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Detecting and Halting an Iranian Weaponization Effort

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Executive Summary

A secret team of Iranian scientists is working to shorten the country's route to nuclear weapons, according to current and former U.S. officials. This intelligence was collected during President Joe Biden's final months in office, then relayed to the incoming national security team under President Donald Trump.[1]

Despite the Islamic Republic's search for a shortcut to the bomb, Trump's second term as president presents a historic chance to reverse the Biden administration's failed Iran policies and prevent Tehran from developing nuclear weapons. Indeed, Trump has repeatedly declared since taking office that Iran cannot have nuclear weapons.[2] To make that goal a reality, he should immediately muster the full weight of the U.S. national security establishment to confront this urgent threat. In particular, now that Iran has a team working to speed its path to the bomb and has produced enough highly enriched uranium for multiple nuclear weapons, the new administration must focus on detecting and stopping additional secret moves by Tehran to advance its weaponization program — i.e., the key scientific and engineering work that could enable the production of a functioning nuclear device, integrating a uranium fissile core, a triggering mechanism, and explosives.[3]

During his four years as president, Biden allowed Tehran's nuclear program to progress largely unimpeded. Today, Iran likely has the capability and know-how to produce nuclear weapons but lacks confidence in the functionality of certain components and therefore the device as a whole. However, according to nuclear expert David Albright, president of the Institute for Science and International Security, Iran probably knows how to resolve these issues and, in a rush, may be able to detonate a crude nuclear device within six months of starting.[4]

1. The author wishes to thank Tzvi Kahn, David Adesnik, Bradley Bowman, Anthony Ruggiero, Richard Goldberg, Behnam Ben Taleblu, and Mark Dubowitz for their reviews of and input to this memorandum. David E. Sanger and Julian E. Barnes, "Iran Is Developing Plans for Faster, Cruder Weapon," *The New York Times,* February 3, 2025. (https://www.nytimes.com/2025/02/03/us/politics/iran-nuclear-weapon.html)

2. @TrumpDailyPosts, *X*, February 5, 2025. (https://x.com/TrumpDailyPosts/status/1887110201410773361)

3. Andrea Stricker and FDD's Visual Intelligence Team, with David Albright and Olli Heinonen, "What Steps Must Iran Take to Construct Nuclear Weapons?" *Foundation for Defense of Democracies*, February 19, 2025. (https://www.fdd.org/iranianweaponization)

4. David Albright, "How Quickly Could Iran Make Nuclear Weapons Today?" *Institute for Science and International Security,* January 8, 2024. (https://isis-online.org/isis-reports/detail/how-quickly-could-iran-make-nuclear-weapons-today/8); David Albright and Andrea Stricker, "Going for the Bomb: Part II: Tasks to Make a Crude Nuclear Weapon," *Institute for Science and International Security,* November 7, 2024. (https://isis-online.org/isis-reports/detail/going-for-the-bomb-part-ii-tasks-to-make-a-crude-nuclear-weapon)

An advancing Iranian weaponization capability, matched with Tehran's enrichment of uranium to near-weapons grade, limits the window of time in which the United States and its allies could intervene to stop an Iranian dash to nuclear weapons, known as a breakout. The regime may be able to move existing enriched uranium stockpiles to secret, highly fortified underground facilities, further enrich that fuel to weapons grade, and finalize construction of nuclear devices before the West could take effective action.[5] Thus, if the United States and its allies fail to stop Tehran's weaponization efforts before a breakout begins, they could be relatively surprised when Iran successfully constructs atomic devices and conducts a demonstration test.

The Trump administration has already broken with Biden's ineffective policy with its February 2025 presidential memorandum reimposing the "maximum pressure" policy and sanctions against Iran that were in place during Trump's first term. There is ample justification for this pressure, yet it may also provide the clerical regime with an additional incentive to seek nuclear weapons to secure its hold on power.[6] It could also sprint for the bomb to bolster its offensive and defensive capabilities to deter further Israeli strikes against the regime itself following Israel's damaging military operations against Iran's most potent proxies, Hamas and Hezbollah, and Tehran's loss of its military assets in Syria.

Now that its efforts to speed its path to nuclear weapons are becoming public, Tehran may seek to preempt or mitigate any pressure campaign and test U.S. and European resolve by seeking a new nuclear deal that would reimpose temporary and limited constraints on its nuclear activities while allowing it to maintain *de facto* nuclear weapons capabilities — a strategy the Iranians have used previously. While Trump, too, has indicated his desire to reach a negotiated settlement on the Iran nuclear issue, he and his European partners must resist the temptation to conclude a flawed deal.[7] Providing sanctions relief to Tehran for such a deal will mean the regime can use its nuclear activities for future extortion or renege on its commitments once Trump leaves office.

This research memorandum begins by tracing the history of Iran's efforts to weaponize nuclear material for the purpose of building atomic arms. This background forms the basis for the subsequent section, which assesses the current status of Iran's nuclear weapons program and its progression over the past few years, indicating the urgency and potential imminence of the threat. The memorandum concludes with detailed policy recommendations that provide a roadmap for the Trump administration to resolve the Iranian nuclear challenge.

First and foremost, the United States and Israel should review and, where necessary, enhance joint intelligence efforts to detect and disrupt Iranian weaponization activities. Second, the United States and its European allies should mobilize the International Atomic Energy Agency (IAEA) for in-depth inspections aimed at detecting Iranian weaponization activities. Third, the United States or Israel should demonstrate its ability to militarily eliminate any detected Iranian weaponization facilities and activities.[8] Finally, Trump should resist nuclear negotiations that allow Iran to delay consequences or a deal that permits Tehran to evade meaningful nuclear constraints.

5. Andrea Stricker and Anthony Ruggiero, "Iran Approaches the Nuclear Threshold," *Foundation for Defense of Democracies,* March 3, 2022. (https://www.fdd.org/analysis/2022/03/03/iran-approaches-the-nuclear-threshold)

6. The White House, "National Security Presidential Memorandum/NSPM-2," February 4, 2025. (https://www.whitehouse.gov/presidential-actions/2025/02/national-security-presidential-memorandum-nspm-2)

7. @cspan, "President Trump comments while signing NSPM-2 to re-impose maximum pressure on Iran," *X*, February 4, 2025. (https://x.com/cspan/status/1886880480928420252)

8. For an additional list of recommended deterrents, penalties, and credible military threats to immediately employ against Iran to deter or halt a breakout, see: Orde Kittrie, Bradley Bowman, and Behnam Ben Taleblu, "Deterring Iran's Dash to the Bomb," *Foundation for Defense of Democracies,* August 29, 2024. (https://www.fdd.org/analysis/2024/08/29/deterring-irans-dash-to-the-bomb)

Activities to Make Nuclear Weapons (these efforts can, and most likely would, occur simultaneously):

- Production of Weapons-Grade Fuel: To construct nuclear weapons, Iran must produce weapons-grade fuel, namely enriched uranium or plutonium that has undergone reprocessing, for the core of a nuclear weapon.
- Nuclear Weaponization: Iran must fashion a nuclear device via complicated scientific and engineering processes that integrate weapons-grade fuel with specialized components and processes to trigger an atomic explosion.
- Delivery System: Iran would seek to outfit a medium- or long-range ballistic missile with a nuclear warhead to ensure reliable delivery to a target and thereby enhance the deterrent or offensive potential of its nuclear weapons. Tehran has made great strides in nuclear-capable delivery missile systems. Yet a missile is not the only option since a device could be delivered, for example, via aircraft, truck, or shipping container.

Iran's Weaponization Program: History and Background

For more than two decades, the Islamic Republic of Iran has amassed the technical know-how and experience needed to build nuclear weapons in short order.[9] From the outset, Tehran sought the production of a nuclear weapon rather than merely civilian applications for nuclear power.

Early Years and Iran's Nuclear Archive

In 2002, nongovernmental groups and the media publicly revealed that Tehran was constructing secret nuclear facilities and conducting undeclared nuclear activities related to uranium and plutonium production, the key fissile materials needed to detonate nuclear weapons. As a state party to the Nuclear Non-Proliferation Treaty (NPT), Iran had a binding legal obligation to declare such facilities and activities to the IAEA and place them under safeguards.

Following the discovery of its illicit activities, Iran denied that it had any intention of weaponizing its nuclear material, but the IAEA and Western governments began to uncover substantial evidence suggesting otherwise.[10] In addition to nuclear fuel production, the IAEA learned of Iran's work on various steps in the weaponization process as well as efforts related to mounting a nuclear warhead on a ballistic missile. Iran cooperated only sporadically with IAEA investigations into the nature of its nuclear activities.

