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Explosion at Iranian Nuclear Plant Buys U.S. Time and Leverage

*Blaise Misztal - Vice President for Policy
Jonathan Ruhe - Director of Foreign Policy
Ari Cicurel - Senior Policy Analyst*

On April 11, what appears to be an explosion at Iran's main Natanz nuclear facility, widely suspected to be the result of Israeli sabotage, set back recent advances in Tehran's ability to enrich uranium quickly and on a large scale – and with it, to pressure Washington to return to the JCPOA. The Biden Administration should embrace the additional leverage and time bought by this action to pursue a more effective strategy for preventing a nuclear Iran, including by publicly endorsing Israel's freedom of action and working with it to develop further credible military options against Tehran's nuclear aggression.

What Happened?

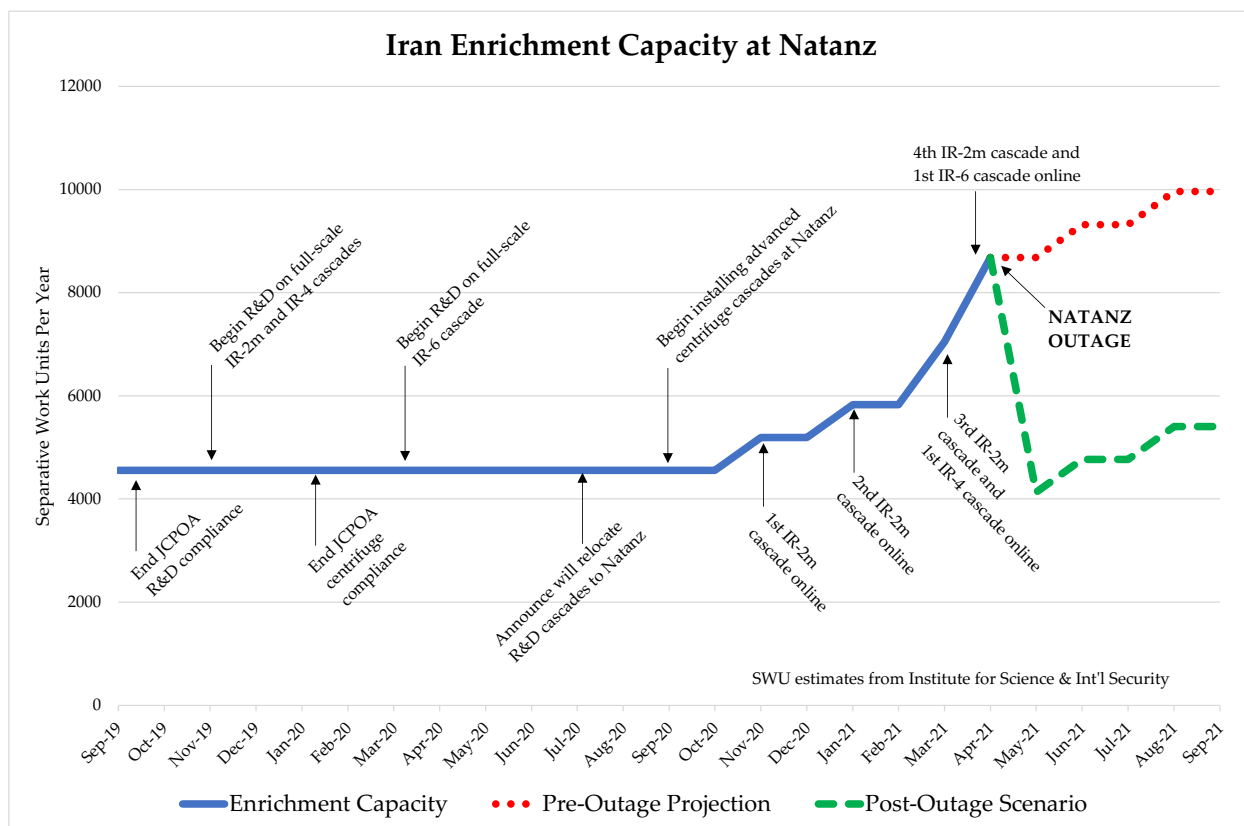
- On Saturday, April 10, Iran's National Nuclear Technology Day, Tehran [announced](#) it would begin enriching uranium with a new, more efficient type of centrifuge, as well as conduct R&D on even more advanced centrifuges.
- The next day, Iran's primary uranium enrichment facility at Natanz suffered a major [power failure](#) that appears to have been caused by an explosion.
 - Despite official Iranian claims that the facility suffered only a fire and a "possible minor explosion," other reports suggest much greater damage, including an [explosion](#) that "completely destroyed the independent — and heavily protected — internal power system that supplies the underground centrifuges that enrich uranium."
 - By some [accounts](#), the damage extended beyond the power system to include structural damage. An Iranian official visiting the site reportedly "fell 7 meters (23 feet) through an open ventilation shaft covered by aluminum debris, breaking both his legs and hurting his head."

