Analysis of IAEA Iran Verification and Monitoring Report — May 2025

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June 9, 2025

Background

- This report summarizes and assesses information in the International Atomic Energy Agency's (IAEA's) quarterly report, dated May 31, 2025, *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). This report also includes a few of the findings in the IAEA's parallel report, *Iran NPT Safeguards Agreement with the Islamic Republic of Iran*.
- Although this report and the parallel NPT report serve to highlight Iran's multiple violations of the JCPOA and the NPT and its increased capabilities to make weapon-grade uranium, they obscure perhaps the most critical concern. Iran's nuclear weaponization program is steadily making progress, out of sight of the inspectors and the world. The urgent need is to place IAEA inspections at heart of relations with Iran and reaffirm that Iran will never be allowed to get a nuclear weapon.

Findings

- Iran can convert its current stock of 60 percent enriched uranium into 233 kg of WGU in three weeks at the Fordow Fuel Enrichment Plant (FFEP), enough for 9 nuclear weapons, taken as 25 kg of weapon-grade uranium (WGU) per weapon.
- Iran could produce its first quantity of 25 kg of WGU in Fordow in as little as two to three days.
- Breaking out in both Fordow and the Natanz Fuel Enrichment Plant (FEP), the two facilities together could produce enough WGU for 11 nuclear weapons in the first month, enough for 15 nuclear weapons by the end of the second month, 19 by the end of the third month, 21 by the end of the fourth month, and 22 by the end of the fifth month.
- In front of the inspectors' eyes, Iran is undertaking the near-final step of breaking out, now converting its 20 percent stock of enriched uranium into 60 percent enriched uranium at a greatly expanded rate, although this rate cannot be sustained much longer (see below).
- Iran has no civilian use or justification for its production of 60 percent enriched uranium, particularly at the level of hundreds of kilograms. Its rush to make much more, quickly

depleting its stock of near 20 percent enriched uranium, which has a civilian use in research reactors, raises more questions. Even if one believed the production of 60 percent is to create bargaining leverage in a nuclear negotiation, Iran has gone way beyond what would be needed. One has to conclude that Iran's real intent is to be prepared to produce large quantities of WGU as quickly as possible, in as few centrifuges as possible.

- Not surprisingly, and in its understated style, the IAEA reiterated in this most recent report: "The significantly increased production and accumulation of highly enriched uranium by Iran, the only non-nuclear-weapon State to produce such nuclear material, is of serious concern."
- Because of the greatly expanded production of 60 percent enriched uranium, the IAEA previously requested and received permission for strengthened safeguards at Fordow.
- The IAEA also previously reported the implementation of a "strengthened safeguards approach [...] at a nuclear material storage at Esfahan", an important development given that a large amount of Iran's 60 percent HEU and 20 percent enriched uranium stock have previously been reported to be stored at Esfahan. Exactly how much of Iran's enriched uranium stocks are held at Esfahan, however, compared to other locations, is no longer reported.
- 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. The IAEA repeatedly requested that Iran reconsider this inappropriate, political act, including in a June 2024 Board of Governors censure resolution, but Iran has not done so. The IAEA stated in its accompanying report, *NPT Safeguards Agreement with the Islamic Republic of Iran*: "The withdrawal of the designation of several experienced inspectors was also not in line with the required spirit of cooperation."
- As of May 17, 2025, the net overall enriched uranium stock, including all levels of enrichment and all chemical forms, had increased by 953.2 kg, from 8294.4 kg to 9247.6 kg (Uranium mass or U mass).
- As of May 17, Iran's stockpile of 60 percent HEU in the form of uranium hexafluoride was 408.6 kg (as measured in U mass) or 604.4 kg (hex mass). This represents a net increase in the stock in the form of uranium hexafluoride of 133.8 kg (U mass) since the previous reporting period. It does include 6.5 kg of enriched uranium (U mass) that is assessed to be enriched above 20 percent but far below 60 percent, as it was discharged from the cascade into a dump tank rather than collected as product.
- Since December 5, Iran has been using 20 percent feedstock rather than 5 percent feedstock to produce 60 percent HEU in the two interconnected IR-6 cascades used for 60 percent HEU production since November 2022. This change led to an average monthly production of 33.5kg 60 percent HEU at Fordow during this most recent reporting period. The two IR-6 cascades used include one of which is easily modifiable to change operations and enrich uranium to higher levels.
- 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).

- Adding the average monthly production of 60 percent HEU at the PFEP, which slightly increased to 4kg per month, Iran is producing 37.5 kg (U mass) or 55.5 kg (hex mass) of 60 percent enriched uranium per month on average. It could produce about 675 kg (hex mass) or 456 kg (U mass) of near 60 percent enriched uranium per year.
- However, in multiplying its 60 percent HEU production, Iran is using significant amounts of 20 percent enriched uranium as feedstock, a rate which is not sustainable unless Iran significantly increases 20 percent enriched uranium production. It used an average of 117 kg (U mass) of 20 percent enriched uranium as feed per month, compared to an average monthly production of 14 kg.
- This led to a reduction in Iran's near 20 percent enriched uranium stock in the form of uranium hexafluoride of 332.3 kg (U mass), for a total stock of 274.5 kg (U mass) as of May 17, 2025.
- At this feed and production rate, Iran could sustain the high 60 percent HEU production for approximately three months after May 17.
- Iran now has nearly 14,689 advanced centrifuges installed at Natanz and Fordow, where most are deployed at the Natanz Fuel Enrichment Plant (FEP).
- Including the installed IR-1 centrifuges at the FEP, PFEP, and FFEP brings the total number of installed centrifuges to roughly 21,900. 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 five new IR-4 cascades at Natanz, for a total of 23 total IR-4 cascades, 12 of which are operating.
- Iran made no progress in this reporting period on installing the massive cascade consisting of 1152 IR-6 centrifuges.
- The quantity of Iran's enriching centrifuges increased during this reporting period, to approximately 18,000 centrifuges.
- Iran has a total installed enrichment capacity of roughly 64,000 swu/year. Its enriching centrifuge capacity is less, approximately 50,000 swu/year.
- Iran's stockpile of near 5 percent LEU in the form of UF_6 increased by 1853.4 kg (U mass) from 3655.4 kg to 5508.8 kg (U mass), or 8149.1 kg (hex mass).
- In general, Iran has not prioritized stockpiling uranium enriched between 2 to 5 percent. This choice is at odds with Iran's contention that its primary goal is to accumulate 4 to 5 percent enriched uranium for use in nuclear power reactor fuel. Instead, Iran has focused on producing 60 percent enriched uranium, far beyond Iran's civilian needs.
- The IAEA again reports that Iran will not start commissioning of the Arak reactor, now called the Khondab Heavy Water Research Reactor (KHRR), or IR-20, until at least 2025, with operation expected to start in 2026. Inspectors again did not observe any significant changes at the reactor, noting this time only minor civil construction.
- Iran stopped implementing the Additional Protocol (AP) to its comprehensive safeguards agreement (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 the AP in place, the IAEA has neither been able

to conduct complementary access to any sites and other locations in Iran nor received updated declarations from Iran.

- The IAEA reports that it has "lost continuity of knowledge in relation to the production and current inventory of centrifuges, rotors and bellows, heavy water and UOC [uranium ore concentrate], which it will not be possible to restore."
- 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 also had detrimental implications for the Agency's ability to provide assurance of the peaceful nature of Iran's nuclear programme."
- 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, which would only need to house a relatively few advanced centrifuge cascades to enrich Iran's current stock of 60 percent HEU to WGU. At the least, this situation complicates any future verification effort and contributes to uncertainty about the status of Iran's nuclear activities and facilities.
- 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. The IAEA's ability to detect diversion of nuclear materials, equipment, and other capabilities to undeclared facilities remains greatly diminished.

