

**ADHERENCE TO AND COMPLIANCE WITH
ARMS CONTROL, NONPROLIFERATION, AND DISARMAMENT
AGREEMENTS AND COMMITMENTS**



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Prepared by the U.S. Department of State**

from every region of the world recognized the threat the DPRK's unlawful nuclear weapons program poses to international peace and security.

The goal of the United States remains the complete denuclearization of the Korean Peninsula. The United States harbors no hostile intent toward the DPRK. U.S. policy calls for a calibrated, practical approach that is open to and will explore diplomacy with the DPRK to make tangible progress that increases the security of the United States, our allies, and our deployed forces. The United States is prepared to meet with the DPRK with no preconditions and continues to consult closely with the Republic of Korea (ROK), Japan, and other allies and partners about how to best engage the DPRK.

The United States has a vital interest in deterring the DPRK, defending against its provocations or uses of force, and limiting the reach of its most dangerous weapons programs. The DPRK continues to fund its unlawful WMD and ballistic missile programs through sanctions evasion efforts in violation of UN Security Council resolutions. It is important for the international community to send a strong, unified message that the DPRK must halt provocations, abide by its obligations under UN Security Council resolutions, and engage in sustained and intensive negotiations with the United States. UN sanctions relating to the DPRK remain in place, and the United States will continue to implement them, including through diplomacy at the United Nations and with the DPRK's neighbors.

The United States remains engaged with the IAEA and welcomes the IAEA's efforts to enhance readiness to resume monitoring and verification activities in DPRK at the appropriate time.

ISLAMIC REPUBLIC OF IRAN (IRAN)

FINDING

During the 2021 reporting period, Iran continued to expand its uranium enrichment activities and stocks of enriched uranium, including the deployment of advanced centrifuges, key factors in the amount of time we assess would be required to produce enough fissile material for a nuclear weapon or device, should Iran decide to pursue nuclear weapons. The United States continues to assess that Iran is not currently undertaking the key nuclear weapons-development activities it judge necessary to produce a nuclear device. If Iran were to manufacture or otherwise acquire a nuclear weapon, such actions would violate its obligations under Article II of the NPT.

Based on reporting by the International Atomic Energy Agency (IAEA) on the implementation of Iran's Comprehensive Safeguards Agreement (CSA) and Additional Protocol (AP), the United States has concluded that serious concerns remained outstanding regarding possible undeclared nuclear material and activities in Iran as of the end the reporting period. Iran's continued failure to fully cooperate with the IAEA's ongoing safeguards investigations raises concerns with regard to Iran's compliance with its obligation to accept safeguards under Article III of the NPT.

CONDUCT GIVING RISE TO COMPLIANCE/ADHERENCE CONCERNS

Iran became a State Party to the NPT in 1970, and its CSA entered into force in 1974. Iran signed, but did not ratify, an AP to its CSA in 2003 and implemented its measures from late 2003 to early 2006 and, pursuant to its commitment to provisionally apply its AP under the Joint Comprehensive Plan of Action (JCPOA), from 2016 to early 2021.

Previous editions of this report have detailed Iran's history of violations and compliance concerns regarding its obligations under NPT Articles II and III and its CSA with the IAEA. This report will focus primarily on updates during the 2021 reporting period.

Iran's "Strategic Action Plan to Lift Sanctions and Protect Iranian Nation's Interests"

In May 2019, one year following the U.S. exit from the JCPOA, Iran announced its intention to begin progressively expanding its nuclear program in nonperformance of JCPOA commitments. In December 2020, Iran enacted a law titled the "Strategic Action Plan to Lift Sanctions and Protect Iranian Nation's Interests," which requires the Iranian government to further expand Iran's nuclear activities in nonperformance of JCPOA commitments, including the production of 20 percent enriched uranium, installation of advanced centrifuges, and reduction of cooperation with the IAEA to only that required by its CSA, including cessation of "the voluntary implementation" of provisions of its AP, if Iran's banking relations with European countries, as well as the volume of oil purchases by them, did not return to what Tehran would deem as satisfactory conditions within three months of the law's enactment.

Iran's nuclear program expanded following the December 2020 law, which included enriching uranium up to 20 percent, producing uranium metal, installing at least 1,000 IR-2M advanced centrifuges, ending implementation of the JCPOA verification and monitoring provisions, and ceasing implementation of provisions of the AP.

