been either reduced or suspended in 1995; and it is significantly underdeveloped. The problems are the same as in the late 1980s – lack of appropriate equipment, nuclear materials and skilled personnel. As far as construction of the first block in Bushehr is concerned, this program is implemented in compliance with approved schedule: the Iranian Government provides sufficient funding for all activities, makes monthly payments to prime contractor in rials and pays for Russian supplies of equipment, etc.

Conclusion

Iranian economy has been developing with high growth rates in the 1990s. Iran has reached the group of countries with medium GDP per capita level. Major industries have achieved substantial progress. However, Iran still faces serious problems of internal and external character.

Iranian industrial complex, including defense industry, supplies the Armed Forces with practically all kinds of conventional arms and materiel. Despite significant advancement, Iran is highly dependent on foreign states as far as complicated modern equipment is concerned, including aircraft, missiles, armor, radio electronics, etc. Chemical industry and some other key sectors remain dependent on imported components. The weakest point of Iranian industry is low capabilities to manufacture means of production.

Development programs elaborated for defense industry provide for keeping reliance on import of technologies and replication of foreign analogues. Although Iran has succeeded in maintaining indigenous military R&D, development programs still envisage application of foreign technological achievements.

In the early 1990s, some experts predicted that Iran would develop nuclear weapons in the next few years. Nonetheless, these assessments proved to be ill-grounded. Iran is in the process of shaping its scientific and technological potential and it will take him long time to reach required level for WMD production.

¹ *Iran Statistical Yearbook 1998*. Tehran, winter 2000, table 21.1.

² *Ibid.*, table 22.18.

³ *Nezavisimoye voennoye obozreniye*, 2000, October 20-26.

⁴ *SIPRI Yearbook 1999* (in Russian). M., 2000, p. 307.

⁵ *Iran Statistical Yearbook 1998*, table 7.4, 7.11, 7.12.

⁶ *Military and Arms Transfer News*, 1995, No. 95/13, November 1.

⁷ *Nezavisimoye voennoye obozreniye*, 1997, December 19-25.

⁸ S. Bagdasarov, D. Chavushyan, *Military and Military-Economic Potential of Middle East Nations*. M., 1998, p. 23.

⁹ *Izvestiya*, 2000, July 18.

¹⁰ *SIPRI Yearbook 1999*, p. 317.

¹¹ *Islamic Revolution in Iran: Past, Present, and Future*. M., 1999, p. 79.

¹² *Iran Statistical Yearbook 1998*, table 18.9.

¹³ *SIPRI Yearbook 1999*, p. 379.

¹⁴ *Ibid.*, p. 398.

¹⁵ *Vremya Novostei*, 2000, May 16

¹⁶ G. Gerardi, M. Aharinejad, "An Assessment of Iran's Nuclear Facilities". *The Nonproliferation Review*, 1995, Spring-Summer.

¹⁷ *New York Times*, 2000, September 19.

Commentary

FEASIBILITY OF PUTIN'S INITIATIVE: WAYS TO ENSURE SUSTAINABLE ENERGY SUPPLY¹

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Abridged version

At the UN Millennium Summit President Putin set forth an initiative to ensure energy supply for the sustainable development of mankind, to resolve in radical way the problems of proliferation of nuclear weapons, and to provide for environmental recovery of the planet. He proposed to launch an international project aimed at pursuing these goals with the help of nuclear energetics. There is no doubt that such initiative is topical and timely as a new century begins.

Putin's initiative is based on critical analysis of the state of global energy sector. There is an obvious shortage of cheap organic fuel, especially gas and oil, and high pollution of environment by waste of energy plants. At the same time, in the process of promoting energy supply for mankind one should bear in mind high population growth rate and increasing economic gap between developed and developing nations. Evidently, different regions will have different growth rate and structure of energy sector. The aforementioned factors will affect development of regional and global energy policy. Without concerted efforts and common concept of energy development, it will be difficult to ensure sustainable energy supplies.

Assessment of the problem of developing energy and protecting environment in the conditions of continuing population growth and predicted increase in energy consumption suggests advisability of large-scale nuclear energy development, at least, for some regions, including Russia. Large-

scale nuclear energy development will mitigate greenhouse effect and provide for optimal (economically and environmentally) growth of global energy consumption. Oil and gas will be preserved for non-energy uses and for power plants that will use them most efficiently.

If we want to solve energy problems of humanity by developing nuclear energy, we should think about improving and upgrading nuclear fuel cycle technologies, introduce close fuel cycles, extended reproduction of nuclear fuel, involvement of new types of nuclear fuel, development of nuclear power plants with different capacity armed with reactors with fast and thermal neutrons. All these activities will be necessary to meet various demands of consumers and to accomplish structural tasks of nuclear energetics. Large-scale nuclear energy sector requires closed fuel cycles, so that it may not only use fissionable uranium isotopes existing in nature, but provide for expanded production and application of artificial fissionable isotopes of plutonium and uranium-233.

Many elements of future structure of nuclear energy sector have already been developed, but much has to be done to create a coherent structure of nuclear energetics capable of long-term and large-scale development. Above all, this relates to development of technologies, components and systems of nuclear fuel cycle and solution of radioactive waste management problem. Developed states should think about the future and assist developing countries in implementation of existing and new projects, adapting them to specific conditions and requirements of the Third World. To invent advanced nuclear energy technologies that will take into account more than 50-year experience and will meet demands of global energetics, there is a need for concerted efforts of all states interested in nuclear energy and possessing scientific and technological potential and knowledge.

Large-scale development of nuclear energy sector will have to enhance efficiency of nuclear nonproliferation regime. Anyway nuclear power plants and related technologies, nuclear fuel enterprises and

fuel itself should be designed in a manner to secure nuclear nonproliferation, though it is understood that nuclear energy sector is not the only and the major way of nuclear arms proliferation. Modern technologies of natural uranium enrichment and separation of plutonium from natural uranium (not in energy reactors) give a chance to acquire nuclear material required for weapons. Meanwhile, the so-called current nonproliferation regime was established more than 30 years ago and does not take into consideration developments that have occurred so far, proliferation of new nuclear technologies, and changes in global political and economic situation. This is why, to ensure effective nonproliferation, mankind should take political, organizational and technical measures at national and international levels both in the spheres of nuclear fuel cycle and nuclear material management.

Format of Putin's initiative at the UN Millennium summit did not require any technical details of implementation. However, the presidential speech contained some technical ideas, 'We should reliably block the ways for spreading nuclear weapons. We can achieve this in several ways, among them, excluding the usage of enriched uranium and pure plutonium in world atomic energy production.' This concept seems to be unclear for the public, has caused equivocal interpretations and has not been accepted by many experts.

Enriched uranium. There are two categories of enriched uranium – highly-enriched uranium and low-enriched uranium. To develop nuclear weapons, one needs HEU, whereas peaceful nuclear power plants use LEU (and it is not recommended to apply HEU in nuclear energetics). Proposal to exclude the usage of enriched uranium will face negative response of entire world nuclear community, since existing peaceful nuclear energy sector based on boiling and pressurized-water reactors employs low-enriched uranium.

Excluding the usage of enriched uranium and pure plutonium in nuclear energy production. This is supposed to be one of the ways to enhance efficiency of nuclear

nonproliferation regime. Nonetheless, there are some examples that refute this theory. Nuclear weapons were developed when there was no civilian nuclear energy production. India has no enrichment industry and does not use pure plutonium in its peaceful nuclear energy production. New Delhi has heavy-water reactors with natural uranium fuel. Fabricated plutonium does not return to the fuel cycle. It may seem that all aforementioned nonproliferation requirements are in place, but India still possesses nuclear weapons. The same is true as far as Pakistan is concerned.

Returning plutonium to nuclear fuel cycle.

