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How quickly could Iran make nuclear weapons today?

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Iran's growing nuclear weapons capability is often condemned, most recently in a December 28th joint statement by the United States and its close European allies.[1] The occasion was the Iranian action to expand its output of 60 percent enriched uranium. This level of enrichment is a hair's breadth from 90 percent enriched or weapon-grade uranium, the enrichment level most desired for making nuclear weapons. That is also the enrichment level used in Iran's nuclear weapons designs, which it nearly perfected during its crash nuclear weapons program in the early 2000s, codenamed the Amad Plan. This program was shut down in 2003 and replaced with a smaller, more dispersed nuclear weapons effort, with the decision to make them postponed.[2]

The unfortunate reality is that Iran already knows how to build nuclear weapons, although there are some unfinished tasks related to the actual construction of them. If the regime's leadership decided to build them, how would it proceed? How long would it take?

The long pole in the tent of building nuclear weapons is essentially complete. Iran can quickly make enough weapon-grade uranium for many nuclear weapons, something it could not do in 2003. Today, it would need only about a week to produce enough for its first nuclear weapon.[3] It could have enough weapon-grade uranium for six weapons in one month, and after five months of producing weapon-grade uranium, it could have enough for twelve.

The other major poles in the tent are "nuclear weaponization" and delivery. Iran has a variety of delivery systems, including nuclear-capable missiles: the delivery pole is ready.

Weaponization is the pole that needs more work. It involves theoretical calculations and simulations; development, testing, and construction of the other components of the nuclear weapon; the conversion of weapon-grade uranium into metallic components; the integration of

[1] https://www.state.gov/joint-statement-on-the-latest-iranian-nuclear-steps-reported-by-the-iaea/s.
[2] David Albright with Sarah Burkhard and the Good ISIS Team, *Iran's Perilous Pursuit of Nuclear Weapons* (Washington, D.C.: Institute for Science and International Security Press, 2021).
[3] David Albright, Sarah Burkhard, Spencer Faragasso, and Andrea Stricker, "Analysis of IAEA Iran Verification and Monitoring Report — November 2023," *Institute for Science and International Security*, November 20, 2023, https://isis-online.org/isis-reports/detail/analysis-of-iaea-iran-verification-and-monitoring-report-november-2023/8.

all the components into a nuclear weapon; and the preparation for mounting the weapons on aircraft or missiles or for use in a full-scale underground test. This pole includes the mastery of the high explosive triggering system, the molding and machining of high explosives, and the building of a neutron initiator that starts the chain reaction at just the right moment to create a nuclear explosion.

Iran has multiple pathways to complete its weaponization requirements and build nuclear weapons. The two most prominent pathways are (1) launching an accelerated effort to achieve a few crude nuclear weapons or reconstituting, or (2) completing its earlier Amad nuclear weapons program with the ability to serially produce annually many warheads suitable for delivery by ballistic missiles.

The second path has some notable challenges. It would require Iran maintaining secrecy for an extended period, a few years by most assessments, while rebuilding a range of production-scale facilities able to serially produce warheads for ballistic missiles. This presents a risk for Iran since early discovery could result in a harsh international reaction and plenty of time for Israel, the United States, and its allies to organize a united reaction.

The accelerated program can be accomplished in a matter of six months and would involve activities conducted in far smaller, more disguisable facilities. This path is a more assured way for Iran to establish itself as a nuclear weapons power while leaving little time for the international community to react. It is also the path followed by other programs such as Pakistan's successful effort in the early 1980s and Iraq's in 1990, the latter thwarted by war. After his invasion of Kuwait in 1990, Saddam Hussein ordered a crash, accelerated nuclear weapons program. This program, far less advanced than Iran's, was advancing steadily until the allied bombing campaign in January 1991 ended it, incidentally without the United States and its allies knowing it had done so.

