IAEA
Atoms for Peace

Derestricted 27 November 2009
(This document has been derestricted at the meeting of the Board on 27 November 2009)

Board of Governors

GOV/2009/74
Date: 16 November 2009

Original: English

For official use only

Implementation of the NPT Safeguards Agreement and relevant provisions of Security Council resolutions 1737 (2006), 1747 (2007), 1803 (2008) and 1835 (2008) in the Islamic Republic of Iran

Report by the Director General

1. On 28 August 2009, the Director General reported to the Board of Governors on the implementation of the NPT Safeguards Agreement and relevant provisions of Security Council resolutions 1737 (2006), 1747 (2007), 1803 (2008) and 1835 (2008) in the Islamic Republic of Iran (Iran) (GOV/2009/35). This report covers relevant developments since that date.

A. Current Enrichment Related Activities

A.1. Natanz: FEP and PFEP

2. On 2 November 2009, Iran was feeding UF_6 into the 18 cascades of Unit A24, and 6 cascades of Unit A26, at the Fuel Enrichment Plant (FEP) at Natanz.[1] On that day, the other 12 cascades of Unit A26 were under vacuum. Iran has continued with the installation of cascades at Unit A28; as of 2 November 2009, 17 cascades had been installed and the installation of another cascade was continuing.[2] All machines installed to date are IR-1 centrifuges with 164 machines per cascade. Installation work at Units A25 and A27 is also continuing.

---

[1] There are two cascade halls planned at FEP: Production Hall A and Production Hall B. According to the design information submitted by Iran, eight units (Units A21 to A28) are planned for Production Hall A (GOV/2008/38, para. 2).

[2] On 2 November 2009, 3936 centrifuges were being fed with UF_6 and an additional 4756 centrifuges had been installed.

3. Iran has estimated that, between 18 November 2008 and 30 October 2009, 10395 kg of UF_6 was fed into the cascades and a total of 924 kg of low enriched UF_6 was produced[3], which would result in a total production of 1763 kg of low enriched UF_6 since the start-up of FEP. The nuclear material at FEP (including the feed, product and tails), as well as all installed cascades and the feed and withdrawal stations, are subject to Agency containment and surveillance.[4]

4. The next physical inventory verification (PIV) at FEP is scheduled for 22 to 30 November 2009. As previously indicated to the Board, at that time, the Agency will verify the inventory of nuclear material at the facility and evaluate the nuclear material balance.[5]

5. Between 14 August and 27 October 2009, a total of approximately 53 kg of UF_6 was fed into a 10-machine IR-2m cascade and single IR-1, IR-2m and IR-4 centrifuges at the Pilot Fuel Enrichment Plant (PFEP). The nuclear material at the PFEP, as well as the cascade area and the feed and withdrawal stations, remain subject to Agency containment and surveillance.[4] The Agency is currently evaluating the results of the PIV it conducted at PFEP between 14 and 16 September 2009.

6. The results of the environmental samples taken at FEP and PFEP indicate that the declared maximum enrichment level (i.e. less than 5.0% U-235 enrichment) has not been exceeded at either plant.[6] Since the last report, the Agency has conducted two unannounced inspections at FEP, for a total of 31 since March 2007.

A.2. Qom: Fordow Fuel Enrichment Plant

7. In a letter to the Director General dated 21 September 2009, Iran informed the Agency that "Based on [its] sovereign right of safeguarding … sensitive nuclear facilities through various means such as utilization of passive defense systems … [Iran] has decided to construct a new pilot fuel enrichment plant (up to 5% enrichment)". Iran stated that the required infrastructure for the plant had been established and that the plant was under construction. In a letter dated 25 September 2009, the Agency requested Iran to provide further information on the current status of its construction and Iran's plans for the introduction of nuclear material into the facility. The Agency also requested that Iran submit a detailed Design Information Questionnaire (DIQ) and provide access to the facility as soon as possible.

8. During a meeting with the Director General in Tehran on 4 October 2009, Iran agreed to provide the Agency with access to the Fordow Fuel Enrichment Plant (FFEP). Under cover of a letter to the Agency dated 18 October 2009, Iran also submitted a preliminary DIQ for FFEP.

9. On 26 and 27 October 2009, the Agency carried out design information verification (DIV) at FFEP, which is located about 20 km north of the city of Qom. The Agency also held two meetings in

---

[3] The Agency has verified that, as of 17 November 2008, 9956 kg of UF_6 had been fed into the cascades and 839 kg of low enriched UF_6 had been produced since the beginning of operations in February 2007 (GOV/2009/8, para. 3). The Agency has confirmed, through independently calibrated operator load cell readings, that, between 18 November 2008 and 30 October 2009, 10412 kg of UF_6 was fed into the cascades, and a total of 814 kg of low enriched UF_6 product and 9080 kg of UF_6 tails and dump material was off-loaded into UF_6 cylinders. The difference of 518 kg between the input and output figures comprises natural, depleted and low enriched UF_6 arising mainly from hold-up in the various cold traps and is not inconsistent with the design information provided by Iran.

