

Better Carrots, Not Centrifuges: Why Iran must halt enrichment and How the U.S. can make it happen

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Summary

Iran is expected to respond this week to a proposal made in early June by Javier Solana on behalf of the European Union, and endorsed by the United States, aimed at ending a standoff between Iran and the international community over the fate of its nuclear program.

The purpose of this analysis is to identify two key shortcomings to the existing EU proposal while explaining clearly why any, even modest, uranium enrichment capability in Iran must not be part of the solution, in particular over the near and intermediate term.

The EU, in simple terms, is seeking an end to Iran's uranium enrichment program and is offering Iran a range of nuclear and economic incentives toward that objective.

There are two shortcomings to the EU proposal that should be remedied before even a short-term suspension of enrichment is possible: Iran must have security assurances that there will be no threats or use of force against Iran as long as it is in compliance with its UN and IAEA obligations, and there must be quickly-delivered "carrots" with broad popular appeal in exchange for Iran giving up its enrichment program.

Among the proposals and counterproposals seeking a resolution to this issue, one that is especially gaining momentum in some quarters of Europe and Iran is to allow Iran's centrifuges to spin but with no uranium hexafluoride. This would give Iran important knowledge of centrifuge cascade operations with proliferation risks of its own, and must not be part of the negotiated settlement. The attached analysis cites an IAEA paper, which ISIS has obtained, making just this point.

Introduction

Iran hasn't let the world know yet of its official response to the European Union's offer of nuclear cooperation and economic incentives in exchange for Iran giving up, more or less permanently, its uranium enrichment ambitions. The only common thread in recent statements by its leadership reveal what we already know—that Iran is deeply attached to its enrichment program and not prepared to relinquish it for tenuous concessions like multilateral talks to which the U.S. is one party, or promises of nuclear and economic assistance that involve long timetables and complicated conditions.

This is the core of the issue with which diplomats and experts on all sides are struggling—how to bridge the gap between Iran's dogged insistence that it has a right under the Nuclear Nonproliferation Treaty (NPT) to every part of the nuclear fuel cycle including enrichment and the insistence of Europe and the United States that enrichment in particular is the one line that Iran must not cross because of its multiple violations of the NPT.

There are good, compelling reasons for the Bush Administration to insist that Iran not have a uranium enrichment capability. But hardliners in Washington, not unlike their counterparts in Tehran, appear so wrapped up in the supreme rightness of their position, almost eager for any budding consensus to fall apart (the quicker to say “told you so” in the Security Council), that they have failed to articulate a way forward for Iran that has broad appeal to its citizenry and makes the decision to give up enrichment an appealing, logical step and not a humiliating, defeated one.

What's wrong with a little R&D?

One idea gaining momentum in some quarters of Europe and Iran is for Iran's centrifuges to be permitted to operate “under vacuum” with the primary condition that no uranium hexafluoride (UF₆) be introduced.¹ This is a bad idea, and the IAEA's own experts have said as much.

In a written June 2006 written response to a question posed by the U.S. government about what Iran could learn from spinning centrifuges in a vacuum, and obtained by ISIS, the IAEA writes that “further information to be gained” would include “the life expectancy and durability of key mechanical components, the failure of materials, the effects of vibrations, electric power requirements...a detailed understanding of the different ways that centrifuges can fail, and information needed for the development of more advanced centrifuge systems.” More significantly, the IAEA adds that such information “could be used to progressively **improve the build quality of manufactured centrifuges, and is vital to successful long-term sustained centrifuge operation...**(emphasis added)”

The IAEA here puts its finger on the key issue—that in learning how to operate and improve centrifuges and cascades, the use of nuclear material is not necessary. By

¹ Matthew Bunn, “Placing Iran's Enrichment Activities in Standby,” June, 2006, <http://www.managing-the-atom.org/irannews/250/placing-irans-enrichment-activities-in-standby>

focusing instead on operating its single 164-machine cascade for short periods of time to enrich gram quantities of uranium, Iran has not learned many of these lessons yet. Iran has also not finished the installation of the second and third cascades at the pilot plant, although inspectors cannot determine if the slowdown has been caused by technical problems or reflects self-constraint in this time of crisis.

The International Crisis Group (ICG) has suggested that Iran be allowed to keep a modest number of centrifuges, perhaps several hundred, which would be allowed to operate under strict IAEA monitoring after a 1-2 year period of confidence building by Iran.²

At the other end of the spectrum is the recommendation that Iran and Europe join together to build a state-of-the-art enrichment plant in Iran using URENCO's most advanced centrifuges with the proviso that the centrifuges' bottom bearings contain self-destruct mechanisms that could deploy in the event of unauthorized use.³

The ICG vastly understates the proliferation risks of even a small enrichment program under the IAEA's watchful gaze. Once Iran gains competence in running a cascade, it can replicate that capability someplace else, out of the IAEA's sight. Centrifuge programs are notoriously difficult for inspectors to find even with the most advanced inspection methods, particularly if a country has an established, declared centrifuge program. If Iran weakened or undermined the inspectors, as it has done almost continuously so far, finding a hidden centrifuge plant would be almost impossible.

A small enrichment capability could also allow Iran gradually to build gradually a stockpile of low-enriched uranium, permitting it to "break-out" and quickly produce nuclear explosive material in secret centrifuge cascades or even in the declared centrifuge cascades. A stock of low enriched uranium would shorten fourfold the time necessary to enrich to weapon grade.

The downsides of the proposal to build a URENCO-style plant are equally significant: URENCO is notoriously averse to the risk of technology transfer, making it unlikely they could agree to the joint operation of a facility with Iran, which could threaten their competitive advantage. It is very hard to see how URENCO could construct an arrangement with Iran that would provide assurance that URENCO's commercial secrets would be protected.

