Leaving the JCPOA Behind: Principles for Preventing a Nuclear Iran

JINSA's Gemunder Center Iran Policy Project - September 2020

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Table of Contents

I. Executive Summary

Regardless of the outcome of the 2020 U.S. presidential election, it appears likely the winner will attempt renewed diplomacy with Iran over its nuclear weapons program, either by trying to reenter the Joint Comprehensive Plan of Action (JCPOA) or pursuing a new agreement. As this group has argued extensively, the JCPOA is so fundamentally flawed as to be unacceptable to the United States, thus making any return to it untenable.[1] Strong existing sanctions enforcement, if coupled with credible preparations for military options, just might offer the leverage to enable the United States to negotiate an acceptable agreement remedying the JCPOA's flaws and verifiably ensuring Iran's nuclear program becomes inherently peaceful.

JCPOA's Flaws

Events since the JCPOA was announced in 2015 underscore our initial, and continued, assessment that it suffers from several critical defects that must be directly addressed in any new agreement.

First, despite its name the JCPOA is not comprehensive. It restricts only one of the three elements of nuclear weapons capability, namely fissile material. The agreement did not clarify, let alone block, Tehran's weaponization efforts to build a working nuclear device, and it actually relaxed prohibitions on Iran's further development of delivery vehicles such as ballistic missiles.

Second, even where it did restrict Iran's ability to produce fissile material, the caps are limited and reversible. They also begin to expire, or "sunset," in as little as five years, giving Iran direct paths to nuclear weapons capability and an industrial-scale enrichment program over the next decade-plus.

Third, though transparency is paramount for an agreement with such minimal other restrictions, the JCPOA inhibits inspectors from looking into suspected covert activities. This leaves the world in the dark about Tehran's efforts to build a nuclear weapon.

Fourth, the deal actually legitimizes Iran's nuclear program despite many outstanding concerns about its supposedly peaceful purposes. This will jeopardize future efforts to apply international sanctions on Tehran's illicit nuclear activities, and threatens the global nonproliferation regime more generally.

Finally, the deal provided Iran a windfall of upfront sanctions relief. Its defense spending then rose, as did its expansion and aggression around the Middle East – including against U.S. forces. Tehran will receive more massive payouts as the deal progresses, conditioned only by the calendar and not Iranian behavior, including the imminent end of the U.N. conventional arms embargo on Iran, and the end of a U.N. ballistic missile ban in just a few years. Washington already faces real diplomatic difficulties trying to maintain those embargoes, which undermines pledges by the JCPOA's supporters that such sanctions can easily be "snapped back."

Reflecting many of these JCPOA shortcomings, in May 2018 the Trump Administration announced the United States would leave the deal and reimpose sanctions as the core of a

"maximum pressure" campaign against the Iranian regime. After the remaining parties to the deal failed to offset the pain of renewed and increasingly strong U.S. sanctions, in May 2019 Tehran began highlighting how easily it could reverse the JCPOA's restrictions by ramping back up its enrichment program.

Consequently, today Iran's "breakout" time to produce enough fissile material for a nuclear bomb is roughly four months, compared to 2-3 months before the JCPOA.[2] While the July 2020 explosion at the Natanz centrifuge assembly plant likely delayed the mass expansion of Iran's enrichment program by at least a year, it did not set back this breakout time. As before the agreement, Iran also now possesses enough low enriched uranium (LEU) for more than a bomb's worth of fissile material. Thanks to data from Israel's 2018 seizure of Iranian nuclear archives, Tehran's weaponization activities were far more dedicated than its official declarations ever let on – meaning it possibly could be months, rather than years, from achieving a working nuclear device. Iran also has sought in earnest to improve its nuclear-capable delivery vehicles under the deal.

Principles for An Acceptable Agreement

Given all these flaws, simply returning to the JCPOA is extremely inadvisable. Sitting down at the negotiating table with Iran, however, is not yet an option either. Tehran's stated price for talks, when it says it's willing to do so at all, is upfront removal of robust U.S. sanctions that currently form the bedrock of American leverage. Instead, the United States needs to bolster its leverage, in order to negotiate and enforce an acceptable nuclear agreement that remedies critical JCPOA flaws identified by our previous reports. Tehran has already been busy building counterpressure against the United States, including by expanding its nuclear program and attacking energy targets and U.S. forces in the Middle East. This underscores for Washington the importance of expeditiously developing an even stronger hand for any prospective negotiations.

Based on the key shortcomings we identified in the JCPOA and Iran's resumed progress toward nuclear weapons capability, our group has spelled out six fundamental principles that should inform any new American approach to nuclear diplomacy with Iran. Many of these recommendations reflect unfulfilled conditions identified by Obama Administration officials as necessary baselines for any agreement prior to the conclusion of the JCPOA in July 2015.

1. Negotiate from Strength

The Trump Administration is to be commended for its unprecedentedly robust sanctions enforcement, but these measures need to be bolstered by further pressure to compel Tehran to negotiate in good faith. This added leverage is also critical to deter or deny any attempted nuclear breakout by Tehran, regardless whether talks occur. History shows credible military leverage, which was conspicuously absent in the run-up to the JCPOA, can most reliably force decisive changes in Iranian behavior. Building up such leverage also adds credibility to statements by American officials that they will walk away from negotiations and pursue less diplomatic measures if Iran proves obstinate.

2. Put the “C” in JCPOA

To actually block Iran from achieving a nuclear bomb, an agreement must be comprehensive. That means it must verifiably prohibit any Iranian efforts to build an actual nuclear weapon, the prerequisite for which is a full and verifiable accounting of the possible military dimensions (PMD) of its nuclear program. A new deal also should expand legal prohibitions, such as existed before the JCPOA, on Iran’s development of delivery vehicles, to include not just ballistic but cruise missiles as well. Such an agreement requires a correspondingly comprehensive monitoring and verification regime.