Some nations (Germany, France, Belgium) have learned to reprocess irradiated nuclear fuel of energy reactors, to separate pure plutonium and use it afterwards to produce energy. Thus, proposal to refrain from stockpiling plutonium separated in the course of reprocessing irradiated fuel and to return it to nuclear fuel cycle is already being implemented in modern nuclear energy sector.

Final solution to radioactive waste problem.

It is too early to say that Russian fundamental research in the area of incineration of plutonium and other radioactive substances creates prerequisites for final solution to the problem of radioactive waste. The aforesaid research is at its initial stage.

We presume that key technical ideas mentioned in the initiative are the result of the BREST project. It is understandable why Russian nuclear industry leadership is so much concerned about this project and strives to use supreme authorities to introduce these innovations. BREST is allegedly capable of solving all problems of large-scale nuclear energetics: unlimited fuel supplies, cardinal solution to the problem of nuclear arms proliferation, natural safety, incineration of radioactive elements and no more problems with radioactive waste. These allegations have not yet been proved in the course of research and technical activities and they are quite controversial.

According to authors of the BREST project, combination of reactor and reprocessing in single complex will ensure nonproliferation.

It is true that mixture of plutonium and actinides used to close fuel cycle cannot be applied to develop nuclear weapons, but it is easy to separate pure plutonium from such mixture and to employ it in A-bomb instead of reactor. Such decision will limit commercial use of such reactors: they will be built by *nuclear club* members only, since transfer of spent fuel reprocessing technology to non-nuclear weapon states will increase proliferation risks. Besides, this technological solution will amplify radiation danger, taking into account the final process of decommissioning and shutting down the reactor.

Spreading of the BREST reactors and scale of nuclear energy development will depend on the amount of plutonium produced after reprocessing spent nuclear fuel of existing thermic reactors. It will inevitably lead to creating productive capacity for fuel reprocessing and separation of pure plutonium, though this contradicts with ideas of radical solution to the problems of nuclear proliferation and natural safety of radioactive waste disposal. Output of reprocessing plants will have to grow; uranium mining and enrichment industry will have to be expanded. Authors of the BREST project do not take these considerations into account and argue that they have resolved the issue of nuclear arms proliferation.

To tackle future fuel shortage, one needs cycles with extended reproduction of nuclear fuel. The BREST project deliberately avoids extended reproduction and this will impede large-scale development of nuclear energy sector. The problem of disposal of excessive neutrons has not yet been studied.

BREST is at its initial stage. Technology of lead coolant is under development today. BREST does not provide for even maintenance of oxygen potential in narrow permitted range (if it succeeds). To secure work of fuel rods, it is necessary to find optimal amount of oxygen in coolant suitable for certain temperatures and to maintain it at this level during all the time reactor is operated. There has been no evidence of normal functioning of construction materials and their normal coexistence with lead in

certain temperature conditions and under high neutron irradiation. The authors of the BREST have failed to study impact of irradiation on behavior of fuel rods and other elements placed in lead coolant: there have been no tests in real-time mode in reactors. The problem of mixed nitride fuel requires considerable efforts and time to be resolved. Technical solutions concerning fuel reprocessing are *in the bud*.

Long-term strategy of nuclear energy development in Russia and appropriate governmental decisions contain specific tasks for near and distant future as far as existing reactors, new generation reactors and fuel cycles are concerned. Nowadays the worst thing would be to take an arbitrary decision and to adopt any technological solution as the only remedy, call it the best way out and abandon all other directions of research. According to feasibility studies, the BREST is not ready for the stage of technical design and cannot be named the only component of long-term strategy of Russian nuclear energy development. This project can hardly become a basis for consolidation of international efforts (since key and the most valuable concept of Putin's initiative is to ensure joint endeavors).

It is necessary to study, develop and test new technologies, assess their efficiency in accordance with technical and economic criteria, as well as from the point of reducing proliferation risks. Nations of the world (the USA, France, Japan, South Korea and others) seek ways and technological solutions for new generation nuclear energy production. Under these circumstances, Putin's initiative about international project may have a consolidating effect, facilitate comparative analysis of several ways of nuclear energy development, which can be evaluated according to unified technical, economic, environmental and nonproliferation criteria. The international project should, in fact, focus on elaboration of such criteria. Broad interpretation of Putin's initiative is required: standards for nuclear energy of the future, optimal structure, key elements and new projects of nuclear energy sector, diminished proliferation risks. If the presidential proposals are regarded only in conjunction with implementation of the BREST project they may cause harsh criticism of international community.

International project should concentrate on comparing programs and concepts of various states and promote international cooperation in development and implementation of these projects. Such activities should be based on consensus and approved and unified requirements and should cover only specific power plants and nuclear fuel cycle systems. The project implies that all countries concerned will unite their efforts in securing energy supply for the sustainable development of mankind.

In the course of debate on Putin's initiative held at the Scientific Council meeting of the *Kurchatov* Institute, we have suggested to include several components in international project, each of which can be later incorporated into a number of projects.

Requirements to nuclear energy of the future. Nuclear energy sector should provide for cost-efficient, safe and reliable energy production in all regions of the world, where energy development on the basis of organic fuel is impeded because of economic, environmental and resource limitations, hence, hampering development of these regions. At the first stage, it is reasonable to formulate a broad range of requirements to nuclear energy and its long-term and large-scale development. One of the major tasks during transition to sustainable development is to find economic and political mechanisms facilitating such development.

Optimal structure and major elements of future nuclear energetics. It is necessary to choose structure and components of nuclear energetics that will meet different requirements and will contain closed fuel cycles with optimal neutron and nuclide balance. This structure should also provide for required production of nuclear fuel and multiple recycling of fuel, should minimize amount of radioactive waste and ensure that useful products are rationally consumed.

Solution to the problem of nuclear proliferation. Increasing use of nuclear energy, disposal of weapons-usable materials, expanding areas of uses and the growing number of countries dealing with nuclear energy, reproduction of nuclear fuel, closed fuel cycle and progress of nuclear technologies (not only in the fuel cycle of

nuclear energetics) pose the threat of nuclear arms proliferation. To mitigate this danger, the world community should:

- regulate proliferation-sensitive technologies, including those beyond fuel cycle of nuclear energetics;
- take strategic decisions and select technical means at all stages of nuclear fuel cycle to decrease stockpiling of weapons-usable materials, reduce their total amount and curb trafficking;
- perform disposal of excessive weapons-usable nuclear materials;
- develop and introduce technologies of nuclear material management that are based on inherent security of nuclear materials, i.e. use technological barriers impeding unauthorized withdrawal of nuclear materials from the cycle;
- improve organization and technical means of MPC&A.

International recommendations on large-scale development of nuclear energy sector should provide for optimal direction of development starting from today and up to distant future. This may result in the need to develop jointly and demonstrate in the near future some nuclear technologies that may become a basis for further large-scale development. These technologies should be aimed at:

- unlimited fuel resources due to the efficient use of natural uranium and, subsequently, thorium;
- the elimination of severe accidents, resulting from equipment failures, human errors, and external conditions, which release radiation and require the evacuation of the population which could be achieved primarily due to the natural properties and behavior inherent in nuclear reactors and their components (natural safety);
- the environmentally safe energy production and waste management in a closed fuel cycle involving in-pile burning of long-lived actinides and fission products and radiation-equivalent radioactive waste disposal without disturbing the natural radiation balance;
- the barring of the nuclear weapons proliferation pathway associated with nuclear power by phasing out the technologies of plutonium separation from spent fuel and uranium enrichment and by physically protecting nuclear fuel against theft;

- the economic competitiveness due to low costs, fuel breeding, high efficiency of the thermodynamic cycle, and the resolution of the NPP safety problems without adding to the complexity of plant design or imposing extreme requirements upon equipment and personnel.

Implementation of the international project will also require recommendations on funding and project management (establishment of working groups, decision-making procedures, etc.). Development of nuclear technologies has long become an international process, so it would be only natural if concerted efforts of countries concerned are promoted. Invention of new nuclear technologies meets long-term interests of the world community and, above all, developed states and should be endorsed by their governments if such technologies do not pose proliferation threats.