Israel's 2018 seizure of an archive of the regime's nuclear weapons files shed new light on Tehran's late 1990s to 2003 nuclear weapons program, known as the Amad Plan. The archive's materials filled in extensive missing information about Iran's early nuclear weapons activities and capabilities, allowing for projections of their status today. The

9. Andrea Stricker and FDD's Visual Intelligence Team, with David Albright and Olli Heinonen, "What Steps Must Iran Take to Construct Nuclear Weapons?" *Foundation for Defense of Democracies*, February 19, 2025. (https://www.fdd.org/iranianweaponization)
10. IAEA Director General, "Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran," GOV/2003/40, June 6, 2003. (https://www.iaea.org/sites/default/files/documents/gov2003-40.pdf); David Albright and Corey Hinderstein, "Iran Building Nuclear Fuel Cycle Facilities: International Transparency Needed," *Institute for Science and International Security*, December 12, 2002. (https://isis-online.org/isis-reports/detail/iran-building-nuclear-fuel-cycle-facilities-international-transparency-need/8#images)

archive's files contained, among other information, Iran's detailed electronic and hard copy nuclear weapon plans and timelines; engineering progress documents; memorandums of meetings; photographs of nuclear weapons personnel, sites, and equipment; locations and functions of nuclear facilities; and a nuclear weapon design.[11]

According to the nuclear archive's documents, prior to mid-2003, Iran had made substantial progress on manufacturing subcomponents and testing nuclear weapons equipment but likely required additional work and testing to refine several steps.[12] Iran also had numerous pilot-scale and large-scale weaponization-related facilities under construction.[13] The archive indicated that Iran planned to build an initial five nuclear weapons by 2003 and test them while simultaneously building production-scale facilities to develop a larger nuclear arsenal.[14]

However, Iran's plans were running behind schedule. By mid-2003, Tehran still lacked weapons-grade uranium, confronted bottlenecks in its weaponization work, and faced growing international scrutiny of its nuclear activities. At that time, with U.S. forces present in Iraq and Afghanistan, Tehran — fearing that Iran would be Washington's next military target — decided to downsize and disperse Amad Plan activities to military sites and civilian institutions, temporarily shelving the goal of constructing atomic weapons.[15] Around the same time, Iran's supreme leader, Ayatollah Ali Khamenei, reportedly issued an Islamic edict known as a *fatwa* that banned nuclear weapons development. However, fatwas can be reversed, and the nuclear fatwa's issuance may have been a means to divert Western focus from the nuclear program.[16]

According to archive meeting memorandums, despite shelving the Amad Plan, Iranian officials still planned to maintain limited nuclear activities, moving those with potential radiological signatures to secure military sites and those with plausible civilian justifications to research institutes. Western governments and the IAEA continued to monitor Iran for evidence of a nuclear weapons program, at times disagreeing in their characterizations of the nature of Tehran's activities and their level of coordination and organization. In particular, certain U.S. agencies, European countries, Israel, and the IAEA remained skeptical that Iran's weaponization activities had fully ended.[17]

11. For the most in-depth study available of Iran's Amad Plan based on the Islamic Republic's nuclear archive materials and other primary source documentation, see: David Albright with Sarah Burkhard and the Good ISIS Team, *Iran's Perilous Pursuit of Nuclear Weapons* (Washington, DC: Institute for Science and International Security Press, 2021).

12. David Albright and Andrea Stricker, "Going for the Bomb: Part II: Tasks to Make a Crude Nuclear Weapon," *Institute for Science and International Security,* November 7, 2024. (https://isis-online.org/isis-reports/detail/going-for-the-bomb-part-ii-tasks-to-make-a-crude-nuclear-weapon)

13. David Albright and Sarah Burkhard, "Unknown Amad Sites, Prior to the Nuclear Archive Seizure," *Institute for Science and International Security,* May 18, 2021. (https://isis-online.org/isis-reports/detail/unknown-amad-sites-prior-to-the-nuclear-archive-seizure/8)

14. David Albright, Olli Heinonen, and Andrea Stricker, "The Plan: Iran's Nuclear Archive Shows It Planned to Build Five Nuclear Weapons by mid-2003," *Institute for Science and International Security,* November 20, 2018. (https://isis-online.org/isis-reports/detail/the-plan-irans-nuclear-archive-shows-it-originally-planned-to-build-five-nu)

15. IAEA Director General, "Implementation of the NPT Safeguards Agreement and relevant provisions of Security Council resolutions in the Islamic Republic of Iran," GOV/2011/65, November 8, 2011. (https://www.iaea.org/sites/default/files/documents/gov2011-65.pdf)

16. Andrea Stricker, "Washington Cannot Rely on Iran's Alleged Nuclear Fatwa," *Foundation for Defense of Democracies,* February 11, 2021. (https://www.fdd.org/analysis/2021/02/11/washington-cannot-rely-on-anti-nuclear-fatwa)

17. Based on conversations with IAEA and foreign government officials.

Prior to 2004, the IAEA learned that Tehran had received a nuclear weapons design from the illicit nuclear network run by Pakistani scientist A.Q. Khan.[18] With help from a former Soviet nuclear weapons expert who assisted Iran with nuclear weapon detonation technology known as a multipoint initiation system, Tehran subsequently developed its own design based on a relatively miniaturized nuclear implosion device.[19] Such a device is a type of nuclear weapon that implodes inward to achieve a nuclear chain reaction before exploding. The nuclear archive contained a simplified Iranian schematic of such a weapon, which could fit in the payload chamber of the regime's Shahab-3 medium-range ballistic missile.

After mid-2003, by maintaining former Amad Plan work on a reduced scale at military sites and civilian institutions, using cover stories for research where necessary, and overcoming technical hurdles, Tehran could ensure it retained the option to build nuclear weapons at a later date.

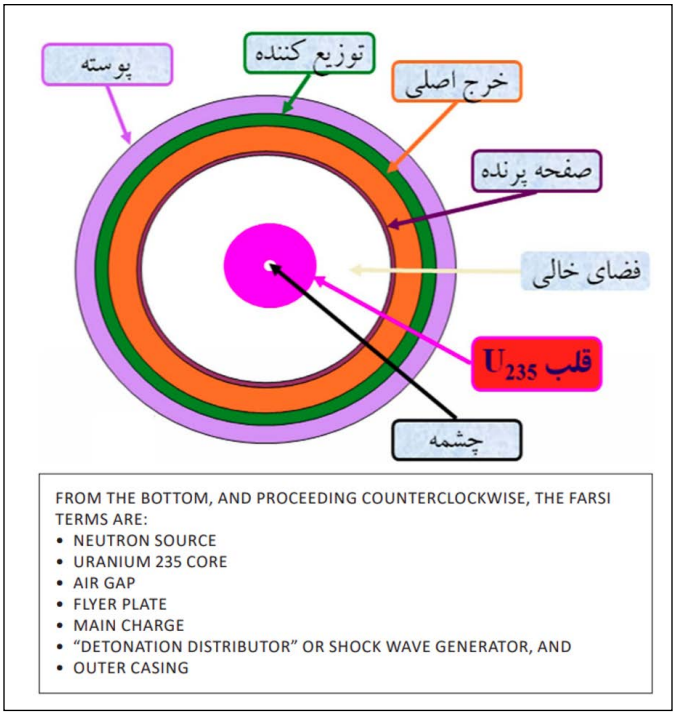

Figure 1. Iran's nuclear weapon design schematic, found in the nuclear archive. Translated from Farsi by the Institute for Science and International Security in Iran's Perilous Pursuit of Nuclear Weapons, 2021.

The Post-Amad Plan Era

During the IAEA's post-2002 investigations of Iran's nuclear program, the regime cooperated in part but largely denied undertaking weaponization efforts as part of an effort to conceal its past nuclear weapons program. Tehran provided untruthful answers and cover stories for suspicious research and activities and, in some cases, denied the IAEA access to sites, violating the regime's NPT safeguards commitments. Tehran also sanitized and removed evidence from sites, including by razing and building over the former headquarters of the nuclear weapons program, Lavisan-Shian, in 2003 and 2004 and removing equipment in 2012 from a key weaponization facility within the Parchin military complex.[20] Nevertheless, the IAEA was able to establish a general picture of some of Tehran's nuclear weapons activities through its own investigations and via information provided by member states.

18. IAEA Director General, "Final Assessment on Past and Present Outstanding Issues regarding Iran's Nuclear Programme," GOV/2015/68, December 2, 2015. (https://www.iaea.org/sites/default/files/documents/gov-2015-68.pdf)

19. David Albright and Olli Heinonen, "Shock Wave Generator for Iran's Nuclear Weapons Program: More Than a Feasibility Study," *Institute for Science and International Security,* May 7, 2019. (https://isis-online.org/isis-reports/mobile/shock-wave-generator-for-irans-nuclear-weapons-program-more-than-a-feasibil); Mark Gorwitz, "Vyacheslav Danilenko – Background, Research, and Proliferation Concerns," *Institute for Science and International Security,* November 29, 2011. (https://isis-online.org/isis-reports/detail/vyacheslav-danilenko-background-research-and-proliferation-concerns/8)

20. IAEA Director General, "Implementation of the NPT Safeguards Agreement and relevant provisions of Security Council resolutions in the Islamic Republic of Iran," November 8, 2011. (https://www.iaea.org/sites/default/files/documents/gov2011-65.pdf); IAEA Director General, "Final Assessment on Past and Present Outstanding Issues regarding Iran's Nuclear Programme," December 2, 2015. (https://www.iaea.org/sites/default/files/documents/gov-2015-68.pdf)

Yet the agency lacked key evidence, documentation, and answers needed to ascertain whether Tehran's program was devoted to peaceful uses.[21]

The regime, meanwhile, hoped to resume its weaponization efforts but remained hamstrung by consistent international pressure and attention. It therefore focused primarily on achieving the means to produce weapons-grade uranium, incrementally advancing its enrichment program by creating faster, more advanced gas centrifuges. By 2006, Iran produced fuel enriched to 5 percent at the underground Natanz enrichment plant and above-ground Natanz pilot plant, and in 2010, it produced its first 20 percent enriched uranium.[22] Iran also continued constructing the Amad Plan's original, intended source of weapons-grade uranium, the then secret Fordow enrichment site. The United States, France, and the United Kingdom revealed the site's existence in 2009, and Iran subsequently placed it under IAEA safeguards.[23] In response to Tehran's actions, the West imposed several rounds of UN sanctions against Iran from 2006 to 2010.

