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# Signs that Iran Might Be Continuing Its Nuclear Weapons Program

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**EXECUTIVE SUMMARY:** Samples recently collected by International Atomic Energy Agency (IAEA) inspectors at two Iranian sites showed traces of radioactivity. Tehran had not reported any nuclear activity at these sites and denied IAEA inspectors access to them until just a few months ago. The findings suggest that Iran, in violation of the JCPOA nuclear agreement it signed in July 2015, has continued to conduct activities related to nuclear military development.

Samples collected by the International Atomic Energy Agency (IAEA) showed traces of radioactivity at two Iranian sites where Tehran has not reported any nuclear activity. Although the IAEA refrained from naming the sites in its quarterly report of June 5, 2020, they were identified last year by the Institute for Science and International Security in Washington. The identification of the sites was based on information extracted from the Iranian nuclear archive smuggled out of Tehran and into Israel in January 2018.

The first site visited by IAEA inspectors in August 2020 was a pilot plant for uranium conversion with an emphasis on the production of UF<sub>6</sub> (uranium hexafluoride, a uranium compound which, in its gas phase, enables the enrichment of uranium by centrifuges). This site, located about 75 km southeast of Tehran, operated under the aegis of the Amad military nuclear program. In documents from the Iranian nuclear archive, this location is referred to as the "Tehran Site." The facility was dismantled in 2004.

The other site was Marivan, located near the town of Abadeh in central Iran. This facility, also part of the Amad program, was designed to conduct "cold tests" of nuclear weapons (that is, to simulate activation of a nuclear explosive device using natural uranium rather than nuclear weapons grade uranium).

This included operating a multipoint explosive system for the activation of a nuclear weapon as well as the development of its neutron initiator.

According to satellite imagery published by the Institute for Science and International Security, the Iranian authorities razed part of the Marivan facility in July 2019, more than a year before they allowed IAEA inspectors access to the facility. It is likely that this was done to prevent exposure of nuclear activities that had taken place there in the past. (This was not the first time the Islamic regime had razed nuclear sites: it did so at the Lavizan-Shian facility in Tehran in 2004 and the Parchin facility in 2012.) It is possible that the traces of radioactive materials found in samples taken by IAEA inspectors in August 2020 indicate renewed efforts to develop a neutron initiator for nuclear weapons previously conducted at the Marivan site.

The IAEA report of June 5, 2020 referred to a third location as well. Though its name was not revealed in the report, it was implied that it was the facility the regime had previously operated in Lavizan-Shian. This suspicion was based on the fact that between 2002 and 2003, a metallic natural uranium disc was found at the site that had been processed by drilling and hydriding (compressing hydrogen atoms inside uranium), an activity Iran neither reported to the IAEA nor provided an explanation for. This finding suggests that the regime had attempted to develop a UD3 neutron initiator at the site.

In addition to all of the above, Iran periodically intensifies its confrontation with the IAEA, causing great concern to the US and the West. The following are examples:

- Iran began enriching uranium to 20%, a rate of enrichment that can serve as a springboard to 90% (the rate required for nuclear weapons). The regime announced on January 28, 2021 that it had already accumulated 17 kg of enriched uranium to 20% and that it intends to reach an annual production capacity of 120 kg of enriched uranium to 20%. Note that 150-200 kg of 20% enriched uranium are required to reach 15-20 kg of 90% enriched uranium. (According to other calculations, Iran could accumulate 90% enriched uranium for its first bomb within a matter of a few months).
- Iran recently installed three cascades at the Natanz uranium enrichment plant, each containing 174 advanced IR-2m centrifuges. They were scheduled to go into operation as early as January 30 with the aim of reaching 1,000 centrifuges of this type at Natanz within three months. Iran also began installing two cascades, each with about 170 of the more advanced IR-6 centrifuges, at the Fordow enrichment facility.
- On January 13, 2021, Iran informed the IAEA that it was researching the production of metallic uranium—an activity which, if true, is another violation of the JCPOA. Britain, France, and Germany have expressed

concern that the metallic uranium produced by Iran will be used for nuclear weapons development.

- Iran has not yet provided the IAEA with a plausible explanation for the low-enriched uranium particles found in samples taken from a warehouse at the Turqzabad site in Tehran by agency inspectors in 2019. An IAEA report from last November said the particulate compounds were similar to particulates found in Iran in the past that turned out to have been from imported centrifuge components (purchased from Pakistan, according to earlier publications). This theory was backed up by the fact that the particles included (among other things) the uranium-236 isotope, which does not exist in nature but is formed as a result of neutron capture by the uranium-235 nucleus—a process that takes place inside a nuclear reactor. As far as is known, it is unlikely that the process of manufacturing the particulates containing uranium-236 took place in Iran.

The problem of Iran's pursuit of nuclear weapons is now largely in the hands of Joe Biden, though he is not enthusiastic about taking it on. Biden stated during his election campaign that he intends to return the US to the nuclear deal, albeit with amendments, and remove the sanctions imposed on Iran by the Trump administration, but it is doubtful that he has formulated a clear policy on this issue so far. He did, however, announce on February 8 that the US will not lift sanctions until Iran fulfills its obligations under the JCPOA.

Secretary of State Tony Blinken said on February 1 that the breakout time in which Iran might ramp up enrichment of uranium to weapons-grade purity "has gone from beyond a year (under the deal) to about three or four months." He also said an agreement with Iran should be "longer and stronger." However, many of Biden's newly appointed officials (including Blinken) are former members of Barack Obama's administration who were deeply involved in negotiating the JCPOA. The appointment of Robert Malley as US envoy to Iran raises particular concerns. If the US does return to a courtship of Tehran, the task of dealing with the Iranian pursuit of nuclear weapons may be left primarily to Israel.

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