Institute for Science and International Security

Report

Analysis of IAEA Iran Verification and Monitoring Report — August 2024

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Background

- This report summarizes and assesses information in the International Atomic Energy Agency's (IAEA's) quarterly report, dated August 29, 2024, *Verification and monitoring in the Islamic Republic of Iran in light of United Nations Security Council resolution 2231 (2015)*, including Iran's compliance with the Joint Comprehensive Plan of Action (JCPOA).

Findings

- Iran can produce more weapon-grade uranium (WGU) since the IAEA's last report in May 2024 due to increased stocks of enriched uranium and a greatly enlarged advanced centrifuge capacity.
- Iran's stocks of enriched uranium and its centrifuge capacity combined are sufficient to make enough WGU, taken as 25 kilograms (kg) of WGU per weapon, for nine nuclear weapons in one month, 12 in two months, 13 in three months, 14 in four months, and 15 in five months.
- With Iran's growing enrichment experience and using only a portion of its stock of 60 percent highly enriched uranium (HEU) and only four advanced centrifuge cascades, Iran could produce its first quantity of 25 kg of WGU in about one week. This breakout could be difficult for the IAEA to detect promptly, if Iran delayed inspectors' access.
- The installation of eight more IR-6 cascades at the deeply buried Fordow Fuel Enrichment Plant (FFEP) since the last report means that Fordow alone could allow Iran to break out within days. With careful planning in advance and placement of all the stocks of 20 and 60 percent enriched uranium at the FFEP, it could produce enough WGU for four nuclear weapons in about two weeks and enough for almost six in a month.[3] By the end of the

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[2] Sarah Burkhard is on temporary leave, and as a result, several sections of this report were omitted.

[3] After adjusting for greater enriched uranium stocks, his calculation uses the same methodology as in "Technical Note: Iran's Recent Increase in Enrichment Capacity at the Fordow Enrichment Plant," by David Albright, June 19,

second month, it could make enough WGU for nine nuclear weapons. If Iran used only less than five percent enriched uranium, it would need about 1.5 months to make enough WGU for a nuclear weapon. If it used only natural uranium, it would need about five and a half months to produce enough WGU for a weapon. The installation of more IR-6 centrifuge cascades, as planned, would worsen the situation.

- The IAEA pointedly admonishes Iran over its "continued accumulation" of HEU, noting it is "the only non-nuclear weapon State to do so, [adding] to the Agency's concerns."
- The IAEA's efforts to verify Iran's nuclear activities, particularly its uranium enrichment activities, continue to be seriously affected by Iran's decision last fall to withdraw the designation of several experienced inspectors. Despite repeated calls by the IAEA that Iran reconsider this inappropriate, political act, including in a June 2024 Board of Governors censure resolution, Iran has failed to reverse course. The IAEA reports Atomic Energy Organization of Iran (AEOI) chief Mohammad Eslami told the IAEA on June 6 that Iran's position on the matter "is unchanged and this position will remain as it is."
- As of August 17, the net overall enriched uranium stock, including all levels of enrichment and all chemical forms, decreased by 449.6 kg, from 6201.3 kg to 5751.8 kg (Uranium mass or U mass). This reflected mainly Iran's use of lower enriched uranium stocks to produce higher enriched uranium stocks.
- As of August 17, Iran's stockpile of 60 percent HEU in the form of uranium hexafluoride was 164.7 kg (as measured in U mass) or 243.6 kg (hex mass). This represented a net increase in the stock in the form of uranium hexafluoride of 22.6 kg (U mass) since the previous reporting period. This form of enriched uranium allows for a more rapid breakout.
- However, the IAEA report states in a footnote that sometime after May 11, 2024, Iran downblended 5.9 kg (U mass) of uranium enriched up to 60 percent U-235 by mixing it with 2 percent enriched uranium, producing 20 percent enriched uranium. Thus, Iran's total new production of 60 percent enriched uranium was given by the IAEA as 28.6 (U mass) as of August 17, 2024. It should be noted that previously Iran converted about 2 kg (U mass) into oxide form.
- With total production of 60 percent enriched uranium at 28.6 (U mass) during this reporting period, the average production rate of 60 percent HEU was about 8.85 kg (U mass) per month, or 0.295 kg (U mass) per day, higher than the average rate of 6.4 kg (U mass) during the previous reporting period. At this rate, Iran can produce about 108 kg of 60 percent HEU (U mass) annually.
- Iran continued to produce 60 percent HEU from 5 percent low enriched uranium (LEU) feed in two pairs of interconnected advanced centrifuge cascades at the above-ground Pilot Fuel Enrichment Plant (PFEP) and at the below-ground Fordow Fuel Enrichment Plant (FFEP). The FFEP pair includes two IR-6 centrifuge cascades, one of which is easily modifiable to change operations and enrich uranium to higher levels.
- According to previous reports, Iran was storing the majority of its 20 percent enriched uranium and 60 percent HEU stocks at the Esfahan Fuel Plate Fabrication Plant (FPFP), which may not be as thoroughly monitored as Natanz and Fordow. The stocks require

2024, https://isis-online.org/isis-reports/detail/technical-note-irans-recent-increase-in-enrichment-capacity-at-fordow/8.

enhanced IAEA safeguards to detect and prevent Iran's diversion of enriched uranium to a secret enrichment plant. For example, there should be stepped-up inspector presence and remote camera surveillance at the facility. The IAEA should also resume reporting on the status of these stocks, since their presence at Esfahan violates JCPOA provisions. Moreover, without constant monitoring, Iran could move these stocks in their entirety to Fordow without being detected promptly.