The international project is planned to be carried out under IAEA auspices, since it complies with the Agency's major objective to promote peaceful nuclear energy development. However, the IAEA cannot make its own scientific and technological contribution to project development. Its mission is to organize work of international experts to assess achieved results and to work out recommendations. The Agency cannot make any substantial financial contribution to the project.

Development of new nuclear technologies is a costly process and only states with sound research and industrial infrastructure in this area, including Russia, may cope with this task. We presume that Russia and other developed nations will benefit from concerted efforts in this sphere. Such cooperation may take bilateral and multilateral forms. In this connection, it would be reasonable to discuss the international project at the G-8 summit and to set common principles of management and funding.

¹ The author expresses his gratitude to experts of the *Kurchatov* Institute – P. Alexeyev, N. Kukharkin, V. Sidorenko, S. Subbotin, and V. Sukhoruchkin – with whom he discussed and prepared major theses of this article.

Commentary

RUSSIAN ARMS SALES: ANOTHER REFORM?

**by Vadim Kozyulin,
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Translation into English. Abridged version

On November 4, 2000, President Putin signed decrees dismissing Alexei Ogarev and Sergei Chemezov, who were Directors-General of *Rosvooruzheniye* and *Promexport*. With another decree the President united two companies into federal state-owned enterprise *Rosoboronexport* headed by Andrei Belyaninov, former Deputy Director-General of *Promexport*.

On December 1, 2000, Vladimir Putin issued Decree No. 1953 *"Problems of Military-Technical Cooperation of the Russian Federation with Foreign States"*, which contains the rules regulating Russian arms sales.

According to our estimates, this is seven reform of military-technical cooperation system since 1992, when President Yeltsin first signed a decree establishing Federal State-Owned Unitary Enterprise *Rosoboronexport*. Nearly every change of the cabinet normally leads to redistribution of arms sales revenues. As a result, rumors concerning soon dismissal normally emerge immediately after each appointment. The changes in the leadership of arms exporting company were expected this time as well; backstage fierce battles sometimes reached the press. Outcome of this struggle was not surprising. However, it is of particular importance: this is one of the first reforms of the new President and there are some facts that require detailed coverage and analysis.

Intrigues concerning reshuffles in the system of military-technical cooperation are not only interesting for a narrow military expert community, but may have long-term implications. This is a vivid example of specifics of decision-making and its implementation. Moreover, resumption of

military-technical cooperation with Iran (studied below) makes us think that such measures may become typical of other spheres, beside arms sales. They presumably reflect new style of work of Russian leadership.

The recent changes were so dramatic that one can speak about certain revolution, which resulted in sweeping and overwhelming victory of one of the two rival groups: President Putin has formed a new hierarchy which is directly subordinate to him.

Current presidential model of arms export has existed since 1994, when Alexander Kotelkin was appointed head of *Rosvooruzheniye*. He had close ties with Alexander Korzhakov, Yeltsin's security chief, and had a chance to submit some decisions to President Yeltsin in circumvention of bureaucratic machine. Nowadays, arms trade is also under presidential control, although Kotelkin's team is out of business today, whereas Putin's friends and colleagues supervise Russian arms export.

It is noteworthy that Kotelkin, who came to this business from the President's Security Service, was connected with the Main Intelligence Directorate (GRU) and his mates from secret services dominated among top managers of *Rosvooruzheniye*. In the new structure key posts were distributed among former officers of the Foreign Intelligence Service (SVR), while GRU lost its traditional influence in this area, which it had always enjoyed since the Soviet time.

Main goal of Kotelkin's team was to preserve existing military ties (chiefly, arms supplies to China and India under interstate agreements), while Chemezov's group strived to obtain full control over military export. *Promexport* enjoyed strong presidential support and it only needed vivid demonstration of success to launch the campaign for incontestable leadership in this area. 1999 was a year of failures for *Promexport*: large deals fell flat, possible breakthrough with Ethiopia was made null and void after adoption of UN arms embargo.

However, the company finally got a chance to urge for reform in the system of military-technical cooperation. On October 12, 2000, Sergei Chemezov arrived in Novosibirsk to verify fulfillment of a contract between *Promexport* and Algeria. According to the agreement, the *Chkalov* NAPO should repair 22 Su-24 bombers (\$120 million); and such significant deal enabled the company to make public statements and to launch the attack. Sergei Chemezov has first claimed for amalgamation of two arms exporters.

On October 27, the Presidential Commission on Military-Technical Cooperation with Foreign States discussed problem of nominating unified state intermediary for selling specialized equipment. Prime Minister Mikhail Kasyanov chaired the meeting and Sergei Chemezov made a report on the topic. He urged for establishment of the unified authority and proved advisability of consolidating *Rosvooruzheniye* and *Promexport*. Nonetheless, the commission rejected his arguments and found it pointless to unite two companies.

A day before revolutionary decree Alexei Ogarev, who was not suspecting a blow, gave a press conference where he briefed the media about his meeting with President Putin. According to Ogarev, Putin pledged that there would be no consolidation of two exporters. On the contrary, the President spoke about division of powers between two arms dealers (that was actually what Ogarev had asked him for). The newspapers came out with sensational statements by Ogarev and on the next day Vladimir Putin issued a decree with a completely opposite meaning: one state-owned company replaced two arms exporters and buried any concept of *division of labor*.

One can hardly believe that Ogarev misunderstood the President during their meeting. It is even more doubtful that after the talk Vladimir Putin suddenly changed his decision and signed an absolutely different decree. Such documents are normally prepared beforehand and it seems that the President deliberately blunted vigilance of Kotelkin's team. This *smoke screen* facilitated violent change of power in the area of

military-technical cooperation, which was sudden for Kotelkin's group and for old Kremlin elite in general.

Andrei Belyaninov, new arms dealer No. 1, convened directors of leading defense enterprises and informed that the President had charged the company with a difficult task: to achieve the same amount of trade as it was in the Soviet Union. Soviet annual arms exports amounted to \$15 billion: according to some estimates, actual Moscow revenues were about \$0.8-1.5 billion, but Putin speaks about absolute amount of sales and that is what he wants from arms dealers. To accomplish this hard mission, Russia has to get rid of its competitors on the world market and reach the level of US arms export. Thus, one may assume that new team has not only a plan of seizing power, but some strategic outline as well.

Andrei Belyaninov, Director-General of *Rosoboronexport*, graduated from the *Plekhanov* Institute of National Economy in Moscow in 1978. Until 1998 he served in the SVR and in 1998-1999 he was Chairman of the Board in *Novikombank*. He joined *Promexport* in December 1999 and was Deputy Director-General for Finance.

Sergei Chemezov comes from Irkutsk, where he graduated from the Irkutsk Institute of National Economy. He headed *Promexport* since late 1999 and has been recently appointed First Deputy Director-General of a newly established company. He is one of the most experienced arms dealers among these three figures and besides, he is known for his friendship with Vladimir Putin, with whom he served in East Germany.

Mikhail Dmitriev chairs the MOD's committee on military-technical cooperation. He graduated from the MGIMO in 1970 and until August 2000 he worked in the First Main Directorate of the Soviet KGB and in the SVR. His last post in the Foreign Intelligence Service was Head of the Information and Analysis Department. Then he was appointed Deputy Minister of Industry, Science and Technology and together with Grigory Rapota was in charge

of military-technical cooperation with foreign countries.

Three abovementioned officials are the most informed people in arms trade. They will obviously have access to analytical materials and confidential information, which are so important in this delicate business. There is no doubt that having *carte blanche* from the President, they will be able to lobby more efficiently many decisions, which were previously buried in the Ministry of Commerce. This team has only one weak point – human resources.