Part 1: Enriched Uranium Stocks

Overall Enriched Uranium Stocks. The net overall enriched uranium stock, including all levels of enrichment and all chemical forms, increased by 953.2 kg from 8294.4 kg to 9247.6 kg (U mass). This increase stems from an increase across uranium stocks enriched up to 5 and up to 60 percent enriched uranium. This reporting period marks the second time since Iran began producing near 20 percent enriched uranium that its stockpile decreased, consistent with the large amounts of near 20 percent feed used for 60 percent HEU production. With respect to the stocks in the form of UF_6, the near 2 percent LEU stock decreased by 705.6 kg from 2927 kg to 2221.4 kg (U mass), and the near 5 percent enriched uranium stock increased by 1853.4 kg from 3655.4 kg to 5508.8 kg (U mass). The near 20 percent LEU stock in the form of UF_6 decreased by 332.3 kg from 606.8 kg to 274.5 kg (U mass) while the near 60 percent enriched uranium stock increased by 133.8 kg from 274.8 kg to 408.6 kg (U mass). Of note, the latter includes 6.5 kg of enriched uranium that is assessed to be enriched above 20 percent but far below 60 percent, as it was discharged from the cascade as dump rather than collected as product. See Table 1.

Chemical Forms of Enriched Uranium Stocks. Out of the net overall enriched uranium stock, 7730.2 kg (U mass) are in the form of uranium hexafluoride. Estimates of additional amounts of LEU in oxides and intermediate products, fuel assemblies and rods, targets, and scrap, add up to 834.3 kg (U mass). The report specifies that of the 834.3 kg enriched to unspecified levels (U mass), 60.6 kg are up to 20 percent enriched uranium and 2 kg are up to 60 percent HEU. Of the 60.6 kg (U mass) of near 20 percent enriched uranium, 48.3 kg (U mass) (up by 13 kg from the previous reporting period are specified to be in the form of fuel assemblies, plates, and rods, and 2.8 kg (U mass) are in targets.

Table 1. Enriched Uranium Inventories,* including less than 5%, up to 20%, and up to 60% enriched uranium (all quantities in uranium mass), as of May 17, 2025

Chemical Form	5/10/2024	8/17/2024	10/26/2024	2/8/2025	5/17/2025
UF_6 (kg)	5841.3	4951.1	5807.2	7464	8413.3
Uranium oxides and their intermediate products (kg)	203.5	645.2	615.8	626.9	619.6
Uranium in fuel assemblies, rods and targets (kg)	51.6	50.1	48.7	65.2	75.4
Uranium in liquid and solid scrap (kg)	104.9	105.4	132.7	138.3	139.3
Enrichment Level Subtotals					
Uranium enriched up to 5 percent (kg) but more than 2 percent, in UF_6	2376.9	2321.5	2594.8	3655.4	5508.8
Uranium enriched up to 2 percent (kg), in UF_6	2571	1651	2190.9	2927	2221.4
Uranium enriched up to 20 percent (kg), in UF_6	751.3	813.9	839.2	606.8	274.5
Uranium enriched up to 60 percent (kg), in UF_6 (including 6.5 kg that were dumped and are likely far below 60 percent)	142.1	164.7	182.3	274.8	408.6
Enriched Uranium in chemical forms other than UF_6 with unspecified enrichment level (kg) (including 60.6 kg up to 20% LEU and 2 kg up to 60 % HEU)	360	800.7	797.2	830.4	834.3
Totals of Enriched Uranium in UF_6, <5 % (kg)	4947.9	3972.5	4785.7	6582.4	7730.2
Totals of Enriched Uranium in UF_6, including near 20 % and near 60 % (kg)	5841.3	4951.1	5807.2	7464	8413.3
Totals of Enriched Uranium in all chemical forms, <5 % <20 % and <60 % enriched	6201.3	5751.8	6604.4	8294.4	9247.6

* These totals do not include undisclosed stocks of enriched uranium exempted by the JCPOA Joint Commission.

Part 2: Enrichment Capacity

Enrichment Capacity in Installed Centrifuges

Natanz Fuel Enrichment Plant. 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,[1] 39 cascades of IR-2m centrifuges, 23 cascades of IR-4 centrifuges, and three cascades of IR-6 centrifuges in Hall A1000.[2] Iran now has an estimated total of 11,222 advanced centrifuges installed at the FEP, of which 6,786 are IR-2m centrifuges (see Figure 1). Iran informed the IAEA on November 22, 2024, of plans to install 18 cascades of IR-4 centrifuges, in an alternate configuration of 166 instead of the usual 174 centrifuges per cascade, in another area of Hall A1000. During this reporting period, Iran installed an additional 5 cascades of the aforementioned IR-4 centrifuges in the 166 centrifuges configuration, for an estimated 830 centrifuges. Another cascade of IR-4 is in the process of being installed in that section of Hall A1000. In total, the original Hall A1000 contains 12 cascades of IR-4 centrifuges, while the alternate section of Hall A1000 contains 11 cascades of IR-4 centrifuges, leading to the aforementioned 23 total IR-4 cascades.

The firm plans discussed above for FEP do not include the stated, less firm plans to install centrifuges in Hall B1000 (the other main centrifuge hall), for which no details of centrifuge types or numbers of cascades have yet been provided by Iran. This issue is further complicated because Iran no longer provides the IAEA information about its production of centrifuges.

Fordow Fuel Enrichment Plant. Iran installed no additional centrifuges during this reporting period at Fordow. At the FFEP, Iran currently has installed 1,044 IR-1 centrifuges in three sets of two interconnected cascades, and 10 cascades of installed IR-6 centrifuges or 1,740 centrifuges. Iran has plans to replace the six cascades of IR-1 centrifuges with IR-6 centrifuges but has yet to move forward with those plans.

Pilot Fuel Enrichment Plant.

Lines 1, 2, and 3. On May 27, 2025, 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; 88 IR-2m centrifuges and 10 IR-2m centrifuges; 14 IR-4 centrifuges; nine IR-5 centrifuges and 19 IR-5 centrifuges; 20 IR-6 centrifuges, 19 IR-6 centrifuges, and 10 IR-6 centrifuges. The following single centrifuges were being tested with natural UF_6 but not accumulating enriched uranium: two IR-2m centrifuges; six IR-4 centrifuges; two IR-5 centrifuges; eight IR-6 centrifuges; one IR-7 centrifuge; one IR-8 centrifuge; one IR-8B centrifuge; and one IR-9 centrifuge."

[1] 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.
[2] Natanz FEP has two large, buried enrichment halls, as seen as large rectangular structures in early 2000s commercial satellite images viewable at www.isis-online.org, Hall A1000 and B1000. All the centrifuges so far have been installed in A1000. Each hall has eight units, each of which holds 18 cascades, for a total of about 25,000 centrifuges per hall.

Lines 4, 5, and 6. The IAEA verified on May 27, 2025, that Iran was feeding near 5 percent LEU into two interconnected cascades of 164 IR-4 and up to 164 IR-6 centrifuges in lines 4 and 6, respectively, to produce near 60 percent HEU. The tails produced from line 6 are being fed into a cascade of 168 IR-4 and four IR-6 centrifuges in line 5.

New Underground PFEP. Iran plans to transfer its enrichment research and development activities from the above-ground PFEP to "a segregated area of Building A1000 at the FEP, to create a new area of the PFEP." On November 22, 2024, Iran provided the IAEA with an updated design information questionnaire (DIQ) for Building A1000, stating it intends to "continue to test individual, small, intermediate and full cascades in three R&D lines (identified as Lines A–C); test intermediate and full cascades of up to 174 IR-4, IR-6 or IR-2m centrifuges in the remaining fifteen R&D production lines (identified as Lines D–R); and enable six of these R&D production lines (identified as lines M–R) to operate as either independent or interconnected pairs of cascades." It further declared that it may accumulate enriched uranium product of up to 5 percent LEU from enrichment activities in that area. On November 22, 2024, Iran informed the IAEA that they intend to install a single cascade of IR-6 centrifuges consisting of 1152 centrifuges in another enrichment unit in Hall A1000. That IR-6 cascade would enrich depleted or natural UF_6 to 5 percent LEU. No progress on the installation of this large cascade was reported by the IAEA in this most recent report.

