

# The Nuclear Agreement with Iran

In November of 2013 Iran reached a historic agreement with the P5+1 states.<sup>1</sup> This agreement offers Iran considerable relief from certain United Nations Security Council sanctions, US sanctions and European Union sanctions. In return Iran has pledged to conform in every way with its safeguards agreements with the International Atomic Energy Agency, the IAEA. Iran has also agreed to allow the IAEA to visit some facilities that are not covered by its legal safeguards agreements. Some of these concessions are in the P5+1 agreement and some are unilateral with the IAEA.

This essay does not try to definitively answer the question of whether Iran has a nuclear weapons program today. Instead it tries to establish the history of how the arguing parties reached their current impasse, how the agreement was reached, and what must happen to satisfy the conditions of the agreement over its six-month projected life. This essay is also limited to the nuclear declaration side of the agreement and not to sanctions and financial aspects. That is a separate and much larger topic.

## **Very Brief History of Iran's Nuclear Efforts**

Iran began an ambitious nuclear program under the Shah of Iran. It was focused on an aggressive development of nuclear power to preserve Iran's considerable oil stocks for the future. These stocks presumably would increase in value as world oil supplies dwindled and Iran could also reserve oil stocks for petrochemical use instead of fuel. Western economists have argued that Iran was either naïve or dishonest in this process but it would be prudent to believe that Iran was serious, especially given that the United States was supportive of this program under the Shah and Germany agreed to build Iran's first nuclear power stations.

The Iranian revolution reversed these attitudes. Antagonism between the US and Iran, in particular, was greatly increased by the

---

<sup>1</sup> The P5 + 1 states are the permanent members of the Security Council, China, France, Russia, the United Kingdom and the United States, plus Germany.

hostage taking of US embassy personnel in 1979. By the time of the Iran-Iraq war of the 1980s it was readily apparent that Iraq had a large nuclear weapons development effort and this was confirmed by post-war inspections in Iraq in 1991. Iran had better intelligence on Iraq than western states and was clearly aware of the threat Iraq was developing. For a number of reasons it is clear that Iran had their own investigation of nuclear weapons in response to Iraq. Clearly engineers and physicists were investigating various aspects of a nuclear weapons program.

In 2002 a dissident group, the National Council of Resistance in Iran, NCRI, publicly revealed the existence of two very large construction projects in Iran. The first factory is located near Natanz. It was in early stages of construction but it was clearly a large underground factory, being built by cut-and-cover techniques on a flat site. It had very significant hardening against aerial attack with earth penetrating bombs. Clearly it was a strategic military facility of high value and importance. The second facility was a pairing of a heavy water separation plant, the size of a small oil refinery located near the town of Arak, and an adjacent construction site for a 40 MW (thermal) heavy water nuclear reactor.

Iran had not declared these projects to the IAEA. Legal scholars argue both sides of the question about whether Iran should have reported. When the NCRI revelations came out, Iran confirmed that Natanz was a uranium enrichment plant using gas centrifuge technology. They confirmed that Arak was a heavy water separation plant coupled with a 40 MW reactor that they claimed was to produce medical isotopes. The extreme security of Natanz was suspicious as was its size. Iran is receiving fuel from Russia for its only nuclear power reactors so enrichment for power is of questionable value, but enrichment could be used for weapons. The 40 MW reactor is very large for medical isotope purposes and it is located far from medical customers. It is still several years from completion even in 2014. But 40 MW heavy water reactors were the pathway to plutonium-based nuclear weapons in India, Israel and Pakistan and they are seen as one of the most dangerous and obvious pathways to nuclear proliferation.

For this reason, it is fair to say that any competent nuclear weapons proliferation analyst in 200(2) would have concluded that Iran had shown all the classical proliferation indicators of a program to produce fissile materials for nuclear weapons. The IAEA, which is an independent international organization reporting to the UN Security Council, has provided allegations that Iran also had engaged in research directly related to nuclear weapons development. In November 2011 the IAEA published a long list of indicators that Iran had engaged in nuclear weapons-related physics and engineering. The IAEA was unable to reveal the source of many of its allegations because the information came from member states that were protecting their

sources. But, significantly, the IAEA list shows that most indicators showed that Iran stopped actual nuclear weapons engineering development around 2004. This is congruent with a later United States intelligence estimate which concluded that Iran had interest in developing nuclear weapons but stopped in 2003.