- As of August 17, 2024, Iran had an IAEA-estimated stock of 813.9 kg of 20 percent enriched uranium (U mass and in the form of UF_6), equivalent to 1204 kg (hex mass), representing an increase of 62.6 kg (U mass). Iran also had a stock of 28.6 kg (U mass) of 20 percent enriched uranium in other chemical forms.
- The average production rate of 20 percent enriched uranium at the FFEP was 20.2 kg (hex mass) per month or 13.7 kg (U mass) per month, slightly higher than the previous reporting period.
- Iran now has nearly 10,600 advanced centrifuges installed at Natanz and Fordow, where most are deployed at the Natanz Fuel Enrichment Plant (FEP) (see Figure 1). The FEP now has all near-term planned centrifuge cascades installed, pending less firm Iranian plans.
- Including the installed IR-1 centrifuges at the FEP and FFEP brings the total number of installed centrifuges to about 16,900. It should be noted that many advanced centrifuges are deployed but not enriching uranium, and the IR-1 centrifuges have a reduced ability to enrich uranium.
- During the reporting period, Iran installed eight new IR-6 cascades at Fordow, for a total of 10 IR-6 cascades, two of which are currently operating. Iran plans to install a total of 16 IR-6 cascades at Fordow. Iran installed ten new IR-2m cascades at the Natanz FEP, for a total of 31 IR-2m cascades. Fifteen of those are now enriching. Iran also started enriching in nine of 12 previously installed IR-4 cascades at the FEP.
- At PFEP Hall A1000, Iran installed a full cascade of 174 IR-6 centrifuges in Line D, where it has begun feeding the cascade with depleted uranium to enrich up to 5 percent LEU.
- The quantity of Iran's enriching centrifuges increased during this reporting period to around 12,800 centrifuges. In a footnote, the IAEA draws a distinction between operating and enriching centrifuges, where operating centrifuges include those that have enriched uranium previously and enriching centrifuges are those that are enriching uranium at the time of inspection.
- In this report, only installed capacity is provided. Iran has a total installed enrichment capacity of roughly 48,800 SWU/year.
- Iran's stockpile of near 5 percent LEU decreased by 55.4 kg (U mass) to 2321.5 kg (U mass), or 3434.2 kg (hex mass).
- Iran has not prioritized stockpiling uranium enriched between two and five percent. It also has not made planned progress on the Enriched Uranium Powder Plant, a key civil facility to convert less than 5 percent enriched uranium hexafluoride into uranium oxide powder for use in nuclear power reactor fuel. These two choices are at odds with Iran's contention that its primary goal is to accumulate 4-5 percent enriched uranium for use in nuclear power reactor fuel. Instead, Iran has used this stock extensively to produce near 20 percent and 60 percent enriched uranium, far beyond Iran's civilian needs.

- The IAEA again reports that Iran has not started commissioning the Arak reactor, now called the Khondab Heavy Water Research Reactor (KHRR), or IR-20. Iran previously informed the IAEA that it expected to commission the reactor in 2023 and start operations in 2024. The IAEA reports that minor civil construction work was ongoing on the reactor. During design information verification (DIV) activities on August 10, Iran informed the IAEA "that commissioning was now expected to take place in 2026," and Iran would provide an updated design information questionnaire (DIQ).
- The IAEA underscores that it has been "more than three and a half years since Iran stopped provisionally applying its Additional Protocol. Therefore, throughout this period, Iran has not provided updated declarations and the Agency has not been able to conduct complementary access to any sites and other locations in Iran."
- Contrary to a demand in the board's June 2024 resolution that Iran implement the IAEA/Iran Joint Statement from March 2023, the IAEA reports no new progress on installing new surveillance cameras at Iran's nuclear-related facilities, including centrifuge manufacturing and assembly sites. Iran has also said it will not turn over data or footage associated with monitoring devices and cameras, as it committed in the statement, unless sanctions are removed, essentially holding the IAEA hostage to political developments outside the agency's control.
- The absence of monitoring and surveillance equipment, particularly since June 2022, has caused the IAEA to doubt its ability to ascertain whether Iran has diverted or may divert advanced centrifuges. A risk is that Iran could accumulate a secret stock of advanced centrifuges, deployable in the future at a clandestine enrichment plant or during a breakout at declared sites. Another risk is that Iran will establish additional centrifuge manufacturing sites unknown to the IAEA. Iran has proven its ability to secretly move manufacturing equipment to new, undeclared sites, further complicating any future verification effort and contributing to uncertainty about where Iran manufactures centrifuges.
- The IAEA concludes that "Iran's decision to remove all of the Agency's equipment previously installed in Iran for JCPOA-related surveillance and monitoring activities has [had] detrimental implications for the Agency's ability to provide assurance of the peaceful nature of Iran's nuclear [program]."
- The IAEA reiterates, "The Agency has lost continuity of knowledge in relation to the production and inventory of centrifuges, rotors and bellows, heavy water and [uranium ore concentrate] UOC."
- Concern about Iran's installation of advanced centrifuges at an undeclared site increases as the 60 percent HEU stocks grow. Such a scenario is becoming more worrisome and viable, since a relatively small number of advanced centrifuge cascades would suffice for the rapid enrichment of the 60 percent HEU to weapon-grade. This hybrid strategy involves Iran diverting safeguarded HEU and enriching the material to weapon-grade using three or four secretly manufactured and deployed cascades of advanced centrifuges. With greater uncertainty about the quantity of advanced centrifuges Iran is making, there is a greater chance of Iran hiding away the requisite number of advanced centrifuges to carry out this scenario.

- Combined with Iran's refusal to resolve outstanding safeguards violations and the program's unresolved nuclear weapons dimensions, the IAEA has a significantly reduced ability to monitor Iran's complex and growing nuclear program, at a time when Iran is also under new scrutiny by U.S. and Israeli intelligence for conducting nuclear weapons-related activities. The IAEA's ability to detect diversion of nuclear materials, equipment, and other capabilities to undeclared facilities remains greatly diminished.

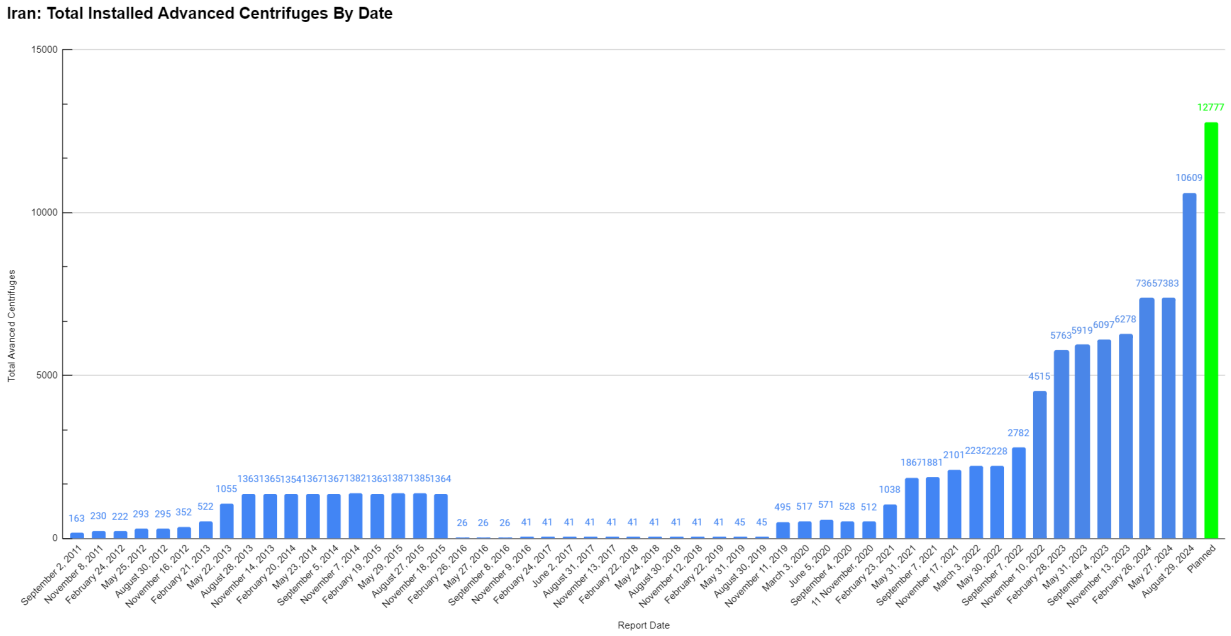

Figure 1. The total number of advanced centrifuges installed at all three enrichment facilities. As can be seen, centrifuge installation accelerated during this reporting period, following relatively small incremental increases during most of 2023 and 2024.

