

Snapping Back and Looking Forward: A New Old Approach to the Iran Nuclear Crisis

Christopher Ford

The days of early optimism among U.S. officials about using diplomacy to rein in Iran's nuclear weapons program are long past, and the Iranian nuclear crisis feared by nonproliferation experts for so many years is now upon us. The "Joint Comprehensive Plan of Action" (JCPOA) nuclear deal signed in 2015 between Iran, the United States, Britain, France, Russia, China, and the European Union (EU) now lies in tatters nearly a decade later. Even the temporary nuclear restraint Iran showed in those years is also a thing of the past.

As has been confirmed with depressing regularity by the International Atomic Energy Agency (IAEA), Iran remains in the process of rapidly expanding its fissile material production capacity and its stockpile of enriched uranium. According to IAEA Director-General Rafael Grossi, for example, writing in his May 2024 report to the Agency's Board of Governors,

From 8 May 2019 onwards ... Iran stopped implementing its nuclear-related commitments under the JCPOA on a step-by-step basis until, on 23 February 2021, it stopped implementing them altogether, including the Additional Protocol.¹

In June 2022, moreover, Iran removed all IAEA equipment related to JCPOA-mandated surveillance and monitoring of the Iranian nuclear program.² It also prohibited some IAEA inspectors from visiting Iran.³

With the regime in Tehran thus now systematically preventing a whole range of IAEA monitoring activities, the Director-General reported, "The Agency has lost continuity of knowledge in relation to

the production and inventory of centrifuges, rotors and bellows, heavy water[,] and UOC [uranium ore concentrate].”⁴ Indeed, by early 2024, it had been fully *three years* since the IAEA had been able to exercise its investigative authorities under the Additional Protocol⁵ that Iran had agreed to comply with under the JCPOA, thus raising grave questions about what undeclared facilities might exist or what undeclared nuclear activities might be going on in Iran.

Nevertheless, despite this Iranian obstruction, there was little question that Iran was in the process of rapidly expanding its capability to produce fissile materials and its stockpile of such materials, including uranium enriched at levels very nearly usable in a nuclear weapon – of which, because of the physics of uranium enrichment, could be further enriched to optimal weapons-grade level with extraordinary rapidity.⁶ As of late May 2024, Iran had fully 62 operating arrays (“cascades”) of uranium-enrichment centrifuges at three different nuclear facilities,⁷ with work ongoing on additional cascades.⁸

Iran was at that point continuing to enrich more uranium, with more than 2,200 kilograms of such material – at levels of enrichment ranging from 2 percent U-235 to 60 percent – produced in early 2024 alone.⁹ Iranian obstruction prevented the IAEA from verifying Iran’s total stockpile of enriched uranium, but the IAEA estimated that figure at upwards of 6,200 kilograms, including more than 751 kilograms enriched to 20 percent and more than 142 kilograms enriched to 60 percent.¹⁰ Indeed, by June 2024, Iran was preparing to accelerate its production of enriched uranium even more, installing new centrifuge cascades in the deeply-buried bunker complex of the enrichment plant at Fordow.¹¹

Iran, it would seem, is now on the cusp of becoming, and perhaps should already be considered, a so-called “virtual” or “latent” nuclear weapons state,¹² poised to sprint to weaponization by raising its stock of 20% and 60% enriched uranium to weapons grade and incorporating such material into a nuclear weapon. According to analyses conducted by the Institute for Science and International Security using IAEA data, Iran by early 2024 was able to make enough weapons-grade uranium (WGU) for seven nuclear weapons in one

month, enough for nine weapons in two months, enough for 11 in three months, enough for 12 or 13 in four months, and enough for 13 in five months.¹³

