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Verification and monitoring in the Islamic Republic of Iran in light of United Nations Security Council resolution 2231 (2015)

Report by the Director General

1. This report of the Director General to the Board of Governors and, in parallel, to the United Nations Security Council (Security Council), is on the Islamic Republic of Iran's (Iran's) implementation of its nuclear-related commitments under the Joint Comprehensive Plan of Action (JCPOA) in relation to its enrichment-related activities. It provides an update on developments since the Director General's previous report.[1]

A. Activities Related to Enrichment

A.1. Fuel Enrichment Plant

2. As previously reported,[2] Iran has informed the Agency that at the Fuel Enrichment Plant (FEP) at Natanz, in addition to the 30 IR-1 cascades provided for under the JCPOA,[3] it intends to: install another 30 cascades – six of IR-1 centrifuges, fifteen of IR-2m centrifuges, six of IR-4 centrifuges, and three of IR-6 centrifuges; install "infrastructure" for up to 18 additional cascades at FEP,[4] without specifying the types of centrifuge to be installed; and increase the number of IR-1 centrifuges installed in some of the 30 IR-1 cascades that had remained in the same configuration since JCPOA Implementation Day. All of these cascades are either already installed, or will be installed, in four of the eight enrichment units

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[1] GOV/2022/62.

[2] GOV/2022/62, paras 18 and 19.

[3] JCPOA, 'Annex I – Nuclear-related measures', para. 27.

[4] Including infrastructure for the six IR-2m cascades already installed (see GOV/2022/62, para. 21).

that comprise Building A1000 at FEP.[5]

3. On 19 November 2022, Iran informed the Agency, through two letters related to FEP dated 17 November 2022, that it had "started feeding" the third IR-4 cascade as well as three more of the installed IR-2m cascades; that it intended to install an additional six IR-4 cascades and six IR-2m cascades;[6] and that it intended "to commission B1000 building with capacity of 8 enrichment units".[7] Iran also informed the Agency that the updated DIQ was "available at the facility" for Agency examination and verification.

4. On 20 November 2022, the Agency carried out a preliminary examination of the updated DIQ referred to above. This latest DIQ update does not provide any additional information on the number and type of cascades that will be installed in Building B1000 which, from previous design information received by the Agency, has the same general design as Building A1000, according to which each enrichment unit can accommodate up to 18 cascades of centrifuges.

5. On the same day, the Agency verified at FEP that the feeding of natural UF_6 into an additional IR-4 cascade and one additional IR-2m cascade to produce UF_6 enriched up to 5% U-235 had started; the installation of one additional IR-4 cascade had started; the installation of centrifuges in the remaining eight IR-4 cascades and six IR-2m cascades had yet to begin; the installation of sub-headers for nine of the additional 12 cascades where six IR-4 cascades and six IR-2m cascades will be installed had been completed; and the installation of a second production hall in Building B1000 had yet to begin.

A.2. Fordow Fuel Enrichment Plant

6. As previously reported,[8] Iran began to enrich UF_6 in one wing (Unit 2) of the Fordow Fuel Enrichment Plant (FFEP) in November 2019. Iran has used six IR-1 cascades (configured as individual cascades or as three sets of two interconnected cascades) and two IR-6 cascades (operated as individual cascades) for the production of UF_6 enriched up to 5% U-235 and UF_6 enriched up to 20% U-235.[9]

7. On 19 November 2022, Iran informed the Agency, through a letter dated 17 November 2022, that at FFEP it "intends to feed LEU in order for producing uranium enriched up to 60%, commissioning unit 1 with capacity of 8 cascades, and replacing 6 cascades of IR-1 with IR-6 centrifuge machines in unit 2". Iran also informed the Agency that the updated DIQ was "available at the facility" for Agency examination and verification.

8. On 20 November 2022, the Agency carried out a preliminary examination of the updated DIQ referred to above. According to this DIQ update, Iran intends to install a total of 14 additional IR-6 cascades at FFEP - six to replace the IR-1 cascades already operating in one wing (Unit 2) and eight in the second wing (Unit 1), which had remained dismantled since JCPOA Implementation Day.[10] Iran also described in the updated DIQ a new mode of operation, in addition to those previously declared,[11] using only the two currently installed IR-6 cascades, in an interconnected mode, to produce UF_6 enriched

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[5] Two of the eight enrichment units have been segregated from the production hall of FEP in Building A1000 and assigned to become part of the Pilot Fuel Enrichment Plant (PFEP) at Natanz where enrichment research and development (R&D) activities are to be carried out (see GOV/2022/62, para. 23).

[6] These additional 12 cascades relate to the "up to 18 additional cascades" referred to in paragraph 2 of this report.

[7] Part of Hall B within Building B1000 is used to store excess centrifuges and infrastructure removed from the three enrichment plants as required under the JCPOA.

[8] GOV/2019/55, paras 14 and 15.

[9] GOV/2022/62, para. 28.

[10] 16 January 2016.

[11] See GOV/2022/62, para. 28.

up to 60% U-235 from UF_6 enriched up to 5% U-235 as feed material. All other cascades, including those yet to be installed, will either produce UF_6 enriched up to 20% U-235 from UF_6 enriched up to 5% U-235 or will be used to enrich natural uranium up to 5% U-235.

9. On 22 November 2022, the Agency verified that Iran had yet to begin installing additional IR-6 cascades at FFEP and had started the installation of Unit 1.[12] The Agency also verified that Iran was using up to 1044 IR-1 centrifuges in three sets of two interconnected cascades to enrich uranium up to 20% U-235 and one set of two interconnected cascades of 166 IR-6 centrifuges to enrich uranium up to 60% U-235 using UF_6 enriched up to 5% U-235 as feed material. One IR-1 centrifuge was installed in a single position but was not being fed with nuclear material.[13]

B. Safeguards Approaches

10. The Agency has again reminded Iran of its obligation under the Safeguards Agreement to inform the Agency of any change in design information sufficiently in advance for the Agency safeguards procedures to be adjusted accordingly to ensure effective verification. The Agency will inform Iran of its intention to increase the frequency and intensity of its verification activities at FFEP in accordance with the Safeguards Agreement.

C. Summary

11. The Director General urges Iran to inform the Agency of any change in design information, particularly in relation to the production of high enriched uranium, sufficiently in advance for the Agency's safeguards procedures to be adjusted accordingly to ensure effective verification.

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[12] To date, this has involved the installation of centrifuge mounting blocks that had been previously removed and transferred for storage at Natanz in Hall B of FEP (see JCPOA, para. 48.2).

[13] In January 2018, Iran informed the Agency about a temporary setup for a single IR-1 centrifuge position for "separation of stable isotopes" in Unit 2 (see GOV/2018/7, footnote 19).