The company's list of staff and members is nearly completed and obviously, *Promexport* managers take leading positions. *Promexport* strategy has always been aggressive and was based on violent attacks against traditional Soviet markets in detriment to rivals from the FSU states and to *Rosvooruzheniye* as well. *Promexport* did not have to shape any state strategic approach to military-technical cooperation, unlike *Rosvooruzheniye*, which was responsible for implementation of interstate contracts. Nowadays, *Promexport* team has to accomplish a brand new task and it would be reasonable to have some experienced *tutors* or, at least, advisors. However, the majority of knowledgeable experts from *Rosvooruzheniye* were in this or that manner connected with Kotelkin's group, so temptation to get rid of rivals may be stronger than need for advice.

Pessimists know that after each reshuffle in the state-owned arms trade company the firm needs about half a year to recover. Naturally, this time the situation will be the same: revolutionary changes in arms export system may result in dramatic decline in sales. At the same time, one should bear in mind that deals with two major importers of Russian weapons – China and India – are regulated with intergovernmental agreements. Means to acquire Russian arms are appropriated in beforehand; therefore, revenues of Russian arms dealers will be only slightly affected. Moreover, new team will be able to realize some of its previous ideas.

One of the promising clients is Tehran. Russian leadership has been exploring the opportunity to resume military cooperation with Iran immediately after the Gore-Chernomyrdin memorandum of May 1995, which forced Russia to break military-technical ties with Tehran on December 31, 1999. Iran has been taking the third place among importers of Russian weapons and has always seemed to be Russia's significant economic and political partner in the region. Relations with Iran became strategically important during war in Chechnya and after *Taliban's* victory in Afghanistan. Iran has a developed defense industry and Russia is practically the only state that can offer advanced military technologies to Tehran to balance Iraq. Besides, Moscow is ready to endorse Iranian attitude towards Afghanistan.

After his trip to Iran Defense Minister Igor Sergeyev argued that Russian arms export to Iran might give Russia about \$2 billion in 2001 and up to \$7 billion in the next few years. This may be a *rosy* estimate, but even if Iran restores its former position, Russia's annual revenues will amount to \$300-500 million.

Another lucrative market is Africa, notably Ethiopia and Eritrea. Ethiopia was a trump for *Promexport* until May 2000. Ethiopian generals brought up in Soviet military academies and by Soviet military advisors were actively procuring different Russian weapons – tanks, Su-27 fighters, helicopters and missiles. UN arms embargo imposed in spring 2000 destroyed this *brotherhood in arms*. President Putin signed a special decree banning military cooperation with Ethiopia and Eritrea until May 17, 2001. *Promexport* lost profitable contracts and an opportunity to demonstrate its success in 2000. Anyway now the new company may have a chance to earn \$100-200 million in 2001 and to *show off* this year.

Finally, Russia is still looking for business opportunities in the Middle East. Escalation of Arab-Israeli conflict coincided with Russia's rapprochement with Arab countries. The latter change their perception of Moscow's policy to the better, albeit Russian

leadership did not even take any special steps to entice Middle East nations. Islamic world commended Kremlin's struggle against Gussinsky and Berezovsky as a positive sign of eliminating pro-Israel lobby in Yeltsin's and Putin's entourage. Putin's often contacts with competent specialist in Oriental studies Yevgeny Primakov have also been regarded as a symbol of positive change. Reshuffles in *Rosvooruzheniye*, whose leadership was considered to be pro-Israel by some Arab military officials, also contributed to this positive attitude.

Meanwhile, the Middle East is one of the biggest potential markets for Russian arms. Libya, Syria and, in the long run, Iraq may become large Russian partners. If we add the United Arab Emirates, Qatar, Kuwait, and Egypt, which have always preferred to rely on both US and non-US weapons and have paid with *real* money, then fruit of Russian-Arab rapprochement may be even more promising.

It may seem that despite dooms-day predictions, the reform in military-technical cooperation system has not resulted in diminishing sales so far. In late 2000, Alexei Ogarev promised that *Rosvooruzheniye* would gain \$2.95 billion. Official results have not been announced yet, but experts believe that total export will amount to \$2.8 billion. However, this figure demonstrates outcome of old deals, while new contracts will face more problems: some time will be needed to establish personal contacts with old partners and resume interrupted negotiations. Frequent reforms confuse foreign customers, since they no longer understand Russian system of military-technical cooperation.

Russian system of military-technical cooperation will face a dramatic reduction of the staff: from 3,000 to 2,000 employees. One may presume that these reductions will mostly affect former *Rosvooruzheniye* officials, especially Kotelkin's team. In fact, this is one of the reasons why *Rosvooruzheniye* is reluctant to promote sales: people are more concerned about their future than about interests of the state. Officials of the Ministry of Commerce will be luckier: they will move to the Ministry of Defense.

Rosvooruzheniye lost its trademark in one day as if it had no original value. At the same time, one should remember that the Government invested a lot of money in popularizing this trademark and these investments are now lost forever. It is difficult to recall any other country that would so easily and frequently give up such popular trademark.

Now that the system is more centralized chances for arms supplies to belligerents (e.g. for Eritrea and Ethiopia at the same time) are slim. *Rosoboronexport* will be good at working with Ethiopia, thanks to old ties, but Russian-Eritrean deals will be limited to contacts with six enterprises that have independent licenses for arms supplies.

Another risk for monopoly is low interest in small contracts. Ukraine realized this mistake and *Ukrspetsexport* set up a special directorate to negotiate and implement small contracts. And in some cases such agreements become a good start for long-term cooperation.

In June 2000, *Promexport* took up another specialized exporter *Russian Technologies*. Afterwards *Rosvooruzheniye* fell victim of takeover. There is a temptation to repeat this operation with other companies that still enjoy the right to independent work on the market. To ensure legitimacy of such monopolization, there is a notorious pretext about advisability of eliminating competition among Russian arms exporters.

Nonetheless, new reform has some advantages. President Putin started with monopolization and, thus, made the first step to strengthen his power and to restore the military-industrial complex. Presidential allies assumed extreme powers and control over military-technical cooperation. For the first time in modern Russian history arms dealers have a chance to use this *tabula rasa* opportunity and to form the system of arms trade headed by a team of associates not rivals. This team has had a large period of probation, so now it has all chances to realize its ideas and to see the outcome of their implementation.

Freedom of action and presidential trust may substantially contribute to predictability of the system, will help to streamline the structure and to promote growth in production of the military-industrial complex. Lack of competition on the part of conflicting financial groups, which was typical of the system in prior years, may help new managers to focus on conquering world markets instead of fighting for secure *rears*. Time will show how efficient the new system will be.

Appendix

Presidential Decree No. 1834

November 4, 2000

"Pertaining to Establishment of the Federal State-Owned Unitary Enterprise Rosoboronexport"

Unofficial translation

To enhance efficiency of military-technical cooperation of the Russian Federation with foreign states, I decide:

1. To establish the federal state-owned unitary enterprise *Rosoboronexport* by consolidating federal state-owned unitary enterprises *Rosvooruzheniye* and *Promexport*.

- The federal state-owned unitary enterprise *Rosoboronexport* is a self-sustained economic organization, which is the state intermediary in export/import of military production;
- The federal state-owned unitary enterprise *Rosoboronexport* is legal successor of the state-owned unitary enterprises *Rosvooruzheniye* and *Promexport* and enjoys all property and other rights and liabilities of reorganized federal state-owned unitary enterprises in accordance with the act of transfer;
- The President of the Russian Federation shall approve the Charter of the federal state-owned unitary enterprise *Rosoboronexport* and appoint and dismiss Director-General of this organization.

2. To charge the Ministry of Defense of the Russian Federation with responsibilities formerly carried out by the Ministry of

Industry, Science and Technology of the Russian Federation in the area of regulating military-technical cooperation with foreign states.

