International Security
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(NUCLEAR CONTROL)

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Editorial

WILL THE BUSH DOCTRINE PROMOTE ARMS CONTROL?

In early May a new military-political doctrine emerged in the United States – the Bush doctrine as the US press immediately called it. Will it help to overcome the stalemate in arms control?

Bush declared that 'Cold War deterrence is no longer enough to maintain peace' and, hence, 'we need new concepts of deterrence that rely on both offensive and defensive forces.' He emphasized that 'deterrence can no longer be based solely on the threat of nuclear retaliation', and argued, 'we need a new framework'.

President Bush, who had praised unilateral reduction in US strategic offensive forces when he was running for presidency, gave a brief and vague comment on the issue this time.

To mitigate the impact of his statement concerning Russia, Bush maintained, 'Russia is not our enemy […] Together, we can address today's threats and pursue today's opportunities.'

The newly proclaimed doctrine got an equivocal response in the United States and in the world. Leader of the Democrats in the US Senate Tomas A. Daschle criticized the proposed NMD system for high costs ($100-120 billion or more) and imperfect technological solutions and argued that America witnessed 'one of the most important and consequential debates we will see in our lifetime'.

China has also strongly opposed the doctrine. France and other US allies were not enthusiastic about the initiative. Russia expressed its willingness to maintain the dialogue, but emphasized that new security patterns should not damage the system of strategic stability.

The core of the problem is what kind of framework will be offered to replace the effective and indefinite ABM Treaty. President Bush did not dwell on this topic during his speech at the National Defense University and referred his listeners to already established technologies and importance of intercepting missiles early in their flight, especially in the boost phase.

Anyway, what may Washington suggest instead of the ABM Treaty? Will the United States simply withdraw from this regime or will it try to come to agreement with Russia on mutually acceptable modifications? If the second option is meant, Russia should consider carefully and without prejudice possible US proposals and get involved in constructive dialogue. The mission of this new framework if the latter is to be negotiated should be to promote stability and not superiority of either party. The objective should be to enhance and not to undermine international security. If the United States makes a different choice, Washington is free to do so, but it will be responsible for undermining international security.

It is noteworthy that Bush said nothing about START II and the prospects for concluding START III. Should this silence be regarded as complete rejection of the entire legally binding system of arms control established in the recent decades? This system was set up during the Cold War and harsh confrontation between the parties, but why one cannot negotiate so necessary arms control agreements on the basis of normal partnership! Nowadays there are even more favorable conditions for new accords and it would be a great mistake to let this window of opportunity close.

Unilateral reduction will hardly substitute for formal agreements. But one should not neglect unilateral steps that, at least, may become provisional measures, which can be later transformed into legally binding commitments. Russia should not only support these activities, as President Putin stated last November, but, perhaps, take an initiative. It would be useful (if both powers declare deep and unilateral reduction in strategic arms) to provide for confidence building and transparency, so that the parties may be sure that the reductions actually take place. It would obviously contribute to international peace, if other officially recognized nuclear weapon states and other nations with nuclear capabilities endorsed this US-Russian initiative and follow the example of two largest nuclear powers.

Nonetheless, so far the world community will have to wait for clarification of the US policy – whether Washington goes hand in hand with other nations to overcome the current deadlock and to promote further arms control, or the United States prefers its own path of *soft unilateralism*.

Hot Topic

BUSH'S SPEECH: A POLITICAL BREAKTHROUGH OR NEAT DISGUISE?

by Dmitry Evstafiev,
PIR Senior Research Associate

President Bush's speech on missile defense at the NDU attracted wide attention of the public and expert community. It was an outstanding speech, which demonstrated that the United States could master the art of *political technology*. Each group interpreted the presidential statement in its own way. US supporters of mighty NMD mentioned Washington's commitment to the system; US liberals noted Bush's understanding of the dangers to strategic stability. Moscow pointed out Bush's readiness to maintain dialogue with Russia and recognize the Kremlin's Great Power ambitions. European politicians commended US willingness to ensure equal security for all NATO allies. China and India appreciated US desire to take count of recent changes in international situation and to recognize their growing status in the world. In general, everyone had a sigh of relief, since Bush, Jr. turned out to be a politician capable of reconciling his ambitions with global reality. The story, however, reveals an important pattern of current US strategy. Washington takes the toughest and irreconcilable initial positions and makes no concessions at negotiations, but then it suddenly mitigates the approach. This relaxation is often of unilateral character, whether it concerns the NMD or long-term relations with China. Hence, US interlocutors are reminded of US exclusive role and monopoly on shaping modern international relations.

It is noteworthy that President Bush said nothing directly. He did not speak about preserving the ABM Treaty in any form. On the contrary, he reaffirmed US willingness to dismantle this regime. Nonetheless, the ABM Treaty is not an isolated *building block* of international system, but an integral part of the arms control regime, which provides for Russia's relatively high status in global hierarchy. In fact, the United States needs the dialogue with Russia, China, India or Europe not to ensure international legitimacy of US actions, but to gain time, for there can be no rush with high-tech missile defenses.

Meanwhile, one can note Washington's readiness to cooperate with Europe in missile defense. This shift from primitive *Europhobia* to interaction began before Bush's speech and its importance goes beyond traditional reiteration of US security commitments to European allies. The White House continues to pursue a course for *de-Europeization* of its foreign policy, but Washington cannot afford to have neutral Europe, when the confrontation with China is coming, even though there are no doubts about present US superiority over Beijing. Europe has quite an ambiguous position on some issues important to the USA, e.g. peace process in the Middle East or cooperation with Iran. Meanwhile, the USA has failed to reduce its military presence in the Balkans, despite Washington's evident desire. And now that substantial part of US military machine has stuck there, one can forget about *playing muscles* in the Taiwan Strait. Besides, Washington still needs NATO's legitimate mechanisms to conduct enforcement operations and it would be quite difficult to resort to such mechanisms without equal security for NATO members.

Hence, it was quite logical to get rid of such annoying factor in US-European relations, as the vague role of Europeans in missile defense. This indicates how rational foreign policy of the new administration is. It is always more convenient to leash the allies by emphasizing their dependence on US defense (either with the help of missile threat, or by promoting activities of Albanian militants) than to make Europe take its own geopolitical decisions.

US NMD umbrella will hardly cover the territory of its allies as safely, as US national territory, if one can speak about reliable defense in this case at all. However, the feeling of constant dialogue with Washington proving that the United States did not forget about Europe, despite the latter's failure to develop any significant defense capabilities even during the conflict in the Balkans, will become an important political technology enabling Washington to gain time. This timeout will be used to restructure the system of ties with allies, implying that Europe will lose its key role in US policy. To that end, the USA need three-five more years of constant and respectful dialogue. Then Bush's intentions mentioned in his speech at the NDU will become evident.

Hot Topic

US-RUSSIAN CONSULTATIONS: UNDERLYING MOTIVES FOR THE DIALOGUE

by Ivan Safranchuk,
PIR Research Associate

On May 11, 2001, US-Russian consultations on NMD issues were held in Moscow. The delegation of US experts had meetings with officers of the Ministry of Foreign Affairs (the Department for Security and Disarmament Affairs and Deputy Minister Trubnikov), with Presidential Aide Igor Sergeyev and Chief of the General Staff Anatoly Kvashnin.

The consultations resembled more exchange of opinions than real negotiations. In fact, each party presented its views long known to their counterparts. However, none expected any specific outcome of the consultations. Commentaries by US and Russian officials indicate their modest satisfaction with the talks. The very fact of consultations has become a small victory for either side. The United States meets the demands of its European allies, whereas Russia launches dialogue with the new administration after the first months of tension.

At present, Russia and the United States are interested in consultations. US willingness to maintain dialogue is accounted for by so-called "*advance payment for missile defenses*". What will structure of Bush's missile defense be? How efficient will this system be? How much will it cost? Answers to these questions are yet to be found by the new administration, but political *price* of withdrawal from the ABM Treaty should be paid immediately, long before the NMD system is operational. Negotiations and consultations enable the United States to postpone the moment of *paying political costs* of future NMD deployment.

One may assume that the United States will tend to promote consultations until the Bush administration completes development of the new NMD concept, i.e. Washington defines specific characteristics of the system, its costs, deployment schedule, etc. After that US desire to continue the dialogue may be less likely.

US position on further consultations will then depend on concrete plans of NMD development and the latter will be more important than political considerations presently forcing Washington to maintain dialogue with Russia on ABM/NMD issues. Among those political factors are positions of European allies and desire to come to an agreement with Russia without deteriorating bilateral relations. After all, the United States has positive 15-year experience of negotiations with the Soviet Union and Russia on arms control. During these years Washington has normally succeeded in obtaining Russia's unilateral concessions. Significance of the aforementioned factors is extremely high, but it may diminish when specific plans of NMD deployment are elaborated and determine US policy.

Moscow may regard US intentions to conduct consultations as the small diplomatic victory. Only the dialogue may help Russia to convince Washington to take into account (to a certain extent) opinion of the Kremlin. The NMD dialogue and talks on strategic stability, in general, are the only tools enabling Moscow to affect US position. Beyond this negotiation process Russia can only threaten with *adequate* response or undertake appropriate measures, to which the Bush administration seems indifferent. Hence, without talks, Russia's influence on NMD issues and arms control is reduced to zero.

Russian officials hint that Moscow's position is not monolithic. This conclusion can be drawn from certain statements made by Foreign Minister Igor Ivanov at the press conference after talks with Secretary Powell in Washington. Ivanov's comments imply that characteristics of the US NMD system will matter and will determine Russia's attitude to US plans. This can be interpreted as Russia's readiness for consultations on limited US missile defense, whose deployment parameters and scale will be acceptable for Moscow.

Nonetheless, one has to point out that *soft* and tough statements by Russian officials

cannot be a basis for far-going conclusions. Such statements alternate and their analysis can hardly describe evolution of Russian policy. In fact, remarks of Russian officials are normally made in response to comments of their US counterparts. Therefore, *softness* or toughness of Russian reaction depends mostly on the form of a US statement rather than on its substance.

These developments indirectly prove that it is more important for Russia how the United States does something (with respect to arms control, NMD or strategic stability) than what Washington actually does.

As a matter of fact, Russian position on NMD and arms control can hardly be called complete and coherent. Debate on ABM/NMD and arms control problems is under way within the agencies concerned, among them and within the expert community. We are not going to analyze in detail these discussions, but have to emphasize that the Russian political leadership will make its choice from a wide range of options after giving broad assessment to bilateral relations. Specific pattern of behavior will depend on further US steps, i.e. Russian position will be *reactive*. Such situation demonstrates Russia's weakness and limited capabilities in making the choice on the basis of national interests. But *reactive* course is one of a few opportunities to influence the US side, since active position of Moscow will further reduce the importance of the *Russian factor* for US decision-making.

The consultations were especially important for Russia and the USA in the light of preparatory activities for the Putin-Bush summit, which will presumably focus on NMD and arms control issues. The parties practice different approaches to this meeting. Either country needs this summit not to solve bilateral problems, but to solve the matters affecting interests of US and Russian allies and partners, precisely in Europe. Moscow and Washington cannot find solutions to European security challenges and NATO expansion during bilateral dialogue. The summit will show their allies that Russia and the United States remain ready, at least, to continue cooperation, if not partnership. The model for discussion on NMD issues may be the same.

Analysis

RESTRUCTURING OF THE MINATOM: DIFFICULTIES AND PROSPECTS

by Dmitry Kovchegin,
PIR Junior Research Associate

 Translation into English. Abridged version

On March 28, 2001, Alexander Rumyantsev was appointed Minister of Atomic Energy of the Russian Federation. In his early statements he emphasized that under the current circumstances, nuclear industry should be commercialized, but at the same time, national security must be maintained. The major problem for the Minatom's leadership in the foreseeable future will be to ensure balance between these two trends – commercialization and national security.

The commercialization will become a result of reorganization of the Minatom, which is widely being discussed nowadays.

Minister Rumyantsev has repeatedly pointed out advisability of thorough analysis of proposed changes. At present, the starting point for such assessments can be the reforms launched by former Minister Yevgeny Adamov.

Among primary reasons for restructuring are the following:

- excessive role of nuclear weapons complex when there is no need in maintaining nuclear arsenal at the Cold War level and when strategic offensive arms reduction takes place;
- inefficient management and misuse of funds, lack of coordination among enterprises, corporations and the ministry (the lack of clear management hierarchy);
- the need to increase electricity output resulting from production growth in the country. The power generation cannot increase without substantial growth in output of nuclear power plants. Hence, it is necessary to promote energy production at existing plants and to build new stations. However, nuclear power plants and construction projects do not

receive sufficient funding due to misuse of financial means;
- large interdependence of defense and civilian sectors of the Russian nuclear complex, which leads to problems with management and may cause a conflict of interests if desire to rush for profits prevail and nuclear weapons complex remains in the periphery.

Analysis of financial, economic and industrial information of nuclear fuel cycle enterprises, such as *AO TVEL* and *Rosenergoatom*, as of the first half of 2000 indicated the following negative trends:
- poor investment climate in the industry;
- low share of money in transactions (barter deals dominate);
- lack of transparency in financial flows of enterprises and imbalance of working capital in the sector (shortage of funds at certain facilities and abuse of funds at other enterprises);
- absence of single information space within the industry.

Bearing in mind the aforementioned factors, the reforms in the Minatom pursue two major goals – to ensure downsizing and conversion of nuclear weapons complex and to change the structure of the industry in order to enhance its efficiency and to promote further development.

Key provisions of this concept can be fulfilled by forming the architecture of vertically integrated corporate system and by organizing information interaction within this structure. Meanwhile, as far as external players are concerned, the sector should work as a single functional mechanism.

According to authors of this concept, if single structure is established on the basis of the following chain – *enrichment-nuclear fuel fabrication- nuclear fuel burning-spent nuclear fuel reprocessing* – this will enable the Minatom to optimize capital flows and to centralize investments. Positive effect of this step may amount to 28.9 billion rubles and $7.2 billion. Meanwhile, the industry will be able to ensure accomplishment of the state defense order and electricity output at the level of 45-50% of FOREM [Russian acronym for the federal wholesale market for power output – **Ed**.].

Key method of restructuring is to distinguish between profitable enterprises and costly military facilities. The ministry should regulate and supervise, whereas administrative management of commercially attractive companies will be handed over to newly established bodies. It is quite possible that in this case defense-sensitive facilities may found themselves among the group targeted at earning money. Then, one may presume that such enterprise will prefer commercial activities to the fulfillment of the state defense contract, which is not always appropriately paid. Minatom's officials charged with defense activities admit that such threat exists, albeit they do not oppose the idea of restructuring.

Structural adjustment in nuclear industry may imply:
- transformation of *Rosenergoatom* into prime contractor responsible for centralized governance of all energy-producing elements of nuclear sector;
- establishment of joint stock company *Rosatomprom* after amalgamation of enterprises working at uranium extraction, enrichment and fuel fabrication facilities that make a single technological chain;
- restoration and development of the specialized construction component of the industry by forming joint stock company *Rosatomstroi* to consolidate enterprises and to enhance efficiency of management in this sphere.

Old guard of the ministry, i.e. nuclear weapons complex veterans, oppose such restructuring and argue that this two-track division will separate financial flows within the industry and nuclear weapons complex facilities will be left without financial support. Nonetheless, their arguments are not sufficient to abandon the reform. There is a widely spread opinion that commercial activities of the Minatom are the major source of financial support for the nuclear weapons complex. But this is not true. Our interviews with senior Minatom's officers indicate that commercial revenues of the ministry did not go directly to defense enterprises and research institutions, but had to *pass* the federal budget first. The money within the industry circulated from

Indicators	Minimalist concept	Maximalist concept
Capacity factor	***Up to 75-82 %***	***Up to 80-85%***
Extension of service life of existing reactors, years	Up to 40, what will result in extra 950 billion kWh until 2020	Up to 40-50, what will allow for extra 2,700 billion kWh
Shutting down by 2020 about 6.76-GW-worth of nuclear reactors	*Bilibinskaya* NPP – 1-4 units; *Kolskaya* NPP – 1,2 units; *Kurskaya* NPP – 1,2 units; *Leningradskaya* NPP- 1-3 units; *Novovoronezhskaya* NPP – 3,4 units	*Bilibinskaya* NPP – 1-4 units; *Kolskaya* NPP – 1,2 units; *Kurskaya* NPP – 1,2 units; *Leningradskaya* NPP- 1-3 units; *Novovoronezhskaya* NPP – 3,4 units
Enhancing capacity of NPPs, GW		
in 2005	Up to 24.2 with energy output ~ 160 billion kWh	Up to 25.2 with energy output - 172 billion kWh
in 2010	Up to 31.2 with energy output – 205 billion kWh	Up to 32 with energy output - 224 billion kWh
in 2020	Up to 35.8 with energy output – 235 billion kWh	Up to 50 with energy output - 372 billion kWh
including:		
by 2010		
Increase in pre-set capacity of NPPs	by 10 GW	by 10.8 GW
Building of 5 GW of new nuclear energy units	*Rostovskaya* NPP – 1,2 units; *Kurskaya* NPP - 5 units; *Kalininskaya* NPP - 3 units, *Balakovskaya* NPP – 5 units	*Rostovskaya* NPP – 1,2 units; *Kurskaya* NPP - 5 units; *Kalininskaya* NPP - 3 units, *Balakovskaya* NPP – 5 units
Indicators	**Minimalist concept**	**Maximalist concept**
New construction of 5-6 GW of nuclear reactors	*Kalininskaya* NPP – 4 units; *Kurskaya* NPP – 6 units, *Balakovskaya* NPP – 6 units, *Novovoronezhskaya* NPP – 6 units, *Bashkirskaya* NPP – 1 unit	*Kalininskaya* NPP - 4 units; *Kurskaya* NPP – 6 units, *Balakovskaya* NPP – 6 units, *Novovoronezhskaya* NPP – 6 units, *Bashkirskaya* NPP – 1 unit, *Yuzhno-Uralskaya* NPP – 1 unit
Until 2020		
Replacement of 6.8 GW of nuclear reactors	*Beloyarskaya* NPP – 4 units, *Leningradskaya* NPP-2 – 1-3 units, *Kurskaya* NPP-2 – 1-2 units, *Novovoronezhskaya* NPP – 7 units	*Beloyarskaya* NPP – 4 units, *Leningradskaya* NPP-2 – 1-3 units, *Kurskaya* NPP-2 – 1-2 units, *Novovoronezhskaya* NPP – 7 units
Increase in capacity of NPPs	by 4.6 GW	by 18 GW
	Yuzhno-Uralskaya NPP – 1-2 units; *Bashkirskaya* NPP – 2 units, *Smolenskaya* NPP – 4 units, *Leningradskaya* NPP-2 – 4 units	*Yuzhno-Uralskaya* NPP - 2 units; *Bashkirskaya* NPP - 2-4 units; *Smolenskaya* NPP – 4 units; *Smolenskaya* NPP-2 – 1-2 units, *Leningradskaya* NPP-2 – 4 units, *Kurskaya* NPP-2 – 3,4 units, *Arkhangelskaya* TNPP-1 – 1 unit, *Severo-Kavkazskaya* NPP – 1-4 units, *Dalnevostochnaya* NPP –1,2 units, *Primorskaya* NPP – 1,2 units, *Kolskaya* NPP-2 - 1 unit

commercial to defense facilities in the form of payment for contracts and performed work.

