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Implementation of the NPT Safeguards Agreement and relevant provisions of Security Council resolutions in the Islamic Republic of Iran

Report by the Director General

A. Introduction

1. This report of the Director General to the Board of Governors and, in parallel, to the Security Council, is on the implementation of the NPT Safeguards Agreement[1] and relevant provisions of Security Council resolutions in the Islamic Republic of Iran (Iran).

2. The Security Council has affirmed that the steps required by the Board of Governors in its resolutions[2] are binding on Iran.[3] The relevant provisions of the aforementioned Security Council resolutions were adopted under Chapter VII of the United Nations Charter, and are mandatory, in accordance with the terms of those resolutions.[4]

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[1] The Agreement between Iran and the Agency for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons (INFCIRC/214), which entered into force on 15 May 1974.

[2] The Board of Governors has adopted ten resolutions in connection with the implementation of safeguards in Iran: GOV/2003/69 (12 September 2003); GOV/2003/81 (26 November 2003); GOV/2004/21 (13 March 2004); GOV/2004/49 (18 June 2004); GOV/2004/79 (18 September 2004); GOV/2004/90 (29 November 2004); GOV/2005/64 (11 August 2005); GOV/2005/77 (24 September 2005); GOV/2006/14 (4 February 2006); and GOV/2009/82 (27 November 2009).

[3] In resolution 1929 (2010), the Security Council: affirmed, inter alia, that Iran shall, without further delay, take the steps required by the Board in GOV/2006/14 and GOV/2009/82; reaffirmed Iran's obligation to cooperate fully with the IAEA on all outstanding issues, particularly those which give rise to concerns about the possible military dimensions of the Iranian nuclear programme; decided that Iran shall, without delay, comply fully and without qualification with its Safeguards Agreement, including through the application of modified Code 3.1 of the Subsidiary Arrangements; and called upon Iran to act strictly in accordance with the provisions of its Additional Protocol and to ratify it promptly (operative paras 1–6).

[4] The United Nations Security Council has adopted the following resolutions on Iran: 1696 (2006); 1737 (2006); 1747 (2007); 1803 (2008); 1835 (2008); and 1929 (2010).

3. By virtue of its Relationship Agreement with the United Nations,[5] the Agency is required to cooperate with the Security Council in the exercise of the Council's responsibility for the maintenance or restoration of international peace and security. All Members of the United Nations agree to accept and carry out the decisions of the Security Council,[6] and in this respect, to take actions which are consistent with their obligations under the United Nations Charter.

4. In meetings held in Vienna on 21 June 2011 and on 12 July 2011, the Director General discussed issues related to the implementation of Iran's Safeguards Agreement and other relevant obligations with H.E. Dr Fereydoun Abbasi, Vice President of Iran and Head of the Atomic Energy Organization of Iran (AEOI), and H.E. Dr Ali Akbar Salehi, the Iranian Minister for Foreign Affairs, respectively.

5. In response to an invitation from Iran, the Deputy Director General for Safeguards visited Iran from 14 to 19 August 2011. During his visit, the Deputy Director General visited the Bushehr Nuclear Power Plant, the enrichment plants at Natanz and Fordow, the IR-40 Reactor and Heavy Water Production Plant (HWPP) at Arak, and the conversion and fuel fabrication facilities at Esfahan. Iran also provided access to an installation where research and development (R&D) on advanced centrifuges was taking place. During his visit, the Deputy Director General also held meetings with Dr Abbasi.

6. This report addresses developments since the last report (GOV/2011/29, 24 May 2011), as well as issues of longer standing. It focuses on those areas where Iran has not fully implemented its binding obligations, as the full implementation of these obligations is needed to establish international confidence in the exclusively peaceful nature of Iran's nuclear programme.

B. Facilities Declared under Iran's Safeguards Agreement

7. Under its Safeguards Agreement, Iran has declared to the Agency 15 nuclear facilities[7] and nine locations outside facilities where nuclear material is customarily used (LOFs).[8] Notwithstanding that certain of the activities being undertaken by Iran at some of the facilities are contrary to relevant resolutions of the Board of Governors and the Security Council, as indicated below, the Agency continues to verify the non-diversion of declared nuclear material at these facilities and LOFs.

