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## TAKING STOCK OF IRAN'S NUCLEAR PROGRAM

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A stocktaking of Iran's "visible" nuclear project is a relatively easy task. Much has been disclosed to the world and subsequently reported about this project. Iran has succeeded in dulling the impact of this information, helped in no small way by the IAEA and some of Iran's friends, notably Russia. It is therefore important to take note of the extent of this program, its achievements and possible developments in order to eliminate any complacency about Iran's program and dispel the notion that this has been designed as a "peaceful" program (as Iran and its friends claim).

**Esfahan** is the site where Iran's uranium conversion facility (UCF) is situated. It is at this site that uranium enters as "yellow-cake" and leaves as one of several products destined either for a uranium enrichment plant or as nuclear fuel for Iran's reactors. Iran has no apparent problem with the supply of uranium, which it obtains from indigenous and foreign sources. Information has recently come to light about major tunneling activity at this site, the purpose of which is as yet unknown.

**Natanz** is the site of Iran's major uranium enrichment facility. It is a large-scale underground installation, well protected from aerial attack. By some estimates, it can host some 50,000 gas centrifuges. The declared purpose of this installation is to provide low-enriched-uranium (LEU) fuel for the Bushehr nuclear power plant. However, a facility this large can easily produce substantial amounts of high-enriched-uranium (HEU) that can be used in nuclear weapons. The declared purpose is not economically viable, but even in the Bushehr plant the fuel can be utilized to produce plutonium for use in a nuclear bomb.

**Bushehr** is the site of Iran's nuclear power reactor. It has been constructed by Russia (which stepped into the breach after Germany, the original constructor, abandoned the project). It will be fuelled by *Russian* LEU fuel, which



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should be returned following its term of irradiation in the reactor. If Iran decides not to return the spent fuel to Russia and instead reprocess it itself, it could produce a very large supply of plutonium.

In order to ascertain the possibility of obtaining plutonium for a nuclear bomb, Iran has embarked on a project for the construction of a natural-uranium, heavy-water reactor at **Arak**. The use of natural-uranium reactor fuel is not dependent on the uranium enrichment program. Iran has started work at the Arak site by constructing a heavy-water production plant, an essential component of the reactor project and a commodity that Iran would not be able to obtain commercially.

In order to obtain plutonium from irradiated fuel, Iran must put it through a reprocessing plant. As far as is known, there is no such facility in Iran. However, uranium was irradiated at the small research reactor situated at the **Teheran Nuclear Research Center (TNRC)** and later reprocessed to produce small quantities of plutonium, in order to gain experience in the technology.

All these facilities deal with the acquisition of fissile materials, the core of any nuclear explosive device. However, more is needed: the construction and testing of the explosive device into which the fissile material is inserted, and essential auxiliary components such as the neutron trigger source, which assures the correct functioning of the device.

Information released by the Iranian dissident group that made the major disclosures concerning the Natanz and Arak sites identified **Lavizan II**, a site near Teheran as the place where trigger development took place.

Finally, the site of **Parchin**, near Tehran, was identified as the place where the development

and testing of the explosive mechanism takes place. It should be noted that the IAEA, in its latest pronouncements, stated that Iran was hindering the organization in its efforts to verify the activities at these two sites.

These are the most noteworthy sites, although there are others where uranium mining activities are conducted, additional laboratories operate, and so on.

What does all this mean? The extent of the program and its details, the continuous cover-ups, the irrationality of some of the excuses Iran presents to the world, and its manifest intention to forge ahead no matter what all attest to Iran's intentions. There can be no doubt that Iran's program has a military application orientation.

However, an even more difficult issue remains on the agenda of those who fear a nuclear Iran: the possibility that Iran has a parallel, clandestine program that uses the visible one as a "red herring" to shield the concealed one. This is a very real possibility, one which will be difficult to disprove unless a very intensive verification project, utilizing extensive access rights and advanced technical means, is initiated. Even then, not all will be certain, but the degree of uncertainty will be vastly reduced. As things stand now, this possibility must be part of any evaluation of the extent of Iran's nuclear program.

Such a verification project, coupled with a commitment to terminate and dismantle the sensitive activities, is the prerequisite that would enable the European Union's negotiating team to proceed and eventually reach a deal that would assure the world that Iran will not be able to achieve a military nuclear capability.

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