Currently, five lines hold full centrifuge cascades; line R contains 174 IR-6 centrifuges, line D contains 174 IR-6 centrifuges, and line E contains 174 IR-2m centrifuges, line Q contains 174 IR-6 centrifuges (newly installed during this reporting period), and line P contains 174 IR-6 centrifuges (newly installed during this reporting period). Line F, a newly installed line during this reporting period, holds an intermediate cascade of 40 IR-6 centrifuges. Iran has 55 IR-4 centrifuges installed in line A, leaving line B with 20 IR-6s centrifuges, and line C with 31 IR-6 centrifuges. All of the lines, except line P, were being fed with depleted uranium to enrich up to 5 percent as of May 27, 2025.

Total Estimated Enrichment Capacity in Installed Centrifuges. Based on the information of the installed centrifuges at all three enrichment facilities, Iran has a total enrichment capacity of 64,079 swu per year. This number consists of 6,500 swu/year from the installed IR-1 and 52,262 swu/year from all types of installed advanced centrifuges. Iran has 14,689 advanced centrifuges (see Figure 2), which contribute the majority of its installed enrichment capacity. Figures 3 and 4 outline the make-up of the installed centrifuges and the respective enrichment capacity by centrifuge type. Figures 3 and 4 show that despite there being more than 7,200 installed IR-1 centrifuges, which is more than one third of all installed centrifuges in terms of number, the enrichment capacity from the installed advanced centrifuges dwarfs that of the IR-1's, a trend observed since May 2021.

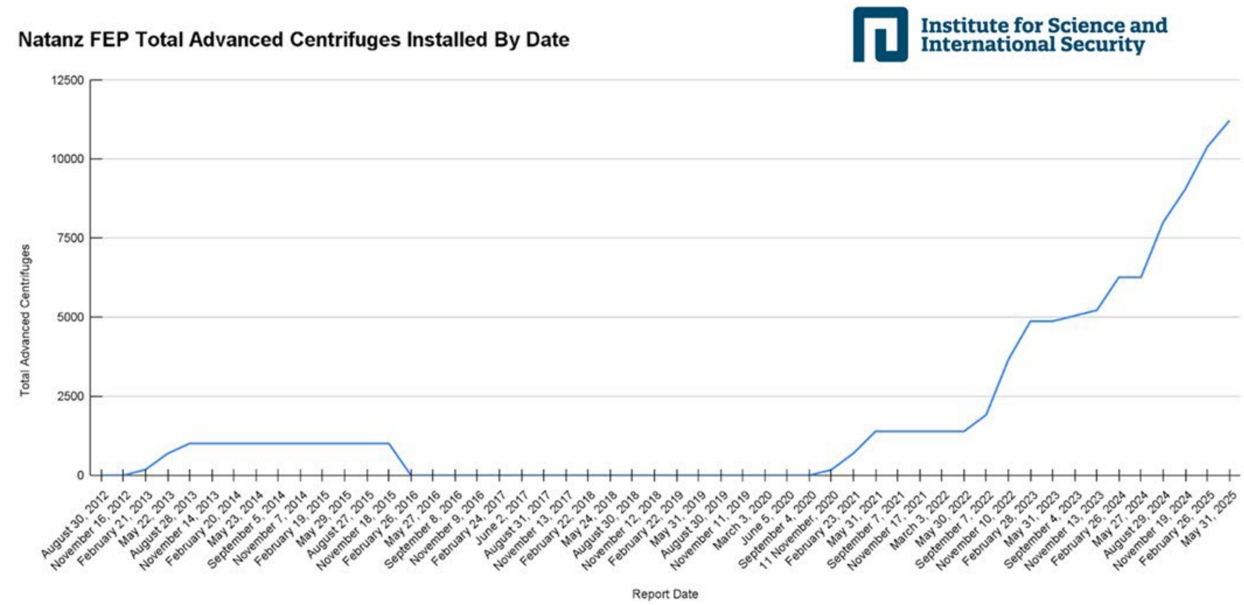
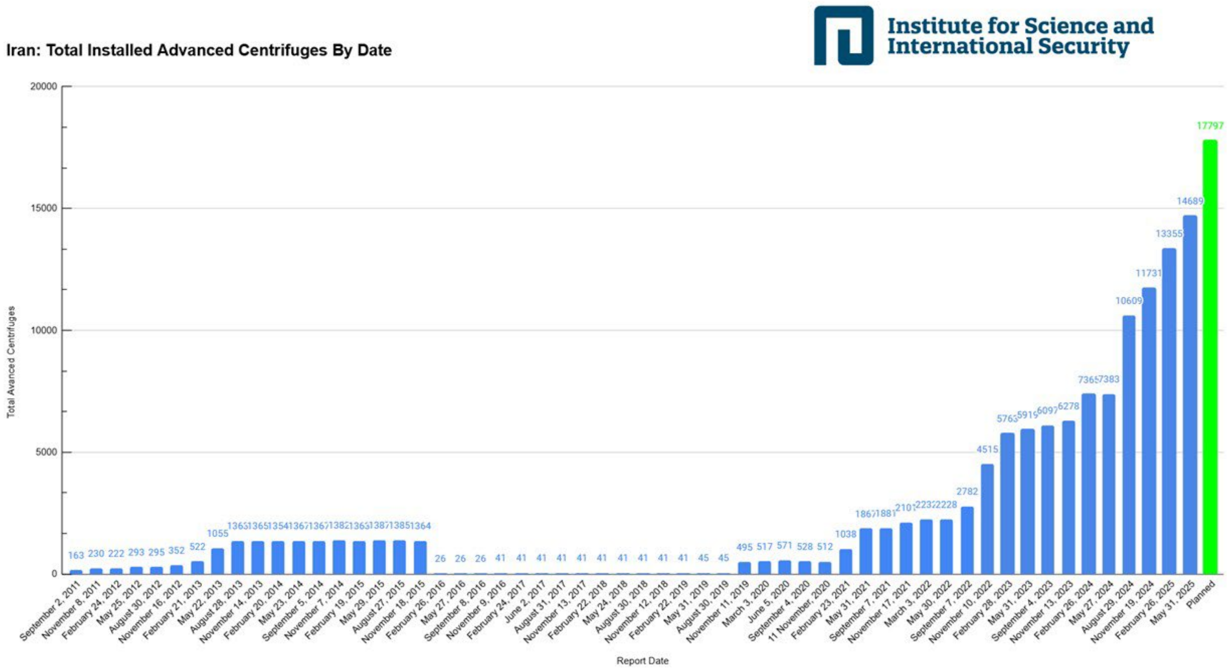


Figure 1. This shows the total number of advanced centrifuges installed at Natanz FEP since advanced centrifuges were first reported by the IAEA in February 2013. The total number of advanced centrifuges installed at Natanz exploded in the past year.