Enrichment and Stockpile of Uranium-235

Throughout 2021, Iran's stockpile of low enriched uranium continued to expand. In a letter dated December 31, 2020, Iran informed the IAEA that in accordance with the December 2020 law, the AEOI intended to produce low-enriched uranium up to 20 percent at the Fordow Fuel Enrichment Plant – well above the 3.67 percent limit under the JCPOA.

Shortly after an explosion on April 11, 2021 that caused a power outage at Iran's Natanz Fuel Enrichment Plant resulting in a number of centrifuge failures, Iran notified the IAEA that it would begin enrichment to 60 percent uranium-235 at Natanz using advanced centrifuges at its above ground Pilot Fuel Enrichment Plant – verified by IAEA on April 17.

As of November 6, 2021, the IAEA estimated that Iran's total enriched uranium stockpile contained 2489.7kg of uranium. Under the JCPOA, Iran committed to maintain a total enriched uranium stockpile of 202.8 kg of uranium enriched to 3.67 percent U-235 until January 2031, among other enrichment-related restrictions.

Production of Uranium Metal

In December 2020, Iran informed the IAEA that it would begin producing uranium metal using natural uranium, before moving to produce uranium metal enriched to up to 20 percent U-235 for a new type of uranium silicide fuel it was developing for the Tehran Research Reactor.

In his February 10, 2021 report to the IAEA Board of Governors (BOG), Director General (DG) Rafael Grossi reported that the IAEA had verified that, for the first time, Iran had produced uranium metal at the Fuel Plate Fabrication Plant in Esfahan. By mid-August, the AEOI produced 200g of uranium metal enriched up to 20-percent U-235.

On November 2, 2021, the IAEA verified that Iran had manufactured uranium silicide fuel plates. Under the JCPOA, Iran committed not to engage in the production of uranium metal until January 2031.

Cessation of Additional Protocol Implementation and JCPOA Monitoring

Pursuant to the December 2020 law, Iran notified the IAEA in a letter dated February 15, 2021 that it would halt the implementation of the transparency measures under the JCPOA, including provisions of AP, as of February 23, 2021. Since that time, Iran has provided information and access to declared nuclear facilities as required under its CSA but has not provided updated AP declarations, - complementary access under the AP to any sites or locations in Iran, and has not permitted the IAEA to implement JCPOA-related verification and monitoring measures.

In response to these measures, as well as Iran's failure to credibly resolve a number of serious, outstanding safeguards issues discussed below, DG Grossi traveled to Tehran in February 2021 to meet with then head of the AEOI Ali Akbar Salehi and reached a "temporary bilateral technical understanding," under which Iran would preserve JCPOA-related verification and monitoring information, including camera footage, in Iran for three months to be made available to the IAEA in the event of a mutual return to the full implementation of JCPOA. Although the arrangement was extended for an additional month in May, it was not formally extended beyond July 24, 2021.

On September 12, 2021, the DG reached an arrangement with the Vice President of Iran and Head of the AEOI, Mohammad Eslami that allowed IAEA inspectors to service JCPOA-related monitoring and surveillance equipment and replace storage media, and indicated that Iran and the IAEA would continue discussions regarding outstanding safeguards issues. From September 20 to 22, 2021, Iran permitted Agency inspectors to service the identified equipment at all necessary locations in Iran with the exception of the centrifuge component manufacturing workshop at the TESA Karaj complex. As such, the Director General has reported that the Agency's ability to restore continuity of knowledge at the workshop has been seriously impacted.

Commercial satellite imagery indicated that the centrifuge component manufacturing workshop at the TESA Karaj complex was damaged by a drone attack on June 23, 2021. Iran claimed that the IAEA's monitoring cameras may have been hacked and assisted the June attack, contributing to Iran's denial of access by IAEA inspectors to the site.

After multiple exchanges between the IAEA and Iran over the span of three months, an arrangement was reached on December 15, 2021, that allowed inspectors to replace surveillance cameras at the TESA Karaj complex. The arrangement also provided for the IAEA would provide a sample camera and related technical information to Iran for analysis by its judiciary and security officials, in the presence of IAEA officials.

