



## Security Council

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### **Note by the President of the Security Council**

At its 6335th meeting, held on 9 June 2010 in connection with the item entitled “Non-proliferation”, the Security Council adopted resolution 1929 (2010).

In paragraph 4 of the resolution, the Council requested the Director General of the International Atomic Energy Agency to communicate to the Council all his reports on the application of safeguards in the Islamic Republic of Iran.

Accordingly, the President circulates herewith the report of the Director General dated 18 November 2015 (see annex).



**Annex**

**Letter dated 18 November 2015 from the Director General of the International Atomic Energy Agency addressed to the President of the Security Council**

I have the honour to enclose herewith the report submitted to the Board of Governors of the International Atomic Energy Agency (see enclosure).

I should be grateful if you would bring the present letter and the enclosed report to the attention of the members of the Security Council.

*(Signed)* Yukiya **Amano**

## Enclosure

[Original: Arabic, Chinese, English,  
French, Russian and Spanish]

### **Implementation of the Treaty on the Non-Proliferation of Nuclear Weapons safeguards agreement and relevant provisions of Security Council resolutions in the Islamic Republic of Iran**

#### **Report by the Director General**

#### **Main developments**

- On 20 September 2015, the Director General held talks with President Rouhani, Vice-President Salehi and Foreign Minister Zarif, on the implementation of the Road-map. They also exchanged views on issues related to the implementation by Iran of its nuclear-related commitments under the Joint Comprehensive Plan of Action (JCPOA). In addition, the Director General met members of the Iranian Parliament.
- On 20 September 2015, the Director General and the Deputy Director General for Safeguards visited the particular location at the Parchin site of interest to the Agency. Environmental samples were taken in the days immediately prior to the visit.
- The activities set out in the Road-map for the period to 15 October 2015 have been completed on schedule.
- On 18 October 2015, Iran informed the Agency that, effective on JCPOA Implementation Day, Iran will provisionally apply the Additional Protocol to its Safeguards Agreement and fully implement the modified Code 3.1.
- On 18 October 2015, the Adoption Day of the JCPOA was reached.
- The Agency has begun conducting preparatory activities related to the verification and monitoring of Iran's nuclear-related commitments under the JCPOA, including verification and monitoring of the steps Iran has begun taking towards the implementation of those commitments.
- The Agency has continued monitoring and verification in relation to the nuclear-related measures set out in the Joint Plan of Action.

#### **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<sup>1</sup> and relevant provisions of Security Council resolutions<sup>2</sup> in the Islamic

<sup>1</sup> 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.

<sup>2</sup> This refers to six United Nations Security Council resolutions adopted between 2006 and 2010: 1696 (2006); 1737 (2006); 1747 (2007); 1803 (2008); 1835 (2008); and 1929 (2010).

Republic of Iran (Iran). It contains information, inter alia, regarding the “Joint Statement on a Framework for Cooperation” (the Framework for Cooperation) and the “Road-map for the clarification of past and present outstanding issues regarding Iran’s nuclear programme” (Road-map); the Joint Plan of Action (JPA), as further extended; and the Joint Comprehensive Plan of Action (JCPOA).<sup>3</sup>

2. The Security Council has affirmed that the steps required by the Board of Governors in its resolutions<sup>4</sup> are binding on Iran.<sup>5</sup> The relevant provisions of the aforementioned Security Council resolutions<sup>6</sup> were adopted under Chapter VII of the United Nations Charter and are mandatory, in accordance with the terms of those resolutions.<sup>7</sup> Security Council resolution 2231 (2015), adopted in July 2015, includes terms providing for the termination of the provisions of those Security Council resolutions.

3. This report addresses developments since the Director General’s previous report (GOV/2015/50),<sup>8</sup> as well as issues of longer-standing.

## **B. Recent developments**

### **B.1. Clarification of unresolved Issues**

4. The Board of Governors, in its resolution of November 2011 (GOV/2011/69), stressed that it was essential for Iran and the Agency to intensify their dialogue aimed at the urgent resolution of all outstanding substantive issues for the purpose of providing clarifications regarding those issues, including access to all relevant information, documentation, sites, material and personnel in Iran. In its resolution of September 2012 (GOV/2012/50), the Board of Governors decided that Iranian cooperation with Agency requests aimed at the resolution of all outstanding issues was essential and urgent in order to restore international confidence in the exclusively peaceful nature of Iran’s nuclear programme.

5. As previously reported, on 11 November 2013, the Agency and Iran signed a “Joint Statement on a Framework for Cooperation” (GOV/INF/2013/14). In the Framework for Cooperation, the Agency and Iran agreed to cooperate further with respect to verification activities to be undertaken by the Agency to resolve all present and past issues, and to proceed with such activities in a step by step manner.<sup>9</sup>

6. As previously reported, on 14 July 2015, the Director General and the Vice-President of Iran and President of the Atomic Energy Organization of Iran, HE Ali

<sup>3</sup> The text of the JCPOA was communicated to the Director General by the Permanent Representatives to the IAEA of the E3+3 countries and Iran in a letter dated 24 July 2015 (INFCIRC/887).

<sup>4</sup> Between September 2003 and September 2012, the Board of Governors adopted 12 resolutions in connection with the implementation of safeguards in Iran (see GOV/2013/56, footnote 2).

<sup>5</sup> Security Council resolution 1929 (2010).

<sup>6</sup> Those listed in footnote 2.

<sup>7</sup> Part I.A of the Agency’s Relationship Agreement with the United Nations (INFCIRC/11).

<sup>8</sup> The Director General continues to provide the Board of Governors with monthly updates on Iran’s implementation of “voluntary measures” undertaken in relation to the JPA, the most recent of which was provided in GOV/INF/2015/19.

<sup>9</sup> The practical measures agreed in relation to the Framework for Cooperation between November 2013 and May 2014 are listed in GOV/2015/50, Annex I.

Akbar Salehi, signed in Vienna a “Road map for the clarification of past and present outstanding issues regarding Iran’s nuclear programme” (Road-map), as set out in the annex to the Director General’s report of November 2011 (GOV/2011/65).<sup>10</sup> The Road-map identifies the necessary activities to be undertaken under the Framework for Cooperation, in order to accelerate and strengthen cooperation and dialogue between the Agency and Iran aimed at the resolution, by the end of 2015, of all past and present outstanding issues that have not already been resolved by the Agency and Iran. (The Road map is reproduced in Annex I.)

7. In line with the Road-map, on 8 September 2015, the Agency submitted questions to Iran on ambiguities regarding the information Iran had provided to the Agency on 15 August 2015.<sup>11</sup> To remove such ambiguities, the Agency and Iran held technical-expert meetings and discussions in Iran on 15, 16, 17, 29 and 30 September 2015 and 10 and 14 October 2015, and the Agency conducted safeguards activities at particular locations of interest to the Agency in Iran on 9 and 15 October 2015.

8. On 20 September 2015, the Director General held talks with the President of Iran, HE Hassan Rouhani, the Vice-President of Iran and President of the Atomic Energy Organization of Iran, HE Ali Akbar Salehi, and the Foreign Minister of Iran, HE Mohammad Javad Zarif, on the implementation of the Road-map.<sup>12</sup> They also exchanged views on issues related to the implementation by Iran of its nuclear-related commitments under the JCPOA. On the same date, the Director General had a meeting with members of the Majlis’s (Parliament’s) Special Commission for Reviewing the JCPOA.

