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An Analysis of Recent Israeli Statements Regarding When Iran Could Have the Bomb: Have the Israelis Given Up Trying to Stop an Iranian Nuclear Weapon?

Ever since Iran began to enrich uranium in 2007, there have been concerns over when Iran might be able to obtain a nuclear weapon. These concerns have intensified over the years as Iran continued to make steady progress with its uranium enrichment program. However, in the first part of 2010, there were various statements by U.S. government officials which suggested that these concerns may have been overblown. Specifically these officials indicated that it would take Iran three to five years (i.e. 2013 to 2015—an eternity in myopic Washington DC) to obtain a nuclear weapon.[1] More recently, several statements by Israeli officials seem to agree with these optimistic assessments. Specifically Israel's minister of strategic affairs, Moshe Yaalon, said that recent technical difficulties in Iran meant that Iran could not produce a nuclear weapon for at least three years (i.e. 2013).[2] Last week, Israel's outgoing intelligence chief, Meir Dagan, said that Iran would not be able to build a nuclear weapon until 2015.[3] He cited international sanctions and covert activities as slowing down the Iranian program.

Unfortunately, it is hard to square these assessments with the accelerating progress that the International Atomic Energy Agency (IAEA) has been reporting regarding Iran's centrifuge enrichment program. As will be discussed below, Iran is currently in a position to be able to produce a weapon's worth of Highly Enriched Uranium (HEU) in less than three months and the production of the weapon itself should take no more than one year. Furthermore since these assessments are made on the basis of well known public information, they should be known by the Israelis as well. The current Israeli estimates are so far out of line with the known facts that it is hard to escape the conclusion that these estimates are simply a cover for Israel giving up trying to stop Iran from obtaining nuclear weapons.

Any effort to obtain nuclear weapons must consist to two parts—the production of the fissile material needed for the weapon and the manufacture of the high explosive components needed to detonate the weapon. For all prior nuclear weapon programs, the production of the fissile material has been by far the hardest, most time consuming and expensive part of the endeavor.

There are two ways to produce the required fissile material, both of which use natural uranium as the starting point. One method requires the production of HEU by enriching the U-235 content of uranium from its natural concentration of 0.7% to 80% or more.

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[1] For my analysis of these statements see: "When Could Iran Have the Bomb? An Analysis of Recent Statements That Iran is 3 to 5 Years Away", April 26, 2010, http://www.npolicy.org/node/1255

[2] "Iran Nuclear Capability Seen as Delayed", *The New York Times*, December 29, 2010, http://www.nytimes.com/2010/12/30/world/middleeast/30briefs-Iranbrf.html

[3] "Israel: No Iran bomb before 2015", *Reuters*, January 7, 2011, http://www.reuters.com/article/idUSTRE70612X20110107

The other method involves the production of plutonium by irradiating natural uranium in a nuclear reactor and then chemically separating the resultant plutonium from the spent fuel. Though our discussion here will focus on Iran's uranium enrichment efforts, it should be noted that Iran is also building a heavy water based plutonium production reactor.

A variety of technologies can be used to enrich uranium. The one that concerns us here is the gas centrifuge. To obtain meaningful levels of uranium enrichment it is necessary to operate many centrifuges in series, an arrangement which is known as a cascade. Since the output of a single cascade is not high, it is necessary to operate many cascades in parallel. It would be possible for Iran to construct centrifuge cascades which could directly produce HEU from natural uranium but as far as is known Iran has not done so since this would constitute a violation of its Nonproliferation Treaty (NPT) obligations. Instead at its largest known enrichment facility, the Fuel Enrichment Plant (FEP) at Natanz, natural uranium is enriched to a level of 3.5%. This level of enrichment can be used as fuel for power reactors, though since currently Iran's only power reactors are supplied fuel from Russia, the enriched uranium produced at the FEP is just being stockpiled. It should be noted that since in any enrichment process, most of the enrichment effort is expended at the low concentration end of the process, 3.5% enriched uranium is already about half way to becoming the HEU required to produce a weapon.