In response to all this, the Biden administration did little more than hope that ordinary Americans do not notice the problem. Apparently afraid of people recognizing the extent of the crisis and realizing the failure of the Biden Administration's Iran policy, U.S. diplomats actually tried to *discourage* their European counterparts at the IAEA Board of Governors from offering a resolution censuring Iran for its obstruction of IAEA monitoring.¹⁴ (This Biden effort seems to have ensured that the Board would not directly criticize Iran, but that body did pass a resolution in early June 2024 calling upon Iran to resolve outstanding safeguards questions and permit the IAEA to do its work in Iran unimpeded.¹⁵)

Hiding one's head in the sand, however, is not a policy, and the Iranian nuclear crisis will not go away. This paper aims to draw attention to one potential way forward that the Biden administration was unwilling to discuss. The following pages will first walk the reader through the history of nuclear diplomacy with Iran, and will then offer an approach that may be able to provide the Western powers with real leverage vis-à-vis Iran and give President Trump an opportunity to restart long-stalled negotiations aimed at imposing enduring constraints upon Tehran's nuclear capabilities.

How We Got Here

Early History of the Program

Iran's nuclear program dates from the 1960s. The country first sought to develop nuclear power generation under the rule of Mohammed Reza Pahlevi, the Shah of Iran, whom the United States supplied with a research reactor in 1967. Despite his country's oil riches, the Shah began an ambitious effort to create a nuclear power capability during the 1970s, striking deals with a number of foreign suppliers, such as in West Germany and France.¹⁶ He did not openly seek nuclear weaponry – and indeed, Iran was one of the original signatories of the Nuclear Nonproliferation Treaty (NPT)¹⁷ – but he

also spoke about Iran's "rights" to nuclear technology loudly enough, and sought an uranium enrichment capability assiduously enough that U.S. officials worried he might at some point wish to develop weapons. Accordingly, the Americans made nonproliferation issues a central piece of their diplomatic engagement with his government.¹⁸

The Iranian Revolution of 1979 threw the country's nuclear power development effort into disarray, but before long Tehran began to explore such work again – this time with a mix of overt and clandestine activities, and very much with weaponization in mind.

By the early 1990s, ... its nuclear program was once again moving forward, based on assistance from Russia, China, and Pakistan. With China, Iran signed two nuclear cooperation protocols, in 1985 and again in 1990. And in 1995, Iran concluded a protocol of cooperation with Russia to complete the construction of the reactor at Bushehr and possibly supply a uranium enrichment plant. Some of the items originally contemplated in these deals, like the enrichment plant, were never delivered as a result of pressure from the United States. Others, like Bushehr, served as a justification for Iran's acquisition of sensitive equipment that would not be sold on its own because of its bomb-making potential. Throughout the 1990s, entities in Russia and China continued to help Iran, despite occasional pledges from their governments to curtail nuclear assistance. Iran is also believed to have received uranium enrichment technology through the black-market network run by Pakistani scientist A. Q. Khan during this period. In the late 1990s, senior Iranian officials approved a plan, called the Amad Plan, to build an arsenal of five nuclear weapons by 2004.¹⁹

As noted above, some of Iran's efforts to acquire nuclear technology came through the nuclear weapons proliferation network run by Pakistani scientist Abdul Qadeer (A.Q.) Khan. Khan was an infamous nuclear smuggler who had stolen centrifuge enrichment technology from the European consortium EURATOM, and who subsequently went on to become the so-called "father" of Pakistan's

nuclear weapons program, as well as a supplier of enrichment technology and nuclear weapons designs to various international clients, including Muammar Qaddafi's Libya.²⁰

Iran has admitted, for instance, that as early as 1987 it had been offered centrifuge designs and "materials for 2,000 centrifuge machines." By the mid-1990s, such a deal had actually been reached, pursuant to which the "supply network" offered "the delivery of [Pakistani] P-1 centrifuge documentation and components for 500 centrifuges." The "first deliveries of the P-1 components started in January 1994." (These transactions involved centrifuges for enriching uranium, a crucial material for many nuclear weapons designs, but in 1998 Iran also began its own experiments with separating plutonium, another possible material "pathway" to a nuclear weapon.)²¹