3. No Preset Sunsets

The JCPOA’s restrictions fall away at predetermined points – 10 years, 15 years – rather than at benchmarks based on Tehran proving its nuclear program is peaceful. Given revelations since 2018 about the real extent of Iran’s weaponization activities, sunsets should be conditioned explicitly – if they exist at all – on the International Atomic Energy Agency (IAEA) being able to reach a “broader conclusion” as to the irreversibly peaceful nature of Iran’s program. This will be possible only if a new agreement comprehensively blocks Iran from nuclear weapons capability, as laid out above.

4. Condition Sanctions Relief

A new agreement should condition sanctions relief on sustained Iranian compliance with restrictions on fissile material and delivery vehicles, and on real advancements with inspectors on its PMD portfolio. Likewise, formal termination of U.S. nuclear-related sanctions should be contingent on the IAEA reaching the abovementioned “broader conclusion” as to the irreversibly peaceful nature of Iran’s program. Other U.S. sanctions, including those for Tehran’s regional aggression, human rights abuses and support for terrorism, should remain wholly separate from any nuclear agreement.

5. Make It a Treaty

The JCPOA was rushed into place by the Obama Administration as a political agreement rather than as a formal treaty passed by the U.S. Senate. A new nuclear deal with Iran should be formalized by the United States in a treaty that will outlast the administration under which it was agreed and lend consistency and credibility to U.S. policy on Iran.

6. Lay Down Clear Redlines

With greater leverage at their disposal this time around, American policymakers can and must articulate and enforce redlines as Iran builds further counterpressure. Of possible steps Tehran could take, several merit clear upfront warnings from the United States:

- No enrichment of 20 percent LEU.
- No new enrichment capacity.
- No reversion to the original design for the heavy water reactor at Arak.
- No interference with inspectors.

Any violations of these redlines must be explicitly tied to threats of military action against Iran's nuclear program. Such warnings will become more credible as U.S. military leverage grows, and will be crucial for deterring or denying further expansions of Iran's nuclear program whether or not the two sides come to the negotiating table.

Indeed, it is possible the United States and Iran will not return to talks, as Supreme Leader Ali Khamenei has repeatedly vowed not to do. In that case, it will be critical that Washington articulate and strictly enforce these redlines. As the Obama Administration and Donald Trump said in 2015, "a bad deal is worse than no deal," but not establishing appropriate redlines and not enforcing them might be the worst result.[3] A peaceful resolution of the dangerous threat of a nuclear-capable Iran is the ideal, but the most important thing is to prevent Iran's acquisition of nuclear weapons capability.

II. Fundamental JCPOA Flaws

The Joint Comprehensive Plan of Action (JCPOA) was officially announced in July 2015, with formal implementation in January 2016. An interim agreement called the Joint Plan of Action was implemented in January 2014. Since the announcement of the latter in November 2013, our policy project has issued multiple reports assessing the serious flaws in these agreements and their implications for U.S. national security.

A. Not Comprehensive

The JCPOA is not comprehensive, despite its name, as it limits merely one of the three necessary elements for achieving nuclear weapons capability. While placing certain timebound caps on production of fissile material (see below), the deal does not enable an accurate accounting of the possible military dimensions (PMD) of Iran's nuclear program, making it nearly impossible to establish – let alone address – Iran's progress on a working nuclear warhead. Moreover, the agreement actually relaxes restrictions on nuclear delivery vehicles, specifically ballistic missiles, and ignores cruise missiles altogether.

Weaponization

Beginning in 2002, the International Atomic Energy Agency (IAEA) voiced concerns about possible undisclosed Iranian weaponization activities "related to the development of a nuclear payload for a missile…." Between then and 2010, the U.N. Security Council adopted six mandatory resolutions affirming Tehran's obligation to address these issues and sanctioning the regime for not cooperating. In 2011 the IAEA publicly issued an extensive list detailing "serious concerns regarding possible military dimensions," which until resolved would make it impossible for inspectors to confirm the peaceful nature of Tehran's nuclear program.[4]

This 2011 report formed the basis for an Iran-IAEA "roadmap," agreed as part of the talks resulting in the JCPOA, that would supposedly address inspectors' outstanding concerns prior to the deal's start in January 2016. However, in so doing, the JCPOA effectively prejudged the process by requiring the interested parties to lean on the IAEA to approach the problem "with a view to closing the issue" at a predetermined deadline.[5]

In effect, this simply swept the issue under the rug as a prerequisite for implementing the nuclear deal itself, despite several glaring flaws in the process. This included evidence of cover-up activities, and inspectors discovering undeclared man-made uranium particles at the Parchin facility where the IAEA suspects weaponization work occurred – despite Tehran unprecedentedly being allowed to self-inspect the facility.[6] Even the IAEA's December 2015 report officially closing Iran's PMD file noted the agency could not resolve certain outstanding issues, and it cast doubt on the accuracy of some information provided by Tehran.[7]

Fundamentally, this cursory process obscured Iran's past, current and even future work on how to mate fissile material with a delivery vehicle, and with it any accurate assessment of Tehran's true progress toward nuclear weapons capability. Furthermore, by perfunctorily declaring Iran's nuclear program peaceful, it implicitly blessed Tehran's self-proclaimed "right" to enrich (see below). It also enabled and justified the JCPOA's removal, no later than October 2025, of the basis for any future U.N. sanctions like those passed under six U.N. Security Council resolutions (UNSCR) from 2006-10 in response to Iran's stonewalling of the IAEA. Indeed,

UNSCR 2231 which instantiated the JCPOA explicitly affirmed that the nuclear deal "marks a fundamental shift" in the Council's consideration of Iran's nuclear program.[8]