3. The Government of the Russian Federation shall:

- within three months provide for implementation of appropriate activities to transfer to the federal state-owned unitary enterprise *Rosoboronexport* federal property formerly belonging to reorganized federal state-owned unitary enterprises;
- within one month consider and submit proposals, if it deems necessary, to augment the strength of the Armed Forces of the Russian Federation to enable the Ministry of Defense perform its duties pertaining to regulation of military-technical cooperation;
- amend all its acts in conformity with the present decree.

4. The Director-General of the federal state-owned unitary enterprise *Rosoboronexport* within two months shall submit for approval draft Charter of the aforementioned enterprise.

5. The Federal Agency of Governmental Communications and Information subordinate to the President of the Russian Federation shall supply the federal state-owned unitary enterprise *Rosoboronexport* with appropriate means of communication, including governmental communications.

6. The Main State Legal Directorate of the President of the Russian Federation shall within two months submit proposals to bring acts by the President of the Russian Federation in accord with the present decree.

7. The present decree comes into force on the date of signature.

Stories of the Past

UNDERWATER RADIOACTIVE THREAT: HOW IT EMERGED

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Abridged version

Seabed becomes more and more a giant dumping site. For many years mankind has been burying millions of tons of waste, including environmentally hazardous substances, in oceans, seas, lakes and rivers. Problems of radioactive materials, crashed nuclear-powered submarines, nuclear warheads have recently become extremely urgent. Dumping of liquid and solid radioactive waste was typical of many states possessing nuclear-powered fleet and nuclear industry. Radioactive items buried in the sea and accidents with atomic submarines raise grave concern of global community. In most cases, regretfully, the former Soviet Union and Russia are blamed for such activities.

On August 12, 2000, the largest accident in the history of Russian submarine fleet occurred – *Kursk* nuclear-powered submarine sank in the Barents Sea during military exercise. The best crew of the *Nay* (118 seamen and officers) died. This emergency situation raised again issues of radioactive material dumping and safety of Russian atomic ships.

At present, seabed has become a grave for seven nuclear-powered submarines, two of which belong to the US Navy and five to the Soviet/Russian Navy (the most well-known are *Komsomolets* and *Kursk*). These submarines have sunk in times of peace because of fire, explosion or uncertain reasons.

It is known that two US decommissioned nuclear-powered submarines were sunk in

open sea after dismantlement of reactor core. The Soviet Navy used the same techniques to get rid of eight old reactors of the first generation SSNs in the North Fleet and two assemblies in the Pacific Fleet. Reactor of *Lenin* atomic icebreaker (the Barents Sea), whose service life had expired, and three SSN reactors with intact or partly dismantled cores were dumped in the sea, too.

In the 1950s-1970s about 25,000 containers with radioactive waste were dumped in the Arctic Ocean and in the Pacific. This waste included polluted uniform and tools, nuclear fuel rods with plutonium, etc. 17,000 of those drums were sunk in the Arctic Ocean, all the rest – in the Pacific. Sometimes, containers did not submerge immediately and seamen fired at them with machineguns to execute orders in time. US specialists did nearly the same job: they concreted containers with waste and dumped dozens of thousands of them in the Gulf of Mexico.

Rank and file officers can be excused: they did not know the consequences of their actions. Key objective of radioactive waste dumping was to isolate it from habitat of human beings to ensure decay of radio nuclides. There was no concept of underwater environment protection; it was the peak of the Cold War. Objections raised by some scientists were lost in the chorus of arms race proponents. The slogan of “arming at any price” was popular with people on both sides of the ocean.

After the Cold War mankind decided to sum up the outcome and results of this survey turned out to be deplorable. According to the IAEA, during 1946-1982 the World Ocean got radioactive waste with total radioactivity of 1.24 Mc. (let alone dumping by the Soviet Union and Russia, which did not submit data to the Agency). Conclusions of the Agency merely proved evolutionary theory of Jean Lamarck, who wrote in 1857 that humanity would destroy itself after ruining its habitat. Ocean cannot store as much waste as mankind would like to dump. If 30-40 years ago people did not know about hazardous implications for future generations, nowadays this practice of waste dumping has been outlawed in majority of civilized states. There are plenty of research papers

proving dangerous character of seemingly *innocent* underwater dumping. The London Dumping Convention signed in 1972 prohibits dumping of radioactive substances in seas and oceans and emphasizes the need to prevent negative changes in environment of one state due to economic activities of another. After its entry into force on August 30, 1975 (for the USSR – in January 1976), State Parties held 15 consultative meetings and approved resolution on moratorium for dumping of any kind of radioactive substance in the sea until their impact on human health, sea-life and environment was assessed. Since the convention became effective there have been no official dumping of high-radioactive waste in the sea.

The 1992 UN Conference on Environment and Development held in Rio de Janeiro decided in its final document to proceed from moratorium on dumping of low-radioactive waste in the sea to complete banning of such practice. Two other conventions preventing pollution of the Baltic Sea and the Black Sea (Helsinki-92 and Bucharest-92 respectively) force all parties to reduce pollution of the seas, including radioactive substances. The Bucharest document (to which Russia is a party) prohibits any radioactive dumping in the Black Sea.

Most of the states stand for comprehensive ban on radioactive dumping in the sea. The United States, France, Great Britain, and Japan do not turn down the idea of moratorium but insist on establishment of transition period.

However, one should not forget about accidents that may result in sinking of new radioactive substances. Here are some grievous examples from modern history of the Navy.

In the early 1960s, US Air Force strategic bomber ran into tanker aircraft over Spain. As a result, four H-bombs fell into the Atlantic Ocean and it took several months to find them and to lift them up.

A Soviet nuclear-powered submarine sank twice in the Far East, but in both cases the Navy managed to buoy it and to prevent radioactive pollution of the sea.

These accidents had a happy ending and it seemed that mankind would always be lucky provoking complacency of officers responsible for nuclear safety. In 1985, the Soviet Union faced a serious emergency in Chazhma (Primorsky krai). A nuclear-powered submarine was near a pier of the dock when a powerful explosion occurred. Reactors of the submarine were charged with violation of nuclear safety and technological standards and uncontrollable chain reaction took place. Nuclear fission of uranium resulted in the explosion, which destroyed bow and stern of the submarine and damaged its hull; one fuel assembly with recently charged core was thrown out of the reactor. The explosion was followed by fire in reactor compartment, which was localized only four hours later and led to radioactive fall out within 50-100-meter zone surrounding the vessel. Seven hours after the accident radiation in this area amounted to 250-500 mrph. 290 men were overexposed to radiation: eight officers and two enlisted men died during the accident and ten others had acute radiation sickness. Chazhma and eastern part of the Ussuriysk gulf were polluted with cobalt-60. Control over radioactive situation in this region was performed by Chemical Service of the Pacific Fleet. The accident did not led to devastating environmental consequences, since total activity of radio nuclides in seabed sediments did not exceed 5 c., thanks to short half-life of cobalt (63 months).

The first serious international accident took place in 1986, when a Soviet submarine sank near the US coast after missile explosion and fire. President Gorbachev himself informed his US counterpart of this accident. The ship was transported to Cuba, but it sank there. This was the first emergency situation that the USSR recognized officially and made public. The vessel submerged to 5,600 m and none got back to this issue or initiated any international sanctions against Moscow.

Crash of *Komsomolets* – a Soviet modern submarine, which sank in the Norwegian Sea as a result of fire – caused different international response. On April 7, 1989, fire began in the stern of the submarine due to unknown reasons. The vessel surfaced, but after several hours of titanic efforts of the

crew it sank and 42 people died. The submarine landed at the depth of 1,680 m near the Medvezhiy Island 200 miles away from Norwegian coast. Nuclear reactor with hundreds of kilograms of fuel and two missiles with nuclear warheads (plutonium) sank together with the ship. When the vessel landed its ammunition (except nuclear warheads) blew up.

Meanwhile, in the Far East a radioactive battery (1 MW) for the lighthouse was lost during transportation. It was carried by helicopter when a rope snapped and the battery fell into the sea less than kilometer away from the coast. All attempts to find it failed, though sea depth there did not exceed 50 m.

