

Statement by Robert J. Einhorn
Senior Adviser, Center for Strategic and International Studies
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The Iran Nuclear Issue

Mr. Chairman, thank you for giving me the opportunity to appear before the Committee this morning.

Developments over the last 10 months – including Iran’s abrogation in July of its agreement with the EU3 (Britain, France, and Germany), its resumption in August of uranium conversion at Isfahan, the end of its voluntary implementation of the IAEA Additional Protocol, the weak U.N. Security Council Presidential statement issued at the end of March, Iran’s production of enriched uranium at Natanz, and the inability so far of the five Security Council Permanent Members to agree on a Chapter 7 resolution – have created a widespread impression that Iran’s quest for a fissile material production capability is progressing more rapidly than expected and is essentially unstoppable.

Fostering that impression – and the belief that the international community has little choice but to accommodate to the reality of an Iranian enrichment program – is very much part of Iran’s game plan. But despite the significant progress Iran has made, Iran’s claims that it has mastered centrifuge enrichment are premature; it still has far to go before it can produce either highly enriched uranium (HEU) or nuclear weapons; and its willingness to negotiate an end to its enrichment and reprocessing programs has yet to be put to a serious test.

Evaluating recent Iranian progress

As documented by the International Atomic Energy Agency (IAEA) in its report of April 28, 2006, Iran has indeed passed some important milestones in recent months. Since September 2005, it has produced over 110 tonnes of uranium hexafluoride (UF₆) at the Isfahan uranium conversion facility, enough gaseous uranium feedstock for over 20 nuclear weapons. After ending its suspension of enrichment activities in January, it fed UF₆ into a single P-1 centrifuge machine, then into 10-machine and 20-machine cascades, and then moved quickly to a 164-machine cascade (a key building block in a centrifuge enrichment facility) where it successfully enriched uranium to around 3.6%. Meanwhile, Iran has been assembling two additional 164-machine cascades at its Pilot Fuel Enrichment Plant (PFEP), one which is about to begin enrichment operations and the other which should be ready by June. In addition, the Iranians announced that they would begin installing the first 3000-machine module of their industrial-scale enrichment facility in the fourth quarter of 2006.

On the basis of these developments, Iran’s leaders are claiming that they have now mastered centrifuge enrichment technology and that it is too late to stop them. They

go so far as to say that, even if existing nuclear facilities were destroyed, they have reached a stage where they could re-generate their program quickly and confidently, with little loss of time. But such claims are premature.

The Iranians have cut corners in their research and development effort in order to register the accomplishments listed in the IAEA's report. Standard practice would have required them to run the 164-machine cascade with UF₆ on an uninterrupted basis for up to six months or more before gaining confidence in its operation. Instead of proceeding in parallel to assemble and operate additional cascades, the efficient operation of the initial cascade would first have been demonstrated. To verify the ability to manufacture centrifuges indigenously, the experimental cascade would have relied on machines made in Iran rather than imported, and it would have been heavily instrumented to measure performance. And before introducing UF₆ into the cascades, any impurities in the uranium gas that could damage the centrifuges would have been addressed and eliminated.

But the Iranians deviated from standard practice. Apparently intent mainly on demonstrating publicly the ability to reach a significant enrichment level, they ran the cascade with UF₆ for less than two weeks. A significant portion of the experimental cascade may have consisted of centrifuges imported from the A.Q. Khan network rather than produced indigenously. Moreover, little of the equipment normally used to measure performance seems to have been used during the short experimental run. And instead of taking the time to fix the problems in the Isfahan conversion process that have produced impurities in the UF₆, the Iranians seem to have chosen to use the impure UF₆ and accept the risk of having to replace any centrifuges damaged as a result.

Iran's research and development efforts to date seem to have been driven by political rather than technical considerations. By giving highest priority to achieving and announcing the ability to produce uranium enriched to 3.6%, the Iranians wanted to present the world with a *fait accompli* – to demonstrate that they already have an enrichment capability and that continued efforts to stop them would be futile. Moreover, fearing (despite their determined show of self-confidence) that they may eventually be forced to accept another freeze on their program, they wanted to establish the highest possible baseline for such a freeze – thus, accelerating the operation of the second and third cascades at the PFEP and starting installation of the 3000-machine module this year at the industrial-scale facility. And not least, Iran's leaders saw the early announcement of the enrichment breakthrough as a way of boosting national pride and building domestic support for the regime, especially in anticipation of international pressures and possible hardships to follow.

Having taken a series of short-cuts largely for political reasons, Iran presumably will now have to do the thorough developmental and testing activities it would normally have done earlier. That will take considerable time, and is probably one reason why the Iranians are saying they would be prepared to negotiate a deferral of industrial-scale enrichment if the Europeans and others will agree to accept continued R&D activities on a pilot scale.

