



Analysis of the IAEA's Eighth Iran Nuclear Deal Report: The JCPOA two years after Adoption Day

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On November 13, 2017, the International Atomic Energy Agency (IAEA) released its eighth [report](#) on its verification and monitoring of the Iran nuclear deal in light of United Nations Security Council (UNSC) resolution 2231 (2015). UNSCR 2231 codified into international law the Joint Comprehensive Plan of Action (JCPOA). The latest IAEA report again states: “Since 16 January 2016 (JCPOA Implementation Day), the Agency has verified and monitored Iran’s implementation of its nuclear-related commitments in accordance with the modalities set out in the JCPOA...” The quarterly report does not contain information about any violations of the JCPOA during this reporting period, but the report is once again so sparse in detail that it is impossible to conclude that Iran is fully complying. Nowhere in the report does the IAEA state that Iran is fully compliant with the JCPOA, and it should not make that judgement in any case. The issue of judging full compliance is rightly the responsibility of the Joint Commission and governments, in particular those in the P5+1. Of note, the report states that IAEA Director General Amano visited Tehran on October 29 and met with President Hassan Rouhani, Vice President Ali Akbar Salehi, and Foreign Minister Javad Zarif, and “stressed the importance of the full implementation by Iran of its nuclear-related commitments under the JCPOA.” Amano’s visit and the statement in the report could imply that the Director General does not think Iran has fully implemented the deal. In terms of full implementation, the Director General has not clarified what exactly he means. He has referred to past cases of Iran exceeding heavy water limits, but he has also discussed Iran needing to do more on implementing Section T of the JCPOA (see below).

This report and its predecessors are deficient in reporting on the verification and monitoring of the JCPOA overall, including Section T, which entails additional Iranian declarations and access to Iranian military sites associated with banned nuclear weapons development activities and associated, controlled dual-use equipment. The continued inclusion in the IAEA’s reports of a statement that it is verifying and monitoring Section T is at odds with Director General Amano’s remarks to Reuters in September that the agency [requires more guidance](#) on how to implement Section T and to *The Financial Times* in November that it would be positive if Iran [made a declaration](#) of all its equipment under Section T. Amano also stated to *The Financial Times* that

Section T does not entail access to sites where potential equipment covered by the provision are located, which would likely include military sites in Iran. This statement is at odds with the text of Section T which implies monitoring must take place as part of verifying Joint Commission approvals concerning Section T equipment or activities. How such monitoring would occur without access to military sites is a mystery. Although the IAEA may be verifying Section T, it is unable to know if Iran is meeting the conditions of Section T or in fact violating these conditions.

The report also does not discuss the IAEA's visits to a number of sites under complementary access arrangements provided in Iran's Additional Protocol (AP) to the Comprehensive Safeguards Agreement (CSA). The IAEA still has not pushed for access to military sites in Iran where military-related nuclear activities are alleged to have taken place. Following criticism after IAEA officials [stated to the media](#) that the agency has not visited military sites in Iran since Implementation Day to verify the absence of military-nuclear related activities and to inspect sites previously associated with such activities, the IAEA appears to have inserted a pointed comment in this report regarding its complementary accesses in Iran. It states that it has had access to the sites it "needed to visit." The IAEA overall appears to again be making a limited interpretation of its mandate to verify the JCPOA in what must be viewed as a stunning reversal of safeguards practices applied in countries such as South Africa and Taiwan, where it has periodically revisited sites associated with past nuclear weapons work, setting aside Section T requirements. The IAEA's stance on this issue in Iran is likely to be to the detriment of both the verification and future of the JCPOA. It may also be to the detriment of future arms control agreements and monitoring efforts involving states such as North Korea, where a permanent end to its pathways to the bomb would be sought along with ensured access to military sites. Overall, the JCPOA suffers from the general problem of having time-bound nuclear limitations on Iran's pathways to the bomb and inadequate access to Iran's military sites, weaknesses that should be avoided in any agreement with North Korea.

In general, the IAEA should report much more fully to member states on Iranian nuclear activities under the JCPOA. Director General Amano claimed on November 6 at a Wilson Center conference, "IAEA at 60," that UNSCR 2231 somehow relegates the Iran nuclear issue to being subject to the IAEA's standard confidentiality practices with regard to reporting. This claim is unfounded. Nothing in the resolution specifies reduced reporting; moreover, Iran needs to prove its adherence to this agreement and the international community writ large should have access to the fullest reporting in order to make independent assessments.