Why would Iran stop? Candidly, the IAEA has little or no evidence of an Iranian program after 2003 because their largest cache of accusations comes from so-called laptop documents supplied by a member state in 2004. For the next ten year period the IAEA has failed to develop any significant new weapons-related information so it appears that Iran's nuclear materials and power efforts continue but any postulated weapons program goes silent. The US Intelligence community believes Iran had a weapons program but stopped around 2003. For technical reasons, Iran may have stopped because the momentum associated with construction eased and the enormous construction costs were booked along with payoffs. It may also have stopped after seeing the US attacks in Iraq based upon no evidence of a continuing Iraqi nuclear program. Shortly thereafter the US and British ended Gadhafi's nuclear program, a program aided by A Q Khan. This may also been a spur to Iran's decision to restrict its program to nuclear materials production.

#### **Developments after 2004**

Iran has pressed on with its nuclear materials production efforts. In December 2003 Iran signed the so-called Additional Protocol with the IAEA. This agreement allows the IAEA more access to Iran's nuclear facilities and gives the IAEA more latitude to ask questions about activities that might indicate nuclear materials production outside of Iran's declarations to IAEA. Under Iran's old agreements IAEA can only verify Iran's voluntary declarations. Under the Additional Protocol, the IAEA can look for signs of undeclared production of nuclear material. For two years Iran behaved as-if the Additional Protocol was in force, but the legislature did not ratify the agreement meaning compliance was completely voluntary. In any case, Iran felt the IAEA did not keep its side of the bargain and in February 2006 Iran stopped its voluntary compliance. This event has been characterized as a failure by Iran to comply with international agreements but it is not. Signing and ratifying the Additional Protocol is entirely voluntary and not compulsory. Iran was within its rights to cite IAEA failure to reciprocate and withdraw from voluntary compliance.

Is there historical precedence for this? One needs to look no further than the Swiss signature of the Nuclear Nonproliferation Treaty (NPT). Switzerland signed the NPT in 1969 and publicly stated that they would not ratify it until it suited the government, which proved to be 1977. During that time the Swiss operated a plutonium production reactor, Diorit, and did not ratify the signed treaty until Diorit stopped

producing plutonium. The Swiss did not develop reprocessing capacity so the plutonium was not available for weapons.

### **The Iranian View**

From Iran's point of view, a nuclear weapons investigation to counter an Iraqi threat makes perfect sense. It is consistent with any number of countries that were looking out for their own interests early in the nuclear weapons age. This includes several well-known developed European countries that pursued options including materials production and weapons R&D before stopping and signing/ratifying the NPT. In addition, one must consider the possibility that there are many actors within the Iranian government and that pursuit of nuclear weapons technology may not have been a sanctioned governmental goal. We need look no further than South Korea or South Africa to see documented cases of secondary organizations pursuing nuclear technology that was not in the government's best interest or main program. Many of the indicators of weapons research may fall into a gray area of unsanctioned research by universities or academics.

The large fissile materials production sites at Natanz, Arak and later Fordo near Qom are another matter. These are huge investments carried out initially in secret and of very questionable economic value in the eyes of the western states, including Israel. They show every sign of having been built and sized to support a weapons program originally. Since their initial disclosure, Iran has submitted all of these enrichment facilities to IAEA inspection. There have been no diversions of any materials to non-peaceful purposes according to the IAEA.

The likelihood is that these facilities represent huge investments in both money and national prestige. Huge amounts of construction, materials and high tech equipment are involved. The lead planning time was years and it is difficult to stop projects like this in midstream, especially in a centrally planned economy where thousands of jobs are at stake, and significant kickbacks and profits accrue to the planners and builders. It is probably impossible for Iran to stop these projects, and for reasons of stubbornness and national pride they will not stop them just to satisfy outside interests if at all possible.