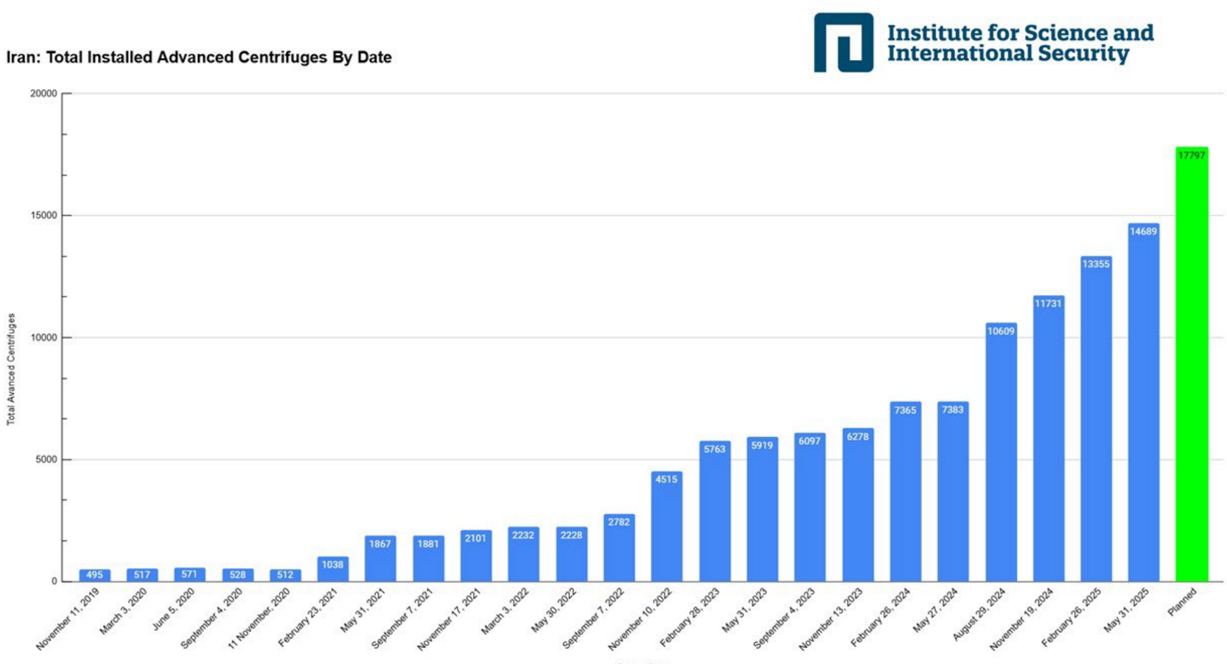


Figure 2. The top image is the total number of advanced centrifuges installed at all three enrichment facilities. As can be seen, centrifuge installation accelerated during this reporting period and the previous reporting period, following incremental increases during 2024. Bottom image is a closeup of the additions since early 2019.

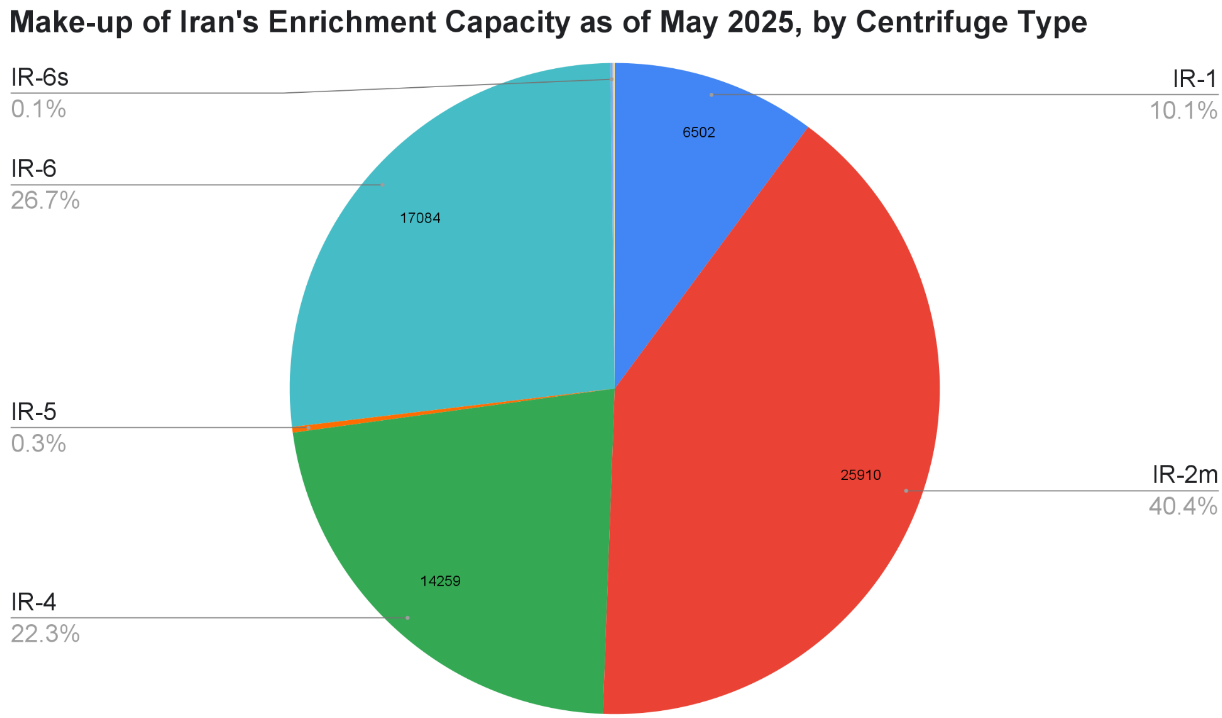


Figure 3. The make-up of Iran's installed enrichment capacity by centrifuge type as of May 2025.

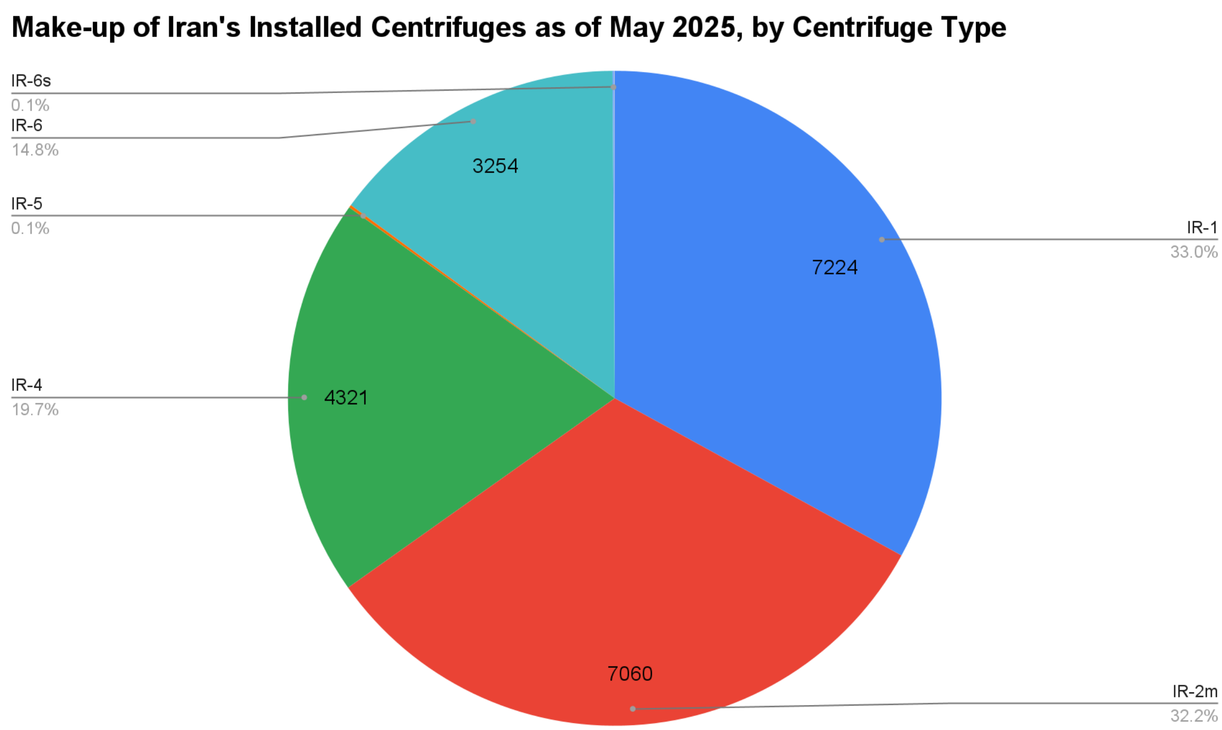


Figure 4. The total number of different types of centrifuges installed by Iran as of May 2025.

Enrichment Capacity in Enriching Centrifuges

Table 2 below summarizes the enrichment capacity in centrifuges that are not only installed but enriching uranium as of the end of the IAEA's most recent reporting period. As of May 27, 2025, the IAEA reports that at the FEP, in total, 36 cascades of IR-1 centrifuges, 31 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. The capacity of enriching centrifuges at the FEP has increased since February 2025 but remains notably below that of installed centrifuges, as a total of eight out of the 39 available IR-2m cascades and 11 out of the available 23 IR-4 cascades are installed but not enriching at the FEP. At the FFEP, Iran was enriching uranium in all six installed IR-1 centrifuges and in seven out of ten installed IR-6 cascades. At the PFEP areas, most installed centrifuges were enriching uranium, but the PFEP areas also hold single centrifuges for testing without accumulating enriched uranium hexafluoride and, as of the end of the reporting period, two full centrifuge cascades that were installed are enriching uranium (see section above).