Israel's covert seizure of Iranian nuclear archives in 2018 put paid to the JCPOA's shortchanging of the PMD issue. These files detail how Iran's weaponization efforts were more extensive than the IAEA originally suspected, and certainly far more extensive than Tehran ever admitted during the 2015 closing of the PMD file.[9]

Delivery Vehicles

Unlike the other two elements of nuclear weapons capability, Iran already was known to possess certain nuclear-capable ballistic and cruise missiles, yet the JCPOA weakened existing restrictions in this regard. Specifically, UNSCR 2231 removed the legally-binding U.N. Security Council ban on any Iranian activity related to nuclear-capable ballistic missiles, including test launches, and replaced it with language merely "calling upon" Iran to refrain from such activities. Moreover, even this softer invocation ends no later than October 2023, after which Tehran will face zero external restrictions on its ballistic missile programs.[10] Neither UNSCR 2231 nor the JCPOA make any mention of Iran's small but potent arsenal of nuclear-capable cruise missiles.[11]

B. Weak Restrictions on Fissile Material

The JCPOA applied limited, temporary and reversible caps on Iran's uranium and plutonium pathways to fissile material. As they expire, these restrictions will provide Iran two direct routes to nuclear weapons capability over the next decade-plus.

Uranium

Because Tehran's progress on the uranium path to a bomb historically has been more advanced than the plutonium path, the JCPOA concentrated most intently on increasing Iran's "breakout" window, or the amount of time to produce one nuclear weapon's worth of 90 percent high enriched uranium (HEU).[12] Breakout time is a function of several factors, including uranium enrichment levels and stockpile, as well as centrifuge capacity, and the JCPOA placed ceilings on each.

Notably, it cut Iran's low enriched uranium (LEU) stockpile – the biggest single factor in breakout time – by 97 percent, reducing it to a fraction of the LEU needed to produce a single bomb's worth of HEU. It also prohibited enriching LEU above 3.67 percent, given that the additional time and effort required to enrich uranium to higher purity decreases more rapidly as enrichment level increases.[13] Iran's operational centrifuge fleet was cut roughly in half, and it was allowed to enrich using only inefficient first-generation IR-1 machines. The deal also halted enrichment at the formerly covert Fordow facility, whose small size and construction deep underground suggest it is better suited for a nuclear weapons program than fueling nuclear power reactors.[14] However, the JCPOA placed no physical obstacles or other barriers to prevent Iran reversing these commitments at will.

The agreement also permitted Iran to expand a key element of the uranium path, namely its natural (unenriched) uranium stockpile. This provides feedstock for enrichment, and to a certain extent can also affect breakout time.[15] Prior to the deal Iran had enough natural uranium ultimately to produce multiple bombs' worth of HEU and reduce breakout time. Not only did the JCPOA place no limits on this, but it encouraged Iran to grow the stockpile by exchanging

excess LEU for natural uranium from abroad. It also allowed Tehran to expand its capacity to produce this feedstock, and to produce new centrifuges.

Taken altogether, these provisions rolled back Iran's estimated breakout time from roughly 2-3 months pre-deal – likely near an undetectable "sneakout" capability – to at least 12 months at the JCPOA's outset.[16] Nevertheless, these caps are temporary, despite being billed as the "final deal" by its proponents. The JCPOA terminates, or sunsets, all enrichment restrictions during March 2024-October 2030. This will steadily shrink Tehran's breakout time toward zero, as even President Barack Obama admitted, and enable it to ramp up to an industrial-scale uranium enrichment program capable of producing multiple bombs' worth of HEU annually.[17]

Plutonium

Unlike with uranium, before the deal Iran did not possess all the requisite elements for the plutonium path to a bomb. It produced uranium to fuel a nuclear reactor, and the heavy water to moderate the reactor core, but the reactor at Arak (IR-40) was still under construction; Iran also lacked any known facility to reprocess the spent reactor fuel into plutonium. Had it completed the reactor as originally designed, Iran was estimated to be capable of producing 1-2 bombs' worth of plutonium annually.[18] Therefore, the JCPOA required a rebuild of the reactor core so "as to minimize the production of plutonium and not to produce weapon-grade plutonium in normal operation." It also capped Iran's heavy water stockpile at the level needed to operate the redesigned reactor, and prohibited spent fuel reprocessing.[19]

Like the JCPOA's uranium restrictions, these provisions are limited, temporary and reversible. The reactor core was redesigned, but once complete it would still be moderated by heavy water, making it more efficient at producing plutonium than if it had been converted to a light water reactor (such as Iran already has at Bushehr). Even the redesigned reactor left Iran with some capacity to revert to the original design, and Iran also retained the ability to sell excess heavy water to foreign buyers. At the same time its last meaningful uranium restrictions expire in 2030, Iran will face no limits on reactor construction, heavy water stockpiles or spent fuel reprocessing.

C. Insufficient Inspections

Given the JCPOA's minimal restrictions on fissile material, proponents of the agreement emphasized it would provide unprecedented transparency over Iran's program – including purportedly "anywhere, anytime" access. Iran did agree to a more expansive international safeguards regime under the JCPOA that bolstered surveillance of its overt (or "declared") nuclear activities, all of which relate to its ability to produce uranium and plutonium. However, it was not required to provide unrestricted access or complete information on its suspected undeclared program, most of which concerns its efforts to build an actual nuclear weapon. Rather than provide anywhere, anytime access to suspected undeclared sites, the JCPOA stipulated a dispute resolution process whereby Iran could propose "alternative means" and drag out negotiations for weeks. These provisions enable it to block access altogether, or at least buy time to try to conceal undeclared activities.[20]

This crucial shortcoming was evident from the start, when Iran was allowed to self-inspect its military base at Parchin – where the IAEA believed extensive weaponization work occurred – as part of the peremptory closing of Iran's PMD file before the deal began. After Israel's seizure of Iranian nuclear archives in 2018 provided new evidence of undeclared activities, as per the

JCPOA Tehran nevertheless has continued stonewalling the IAEA on accessing relevant sites, documents and personnel.[21]

D. "Right" to Enrich

Even as it lays out a glide path toward the bomb, the JCPOA also bestows unmerited legitimacy on Iran's nuclear program. Tehran routinely asserts its activities are entirely peaceful, that its Nonproliferation Treaty (NPT) membership grants it a right to enrich and that UNSCRs condemning that purported right are illegal. Though American negotiators openly disputed these arguments in the run-up to the deal, the JCPOA nevertheless provides for the eventual legalization of Iran's nuclear program.