The United States was aware of the Iranian regime's nuclear ambitions, and quickly understood that they included the eventual development of nuclear weapons. As early as January 1993, for instance, the U.S. Arms Control and Disarmament Agency (ACDA) assessed that Iran was in the early stages of developing a nuclear weapons program, and American officials warned publicly and repeatedly during the 1990s that Iran's nuclear intentions were "suspect" or "highly questionable." In 2003, in fact, the United States declared explicitly that Iran "is pursuing a program to develop nuclear weapons."²² In 2005, the United States formally found Iran to be in violation both of its IAEA safeguards obligations and of Article II of the NPT.²³

There was little or no publicly available evidence about secret Iranian nuclear work until August 2002, when the National Council of Resistance of Iran (NCRI) - an Iranian dissident group formed by the leftist Islamists of the *Mujahideen i-Khalq* (MEK) group - announced that Iran was secretly constructing a nuclear material production facility at Natanz and a heavy water moderated nuclear power reactor at Arak.²⁴ (This type of reactor design is highly useful for producing plutonium out of spent reactor fuel.) It is suspected that NCRI did not actually originate this information, and it has been reported that U.S. officials learned of these projects through their own intelligence sources and had briefed the IAEA about their concerns in advance of

the NCRI's public revelations.²⁵ But whatever the case, August 2002 marked the *public* beginning of the Iran nuclear crisis – setting off a long succession of acrimonious debates, first at the IAEA and thereafter at the United Nations Security Council (UNSC).

Contestation and Pressure

Partial Suspension of Iran's Weapons Program

On the positive side, the public revelation that Iran had a secret nuclear program, and the international debates that thereby ensued in late 2002 and into 2003, had a material effect in slowing progress in the Iranian program itself. The discovery that Iran might have a secret nuclear weapons program raised the international stakes considerably, as it came at a time when the United States had already invaded and occupied the entire country of Afghanistan in response to the Taliban regime's harboring of the international terrorists responsible for the atrocities of September 11, 2001, and also when Washington was clearly considering whether to invade Iraq over the weapons of mass destruction (WMD) the United States and its allies believed Saddam Hussein's regime possessed. While this context made the *international* politics of trying to hold Iran to account for its nuclear violations far more contentious, it also offered an important lesson.

U.S. intelligence officials assessed with "high confidence" in a National Intelligence Estimate (NIE) in 2007, for instance, that in the fall of 2003, Iran suspended its "nuclear weapon design and weaponization work and covert uranium conversion-related and uranium enrichment-related work."²⁶ This assessment was contentious, not merely on its own direct merits – *i.e.*, whether or not Iran actually *had* stopped those specific activities (as will be discussed further below) – but also because of the disingenuous phrasing used in that assessment's "Key Judgments," which misleadingly seemed to say that Iran had halted *all* of the work it had previously been doing as part of the government's effort to develop nuclear weapons.

The previously secret enrichment facility at Natanz and the plutonium-production reactor at Arak had been part of the secret

weapons effort as well, of course: they were to be the *sources* of fissile material for the bombmaking effort. (After all, one cannot make nuclear explosives without a supply of fissile material, primarily uranium or plutonium.) Fissile material production, moreover, is generally acknowledged to be the most difficult and expensive part of any nuclear weapons program.²⁷ From this perspective, therefore, Natanz and Arak were arguably *more* important and problematic than the aspects of Iran's work that the NIE assessed to have been "halted."