Table 2. Number of enriching centrifuges and their enrichment capacity, as of May 2025

	Number of centrifuges	Enrichment capacity in swu/yr	IR-1 equivalent
Natanz	14192	35993	39992
Fordow	2264	7345	8161
Natanz Above-Ground PFEP*	701	2964	3293
Natanz Below-Ground PFEP*	802	3821	4245
Total	17,959	50,123	55,691

* The values for IR-5 and IR-6s centrifuges at the PFEP areas are rough estimates based on the use of estimated and measured values for the separative output of these centrifuges in cascades, as drawn from IAEA and Iranian information.

Part 3: Enriched Uranium Production

Five Percent LEU Production at the Natanz FEP. At the Natanz FEP, Iran produced approximately 2671.3 kg of UF_6 enriched up to 5 percent U-235 during the reporting period, which spanned 97 days from February 8 to May 16, 2025. The report discusses this amount as kilograms of UF_6 in units of UF_6 mass, which the authors refer to as hex mass.[3] The total uranium mass, ignoring the fluorine elements, is 1805.8 kilograms, for a monthly average production rate of 558 kg U mass and a daily average production rate of 18.6 kg U mass. These average production rates increased from the previous reporting period, consistent with the fact that many more centrifuge cascades are now operating.

60 Percent HEU Production at Fordow. Iran continued to produce 60 percent HEU at the FFEP at a high rate during this reporting period. On December 5, Iran started to use 20 percent feed rather than 5 percent feed to produce 60 percent HEU in two interconnected IR-6 cascades that have been used for 60 percent HEU production since November 2022. The changes made on December 5 led to a near seven-fold increase in average monthly 60 percent HEU production.

Iran produced a total of 160.1 kg 60 percent HEU (hex mass) or 108.2 kg (U mass) at Fordow from February 8 until May 16,2025. Averaging this amount over the 97 days results in a daily average production rate of 1.1 kg (U mass), and a monthly average production rate of 33.5 kg (U mass). Annually, using the daily average production and multiplying it by 365 days, Iran could produce 407 kg (U mass) or 602 kg (hex mass) of 60 percent enriched uranium at FFEP alone (see caveat on Iran's dependence on 20 percent feedstock below).

20 Percent Enriched Uranium Production at Fordow. At the FFEP, Iran continued to use the three sets of two interconnected IR-1 cascades to produce 20 percent enriched uranium from up to 5 percent LEU. From February 8 to May 16, 2025, Iran produced 68 kg of UF_6 (hex mass) enriched up to 20 percent enriched uranium, or 46 kg U mass. Average production of 20 percent enriched uranium at the FFEP was slightly higher than the last reporting period, at 0.7 kg (hex mass) or 0.47 kg (U mass) per day, resulting in a monthly average production rate of 21 kg (hex mass) or 14.2 kg (U mass). Annually, Iran could produce 256 kg (hex mass) or 173 kg (U mass) of near 20 percent enriched uranium.

From its production of 60 and 20 percent enriched uranium at the FFEP, Iran accumulated 396.9 kg (hex mass) or 268.3 kg (U mass) of up to 5 percent enriched uranium and 368.7 kg (hex mass) or 249.2 kg (U mass) of up to 2 percent enriched uranium in tails. The IAEA adds that 98.5 kg (hex mass) or 66.5 kg (U mass) up to 2 percent enriched uranium were accumulated as dump.

[3] 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.

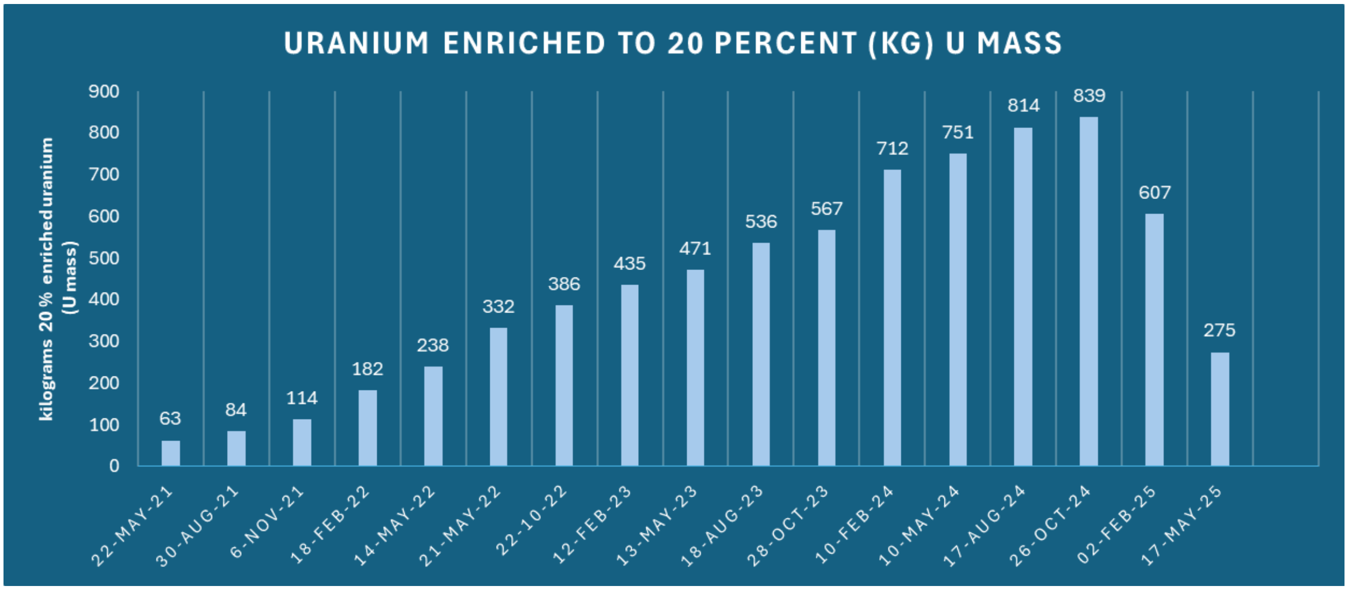


Figure 5. Historical inventory of 20 percent enriched uranium, showing the recent sharp drop-off as Iran enriches its stock of 20 percent material to 60 percent.

Five Percent Enriched Uranium Production at Fordow.

Also on December 5, 2024, Iran started to use two IR- 6 cascades to produce uranium enriched up to 5 percent, using natural uranium as feedstock. As of February 22, 2025, the IAEA reported that Iran was using depleted uranium to enrich uranium up to 5 percent LEU in a total of five IR-6 cascades (out of eight IR-6 cascades installed in this Unit called Unit 1). At some point during this most recent reporting period, Iran switched back to feeding the five IR-6 cascades with natural uranium, as observed by the IAEA on May 28, 2025. Iran produced 229.1 kg up to 5 percent LEU (hex mass) or 154.9 kg (U mass) in the 97 days from February 8 to May 16, 2025. This results in an average production rate of 2.3 kg (hex mass) or 1.6 kg (U mass) per day, and 70.9 kg (hex mass) or 47.9 kg (U mass) per month.

Iran has not specified when it would start feeding the additional three IR-6 cascades in Unit 1, but the IAEA reports that installation of associated feed and withdrawal stations had yet to begin. Iran has also not reported the exact level of enrichment planned; the DIQ specifies an up to 5 or up to 20 percent enrichment level.