So recent reports regarding progress in Iran's nuclear program, especially boastful accounts coming from Tehran, have created the somewhat misleading picture that Iran's efforts have accelerated to an alarming degree. While Iran has indeed reached some key milestones of late, the basic timelines for Iran achieving a nuclear weapons capability – in particular, the capability to produce enough HEU for a single nuclear weapon – have not significantly changed.

Timeline for producing HEU

One of the best recent analyses in the open literature of Iran's timeline for producing HEU was done by David Albright.* Since he's a witness at today's hearing and available to explain his analysis, I'll just cite his conclusion – that whether Iran builds a clandestine enrichment plant with 1500 P-1 centrifuges or breaks out of the NPT and uses its first module of 3000 P-1 centrifuges at its industrial-scale facility, the earliest it could produce enough HEU for a single nuclear weapon would probably be three years from now, or 2009. Albright emphasizes that this is a worst-case assessment and that Iran is likely to take longer if, for example, it needs additional time to manufacture and install the necessary number of centrifuges and overcome the normal technical difficulties that arise in seeking to operate a number of cascades in a single production unit.

Director of National Intelligence John Negroponte seems to believe Iran will probably take longer than three years. In testimony before the Senate Intelligence Committee in February 2006, he said that, if Iran continues its present efforts, it “will likely have the capability to produce a nuclear weapon within the next decade.” A National Intelligence Estimate on Iran produced last year reportedly judged that Iran could have a nuclear weapon in from five to ten years.

Large margins of uncertainty inevitably surround judgments of when Iran will or could have nuclear weapons or the fissile materials to build them. Some of the biggest unknowns relate to Iran's intentions – whether it is determined to produce HEU and acquire nuclear weapons as soon as possible; whether – and for how long – it is willing to stop at an LEU production capability while deferring decisions on HEU production and weaponization; or whether it is prepared to forgo, temporarily or indefinitely, the capability to produce even LEU in order to avoid penalties or gain rewards.

Other uncertainties about the pace of Iran's nuclear program relate more to capabilities. If Iran cannot readily overcome the technical problems that typically accompany start-up enrichment operations, the timeframe will lengthen. If, however, Iran can soon learn to master the much more efficient P-2 centrifuge design and build P-2 enrichment units, the timeframe will shorten. Iran's ability to procure materials, equipment, and technology from abroad will also affect the pace of its nuclear program, although imports will be much more important in the case of Iran's industrial-scale

* David Albright and Corey Hinderstein, “The Clock is Ticking, But How Fast?” The Institute for Science and International Security (ISIS), March 27, 2006.

enrichment facility, which still requires large quantities of specialized materials and equipment, than in the case of a pilot-scale facility. Indeed, even if it were possible to cut off its access to foreign supplies, Iran probably already possesses within its territory all the materials and equipment it needs to set up a 1500- or 3000-machine centrifuge facility and produce enough HEU for a small nuclear weapons stockpile.

A key variable affecting the pace of Iran's nuclear program is whether – and the extent to which – Iran has a clandestine nuclear program parallel to its overt program. Obviously, a successfully hidden conversion plant and enrichment facility would invalidate current estimates and eventually confront the United States and its allies with a sudden, major security threat. But even undetected activities of less importance (e.g., manufacture of centrifuge components or assembly of centrifuges) could have a substantial impact on timeframes for producing HEU or nuclear weapons.

Monitoring Iran's program – the role of the IAEA

The IAEA plays a critical role in narrowing our uncertainties about Iran's nuclear program. But IAEA monitoring of Iran's program has serious limitations, especially given Tehran's decision in February to cease implementation of the Additional Protocol and its overall failure to meet the IAEA's requirements for transparency and cooperation.

The Agency's presence in Iran, even with the less intrusive verification rights contained in the IAEA-Iran Comprehensive Safeguards Agreement (as compared to the Additional Protocol), provides a strong basis for monitoring *declared* nuclear facilities and activities in Iran. Agency inspectors can measure accurately how much UF₆ is produced at Isfahan and verify that it is not being diverted to a covert enrichment plant. They know how much enriched uranium is being produced at Natanz and can be confident that no HEU is being produced there and that no Natanz-produced LEU is being sent to a covert enrichment facility to be further enriched to weapons grade. Frequent IAEA visits also enable us to keep track of progress in assembling and operating cascades at the PFEP, in constructing and operating the heavy water production plant and heavy-water research reactor at Arak, and in building the industrial-scale enrichment plant at Natanz. This information is crucial in understanding the nature and pace of Iran's acquisition of a fissile material production capability.

