



Iran Defies the International Atomic Energy Agency: The IAEA's Latest Iran Safeguards Report

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This analysis summarizes and assesses information in the International Atomic Energy Agency (IAEA's) periodic safeguards report, *NPT (Nuclear Non-Proliferation Treaty) Safeguards Agreement with the Islamic Republic of Iran*, the most recent of which was issued on June 5, 2020.

The report's major finding is:

The Agency notes with serious concern that, for over four months, Iran has denied access to the Agency, under Article 4.b.(i) and Article 5.c of the Additional Protocol, to two locations and, for almost a year, has not engaged in substantive discussions to clarify Agency questions related to the possible undeclared nuclear material and nuclear-related activities in Iran.

As a result, the report continues, "This is adversely affecting the Agency's ability to clarify and resolve the questions and thereby to provide credible assurance of the absence of undeclared nuclear material and activities at these locations in Iran." The Director General ends by calling on Iran to cooperate fully with the IAEA and provide prompt access to the two sites, in accordance with its obligations under the Safeguards Agreement and the Additional Protocol.

This IAEA finding follows several months of trying to gain Iran's cooperation and access to the two sites. The IAEA states in its June 5, 2020 report that, since its last NPT report of March 5, 2020, the IAEA and its head of safeguards undertook extensive diplomatic efforts through high-level visits to Tehran and meetings with Iranian leaders in order to secure pledges of cooperation and access to the two sites. Iran countered with demands for "further clarification" and stated that there were "legal ambiguities" regarding the agency's requests. It stated that it did not want its refusal of access to be called a "denial" in the IAEA's reporting. Iran asked to hold further discussions.

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In response, the IAEA stated, as recently as June 4, that “there were no legal ambiguities regarding the Agency’s rights and obligations” and “the Agency’s requests for clarification and access were strictly in accordance with the Safeguards Agreement and the Additional Protocol.” The IAEA “noted that there was no need for further clarification regarding the technical basis underlying the Agency’s access.”

The IAEA is investigating a nexus between undeclared nuclear material and Iran’s nuclear weapons program, an investigation built on an important safeguards foundation critical to both the IAEA’s effectiveness and credibility in determining whether a state’s declaration is complete and its program peaceful. By failing to fully declare its nuclear material and allow access to sites, Iran is committing major safeguards violations, regardless of when the activities may have occurred, risking a finding of non-compliance by the IAEA Board of Governors, and afterward, a referral to the UN Security Council.

Three Locations of Interest

The report obliquely discusses three Iranian locations: the two sites which Iran has refused to allow the IAEA to access, and a third one, razed in 2003 and 2004, experiencing such “extensive sanitization and leveling” as to render a visit of “no verification value.” The IAEA makes clear that all three sites may have involved undeclared nuclear material and nuclear-related activities. Key questions for the IAEA are: Where could that undeclared nuclear material be today? Where is the equipment that was used at the sites and in the activities referred to by the IAEA? Do any of these activities continue?

In January 2019, according to another IAEA report issued on June 5, 2020, the IAEA detected “natural uranium particles of anthropogenic origin at a location in Iran not declared to the Agency.”² The media reported in April 2019 that the IAEA had taken the samples at an open-air warehouse in the Tehran neighborhood of Turquz-Abad, a site Israel originally revealed to the IAEA in the summer of 2018 and revealed publicly in September 2018. Over the summer of 2018, Iran removed the contents of the site and sanitized it, prior to the IAEA visit.³ Despite the sanitization, the IAEA found the uranium particles, which *Bloomberg* reported included uranium hexafluoride.⁴ At least in part because of this environmental sampling result, the IAEA’s investigation led to the two additional sites mentioned above. This sampling result, involving recent activity at a site in Tehran, also highlights that undeclared uranium may exist in Iran today.

² IAEA Director General, *Verification and monitoring in the Islamic Republic of Iran in light of United Nations Security Council resolution 2231 (2015)*, GOV/2020/26, June 5, 2020, https://isis-online.org/uploads/iaea-reports/documents/IAEA_Iran_Quarterly_Safeguards_Report_June_2020_.pdf

³ David Albright, Olli Heinonen, Frank Pabian, and Andrea Stricker, “[Revealed: Emptying of the Iranian “Atomic Warehouse” at Turquz Abad](https://isis-online.org/isis-reports/detail/revealed-emptying-of-the-iranian-atomic-warehouse-at-turquz-abad/8),” *Institute for Science and International Security*, November 29, 2018, <https://isis-online.org/isis-reports/detail/revealed-emptying-of-the-iranian-atomic-warehouse-at-turquz-abad/8>

⁴ Jonathan Tirone, “Iran Atomic Inspections Continued at a Record Pace Last Year,” *Bloomberg*, May 5, 2020, <https://www.bloomberg.com/news/articles/2020-05-05/iran-nuclear-inspections-continued-at-a-record-pace-last-year>

The IAEA report includes new details about these three locations of interest to the IAEA and activities suspected of taking place there, from which more information can be established about their relationship to Iran's nuclear weapons effort in the early 2000s. In particular, this analysis discusses the three locations (sites) mentioned in the IAEA report and their relationship to Iran's nuclear weapons effort in the early 2000s including the "Amad Plan." This effort was a crash nuclear weapons program to build five nuclear weapons by the mid-2000s, downsized in late 2003 and reconstituted as a smaller, more disguised effort. It may continue today, at least as a program to be able to build nuclear weapons on relatively short notice, if the leadership so orders, utilizing a combination of safeguarded and secret nuclear facilities and capabilities.

