

Meeting of the SuPR (Sustainable Partnership with Russia) Group

*February 1-3, 2011
Arc-en-Ciel, Gstaad, Switzerland*

**NON-PROLIFERATION REGIME AND NUCLEAR PROBLEMS OF GREATER
MIDDLE EAST**

A Policy Memo

Prof. Evgeny Y. Satanovskiy

Dr., President, Institute of Middle East Studies, Moscow, Member of PIR Center Advisory Board

M. Dagan, ex-head of Israel's Mossad intelligence service, believes that Iran will acquire nuclear weapons by 2015. According to the estimates of the Israeli military-political leadership, by 2020 Iran will be probably ready for waging a limited nuclear war. In the short run the stringent internal political situation in Iran may instigate initiation of regional conflicts by it or its participation in such conflicts both versus Israel and in the Arab world as a whole.

Notwithstanding a serious damage inflicted to Iran's economy by the sanctions imposed against this country, inflexible determination of its leadership supported not only by the entire population and the overwhelming majority of the opposition leaders to make way in the nuclear sphere to gaining the de facto status of the nuclear club member appears to be obvious. None of the possible successors of the incumbent president of Iran will give up the idea of full-scale implementation of the nuclear program, whose military nature is evident for political analysts and probable for technical experts.

The prospects of peaceful and military settlement of the crisis around the Iran's nuclear program are equally incredible. A strike on the Iranian nuclear objectives may slow down, but will not stop Tehran's nuclear program, while the ground operation required for the purpose is ruled out. The armed forces and vital economic objects of Iran can be destroyed by a strike delivered by the US army, but the result of the operations in Iraq and Afghanistan convincingly demonstrate inability of the US and NATO armed forces to carry out occupation functions in the Middle East countries during any protracted period of time.

Apart from a danger of a large-scale Iran-Israel confrontation, which may ultimately become a nuclear one, this situation has provoked an avalanche-like process of development of nuclear programs in the Near and Middle East countries, including not only Turkey, but also several Arab countries with those possessing global-level hydrocarbon reserves among them. Iran undertakes active steps aimed at involvement of African and Latin American countries in the conflict around its nuclear program,

cooperates with North Korea, and in the past (and as likely as not unofficially nowadays) with Pakistan.

The situation in Pakistan, in its turn, even more hazardous for the non-proliferation regime not only due to this country's active and not thoroughly flushed out role in creation of the black market of nuclear technologies in the Islamic world, but also due to internal instability in Pakistan. The military-political elite in Islamabad is not ready for any form of external monitoring of the country's nuclear armories, while external interference in the processes under way in this country is even less feasible than the case of Iran. Over the longer term the getting of the Pakistani fissile materials into the hands of radical Islamist organizations cannot be ruled out, while the development of disintegrating processes in the country may bring the Pakistani nuclear charges, carriers, and attending personnel into the "free market". Their possible transfer to the territory of Saudi Arabia or United Arab Emirates is of particular hazard in the context of the events now under way in Tunisia, Egypt, Yemen and other countries of the Arab world.

In the medium term a failure of the non-proliferation regime, a race of armaments and nuclear technologies, and nuclear weapons employment threshold lowering appear on the agenda. From our point of view, efficiency of activity of the nuclear club and "great powers", including the USA, aimed at keeping the non-proliferation regime is reduced in direct proportion to reduction of their influence, while the prospect of implementing the "global zero" initiative proposed by President B. Obama is nil. The latter makes us turn attention to two key Greater Middle East states posing a real danger to the non-proliferation regime: Iran and Pakistan.

NUCLEAR PROGRAM OF IRAN

(based on materials by V. Yevseyev)

According to the report by the IAEA Director General as of November 24, 2010, 8426 first-generation gas centrifuges (Iranian name – IR-1) are installed at the uranium enrichment facility in Natanz. Of them 4816 centrifuges are operational. The total number of gas centrifuges in Natanz was reduced by 1023 during the last six months. At the same time the number of operational centrifuges was increased by 880, which testifies to the enrichment process expansion. Some of already installed gas centrifuges are possibly reserved for subsequent delivery to the uranium enrichment facility being constructed in Fordo, where they plan to locate 3 thousand centrifuges. The infrastructure created in Iran makes it possible to manufacture in the order of 3 thousand gas centrifuges. The process of concealed accumulation of this equipment is probably under way.

During the period from February 2007 till October 17, 2010 34.7 t of uranium hexafluoride delivered to the centrifuge cascades in Natanz, were on the average enriched to 3.4 % for uranium-235. According to Iranian estimates, 3183 kg of low enriched hexafluoride were accumulated by the end of October 2010. With the maintained rate of the low enriched uranium manufacture the accumulated reserves may amount to 3471 kg by late January of 2011, which is sufficient for manufacture (after re-enrichment) of 5 nuclear charges based on weapon-grade uranium. Owing to the absence of uranium concentrate in Iran the process of manufacture of low enriched uranium will be constrained. The reserves of this material available by August 10, 2009 were converted into uranium hexafluoride at the uranium conversion facility in Isfahan. As a result, 371 t of uranium hexafluoride were obtained and the enterprise was shifted to the technical maintenance stage.