Signs of continuing weaponization efforts periodically surfaced, including information detailing shifts in responsibility for the oversight of weaponization following the Amad Plan's pause in mid-2003.[24] The IAEA reported in 2011, for example, that the entity overseeing the program had evolved from the Amad Plan into the Section for Advanced Development Applications and Technologies (SADAT) from roughly 2006 to 2008; oversight efforts were then headquartered at Paradis Tehran Malek Ashtar University (or MUT) by 2010; and finally, in 2011, the entity in charge was the Organization of Defense Innovation and Research, or SPND, its Persian acronym. SPND remains at the helm today.[25] The group, a branch of Iran's Ministry of Defense and Armed Forces Logistics, has numerous subgroups and maintains responsibility for other types of advanced non-nuclear defense technologies and research. The United States sanctioned SPND in 2014, referring to it as a "Tehran-based entity that is primarily responsible for research in the field of nuclear weapons development."[26]

In 2007, a key U.S. national intelligence estimate by the Office of the Director of National Intelligence (ODNI) found with high confidence that "in fall 2003, Tehran halted its […] nuclear weapon design and weaponization work and covert uranium conversion-related and uranium enrichment-related work." Parts of the U.S. intelligence community, however, held only moderate confidence "that the halt to those activities represent[ed] a halt to Iran's

21. Dozens of IAEA Iran reports dating 2003 to 2024 detail this picture, issued pursuant to IAEA investigative and reporting mandates of the IAEA's 35-member Board of Governors. "IAEA and Iran - IAEA Board Reports," *International Atomic Energy Agency*, accessed February 12, 2025. (https://www.iaea.org/newscenter/focus/iran/iaea-and-iran-iaea-board-reports)

22. "Timeline of Nuclear Diplomacy with Iran, 1967-2023," *Arms Control Association*, last reviewed January 2023. (https://www.armscontrol.org/factsheets/timeline-nuclear-diplomacy-iran-1967-2023)

23. David Albright, Frank Pabian, and Andrea Stricker, "The Fordow Enrichment Plant, aka Al Ghadir: Iran's Nuclear Archive Reveals Site Originally Purposed to Produce Weapon-Grade Uranium for 1-2 Nuclear Weapons Per Year," *Institute for Science and International Security,* March 13, 2019. (https://isis-online.org/isis-reports/detail/the-fordow-enrichment-plant-aka-al-ghadir/8)

24. Catherine Philp, "Leaked Memo Identifies Man at Head of Iran's Nuclear Programme," *The Times (UK),* December 14, 2009. (https://www.thetimes.com/article/leaked-memo-identifies-man-at-head-of-irans-nuclear-programme-s7pxjgztdkg); "New Document Reopens Question of Whether Iran's Nuclear Weaponization Work Continued Past 2003," *Institute for Science and International Security*, December 14, 2009. (https://isis-online.org/isis-reports/detail/new-document-reopens-question-on-whether-irans-nuclear-weaponization-work-c/8); "Documents Assessing the Organizational Structure of FEDAT," *Institute for Science and International Security*, December 14, 2009. (https://isis-online.org/isis-reports/detail/documents-assessing-the-organizational-structure-of-fedat/8)

25. IAEA Director General, "Implementation of the NPT Safeguards Agreement and relevant provisions of Security Council resolutions in the Islamic Republic of Iran," November 8, 2011. (https://www.iaea.org/sites/default/files/documents/gov2011-65.pdf)

26. U.S. State Department, Office of the Spokesperson, "Additional Sanctions Imposed by the Department of State Targeting Iranian Proliferators," August 29, 2014. (https://2009-2017.state.gov/r/pa/prs/ps/2014/231159.htm)

entire nuclear weapons program."[27] The archive suggests that the latter view is correct. The IAEA itself assessed in 2011 that Iran had continued some weaponization projects until 2009.[28] It assessed, "Some of [Iran's] activities undertaken after 2003 would be highly relevant to a nuclear weapon [program]."

Between 2007 and 2012, Israel conducted an assassination campaign against at least five Iranian scientists with connections to SPND or the potentially ongoing nuclear weapons effort.[29] In 2020, Israel also assassinated the so-called father of Iran's nuclear weapons program, SPND head Mohsen Fakhrizadeh, who in the 1990s had developed a roadmap to establish the nuclear weapons program and assumed leadership of the Amad Plan's precursor in 1998.[30]

The 2010s, the JCPOA, and the Trump Administration

The United States and Europe attempted several diplomatic initiatives with Iran that bore limited fruit. Then, in 2011, the U.S. Congress began imposing harsh sanctions against Iran's Central Bank and other financial institutions and threatened secondary sanctions against those importing Iranian oil or processing related transactions, all of which imposed severe costs on the Iranian economy.[31] The European Union followed suit with its own tightened sanctions.[32]

In 2012, Iran agreed to conduct back-channel talks with the United States aimed at resolving the nuclear issue. The following year, the P5+1 group of nations (the United States, France, the United Kingdom, Russia, China, and Germany) reached an interim nuclear agreement with Iran, known as the Joint Plan of Action (JPOA), aimed at freezing and partially rolling back the nuclear program while a long-term solution was sought.[33] By the time the JPOA was implemented in early 2014, Iran had more than 15,000 early-generation centrifuges and over 1,000 fast-generation centrifuges installed at Natanz, as well as some 2,700 early-generation centrifuges installed at Fordow and relatively large stocks of enriched uranium.[34] At this point, Iran's stock of enriched uranium, combined with its number of deployed centrifuges, positioned it to be able to produce enough fissile material for a nuclear weapon within a matter of weeks, one of the original goals of the Amad Plan. Several additional months or longer would

27. Office of the Director of National Intelligence, "National Intelligence Estimate: Iran: Nuclear Intentions and Capabilities," November 2007. (https://www.dni.gov/files/documents/Newsroom/Reports%20and%20Pubs/20071203_release.pdf)

28. IAEA Director General, "Implementation of the NPT Safeguards Agreement and relevant provisions of Security Council resolutions in the Islamic Republic of Iran," November 8, 2011. (https://www.iaea.org/sites/default/files/documents/gov2011-65.pdf); IAEA Director General, "Final Assessment on Past and Present Outstanding Issues regarding Iran's Nuclear Programme," December 2, 2015. (https://www.iaea.org/sites/default/files/documents/gov-2015-68.pdf)

29. Mehdi Jedinia, "History of Assassinations of Iran's Top Nuclear Scientists," *Voice of America,* December 3, 2020. (https://www.voanews.com/a/extremism-watch_history-assassinations-irans-top-nuclear-scientists/6199135.html)

30. David Albright with Sarah Burkhard and the Good ISIS Team, *Iran's Perilous Pursuit of Nuclear Weapons* (Washington, DC: Institute for Science and International Security Press, 2021).; Ronen Bergman and Farnaz Fassihi, "The Scientist and the A.I.-Assisted, Remote-Control Killing Machine," *The New York Times,* September 18, 2021. (https://www.nytimes.com/2021/09/18/world/middleeast/iran-nuclear-fakhrizadeh-assassination-israel.html)

31. "Timeline of U.S. Sanctions," *The Iran Primer, United States Institute of Peace,* updated September 25, 2024. (https://iranprimer.usip.org/resource/timeline-us-sanctions)

32. Arms Control Association, "Timeline of Nuclear Diplomacy with Iran, 1967-2023," last reviewed January 2023. (https://www.armscontrol.org/factsheets/timeline-nuclear-diplomacy-iran-1967-2023)

33. Joint Plan of Action, Geneva, November 24, 2013. (https://ofac.treasury.gov/media/14286/download?inline)

34. IAEA Director General, "Implementation of the NPT Safeguards Agreement and relevant provisions of Security Council Resolutions in the Islamic Republic of Iran," GOV/2014/10, February 20, 2014. (http://isis-online.org/uploads/isis-reports/documents/iaea-iranreport-02202014_1.pdf)

likely have been required for weaponization.[35] Still, the U.S. intelligence community did not issue new reporting regarding the status of Iran's mid-2003 weaponization halt. ODNI's 2015 worldwide threat assessment indicated, however, that "Iran does not face any insurmountable technical barriers to producing a nuclear weapon, making Iran's political will the central issue" in moving to build nuclear weapons.[36]

In 2015, the P5+1 and Iran reached the longer-term deal known as the Joint Comprehensive Plan of Action (JCPOA).[37] The agreement contained various provisions limiting the Iranian nuclear program for a duration of about 10 years, after which limits would gradually lift. In exchange, Washington and its allies would suspend most of their sanctions as soon as Tehran implemented the agreement.

In essence, the JCPOA provided Tehran with a path to normalize its nuclear program and retain advanced civilian nuclear capabilities. The deal also legitimized uranium enrichment in Iran, even though the UN Security Council had demanded for years that Iran stop the activity. This meant Iran would retain its capability to produce weapons-grade material. Codified in UN Security Council Resolution 2231, the JCPOA also included weak prohibitions on the Iranian missiles that might serve as delivery vehicles for a nuclear weapon. Specifically, Resolution 2231 called upon Iran not to test its missiles for eight years and limited related trade during that time.[38]

The JCPOA also contained basic provisions prohibiting several weaponization activities and reiterated Iran's binding commitment under the NPT not to build nuclear weapons. Yet there was no explicit mechanism for the IAEA to verify the absence of such activities or to conduct a full-access investigation of Iran's past and possibly ongoing nuclear weapons work. Instead, the JCPOA required the IAEA to issue a "final" report on the possible military dimensions of Iran's nuclear weapons program ahead of the JCPOA's implementation in early 2016. Tehran provided false explanations and denials of past work to the IAEA, which the IAEA did not accept, yet the P5+1 implemented the deal anyway.[39]

Trump exited the JCPOA in May 2018, indicating it "enriched the Iranian regime and enabled its malign behavior, while at best delaying its ability to pursue nuclear weapons and allowing it to preserve nuclear research and development."[40] Shortly before Trump made a final decision to exit the JCPOA, Israel announced its seizure of Iran's nuclear archive, whose very existence indicated Tehran wanted to preserve the option of making nuclear weapons. The Trump administration then imposed a campaign of "maximum economic pressure" on Iran and threatened sanctions anew against countries and companies that engaged in prohibited commerce.[41] The Tehran regime, however, did not withdraw from the JCPOA, instead choosing to incrementally reduce compliance. In