9. On 20 September 2015, the Director General, together with the Deputy Director General and Head of the Department of Safeguards, Tero Varjoranta, visited the particular location at the Parchin site of interest to the Agency,<sup>13</sup> during which they entered the main building of interest. They saw indications of recent renovation. There was no equipment in the building. In the days immediately prior to the Director General’s visit, and as agreed in the Road map, certain safeguards activities were carried out at this particular location, including the taking of environmental samples. All of the information acquired by the Agency from these activities, including the analysis of the environmental samples and the visual observations made by the Director General and Deputy Director General, is being assessed by the Agency.

10. On 25 September 2015, the Director General and Foreign Minister Zarif met in New York and discussed the implementation of the Road-map.

11. The activities set out in the Road-map for the period to 15 October 2015 have been completed on schedule.

12. By 15 December 2015, the Director General will provide, for action by the Board of Governors, the final assessment on the resolution of all past and present outstanding issues, as set out in the annex of the 2011 Director General’s report (GOV/2011/65).

<sup>10</sup> GOV/INF/2015/14.

<sup>11</sup> Note by the Secretariat, 2015/Note 69, 8 September 2015.

<sup>12</sup> GOV/2015/59, para. 4.

<sup>13</sup> GOV/2015/59, para. 5.

## B.2. Joint Plan of Action

13. As previously reported, on 24 November 2013, China, France, Germany, the Russian Federation, the United Kingdom and the United States of America (E3+3) and Iran agreed on the JPA.<sup>14</sup> As requested by the E3+3 and Iran, and endorsed by the Board of Governors (subject to the availability of funds), the Agency undertook the necessary nuclear related monitoring and verification activities in relation to the JPA, involving activities additional to those already being carried out pursuant to Iran's Safeguards Agreement and relevant resolutions of the Board of Governors and Security Council.<sup>15</sup> The JPA took effect on 20 January 2014, initially for six months. It has since been extended three times, most recently on 30 June 2015, when the E3+3 and Iran requested the Agency, on behalf of the E3/EU+3 and Iran, to continue to undertake the necessary nuclear related monitoring and verification activities in Iran under the JPA "until further communication".<sup>16</sup>

14. Since the Director General's previous report, the Agency has continued monitoring and verification in relation to the nuclear-related measures set out in the JPA. These JPA-related activities have been funded by voluntary contributions already provided by Member States. As of 15 November 2015, the Agency had approximately €7.0M of extrabudgetary funds available to fund JPA-related activities (and JCPOA-related activities: see Section B.3 below); and, based on current indications, expects further pledges of extrabudgetary funds from Member States of approximately €1.3M.<sup>17,18</sup>

## B.3. JCPOA and Security Council resolution 2231

15. As previously reported, on 14 July 2015, the E3/EU+3 and Iran agreed on the JCPOA. The JCPOA states, inter alia, that it "builds on" the implementation of the JPA and that the "full implementation of this JCPOA will ensure the exclusively peaceful nature of Iran's nuclear programme".<sup>19</sup> The Director General welcomed the agreement, stating that it would "facilitate the IAEA's further verification work in Iran".<sup>20</sup>

<sup>14</sup> The text of the JPA was communicated to the Director General by the High Representative of the European Union (EU), on behalf of the E3+3 (INFCIRC/855), and by the Resident Representative of Iran to the IAEA, on behalf of Iran (INFCIRC/856).

<sup>15</sup> See footnote 2.

<sup>16</sup> GOV/INF/2015/11, Attachment.

<sup>17</sup> It is expected that the Agency will continue conducting JPA-related activities until "Implementation Day", as defined in the JCPOA, para. 34 (iii).

<sup>18</sup> For information on the additional resources required by the Agency in relation to the further extension of the JPA, as well as in relation to the requests of the Security Council contained in resolution 2231 (2015), see "Verification and Monitoring in the Islamic Republic of Iran in light of United Nations Security Council Resolution 2231 (2015)" (GOV/2015/53 and Corr.1), 14 August 2015.

<sup>19</sup> JCPOA, Preamble and General Provisions, para. ii.

<sup>20</sup> Note by the Secretariat, 2015/Note 55, 14 July 2015.

16. On 20 July 2015, the United Nations Security Council adopted resolution 2231 (2015),<sup>21</sup> in which, *inter alia*, it requested the Director General to “undertake the necessary verification and monitoring of Iran’s nuclear-related commitments for the full duration of those commitments under the JCPOA”;<sup>22</sup> reaffirmed that Iran “shall cooperate fully as the IAEA requests to be able to resolve all outstanding issues, as identified in IAEA reports”;<sup>23</sup> and requested that the Agency and the Joint Commission<sup>24</sup> “consult and exchange information, where appropriate, as specified in the JCPOA”.<sup>25</sup>

17. As previously reported, on 25 August 2015, the Board of Governors took note of the Director General’s report GOV/2015/53 and Corr.1; authorized the Director General to implement the necessary verification and monitoring of Iran’s nuclear-related commitments as set out in the JCPOA, and report accordingly, for the full duration of those commitments in light of Security Council resolution 2231 (2015), subject to the availability of funds<sup>26</sup> and consistent with the Agency’s standard safeguards practices; and authorized the Agency to consult and exchange information with the Joint Commission, as set out in that report.<sup>27</sup> The Secretariat informed Member States that the activities set out in the Road-map for the period to 15 October 2015 had been completed on schedule.<sup>28</sup>

18. On 18 October 2015, the Director General received a letter from the Permanent Representative of Iran to the Agency informing the Agency pursuant to paragraph 8 of Annex V of the JCPOA that, effective on JCPOA Implementation Day,<sup>29,30</sup> Iran will provisionally apply the Additional Protocol to its Safeguards Agreement, pending its ratification by the Majlis (Parliament), and will fully implement the modified Code 3.1 of the Subsidiary Arrangements to its Safeguards Agreement.<sup>31</sup>

<sup>21</sup> Security Council resolution 2231 (2015) makes provision for the termination of Security Council resolutions 1696 (2006), 1737 (2006), 1747 (2007), 1803 (2008), 1929 (2010) and 2224 (2015) in accordance with its terms. Upon termination of the above referenced Security Council resolutions, the Board of Governors may wish to consider parallel action in regard to its decision (see GOV/2007/7 and GOV/OR.1181, paras. 40 and 41) and consequential decisions on technical cooperation provided to Iran, which were taken through the Agency’s Technical Assistance and Cooperation Committee (based on GOV/2008/47/Add.3, GOV/2009/65, GOV/2011/58/Add.3 and GOV/2013/49/Add.3).

<sup>22</sup> The actions requested of the Director General by the Security Council as contained in resolution 2231 (2015) are set out in GOV/2015/53 and Corr.1, para. 8.

<sup>23</sup> Security Council resolution 2231 (2015), para. 3.

<sup>24</sup> The JCPOA establishes a Joint Commission consisting of representatives of the E3/EU+3 and Iran (Annex IV of the JCPOA).

<sup>25</sup> Security Council resolution 2231 (2015), para. 19.

<sup>26</sup> A number of Member States indicated that they would make extrabudgetary funds available.

<sup>27</sup> The Board of Governors also approved modifications to “The Agency’s Programme and Budget 2016-2017” (GC(59)/2) as proposed in paragraph 3 of Section B of GOV/2015/54; and requested the Secretariat to take the necessary actions on the elements contained in Section B of GOV/2015/54 and to modify document GC(59)/2 as necessary to reflect the Board’s decision, for submission to the General Conference.