Hence the problem with the NIE's phrasing. Its drafters expressly defined Iran's "nuclear weapons program" for the purposes of that document to include only the elements of Iran's nuclear weapons program that were by that point still secret, noting that their phrasing did not include "Iran's *declared* civil work related to uranium conversion and enrichment."²⁸ Notably, Natanz and Arak were by 2003 no longer "covert," as they had been the subject of public debate for months, having been revealed to the world by NCRI in August 2002. The NIE's idiosyncratic definition thus allowed its drafters to say that Iran's "nuclear weapons program" had been "halted," even though Iran was still briskly moving forward with the fissile material production effort it had begun to provide the material for nuclear weapons.²⁹

One should remember, the NIE was publicly released in late 2007, at a time of widespread recriminations against the U.S. Intelligence Community for having contributed to a disastrous Middle Eastern war by grievously overestimating the nature and extent of Iraq's WMD stockpile – perhaps explaining the disingenuous phrasing in the NIE's "Key Judgments," which could have represented an effort to deliberately *downplay* threats in Iran so as to insulate the drafters from suspicion of further threat inflation. Nevertheless, it was hugely significant that Iran had halted at least *some* of its nuclear weapons work out of apparent fear of international sanctions or even direct U.S. attack. It demonstrated that it was *not* impossible to pressure Iran into making significant nuclear concessions. As we shall see below, this is a lesson that would subsequently be reinforced by the world's experience with nuclear sanctions against Iran in the mid-2010s, and it bears importantly upon the recommendations in this paper.

Early Diplomatic Efforts

The threat of such potential penalties seems to have led to some aspects of Iran's nuclear weapons program being suspended in the fall of 2003, but such pressures began to ebb quickly. Even as Iran was secretly making this decision to suspend some elements of its nuclear weapons effort, in fact, European diplomats – feeling aggrieved over Washington's prosecution of the Iraq war – were already making concessions to Iran in order to undermine U.S. efforts to bring the Iran issue to the UNSC.

In October 2003, the foreign ministers of Britain, France, and Germany (the so-called "EU-3" countries) traveled to Tehran and announced that they had reached a deal with the Iranian regime pursuant to which Iran would agree to answer the IAEA's questions about its apparent violations of nuclear safeguards agreements, to sign the Additional Protocol, and to "suspend its uranium-enrichment and reprocessing activities."³⁰ Iran did not fully honor these promises, not least by continuing to produce components for uranium enrichment centrifuges. (At first, Iran simply continued to manufacture such components under "existing contracts,"³¹ but later it announced in June 2004 that it would resume full-scale production either way.)³²

Officials in Tehran also struggled to explain results from IAEA environmental sampling that were inconsistent with Iran's claim not to have conducted any undeclared enrichment activity, such as inspectors' discovery of particles of enriched uranium on centrifuge components and at certain locations.³³ But the Europeans followed through on *their* implicit side of the bargain, and American diplomacy promptly stalled at the IAEA, with Washington now lacking support at the Board of Governors to find Iran in violation of nuclear safeguards and thus to forward the "Iran file" to the UNSC.

The EU-3 tried to salvage the *Iran* side of their Iran diplomacy in late 2004 with what became known as the Paris Agreement. Under its terms, Iran agreed to

continue and extend its suspension to include all enrichment related and reprocessing activities, and specifically: the manufacture and import of gas centrifuges and their components; the assembly, installation, testing or operation of gas centrifuges; work to undertake any plutonium separation, or to construct or operate any plutonium separation installation; and all tests or production at any uranium conversion installation.³⁴

Tehran, however, continued to press forward with aspects of its nuclear program, and also continued to drag its feet in giving IAEA inspectors the information they needed in order to verify Iranian compliance with safeguards obligations. As a later account of this period summarized,

Iran did not follow through on these commitments. Its declarations to the IAEA in 2004 and 2005 were incomplete and at times inconsistent, preventing the Agency from developing a full picture of the nuclear program and Iran's past activities. Iran also resumed or continued activities that the IAEA considered to be related to enrichment.³⁵