By peremptorily closing Iran's PMD file, inspectors were forced to brush past many of Iran's NPT violations that had triggered multiple rounds of legally-binding UNSC sanctions since 2006. No later than October 2025, and regardless whether Iran submits a verifiably complete declaration of its nuclear activities to the IAEA, UNSCR 2231 removes the basis for all U.N. sanctions and requires the Security Council to "have concluded its consideration of the Iranian nuclear issue, and the item 'non-proliferation' will be removed from the list of matters of which the Council is seized."[22] This also would undermine U.S. and European sanctions, whose legal basis is derived from these U.N. sanctions. Once the JCPOA's major nuclear restrictions expire, Tehran could argue it had proven the peaceful nature of its program by having adhered to the agreement.

Such provisions will jeopardize future efforts to reapply sanctions pressure. The international nonproliferation regime – arguably the single greatest achievement of arms control – and the UNSC's authority to uphold it, also will be undermined if Iran is permitted to become the first of 190 active NPT members to acquire nuclear weapons capability since the treaty began in 1970.

E. Upfront and Unconditional Sanctions Relief

Iran also received two forms of much-needed sanctions relief at the very outset of the deal. From day one the JCPOA suspended all U.S. and European "nuclear-related," or "crippling," sanctions on the Iranian regime's most lucrative economic sectors like energy, finance and shipping. The agreement also unfroze an estimated $115 billion of Iranian foreign exchange assets from abroad, which previously had been subject to these same sanctions.[23] Iran's economy rebounded almost immediately, with GDP growing 16 percent in 2016-17 after contracting roughly seven percent under sanctions from 2012-15; Iran's official defense spending shot up 40 percent between JCPOA implementation and the re-imposition of U.S. sanctions.[24] Correspondingly, Iranian aggression increased around the Middle East, and it plowed ahead in developing new and improved weapons systems.[25]

The JCPOA stipulates additional, significant payouts for Iran in coming months and years that will amplify its destabilizing projection of military power across the Middle East and potentially beyond. While nuclear-related sanctions relief is at least contingent on Tehran's compliance with the JCPOA's fissile material restrictions, the lifting of these other sanctions is conditioned by the calendar, not Iran's behavior.

Specifically, UNSCR 2231 provides for the end of the U.N. conventional arms embargo on Iran no later than next month, and the end of a similar embargo on Iran's ballistic missile program no later than October 2023. By that latter point in time, the United States and Europe are also required to fully terminate – rather than simply continue suspending – all nuclear-related sanctions, thereby removing altogether an effective form of leverage shortly before the first JCPOA sunsets on Iran's enrichment program.

That resolution spells out a complex procedure to "snap back" the previous six UNSCRs, including maintaining both embargoes, in response to "significant non-performance of commitments under the JCPOA" by Iran.[26] As our group noted previously, however, this is far from automatic, despite what the phrase itself suggests and despite President Obama's assurance in 2015 that "if Iran violates the deal, all of these sanctions will snap back into place."[27] The complications attending this process are underscored by the Trump Administration's ongoing efforts to restore the previous UNSCRs before next month's arms embargo expiration. Even though the United States has a solid legal case and can simply veto any resolution to end the embargo, it is clear such efforts are effectively distancing it from the other Security Council members – all of whom are opposed to snapback in their commitments to maintaining the JCPOA.[28]

This provision is proving to be self-isolating, rather than self-executing as the Obama Administration promised. Instead of imposing further costs on Iran, it is doing the opposite by creating diplomatic daylight between the United States and the JCPOA's European participants, while also incentivizing Moscow and Beijing to ignore the U.S. veto in their eagerness to sell advanced weaponry to Tehran.

III. Breaking Out of the Deal

The IAEA verified Iran's basic compliance with the JCPOA from the deal's formal implementation in January 2016 through May 2019, at which point Tehran initiated a series of steps to violate the agreement's fissile material restrictions. Today Iran's breakout time is roughly 3-4 months, though it has made little discernible progress on the plutonium path to a bomb.

A. Maximum Pressure vs. Counterpressure

In May 2018 the Trump Administration said it was leaving the JCPOA and re-imposing U.S. sanctions as the centerpiece of its "maximum pressure" campaign against the Iranian regime. In departing, the president emphasized the need for a truly comprehensive deal that also addressed Iran's regional aggression, ballistic missile program and support for terrorism.[29] For a year thereafter, Tehran pursued a "strategic patience" policy toward the remaining parties to the deal, premised on ultimately unfounded hopes that they could offset the steadily accumulating pain of U.S. sanctions. Instead, vital Iranian oil exports officially fell 90 percent and its currency plummeted.[30]

Thus on the first anniversary of America's departure from the deal, Iran abandoned strategic patience for a more forceful counterpressure policy. Publicly, it began progressively de-complying with the JCPOA, threatening additional steps every 60 days until and unless it could access the global financial system and export its oil.[31] Highlighting the ease of reversibility of key JCPOA restrictions, Tehran said it would calibrate its compliance based on its demands being met. It also began surreptitiously attacking energy infrastructure around the Middle East, and shot down a U.S. drone.[32]

With no sanctions relief forthcoming, Iran serially expanded its nuclear program beyond the JCPOA's strictures – chiefly on the uranium path to a bomb – beginning May 2019:

- *May 8, 2019:* Iran will exceed JCPOA caps on heavy water and uranium stockpiles;
- *July 8:* produce low enriched uranium above the JCPOA cap of 3.67 percent;
- *September 8:* install, and conduct research and development (R&D) on, advanced centrifuges ahead of the JCPOA timeline for such activities;
- *November 8:* resume enrichment at the deeply-buried Fordow facility;
- *January 5, 2020:* as a final step, no longer adhere to the JCPOA's centrifuge capacity caps.

