



## Iranian Breakout Timeline Now at Zero

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Iran has crossed a new, dangerous threshold; Iran's breakout timeline is now at zero. It has enough 60 percent enriched uranium or highly enriched uranium (HEU) to be assured it could fashion a nuclear explosive.<sup>1</sup> If Iran wanted to further enrich its 60 percent HEU up to weapon-grade HEU, or 90 percent, it could do so within a few weeks with only a few of its advanced centrifuge cascades.<sup>2</sup>

In parallel, within a month, it could produce enough weapon-grade uranium for a second nuclear explosive from its existing stock of near 20 percent low enriched uranium. Whether or not Iran enriches its HEU up to 90 percent, it can have enough HEU for two nuclear weapons within one month after starting breakout.

Within 1.5 months after starting breakout, it could accumulate enough for a third nuclear weapon, using its remaining near 20 percent enriched uranium and some of its 4.5 percent enriched uranium. In 2.75 months after starting breakout, it could have a fourth quantity by further enriching 4.5 percent enriched uranium up to 90 percent. At six months, it could have produced a fifth quantity by further enriching both 4.5 percent enriched uranium and natural uranium. The accumulation for a sixth would take several months longer.

When Iran ended its crash nuclear weapons program in 2003, its biggest bottleneck was its lack of weapon-grade uranium, needing at least a few more years to accumulate enough weapon-grade uranium for a nuclear weapon.<sup>3</sup> Under intense international pressure, it decided in 2003 to downsize and better camouflage its nuclear weapons effort, while pushing to establish a

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<sup>1</sup> According to the International Atomic Energy Agency (IAEA), Iran has 43.1 kg of 60 percent enriched uranium (uranium mass) in the form of uranium hexafluoride, slightly more than a significant quantity, which the IAEA defines as the "approximate amount of nuclear material for which the possibility of manufacturing a nuclear explosive cannot be excluded."

<sup>2</sup> For background, see David Albright and Sarah Burkhard, "Entering Dangerous, Uncharted Waters: Iran's 60 Percent Highly Enriched Uranium," April 11, 2022 <https://isis-online.org/isis-reports/detail/entering-uncharted-waters-irans-60-percent-highly-enriched-uranium>. The Institute's breakout calculator is used to estimate a credible, worst-case breakout times, as in previous reports. The methodology is described in earlier Institute reports.

<sup>3</sup> 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)

robust capability to enrich uranium. Today, that decision has borne fruit. While it could only yearn for enough nuclear explosive material for five nuclear weapons in 2003, today it can have enough for those five weapons in six months. With its residual and covert nuclear weaponization capabilities, it could test a nuclear explosive underground or deploy a crude nuclear weapon within several months, certainly within six months, and deploy nuclear weapons on ballistic missiles in a year or two.

As Iran has reached a zero breakout timeline, the International Atomic Energy Agency (IAEA) has issued a harsh judgement that Iran is violating its safeguards agreement under the Nuclear Non-Proliferation Treaty, judged as having undeclared nuclear materials and activities, related to past and possibly on-going nuclear weapons efforts. Iran moreover shows no sign of being willing to rectify these violations or provide assurance to the IAEA its nuclear weapons program has ended. In fact, Iran's answers to the IAEA are not only technically noncredible and lack support, but they are also haughty. Iran's actions have placed the international community in an extremely difficult position. Some argue for reentering a nuclear deal, even one weaker than the 2015 nuclear deal, because it will extend breakout timelines. But we now know that what Iran takes apart, it can put back together quickly. Even if Iran downsized its enrichment program, it could quickly reconstitute its capabilities, as seen by its actions from 2018 to present. A deal is also but a short-term fix — the 2015 accord permits the program's expansion in just a few years. And the IAEA's judgement renders any meaningful verification of such a deal impossible, even dangerous, sure to lead Iran to further violations and others to seek nuclear weapons. It is time to recognize that only the toughest type of pressure, akin to that on Russia today, is going to convince Iran not to build nuclear weapons.