Enrichment Levels Produced at the Natanz Pilot Plant. At the above and below-ground PFEP areas, Iran continued to produce up to 2 percent enriched uranium, up to 5 percent enriched uranium, and up to 60 percent enriched uranium stock during the reporting period. Between February 8 and May 16, 2025, the PFEP produced 19.2 kg (hex mass) of near 60 percent enriched uranium or 13 kg (U mass); 243.2 kg (hex mass) of up to 5 percent LEU (164.4 kg U mass); and 200.1 kg (hex mass) of uranium enriched up to 2 percent U-235 (135.3 kg U mass). It accumulated an additional 253.3 kg (hex mass) of uranium enriched up to 2 percent U-235 (171.2 kg U mass) in tails.

In Hall A1000, the new PFEP R&D production lines A, B, C, and D produced 76.6 kg (hex mass) of up to 5 percent LEU (51.8 kg U mass).

60 Percent HEU Production at the Natanz Pilot Plant. From February 8 to May 16, 2025, Iran was feeding up to 5 percent LEU into 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.

The 60 percent enriched uranium production rate at the PFEP during this reporting period was slightly higher than the previous reporting period at 19.2 kg (hex mass) or 13 kg (U mass) over 97 days, resulting in a monthly average production rate of 5.9 kg (hex mass) or 4 kg (U mass) per month, or a daily average production rate of 198 grams (hex mass) or 134 grams (U mass) per day. Annually, using only the two advanced production-scale centrifuge cascades at the PFEP, Iran could produce 72 kg (hex mass) or 49 kg (U mass) of 60 percent enriched uranium.

Combined Production of 60 Percent HEU at Fordow and the Natanz PFEP. Combining the current production levels from the FFEP with those at the PFEP, Iran is producing 37.5 kg (U mass) or 55.5 kg (hex mass) of 60 percent enriched uranium per month on average, or a daily rate of 1.25 kg U mass per day. It could produce about 675 kg (hex mass) or 456 kg (U mass) of near 60 percent enriched uranium per year.

Twenty Percent LEU Feed Rates. Since December 5, Iran has been using significant amounts of 20 percent enriched uranium as feedstock to produce 60 percent HEU. During the most recent reporting period, of its near 20 percent enriched uranium stock, Iran fed 560.3 kg hex mass (or 378.8 kg U mass) into the IR-6 cascades at Fordow, resulting in an average feed rate of 117 kg (U mass) of 20 percent enriched uranium per month, compared to an average monthly production of 14.2 kg (U mass). This led to a reduction in Iran's near 20 percent enriched uranium stock of 332.3 kg (U mass), for a total stock of 274.5 kg (U mass) as of May 17. At this feed and production rate, Iran could sustain the high 60 percent HEU production for approximately three months after May 16.

Emergence of Fordow as a Multipurpose Facility for WGU Production

Fordow has emerged as a multipurpose facility that can produce HEU and be easily modified to make WGU from 60 percent HEU.

Already in December, 2025, the IAEA reported that Iran set up a three step, interconnected enrichment process at Fordow, going from natural uranium up to 5 percent enriched uranium in up to 8 IR-6 cascades, from 5 to 20 percent in six current IR-1 cascades, and 20 to 60 percent in two interconnected IR-6 cascades.[4] This three-step process allows the near continuous, sequential enrichment of natural uranium to 60 percent HEU. This process can be easily modified to produce WGU.

The produced 5 percent LEU is combined with tails from 60 percent HEU production; they are collected in the same receiving cylinder. This is similar to what is expected to happen in a breakout to maximize the use of tails produced in the production of WGU.

The Risk of Producing 60 Percent Highly Enriched Uranium, Practicing Breakout, and the Acceptance of Strengthened Safeguards

Sixty percent enriched uranium poses a significant breakout risk, since it is a short step away from weapon-grade uranium. In fact, in terms of enrichment requirements expressed in separative work units, 60 percent enriched uranium is 99 percent of the way to 90 percent weapon-grade uranium.

Iran started producing near 60 percent highly enriched uranium at the Pilot Fuel Enrichment Plant in April 2021. On November 22, 2022, Iran started producing 60 percent HEU at the Fordow Fuel Enrichment Plant, using 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."

Soon after January 16, 2023, Iran made an undeclared change to the operation of these interconnected IR-6 cascades at Fordow, where one with modified subheaders was used for the last stage of enrichment, which added flexibility to their combined operation. While Iran temporarily reversed this change over the summer 2023, this is the configuration Iran used after December 2023.[5] As discussed above, Iran has since multiplied its 60 percent HEU production rate by starting with 20 percent enriched uranium feed.

With its production of 60 percent HEU, 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 transfer 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 WGU for Pakistani nuclear weapons.

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[4] See: David Albright and Sarah Burkhard, "IAEA's December 6th Update on Iran," *Institute for Science and International Security*, December 10, 2024, https://isis-online.org/isis-reports/detail/iaeas-december-6th-update-on-iran/8

[5] "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.

With the start of Iran's dramatic increase of 60 percent enriched uranium production in December 2024, the IAEA asked for strengthened safeguards arrangements at Fordow. In December 2024, Iran agreed to the IAEA's request to "increase the frequency and intensity of the implementation of safeguards measures at FFEP necessitated by the significant increase in production of uranium enriched up to 60% U-235 at the facility. The Agency has since implemented such a strengthened safeguards approach at FFEP."

Iran has no civilian use or justification for its production of 60 percent enriched uranium, particularly at the level of hundreds of kilograms. Its rush to make much more, quickly depleting its stock of near 20 percent enriched uranium, which has a civilian use in research reactors, raises more questions. Even if one believed the production of 60 percent is to create bargaining leverage in a nuclear negotiation, Iran has gone way beyond what is needed. It has vastly overplayed its hand. One has to conclude that Iran's real intent is to be prepared to produce large quantities of WGU as quickly as possible in as few centrifuges as possible. As discussed below, it can now do so.

Not surprisingly, and in its understated style, the IAEA reiterated in this most recent report: "The significantly increased production and accumulation of highly enriched uranium by Iran, the only non-nuclear-weapon State to produce such nuclear material, is of serious concern."

Storage of 20 Percent Enriched Uranium and 60 Percent HEU at Esfahan

For multiple reporting periods, the IAEA no longer discusses transfers to or existing stocks of near 20 and 60 percent enriched uranium at the Esfahan Fuel Plate Fabrication Plant (FPFP), stocks which Iran moved from Natanz and Fordow. The reason for the omission is not provided.

Earlier reports discussed Iran's transfer of large amounts 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. Iran agreed to these additional measures in December 2024, when it agreed to the IAEA's request to implement such a strengthened safeguards approach at a nuclear material storage facility at Esfahan.

Based on past reports, 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 amount does not include 2 kg 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. No more 60 percent HEU was converted into targets.

As of August 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. Given Iran's use of much of its 20 percent stock to make 60 percent, one can surmise that some of this inventory was moved to Fordow.

However, reports since August 2023 provide no information about the size of these stocks at the FPFP. Future reports should contain this information, as its location at Esfahan constitutes a further violation of the JCPOA.

Part 4: Current Breakout Estimates

During this reporting period, Iran's installed centrifuge capacity used for breakout calculations continued to increase. Because Iran no longer allows the IAEA to monitor its manufacture and assembly of advanced centrifuges, it has been stockpiling advanced centrifuges without the IAEA's knowledge, a shortcoming the IAEA 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 ten nuclear explosives.[6] Practically, about 40 kg (U mass) of 60 percent HEU is 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.

If Iran wanted to further enrich all its 60 percent HEU up to weapon-grade, it could do so quickly. It could use the four advanced centrifuge cascades that are already installed at the PFEP and FFEP that made the 60 percent enriched uranium. It could also dedicate Fordow' ten installed IR-6 cascades to enrich the 60 percent material to weapon-grade. Other options are also available.

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 case, the expected enrichment level of the tails assay is likely 5 or 20 percent enriched uranium, which would allow Iran to reuse the tails as feed in cascades making 20 percent, 60, or 90 percent enriched uranium. When the tails are recycled to make more WGU, the total amount of WGU produced will be the same regardless of which tails assay is selected. So, the choice of the tails assay affects the speed of producing significant quantities of WGU.