35. David Albright, Patrick Migliorini, Christina Walrond, and Houston Wood, "Maintaining at Least a Six-Month Breakout Timeline: Further Reducing Iran's Near 20 Percent Stock of LEU," *Institute for Science and International Security,* February 17, 2014. (https://isis-online.org/uploads/isis-reports/documents/20_pct_stock_cap_17Feb2014-final.pdf)
36. Director of National Intelligence James R. Clapper, "Worldwide Threat Assessment of the US Intelligence Community," February 26, 2015. (https://www.dni.gov/files/documents/Unclassified_2015_ATA_SFR_-_SASC_FINAL.pdf)
37. Joint Comprehensive Plan of Action, Vienna, July 14, 2015. (https://www.europarl.europa.eu/cmsdata/122460/full-text-of-the-iran-nuclear-deal.pdf)
38. UN Security Council, Resolution 2231, July 20, 2015. (https://docs.un.org/en/S/RES/2231(2015))
39. IAEA Director General, "Final Assessment on Past and Present Outstanding Issues regarding Iran's Nuclear Programme," December 2, 2015. (https://www.iaea.org/sites/default/files/documents/gov-2015-68.pdf)
40. President Donald J. Trump, "President Donald J. Trump is Ending United States Participation in an Unacceptable Iran Deal," *The White House,* May 8, 2018. (https://trumpwhitehouse.archives.gov/briefings-statements/president-donald-j-trump-ending-united-states-participation-unacceptable-iran-deal)
41. "Six Charts That Show How Hard U.S. Sanctions Have Hit Iran," *BBC* (UK), December 9, 2019. (https://www.bbc.com/news/world-middle-east-48119109)

January 2020, the United States' assassination of Islamic Revolutionary Guard Corps (IRGC) Quds Force chief Qassem Soleimani spurred the regime to announce it would end all compliance with the JCPOA, yet it still did not officially withdraw.[42] But rather than augment its nuclear program to pre-JCPOA levels, from 2018 to 2020, Tehran appeared to hesitate to incur additional penalties and instead waited out Trump's term in office.[43]

In 2018, the IAEA resumed its investigation of Iran's past nuclear weapons work, following Israel's seizure of the Tehran nuclear archive. The IAEA posed questions to Tehran about the whereabouts of nuclear material and evidence of past nuclear weapons work at four sites, three of which were detailed in the archive.[44] These included the alleged former headquarters of Iran's nuclear weapons program, Lavisan-Shian, where Iran may have also conducted illicit work on aspects of a nuclear weapon core; a suspected pilot uranium conversion facility called Varamin; an alleged outdoor high-explosive testing facility called Marivan; and an open-air warehouse, located in the Turquz-Abad neighborhood of Tehran, where Iran allegedly stored equipment and nuclear material related to its undisclosed nuclear activities. The regime initially refused the IAEA's requests for access to three of the sites and appeared, from commercially available satellite imagery, to sanitize them and remove evidence before finally permitting IAEA access under international pressure.[45]

The Biden Administration's Iran Policy

Following the election of Biden, who ran on a platform of restoring the JCPOA and lifting sanctions against Tehran, Iran significantly expanded its nuclear program. It began to accelerate its nuclear advances almost as soon as Biden was elected, enriching uranium once again to 20 percent purity, then to 60 percent — a stone's throw from 90 percent, or weapons-grade uranium. It also made uranium metal, a material used in nuclear weapon cores, and reactivated its underground enrichment site at Fordow, where it was briefly caught producing near 84 percent enriched uranium.[46] As of October 2024, the regime possessed a total enriched uranium stockpile of more than 6,400 kilograms and had added thousands of advanced model uranium-enriching centrifuges across its three enrichment facilities at Natanz, the Natanz pilot plant, and Fordow.[47] As of November 2024, nongovernmental

42. "Iran Takes Final JCPOA Step, Removing Last Limit on Nuclear Program," *Mehr News Agency* (Iran), January 5, 2020. (https://en.mehrnews.com/news/154191/Iran-takes-final-JCPOA-step-removing-last-limit-on-nuclear-program)

43. Behnam Ben Taleblu and Andrea Stricker, "Exploiting America's Declining Pressure: Iran's Nuclear Escalation Over Time," *Foundation for Defense of Democracies,* updated August 2024. (https://www.fdd.org/analysis/2023/03/09/exploiting-americas-declining-pressure-irans-nuclear-escalation-over-time)

44. IAEA Director General, "Implementation of the NPT Safeguards Agreement and relevant provisions of Security Council resolutions in the Islamic Republic of Iran," GOV/2024/44, August 29, 2024. (https://www.iaea.org/sites/default/files/documents/gov2024-44.pdf); David Albright, Sarah Burkhard, and Andrea Stricker, "Analysis of the IAEA's Iran NPT Safeguards Report – May 2024," *Institute for Science and International Security,* May 31, 2024. (https://isis-online.org/uploads/isis-reports/documents/Analysis_of_the_IAEA%E2%80%99s_Iran_NPT_Safeguards_Report_May_31_2024_Final.pdf)

45. David Albright, Olli Heinonen, Frank Pabian, and Andrea Stricker, "Revealed: Emptying of the Iranian 'Atomic Warehouse' at Turquz Abad," *Institute for Science and International Security,* November 29, 2018. (https://isis-online.org/isis-reports/detail/revealed-emptying-of-the-iranian-atomic-warehouse-at-turquz-abad/8); David Albright and Sarah Burkhard, "More Demolition at the Marivan Former Nuclear Weapons Development Site," *Institute for Science and International Security,* March 1, 2022. (https://isis-online.org/isis-reports/detail/more-demolition-at-the-marivan-former-nuclear-weapons-development-site/8)

46. Behnam Ben Taleblu and Andrea Stricker, "Exploiting America's Declining Pressure: Iran's Nuclear Escalation Over Time," *Foundation for Defense of Democracies,* updated February 2024. (https://www.fdd.org/analysis/2023/03/09/exploiting-americas-declining-pressure-irans-nuclear-escalation-over-time)

47. David Albright, Sarah Burkhard, and Andrea Stricker, "What to Know About Iran's Nuclear Program: Advanced Centrifuges," *Foundation for Defense of Democracies*, May 1, 2024. (https://www.fdd.org/analysis/2024/05/01/what-to-know-about-irans-nuclear-program-advanced-centrifuges)

experts assessed that Tehran could make enough weapons-grade uranium for a first nuclear weapon in one week and enough for 16 weapons in five months.[48]

Iran may also be working on a new, secret enrichment facility in the mountains near the Natanz enrichment site that is 100 meters deep and potentially immune to U.S. and Israeli airstrikes. Since February 2021, Iran also greatly limited IAEA monitoring of its nuclear activities, including by removing surveillance cameras and real-time electronic monitoring devices and exiting an enhanced IAEA inspection agreement known as the IAEA Additional Protocol, in effect restricting inspections to declared sites where Tehran produces or uses nuclear material.[49] Thus, the IAEA continues to lack a comprehensive picture of the regime's nuclear activities, which would make it easier for Iran to stockpile advanced centrifuges at a secret enrichment site for use in a breakout to nuclear weapons.

During Biden's presidency, Washington and its European allies focused mainly on preventing Iran from crossing the nuclear threshold and making nuclear weapons, rather than confronting Tehran and penalizing its advances.[50] The United States also carried out indirect talks with the regime aimed at obtaining Iran's restraint on nuclear advances and regional aggression.[51] However, in belated recognition that this conciliatory approach only encouraged the regime to accelerate its nuclear program, the United Kingdom, France, and Germany, or "E3," spearheaded censure resolutions at the June and November 2024 IAEA Board of Governors meetings, moves the United States initially opposed.[52]

Meanwhile, the U.S. intelligence community continued to assess that Iran was not pursuing weaponization. For example, in its annual worldwide threat assessments from 2019 to 2024, ODNI included a variation of the statement, "Iran is not currently undertaking the key nuclear weapons-development activities necessary to produce a testable nuclear device."[53] Yet ongoing Iranian activities were potentially undetectable to foreign intelligence efforts.[54] For example, Tehran could carry out some weaponization activities via closed-circuit computer modeling and conduct the most incriminating tests at restricted military sites.

One hint of a revived weaponization effort emerged in May 2024, when the Iranian parliament, or Majlis, increased the funding of SPND and underscored the organization's independent legal, administrative, and budgetary authority. In particular, the law authorized SPND "to continue and consolidate the path of the scientist 'Martyr Mohsen

48. David Albright, Sarah Burkhard, and Spencer Faragasso, "Analysis of IAEA Iran Monitoring and Verification Report – November 2024," *Institute for Science and International Security,* November 21, 2024. (https://isis-online.org/uploads/isis-reports/documents/Analysis_of_November_2024_IAEA_Iran_Verification_Report_Nov_21_2024.pdf)

49. IAEA Director General, "Verification and Monitoring in the Islamic Republic of Iran in light of United Nations Security Council Resolution 2231 (2015)," GOV/2021/10, February 23, 2021. (https://www.iaea.org/sites/default/files/documents/gov2021-10.pdf)

50. Laurence Norman, "Biden Administration Presses Allies Not to Confront Iran on Nuclear Program," *The Wall Street Journal,* May 27, 2024. (https://www.wsj.com/world/middle-east/u-s-opposes-european-plan-to-censure-iran-over-nuclear-work-85ad7fc6)

51. Edward Wong, "U.S. and Iranian Officials Held Indirect Talks in Oman on Risks of a Wider War," *The New York Times,* May 18, 2024. (https://www.nytimes.com/2024/05/18/us/politics/us-iran-talks-oman.html)

52. Resolution Adopted by the IAEA Board of Governors during the 1723rd Session, "NPT Safeguards Agreement with the Islamic Republic of Iran," GOV/2024/39, June 5, 2024. (https://www.iaea.org/sites/default/files/documents/gov2024-39.pdf); Resolution Adopted by the IAEA Board of Governors during the 1746th Session, "NPT Safeguards Agreement with the Islamic Republic of Iran," GOV/2024/68, November 21, 2024. (https://www.iaea.org/sites/default/files/24/11/gov2024-68.pdf)

53. As seen in those annual reports, available at: "Annual Threat Assessment of the U.S. Intelligence Community, 2006-2023," *Office of the Director of National Intelligence*, accessed February 12, 2025. (https://www.intelligence.gov/annual-threat-assessment)

54. Andrea Stricker and Behnam Ben Taleblu, "Washington Fails — Again — to Gauge Iran's Nuclear Threat," *19FortyFive*, March 28, 2024. (https://www.19fortyfive.com/2024/03/washington-fails-again-to-gauge-irans-nuclear-threat)

Fakhrizadeh'" and to acquire "innovative, emerging, groundbreaking, high-risk, and superior technologies in response to new and emerging threats."[55]

Due to Tehran's consistent lack of cooperation with the IAEA, including the regime's abrogation of the Additional Protocol, the agency has not been able to inspect SPND, visit its subgroups, or routinely interview personnel in order to ascertain whether Iran continues nuclear weaponization activities today.