[4] In line with normal safeguards practice, small amounts of nuclear material at the facility (e.g. some waste and samples) are not under containment and surveillance.

[5] GOV/2009/55, para. 4.

[6] Results are available for samples taken up to 12 August 2009 for FEP and up to 15 August 2009 for PFEP. These results have shown particles of low enriched uranium (with up to 4.4% U-235 enrichment), natural uranium and depleted uranium (down to 0.37% U-235 enrichment).

Tehran, on 25 and 28 October 2009, to review the DIQ and to discuss the chronology of the design and construction of FFEP as well as its status and purpose. The Agency verified that FFEP was being built to contain sixteen cascades with a total of approximately 3000 centrifuges. Iran indicated that it currently planned to install only IR-1 centrifuges at FFEP, but that the facility could be reconfigured to contain centrifuges of more advanced types should Iran take a decision to use such centrifuges in the future. Iran stated that some of the equipment located at FFEP had come from the Natanz site, and that the Natanz site would provide functional support to FFEP, such as centrifuge assembly and decontamination of equipment. Iran also stated that no nuclear material had been introduced into FFEP.

10. The DIV included a detailed visual examination of all areas of the plant, the taking of photographs of cascade piping and other process equipment, the taking of environmental samples and a detailed assessment of the design, configuration and capacity of the various plant components and systems. Iran provided access to all areas of the facility. The Agency confirmed that the plant corresponded with the design information provided by Iran and that the facility was at an advanced stage of construction, although no centrifuges had been introduced into the facility. Centrifuge mounting pads, header and sub-header pipes, water piping, electrical cables and cabinets had been put in place but were not yet connected; the passivation tanks, chemical traps, cold traps and cool boxes were also in place but had not been connected. In addition, a utilities building containing electricity transformers and water chillers had also been erected.

11. During the meeting in Tehran on 25 October 2009, the Agency provided comments on the preliminary DIQ submitted by Iran, and requested that a revised preliminary DIQ be submitted with additional information, which Iran did in the course of the later meeting on 28 October. Iran informed the Agency that it would provide further information required in the DIQ as the facility is developed. The Agency informed Iran that, in accordance with its Safeguards Agreement, FFEP will henceforth be subject to regular DIV by the Agency. The next DIV is scheduled for the end of November 2009.

12. Iran explained that the Fordow site had been allocated to the Atomic Energy Organization of Iran (AEOI) in the second half of 2007, and that that was when the construction of FFEP had started. Iran subsequently confirmed that explanation in a letter dated 28 October 2009. In that letter, Iran stated that:

> "As a result of the augmentation of the threats of military attacks against Iran, the Islamic Republic of Iran decided to establish contingency centers for various organizations and activities …
>
> "The Natanz Enrichment Plant was among the targets threatened with military attacks. Therefore, the Atomic Energy Organization requested the Passive Defence Organization to allocate one of those aforementioned centers for the purpose of [a] contingency enrichment plant, so that the enrichment activities shall not be suspended in the case of any military attack. In this respect, the Fordow site, being one of those constructed and prepared centers, [was] allocated to the Atomic Energy Organization of Iran (AEOI) in the second half of 2007. The construction of the Fordow Fuel Enrichment Plant then started. The construction is still ongoing. Thus the plant is not yet ready for operation and it is planned to be operational in 2011."

13. During the meetings, the Agency informed Iran that it had acquired commercially available satellite imagery of the site indicating that there had been construction at the site between 2002 and 2004, and that construction activities were resumed in 2006 and had continued to date. The Agency also referred to the extensive information given to the Agency by a number of Member States detailing

the design of the facility, which was consistent with the design as verified by the Agency during the DIV. The Agency also informed Iran that these Member States alleged that design work on the facility had started in 2006.

14. The Agency further indicated that it still had questions about the purpose for which the facility had been intended and how it fit into Iran's nuclear programme. The Agency also indicated that Iran's declaration of the new facility reduces the level of confidence in the absence of other nuclear facilities under construction and gives rise to questions about whether there were any other nuclear facilities in Iran which had not been declared to the Agency.

15. In light of the above, the Agency requested access to the FFEP project manager and those responsible for the design of FFEP, along with access to original design documentation, such as engineering drawings, with a view to confirming Iran's statements regarding the chronology and purpose of the facility.