C. Enrichment Related Activities

8. Contrary to the relevant resolutions of the Board of Governors and the Security Council, Iran has not suspended its enrichment related activities in the following declared facilities, all of which are nevertheless under Agency safeguards.

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[5] The Agreement Governing the Relationship between the United Nations and the IAEA entered into force on 14 November 1957, following approval by the General Conference, upon recommendation of the Board of Governors, and approval by the General Assembly of the United Nations. It is reproduced in INFCIRC/11 (30 October 1959), Part I.A.

[6] The Charter of the United Nations, Article 25.

[7] Since the previous report, the Agency has verified and confirmed the decommissioned status of the Fuel Fabrication Laboratory at Esfahan.

[8] All of the LOFs are situated within hospitals.

C.1. Natanz: Fuel Enrichment Plant and Pilot Fuel Enrichment Plant

9. **Fuel Enrichment Plant (FEP):** There are two cascade halls at FEP: Production Hall A and Production Hall B. According to the design information submitted by Iran, eight units are planned for Production Hall A, with 18 cascades in each unit. No detailed design information has yet been provided for Production Hall B.

10. On 28 August 2011, 53 cascades were installed in three of the eight units in Production Hall A, 35 of which were declared by Iran as being fed with UF_6.[9] Whereas initially each installed cascade comprised 164 centrifuges, Iran has subsequently modified 12 of the cascades to contain 174 centrifuges each. To date, all the centrifuges installed are IR-1 machines. As of 28 August 2011, installation work in the remaining five units was ongoing, but no centrifuges had been installed, and there had been no installation work in Production Hall B.

11. Iran has estimated that, between 18 October 2010 and 13 August 2011, it produced 1408 kg of low enriched UF_6, which would result in a total production of 4543 kg of low enriched UF_6 since February 2007.[10] 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.[11] The consequences for safeguards of the seal breakage in the feed and withdrawal area, referred to in the previous report,[12] will be evaluated by the Agency upon completion of the next Physical Inventory Verification (PIV), currently envisaged for October 2011.

12. Based on the results of the analysis of environmental samples taken at FEP since February 2007[13] and other verification activities, the Agency has concluded that the facility has operated as declared by Iran in the Design Information Questionnaire (DIQ).

13. **Pilot Fuel Enrichment Plant (PFEP):** PFEP is an R&D facility and a pilot low enriched uranium (LEU) production facility, which was first brought into operation in October 2003. It has a cascade hall that can accommodate six cascades, and is divided between an area designated for the production of LEU enriched up to 20% U-235 and an area designated for R&D.

14. In the production area, Iran first began feeding low enriched UF_6 into Cascade 1 on 9 February 2010, for the stated purpose of producing UF_6 enriched up to 20% U-235 for use in the manufacture of fuel for the Tehran Research Reactor (TRR).[14,15] Since 13 July 2010, Iran has been feeding low enriched UF_6 into two interconnected cascades (Cascades 1 and 6), each of which consists of 164 IR-1 centrifuges.[16]

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[9] The 53 installed cascades contained approximately 8000 centrifuges; the 35 cascades declared by Iran as being fed with UF_6 on that date contained 5860 centrifuges. Not all of the centrifuges in the cascades that were being fed with UF_6 may have been working.

[10] The Agency previously verified that, as of 17 October 2010, a total of 3135 kg of low enriched UF_6 had been produced since the start of operations in February 2007 (GOV/2011/29, para. 9).

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

[12] GOV/2011/29, para. 10.

[13] Results are available to the Agency for samples taken up to 1 February 2011.

[14] GOV/2010/28, para. 9.

[15] TRR is a 5 MW reactor which operates with 20% U-235 enriched fuel and is used for the irradiation of different types of targets and for research and training purposes.

[16] GOV/2010/28, para. 9.