With Iran's stock of 60 percent enriched uranium as of May 17, 2025, and producing WGU in the four cascades that made 60 percent enriched, Iran could produce about 233 kg (U mass) of WGU in 1.9 months, with a tails assay of 20 percent. It could produce enough for the first one in seven days.

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[6] 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.

However, this approach warrants modification. As the production of 60 percent enriched uranium at Fordow has dramatically increased since December 2024, Fordow is a logical location for Iran to break out with all its 60 percent HEU. With all ten installed IR-6 cascades at Fordow enriching the stock of 60 percent to 90 percent enriched uranium, and a tails assay of 20 percent, Iran could produce 233 kg of WGU in three weeks, enough for nine nuclear weapons. The time to produce its first 25 kg of WGU would be between two and three days. This choice would result in a large amount of 20 percent tails, which could be further enriched at Fordow into WGU after finishing with its 60 percent stock.

If a lower tails assay of 5 percent was used, WGU would be produced more slowly but more would result. In this case, Fordow could make 264 kg of WGU in 1.2 months, enough for ten nuclear weapons, with 222 kilograms of WGU produced in the first month, enough for almost 9 nuclear weapons. The first quantity of 25 kg would take one week to produce.

In this estimate, both tails assays are considered, and the 20 percent tails stock is further enriched to WGU at Fordow after finishing with its 60 percent stock. For convenience, this occurs in the second month and takes less than two weeks. The result is that Fordow would produce enough WGU in the first month for about 8.9 to 9.3 nuclear weapons, rounded to nine, and enough for ten nuclear weapons by the end of the second month.

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In parallel to breakout at Fordow, the Natanz FEP could be used to enrich the 20 percent and up to five percent enriched uranium stocks to WGU. In the first month, the FEP, allowing a two-week setup time, could produce enough WGU for two nuclear weapons, using the stock of near 20 percent enriched uranium, which has been significantly reduced by Iran having had enriched most of it to 60 percent enriched uranium. In the second month, the number would grow to enough WGU for five nuclear weapons. The cumulative number of weapons-worth in the third, fourth, and fifth month are 8, 11, and 12 nuclear weapons.

With the two facilities operating in parallel, the two facilities together could produce enough WGU for 11 nuclear weapons in the first month, enough for 15 nuclear weapons by the end of the second month, 19 by the end of the third month, 21 by the end of the fourth month, and 22 by the end of the fifth month.

Figures 6 and 7 capture the results in graphs. The results for the first month in Figure 6 assume that a tails assay of 20 percent is selected, providing a faster breakout timeline.

The approach underutilized Fordow, since the ten IR-6 cascades are not used in the breakout after the second month. In addition, PFEP is not used at all. However, this approach shows that the method Iran uses to break out does not overly affect the total numbers by month in the out months, but it does affect the timeline in the first few weeks. In this case of focusing on Fordow to convert its 60 percent HEU to 90 percent WGU, in the event of breakout, a higher tails assay results in a quicker accumulation of WGU in the first few weeks of the first month. In the longer term, with the recycling of tails, this effect disappears.

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 its first nuclear weapon.[7] Under intense international pressure, Iran decided in 2003 to downsize and better camouflage its nuclear weapons effort, while pushing to establish a robust 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 less than two weeks. 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.[8]

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. Smaller amounts may be sufficient for each nuclear weapon, indicating that the breakout calculation is conservative.

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.

[7] 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).

[8] 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. See also, David Albright, "Going for the Bomb: Part I, Pathways and Timelines, November 7, 2024, https://isis-online.org/isis-reports/detail/going-for-the-bomb-part-i-pathways-and-timelines/8; and "Going for the Bomb: Part II," Tasks to Make a Crude Nuclear Weapon, November 7, 2024https://isis-online.org/isis-reports/detail/going-for-the-bomb-part-ii-tasks-to-make-a-crude-nuclear-weapon/8.

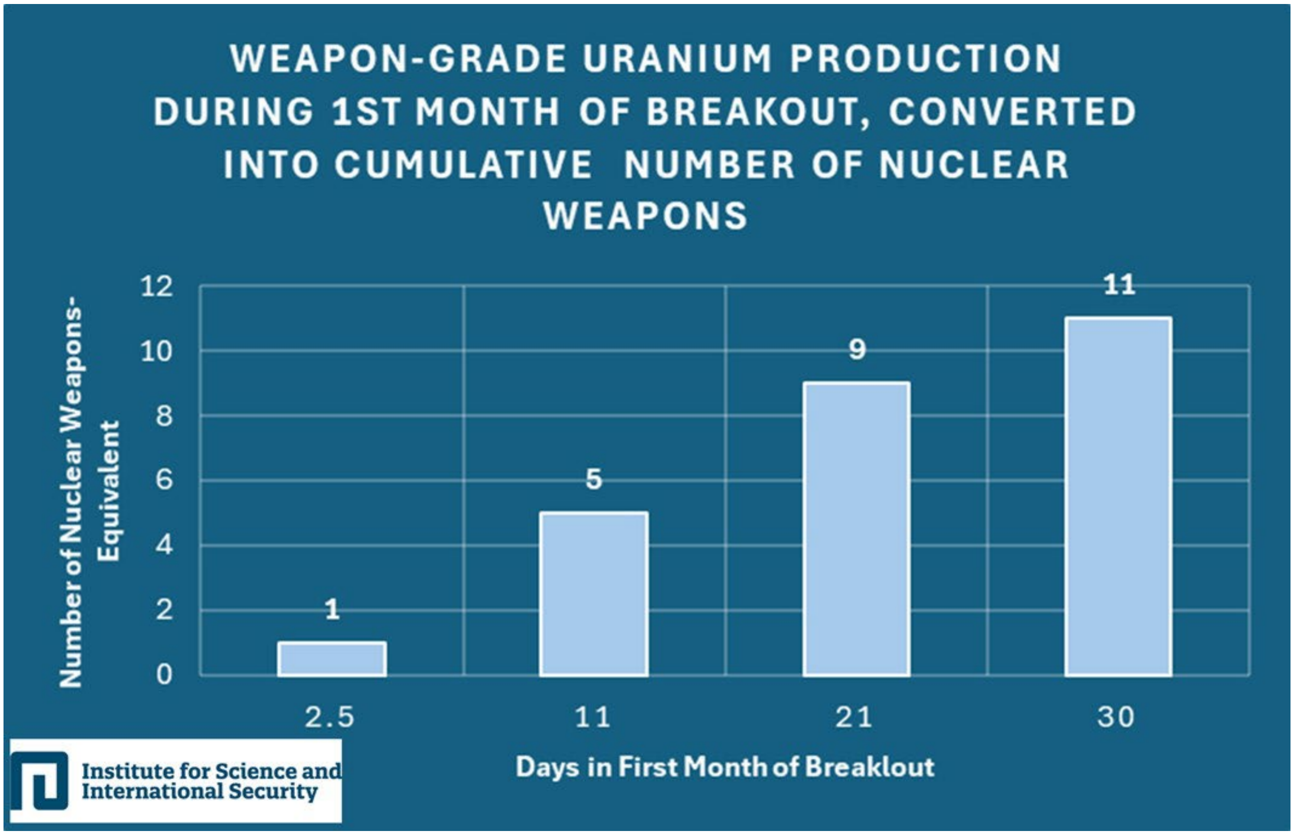

Figure 6. The cumulative growth in the number of nuclear weapons possible to build from weapon-grade uranium produced during the first month of a breakout at the Fordow and Natanz enrichment sites. (Tails assay at Fordow taken as 20 percent for enrichment of the 60 percent stock.) Building a nuclear weapon would take longer than the time values provided here.

