

Iran's Nuclear Program: How Imminent Is the Threat?

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1. What do we know about Iran's nuclear activities?

- a. IAEA discovered beginning in 2003, and subsequently admitted by Iran, that for 20 years Iran had conducted a broad range of clandestine nuclear activities in violation of its NPT obligations. These included:
 - i. Uranium enrichment activities
 - ii. Plutonium separation experiments
 - iii. Construction of numerous facilities where unreported nuclear activities were carried out.
 1. Natanz centrifuge plant
 - iv. Acquired from AQ Khan, at least as far back as 1987, information and equipment for uranium enrichment and plans and information for casting and machining the uranium core of a nuclear weapon.
 - v. Built a heavy water production plan and is proceeding with construction of a heavy water reactor capable of producing significant amounts of plutonium.
- b. Iran now has a pilot cascade of about 164 centrifuges of foreign design and assembled largely from foreign manufactured parts that have produced small amounts of 3.5% enriched U. And they have acquired plans, here again from foreign sources, for a more advanced centrifuge design.
- c. Iran still has not explained to the full satisfaction of the IAEA a number of issues and the IAEA reports that Iran has continued to refuse to turn over requested documents related to its acquisition of foreign technology and suppliers. The IAEA reported – first on 28 April 2006 –

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that it was “unable to make progress in its efforts to provide assurance about the absence of undeclared nuclear material and activities in Iran.”

2. Where does Iran’s nuclear program stand today?

- a. Iran has laid the foundation for a sustained U enrichment program that if successfully completed will be capable of producing significant amounts of enriched U. Given its observed rate of progress in building and operating the existing pilot scale activities, however, this level of production is not likely to be reached for 5 to 10 years at the earliest. Foreign assistance and technology has been vital to the centrifuge program and Iran’s ability to have continued access to this assistance is a significant limitation on the pace at which it can pursue any nuclear ambitions..
- b. Iran is moving ahead with the construction of the IR-40 heavy water reactor which will allow it to produce plutonium which in many ways is superior to uranium for a weapons to be delivered by missile. The actual plutonium separation process is simpler than the production of enriched U and if Iran is able to grow its capability in this area may pose a greater long term threat. But here too, Iran is probably a decade away from fully mastering this capability.
- c. Iran has most probably acquired from the AQ Khan network, and perhaps others, workable designs and instructions for a first generation nuclear device. There may be gaps in critical assembly areas that Iran can only resolve through actual testing, both nuclear and non-nuclear testing. Beyond the initial Khan-supplied design Iran faces significant work to get a workable design that could be delivered by its present and projected longer range missiles.
- d. The design, fabrication and testing of a suitable missile warhead seems to not have moved beyond the preliminary stages.
- e. It is important to acknowledge that Iran’s nuclear program has been a clandestine program for two decades and what is known and observed today may well not be everything. But what is known to the fullest extent about

the state of Iran's nuclear program is the state of its uranium enrichment efforts. The production of significant amounts of fissile material, either high enriched uranium or weapons-grade plutonium is the hardest part of any nuclear weapons program. The available evidence is clear that Iran has yet to master the production of these materials in the amounts required for a nuclear weapons program. Iran has placed serious roadblocks in the way of the IAEA pursuing various leads, even destroying buildings and bulldozing a site, before giving inspectors access.

- f. **THE BOTTOMLINE:** If Iran has made, or makes in the future, a decision to produce nuclear weapons it has laid the foundation that would support such a program. It would, however, take time, require continued access to foreign materials and technology, and most probably require significant, time consuming and observable testing both in the fissile materials production and in the warhead design areas. Iran has obtained from abroad the playbook, but not all the pages, for how to produce fissile material and turn this into nuclear weapons. Significant hurdles remain both to filling in the missing pages and for Iran to be able to successfully execute the plans it has obtained. Iran is much better at constructing facilities and hiding them than it is at operating at the required industrial scale the plant it has built. The route that Iran has chosen to produce high enriched uranium, gas centrifuges, represents a high end industrial process unlike anything else operating in Iran. The feedstock for the centrifuges, UF₆, is one of the most corrosive and hard to handle chemicals and it needs to be produced in very large quantities. The centrifuges themselves represent the pinnacle of twentieth century industrial design and require materials and operating tolerances unlike any other industrial process in the country. Iran still has a very steep learning curve and a continuing need for foreign assistance if it is to master this process.

- g. Iran does not today, and is not likely to for some time, to pose a nuclear threat to its neighbors or to the United States. Assuming the worse case that Iran has already made the decision to proceed with a nuclear weapons program, the world has both time and a number of options for making Iran's possession of such weapons a very expensive and difficult to reach goal.**
- h. This conclusion is NOT a call for complacency concerning Iran's nuclear ambitions. It is certainly not a call to lessen international efforts to halt Iran's march toward nuclear weapons capability. It IS a call to expand the vision of those who say we have only two options:
 - i. Learn how to live with Iranian nuclear weapons or**
 - ii. Take military actions to end the program.****
- i. This is a false set of choices at this time and ones that each in their own way have the potential to cause great harm to the United States and the world at large. If we do nothing, the world may end up with only these two dangerous choices. But such a tragic end will be the result of our failures as a nation to pursue the wide range of bilateral and multilateral policies that are available to us.**