We continue to urge fuller reporting by the IAEA on Iran's compliance with the JCPOA, including adding previously included technical data, at-issue verification concerns, and details about the IAEA's efforts to verify weaponization development bans and controls and reach a broader conclusion about the peacefulness of Iran's nuclear program. We also urge the IAEA to credibly verify Section T and access military sites under Iran's safeguards agreement and the Additional Protocol as needed and as is the IAEA's right. Any failure to do so undermines the IAEA's ability to ensure Iran's compliance with the JCPOA and reach a credible broader conclusion in Iran.

Without substantial access to military sites, there will be suspicions that any such future conclusion will be superficial.

U.S. Failure to Certify JCPOA separate from IAEA's reporting; is based on the lack of proportionality, triggering window for Congressional review to "fix" deal's weaknesses

On October 13, President Donald Trump [announced](#) that he was declining to certify under U.S. law that the suspension of U.S. nuclear sanctions under the JCPOA was appropriate and proportionate to the measures undertaken by Iran. The relevant [U.S. law](#) requiring the president to make this certification every 90 days is the Iran Nuclear Agreement Review Act (INARA) of 2015. The law sets out four criteria that the president must determine are met in order for certification to take place:

- (i) Iran is transparently, verifiably, and fully implementing the agreement, including all related technical or additional agreements;
- (ii) Iran has not committed a material breach with respect to the agreement or, if Iran has committed a material breach, Iran has cured the material breach;
- (iii) Iran has not taken any action, including covert activities, that could significantly advance its nuclear weapons program; and
- (iv) suspension of sanctions related to Iran pursuant to the agreement is--
 - (I) appropriate and proportionate to the specific and verifiable measures taken by Iran with respect to terminating its illicit nuclear program; and
 - (II) vital to the national security interests of the United States.

Trump listed examples of where Iran had been in non-compliance with the agreement. **It is important to note, however, that he did not decline to certify under INARA based on Criteria ii, or a case of an uncured material breach by Iran.** His speech instead focused on the proportionality of the agreement that makes the agreement a major security risk for the United States. The media often mis-reports this distinction and claims that since the IAEA certifies Iran's compliance, Trump has invented a justification for not certifying. (Notably, the IAEA does not certify compliance, and in any case, its public reporting is too sparse to assess compliance). But the argument is factually incorrect based on the president's stated reasons for declining to certify.

In his speech, Trump asked Congress to develop legislation that would state, as a matter of U.S. policy, that certain of the JCPOA's technical provisions need to remain in effect in perpetuity in order to keep U.S. sanctions from snapping back when Iran seeks to build back its pathways to the bomb or violates the deal. This would essentially "fix" the problem of many of the deal's provisions ending eight to fifteen years after Implementation Day, allowing Iran to again build up its enrichment capabilities, e.g. its pathways to the bomb, to threatening levels and renew the nuclear crisis. Iran could eventually decide to abide by such a U.S. statement of policy or the parties to the JCPOA could later seek negotiations for a follow-on agreement to codify the provisions. Alternatively, Iran could simply extend in time its long-term enrichment plan that is part of the JCPOA. As of today, Congress continues working on this legislation and in particular

seeking to make it non-partisan. The legislative work in essence suspends any Congressional action under INARA's 60-day window to re-impose nuclear sanctions on an expedited basis and effectively end U.S. participation in the JCPOA.

Findings and Analysis

- 1) Iran appears to be restraining its tendency toward overproduction of heavy water, at least from the limited information provided.** The IAEA reports that Iran had less than the JCPOA-mandated cap of 130 metric tonnes of heavy water inside Iran as of November 6 in this reporting period. It reports that Iran's stock of heavy water was 114.4 metric tonnes on that date. It was 111 metric tonnes in August, implying a modest increase, assuming that no additional heavy water was exported from Iran. The August level followed Iran shipping out 19.1 metric tonnes the previous June. In any case, since the previous IAEA report, Iran may have surpassed the 130 metric tonnes cap on heavy water imposed by the JCPOA if the cap is interpreted as including heavy water inside and outside Iran that is under Iranian control. The IAEA again does not explain whether it calculates Iran's stock of heavy water as counting heavy water both inside and outside of Iran. It has implied that it only considers heavy water physically inside Iran as part of the 130 metric tonnes cap. Iranian overproduction of heavy water has been sent to the third-party country of Oman, where it technically remains under Iranian control, before sale to foreign buyers. No information is included in the report about a buyer for the amount of 19.1 metric tonnes of heavy water transferred to Oman during the previous reporting period. If Iran is truly ending its historical tendency to overproduce heavy water for sale to foreign buyers, it is certainly as a result of the Trump administration's tougher approach toward enforcement of the JCPOA.
- 2) Iran has shared plans with the IAEA to build a light water critical facility, which the IAEA calls a Light Water Critical Reactor. This seems at odds with the intention of the JCPOA to freeze and limit its nuclear programs.** In a surprise move, the IAEA reports that Iran announced in a letter dated October 29 its intention to "design and construct a critical facility (Light Water Critical Reactor) at AEOL [Atomic Energy Organization of Iran] site for research purposes in near future' and provided preliminary design information for the facility." The planned nominal power of the facility will be 1 KW (kilowatt) thermal and the fuel will be uranium enriched up to 3.67 percent. Iran must provide early design information on new nuclear facilities under its adherence to modified Code 3.1 of the Subsidiary Arrangements to its CSA. The IAEA report does not state where the fuel would be made. Although a critical facility is not a nuclear reactor as commonly defined, Iran's decision to build a light water critical facility seems at odds with the intention of the JCPOA to limit the size and scope of Iran's nuclear program. One also has to ask if this critical facility is a first step in an Iranian effort to build a land-based naval propulsion reactor, a goal discussed recently by Iran. Few in the United States would view an Iranian naval propulsion reactor program as permitted under the JCPOA.
- 3) The IAEA repeats its claim that it is verifying Section T despite overwhelming lack of evidence.** The IAEA again claims in its report in a minor comment that it is verifying and