While the IAEA can effectively monitor *declared* nuclear facilities and activities *as long as the Agency has access to them*, monitoring confidence drops off rapidly at undeclared locations or if inspectors are no longer given access to declared sites. In the latter case, such as in the event of NPT withdrawal and termination of IAEA verification, Iran could proceed without international scrutiny to use previously monitored facilities to produce fissile material, either by starting from natural uranium or boosting previously safeguarded LEU to HEU.

Even if Iran remains in the NPT, monitoring undeclared locations is a formidable challenge, especially given Iran's 20-year track record of what the IAEA calls its "many failures and breaches of its obligations to comply" with its NPT safeguards agreement

and given its February decision no longer to act as if bound by the Additional Protocol. In its April 28th report, the IAEA cites numerous “gaps in the Agency’s knowledge” that have sustained or even heightened “concern” that Iran may be pursuing nuclear weapons. Among the IAEA’s concerns are that Iran is not being honest about the extent of its work on P-2 centrifuges, that Iran took fuller advantage of a 1987 offer by A.K. Khan’s network than it is admitting, that procurement of dual-use equipment (e.g., mass spectrometers) was related to a weapons program, that Iran’s military is heavily involved in the nuclear program, that experiments with plutonium, polonium, and uranium metal point to a weapons program, and that Iran may be engaged in nuclear-related high explosives testing and missile re-entry vehicle design.

These concerns, and the IAEA’s judgment that Iran is not providing the Agency “full transparency and active cooperation,” have brought the IAEA to the sobering admission that it “is unable to make progress in its efforts to provide assurances about the absence of undeclared nuclear material and activities in Iran.” The April 28th report goes on to say that “additional transparency measures, including access to documentation, dual use equipment, and relevant individuals” – all of which have been specifically requested by the IAEA Board of Governors but denied by Iran – will be required if the Agency is to be able to do its job.

Iran’s decision to stop implementing the Additional Protocol (AP) has hampered the IAEA’s work. But implementation of the AP is not enough. The AP has its own limitations. Unlike what many observers believe, it does not provide for “anywhere, anytime” inspections. It does not, for example, authorize investigation of suspected weaponization activities or allow access to military facilities where no nuclear materials are believed to be present. That is why the IAEA Board has several times requested, unsuccessfully, that Iran accept verification procedures going beyond what is required by the AP.

The IAEA must be given stronger tools to perform its verification mission in Iran, and that will require action by the United Nations Security Council. The IAEA Director General should be asked to determine what additional verification authorities the Agency would need to carry out its mandate in Iran. If required, those authorities should go well beyond what is contained in the existing Comprehensive Safeguards Agreement or even the Additional Protocol. The Security Council should then take a decision to grant the IAEA those additional authorities.

Enhanced verification tools would not be a panacea. Even if Iran complied with a Security Council directive to cooperate with them, more intrusive methods would not necessarily be capable of uncovering all undeclared nuclear activities. For example, a relatively small clandestine centrifuge enrichment plant (e.g., 1500 centrifuges) might still be difficult to detect. But stronger verification tools would give the international community significantly more confidence than it currently has in the ability to detect and deter violations.

Persuading Iran to forgo its enrichment program

The absence so far of a clear-cut IAEA determination that Iran is seeking nuclear weapons has made it very difficult to build strong international support for a strategy capable of persuading Iran to give up its enrichment capability. Indeed, under present circumstances, the prospects for heading off an Iranian fissile material production capability by means short of the use of military force do not look very good.

Iran's leaders have done an effective job convincing the Iranian public that an indigenous enrichment capability is an Iranian right that is essential to national dignity, technological advancement, and energy independence and must never be given up. While influential Iranians occasionally express concern about the potential consequences of pursuing an enrichment program in defiance of the international community, the regime can be expected to remain on course barring a major shift in the currently perceived balance of benefits and risks.

The risks, at this stage at least, appear manageable. Tehran probably believes the likelihood of military strikes has increased in recent months but remains remote given Washington's preoccupation with Iraq and its appreciation of Iran's many options to retaliate. The Russians and Chinese have so far remained stalwart in their opposition to sanctions and a Chapter 7 resolution. Even if resistance in Moscow and Beijing eroded, the Iranians may calculate that any sanctions adopted would be weak and easily weathered and that tougher measures (such as those affecting oil and gas markets) would be avoided on the assumption – actively promoted by Tehran – that they would hurt the West more than Iran.

Not only do the risks of continuing enrichment seem limited, but the benefits of giving up the enrichment program also currently appear small (especially when compared to the perceived security, geo-political, and prestige benefits of acquiring a nuclear weapons option). The economic, technological, and political incentives offered by the Europeans last July apparently didn't impress the Iranians, who probably recognize that, without U.S. support, those benefits may not fully materialize. More fundamentally, Iran's leaders may see little sense in giving up their trump card in a deal with the Europeans if they believe they'd still face a U.S. government intent on pursuing a policy of regime change.