15. Since the last report, Iran has continued to work on improving its measurement system, especially through the implementation of an improved weighing system and better sampling procedures, which is expected to result in a more accurate determination of the level of U-235 enrichment.[17]

16. Iran has estimated that, between 19 September 2010 and 20 August 2011, a total of 320.5 kg of UF_6 enriched at FEP was fed into the two interconnected cascades and that approximately 45.7 kg of UF_6 enriched up to 20% U-235 was produced. This would result in a total of approximately 70.8 kg of UF_6 enriched up to 20% U-235 having been produced since the process began in February 2010.

17. In the R&D area, between 22 May 2011 and 20 August 2011, a total of approximately 170.1 kg of natural UF_6 was fed into centrifuges, but no LEU was withdrawn as the product and the tails are recombined at the end of the process.

18. As of 28 August 2011, Iran had installed 136 IR-2m centrifuges in Cascade 5.[18] As the Agency had been informed by Iran in a letter dated 22 June 2011, Iran started feeding 54 of the IR-2m centrifuges with natural UF_6. Since the last report, Iran has installed 27 IR-4 centrifuges in Cascade 4, none of which, as of 28 August 2011, had been fed with natural UF_6.

19. Based on the results of the analysis of the environmental samples taken at PFEP[19] and other verification activities, the Agency has concluded that the facility has operated as declared by Iran in the DIQ.

C.2. Fordow Fuel Enrichment Plant

20. In September 2009, Iran informed the Agency that it was constructing the Fordow Fuel Enrichment Plant (FFEP), located near the city of Qom. In its DIQ of 10 October 2009, Iran stated that the purpose of the facility was the production of UF_6 enriched up to 5% U-235, and that the facility was being built to contain 16 cascades, with a total of approximately 3000 centrifuges.[20]

21. In September 2010, Iran provided the Agency with a revised DIQ in which it stated that the purpose of FFEP was to include R&D as well as the production of UF_6 enriched up to 5% U-235.

22. On 8 June 2011, it was reported that Iran had decided to "transfer the 20-percent-uranium enrichment… to the Fordow plant" and would "triple its (production) capacity", after which Iran would stop the "20% fuel production" at Natanz.[21] On 9 June 2011, the Agency received a letter from Iran informing the Agency of Iran's decision to produce UF_6 enriched up to 20% U-235 at FFEP.

23. On 25 June 2011, Iran provided the Agency with another revised DIQ in which the stated purpose of FFEP, as well as R&D, was the production of UF_6 enriched up to 20% U-235, and that initially this production would take place within two sets of two interconnected cascades. Each of these cascades will consist of 174 centrifuges.

24. In a letter dated 27 July 2011, Iran provided answers to a number of technical questions from the Agency relating to this revised DIQ, and provided another revised DIQ.

25. On 7 August 2011, the Agency and Iran agreed on a safeguards approach for FFEP. As of 20 August 2011, Iran had installed one of the cascades designated in the DIQ for the production of UF_6 enriched up to 20% U-235.

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[17] GOV/2011/29, para. 14.

[18] Iran had previously indicated its intention to install two 164-centrifuge cascades (Cascades 4 and 5) in the R&D area (GOV/2011/7, para. 17).

[19] Results are available to the Agency for samples taken up to 1 January 2011.

[20] GOV/2009/74, para. 9.

[21] Dr Fereydoun Abbasi, 'Iran to Triple Production of 20%-Enriched Uranium', Fars News Agency, 8 June 2011.

26. The Agency continues to verify that FFEP is being constructed according to the latest DIQ provided by Iran. Since the last report, Iran has provided some clarification regarding the initial timing of, and circumstances relating to, its decision to build FFEP at an existing defence establishment. Additional information from Iran is still needed in connection with this facility.

27. The results of the analysis of the environmental samples taken at FFEP up to 29 December 2010 did not indicate the presence of enriched uranium.[22]

C.3. Other Enrichment Related Activities

28. The Agency is still awaiting a substantive response from Iran to Agency requests for further information in relation to announcements made by Iran concerning the construction of ten new uranium enrichment facilities, the sites for five of which, according to Iran, have been decided, and the construction of one of which was to have begun by the end of the last Iranian year (20 March 2011) or the start of this Iranian year.[23,24] To date, the Agency has no information as to whether that construction has started. Iran has not provided information, as requested by the Agency in its letter of 18 August 2010, in connection with its announcement on 7 February 2010 that it possessed laser enrichment technology.[25] As a result of Iran's lack of cooperation on those issues, the Agency is unable to verify and to report fully on these matters.