<sup>28</sup> Note by the Secretariat, 2015/Note 80, 15 October 2015.

<sup>29</sup> GOV/INF/2015/18.

<sup>30</sup> As defined in the JCPOA, para. 34 (iii).

<sup>31</sup> Pursuant to paragraphs 15.10 of Annex V and 64 and 65 of Section L of Annex I of the JCPOA, Iran is required to notify the Agency, prior to Implementation Day, of the “provisional application of the Additional Protocol to its Safeguards Agreement in accordance with Article 17(b) of the Additional Protocol pending entry into force” and that “it will fully implement the Modified Code 3.1”.

19. On 18 October 2015, the Adoption Day<sup>32</sup> of the JCPOA was reached.<sup>33</sup>

20. Since the Director General's previous report, the Agency has begun conducting preparatory activities related to the verification and monitoring of Iran's nuclear-related commitments under the JCPOA. These activities included the Agency and Iran making arrangements for the verification and monitoring of the steps Iran would take towards the implementation of those commitments from Adoption Day. Since Adoption Day, Iran has begun taking such steps under Agency verification and monitoring.

### **C. Facilities declared under Iran's safeguards agreement**

21. Under its Safeguards Agreement, Iran has declared to the Agency 18 nuclear facilities and nine locations outside facilities where nuclear material is customarily used (LOFs)<sup>34</sup> (Annex II). Notwithstanding that certain of the activities being undertaken by Iran at some of the facilities are contrary to the relevant resolutions of the Board of Governors and the Security Council as they currently stand,<sup>35</sup> as indicated below, the Agency continues to verify the non-diversion of declared nuclear material at these facilities and LOFs.

### **D. Enrichment related activities**

22. Iran is required<sup>36</sup> to suspend all enrichment related activities. Since 20 January 2014, Iran has not produced UF<sub>6</sub> enriched above 5% U-235 and all of its stock of UF<sub>6</sub> enriched up to 20% U-235<sup>37</sup> has been further processed through downblending or conversion into uranium oxide (see Annex III). All of the enrichment related activities at Iran's declared facilities are under Agency safeguards, and all of the nuclear material, installed cascades, and feed and withdrawal stations at those facilities are subject to Agency containment and surveillance.<sup>38</sup>

23. Iran has stated that the purpose of enriching UF<sub>6</sub> up to 5% U-235 is the production of fuel for its nuclear facilities.<sup>39</sup> Since Iran began enriching uranium at its declared facilities, it has produced at those facilities, 16,141.6 kg<sup>40</sup> (+490.2 kg since the Director General's previous report) of UF<sub>6</sub> enriched up to 5% U-235, of which 8,305.6 kg (+460.2 kg since the Director General's previous report) remain in

<sup>32</sup> As defined in the JCPOA, para. 34 (ii).

<sup>33</sup> See Joint Statement by EU High Representative Federica Mogherini and Iranian Foreign Minister Javad Zarif, at [http://eeas.europa.eu/statements-eeas/2015/151018\\_01\\_en.htm](http://eeas.europa.eu/statements-eeas/2015/151018_01_en.htm).

<sup>34</sup> All of the LOFs are situated within hospitals.

<sup>35</sup> Security Council resolution 2231 (2015) provided that the resolutions listed in footnote 2 shall terminate in accordance with the terms of resolution 2231.

<sup>36</sup> See footnotes 2, 4 and 35.

<sup>37</sup> Up to the point at which it stopped, Iran had produced 447.8 kg of UF<sub>6</sub> enriched up to 20% U-235 (see Annex III).

<sup>38</sup> In line with normal safeguards practice, small amounts of nuclear material (e.g. some waste and samples) may not be subject to containment and surveillance.

<sup>39</sup> As declared by Iran in its design information questionnaires (DIQs) for the Fuel Enrichment Plant (FEP) at Natanz.

<sup>40</sup> This figure includes 115.6 kg of UF<sub>6</sub> enriched up to 5% U-235 that has been produced from the downblending of UF<sub>6</sub> enriched up to 20% U-235.



the form of UF<sub>6</sub> enriched up to 5% U-235<sup>41</sup> and the rest has been further processed (see Annex III).

#### D.1. Natanz

24. **Fuel Enrichment Plant:** FEP is a centrifuge enrichment plant for the production of low enriched uranium (LEU) enriched up to 5% U-235, which was first brought into operation in 2007. The plant is divided into Production Hall A and Production Hall B. According to the design information submitted by Iran, eight units, each containing 18 cascades, were planned for Production Hall A, which totals approximately 25,000 centrifuges in 144 cascades. Currently, one unit contains IR-2m centrifuges; five contain IR-1 centrifuges; and the other two units do not contain centrifuges. Iran has not provided the corresponding design information for Production Hall B.

25. As previously reported, and as of Adoption Day, in the unit containing IR-2m centrifuges, six cascades had been fully installed with IR-2m centrifuges,<sup>42</sup> none of which had been fed with natural UF<sub>6</sub>, and preparatory installation work had been completed for the other 12 cascades.

26. As previously reported, and as of Adoption Day, 90 cascades in the five units containing IR-1 centrifuges had been fully installed,<sup>43</sup> of which 54 cascades were being fed with natural UF<sub>6</sub>,<sup>44</sup> and preparatory installation work had been completed for 36 IR-1 cascades in the two units not containing centrifuges.

27. Since Adoption Day, Iran has started removing centrifuges and related infrastructure from Production Hall A and has stored them in Production Hall B under Agency verification and monitoring.<sup>45</sup>

28. On 28 October 2015, the Agency verified that Iran had stopped feeding natural UF<sub>6</sub> into the cascades in order to perform the annual physical inventory taking (PIT) at the facility. On 31 October 2015, the Agency commenced a physical inventory verification (PIV) at FEP to verify the inventory as declared by Iran on 31 October 2015. As of 16 November 2015, the PIV was still ongoing.

29. As of 31 October 2015, Iran had fed 177,738 kg of natural UF<sub>6</sub> into the cascades at FEP since production began in February 2007 and produced a total of 15,525 kg of UF<sub>6</sub> enriched up to 5% U-235.<sup>46</sup>

30. As of 24 November 2014, Iran had downblended about 4,118 kg of UF<sub>6</sub> enriched up to 2% U-235 to natural uranium.<sup>47</sup>

<sup>41</sup> This comprises nuclear material in storage as well as nuclear material in the cold traps and inside cylinders still attached to the enrichment process.

<sup>42</sup> The number of IR-2m centrifuges installed at FEP was 1,008.

<sup>43</sup> The number of IR-1 centrifuges installed at FEP was 15,420.

<sup>44</sup> GOV/2014/10, para. 22. The Agency has applied additional containment and surveillance measures to confirm that no more than the 54 IR-1 cascades (containing 9,156 centrifuges) are being fed with nuclear material at FEP.

<sup>45</sup> As of 15 November 2015, there were 11,308 IR-1 centrifuges and 848 IR-2m centrifuges installed at FEP.

<sup>46</sup> Based on the amounts of UF<sub>6</sub> enriched up to 5% U-235 verified by the Agency (as of 31 October 2015).

<sup>47</sup> This relates to one of Iran's undertakings in the JPA, as extended. The nuclear material originates from the tails produced by the enrichment of UF<sub>6</sub> up to 20% U-235 and from nuclear material evacuated from the cascades producing UF<sub>6</sub> enriched up to 5% U-235, and is not included in the amount of UF<sub>6</sub> enriched up to 5% U-235 indicated in para. 23.