Despite Iran's obstruction of its renewed investigation into information from the nuclear archive, the IAEA was able to conclude through its investigations, including environmental sampling that detected the presence of man-made uranium particles, that Iran had carried out undeclared nuclear weapons-related work at two of the sites.[56] The agency is still unable to reach conclusions about the other two sites due to Tehran's lack of cooperation. The Institute for Science and International Security assesses that the IAEA still has not yet visited as many as two dozen sites associated with Iran's past and possibly ongoing nuclear weapons program.[57]

Current Status of Iran's Nuclear Program

In the waning months of Biden's presidency, unnamed countries reportedly collected intelligence indicating a secret team of Iranian scientists was working to shorten the time required to build nuclear weapons — honing Tehran's option to produce a crude nuclear device. Two weeks into Trump's second term, *The New York Times* reported this information and that Biden's team had informed the incoming Trump team. The report included no further details about Tehran's specific activities.[58]

The United States and Israel reportedly assess that Tehran remains at least a year from being able to construct a nuclear device, although the former chairman of the Joint Chiefs of Staff, Mark Milley, claimed in early 2023 that the timeline was "several months."[59] No official U.S. or Israeli statements have modified the one-year estimate, and it is unclear whether the United States has shortened that timeline given the new intelligence.[60]

55. Jay Solomon, "How Close Is Iran to the Bomb?" *The Free Press,* September 3, 2024. (https://www.thefp.com/p/how-close-is-iran-nuclear-bomb)

56. IAEA Director General, "NPT Safeguards Agreement with the Islamic Republic of Iran," GOV/2022/5, March 5, 2022 (https://www.iaea.org/sites/default/files/documents/gov2022-5.pdf); IAEA Director General, "NPT Safeguards Agreement with the Islamic Republic of Iran," GOV/2023/58, November 13, 2023. (https://www.iaea.org/sites/default/files/documents/gov2023-58.pdf)

57. David Albright and Sarah Burkhard, "Priority List of Sites Deserving/Requiring International Atomic Energy Agency (IAEA) Inspections, with Employee Interviews," *Institute for Science and International Security,* May 20, 2021. (https://isis-online.org/isis-reports/detail/priority-list-of-sites-for-IAEA-visits)

58. David E. Sanger and Julian E. Barnes, "Iran Is Developing Plans for Faster, Cruder Weapon," *The New York Times,* February 3, 2025. (https://www.nytimes.com/2025/02/03/us/politics/iran-nuclear-weapon.html)

59. Laurence Norman and Michael R. Gordon, "Iran Could Produce Nuclear Weapon in Several Months if It Decides To Do So, Mark Milley Says," *The Wall Street Journal,* March 23, 2023. (https://www.wsj.com/articles/iran-could-produce-nuclear-weapon-in-several-months-if-it-decides-to-do-so-mark-milley-says-ecd38f07)

60. William J. Broad, "To Build a Nuclear Bomb, Iran Would Need Much More Than Weeks," *The New York Times,* October 2, 2024. (https://www.nytimes.com/2024/10/02/science/iran-nuclear-weapon.html); Barak Ravid, "Scoop: Biden Discussed Plans to Strike Iran Nuclear Sites if Tehran Speeds Toward Bomb," *Axios,* January 2, 2025. (https://www.axios.com/2025/01/02/iran-nuclear-weapon-biden-white-house)

According to David Albright, Iran may in fact be able to accomplish the construction and testing of nuclear weapons not in a year but in under six months.[61] The exact time frame will likely depend on Iran's progress on two factors: weaponization and the production of weapons-grade fuel.

Weaponization

Throughout 2024, current and former Iranian officials, including the former head of Iran's Atomic Energy Organization, Ali Akbar Salehi, openly claimed that Tehran possesses — in a disassembled fashion — all the components it requires to build nuclear weapons.[62] This statement elicited condemnation by the IAEA's director general, Rafael Grossi, who demanded Tehran explain the assertion.[63]

Around March 2024, U.S. and Israeli intelligence reportedly detected Iranian scientists at civilian institutes conducting computer simulations and metallurgy work that could assist the building of atomic devices.[64] While the scientists may have been acting without official direction, a subsequent July 2024 ODNI estimate to Congress stated that Tehran has "undertaken activities that better position it to produce a nuclear device, if it chooses to do so."[65] In light of the repeated ODNI assessments since 2019 denying such activities had taken place, the July 2024 estimate appeared to mark at least greater uncertainty — if not a major shift — in the views of the U.S. intelligence community.

Members of Congress who reviewed the classified version of ODNI's July 2024 report expressed alarm. For example, Rep. Mike Turner (R-OH), then chairman of the House Permanent Select Committee on Intelligence, warned that Iran "could declare itself a nuclear weapon state by the end of the year."[66] Sen. Lindsay Graham (R-SC), the sponsor of the law requiring ODNI's report, called the estimate "stunning."[67] It is unclear whether the classified version of the ODNI report described additional Iranian weaponization efforts beyond those described in media reports.

Despite the sudden reversal of the ODNI assessment, the U.S. intelligence community still claims to possess deep insight and penetration of the Iranian nuclear program to detect weaponization work. A spokesman for ODNI told *The Wall Street Journal* in August 2024, for example, that "the U.S. intelligence community is well-positioned to detect active work by Iran to build a nuclear weapon."[68]

61. David Albright, "How Quickly Could Iran Make Nuclear Weapons Today?" *Institute for Science and International Security,* January 8, 2024. (https://isis-online.org/isis-reports/detail/how-quickly-could-iran-make-nuclear-weapons-today/8)

62. "Iran Signals It Is Closer to Building Nuclear Weapons," *Iran International,* February 12, 2024. (https://www.iranintl.com/en/202402123916)

63. Jon Gambrell, "The Head of UN's Nuclear Watchdog Warns Iran is 'Not Entirely Transparent' on its Atomic Program," *Associated Press,* February 13, 2024. (https://apnews.com/article/iran-nuclear-program-iaea-gross-israel-hamas-gaza-war-ee164aefb63a533548a54179c952b5e1)

64. Barak Ravid, "Scoop: U.S. Privately Warned Iran Over Suspicious Nuclear Activities," *Axios,* July 17, 2024. (https://www.axios.com/2024/07/17/iran-nuclear-program-research-warning)

65. Office of the Director of National Intelligence, "Iran's Nuclear Weapons Capability and Terrorism Monitoring Act of 2022," July 2024. (https://www.dni.gov/files/ODNI/documents/assessments/ODNI-Unclassified-Irans-Nuclear-Weapons-Capability-and-Terrorism-Monitoring-Act-of-2022-202407.pdf)

66. "Iran Could Declare Itself a Nuclear Weapon State by Year's End, Top U.S. Lawmaker Says," *Foundation for Defense of Democracies,* August 20, 2024. (https://www.fdd.org/analysis/2024/08/20/iran-could-declare-itself-nuclear-weapons-state-by-years-end-top-u-s-lawmaker-says)

67. Stephen Sorace, "Graham Warns Iran Could 'Sprint to a Nuclear Weapon' Before Election, Blames Biden 'Failure,'" *Fox News,* July 28, 2024. (https://www.foxnews.com/politics/graham-warns-iran-could-sprint-nuclear-weapon-before-election-blames-biden-failure)

68. An ODNI spokeswoman also said, "Iran doesn't have an active military nuclear program." See: Laurence Norman and Michael R. Gordon, "Iran Is Better Positioned to Launch Nuclear-Weapons Program, New U.S. Intelligence Assessment Says," *The Wall Street Journal,* August 9, 2024. (https://www.wsj.com/world/middle-east/iran-is-better-positioned-to-launch-nuclear-weapons-program-new-u-s-intelligence-assessment-says-e39b6c78)

In September 2024, the Institute for Science and International Security issued a report on weaponization based on 157 open-source, English-language academic articles by Iranian scholars. It found, via civilian research institutes and universities, that Tehran "has advanced its nuclear weaponization efforts in a decentralized manner with academic covers. By this means, the regime is acquiring additional knowledge and capabilities in regard to 'designing and developing' nuclear weapons."[69] The institute also published separate satellite imagery showing that there has been suspicious unexplained activity since 2023 at two former Amad Plan sites where Iranian weaponization efforts may have taken place. The IAEA has not inspected either site.[70]

In October 2024, during a counterstrike against Iran, Israel eliminated a former and possibly current weaponization site within Parchin called Taleghan 2. According to U.S. and Israeli officials, Iran was conducting renewed experiments at the site related to high explosives used to trigger a nuclear detonation, and the Israeli strike destroyed key equipment.[71] It remains unclear whether Israel targeted that equipment or a different activity taking place at the site. Yet according to an unnamed U.S. official, Iran had "conducted scientific activity that could lay the ground for the production of a nuclear weapon. It was a top secret thing. A small part of the Iranian government knew about this, but most of the Iranian government didn't."[72] Such activities could warrant further updates to ODNI's assessments, if they have not already been included.