In terms of numbers of operating centrifuges and cascades, the FEP has had a checkered history. In some cases centrifuges have been installed but never operated and some cascades have operated but then were taken out of service. These facts have been cited by those who have emphasized Iran's operating difficulties.

But what really counts is how much 3.5% enriched uranium Iran produces each month and this has steadily increased.[4] Throughout much of 2009, Iran was producing about 57 kilograms of 3.5% enriched uranium per month. But starting in late 2009 the enriched uranium output jumped to about 80 kilograms per month. Iran maintained this level of production through July of 2010 (note it was during this time that U.S. government officials were claiming that technical difficulties were slowing the Iranian enrichment program). In the latest reporting period (August 7, 2010 to October 31, 2010), Iran's 3.5% enriched uranium output further increased to 91 kilograms per month which is a 60% increase over Iran's production rate for most of 2009.[5] By October 31, 2010 Iran had produced 2,152 kilograms of 3.5% enriched uranium.

Nor is that all. Starting in February 2010, Iran set up a special cascade at its Pilot Fuel Enrichment Plant (PFEP) which processes 3.5% enriched uranium into 20% enriched uranium (the highest enrichment level permitted to Iran). Iran ostensible reason for conducting this activity is to produce fuel for a research reactor but Iran doesn't have the capability to manufacture this fuel and the 20% enriched uranium is currently being

[4] Iran was able to increase its enriched uranium output even though the number of operating centrifuges has at times declined by improving the output of the individual centrifuges.

[5] Iran achieved this latest production increase by increasing the number of operating cascades from 23 to 29.

stockpiled. As of November 19, 2010 Iran had produced about 22 kilograms of 20% enriched uranium.

It has long been known that the gas centrifuge is a particularly dangerous technology with regards to nuclear nonproliferation. Iran can easily use the centrifuges at the FEP and its stockpile of 3.5% enriched uranium to quickly produce the 20 kilograms of HEU needed for a nuclear weapon. This would involve a two step process where the FEP would first process the 3.5% enriched uranium into 20% enriched uranium. Then the 20% enriched uranium would be processed into 90% enriched uranium which can easily be used in a nuclear weapon.

More specifically, the first step would require about 1,900 kilograms of 3.5% enriched uranium to produce about 160 kilograms of 20% enriched uranium.[6] With the current number of centrifuges operating at the FEP, this step would take about 2 months. Note that there would be nothing illegitimate about this step since Iran's current production of 20% enriched uranium at the PFEP has established the principle that Iran is permitted to produce and possess such material. In the second step, the 160 kilograms of 20% enriched uranium would be processed into the required 20 kilograms of 90% enriched uranium. This second step would only take about 2 weeks. Only at this step would Iran have violated the NPT but there would be very little time for Western counteraction before the process was completed. Indeed since the FEP is not continuously monitored by the IAEA, the process could be well along or even completed before it was discovered by the IAEA.

To utilize this HEU in a nuclear weapon, Iran would also have to produce the rest of the nuclear weapon components needed to detonate the HEU. This work need not wait for the production of the HEU but rather can be carried out in parallel. Though some U.S. officials have claimed that this effort would take three to five years, the U.S, starting from scratch, developed an implosion nuclear weapon in just 11 months during World War II.[7] Now it is true that Iran would not have anywhere near the talent and resources available to the Manhattan Project, but nor is Iran starting from scratch. General descriptions of implosion nuclear weapons (including pictures) are now widely available. Iran has already conducted some research on nuclear explosives. According to a U.S. National Intelligence Estimate this work was stopped in the fall of 2003 but some Europeans and the IAEA have concerns that such work may be continuing. (Note that current IAEA inspections in Iran are not designed to detect such work). And it is unknown how much aid on nuclear weapons development Iran may have received from Pakistan and/or North Korea.