Part 1: Enriched Uranium Stocks

Five Percent LEU Production at the Natanz FEP. At the Natanz FEP, Iran produced approximately 1725.1 kg of UF_6 enriched up to 5 percent U-235 during the reporting period, which spanned 97 days from May 11, 2024, to August 16, 2024.[4] The report discusses this amount as kilograms of UF_6 in units of UF_6 mass, which the authors refer to as hex mass. The total uranium mass, ignoring the fluorine elements, is 1166.2 kilograms, for a monthly average production rate of 360.7 kg U mass and a daily average production rate of 12 kg U mass. These average production rates increased from 203.5 kg U mass per month, or 6.8 kg U mass per day, during the previous reporting period, consistent with the fact that fewer centrifuge cascades were operating.

[4] That production values are reported in uranium hexafluoride mass can be discerned only by comparing the production values to the differences in stockpile from one reporting period to the next. The differences in stockpile are consistently two-thirds of the given produced quantity, showing that the former is in uranium mass and the latter is in uranium hexafluoride mass.

60 Percent HEU Production at Fordow. At the FFEP, during the most recent reporting period, which spanned May 11, 2024, to August 16, 2024, Iran produced 27.4 kg (hex mass) of near 60 percent enriched uranium, or 18.5 kg U mass. The daily average production rate was 0.19 kg (U mass), resulting in a monthly average production rate of 5.7 kg (U mass), above the average production rate during the last reporting period, when it was 3.9 kg (U mass). Annually, using the daily average production and multiplying it by 365 days, Iran could produce 69.7 kg (U mass) or 103 kg (hex mass) of 60 percent enriched uranium at FFEP alone.

20 Percent Enriched Uranium Production at Fordow. At the FFEP, Iran also produced 65.4 kg of UF_6 (hex mass) enriched up to 20 percent enriched uranium, or 44.2 kg U mass. Average production of 20 percent enriched uranium at the FFEP was comparable to the last reporting period, at 0.67 kg (hex mass) or 0.45 kg (U mass) per day, resulting in a monthly average production rate of 20.2 kg (hex mass) or 13.7 kg (U mass). Annually, Iran could produce 246 kg (hex mass) or 166 kg (U mass) of near 20 percent enriched uranium.

From its production of 60 and 20 percent enriched uranium at the FFEP, Iran accumulated 859.7 kg (hex mass) or 581.2 kg (U mass) of up to 2 percent enriched uranium in tails.

Enrichment Levels Produced at the Natanz Pilot Plant. At the PFEP, Iran continued to produce 2 percent enriched uranium, 5 percent enriched uranium, and up to 60 percent enriched uranium stock during the reporting period. Between May 11, 2024, and August 16, 2024, the PFEP produced 14.9 kg (hex mass) of near 60 percent enriched uranium or 10.1 kg (U mass); 104.6 kg (hex mass) of up to 5 percent LEU (70.7 kg U mass); and 64.7 kg (hex mass) of uranium enriched up to 2 percent U-235 (43.7 kg U mass). It accumulated an additional 201.8 kg (hex mass) of uranium enriched up to 2 percent U-235 (136.4 kg U mass) in tails.

At Hall A1000 R&D production lines A, B, C, and D produced 14 kg (hex mass) of up to 5 percent LEU (9.5 kg U mass). In these same production lines, Iran also produced 7.4 kg (hex mass) of up to 2 percent LEU (5 kg U mass).

60 Percent HEU Production at the Natanz Pilot Plant. The 60 percent enriched uranium production rate at the PFEP during this reporting period was similar to the previous reporting period at 14.9kg (hex mass) or 10 kg (U mass) over 97 days, resulting in a monthly average production rate of 4.6 kg (hex mass) or 3.1 kg (U mass) per month, or a daily average production rate of 153 grams (hex mass) or 103 grams (U mass) per day. Annually, using only the two advanced production-scale centrifuge cascades at the PFEP, Iran could produce 56 kg (hex mass) or 39.9 kg (U mass) of 60 percent enriched uranium.

Combined Production of 60 Percent HEU at Fordow and the Natanz PFEP. Combining production levels from the FFEP with those at the PFEP, Iran is producing 8.85kg (U mass) or 13.1 kg (hex mass) of 60 percent enriched uranium per month on average, or a daily rate of 0.295 kg U mass per day. It could produce about 160 kg (hex mass) or 108 kg (U mass) of near 60 percent enriched uranium per year.

Enriched Uranium Stocks in Other Chemical Forms. Estimates of additional amounts of LEU in oxides and intermediate products, fuel assemblies and rods, targets, and scrap, add up to 800.7 kg (U mass). The report specifies that of the 800.7 kg enriched to unspecified levels (U mass), 28.6 kg are up to 20 percent enriched uranium and 2 kg are up to 60 percent HEU. Of the 28.6 kg (U mass) of near 20 percent enriched uranium, 20.2 kg (U mass) (down by 1.5 kg from the previous reporting period) are specified to be in the form of fuel assemblies and 2.8 kg are in targets. The report specifies that 1.5 kg were "loaded into the reactor core at [Tehran Research Reactor] TRR" and "thus removed from the stockpile." What this means is unclear, since the uranium in the irradiated fuel is still subject to safeguards. This could be referring to past, defective exemptions of nuclear material under the JCPOA.

Five Percent LEU Feed Rates. Of its near 5 percent LEU stock, Iran fed 951.2 kg hex mass (or 643 kg U mass) into the cascades at Fordow, for an average feed rate of about 9.8 kg per day hex mass, or 6.6 kg U mass. Iran dumped 1.2 kg of near 5 percent LEU feed at the FFEP (hex mass), or about .81 kg in uranium mass. Iran also fed 320.6 kg of near 5 percent hex mass (216.71 kg U mass) into PFEP R&D lines 4, 5, and 6, for a daily average feed rate of 3.3 kg (hex mass) or 2.2 kg U mass per day.