monitoring “Sections D, E, S and T” in Annex 1 of the JCPOA. There is no other comment on its efforts to verify and monitor Section T, which includes nuclear weaponization development bans and controls over associated dual-use equipment. Moreover, the IAEA includes no information about visits to sites or monitoring of specialized equipment that would provide insight into its Section T verification effort. Given that the IAEA has stated it has not visited any Iranian military sites since Implementation Day, and in light of Amano’s statements that an Iranian declaration of Section T-relevant equipment would be positive and that Section T does not entail access to Iranian sites, it is doubtful that the effort to verify or monitor Section T is credible or effective. In fact, it is likely that some of the requirements of Section T are not being met and Iran may today be in violation of Section T.

- 4) The IAEA includes language about complementary accesses to sites “it needed to visit” under Additional Protocol, but appears to be interpreting its role as one of providing limited verification in Iran.** Following criticism after IAEA officials stated to the media that the agency has not visited military sites in Iran to verify the absence of military-nuclear related activities and to inspect sites previously associated with such activities, the IAEA appears to have inserted a pointed comment in this report regarding its complementary accesses in Iran. It states that it has had access to the sites it “needed to visit.” The IAEA overall appears to again be taking a limited, counterproductive interpretation of its mandate to verify the JCPOA. This stance is likely to be to the detriment of both the verification and future of the agreement. It may also be to the detriment of future arms control agreements and monitoring efforts in states that claim they have abandoned nuclear weapons programs.
- 5) The IAEA is monitoring Iran’s hot cells allowed under Joint Commission exemptions, which it terms “shielded cells.”** Iran operates hot cells at locations not described in the IAEA’s reporting at sizes larger than that allowed in the JCPOA, but subsequently exempted from this requirement pursuant to a Joint Commission decision. The IAEA in this report, and perhaps reflecting criticism over previous failures to do so, states that it is monitoring both “hot cells at the TRR [Tehran Research Reactor] and MIX facility and shielded cells” (its apparent terminology for the other allowed hot cells). The IAEA should more fully describe Iran’s use of all hot cells and its own efforts to monitor them, including describing their locations, in its quarterly reporting.
- 6) IAEA attended one Procurement Working Group (PWG) meeting, suggesting a proposal was weighed relating to nuclear direct-use applications.** The IAEA reports that it attended one meeting of the PWG, which [oversees](#) procurements by Iran of nuclear and nuclear-related commodities. These meetings happen every three weeks. IAEA attendance implies that there are one or more proposals for exports to Iran of nuclear direct-use goods (Nuclear Suppliers Group Part I goods), possibly including natural uranium. We will seek out more information on any new proposals considered by the PWG and report anything of importance in future reports.

7) Iran has again produced only a small quantity of low enriched uranium (LEU) at the Natanz Fuel Enrichment Plant (FEP); questions remain about whether it is exploiting a loophole whereby it enriches natural uranium from a stock of depleted uranium. The IAEA continues its misleading accounting practices for this reporting, complicating any independent assessment of the total amount of enrichment performed by Iran or LEU in its possession. During this reporting period, Iran's newly produced amount of LEU is estimated below as about 8.3 kilograms (kg) (uranium mass), for a total of 96.7 kg of LEU (uranium mass) enriched up to 3.67 percent (see below for discussion of fuzzy math on the total value). In theory, the FEP could produce up to 100 kg of LEU hexafluoride per month, still perhaps indicating that Iran may be exploiting a loophole in the JCPOA and enriching a considerable amount of natural uranium using its existing stocks of depleted uranium.

