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# Iran's Nuclear Program: Tehran's Compliance with International Obligations

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SUMMARY

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# Iran's Nuclear Program: Tehran's Compliance with International Obligations

Several U.N. Security Council resolutions adopted between 2006 and 2010 required Iran to cooperate fully with the International Atomic Energy Agency's (IAEA's) investigation of its nuclear activities, suspend its uranium enrichment program, suspend its construction of a heavy-water reactor and related projects, and ratify the Additional Protocol to its IAEA safeguards agreement. Iran did not comply with most of the resolutions' provisions. However, Tehran has implemented various restrictions on, and provided the IAEA with additional information about, the government's nuclear program pursuant to the July 2015 Joint Comprehensive Plan of Action (JCPOA), which Tehran concluded with China, France, Germany, Russia, the United Kingdom, and the United States. On the JCPOA's Implementation Day, which took place on January 16, 2016, all of the previous resolutions' requirements were terminated. The nuclear Nonproliferation Treaty (NPT) and U.N. Security Council Resolution 2231, which the Council adopted on July 20, 2015, compose the current legal framework governing Iran's nuclear program. The United States attempted in 2020 to reimpose sanctions on Iran via a mechanism provided for in Resolution 2231. However, the Security Council did not do so.

Iran and the IAEA agreed in August 2007 on a work plan to clarify outstanding questions regarding Tehran's nuclear program. The IAEA had essentially resolved most of these issues, but for several years the agency still had questions concerning "possible military dimensions to Iran's nuclear programme." A December 2, 2015, report to the IAEA Board of Governors from then-agency Director General Yukiya Amano contains the IAEA's "final assessment on the resolution" of the outstanding issues. A June 2020 IAEA Board of Governors resolution calls on Iran to satisfy more recent agency requests concerning possible undeclared nuclear activities in Iran. This resolution does not contain a formal finding of noncompliance.

This report provides a brief overview of Iran's nuclear program and describes the legal basis for the actions taken by the IAEA board and the Security Council. It will be updated as events warrant.

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# Introduction

Iran ratified the nuclear Nonproliferation Treaty (NPT) in 1970. Article III of the treaty requires nonnuclear-weapon states-parties[1] to accept comprehensive International Atomic Energy Agency (IAEA) safeguards; Tehran concluded a comprehensive safeguards agreement with the IAEA in 1974.[2] In 2002, the agency began investigating allegations that Iran had conducted clandestine nuclear activities; the IAEA ultimately reported that some of these activities had violated Tehran's safeguards agreement. Following more than three years of investigation, the IAEA Board of Governors reported the matter to the U.N. Security Council in February 2006. Since then, the council adopted six resolutions requiring Iran to take steps to alleviate international concerns about its nuclear program. This report provides a brief overview of Iran's nuclear program and describes the legal basis for the actions taken by the IAEA board and the Security Council.

For more detailed information about Iran's nuclear program, see CRS Report RL34544, *Iran's Nuclear Program: Status*, by Paul K. Kerr. For more information about the July 2015 Joint Comprehensive Plan of Action (JCPOA) concerning Iran's nuclear program, see CRS Report R43333, *Iran Nuclear Agreement and U.S. Exit*, by Paul K. Kerr and Kenneth Katzman.

## Background

Iran's nuclear program has generated widespread concern that Tehran is pursuing nuclear weapons. Tehran's construction of gas centrifuge uranium enrichment facilities has been the main source of proliferation concern. Gas centrifuges enrich uranium by spinning uranium hexafluoride gas at high speeds to increase the concentration of the uranium-235 isotope. Such centrifuges can produce both low-enriched uranium (LEU), which can be used in nuclear power reactors, and highly enriched uranium (HEU), which is one of the two types of fissile material used in nuclear weapons. HEU can also be used as fuel in certain types of nuclear reactors. Iran also has a uranium conversion facility, which converts uranium ore concentrate into several compounds, including uranium hexafluoride. Tehran claims that it wants to produce LEU for its current and future power reactors.

Iran's construction of a reactor moderated by heavy water has also been a source of concern. Although Tehran says that the reactor, which Iran is building at Arak, is intended for the production of medical isotopes, it was a proliferation concern because the reactor's spent fuel would have contained plutonium well-suited for use in nuclear weapons. In order to be used in nuclear weapons, however, plutonium must be separated from the spent fuel—a procedure called "reprocessing." Iran has said that it will not engage in reprocessing. Pursuant to the Joint Comprehensive Plan of Action (JCPOA), which Iran concluded in July 2015 with China, France, Germany, Russia, the United Kingdom, and the United States (collectively known as the "P5+1"), Tehran has rendered the Arak reactor's original core inoperable. Iran has also begun to fulfill a JCPOA requirement to redesign and rebuild the Arak reactor based on a design agreed to by the P5+1 so that it will not produce weapons-grade plutonium. The agreement also requires Iran to export the spent fuel from this reactor and all other nuclear reactors.

[1] The NPT defines a nuclear-weapon state as "one which has manufactured and exploded a nuclear weapon or other nuclear explosive device" prior to January 1, 1967. These states are China, France, Russia, the United Kingdom, and the United States.

[2] INFCIRC/214.

Iran and the IAEA agreed in August 2007 on a work plan to clarify the outstanding questions regarding Tehran's nuclear program.[3] Iran and the agency subsequently resolved most of these questions, which had contributed to suspicions that Iran had been pursuing a nuclear weapons program.[4] Then-IAEA Director General Mohamed ElBaradei, however, told the IAEA board June 2, 2008, that there was "one remaining major [unresolved] issue," which concerns questions regarding "possible military dimensions to Iran's nuclear programme."[5] The IAEA agency did not make any substantive progress on these matters for some time.

Tehran has questioned the authenticity of some of the evidence underlying the agency's concerns and maintains that it has not done any work on nuclear weapons.[6] Iran also expressed concern to the IAEA that resolving some of these issues would require agency inspectors to have "access to sensitive information related to its conventional military and missile related activities." The IAEA, according to a September 2008 report from ElBaradei, stated its willingness to discuss with Iran

> modalities that could enable Iran to demonstrate credibly that the activities referred to in the documentation are not nuclear related, as Iran asserts, while protecting sensitive information related to its conventional military activities.[7]

Indeed, the agency made several specific proposals, but Tehran did not provide the requested information.[8]

The IAEA Board of Governors adopted a resolution on November 18, 2011, stating that "it is essential" for Iran and the IAEA "to intensify their dialogue aiming at the urgent resolution of all outstanding substantive issues." IAEA and Iranian officials met 10 times between January 2012 and May 2013 to discuss what the agency termed a "structured approach to the clarification of all outstanding issues related to Iran's nuclear programme."[9] However, during an October 2013 meeting, IAEA officials and their Iranian counterparts decided to adopt a "new approach" to resolving these issues. Iran signed a joint statement with the IAEA on November 11, 2013, describing a "Framework for Cooperation." According to the statement, Iran and the IAEA agreed to "strengthen their cooperation and dialogue aimed at ensuring the exclusively peaceful nature of Iran's nuclear programme through the resolution of all outstanding issues that have not already been resolved by the IAEA." Iran subsequently provided the agency with information

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[3] The text is available at https://www.iaea.org/sites/default/files/publications/documents/infcircs/2007/infcirc711.pdf.

[4] Atomic Energy Organization of Iran President Ali Akbar Salehi explained in a 2009 interview that Tehran "decided to solve these problems within the context of our [safeguards] commitments and not accept anything beyond our legal obligations," adding that there had previously been "debates about the decreasing of the level of our cooperation" with the IAEA. ("Interview: Dr. Salehi on Iran's Nuclear Program," published in *Discourse: An Iranian Quarterly*, Vol. 9, Nos. 1-2, Fall 2009-Winter 2010, p. 1.

[5] *Introductory Statement to the Board of Governors*, IAEA Director General Dr. Mohamed ElBaradei, June 2, 2008.

[6] See, for example, *Communication Dated 7 January 2016 Received from the Permanent Mission of the Islamic Republic of Iran to the Agency Regarding the Report of the Director General on the Final Assessment on Past and Present Outstanding Issues Regarding Iran's Nuclear Programme*, INFCIRC/893, January 8, 2016.

[7] *Implementation of the NPT Safeguards Agreement and Relevant Provisions of Security Council Resolutions 1737 (2006), 1747 (2007), 1803 (2008) and 1835 (2008) in the Islamic Republic of Iran*, Report by the Director General, GOV/2008/38, September 15, 2008.

[8] See, for example, *Implementation of the NPT Safeguards Agreement and Relevant Provisions of Security Council Resolutions in the Islamic Republic of Iran*, Report by the Director General, GOV/2012/23, May 25, 2012.

[9] A September 2012 IAEA Board of Governors resolution reiterated the board's support for the Agency's negotiations with Tehran, and stated that "Iranian cooperation with IAEA requests aimed at the resolution of all outstanding issues is essential and urgent in order to restore international confidence in the exclusively peaceful nature of Iran's nuclear programme."

about several of the outstanding issues. Iran later agreed in May 2014 to provide information to the IAEA by August 25, 2014, about five additional issues, including alleged Iranian research on high explosives and "studies made and/or papers published in Iran in relation to neutron transport and associated modelling and calculations and their alleged application to compressed materials." Iran subsequently provided information about four of these issues.[10]

Pursuant to the JCPOA, Iran completed a series of steps set out in an Iran-IAEA "Roadmap for Clarification of Past and Present Outstanding Issues." According to then-IAEA Director General Yukiya Amano, this road map set out "a process" under a November 24, 2013, Joint Plan of Action between Iran and the P5+1, "to enable the Agency, with the cooperation of Iran, to make an assessment of issues relating to possible military dimensions to Iran's nuclear programme."[11] According to a December 2, 2015, report from Amano to the IAEA Board of Governors, "[a]ll the activities contained in the road-map were implemented in accordance with the agreed schedule."[12] The road map required Amano to present this report, which contains the agency's "final assessment on the resolution" of the aforementioned outstanding issues.