After crash of *Komsomolets* a number of issues emerged: if radioactive pollution was possible, if plutonium and other radioactive substances could get into water, who was to blame and what to do. The submarine sank in the EEZ of Norway. Besides, this region is used for fishery by Sweden, Great Britain, and Iceland. If the ship sank five-six miles further from the coast, it would be a *headache* only for the USSR. In this case, even minimal transfer of radio nuclides along the line "sea water-plankton-fish" could lead to dramatic political and economic consequences. This concerns any radioactive items and substances dumped in the sea. 30 states of the Baltic Sea and the North Sea catch annually about 2.5 million tons of fish. It is practically impossible to check it for radiation and the only way out is to ban fishing in this area for indefinite term to save the population from potential threat. If one takes into account that seafood and related products account for 40-45% of GNP in Denmark and Sweden, one may presume that damage for such nations will amount to hundreds of billions of dollars a year and for uncertain period. This damage should be combined with detriment to tourist industry. Panic and malicious intent will do the rest. Any terrorist group may argue that hazardous items have been mined and can be exploded if certain demands are not met. This will significantly destabilize situation in the region.

This accident led to international sanctions against the USSR. An international commission was set up to determine ways of preventing radioactive pollution of the environment. In the next five days, a key research institute of the Navy and the *Krylov* Central Research Institute prepared a 70-page report concluding that hull was made of titanium and there would be no corrosion; hence, nothing would happen with the submarine in the next 70 years. However, in fact, even simple theory of electrochemical corrosion implied that any contact of titanium hull, steel reactor details and other assemblies (made of different metals) with sea-water would tremendously accelerate corrosion in comparison with corrosion of pure steel. One of the authors of this article, Tengiz Borisov, proceeded from this assumption and submitted a report to Mikhail Gorbachev arguing that the submarine would soon leak. There was no reaction to this report.

36 months later, when *Komsomolets* began to leak, this was a *surprise* for the state leadership. The research ship *Akademik Mstislav Keldysh* returned from the area of the accident and brought samples of water containing radioactive elements – cesium, strontium, and uranium oxide, although leakage of radio nuclides was low at that time. The Soviet leadership started to tackle the problem, but four days later the 1991 coup began. Decision was postponed and only in 1992 the Russian Government established the Committee on Specialized Underwater Activities (CSUA) headed by Tengiz Borisov. The organization resembled the Expedition of Specialized Underwater Activities known since the 1920s and disbanded after the World War II. The CSUA united 64 institutions of the Academy of Sciences, Minatom, MOD, specialists from Arzamas-16 and St. Petersburg. The committee directed activities to conserve *Komsomolets*. The activities were included in the state order and received regular funding.

The committee sent an expedition (*Keldysh* and *Ivan Kruzenshtern*) to the area of the accident. Six dives of deep-water manned vehicles *Mir-1* and *Mir-2* took place. The expedition found out that bow of the hull had been destroyed. The first and the second compartment were separated with a two-meter-wide cross rupture. The hull had a 400mm-wide and 20m-long crack and small non-hazardous amount of

cesium-137 and other radio nuclides got into sea-water.

Situation with plutonium was more dangerous. It turned out that reactor was not posing any threat, but torpedo tubes were not hermetic and nuclear munitions had contact with sea-water. Radioactivity of missiles is generated by plutonium-239 and amounts to 430 c. Leakage of plutonium could have started in 1995-1996. Uncontrollable process could have lasted for several years. Achievements of modern science help to understand better the threat of underwater radioactive pollution: it is not a matter of direct contamination in case of leakage, but the problem of genetic mutation under influence of radioactivity, which may affect the third or the fourth generation after the accident and result in physical and mental deviations. Plutonium is the most hazardous element: it dissolves easily in sea-water, make long molecular chains transported by currents or plankton; toxicity of plutonium is 10,000 times higher than that of arsenic! Plutonium has no gamma- or beta-activity, it possesses only alpha-activity and this impedes search and detection. Its half-life is more than 24,000 years and it is a *perfect* mutagen and carcinogen.

When President Yeltsin learned about situation with *Komsomolets*, he was shocked and asked Alexei Yablokov, who was then his advisor on environment, prepare a detailed report on this issue. The governmental commission was established and in 1993 the White Book "*Facts and Problems Concerning Dumping of Radioactive Waste in Seas Washing the Territory of the Russian Federation*" came out. The report contained all information about dumped radioactive items, containers with waste, reactors with unloaded cores, etc. The book was published by the President's Office with a sign "*prohibited to make copies*", although it was not confidential. 300 copies were printed and presented to the public under permission of the President. It is noteworthy that after dissemination of several dozens of copies to all ambassadors attending the presentation, the rest of the circulation was withdrawn. However, English edition of the White Book appeared soon and was widely disseminated. Many countries, including Korea, Japan, China, began to make claims to Russia and demanded to establish order in the areas of radioactive dumping.

When it became clear that *Komsomolets* could not have been lifted up due to its damaged hull, Russia decided to seal the submarine

hermetically and to isolate the torpedo bay. After complex tests, Russian specialists found a unique and safe method for isolating the nuclear-powered submarine (the hull was transformed into sarcophagus). Bow of the submarine is now a hermetic capsule with radioactive contents. The CSUA has managed to prevent a *salvo* leakage of plutonium and this was the major achievement. 6.5 kg of plutonium might have leaked into the water and could have polluted 1,200 square meters of seabed in the Norwegian Sea. Thus, in 1992-1995 Russia succeeded in eliminating consequences of the accident with *Komsomolets* and did it with relatively low budget. Total costs of activities amounted to several millions of dollars, whereas plutonium leakage would have resulted in Norwegian claims to Russia of \$2.5 billion dollars per year over indefinite term. In the next 30-40 years *Komsomolets* will be safe for mankind and one cannot expect plutonium to leak. As far as reactor is concerned, if it is not touched, it will keep safe for hundreds of years.

Komsomolets was the primary objective of the CSUA, but the committee also had to deal with all radioactive and chemical items dumped in the sea. According to official data, Russia has dumped about 325 Kc. in the water. Other sources speak about 2,500 Kc. There were some notorious cases of violation of the London Convention and the Law "*On Protection of Environment*". Environmental monitoring had not been carried out in the northern seas since 1967 and the CSUA failed to receive any information on radio nuclides and to make even rough assessment of radioactive pollution in the Kara Sea and in the Barents Sea. It is known that it is prohibited to drop anchor in many harbors of Novaya Zemlya. The Soviet Union performed regular dumping of liquid radioactive waste in the Far East during 1966-1991; even Russia dumped some waste in 1997. Russia's partial excuse can be depletion of storage facilities for spent fuel assemblies and low capabilities for reprocessing of radioactive substances.

In 1994, the CSUA was disbanded and the operation with *Komsomolets* was completed by the EMERSCOM (Ministry for Emergency Situations). Nowadays, only the Russian Academy of Sciences and the Pugwash movement tackle such problems. As a result, there is no control over radiological situation in the sea, although all dumped radioactive items and substances pose potential threat. The most

dangerous are the reactor of *Lenin* icebreaker with unloaded core (it is situated at the depth of 200 m); power plants of nuclear-powered submarines sunk in shallow gulfs of Novaya Zemlya; and 52 nuclear warheads (50 belong to the submarine near the Cuban coast and two are of *Komsomolets*).