Overall Enriched Uranium Stocks as of August 17. The net overall enriched uranium stock, including all levels of enrichment and all chemical forms, decreased by 449.5 kg from 6201.3 kg to 5751.8 kg (U mass). This decrease stems from a decrease across two out of four enriched uranium stocks. The near 2 percent LEU stock in the form of UF_6 decreased by 920 kg (U mass), and the near 5 percent enriched uranium stock decreased by 55.4 kg from 2376.9 kg to 2321.5 kg (U mass). Differently from the previous reporting period, the near 20 percent LEU stock in the form of UF_6 increased by 62.6 kg (U mass) while the near 60 percent enriched uranium stock increased by 22.6 kg from 142.1 kg to 164.7 kg (U mass).

Efficiency of 60 Percent Production from Five Percent LEU Feed at the Natanz Pilot Plant. At the PFEP, Iran continued to use a combination of R&D lines 4, 5, and 6 to feed 5 percent LEU into the interconnected cascades in lines 4 and 6 and produce 60 percent enriched uranium, while using centrifuges in line 5 to increase the enrichment level of the tails. During this reporting period, spanning February 11, 2024, to August 16, 2024, of the 320.6 kg (hex mass) of 5 percent LEU fed into lines 4 and 6, Iran turned 11.1 kg (hex mass) into 60 percent enriched uranium and 92.6 kg (hex mass) back into 5 percent enriched uranium (30 percent). 202.7 kg (hex mass) (66 percent) remained as tails enriched up to 2 percent.

Part 2: Enrichment Capacity

Natanz Fuel Enrichment Plant

Installed Centrifuges. As of the end of this reporting period, the IAEA reports that Iran had installed at the Natanz FEP 36 cascades of IR-1 centrifuges,[5] 31 cascades of IR-2m centrifuges, 12 cascades of IR-4 centrifuges, and three cascades of IR-6 centrifuges. Iran now has an estimated total of 8,004 advanced centrifuges installed at the FEP, of which 5,394 are IR-2m centrifuges.

Enriching Centrifuges. As of August 21, 2024, the IAEA reports that at the FEP, in total, 36 cascades of IR-1 centrifuges, 15 cascades of IR-2m centrifuges, 12 cascades of IR-4 centrifuges, and three cascades of IR-6 centrifuges were being fed with natural UF_6, more than during the last reporting period, where 35 cascades of IR-1 centrifuges, five cascades of IR-2m centrifuges, three cascades of IR-4 centrifuges, and three cascades of IR-6 centrifuges were being fed with UF_6. Overall, the capacity of enriching centrifuges remains significantly below that of installed centrifuges, as a total of 16 out of the 31 available IR-2m cascades are installed but not enriching at the FEP.

The quantity of IR-1 centrifuges Iran withdrew from JCPOA-mandated storage continues to be unavailable for this reporting period because of Iran's refusal since February 2021 to provide the IAEA with access to data and recordings collected by agency equipment, and since June 2022, to continue collecting such data. In general, these centrifuges are believed to be coming from stocks of IR-1 centrifuges dismantled before JCPOA Implementation Day in January 2016 rather than representing newly built IR-1 machines.

In Hall A1000, Iran installed 10 cascades of IR-2m centrifuges, or an estimated 1,740 centrifuges, during this reporting period. It is unclear whether they are newly produced machines or were drawn from a secret storage site. The total number of IR-2m centrifuges installed is many times the quantity Iran had installed prior to the JCPOA and even exceeds the quantity Iran declared, prior to the JCPOA, that it planned to install at the FEP. Iran may have built many of these machines prior to the JCPOA's Implementation Day in early 2016 while declaring falsely that it had not done so.

Planned Expansion. Iran is planning to commission up to eight enrichment units in Hall B1000 at Natanz, based on previous IAEA reports. Each of its eight enrichment units can hold 18 cascades (same general design as Hall A1000), but Iran has not specified how many centrifuges and what type it plans to install there. The current report provides no update on this planned commissioning. Iran plans to install 18 IR-2m cascades in one enrichment unit in Hall A1000. As previously stated, 10 of those 18 cascades have been installed and another two cascades are in the process of being installed. This issue is further complicated because Iran no longer provides the IAEA information about its production of centrifuges.

[5] In August 2022, Iran had announced its intention to reconfigure some of the IR-1 cascades to include additional centrifuges, and in December 2022, this process was completed with 120 total IR-1 centrifuges added.

Fordow Fuel Enrichment Plant

Iran has installed an additional eight cascades of IR-6 centrifuges at Fordow, bringing the total to 10 IR-6 cascades. Iran plans to install 16 IR-6 centrifuge cascades at Fordow. At the FFEP, Iran currently has installed 1044 IR-1 centrifuges in three sets of two interconnected cascades, and 10 cascades of installed 1660 IR-6 centrifuges. Iran informed the IAEA that it intends to use depleted uranium as feed material.

Iran continues to use the three sets of two interconnected IR-1 cascades to produce 20 percent enriched uranium from up to 5 percent LEU. Two interconnected IR-6 cascades have produced 60 percent HEU from 5 percent LEU feed. Iran has not specified when it would start feeding the eight additional cascades in Unit 1 with UF_6 or the planned level of enrichment, although the DIQ specifies a 20 percent enrichment level. In late January 2023, the IAEA detected near-84 percent enriched HEU at the product sampling point, suggesting that the enrichment level temporarily rose above 60 percent.

60 Percent HEU Production at the FFEP. On November 22, 2022, Iran started using the two cascades of IR-6 centrifuges to produce UF_6 enriched up to 60 percent from near 5 percent LEU feed "by operating the two IR-6 cascades as one set of two interconnected cascades." In a footnote, the IAEA previously specified that the declared mode of interconnection used the IR-6 cascade without modified subheaders for the last stage of enrichment to 60 percent, and this mode appears to have been used through January 16, 2023. At some point after an unannounced inspection (UI) on January 16, 2023, Iran made an undeclared change to the operation, where the IR-6 cascade with modified subheaders was used for the last stage of enrichment. While Iran temporarily reversed this change over the summer 2023, this is the configuration Iran has been using again since December 2023.[6] The current report does not contain any new information on this issue.

Pilot Fuel Enrichment Plant

New Underground PFEP. Iran plans to transfer its enrichment research and development activities to "a segregated area of Building A1000 at the FEP, to create a new area of the PFEP." On April 24, 2023, Iran provided the IAEA with an updated DIQ for Building A1000, stating it intends to commission there six of the 18 R&D lines (A-F), consisting of "up to 174 IR-4 or IR-6 centrifuges, or various configurations of smaller cascades and single machines." It further declared that it may accumulate enriched uranium product of up to 5 percent LEU from enrichment activities in that area. A fourth line, line D, was commissioned during this reporting period with one full cascade of IR-6 centrifuges, bringing the total number of lines containing centrifuges to four. Iran removed the 20 IR-4 centrifuges in line A, leaving line B with 20 IR-6s

[6] "Statement on Iranian nuclear steps reported by the IAEA," United Kingdom Foreign, Commonwealth & Development Office, December 28, 2023, https://www.gov.uk/government/news/statement-on-iranian-nuclear-steps-reported-by-the-iaea?utm_medium=email&utm_campaign=govuk-notifications-topic&utm_source=2f47a885-843f-4f0e-b89d-7c0e6285e3cc&utm_content=immediately.

centrifuges, and Line C with 20 IR-6 centrifuges. Lines B, C, and D are being fed with depleted uranium or natural uranium to enrich up to 5 percent.