29. On 18 August 2011, in response to Agency requests, Iran provided the Agency access to an installation where R&D on advanced centrifuges was taking place. During the Agency's visit, Iran provided extensive information on its current and future R&D work on advanced centrifuges.

D. Reprocessing Activities

30. Pursuant to the relevant resolutions of the Board of Governors and the Security Council, Iran is obliged to suspend its reprocessing activities, including R&D.[26] In a letter to the Agency dated 15 February 2008, Iran stated that it "does not have reprocessing activities". In that context, the Agency has continued to monitor the use of hot cells at TRR and the Molybdenum, Iodine and Xenon Radioisotope Production (MIX) Facility.[27] On 17 August 2011, the Agency carried out a PIV and a design information verification (DIV) at TRR, and a DIV at the MIX Facility. It is only with respect to TRR, the MIX Facility and the other facilities to which the Agency has access, that the Agency can confirm that there are no ongoing reprocessing related activities in Iran.

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[22] The results did show a small number of particles of depleted uranium (GOV/2010/10, para. 17).

[23] 'Iran Specifies Location for 10 New Enrichment Sites', Fars News Agency, 16 August 2010.

[24] GOV/2010/46, para. 33.

[25] Cited on the website of the Presidency of the Islamic Republic of Iran, 7 February 2010, at http://www.president.ir/en/?ArtID=20255.

[26] S/RES/1696 (2006), para. 2; S/RES/1737 (2006), para. 2; S/RES/1747 (2007), para. 1; S/RES/1803 (2008), para. 1; S/RES/1835 (2008), para. 4; S/RES/1929 (2010), para. 2.

[27] The MIX Facility is a hot cell complex for the separation of radiopharmaceutical isotopes from targets, including uranium, irradiated at TRR. The MIX Facility is not currently processing any uranium targets.

E. Heavy Water Related Projects

31. Contrary to the relevant resolutions of the Board of Governors and the Security Council, Iran has not suspended work on all heavy water related projects, including the construction of the heavy water moderated research reactor, the IR-40 Reactor, which is subject to Agency safeguards.[28]

32. On 9 August 2011, the Agency carried out a DIV at the IR-40 Reactor and observed that construction of the facility was ongoing, the moderator heat exchangers had been installed and the coolant heat exchangers had been delivered to the site. According to Iran, the operation of the IR-40 Reactor is planned to commence by the end of 2013.

33. On 17 August 2011, during its first visit to the HWPP since 2005, the Agency observed that the HWPP was operating. During the visit, Iran told the Agency that it had produced approximately 60 tons of heavy water at HWPP. To date, Iran has not provided the Agency access to the heavy water stored at the Uranium Conversion Facility (UCF) in order to take samples.[29]

F. Uranium Conversion and Fuel Fabrication

34. Although it is obliged to suspend all enrichment related activities and heavy water related projects, Iran is conducting a number of activities at UCF and the Fuel Manufacturing Plant (FMP) at Esfahan, as described below, that are in contravention of those obligations, notwithstanding that both facilities are under Agency safeguards.

35. The Agency has finalized its assessment of the results of the PIV carried out at UCF in March 2011 (GOV/2011/29, para. 30), and has concluded that the inventory of nuclear material at UCF as declared by Iran is consistent with those results, within the measurement uncertainties normally associated with conversion plants of similar throughput.

36. In a letter dated 15 June 2011, Iran provided the Agency with an updated schedule for the operation of UCF. According to the schedule, the production of natural UO_2 would commence on 23 July 2011 and the tests for the conversion of UF_6 enriched up to 20% U-235 into U_3O_8 on 23 August 2011. In a letter dated 20 July 2011, Iran informed the Agency that on 23 October 2011 it would restart the production of natural UF_6, involving the use of uranium ore concentrate (UOC) produced at the Bandar Abbas Uranium Production Plant. In a letter dated 24 August 2011, Iran informed the Agency that tests for the conversion of UF_6 enriched up to 20% U-235 into U_3O_8 would start on 6 September 2011. Iran has indicated that the initial tests of this conversion line will not involve the use of nuclear material.

