

Iran's Uranium Enrichment Program: June 2022 Update

The information provided by the International Atomic Energy Agency's (IAEA) May 2022 update demonstrates that Iran is continuing to make significant advances toward producing the 90% enriched uranium needed for nuclear weapons.² The key components of Iran's uranium stockpile are its stocks of 60% enriched uranium, 20% enriched uranium and uranium enriched between 3.5% and 5%.

Iran's enrichment effort appears to be virtually unchanged since the IAEA's last enrichment update in March 2022. Iran is producing about 4.4 kilograms per month of 60% enriched uranium at its Pilot Fuel Enrichment Plant (PFEP), producing about 20.4 kilograms per month of 20% enriched uranium at its Fordow Fuel Enrichment Plant (FFEP) and producing about 176 kilograms per month of 3.5%-5% enriched uranium at its Fuel Enrichment Plant (FEP).³ Assuming that this production rate has continued, I estimate that by the end of June, Iran possessed a total stockpile of about 50 kilograms of 60% enriched uranium and about 270 kilograms of 20% enriched uranium.

The situation regarding Iran's stockpile of 3.5% - 5% enriched uranium is more complicated. Though it is producing significant quantities of this enriched uranium at the FEP, it is also using this enriched uranium as feed at the PFEP and FFEP to produce 60% and 20% enriched uranium. As a result, Iran's stockpile of 3.5% - 5% enriched uranium is actually declining by about 80 kilograms per month. By the end of June, I estimate that Iran's stockpile of this enriched uranium has declined to about 935 kilograms.

Iran's stockpile of 60% enriched uranium has grown so large that using just this enriched material alone, Iran can now produce the 20 kilograms of 90% enriched uranium needed to manufacture a nuclear weapon in about one week. In addition, Iran's stockpile of 20% enriched uranium has grown so large that using just this enriched material alone, Iran can now produce the 20 kilograms of 90% enriched uranium needed to manufacture a second nuclear weapon in about one additional week. Using its remaining 20% enriched uranium, plus some of its 3.5-5% enriched uranium stockpile, it would take Iran about an additional two weeks to produce a third weapon's worth of 90% enriched uranium. Therefore, in just one month Iran could produce 60 kilograms of 90% enriched uranium, sufficient for three nuclear weapons.

Using its remaining stockpile of 3.5% - 5% enriched uranium, Iran could produce a fourth weapon's worth of 90% enriched uranium in about one additional month. After it has produced

¹ This paper is the product of the author's personal research and the analysis and views contained in it are solely his responsibility. Though the author is also a part-time adjunct staff member at the RAND Corporation, this paper is not related to any RAND project and therefore RAND should not be mentioned in relation to this paper. I can be reached at GregJones@proliferationmatters.com

² Verification and monitoring in the Islamic Republic of Iran in light of United Nations Security Council resolution 2231 (2015)," GOV/2022/24, International Atomic Energy Agency, May 30, 2022. <https://www.iaea.org/sites/default/files/22/06/gov2022-24.pdf>

³ To account for the fact that months have different numbers of days, I use a uniform month length of 30.44 days.

this 80 kilograms of 90% enriched uranium, Iran will have used up its current stocks of uranium enriched to 3.5% or higher. Any additional production of 90% enriched uranium will require Iran to replenish its stocks of enriched uranium. With its current enrichment capacity, it would require nearly six months for Iran to produce sufficient 3.5% - 5% enriched uranium that could be converted into an additional weapon's worth of 90% enriched uranium. The actual time interval would probably be significantly less as Iran would likely expand its enrichment facilities once it began producing 90% enriched uranium.

Efforts to revive the Iran nuclear deal (Joint Comprehensive Plan of Action--JCPOA) are becoming increasingly pointless as some of its key restrictions will soon start to expire. In January 2024, which is only one and one half years from now, the JCPOA provides that some of the restrictions on Iran's centrifuge manufacturing and testing will be lifted. In January 2026, three and one half years from now, the JCPOA will no longer impose any restrictions on the number or types of centrifuges that Iran is allowed to deploy. Once Iran is operating a large number of advanced centrifuges, the time required for Iran to produce HEU for nuclear weapons would become quite short, as President Obama admitted in 2015.⁴

That is not to say that I expect Iran to divert nuclear material from IAEA safeguards anytime soon. After all, why should it? It can continue to move ever closer to the HEU required for nuclear weapons with the blessing of the IAEA. Iran would only need to divert nuclear material from safeguards when it would want to test or use a nuclear weapon. Recall that the U.S. was unable to certify that Pakistan did not have nuclear weapons in 1990, but it was only in 1998 that Pakistan actually tested a bomb. Similarly, though it could be many years before Iran becomes an overt nuclear power, there appears to be little hope of preventing this eventuality.

⁴ He said "...at that point the breakout times would have shrunk almost down to zero." See: "Transcript: President Obama's Full NPR Interview On Iran Nuclear Deal," April 7, 2015.
<https://www.npr.org/2015/04/07/397933577/transcript-president-obamas-full-npr-interview-on-iran-nuclear-deal>