16. Iran stated that it did not have any other nuclear facilities that were currently under construction or in operation that had not yet been declared to the Agency. Iran also stated that any such future facilities would "be reported to the Agency according to Iran's obligations to the Agency". In a letter dated 6 November 2009, the Agency asked Iran to confirm that it had not taken a decision to construct, or to authorize construction of, any other nuclear facility which had not been declared to the Agency.

17. For reasons set out in previous reports to the Board of Governors, Iran remains bound by the revised Code 3.1 of the Subsidiary Arrangements General Part to which it had agreed in 2003,[7] which requires that the Agency be provided with preliminary design information about a new nuclear facility as soon as the decision to construct or to authorize construction of the facility is taken. The revised Code 3.1 also requires that Iran provide the Agency with further design information as the design is developed early in the project definition, preliminary design, construction and commissioning phases.[8] Even if, as stated by Iran, the decision to construct the new facility at the Fordow site was taken in the second half of 2007, Iran's failure to notify the Agency of the new facility until September 2009 was inconsistent with its obligations under the Subsidiary Arrangements to its Safeguards Agreement.

B. Reprocessing Activities

18. The Agency has continued to monitor the use and construction of hot cells at the Tehran Research Reactor (TRR) and the Molybdenum, Iodine and Xenon Radioisotope Production (MIX) Facility. The Agency carried out a DIV at TRR on 19 August 2009 and on 9 November 2009 at the MIX Facility. There were no indications of ongoing reprocessing related activities at those facilities. While Iran has stated that there have been no reprocessing related R&D activities in Iran, the Agency can confirm this only with respect to these two facilities, as the measures of the Additional Protocol are not currently available to it for Iran.

---

[7] GOV/2009/55, para. 14; GOV/2008/59, para. 9; GOV/2007/22, paras 12–14.

[8] GOV/2003/40, paras 6, 15.

C. Heavy Water Reactor Related Projects

19. The Agency has reviewed the updated DIQ for the Fuel Manufacturing Plant (FMP) at Esfahan provided by Iran on 21 August 2009 (GOV/2009/55, para. 9). Contrary to what was requested in the Agency's letter of 19 June 2009, the updated DIQ did not contain information on the design features of the IR-40 fuel assembly. The Agency provided comments on the DIQ to Iran on 5 November 2009, reiterating its request that Iran include the fuel assembly information.

20. The Agency has finalized its assessment of the results of the physical inventory verification (PIV) carried out at FMP in August 2009 (GOV/2009/55, para. 10), and has concluded that the inventory of nuclear material at FMP as declared by Iran is consistent with those results, within the measurement uncertainties normally associated with fabrication plants of similar throughput. On 24 October 2009, the Agency carried out a DIV at FMP. It confirmed that the status of the facility had remained unchanged and that no further assemblies, rods or pellets have been produced.

21. On 7 November 2009, the Agency carried out a DIV at the IR-40 reactor at Arak. The Agency verified that the construction of the facility was ongoing. The Agency has continued using satellite imagery to monitor the status of the Heavy Water Production Plant, which seems not to have been operating since the last report.

22. On 25 October 2009, during the DIV at the Uranium Conversion Facility (UCF) at Esfahan, the Agency observed 600 50-litre drums said by Iran to contain heavy water. In a letter dated 10 November 2009, the Agency asked Iran to confirm the number of drums and their contents, and to provide information on the origin of the heavy water.

D. Other Implementation Issues

D.1. Uranium Conversion

23. In a letter dated 16 October 2009, the Agency requested Iran to provide information regarding the layout, equipment and installation schedule for an analytical laboratory which, in the updated DIQ for UCF submitted in August 2009, Iran had indicated would be installed in an underground location in one of the UCF storage areas.

24. On 25 October 2009, the Agency carried out a DIV at UCF. At that time, the plant was undergoing maintenance. No UF_6 has been produced since 10 August 2009. The total amount of uranium in the form of UF_6 produced at UCF since March 2004 therefore remains 366 tonnes, some of which was transferred to the FEP and PFEP, and which remains subject to Agency containment and surveillance (GOV/2009/55, para. 12). Between 11 August 2009 and 25 October 2009, 92 samples of ammonium diuranate (ADU) containing about a kilogram of uranium were received at UCF from the Bandar Abbas Uranium Production Plant.

D.2. Design Information

25. Iran has not yet resumed the implementation of the revised Code 3.1 of the Subsidiary Arrangements General Part on the early provision of design information, and remains the only State with significant nuclear activities which has a comprehensive safeguards agreement in force but is not implementing the provisions of the revised Code 3.1. It is important to note that the absence of such early information reduces the time available for the Agency to plan the necessary safeguards

arrangements, especially for new facilities, and reduces the level of confidence in the absence of other nuclear facilities under construction, as indicated above.