- The Biden Administration has said it was not [involved](#), and Iranian officials have blamed Israel for the attack and [vowed retribution](#).
 - Although Israel has officially remained silent about the incident, [Israeli media](#) have unusually cited unnamed intelligence sources who claim Mossad was behind the attack.
 - It is not [clear](#) how the explosion might have been caused. Some Israeli commentators have suggested a [cyberattack](#), while Iranian sources claim that, because Natanz is not connected to outside networks, a [physical](#) attack had to be involved.
 - Sunday's events appear to be part of an intensifying shadow war between Israel and Iran over the last nine months, including previous Israeli [operations](#) against Iran's nuclear [program](#), Iranian proxies and facilities in [Syria](#), and Iranian [ships](#).

Why Does it Matter?

- The explosion will slow the pace of Iran's recent breakneck nuclear advances, buying time and leverage for the United States, if it chooses to use it, in its effort to prevent a nuclear Iran.
- Though the extent of the damage remains unclear, according to U.S. intelligence officials it could take Tehran [nine months](#) to restore the lost enrichment output at Natanz.
 - Natanz is the larger of Iran's two known enrichment facilities (the other being the fortified Fordow plant). It consists of two large underground rooms ("production halls") and an aboveground R&D facility.
 - Compared to Fordow's 1,044 IR-1 centrifuges, Natanz houses:
 - 5,060 actively enriching IR-1 in Hall A; and
 - At least 860 actively enriching, advanced centrifuges (IR-2m/-4/-5/-6) in [Hall B](#).
 - If Iranian [claims](#) that its IR-1 centrifuges were impacted are true, that would mean the attack targeted Hall A.
 - This could have disrupted the operation of up to 5,060 IR-1 centrifuges. How long it takes for Iran to resume operations depends on the extent and nature of the damage.
 - Hall A represents up to 57 percent of Iran's total current enrichment capacity, roughly 100 kilograms of 3.5 percent enriched uranium produced per month.

- At a minimum the plant's power supply has to be replaced and part of the hall repaired, if reports of structural damage are accurate.
- However, it is possible that the explosion also damaged the centrifuges installed there, either directly or through a power surge that might have affected the delicate machines' electronics and/or mechanics.
- Replacing damaged centrifuges might take longer, though it will depend on what type of centrifuge Iran chooses to install.
- Iran has roughly 11,000 IR-1 centrifuges in [storage](#) that it could relatively quickly put into place. However, Iran has threatened it will [replace](#) any damaged IR-1 centrifuges with more advanced models. This might lead to a longer delay, but ultimately allow Iran to resume enrichment at a much faster rate than before.
- Since September 2019, Iran has sought to build leverage against the United States by significantly expanding its enrichment capacity (see chart below). The new centrifuge advances unveiled on April 10 were the latest such nuclear escalation.
 - Since September 2019 Iran has steadily expanded its R&D on IR-2m, IR-4 and IR-6 centrifuges, including testing each of them with uranium in large-scale, 164-174-machine cascades.
 - On April 10, 2021, Iran announced it would begin R&D on new IR-9 [machines](#), which it claims are 50 times more efficient than the IR-1.
 - Since September 2020, Iran has progressively transferred these cascades and associated infrastructure to Natanz, and installed more IR-2m cascades, for enrichment.
 - Prior to April 10 at Natanz, Iran had 696 actively enriching IR-2m in four cascades, plus 174 actively enriching IR-4 in one cascade, with two additional IR-2m cascades installed but not yet enriching.
 - On [April 10](#), Iran announced it was beginning enrichment with an additional 164 IR-6 machines in one cascade.
 - In cascades, these centrifuges are [estimated](#) to be roughly 4-7 times as efficient as the IR-1, which has always been Iran's enrichment workhorse.