31. Based on the results of the analysis of environmental samples taken at FEP,<sup>48</sup> and other verification activities, the Agency has concluded that the facility has operated as declared by Iran in the relevant design information questionnaire (DIQ).

32. **Pilot Fuel Enrichment Plant:** PFEP is a pilot LEU production, and research and development (R&D) facility that was first brought into operation in October 2003. It can accommodate six cascades, and is divided between an area currently being used for the production of UF<sub>6</sub> enriched up to 5% U-235 (Cascades 1 and 6) and an area for R&D (Cascades 2, 3, 4 and 5).

33. **Production area:** As indicated in the Director General's previous reports, since the JPA took effect, Iran has ceased feeding Cascades 1 and 6 with UF<sub>6</sub> enriched up to 5% U-235 and has fed them with natural UF<sub>6</sub> instead.<sup>49</sup> Since the JPA took effect, Iran has not operated Cascades 1 and 6 in an interconnected configuration.<sup>50</sup>

34. Between 20 January 2014 and 21 August 2015, Iran fed 1,425.2 kg of natural UF<sub>6</sub> into Cascades 1 and 6 at PFEP and produced a total of 136.4 kg of UF<sub>6</sub> enriched up to 5% U-235.<sup>51</sup>

35. As previously reported, on 22 August 2015, Iran started a test run involving the feeding of Cascade 6 with depleted UF<sub>6</sub>,<sup>52</sup> while Cascade 1 remained under vacuum. On 10 October 2015, Iran ceased this feeding. The product and the tails were recombined at the end of the process.

36. On 25 October 2015, the Agency commenced a PIV at PFEP to verify the inventory as declared by Iran on 25 October 2015. As of 16 November 2015, the PIV was still ongoing.

37. **R&D area:** Since the Director General's previous report, Iran has been intermittently feeding natural UF<sub>6</sub> into IR-1, IR-2m, IR-4, IR-6 and IR-6s centrifuges, sometimes into single machines and sometimes into cascades of various sizes. The Agency has verified that one IR-5 centrifuge and one prototype IR-8 centrifuge<sup>53</sup> are in place but without connections.<sup>54</sup>

38. Between 18 August 2015 and 25 October 2015, a total of approximately 370.7 kg of natural UF<sub>6</sub> was fed into centrifuges in the R&D area, but no LEU was withdrawn as the product and the tails were recombined at the end of the process.

39. Based on the results of the analysis of environmental samples taken at PFEP,<sup>55</sup> and other verification activities, the Agency has concluded that the facility has operated as declared by Iran in the relevant DIQ.

<sup>48</sup> Results are available to the Agency for samples taken up to 29 July 2015.

<sup>49</sup> As of 14 November 2015, Cascades 1 and 6 contained a total of 328 IR-1 centrifuges (unchanged).

<sup>50</sup> GOV/2014/10, para. 28. The Agency has applied additional containment and surveillance measures to confirm that Cascades 1 and 6 are not interconnected.

<sup>51</sup> Based on the amounts of UF<sub>6</sub> enriched up to 5% U-235 verified by the Agency (as of 25 October 2015).

<sup>52</sup> GOV/2015/50, para. 26.

<sup>53</sup> GOV/2014/58, footnote 33.

<sup>54</sup> On 14 November 2015, there were one IR-1 centrifuge, 13 IR-4 centrifuges, one IR-5 centrifuge, four IR-6 centrifuges, two IR-6s centrifuges and one prototype IR-8 centrifuge installed in Cascade 2; 24 IR-1 centrifuges and nine IR-6 centrifuges installed in Cascade 3; 164 IR-4 centrifuges installed in Cascade 4; and 162 IR-2m centrifuges installed in Cascade 5.

<sup>55</sup> Results are available to the Agency for samples taken up to 25 May 2015.

## D.2. Fordow

40. **Fordow Fuel Enrichment Plant:** FFEP is a centrifuge enrichment plant that has been used for the production of UF<sub>6</sub> enriched up to 5% U-235.<sup>56</sup> The facility, which was first brought into operation in 2011, was designed to contain up to 2,976 centrifuges in 16 cascades, divided between Unit 1 and Unit 2. All of the centrifuges installed are IR-1 machines.

41. As previously reported, when the JPA took effect, Iran ceased feeding UF<sub>6</sub> enriched up to 5% U-235 into the four cascades of Unit 2 previously used for this purpose and fed them with natural UF<sub>6</sub> instead. Iran has also not operated these cascades in an interconnected configuration throughout the same period.<sup>57</sup> None of the other 12 cascades in FFEP had been fed with UF<sub>6</sub>.<sup>58</sup>

42. Since Adoption Day, Iran has started removing centrifuges and related infrastructure under Agency verification and monitoring. The removed centrifuges and infrastructure remained in the cascade hall at FFEP.<sup>59</sup>

43. Between 20 January 2014 and 25 October 2015, Iran fed 3,942.3 kg of natural UF<sub>6</sub> into the cascades at FFEP and produced a total of 364.6 kg of UF<sub>6</sub> enriched up to 5% U-235.<sup>60</sup>

44. Iran ceased feeding the cascades at FFEP on 25 October 2015 in preparation for the PIT. On the same date, the Agency commenced a PIV at FFEP to verify the inventory as declared by Iran on 25 October 2015. As of 16 November 2015, the PIV was still ongoing.

45. Based on the results of the analysis of environmental samples taken at FFEP,<sup>61</sup> and other verification activities, the Agency has concluded that the facility has operated as declared by Iran in the relevant DIQ.

## D.3. Other enrichment related activities

46. Iran continues to provide the Agency with regular managed access to centrifuge assembly workshops, centrifuge rotor production workshops and storage facilities.<sup>62</sup> Such access, as well as associated mutually agreed information, was also provided by Iran pursuant to one of the practical measures agreed in relation to the Framework for Cooperation.<sup>63</sup> As part of this managed access, Iran has also provided the Agency with an inventory of centrifuge rotor assemblies to be used to replace those centrifuges that fail. The Agency has analysed the information provided by Iran and, upon request, has received additional clarifications. Based on

<sup>56</sup> GOV/2009/74, paras. 7 and 14; GOV/2012/9, para. 24. Iran has provided the Agency with an initial DIQ and three revised DIQs with different stated purposes for FFEP. In light of the difference between the original stated purpose of the facility and the purpose for which it is now being used, additional information from Iran is still required.

<sup>57</sup> GOV/2014/10, para. 36. The Agency has applied additional containment and surveillance measures at FFEP to confirm that only the four IR-1 cascades are used to enrich UF<sub>6</sub> and that they are not interconnected.

<sup>58</sup> The number of centrifuges installed at FFEP was 2,710.

<sup>59</sup> As of 15 November 2015, there were 2,452 IR-1 centrifuges installed at FFEP.

<sup>60</sup> Based on the amounts of UF<sub>6</sub> enriched up to 5% U-235 verified by the Agency (as of 25 October 2015).

<sup>61</sup> Results are available to the Agency for samples taken up to 22 June 2015.

<sup>62</sup> This relates to one of Iran's undertakings in the JPA.