The IAEA reports that during the reporting period, Iran's total enriched uranium stockpile "has not exceeded 300 kg of UF₆ enriched up to 3.67% U-235 (or the equivalent in different chemical forms). The quantity of 300 kg of UF₆ corresponds to 202.8 kg of uranium." However, as discussed before, this value excludes certain stocks of LEU, as discussed previously and briefly below.

The IAEA again does not report on the total amount of LEU in Iran under all Joint Commission decisions, whether enriched less than 5 percent or near 20 percent enriched. The IAEA reports as though some of this LEU does not exist, based on Joint Commission decisions to exempt it from the limits. For example, LEU in low level waste is exempted, and some of the LEU in or from the Enriched UO₂ Powder Plant (EUPP) may not be counted as well. One expects that the IAEA does not apply such lax or political accounting practices in its normal safeguards operations. The amount of LEU exempted should be reported, as should the total amount of LEU in Iran, including that which is enriched below 5 percent and near 20 percent.

The IAEA uses fuzzy math to define the amount of LEU in Iran subject to the 300-kg cap. This can be seen by the way the IAEA reports on the quantity of LEU in Iran enriched up to 3.67 percent, namely "96.7 kg, based on the JCPOA and decisions of the Joint Commission." The actual amount is greater than that given by the IAEA and includes exempted quantities of LEU, although we cannot tell by how much. With a recognition that the total LEU stock is in fact larger, the IAEA reports the status and quantities of enriched uranium in Iran that it includes under the cap as:

96.7 kg of uranium enriched up to 3.67% U-235 (up from previous report's figure of 88.4 kg), including:

- a. 85.9 kg of uranium in the form of UF₆ (previous report was 77.8 kg, reflecting an increase of 8.1 kg likely representing new LEU production in the FEP (see above));
- b. 1.4 kg of uranium in the form of UO₂ (previous report was 1.0 kg, reflecting a minor increase);
- c. 4.3 kg of uranium in fuel assemblies and rods (down from 5.5 kg);
- d. 4.8 kg of uranium in liquid and solid scrap (up from 3.8 kg); and

e. 0.3 kg of enriched uranium in hold up at the EUPP (same as previous report).

- 8) Iran’s failure of IR-1 centrifuges at the FEP may have decreased.** In previous reporting periods, Iran appeared to experience a greater than expected failure of its IR-1 centrifuges that are in operation at the FEP. These excessive centrifuge failures during the earlier reporting periods could be tied to the enrichment of depleted uranium or an increase in the number of centrifuge failures from before Implementation Day. During this reporting period, it withdrew 16 IR-1 centrifuges from those held in storage for the replacement of damaged or failed IR-1s, a rate somewhat more in line with expectations. By contrast, it withdrew 57 IR-1 centrifuges during the previous reporting period. Only approximately 40-50 IR-1 centrifuges per year in total would be expected to fail at Iran’s current rate of LEU production, or roughly 10-12 IR-1 centrifuge failures per reporting period. This number of estimated failures is close enough to the 16 IR-1 centrifuges withdrawn so as not to necessarily imply that Iran is undertaking unstated enrichment of depleted uranium or experiencing more than expected centrifuge failures.
- 9) Iran is operating fewer centrifuges at the Fordow Fuel Enrichment Plant (FFEP) in preparation for stable isotope production.** The IAEA reports that Iran removed ten IR-1 centrifuges from the FFEP (for a total of 1,034 installed, down from 1,044). On October 30, the IAEA verified that the ten centrifuges had been removed from the six installed cascades and installed separately “for the purpose of conducting ‘initial research and R&D activities related to stable isotope production.’” On September 5, Iran provided the IAEA with updated design information for the FFEP which “included a layout of 16 IR-1 centrifuge positions” for conducting “Initial Research Setup for Separation of Stable Isotopes.”
- 10) The IAEA again provides no information on past and possibly on-going compliance controversies.** Previously reported compliance controversies relate to: Iran’s construction of more advanced centrifuges than allowed; production of significantly more rotor tubes and bellows than used in operating advanced centrifuges; Iran’s exploitation of quality assurance limits to further test advanced centrifuges; questions on its production of rotor tubes and bellows outside of declared equipment manufacturing sites; lack of testing of carbon fiber, or excessive numbers of centrifuge parts manufactured in general. We have gathered information on these issues and reported on them in one of our [previous](#) IAEA report analyses and in other Institute reports in light of the IAEA’s failure to do so.