In response, the board adopted a resolution on December 15, 2015, that notes Iran's cooperation with the road map and "further notes that this closes the Board's consideration" of the "outstanding issues regarding Iran's nuclear programme."[13] Since the IAEA has verified that Iran has taken the steps required for Implementation Day to take effect, the board is no longer focused on Iran's compliance with past Security Council resolutions and past issues concerning Iran's safeguards agreement. Instead, the board is focused on monitoring and verifying Iran's JCPOA implementation "in light of" United Nations Security Council Resolution 2231, which the Council adopted on July 20, 2015. This latter resolution requests the IAEA Director General "to undertake the necessary verification and monitoring of Iran's nuclear-related commitments for the full duration of those commitments under the JCPOA."

The December 2015 IAEA resolution requests the Director General to issue quarterly reports to the board regarding Iran's "implementation of its relevant commitments under the JCPOA for the full duration of those commitments." The Director General is also to report to the Board of Governors and the Security Council "at any time if the Director General has reasonable grounds to believe there is an issue of concern" regarding Tehran's compliance with its JCPOA or safeguards obligations. The JCPOA and Resolution 2231 also contain a variety of reporting provisions for the IAEA. For example, the resolution requests the agency's Director General

> to provide regular updates to the IAEA Board of Governors and, as appropriate, in parallel to the Security Council on Iran's implementation of its commitments under the JCPOA and also to report to the IAEA Board of Governors and in parallel to the Security Council at any time if the Director General has reasonable grounds to believe there is an issue of concern directly affecting fulfilment of JCPOA commitments.

Several U.N. Security Council Resolutions required Iran to cooperate fully with the IAEA's investigation of its nuclear activities, suspend its uranium enrichment program, suspend its

[10] *Implementation of the NPT Safeguards Agreement and Relevant Provisions of Security Council Resolutions in the Islamic Republic of Iran*, Report by the Director General, GOV/2015/34, May 29, 2015.

[11] For more information about the Joint Plan of Action and the JCPOA, see CRS Report R43333, *Iran Nuclear Agreement and U.S. Exit*, by Paul K. Kerr and Kenneth Katzman.

[12] *Final Assessment on Past and Present Outstanding Issues Regarding Iran's Nuclear Programme*, GOV/2015/68, December 2, 2015.

[13] *Joint Comprehensive Plan of Action Implementation and Verification and Monitoring in the Islamic Republic of Iran in Light of United Nations Security Council Resolution 2231 (2015)*, GOV/2015/72, December 15, 2015.

construction of a heavy-water reactor and related projects, and ratify the Additional Protocol to its IAEA safeguards agreement.[14] Tehran has signed, but not ratified, its Additional Protocol. Resolution 1929, which the council adopted in June 2010, required Iran to comply with these provisions, as well as to refrain from "any activity related to ballistic missiles capable of delivering nuclear weapons." Resolution 1929 also required Iran to comply with the modified Code 3.1 of its subsidiary arrangements. (See "Potential Noncompliance After September 2005.") Iran did not take any of these steps prior to concluding the JCPOA, but did limit and reverse some aspects of its nuclear program since the government began implementing the November 2013 Joint Plan of Action. Moreover, pursuant to the Joint Plan of Action and its November 2013 agreement with the IAEA, Iran provided some information to the agency required by the modified Code 3.1.

## The Joint Comprehensive Plan of Action

Pursuant to the JCPOA, Tehran applied additional restrictions on its uranium enrichment program and heavy-water reactor program, as well as began implementing its additional protocol and the modified Code 3.1. On the JCPOA's Implementation Day, which took place on January 16, 2016, all of the previous Security Council resolutions' requirements were terminated pursuant to U.N. Security Council Resolution 2231, which, along with the NPT, composes the current legal framework governing Iran's nuclear program.[15] The IAEA reports findings of its inspection and monitoring activities and the JCPOA-established Joint Commission monitors the parties' implementation of the agreement. However, compliance determinations are national decisions. Until July 2019, all official reports and statements from the United Nations, European Union, the IAEA, and the non-U.S. participating governments indicated that Iran had fulfilled its JCPOA and related Resolution 2231 requirements.[16] [17]

Beginning in July 2019, the IAEA verified that some of Iran's nuclear activities were exceeding JCPOA-mandated limits; the government has since increased the number of such activities (see

[14] Iran has a plant for producing heavy water.

[15] "Joint Statement by EU High Representative Federica Mogherini and Iranian Foreign Minister Javad Zarif," January 16, 2016.

[16] Iran's stock of heavy water exceeded the JCPOA-required limit of 130 metric tons on two occasions since the P5+1 began implementing the agreement. "In both instances, this issue was resolved after Iran shipped out sufficient amounts of material to get back under the limit," the State Department reported in April 2017 (*Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments,* Department of State, April 2017). For more information, see CRS Report R43333, *Iran Nuclear Agreement and U.S. Exit* and CRS Report RL34544, *Iran's Nuclear Program: Status,* by Paul K. Kerr. Beginning in November 2019, IAEA reports have noted that Iran has on several occasions exceeded the JCPOA-required limit. Tehran since February 23, 2021, has neither informed the IAEA about Iran's inventory of heavy water nor allowed the agency to monitor Tehran's heavy water production.

[17] According to a May 31, 2019, report from then-IAEA Director General Amano, Iran had conducted research and development using advanced centrifuges; the number of these centrifuges may have exceeded the number permitted by the JCPOA (*Verification and Monitoring in the Islamic Republic of Iran in Light of United Nations Security Council Resolution 2231 (2015),* Report by the Director General, International Atomic Energy Agency, GOV/2019/21, May 31, 2019; *Verification and Monitoring in the Islamic Republic of Iran in Light of United Nations Security Council Resolution 2231 (2015),* Report by the Director General, International Atomic Energy Agency, GOV/2019/21, May 31, 2019; GOV/2019/32). In a June 11, 2019, speech to the IAEA Board of Governors, U.S. Ambassador Jackie Wolcott stated that this activity has violated the JCPOA. However, no JCPOA participating government appears to have issued a similar public finding. Moreover, EU High Representative Mogherini stated during a June 17 press conference that "Iran is still compliant" with the JCPOA (Remarks by High Representative/Vice-President Federica Mogherini at the press conference following the Foreign Affairs Council, June 17, 2019).

**Appendix D**).[18] According to IAEA reports, Iran's number of installed centrifuges, LEU stockpile, enriched uranium u-235 concentration, and number of enrichment locations exceed JCPOA-mandated limits. Tehran is also conducting JCPOA-prohibited research and development (R&D) activities, as well as centrifuge manufacturing.[19]

In a May 8, 2019, speech, Iranian President Hassan Rouhani cited JCPOA Paragraph 26 as grounds for reducing the government's performance of some Iranian commitments pursuant to the agreement.[20]According to that paragraph,

> Iran has stated that it will treat such a re-introduction or re-imposition of the sanctions specified in Annex II, or such an imposition of new nuclear-related sanctions, as grounds to cease performing its commitments under this JCPOA in whole or in part.

However, the foreign ministers of France, Germany, and the United Kingdom, collectively known as the "E3," stated on January 14, 2020, that "Iran is not meeting its [JCPOA] commitments" and announced that the three governments were referring the matter to the agreement's dispute resolution mechanism.[21] The E3 sent a letter on January 14, 2020, to EU High Representative for Foreign Affairs and Security Policy Josep Borrell, who oversees the mechanism's process.[22] It does not appear that any government has taken action under the mechanism. With regard to Iranian compliance issues, the E3 explained in a November 19, 2020, statement that those governments "remain committed to working with all JCPOA participants to find a diplomatic way forward … we intend to pursue these discussions within the framework" of the JCPOA. The E3 did not explicitly mention the dispute resolution mechanism.[23]

The E3 November 2020 statement explains that those governments "do not accept the argument that Iran is entitled to reduce compliance" with the JCPOA, and adds that "Iran has never

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[18] Unless otherwise noted, this paragraph is based on the following sources: GOV/2019/32; *Verification and Monitoring in the Islamic Republic of Iran in Light of United Nations Security Council Resolution 2231 (2015)*, Report by the Director General, GOV/INF/2019/8, July 1, 2019; *Verification and Monitoring in the Islamic Republic of Iran in Light of United Nations Security Council Resolution 2231 (2015)*, Report by the Director General, GOV/INF/2019/9, July 8, 2019; *Verification and Monitoring in the Islamic Republic of Iran in Light of United Nations Security Council Resolution 2231 (2015)*, Report by the Acting Director General, GOV/2019/55, November 11, 2019; *Verification and Monitoring in the Islamic Republic of Iran in Light of United Nations Security Council Resolution 2231 (2015)*, Report by the Acting Director General, GOV/INF/2019/17, November 18, 2019; *Verification and Monitoring in the Islamic Republic of Iran in Light of United Nations Security Council Resolution 2231 (2015)*, Report by the Director General, GOV/2020/5, March 3, 2020; *Verification and Monitoring in the Islamic Republic of Iran in Light of United Nations Security Council Resolution 2231 (2015)*, Report by the Director General, GOV/2020/26, June 5, 2020; *Verification and Monitoring in the Islamic Republic of Iran in Light of United Nations Security Council Resolution 2231 (2015)*, Report by the Director General, GOV/2020/41, September 4, 2020; *Verification and Monitoring in the Islamic Republic of Iran in Light of United Nations Security Council Resolution 2231 (2015)*, Report by the Director General, GOV/2020/51, November 11, 2020; *Verification and Monitoring in the Islamic Republic of Iran in Light of United Nations Security Council Resolution 2231 (2015)*, Report by the Director General, GOV/2021/10, February 23, 2021; *Verification and Monitoring in the Islamic Republic of Iran in Light of United Nations Security Council Resolution 2231 (2015)*, Report by the Director General, GOV/2021/28, May 31, 2021; *Verification and Monitoring in the Islamic Republic of Iran in Light of United Nations Security Council Resolution 2231 (2015)*, Report by the Director General, GOV/2021/39, September 7, 2021; and *Verification and Monitoring in the Islamic Republic of Iran in Light of United Nations Security Council Resolution 2231 (2015)*, Report by the Director General, GOV/2021/51, November 17, 2021.