<sup>63</sup> See GOV/2015/50, Annex I.

analysis of all the information provided by Iran, as well as the managed access and other verification activities carried out by the Agency, the Agency can confirm that, since the JPA took effect, centrifuge rotor manufacturing and assembly are consistent with Iran's replacement programme for failed centrifuges.<sup>64</sup>

## E. Reprocessing activities

47. Iran is required<sup>65</sup> to suspend its reprocessing activities, including R&D.<sup>66</sup> As previously reported, Iran stated in January 2014 that "during the first step time-bound (six months), Iran will not engage in stages of reprocessing activities, or construction of a facility capable of reprocessing".<sup>67</sup> In a letter to the Agency dated 27 August 2014, Iran indicated that this "voluntary measure" had been extended in line with the extension of the JPA.

48. The Agency has continued to monitor the use of hot cells at the Tehran Research Reactor (TRR)<sup>68</sup> and the Molybdenum, Iodine and Xenon Radioisotope Production (MIX) Facility.<sup>69</sup> The Agency carried out an inspection and a design information verification (DIV) at TRR on 15 November 2015, and a DIV at the MIX Facility on 14 November 2015. The Agency can confirm that there are no ongoing reprocessing related activities with respect to TRR, the MIX Facility and the other facilities to which the Agency has access in Iran.

## F. Heavy water-related projects

49. Iran is required<sup>70</sup> to suspend work on all heavy water related projects.<sup>71</sup> Since the JPA took effect, Iran has neither installed any major components at the IR-40 Reactor nor produced nuclear fuel assemblies for the IR-40 Reactor at the Fuel Manufacturing Plant (FMP).

50. **IR-40 Reactor:** The IR-40 Reactor is under Agency safeguards. According to the design information provided to the Agency by Iran, the IR-40 Reactor was designed as a 40 MW heavy water moderated research reactor to contain 150 fuel assemblies containing natural uranium in the form of UO<sub>2</sub>.

51. On 16 November 2015, the Agency carried out a DIV at the IR-40 Reactor and observed that, since the Director General's previous report, none of the reactor's remaining major components had been installed.<sup>72</sup> As previously reported, pursuant to one of the practical measures agreed in relation to the Framework for

<sup>64</sup> This relates to one of Iran's undertakings in the JPA.

<sup>65</sup> See footnotes 2, 4 and 35.

<sup>66</sup> GOV/2013/56, footnote 28.

<sup>67</sup> This relates to one of Iran's undertakings in the JPA.

<sup>68</sup> The 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.

<sup>69</sup> The MIX Facility is a hot cell complex for the separation of radiopharmaceutical isotopes from targets, including uranium, irradiated at TRR.

<sup>70</sup> See footnotes 2, 4 and 35.

<sup>71</sup> GOV/2013/56, footnote 32.

<sup>72</sup> GOV/2013/56, para. 34.

Cooperation, Iran concluded with the Agency a safeguards approach for the IR-40 Reactor in August 2014.<sup>73</sup>

52. Heavy Water Production Plant: The Heavy Water Production Plant (HWPP) is a facility for the production of heavy water with a design capacity to produce 16 tonnes of reactor-grade heavy water per year.

53. As previously reported, although the HWPP is not under Agency safeguards, the plant was subject to managed access by the Agency on 8 December 2013.<sup>74</sup> During the managed access, Iran also provided the Agency with mutually agreed relevant information. In addition, access to the heavy water storage location at the Uranium Conversion Facility (UCF) at Esfahan in February 2014 enabled the Agency to characterize the heavy water.<sup>75</sup>

## **G. Uranium conversion and fuel fabrication**

54. Iran is conducting a number of uranium conversion and fuel fabrication activities at UCF, the Enriched UO<sub>2</sub> Powder Plant (EUPP), FMP and the Fuel Plate Fabrication Plant (FPFP) at Esfahan, as indicated below, which it is required<sup>76</sup> to suspend, notwithstanding that the facilities are under Agency safeguards.

55. Since Iran began conversion and fuel fabrication at its declared facilities, it has, inter alia:

- Produced 550 tonnes of natural UF<sub>6</sub> at UCF, of which 185 tonnes have been transferred to FEP.
- Produced 13.8 tonnes of natural uranium in the form of UO<sub>2</sub> at UCF, of which 13.2 tonnes have been transferred to FMP.
- Transferred to EUPP: 8,538 kg of natural UF<sub>6</sub>; 12,689 kg of UF<sub>6</sub> enriched up to 5% U-235; and 10,769 kg of depleted UF<sub>6</sub>.
- Fed into the conversion process at EUPP 4,334 kg of UF<sub>6</sub> enriched up to 5% U-235.
- Fed into the R&D conversion process at UCF 53 kg of UF<sub>6</sub> enriched to 3.34% U-235 and produced 24 kg of uranium in the form of UO<sub>2</sub>.<sup>77</sup>
- Fed into the conversion process at FPFP 337.2 kg of UF<sub>6</sub> enriched up to 20% U-235 and produced 162.8 kg of uranium in the form of U<sub>3</sub>O<sub>8</sub>.<sup>78</sup>
- Fed into the uranium recovery process 95.9 kg of uranium in liquid, solid and fuel items scrap and produced 44.7 kg of uranium in the form of U<sub>3</sub>O<sub>8</sub>.
- Used 156.0 kg of uranium in the form of U<sub>3</sub>O<sub>8</sub> produced at FPFP for the manufacture of fuel items for TRR.

<sup>73</sup> GOV/2014/43, para. 46.

<sup>74</sup> GOV/2014/10, para. 13.

<sup>75</sup> GOV/2013/56, para. 39.

<sup>76</sup> See footnotes 2, 4 and 35.

<sup>77</sup> GOV/2012/55, para. 35.

<sup>78</sup> Unchanged since the Director General's previous report.

56. **Uranium Conversion Facility:** UCF is a conversion facility for the production of both natural  $\text{UF}_6$  and natural  $\text{UO}_2$  from uranium ore concentrate (UOC). It is planned that UCF will also produce  $\text{UF}_4$  from depleted  $\text{UF}_6$ , and uranium metal ingots from natural and depleted  $\text{UF}_4$ .

57. Since January 2014, Iran has neither produced natural uranium in the form of  $\text{UO}_2$  through the conversion of UOC at UCF, nor has it transferred any natural uranium in the form of  $\text{UO}_2$  from UCF to FMP.

58. As previously reported, Iran is conducting R&D activities at UCF on the recovery of uranium from liquid and solid scrap resulting from conversion activities at UCF. On 15 November 2015, the Agency observed that the recovery of uranium from such liquid scrap was ongoing. Since the Director General's previous report, Iran has started conducting R&D at UCF on the production of  $\text{UO}_2$  using natural and low enriched  $\text{UO}_2\text{F}_2$  material produced at EUPP.

59. As a result of the physical inventory verification (PIV) carried out by the Agency at UCF between 13 and 17 June 2015, the Agency verified, within the measurement uncertainties normally associated with such a facility, the inventory as declared by Iran on 12 June 2015.

60. **Enriched  $\text{UO}_2$  Powder Plant:** EUPP is a facility for the conversion of  $\text{UF}_6$  enriched up to 5% U-235 into  $\text{UO}_2$  powder.<sup>79</sup> As previously reported, Iran began commissioning the facility in May 2014 using natural uranium. As part of the commissioning, as of 9 November 2015, Iran had fed a total of 6,319 kg of natural  $\text{UF}_6$  into the conversion process and produced 1,828.8 kg of uranium in the form of  $\text{UO}_2$ . Since the plant began operations in July 2014, as of 9 November 2015, Iran had fed 4,334 kg of  $\text{UF}_6$  enriched up to 5% U-235 into the conversion process for the production of  $\text{UO}_2$  and produced 2,330 kg of uranium in the form of  $\text{UO}_2$ .