The works on mining of natural uranium and production of concentrate from it are continued in Bandar-Abbas. A uranium concentrate production plant is being built in Ardakan and a uranium mine in Saghand is developed. Additional sources of natural uranium can be found by Iran in Africa and Latin America.

Teheran's capabilities in uranium re-enrichment are unclear. These works began in Natanz on February 9–11, 2010, when, according to the data of Iranian specialists (probably fabricated), the enrichment level of 19.8 % for uranium-235 (this uranium is still considered to be low enriched) was attained. To ensure uranium re-enrichment, use is made of 2 cascades only: 328 gas centrifuges P-1. According to the Iranian data, 45 kg of uranium enriched to 20-% uranium hexafluoride can be obtained by late January of 2011. This material cannot be used for manufacture of nuclear weapons.

Iranian specialists cannot ensure purity of hexafluoride required for manufacture of highly-enriched uranium. In the course of re-uranium enrichment they perform multiple elimination of light gases and other impurities from the nuclear material, which will hamper manufacture of highly-enriched uranium whenever this decision is adopted. However, one should not exaggerate the technical problems in this sphere. To manufacture a nuclear explosive device, it is necessary to not only produce highly-enriched uranium in the form of hexafluoride, but also convert it into a metal form. This problem has not obviously solved yet in Iran.

New types of gas centrifuges are tested in Natanz. From August 21 till November 19, 2010 138 kg of uranium hexafluoride were loaded into the cascade of 20 centrifuges IR-4, cascade of 20 centrifuges IR-2m and into separate centrifuges IR-1, IR-2m and IR-4. 22 Iranian enterprises and organizations are involved in manufacture of and testing of centrifuges.

40-MW research heavy-water reactor IR-40 capable of producing 9 kg of plutonium a year is under construction since September 2004 in Arak. It was found in the course of the IAEA inspection held on November 8, 2010 that the construction of buildings had been nearly completed and the main crane in the reactor building and the pressure compensator of the reactor's cooling system had been installed. According to Iranian specialists, the operation of research reactor IR-40 will be commenced in 2013. The reactor has already been provided with nuclear fuel and heavy water. For this purpose the heavy-water plant was commissioned and assembly of in Arak in 2006, while the installation of the process line for production of natural uranium pellets and assembly of fuel rods from them was completed by February 2009. Iran possesses no capacities for regeneration of spent nuclear fuel and extraction of plutonium on an industrial scale. In November 2006 the IAEA Board of Governors imposed a ban on rendering technical assistance to Iran for implementation of these projects. The Iranian origin of 600 fifty-liter heavy water containers stored in Isfahan gives rise to serious doubt.

In July 2010 Teheran reported the beginning of works in the thermonuclear fusion sphere on the basis of the Nuclear Fusion Study Institute. \$8 mln were allocated for implementation of the project with participation of 50 nuclear scientists. The preparatory work will expectedly take about 2 years, which will make it possible to commission the respective nuclear object. These works bring Teheran nearer to creation of the nuclear fusion bomb.

Teheran signed the Additional Protocol (1997), thus undertaking the obligations to comply with it till completion of the ratification process and agreed for use of amended code 3.1 to the Agreement with the IAEA on application of safeguards in December 2003. The Additional Protocol remained valid on the territory of Iran till early 2006 when President Ahmadinejad suspended its application. In March 2007 Iran ceased to fulfill amended code 3.1, though in compliance with Article 39 of the Agreement it was unauthorized to do this unilaterally. At that according to the available data construction of the uranium enrichment facility in Fordo was commenced in 2006 during the period of validity of amended code 3.1.

Russia has completed construction of the nuclear power plant with power reactor VVER-1200 in Bushehr. In November 2010 the reactor core was loaded. To operate the nuclear power plant, a Russian-Iranian joint enterprise with a personnel of about 900 employees is established. Russian-Iranian cooperation in the nuclear sphere is implemented only within the NPP construction in Bushehr. This cooperation is of peaceful nature as the light water reactor is not intended for manufacture of plutonium. The Bushehr NPP is covered by the IAEA guarantees. Iran undertook the obligation for returning the irradiated fuel to Russia.