Another argument against establishment of joint stock ventures is that they would take responsibility for maintaining nuclear safety of the enterprises and dangerous situations may occur.

Although 100% of these new joint stock companies will be owned by the state, one cannot preclude that in the future some shares may become private property. Such situation took place in cases of *Gazprom*, *RAO EES,* and *Svyazinvest*.

Nuclear Energy

In accordance with the Russian Energy Strategy until 2020, nuclear energy is regarded as 'the most important part of the energy sector, since nuclear energy has potential characteristics enabling it to replace a substantial part of traditional energy sector working with fossil fuel, has a developed basis for production and construction and possesses sufficient capacity to fabricate nuclear fuel.'

According to the Minatom's plans, key objectives are to extend for 10-20 years the service life of nuclear reactors, whose life has expired, and to build new energy units to substitute for oil and gas energy production. There are two possible scenarios of nuclear energy development – minimalist and maximalist – characterized by different indicators (see the table above).

Minatom's plans for the near future include completion of construction the third energy unit of *Kalininskaya* NPP and the fifth energy unit of *Kurskaya* NPP, which are the most ready among unfinished construction sites.

However, under current circumstances, the Minatom cannot carry out these plans. The Minatom elaborated the Strategy of Nuclear Energy Development adopted by the Government on May 25, 2000, bearing in mind successful restructuring of nuclear sector in accordance with the plans of its leadership. As we have mentioned before, *Rosenergoatom* should be replaced with the Single Generating Company (EGK).

The EGK will be governed by a federal executive authority. *Rosenergoatom* will remain a company subordinate to the Minatom. The former will manage and supervise activities of all units of the corporation and cover production, administrative, scientific, technological, economic, financial, commercial, personnel, social and other issues. Besides, *Rosenergoatom* will be charged with responsibility for ensuring safety of nuclear materials and plants.

At present, the following EGK's structure is considered to be a priority: maintenance and supply facilities become daughter companies, whereas existing NPPs and stations under construction will make branches of *Rosenergoatom*. The latter will sign contracts with the NPPs concerning permission to operate equipment of the corporation. *Rosenergoatom* will pay the services of the NPPs.

Rosenergoatom will make agreements on reconstruction, construction, decommissioning of energy units with exterior specialized organizations or with the NPPs. The funding for such contracts will be provided with the help of centralized amortization payments and investments, money to replace energy units accumulated in *Rosenergoatom*.

There is the second model of the EGK: existing NPPs and supply facilities become daughter state-owned companies of *Rosenergoatom* and their assets are formed by placing some equipment under their administrative authority. NPPs under construction that require large investments will become branches during the period of construction and will be further transformed into daughter companies as soon as they obtain the license.

Authors of this concept believe that the EGK will ensure:

- implementation of single technological policy during modernization of existing NPPs;
- centralized use of funds to accomplish urgent and top-priority tasks;
- development and production of modern indigenous equipment for existing NPPs and atomic stations to be built.

They also assume that establishment of the EGK will make nuclear activities comply with existing legislation (at present, there is a dissonance with Articles 113, 114 of the Civil Code and Article 34, 35 of the Law "*On Nuclear Energy Uses*").

The EGK should become the only seller of electricity generated at all Russian NPPs for the FOREM.

Initially, the EGK will be a state-owned unitary enterprise. According to former Minister of Atomic Energy Yevgeny Adamov, it could be later transformed into a joint stock company with 100% state-owned capital. The need for such reform allegedly results from the fact that 'joint stock companies have more civilized rules of management, control, accounting and provide for better transparency'.

The Minatom's leadership endorses the idea of the EGK, but NPPs are less enthusiastic. As a result of restructuring, financial flows will be centralized and the NPPs will lose control over funds. Besides, they fear substantial layoff of personnel.

Reduction in employees should occur for the following reason. Nowadays, the coefficient for Russian NPPs is 1.5 employees per MWe, while at foreign NPPs – only 0.25 employees per MWe, because personnel for maintenance and support work at the atomic stations. If these enterprises become contractors and will be separated, there will no use in maintenance workers at the NPPs.

In the recent months, the establishment of the EGK has been considered in conjunction with restructuring of *RAO EES*. The Minatom has complicated relations with this body, has specific attitude towards reform and the EGK may have significant impact on the future energy market.

In the recent years *RAO EES* (and local joint stock energy companies – its branches) has systematically been breaking its commitments to the NPPs concerning payment for received electricity. Besides, the corporation has been reducing money component in deals with the NPPs in comparison to its own relations with the consumers. It exerted pressure on the NPPs, taking advantage of its monopolist position on the energy transportation market. Hence, the Minatom has been struggling to deprive *RAO EES* of its functions of middleman on the energy market and to preserve only its energy delivery duties. According to the Minatom *RAO EES* should be regulated by the state or should even be nationalized.

Key party to the process of the EGK establishment is the Ministry of Economic Development and Commerce. The latest draft of "*Guidelines for the State Policy of Reforming the Energy Sector*" disseminated by the MEDC among all agencies concerned (including the Minatom) argues that after reforms *RAO EES* will lose its middleman functions and will serve as a dispatching office for electricity grid. Shares of generating companies making *RAO* will be sold.

Nonetheless, the MEDC does not agree with some provisions of the Minatom's concept. For instance, it suggests that the possibility of establishing two-three generating companies be explored. The EGK may become a monopoly on the energy market and it will make hydropower plants and fossil fuel facilities less attractive for investors. This is why in January 2001 Vice Prime Minister Ilya Klebanov conceded to the pressure of the MEDC and postponed the establishment of the EGK until the reform of *RAO EES* was over.

Atomprom

While the establishment of the EGK is the matter of the nearest future and decision will soon be made, the problem of *Atomprom* (a single corporation for nuclear fuel cycle) is only being developed by the ministry and is yet to be discussed.

Atomprom should be based on nuclear fuel cycle enterprises of *OAO TVEL*, facilities of the Department for Nuclear Fuel Cycle of the Minatom and nuclear fuel cycle enterprises beyond Russian territory situated in the states of the former Soviet Union. Besides, this structure will comprise *OAO Techsnabexport* – foreign trade unit of the Minatom, whose annual sales amount to $1 billion.

The Minatom believes that if new structure is established, nuclear energy sector will overcome stagnation and expand its services to foreign markets.

Atomprom will be a joint stock company, whose 100% of shares will belong to the state, since, as we mentioned above, these companies have 'civilized rules' of control, accounting, etc. Nonetheless, the company may also be privatized, at least, this possibility is not ruled out even by officials of future *Atomprom* enterprises.

In fact, all these facilities are dual-use enterprises and have always been used for civilian and military purposes. Their commercialization may result in refusal to perform state defense contracts, since they are ill-paid in comparison with other orders. Besides, one cannot preclude that these enterprises will avoid violations of nonproliferation regimes. In his recent interview Yevgeny Adamov, then Minister of Atomic Energy, has called for revision of international agreements preventing promotion of Russian nuclear technologies on foreign markets. These two factors impede thorough discussion on restructuring of nuclear fuel cycle in Russia.

Rosatomstroi

OAO Rosatomstroi may become another structure established in the course of reforms. During Soviet era the Minatom had its own mighty construction complex. Construction companies were the first Minatom's enterprises that were partly privatized and nowadays it is believed that this was the major reason for their decline.

Rosatomstroi will comprise construction companies still controlled by the Minatom.

Nonetheless, attitude of Russian leadership towards natural monopolies hampers transition to *free market* management techniques in nuclear industry. Restructuring of *RAO EES* and the Ministry of Railways indicate that the Kremlin tends to promote de-monopolization and to create competitive environment. Hence, it is hardly probable that a new monopoly emerges.

Meanwhile, the Minatom suggests that bodies with monopolistic domination on the market be set up. Corporate interests and willingness to preserve unity result, to a certain extent, from the Soviet legacy when nuclear industry and associated sectors were closed for the public and made *a state within the state*. Activities at nuclear facilities were the prerogative of enterprises incorporated in nuclear industry of the Soviet Union. *Minsredmash* comprised construction, machine-building, instrument-making and other enterprises, some of which were not directly related to nuclear production, but provided technical and logistic support. For instance, the Minatom controlled several facilities manufacturing agricultural equipment and equipment for dairy. Even now *OAO TVEL* incorporates *Commercial Center 100* founded in 1953, which is in charge of supplying consumer goods (Russian-made food products – cereals, sugar, flour, canned meat, fish, vegetables, fresh-frozen fish, poultry). Even in the 1990s, the Minatom was quite cautious about granting exterior enterprises access to nuclear facilities.

Under these circumstances and differences between the Minatom and the Russian leadership, one may presume that restructuring in nuclear weapons complex, i.e. at nuclear fuel cycle enterprises, will be *frozen*. As the first step in this direction, one may note appointment of Alexander Rumyantsev, whose early statements as minister, imply that he wants to keep balance of national security, nonproliferation and enhanced economic efficiency.

Meanwhile, nuclear energy sector will be reorganized in close connection with reforms in *RAO EES*. The pace of this restructuring will grow and in the long run, it may lead to

privatization of non-nuclear generating facilities. The same scenario may apply to nuclear energy sector as well.

Certain conclusions can be drawn from the annual *Presidential Address to the Federal Assembly*. Vladimir Putin maintained, 'Demand in defense is half met by private enterprises, including joint stock companies with state's share. I suppose that this practice of involving non-state-owned enterprises in defense research and production should be encouraged. Obviously, this should be done in compliance with all existing requirements, through tender system of state purchases.'

This position may also apply to reform of nuclear fuel cycle facilities involved in nuclear arms production. Much will depend indeed on efficiency of the aforementioned political, legal and administrative mechanisms. In case of nuclear industry, this means introduction of state system of safeguards for nuclear material to prevent its unauthorized use (or to adopt appropriate system of IAEA safeguards), to establish tight export controls and to provide sufficient funding for state defense contracts. It is also necessary to have a strong and independent national supervision authority to ensure safety of nuclear industry.

It is evident that all these conditions will hardly be met in the near future, so it is too early to speak about sweeping changes in nuclear industry.

The President also mentioned the fact that 'extra-budgetary means start to play significant role in financing the science.' At the same time, 'fundamental research can be supported by the state […]. But the state should order research and development only in conformity with its real economic capabilities. This is why it is necessary today to define priorities for state funding of science and to study the mechanisms of funding, as Russian scientific foundations have been doing for several years. They finance research and not research facilities on competitive basis.'

This approach corresponds with the Minatom's proposals and the current state of relations between commercially profitable nuclear enterprises and research institutions. Thus, if the money is not redistributed directly within the Minatom, it will not matter whether the institute belongs to the Minatom, the MOD, or the Russian Academy of Sciences.

Problems of Licensing Concerning Nuclear Energy Uses and Related Activities

There is another potential area of conflict between national security interests and the rush for profits.

In fall 2000, the Minatom submitted to the State Duma a bill with amendments concerning the Law "*On Nuclear Energy Uses*". In accordance with the suggested amendments, licensing should become the responsibility of the Minatom (the body that manages nuclear energy uses), while *Gosatomnadzor* (the state regulating authority) may lose such powers.

The major point of contradiction for the two agencies is difference in approaches towards the notion of "regulating safety in the area of nuclear energy uses", i.e. it is a debate on the sphere of competence of *Gosatomnadzor*.

The Minatom believes that safety regulations are the two-dimensional activities:

- elaboration of norms and standards for safe nuclear energy uses;
- supervision of their implementation, control over compliance with terms of licenses issued by the licensing authority to permit activities pertaining to nuclear energy uses.

According to *Gosatomnadzor*, safety regulations are three-dimensional:

- preparation of legal acts and elaboration of norms;
- licensing to ensure safe use of nuclear energy;
- supervision and oversight as stated above.

The Minatom proceeds from its concept and proposes to preserve *Gosatomnadzor* as a supervising authority for nuclear and radiological safety. Meanwhile, the Ministry would be responsible for issuing licenses for

specific activities. Each project and each license should undergo the expert examination to check their compliance with nuclear safety standards and should be countersigned by *Gosatomnadzor*. The latter would be in charge of overseeing further implementation of the terms of license.

Gosatomnadzor presumes that the aforementioned changes will run counter to the provisions of the Nuclear Safety Convention signed by Russia. Article IV of the document states, 'Each Contracting Party shall take the appropriate steps to ensure an effective separation between the functions of the regulatory body and those of any other body or organization concerned with the promotion or utilization of nuclear energy.' The proposals by the Minatom will violate this principle, since it is senseless if the governing body (the ministry) issues licenses to the subordinate organizations, which it directs.

The amendments do not clear up the following principal aspect – who will participate in defining the terms of the license if the Minatom's proposals are accepted? If *Gosatomnadzor* has a legal opportunity to affect the terms of the license from the point of nuclear safety and has enough powers for oversight (including the use of sanctions, such as fines, suspension of activities or cancellation of the project), the Minatom's proposals will pose no threat as far as nuclear and radiological safety is concerned.

It is noteworthy that both parties strive to achieve their goals within the legal framework. The Minatom is ready to promote amendments to the Russian legislation and even to the Nuclear Safety Convention. *Gosatomnadzor* is also willing to abide to any adopted legislation, but will defend its positions at all stages of consideration of the bill.

However, the Minatom's willingness to provide favorable legal environment for its activities may contradict the objectives of maintaining safety and security proclaimed by Alexander Rumyantsev.

Analysis

EVOLUTION OF US EXPORT CONTROL LEGISLATION

by Vladimir Yermakov
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US presidential elections last year overshadowed another significant event - restoration of the old Export Administration Act by President Clinton. On November 13, 2000, he signed P.L. 106-508 providing for temporary restoration of the Export Administration Act until August 20, 2001. The President emphasized that the law should have been reviewed, since it was adopted during the Cold War and became invalid on August 20, 1994. There was a need for renewed export controls legislation reflecting situation on the quickly developing world competitive market and ensuring national security through control over sensitive dual-use articles. The Clinton administration set forth such bill in 1994, but the Congress failed to pass the law and, hence, the President was forced to take the aforementioned provisional measure.

It was evident that the Bush administration would return to this legislation, taking into account the importance of the act. It is indeed the main legal instrument to regulate export of high-tech US production and Washington widely uses this mechanism to pursue US foreign policy. In January 2001, a group of Congressmen (Republicans Phil Gramm and Mike Enzi together with Democrats Tim Johnson and Paul Sarbanes) submitted to the Senate a new bill on export controls.

Export Controls in the United States

Export controls have always played important part in US system of government. The Constitution entrusted the Congress with powers to regulate commerce with foreign states.

Nowadays, it is more profitable to develop large and even high-tech production in countries with the lowest costs, such as Malaysia or the Philippines, where one can spend less on energy, primary assets and labor. If there were no control over export of technology and capital, such overseas territories would become global centers of advanced production, whereas the United States and other Western nations would suffer de-industrialization. This process is under way, but thanks to various constraints, including nonproliferation of sensitive technologies, the changes are less dramatic. Export of US high technologies was impeded by export control over sensitive articles. These regulations make integral part of the system of checks and balances and ensure efficiency of US economic model. Thanks to them, modern production is preserved and developed on the US territory. As a result, tight export controls enable Washington to retain some large-scale high-tech facilities that remain unique and highly profitable. All this facilitates US efforts to maintain the status of technological superpower and provides for US domination on high-tech world market.

On the other hand, export controls are directly connected with US foreign policy and are used as an efficient mechanism of pursuing national interests in the area of WMD nonproliferation. One can hardly underestimate this function of export controls and its influence on global developments, including US-Russian relations. The first steps of the Bush administration have demonstrated its readiness to promote nonproliferation and export controls and to intensify efforts in this sphere. Such measures, however, are not always acceptable to other countries, despite *noble goals* that are pursued.

US export controls affect situation on world markets and foreign policy of some states. In the recent years, its impact has significantly grown, due to attempts of exterritorial application of US domestic export control procedures and acts providing for unilateral sanctions against violators of *civilized* norms, whose behavior runs counter to US national interests. Tough unilateral steps have many times resulted in confrontation and clash of interests with other nations.

Export controls of dual-use goods and technologies, as well as of military export, makes essential part of entire national export control system. The agencies concerned are the Department of Commerce, the State Department, the Department of Energy, the Department of Defense, and special services. The State Department plays decisive role and has the last say if any differences among agencies emerge. The Department of Commerce is responsible for licensing and has strict and detailed rules and regulations for dual-use export controls aimed at preventing transfer of high-tech US production to *unfriendly* states that may use these technologies for developing nuclear, chemical, biological, and missile weapons. Sometimes articles of the DOC trigger list were included in control lists for military items and were moved under jurisdiction of the State Department to ensure tighter supervision and licensing.

Dual-use technologies and goods account for a large share of US export and it is quite difficult to avoid contradictions between national security and foreign policy priorities and interests of the US businesses, notably military-industrial complex. However, the last word belongs to federal agencies and any circumventor faces criminal prosecution or civil liability and, evidently, loses the right to conduct foreign trade.