61. Since the Director General's previous report, Iran has begun feeding depleted  $\text{UF}_6$  into the conversion process at EUPP and, as of 9 November 2015, had fed a total of 8,650 kg into the conversion process and produced 5,839 kg of uranium in the form of  $\text{UO}_2\text{F}_2$ .

62. As a result of the PIV carried out by the Agency at EUPP between 4 and 6 April 2015, the Agency verified, within the measurement uncertainties normally associated with such a facility, the inventory as declared by Iran on 3 April 2015.

63. **Fuel Manufacturing Plant:** FMP is a facility for the fabrication of nuclear fuel assemblies for power and research reactors (see Annex III).

64. As previously reported, in February 2015, Iran informed the Agency of its intention to conduct a "sinterability test on  $\text{UO}_2$  sample powder" (enriched and natural)<sup>80</sup> in the form of "VVER-type  $\text{UO}_2$  pellets", which it would produce for this purpose. As of 10 November 2015, the Agency verified that the production of samples of LEU VVER-type  $\text{UO}_2$  pellets was ongoing. The Agency also verified that the LEU pellets produced were assembled into seven fuel rods with different enrichment levels, which will be used for the calibration of the gamma fuel rod scanner.

65. Between 11 and 15 November 2015, the Agency carried out an inspection and a DIV at FMP and verified that Iran was still not producing nuclear fuel assemblies

<sup>79</sup> GOV/2013/40, para. 45.

<sup>80</sup> Such tests are conducted for quality control purposes.

using natural  $\text{UO}_2$  for the IR-40 Reactor and that all of the fuel assemblies that had been produced previously remained at FMP.

66. **Fuel Plate Fabrication Plant:** FPPF is a facility for the conversion of  $\text{UF}_6$  enriched up to 20% U-235 into  $\text{U}_3\text{O}_8$  and the manufacture of fuel assemblies made of fuel plates containing  $\text{U}_3\text{O}_8$  (see Annex III).

67. As previously reported, Iran stated in January 2014 that “during the first step of time-bound (six months), Iran declares that there is no reconversion line to reconvert uranium oxide enriched up to 20% U-235 back into  $\text{UF}_6$  enriched up to 20% U-235”.<sup>81</sup> In a letter to the Agency dated 27 August 2014, Iran indicated that this “voluntary measure” had been extended in line with the extension of the JPA. On 8 and 9 November 2015, the Agency carried out an inspection and a DIV at FPPF during which it confirmed that there was no process line at the plant for the reconversion of uranium oxide into  $\text{UF}_6$ .

68. As previously reported, Iran has fed a total of 337.2 kg of  $\text{UF}_6$  enriched up to 20% U-235 (227.6 kg of uranium) into the conversion process of FPPF. As of 7 November 2015, Iran had produced 162.8 kg of uranium in the form of  $\text{U}_3\text{O}_8$  and generated solid and liquid scrap containing 55.4 kg of uranium. The remainder of the uranium that was fed into the process remains in the process and in waste.

69. Of the 162.8 kg of uranium in the form of  $\text{U}_3\text{O}_8$ , Iran has used 125.6 kg to manufacture fuel items for TRR and generated 33 kg of uranium as solid scrap. The remainder of the uranium remains in the process and in waste. Of the fuel items manufactured using the 125.6 kg of uranium, Iran declared fuel items scrap containing 17.3 kg of uranium.

70. Iran has fed into the uranium recovery process 95.9 kg of uranium in liquid, solid and fuel items scrap, from which it has produced 44.7 kg of uranium in the form of  $\text{U}_3\text{O}_8$  and generated 11.8 kg of uranium as liquid and solid scrap. As of 7 November 2015, Iran had used 30.4 kg of uranium from this 44.7 kg to manufacture fuel items for TRR. As of the same date, Iran had ceased the recovery of uranium from all liquid, solid and fuel items scrap at FPPF.

71. The Agency has verified that, as of 7 November 2015, Iran had produced at FPPF one experimental fuel assembly and 39 TRR-type fuel assemblies. As of 15 November 2015, the experimental fuel assembly and 29 TRR-type fuel assemblies had been transferred to TRR.

## H. Possible military dimensions

72. 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.<sup>82</sup> As indicated above (Section B.1), the Agency and Iran have agreed on a Road-map for the clarification of past and present outstanding issues regarding Iran’s nuclear programme, as set out in the annex to the Director General’s report of November 2011 (GOV/2011/65). The activities set out in the

<sup>81</sup> This relates to one of Iran’s undertakings in the JPA.

<sup>82</sup> For example: GOV/2011/65, paras. 38-45 and Annex; GOV/2011/29, para. 35; GOV/2011/7, Attachment; 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.

Road-map for the period to 15 October 2015 have been completed on schedule. By 15 December 2015, the Director General will provide, for action by the Board of Governors, the final assessment on the resolution of these issues, as set out in the annex of GOV/2011/65.

## **I. Design information**

73. Under the terms of its Safeguards Agreement Iran is required<sup>83</sup> to implement the provisions of the modified Code 3.1 of the Subsidiary Arrangements General Part concerning the early provision of design information.<sup>84,85</sup> As indicated earlier (para. 18), Iran has informed the Agency pursuant to paragraph 8 of Annex V of the JCPOA that, effective on Implementation Day, it will fully implement the modified Code 3.1.<sup>86</sup>

## **J. Additional protocol**

74. Iran is required<sup>87</sup> to implement the Additional Protocol.<sup>88</sup> As indicated earlier (para. 18), Iran has informed the Agency pursuant to paragraph 8 of Annex V of the JCPOA that, effective on Implementation Day, Iran will provisionally apply the Additional Protocol to its Safeguards Agreement, pending its ratification by the Majlis (Parliament).<sup>89</sup>

75. Implementation of the Additional Protocol by Iran is an essential prerequisite for the Agency to be able to reach a position where it could provide credible assurance about the absence of undeclared nuclear material and activities in Iran.

## **K. Other matters**

76. On 15 November 2015, the Agency confirmed that 22 fuel assemblies, which had been produced in Iran and which contain uranium that was enriched in Iran up to 20% U-235, were in the core of TRR.<sup>90</sup> On the same date, the Agency observed that the Mini IR-40 prototype fuel assembly was in the storage pool.<sup>91</sup>

77. As of 14 November 2015, the Agency confirmed that one fuel plate (the same one as indicated in the Director General's previous reports), containing a mixture of U<sub>3</sub>O<sub>8</sub> (enriched up to 20% U-235) and aluminium, remained at the MIX facility and

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<sup>83</sup> See footnotes 2, 4 and 35.

<sup>84</sup> See GOV/2015/50, footnote 84.

<sup>85</sup> See GOV/2015/15, para. 65.

<sup>86</sup> See footnote 31.

<sup>87</sup> See footnotes 2, 4 and 35.

<sup>88</sup> Iran's Additional Protocol was approved by the Board of Governors 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.

<sup>89</sup> See footnote 31.

<sup>90</sup> On 15 November 2015, the core of TRR comprised a total of 33 fuel assemblies.

<sup>91</sup> GOV/2013/40, para. 64.



was being used for R&D activities aimed at optimizing the production of  $^{99}\text{Mo}$ ,  $^{133}\text{Xe}$  and  $^{131}\text{I}$  isotopes.<sup>92</sup>

78. On 16 November 2015, the Agency started conducting a PIV and a DIV at the Bushehr Nuclear Power Plant, at which time the reactor was shut down for refuelling.