37. In a letter dated 28 July 2011, Iran informed the Agency that it would start R&D activities at UCF for the conversion of UF_6 enriched up to 5% U-235 into UO_2.

38. On 8 August 2011, Iran and the Agency agreed to an updated safeguards approach for UCF that takes into account the production of natural UO_2, natural UF_6, and 20% U-235 as U_3O_8.

39. On 27 August 2011, the Agency carried out an inspection and a DIV at UCF, during which Iran declared that it had fed into the process 652.2 kg of uranium in the form of UOC and produced about 96 kg

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[28] S/RES/1737 (2006), para. 2; S/RES/1747 (2007), para. 1; S/RES/1803 (2008), para. 1; S/RES/1835 (2008), para. 4; S/RES/1929 (2010), para. 2.

[29] GOV/2010/10, paras 20 and 21.

of uranium in the form of UO_2, and further indicated that some of the product was fed back into the process. Iran has also started R&D activities using depleted uranium for the conversion of UF_6 into UO_2.

40. On 31 May 2011, in a DIQ for FMP, Iran informed the Agency that a fresh fuel rod of natural UO_2 manufactured at FMP would be shipped to TRR for irradiation and post-irradiation analysis.

41. On 10 August 2011, the Agency carried out a PIV and a DIV at FMP and confirmed that Iran had not yet started to install equipment for the fabrication of fuel for TRR.[30]

42. In a letter dated 28 August 2011, Iran provided an updated DIQ for FMP, which the Agency is currently reviewing.

G. Possible Military Dimensions

43. Previous reports by the Director General have identified outstanding issues related to possible military dimensions to Iran's nuclear programme and actions required of Iran to resolve these.[31] In particular, the Agency is increasingly concerned about the possible existence in Iran of past or current undisclosed nuclear related activities involving military related organizations, including activities related to the development of a nuclear payload for a missile, about which the Agency continues to receive new information. Examples of these activities were listed in the previous report.[32] The information available to the Agency in connection with these outstanding issues is extensive and comprehensive and has been acquired both from many Member States and through its own efforts. It is also broadly consistent and credible in terms of technical detail, the time frame in which the activities were conducted and the people and organisations involved.[33]

44. The Board of Governors has called on Iran on a number of occasions to engage with the Agency on the resolution of all outstanding issues in order to exclude the existence of possible military dimensions to Iran's nuclear programme.[34] In resolution 1929 (2010), the Security Council reaffirmed Iran's obligations to take the steps required by the Board of Governors in its resolutions GOV/2006/14 and GOV/2009/82, including by providing access without delay to all sites, equipment, persons and documents requested by the Agency.[35] In his letter to the Director General dated 26 May 2011, Dr Abbasi explained Iran's position on this issue. The Director General, in his letter of 3 June 2011 to Dr Abbasi, reminded Iran that it should fully implement all of its obligations in order to establish international confidence in the exclusively peaceful nature of Iran's nuclear programme. In the course of the meetings referred to in paragraphs 4 and 5 of this report, the question of the possible military dimensions of Iran's nuclear programme was discussed.

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[30] GOV/2010/46, para. 26.

[31] GOV/2010/10, paras 40–45; GOV/2009/55, paras 18–25; GOV/2008/38, paras 14–21; GOV/2008/15, paras 14–25 and Annex; GOV/2008/4, paras 35–42.

[32] GOV/2011/29, para. 35.

[33] GOV/2010/10, para. 41.

[34] Most recently in GOV/2009/82 (27 November 2009).

[35] S/RES/1929, paras 2 and 3.