On August 12, 2000, *Kursk* submarine sank and this was the most serious accident in the history of Russian submarine fleet. The Navy commanders, including Admiral Vladimir Kuroyedov, tried to convince the public that *Kursk* ran into foreign ship. This version is hardly true. Only US and UK submarines might have been in this area of operations. These two countries are NATO members and have transparent system of control; mass media possess all information about naval exercise. If *Kursk* ran into foreign nuclear-powered submarine, the latter should have sunk or should have been damaged with inevitable casualties (or injuries) for the crew. And it is impossible to conceal the death of seamen in the West. Moreover, the submarine was sailing at the depth of 18-20 m with raised periscope and radar equipment. Maximum speed in this mode is no more than six knots and acoustics is perfect. The crew could not have missed arriving surface ship or submarine. Even if they did, the version about sinking, hitting the bottom and explosion of ammunition is dubious. The ammunition cannot blow up even after the hardest landing, since it is stored without fuses. The fuses are placed in torpedoes before loading them to torpedo tubes. If the latter exploded, bow would have been destroyed, the first compartment would have been filled with water and that would have been all. Moreover, at the depth of more than 30 m telescopic equipment is automatically taken in. Since they remained, the explosion should have occurred at the periscope depth. Even in case of ram, the submarine floatation ratio is 30% and it can survive after submergence of any compartment. Hence, if *Kursk* sank, two or more of its compartments must have been filled with water. This may happen only if the hull has been critically damaged, i.e. as a result of explosion of stored ammunition. Torpedoes of *Pyotr Veliky* had no warheads and could not damage the submarine and cause detonation of ammunition.

It is more likely that *Kursk* sank because of explosion of air and hydrogen mixture and subsequent detonation of ammunition. On

September 13, 1977 a Soviet nuclear-powered submarine blew up under similar circumstances. It left Severodvinsk after 10 months of repairs. The crew lost skills of operating the battery, which had not been ventilated for 19 hours. Hydrogen accumulated in the first and second compartments and exploded. The submarine did not sink because it had no ammunition. Two compartments were completely destroyed, but the hull survived the explosion. The same might have happened to *Kursk*: concentration of hydrogen exceeded four percent and explosion was followed by fire. Warheads endure open fire for approximately two minutes. When ammunition blew up, all compartments (from the first to the fifth) were destroyed. Reactor compartment functioned as protector and stopped the blast wave. Three intact compartments were slowly filled with water. People found themselves in *aircushion* with pressure equal to outboard pressure (10 atmospheres) and could live for 28-30 hours.

Proposals to lift up *Kursk* as a whole are costly and senseless. This operation will not help to clear up the reasons for the accident, since the hull has been damaged. It would be reasonable to cut the submarine into three pieces and to elevate the reactor compartment. If reactor stays in the sea, leakage of radiation may start in two or three years because of corrosion. Another option is to isolate the reactor. Russian scientists have developed a number of technologies enabling to isolate underwater items without evacuation, without violating international law and exposing people and environment to risk. *Komsomolets* proved that such technologies were efficient. They may be applied at the depth of up to 6,000 m. There are no simpler, cheaper and more efficient ways of isolation of underwater items in conditions of time pressure than these Russian technologies. Firstly, isolation from water will significantly diminish the rate of corrosion. Secondly, natural disasters will not provoke *salvo* leakage of radioactivity. There will be no danger of terrorist acts, since isolation will not allow terrorists to use explosives in the area of dumping.

Nowadays, it is a matter of uniting scientific and economic potential of states concerned to solve this problem. None of the countries will be able to maintain its national security independently from other states. There is still a chance of preventing catastrophe, but there will be no possibility to eliminate its consequences.

PIR Center News

2000, November 30. The UNIDIR held in Geneva a seminar for CD delegates and experts to find the ways from current deadlock at the Conference on Disarmament.

Director-General of the UN Office at Geneva Vladimir Petrovsky, Director of the UNIDIR Patricia Lewis and Ambassador of Canada Christopher Westdal made opening addresses to the seminar. Among key speakers were Prof. Mutiah Alagappa, Program Director of the East-West Center, Hawaii; Rebecca Johnson, Executive Director of the Acronym Institute; Tariq Rauf, Project Director of the Monterey Institute of International Studies.

More than 100 CD delegates and experts attended the meeting.

It is known that the CD is supposed to be the only forum for negotiating international arms control and disarmament treaties. At the same time, in the last four years, the Conference has failed to agree on its agenda. Despite the 1995 decision to start elaboration of the FMCT Treaty, there has been no progress so far. The CTBT concluded in 1996 was the latest treaty prepared within the Conference framework.

The current CD deadlock discredits the whole process of multilateral arms control and disarmament efforts. Some states have decided to diminish level of their representation at the Conference. Academic community discusses proposals to dissolve the CD or to ensure deep reforms. At the same time, some of them believe that many international negotiation mechanisms have failures that should be overcome and should not be exaggerated.

Parties to the UNIDIR seminar touched upon the following issues:

- What is the global perception of the CD stalemate?
- What should be the CD objectives in a new phase?
- What are the reasons for current deadlock? Which consequences it may have?

- How does consensus principle correspond with efficient moves towards implementation of the CD objectives?
- What should be done to eliminate the deadlock?
- What would be a realistic assessment of the CD prospects?

The conference was held in an off-record mode.

Director of the PIR Center Vladimir Orlov participated in the meeting and put forward some proposals.

2000, December. The PIR Center held two Midweek Brainstorming meetings.

On December 6 PIR Intern Bailey Hand made a report on "*US-Russian Plutonium Management Agreement: Prospects for Implementation*".

The meeting was attended by PIR staff members, including Dmitry Kovchegin, Dmitry Polikanov, Maria Vernikova, and Andrei Zobov (*Nuclear Society*), Alexander Zhgutov (Institute for Strategic Stability), Valery Menshchikov (RF Security Council).

In her speech Bailey Hand concentrated on factors of crucial importance for successful implementation of the agreement. The follow-up discussion focused on economic and environmental aspects of the problem.

On December 13 PIR Research Associate Vadim Kozyulin made a report on "*Analysis of Situation in the Russian System of Military-Technical Cooperation*".

Among participants of the meeting were PIR staff members: Dmitry Kovchegin, Vasily Lata, Vitaly Fedchenko, Maria Vernikova; and Vladimir Novikov (RISI), Elina Kirichenko (IMEMO) and Konstantin Makiyenko (AST Center).

Vadim Kozyulin gave his vision of reform in the area of military-technical cooperation in Russia and examined its possible consequences. In his opinion, the reform would result in declining sales in 2001, which

would cause problems for Rosoboronexport leadership.

In the course of discussion, the participants expressed their views on possible changes concerning market for Russian arms, while recruitment policy of Rosoboronexport would be decisive for this process.

2000, December 7. The PONARS conference was held in Washington.

PONARS Director is Dr. Celeste Wallander, who is currently affiliated with the Council on Foreign Relations. The PONARS unites more than 50 scholars from the United States and Russia in political, economic and social sciences.

The conference had the following panels: "*Russian State and Society: A Decade after Collapse of the USSR*", "*Military Reform*", "*Regions and Federalism*", "*Problems of Caspian Region and the Caucasus*", "*Russia and Asia*", "*Europe and Russia*", "*Economic Problems*". "*Russian Nuclear Policy*".

Speakers at the last panel were Program Director of the Moscow Carnegie Center Alexander Pikayev, MPhTI Research Associate and scholar of the Princeton University Pavel Podvig, PIR Director Vladimir Orlov.

2000, December 11-14. The *De Burght* Foundation held NMD conference in the Hague (Netherlands).

The conference was attended by Russian, US, British and Dutch experts, including Edward L. Warner, Amb. R. Braithwaite, Lt.-Gen. H. Satter. PIR Senior Advisor Yevgeny Maslin and PIR Research Associate Ivan Safranchuk represented the PIR Center and made reports on Russian approach towards US plans of NMD development.

2000, December 12. PIR Center Director Dr. Vladimir Orlov spoke at the Korea National Defense University on nonproliferation and security challenges at the Korean Peninsula.

The international seminar was organized by the Research Institute on National Security

Affairs, a division of the Korea National Defense University affiliated with the ROK Ministry of Defense. The seminar was devoted to changes in international security environment expected to occur as a result of rapprochement between South and North Korea after the June 2000 summit.