## L. Summary

79. 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, the Agency is not in a position 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.<sup>93</sup>

80. On 20 September 2015, the Director General held talks with President Rouhani, Vice-President Salehi and Foreign Minister Zarif, on the implementation of the Road-map. They also exchanged views on issues related to the implementation by Iran of its nuclear-related commitments under the JCPOA.

81. On 20 September 2015, the Director General and the Deputy Director General of Safeguards visited the particular location at the Parchin site of interest to the Agency. Environmental samples were taken in the days immediately prior to the visit.

82. The activities set out in the Road-map for the period to 15 October have been completed on schedule. By 15 December 2015, the Director General will provide, for action by the Board of Governors, the final assessment on the resolution of all past and present outstanding issues, as set out in the annex of GOV/2011/65.

83. Iran has informed the Agency that, effective on Implementation Day of the JCPOA, it will provisionally apply its Additional Protocol and fully implement the modified Code 3.1.

84. On 18 October 2015, the Adoption Day of the JCPOA was reached.

85. The Agency has begun conducting preparatory activities related to the verification and monitoring of Iran's nuclear-related commitments under the JCPOA, including verification and monitoring of the steps Iran has begun taking towards the implementation of those commitments.

86. The Agency has continued monitoring and verification in relation to the nuclear-related measures set out in the Joint Plan of Action.

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

<sup>92</sup> GOV/2013/40, para. 65.

<sup>93</sup> The Board of Governors has confirmed on numerous occasions, since as early as 1992, that para. 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 and GOV/OR.865, paras. 53-54).

**Annex I****Road-map for the clarification of past and present outstanding issues regarding Iran's nuclear programme**

The International Atomic Energy Agency (IAEA) and the Islamic Republic of Iran (Iran) agree, in continuation of their cooperation under the Framework for Cooperation, to accelerate and strengthen their cooperation and dialogue aimed at the resolution, by the end of 2015, of all past and present outstanding issues that have not already been resolved by the IAEA and Iran.

In this context, Iran and the Agency agreed on the following:

1. The IAEA and Iran agreed on a separate arrangement that would allow them to address the remaining outstanding issues, as set out in the annex of the 2011 Director's General report (GOV/2011/65). Activities undertaken and the outcomes achieved to date by Iran and the IAEA regarding some of the issues will be reflected in the process.
2. Iran will provide, by 15 August 2015, its explanations in writing and related documents to the IAEA, on issues contained in the separate arrangement mentioned in paragraph 1.
3. After receiving Iran's written explanations and related documents, the IAEA will review this information by 15 September 2015, and will submit to Iran questions on any possible ambiguities regarding such information.
4. After the IAEA has submitted to Iran questions on any possible ambiguities regarding such information, technical-expert meetings, technical measures, as agreed in a separate arrangement, and discussions will be organized in Tehran to remove such ambiguities.
5. Iran and the IAEA agreed on another separate arrangement regarding the issue of Parchin.
6. All activities, as set out above, will be completed by 15 October 2015, aimed at resolving all past and present outstanding issues, as set out in the annex of the 2011 Director General's report (GOV/2011/65).
7. The Director General will provide regular updates to the Board of Governors on the implementation of this Road-map.
8. By 15 December 2015, the Director General will provide, for action by the Board of Governors, the final assessment on the resolution of all past and present outstanding issues, as set out in the annex of the 2011 Director General's report (GOV/2011/65). A wrap up technical meeting between Iran and the Agency will be organized before the issuance of the report.
9. Iran stated that it will present, in writing, its comprehensive assessment to the IAEA on the report by the Director General.
10. In accordance with the Framework for Cooperation, the Agency will continue to take into account Iran's security concerns.

## Annex II

### List of Declared Nuclear Facilities and LOFs in Iran

#### Tehran:

1. Tehran Research Reactor (TRR)
2. Molybdenum, Iodine and Xenon Radioisotope Production (MIX) Facility
3. Jabr Ibn Hayan Multipurpose Laboratories (JHL)

#### Esfahan:

4. Miniature Neutron Source Reactor (MNSR)
5. Light Water Sub-Critical Reactor (LWSCR)
6. Heavy Water Zero Power Reactor (HWZPR)
7. Uranium Conversion Facility (UCF)
8. Fuel Manufacturing Plant (FMP)
9. Fuel Plate Fabrication Plant (FPFP)
10. Enriched UO<sub>2</sub> Powder Plant (EUPP)

#### Natanz:

11. Fuel Enrichment Plant (FEP)
12. Pilot Fuel Enrichment Plant (PFEP)

#### Fordow:

13. Fordow Fuel Enrichment Plant (FFEP)

#### Arak:

14. Iran Nuclear Research Reactor (IR-40 Reactor)

#### Karaj:

15. Karaj Waste Storage

#### Bushehr:

16. Bushehr Nuclear Power Plant (BNPP)

#### Darkhovin:

17. 360 MW Nuclear Power Plant

#### Shiraz:

18. 10 MW Fars Research Reactor (FRR)

#### LOFs:

Nine (all situated within hospitals)

## Annex III

Table 1  
**Summary of UF<sub>6</sub> production and flows**

|  | <i>Date</i>      | <i>Quantity (kg)</i> | <i>Enrichment</i> |
|--|------------------|----------------------|-------------------|
| Produced at UCF  | November 2015    | 550 000              | Natural           |
| Produced by downblending of UF <sub>6</sub> enriched up to 2% U-235  | 24 November 2014 | 7 730                | Natural           |
| Fed into FEP, PFEP and FFEP  | November 2015    | 183 105.5            | Natural           |
| Fed into EUPP  | November 2015    | 6 319                | Natural           |
| Produced at FEP, PFEP and FFEP                                       | November 2015    | 16 026.0             | Up to 5%          |
| Produced by downblending of UF <sub>6</sub> enriched up to 20% U-235 | 20 July 2014     | 115.6                | Up to 5%          |
| Fed into PFEP  | 20 January 2014  | 1 630.8              | Up to 5%          |
| Produced at PFEP   | 20 January 2014  | 201.9                | Up to 20%         |
| Fed into FFEP  | 20 January 2014  | 1 806.0              | Up to 5%          |
| Produced at FFEP   | 20 January 2014  | 245.9                | Up to 20%         |

Table 2  
**Inventory of UF<sub>6</sub> enriched up to 20% U-235**

|                             |           |
|-----------------------------|-----------|
| Produced at FFEP and PFEP   | 447.8 kg  |
| Fed into conversion process | 337.2 kg  |
| Downblended                 | 110.0 kg* |
| Stored as UF <sub>6</sub>   | 0.6 kg**  |

\* The figure includes 1.6 kg that was previously downblended (GOV/2012/55, para. 10).

\*\* This material is under Agency seal at Iran's declared enrichment facilities where it had been used as reference material for mass spectrometry.

Table 3  
**Conversion at UCF**

| <i>Conversion process</i>                          | <i>Quantity produced</i> | <i>Transferred to FMP</i> |
|--|--------------------------|---------------------------|
| UF <sub>6</sub> (~3.4% U-235) into UO <sub>2</sub> | 24 kg U                  | 24 kg U                   |
| Natural UOC into UO <sub>2</sub>                   | 13 792 kg U*             | 13 229 kg U               |

\* Uranium content in material suitable for fuel fabrication.