[19] See also "IAEA Chief Sounds Alarm over Iran's Nuclear Programme," *Financial Times*, May 26, 2021.

[20] See also *Communication Dated 29 January 2021 from the Permanent Mission of the Islamic Republic of Iran to the Agency*, INFCIRC/953, February 2, 2021.

[21] "Statement by the Foreign Ministers," January 14, 2020.

[22] "Statement by High Representative Borrell as Coordinator of the Joint Commission of the Joint Comprehensive Plan of Action on the Dispute Resolution Mechanism," January 14, 2020.

[23] "E3 Statement on Iran to the IAEA Board of Governors," November 19, 2020.

triggered" the agreement's dispute resolution mechanism "and has no legal grounds to cease implementing the provisions of the agreement."[24] Nevertheless, according to the U.S. government, "under the terms of the JCPOA, Iran may cease performing commitments in whole or in part following the U.S. re-imposition of sanctions."[25]

A February 2021 report from IAEA Director General Raphael Grossi states that the IAEA had continued verification and monitoring of the restrictions described in Section T of the JCPOA, which prohibits a number of nuclear weapons-related activities.[26] Grossi's November 2021 report, however, states that the agency has not been able to undertake the verification and monitoring activities concerning Section T since his February 2021 report.[27]

The JCPOA, as noted, describes arrangements for agency inspectors to gain access to Iranian sites, including military sites, other than those that Tehran has declared to the agency, "if the IAEA has concerns regarding undeclared nuclear materials or activities, or activities inconsistent with" the JCPOA. The agreement also provides for alternative means to clarify such concerns. The IAEA has not reported whether it has requested JCPOA-related access to any Iranian military facilities, but the agency has a number of methods other than inspections, such as analyzing open-source information and receiving intelligence briefings from governments, to monitor Iranian compliance with these and other JCPOA commitments. According to an April 2018 State Department report regarding states' compliance with arms control and nonproliferation agreements,

> [t]he IAEA continues to exercise its full authorities in pursuing any new safeguards-relevant or JCPOA-related information in Iran, including any new concerns regarding weaponization should they arise, through implementation of Iran's Safeguards Agreement, Additional Protocol, and the enhanced transparency and verification measures contained in the JCPOA.[28]

The June 2020 version of the same report states that "the IAEA continues to monitor and verify Iran's compliance with its obligations under its [comprehensive safeguards agreement], and the Additional Protocol as well as Iran's adherence to its JCPOA commitments."[29] According to Grossi's November 2020 report, the IAEA had "not observed any change in the level of cooperation by Iran in relation to Agency verification and monitoring activities under the JCPOA."[30]

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[24] "Statement by the Foreign Ministers of France, Germany and the United Kingdom," January 14, 2020.

[25] Email from State Department official, July 17, 2019. A State Department official reiterated this position in a January 31, 2020, interview with a CRS analyst.

[26] GOV/2021/10.

[27] GOV/2021/51.

[28] Department of State, April 2018. The August 2019 version of the same report notes that the December 15, 2015, IAEA Board of Governors resolution that closed the board's "consideration" of the "outstanding issues" concerning the possible military dimensions of Iran's nuclear program,

> does not preclude the IAEA from investigating any information that is new or inconsistent with its previous assessment of Iran's past nuclear weapons program, or where it has concerns regarding the potential existence of undeclared nuclear materials or activities. (*Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments*, 2019).

[29] *Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments*, Department of State, June 2020. An April 2021 version of the report contains similar language (*Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments*, Department of State, April 2021).

[30] GOV/2020/51.

However, Iran informed the IAEA in a February 15, 2021, letter that the government, as of February 23, would stop implementing some of the JCPOA "voluntary transparency measures" described above, including implementation of the Additional Protocol.[31] On February 21, 2021, Iran and the IAEA "reached a temporary bilateral technical understanding … whereby the Agency would continue with its necessary verification and monitoring activities for up to three months, as set out in a technical annex."[32] During a press conference that day, Grossi explained that this arrangement "is not a replacement for what we used to have" under the Additional Protocol but "is a temporary solution that allows us to continue to give the world assurances of what is going on there in the hope that we can return to a fuller picture"[33] According to Grossi's May 2021 report, this agreement is meant "to enable the Agency to recover and re-establish the necessary continuity of knowledge."[34]

Iran agreed to continue implementing its comprehensive safeguards agreement "without limitation."[35] According to a December 1, 2021, letter to the IAEA, Iran has not scaled back monitoring and inspections related to Tehran's comprehensive safeguards agreement; IAEA reports do not contradict this claim.[36]

Ambassador Kazem Gharibabadi, Iran's Permanent Representative to the UN in Vienna, stated on March 4 that Tehran will resume "full implementation of the Additional Protocol" when the other JCPOA participants resume implementing their obligations pursuant to the agreement.[37] The IAEA and Iran announced on May 24 that the parties agreed to extend this arrangement until June 24.[38] Since that date, Iran has not agreed to continue the arrangement. However, the agency has received informal Iranian "indications" that the IAEA's "monitoring and surveillance equipment covered by the technical understanding continued to operate and the information that was collected continued to be stored," according to a September 7 report from Director General Grossi.[39]

This report adds that the agency in late August 2021 requested that Iran provide access to "all relevant locations" in Iran "in order to service the equipment and replace the storage media."[40] The IAEA also requested that Tehran permit agency inspectors to "verify the status" of four surveillance cameras that Iran had removed from its TESA Karaj complex centrifuge component

[31] GOV/2021/10. The letter names the following measures: provisions of Iran's Additional Protocol; modified Code 3.1 of the subsidiary arrangements to Iran's safeguards agreement; IAEA use of modern safeguards technologies in Iran; the long term in-country presence of IAEA inspectors; transparency measures concerning Iranian uranium enrichment, uranium ore concentrate production, and centrifuge component manufacturing; unspecified IAEA access "pursuant to provisions of the JCPOA"; and unspecified monitoring and verification of Tehran's implementation of JCPOA-mandated "voluntary measures."

[32] GOV/2021/10.

[33] "Press Conference with IAEA DG Rafael Grossi," YouTube video, 6:13, posted by Sputnik, February 21, 2021, https://www.youtube.com/watch?v=NsDUXCQNVAU.

[34] GOV/2021/28.

[35] GOV/2021/10.

[36] *Communication Dated 1 December 2021 From the Permanent Mission of the Islamic Republic of Iran to the Agency*, INFCIRC/967, December 3, 2021.

[37] "Iranian Envoy Hails IAEA Members' Vigilance to Prevent Escalating Tensions," *Fars News Agency*, March 4, 2021.

[38] "IAEA Director General Says Agreement Reached on Verification and Monitoring in Iran," May 24, 2021; "Iran Extends Agreement with IAEA for One More Month," *Islamic Republic News Agency*, May 24, 2021; "Envoy Confirms Iran Nuclear Chief's Letter to IAEA," *Islamic Republic News Agency*, June 1, 2021.

[39] GOV/2021/39.

[40] Ibid.

manufacturing workshop.[41] Iranian officials have explained that the government removed the cameras following a June 23 "terrorist attack in which ... the agency's equipment was destroyed and damaged."[42] Director General Grossi explained in an October press interview that, as a result of this incident, "some of our equipment was affected," adding that "we need to restore our monitoring capacities there."[43] The IAEA and Iran reached an agreement on September 12, 2021, that, according to an IAEA-Iran joint statement, permits agency inspectors to "service the identified equipment and replace their storage media."[44]

Iran has not fully complied with this agreement, according to the IAEA. Iran permitted agency inspectors from September 20-22 to "service the identified Agency monitoring and surveillance equipment and to replace storage media, at all necessary locations in Iran," according to Grossi's November 17 report, which adds that Iran denied the inspectors access to the Karaj workshop.[45] Iranian Ambassador Gharibabadi asserted in a September 27, 2021, statement that

> [d]uring the discussions in Tehran as well as in Vienna, it was clearly indicated that since that Tessa Karaj Complex is still under security and judicial investigations, the equipment related to this Complex are not included for servicing.[46]

Grossi's November 17 report contradicts Gharibabadi's claim, explaining that the September agreement "did not in any way exclude certain locations and equipment."[47] In any case, the IAEA is to install replacement cameras in the Karaj workshop before the end of 2021, according to a bilateral agreement announced on December 15.[48] This agreement "will enable us to resume necessary continuity of knowledge at this facility," Grossi stated that same day.[49]

The IAEA's ability to monitor Iran's implementation of the government's JCPOA commitments has diminished since February 23; Grossi's November 17 report explains that the agency's "verification and monitoring activities in relation to the JCPOA have been seriously undermined as a result of Iran's decision to stop the implementation of its nuclear-related commitments under the JCPOA, including the Additional Protocol."[50] Moreover, "the repeated prolongation of the agreement...is becoming a significant challenge to the Agency's ability to restore this continuity of knowledge," the report adds.[51] Grossi explained in a December 14 press interview that "the more time passes and you lose the ability to record what is going on, then the moment this capability is restored, inspectors come back and start to put the jigsaw puzzle together again...[t]here might be gaps. And these gaps are not a good thing to have."[52]

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[41] GOV/2021/39.

[42] GOV/2021/39; "Iran Urges JCPOA Parties to Prove Their Genuine Intention to Full Implementation of Commitments," November 26, 2021. Available at: https://irangov.ir/detail/374677.

[43] Stephanie Cooke, "Interview: IAEA's Grossi on Aukus, Iran and COP26," *Energy Intelligence*, October 8, 2021.

[44] "Joint Statement by the Vice-President and the Head of Atomic Energy Organization of the Islamic Republic of Iran and the Director General of the International Atomic Energy Agency," September 12, 2021.

[45] GOV/2021/51.

[46] "Ambassador Gharibabadi's Comments on the IAEA DG Sep 26 Report on Cameras," September 27, 2021.

[47] GOV/2021/51.

[48] "IAEA and Iran Reach Agreement on Replacing Surveillance Cameras at Karaj Facility," December 15, 2021.

[49] Ibid.