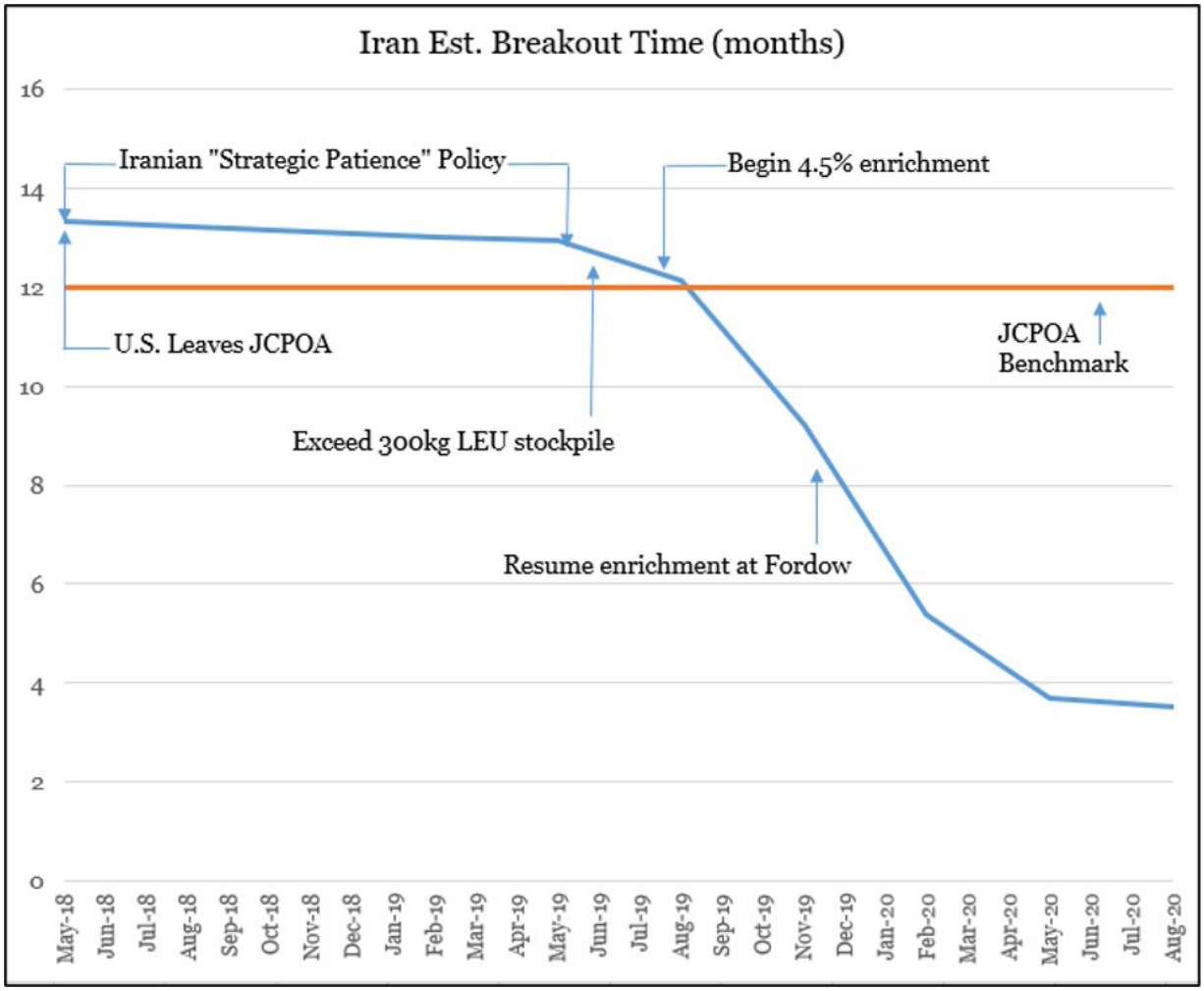
Though not explicitly part of its counterpressure strategy, throughout much of 2020 Iran also refused to address new IAEA concerns or allow inspectors at three suspected undeclared nuclear sites. One of these sites was first revealed by Israel's seizure of Iranian nuclear archives in 2018, and was found by inspectors to contain man-made uranium even though Tehran tried to sanitize the area beforehand.[33] Iran finally agreed in late August to allow IAEA inspectors at two of the sites, though it made clear it also expected no further inquiries into its possible weaponization activities.[34]

Separately, on July 2, 2020, an unexplained explosion severely damaged the Centrifuge Assembly Center at Natanz. The facility, opened two years prior, reportedly was devoted to

mass production of advanced centrifuge models currently prohibited by the JCPOA.[35] Two months later Tehran's nuclear chief announced it had begun building a replacement facility nearby that would be "more modern, [a] larger and more comprehensive hall in all dimensions in the heart of the mountain near Natanz."[36]