- These nuclear escalations demonstrate how a return to the Joint Comprehensive Plan of Action (JCPOA) would fail to return Iran’s nuclear program to pre-2018 levels or prevent its eventual acquisition of a nuclear capability.
 - Returning to the JCPOA would not reverse Tehran’s invaluable knowledge, gained over the past year-plus, about operating these machines in large-scale cascades.
 - Moreover, returning to the JCPOA would permit Iran to conduct further, and gradually expanding, R&D on advanced centrifuges.
- This latest apparent attack on Natanz came as Biden Administration officials had begun indirect talks with Iran about rejoining the JCPOA, spurred in part by concern that Iran could “break out” (enrich enough fissile material for a nuclear weapon) in as little as three months.
 - Despite criticism of the JCPOA, the Biden Administration appears to consider returning to the deal the best means by which to stop Iran’s nuclear advances.
- Meanwhile, the damage to Natanz demonstrates that, while the JCPOA cannot prevent a nuclear Iran, the tactical application of force can disrupt Tehran’s nuclear escalations and buy time to pursue a more effective strategy for preventing a nuclear Iran.
 - Israel’s concerted campaign of sabotage and covert action, including with U.S. support and involvement, has repeatedly delayed Iran’s nuclear program over the last decade.

- With at least three incidents over the last nine months, Israel's pace of operations – and its ability to operate in Iran – seems to be accelerating.
 - Last July's explosion at an adjacent Natanz facility is estimated to have [delayed](#) Tehran's ability to mass-produce advanced centrifuges by 1-2 years.
 - The November 2020 killing of Iran's chief nuclear scientist might also delay Iranian attempts to research nuclear weapons design.
 - The most recent explosion at the Natanz production hall disrupts Iranian enrichment and could potentially temporarily reduce the number of centrifuges available for enrichment.
- Iran and Israel are locked in a broader shadow war that extends beyond the nuclear program to include attacks in [Syria](#) and [at sea](#).
- Proponents of the JCPOA might argue that this attack makes a U.S. return to the deal, and preemptive concessions to Iran, more urgent. However, the obverse is now certainly true: Washington now has additional time and leverage, reducing the need to for quick U.S. reentry into the flawed JCPOA.
 - Supporters of the deal could argue that, if Iran uses the attack as an excuse to refuse negotiating with the United States, Washington will have to offer greater sanctions relief sooner to entice Tehran back to the table.
 - However, with its nuclear program damaged, its breakout clock paused, and the credible threat of further Israeli action, it is Tehran that should feel pressured to make concessions, not Washington.
- Tehran might attempt to use Israeli action to drive a wedge between Washington and Jerusalem. Indeed, this put the Biden administration in a delicate spot. There is no reason that Israeli action should cause friction between the two partners.
 - It is not clear at this time if Israel provided advance notice to or consulted the Biden administration at any phase of the Natanz operation.
 - Iran will portray the Natanz incident as an Israeli attempt to disrupt Washington's nuclear diplomacy and embarrass American officials.
 - The explosion occurred a week after Washington and Tehran began indirect talks in Vienna, and on the same day that Secretary of Defense Lloyd Austin visited Israel.
 - American officials, if not previously alerted, might be understandably irritated by this timing.
 - However, given the significant time required to plan and execute such an operation, it does not appear that Jerusalem deliberately scheduled the Natanz [attack](#) to coincide with the Vienna talks or Austin's visit, which was announced just five days in advance.

What Can the United States Do Next?

- The Biden administration should utilize the time and leverage provided by the recent string of setbacks to Iran's nuclear program.
 - American officials should continue to refuse to lift any sanctions on Iran before it stops, and reverses, its nuclear escalation.
 - The Biden administration should underscore publicly that diplomacy with Iran does not rule out military or other options, including closer cooperation with Middle East allies, to reverse Tehran's nuclear progress.
 - This time should be used to build a credible U.S. military option against Iran's nuclear program, including by reversing the [drawdown](#) of relevant offensive and defensive assets from the Middle East.
- President Biden should publicly endorse Israel's freedom of action to defend itself against Iranian nuclear threats by all means necessary and offer Israel further military assistance. He should also recognize, even if privately, that such Israel's efforts against Iran serve U.S. interests as well.
- American officials should warn that any violence directly against Israel from Iran or its proxies would lead to the immediate suspension of negotiations.

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