60 Percent HEU Production in Lines 4, 5, and 6. In the August 29, 2024, report, the IAEA reported no changes to the deployment of centrifuges in production lines 4 and 6, which are used for production of 60 percent enriched uranium. Since 60 percent enriched uranium production started on April 17, 2021, Iran has changed the mode of production several times, described in previous IAEA reports.

On August 21, 2024, the IAEA verified that Iran was still feeding up to 5 percent LEU into the two interconnected cascades in lines 4 and 6, comprising up to 164 IR-4 and up to 164 IR-6 centrifuges, respectively, and producing up to 60 percent enriched uranium. The assay of the tails is likely about 2-3 percent. On August 21, 2024, line 5 was enriching the tails from lines 4 and 6 in a cascade of 168 IR-4 and four IR-6 centrifuges to produce up to 5 percent enriched uranium hexafluoride.

Lines 1, 2, and 3. On August 21, 2024, according to the IAEA report, "Iran has continued to accumulate uranium enriched up to 2% U-235 through feeding natural UF_6 into small and intermediate cascades comprising up to: 12 IR-1 centrifuges; 94 IR-2m centrifuges and nine IR-2m centrifuges; 20 IR-4 centrifuges and ten IR-4 centrifuges; six IR-5 centrifuges and 19 IR-5 centrifuges; nine IR-6 centrifuges, 20 IR-6 centrifuges, 19 IR-6 centrifuges and four IR-6 centrifuges. The following single centrifuges were being tested with natural UF_6 but not accumulating enriched uranium: two IR-2m centrifuges; five IR-4 centrifuges; three IR-5 centrifuges; six IR-6 centrifuges; one IR-6s centrifuge; one IR-7 centrifuge; one IR-8 centrifuge; one IR-8B centrifuge; and one IR-9 centrifuge."

Practicing Breakout by Producing Highly Enriched Uranium

During this reporting period, Iran continued to produce 60 percent enriched uranium, or HEU, and its stock now is almost four significant quantities of HEU (3.95 to be precise), despite blending down a fraction of it to near 20 percent enriched uranium.[7] Thus, Iran continues to have enough nuclear explosive material to have assurance it can directly fashion a nuclear explosive device, since 60 percent enriched uranium can be used directly in nuclear weapons. About 40 kg (U mass) is more than enough to make a nuclear explosive, compared to 25 kg (U mass) of 90 percent enriched uranium, the quantity the Institute uses as a "sufficient quantity" for Iran to manufacture a nuclear explosive.

Iran could also enrich the 60 percent enriched uranium to weapon-grade uranium. After all, 60 percent enriched uranium is 99 percent of the way to WGU.

[7] A significant quantity of 60 percent enriched uranium is 41.7 kg, and it contains 25 kilograms of uranium-235, all in uranium mass.

Sixty percent enrichment is also a level associated with a key step in the traditional A.Q. Khan stepwise process of climbing from natural uranium to 90 percent enriched uranium in four enrichment steps – enriching natural uranium to 4-5 percent enriched uranium, then further enriching this material to 20 percent, then to 60 percent, and finally to 90 percent.

Iran has thoroughly practiced the main steps of breakout under a civilian cover and has also learned to reduce the number of steps that it would need to go from natural uranium to WGU, such as by going directly from five percent to 60 percent. Moreover, the Iranians are experimenting with transferring enriched UF_6 as a gas from one step to the next, instead of having to solidify the intermediate product gas and turn it back into a gas in the next step, as Khan needed to do to make Pakistani nuclear weapons.

Iran may have covertly produced small quantities of WGU from near 20 percent enriched uranium, despite not collecting this product. In November 2021, Iran fed an unspecified amount of its near 20 percent enriched uranium stock into a variety of advanced centrifuges at the PFEP. Since Iran was not accumulating enriched uranium, and was instead combining the product and tails, the levels of enriched uranium achieved are not included in the report and may also not be known to the IAEA. The levels reached may include 90 percent, or weapon-grade.

All this experimentation has led Iran to be more capable of breaking out, if the leadership orders production of WGU or moves toward the construction of nuclear weapons. Undoing Iran's acquisition of this knowledge is not possible.

Transfer of 20 Percent Enriched Uranium and 60 Percent HEU from Natanz to Esfahan

This report and the previous two IAEA reports do not discuss additional transfers to or existing stocks of near 20 and 60 percent enriched uranium at the Esfahan FPFP, stocks which Iran moved from Natanz and Fordow. The reason for the omission is not provided.

Earlier reports discussed Iran's transfer of 20 percent enriched uranium and 60 percent HEU in hexafluoride form from the Natanz site to the FPFP, which it declared to be for the production of HEU targets for the TRR. However, almost none of this enriched uranium has been turned into targets. Iran's storage of so much proliferation-sensitive material at the FPFP requires enhanced IAEA safeguards to detect and prevent diversion to a secret enrichment plant. It is unclear if such safeguards have been applied, such as stepped-up inspector visits, more frequent inventory verification, or camera surveillance. The IAEA should report on this matter urgently.

Based on past reports, in January 2022, Iran transferred 23.3 kg (U mass) of 60 percent material to the FPFP. On April 19, 2022, the IAEA verified the receipt of an additional quantity of 15.3 kg (U mass) 60 percent HEU, bringing the total to 38.6 kg (U mass). On September 11, 2022, the IAEA verified the receipt of 16.5 kg (U mass) of 60 percent enriched uranium, bringing the total to 55.1 kg. On October 24, 2022, the IAEA verified the presence of a total of 53 kg (U mass) 60 percent HEU at the "storage area" of FPFP. The difference of about 2 kg matches the amount of 60 percent HEU reported to be in forms other than uranium hexafluoride, specified to contain 1.6 kg

(U mass) in mini-plates. As of August 19, 2023, this 1.6 kg of HEU in 264 targets had been irradiated in the TRR, and the targets were being stored in the TRR reactor pool. Another 0.4 kg (U mass) was in liquid and solid scrap.