David Albright has assessed since 2021 that Iran may be able to make weapons-grade uranium, complete the weaponization process, and explode a crude nuclear device in a demonstration test within six months.[73] In a rush, Iran may even use its stockpile of enough 60 percent highly-enriched uranium to fuel roughly five large, heavy bombs, instead of enriching further to weapons-grade uranium for smaller nuclear devices. In addition, Albright suggests that Tehran may opt to complete many of the engineering steps to build the nuclear device during the first four months of that timeline, diverting enriched uranium stocks from IAEA-safeguarded facilities and triggering international alarm only two months before finalizing the construction of nuclear devices.[74]

69. Mark Gorwitz, Mohammadreza Giveh, and David Albright, "Iran's Likely Violations of Section T: Computer Modeling Relevant to Nuclear Weapons Development," *Institute for Science and International Security*, September 10, 2024. (https://isis-online.org/uploads/isis-reports/documents/Section_T_review_September_10_2024_final.pdf)

70. David Albright, Spencer Faragasso, and the Good ISIS Team, "Renewed Activity at the Sanjarian and Goleh Dareb Amad Sites," *Institute for Science and International Security*, September 12, 2024. (https://isis-online.org/uploads/isis-reports/documents/Renewed_Activity_at_the_Sanjarian_Amad_Site_september_12_2024_FINAL.pdf)

71. Barak Ravid, "Scoop: Israel Destroyed Active Nuclear Weapons Research Facility in Iran, Officials Say," *Axios,* November 15, 2024. (https://www.axios.com/2024/11/15/iran-israel-destroyed-active-nuclear-weapons-research-facility); Barak Ravid, "Israel Destroyed Equipment Iran Would Need to Develop Nuclear Weapon, Officials Say," *Axios,* November 15, 2024. (https://www.axios.com/2024/11/15/iran-nuclear-equiptment-destryoed-israel); David Albright, Sarah Burkhard, Spencer Faragasso, and the Good ISIS Team, "Taleghan 2: Pre- and Post-Strike Assessment," *Institute for Science and International Security,* December 12, 2024. (https://isis-online.org/isis-reports/detail/taleghan-2-pre-and-post-strike-assessment); Andrea Stricker, "The Curious Case of Iran's Destroyed Nuclear Site," *Jewish Policy Center's InFOCUS Quarterly*, Winter 2025. (https://www.fdd.org/analysis/op_eds/2024/12/25/the-curious-case-of-irans-destroyed-nuclear-site)

72. Barak Ravid, "Scoop: Israel Destroyed Active Nuclear Weapons Research Facility in Iran, Officials Say," *Axios,* November 15, 2024. (https://www.axios.com/2024/11/15/iran-israel-destroyed-active-nuclear-weapons-research-facility)

73. David Albright with Sarah Burkhard and the Good ISIS Team, *Iran's Perilous Pursuit of Nuclear Weapons* (Washington, DC: Institute for Science and International Security Press, 2021).

74. David Albright and Andrea Stricker, "Going for the Bomb: Part II: Tasks to Make a Crude Nuclear Weapon," *Institute for Science and International Security,* November 7, 2024. (https://isis-online.org/isis-reports/detail/going-for-the-bomb-part-ii-tasks-to-make-a-crude-nuclear-weapon)

Albright notes that most of the steps Iran would have to take to construct an Amad Plan nuclear implosion design weapon have been completed or require limited additional work that Iran can complete quickly.[75]

He assesses that remaining Iranian bomb-construction activities likely include conducting a cold test, which entails the use of surrogate material for weapons-grade uranium to ascertain whether the device will function and explode; building a prototype weapon; constructing a nuclear weapon assembly plant; and building an underground nuclear test site. Iran could use theoretical and simulation work to assist its efforts, he estimates. If Tehran continues key weaponization activities at secret military sites and at civilian research institutes, this further shortens its timeline in a dash to weapons.[76] Iran's dedicated team of nuclear scientists may be actively working on various aspects of the challenge. Moreover, any direct Chinese, Russian, or North Korean assistance to Iran's weaponization efforts could accelerate this timeline.

The regime's ongoing lack of transparency regarding the IAEA's renewed investigation into past nuclear weapons work also raises concern that it fears cooperation with the IAEA will uncover ongoing weaponization efforts. Retaining the archive also rendered Iran in immediate noncompliance with the JCPOA, which required Tehran to never seek nuclear weapons, since keeping the archive materials allowed Iran to retain Amad Plan work. This, in turn, suggests Iran may not comply with any nuclear agreement that fails to require an in-depth IAEA investigation of its past — and possibly ongoing — nuclear weapons work.

Fuel Production

As discussed, Iran currently possesses enough enriched uranium to provide weapons-grade uranium for up to 16 nuclear bombs within five months. As of November 2024, Tehran's three IAEA-safeguarded enrichment plants were equipped with nearly 12,000 advanced-generation centrifuges, as well as more than 7,200 early-generation models. The advanced centrifuges enable the regime to enrich uranium far more quickly than it could prior to the JCPOA, when estimates indicated it had around 1,200 advanced centrifuges.[77] In response to the June 2024 IAEA board censure of Iran, the regime tripled its enrichment capacity at Fordow. In December 2024, in response to the November IAEA censure, Iran also boosted the output of 60 percent enriched uranium at the site so that it could produce enough material for around one bomb per month, rather than every few months.[78] Moreover, Iran's modifications of the centrifuge cascades at Fordow enable the regime to quickly produce uranium enriched to weapons grade.[79]

75. "Nuclear Weapons Primer," *Wisconsin Project on Nuclear Arms Control*, accessed January 7, 2025. (https://www.wisconsinproject.org/nuclear-weapons); David Albright and Andrea Stricker, "Going for the Bomb: Part II: Tasks to Make a Crude Nuclear Weapon," *Institute for Science and International Security,* November 7, 2024. (https://isis-online.org/isis-reports/detail/going-for-the-bomb-part-ii-tasks-to-make-a-crude-nuclear-weapon)

76. David Albright and Andrea Stricker, "Going for the Bomb: Part II: Tasks to Make a Crude Nuclear Weapon," *Institute for Science and International Security,* November 7, 2024. (https://isis-online.org/isis-reports/detail/going-for-the-bomb-part-ii-tasks-to-make-a-crude-nuclear-weapon)

77. David Albright, Sarah Burkhard, and Spencer Faragasso, "Analysis of IAEA Iran Monitoring and Verification Report — November 2024," *Institute for Science and International Security,* November 21, 2024. (https://isis-online.org/uploads/isis-reports/documents/Analysis_of_November_2024_IAEA_Iran_Verification_Report_Nov_21_2024.pdf)

78. Joby Warrick, "Iran Signals a Major Boost in Nuclear Program at Key Site," *The Washington Post*, June 19, 2024. (https://www.washingtonpost.com/national-security/2024/06/19/iran-nuclear-enrichment-fordow); Alexander Cornwell, Francois Murphy, and John Irish, "Exclusive: Iran Dramatically Accelerating Uranium Enrichment to Near Bomb Grade, IAEA Says," *Reuters,* December 6, 2024. (https://www.reuters.com/world/middle-east/iran-dramatically-increasing-enrichment-near-bomb-grade-iaea-chief-2024-12-06)

79. David Albright and Sarah Burkhard, "IAEA's December 6th Update on Iran," *Institute for Science and International Security*, December 10, 2024. (https://isis-online.org/isis-reports/detail/iaeas-december-6th-update-on-iran)

If Iran wanted to use Fordow — rather than a secret enrichment plant — to enrich material to weapons grade, it could simply prevent IAEA inspectors from entering Fordow for several weeks. Tehran could then move the uranium for weaponization to a secret site. Using Fordow for a breakout, rather than a secret enrichment plant, would immediately make the facility a target for bombing.[80] Thus, Tehran may transport its uranium to a deeply buried site unknown to Western intelligence for further enrichment to weapons grade. The regime could also divert uranium from facilities other than Fordow. The IAEA reported in September 2023 that Iran was also stockpiling a significant amount of uranium enriched to 20 percent and 60 percent purity at the Fuel Plate Fabrication Plant located at the Esfahan uranium conversion site and has since stopped reporting on the status of these stocks. That uranium is likely stored in easily moveable containers, enabling relocation to a secret, deeply buried site.[81]

Since Tehran would need only small underground facilities to complete further enrichment to weapons grade and finish weaponization, world powers would require exact intelligence and robust military capabilities to destroy uranium stocks during a diversion or otherwise disrupt a diversion and stop subsequent weaponization. If they failed to do so, an underground nuclear demonstration test would suffice to establish Iran as a nuclear-armed power since an atomic weapon could be delivered via aircraft, truck, or shipping container. According to the nuclear archive, the regime had already identified potential nuclear test site locations in the early 2000s and studied how to carry out such a test.[82] Following a nuclear test, should foreign governments seek to destroy the program's infrastructure, they likely could not know for sure whether Iran had additional nuclear weapons to use in a counterstrike. Even presenting video and photos of completed nuclear weapons may be adequate for Iran to establish deterrence against Western military action.

Missile Delivery

If Tehran seeks the capability to deliver a nuclear payload via missile, the United States and Israel reportedly estimate that the regime would require two years to integrate a warhead onto a missile after the completion of weaponization.[83] In this area, however, Tehran made great strides prior to 2003 and afterward — in particular, by advancing its longer-range missile and related space launch capabilities, the latter of which are critical in boosting development of intercontinental ballistic missiles.[84] Iran may draw on Russia's help. For example, Moscow assisted

80. Most analysts generally do not believe that Iran has built and hidden an entirely parallel uranium fuel production cycle, although the possibility cannot be excluded. Iran is likely relying on safeguarded enriched uranium.

81. IAEA Director General, "Implementation of the NPT Safeguards Agreement and relevant provisions of Security Council resolutions in the Islamic Republic of Iran," GOV/2023/39, September 4, 2023. (https://www.iaea.org/sites/default/files/documents/gov2023-39.pdf)

82. David Albright, Sarah Burkhard, Olli Heinonen, Frank Pabian, and Andrea Stricker, "Project Midan: Building an Underground Nuclear Test Site in Iran," *Institute for Science and International Security,* April 2, 2019. (https://isis-online.org/isis-reports/detail/project-midan-developing-and-building-an-underground-nuclear-test-site-in-i/8)

83. Cora Engelbrecht, "Why Iran's Missile Program Alarms Its Rivals," *The New York Times*, February 1, 2023. (https://www.nytimes.com/2023/02/01/world/middleeast/iran-missile-program-israel.html); Joby Warrick, "Nuclear Deal in Tatters, Iran Edges Closer to a Nuclear Weapons Capability," *The Washington Post,* April 10, 2024. (https://www.washingtonpost.com/national-security/2024/04/10/iran-nuclear-bomb-iaea-fordow)

84. Behnam Ben Taleblu, "Arsenal: Assessing the Islamic Republic of Iran's Ballistic Missile Program," *Foundation for Defense of Democracies,* February 15, 2023. (https://www.fdd.org/analysis/2023/02/15/arsenal-assessing-the-islamic-republic-of-irans-ballistic-missile-program); "From Iran's Nuclear Archive: Schematics of Warhead in a Shahab-3 Re-Entry Vehicle," *Institute for Science and International Security,* May 17, 2019. (https://isis-online.org/isis-reports/detail/from-irans-nuclear-archive-schematics-of-warhead-in-a-shahab-3-re-entry-veh); IAEA Director General, "Implementation of the NPT Safeguards Agreement and relevant provisions of Security Council resolutions in the Islamic Republic of Iran," November 8, 2011. (https://www.iaea.org/sites/default/files/documents/gov2011-65.pdf)

Tehran with space launch vehicles in return for Iran's military assistance to Russia during the Ukraine war. In November 2024, Russia launched satellites into orbit for Tehran.[85]

Russia's assistance could also extend to assisting Tehran in putting a nuclear warhead on a missile. The United States and the United Kingdom voiced concern in September 2024 that Russia may be assisting Iran with nuclear technology.[86] Thus, Tehran may have a shorter timeline to missile-deliverable nuclear weapons than thought.[87]

Policy Recommendations

In addition to its efforts to reimpose maximum U.S. economic pressure and sanctions on Tehran, the Trump administration should immediately muster additional means of leverage to confront the serious threat posed by Iran's unchecked nuclear program.