[50] GOV/2021/51.

[51] Ibid.

[52] Jon Gambrell and Isabel Debre, "The AP Interview: UN Nuke Chief Says View of Iran Blurred," *Associated Press*, December 14, 2021.

Grossi's November 17 report provides examples of lapses in Iranian cooperation.[53] For instance, Tehran since February 23, 2021, has neither informed the IAEA about Iran's inventory of heavy water nor allowed the agency to monitor Tehran's heavy water production. The government has also withheld from the IAEA similar information and access concerning the government's production and inventory of certain centrifuge components. In addition, Iran's refusal to implement the government's Additional Protocol obligations has deprived the IAEA of still more information concerning aspects of Tehran's nuclear program, as well as access to certain nuclear-related facilities.[54]

## Iran and the IAEA

As noted, Iran is a party to the NPT and has concluded a comprehensive safeguards agreement with the agency. Such agreements, which are based on a model described in INFCIRC 153, are designed to enable the IAEA to detect the diversion of nuclear material from peaceful purposes to nuclear weapons uses, as well as to detect undeclared nuclear activities and material.[55] Safeguards include agency inspections and monitoring of declared nuclear facilities. Although comprehensive safeguards agreements give the IAEA the authority "to verify the absence of undeclared nuclear material and activities, the tools available to it to do so, under such agreements, are limited" according to the agency.[56]

As a practical matter, the IAEA's ability to inspect and monitor nuclear facilities, as well as obtain information, in a particular country pursuant to that government's comprehensive safeguards agreement is limited to facilities and activities that have been declared by the government.[57] Additional Protocols to IAEA comprehensive safeguards agreements increase the agency's ability to investigate undeclared nuclear facilities and activities by increasing the IAEA's authority to inspect certain nuclear-related facilities and demand information from member states.[58] Iran signed such a protocol in December 2003 and agreed to implement the agreement pending ratification. Tehran stopped adhering to its Additional Protocol in 2006.[59]

The IAEA's authority to investigate nuclear-weapons-related activity is limited. Then-Director General ElBaradei explained in a 2005 interview that the IAEA does not have "an all-encompassing mandate to look for every computer study on weaponization. Our mandate is to

[53] For a complete list of JCPOA activities impacted by Iran's decreased cooperation, see Annex I of GOV/2021/51.

[54] Ibid.

[55] *2001 IAEA Safeguards Glossary*. (Available at http://www-pub.iaea.org/books/IAEABooks/6570/IAEA-Safeguards-Glossary-2001-Edition.) Comprehensive safeguards agreements are based on a model described in INFCIRC 153, available at http://www.iaea.org/Publications/Documents/Infcircs/Others/infcirc153.pdf. According a Amano's May 2013 report from Amano, the IAEA Board of Governors "has confirmed on numerous occasions, since as early as 1992," that this model agreement "authorizes and requires the Agency to seek to verify both the non-diversion of nuclear material from declared activities (i.e. correctness) and the absence of undeclared nuclear activities in the State (i.e. completeness)" (*Implementation of the NPT Safeguards Agreement and Relevant Provisions of Security Council Resolutions in the Islamic Republic of Iran*, Report by the Director General, GOV/2013/27, May 22, 2013).

[56] *Guidance for States Implementing Comprehensive Safeguards Agreements and Additional Protocols*, IAEA Services Series 21, May 2016.

[57] *2001 IAEA Safeguards Glossary*.

[58] Additional Protocols for an individual IAEA member state are based on the agency's Model Additional Protocol (INFCIRC/540), available at http://www.iaea.org/Publications/Documents/Infcircs/1997/infcirc540c.pdf.

[59] Iran announced that it would stop implementing the protocol two days after the IAEA Board of governors adopted a resolution in February 2006 that reported Iran's noncompliance with its IAEA safeguards agreement to the U.N. Security Council. Iran implemented the protocol pursuant to the JCPOA until February 2021.

make sure that all nuclear materials in a country are declared to us."[60] Similarly, a February 2006 report from ElBaradei to the IAEA board stated that "absent some nexus to nuclear material the agency's legal authority to pursue the verification of possible nuclear weapons related activity is limited."[61] There is no requirement that there be any nexus to nuclear material in order for the IAEA to request access to a facility, but there are disagreements among IAEA member states regarding the extent of the agency's rights to access locations where there is no reason to suspect the presence of nuclear material. Such disagreements could play a role if the IAEA Board is required to consider a request for special inspections in Iran or another country (see **Appendix B**). Therefore, the closer the connection between nuclear material and the location in question, the more likely the Board would be to approve such an inspection.

The current public controversy over Iran's nuclear program began in August 2002, when the National Council of Resistance on Iran (NCRI), an Iranian exile group, revealed information during a press conference (some of which later proved to be accurate) that Tehran had built nuclear-related facilities that it had not revealed to the IAEA. The United States had been aware of at least some of these activities, according to knowledgeable former officials.[62] Prior to the NCRI's revelations, the IAEA had expressed concerns that Iran had not been providing the agency with all relevant information about its nuclear programs, but had never found Tehran in violation of its safeguards agreement.

In fall 2002, the IAEA began to investigate Iran's nuclear activities at the sites named by the NCRI; inspectors visited the sites the following February. Adopting its first resolution on the matter in September 2003, the IAEA board called on Tehran to increase its cooperation with the agency's investigation, suspend its uranium enrichment activities, and "unconditionally sign, ratify and fully implement" an Additional Protocol.[63]

In October 2003, Iran concluded a voluntary agreement with the E3 to suspend its enrichment activities, sign and implement an Additional Protocol to its IAEA safeguards agreement, and comply fully with the IAEA's investigation.[64] As a result, the agency's board decided to refrain from reporting the matter to the U.N. Security Council. As noted, Tehran signed this Additional Protocol in December 2003, but has never ratified it.[65]

Ultimately, the IAEA's investigation, as well as information Iran provided after the October 2003 agreement, revealed that Iran had engaged in a variety of clandestine nuclear-related activities, some of which violated the country's safeguards agreement (see **Appendix A**). After October 2003, Iran continued some of its enrichment-related activities, but Tehran and the E3 agreed in November 2004 to a more detailed suspension agreement.[66] However, Iran resumed uranium

[60] "Tackling the Nuclear Dilemma: An Interview with IAEA Director-General Mohamed ElBaradei," February 4, 2005, available at http://www.armscontrol.org/act/2005_03/ElBaradei.

[61] *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran*, Report by the Director General, GOV/2006/15, February 27, 2006.

[62] Gary Samore, former Senior Director for Nonproliferation and Export Controls on the National Security Council, personal communication June 5, 2008; then-Director of Central Intelligence George J. Tenet, "DCI Remarks on Iraq's WMD Programs," February 5, 2004, available at https://www.cia.gov/news-information/speeches-testimony/2004/tenet_georgetownspeech_02052004.html.

[63] *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran*, Report by the Director General, GOV/2003/75, November 10, 2003.

[64] The text of the agreement is available at https://fas.org/nuke/guide/iran/uk2005.pdf.

[65] Iran implemented the protocol pursuant to the JCPOA until February 2021.

[66] The text of the agreement is available at https://fas.org/nuke/guide/iran/uk2005.pdf.

conversion in August 2005 under the leadership of then-President Mahmoud Ahmadinejad, who had been elected two months earlier.

On September 24, 2005, the IAEA Board of Governors adopted a resolution (GOV/2005/77)[67] that, for the first time, found Iran to be in noncompliance with its IAEA safeguards agreement. The board, however, did not report Iran to the Security Council, choosing instead to give Tehran additional time to comply with the board's demands. The resolution urged Iran

- to implement transparency measures including access to individuals, documentation relating to procurement, dual use equipment, certain military owned workshops, and research and development locations;
- to reestablish full and sustained suspension of all enrichment-related activity;
- to reconsider the construction of the research reactor moderated by heavy water;
- to ratify promptly and implement in full the Additional Protocol; and
- to continue to act in accordance with the provisions of the Additional Protocol.

No international legal obligations required Tehran to take these steps. But ElBaradei's September 2008 report asserted that, without Iranian implementation of such "transparency measures," the IAEA would "not be in a position to progress in its verification of the absence of undeclared nuclear material and activities in Iran."

Iran announced in January 2006 that it would resume research and development on its centrifuges at Natanz. The next month, the IAEA Board of Governors reported Iran's case to the U.N. Security Council.[68] Tehran announced shortly after that it would stop implementing its Additional Protocol. (For details, see "Iran and the U.N. Security Council" below.)

## Potential Noncompliance After September 2005

Iran further scaled back its cooperation with the IAEA in March 2007, when the government told the agency that it would stop complying with a portion of the subsidiary arrangements for its IAEA safeguards agreement.[69] That provision (called the modified code 3.1), to which Iran agreed in February 2003, requires Tehran to provide design information for new nuclear facilities "as soon as the decision to construct, or to authorize construction, of such a facility has been taken, whichever is earlier." Beginning in March 2007, Iran argued that it was only obligated to adhere to the previous notification provisions of its subsidiary arrangements, which required Tehran to provide design information for a new facility 180 days before introducing nuclear material into it.[70]

This decision constituted the basis for Iran's stated rationale for its subsequent refusal to provide the IAEA with some information concerning its nuclear program. For example, Tehran had refused to provide updated design information for the heavy-water reactor under construction at

[67] Available at http://www.iaea.org/Publications/Documents/Board/2005/gov2005-77.pdf.

[68] For details on the IAEA's authority to refer noncompliance cases to the Security Council, see "Iran and the U.N. Security Council."

[69] According to the 2001 IAEA Safeguards Glossary, subsidiary arrangements describe the "technical and administrative procedures for specifying how the provisions laid down in a safeguards agreement are to be applied."

[70] During a November 2011 session of the Non-Aligned Movement, Ambassador Ali Asghar Soltanieh, then Iran's Permanent Representative to the IAEA, characterized the modified Code 3.1 as "merely a suggestion" by the IAEA Board of Governors. See "Iran Provides 20 Answers to Clarify Ambiguities about Its Nuclear Program," *Tehran Times*, November 9, 2011.