On February 15, 2023, the IAEA verified the receipt at the FPFP of 16.55 kg (U mass) of 60 percent enriched uranium in the form of uranium hexafluoride. On July 19, 2023, the IAEA verified receipt at the FPFP of 30.92 kg of 60 percent enriched uranium, and on August 20, 2023, it verified an overall total of 100.52 kg of 60 percent enriched uranium at the FPFP.

On May 30, 2023, the IAEA verified receipt from the PFEP of 64.5 kg (U mass) of 20 percent enriched uranium in the form of uranium hexafluoride, bringing the total of 20 percent enriched uranium to 454.64 kg. No additional transfer or production of mini-plates (targets) has been reported since the previous reporting period.

As of August 2023, of Iran's total stock of 121.6 kg (U mass) of 60 percent HEU at that time, about 83 percent of this stock was in storage at the FPFP. This represented an increase from the total of 60 percent of this material stored at the FPFP at the end of the prior reporting period in May 2023. Of Iran's total stock of 20 percent enriched uranium, nearly 85 percent of this stock was in storage at the FPFP at that time. Reports since August 2023 provide no information about the size of these stocks at the FPFP.

Given that Esfahan holds Iran's capabilities to turn enriched uranium hexafluoride into metal, the IAEA should carefully monitor these stocks, as well as guard against diversion to a secret enrichment facility. It should also be noted that the presence of these stocks of 20 and 60 percent stocks violates the JCPOA, and therefore the amounts should be available in the IAEA report.

Part 3: Current Breakout Estimates

During this reporting period, Iran's installed centrifuge capacity used for breakout calculations increased significantly. Because Iran no longer allows the IAEA to monitor its manufacture and assembly of advanced centrifuges, it could also be stockpiling advanced centrifuges without the IAEA's knowledge, a shortcoming it regularly acknowledges.

Iran's formal breakout timeline remains at zero. It has enough 60 percent enriched uranium, or HEU, to be assured it could directly fashion almost four nuclear explosives.[8]

If Iran wanted to further enrich all its 60 percent HEU up to weapon-grade, it could do so quickly, using four advanced centrifuge cascades that are already installed at the PFEP and FFEP. The length of time needed to further enrich the 60 percent HEU to WGU also depends on its choice of tails assay, or the enrichment level of the "waste" material. In this reporting period, the expected

[8] The IAEA defines a significant quantity as the "approximate amount of nuclear material for which the possibility of manufacturing a nuclear explosive cannot be excluded." By definition, it is the amount of HEU containing 25 kg of uranium-235, or 41.7 kg of 60 percent enriched uranium.

enrichment level of the tails assay is selected at 5 percent enriched uranium, which would allow Iran to reuse the tails as feed in cascades making 20 percent. With Iran's stock of 60 percent enriched uranium as of August 17, 2024, and using three IR-6 cascades and one IR-4 cascade, Iran could produce about 93.6 kg (U mass) of WGU in about four weeks. The time to produce its first 25 kg of WGU, where a weapon is assigned 25 kg of weapon-grade uranium (U mass) (see below for a brief explanation for this choice) would entail about one week. Within the first month after a breakout started, Iran could use its stock of 60 percent "feed" to produce almost enough WGU for well over three quantities of 25 kg of WGU, using only these four advanced centrifuge cascades.

In parallel to further enriching 60 percent material, Iran could enrich its near 20 percent enriched uranium stock to weapon-grade uranium in its production-scale cascades at the FEP and FFEP. Using the Institute's breakout calculator, and assuming a set-up time of two weeks, Iran is estimated to be able to accumulate, in one month, over 140 kg (U mass) of weapon-grade uranium, or enough for over five nuclear weapons from its stock of near 20 percent enriched uranium.

Looking at the issue differently, in one month, using 20 and 60 percent stocks, with a set-up time applied to the 20 percent enriched uranium, Iran could produce 235 kg of weapon-grade uranium, enough for nine nuclear weapons. Smaller amounts may be sufficient for each nuclear weapon, indicating that the breakout calculation is conservative.

In the second month, Iran could continue enriching to weapon-grade using its feedstocks of enriched uranium, in particular, its remaining 20 and 60 percent stocks, producing enough weapon-grade uranium for three more nuclear weapons, or a cumulative total of 12 nuclear weapons.

By the end of the third month, using its remaining stock of less than five but greater than two percent enriched uranium, Iran could accumulate enough WGU for 13 nuclear weapons, and by the end of the fourth month, enough WGU for 14 nuclear weapons. By the end of the fifth month, this value would increase to enough WGU for 15 nuclear weapons. The latter variation reflects the functioning of the calculator and transition times to the use of 4.5 percent enriched uranium.

In summary, Iran can use a fraction of its 60 percent enriched uranium to rush to its first quantity of 25 kg of WGU in about a week. Its enriched uranium stocks are sufficient to make enough weapon-grade uranium for nine nuclear weapons in one month, 12 nuclear weapons in two months, 13 in three months, 14 in four months, and 15 in five months.

When Iran ended its crash nuclear weapons program in 2003, called the Amad Plan, its biggest bottleneck was the lack of WGU; it still needed at least a few more years to accumulate enough WGU for a nuclear weapon.[9] Under intense international pressure, Iran decided in 2003 to downsize and better camouflage its nuclear weapons effort, while pushing to establish a robust

[9] David Albright with Sarah Burkhard and the Good ISIS Team, *Iran's Perilous Pursuit of Nuclear Weapons* (Washington, D.C.: Institute for Science and International Security Press, 2021).

capability to enrich uranium. Today, that decision has borne fruit. While Iran aimed for enough nuclear explosive material for five nuclear weapons in 2003, today it can have enough for those five weapons in significantly less than one month. With its residual and covert nuclear weaponization capabilities, Iran could test a nuclear explosive underground or deploy a crude nuclear weapon six months after it decides to build nuclear weapons. It could also re-establish and complete its Amad Plan infrastructure in two years, before serially producing nuclear weapons for ballistic missiles.[10]

Breakout Calculator. The Institute's breakout calculator is used to estimate the breakout time, as in previous reports. The methodology is described in earlier Institute reports. The production of WGU from the 4.5, 20, and 60 percent enriched uranium stocks significantly reduces the timeline for the production of multiple quantities of 25 kg of WGU (U mass). The authors' benchmark reflects a reasonable, assured quantity of WGU for a variety of nuclear weapon designs available to Iran and the creation of a pipeline for production of multiple WGU cores. As before, the total enrichment contribution from small, non-production-scale cascades of advanced centrifuges installed at the PFEP is not included, as their use in a breakout would be complicated and likely would not contribute significantly to reducing breakout timelines. Stocks of less than 2 percent enriched uranium are also not included, since to do so would require additional modifications of the cascades to handle lower enrichments, likely significantly slowing or contributing only slightly, rather than speeding up, breakout timelines. Lastly, only enriched uranium hexafluoride stocks are used; Iran's chemical conversion of other stocks is assessed as too time consuming, and involving too little material, to significantly affect breakout estimates.