Under these circumstances, a natural question would be why not to pass a new updated export control legislation, which would create favorable conditions for all key parties: the Congress, the executive branch, and the business community. Despite ten years of work, intense intellectual and lobbyist endeavors, the process of export control reform has stalled and the Clinton administration had to return to the 1979 Export Administration Act. To understand US commitment to this Cold War *relic*, which does not meet requirements of new reality and runs counter to interests of US industries, one should analyze the history of export controls in the United States.

American export controls were developing slowly, step by step and each time became more and more complicated. This evolution reflected the following concept: export of US sensitive production was not the right, but the privilege granted by the Government to law-abiding traders and only when such supplies met US national security interests.

The first export control procedures emerged in the late 18th century when US independence was shaped. However, streamlined and sophisticated system of sensitive export controls was established in mid 20th century, when the United States passed the law on export controls in 1949. One should remember that principles and methods of export controls were formed in conditions of confrontation with the Soviet bloc and were aimed at preventing procurement of high-tech goods and technologies by the USSR and its allies. For that purpose, the notorious COCOM was established alongside with NATO and this body functioned until April 1994. In 1995, a post-Cold War mechanism was set up, i.e. the Wassenaar Arrangements, whose normal operation was impossible without Russia's participation and Russia's consent to its principles.

In 1979, the United States adopted the Export Administration Act that contained guidelines for export control of dual-use goods and technologies and described mechanisms for national export controls and internal compliance programs. The law underwent several amendments in 1981, 1985 and 1988 and, as a result, the Export Administration Regulations emerged, i.e. a set of documents specifying key provisions of the act.

In practice, export controls in the United States are based on constantly renewed provisions of the Export Administration Regulations and the Commerce Control List of the DOC. US legislation envisages also individual examination of certain supplies, whose outcome depend not on the character of laws, but on interpretation of national security interests by the DOC officials or officers of other agencies concerned. The range of officers may vary from a department head of the DOC to the US President. Another mechanism can be the Enhanced Proliferation Control Initiative enabling the authorities to bloc any deal, which poses a threat to nonproliferation regimes. Since 1984 the United States has also established the catch-all principle. The Department of the Treasury has the right to impose embargo (e.g. on foreign trade with Iraq, Iran, Sudan, Syria, Libya, North Korea, and Cuba).

Global situation changed dramatically in the 1990s and there were all prerequisites for developing full-scale mutually beneficial cooperation between Russia and the United States in the area of high technologies. It was only logical that Russia was engaged in international efforts to ensure WMD nonproliferation: the COCOM was disbanded, new multilateral mechanisms were set up and Russia agreed to join the MTCR. Further step would have been review of US export control policy to encourage real partnership in Russia and equal exchange of high technologies. But this fundamental change did not take place and US export controls remained intact.

However, in 1994-1999, the US administration was not restrained with any fully-fledged export controls act and could afford certain liberalization of its approach towards high-tech exchange with Russia. It is noteworthy that at that time Washington was actively purchasing Russian high technologies and preserved strict bans on similar supplies to Moscow. Russia, on its hand, strived to eliminate Western export restrictions on trade with Russia. But despite numerous promises, the problem has not yet been solved. During short *liberalization* period, the United States managed to tighten some regulations concerning export to Russia. This trend was reflected in the bill on export control of dual-use technologies and goods submitted to the Congress.

As an example of discrimination, one can cite evolution of rules pertaining to export control of fast computers. The Clinton administration has been amending these regulations since 1993 to make them more liberal, but there are two major criteria for export decision – affiliation of the state with one of four groups of importers depending

on proliferation risks and computer operation time.

From the very beginning Russia has been in group "C", i.e. among those nations that are under strict control and limitations concerning import of fast computers. The United States explained it by nonproliferation goals with respect to the country possessing military nuclear program. Group "B" countries had lower control (South America, South Korea, ASEAN, South Africa, and Eastern Europe) and group "A" states had practically no control (NATO, Japan, Australia, New Zealand, Brazil, and Mexico). When in late January 2001 Washington revised the rules for the sixth time, groups "A" and "B" were united into group of *allies and friends* with privileged access to supercomputers, while Russia remained among countries with high proliferation risks. The only positive change reflecting US desire to cope with quickly developing computer market was introduction of new level of 85,000 millions of computing operations per second (instead of 28,000), which requires additional approvals and permissions.

New Export Control Legislation: Debate and Prospects

US conservatism is understandable. Washington has benefited from political and economic changes of the 1990s and asks if it would be rational to transform existing order, which helps to strengthen US positions. Perhaps, this one of the motivations of the US Congress in 1994 when the term of the 1979 Export Administration Act was expiring. A new bill that took into account the aforementioned global developments was submitted to US legislature and at first, it seemed that it would be passed by August 1994 as required. But the Congress and the White House failed to find reasonable compromise: conservative lobby blocked any liberal bill under standard pretext – protection of national interests and prevention of proliferation. Some Congressmen argued that Russia and China should be kept out of reach of advanced technologies to avoid buildup of their military potential. They insisted on tight export controls to maintain US military and technological superiority and to preserve ability to curb proliferation of WMD and delivery systems.

In 1999, Republican Senators Gramm and Enzi sponsored a bill (S.1712) providing for unlicensed supplies of US high-tech items if similar goods already exist on the world market. However, this attempt fell flat – majority in Congress voted not against provisions of the bill, but against the Clinton administration, which was promoting the bill. Nostalgia of some Republicans for the COCOM coincided with tough criticism of the Clinton administration for undermining national security of the United States.

Even key agencies involved in export controls had no clear understanding of the limits of liberalization. The State Department traditionally followed conservative view and regarded total control as an essential foreign policy tool. The DOC and the DOD called for simplification of procedures, since the latter was interested in intensifying military-technical deals with NATO allies.

When it turned out that the bill had stalled in the Congress, the President had to find other legal means to ensure export controls. The White House resorted to the International Emergency Economic Powers Act and every six months extended the shortened 1979 Act. Thanks to this policy, US export control system survived the crisis and all mechanisms were smoothly working.

Confrontation between the executive and the legislative branch lasted six years and left field for maneuver neither for President Clinton nor for the Congress. Finally, the parties met halfway and agreed to provisional restoration of the old law with some amendments (stricter administrative sanctions against US companies that violate export control requirements). This step helped to eliminate legal vacuum of the last six years, when presidential directives maintained the system operational, but did not allow for any development. Old legal basis with some amendments, however, gave the US administration powerful instruments against circumventors (even individuals can be fined (up to $500,000) and/or imprisoned

for up to 10 years if they breach the adopted legislation).

One may presume that US manufacturers of dual-use articles will now be more cautious in striking deals, since long forgotten sanctions will be much more painful. At the same time, rights of exporters were protected, especially as far as transfer of commercial information during administrative or court proceedings is concerned.

There was no doubt that provisional legislation was a half-hearted measure to defer final decision to the new administration and renewed Congress. Further developments indicated that the pause was brief and in late January new export control bills were submitted for consideration of legislators.

It is difficult to predict the course of export control reform in the United States. Many businesses supported by the DOC and some Congressmen (mainly Democratic minority in both Houses) stand for updating the legislation to ensure true liberalization. They tend to shorten time of inter-agency approval, to exploit opportunities given by the Internet and other technological innovations to simplify licensing procedures. Experts believe that if suppliers were granted more powers and responsibilities this would facilitate regulation of export. They also propose fundamentally new approaches. For instance, as far as control over computer supplies is concerned, it is suggested not to focus on capabilities of computers, but on their application in certain country. Under current circumstances, it is not important how fast computer is, hardware is less crucial, since much depends on network configuration, its software, and capabilities of users.

The US administration is prudent in reforming export controls and takes selective approach to all proposals. Key principle is always observed: separate policy towards NATO and separate policy for states that are potentially dangerous for US national interests. Special relationship with allies has always existed in the area of high-tech exchange, but even here Washington makes difference between privileged and non-privileged recipients of US technologies. Another extreme is black list of nations that are deprived of equal participation in world trade. Presumably, coming reform will follow this general trend. Whatever pattern is used (conservative or liberal), it will be aimed at facilitating sensitive trade with close allies (NATO) and tightening controls for trade with other states.

Analysis of major provisions of the submitted export control bill proves these conclusions. Its authors strive to accomplish two different tasks – to strengthen US domination on high-tech market by expanding American exports and to tighten measures against proliferation of WMD and ballistic missiles. To solve this contradiction, the Congressmen propose the following steps:

- to preserve constraints and politicized approach towards sensitive export (the Commerce Control List contains some goods, whose export is regulated for national security reasons, and each item of this category can be under enhanced control if its export allegedly poses threat to US security);
- to divide all nations in five categories, given their relations with the United States, their WMD and missile capabilities, their participation in nonproliferation regimes, the state of their national export controls, etc.;
- to keep the right to impose export restrictions for foreign policy reasons and to apply US domestic legislation beyond its territory;
- to provide for unlicensed export of US goods and technologies that are freely sold on world market by other exporters;
- to toughen administrative and criminal liability of suppliers for violation of export control requirements (to increase minimal fine to $1 million and to introduce life imprisonment).

Even brief assessment of the document makes us conclude that new concept of sensitive export controls strives to balance public and private interests and to obtain additional powerful tools for pursuing

foreign policy and foreign trade goals. According to some sources, the Congress may approve the bill within the next few months to ensure its adoption by August 20, 2001.

US Export Control Policy and Russian Interests

Russia suffered from tentative solution of the Clinton administration, since it failed to get long-awaited access to advanced Western technologies. For some proponents of *radical democratic reforms* this US course must have been a surprise.

However, one may assume that US conservatism can be accounted for by simple pragmatism rather than by cautiousness and suspicions of the Cold War. Washington does not want Russia to become its new rival on high-tech market. This explains foreign policy priorities of the old law reinvigorated by President Clinton and of the new bill, which will soon be passed by the Congress. The document remains discriminative and anti-Russian and there have been no positive shifts so far.

Under these circumstances, one should ask what is more profitable for Washington – stable and reliable partnership with Moscow in the sphere of high technologies, or continuation of *shaking neo*-COCOM approach based on tight controls and sometimes absurd restrictions on dual-use supplies to Russia? US-Russian relations will significantly depend on further directions of US export control policy.

If the first scenario is implemented, the USA will have to abandon some outdated approaches. Washington will have to demonstrate market openness widely promoted in the early 1990s (in compliance with the WTO principles) and will have to put up with the fact that US high technologies will be used in Russian industry, including defense sector. It is understood that many in the United States are frightened with these prospects and oppose such policy under pretext of protecting *weakening national security*. But the United States insists on such transparency when it comes to building market economy in Russia to ensure its full integration in global economic processes! The paradox is that, despite Western appeals to Moscow, US economy remains more closed, due to tight export controls, than Russian.

Washington has evident reasons for strict regulations in the area of nonproliferation and export controls. But one should bear in mind that Russia and the United States have similar approaches towards nonproliferation and control of dual-use items, as it has repeatedly been stated by leaders of both nations. Two countries pursue similar policy to curtail proliferation of WMD and missile delivery systems.

Unfortunately for US-Russian relations, they become hostages of inner contradictions, when the United States publicly declares transparency and partnership and in practice uses double standards. When it is profitable for Washington, it purchases Russian advanced technologies (e.g. missile technologies) and applies the principle of transparency. When it comes to Moscow's attempts to procure US technologies (e.g. computers), the United States starts to protect *national interests* and pulls down *iron curtain* of export controls. As a result, concerns of the parties are not met and impede bilateral dialogue raising suspicions and unpredictability of both sides.

All this may undermine positive experience accumulated in the last ten years and make the parties return to the Cold War confrontation. This would signify substantial losses to the two countries and would devaluate fragile system of strategic stability based on mutual understanding of key international security issues. Russia follows closely US developments in the area of export controls. Moscow believes that narrow national interests of US legislators will be replaced by pragmatic and unbiased assessment of global political reality and mutually beneficial strategic cooperation with Russia will continue.

Commentary

THE RUSSIAN-INDIAN NUCLEAR COOPERATION: MORE QUESTIONS THAN ANSWERS

by Vitaly Fedchenko,
PIR Intern

In early October 2000, during President Putin's visit to India Moscow and New Delhi signed a set of agreements promoting bilateral cooperation in different areas, including peaceful nuclear energy uses.

Along with the Declaration on Strategic Partnership, the parties approved the Memorandum of Understanding (MOU) related to peaceful nuclear energy uses. This document was not published and one has to judge it, relying on indirect sources. The agreement provides for Russian commitment to promote development of Indian peaceful nuclear energy sector[1]. Existing international regulations pertaining to proliferation of nuclear equipment and technologies rule out any chances for India to develop such energy system that will meet country's growing demands. Russia is ready to make appropriate supplies without significant political concessions on the part of New Delhi. The parties presume that cooperation under the MOU will fully comply with Russia's export control commitments.

This compliance is, however, quite dubious, especially as far as the rules of the Nuclear Suppliers Group are concerned. Many experts argue that Russia will have to convince the United States and other NSG members that its relations with New Delhi are in full compliance with international export control regulations[2]. Under these circumstances, it is clear why the parties kept the deal secret.

India was quite enthusiastic about the MOU, despite harsh criticism on the part of Western nations. New Delhi regards the document as a logical continuation of new Moscow's approach towards nuclear energy uses and towards reducing nuclear proliferation risks. India considers the MOU to be a part of nuclear initiative presented by Vladimir Putin at the UN Millennium Summit last year. According to Indian sources, the Russian decision on nuclear export to India was based on political ideas contained in the Putin's address and Moscow's understanding of significant economic benefits resulting from cooperation with New Delhi.

In Russia, key lobbyist of the Putin's initiative was Minister of Atomic Energy Yevgeny Adamov, whose views corresponded with Indian vision of nuclear issues. The Russian minister had to take into account diminishing public support for nuclear energy and urged all states to cooperate in developing new types of nuclear power plants that would be safer and would serve to reprocess nuclear waste. Yevgeny Adamov also responded to international concerns about correlation between civilian and military nuclear sectors and promoted development of new nonproliferation-friendly nuclear programs with inherent safety and security.

Despite Minatom's rhetoric and proclaimed commercial benefits of new nuclear policy, it will hardly be welcomed in Washington and other Western capitals. Key reason for criticism is further use of plutonium produced by energy reactors, i.e. how to ensure safe and profitable plutonium management. The United States presumes that the safest plutonium disposition technique is immobilization and burying[3]. Russia and India share a different opinion and prefer to separate plutonium from spent nuclear fuel and burn it in civilian nuclear reactors. Major argument against selling nuclear reactors to such states, as India, is that separated plutonium can be used in nuclear weapon programs. Russia believes that technologies to be supplied make this impossible. The question is whether the United States will believe these assurances.

General discussion about plutonium management causes specific problems. Stumbling blocks for Russian relations with the world community were nuclear fuel supplies to Tarapur and Minatom's intention to build additional reactors in Koodankulam in circumvention of the NSG rules.

In fact, the NSG itself was established, to a certain extent, thanks to India. Nuclear tests of May 1974 gave impetus to international efforts to tighten export controls, which resulted in establishment of the NSG in 1975. The 1978 Guidelines for Nuclear Transfers did not provide for full-scope safeguards and, hence, New Delhi did not oppose them and even placed under safeguards some of its nuclear power plants.

However, the situation changed after the Gulf War, when clandestine Iraqi nuclear program was discovered. The NSG decided to strengthen the regime and on April 3, 1992 in Warsaw the State Parties agreed to regard full-scope safeguards as an indispensable condition for supplies to any non-nuclear weapon states.

A few days before, on March 27, 1992, President Yeltsin signed Decree No. 312 "*On Control of Export of Nuclear Materials, Equipment and Technologies from the Russian Federation*". The document stated that Russia could supply 'nuclear materials, technologies, equipment, plants and specialized non-nuclear materials' only to non-nuclear weapon states, whose nuclear activities were under full-scope IAEA safeguards. Since India is not a signatory to the NPT and resists international attempts to impose full-scope safeguards on its nuclear activities, Russian nuclear export to India, except one case, was merely prohibited starting from April 1992.

The exception is Russia's legal right to build two energy reactors in Koodankulam, where Moscow can confine itself to demanding India's commitment to place only specific plants under IAEA safeguards. The thing is that the appropriate agreement was signed in 1988, i.e. before Decree No. 312 and the NSG full-scope safeguards statement. Nonetheless, in April 1996 Russia reaffirmed its commitment to revised NSG Guidelines.

Immediately after Putin's inauguration, he amended Russian export control legislation. On May 7, 2000, six new paragraphs were added to the aforementioned decree, which provided for nuclear supplies to non-nuclear weapon states, whose activities were not under full-scope safeguards, in 'exceptional circumstances'. The Russian Government got the right to permit export of nuclear materials and equipment under certain terms.

Firstly, the supplies should comply with Russian international commitments. Thus, this decree, at least, theoretically does not contradict the NSG rules. Secondly, the government importing nuclear material or equipment should provide formal assurances of non-diversion of supplied items for the purposes of developing nuclear explosive devices. Thirdly, such supplies can occur only to ensure security of nuclear plants existing on the territory of the recipient. Fourthly, the plants should be under IAEA safeguards. The last two conditions correspond with the requirements of the IAEA INFCIRC/254/Rev.4[4] disseminated seven weeks before Putin's decree. The information circular note in paragraph 4(b) also states that safety reasons may be an excuse for exceptional supplies to non-nuclear weapon states without full-scope safeguards.

Despite the aforementioned reservations, Minatom's spokesman Yury Bespalko argued then that the decree significantly expanded Russia's nuclear export capabilities and was connected with Moscow's intentions to cooperate with India.

In the foreseeable future, New Delhi will hardly change its attitude to the NPT and the NSG standards, but it was not an obstacle for the Minatom. Moreover, Russia actively offers India new projects pertaining to construction of energy reactors. Beside two units in Koodankulam (under negotiation since 1988), Moscow was willing to build two more reactors and this proposal was voiced during Putin's visit to New Delhi. In early 2001, Russia suggested that four more reactors should be built.

Another consequence of Putin's decree was Russia's nuclear fuel supply for the Tarapur nuclear power plant. Details of the story follow.