1. Review and Enhance Joint U.S.-Israeli Intelligence Efforts

The United States and Israel should review and, where necessary, enhance their joint utilization of intelligence-related operations to detect and disrupt Iranian weaponization. Where needed, the two should greatly increase joint efforts to detect weaponization efforts, whether coordinated by the IRGC, the SPND, other Iranian Ministry of Defense entities, or civilian research institutions. Likewise, Washington and Jerusalem should increase collaboration both to identify key Iranian officials and nuclear scientists and to cultivate them as new human intelligence sources. In addition, America and the Jewish state should work together to detect and disrupt any related Russian assistance to Iran.

If appropriate, U.S. and Israeli sabotage — via cyber means, supply chain disruption, or other physical sabotage — can cause damage to Iran's nuclear assets and set back weaponization or other activities. When used strategically, sabotage can also send Tehran a powerful psychological message about the nuclear program's penetration by foreign intelligence and discourage further work by shaping the regime's perception that such weaponization efforts will be detected.

For example, in 2020, Israel allegedly caused an explosion at Iran's Centrifuge Assembly Center. In 2021, alleged Israeli drone attacks damaged small workshops owned by the Iran Centrifuge Technology Company near Karaj. Both actions may have impeded Tehran's advanced centrifuge program for many months due to the substantial

85. "Russian Rocket Launches Iranian Satellites into Orbit as Moscow and Tehran Expand Ties," *Associated Press,* November 5, 2024. (https://apnews.com/article/russia-iran-satellites-space-launch-944a6bc87aa2511e38acf58e37c02c28)
86. Patrick Wintour, "Blinken Says Russia Has Received New Ballistic Missiles from Iran," *The Guardian* (UK), September 10, 2024. (https://www.theguardian.com/world/article/2024/sep/10/antony-blinken-russia-ballistic-missiles-iran-ukraine)
87. Joby Warrick, "Nuclear Deal in Tatters, Iran Edges Closer to a Nuclear Weapons Capability," *The Washington Post,* April 10, 2024. (https://www.washingtonpost.com/national-security/2024/04/10/iran-nuclear-bomb-iaea-fordow); David E. Sanger and Farnaz Fassihi, "As Iran Picks a President, a Nuclear Shift: Open Talk About Building the Bomb," *The New York Times*, June 27, 2024. (https://www.nytimes.com/2024/06/27/us/politics/iran-president-nuclear-bomb.html); Behnam Ben Taleblu, "Arsenal: Assessing the Islamic Republic of Iran's Ballistic Missile Program," *Foundation for Defense of Democracies,* February 15, 2023. (https://www.fdd.org/analysis/2023/02/15/arsenal-assessing-the-islamic-republic-of-irans-ballistic-missile-program); "From Iran's Nuclear Archive: Schematics of Warhead in a Shahab-3 Re-Entry Vehicle," *Institute for Science and International Security*, May 17, 2019. (https://isis-online.org/isis-reports/detail/from-irans-nuclear-archive-schematics-of-warhead-in-a-shahab-3-re-entry-veh)

destruction of raw materials and equipment.[88] Similarly, Washington and Jerusalem's reported use of the Stuxnet malware in 2009 and 2010 succeeded in destroying hundreds of Iran's early-generation centrifuges at the Natanz enrichment facility.[89]

If the United States and Israel opted to conduct several successful sabotage operations within the span of a few weeks, the regime could decide to halt ongoing weaponization-related activities — much as the regime did in 2003 when it shelved the Amad Plan.

To ensure operational success and continuity, Congress should fully support and fund such joint intelligence efforts as needed.

2. Mobilize IAEA Inspections

Given the Islamic Republic's proximity to nuclear weapons and the dire implications of a rapid breakout using safeguarded or unknown sites, the United States and other nations should urgently mobilize the IAEA to strengthen inspections for weaponization activities in Iran. In early 2024, U.S. and Israeli intelligence reportedly observed weaponization-tangential work at Iranian research institutions as well as suspicious work leading to Jerusalem's October 2024 elimination of Taleghan 2, but they may be missing additional activities at military sites.

Ideally, the United States and Europe would pass a resolution at a quarterly IAEA Board of Governors meeting, where they wield significant political weight, directing the agency to undertake an in-depth investigation of Iran's past and possibly ongoing weaponization work. In doing so, the IAEA should work to verifiably ensure that those activities are ended and that Tehran is complying with its NPT obligation not to seek nuclear weapons. Absent a board resolution, the IAEA could also initiate its own access requests following U.S. and European encouragement that it pursue such an investigation.

The IAEA should first request inspections of civilian entities involved in alleged weaponization-relevant activities observed by the United States and Israel. Iran may initially deny an IAEA request to inspect for weaponization work, but unified Western pressure and the threat of sanctions have succeeded in changing Iran's stance in previous instances, such as when the IAEA requested access to nuclear archive-related sites in 2019 and 2020.[90] Notably, such an investigation would require full access to all relevant sites discussed in the nuclear archive as well as any others the IAEA may seek to visit, going far beyond the limited sites the IAEA accessed since renewing its investigation in 2018.

88. Andrea Stricker, "Iran Could Face a Summer of Nuclear Sabotage," *Foundation for Defense of Democracies*, July 13, 2020. (https://www.fdd.org/analysis/2020/07/13/iran-could-face-a-summer-of-nuclear-sabotage); Joby Warrick, Souad Mekhennet, and Steve Hendrix, "Signs Increasingly Point to Sabotage in Fiery Explosion at Iranian Nuclear Complex," *The Washington Post,* July 6, 2020. (https://www.washingtonpost.com/national-security/signs-increasingly-point-to-sabotage-in-fiery-explosion-at-iranian-nuclear-complex/2020/07/06/d1035e84-bfce-11ea-b178-bb7b05b94af1_story.html); David Albright, Sarah Burkhard, and Frank Pabian, "Damage to the Iran Centrifuge Assembly Center (ICAC) at Natanz Is Far More Severe and Extensive Than Previously Reported," *Institute for Science and International Security,* July 8, 2020. (https://isis-online.org/isis-reports/detail/damage-to-the-iran-centrifuge-assembly-center-icac-at-natanz); Farnaz Fassihi and Ronen Bergman, "Iran Atomic Agency Says It Thwarted Attack on a Facility," *The New York Times,* June 23, 2021. (https://www.nytimes.com/2021/06/23/world/middleeast/iran-atomic-agency-attack.html)

89. Kim Zetter, "An Unprecedented Look at Stuxnet, the World's First Digital Weapon," *Wired*, November 3, 2014. (https://www.wired.com/2014/11/countdown-to-zero-day-stuxnet)

90. "Iran Blocking Site Access, UN Nuclear Watchdog Says," *BBC* (UK), June 5, 2020. (https://www.bbc.com/news/world-middle-east-52941982); IAEA Director General, "NPT Safeguards Agreement in the Islamic Republic of Iran," GOV/2020/47, September 4, 2020. (https://www.iaea.org/sites/default/files/documents/govinf2020-47.pdf)

If an investigation leads the IAEA to seek access to an Iranian military entity — such as former Amad Plan sites — then significant, unified Western pressure would be required to ensure Iranian compliance with its nuclear obligations.

If needed, the IAEA and the Board of Governors can trigger so-called "special inspections" in Iran, even at military-owned entities. According to standard IAEA safeguards that Iran must adopt, the IAEA can ask to visit any site "if the Agency considers that information made available by the State and information obtained from routine inspections is not adequate for the Agency to fulfil its responsibilities under the Agreement."[91] The agency has conducted special inspections only twice. In 1992, Romania invited the agency to visit its nuclear facilities to rectify IAEA safeguards concerns. In 1993, the IAEA requested a special inspection in North Korea after Pyongyang withdrew from the NPT. However, the North Korean regime refused to grant access.[92]

Iran may try to delay this effort through time-wasting talks with the agency, particularly if it seeks to move or hide evidence of nefarious activities, as it has numerous times in the past.[93] However, the IAEA can request access, interviews, and documentation, as well as take environmental samples for nuclear material, until it has made a determination regarding Iran's conduct. It has successfully ensured the end of nuclear weapons programs in Libya, Iraq, and South Africa.[94] Moreover, IAEA inspections may have a chilling effect on further Iranian weaponization work, allowing time for world powers to revive a campaign of pressure and restore a credible military threat against Iran's nuclear program.

3. Reestablish a Credible Threat of Military Force

To deter the regime in Tehran from breaking out of its nonproliferation commitments at an opportune moment, the United States or Israel should demonstrate its ability to eliminate any detected Iranian weaponization facilities and activities.