The participants analyzed new approaches towards developments on the Korean peninsula being invented by the USA, Japan, China, and Russia. They also examined in detail domestic political situation in North Korea and touched upon issue of formulating security policy after unification of Korea in the long run.

President of the University Lt.-Gen. Seo Jong-Pyo addressed the participants. Other speakers were Prof. Victor D. Cha from the Georgetown University, Prof. Toshimitsu Shigemura from the Tokyo University, Prof. Soonam Kim from the KNDU, Prof. Jia Qingguo from the Beijing University and Dr. Vladimir Orlov, Director of the PIR Center.

Director of the PIR Center also met President of the KNDU Gen. Seo Jong-Pyo and Director of the RINSA Prof. Byong-Moo Hwang.

2001, January 31. Informal meeting of heads of research organizations in the area of nuclear nonproliferation and representatives of international foundations supporting their activities was held in New York.

The meeting was convened at the invitation of the Ford Foundation and the W. Alton Jones Foundation. The parties discussed strategy and tactics of nonproliferation organizations, ways to enhance coordination among them and determined primary areas of studies.

The meeting was attended by Terence Taylor (IISS, London), Rolf Ekeus (SIPRI, Stockholm), Rebecca Johnson (*Acronym* Institute, London), Harald Mueller (Frankfurt Peace Research Institute, Frankfurt), William Potter (Center for Nonproliferation Studies, Monterey, CA), John Simpson (University of Southampton), Vladimir Orlov (PIR Center, Moscow), Joseph Cirincione (CEIP,

Washington), Therese Delpech (France), Patricia Lewis (UNIDIR, Geneva) and others.

2001, February 8-9. The Center for International Studies at the Swiss Federal Institute of Technology held the international conference “*Peace Support Operations – Lessons Learned and Future Perspectives*” in Zurich.

The conference discussed current situation in this area, peacekeeping and peace-enforcement techniques in modern conditions, division of labor between international and regional bodies, military and humanitarian aspects of peace support operations and peacekeeping experience of certain states (Austria and Switzerland). The conference united 250 delegates from 28 states. PIR Editor Dmitry Polikanov represented the PIR Center at the forum.

2000, February 20. Director of the PIR Center Vladimir Orlov met NATO Secretary General Lord Robertson at the opening of the NATO Information Center in Moscow.

In the course of the brief meeting, the parties discussed Russian proposals on joint deployment of TMD system in Europe.

2001, February 22. The PIR Center held the press conference “*New US Administration and the Fate of the ABM Treaty. The Powell-Ivanov Summit – New Stage of Negotiations?*” at the National Press Institute.

Speakers at the press conference were Director of the PIR Center Dr. Vladimir Orlov, Senior Advisor Amb. Roland Timerbaev, Senior Advisor Col.-Gen. Yevgeny Maslin, and Project Director Ivan Safranchuk.

Among Russian and foreign media attending the conference were the Federal News Service, *RIA Novosti*, *TV Center*, *Obzhaya gazeta*, *Radio Mayak*, *Nash vek*, press service of the Defense Ministry, *Kyodo News Agency*, *Associated Press*, *Finnish Radio* and others.

Ivan Safranchuk, who directs the “*Nuclear Arms Control: Russia and Other Nuclear-Weapon States*” project, emphasized that the US NMD plans and the fate of the 1972 ABM

Treaty remain key issues of US-Russian bilateral agenda. US-Russian dialogue on these topics may intensify in the near future.

The United States has completed the process of forming new administration. President Bush, his Vice President, Secretary of State, Secretary of Defense and National Security Advisor have already endorsed the idea of accelerating limited NMD development. New administration will continue the process of limited NMD deployment when all technological problems are solved. Characteristics of this system are not clear yet, but one may presume that the Bush administration will set forth even more ambitious NMD plans and this will exacerbate Russian concerns.

According to Col.-Gen. Yevgeny Maslin, major reason for NMD deployment is China and not *states of concern*. He argues that the ABM Treaty should not be considered separately from other disarmament agreements.

Senior Advisor Roland Timerbaev pointed out the danger of NMD deployment, which may result in new arms race and will inflict serious damage to viability of international nuclear nonproliferation regime..

2001, February 22. The PIR Center held a meeting of the **Partnership-In-Research Club** (PIR Club) pertaining to the Russian foreign policy.

PIR Senior Research Associate Dmitry Evstafiev, who heads the “*Domestic Policy and Security*” program and edits “*Russian Security*” newsletter, was keynote speaker and made a report “*Russian Foreign Policy: Facing the Choice*”.

Participants discussed Russian foreign policy issues and their interconnection with evolution of domestic political situation.

Among participants of the meeting were representatives of *Bechtel National, Inc.*, embassies of India, Norway, Poland, Turkey, and Sweden.

Summary

Yaderny Kontrol (Nuclear Control) Journal of the PIR-Center for Policy Studies Volume 7, No. 2, March-April, 2001

Roland Timerbaev in his commentary “*Status and Prospects for Nuclear Nonproliferation*” maintains that ‘the article examines Russia’s approach towards nuclear nonproliferation in the 1990s with special emphasis placed on recent developments when Vladimir Putin came to power. It also contains some considerations concerning prospects for further progress of Russian position to optimize Russian relations with the United States and other key powers in order to strengthen international nonproliferation regime. Since nuclear nonproliferation issues are often discussed in PIR publications, this article will focus on some major problems only.’

Yevgeny Antonov in “*Threat of WMD Terrorism and Chechnya*” argues that ‘terrorist activities in Chechnya started in the late 1980s – early 1990s. Major reason for current upsurge of terrorism has been a growing nationalistic movement.

‘The most difficult task for an analyst assessing possibility of WMD terrorism in Chechnya is not a technical aspect, but information component of the problem. So far none of numerous reports concerning WMD in Chechnya has been proved, but such information continues to pop up in Russian and Western media. Obviously, Chechen militants are interested in spread of such information. However, it is difficult to say why independent Russian and foreign press disseminate this gossip so often.’

The issue also contains *Information* section and materials from PIR dossiers.

PIR RECENT PUBLICATIONS

Arms Control Letters

Letter of February 2001.

Russian Arms Sales: Another Reform? February 15, 2001.

Russian Security

No. 1

January 2001

Dmitry **Evstafiev**. “Post-Yeltsin Russia: Problems and Prospects of New Power”.

No. 2

January 2001

Dmitry **Evstafiev**. “Evolution of Political Spectrum in Russia: Prospects for 2001”.

No. 3

February 2001

Nikolai **Kuzmin**. “January 2001: The Awaited Crisis Began”.

No. 4

February 2001

Bobo **Lo**. “Putin’s First Year: Continuity and Change in Russian Foreign Policy”.

The Duma and Arms Control

January 2001

- Andrei **Nikolaev**: US NMD Deployment Will Destroy the 1972 ABM Treaty
- Valery **Zubov**: Minatom’s Closed Nuclear Cities and Russia’s Possible Technological Breakthrough
- Yevgeny **Zelenov**: US Intentions to Stick to the NMD Plans Were not Surprising
- Sergei **Yushenkov**: I Endorse the Russian Military Doctrine in General, but the Country Should not Be Involved in Arms Race
- Yevgeny **Primakov** Believes that One Should not Hurry with Assessment of New US Administration
- Gennady **Seleznyov** Proves Peaceful Character of Russian-Iranian Nuclear Cooperation
- Andrei **Nikolaev** Commends the Defense Committee Activities in 2000
- Boris **Gryzlov** Backs Collective Missile Defense System
- Andrei **Nikolaev** Meets French Defense Minister
- The **State Duma** Adopted the Law Providing Penalty for Development and Storage of Chemical Weapons
- The **Open Skies Treaty** Is Ready to Be Submitted for Ratification
- Proposal to Establish **Inter-Factional Group** of Deputies “*Russia’s Defense*”
- The **State Duma** Will Discuss the Prospects for Civilian Control over the Armed Forces in 2001