Cessation of Implementation of Modified Code 3.1 of the Subsidiary Arrangements to Iran's CSA

Additionally, Iran informed the IAEA in a letter dated February 15, 2021, that it would suspend implementation of modified Code 3.1 of the Subsidiary Arrangements to its CSA. The DG reminded Iran that the modified Code 3.1 is a legal obligation that cannot be modified unilaterally and that there is no mechanism for its suspension and reported the matter to the IAEA Board of Governors. As of the reporting period, the issue remains unresolved.

IAEA NPT Safeguards Reports – Compliance Concerns Related to Iran's Safeguards Obligations

The IAEA investigated outstanding safeguards issues related to four undeclared locations in Iran during the reporting period, including three where the IAEA detected chemically processed uranium particles (Location 1, 3, and 4), as well as a fourth location (Location 2) in connection with natural uranium in the form of a uranium metal disc. Based on the IAEA's technical analysis, including evaluation of all safeguards-relevant information, the questions and requests for clarifications relate to the following four locations:

Location 1 served as possible storage of nuclear material and equipment. Following the analysis of environmental samples taken during a complementary access in February 2019, "the Agency assessed the explanations by Iran for the presence of these particles to not be technically credible." As of the reporting period, Iran had not provided any further information on, or relevant to, Location 1 since October 2020.

Location 2: The IAEA has been following up on indications of the possible presence between 2002 and 2003 of natural uranium in the form of a metal disc that had undergone drilling and processing, which may not have been included in Iran's declarations. As previously reported by the IAEA, the location where the material had been located during that time underwent extensive sanitization and levelling in 2003 and 2004. Consequently, the Agency has assessed that there would be no verification value in conducting a complementary access at this location. In an effort to verify the location of the uranium in the form of a metal disc that may have been used at Location 2, the IAEA conducted verification activities under Iran's CSA on November 14 – 16 at a declared facility in Iran where uranium metal had been produced previously. As of the end of the reporting period, the Agency was evaluating the results of these verification activities.

Location 3 showed indications of the possible use or storage of nuclear material and/or conducting of nuclear-related activities, including research and development activities related to the nuclear fuel cycle. This location may have been used for the processing and conversion of

uranium ore, including fluorination in 2003, and underwent significant changes in 2004, including the demolition of most buildings and the removal of all other structures inside the facility. Iran initially denied the IAEA access to Location 3, but was later granted access in August 2020. An analysis from the environmental samples indicated the presence of anthropogenic uranium particles that required explanation by Iran. The IAEA assesses that there are indications, supported by the sampling results, indicate that materials removed from Location 3 were subsequently also present at Location 1. However, the results of the environmental sample analysis would not explain all of the particles found at Location 1. As of the end of the reporting period, Iran had not provided any further information relevant to Location 3.

Location 4 showed indications of the possible use and storage of nuclear material where outdoor, conventional explosive testing may have taken place in 2003, including in relation to testing of shielding in preparation for the use of neutron detectors. From July 2019 onwards, the IAEA observed activities consistent with efforts to sanitize part of the location and repurpose it for use by another entity. As of the end of the reporting period, Iran had yet to provide a credible explanation for the presence of anthropogenic uranium particles and fully answer the IAEA's original questions.

Throughout the reporting period, the DG repeatedly called upon Iran to fully cooperate with the IAEA and provide the necessary information and documentation to answer the Agency's outstanding questions. Despite exchanges between the Agency and Iran, the DG reported that, as of November 2021, Iran had not provided technically credible or satisfactory answers to the IAEA's questions regarding Locations 1, 3, and 4.

Other Areas of Concern

Since April 2021, and during the rest of the reporting period, IAEA inspectors were subject to inappropriate treatment inconsistent with internationally accepted security practices, such as invasive physical searches, by Iranian security personnel at nuclear facilities in Iran. By the end of 2021, the IAEA reported that the issue had been resolved.

Additional information is provided in the higher classification Report.

See previous years' reports for additional compliance history and background information.

ANALYSIS OF COMPLIANCE/ADHERENCE QUESTIONS

The United States continues to assess that Iran is not currently engaged in key activities associated with the design and development of a nuclear weapon. If Iran were to manufacture or otherwise acquire a nuclear weapon, such actions would violate its obligations under Article II of the NPT.

During the reporting period, Iran continued to expand its uranium enrichment activities and stocks of enriched uranium, key factors in the amount of time it would require to produce enough fissile material for a nuclear weapon or device, should Iran decide to pursue nuclear weapons.