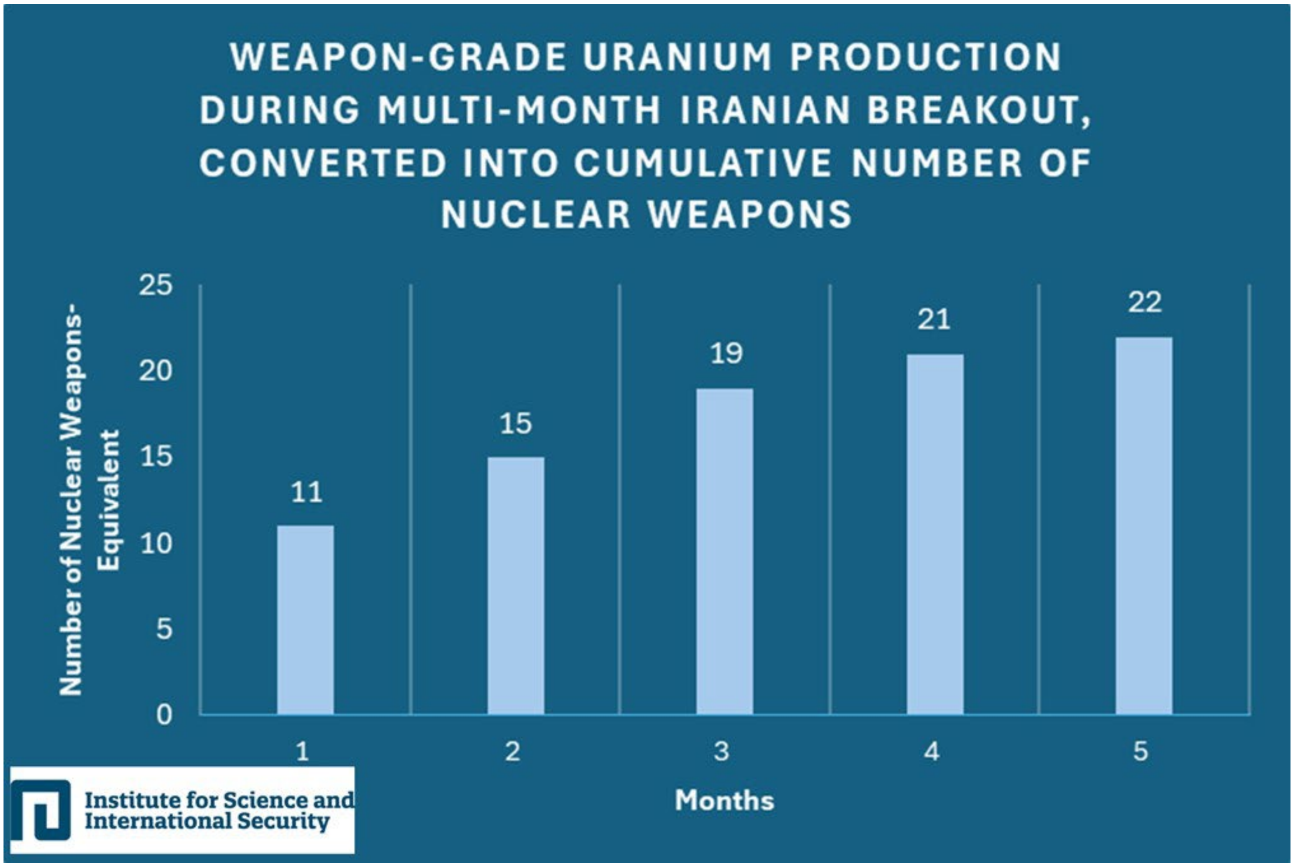

Figure 7. The cumulative growth in the number of nuclear weapons possible to build from weapon-grade uranium produced during the first several months of a breakout at the Fordow and Natanz enrichment sites. Building a nuclear weapon would take longer than the time values provided here.

Part 5: Enriched Uranium Metal Production Remains Halted, Uranium Conversion Campaign

Since the fall of 2021, Iran has not produced any uranium metal at the Esfahan Fuel Plate Fabrication Plant (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 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.[9] It was soon to introduce uranium metal production at its Amad pilot plant.

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. The latest report states:

> "As of 17 May 2025, the inventory of uranium enriched up to 60% U-235 in forms other than UF_6 remains 2.0 kg of uranium as previously reported, consisting of 1.6 kg of uranium in irradiated targets, verified at TRR on 17 May 2025, and 0.4 kg of uranium in liquid and solid scrap, verified at FPFP on 17 May 2025"

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The FPFP did convert limited quantities of near 20 percent uranium hexafluoride into U_3O_8. According to the most recent report, "As of 9 February 2025, Iran had fed two cylinders containing 31.6 kg of uranium in the form of UF_6 enriched up to 20% U-235 into the conversion process for conversion into U_3O_8. From this material, by May 16, 2025, Iran had produced four control fuel

[9] *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.

assemblies and eleven standard fuel assemblies containing a total of 20.6 of uranium in the form of U_3O_8 which had been verified and placed under seal by the Agency.

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)."[10] 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 May 11, 2025, 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 May 13, 2025, 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 Khondab Heavy Water Research Reactor (KHRR) (see also below), Iran informed the IAEA "that the purpose of a campaign to convert 650 kg of UF_6 enriched up to 5% U-235 into UO_2…was for the production of fuel assemblies for the KHRR [Khondab Heavy Water Reactor]." 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)." As of November 5, 2024, 10.5 kg of UO_2 enriched up to 3.3 percent had been produced. As of May 23, 2025, according to the latest report, "368 kg of uranium in the form of UO_2 enriched up to 5% U-235 had been received at FMP from UCF, from which 129 kg of uranium in the form of KHRR fuel pellets had been produced. These numbers suggest a rather slow production of fuel pellets."

Part 6: 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 November 2024 report its assessment that the HWPP had resumed operation after being shut down for maintenance during the previous reporting period. This and the previous report assessed, based on commercial satellite imagery, that the plant continued to operate during the last two reporting periods.

[10] 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.

The IAEA reports that as of May 14, 2025, minor civil construction work was ongoing at the Khondab Heavy Water Research Reactor, 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," maintaining consistency 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 already manufactured dummy IR-20 fuel assemblies of Iranian design, and the reactor would start operations in 2024. Iran communicated to the IAEA on August 10, 2024, that commissioning was now expected to take place in 2025 and operation to start in 2026. On February 5, 2025, and again on May 14, 2025, inspectors did not observe any significant changes at this reactor compared to the situation from earlier periods.

Part 7: 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 AEOI head 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.

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 partial reversal, in a high-level meeting in Tehran on November 14, 2024, with the Director General, Iran offered to consider accepting the designation of four additional experienced inspectors. These four cannot be chosen from the ones previously de-designated.

Media reporting indicated that this offer may be withdrawn if the Board of Governors passed a resolution on Iran in early December, which it did do. Iran, in a letter dated December 16, 2024, informed the IAEA that "[b]earing in mind the developments that took place compromising the joint efforts by Iran and the Agency before the recent Board of Governors' session" it was not accepting the designations of four inspectors proposed by the Agency in a letter dated 12 December 2024." This action was regretted by the IAEA.

In the accompanying report on Iran's compliance with NPT Safeguards, it offered a harsh condemnation of Iran. It said:

> “Iran has, over several years, used the withdrawal of the designation of experienced inspectors in such a way that it undermines the Agency’s ability to conduct effective and efficient safeguards. The repeated removal of the designation of experienced inspectors with little or no notice has a detrimental effect on the planning, implementation, and effectiveness of safeguards in Iran. While removing the designation of inspectors is formally permitted by the NPT Safeguards Agreement, Iran is a notable outlier for the frequency and rationale with which it withdraws these designations. Selectively withdrawing the designation of experienced inspectors and doing so, in most of the cases, in response to other Member States’ positions in relation to Iran’s nuclear programme is unjustified and not in line with the spirit of cooperation that is a prerequisite of the effective implementation of safeguards.”

Part 8: 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 the AP in place, the IAEA has neither been able to conduct complementary access to any sites and other locations in Iran nor received updated declarations from Iran.

The IAEA reports that it has “lost continuity of knowledge in relation to the production and current inventory of centrifuges, rotors and bellows, heavy water and UOC, which it will not be possible to restore.”

It 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 also had detrimental implications for the Agency’s ability to provide assurance of the peaceful nature of Iran’s nuclear programme.”