Iran failed repeatedly to declare relevant information about nuclear facilities and activities to the IAEA, including underground excavations in late December 2004 for a nuclear facility at Esfahan,³⁶ and in August 2005, it "started to feed uranium ore concentrate (UOC) into the first part of the process line at the Uranium Conversion Facility (UCF),"³⁷ thus beginning the process of preparing uranium hexafluoride (UF₆) feedstock for the centrifuge cascades it had also been assembling. Unsurprisingly, a month later, the IAEA found it remained unable to "verify the correctness and completeness of Iran's statements concerning those programmes."³⁸

On to New York

The EU-3's diplomacy with Tehran had succeeded in derailing American diplomatic efforts to hold Iran accountable at the IAEA Board of Governors for a time, but Iranian intransigence eventually made IAEA action inevitable. By February 2006, the Board - the

chastened Europeans included – had finally reached the limits of patience. In a resolution that month, it insisted that Iran “re-establish full and sustained suspension of all enrichment-related and reprocessing activities, including research and development.” And the Board finally directed the IAEA Director-General to refer Iran to the UNSC.³⁹

At the end of July 2006, the UNSC itself demanded that Iran “suspend all enrichment-related and reprocessing activities, including research and development, to be verified by the IAEA.”⁴⁰ When Tehran did not comply, the UNSC acted to mandate this under Article 41 of the UN Charter, thus making that requirement obligatory under international law.⁴¹ In December 2006, UN Security Council Resolution (UNSCR) 1736 required Iran to suspend “all enrichment-related and reprocessing activities, including research and development,” as well as “work on all heavy water-related projects, including the construction of a research reactor moderated by heavy water.”⁴² It also prohibited any country from providing “items, materials, equipment, goods and technology which could contribute to Iran’s enrichment-related, reprocessing or heavy water-related activities, or to the development of nuclear weapon delivery systems,” and (of course) it required Iran to cooperate with the IAEA.⁴³ UNSCR 1736 also imposed international sanctions on a number of entities associated with the Iranian nuclear program.⁴⁴

The public revelations about Iran’s various violations of its safeguards obligations that had begun in August 2002 had now reached a formal climax, with the IAEA having found Iran in breach and the UNSC having both agreed and moved to punish Iran for the violation. December 2006, however, was grievously late, as this author later noted somewhat bitterly,

chances to put significant pressure on Iran had evaporated earlier, being quite deliberately undercut by the EU-3 in the concessionary side deal they reached with Tehran in the autumn of 2003. In return for an Iranian ‘suspension’ that the IAEA has documented that Tehran never fully honored, the Europeans drove the U.S.-led multilateral effort at the IAEA into a ditch, making clear to Tehran that

their new deal precluded Security Council action. It took *years* for Iran's continued deceit and provocations to exhaust the Europeans' patience, so that by the time the IAEA finally got around to complying with its own statute to report Iran to the Security Council and the first tentative sanctions were applied in 2006, Tehran had come a long way in making its enrichment program into a *fait accompli*. Natanz had been a hole in the ground in August 2002, but with European complicity, Iran was able to get its first centrifuges spinning by the time any sanctions started to bite.⁴⁵

The Scope of Iran's Effort Becomes More Clear

And still Iran continued to press forward with its nuclear ambitions. In the autumn of 2009, for instance, U.S., British, and French officials released sensitive intelligence information revealing "a multiyear Iranian effort, tracked by spies on the ground and satellites above, to build a secret uranium enrichment plant deep inside a mountain" at a place known as Fordow.⁴⁶ In 2010, Iran began enriching uranium to the 20% level,⁴⁷ thus beginning to produce material capable of being quickly and easily enriched further to optimal weapons-grade levels. A year after that, a Russian-built and -operated nuclear reactor at Bushehr began operations,⁴⁸ thus also - at least potentially - offering Iran the option, in extremis, to seize and appropriate that facility's partially-burned or spent fuel remnants as a source for plutonium.