The Story of Tarapur

Nuclear complex in Tarapur dates back to the 1960s, when a small provincial town became a construction site for the first Indian commercial nuclear power plant. The plant

was constructed by US companies and was called TAPS (i.e. Tarapur Atomic Power Station). The plant was built by *Bechtel Corp.*, which together with *General Electric Co.* designed the plant. *General Electric* in partnership with *Combustion Engineering Inc.* made the reactors and supplied related equipment[5]. *Nuclear Power Corporation of India Ltd.* operated the plant. Its two units – TAPS-1 and TAPS-2 – with 210-MW capacity each, produce now about 160 MW. Their commercial use started on October 28, 1969.

Average energy reactors work with 70% capacity; Indian power plants have 49%[6]. As far as TAPS is concerned, it has 9% higher capacity than India's average. However, at present, planned service life of the units has nearly expired and some Indian officials have already warned about emerging threat to safe operation of this station. However, the Indian Government believes that the reactors work smoothly and their service life can be extended. Such decision must help to diminish India's energy shortage.

TAPS-1 and TAPS-2 are boiling water reactors and they cannot use natural uranium unless it is enriched. Nowadays, two more units are being built in Tarapur – TAPS-3 and TAPS-4. India notes that these power units were designed and will be constructed with the use of Indian indigenous materials and technologies. Total costs of the project will amount to $2 billion. TAPS-4 will be completed nine months before TAPS-3 (i.e. in October 2005), due to particularities of the construction site. Two new reactors will be pressurized heavy-water reactors with nominal capacity of 500 MW each and natural uranium fuel. The buildings will be seismically resistant and surrounding landscape should impede their destruction with low-flying missiles. For safety reasons, each reactor will be placed in two containments. The units will be the most powerful Indian indigenous plants. US experts fear that plutonium separated from spent nuclear fuel of these reactors will be used not only in MOX fuel, but admit that its isotopic concentration will hardly be optimal for military purposes.

The modern nuclear power plant in Tarapur produces electricity and reprocesses spent nuclear fuel, immobilizes related waste and manufacture MOX fuel. The following facilities make part of TAPS:

- PREFRE – reprocessing plant constructed to reprocess spent nuclear fuel from Indian NPPs, including Madras, Rajastan, and Tarapur. The plant was built in 1975 and became operational in 1982. The plant can reprocess natural and low-enriched uranium fuel (up to 150 tons per year). Meanwhile, it is not under IAEA safeguards, unless it reprocesses the fuel already placed under the safeguards. The plutonium is used for MOX fuel and for research, but this plant may be the most proliferation-sensitive among all Tarapur facilities.
- WIP – waste immobilization plant constructed in 1981 and operational since 1990 (according to other sources, since 1985). The facility vitrifies highly radioactive waste with the rate of 125 kg of vitrified waste per day.
- SSSF – solid storage surveillance facility for immobilized waste supplied by the WIP. The construction was completed by 1990. The facility may store vitrified waste of the Tarapur and Trombay power plants produced within 20 years.
- AFFF – advanced fuel fabrication facility to produce MOX fuel. The plant was designed and is maintained with assistance of the Homi Bhabha Atomic Research Center. The plant produced MOX fuel pellets for TAPS-1 and TAPS-2 using plutonium fabricated in PREFRE.

The first two units of Tarapur require enriched uranium fuel. When the plant was constructed, India had no facilities to fabricate such fuel and had to sign a 30-year contract with the United States on corresponding supplies. Although TAPS was not involved in the 1974 Indian nuclear tests and was under IAEA safeguards from the very beginning, in 1978 the United States passed the Nuclear Nonproliferation Act providing for full-scope safeguards as a condition for further supplies of US nuclear technologies and materials. India refused to meet this demand and in 1980, Washington stopped any supplies of fuel and spare parts to Tarapur.

New Delhi began to run out of fuel and faced a dilemma: to shutdown two reactors, or to find a new source of fuel. After negotiations aimed at ensuring India's commitment to continue to apply safeguards to TAPS reactors and spent fuel, the Reagan administration signed a trilateral US-Indo-French agreement (1983) entrusting Paris to supply fuel and equipment to Tarapur. According to this deal, fuel supplies should have continued until 1993, when the old US-Indian contract was to expire. But in late 1991 French leadership decided to apply full-scope safeguards principle and after 1993 India could no longer expect to extend the contract with France.

Thus, New Delhi had to seek new supplier again and in early 1995 signed a contract with *China Nuclear Energy Industry Corporation*. At the same time, India declared that Chinese low-enriched uranium would be placed under IAEA safeguards. For a number of political reasons, China can hardly be ideal supplier for India, including nuclear fuel deals. Besides, New Delhi is discontent with Tarapur's dependence on foreign suppliers. This is why Indian scientists had to explore opportunities for indigenous production of fuel for their reactors and the country has already achieved certain positive results in MOX fuel fabrication. The Tarapur reactor was first charged with a pellet of Indian MOX fuel in 1994 and share of indigenous fuel has grown since that time.

After the 1998 nuclear tests Chinese supplies were stopped and in spring-summer 2000 Tarapur began to run out of fuel. Energy production was decreasing and some industrial zones near Mumbai suffered from electricity cuts. So, New Delhi turned to Russia and on August 16, 2000, a facility in Elektrostal (Moscow region) agreed to supply India with approximately 58 tons of 1.66-2.6%-enriched uranium dioxide[7]. The supplies started in mid-February 2001 and were strongly criticized by the West.

Under these circumstances, one may remember a historical precedent of the 1970s, when Russia and India found themselves in quite a sensitive situation. In May 1974, Canada decided to stop nuclear cooperation with India and New Delhi faced substantial difficulties in operating its reactors and completing construction of some nuclear power plants. For instance, RAPS-1 heavy water reactor in Rajastan was built by Canadian companies and had 220-MW capacity. Canada and the United States supplied 130 tons of heavy water and the Soviet Union provided 80 tons for RAPS-1 in 1973, i.e. before the NSG establishment. India also needed heavy water to launch RAPS-2.

Two energy reactors were under IAEA safeguards and New Delhi addressed the Soviet Union with the request to supply heavy water. Moscow agreed to export 200 tons of heavy water if all Soviet international commitments were observed. Long negotiations followed and India strongly opposed Moscow's demand for assurances of non-use of this material to develop peaceful nuclear explosive devices. However, the USSR insisted on this international requirement and forced New Delhi to give such assurances in September 1976. The supplies started in October-November 1976.

Thus, at that time, unlike in case of Tarapur, the Soviet Union preferred to abide to its international obligations and to avoid the situation when its commitments could be called into question.

Russian Response to Western Criticism

At the December 2000 NSG meeting many State Parties expressed their concern about planned Russia's fuel supplies to India and questioned Russia's compliance with its international commitments. In January 2001, the *Economist* explained Russian-Indian nuclear cooperation with the connivance of Russian officials and Putin's desire to taunt the United States; the article called for international pressure on Russia. In mid-February 2001 US State Department expressed regret concerning nuclear fuel supplies to India in violation of Russian nonproliferation obligations. The United States called into question Russia's commitment to nuclear nonproliferation and urged Moscow to abandon the deal. US Secretary of State Donald Rumsfeld also accused Russia of actively proliferating nuclear weapons. Pakistan also condemned the Tarapur deal for the practice of discrimination against certain states.

Key argument against Russian-Indian nuclear cooperation is breach of the NSG rules, albeit Moscow is one of its members. There were several scenarios of Russian response to such accusations.

In December 2000, Minister Adamov proposed the most radical and the least acceptable way out. In his interview with *The Hindu* concerning Russia's intentions and the NSG regulations, he made hints about Moscow's withdrawal from this organization. Yevgeny Adamov argued that 'if current restrictions on cooperation in peaceful use of nuclear energy were not modified, there may be changes in the lists of participants in various control regimes'. The Russian minister cited an example of China. Beijing does not observe the NSG standards, but is a party to the Zangger Committee. Since the latter does not provide for full-scope safeguards, China has recently constructed a 300-MW nuclear power plant in Pakistan.

He hoped that Russia would succeed in persuading the NSG to ease export restrictions. He referred to Articles III and IV of the NPT pertaining to peaceful nuclear energy development and cooperation with developing nations and maintained, 'We will do our best to participate in India's ambitious program to generate 20,000 MW of nuclear power by 2020.'

Russia's withdrawal from the NSG would be a measure of last resort and would negatively affect Russian interests. Are there any other ways to reconcile Minatom's export with existing international restrictions?

Indian observers[8] have their arguments in favor of expanded Russian-Indian nuclear cooperation. As far as the NSG Guidelines are concerned, they mention three major points. Firstly, the Guidelines should be applied by NSG member states in accordance with their domestic legislation, i.e. laws and regulations concerning export controls. Secondly, the Guidelines do not mention the NPT. Thirdly, they do not define nuclear weapon states and non-nuclear weapon states. The Russian legislation contains no definition of nuclear weapon state either. This term is identified in the NPT, but Indian experts do not see a big problem in this.

Under these circumstances, they presume, Moscow may 'temporarily declare' India a nuclear weapon state for the sake of specific supplies. Since India has many times conducted nuclear tests, Russia may regard it as a nuclear weapon states and, hence, supplies to India will not be covered by NSG restrictions with respect to non-nuclear weapon states. Besides, for there is no formal connection between the NPT and the NSG Guidelines, Russia may disregard the NPT definition of Article IX and use a special interpretation of this term, hence, legitimizing any supplies to India.

We believe that the aforementioned arguments will be accepted neither by international community nor by Russia. It runs counter to the very spirit of cooperation within the NSG and ignores the fact that international treaties are prevailing over domestic legislation in Russia. Thus, the NPT definition should be effective to Russian national legislation as well. Moscow cannot give *ad hoc* definitions of nuclear weapon states and non-nuclear weapon states and Indian conclusions can be called into question.

Moreover, one should bear in mind that Russia has always regarded India as a non-nuclear weapon state and it has no intentions to revise its position. Vladimir Putin in his interview to Indian media said, 'We do not believe that new nuclear weapon states have emerged on global arena and we do not think that our recognition of this fact will lead to positive consequences for those states that claim for such recognition.'[9]. In his other statement, President Putin emphasized, 'We would like to see India among State Parties to the CTBT and the NPT.'[10].

As far as supplies to Tarapur are concerned, there is a way out. The aforementioned document of the NSG (INFCIRC/254/Rev.4) provides for transfer of items and technologies of the Trigger List without full-scope safeguards if it is indispensable for further safe operation of a nuclear power plant. Russia used this legal mechanism to explain its August 2000 decision on

supplying low-enriched uranium from Elektrostal to Tarapur.

Russia tried to convince the NSG that in the absence of other sources of nuclear fuel, India would have to attempt to use rest of the fuel from previous supplies. But its long irradiation in reactor may result in eroding casing of fuel rods and radioactive isotopes will mix with coolant; an accident will be inevitable. Thus, according to Russian officials, fresh fuel supplies are aimed at preventing emergency situation and comply with paragraph 4 (b) of the document.

However, the NSG members, except Belarus, are not satisfied with this explanation. The United States, which supplied the energy units, constructed the power plant and, hence, has better knowledge of design and technology of Tarapur, maintains that danger of using over-irradiated fuel is exaggerated. Washington argues that the aforementioned provision cannot be applied to this case, since it was specially designed for use in emergency situations threatening public health and safety of population.

There is one more argument against Russian supplies. Despite Indian assurances of normal functioning of Tarapur reactors, one has to admit that service life of the units has expired and any further operation is fraught with accidents. If such emergencies occur, New Delhi may officially turn to the NSG group and demand new supplies of materials, equipment and technologies regardless of full-scope safeguards principle. And such pleas may often repeat in the future. This is another reason for the NSG discontent with Russian decision on supplies, since it extends functioning of outdated reactors.

Some circles in Russia also realize legal defects of Minatom's nuclear policy with respect to India. This was partly demonstrated at the RF Security Council meeting of February 22, 2001 chaired by Vladimir Putin. This closed meeting dealt with export control issues and the ways to tighten export controls in the Russian Federation. In theory, Russian export controls are the most advanced in the world, but it is not always efficient enough in practice. In the course of the meeting, Vladimir Putin mentioned some shortcomings in the work of *Rosaviakosmos* and the Minatom.

There are no clear indications of Putin's concerns, but one may presume the following, concerning his criticism of Yevgeny Adamov.

According to then Secretary of the Security Council Sergei Ivanov, export control issues were to be discussed during the February 22 meeting, since the Security Council's staff had been preparing this debate for sixth months. Hence, the topic emerged in late August 2000, when, in fact, the Tarapur deal was signed. Another coincidence was related to actual nuclear fuel supplies, which began in February 2001 and caused strong Western criticism of Russia's nuclear deals with India, including construction of new nuclear power plants. The Security Council held the meeting several days after the criticism had reached its climax. Hence, according to our sources, Putin's criticism of the Minatom and Yevgeny Adamov was caused by the Indian policy of the latter and his desire to withdraw from the NSG in detriment to Russia's international image, since other export activities of the ministry were quite successful and complied with export control standards.

Conclusion

In our opinion, Indian-Russian bilateral cooperation can only be welcomed if it complies with international regulations and Russia's nonproliferation commitments. Any other decisions, even if they can lead to short-term economic benefits at the expense of *petty* violation of international obligations, should be condemned, since in the long run, losses will overshadow profits. The Minatom's decision to supply India with uranium pellets and to build additional units in Koodankulam runs counter to the aforementioned norms and was a mistake.

Minatom's activities and steps of the former minister Yevgeny Adamov are understandable: they were aimed at getting revenues when the ministry was run as corporation. In these terms, Minatom's policy is quite successful: breathtaking financial prospects on external markets and domestic achievements speak for themselves.

But one should remember that the Minatom is not a private company and cannot afford to work only for profit. It has to take into account national and international obligations that should not be breached.

However, we can hardly presume that strongly criticized aspects of Indian-Russian nuclear cooperation were caused by Adamov's lobbying of corporate interests. One should also remember that the MOU was signed by Vice Prime Minister Ilya Klebanov, while amendments to Decree No. 312 were made by the President. And it is not clear whether these steps resulted from activities of nuclear lobby or were part of national export policy. This will become evident after some decisive measures by new Minister of Atomic Energy Alexander Rumyantsev.

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[1] *The Hindu*, 2000, October 5.
[22] A. Wagner, "Russia, India Sign Secret Nuclear Energy Accord". *Arms Control Today*, 2000, November.
[3] However, this does not prevent the United States from using plutonium in reactors. For instance, according to the 2000 Plutonium Disposition Agreement, the United States should eliminate 34 tons of plutonium. Only 8.43 tons out of this amount will be immobilized, and the rest (25.57 tons) will be irradiated in reactors.
[4] See http://www.iaea.org/worldatom/Documents/Infcircs/2000/infcirc254r4p1.pdf
[5] See International Nuclear Safety Database, http://www.insc.anl.gov/cgi-bin/sql_interface?view=rx_com_matrix&qvar=unit&qval=145
[6] See A. Koch, C. Derrick, S. McNichols, "Selected Indian Nuclear Facilities." Center for Nonproliferation Studies. http://cns.miis.edu/research/india/nuclear.htm. Indian sources give different estimates.
[7] See FBIS Document CEP20000816000224, 2000, August 16.
[8] *The Hindu*, 2000, October 18.
[9] Interview by President Putin to Indian mass media and Russian *RTR* TV channel. See http://president.kremlin.ru/events/67.html
[10] Statement by President Putin before scientists and experts of Indian nuclear energy sector. See http://president.kremlin.ru/events/73.html

Commentary

THE IRANIAN PROGRAM FOR NUCLEAR ENERGY DEVELOPMENT: THE PAST AND THE FUTURE

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Translation into English. Abridged version

The Moscow visit of Iran's President Mohammad Khatami provoked new wave of interest in Russian-Iranian cooperation, in the area of nuclear energy uses in particular. The two presidents did not sign any documents to expand peaceful nuclear energy cooperation, but President Putin noted that Russia would fulfill its prior commitments and was ready to take up new obligations. According to him, Moscow regards 'this direction of joint activities as very important both for Iran and for the Russian Federation'[1]. To assess the scale of Iranian-Russian nuclear cooperation and its prospects, let me review first the history of Iranian nuclear energy development program.

The Shah's Regime and the Program for Nuclear Energy Development

In the early 1970s Iran adopted the program for diversification of energy sources and named nuclear energy production its top priority. This decision resulted from estimates pertaining to the state of national oil reserves (about 17 billion tons). If oil production had remained at the same rate (200 million tons per year), Tehran's oil fields would have been exhausted by 2042. Besides, Iran was willing to keep oil revenues in budget (they accounted for 90% of revenues) and to avoid energy dependence in the future. Another reason was skyrocketing oil prices – from $1.8 per barrel in January 1971 to $11.65 in January 1974, - which enhanced competitive capabilities of other sources of energy[2].

In 1974, Reza Shah Pahlavi proclaimed the plan of nuclear energy development. The program provided for construction of about

20 nuclear power plants with overall capacity of 23 MW. Key body charged with implementation of the plan was the newly established Atomic Energy Organization of Iran (AEOI), whose head was directly subordinate to the shah and latter to the President. The organization had the following responsibilities:

- to promote nuclear energy uses to meet energy demands of the country;
- to acquire technologies required for construction of nuclear reactors;
- to purchase technologies required to develop closed nuclear fuel cycle;
- to use nuclear technologies in industry, agriculture and healthcare;
- to protect people and environment from radiation[3].

Tehran intended to buy nuclear fuel abroad and signed appropriate contracts with Germany, France and the United States during 1974-1977. Iran regarded these three nations as major partners in implementation of the program. Meanwhile, in the long run, Tehran was planning to produce nuclear fuel on its own territory, conducted geological surveys to find uranium deposits and held negotiations on purchasing enrichment plants abroad.

Many Iranian specialists were educated and trained in nuclear physics in the United States[4] and Western Europe, including Belgium[5], Great Britain, West Germany, Italy, Switzerland, and France.

German *Kraftwerk Union* (*KWU*) and the AEOI agreed in 1974 to build two pressurized water reactors with total capacity of 1,300 MW in southern Iran near Bushehr. In accordance with the agreement signed in March 1977 by the AEOI and the German Ministry of Technology and Research, the parties pledged to cooperate in peaceful nuclear energy uses and committed to build and operate jointly nuclear power plants and other nuclear facilities, to train Iranian academics, to promote nuclear and radiological safety, to produce and use radioisotopes. To fulfill these commitments, the AEOI and German *KWU* and *Brown Boverie* negotiated a deal concerning construction of nuclear energy reactors.