If the international community is to have any chance of persuading Iran to give up its enrichment capability (and its nuclear weapons option), it must radically alter Tehran's current calculus of benefit and risk.

Part of the equation is stronger sticks. Iran must face the credible threat of increasingly severe penalties – ranging from travel bans, asset freezes, and political gestures to investment and trade restrictions to even the use of military force. Russia and China, in particular, must be persuaded that such threats are necessary and not counterproductive. But they will be prepared to join in threatening such penalties only if

Iran is also offered incentives that they believe could get Iran to accept the deal and therefore avoid the need to implement the penalties.

And so the other part of the equation is more attractive carrots. Possible incentives for Iran have been widely discussed, including the kinds of commercial and technological cooperation offered by the Europeans last July, membership in the World Trade Organization, lifting of existing U.S. economic sanctions, military confidence-building arrangements in the Gulf region, and so forth. But the carrot likely to be most influential in Tehran would be the prospect of a less threatening and more normal relationship with the United States – and specifically a recognition in Washington that regime change in Tehran should be the prerogative of the Iranian people and not the policy of the U.S.

Direct engagement between the U.S. and Iran

The most effective way to offer the incentive of a more normal, less threatening relationship with the United States – and indeed the only way it would be credible – is through direct, face-to-face discussions involving American and Iranian representatives. Bilateral U.S.-Iranian contacts could take place within the framework of a multilateral process that also included Britain, France, Germany, Russia, and China – analogous to the Six Party Talks that have provided an acceptable context for bilateral meetings between the U.S. and North Korea during the last year or so.

The agenda for U.S.-Iranian discussions should not be confined to the nuclear issue. It should instead cover the full range of issues that divide the two countries, including U.S. concerns about Iran's support for Middle East terrorist groups, its role in Iraq, its alleged harboring of al-Qaeda operatives, its policies toward Israel, and its treatment of its own people. Iran undoubtedly will have its own list of issues and demands. The purpose of the talks would be to explore whether U.S. concerns can be met and whether the interests of the two countries can be reconciled. Only by addressing the broad range of issues can prospects for normalization be assessed. And only the prospect of normalized bilateral relations can provide the context in which Iran is likely to consider suspending its enrichment program and giving up its aspiration for nuclear weapons.

At various times during the past decade, the U.S. and Iran have both been interested in bilateral engagement, but never at the same time. In recent weeks and months, the Iranians have been sending signals – however mixed and confusing – that they might be ready. But it is the U.S. Administration that is now resisting.

Asked recently whether the Bush Administration is willing to engage directly with Iran, Secretary Rice replied: “What is to be gained if Iran is not prepared to show that it is ready to accede to the demands of the international community?” But do we really expect Iran to meet our demands even before sitting down to talk with us – before knowing what it might receive in return? Do we realistically think our current bargaining position is so strong?

There seems to be a strong conviction within the Administration that talking to the current regime in Tehran will give it legitimacy and sustain it in power, whereas pressuring and isolating it will divide the leaders from the people and perhaps even result in regime change and more acceptable policies on the nuclear issue and other issues. But most experts on Iran tend to believe just the opposite – that external pressures will unite the Iranian public behind the regime and its nuclear policies, while engagement will magnify the fissures that have begun to appear within the Iranian leadership and perhaps produce significant changes in policy, including on the nuclear issue.

In London this Friday, the P-5 countries plus Germany are scheduled to meet to consider a European-drafted package proposal for Iran. It is an opportunity to make the major changes in Iran's calculation of benefits and risks that will be necessary to induce Tehran to give up its enrichment capability. To have that effect, the Russians and Chinese should agree that the package will require stiff penalties if Iran does not accept a reasonable offer. The Europeans should provide incentives more attractive than those contained in their July proposal. And the U.S. should be prepared to engage in direct talks with the Iranians within a multilateral framework.

Such a package would be the first real test of whether Iran is willing to give up its quest for a nuclear weapons capability. If the Iranians are determined to proceed with their nuclear plans come what may, they will fail the test. But that will at least put the U.S. and the Europeans in a stronger position to rally the international community behind a longer-term strategy to demonstrate to Iran that it has much to lose and little to gain by staying on its present course.

Despite recent progress in Iran's enrichment program, Iran is still years away from being able to produce a nuclear weapon. But it will not be long – perhaps several months to a year – before Iran is confident in its ability to enrich uranium efficiently in overt or clandestine production units large enough to produce bomb quantities of HEU in less than a year. It is therefore important that the U.S. and the other key states move quickly to construct and present a package that gives Iran a stark choice – it can be a pariah with nuclear weapons or a well-integrated, respected member of the international community, with normal relations with the U.S., without them.