The United States, together with Israel, must also continue to prepare and showcase combined military capabilities to target Iranian nuclear sites.[95] In particular, the Trump administration should repeat, expand, and strengthen the Juniper Oak exercises last conducted by U.S. Central Command and the Israel Defense Forces in January 2023. According to the U.S. Department of Defense, these exercises "integrated unmanned aerial vehicles, strategic bombers, jet fighters and precision fires. U.S. and Israeli forces conducted long-range strikes, suppression of enemy

91. International Atomic Energy Agency, "The Structure and Content of Agreements Between the Agency and States Required in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons," INFCIRC/153 (Corrected), June 1972. (https://www.iaea.org/sites/default/files/publications/documents/infcircs/1972/infcirc153.pdf)

92. John Carlson and Russell Leslie, "Special Inspections Revisited," *Paper presented at Institute for Nuclear Materials Management Symposium*, July 2005. (https://www.dfat.gov.au/sites/default/files/inmm2005_special_inspections.pdf); Laura Rockwood, "IAEA Safeguards: Correctness and Completeness of States' Safeguards Declarations," *Nuclear Law: The Global Debate*, Ed. International Atomic Energy Agency (The Hague: Asser Press, 2022), pages 205-222. (https://link.springer.com/chapter/10.1007/978-94-6265-495-2_10)

93. David Albright and Sarah Burkhard, "More Demolition at the Marivan Former Nuclear Weapons Development Site," *Institute for Science and International Security,* March 1, 2022. (https://isis-online.org/isis-reports/detail/more-demolition-at-the-marivan-former-nuclear-weapons-development-site/8); David Albright, Olli Heinonen, Frank Pabian, and Andrea Stricker, "Revealed: Emptying of the Iranian 'Atomic Warehouse' at Turquz Abad," *Institute for Science and International Security,* November 29, 2018. (https://isis-online.org/isis-reports/detail/revealed-emptying-of-the-iranian-atomic-warehouse-at-turquz-abad/8)

94. David Albright with Andrea Stricker, *Revisiting South Africa's Nuclear Weapons Program: Its History, Dismantlement, and Lessons for Today* (Washington, DC: Institute for Science and International Security Press, 2016). (https://isis-online.org/uploads/isis-reports/documents/RevisitingSouthAfricasNuclearWeaponsProgram.pdf)

95. See key recommendations in: Orde Kittrie, Bradley Bowman, and Behnam Ben Taleblu, "Deterring Iran's Dash to the Bomb," *Foundation for Defense of Democracies,* August 29, 2024. (https://www.fdd.org/analysis/2024/08/29/deterring-irans-dash-to-the-bomb)

air defense, electronic attacks, offensive counter and air interdiction, and air operations in the maritime domain."[96] Unofficially, the joint exercises aimed to send a message to Tehran that America and Israel were prepared to use force against Iran's nuclear facilities. They also sought to demonstrate the interoperability and preparedness of the United States and Israeli militaries.[97]

A new Juniper Oak exercise should "replicate, as closely as possible, a combined U.S. and Israeli attack on Iran's nuclear program," according to Bradley Bowman, senior director of FDD's Center on Military and Political Power. "This will prepare American and Israeli forces for an operation they may be forced to conduct in the next year or two, reinforce deterrence, and make Tehran think twice about sprinting to a nuclear weapon."[98] Bowman suggests using American B-2 aircraft in addition to the B-1 and B-52 aircraft used during the last Juniper Oak exercise, as well as American KC-46 refueling aircraft. That would provide Israeli fighter pilots the opportunity to rehearse refueling from the KC-46 in anticipation of Israel receiving its own KC-46 refuelers.[99]

As part of that and other future exercises, the U.S. and Israeli air forces should rehearse attacks against deeply buried nuclear facilities like Fordow. Currently, only the United States possesses the bunker-busting GBU-57 Massive Ordnance Penetrator (MOP) and the B-2 aircraft that carry that munition. Additionally, the stealth capabilities of the B-2 give it a reasonable chance of evading Iranian air and missile defenses in repeat missions over key nuclear sites.[100] Washington should consider providing the MOP to Jerusalem and explore ways to ensure Israel has the means to deliver it effectively.

Past U.S. administrations have wavered in the strength of their stated commitments to use force, which Tehran understands as weakness.[101] Biden and his administration steadily degraded the credibility of an American threat out of a misguided perception that avoiding escalation with adversaries leads them to back down, when the opposite is usually true. After Hamas's massacre of 1,200 Israelis on October 7, 2023, Iran's penchant for risk-taking concurrently increased as Washington failed to respond, did not respond strongly, or attempted to restrain Israeli military reprisals. This included passivity amid numerous direct missile and drone attacks on Israel and hundreds of proxy assaults against the Jewish state, U.S. troops, and maritime shipping.[102]

The United States and Israel should also prepare other, nontraditional military options to damage or render inoperable Iran's nuclear facilities. These include cyber and commando operations and bombs planted ahead of

96. David Vergun, "Largest U.S.-Israeli Exercise in History Concludes," *DoD News*, January 26, 2023. (https://www.defense.gov/News/News-Stories/Article/Article/3279772)

97. See: Bradley Bowman with Lt. Gen. Gregory Guillot, U.S. Central Command Deputy Commander, "Junipers, Oaks, and Killer Tomatoes," *Foreign Podicy*, February 6, 2023. (https://www.fdd.org/podcasts/2023/02/06/junipers-oaks-and-killer-tomatoes); Bradley Bowman and Ryan Brobst, "With an Eye on Adversaries, the U.S. and Israel Conduct Major Military Exercises," *Foundation for Defense of Democracies*, January 24, 2023. (https://www.fdd.org/analysis/2023/01/24/eye-on-adversaries-us-israel-major-military-exercise)

98. Bowman's comments to the author, January 24, 2025.

99. Bradley Bowman and Enia Krivine, "Israel Has a KC-46 Problem. Here's the Solution," *Defense News,* April 21, 2022. (https://www.defensenews.com/opinion/commentary/2022/04/21/israel-has-a-kc-46-problem-heres-the-solution); Bradley Bowman and Ryan Brobst, "Sen. Cotton Legislation Seeks to Expedite Efforts to Strengthen Israel's National Security," *Foundation for Defense of Democracies,* February 17, 2023. (https://www.fdd.org/analysis/2023/02/17/sen-cotton-legislation-strengthen-israels-security)

100. Anthony Capaccio, "US to Boost Output of Bombs Designed to Hit Underground Nuclear Facilities," *Bloomberg,* May 14, 2024. (https://www.bloomberg.com/news/articles/2024-05-14/us-to-make-more-bunker-buster-bombs-that-can-hit-underground-nuclear-facilities)

101. Orde Kittrie, Bradley Bowman, and Behnam Ben Taleblu, "Deterring Iran's Dash to the Bomb," *Foundation for Defense of Democracies,* August 29, 2024. (https://www.fdd.org/analysis/2024/08/29/deterring-irans-dash-to-the-bomb)

102. Bradley Bowman and Cameron McMillan, "The Consequences of U.S. Weakness in Iraq and Syria," *Foundation for Defense of Democracies' Long War Journal,* April 10, 2024. (https://www.fdd.org/analysis/2024/04/10/the-consequences-of-us-weakness-in-iraq-and-syria)

time inside nuclear facilities, for use in advance of or during an attempted Iranian breakout. In September 2024, Israel succeeded in destroying an Iranian missile facility in Syria using these methods.[103]

4. Resist Nuclear Negotiations That Allow Iran to Delay Consequences or Result in a Deal That Permits Tehran to Evade Meaningful Constraints

With Trump in office and new intelligence about Iran's weaponization activities now public, Khamenei may try to evade renewed pressure by enticing Europe, and then Washington — through futile negotiations — to delay imposing consequences. Iran may even seek to conclude a weak nuclear deal that would at best delay rather than end the atomic threat. Iran has successfully used the tactic of negotiations to prolong the nuclear crisis for more than two decades, most recently stringing Biden along while pocketing concessions. Providing sanctions relief to Tehran simply to negotiate, or to implement only limited nuclear constraints, would mean that the regime can use its nuclear activities for future extortion or renege on its commitments later.

Trump should seek such a deal and contemplate associated sanctions relief only if, at the outset of negotiations, Iran agrees to an accord that both verifiably dismantles its uranium enrichment capabilities and all other pathways to nuclear weapons such as plutonium production and reprocessing and allows full, unrestricted IAEA access to any regime sites, including military sites, that might be engaging in weaponization work. Iran must verifiably eliminate all weaponization work, records, and information, and reorient scientists to new activities. In addition, the administration must restore UN sanctions against the regime, including prior nuclear, missile, and military trade restrictions before their expiry in October 2025.

The Trump administration must not repeat the flaws of the 2015 JCPOA, whose terms were to fully expire, or "sunset," in 2031, allowing Tehran to emerge with an internationally approved, industrial-sized nuclear weapons breakout capability that could render the regime unstoppable if it chose to serially produce nuclear weapons.[104] Iran would simply use a similar deal to evade pressure, wait out the Trump administration's term in office, and retain key nuclear program assets for a later date.

Conclusion

Four years of failed Biden administration Iran policy enabled Tehran to move far closer to a nuclear weapons capability while reaping the benefits of weak U.S. enforcement of sanctions. Iran is positioning itself to take the final steps necessary to acquire nuclear arms. Western policy must detect, deter, penalize, and disrupt Tehran's activities, or the regime will exit its nonproliferation obligations, facing few technical obstacles when it decides to construct nuclear weapons.

Trump's presidency presents a new and historic chance to act. Washington and its partners must proceed urgently rather than leave the threat to future generations — including Iranians, Israelis, and the entire Middle East — who would face the full brunt of a nuclear-armed Tehran at home and in their own backyards.

103. Barak Ravid, "Israel Destroyed Reported Iranian Underground Missile Factory in Syria Ground Raid," *Axios,* September 12, 2024. (https://www.axios.com/2024/09/12/israel-syria-raid)

104. Behnam Ben Taleblu and Andrea Stricker, "Key Sunsets Under the JCPOA and UNSC Resolution 2231," *Foundation for Defense of Democracies,* February 24, 2021. (https://www.fdd.org/analysis/2021/02/19/key-sunsets-under-the-jcpoa-and-unsc-resolution-2231)

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