In early March 1976, French President Valery Giscard d'Estaing visited Tehran and the parties signed an agreement on cooperation in the area of industrial and economic development providing, among other issues, for building a nuclear power plant in Iran. The follow-up talks between the AEOI and *Framatom* led to $4-billion-worth deal and French commitment to construct two 950-MW PWRs in Darkhovin.

Since the Iranian program envisaged development of the closed nuclear fuel cycle, Tehran also tried to acquire uranium enrichment plants and spent nuclear fuel reprocessing facilities in France. In 1974, the AEOI spent $1 billion to buy 10% of shares of the gaseous diffusion uranium enrichment plant being built in France. Tehran acquired these shares from *EURODIF* international consortium co-owned by Spanish *ENUSA*, Belgian *Synatom*, and Italian *Enea*, got the right to purchase production of the plant and enjoyed full access to enrichment technology developed by the consortium.

To train Iranian engineers and scientists in operating nuclear power plants, Tehran launched the construction of a nuclear research center in Isfahan in 1974 in collaboration with the French. By 1980 the center would have possessed research reactor and a French-made spent nuclear fuel reprocessing plant.

In October 1976, the Soviet MFA concerned with possibility of supplying Iran with spent fuel reprocessing plant and plutonium fabrication facility made a statement to France pertaining to its plans of sensitive technological supply. The Soviet Union feared that its southern neighbor might become a nuclear weapon state.

Among other Iranian nuclear partners, one could hardly underestimate the role of the United States. In 1957, long before the adoption of the aforementioned program, Iran and the United States signed an agreement on cooperation in peaceful nuclear energy uses within the framework of the "*Atoms for Peace*" project. This program first presented by Washington in December 1953 at the session of the UN General Assembly provided for US assistance in peaceful nuclear energy development in the

form of nuclear equipment supplies and training in exchange for the right to monitor and make inspections of these facilities to verify their compliance with peaceful purposes of the program.

In 1967, the United States with financial and technical assistance of the IAEA supplied the Tehran Nuclear Research Center with 5-MW research reactor and hot cells for plutonium separation. In mid 1970s, Iran demonstrated its interest in purchasing eight US energy reactors ($6.4 billion) [6]. Iran and the United States also conducted negotiations on the *Agreement on Cooperation in the Civil Uses of the Atomic Energy*, which would have become a legal basis for export of US nuclear reactors and materials, Iranian investments in US enrichment industry and other types of nuclear cooperation.

Washington did not oppose Iran's plans to develop closed nuclear fuel cycle. The declassified documents of the National Security Council formulated the US position in the following manner:

- to permit U.S. material to be fabricated into fuel in Iran;
- to require U.S. approval for reprocessing of U.S. supplied fuel, while indicating that the establishment of multinational reprocessing plant would be an important factor favoring such approval;
- to offer Tehran participation of Pakistan in operating the reprocessing facility on the territory of Iran in exchange for Islamabad's refusal to build its national plant[7].

There is no information whether the agreement was signed or not, but it is known that in 1977 the talks were still under way.

Full implementation of the energy diversification program was scheduled for 1994; the first two energy units in Bushehr would have become operational in 1980 and 1981, in Darkhovin – by late 1983 and 1984. Total expenditure would have amounted to $30 billion.

Iranian program relied totally on foreign partners and this not only made it dependent on financial capabilities of the state, but on the level of partner relations with nuclear exporters, notably with the United States, Germany, France, Canada, and the USSR (Russia).

The 1979 Islamic revolution, the policy of Ayatollah Khomeini aimed at diminishing dependence on foreign nations and disruption of diplomatic relations with some countries, including the United States resulted in suspension of the program of nuclear construction.

Iran did not achieved significant progress in fulfillment of its nuclear energy development program by 1979 and nuclear infrastructure was still rudimental. In Bushehr, foreign companies completed construction of the inner iron hermetic shield, external concrete dome was not ready, the unit was 70-90% complete, whereas the second unit was only 40-75% complete[8]. French specialists in Darkhovin finished to prepare the construction site for nuclear power plant in early 1979. Uranium enrichment facility in Tricastin (France) began its operations shortly before the Islamic revolution and Tehran obtain neither gaseous diffusion technology nor nuclear materials.

Iran had to suspend the program for nuclear energy development until late 1980s, when its bloody and costly war with Iraq was over. Besides, Tehran's financial capabilities substantially diminished, due to double decrease in world oil prices – major source of revenues for Iran.

Tehran's attempts to make a deal on completion of construction in Bushehr, including talks with Argentina, Spain, Germany, Sweden, France, failed for the reason of US pressure on potential contractors. So, Iran had to turn to the Soviet Union and then Russia for cooperation in peaceful nuclear energy uses. Another new partner of Iran was China.

In September 1992, Iranian President Ali-Akbar Rafsanjani visited Beijing and signed a protocol on nuclear energy cooperation. According to this document, China supplied the Isfahan Nuclear Research Center[9] with equipment and research plants – two sub-critical assemblies (in 1992), minute source of neutrons with 27-kW capacity (1994), and zero-power heavy-water research reactor (1995) [10]. The parties also agreed to build two

light-water reactors of 300-MW capacity in Bushehr (according to other sources, in Darkhovin at the French-equipped site). Later the deal was annihilated under the US pressure.

Russian-Iranian Cooperation and US Sanctions

On June 22, 1989, the Soviet Union and Iran concluded a bilateral agreement on trade and economic cooperation until 2000. In accordance with the document, Soviet experts were to assess prospects for increasing energy output. The USSR was, presumably, ready to build a nuclear power plant in northern Iran, near the Caspian Sea. But after some surveys the Soviets decided that this location was not safe from the point of seismic activity. Geological survey and analysis of research materials prepared by German and US specialists indicated that the site could suffer earthquakes of up to nine degrees under the Richter scale. Meanwhile, Soviet atomic power stations could resist only eight-degree earthquakes. Hence, it was necessary to upgrade the reactor design and design of appropriate systems. Besides, it was quite difficult to deliver supplies to the region due to poor transportation network and bad roads.

At the same time, Iran's negotiations on Bushehr with a number of states stalled and Tehran offered this deal to the Soviet Union.

On August 25, 1992, Russia signed two agreements with Iran on construction of nuclear power plants (from two to four energy units of average capacity) and on cooperation in peaceful nuclear energy uses. The latter provided for Russian supplies of research reactors, cooperation in nuclear fuel cycle, in research and fabrication of isotopes for healthcare and industry, in training Iranian specialists. Meanwhile, Iran continued to insist on building a nuclear power plant in northern Iran and, as a result, the implementation of the agreement was postponed for more than two years.

In January 1995, Minister of Atomic Energy Victor Mikhailov visited Iran at the invitation of Vice-President Dr. Amrollahi, who was also President of the AEOI. The parties negotiated peaceful nuclear energy uses and signed a number of documents specifying different aspects of cooperation stated in the 1992 agreement. The training program for Iranian experts was significantly cut down. However, the parties struck a deal on completing the first unit in Bushehr and signed a protocol on further cooperation.

The protocol maintained that the parties will:

- cooperate in the construction of research reactors of low power (less than 1MW) in Iran for instructional purposes. Over a six month period, the Russian side will transfer a technical-commercial proposal to the Iranian side on this question/issue;
- examine the issue of cooperation on the construction of a desalination plant in Iran;
- utilize Iranian personnel, as much as possible, for the objectives of the cooperation, especially for work on the completion of construction of Block № 1 at the Bushehr NPP;
- supply fuel for Block № 1 at the Bushehr NPP under conditions and at prices [set] by corresponding agreement;
- carry out meetings, no less frequency than once a year, on the high level of Russia's Minatom and the Atomic Energy Organization of Iran for organization of operational control for the implementing of cooperation, especially for the work in connection with the construction of Block № 1 at Bushehr NPP.

Iranian and Russian competent organizations were to prepare and sign[11]:

- in the course of three months, a contract for delivery of a light-water reactor for research with power of 30-50 MW from Russia;
- in the course of the first quarter of 1995, a contract for the delivery of 2,000 tonnes of natural uranium from Russia;
- in the course of the first quarter of 1995, a contract for preparation/training for the Atomic Energy Organization of Iran scientific personnel, 10-20 (graduate students and PhDs) annually, at Russian academic institutions;
- within a six month period of time, a contract for the construction of a uranium vault in Iran, after which negotiations will be conducted on the signing of a contract for the construction of a centrifuge plant for enrichment of

uranium according to conditions, which are comparable to conditions of the contracts concluded by Russian organizations with firms of third countries.

Iran was to pay 80% of the deal with money and 20% with goods; Russia pledged to finish the construction within 55 months.

In August 1995, Dr. Amrollahi visited Moscow and signed a contract on nuclear fuel supplies for Bushehr in 2001-2011 ($300 million). Spent nuclear fuel should have been retransferred to Russia.

This Russian-Iranian arrangements were harshly criticized by the West, especially by the United States and Israel. According to Washington and Tel Aviv, the only goal of nuclear energy development for Iran was to acquire technologies for nuclear arms production.

These topics were discussed during US-Russian talks at all levels and within the Russian leadership. The most heated debate concerned the possibility of selling enrichment technology to Iran, as the Minatom proposed without getting preliminary approval of the Government. Experts who analyzed the situation in Iran and who approved construction in Bushehr strongly opposed supplies of gas centrifuge equipment.

Dissatisfaction with Mikhailov reached the paramount level and it was recommended to the President to fire him for his 'spontaneous actions'. However, he was not dismissed, but the Kremlin decided to stop negotiations on gas centrifuge equipment and not to return to this issue in the future. The US State Department was informed about this before the 1995 US-Russian summit in Moscow.

During this summit the United States did it best to convince Boris Yeltsin to stop any sensitive technology supply to Iran. Moscow's position was unequivocal – cooperation in Iran complies with Russia's international nonproliferation commitments and it will not abandon this profitable partnership. The parties failed to come to an agreement and the meeting bore no fruit in this area. The Gore-Chernomyrdin Commission was entrusted with discussing the problem of supplying the nuclear power plant in Bushehr with nuclear reactor. At the follow-up press conference President Yeltsin made official statement about Russia's refusal to sell gas centrifuge equipment and natural uranium to Tehran to ensure peaceful nuclear energy uses by the latter.

In late June 1995 Prime Minister Victor Chernomyrdin pledged that Russia would stop supplying Iran with advanced weapons, but would fulfill existing contracts by December 31, 1999. Russia must have also decided in December 1995 to confine its nuclear cooperation with Iran to supplying Bushehr with only a single reactor and to training personnel for this nuclear power plant. In exchange, the Clinton administration allegedly promised not to impose sanctions against nuclear cooperation with Iran, as provided for in the US legislation[12]. Russia had to make concessions to the United States, since the latter must have threatened to suspend credits.

In the late 1990s, the sanctions became an important instrument of US policy aimed at isolation of Iran.

On July 28, 1998, one week after the first test of Shahab-3 missile with the range of 1,200 km, Bill Clinton signed Executive Order 13094 amending the Executive Order 12938 of November 14, 1994. The act expanded the list of activities subject to sanctions. Beside export of items and technologies for development of CW and BW, the United States added nuclear and missile exports. The range of sanctions also increased – a ban on US assistance, a ban on importing goods, technologies and services of a foreign company to the United States if this corporation promotes nuclear arms proliferation.

In July 1998, seven Russian institutions and firms fell victims of this document. They were suspected of exporting missile components and technologies to Iran. On January 12, 1999, three more institutes suffered from sanctions, including the NIKIET (Research and Design Institute of Energy Engineering) and the Mendeleyev University of Chemistry and Technology (RKhTU). The sanctions included:

- ban on signing contracts with US ministries and agencies on supplies of goods, technologies and services produced or rendered to these institutions;
- ban on providing governmental assistance to such organizations and their exclusion from joint programs involving the United States;
- ban on import of goods, technologies and services to the United States[13].

White House official spokesman Robert Gallucci refused to name specific cases of violation by Russian institutions of international nonproliferation agreements. He explained this by desire to withhold information and noted that the US Government negotiated on this issue with Russia. So, according to Mr. Gallucci, the United States did not want to reveal their sources and data, including intelligence data. Meanwhile, he pledged that Washington had provided Moscow with evidence pertaining to three institutions[14].

Russia and Iran had similar reaction to sanctions. Spokesman of Iranian embassy in Moscow pointed out that Tehran had no official contacts with three aforementioned institutions. Representatives of the institutions denied any accusations of breaching Russia's missile and nuclear nonproliferation commitments.

Later senior Minatom's officials admitted that two institutes had contacts with the AEOI. In 1996, the NIKIET made a deal with the AEOI to conduct feasibility studies for the project of heavy-water production plant[15]. The institute also prepared contracts to supply Iran with light-water and heavy-water research reactor with 40-MW capacity[16], but the Russian Government did not authorize the deal. Deputy Minister of Atomic Energy Bulat Nigmatulin confirmed that 'Russia had talks with Iran on constructing nuclear research center and supplying light- and heavy-water reactors to Tehran. However, the negotiations failed.' Among participants of negotiations, he named the NIKIET[17].

According to the then Minister of Atomic Energy Yevgeny Adamov, the Mendeleyev University supplied Iran with general non-classified information on technology of heavy water production. When the sanctions were imposed, the university had one post-graduate student from Iran, who prepared a dissertation that had nothing to do with nuclear topics.

The NIKIET maintained cooperation with the US DOE and conducted some joint research with US national laboratories. Since 1992 the institute was receiving funds for reconstruction and modernization of the RBMK nuclear reactors and in 1999 the NIKIET was going to obtain international funding for in-depth assessment of safety situation at Kurskaya NPP, which possessed four energy units with RBMK-1000 reactors. Total amount of funds to be received in 1999 was about $5 million. According to some estimates, when this funding was suspended, the NIKIET lost the ability to provide sufficient payment to about 500 of its employees[18]. The Mendeleyev University suffered less, but also lost some programs and grants. In January 1999, 15 Russians from the RKhTU had internships in US higher education institutions, but due to sanctions the program of student exchange was curtailed.

On April 17, 1999, Yevgeny Adamov offered the United States to lift sanctions against the NIKIET and the RKhTU in exchange for curbing joint activities of these institutes with Iran. According to the minister, he instructed the institutions to stop contacts with the AEOI. Russia and the United States were to make a deal by the time of Yevgeny Primakov's visit to Washington. But the Russian Prime Minister did not go to the USA, because of NATO bombings in Yugoslavia.

In April 2000, the State Department lifted sanctions against *NPTs INOR* and *NPA Polus* (imposed in July 1998 under suspicion of supplying missile components). Sanctions against the NIKIET and the RKhTU remained in force.

The Minatom considered the possibility of supplying Iran with a research reactor for several years. In April 1998, draft contract was ready, but the Government did not authorize the deal. During 1992-1997 Russian specialists prepared a design for a uranium

vault with capacity of 100-200 tons per year[19]. But the cooperation was stopped at that stage. Thus, the only active project of Russian-Iranian nuclear cooperation was construction of the nuclear power plant in Bushehr.

The Bushehr Nuclear Project

Construction in Bushehr consisted of three stages. The first stage included examination of the nuclear power plant, assessment of construction site, equipment and containment, preparation of technical documentation for reconstruction. The second phase implied repairs of the building in accordance with approved technical documentation. The third stage envisaged supplies of equipment and its installation.

According to an initial plan, 200 Russian experts should have completed the examination during 1995. By July 1996 Moscow finished this part of work; about $2 million were spent, but the project was not approved. There was no decision on equipment and facilities to be totally replaced.

The delay was caused by partial lack of documentation (80,000 pages) for equipment and elements of design delivered by *Siemens* in the late 1970s and stored for 20 years. Examination of German equipment continued until 2000 – 47,000 items were suitable for operations, 11,000 were ready for use but had no documentation. Russian experts from Nizhny Novgorod (*OKBM*) and Podolsk (*Gidropress*) were charged with restoring this documents. Only in December 1999 Iran adopted the final technical project of construction.

Another problem for *Zarubezhatomenergostroi* was to find loans to pay for equipment manufactured in Russia. According to international practice, the customer pays 5% in advance, 85% after delivery of equipment and 10% after launching the reactor. In March 1997, the AEOI paid $60 million in advance, but this was not enough to reimburse the costs of Russian subcontractors. Russian banks do not give large loans and charge 13-15% per year. The Russian Government does not provide loans for construction of NPPs at all, hence, debilitating competitive capabilities of Russian enterprises on the nuclear energy market. For instance, France gives preferential loans (0.5%, Export-Import Bank) and serves as guarantor.

Besides, Russians have overestimated capabilities of Iranian constructors, who had to perform some construction and installation activities under the aforementioned contract. In fact, during three years (1995-1997) they completed tasks of one year only.

To facilitate construction in Bushehr, on August 29, 1998, *Atomstroiexport* signed an additional protocol with the AEOI and committed to complete entire construction in 52 months[20]. Russians will now make the work of Iranian contractors. ZAO *Atomstroiexport* is responsible for quality of equipment, its timely delivery, installation, and launching. *Atomstroiexport* will receive about 10% of total amount of the contract and the rest will be distributed among other participants of the project.

In late 1999, *Atomstroiexport* began to sign contracts with Russian enterprises on supplying equipment to the Bushehr NPP. One of the major contractors is *Atommach* (Volgodonsk, Rostovskaya oblast), which committed to supply nuclear fuel transportation equipment, systems of biological protection and other items (59 categories, $18.5 million). On February 12, 2001, the enterprise began to deliver its production to Iran. *OAO Izhorskiye Zavody* will become major equipment supplier for the NPP in Bushehr. The *Leningrad Metallic Plant* will deliver a 1,000-MW turbine ($38 million). *AO Elektrosila* will supply a 1,000-MW turbogenerator, whose production started in April 2000. In April 2001, the plant conducted tests of this power generator. Total amount of this work is $15 million. In June-July 2001, Russia will deliver primary equipment and in late August-September it will start installation. The fuel for the NPP will be supplied by the *Machine-Building Plant* in Elektrostal. More than 300 Russian enterprises take part in construction. According to some estimates, 20,000 jobs emerged, thanks to the contract with Iran.