In November 2011, with Director-General Mohammed El-Baradei having been replaced by the Japanese diplomat Yukiya Amano in December 2009, the IAEA was finally willing publicly to release a compendium of the extensive information about the specifically weaponization-related aspects of Iran's nuclear program that it had acquired over several years. In addition to reporting on Iran's continuing range of fissile-material activities - including the production of low-enriched uranium (LEU) - Amano published a lengthy compilation of IAEA concerns about what became known as the "possible military dimensions" of Iran's nuclear program (a.k.a. the "PMD issue").

According to Amano's report, the Agency had acquired "a large volume of documentation" about Iran's nuclear weapons program, including:

... correspondence, reports, view graphs from presentations, videos and engineering drawings ... amounting to over a thousand pages. The information reflected in that documentation is of a technically complex and interconnected nature, showing research, development[,] and testing activities over time. It also contains working level correspondence consistent with the day to day implementation of a formal programme.⁴⁹

The IAEA had also received information about Iran's nuclear work from "more than ten Member States," as well as acquiring information from its own investigations.⁵⁰ Tellingly, Amano made clear that "the Agency finds the information to be, overall, credible."⁵¹

On the basis of this information and its own analysis, the IAEA said, it had become "increasingly concerned about the possible existence in Iran of undisclosed nuclear related activities involving military related organizations, including activities related to the development of a nuclear payload for a missile."⁵² Specifically, the November 2011 report described "[e]fforts, some successful, to procure nuclear related and dual use equipment and materials by military related individuals and entities," as well as "[e]fforts to develop undeclared pathways for the production of nuclear material," "[t]he acquisition of nuclear weapons development information and documentation from a clandestine nuclear supply network," and "[w]ork on the development of an indigenous design of a nuclear weapon including the testing of components."⁵³

While some of the Iranian work described was dual-use - that is, it could theoretically be applied to either civilian or military applications of nuclear energy - much of it, Amano noted, was "specific to nuclear weapons." Moreover, "prior to the end of 2003 the above activities took place under a structured programme" - that is, a nuclear weapons program. Worryingly, despite the seemingly

sanguine conclusion of the 2007 U.S. NIE that Iran had “halted” its “nuclear weapons program” in 2003, the November 2011 IAEA report made clear that “[t]here are also indications that some activities relevant to the development of a nuclear explosive device continued after 2003, and that some may still be ongoing.”⁵⁴

Further insight into Iran’s nuclear weapons work – or at least into Iran’s efforts to conceal this work – emerged in connection with an IAEA visit to a suspect facility at Parchin in September 2015. Iran refused to allow an IAEA team to visit until after extensive renovations and alterations had been made at the specific building the IAEA sought to inspect, and even during their eventual visit the Iranians excluded the inspectors from the room where they supposedly took environmental samples at the IAEA’s request.⁵⁵

That building at Parchin was believed to have been the location of a huge metal containment vessel used for testing implosion detonator systems, and associated with a former Soviet nuclear weapons scientist named Vyacheslav Danilenko – who had helped Iran during the 1990s with warhead designs and technology,⁵⁶ particularly “the design and testing of an unusual, half-sphere-shaped detonator.”⁵⁷ (This was associated with the detonation system for what was unmistakably a spherical nuclear warhead, sized to fit into the idiosyncratically “tri-conic” warhead of an Iranian Shahab-3 ballistic missile.⁵⁸) By the time the IAEA inspectors were permitted into the building, however, the large metal device had apparently been cut to pieces and removed.⁵⁹

Pressure Builds

Iran’s continuing refusal to comply with the UNSC’s legal requirement that it suspend its nuclear activities, the growing amount of information publicly available about Iran’s now glaringly obvious nuclear weapons ambitions, and Tehran’s continuing gamesmanship with the inspectors as they sought to determine the nature, scope, and status of this program led to a progressive strengthening of sanctions against the Iranian regime. Even before the revelations about the uranium enrichment bunker complex at Fordow, for instance, UNSCR 1801 had expanded sanctions in 2008,⁶⁰ and in 2010 additional

sanctions were added – including a prohibition on testing of nuclear-capable ballistic missiles, and the imposition of an embargo on the transfer of major weapons systems to Iran.⁶¹

