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Iran's Uranium Enrichment Program: September 2021 Update

The information provided by the International Atomic Energy Agency's September 2021 update demonstrates that Iran is continuing to make significant advances toward producing the 90% enriched uranium needed for nuclear weapons.[2] Given Iran's current centrifuge enrichment capacity and enriched uranium stockpiles, Iran could produce a weapon's worth of 90% enriched uranium (20 kilograms) in just three-and-one-half weeks. It would take an additional 6 weeks to produce a second weapon's worth. If Iran were not to further expand its centrifuge enrichment facilities, then it would take about 5 months after that to produce a third weapon's worth of 90% enriched uranium. However, given Iran's continuing deployment of advanced centrifuges, the actual time required to produce a third weapon's worth will probably be a good deal less. The continuing accumulation by Iran of 20% and 60% enriched uranium will, by the end of November 2021, reduce the time required to produce its first weapon's worth of 90% enriched uranium to just one or two weeks.

On April 11, 2021, there was a major act of sabotage at Iran's main enrichment site at Natanz. About one half of the centrifuges there ceased operating and it was optimistically suggested that these centrifuges had been destroyed. However, by the end of August almost all of these centrifuges had been returned to operation, showing that the damage was not as severe as first supposed. The restoration of operations at Natanz, combined with Iran's continued stockpiling of 20% and 60% enriched uranium, has resulted in the time required for Iran to acquire its first weapon's worth of 90% enriched uranium to drop from the two months I calculated at the end of June 2021 to the three-and-one-half weeks that I calculate today.

Iran has given up any pretense that its enrichment activities are intended to produce the 3% to 5% enriched uranium that would be used to fuel a nuclear power reactor, as it is no longer expanding its stockpile of this material. Rather Iran's production of 3% to 5% enriched uranium is being counterbalanced by its consumption to produce 20% and 60% enriched uranium.

As I have written previously, there appears to be no satisfactory way to prevent Iran from acquiring the 90% enriched uranium required to produce nuclear weapons.[3] Iran appears to be determined to join the ranks of the nuclear weapon states.

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[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/2021/39, International Atomic Energy Agency, September 7, 2021. https://www.iaea.org/sites/default/files/21/09/gov2021-39.pdf

[3] Gregory S. Jones, "Iran's Uranium Enrichment Program: June 2021 Update," July 8, 2021. https://nebula.wsimg.com/a4d47d173c6d3280f919d00997eaccb4?AccessKeyId=40C80D0B51471CD86975&disposition=0&alloworigin=1