Further Prospects for Iranian Nuclear Program

On October 3, 1997, President of the AEOI Reza Amrollahi met Director-General of the IAEA Hans Blix and stated that nuclear energy would account for 20% of electricity output in Iran and three more nuclear reactors would be built with the help of Russian specialists – two VVER-440 and one VVER-1000 to be adapted for German-designed facility in Bushehr[21].

According to Mohammed Ayatollahi, Permanent Representative of Iran to the IAEA, the decision to complete the NPP in Bushehr and to restore the program for nuclear energy development had the following reasons:

- several billions of dollars have already been invested in Bushehr (DM 5.3 billion);
- dependence on fossil fuels in the future may result in energy crisis if it becomes impossible to use fossil fuels for environmental or safety and security reasons;
- by 2010 Iran's energy consumption will reach such level that national oil production will cover only national demand and there will be no opportunity to export oil.

Yevgeny Adamov, who visited Iran in November 1998, confirmed that Iran turned to Russia with a request to prepare technical documentation for three reactors ($3-4.5 billion). In early 2000, Vice Prime Minister Ilya Klebanov also reaffirmed this possibility.

During President Khatami's visit to Moscow in March 2001, the Russian press referred to the President's Office and argued that Russia might potentially participate in construction of 5, 10 or even 11 energy units in Iran. However, these reports are hardly true. In early 2001, the Minatom was making feasibility study for the second energy unit in Bushehr, but no documents have so far been signed. The Minatom's officials maintain that final decision on expansion of nuclear cooperation with Iran will be taken after launching the first reactor in Bushehr. As Vladimir Putin put it, 'Iran has plans to expand its nuclear energy sector and the Russian Federation is interested in participating in appropriate tenders in accordance with international rules.'

Since in 2000 Iran was producing about 27 GW, 20% of this amount will be about 5 GW, i.e. supposed capacity of nuclear power plants in Iran in accordance with the aforementioned program. This means that five VVER-1000 can be built. Russia cannot meet such demands today. Four major supplies have orders for manufacturing equipment for five energy units (two for China, one for Iran and two for India). If Russia signs a contract for another energy unit in Iran, total work on six energy units will last for six years.

Meanwhile, there is rapprochement between Iran and the EU. In 2000, trade turnover grew by 64% and amounted to $12 billion. Leaders in this trade are Germany, Italy and France, whose trade turnover was $3 billion, $2.6 billion and $1.8 billion respectively (Russia takes only the 12th place with $670 million). The parties have reached agreement on providing loans for Iranian export goods – with Italy ($2.2 billion), Spain ($1 billion). Tehran holds negotiations with Japan, Germany and Italy on getting a $3-billion credit.

In 1998, despite the scandal concerning assassinations of Iranian Kurds in Berlin and further recall of EU ambassadors from Tehran, Germany proposed to resume EU nuclear cooperation with Iran in exchange of latter's accession to the IAEA Additional Protocol. EU nations had informal consultations with Iran and Tehran commended such steps. The issue was also discussed by the EU working group on nonproliferation, when President Khatami came to power, and some states (Austria, Belgium and France) supported German proposal. Other countries, e.g. the Netherlands, called into question Iran's nuclear intentions. Washington strongly opposed this move and the process stalled after appointment of Joschka Fischer in Germany. However, since some national NPP construction programs in Europe have been frozen, but the industry remains highly profitable, companies concerned will seek access to Iranian market.

New agreements between Russia and Iran will probably be signed during Putin's visit to Tehran that may take place this year. Beside the second energy unit in Bushehr, it would be advisable to cooperate in construction of desalination plant to solve the problem of fresh water shortages in Iran and in the Middle East. In fact, this plant was mentioned in the 1995 agreement. In 2001-2002, Iran may organize tenders for construction of two energy units in Darkhovin, where the French prepared the construction site twenty years ago.

The pace of Iranian nuclear program will not be affected by presidential elections in Iran to be held in early June this year. In the recent years, despite changes in the government, Tehran's position on nuclear energy development remained intact – the country intends to promote peaceful nuclear energy uses.

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[1] "Press Conference after Negotiations with President of Iran S. Khatami", Press Service of the President of the Russian Federation, March 12, 2001.

[2] *World Oil Market and Oil Price Chronologies: 1970–2000,* www.eia.doe.gov/emeu/cabs/chron.html

[3] M. S. Ayatollahi, "Iran Replies to the Risk Report; Denies It Wants the Bomb". *The Risk Report,* 1996, Volume 2, №1, January-February, pp.2-3, www.wisconsinproject.org/countries/iran/denies.html

[4] In 1977 Iranian citizens made the largest foreign student community in the United States. According to the US State Department, 30,000-40,000 Iranians studied in US colleges. Besides, the Iranian ambassador to the United States, the Prime Minister and nine ministers were educated in US universities. www.sedona.net/pahlavi/us-iran.html

[5] The first President of the AEOI Akbar Etemad pursued his higher education at the Lausanne Polytechnic and then in France at the National Institute for Nuclear Science and Technology at Saclay. "Iran's Atomic Energy Program", www.iranbooks.com/atomener.htm. His successor Reza Amrollahi studied nuclear physics at the University of Texas with follow-on training at nuclear research Center in Mol, Belgium. G. Gerardi, M. Aharinejad, "An Assessment of Iran's Nuclear Facilities". *The Nonproliferation Review*, 1995, Volume 2, Number 3, Spring-Summer cns.miis.edu/pubs/npr/iranuc23.htm.

[6] www.sedona.net/pahlavi/us-iran.html

[7] *National Security Study Memorandum 219*, 1975, March 14; *National Security Study Memorandum 292*, 1975, April 22; *National Security Study Memorandum 324*, 1976, April 20, http://www.ford.utexas.edu/library/document/nsdmnssm/nsdm.htm.

[8] There is different data concerning this topic. According to B. Perabo (*A Chronology of Iran's Nuclear Program*), the first bloc was 75-85% complete, the second – 40-70% complete; A. Koch and J. Wolf (*Iran's Nuclear Facilities: a Profile*) speak about 90% and 50% respectively; A. Cordesman, (*Weapons of Mass Destruction in Iran*) mentions 75% and 60%.

[9] According to some sources, China participated in completing the construction of the center, whose building started in collaboration with France. The center was opened in 1984.

[10] A. Koch, J. Wolf. *Iran's Nuclear Facilities: a Profile.* The Center for Nonproliferation Studies, 1998.

[11] "Text of Russian-Iranian protocol". *Iran Brief, Policy, Trade and Strategic Affairs*, 1995, Issue №8, June 1, www.iran.org/tib/public/0818.html

[12] *Izvestiya*, 2000, October 19.

[13] K. Katzman. *US-Iranian Relations: An Analytic Compendium of Laws, Regulations and Policies*. The Atlantic Council of the United States, 1999, September, pp. 32-43.

[14] *Nevskoye Vremya*, 1999, No. 5, January 14, www.nvrem.dux.ru/arts/nevrem-1886-art-16.html.

[15] *Conclusion of the State Duma's Commission on Fighting against Corruption Pertaining to Business Activities of Minister of Atomic Energy of the Russian Federation Yevgeny Adamov*, 2001, March, www.ccnnp.ru/2001/03/full_greenpeace01_03_02.htm.

[16] H. Diamond, "US Sanctions Russian Entities for Iranian Dealing". *Arms Control Today,* 1999, January-February, www.armscontrol.org/ACT/janfeb99/rujf99.htm.

[17] *The Moscow Times*, 1999, January 21, www.moscowtimes.ru/stories/1999/01/21/008.html.

[18] *Nezavisimaya Gazeta*, April 17, 1999.

[19] Victor Mikhailov, "Russian Iranian Nuclear Cooperation and Export Controls". Press Conference of the PIR Center in the National Press Institute, 1998, November 25.

[20] www.nuclear.ru (with reference to *RIA Novosti).*

[21] A. Cordesman. *Iran and Nuclear Weapons.* Center for Strategic and International Studies, 2000, February 7, p.14.

Viewpoint

DISARMAMENT EDUCATION: THE ROLE OF THE UNITED NATIONS[1]

by Yevgeny Gorkovsky,
Director of the Department for Disarmament Affairs
and Deputy to the Under-Secretary-General for Disarmament Affairs

Following the end of the bloodiest and most war-torn century in history, the need for peace education is greater than ever before. Currently, history is taught as a series of wars that have shaped our world. To make the new century less violent and blood-filled, we must teach to practice peace. Educating for peace and disarmament is an endeavor that requires much courage, honesty, imagination, energy and strategic planning. I will attempt to describe efforts in the field of disarmament education, in the historical and practical contexts, and to offer some thoughts on their future potential.

Practically, more than fifteen years have passed since the end of the Cold War. A whole generation of young people were brought up and educated in those years. However, we continue to live in a world plagued by national, social, religious, and ethnic intolerance, and sometimes even hatred. We cannot blame this situation on the past or on others anymore.

By some estimates, in the last ten years, almost five million people, mostly women and children, have died, and millions upon millions were crippled. Tens of millions were left homeless, displaced, or became refugees. Even school grounds, shrines to education, became dangerous battlegrounds. Nowadays, 50% of the world population continue to live on less than two dollars a day. Just one example, development assistance for Africa has fallen by almost 50% since 1990. The number of the Least Developed Countries is growing, and so are world military expenditures.

Tragically, this is happening at a time of great technological progress, scientific breakthroughs, and fantastic innovations. And sadly enough, this technological progress is also manifesting itself in the development and proliferation of most destructive weapons. At the beginning of the 21st century, when trends of globalization and interdependence are becoming more and more pronounced, we still hear insane claims to supremacy and exclusivity, degrading remarks about peoples and nations, and we witness arrogance and double standards in politics. All this means that we are failing in our educational efforts, and we are responsible for it.

All of these developments are presenting enormous challenges to international peace and security, challenges that must be better understood by the public, which brings us to the specific subject of disarmament education. Disarmament is, of course, part of a broader process of peace building, yet it has its own special qualities and features that give it a unique identity as a subject for teaching and research. It has to be understood by the public, for public support provides a solid political foundation for strong disarmament policies. Disarmament also has its own unique history, a rich subject indeed for research, one requiring close analysis of the causes and effects of disarmament successes and failures.

While disarmament activities at the United Nations date back literally to 1946 - when the first General Assembly adopted Resolution 1(I) identifying the elimination of weapons of mass destruction as a goal - most of the present structures and formal goals were established as a result of the General Assembly's first Special Session on Disarmament in 1978 (SSOD-I). Virtually the entire structure of the UN's disarmament machinery was set forth in the Final Document of that historic conference. This includes the First Committee of the General Assembly, the Conference on Disarmament in Geneva, the UN Disarmament Commission in New York, the UN Institute for Disarmament Research (UNIDIR) in Geneva, and the UN Secretariat's "Center for Disarmament", today Department for Disarmament Affairs (DDA). It also set up

the UN's Disarmament Fellows Program which, over the years, has since trained over 500 officials - mostly from developing countries - in the field of disarmament.

For our purposes today, it is most important to note the emphasis in this document on the importance of education - both teaching and research - in shaping the future of disarmament. It urged the UN Secretariat to 'intensify its activities in the presentation of information concerning the armaments race and disarmament' and similarly called upon the UN Education, Scientific and Cultural Organization (UNESCO) to intensify its work in disarmament, particularly in facilitating research in developing countries. The document stressed the need for increased participation by non-governmental organizations in the process of disseminating information about developments in the disarmament field of all countries. It encouraged Member States to ensure a better flow of information with respect to disarmament and to avoid the dissemination of false and tendentious information.

The Final Document urged all these institutions - governmental, non-governmental, and international alike – 'to take steps to develop programs of education for disarmament and peace studies at all levels.' The General Assembly also welcomed a UNESCO plan to hold a 'world congress on disarmament education' and urged that Organization to 'step up its program aimed at the development of disarmament education as a distinct field of study through the preparation, *inter alia*, of teachers' guides, textbooks, readers and audio-visual materials.' The intent of SSOD-I was quite clearly expressed in the final sentence of the Final Document - namely, to 'attract the attention of all peoples, further mobilize world public opinion and provide a powerful impetus for the cause of disarmament.'

Later, UNESCO's World Congress on Disarmament Education took place in Paris on June 9-13, 1980. This Organization's interest specifically in disarmament can be traced back to 16 November 1945 with the adoption of the UNESCO Constitution, whose preamble begins with these historic words: 'since wars begin in the minds of men, it is in the minds of men that the defenses of peace must be constructed.' This Constitution later held that international peace could not rest exclusively upon the 'political and economic arrangements of governments' but must be founded instead upon 'the intellectual and moral solidarity of mankind.' This approach placed great emphasis on the importance of increasing communication between the world's peoples, a task that has taken on enormous importance in today's age of globalization - where people, information, and ideas are flowing across borders at rates that are unprecedented in world history.

The Document of the 1980 UNESCO's Congress contained recommendations on numerous measures to promote both research and education in disarmament. It led to the publication of a handbook for classroom teachers, various other teaching materials, and follow-up studies. Aside from its merit in helping to establish disarmament education as a distinct professional activity, the Final Document also helped to clarify the appropriate focus of this education. It focused attention on the need to promote awareness of 'the factors underlying the production and acquisition of arms, of the social, political, economic and cultural repercussions of the arms race and of the grave danger for the survival of humanity of the existence and potential use of nuclear weapons.'

More than a decade after the end of the Cold War it is an appropriate time to address issues of negative effects of cultures of violence and complacency in the world through long-term programs of education. Based on the humanistic vision of importance of the culture of peace in the 21st century, the UN General Assembly in November 1998 proclaimed the period 2001-2010 as the International Decade for a Culture of Peace. The General Assembly called on relevant United Nations bodies, NGOs, religious groups, educational institutions, artists and media to actively support the decade for the benefit of mankind. The fundamental task for this initiative is to find a way of transforming the culture of violence into a culture of peace and non-violence.

Education requires information - detailed facts to communicate about the nature of the problem and the scope for possible solutions. DDA dedicates a lot of effort to public education through written publications, information packages for schools, expositions, the organization of different fora on disarmament and through the maintenance of a highly informative Web-site. We also seek to improve the public's access to relevant information by publicizing; for example, the Conventional Arms Register - which consists of data supplied voluntarily by national governments. Since 1992, when this instrument became operational, some 150 States have participated at least once. On average, thus far, over 90 countries submit their returns to the Register, which covers seven agreed categories of weapons systems, comprising battle tanks, armored vehicles, combat aircraft, attack helicopters, naval vessels and missiles as well as missile launchers. It is widely believed that the Register is able to capture more than 95% of the global arms trade in the seven categories. However, participation level is far from universal and not all major producers, importers, and exporters participate in this instrument regularly.

We also encourage States to use the 'standardized reporting instrument for military expenditures.' Unfortunately, the United Nations instrument for reporting military expenditures has made very slow progress. The average number of States participating each year in this instrument is around 35, with very low participation from developing countries. Some industrialized countries have also not participated or have participated inconsistently. In total, some 56 countries have reported to this instrument at least once over the past five years. The UN Secretariat, with the assistance of interested Governments, is now engaged in a stepped up effort to encourage wider participation and to increase familiarity with this instrument.

It is also noteworthy that there is no such public register or instrument for many other types of weapons systems. This is one of the most serious problems facing all who are concerned with the future of disarmament education: access to reliable facts.

Another UN effort in the field of disarmament education derived from work undertaken in the Secretary-General's Advisory Board on Disarmament Matters; an independent think-tank on disarmament and security matters. The Board's interest in this subject grew from a general sense of dissatisfaction with the slow rate of progress both in disarmament and in disarmament education since the World Disarmament Congress in 1980. The Board saw widespread public complacency about global nuclear threats as one source of the problem. Some Board members also noted the need for such education among parliamentarians, industrial and business circles, the media, and the general public.

Following consultations with some key non-governmental groups and two noted academic experts - Eudora Pettigrew and Betty Reardon - the Board urged the Secretary-General to highlight the importance of disarmament and nonproliferation education at all levels of instruction. The Board also supported a proposal for a UN study on the issue. On 20 November 2000, the General Assembly adopted Resolution 55/33 E, which requested the Secretary-General to prepare such a study, to be undertaken with the assistance of a group of qualified governmental experts, focusing on the current status of educational efforts in this field worldwide, and on new initiatives.

The United Nations Study on Disarmament and Nonproliferation Education is to be completed in two years and will be prepared in consultation with other UN organizations as well as with university educators, disarmament and peace-related institutes and nonproliferation organizations. The key questions facing the study are to define and assess disarmament and nonproliferation education today and to make recommendations on ways to promote education and training in the field, using the rapidly evolving information and communications technology tools at the disposal of educators today.

In order to assist disarmament educators and activists around the world, DDA will be devoting a portion of its Web-site to

regularly updates on the progress being made and for exchange of information. We know about the uphill battles it takes to bring disarmament curricula into the university systems.

DDA, its Regional Centers and the Hague Appeal for Peace also seek to implement a peace and disarmament 'education for action' project, intended to demilitarize the mentality of young people and mobilize community support for a weapons for development collection program. We are developing a two-year project to be implemented in four countries: Bakan District (Cambodia), Lima (Peru), Gramsh (Albania) and N'guigmi (Niger).

Peace and disarmament education in primary and secondary schools as well as through non-formal community learning, is the building block for individuals to *choose* for themselves to decisively reject violence, resolve conflicts peacefully and sustain a culture of peace. It has been determined that students exposed to non-violence education achieve higher academic scores. As a community-based initiative, these educative strategies will be tied to mobilizing support in coordination with local governments and UN agencies, for the removal and public destruction of small arms.

Inter-agency representation, civil society, government and educators will be invited to share the best practices, recognize lessons learned and carve complementary and supportive roles of their work for weapon and violence reduction in the regions.

In December 1997, Secretary-General Kofi Annan surveyed several problems facing the world - including environmental degradation, organized crime, terrorism, drug smuggling, and the negative effects of globalization - and called these, 'problems without passports'. So too are the weapons threats we all face today - for they are truly global in scope and completely beyond the capacity of any one state to remedy. They present a problem whose remedy can be found only in extensive international cooperation at literally all levels. This cooperation does not spring from nowhere. It occurs only when leaders and the public share an abiding awareness of a common challenge and willingness to work collectively to confront it.