There is also the risk of Iran's knowledge of centrifuges would grow dramatically if it were able to obtain information about these machines—they would gain the ability to make far more advanced, faster, more powerful machines that could produce HEU for a weapons program in far less time and with far fewer machines than their existing

² International Crisis Group, Iran, Is there a way out of the nuclear impasse?" February 2006, <http://www.crisisgroup.org/home/index.cfm?id=3976&l=1>

³ Geoff Forden and Sir John Thompson, "Technical Aspects of Multilateral Nuclear Agreements with Iran" March 2006, <http://web.mit.edu/stgs/pdfs/Technical%20Aspects%20of%20Multilateral%20Nuclear%20Agreements%20with%20Iran.pdf>

capability would permit. This poses an especially sobering proliferation threat if Iran were to share the technology with others.

It is also difficult to conceive of plant workers going about their already technically challenging business without worrying about the accidental destruction of centrifuges. Equally difficult to envision is a credible method to destroy the facility. Which international entity would order the destruction of the plant and under what conditions? If ordered to destroy the plant, would the owner actually carry out the order? Could Iran stop the destruction and then use the facility to rapidly produce highly enriched uranium for nuclear weapons, perhaps even before a military strike could be ordered?

Under any scenario, until the international community's trust in Iran is reestablished and it institutes a robust, credible system of controls on the transfer of technology, there is a very real risk of diversion to other proliferants or even terrorists, whether of nuclear material itself, equipment or know-how. Pakistan, a key partner of the United States in the war on terror, was incapable of halting the entrepreneurial impulses of its chief nuclear scientist. Can Iran be trusted to stop a rogue scientist with years of experience in building or operating centrifuges? Unlikely, especially in light of remarks by Iran's supreme leader, Ayatollah Ali Khamenei, that it is prepared to transfer "the experience, knowledge and technology" of its nuclear scientists.

It is important to be clear about another facet of Iran's determination to develop the full fuel cycle. As we have noted, even a closely monitored, small scale enrichment program (with or without uranium hexafluoride) allows Iran to make important technological leaps forward in terms of centrifuge operations which carry proliferation risks and make little economic sense for fueling power reactors. A large scale enrichment plant **might** make sense, only if Iran had a minimum of five, and probably closer to ten, reactors before the plant's cost could be rationalized and its product effectively utilized. At this point, discussions about the most appropriate enrichment plant and its supplier could commence. This would take many years, in which time Iran could reestablish the trust of the IAEA and UN Security Council. But until that time is reached, any enrichment program in Iran poses too many risks and should be opposed.

So What to Do?

The proposal presented by Javier Solana to Iran on June 5 contains most, but not all, the necessary elements for a resolution to the Iranian nuclear issue. The offer includes, among other items, a five-year guaranteed reactor fuel supply, access to advanced reactor technology for new projects, promises of increased trade and investment, and expanded cooperation in other areas, including civil aviation and development of the oil and gas sector.

The current EU proposal lacks clearly stated security assurances that promise Iran's territorial integrity and sovereignty will be respected in the event of a long term deal. U.S. agreement to such assurances is vital if the negotiations are to succeed. In addition, the EU and the United States should clearly state that as long as Iran abides by the terms

of the suspension and continues to negotiate in good faith toward a final resolution, they will not attack Iran or otherwise seek regime change.

The current offer also implies that the suspension is open-ended, a formulation that severely complicated the last round of negotiations. An alternative is for all sides to agree that that suspension will take effect for 6 to 12 months, while negotiations are underway on the longer-term initiatives outlined in the EU's offer. If negotiations fail during that period, the EU could seek an extension or move to impose sanctions or other punitive measures.

While Europe and the United States are requiring that Iran immediately give up all uranium enrichment activity—a major concession in part simply because of how Iran has hyped its own actually modest achievement (operated a small cascade for relatively short continuous periods and with very limited production of low enriched uranium), there are virtually no tangible, immediate benefits accruing to Iran. The offers of trade and economic assistance are vague: “Support for full integration into international structures, including the WTO, and to create the framework for increased direct investment in Iran and trade with Iran (including a Trade and Economic Cooperation Agreement with the EU).” Spare parts for Iran's ten ageing Boeing 727s and 747s, and 17 Airbus planes are often cited as the main carrot for immediate delivery. This is nice, and surely warranted as a matter of public safety, but has a largely symbolic meaning for the many thousands of Iranians fortunate enough not to fly the planes.

It is not difficult therefore to see why the average Iranian would find support for WTO integration and a “framework for increased trade” something less than inspiring, and perhaps not worth mothballing Natanz for. The challenge for Europe and the U.S. is to find immediate economic gratification that makes Iran's sacrifices meaningful.

Concurrent with Iran's suspension, the EU and United States would identify key areas of Iranian civil society—public health and infrastructure are two examples—where trade embargos and economic isolation have led to a deterioration of conditions or standards and develop one or two areas where assistance could be brought to bear quickly and translated into tangible goods for Iranian citizens.

The United States has expended significant diplomatic energy in attempting to convince the EU, Russia and China that anything short of full Iranian endorsement of the proposal constitutes a rejection that must be met with swift punitive action. This is exactly the kind of posturing that Iranian officials love to point to in support of their own view that the U.S. is not sincere in seeking a negotiated resolution to this issue. There are hopeful signs however, that the U.S. administration is being pulled along by Europe, even if unwillingly, to a position closer in line with its own. The U.S. reached the logical conclusion that refusing to negotiate with Iran in the framework established by the EU was unsustainable; it must also be persuaded that security assurances, and quickly deliverable incentives with broad popular appeal are also part of the solution.