



Natanz Enrichment Site: Boondoggle or Part of an Atomic Bomb Production Complex?

By David Albright, Paul Brannan, Andrea Stricker, and Christina Walrond

September 21, 2011

In an August 30 [interview](#), Vice-President of Iran and head of the country's Atomic Energy Organization (AEOI), Fereydoun Abbasi-Davani, told IRNA that contrary to rumors, Iran would not shut down its enrichment plants at Natanz. (The original version of the interview is no longer available on the IRNA website, but ISIS created a .pdf transcript, available [here](#).) Abbasi-Davani said, "I emphasize that the spread rumors on shutting down Natanz have been due to misconceptions, as we have no such intention." He continued, "People had better end propagating about Iran's intention to shut down Natanz, as that site would mightily continue its activities and we would definitely expand it in the future." Abbasi-Davani may have been making the usual overwrought declaration to the West about never stopping enrichment, or perhaps responding to internal criticism about the performance of the Natanz enrichment site.

Abbasi-Davani's defense underlines that ten years after the commencement of construction, the Fuel Enrichment Plant (FEP) at Natanz is unlikely to fulfill its originally stated purpose of holding 50,000 centrifuges to make enough low enriched uranium (LEU) to fuel a commercial nuclear power plant in the foreseeable future. On that point, the FEP is a massive failure, and Iran would do well in shutting it down. However, Abbasi-Davani dismissed that possibility. What is now the purpose of the FEP, and is Iran's justification for its existence logical or economically feasible? Is its only justification the initial production point for a relatively small amount of research reactor fuel? Despite multiple problems, the FEP is successful enough to support a small nuclear weapons program of the type Iran may seek.

An examination of the available evidence suggests that Iran may not actually intend to continue expanding operations at Natanz. Instead, the evidence shows a possible change in Natanz's role to producing 3.5 percent LEU in support of the production of 19.75 percent LEU or higher enriched uranium.

1. Iran has had significant problems adding more centrifuges at Natanz.

The number of centrifuges installed at the FEP has fallen from a peak of approximately 9,000 IR-1 centrifuges and has remained stagnant at 8,000 for almost the past year. Because of sanctions and poor centrifuge operation including frequent centrifuge breakage, Iran may not be able to increase the total number of IR-1 centrifuges at Natanz. The number of centrifuges reported as enriching has also leveled off at 5,860, and the International Atomic Energy Agency (IAEA) has noted that not all of these centrifuges may, in fact, be enriching. Iran's ability to build thousands of advanced centrifuges is in doubt, particularly as sanctions tighten. Another key question is whether these centrifuges will work adequately.

2. Iran is not producing low enriched uranium (LEU) efficiently at the FEP and has had difficulty improving this efficiency.

The average centrifuge enrichment output at Natanz has fallen over the past year, indicating continued problems in the centrifuge cascades. The monthly production has increased to about 150 kilograms a month of 3.5 percent LEU hexafluoride. But this was accomplished by compensating and using more IR-1 centrifuges. Iran may be nearing the limit of how much LEU it can produce at the FEP. For comparison, Iran would need to produce about 3,000 kilograms of 3.5 percent LEU hexafluoride per month to fuel a commercial size nuclear power reactor like Bushehr. Currently, the Natanz Fuel Enrichment Plant produces only five percent of that amount. Iran's enormous investment into Natanz is unlikely to pay off in terms of utilizing LEU in power reactors.

3. Iran is shifting 19.75 percent LEU production to Fordow.

This move underlines its decision to focus on production of 19.75 percent LEU over 3.5 percent LEU. Situated under a mountain, the Fordow enrichment facility is far better protected from bombing than the Natanz facility. Moving 19.75 percent production to Fordow demonstrates how important this material is to Iran's plans.

4. Iran lacks an immediate or logical purpose for requiring relatively large stockpiles of 19.75 percent LEU.

Iran's argument that it requires relatively large stocks of 19.75 percent LEU for research reactors is not credible. It has already produced several years' worth of 19.75 percent enriched uranium for the Tehran Research Reactor (TRR), and it still cannot turn the enriched uranium into TRR fuel. Likewise, its claim that it will build four or five new research reactors is not believable. It is highly unlikely that Iran could deploy any new research reactors, given its lack of a reactor design. With sanctions remaining in place, Iran would be unable to procure the necessary reactor components internationally. Against that background, it will have to create a domestic industry to make high quality research reactor components. Moreover, creating a stockpile of 19.75 percent LEU for research reactors provides minimal payback on its overall investment in the Natanz enrichment plant. It would be much more cost-efficient to import the required research reactor fuel for Iran's sole, small research reactor and any new ones it requires.

5. If Abbasi-Davani's statements about plans to triple 19.75 percent LEU production are true, Iran's 3.5 percent LEU production program at the Natanz FEP will be oriented toward meeting the demand for using this material to produce 19.75 percent LEU at Fordow.

This evidence suggests that Iran continues to shift the formerly central role of Natanz to one of supporting 19.75 percent LEU production at Fordow. Will Natanz now be devoted to making the feedstock for the production of 19.75 percent uranium or perhaps highly enriched uranium?

Since Iran has no logical need for a stockpile of 19.75 percent LEU, the question remains: What is the true purpose of Iran's enrichment program? Current events at Natanz and the facts about Iran's stated plans appear to support an effort to position the program to produce highly enriched uranium rather than a large-scale nuclear power or research reactor fuel production program. Despite the measly performance of the Fuel Enrichment Plant as a provider of LEU for power reactors, it is adequate enough to be part of a small nuclear weapons production complex. This more realistic new role of Natanz should be regarded as additional troubling evidence that Iran seeks at least the capability to build nuclear weapons.