H. Design Information

45. The modified Code 3.1 of the Subsidiary Arrangements General Part to Iran's Safeguards Agreement provides for the submission to the Agency of design information for new facilities as soon as the decision to construct, or to authorize construction of, a new facility has been taken, whichever is the earlier. The modified Code 3.1 also provides for the submission of fuller design information as the design is developed early in the project definition, preliminary design, construction and commissioning phases. Iran remains the only State with significant nuclear activities in which the Agency is implementing a comprehensive safeguards agreement but which is not implementing the provisions of the modified Code 3.1.[36] The Agency is still awaiting receipt from Iran of, inter alia, updated design information for the IR-40 Reactor, and further information pursuant to statements it has made concerning the planned construction of new uranium enrichment facilities and the design of a reactor similar to TRR.[37]

46. As reported previously, Iran's response to Agency requests for Iran to confirm or provide further information regarding its statements concerning its intention to construct new nuclear facilities is that it would provide the Agency with the required information in "due time" rather than as required by the modified Code 3.1 of the Subsidiary Arrangements General Part to its Safeguards Agreement.[38]

I. Additional Protocol

47. Contrary to the relevant resolutions of the Board of Governors and the Security Council, Iran is not implementing its Additional Protocol. The Agency will not be in a position to provide credible assurance about the absence of undeclared nuclear material and activities in Iran unless and until Iran provides the necessary cooperation with the Agency, including by implementing its Additional Protocol.[39]

J. Other Matters

48. In a letter dated 19 June 2011, Iran informed the Agency of its intention to "transfer some of spent fuel assemblies (HEU Control Fuel Element (CFE) and Standard Fuel Element (SFE)) from spent fuel pool (KMPE) to reactor core (KMPB) in order to conduct a research project".

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[36] In accordance with Article 39 of Iran's Safeguards Agreement, agreed Subsidiary Arrangements cannot be changed unilaterally; nor is there a mechanism in the Safeguards Agreement for the suspension of provisions agreed to in the Subsidiary Arrangements. Therefore, as previously explained in the Director General's reports (see e.g. GOV/2007/22, 23 May 2007), the modified Code 3.1, as agreed to by Iran in 2003, remains in force. Iran is further bound by operative paragraph 5 of Security Council resolution 1929 (2010) to "comply fully and without qualification with its IAEA Safeguards Agreement, including through the application of modified Code 3.1".

[37] GOV/2010/46, para. 32.

[38] See para. 28 of this report and GOV/2011/29, para. 37.

[39] Iran's Additional Protocol was approved by the Board on 21 November 2003 and signed by Iran on 18 December 2003, although it has not been brought into force. Iran provisionally implemented its Additional Protocol between December 2003 and February 2006.

49. On 18 August 2011, the Agency undertook a visit to the Bushehr Nuclear Power Plant, during which Iran explained that the reactor had been shut down for technical reasons and that it was planning to restart the reactor within the next few days.

K. Summary

50. While the Agency continues to conduct verification activities under Iran's Safeguards Agreement, Iran is not implementing a number of its obligations, including: implementation of the provisions of its Additional Protocol; implementation of the modified Code 3.1 of the Subsidiary Arrangements General Part to its Safeguards Agreement; suspension of enrichment related activities; suspension of heavy water related activities; and addressing the Agency's concerns about possible military dimensions to Iran's nuclear programme.

51. While the Agency continues to verify the non-diversion of declared nuclear material at the nuclear facilities and LOFs declared by Iran under its Safeguards Agreement, as Iran is not providing the necessary cooperation, including by not implementing its Additional Protocol, the Agency is unable to provide credible assurance about the absence of undeclared nuclear material and activities in Iran, and therefore to conclude that all nuclear material in Iran is in peaceful activities.[40]

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

[40] The Board has confirmed on numerous occasions, since as early as 1992, that paragraph 2 of INFCIRC/153 (Corr.), which corresponds to Article 2 of Iran's Safeguards Agreement, authorizes and requires the Agency to seek to verify both the non-diversion of nuclear material from declared activities (i.e. correctness) and the absence of undeclared nuclear activities in the State (i.e. completeness) (see, for example, GOV/OR.864, para. 49). Paragraph 51 reflects the past and current implementation by Iran of its Safeguards Agreement and other obligations.