On the whole, given these facts, an estimate of one year or less for Iran to obtain a nuclear weapon (assuming that it decided to proceed today) seems far more plausible

[6] For the technical details behind these numbers see: Gregory S. Jones, "Iran's Rate of Enriched Uranium Production Continues to Increase: Centrifuge Enrichment and the IAEA November 23, 2010 Update", November 30, 2010, http://www.npolicy.org/files/Irans_Rate_of_Enriched_Uranium_Production.pdf

[7] Gregory S. Jones, "When Could Iran Have the Bomb? An Analysis of Recent Statements That Iran is 3 to 5 Years Away", April 26, 2010, http://www.npolicy.org/node/1255

than the recent Israeli estimates of 3 to 5 years. Indeed the Israeli estimates are so implausible that they would seem to be a cover designed to obscure the fact that the Israelis have given up trying to stop Iran from obtaining nuclear weapons. This seems to have been confirmed by a statement this week by Israeli Prime Minister Benjamin Netanyahu which basically said that it is up to the U.S. to stop Iran from getting nuclear weapons.[8]

Just to be clear, the fact that Iran could quickly produce a nuclear weapon does not necessarily mean that it will do so right away. Indeed it seems far more likely that for the moment Iran will not. After all, why should it? Everything is currently going its way. Despite Western statements about how much Iran's centrifuge enrichment effort has been disrupted and slowed, Iran is increasing the amount of 3.5% enriched uranium it is producing at the FEP (a 60% increase since 2009) and has begun the first step of converting this material into HEU by producing 20% enriched uranium at the PFEP. It could well be 2015 before Iran actually produces nuclear weapons but by that time we will be talking not about a nuclear weapon but rather nuclear weapons i.e. a full fledged nuclear arsenal.

We have gone through all this before. It was 1990 when the Bush administration said that it could no longer certify that Pakistan was a non-nuclear state but only in 1998 did Pakistan actually explode a nuclear weapon. Now Pakistan has an arsenal approaching 100 nuclear weapons and is producing fissile material for nuclear weapons at a rate faster than any other country in the world. At the same time we face the specter of the rise of radical Islam in Pakistan. This was most recently demonstrated by the assassination of the Governor of Punjab, Salman Taseer, for opposing Pakistan's archaic blasphemy law. The assassin was Taseer's own security guard. Tens of thousands of Pakistanis have demonstrated in support of the assassin.

We tried a "kick the can down the road" strategy with North Korea as well. It was well understood that the 1994 Agreed Framework was not a solution to the problem of North Korean nuclear weapons (among other things it required South Korea to transfer U.S. origin nuclear technology to North Korea—something prohibited by U.S. law). The idea was to buy time since it was widely expected that by the year 2000, North Korea's communist regime would have gone the way of those in Eastern Europe. But the communists in North Korea have proven far more resilient than expected, thanks in part to major assistance from China. It turns out that China does not mind North Korean nuclear weapons since they will likely land on South Korea, Japan or U.S. military forces.

[8] Prime Minister Netanyahu said, "…I don't think that this pressure will be sufficient to have this regime change course without a credible military option that is put before them by the international community led by the United States". See: "Only a threat of force will halt Iran nukes: Israel", *Reuters*, January 11, 2011, http://www.reuters.com/article/idUSTRE70A64F20110111

Writing last month with Henry Sokolski, we said that the U.S. had run out of time to negotiate away the threat of Iranian nuclear weapons.[9] Israel's apparent surrender to the inevitability of Iranian nuclear weapons would seem to confirm this. It is time for the U.S. to admit that it has failed to prevent Iran from getting nuclear weapons and begin deciding what to do next.

[9] Henry Sokolski and Greg S. Jones, "Bombshell, Obama has run out of time to negotiate with Iran", *The New Republic*, December 7, 2010, http://www.npolicy.org/files/Bombshell.pdf