Arak.[71] As part of the November 2013 Joint Plan of Action, Iran submitted this information to the IAEA on February 12, 2014.[72] Similarly, Tehran had refused to provide the IAEA with design information for a reactor that Iran intends to construct at Darkhovin. Although Iran provided the agency with preliminary design information about the Darkhovin reactor in a September 22, 2009, letter, the IAEA requested Tehran to "provide additional clarifications" of the information, according to a November 2009 report.[73] Amano reported in September 2010 that Iran had "provided only limited design information with respect to" the reactor.[74] IAEA reports since 2012 do not appear to address this issue.

Tehran also argued, based on its March 2007 decision, that its failure to notify the IAEA before September 2009 that it has been constructing a gas-centrifuge uranium enrichment facility, called the Fordow facility, near the city of Qom was consistent with the government's safeguards obligations. Exactly when Iran decided to construct the facility is unclear. Amano reported in May 2012 that the IAEA has requested information from Iran regarding the Fordow construction decision. But Tehran, according to Amano's November 2015 report, has not yet provided all of this information. Subsequent reports from Amano have not addressed the issue.

Both the 2007 decision, which the IAEA asked Iran to "reconsider," and Tehran's refusal to provide the design information appear to be inconsistent with the government's safeguards obligations. Although Article 39 of Iran's safeguards agreement states that the subsidiary arrangements "may be extended or changed by agreement between" Iran and the IAEA, the agreement does not provide for a unilateral modification or suspension of any portion of those arrangements.[75] Moreover, the IAEA legal adviser explained in a March 2009 statement[76] that Tehran's failure to provide design information for the reactors is "inconsistent with" Iran's obligations under its subsidiary arrangements. The adviser, however, added that "it is difficult to conclude that" Tehran's refusal to provide the information "in itself constitutes noncompliance with, or a breach of" Iran's safeguards agreement. Nevertheless, a November 2009 report from ElBaradei described Tehran's failures both to notify the agency of the decision to begin constructing the Fordow facility, as well as to provide the relevant design information in a timely fashion, as "inconsistent with" Iran's safeguards obligations. The report similarly described Iran's

[71] This lack of information was "having an increasingly adverse impact on the Agency's ability to effectively verify the design of the facility and to implement an effective safeguards approach," according to Amano's May 2013 report (GOV/2013/27). A November 2013 report from Amano explains that the IAEA "needs updated design information as early as possible in order ... to ensure that all possible diversion paths are identified, and appropriate safeguards measures and customized safeguards equipment are put in place." (*Implementation of the NPT Safeguards Agreement and Relevant Provisions of Security Council Resolutions in the Islamic Republic of Iran,* Report by the Director General, GOV/2013/56, November 14, 2013.) Iran has concluded "a safeguards approach for the reactor" (*Status of Iran's Nuclear Programme in Relation to the Joint Plan of Action,* Report by the Director General, GOV/INF/2015/8, April 20, 2015).

[72] *Implementation of the NPT Safeguards Agreement and Relevant Provisions of Security Council Resolutions in the Islamic Republic of Iran,* Report by the Director General, GOV/2014/10, February 20, 2014.

[73] *Implementation of the NPT Safeguards Agreement and Relevant Provisions of Security Council Resolutions 1737 (2006), 1747 (2007), 1803 (2008) and 1835 (2008) in the Islamic Republic of Iran,* Report by the Director General, GOV/2008/59, November 19, 2008.

[74] *Implementation of the NPT Safeguards Agreement in Relevant Provisions of Security Council Resolutions in the Islamic Republic of Iran,* Report by the Director General, GOV/2010/46, September 6, 2010.

[75] See also GOV/2007/22, available at http://www.iaea.org/Publications/Documents/Board/2007/gov2007-22.pdf. Security Council Resolution 1929 affirmed that Code 3.1 "cannot be modified nor suspended unilaterally."

[76] "Statement by the Legal Adviser," Meeting of the Board of Governors, March 2009.

delay in providing design information for the Darkhovin reactor. As noted, Iran notified the IAEA on February 15, 2021, that it would cease implementing modified Code 3.1.[77]

Iran may also have violated its safeguards agreement if it has decided to construct other new nuclear facilities without informing the IAEA. The agency has investigated whether Iran has made such decisions. For example, the IAEA asked the government for information about Iranian statements that Tehran is planning to construct new uranium enrichment facilities, is designing a nuclear reactor similar to a research reactor located in Tehran, is producing fuel for four new research reactors, and is planning to construct additional nuclear power reactors. Pursuant to its November 2013 agreement with the IAEA, Iran has provided at least some of this information to the agency. According to a November 2021 report from Director General Grossi, "Iran has informed" the IAEA that Tehran "does not have a plan to construct a new nuclear facility in the near future."[78]

Iran's March 2007 decision regarding the provision of information to the IAEA also formed the basis for Tehran's refusal until August 2009 to allow agency inspectors to verify design information for the Arak reactor. This action also appeared to be inconsistent with Tehran's safeguards agreement. Article 48 of that agreement states that the IAEA "may send inspectors to facilities to verify the design information provided to the Agency"; in fact, the agency has a "continuing right" to do so, according to a November 2008 report from ElBaradei.[79] Moreover, the legal adviser's statement characterized Iran's refusal to allow IAEA inspectors to verify the Arak reactor's design information as "inconsistent with" Tehran's obligations under its safeguards agreement.[80] IAEA inspectors visited the reactor facility in August 2009 to verify design information, according to a report ElBaradei issued the same month.[81] Inspectors have visited the facility several more times, according to reports from Amano.

In addition to the lapses described above, Iran's failure to notify the IAEA of its decision to produce enriched uranium containing a maximum of 20% uranium-235 in time for agency inspectors to adjust their safeguards procedures may, according to a February 2010 report from Amano, have violated Iran's IAEA safeguards agreement.[82] Article 45 of that agreement requires that Tehran notify the IAEA "with design information in respect of a modification relevant for safeguards purposes sufficiently in advance for the safeguards procedures to be adjusted when necessary," according to Amano's report, which describes Iran's enrichment decision as "clearly relevant for safeguards purposes."

The IAEA board has neither formally found that any of the Iranian actions described above are in noncompliance with Tehran's safeguards agreement, nor reported these issues to the U.N.

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[77] In a February 16, 2021, letter to Tehran, Grossi "reminded Iran that implementation of the modified Code 3.1 is a legal obligation for Iran under the Subsidiary Arrangements to its Safeguards Agreement which cannot be modified unilaterally and that there is no mechanism in the Safeguards Agreement for the suspension of implementation of provisions agreed to in the Subsidiary Arrangements." See GOV/2021/10.

[78] GOV/2021/51.

[79] GOV/2008/59. Security Council Resolution 1929 affirmed this statement.

[80] Iran stated in an April 2007 letter to the IAEA that, given Tehran's March 2007 decision regarding the subsidiary arrangements to its safeguards agreement, such visits were unjustified.

[81] *Implementation of the NPT Safeguards Agreement and Relevant Provisions of Security Council Resolutions 1737 (2006), 1747 (2007), 1803 (2008) and 1835 (2008) in the Islamic Republic of Iran*, Report by the Director General, GOV/2009/55, August 28, 2009.

[82] *Implementation of the NPT Safeguards Agreement and Relevant Provisions of Security Council Resolutions 1737 (2006), 1747 (2007), 1803 (2008) and 1835 (2008) in the Islamic Republic of Iran*, Report by the Director General, GOV/2010/10, February 18, 2010.

Security Council. The IAEA board adopted a resolution on November 27, 2009, that described Iran's failure to notify the agency of the Fordow facility as "inconsistent with" the subsidiary arrangements under Iran's safeguards agreement, but this statement did not constitute a formal finding of noncompliance. A September 13, 2012, IAEA board resolution expressed "serious concern" that Tehran has not complied with the obligations described in IAEA Board of Governors and U.N. Security Council resolutions, but that resolution did not contain a formal finding of noncompliance.[83]

More recently, a March 3, 2020, report from IAEA Director General Grossi to the agency's Board of Governors states that the IAEA has "identified a number of questions related to possible undeclared nuclear material and nuclear-related activities" that had taken place at three undeclared Iranian locations.[84] [85] Beginning in November 2019, IAEA reports have detailed what Director General Grossi has described as "possible undeclared nuclear material and nuclear-related activities" in Iran. Specifically, IAEA inspectors have detected anthropogenic uranium particles at three undeclared Iranian locations.[86] Pursuant to Iran's comprehensive safeguards agreement and additional protocol, the agency has requested information about these activities, as well as access to these locations.[87]

In a March 4, 2020, press interview, Grossi explained that "[t]he fact that we found traces (of uranium) is very important. That means there is the possibility of nuclear activities and material that are not under international supervision and about which we know not the origin or the intent."[88] A June 2020 report from Director General Grossi explained that Tehran's inadequate cooperation with the IAEA was "adversely affecting the Agency's ability to clarify and resolve the questions" raised by the IAEA's findings described above.[89] The IAEA Board of Governors adopted a resolution later that month calling on Iran "to fully cooperate with the Agency and satisfy the Agency's requests without any further delay, including by providing prompt access to the locations specified by the Agency."[90] This resolution does not contain a formal finding of noncompliance.

Although Iran has provided the IAEA with access to the relevant locations and provided some related information, the matter remains unresolved, according to Director General Grossi's November 2021 report, which explains that the "lack of substantive engagement by Iran in trying to resolve these issues has prevented progress in clarifying the Agency's questions concerning the

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[83] *Implementation of the NPT Safeguards Agreement and Relevant Provisions of United Nations Security Council Resolutions in the Islamic Republic of Iran*, GOV/2012/50, September 13, 2012.

[84] *NPT Safeguards Agreement with the Islamic Republic of Iran*, Report by the Director General, GOV/2020/15, March 3, 2020.

[85] Iran has suggested that these agency investigations are based on "fabricated information" from foreign intelligence services (*Communication dated 8 June 2020 received from the Permanent Mission of the Islamic Republic of Iran to the Agency*, INFCIRC/936, June 9, 2020).