Education will, without question, prove to be a crucial factor in determining whether noble efforts in the field of disarmament will succeed or fail. Education - both teaching and research - will help to produce new leaders and enlightened citizens who can advance responsible national and international disarmament initiatives. It will generate information that non-governmental organizations can use to rouse public opinion and to support needed national and international policy initiatives. Education provides the tool to achieve the goals of good governance and the culture of peace.

Education – whether it is about human rights, environment, disarmament or non-violence – invests in the potential of people to decisively reject violence and injustice and work towards building a culture of peace. On the 13th of March 2001, during his trip to Asia the Secretary-General, Kofi Annan, referring to the recent situation of Afghanistan, profoundly stated:

'I think in the longer run what will help us avoid this sort of situation is education. Education about tolerance, education about respect for diversity, education that allows people to understand that you do not have to hate what belongs to others, to love your own, to respect your own religion.'

Education is a powerful weapon, and the United Nations stands ready to make the most of its use. Disarmament education has the capacity to demilitarize mindsets and promote peaceful attitudes towards non-violence among people. It is through education that transformation in a community of people and nations is not only possible, but also the only sustainable option. And if we failed, our conscience would be clean and we could tell our children and grandchildren: 'At least we tried!'

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[1] This article is based on Mr. Gorkovsky's report at the Conference on "*Building the Future Today - World Peace"* cosponsored by the IAUP/UN Commission on Disarmament Education, Conflict Resolution, and Peace and La Universidad La Salle. Mexico City, Mexico, April 2, 2001.

PIR Center News

Spring-Summer 2001

2001, February 28. The PIR-Center for Policy Studies held a seminar „*New US Administration: The Fate of the ABM Treaty and Prospects for US-Russian Relations*" in *National* Hotel.

The seminar united deputies and staff of the State Duma, officials of the Ministry of Foreign Affairs, the Ministry of Defense and other Russian agencies, leading experts on strategic offensive and defensive arms control representing the PIR Center, the Institute of World Economy and International Relations, the Institute for US and Canadian Studies, the Russian Institute for Strategic Studies and other institutions, officials of foreign embassies in Moscow.

Among keynote speakers were Deputy Director of the Department of Security and Disarmament Affairs of the Russian Foreign Ministry Mikhail Lysenko; Victor Koltunov, Consultant of the International Treaties Directorate of the Russian Defense Ministry; Vladimir Baranovsky, Deputy Director of the Institute of World Economy and International Relations of the Russian Academy of Sciences; and PIR Research Associate Ivan Safranchuk.

The majority of the participants agreed that US NMD deployment was inevitable. At the same time, now it is a matter of Russian actions to be undertaken: to give consent to modification or to allow for US withdrawal. This issue was not resolved in the course of discussion and both concepts got many arguments in favor.

Meanwhile, participants pointed out that modern approaches to international security should not follow the logic of the Cold War. There should emerge a new attitude towards US-Russian nuclear balance, which would reflect current financial and economic situation of Russia. Some participants stressed that Russia would benefit from preserving the ABM Treaty and this should be a diplomatic priority for Moscow.

2001, March 3-4. PIR Director Vladimir Orlov participated in the seminar on security cooperation in East Asia held in Shanghai.

The meeting was organized by the Nautilus Institute for Security and Sustainable Development (Berkeley, CA) and the Center for American Studies at the Fudan University (Shanghai). Participants discussed a wide range of bilateral and multilateral regional security issues: affect of US presidential elections on situation in East Asia, prospects for US-Chinese relations, possible developments on the Korean Peninsula, situation with Taiwan, implications of US NMD deployment and consequences of TMD deployment in Japan. They also touched upon the problems of building confidence among states of the region.

2001, March 7-8. PIR Director Vladimir Orlov attended the Second International Symposium "*How to Harmonize Peaceful Nuclear Energy Uses and Nonproliferation? Future of Nuclear Energy Development in Asia*" in Tokyo.

The symposium was held by the Working Group on Peaceful Nuclear Energy Uses and Nonproliferation Policy (Japan) with support of the Atomic Energy Commission of Japan, the Japanese Ministry of Foreign Affairs, the Ministry of Economics, Commerce and Industry, and the Ministry of Education, Culture, Sports, Science and Technology.

Participants were welcomed by Director-General of the Office for Research and Development of the Ministry of Education, Culture, Sports, Science and Technology Tsutomu Imamura and by Prof. Mitsuru Kurosawa, chairman of the working group.

The symposium united more than 100 participants representing industry and nuclear fuel cycle facilities of Japan, as well as experts from the United States, Russia, France, Germany, India, China, South Korea, and the IAEA. Keynote speakers were Senior Advisor of the *Japan Atomic Power Co.* Shinji Shimoyama, French Member of the IAEA Board of Governors Philippe Thiebaud, Senior Associate of the Carnegie Endowment for International Peace Dr. Rose Gottemoeller, former Chairman of the Indian Atomic Energy Commission Rajagopala Chidambaram, Director of External Relations and Policy Coordination Department of the IAEA Piet de Klerk, Deputy Director of the Juelich Research Center Gotthard Stein, PIR Director Vladimir Orlov, and others.

In the course of symposium participants discussed the prospects for nuclear energy development in Asia and in the world, major obstacles that impede this process and restrictions that should be established to ensure nuclear nonproliferation. Other issues were the fate of the CTBT, the FMCT, efficiency of the IAEA safeguards, illicit trafficking in nuclear

material, ways to improve MPC&A and to tighten export controls.

2001, March 16. The PIR Center held the press conference "*Russian-Iranian Nuclear and Military Cooperation: Before and after the Moscow Visit of President Khatami*" in the Press Development Institute.

The speakers at the conference were Director of the PIR Center Dr. Vladimir Orlov and PIR Research Associate and "*A Nongovernmental Register of Conventional Arms Exports from Russia the NIS*" Project Director Vadim Kozyulin.

2001, March 19. The PIR Center and the Center for Nonproliferation Studies of the Monterey Institute of International Studies held a seminar "*Russian Nuclear Regionalism and US Policy*" in Washington.

The seminar was organized within the framework of the PIR-CNS joint project aimed at analyzing decision-making mechanisms of Russian nuclear infrastructure at federal and regional levels.

The meeting united representatives of Russian and US research centers, nongovernmental foundations and US government agencies.

Director of the PIR Center Vladimir Orlov and Director of the CNS Bill Potter made an overview of the project and its major outcome. Director of the NIS Nonproliferation Program at CNS Clay Moltz added to their reports.

Other speakers focused on three major topics. Adam Stulberg and Nikolai Sokov (CNS) concentrated on review and analysis of regional reform in Russia and the way it affected nuclear decision-making.

John Lepingwell and Sonya Ben Ugram (CNS), as well as Igor Khripunov (Center for International Trade and Security at the University of Georgia) spoke on mechanisms of interaction among the Minatom, the MOD, and the regions.

The third group dealt with situation in key regions studied within the project: the Far East (Cristina Chuen, CNS), Northwestern region and Nizhegorodskaya oblast (Ivan Safranchuk, PIR), the Urals (Elena Sokova, CNS), and Krasnoyarsky krai (Dmitry Kovchegin, PIR).

Rose Gottemoeller, CEIP Senior Associate, made a report on implementation of US nonproliferation assistance programs in Russian regions.

Participants concluded that under the current circumstances, the most thought-provoking issue is not the threat of *nuclear separatism*, which practically does not exist any more, but opportunities for interaction with regional authorities at different levels and influence of such cooperation on nuclear decision-making in Russia and implementation of international programs at Russian nuclear facilities.

2001, March 27. PIR Director Vladimir Orlov attended the 2001 political forum "*Russian Scientific Talents: Economic Challenges and Opportunities*" in Atlanta.

The forum was held by Senator (retired) Sam Nunn with support of the Bank of America on March 26-27 and became an important event in US-Russian bilateral agenda. In the course of the conference, leading governmental and nongovernmental experts of two states discussed the most efficient ways to assist Russian scientists working in high-tech and defense areas, above all in closed nuclear cities (Sarov, Snezhinsk, etc.) and in bio-tech industry.

Keynote speakers at the forum were Senator Sam Nunn, head of the Russian Munitions Agency Zinovy Pak, First Deputy Minister of Atomic Energy Lev Ryabev, State Duma Deputy Andrei Kokoshin. Major experts of the closed nuclear cities and Russian nuclear science made important report. Representatives of US business community also took part in the meeting. Among them was Ted Turner, who had lately launched the *Nuclear Threat Initiative* together with Senator Nunn. This organization is aimed at promoting assistance to Russia in reducing the threat of nuclear proliferation. Mr. Turner declared preliminary plans concerning the Initiative.

2001, April 16. The PIR Center held regular Research Council meeting on "*Proliferation of Missiles and Missile Technologies: Threats to Russian Security*".

Keynote speakers were Rebecca Johnson, Executive Director of the *Acronym* Institute (London, UK) and Vitaly Lukyantsev, Senior Counselor of the Department of Security and Disarmament Affairs of the Russian MFA.

Participants also noted the need for financial support to Russian missile officers retiring under the program of reduction in the Armed Forces approved by the President. Another issue was control over spread of missile-related

knowledge. Important element of control over proliferation of missiles and missile technologies is US-Russian bilateral cooperation in this area.

The seminar was attended by experts of the Russian MFA, MOD, *Rosaviakosmos*, the Military Academy of the Strategic Missile Forces, the Military Academy of the General Staff, the Diplomatic Academy, the Center for Political and International Studies, the Russian Institute for Strategic Studies, the Institute for US and Canadian Studies, the Institute of Strategic Stability, and the PIR Center.

2001, April 16. PIR Executive Council Chair Roland Timerbaev took part in the meeting of the Award Committee of the *Delta Prize for Global Understanding*, as a member of the committee. The committee selected the 2002 Delta Prize winner, whose name will be announced later. The 2001 winner was Mikhail Gorbachev, who received his reward at the special ceremony in Atlanta on April 16. Mr. Gorbachev made a report mostly concerning environmental problems.

2001, April 16-27. PIR Center successfully finished lecture course held in the framework of the "*Training Program for Young Researches in the Field of Nonproliferation of Weapons of Mass Destruction*" project.

Lecture course consisted of 18 lectures. 13 lecturers delivered lectures during the program: Director of the PIR Center Dr. Vladimir A. Orlov; PIR Senior Advisor, Professor Amb. Roland M. Timerbaev; PIR Senior Research Associate Dr. Dmitry G. Evstafiev; PIR Senior Advisor, Col.-Gen. (ret.) Yevgeny Maslin; PIR Advisor Lt.-Gen. Vasily F. Lata; PIR Research Associate Ivan Safranchuk; MGIMO Assistant Professor Ildar A. Akhtamzyan; PIR Research Council member, Minatom official Marina P. Belyaeva; Consultant of the Government's Office Dr. Natalia Kalinina; Leading Research Associate of the MOD Research Institute Leonid Chumenko; Senior Expert of *Glavkosmos* Gennady Khromov; Director of the Center for International and Strategic Studies Maj.-Gen. Vladimir Belous.

13 students took part in the program: Marina Abrakova, Yury Opanasuk, Nadezhda Koroleva (the *Kurchatov* Institute), Oleg Barabanov (the Russian Institute for Strategic Studies), Vitaly Shishkov (MOD), Vladimir Khlebnikov (MFA), Olga Mikheyeva (the Russian Federal Nuclear Center VNIIEF, Sarov), Natalia Mironova (the Movement for Nuclear Security, Chelyabinsk), Andrei Talevlin (*Pravosoznanie* public organization, Chelyabinsk), Konstantin Kozlov (the Institute of International Ecological Security, Chelyabinsk), Svetlana Ryabokon (the Higher School of Economics), Marsalina Tsyrenjapova (PIR Center), Vitaly Khijnyak (the Nuclear Nonproliferation Center, Chelyabinsk).

Beside the lectures, in the framework of the program excursions to nuclear fuel cycle plants, such as the IPPE (Obninsk) and the *Kurchatov* Institute (Moscow), were organized. Upon the completion of the course, the students received a copy of *Nonproliferation Textbook* and a number of other PIR Center's publications. At the end of the program, a celebration took place where the lecturers and the students could communicate informally.

2001, April 18-20. The Group of Governmental Experts to Prepare a United Nations Study on Disarmament and Non-Proliferation Education held its first session in New York.

The group was established under the decision of the UN General Assembly. In November 2000, the General Assembly, acting on the advice of the Advisory Board on Disarmament Matters, adopted without a vote against the resolution entitled "*United Nations Study on Disarmament and Non-Proliferation Education*" (55/33 E of 20 November 2000). In it, the Assembly requests the Secretary-General to prepare such a study, with the assistance of a group of qualified governmental experts, for consideration at its fifty-seventh session (in 2002).

The study has been carried out by a small group of ten governmental experts representing the geographical regions of the world and different approaches, philosophies and cultures with respect to education within regions. The list of participating experts is the following:

H.E. Dr. Mohamed Shaker, Chairman, Board of the Egyptian Council for Foreign Affairs (ECFA), Cairo, Egypt; Mr. Attila Zimonyi, Senior Counsellor, Department of Arms Control and Security Policy, Ministry of Foreign Affairs, Budapest, Republic of Hungary; Mr. Venkatesh Varma, Counsellor, Embassy of India, Moscow; Mr. Yukiya Amano, Minister, Embassy of Japan to the United States, Washington, D.C., USA; H.E. Mr. Miguel Marín Bosch, Under Secretary for Asia, Africa, Europe

and Multilateral Affairs, Ministry of Foreign Affairs, Mexico City, Mexico; Dr. Kate Dewes, IPB Vice-President, Disarmament and Security Centre, Aotearoa, New Zealand; H.E. Mr. Hugo E. Palma, Vice Minister and Secretary-General, Ministry of Foreign Affairs (1991, 1997-98), Lima, Peru; Mrs. Anna Grupinska, Director, Department for United Nations Political Affairs, Ministry of Foreign Affairs, Warsaw, Republic of Poland; Mr. Alioune Diagne, Minister Counsellor, Permanent Mission of Senegal to the United Nations, New York, N.Y.; Ms. Birgitte Alani, Deputy Director, Stockholm International Peace Research Institute (SIPRI), Solna, Sweden.

Prof. William Potter, Director of the Center for Nonproliferation Studies of the Monterey Institute of International Studies and member of the Advisory Board on Disarmament Matters, was invited by the Group to participate in its sessions.

Dr. Vladimir Orlov, Director of the PIR Center, is a Consultant of the Study Group.

During the first session the group solved some procedural issues and discussed a broad range of issues pertaining to disarmament and nonproliferation education as stated in the mandate of the UN General Assembly resolution.

Director of the Department for Disarmament Affairs and Deputy to the Under-Secretary-General for Disarmament Affairs Yevgeny Gorkovsky opened the first session.

Amb. Jayantha Dhanapala, Under-Secretary-General for Disarmament Affairs, addressed the meeting.

H.E. Mr. Miguel Marin Bosch from Mexico was elected Chairman of the Study Group.

Vladimir Orlov delivered a report "*Assessing and Promoting Disarmament and Non-Proliferation Education and Training*", which was discussed by members of the group.

Members of the group listened to the reports by representatives of UN family organizations working to promote disarmament and nonproliferation education. The list of participating agencies and other bodies, among others, included the Department of Political Affairs (DPI) of the United Nations (Mr. Shashi Thahroor, Interim Head, DPI), the IAEA (Mr. Berhanykun Andemicael, Representative of the Director General to the United Nations New York Office), the PrepCom for CTBTO (Ms. Daniela Rozgonova, Chief, Public Information of the Provisional Technical Secretariat), the UNIDIR (Ms. Kerstin Vignard, Editor, *Disarmament Forum),* the University for Peace (UPEACE) (Ms. Catherine Bellamy, Program Officer), as well as representatives of the UNESCO (Mr. J. Kyazze, Representative of the UNESCO to the United Nations and Mr. A. Hamad, Deputy Director of the Liaison Office), the UNICEF, etc.

The resolution requests the experts to 'invite university educators, disarmament and peace-related institutes and non-governmental organizations that have special qualifications in education and training or in the field of disarmament and nonproliferation to make written and oral presentations to it.' Active participation of NGOs in the form of written and oral presentations contributed to the success of the meeting. Among keynote speakers were: Prof. William C. Potter, Director Center for Nonproliferation Studies, Monterey Institute of International Studies, Monterey, CA, USA; Dr. Betty Reardon, Director, Peace Education Program, Hague Appeal for Peace; Dr. Natalie Goldring, Director, Program for General and Complete Disarmament, Political Science Faculty, University of Maryland; Ms. Felicity Hill, New York Office, Women's International League for Peace and Freedom (WILPF); and Mr. Arjun Makhijani, Institute for Energy and Environmental Research.

In the course of discussion, members of the group admitted the urgency of promoting concerted international efforts at disarmament and nonproliferation education and training. They began to consider the following issues and presented their general vision of the tasks named in the mandate of the UN General Assembly.

The group began to collect and analyze information on the availability of:

- disarmament and nonproliferation programs, both formal and informal, courses or curricula being carried out at the primary, secondary and university levels of national educational systems of member states on the UN;
- the institutions and organizations, including educational, that are working in the field of disarmament and nonproliferation education and training;

- educational programs for government officials, parliamentarians, municipal leaders, the military, or other sectors and
- other educational and training programs in the sphere of disarmament and nonproliferation conducted for the media, researchers, scientists, engineers, teachers, unions, or general public.

The next session of the Study Group will take place in Monterey, CA on August 8-10, 2001.

N.B.: This information has been compiled by the PIR Center on the basis of materials available for public use. By no means, it should be considered as an official statement.

2001, April 19-21. The international conference "*Europe as One Security Area: Ensuring Stability for Greater Europe*" was held in Potsdam by the Development and Peace Foundation (Bonn, Germany).

The forum was part of the Potsdam Spring Dialogues series. The participants discussed the problems of establishing pan-European security system, current threats to stability in Europe, the role of various institutions (NATO, OSCE, EU, Council of Europe) and their mechanisms of interaction, positions of the Central and Eastern European states, as well as Russia's and US influence on security situation in Europe. The conference united more than 50 participants from 10 countries.