The breakout timelines are credible, worst-case estimates, likely representing the shortest timelines to breakout, with longer timelines possible. Uncertainties include ongoing ones, such as the exact enrichment level of the uranium stock enriched between 2 and 5 percent and operational efficiencies of the advanced centrifuges, particularly the IR-4 and IR-6 cascades, although the calculations use a significantly lower estimated enrichment output for the IR-6 cascades than expected.

Part 4: Enriched Uranium Metal Production Remains Halted, Uranium Conversion Campaign

Since the fall of 2021, Iran has not produced any uranium metal at the Esfahan FPFP. However, Iran's capability to produce uranium metal remains intact.

In December 2020, Iran informed the IAEA that it would begin producing uranium metal, including uranium metal enriched up to 20 percent, a step that alarmed many. Iran is using the uranium metal in civil applications, including to produce experimental fuel rods for the TRR. However, Iran has no pressing need to develop this fuel or to use this material for other civilian activities, lending weight to concern that Iran is installing the wherewithal to make uranium metal to increase its nuclear weapons capabilities and is producing it to practice the manufacture of enriched uranium

[10] David Albright, "Iran Building Nuclear Weapons," *Institute for Science and International Security,* December 5, 2022, https://isis-online.org/isis-reports/detail/iran-building-nuclear-weapons/8.

metal components of nuclear weapons. Prior to 2003, under the Amad Plan, Iran was constructing both pilot and large-scale uranium metallurgy facilities to make nuclear cores and was practicing with surrogate materials for WGU.[11]

On February 2, 2021, Iran began producing uranium metal using natural uranium in a laboratory experiment at the Esfahan FPFP. As of August 14, 2021, the IAEA verified that Iran had begun producing enriched uranium metal from 20 percent enriched UF_6. It produced 200 grams of enriched uranium metal, starting with 257 grams of enriched uranium in tetrafluoride form.

Iran stated this enriched uranium metal was for use in silicide fuel for the TRR. Iran produced "two batches of uranium silicide" containing 0.43 kg of uranium enriched to 20 percent. Assuming this is in uranium mass, the uranium silicide contains twice the amount of metal that was reported previously (430 grams compared to 200 grams). As of May 20, 2023, three irradiated silicide fuel elements, containing 70 grams of 20 percent enriched uranium, were in the TRR spent fuel pond. As of that date, another two such fuel elements were being irradiated in the TRR. As of August 19, 2023, the situation remained the same, with these three fuel elements still in the TRR reactor pond and another two still being irradiated in the TRR. The November 2023 report did not update this information, although the report implied that no new silicide fuel elements had been introduced into the TRR. The latest report notes that as of August 18, 2024, the IAEA "verified that 12 fresh TRR fuel standard fuel assemblies and one control fuel assembly, previously received from the FPFP, had yet to be irradiated."

Since 2021, the IAEA has also verified Iran's plans to install a process line to make enriched UF_4 from enriched UF_6. Uranium tetrafluoride can be the intermediate product of uranium metal. In December 2020, Iran notified the IAEA that it planned to create a three-stage line at the FPFP "involving the conversion of: UF^6 to UF^4; UF^4 to uranium metal; and uranium metal to uranium silicide (U^3Si^2)."[12] The IAEA noted that on May 17, 2022, installation had been completed on the first stage but Iran had not yet tested it with nuclear material, and the IAEA observed the same through May 19, 2024. On August 21, 2024, the IAEA verified that "no progress had been made regarding the remaining two stages of the process" of the three planned stages.

At the nearby Uranium Conversion Facility (UCF) at Esfahan, in November 2021, Iran had finished installing equipment for producing uranium metal, and the facility was ready to operate with depleted or natural uranium. As of August 12, 2024, the IAEA verified that no nuclear material had been introduced into the production area.

On May 21, 2024, Iran began a uranium conversion campaign at Esfahan. During an August 10, 2024, DIV at the KHRR, Iran informed the IAEA "that the purpose of a campaign to convert 650 kg

[11] *Iran's Perilous Pursuit of Nuclear Weapons*; David Albright, Sarah Burkhard, and Frank Pabian, "Shahid Mahallati: 'Temporary' Plant for Manufacturing Nuclear Weapon Cores," *Institute for Science and International Security*, April 8, 2020, https://isis-online.org/isis-reports/detail/shahid-mahallati-temporary-plant-for-manufacturing-nuclear-weapon-cores/8.

[12] IAEA Director General, "Verification and Monitoring in the Islamic Republic of Iran in light of United Nations Security Council Resolution 2231 (2015)," GOV/INF/2021/3, January 13, 2021.

of UF_6 enriched up to 5% U-235 to UO_2…was for the production of fuel assemblies for the KHRR." Iran said the campaign will involve "individual conversion and fuel assembly lines at the Enriched UO_2 Powder Plant (EUPP), FPFP, UCF and the Fuel Manufacturing Plant (FMP)."

Part 5: Heavy Water and Khondab (Arak) Reactor

The IAEA reports that since February 2021, due to Iran's reductions in agency monitoring, it has not been able to ascertain the status of Iran's Heavy Water Production Plant (HWPP) nor the production and inventory of heavy water. Since June 11, 2022, when Iran removed Flow-rate Unattended Monitoring (FLUM) equipment at the HWPP, the IAEA has had no monitoring capabilities. Based on commercial satellite imagery, the IAEA included in its August 2024 report its assessment that parts of the HWPP were shut down for maintenance during the reporting period.

The IAEA reports that as of August 10, 2024, civil construction work was ongoing at the Khondab Heavy Water Research Reactor (KHRR), or IR-20, formerly known as the Arak reactor or IR-40. Iran agreed to re-orient the reactor's design under the JCPOA. In May 2023, the IAEA reported that Iran provided an updated DIQ for the reactor, indicating "that the reactor power of 20 MW(th), the fuel enrichment and the preliminary core design are consistent with the 'Fundamental Principles' and 'Preliminary Characteristics' for the re-design of the research reactor" were consistent with the conceptual design set out in Annex I of the JCPOA.

Previously, Iran informed the IAEA that it expected to commission the reactor and the primary circuit in 2023 using dummy IR-20 fuel assemblies of Iranian design, and the reactor would start operations in 2024. Iran communicated to the IAEA on August 10 that "commissioning was now expected to take place in 2026." Iran said it will formally update its DIQ accordingly.