The following can provide evidence of the Military focusing of the Iranian nuclear program:

- a) document discovered in Iran in 2005 by the IAEA inspectors, which describes the processes of conversion of uranium hexafluoride into metal uranium and shaping enriched and depleted metal uranium into semi-spheres;
- b) targeting the “Green Salt” project at conversion of uranium dioxide into uranium hexafluoride, which can be used for obtaining both initial material for the uranium enrichment process with the aid of gas centrifuges (uranium hexafluoride), and uranium metal;
- c) performance of experimental and theoretical research on high-power explosions and multiple re-entry vehicles;
- d) focusing on the tests of blasting explosives operating only as a result of detonation, which is used for development of implosive nuclear munitions;
- e) designing a ballistic missile warhead capable of penetrating the dense atmosphere along the descent path (this is required only for development of intercontinental ballistic nuclear missiles).

Iran is approaching the point at which the of development of nuclear weapons is no more a technical problem. The «window of opportunities» for settlement of the Iranian nuclear problem is contracting, though Iran successfully presses its nuclear weapons with the support of its several partners. Thus, on May 17, 2010 Ankara agreed to accept low enriched uranium accumulated in the Islamic Republic of Iran for safe storage with a view to its subsequent exchange for nuclear fuel to be used in the Teheran research reactor. On June 9 Turkey together with Brazil refused to support UN Security Council Resolution No. 1929, which serves as a base for imposing severe sanctions against Iran. Cooperation of Iran in the nuclear sphere with Venezuela cannot be ruled out.

PAKISTAN AND VIOLATION OF NON-PROLIFERATION REGIME

(based on materials by V. Sotnikov)

Pakistan's developments of nuclear capable ground-launched cruise missiles Babur and air-launched cruise missiles Ra'ad indicate that Pakistan has managed to create miniaturized nuclear warheads. Progress of Pakistan in developing and testing the Shaheen nuclear capable intermediate-range ballistic missiles, in particular Shaheen-2, with a range of 700-2500 km. According to the most realistic estimates the up-to-date nuclear capability of Pakistan reaches 70-80 nuclear warheads.

The variants of financing these programs are as follows:

- from the budget under non-defense items of the budget;
- at the expense of the aid provided by China, North Korea and, possibly, other states supplying Pakistan with dual-use materials;
- from the secret fund being replenished by donors (United Arab Emirates, Kuwait, Saudi Arabia, or Libya), some of which were supplied by Pakistan with nuclear dual-use technologies.

Since the beginning of the crisis concerning the Iranian nuclear program Islamabad upholds the right of Teheran for nuclear technologies and application of nuclear energy for peaceful uses. On March 15, 2010 Pakistan refuted the report that Dr. A.Q. Khan had secretly supplied Iran with the uranium enrichment technology and components for centrifuges R-1 used in the uranium enrichment process and provided Iran with the information pertinent to nuclear developments, including the centrifuges' drawings and components, and the list of major suppliers of nuclear technology and equipment.

General Mirza Aslam Beg confirmed that in mid-80's Iran had asked Pakistan then headed by President Zia-ul-Haq for assistance in implementation of the nuclear program, but had been refuted. In 1986 Dr. A.Q. Khan believed to visit the Iranian reactor in Bushehr. In 1987 Atomic Energy Commissions of both countries concluded the official nuclear cooperation agreement. The illegal nuclear traffic network of Dr. A.Q. Khan made a \$3-mln deal with Iran for supply of nuclear technologies. In 1988 after death of Zia-ul-Haq centrifuges R-1 arrived to Iran. In 1991 Mirza Aslam Beg and Iran came to the nuclear and conventional cooperation-for-oil agreement. The government of Pakistan insists that there were no deliveries of centrifuge components to Iran afterwards. The last acknowledged meeting between Dr. A.Q. Khan and Iranians took place in 1999. Iran acknowledged the fact of getting assistance in uranium enrichment from foreign intermediaries since 1987. In 2004 Dr. A.Q. Khan affirmed the provision of nuclear technology and equipment to Iran.

The government of Pakistan asserts that he acted with a view to getting his personal financial gains and without interference of any military or official person. Dr. Khan himself said that top-ranking officers, including the Chief of General Staff of the Pakistan Armed Forces had known about his assistance to foreign nuclear programs, including that of Iran from 1988 till 1991. In the IAEA report made public in 2004 it was confirmed that from mid- till late 1990's Iranian officials had held 13 meetings with a "secret supply network", which was obviously the network headed by A.Q. Khan. It is unlikely that intergovernmental contacts between Pakistan and Iran in the sphere of assistance to the

nuclear program of Iran are presently maintained, but the Pakistani intermediaries may continue supplying nuclear materials and equipment to Iran.

Iran expresses concern over nuclear cooperation of Pakistan with Saudi Arabia and reports on the secret agreement in this sphere, reached between Pakistan and Saudi Arabia in 2003 after the visit of the official representative of the Ministry of Defense of Saudi Arabia to the nuclear facilities in Pakistan. It should be noted that Dr. Khan had visited Saudi Arabia for “attending the scientific conferences”.