PIR Editor Dmitry Polikanov attended the conference and made a report on "*European Security Policy as a Challenge for Russia*".

2001, April 19-23. PIR Senior Advisor Col.-Gen. (ret.) Yevgeny Maslin attended the 11th Annual International Arms Control Conference "*Looking Ahead: New Horizons and Challenges in Arms Control*" in Albuquerque held by the Sandia National Laboratory.

The conference united experts, diplomats, the military, businessmen and lawyers from 16 states and the following issues were discussed:

- new arms control paradigms: offense vs. defense;
- US-Russian cooperative threat reduction efforts: lessons learned and future problems;
- the age of biotechnology: implications for global security and arms control;
- how to prevent WMD proliferation in North Korea.

2001, April 27. The PIR Executive Council held its annual meeting.

Among those attending the meeting were Dr. Vladimir Misyuchenko, Executive Council Member and Deputy Head of the State Duma Press Service, Dr. Vladimir Orlov, Executive Council Member and PIR Director, Amb. Roland Timerbaev, Executive Council Chair and PIR Senior Advisor, and Prof. Yury Fyodorov, Executive Council Member.

The agenda contained the following issues – approving the 2000 Annual Report by Director Vladimir Orlov; identifying key directions of activities for 2001; approving fulfillment of the 2000 budget and financial plan for 2001.

Vladimir Orlov made the 2000 annual report and listened to the comments of other members of the Council. They approved the report and confirmed its compliance with the previously adopted *Guidelines for PIR Activities in 2000-2001*. The Council expressed its content with the work of Director Vladimir Orlov in 2000.

As it was proposed by Vladimir Misyuchenko, the Council charged Vladimir Orlov with preparing by September 30 recommendations to improve the management structure and to change the organization of the PIR Center. These recommendations should be worked out in coordination with the members of the Council, so that by January 1, 2002, the PIR Center can have a new organization.

Vladimir Orlov also put forward some motions concerning new guidelines for activities of the PIR Center in 2001. The amended list of projects was unanimously adopted.

Vyacheslav Zaytsev, PIR Assistant Director for Finance and Senior Accountant, informed the Council how the 2000 budget had been fulfilled, cleared up the situation with sources of funding for 2001 and characterized would-be expenses.

The Council unanimously approved the 2000 financial report and agreed that the expenditure of grants had complied with objectives stated in the PIR Charter and with goals of specific projects. The Council adopted the 2001 financial plan and charged Vladimir Orlov with fundraising to seek extra funds. He will also make report on fulfillment of the 2001 budget and will submit the 2002 financial plan to the next annual meeting of the Council.

Amb. Timerbaev, as Executive Council Chair, proposed to convene the next meeting in May

2002. The exact date and agenda should be agreed upon no later than April 30, 2002.

2001, May 10-11. Vladimir Orlov attended a meeting of the W. Alton Jones Foundation's Board held in Fiesole near Florence (Italy).

Members of the Board and the Foundation's staff met experts and discussed situation in Russia. Reports were made by Alexei Arbatov (the State Duma), Robert Cooper (the UK Cabinet Secretariat), Karsten Voigt (the German Foreign Ministry), Therese Delpech (the French Atomic Energy Commission), Vladimir Orlov (the PIR Center), Michael McFaul (the CEIP), and Rebecca Johnson (the *Acronym* Institute).

2001, May 18. The PIR Center held regular Research Council meeting on "*The Problems of Implementation of the US-Russian Plutonium Disposition and Management Agreement*".

Keynote speaker was Ms. Laura Holgate, who used to work in the US administration and took active part in negotiating the agreement.

Ms. Holgate, now in her personal capacity, proposed a number of measures for the US Government to accelerate fulfillment of the PDMA and assessed the problems facing this agreement.

Among participants of the discussion were First Deputy Minister of Atomic Energy Valentin Ivanov, Senior Counselor of the MFA's Department for Security and Disarmament Affairs Vladimir Rybachenkov, PIR Junior Research Associate Dmitry Kovchegin, Director of the Nonproliferation Analytical Center (Obninsk) Gennady Pshakin, etc.

The seminar was attended by Director of the IPPE (Obninsk) Anatoly Zrodnikov, officers of the Defense Ministry, the Foreign Ministry, the Minatom and representatives of the non-governmental organizations.

During the first part of the meeting Ms. Holgate, who takes the post of Vice President for Russia/NIS Programs of the *Nuclear Threat Initiative*, described the first activities of this private foundation and its key objectives. Its principal strategy will be to forge partnership with governmental, non-governmental and private sector, in order to accomplish the tasks facing the foundation. The latter will attach special importance to direct action.

PIR RECENT PUBLICATIONS

INTERNATIONAL INFORMATION SECURITY – A NEW PROJECT OF THE PIR CENTER IS LAUNCHED

PIR Center has launched a new project – "Information Challenges to International Security". In the framework on the project, the Center has invited a group of distinguished Russian experts in the field to write a monograph "International Information Security". The work on the monograph has already started, and we expect it to be published already this year.

The publication addresses the consequences of the global information-technological revolution for international peace and stability. It makes the emphasis on the necessity to combat potential threats and risks of implementation of IT inventions and technologies for warfare; aggressive purposes and those inconsistent with international law, human rights and freedom of press. The idea to create by a concerted effort of the world community under the UN auspices of international information security framework is advocated.

Sophisticated scenarios of information warfare took our breath away in horror films of the past: computer viruses secretly introduced into electronic systems of a state and its economic administration, and military command coming to life and paralyzing them; acting at long distances scoundrels used electronic devices to remove money from the adversary's bank accounts and to cripple industry, communication, power production, transport, municipal services, ecological monitoring, atomic power stations, airports, strategic forces' command points; powerful generators of electromagnetic impulses destroyed software and deleted vitally important data bases of protected computer systems. All this created panic among civilian population and deprived the state leaders of correct information.

Little by little alike TV horrors reached real life. Back in the mid-1980s the United States embargoed Iranian bank deposits during the US-Iranian hostages crisis by using a computer program. The 1991 Gulf War illustrates the value of having *control* of the

fifth info-dimension. The coalition forces possessed information dominance and were able to wage acts of political and psychological warfare, as well as acts of deception against the Iraqis. The coalition forces completely destroyed Iraqi communications architecture. Military experts called the *Desert Storm* punitive operation that efficiently employed radio-electronic means of warfare the first "information Hiroshima."

Initiating in 1998 a discussion in the United Nations on international information security Russian foreign minister Igor Ivanov noted in his letter to the UN Secretary-General that mankind was witnessing formation of a truly global information society in which information got a new, revolutionary quality, significance and influence both nationally and universally.

A single technological line is formed by computers, telephone, radio/TV, and space-based communication systems. Society today greatly depends on its smooth functioning. In fact, it is experiencing a landslide and worldwide introduction of high-tech telecommunication, and cybernetic means. Local and global networks have created a new quality of trans-border information exchange. All this directly affects politics, economy, culture, international relations, national, regional, and international security.

A single worldwide information space is emerging as a global development factor and, as such, is determining the main trends of social progress. Information is becoming the states' major strategic resource.

The global information-technological revolution we are living through today has brought obvious boons and is promising more. At the same time it has created fundamentally new threats. The scientific and technological achievements can be abused to reach aims that have nothing in common with international peace, stability and security, rejection of the use of force, non-interference in domestic affairs of other states, and respect for human rights. It takes no wisdom to predict the information-technological threats evolving into serious challenges to 21st-century international security.

As the Okinawa Charter on Information Society stresses, the development of information technologies could increase the international digital divide between technically developed and less developed countries which in its turn could endanger world and regional stability.

A new type of extremely destructive weapons can be developed - the information ones. The pace of their development and growing interdependency of national and international information infrastructures leaves, as it seems, no chance to any state to be immune to possible hostile trans-border actions either with the use of information technologies or against critical information resources.

So far, the term "information weapon" has not yet received exact definition. It was first used by the US military in 1991 after the Gulf War. It is hard to define it because the bulk of the information technologies are of dual or non-military application. But whatever the terms are the huge potential of the information-computer technologies can be used to ensure military-political domination, the use of force and blackmail and cannot exclude a possibility that in the foreseeable future punitive expeditions against international outcasts will use information weapons rather than cruise missiles and bombs. This will turn conflicts into information warfare.

Deliberate information impact on the enemy has a history that is as old as the world itself. Today, thanks to the latest technologies, it is developing from scattered acts of information sabotage and disinformation into a fully-fledged method of international policy applied on a mass scale.

Information weapons are used: to achieve information superiority, damage information, information resources, processes, and systems; to improve traditional and create new types of armaments and military technology aimed at a further direct armed impact on the enemy; to put out of commission civilian objects and life-support systems; to disorganize state administration; to set economic chaos and sabotage; to damage national financial systems based on information-computer

networks; psychological brainwashing of the population to achieve social disorganization. Any of the above technologies when used by one state against another can be called information warfare or war.

The greatest damage is done when information weapons are applied against military and civilian objects that should function uninterruptedly and online (early warning systems; anti-air and anti-missile defense systems: power production complexes, especially atomic power stations; industry). The results may be catastrophic and comparable with those produced by WMD.

Main threats to international information security include:

- Creation and use of means of influencing or damaging another State's information resources and systems;
- Deliberate use of information to influence another State's vital structures;
- Use of information with a view to undermining a State's political and social system; psychological manipulation of a population for the purpose of destabilizing society;
- Actions by States to dominate and control the information area, prevent access to the latest information technologies and create a situation in which other States are technologically dependent in the information sphere;
- Actions by international terrorist, extremist or criminal associations, organizations, groups or individual lawbreakers that pose a threat to a State's information resources and vital structures;
- Formulation and adoption by States of plans or doctrines providing for the possibility of waging information wars and capable of provoking an arms race and causing tension in relations between States, and of leading to information wars per se;
- Use of information technologies and means to the detriment of human rights and freedoms in the field of information;
- Uncontrolled trans-boundary dissemination of information in contravention of the principles and norms of international law and the domestic legislation of specific countries;
- Manipulation of information flows, disinformation and concealment of information with a view to undermining a society's psychological and spiritual environment and eroding traditional cultural, moral, ethical and aesthetic values;
- Information expansion and acquisition of a monopoly over another State's national information and telecommunication infrastructures, including conditions for their operation in the international information area.

Information weapons are qualitatively universal, highly efficient, and easily accessible. They offer a wide choice of time and place of use; they do not require large armies, what makes information warfare relatively cheap. Their application can easily pass for routine action. At the same time it is hard to pin it on any particular state. Information weapons are indifferent to long distances and state frontiers.

The cyber-weapons can be used without a formal declaration of war; they do not need large-scale and obvious preparations. Sometimes a victim remains unaware that information impact is applied to it. It is much harder to respond to information aggression because there are no systems and methods to assess the threat of attack and warn about it.

The information weapon has produced a revolution in warfare. Many traditional military concepts such as "defense" or "assault" have been transformed. In local clashes there is no longer need to seize territories or take POWs; it has become possible to reduce loss of life of one's own army and to entrust initiative in combat assignments to unmanned means.

Sham humanitarian nature of information weapons should be also emphasized. Many methods of information warfare such as crippling telecommunication systems, virus programs, jamming, blocking communication systems, etc. while giving a heavy blow to economy do not cause directly bloodshed, loss of life and visible destruction common in conventional warfare. As a result, none is deprived of food, dwelling, etc., needed to maintain life. There will be

probably no refugee problem. This may lower the moral threshold of political decision-making. All talk about the humanitarian nature of the information-cybernetic means and methods of military-political impact may produce dangerous light-heartedness and tolerance where their use is concerned. There may be a tendency to excuse their use as unilateral sanctions on the ground that no blood was spilt.

Man-in-the-street may approve such means and methods because they do not require building-up of the armed forces; they even lead to their shrinking. Development of military-information potential camouflages itself as part of technological progress. Budget allocations for military purposes can be easily passed for and realized as spendings for large-scale peaceful programs. The miracle weapon looks tempting: about 120 countries are engaged in or have completed elaboration of possible information-computer impact on a potential enemy's information resources.

Further development of the information weapons and progress in the use of civilian information-cybernetic networks and means for military purposes may let out a *technological genie* of a new generation to supplant the nuclear one.

There are practically no international laws to regulate the use of information weapons, to limit them as this is done under treaties with other weapon types and military activities. This cannot but aggravate the situation.

The emergence and proliferation of this weapon and militarization of peaceful information technologies are a powerful destabilizing factor in international relations. The present military strategic balance, the local and global balance of forces, and greater risks of an attack or blackmail are the payment for the new technological experiment. The entire system of international agreements on maintaining strategic stability, curbing arms race, at the regional level as well, will be put to a serious test.

It never rains but pours: information-cybernetic technologies can be used by criminals and terrorists. On the one hand, the technologies are easy to use, an access to the means of communication and data transmission means is cheap, global information networks are cosmopolitan. On the other, the worldwide information resources and infrastructure are vulnerable.

Individuals and groups acting towards unsanctioned penetration into information-cybernetic systems irrespective of their affiliation, breaking protection systems, stealing or destroying information for mercenary reasons or out of hooliganism are criminals. Computer thieves, or hackers, are also criminals. There are hundreds of thousands of registered computer-associated crimes all over the world and they double every year. According to the Pentagon figures, in 1995 alone hackers penetrated the US DOD computers through Internet over 165,000 times. Criminologists believe that there is a new type of organized crime in the world specializing in overcoming computer protection of military departments or objects, credit and finance organizations and in stealing secrets and money.

Information terrorism differs from information warfare and crime not so much by its method as by its aims typical of terrorism, and the tactics employed. Relying on the same technological foundation the three types of menaces make the problem of information security as topical as other global problems: nonproliferation and elimination of nuclear missiles and chemical weapons, banning bacteriological weapons, counter-terrorist and anti-drug struggle, etc. They are more or less the same in scope and are part and parcel of international relations. One or several countries united in a bloc cannot deal with them. It is equally impossible to cope with these global problems on the *every man for himself* principle. The world information space cannot be divided while the information systems are interconnected.

The world community should not and cannot afford to permit itself to be involved in a new area of confrontation this time - information technology - to face a possible escalation of the arms race in this field and endless chase of countermeasures for offensive inventions as it was typical for nuclear age.

A group of authors representing the leading institutions of the Russian governmental and academic circles that tackled this problem launched an initiative to make a differentiated analysis in the field of information security.

The monograph covers all major aspects of the problem and aims at providing necessary data including some facts finding references for its complete perception. It formulates initiatives to create international legal regulations in this field.

The book will help statesmen and public to understand the problem of information security to realize those direct dangers that appear as information weapons in the process of valorization of the achievements in the sphere of information.

Besides, the edition could serve as a source of information on the problem of achieving international information security and its specific aspects for politicians, diplomats, military, scholars, businessmen and governmental and non-governmental organizations as well.

In perspective it could help the preparation of handbooks for those who are interested in studying the problems of information security and before it is done, the monograph itself could serve this purpose.

The complexity of the subject and its multiple facets determined a comprehensive examination of the problem. This resulted in structure of the book which consists of six chapters covering the following aspects. There are only provisional titles of chapters here and in the following paragraphs. Their final wording will be completed during the work on this book.

Chapter 1. *Information security as one of the most important area of Russia's state security.* The place of dangers in the field of information is shown on a general scale of menaces to the security of Russia, the chapter stresses the timely character and importance of work to counteract the dangers of information effects upon the state, its institutions, Russian society and individuals.

Chapter 2. *The philosophy of information security*. The following items are to be dwelt upon:

- the concept of information, its definition in Russian and foreign systems of definitions, its substantive appearances in relation to human activity, the role of information as a basis of social communication;
- information as a major objective and instrument of influence in information society;
- information weapon as a natural product of scientific and technological evolution of society, the relationship between the scientific and technological potential and the military one;
- major dangers for the security of individual, society and state, related to the use of new information technologies;
- major sources of dangers, potential objectives of influence and methods of achievement.

Chapter 3. *Information weapon - new type of weapon of mass distraction*. It contains:

- classification of information weapons according to different parameters - principle of action, its purpose, method of use, etc.;
- potential principles and methods of identification of information weapons;
- specific character of effects and known methods of use of information weapons;
- facts of use of information weapons which prove the reality of information wars.

Chapter 4. *The use of information technologies in military purpose*. The chapter deals with:

- new concepts of time of war and time of peace, the abilities provided by IT to conduct military operations in time of peace;
- concept and basic definitions of information war;
- change of forms and methods of warfare as a result of use of information weapons, inability of conventional warfare in sphere of information;
- standards of armed conflict and information wars.

Chapter 5. *Information warfare. Information operations and information stand-off in time of peace.* In this chapter will be examined the use of information weapons in purposes, which are not yet considered as military ones. It will be shown also that even in time of peace information weapon presents a great danger. The following items will be stressed:

- cyber-wars, warfare in computer nets and telecommunications;
- cyber-terrorism and cyber-crime;
- national economies as a major target of

information weapons;
- use of information weapons in political purpose;
- mass media as a channel of information operations;

Chapter 6. *International relations and information warfare*. The chapter deals with the solutions of information security problem through international law, efforts of Russia and other states in this field, the capabilities of international community to fight the danger of information weapons proliferation and its use in military purposes, plans to create a system of international control of production, expansion and use of information weapons by means of international law, its background and evolution; *pros* and *contras* in international arena; process of negotiations in the field of limitation of information types of weapons; Russian initiatives on international information security; feasibility and prospects of international control of information types of weapons.

The Conclusions will stress the importance of unique way, as it happened in cases of *classical* types of WMD, to obtain safeguard of humanity against information wars through international law.

The second part of the book (***Annexes***) will have materials on the subject, such as:
- glossary of basic terms used both in Russian and foreign interpretation;
- texts of official international documents;
- excerpts from Russian legal acts related to the problem of information security;
- drafts of national and international documents which, in authors' opinion, should be adopted among the first.

In order to give the problem a thorough professional consideration, it is suggested that the specialists and experts from law enforcement and military structures of Russia be among the authors of the book, as well as leading scholars from institutions of the Russian Academy of Science. On the other hand, the fact of participation of such people in writing this book should raise a great public interest.

The book will be the first of this type and in a way unique edition of opinions of specialists dealing with the challenges that are still considered to be "*potential*".

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