Table 4  
**Conversion of UF<sub>6</sub> enriched up to 20% U-235 into U<sub>3</sub>O<sub>8</sub> at FPFEP**

| <i>Feed quantity</i>                     | <i>Quantity produced</i> |
|--|--------------------------|
| 337.2 kg of UF <sub>6</sub> (227.6 kg U) | 162.8 kg U               |

Table 5  
**Conversion of UF<sub>6</sub> into UO<sub>2</sub> at EUPP**

| <i>Feed quantity</i>   | <i>Quantity produced</i>                                 |
|--|--|
| 6 319 kg of natural UF <sub>6</sub> (4 262.3 kg U)                 | 1 828.8 kg U in the form of UO <sub>2</sub> *            |
| 4 334 kg of UF <sub>6</sub> enriched up to 5% U-235 (2 924.3 kg U) | 2 330.0 kg U in the form of UO <sub>2</sub> *            |
| 8 650 kg of depleted UF <sub>6</sub> (5 840 kg U)                  | 5 839 kg U in the form of UO <sub>2</sub> F <sub>2</sub> |

\* The rest of the nuclear material is in different stages of the process.

Table 6  
**Fuel manufacturing at FMP**

| <i>Item</i>                                  | <i>Number produced</i> | <i>Enrichment</i> | <i>Item mass (g U)</i> | <i>Number irradiated</i> |
|--|------------------------|-------------------|------------------------|--------------------------|
| Test fuel rod for IR-40 Reactor              | 3                      | Natural uranium   | 500                    | 1                        |
| Test fuel rod                                | 2                      | 3.4%              | 500                    | —                        |
| Fuel rod assembly                            | 2                      | 3.4%              | 6 000                  | 1                        |
| Mini IR-40 prototype fuel assembly           | 1                      | Natural uranium   | 10 000                 | 1                        |
| IR-40 prototype fuel assembly                | 36                     | Natural uranium   | 35 500                 | Not applicable           |
| IR-40 fuel assembly                          | 11                     | Natural uranium   | 56 500                 | —                        |
| Test fuel rods for gamma scanner calibration | 7                      | 1.6%-4.1%         | 475                    | —                        |

Table 7  
**TRR Fuel Fabrication at FPF**

| <i>Item</i>                      | <i>Number produced</i> | <i>Enrichment</i> | <i>Item mass (g U)</i> | <i>Present at TRR</i> | <i>Irradiated</i> |
|----------------------------------|------------------------|-------------------|------------------------|-----------------------|-------------------|
| TRR test plate (natural uranium) | 4                      | Natural uranium   | 5                      | 2                     | 1                 |
| TRR test plate                   | 5                      | 19%               | 75                     | 5                     | 2                 |
| TRR control fuel assembly        | 10                     | 19%               | 1 000                  | 8                     | 6                 |
| TRR standard fuel assembly       | 29                     | 19%               | 1 400                  | 21                    | 17                |
| Test assembly (with 8 plates)    | 1                      | 19%               | 550                    | 1                     | —                 |

## Annex IV

**Update on Iran's implementation of "voluntary measures" undertaken in relation to the Joint Plan of Action agreed between the E3+3 and Iran on 24 November 2013**

1. The Agency confirms that since 20 January 2014, Iran has:
  - i. not enriched uranium above 5% U-235 at any of its declared facilities;
  - ii. not operated cascades in an interconnected configuration at any of its declared facilities;
  - iii. diluted — down to an enrichment level of no more than 5% U-235 — 108.4 kg of UF<sub>6</sub> enriched up to 20% U-235;<sup>94</sup>
  - iv. fed 100 kg of UF<sub>6</sub> enriched up to 20% U-235 into the conversion process at FPF for conversion into uranium oxide;
  - v. had no process line to reconvert uranium oxides back into UF<sub>6</sub> at FPF;
  - vi. not made "any further advances" to its activities at FEP, FFEP or the Arak reactor (IR-40 Reactor), including the manufacture and testing of fuel for the IR-40 Reactor;
  - vii. provided an updated DIQ for the IR-40 Reactor and concluded with the Agency a safeguards approach for the reactor<sup>95</sup> (based on the updated DIQ and the safeguards measures agreed on 5 May 2014);
  - viii. fed 4,334 kg of UF<sub>6</sub> enriched up to 5% U-235 into the conversion process at the EUPP for conversion into uranium oxide;<sup>96</sup>
  - ix. continued its safeguarded enrichment R&D practices at PFEP, without accumulating enriched uranium;
  - x. not carried out reprocessing related activities at TRR and the MIX Facility or at any of the other facilities to which the Agency has access;
  - xi. provided information and managed access to the uranium mine and mill at Gchine,<sup>97</sup> to the Saghand Uranium Mine<sup>98</sup> and the Ardakan Uranium Production Plant;<sup>99</sup>
  - xii. continued to provide daily access to the enrichment facilities at Natanz and Fordow;
  - xiii. provided regular managed access to centrifuge assembly workshops, centrifuge rotor production workshops and storage facilities, and provided information thereon; and

<sup>94</sup> For details, see GOV/INF/2014/26, footnote 4.

<sup>95</sup> On 31 August 2014.

<sup>96</sup> On 9 October 2015, the Agency verified that 2,330 kg of uranium in the form of UO<sub>2</sub> enriched up to 5% U-235 had been produced since the plant started operation.

<sup>97</sup> On 29 January 2014.

<sup>98</sup> On 6 May 2014.

<sup>99</sup> On 7 May 2014.

- xiv. provided,<sup>100</sup> in relation to enhanced monitoring, the following:
- plans for nuclear facilities and a description of each building on each nuclear site;
  - descriptions of the scale of operations being conducted for each location engaged in specified nuclear activities; and
  - information on uranium mines and mills, and on source material.
2. In addition, the Agency confirms that since 24 July 2014, Iran has:
- i. used 109.2 kg of  $U_3O_8$ , converted from  $UF_6$  enriched up to 20% U-235, for the manufacture of fuel items for TRR;<sup>101,102</sup>
  - ii. used 1.2 kg of  $U_3O_8$ , converted from  $UF_6$  enriched up to 20% U-235, for the manufacture of miniature fuel plates for  $^{99}Mo$  production;<sup>103</sup> and
  - iii. diluted about 4,118 kg of  $UF_6$  enriched up to 2% U-235 to the level of natural uranium.

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<sup>100</sup> As of 20 April 2014: pursuant to Iran's undertaking to provide this information within three months of the JPA taking effect, i.e. 20 January 2014.

<sup>101</sup> The Agency has verified that, since 24 July 2014, an additional 18.1 kg of this  $U_3O_8$  (6.2 kg prior to 24 November 2014 and 11.9 kg since that date), have been generated by and removed from the fuel fabrication process as scrap. Iran reported that this nuclear material, which remains at the facility, had not met the technical specification for fuel fabrication.

<sup>102</sup> Since 16 September 2015, Iran has been recovering uranium in the form of  $U_3O_8$  from the solid and liquid scrap originating from the conversion and fuel fabrication processes associated with the manufacture of fuel items. As of 7 November 2015, the Agency had verified that, since 16 September 2015, Iran had recovered 44.7 kg of uranium in the form of  $U_3O_8$  suitable for fuel fabrication, of which 30.4 kg had been used for the manufacture of fuel items for TRR.

<sup>103</sup> In a letter dated 28 December 2014, Iran informed the Agency that FFP was to start the production of miniature fuel plates for the MIX Facility for  $^{99}Mo$  production.