[86] According to a February 2021 report from Director General Grossi, the IAEA has "assessed that there would be no verification value in conducting a complementary access" at a fourth location where Iran may have conducted undeclared nuclear activities. The agency instead decided to conduct "additional verification activities" at a different Iranian facility. (*NPT Safeguards Agreement with the Islamic Republic of Iran*, Report by the Director General, GOV/2021/15, February 23, 2021).

[87] *NPT Safeguards Agreement with the Islamic Republic of Iran*, GOV/2021/42, September 7, 2021.

[88] Didier Lauras and Jastinder Khera, "IAEA Chief Demands 'Clarifications' on Iran's Nuclear Program," *Agence France Presse*, March 4, 2020.

[89] *NPT Safeguards Agreement with the Islamic Republic of Iran*, GOV/2020/30, June 5, 2020.

[90] *NPT Safeguards Agreement with the Islamic Republic of Iran*, GOV/2020/34, June 19, 2020.

correctness and completeness of Iran's safeguards declarations."[91] This lack of progress "seriously affects the Agency's ability to provide assurance of the exclusively peaceful nature of Iran's nuclear programme," the report adds. According to a bilateral agreement announced on December 15, Iran and the IAEA "will continue to work on remaining outstanding safeguards issues with the aim of resolving them."[92] The two parties "will conduct a series of exchanges of information and assessments including through meetings of experts," the agreement says.[93]

## Iran and the U.N. Security Council

As noted, Iran announced in January 2006 that it would resume research and development on its centrifuges at Natanz. In response, the IAEA board adopted a resolution (GOV/2006/14)[94] on February 4, 2006, reporting the matter to the Security Council and reiterating its call for Iran to take the measures specified in the September resolution. Two days later, Tehran announced that it would stop implementing its Additional Protocol.

On March 29, 2006, the U.N. Security Council President issued a statement, which was not legally binding, that called on Iran to "take the steps required" by the February IAEA board resolution. The council subsequently adopted six resolutions concerning Iran's nuclear program: 1696 (July 2006), 1737 (December 2006), 1747 (March 2007), 1803 (March 2008), 1835 (September 2008), and 1929 (June 2010). The second, third, fourth, and sixth resolutions imposed a variety of restrictions on Iran.

The Security Council adopted Resolution 1696 under Article 40 of Chapter VII of the UN Charter. That article empowers the council to "call upon" governments "to comply with such provisional measures as it deems necessary or desirable" before the council decides upon or recommends responses addressing threats "to the peace, breach of the peace, or act of aggression." Except for Resolution 1835, the council adopted the remaining resolutions, as well as Resolution 2231, under Article 41 of Chapter VII. This article enables the Security Council to adopt "measures not involving the use of armed force," including sanctions, "to give effect to its decisions" concerning "threats to the peace, breaches of the peace, and acts of aggression."

Resolution 1696 was the first to place legally binding Security Council requirements on Iran with respect to its nuclear program. That resolution made mandatory the IAEA-demanded suspension and called on Tehran to implement the transparency measures called for by the IAEA board's February 2006 resolution. Resolution 1737 reiterated these requirements but expanded the suspension's scope to include "work on all heavy water-related projects." It is worth noting that the Security Council has acknowledged (in Resolution 1803, for example) Iran's rights under Article IV of the NPT, which states that parties to the treaty have "the inalienable right ... to develop research, production and use of nuclear energy for peaceful Purposes." As noted, Resolution 1929 also required Tehran to refrain from "any activity related to ballistic missiles capable of delivering nuclear weapons" and to comply with the modified Code 3.1 of its subsidiary arrangement.

Resolution 2231, which the U.N. Security Council adopted on July 20, 2015, states that all of the previous resolutions' requirements would be terminated when the council receives a report from the IAEA stating that Iran has implemented the nuclear-related measures by Implementation Day,

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[91] *NPT Safeguards Agreement with the Islamic Republic of Iran*), Report by the Director General, GOV/2021/52, November 17, 2021.

[92] "IAEA and Iran Reach Agreement on Replacing Surveillance Cameras at Karaj Facility," December 15, 2021.

[93] Ibid.

[94] *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran*, GOV/2006/14, February 4, 2006.

as described by the July 2015 Joint Comprehensive Plan of Action. As noted, Implementation Day took place on January 16, 2016. Resolution 2231 also "reaffirms that Iran shall cooperate fully as the IAEA requests to be able to resolve all outstanding issues, as identified in IAEA reports." The IAEA Board of Governors' December 2015 resolution noted that the board had closed its consideration of the "outstanding issues regarding Iran's nuclear programme."

The JCPOA spells out a process for Iran or the P5+1 to resolve disputes over alleged breaches of their JCPOA commitments pursuant to the agreement. Both the JCPOA and Resolution 2231 contain a "snapback" mechanism to reimpose sanctions should Iran fail to resolve satisfactorily a P5+1 claim regarding Iranian JCPOA noncompliance. This mechanism provides that any permanent UN Security Council member would be able to veto a Security Council resolution that would preserve U.N. sanctions relief in the event of Iranian noncompliance. The JCPOA specifies that, in such a case, "the provisions of the old U.N. Security Council resolutions would be re-imposed, unless the U.N. Security Council decides otherwise."

Resolution 2231 provides that only a "JCPOA participant state" may bring a noncompliance finding to the Security Council; U.S. officials have stated that the United States is no longer participating in the agreement.[95] In an August 20 letter to Security Council President Indonesian Ambassador Dian Triansyah Djani, Secretary of State Michael Pompeo initiated the snapback process by notifying the council that Iran "is in significant non-performance" of its JCPOA commitments. However, Djani explained in an August 21 letter to the council that the "United States cannot invoke the snapback mechanism … because it has withdrawn from" the JCPOA.[96] Consequently, he added, the August 20 letter "has no legal effect." UN Secretary General António Guterres wrote in a September 19 letter that the "majority" of Security Council members have argued that Pompeo's letter did not constitute the notification necessary for snapback. The resulting uncertainty, he added, required the Secretary to refrain from proceeding on the matter.

On February 18, 2021, Acting U.S. Ambassador to the UN Richard Mills sent a letter to Security Council President UK Ambassador Barbara Woodward "reversing the previous administration's position on the ... sanctions snapback issue," a State Department official told reporters on February 18, adding that "the United States is affirming that" Resolution 2231 "remains in full effect."[97]

# Authority for IAEA and U.N. Security Council Actions

The legal authority for the actions taken by the IAEA Board of Governors and the U.N. Security Council is found in both the IAEA Statute and the U.N. Charter. The following sections discuss the relevant portions of those documents.

[95] For more information, see CRS In Focus IF11583, *Iran's Nuclear Program and U.N. Sanctions Reimposition*, by Paul K. Kerr.

[96] *Letter Dated 21 August 2020 from the Permanent Representative of Indonesia to the United Nations Addressed to the President of the Security Council*, S/2020/824

[97] Ibid.

## IAEA Statute[98]

Two sections of the IAEA Statute explain what the agency should do if an IAEA member state is found to be in noncompliance with its safeguards agreement.[99] Article III B. 4. of the statute states that the IAEA is to submit annual reports to the U.N. General Assembly and, "when appropriate," to the U.N. Security Council. If "there should arise questions that are within the competence of the Security Council," the article adds, the IAEA "shall notify the Security Council, as the organ bearing the main responsibility for the maintenance of international peace and security."

Additionally, Article XII C. states that IAEA inspectors are to report noncompliance issues to the agency's Director General, who is to report the matter to the IAEA Board of Governors. The board is then to "call upon the recipient State or States to remedy forthwith any non-compliance which it finds to have occurred," as well as "report the non-compliance to all members and to the Security Council and General Assembly of the United Nations."

In the case of Iran, the September 24, 2005, IAEA board resolution (GOV/2005/77) stated that the board

> found that Iran's many failures and breaches of its obligations to comply with its NPT Safeguards Agreement, as detailed in GOV/2003/75 [a November 2003 report from then-Director General ElBaradei], constitute non compliance in the context of Article XII.C of the Agency's Statute;

According to the resolution, the board also found

> that the history of concealment of Iran's nuclear activities referred to in the Director General's report [GOV/2003/75], the nature of these activities, issues brought to light in the course of the Agency's verification of declarations made by Iran since September 2002 and the resulting absence of confidence that Iran's nuclear programme is exclusively for peaceful purposes have given rise to questions that are within the competence of the Security Council, as the organ bearing the main responsibility for the maintenance of international peace and security.

ElBaradei issued the report cited by the resolution, GOV/2003/75, in November 2003.[100] It described a variety of Iranian nuclear activities, which are detailed in **Appendix A**, that violated Tehran's safeguards agreement. ElBaradei subsequently reported that Iran has taken corrective measures to address these safeguards breaches. As noted above, the 2005 resolution called on Iran to take a variety of actions that Tehran was not legally required to implement.

## U.N. Charter and the Security Council

Several articles of the U.N. Charter, which is a treaty, describe the Security Council's authority to impose requirements and sanctions on Iran.[101] Article 24 confers on the council "primary responsibility for the maintenance of international peace and security." The article also states that the "specific powers granted to the Security Council for the discharge of these duties are laid down" in several chapters of the charter, including Chapter VII, which describes the actions that

[98] The IAEA Statute is not self-executing; the Agency implements safeguards agreements reached with individual governments and certain regional organizations. As noted, comprehensive safeguards agreements are based on a model described in INFCIRC 153.

[99] The text of the IAEA Statute is available at https://www.iaea.org/about/statute.

[100] *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran*, Report by the Director General, GOV/2003/75, November 10, 2003.

[101] The text of the charter is available at http://www.un.org/en/sections/un-charter/un-charter-full-text/.

the council may take in response to "threats to the peace, breaches of the peace, and acts of aggression."

Chapter VII of the charter contains three articles relevant to the Iran case. Security Council resolutions that made mandatory the IAEA's demands concerning Iran's nuclear program invoked Chapter VII. Article 39 of that chapter states that the council

> shall determine the existence of any threat to the peace, breach of the peace, or act of aggression and shall make recommendations, or decide what measures shall be taken in accordance with Articles 41 and 42, to maintain or restore international peace and security.