26. In December 2007, the Agency requested preliminary design information for the nuclear power plant to be built in Darkhovin (GOV/2008/38, para. 11). In a letter dated 22 September 2009, Iran provided the Agency with preliminary design information for the plant, citing, as it had in its letter of 21 September 2009 concerning FFEP, its desire to cooperate rather than a legal obligation. In the preliminary design information, the Darkhovin plant is described as a 360 MWe pressurized water reactor, the construction of which is scheduled to start in 2011, with commissioning to take place in 2015. The Agency has examined the design information and has requested Iran to provide additional clarifications regarding, inter alia, the design of the fuel assemblies and the facility layout.

27. For reasons set out in previous Board reports,[9] the Agency is of the view that the revised Code 3.1 remains in force for Iran. Thus, as indicated above concerning the late submission of design information for FFEP, Iran's failure to submit design information for the Darkhovin facility until September of this year was inconsistent with its obligations under the Subsidiary Arrangements to its Safeguards Agreement.

D.3. Other Matters

28. A PIV at the Bushehr Nuclear Power Plant is planned for 17 November 2009.

29. On 23 September 2009, the Agency performed a DIV at the Uranium Chemical Laboratory at Esfahan, and was able to confirm the decommissioned status of the facility (GOV/2009/55, para. 17).

30. Based on satellite imagery and supporting documentation relevant to the ADU samples received at UCF (see para. 23 above), the Agency assesses that uranium recovery activities are continuing in the area of the Bandar Abbas Uranium Production Plant.

E. Possible Military Dimensions

31. As detailed in the Director General's previous reports to the Board (most recently in GOV/2009/55, para. 18), there remain a number of outstanding issues which give rise to concerns, and which need to be clarified to exclude the existence of possible military dimensions to Iran's nuclear programme. As indicated in those reports, for the Agency to be able to address these concerns and make progress in its efforts to provide assurance about the absence of undeclared nuclear material and activities in Iran, it is essential that Iran, inter alia, implement the Additional Protocol and provide the information and access necessary to: resolve questions related to the alleged studies; clarify the circumstances of the acquisition of the uranium metal document; clarify procurement and R&D activities of military related institutes and companies that could be nuclear related; and clarify the production of nuclear related equipment and components by companies belonging to defence industries.

32. The Agency is still awaiting a reply from Iran to its request to meet relevant Iranian authorities in connection with these issues.[10] The Agency is also still awaiting Iran's response to the Agency's repeated requests for access to persons, information and locations identified in the alleged studies

---

[9] GOV/2009/55, para. 14; GOV/2008/59, para. 9; GOV/2007/22, paras 12–14.
[10] GOV/2009/55, paras 24, 28.

documents in order to verify Iran's assertion that these documents are false and fabricated. Further analysis of the information available to the Agency underscores the importance of Iran engaging with the Agency in a substantive and comprehensive manner, and providing the requested access, so that the remaining outstanding issues may be resolved. In this context, it would be helpful if Member States which have provided documentation to the Agency would agree to share more of that documentation with Iran, as appropriate.

F. Summary

33. The Agency continues to verify the non-diversion of declared nuclear material in Iran. While Iran recently submitted preliminary design information on the Darkhovin reactor, it continues to assert that it is not bound by the revised Code 3.1 of the Subsidiary Arrangements General Part to which it agreed in 2003, and which it ceased to implement in March 2007.

34. Iran has informed the Agency about the construction of a new pilot enrichment plant at Qom, FFEP. Iran's failure to inform the Agency, in accordance with the provisions of the revised Code 3.1, of the decision to construct, or to authorize construction of, a new facility as soon as such a decision is taken, and to submit information as the design is developed, is inconsistent with its obligations under the Subsidiary Arrangements to its Safeguards Agreement. Moreover, Iran's delay in submitting such information to the Agency does not contribute to the building of confidence. While the Agency has confirmed that the plant corresponds to the design information provided by Iran, Iran's explanation about the purpose of the facility and the chronology of its design and construction requires further clarification.

35. Iran has not suspended its enrichment related activities or its work on heavy water related projects as required by the Security Council.

36. Contrary to the request of the Board of Governors and the requirements of the Security Council, Iran has neither implemented the Additional Protocol nor cooperated with the Agency in connection with the remaining issues of concern, which need to be clarified to exclude the possibility of military dimensions to Iran's nuclear programme. It is now well over a year since the Agency was last able to engage Iran in discussions about these outstanding issues. Unless Iran implements the Additional Protocol and, through substantive dialogue, clarifies the outstanding issues to the satisfaction of the Agency, the Agency will not be in a position to provide credible assurance about the absence of undeclared nuclear material and activities in Iran.

37. The Director General will continue to report as appropriate.