Location 1: Lavisan-Shian

The first location discussed in the IAEA report is the Lavisan-Shian site. It was this site that was subject to such extensive razing as to make another visit not worthwhile.

Although not explicitly named in the body of the report, it is identified in an accompanying footnote, referencing a particular paragraph of a 2004 IAEA report on Iran that identified the location as Lavisan-Shian, stating in full in that earlier report:⁵

On 22 June 2004, during the same mission, the Agency requested access to the Lavisan-Shian site in Tehran which had been referred to in the June 2004 Board of Governors meeting as having been relevant to alleged nuclear activities in Iran before the site was razed after November 2003. The Agency visited the site on 28 June 2004.

Figure 1 shows the site before and after its destruction, with the demolition of several buildings and the leveling of the earth. Following its visit in 2004, the IAEA asked to take environmental samples of the site's rubble that had been trucked away, but Iran denied the request.

The site had been the location of the Physics Research Center, the core of Iran's nuclear weapons effort in the 1990s, subsequently incorporated into the Amad Plan.

In reference to this site, the IAEA reported in its June 5, 2020 report the possible presence in Iran between 2002 and 2003 of "natural uranium in the form of a metal disc, with indications of it undergoing drilling and hydriding, which may not have been included in Iran's declarations: the origins of this disc; and where such material is currently located." The statement about "drilling and hydriding" appears to refer to the production of uranium deuteride (UD₃), which is used in a neutron initiator Iran was developing in the Amad Plan.⁶

⁵ IAEA Director General, *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran*, GOV/2004/60, September 1, 2004, paragraph 6, <https://www.iaea.org/sites/default/files/gov2004-60.pdf>

⁶ "Neutron Source: Iran's Uranium Deuteride Neutron Initiator, *Institute for Science and International Security*, May 13, 2019, <https://isis-online.org/isis-reports/detail/neutron-source-irans-uranium-deuteride-neutron-initiator-1/>



Figure 1. Before and after pictures from 2000 (above) and 2004 (below) show the extent of razing and sanitization that took place at Lavisan-Shian.

The production of UD_3 typically involves producing uranium metal chips or shavings from a solid uranium metal piece, which are then combined under controlled temperatures and pressures with deuterium gas, producing the final product, UD_3 . Iran's Nuclear Archive contains an image of equipment in a glove box producing the uranium metal chips; other documents in the archive describe a step-by-step effort to produce UD_3 , including practicing its synthesis with surrogate materials. The testing of a UD_3 neutron initiator is also extensively discussed in the Nuclear Archive, incidentally helping explain the IAEA's detection in 2015 of uranium from environmental sampling done at the Parchin high explosive chamber in 2015, despite Iran's extensive sanitization.⁷

Under the Amad Plan, the production of uranium deuteride had a codename, Project 3.20. When the Amad Plan was downsized and reconstituted as a smaller, more disguised effort in late 2003 and early 2004, Project 3.20 was to be closed, but a few of the project staff needed to make the "Source," a codeword for the uranium deuteride neutron initiator, were slated to continue their activities.⁸

⁷ David Albright, Sarah Burkhard, Olli Heinonen, and Frank Pabian, "New Information about the Parchin Site: What the Atomic Archive Reveals About Iran's Past Nuclear Weapons Related High Explosive Work at the Parchin High Explosive Test Site," *Institute for Science and International Security*, October 23, 2018. <http://isis-online.org/isis-reports/detail/new-information-about-the-parchin-site>

⁸ Memorandum, Statement of Mohsen Fakhrizadeh, October 25, 2003. From Nuclear Archive.

Evidence of post-2003 work includes an Iranian document that surfaced in 2009. The document, dated to 2007, discusses that although work on neutron sources had made progress in the past, it was reduced in scale, leading to a decision to increase that work starting in about 2007, including continuing ongoing work on the production and testing of a UD₃ initiator.⁹

Location 2: Pilot Uranium Conversion Facility

The second location discussed in the IAEA report is a pilot uranium conversion site. According to the IAEA report, the location involved the “possible use or storage of nuclear material and/or conducting nuclear-related activities, including research and development activities related to the nuclear fuel cycle.” It added: “This location may have been used for the processing and conversion of uranium ore, including fluorination in 2003.” The IAEA reports that “this location also underwent significant changes in 2004, including the demolition of most buildings,” effectively razing that site.