Resolution 1696 invoked Article 40 of Chapter VII "in order to make mandatory the suspension required by the IAEA." As noted, that resolution did not impose any sanctions on Iran. Article 40 states that

> the Security Council may, before making the recommendations or deciding upon the measures provided for in Article 39 [of Chapter VII], call upon the parties concerned to comply with such provisional measures as it deems necessary or desirable.

Resolutions 1737, 1747, 1803, and 1929, which did impose sanctions, invoked Article 41 of Chapter VII. According to Article 41, the Security Council

> may decide what measures not involving the use of armed force are to be employed to give effect to its decisions, and it may call upon the Members of the United Nations to apply such measures. These may include complete or partial interruption of economic relations and of rail, sea, air, postal, telegraphic, radio, and other means of communication, and the severance of diplomatic relations.

As noted, Security Council resolution 1835 did not impose new sanctions, but reaffirmed the previous resolutions and called on Iran to comply with them.

It is worth noting that Article 25 of the U.N. Charter obligates U.N. members "to accept and carry out the decisions of the Security Council." Moreover, Article 103 of the Charter states that

> [i]n the event of a conflict between the obligations of the Members of the United Nations under the present Charter and their obligations under any other international agreement, their obligations under the present Charter shall prevail.

The IAEA also has an obligation to cooperate with the Security Council, "[b]y virtue of its Relationship Agreement with the United Nations."[102] As noted, Security Council Resolution 2231 requests the IAEA Director General "to undertake the necessary verification and monitoring of Iran's nuclear-related commitments for the full duration of those commitments under the JCPOA."

# Has Iran Violated the NPT?[103]

Whether Iran has violated the NPT is unclear. The treaty does not contain a mechanism for determining that a state-party has violated its obligations. Moreover, there does not appear to be a formal procedure for determining such violations. An NPT Review Conference would, however, be one venue for NPT states-parties to make such a determination.

The U.N. Security Council has never declared Iran to be in violation of the NPT; neither the council nor the U.N. General Assembly has a responsibility to adjudicate treaty violations. However, the lack of a ruling by the council on Iran's compliance with the NPT has apparently

[102] GOV/2013/27. The agreement is contained in INFCIRC/11.

[103] Portions of this section are based on interviews with U.N. and State Department officials.

had little practical effect because, as noted, the council has taken action in response to the IAEA Board of Governors' determination that Iran has violated its safeguards agreement.

Iran's violations of its safeguards agreement appear to constitute violations of Article III, which requires NPT nonnuclear-weapon states-parties to accept IAEA safeguards, in accordance with the agency's statue, "for the exclusive purpose of verification of the fulfillment of its obligations assumed under this Treaty with a view to preventing diversion of nuclear energy from peaceful uses to nuclear weapons or other nuclear explosive devices."

Tehran may also have violated provisions of Article II which state that nonnuclear-weapon states-parties shall not "manufacture or otherwise acquire nuclear weapons or other nuclear explosive devices" or "seek or receive any assistance in the manufacture of nuclear weapons or other nuclear explosive devices."

As noted, the IAEA investigated evidence of what then-IAEA Director General Mohamed ElBaradei described in June 2008 as "possible military dimensions to Iran's nuclear programme." Such activities may indicate that Tehran has violated both Article II provisions described above. Moreover, a November 2007 National Intelligence Estimate (NIE) stated that "until fall 2003, Iranian military entities were working under government direction to develop nuclear weapons."[104] This past program could be a violation of Article II, although the estimate does not provide any detail about the program. Nevertheless, the IAEA has never reported that Iran has attempted to develop nuclear weapons.

Despite the lack of such an IAEA conclusion, a 2005 State Department report regarding states' compliance with arms control and nonproliferation agreements argued that the country had violated Article II of the NPT:

> The breadth of Iran's nuclear development efforts, the secrecy and deceptions with which they have been conducted for nearly 20 years, its redundant and surreptitious procurement channels, Iran's persistent failure to comply with its obligations to report to the IAEA and to apply safeguards to such activities, and the lack of a reasonable economic justification for this program leads us to conclude that Iran is pursuing an effort to manufacture nuclear weapons, and has sought and received assistance in this effort in violation of Article II of the NPT.[105]

The report also stated that Iran's "weapons program combines elements" of Tehran's declared nuclear activities, as well as suspected "undeclared fuel cycle and other activities that may exist, including those that may be run solely by the military."

The State Department's 2005 reasoning appears to be based on an interpretation of the NPT which holds that a wide scope of nuclear activities could constitute violations of Article II. The 2005 report states that assessments regarding Article II compliance "must look at the totality of the facts, including judgments as to" a state-party's "purpose in undertaking the nuclear activities in question." The report also includes a list of activities which could constitute such noncompliance.[106]

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[104] *Iran: Nuclear Intentions and Capabilities*, National Intelligence Estimate, November 2007. Subsequent U.S. official statements have been consistent with the NIE.

[105] *Adherence to and Compliance with Arms Control, Nonproliferation and Disarmament Agreements and Commitments*, Department of State, August 2005.

[106] According to the report, such activities can include (1) the presence of undeclared nuclear facilities; (2) procurement patterns inconsistent with a civil nuclear program (e.g., clandestine procurement networks, possibly including the use of front companies, false end-use information, and fraudulent documentation); (3) security measures beyond what would be appropriate for peaceful, civil nuclear installations; (4) a pattern of Article III safeguards violations

The 2005 State Department report cites testimony from then-Arms Control and Disarmament Agency Director William Foster during a 1968 Senate Foreign Relations Committee hearing.[107] Foster stated that "facts indicating that the purpose of a particular activity was the acquisition of a nuclear explosive device would tend to show non-compliance" with Article II. He gave two examples: "the construction of an experimental or prototype nuclear explosive device" and "the production of components which could only have relevance" to such a device. However, Foster also noted that a variety of other activities could also violate Article II, adding that the United States believed it impossible "to formulate a comprehensive definition or interpretation."

It is worth noting that the 2005 State Department report's arguments appear to rely heavily on the notion that a state's apparent intentions underlying certain nuclear-related activities can be used to determine violations of Article II. This interpretation is not shared by all experts.[108] The 2005 report "primarily reflected activities from January 2002 through December 2003." Whether the State Department assesses that Iran has violated Article II since then is unclear. A version of the report released in 2010, which primarily reflected activities from January 1, 2004, through December 31, 2008, states that "the issues underlying" the 2005 report's conclusion regarding Iran's Article II compliance "remain unresolved."[109] Subsequent versions of the report reiterated the 2010 report's assessment until 2016, when the State Department assessed that "previous issues leading to NPT noncompliance findings [regarding Iran] had been resolved."[110] As noted, the 2007 NIE assessed that Iran halted its nuclear weapons program in 2003; subsequent U.S. official statements have consistently reiterated that Tehran has not yet decided to build nuclear weapons.[111] The United Kingdom's then-Foreign Secretary William Hague would not say whether Iran had violated Article II when asked by a Member of Parliament in March 2012.[112]

suggestive not of mere mistake or incompetence, but of willful violation and/or systematic deception and denial efforts aimed at concealing nuclear activities from the IAEA; and (5) a nuclear program with little (or no) coherence for peaceful purposes, but great coherence for weapons purposes.

[107] *Nonproliferation Treaty*, Senate Committee on Foreign Relations, Joint Committee on Atomic Energy [Part 1] July 10-12, 17, 1968; Session 90-2 (1968). The complete statement regarding Article II violations is in **Appendix C**.

[108] Personal communication with Andreas Persbo, Senior Researcher, the Verification Research, Training and Information Centre.

[109] Quotations are from *Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments*, Department of State, July 2010.

[110] *Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments*, Department of State, April 2016.

[111] See, for example, Director of National Intelligence James R. Clapper, *Statement for the Record, U.S. Intelligence Community Worldwide Threat Assessment*, February 26, 2015. The State Department compliance report covering 2020 states that the U.S. intelligence community "continued to assess that Iran is not currently engaged in key activities associated with the design and development of a nuclear weapon." (*Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments*, Department of State, April 2021.)

[112] *Developments in UK Foreign Policy*, House of Commons: Oral Evidence Taken Before the Foreign Affairs Committee, March 8, 2012.

# Appendix A. Iranian Noncompliance with Its IAEA Safeguards Agreement

The November 2003 report (GOV/2003/75) from then-IAEA Director General ElBaradei to the agency's Board of Governors details what the September 2005 board resolution described as "Iran's many failures and breaches of its obligations to comply with its safeguards agreement."

The report stated that

> Iran has failed in a number of instances over an extended period of time to meet its obligations under its Safeguards Agreement with respect to the reporting of nuclear material and its processing and use, as well as the declaration of facilities where such material has been processed and stored.

The report detailed some of these failures and referenced other failures described in two earlier reports (GOV/2003/40 and GOV/2003/63) from ElBaradei to the IAEA board.[113]

According to GOV/2003/40, Iran failed to declare the following activities to the agency:

- The importation of natural uranium, and its subsequent transfer for further processing.
- The processing and use of the imported natural uranium, including the production and loss of nuclear material, and the production and transfer of resulting waste.

Additionally, Iran failed to

- declare the facilities where nuclear material (including the waste) was received, stored, and processed;
- provide in a timely manner updated design information for a research reactor located in Tehran; as well as
- provide in a timely manner information on two waste storage sites.

GOV/2003/63 stated that Iran failed to report uranium conversion experiments to the IAEA. According to GOV/2003/75, Iran failed to report the following activities to the IAEA:

- The use of imported natural uranium hexafluoride for the testing of centrifuges, as well as the subsequent production of enriched and depleted uranium.
- The importation of natural uranium metal and its subsequent transfer for use in laser enrichment experiments, including the production of enriched uranium, the loss of nuclear material during these operations, and the production and transfer of resulting waste.
- The production of a variety of nuclear compounds from several different imported nuclear materials, and the production and transfer of resulting wastes.
- The production of uranium targets and their irradiation in the Tehran Research Reactor, the subsequent processing of those targets (including the separation of plutonium), the production and transfer of resulting waste, and the storage of unprocessed irradiated targets.