An Iranian accelerated program would not aim to produce warheads for ballistic missiles, a task that could take significantly longer than six months. Nonetheless, a crude nuclear weapon would signal Iran's entry into the nuclear weapons club as the tenth member, either dramatically via an underground nuclear test or stealthily via leaks about its accomplishment. A missile-deliverable warhead would probably be the next goal of Iran's nuclear weapons program. The outside world would be left to ponder how soon it could reach this capability.

While most of the weaponization work has been accomplished for a crude nuclear weapon, such as the high explosive triggering package, an acceptable neutron initiator, and high explosives components, a few significant tasks likely remain.[4] One important step could be a "cold test," a final demonstration test of the complete nuclear device with the weapon-grade uranium in the core replaced by a surrogate material. Iran was preparing to conduct such a test at the end of the Amad Plan in 2003 but may not have conducted it subsequently. Iran may also want to do more development work of its neutron initiator. However, these tasks could be

[4] *Iran's Perilous Pursuit of Nuclear Weapons.*

completed in a matter of several months. Much of the work on weaponization could be conducted in utmost secrecy and would use existing or repurposed military facilities or hidden equipment and materials, possibly located underground.

Iran could also immediately start preparatory work on transforming the weapon-grade uranium into nuclear weapon components in anticipation of later receiving weapon-grade uranium. It accomplished a considerable amount of such work during the Amad Plan, and subsequently at civilian nuclear facilities at Esfahan during the last several years as part of Iran's buildup of its nuclear program, including the production of a small amount of 20 percent enriched uranium metal, a material that can stand in for weapon-grade uranium.

Western intelligence agencies may not detect the start of Iran's nuclear weaponization effort. Given all the complexities and conflicts in the Middle East today, Western intelligence agencies, including Israel's, are stretched to the limit. The beginning stages of a quiet, low-level effort to build nuclear weapons could slip through unobserved.

What that means is that Iran may have a six-month timeline, but the United States and its allies may have to react to a much shorter one. Because Iran has achieved very short breakout timelines to produce weapon-grade uranium, it could wait until month four of the six-month timeline to divert its enriched uranium from International Atomic Energy Agency (IAEA) safeguards, a step likely to be detected by inspectors, although Iran may delay the diversion's detection by a few weeks by denying inspectors access to the safeguarded sites storing the enriched uranium and containing the centrifuges to be used to take the enriched uranium up to weapon-grade, falsely declaring a fire, an accident, or a security incident. The result is that instead of a six-month warning, Western intelligence agencies may have less than two months to respond.

Given short warning times and few prospects of a nuclear deal, the United States and its allies have little choice other than focusing on a strategy to deter Iran from deciding to build nuclear weapons in the first place. Iran needs to be made fully aware via concrete demonstrations that building nuclear weapons will trigger quick, drastic actions by the international community, including military strikes. U.S. military cooperation with Israel aimed at destroying Iran's nuclear capabilities should be bolstered, ensuring Israel can decisively strike Iran's nuclear sites on short notice if there are signs that Iran is moving to build nuclear weapons, including the ability of delivering a second strike if Iran reconstitutes those activities. The priority should be assisting and building military capabilities with our allies and regional partners in the Middle East, with a U.S. commitment to prevent Iran from acquiring nuclear weapons and deter Iran from retaliation.

Complementing this strategy is bolstering the IAEA in its efforts to ensure that Iran addresses the inspectors' finding that Iran has undeclared nuclear material and activities in violation of its comprehensive safeguards agreement, a key part of the Nuclear Non-Proliferation Treaty. Beyond stonewalling, Iran has no defense against the IAEA's charges. The IAEA should continue pressing Iran to address its evidence that its nuclear program is not peaceful, publicly raising its

alarm, sending a strong signal that Iran's violations are unacceptable, and further isolating Iran internationally.

Accelerating action at the IAEA will also help ensure that the Iran nuclear issue does not slip off the front pages as other pressing security matters dominate. After all, Iran's possession of a nuclear weapon will enormously complicate most of those other issues.

The United States and its allies know how to deter Iran from building nuclear weapons. That effort should accelerate and sharpen as the hope of a revived nuclear deal evaporates and the threat of Iran building nuclear weapons increases.