Although uranium metal has civilian and conventional military applications, producing it is also a key nuclear-weapons-related capability because Iran would need to convert weapons-grade uranium from the gaseous form used in enrichment into metal to make nuclear weapon components.

Since February 23, 2021, the IAEA's verification and monitoring activities have been seriously undermined as a result of Iran's decision to halt the implementation of such activities that go beyond the requirements of its CSA, including implementation of the AP.

At the end of the reporting period, outstanding concerns remained regarding possible undeclared nuclear material and activities in Iran today, as evidenced by the IAEA's ongoing safeguards investigations. As of November 2021, the IAEA DG continued to evaluate Iran's declarations under its CSA and AP and investigate outstanding safeguards issues related to four undeclared locations in Iran where nuclear material was possibly used in Iran.

EFFORTS TO RESOLVE COMPLIANCE QUESTIONS AND NEXT STEPS

The United States remains committed to denying Iran any pathway to a nuclear weapon and will work through the IAEA's Board of Governors to provide the IAEA the support it needs to resolve these serious matters. The United States has underscored that Iran must immediately provide the IAEA nothing short of full cooperation and comply with its nuclear safeguards obligations. Iran is legally obligated to provide the IAEA with required clarifications and access.

The United States seeks a comprehensive diplomatic solution to concerns about Iran's nuclear program, a solution that must be built on effective verification. U.S. sanctions since 2018 have targeted critical sectors of Iran's economy, such as its energy, shipping, and shipbuilding sectors, the provision of insurance to designated persons or for sanctionable activities, and transactions involving designated Iranian financial institutions.

Starting in April 2021 and throughout the reporting period, the United States and its P5+1 partners engaged in a diplomatic process aimed at a mutual return to full implementation of the JCPOA. As of the end of the reporting period, no understanding had been reached.

ISLAMIC REPUBLIC OF IRAN (IRAN)

FINDING

The Islamic Republic of Iran's (Iran's) activities continue to raise concerns regarding its compliance with Article I of the BWC. The United States continues to assess that Iran has not abandoned its intention to conduct research and development of biological agents and toxins for offensive purposes. This is based on a cumulative assessment of current and past Iranian activity and its continued lack of transparency. Also, Iran maintains flexibility to use, upon leadership demand, legitimate research underway for biodefense and public health purposes for a capability to produce lethal BW agents; whether maintaining this flexibility is pursuant to decisions by leadership is unknown. The United States remains unable to differentiate some of Iran's public health research and biodefense activities from those that are prohibited under the BWC, complicating assessments of Iranian compliance.

CONDUCT GIVING RISE TO COMPLIANCE CONCERNS

Iran became a State Party to the BWC in 1973. Its compliance with the Convention has been addressed since the 1993 Report.

Prior to submission of an incomplete CBM in 2016, Iran had not submitted an annual CBM report since 2011. Previous Iranian CBM submissions asserted that Iran did not have a biodefense program, but "has carried out some defensive studies on identification, decontamination, protection, and treatment against some agents and toxins."

Iran has engaged in dual-use activities with potential for BW applications such as building a separate plant for pharmaceutical botulinum toxin production. Iranian biotechnology entities, particularly military-affiliated institutions, continued to pursue dual-use technologies. Open source reports note Iranian military-associated universities and affiliated research centers have conducted BW-relevant projects on bioregulators and have built a plant for the commercial production of botulinum toxin.

Additional information is provided in the higher classification Annex.

ANALYSIS OF COMPLIANCE CONCERNS

Available information shows Iran engaged in activities that raise concern with regard to its Article I obligations under the BWC. Although it remains difficult for the United States to differentiate between some of Iran's public health research and biodefense activities from those that would be prohibited under the BWC, the nature of Iran's sophisticated toxin research and production and its capability to produce lethal agents on demand raise concerns regarding Iran's compliance with its obligations under Article I of the BWC.

EFFORTS TO RESOLVE COMPLIANCE CONCERNS AND NEXT STEPS

There were no discussions during the reporting period between the United States and Iran regarding Iran's compliance with the BWC. The United States will continue to monitor Iran's activities as they relate to Iran's obligations under the BWC. The United States will seek to engage Iran to clarify activity that may be inconsistent with the BWC.