B. Iran's Current Nuclear Status

Cumulatively, Iran's nuclear advances on the uranium path since May 2019 have reduced breakout time to an estimated 3-4 months – compared to roughly 2-3 months prior to the JCPOA (see chart). In addition to its sizable unenriched uranium stockpile, it also now possesses enough LEU to produce perhaps two bombs' worth of HEU, compared to approximately 5-10 bombs' worth before the JCPOA.[37] To date, Iran does not appear to have made good on its January 2020 claim that it will no longer adhere to the JCPOA's caps on centrifuge capacity, other than at Fordow. If it did so, either by exceeding the deal's limit for operational IR-1 centrifuges and/or installing and operating its existing fleet of more efficient IR-2m machines, breakout time would decrease further still.[38]



Tehran's breach of the agreement's timeline for advanced centrifuge R&D has not yet impacted its breakout time, as currently it enriches only with rudimentary IR-1 machines. Yet unlike its other JCPOA violations, the valuable know-how it is gaining through R&D on these much more efficient centrifuges is irreversible, and such advances could shrink breakout time precipitously if and when these machines become operational. The recent explosion at the Natanz Centrifuge Assembly Center, while not directly impairing Iran's breakout time or its ability to continue R&D and enrichment, is estimated to have set back by more than a year any plans Tehran had to operationalize these advanced centrifuges en masse.[39] If and when Iran were to deploy advanced centrifuges in large numbers, its breakout time would drop toward zero and it could produce many more bombs' worth of HEU annually than currently.

Meanwhile Iran has not materially advanced its plutonium path to a bomb since May 2019. Its decision to stockpile excess heavy water does not pose an immediate risk, since it has not completed or declared a new reactor in which to use the heavy water.

Iran's exact weaponization progress is harder to determine. Nevertheless, Israel's seizure of Iranian nuclear archives suggests Western intelligence agencies repeatedly underestimated how close Tehran could be to producing a nuclear weapon. Archival analysis also suggests that Iran had the infrastructure for a comprehensive nuclear weapons program, which today could still give it a head start in producing a nuclear weapon, should it choose to do so.[40] Whereas it had been widely estimated for years that Iran would need more than a year to build a working nuclear device, based on new archival information that timeframe could now be as short as several months.[41]

Tehran's nuclear delivery vehicles have not faced any external setbacks since 2015, thanks to UNSCR 2231's softening of restrictions on this score. Only days after the JCPOA officially was adopted, Iran carried out a provocative test of a nuclear-capable medium range ballistic missile with a more precise guidance system.[42] This set the tone for a series of similar tests over several years to improve the range, precision and lethality of its nuclear-capable ballistic missiles.[43] In spring 2020, Tehran launched its first military satellite. This is widely seen as a precursor to developing longer-range intercontinental ballistic missiles (ICBM) capable of reaching the U.S. homeland, given that many capabilities for space launch vehicles – including the use of multiple stages for range and speed, precision guidance and control – are also needed for ICBMs.[44]

IV. Principles for New Agreement

The JCPOA offers myriad lessons for future nuclear diplomacy with Iran, but first and foremost is the simple correlation between U.S. strength and Iranian concessions. Improvements to the existing deal are necessary almost across the board, but none will be possible without first bolstering America's negotiating leverage. Many of the recommendations below reflect statements, though not always actions, from Obama Administration officials about their baselines for an acceptable agreement.

A. Negotiate from Strength

One of the primary takeaways from the JCPOA is how the United States developed only enough pressure to force Iran to trade for significant sanctions relief, without offering a genuine halt to its nuclear ambitions. The Trump Administration is to be commended for its much more robust sanctions enforcement and its correspondingly greater impact on Tehran. Among other things, these measures hurt the regime's ability to fund terrorism and regional aggression; they also exacerbate economic and other domestic problems stemming from the regime's own repression, corruption and mismanagement.

But no matter how effectively enforced, sanctions must be bolstered by added pressures. The regime still is not convinced it needs to come to the table, even as the economic toll has mounted steadily now for two years. Nor can sanctions deter or deny Iran from applying its own counterpressure, as seen in its policy of nuclear and kinetic escalation since May 2019. Tehran also can be expected to build further leverage as a prelude to any talks, as it already is doing through a new strategic cooperation accord with Beijing.[45]

Credible military threats have most reliably forced decisive changes in Iranian behavior, including where sanctions alone could not. Accordingly the United States must pursue a truly "maximum pressure" strategy that complements existing robust economic sanctions with stronger military and diplomatic policies to compel Tehran to agree to an acceptable deal. This includes continued strong sanctions implementation, lest Iran continue to hold out in the hopes of a reprieve after the U.S. presidential election.

<u>Develop Credible Military Leverage</u>
The realistic prospect of military action against Iran's forces and nuclear program should form the foundation of any U.S. negotiating approach toward Iran.

Supreme Leader Ruhollah Khomeini did the unimaginable in 1988 by ending the interminable Iran-Iraq War, but only after a costly military engagement with the United States lent credibility to the prospect of more decisive U.S. action against Tehran. Iran suspended key elements of its enrichment program in 2003, once it thought it was next in American crosshairs after the Taliban and Saddam Hussein. In 2012 it began converting its near-20 percent LEU to a form unsuitable for further enrichment, to avoid exceeding Israeli Prime Minister Benjamin Netanyahu's explicit redline on Tehran possessing enough of this stockpile to produce one nuclear bomb (with further enrichment).[46]

Looking ahead, American officials can strengthen their hand at the negotiating table by making clear they are similarly ready for military options, should diplomacy fail. Preparing for military action as a last resort can also help deter Iranian efforts to expand its nuclear program further.

To this end, the Pentagon should make clear it is updating contingency planning, both to neutralize Iran's nuclear facilities and counter potential retaliation by Iran and/or its proxies in response to Israeli military action. American officials also should prepare contingency plans to defend the United States and its allies from Iranian tests of nuclear-capable ballistic and cruise missiles, including visible demonstrations of U.S. missile defense interceptors and clear threats to shoot down these tests if necessary. Furthermore, Washington should ensure that the rules of engagement for its forces around the Middle East – both onshore and off – permit appropriately forceful self-defense responses to potential escalation by Iran and its proxies, especially as Tehran can be expected to build further counterpressure against the United States.