### **Western Misconceptions**

On the other side of the coin there are strong voices wanting to shut down Iran's nuclear activities. Many of the parties demanding action against Iran are badly informed. They claim that Iran is not cooperating with the IAEA; that Iran is impeding inspections of its nuclear facilities. These claims do not universally hold up. There is a legal definition of nuclear facilities enshrined in the NPT and a legal definition of nuclear materials. Iran has declared a number of nuclear

facilities to the IAEA and permits inspections of all of them. They have gone beyond minimal compliance and allow surprise inspections of the enrichment facilities and in-plant monitoring of many parameters that would indicate if Iran tried to divert nuclear materials and hide them from the IAEA, or even openly flaunt the IAEA. In either case, the IAEA is probably able to spot any diversion within two weeks and notify the UN Security Council if necessary.

The complainants in the west have confused “nuclear facilities” with any other facility not bound by Iran’s legal obligations under the NPT. Some countries and pundits have demanded access to military bases, universities and individual Iranian citizens. Legally Iran does not have to comply with these requests. On a number of occasions Iran has allowed the IAEA to visit facilities that are outside the ones specified in its legal agreements. It is safe to say that Iran is totally dissatisfied with the performance and openness of the IAEA in these cases. Iran has been expecting the IAEA to clearly state what they were looking for and what they found. If the IAEA was mistaken in its quest for access then Iran expects a clear statement to that effect. This has not happened and Iran has hardened its stand against voluntary compliance beyond its legal obligations. Hence Iran believes that those in the west and Israel that claim Iran is not cooperating or impeding access to nuclear facilities are badly informed or even intentionally misleading the public.

### **What Does the Agreement Do?**

Iran is subject to several different sets of inspections and visits under the P5+1 and bilateral agreements.

#### **Normal Safeguards – Enhanced**

The agreement reinforces Iran’s unbroken commitment to submit its nuclear program to IAEA inspection. Iran and the IAEA will continue to cooperate in routine nuclear facility and materials safeguards under its agreements with IAEA. Iran has gone beyond minimum requirements and agreed to allow the IAEA up to daily access to the enrichment plants at Natanz and Fordo. This wholly unnecessary measure was demanded by the P5+1 and is of no significance to Iran and so Iran is accepting the request. Since the IAEA can reliably detect diversion within two weeks on a program with time scales of months the new requirement is simply costly. The P5+1 could have demanded twice daily or even hourly access and Iran could have agreed without any concern.

#### **New Accesses beyond Legal Safeguards Requested by P5+1**

The P5+1 have also demanded that Iran allow access to nuclear-related facilities that are not legally defined nuclear facilities and are not subject to IAEA inspections. These visits are not inspections since they are not legally necessary under the NPT. They are voluntary

compliance by Iran with the IAEA in additional areas where the activities are not defined as “nuclear” under the NPT but can provide significant transparency in understanding the scope of Iran’s entire nuclear program. They are legally termed “visits” because there is nothing to inspect under the NPT or data to verify against Iran’s voluntary declarations. A key facility for this agreement is the industrial infrastructure for manufacturing gas centrifuges for uranium enrichment. The IAEA had some access to these facilities during its early confrontational period in 2003 and 2004. Iran then declared the facilities non-nuclear, which is a correct legal description. Access to manufacturing facilities will allow the IAEA to better assess the scale of Iran’s capabilities, and the performance of individual machines. Since Iran has agreed to stop adding new centrifuges to its cascades this access is extremely useful to the IAEA.

#### **New Accesses beyond Legal Safeguards Agreed Bilaterally between IAEA and Iran**

Iran has also agreed to additional visits beyond the requirements of the NPT in concurrent but separate agreements with IAEA. These bilateral accesses specifically state that the IAEA can visit the uranium mine at Gchine and the Heavy Water Separation Plant at Arak. These two facilities are legally non-nuclear facilities and so access to them is voluntary on the part of Iran. This voluntary compliance will allow the IAEA to form a better overall assessment of Iran’s entire nuclear program and hence is quite useful. Other parts of the agreement are pure window-dressing. Iran has agreed to give the future location of all planned nuclear power plants for example. This obviously has no impact on the current inspection regime, is unrelated to weapons in any way, and concerns things that will not happen for decades. It is political theater.