Fluorination of uranium usually refers to the production of uranium hexafluoride.¹⁰ Moreover, *Bloomberg’s* reporting of the IAEA finding uranium hexafluoride in a sample at Turqz Abad, suggests the presence of undeclared uranium hexafluoride and its production at the undeclared uranium conversion site.

Again, by looking at an accompanying footnote, referencing a 2003 IAEA report,¹¹ it is apparent that the IAEA is questioning Iran’s 2003 declaration that it never had a pilot uranium tetrafluoride or uranium hexafluoride production plant. It also appears significant that Iran razed the site in 2004 after being asked by the IAEA about having a pilot uranium hexafluoride plant in 2003.

Moreover, the Institute published a study earlier this year based on documents in the Nuclear Archive, about a site called the “New Tehran Plant”, a plant intended as a follow-on uranium hexafluoride production plant under the Amad Plan.¹² Although never built, it was a scaled-up version of a secret pilot plant. The IAEA’s information may help answer questions about what may have preceded that site.

⁹ “New Document Reopens Question on Whether Iran’s Nuclear Weaponization Work Continued Past 2003, *Institute for Science and International Security*, December 14, 2009, <https://isis-online.org/isis-reports/detail/new-document-reopens-question-on-whether-irans-nuclear-weaponization-work-c/8>. Farsi and English versions of the document are available at: <http://isis-online.org/isis-reports/detail/farsi-and-english-versions-of-document-on-neutroninitiator/>

¹⁰ See, for example, <https://www.nrc.gov/docs/ML1204/ML12045A005.pdf>

¹¹ IAEA Director General, *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran*, GOV/2003/75, November 10, 2003, Section C.1, referenced in paragraph 8 of the June 5, 2020 report.

¹² David Albright and Sarah Burkhard, “New Information about Iran’s Production of Uranium Hexafluoride under the Amad Plan,” *Institute for Science and International Security*, April 2, 2020, <https://isis-online.org/isis-reports/detail/irans-production-of-uranium-hexafluoride-under-the-amad-plan/8>

There is no public knowledge of any suspect site razed in the time frame referenced by the IAEA, other than Lavisian-Shian, but the uranium conversion pilot plant appears to be at an independent location that remains publicly unknown.

Location 3: Abadeh

The third location referenced in the IAEA report is a remote site, a site where the IAEA “observed activities consistent with efforts to sanitize part of the location” from July 2019 onward. The report discusses “the possible use and storage of nuclear material, where outdoor, conventional explosive testing may have taken place in 2003, including in relation to testing of shielding in preparation for the use of neutron detectors.”

Based on the available information, it is clear that the IAEA is looking for the existence and/or use of undeclared uranium at this site, leading it to seek additional information and clarification about activities that occurred there.

Where is this location? The IAEA provided July 2019 as the date of the site’s razing. This date corresponds to one provided in a presentation on September 9, 2019, when Israeli Prime Minister Netanyahu held a press conference and revealed that Iran had razed a previously clandestine nuclear weapons development site in July 2019, located approximately 24 kilometers north of the town of Abadeh, in central Iran.¹³ The Prime Minister said that the site, commonly called the “Abadeh site,” was discovered by Israel as a result of its acquisition of the Nuclear Archive information. Netanyahu described the site as having been engaged in conducting “experiments to develop nuclear weapons.”

The identical date means that the location discussed by the IAEA is probably the Abadeh site. Abadeh is the subject of another Institute report, parts of which are summarized here. This includes the identification of a possible outdoor high explosive testing area at the location, also razed in the summer of 2019.

Unlike the Lavisian-Shian site and the uranium hexafluoride pilot plant, this site was preserved for some time after 2003. Abadeh is in a very remote part of Iran, possibly leading the Amad Plan leaders to leave it intact post-2003, either for additional testing or to be on stand-by. After 2003, when commercial satellite imagery is available, the site has exhibited evidence of personnel presence, such as in a 2006 satellite image, and lighter signs of activity around 2012 and 2013, and again around 2018, which may have continued up until its razing in mid-summer 2019.

With the discovery and seizure of the Nuclear Archive in 2018, followed by increased IAEA interest, and inspectors now armed with highly specific information about Iran’s nuclear

¹³ Raphael Ahren, “Netanyahu reveals site where Iran ‘experimented on nuclear weapons development,’” *The Times of Israel*, September 9, 2019, <https://www.timesofisrael.com/pm-reveals-secret-site-where-iran-experimented-on-nuclear-weapons-development/>

weapons-related work, Iran may have worried about an IAEA request to visit the site. It may have reckoned it was time to raze it, not counting on the IAEA sounding an alarm to the entire world.

A full satellite imagery report on Abadeh can be accessed here: <https://isis-online.org/isis-reports/detail/the-alleged-nuclear-weapons-development-site-near-abadeh-iran/>