Part 6: De-designation of Inspectors

The IAEA's efforts to verify Iran's nuclear activities, particularly its uranium enrichment activities, continue to be seriously affected by Iran's decision to withdraw the designation of several experienced enrichment inspectors. While formally Iran is within its rights to do so under its comprehensive safeguards agreement (CSA), this de-designation was exercised by Iran in a political manner, contrary to the spirit and intent of safeguards. In October 2023, the Director General requested that Eslami reconsider the withdrawal of designations for these inspectors, and in the June 2024 IAEA board resolution, the board also called on Iran to reverse the act. As of the end of August 2024, Iran has failed to do so and apparently considers the matter settled. In a letter dated June 6, 2024, Eslami informed the IAEA "that pursuant to a careful and in depth consideration of request to reverse the withdrawal of designation of certain inspectors," Iran's position "is unchanged and this position will remain as it is." In a separate report on Iran's compliance with the NPT, the director general underscores, Reinstating the inspectors' access "remains essential to fully allow the Agency to conduct its verification activities in Iran effectively."

Part 7: Additional Protocol and JCPOA Monitoring

Iran stopped implementing the Additional Protocol (AP) to its CSA and the JCPOA's additional monitoring arrangements on February 23, 2021. Iran's actions and its refusal to cooperate with the IAEA across a wide range of monitoring issues causes the IAEA to consistently express doubt about understanding key aspects of Iran's nuclear activities. Without monitoring in place for three and a half years, for example, the IAEA cannot determine the number of centrifuges Iran has manufactured.

Although the IAEA can ascertain the number of centrifuges deployed at Fordow and Natanz, it cannot know how many more Iran has made and stored or deployed at an undeclared site. A risk is that Iran will accumulate a secret stock of advanced centrifuges, deployable in the future at a clandestine enrichment plant. At the least, this situation complicates any future verification effort and contributes to uncertainty about the status of Iran's nuclear activities and facilities.

Monitoring and Surveillance Equipment

After halting implementation of the AP and JCPOA monitoring measures in February 2021, Iran agreed to continue operating IAEA monitoring and surveillance equipment installed for JCPOA monitoring purposes, but to keep footage and data in its custody until it received sanctions relief. Iran pledged to continue collecting and storing these data "with the aim of enabling the Agency to recover and re-establish the necessary continuity of knowledge" at the affected nuclear sites. On June 8, 2022, following IAEA board censure over its failure to cooperate on the IAEA's separate safeguards probe, Iran notified the IAEA that it would remove the IAEA's JCPOA-related monitoring and surveillance equipment. From June 9 to 11, 2022, the IAEA removed, in total, 27 surveillance cameras, the on-line enrichment monitor (OLEM) at the Natanz FEP, and the FLUM equipment installed at the HWPP. The equipment was placed in storage under IAEA seal. The IAEA continues to note, "This seriously affected the Agency's JCPOA-related verification and monitoring."

Cameras and Surveillance at the Natanz Centrifuge Workshops. During a September 2023 meeting with Eslami, the IAEA proposed to Iran the voluntary measure of installing agency cameras in the centrifuge component workshops at Natanz and "a limited number of consistency checks" of the data stored in those cameras. Iran dismissed the request as "not acceptable." The IAEA reports no further developments on the issue.

Cameras and Surveillance at the Esfahan Centrifuge Manufacturing Plant. Iran continued to delay — and may in fact have ended — inspector access to service cameras at the Esfahan centrifuge rotor and bellows manufacturing workshops. As detailed in the IAEA's separate report on Iran's compliance with the NPT, in a letter dated August 8, 2024, the IAEA requested access to the Esfahan workshops "to enable the agency to service the cameras that had last been serviced on May 21, 2024." The IAEA reminded Iran that agency equipment needed to be serviced at least every three months. Under standard safeguards practice, these cameras should not be left for more than three months without being serviced by the inspectors. The IAEA reported that Iran

had not replied as of the issuance of its latest report. Iran retains data collected by cameras since 2023 under agency and Iranian seals at the Esfahan location.

In April 2024, the IAEA also requested access to service the cameras, and Iran did not oblige until May. Iran delayed similarly when the IAEA asked to service the cameras throughout most of 2023. When the IAEA has proposed to conduct consistency checks on the data stored in the Esfahan cameras, Iran has refused.

The IAEA initially installed the cameras in May 2023 pursuant to the March 2023 Iran/IAEA Joint Statement, but Iran has never turned over the video footage to the IAEA.

Lack of Updated AP Declarations, Complementary Access, and Enhanced JCPOA Monitoring

Due to Iran's refusal to implement the AP, the IAEA reports that it has "been more than three and a half years since Iran stopped provisionally applying its Additional Protocol. Therefore, throughout this period, Iran has not provided updated declarations and the Agency was able to conduct complementary access to any sites and other locations in Iran."

The IAEA can no longer carry out daily visits upon request to Iran's enrichment facilities or measure in-process low enriched nuclear material. It has not had access to data from on-line enrichment monitors and electronic seals, or access to measurement recordings registered by installed measurement devices.

The IAEA also no longer receives data and recordings of test stands engaged in quality control tests of advanced centrifuge rotor assemblies, prior to their installation at Natanz and Fordow enrichment plants. It no longer has information about Iran's production of uranium ore concentrate (UOC) or its transfer to the Esfahan facility for conversion, or about UOC obtained from any other source. Table C.1 in the IAEA report describes these and other reduced provisions under JCPOA enhanced monitoring.

The IAEA previously reported in several reports:

> *In the event of a full resumption of implementation by Iran of its nuclear-related commitments under the JCPOA, the Agency would not be able to re-establish continuity of knowledge in relation to the production and inventory of centrifuges, rotors and bellows, heavy water and UOC. Instead, the Agency would need to establish a new baseline in relation to such production and inventories. It would face major challenges in doing so, including the difficulty in confirming the accuracy of any declaration by Iran of its production of centrifuges, rotors and bellows, heavy water and UOC for the period when no verification and monitoring equipment had been in operation. In order to try to fill the gaps in its knowledge and minimize the margin of error, the development of specific arrangements with Iran would be indispensable.*

In three consecutive reports, however, the IAEA categorically states, “The Agency has lost continuity of knowledge in relation to the production and inventory of centrifuges, rotors and bellows, heavy water and UOC.”

Iran has augmented centrifuge manufacturing, assembly, and mechanical testing activities in violation of the JCPOA, while halting IAEA monitoring. Without any monitoring in place, for more than three and a half years, the IAEA cannot ascertain the total quantities of centrifuges Iran has manufactured.

Combined with Iran’s refusal to resolve outstanding safeguards violations, the IAEA has a significantly reduced ability to monitor Iran’s complex and growing nuclear program, which notably has unresolved nuclear weapons dimensions. Iran is also under new scrutiny by U.S. and Israeli intelligence for conducting nuclear weapons-related activities. The IAEA’s ability to detect diversion of nuclear materials, equipment, and other capabilities to undeclared facilities remains greatly diminished.