#### **Assessment of “Possible Military Dimensions” (PMD)**

As mentioned earlier, the IAEA has accused Iran of many activities that might be in support of a nuclear explosives development program. The IAEA has been very vague in their accusations and has cast a broad net. Iran allowed IAEA access to the huge military factory at Parchin in 2005 and the IAEA found nothing there. Iran expected the IAEA to be more forthcoming about its reasons for inspection and its failure to find anything. Lacking that transparency on the part of IAEA, Iran has refused any further access to any military facilities or personnel beyond those involved in declared nuclear activities.

This failure has been seized upon by some as circumstantial evidence that Iran has something to hide. If, in fact, previous military site inspections had led to greater trust and transparency, Iran might have been willing to accept more. But, from Iran’s point of view, the derogatory information accusing it of illicit nuclear activities has come anonymously but clearly from its sworn enemies. Furthermore the activities that the IAEA is demanding to see are clearly outside any

requirement for the declaration of declared nuclear materials or facilities. Iran is applying a legalistic barrier in refusing such access. One caveat is clear. If Iran should be using surrogate nuclear materials, such as natural uranium in simulations of a nuclear bomb, the activity would have to be declared. But activities such as calculations or studies conducted by the government or even enterprising amateurs, fall outside the NPT.

Because the PMD are not mentioned by the P5+1 agreement, and weakly mentioned occasionally by IAEA officials, it would appear that this diversion is not on the table for any serious discussion.

### **Iran's Important Concessions**

Iran has made a number of concessions to the P5+1 in return for sanctions relief. They have agreed to stop introducing new gas centrifuges. They will continue to operate centrifuges but reduce the output enrichment to 5% or less. They will not install new machines, but only replace broken machines, hence the importance of the visits to centrifuge manufacturing workshops. Iran will be allowed to develop new improved centrifuges but not install them in operational cascades.

By far the most convincing concession is the dilution of all 20% enriched uranium down to 5% enrichment. This act irreversibly destroys all of the higher enrichment that has taken place to date. Of course the material can be turned back into hexafluoride and re-enriched, but this is equivalent to all the work of the last few years being re-done. Is this significant? The United States has just finished a multi-billion dollar program to dilute Russian highly enriched uranium down to power reactor fuel levels. This is correctly hailed as a huge arms control success. It is equally true that destroying thousands of separative work units in Iran is also a huge successful outcome of the P5+1 initiative.

Iran has also agreed to stop most work on its Arak 40 MW heavy water reactor. This gift should be taken with a grain of salt. Increasingly the Arak is seen as a white elephant that is consuming huge amounts of capital for little civil purpose. In particular, Iran has failed to successfully make any new fuel elements for the reactor in over half a year, probably because the zirconium seamless tube plant is not functioning properly. It may well be that Iran's concessions on Arak come with no setback for them since the project seems to be foundering anyway. Hopefully the IAEA will visit the non-nuclear zirconium tube plant to establish whether this choke point facility is actually operational or if the concessions on Arak were for this reason. In addition, Iran has suggested converting Arak to a light water reactor which will then require enriched fuel, a significant new justification for continued enrichment.

## **Summary**

It is abundantly clear that Iran has had an interest in nuclear weapons since the 1990s when it was directly threatened by Iraq. Indications of such interest date from this period and are confirmed by investigations made by many states around the world. The huge investment in capital facilities at Natanz and Arak shows a government commitment to major spending that in the planning years, around 2000, could very well indicate a serious government commitment to the program. Other indicators of “weapons-related research” could well be indicators of players outside of government programs. And the continuation of multi-million dollar contracts for construction may have more to do with the profits to be made by contractors and the government’s cronies than on a continuing commitment to weapons work.

If Iran has given up a serious weapons program, then continued resistance to western pressure may be driven by national pride. Iran may well aspire to becoming a threshold state, knowledgeable about nuclear weapons but not building them. This may be unpalatable to some, but in the absence of any international legal framework to prevent Iran from doing so, this is the status quo. The P5+1 and the IAEA are becoming more realistic about their objectives in inspecting Iran from a legal basis and are turning their efforts to doing the existing legal job as well as possible. Iran has made a huge concession in diluting its 20% enriched material and has made many other transparency concessions. Many of the recent gestures were apparently made in good faith. This would be a good time to let the agreement run for six months and see who is being more transparent and cooperative.