[113] Those reports are available at http://www.iaea.org/Publications/Documents/Board/2003/gov2003-40.pdf and http://www.iaea.org/Publications/Documents/Board/2003/gov2003-63.pdf.

Iran also failed to provide the agency with design information for a variety of nuclear-related facilities, according to the report. These included the following:

- A centrifuge testing facility.
- Two laser laboratories and locations where resulting wastes were processed.
- Facilities involved in the production of a variety of nuclear compounds.
- The Tehran Research Reactor (with respect to the irradiation of uranium targets), the hot cell facility where the plutonium separation took place, as well as the relevant waste handling facility.

In addition, the report cited Iran's "failure on many occasions to co-operate to facilitate the implementation of safeguards, through concealment" of its nuclear activities.

# Appendix B. IAEA Special Inspections

As noted, Iran's obligations under its Additional Protocol to provide access to certain locations are unclear; Tehran may refuse to grant the IAEA access to certain facilities. In such a case, the IAEA Director General could call for a special inspection; the inspection could require approval from the IAEA Board of Governors. According to the IAEA, an inspection is deemed to be special when it is in addition to IAEA routine inspections or "involves access to information or locations" that have not been identified to the IAEA as part of the agency's implementation of safeguards in that country.[114] Such inspections "are foreseen in all Agency safeguards agreements, principally as a means for the Agency to resolve unforeseen verification problems," according to a 1991 IAEA document.[115] Paragraph 73 of the model safeguards agreement, INFCIRC 153, states that comprehensive safeguards agreements should provide for the IAEA's ability to "make special inspections," subject to certain procedures, if the agency

> considers that information made available by the State, including explanations from the State and information obtained from routine inspections, is not adequate for the Agency to fulfill its responsibilities under the Agreement.

According to the 1991 document, a special inspection could be triggered by the IAEA's receipt of "plausible information, which is not adequately explained by the State or otherwise resolved" by other IAEA inspections that the country has "nuclear material in a nuclear activity" outside of IAEA safeguards, or that the state has an undeclared nuclear facility that it had been required to report to the agency.

The IAEA Director General "has the authority ... to determine the need for, and to direct the carrying out of, special inspections," according to another 1991 IAEA paper.[116] In the event that the IAEA argues for a special inspection in a country, the agency and the government "must hold immediate consultations," according to the 1991 paper. Any dispute regarding the inspection request must be resolved according to dispute settlement provisions described in INFCIRC 153. However, paragraph 18 of INFCIRC 153 states that

> if the Board, upon report of the Director General, decides that an action by the State is essential and urgent in order to ensure verification that nuclear material subject to safeguards under the Agreement is not diverted to nuclear weapons or other nuclear explosive devices the Board shall be able to call upon the State to take the required action without delay, irrespective of whether procedures for the settlement of a dispute have been invoked.

If the state refuses the inspection, the IAEA Board of Governors can take action according to paragraph 19 of INFCIRC 153, including reporting the matter to the U.N. Security Council.[117]

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[114] *2001 IAEA Safeguards Glossary*. According to that Glossary, special inspections can also be used "to verify the information contained in special reports." States with comprehensive safeguards agreements are required to submit a special report to the IAEA if there is a "loss of nuclear material exceeding specified limits" or if "containment and surveillance measures have been unexpectedly changed from those specified in the Subsidiary Arrangements." Subsidiary arrangements describe the "technical and administrative procedures for specifying how the provisions laid down in a safeguards agreement are to be applied." The IAEA negotiates changes to such arrangements with the state if alterations to the country's nuclear facilities necessitate such changes.

[115] GOV/INF/613, May 29, 1991.

[116] GOV/2554, November 12, 1991.

[117] Ibid.

# Appendix C. Extended Remarks by William Foster Regarding Possible NPT Article II Violations

On July 10, 1968, then-Arms Control and Disarmament Agency Director William Foster testified before the Senate Foreign Relations Committee about the NPT. In response to a question regarding the type of nuclear activities prohibited by Article II of the treaty, Foster supplied the following statement:

> Extension of Remarks by Mr. Foster in Response to Question Regarding Nuclear Explosive Devices
>
> The treaty articles in question are Article II, in which non-nuclear-weapon parties undertake "not to manufacture or otherwise acquire nuclear weapons or other nuclear explosive devices," and Article IV, which provides that nothing in the Treaty is to be interpreted as affecting the right of all Parties to the Treaty "to develop research, production and use of nuclear energy for peaceful purposes…in conformity with Articles I and II of this Treaty." In the course of the negotiation of the Treaty, United States representatives were asked their views on what would constitute the "manufacture" of a nuclear weapon or other nuclear explosive device under Article II of the draft treaty. Our reply was as follows:
>
> "While the general intent of this provision seems clear, and its application to cases such as those discussed below should present little difficulty, the United States believe [sic] it is not possible at this time to formulate a comprehensive definition or interpretation. There are many hypothetical situations which might be imagined and it is doubtful that any general definition or interpretation, unrelated to specific fact situations could satisfactorily deal with all such situations.
>
> "Some general observations can be made with respect to the question of whether or not a specific activity constitutes prohibited manufacture under the proposed treaty. For example, facts indicating that the purpose of a particular activity was the acquisition of a nuclear explosive device would tend to show non-compliance. (Thus, the construction of an experimental or prototype nuclear explosive device would be covered by the term 'manufacture' as would be the production of components which could only have relevance to a nuclear explosive device.) Again, while the placing of a particular activity under safeguards would not, in and of itself, settle the question of whether that activity was in compliance with the treaty, it would of course be helpful in allaying any suspicion of non-compliance.
>
> "It may be useful to point out, for illustrative purposes, several activities which the United States would not consider per se to be violations of the prohibitions in Article II. Neither uranium enrichment nor the stockpiling of fissionable material in connection with a peaceful program would violate Article II so long as these activities were safeguarded under Article III. Also clearly permitted would be the development, under safeguards, of plutonium fueled power reactors, including research on the properties of metallic plutonium, nor would Article II interfere with the development or use of fast breeder reactors under safeguards."

# Appendix D. Iranian Adherence to JCPOA Commitments[118]

Iran's number of installed centrifuges, low-enriched uranium (LEU) stockpile, LEU uranium-235 (u-235) concentration, and enrichment locations exceed JCPOA-mandated limits. Tehran is also conducting JCPOA-prohibited research and development (R&D), as well as centrifuge manufacturing, installation, and uranium metal production.[119]

## Operating Centrifuges

Under the JCPOA, Iran is to use only its commercial-scale facility at Natanz for enriching uranium. Tehran is to use no more than 5,060 IR-1 centrifuges for this purpose. Iran has retained these centrifuges and installed additional IR-1 centrifuges. Iran has also installed JCPOA-prohibited IR-2m and IR-4 centrifuges in the facility and is using all three types centrifuges for enriching uranium. In addition, Iran is producing enriched uranium at Tehran's pilot-scale and Fordow centrifuge facilities. The JCPOA prohibits any nuclear material in the latter facility, but Iran is using IR-1 centrifuges to enrich uranium there. Iran is also producing enriched uranium containing 20% u-235 in the facility using IR-6 centrifuges.[120]

## Enriched Uranium Limits[121]

The JCPOA requires that Iran's enriched uranium stockpile must not exceed 300 kilograms of uranium hexafluoride containing 3.67% u-235 "or the equivalent in other chemical forms." This quantity of uranium hexafluoride "corresponds to 202.8 kg of uranium."[122] Iran has been producing uranium containing up to 5% u-235, up to 20% u-235, and up to 60% u-235. The IAEA estimates Tehran's total LEU stockpile to be 2489.7 kilograms of uranium. Most of this uranium is in the form of uranium hexafluoride; the remainder is in other chemical forms.

## Centrifuge Manufacturing

Iran has manufactured centrifuges for prohibited R&D activities and also manufactured centrifuge components using carbon fiber that has not received the required approval from the JCPOA-established Joint Commission.

## Research and Development

The JCPOA permits R&D with uranium using only several specified types of centrifuges and allows Iran to operate only one test cascade containing a maximum of 10 IR-4 centrifuges.[123]

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[118] Unless otherwise noted, this appendix is based on IAEA reports and the JCPOA text.

[119] As noted, Iran's February 2021 decision to stop implementing some of the JCPOA "voluntary transparency measures" has impeded the IAEA's ability to monitor Iran's implementation of the agreement.

[120] "Iran Starts Enriching with Advanced Machines at Fordow During Deal Talks," *Reuters,* December 1, 2021; "Iran's Envoy: IAEA Report a Regular Technical Document," *Islamic Republic News Agency,* December 1, 2021.

[121] Grossi's November 17 report states that the IAEA "has not been able to verify Iran's total enriched uranium stockpile" since February 16.

[122] GOV/2021/39.

[123] IR-4, IR-5, IR-6, and IR-8 centrifuges. Individual centrifuges are linked together in cascades for producing enriched uranium in quantity.

Iran's current enrichment R&D activities include JCPOA-prohibited centrifuge types, locations, and configurations.

## Uranium Metal

The JCPOA prohibits Iran from "producing or acquiring plutonium or uranium metals or their alloys" and "conducting R&D on plutonium or uranium (or their alloys) metallurgy, or casting, forming, or machining plutonium or uranium metal." Producing uranium or plutonium metals is a key step in producing fissile material nuclear weapons. These prohibitions' duration is 15 years. Iran has produced natural and enriched uranium metal.[124]

## Heavy Water

As noted, Iran's stock of heavy water exceeded the JCPOA-required limit of 130 metric tons on two occasions since the P5+1 began implementing the agreement. Beginning in November 2019, IAEA reports have noted that Iran has on several additional occasions exceeded this limit. Since February 23, 2021, Iran has neither informed the IAEA about its heavy water inventory "nor allowed the Agency to monitor the quantities of Iran's heavy water stocks and the amount of heavy water."[125]

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[124] GOV/2021/39.

[125] GOV/2021/51.