Even with these measures, prospective U.S.-Iran negotiations would occur in a context of receding American presence in the Middle East. This will necessitate certain steps to ensure regional allies maintain concentric pressure on Iran. The United States should ensure Israel, which has been at the forefront of rolling back Iran's nuclear and regional expansions, has the tools to continue defending both itself and U.S. interests.[47]

At the same time, the United States should harness growing tacit cooperation among its regional allies to present a stronger common diplomatic and military front against Iran. Given Tehran's ongoing advances in precision munitions and its aggressive posture in the Persian Gulf, Washington should work with its regional allies to develop multi-layered theater missile defense, interoperable air and maritime defense and better intelligence-sharing. With the United States expected to sell advanced F-35 combat aircraft to the UAE, American policymakers should implement corresponding measures to upgrade Israel's "qualitative military edge," or QME, over its neighbors (which U.S. law requires the United States uphold). Building on recent diplomatic successes between Israel and Gulf Arab states, the United States also should foster budding ties, mostly *sub rosa*, between Israel and America's Arab partners on regional missile defense, maritime security, intelligence and cyber. Because Iran pinned many of its hopes for relief from U.S. pressure on Europe, the United States should coordinate closely with Britain, France, Germany and the E.U. on diplomacy for a new deal – especially as some of these countries favor a more comprehensive approach to dealing with Iran's nuclear program.

Where possible, all these actions must be underscored by public announcements. The United States also should conduct highly visible joint and international military exercises to make intentions, capabilities and allied unity clear to Tehran. By the same token, American officials must not repeat past mistakes of publicly downplaying the viability of U.S. or Israeli military options.

Be Prepared to Walk Away

Even with these concrete and explicit measures to increase the chances of an acceptable deal, the United States still needs to be prepared to say "no." Any putative nuclear talks with Tehran would occur amid a closing Iranian breakout window of four months or fewer which, while a bigger window than before the JCPOA, still imparts a certain exigence to negotiations. But Washington cannot appear to want a deal more than Tehran does. When confronted with

Iranian obstinacy during JCPOA talks, the United States repeatedly softened its negotiating positions rather than walk away from the table. The deal's many flaws reflect in no small part Tehran's correct perception that the United States acted as though it had more to lose from the failure of diplomacy.

Thus American officials must adhere to the Obama Administration's unfulfilled mantra, also voiced in a 2015 tweet by President Trump, that "no deal is better than a bad deal," especially because they have greater leverage at their disposal this time (including the development of credible military leverage as detailed above). This will raise the possibility of successful diplomacy while also reducing the costs and risks of its potential fallout.[48]

B. Put the "C" in JCPOA

The JCPOA is a misnomer, as it only restricted one of the three elements of nuclear weapons capability. The shortcomings of this approach have been readily evident in Iran's continued development of nuclear-capable delivery vehicles, and by the findings from Israel's seizure of Iranian nuclear archives, which indicate Tehran's weaponization efforts were much more extensive than it admitted to inspectors prior to the deal. To actually block Iran's path to a bomb, any successor agreement must comprehensively address weaponization and delivery vehicles, in addition to fissile material.

Weaponization

Under the nuclear deal, in 2015 the IAEA officially ended its inquiry into the possible military dimensions of Iran's nuclear program, including efforts to produce a nuclear explosive device that would fit in a warhead. As this policy group argued at the time, peremptorily closing this PMD file left the world in the dark about the extent of Tehran's weaponization efforts, despite then Secretary of State Kerry saying that Iran would have to disclose these activities.[49]

Israel's release of Iranian archives in 2018 reinforces concerns about Iran's progress toward a bomb, on top of Tehran's unsatisfactory and incomplete responses when the IAEA was closing the PMD file in 2015. These revelations magnify the importance of having Iran submit, and the IAEA verify, a complete declaration of its nuclear program, past and present, as part of any deal. Additionally, the JCPOA's arbitrary legalization and legitimization of Iran's nuclear program no later than 2025 should be altered, so as to be conditional upon IAEA verification of Iran's complete declaration.

Delivery Vehicles

The JCPOA actually weakened restrictions on Iran's development of nuclear-capable ballistic missiles, even though American negotiators at the time said publicly that shutting down production of these weapons would be part of the agreement.[50] The deal also ignored Iran's nuclear-capable cruise missiles altogether. It even terminates the U.N. embargo on foreign assistance to Iran's ballistic missile program no later than 2023, which could help advance its nuclear delivery vehicles markedly.

Like the UNSCRs of 2006-10 that were wiped out by the JCPOA, American diplomats should ensure any new agreement contains provisions legally prohibiting Iran's development of nuclear delivery vehicles, whether ballistic or cruise missiles or other. These officials should coordinate closely with European partners that have expressed similar demands that any accord with Iran include ballistic missiles.

Inspections

The JCPOA's monitoring and verification regime reflects how the deal effectively bypassed the issues of PMD and delivery vehicles. Inspectors have had direct, and so far regular, access to facilities pertaining to Iran's nuclear fuel cycle, much of which they already enjoyed before the deal. But they lack anything like the "anywhere, anytime" access which is necessary to assess Tehran's proclaimed peaceful nuclear intentions, and which was pledged by American officials in the final months of negotiations in 2015.[51]

Any new agreement must address these shortcomings in the inspection regime, most importantly Iran's ability to delay or deny access to suspected undeclared facilities.

C. No Preset Sunsets

The JCPOA's restrictions fall away at predetermined points throughout the course of the deal. Such timeframes are round numbers – 10 years, 15 years – rather than benchmarks based on Tehran proving its nuclear program is peaceful. This reflects a fundamental, and dangerous, disconnect at the heart of the nuclear deal. It closed the PMD file as a prerequisite of implementing the nuclear restrictions, and it arbitrarily requires the UNSC to drop the issue altogether by 2025. Thus the JCPOA can maintain the fiction that, because Iran's program ostensibly is civilian, it has a "right" to eventual industrial-scale enrichment infrastructure.

Our task force highlighted this problem from the outset of the deal, but it has only become more acute given revelations since 2018 about the real extent of Iran's weaponization activities. Therefore, rather than simply preordaining a given period of time, sunsets should be conditioned explicitly – if they exist at all – on the IAEA being able to reach a "broader conclusion" as to the peaceful nature of Iran's program. This conclusion will be possible only if a new agreement comprehensively blocks Iran from nuclear weapons capability, as laid out above.

D. Condition Sanctions Relief

The JCPOA frontloaded the removal of Iran sanctions, including a massive windfall of unfrozen assets at the outset. This contributed directly to Tehran's rising defense spending and regional aggression since 2015, and proactively undercut U.S. and European leverage under the deal. As soon as next month, the agreement also begins removing U.N. sanctions – including key weapons embargoes – as well as the basis for U.S. and E.U. sanctions at arbitrarily predetermined timeframes.

A comprehensive agreement should condition sanctions relief on sustained Iranian compliance with restrictions on fissile material and delivery vehicles, and on real cooperation with inspectors regarding its PMD portfolio. Likewise, actual termination of U.N., U.S. and E.U. sanctions and embargoes on Iran's nuclear program should be contingent on the IAEA reaching a "broader conclusion" as to the peaceful nature of Iran's program.

E. Make the Agreement a Treaty

The JCPOA was a political agreement, not a formal treaty passed by the U.S. Senate or in any similar form by any other participant. This reflected its lack of clear support among much of the American populace and Congress, and it facilitated the U.S. withdrawal from the deal at the stroke of a pen in 2018.

A new, acceptable nuclear deal with Iran therefore should be formalized by the United States in a treaty that will outlast the administration under which it was agreed. Unlike the JCPOA, a much more durable treaty will lend consistency and credibility to U.S. policy on Iran. Securing this will necessitate concerted efforts to build broad domestic support and bipartisan Congressional consensus, including through a coherent messaging campaign contrasting a comprehensive deal with the JCPOA's shortcomings.

F. Lay Down Clear Redlines

Tehran will not simply accept these more stringent U.S. demands, especially since it has explicitly framed its nuclear violations as responses to U.S. pressure. Very likely it will seek to build additional counterpressure. This reinforces the importance of credible military threats and other effective forms of pressure, not only for compelling Iran to negotiate in earnest but also to deter it from nuclear and regional escalation.

With greater leverage at their disposal this time around, American policymakers can and must articulate more credible redlines as Iran tries to amass its own leverage. Of possible steps Tehran could take, several stand out as meriting clear upfront warnings from the United States.

No 20 Percent Enrichment

All else being equal, significantly more effort and time are required to enrich from Iran's current level of 4.5 percent LEU to 20 percent LEU, than is required to enrich from 20 percent LEU to weapons-grade 90 percent HEU. Put another way, enriching to 20 percent LEU would put Iran roughly nine-tenths of the way to producing fissile material, with a corresponding estimated breakout time of several weeks. For this same reason, Tehran would need to employ fewer centrifuges to jump from 20 to 90 percent than it would to reach 20 percent in the first place. These considerations illustrate the disproportionate dangers of higher enrichment levels, and the difficulties that would confront American diplomats if they had to negotiate with an Iran on the precipice of the bomb. Indeed, this was Israel's explicit redline when Iran previously enriched to 20 percent LEU in 2011-12. In May 2019 the head of Iran's atomic energy organization raised the possibility of restarting 20 percent enrichment.[52]

No New Enrichment Capacity

Iran already took one step to increase enrichment capacity in November 2019 when it resumed enrichment at Fordow using 1,044 IR-1 machines (on top of the 5,060 IR-1 machines it operates at Natanz as per the JCPOA). This helped accelerate the ongoing drop in breakout time, yet it also represented a fraction of what Tehran could have done in this regard. Iran is believed to retain significant numbers of IR-1 machines in storage, plus perhaps 1,000 IR-2m machines which are 4-5 times more efficient than the IR-1.[53] Any steps to reinstall and operate these centrifuges would cut down breakout time appreciably, and overnight, creating a problem for American negotiators similar to 20 percent LEU enrichment.

No Reversion to Original Arak Reactor

To date Iran has been circumspect in its escalations on the plutonium path to a bomb, opting only to exceed its heavy water stockpile limit – a move which is immaterial until it has a functioning heavy water reactor. The real issue is which heavy water reactor design Tehran pursues. Any move to revert to the pre-JCPOA reactor would put Iran back on track to eventually producing multiple weapons' worth of plutonium annually. Since May 2019 it has threatened to resume construction on the original reactor, and Iranian officials have claimed

they furtively procured a duplicate of the specialized tubing (calandria) needed to fulfill this threat.[54]

No Interference with Inspectors

The redlines listed above all hinge on transparency, precisely because the JCPOA does so little to actually restrict enrichment-related activities. This makes continued access for inspectors vital for any future negotiations. Iran has an escalating menu of options to reduce existing transparency measures that should be red flags for the United States:

- Suspension of the IAEA Additional Protocol and/or Modified Code 3.1, which permit enhanced inspections at declared and suspected undeclared facilities;
- Denying or delaying access to inspectors at declared facilities like Natanz or Fordow;
- Withdrawing from the NPT, which would remove altogether the basis for IAEA inspections of any Iranian nuclear facilities.

V. Endnotes

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