The year 2010 also saw the EU step up sanctions against Iran.⁶² In 2012, EU sanctions were expanded further, now banning imports of Iranian oil and freezing Iranian Central Bank assets in Europe.⁶³ Over the next several years, the U.S. Congress also enthusiastically expanded American sanctions. In 2010, Congress passed the Comprehensive Iran Sanctions, Accountability, and Divestment Act (CISADA), which targeted firms investing in Iran’s energy sector or selling refined petroleum to Iran, as well as foreign banks doing business with designated Iranian banks.⁶⁴ In 2011, Congress passed new penalties on Iran’s Central Bank over the Obama Administration’s objections.⁶⁵ U.S. sanctions expanded further in 2012 and 2013, with the Iran Threat Reduction and Syria Human Rights Act (ITRSHRA)⁶⁶ and then the Iran Freedom and Counter-Proliferation Act (IFCA).⁶⁷

These various measures unquestionably imposed significant costs on Iran. Nonetheless, the Iranian program continued to expand rapidly.

By the summer of 2013, Iran had installed more than 18,000 of its first-generation IR-1 centrifuges and 1,300 more advanced centrifuges, mostly of the IR-2m model, across its enrichment sites. It had also amassed a stockpile of about 9,700 kg of uranium enriched up to 5 percent and 370 kg enriched up to 20 percent. According to the U.S. government in 2016, this amount would yield enough weapons-grade fissile material for a nuclear weapon, with further enrichment, within two or three months.⁶⁸

Moving Toward an Agreement

The pain inflicted by these combined international, U.S., and European sanctions, however, apparently *did* wear on the Iranian leadership, giving them incentives to explore diplomatic alternatives once more. In November 2014, Iranian officials met in Geneva with

representatives of the United States, the EU-3, Russia, and China – together referred to as the “P5+1” powers, since this group represented all five permanent members of the UNSC plus Germany. (The EU itself, represented by EU High Representative Catherine Ashton, also played a key role.)

Together, these officials announced their agreement upon a “Joint Plan of Action” (JPOA) intended to point the way toward a more comprehensive nuclear deal. Under its terms, Iran agreed to dilute its uranium stockpile, temporarily stop enriching above 5% levels, refrain from “further advances” at various listed nuclear facilities, and allow some additional IAEA monitoring. In return, the Europeans would stop trying to restrict Iranian oil sales, would suspend sanctions on petrochemical exports, sales of gold and precious metals, and the auto industry, and would forswear new sanctions.⁶⁹ Iran would also be permitted to repatriate some of its assets that had been frozen abroad, and the Americans would stop sanctioning foreign companies involved with Iran’s automotive sector or involved in purchasing Iranian petrochemicals.⁷⁰

The JPOA was an expressly provisional step, intended to create diplomatic space for further negotiations, and indeed by the summer of 2015, the Iranians and the P5+1 announced they had reached a more enduring agreement. This deal was the more elaborately acronymic “Joint Comprehensive Plan of Action” (JCPOA), which will be discussed in the following pages.

The JCPOA

Basic Provisions

The architecture of the JCPOA is at times numbingly complex, but its basic conception is simple. As with the JPOA, Iran undertook to abide by certain obligations in restraining aspects of its nuclear program for a certain period of time, in return for which the P5+1 powers agreed to lift a broad range of sanctions against Iran that had been imposed upon it for its nuclear activities.

The details are of little concern here, but for present purposes the key point is that the restrictions on Iran were only temporary. The duration of various provisions restricting specific aspects of Iran’s nuclear work varied considerably, but none of the significant ones were permanent. **Figure 1** below provides an account of limitations imposed on Iran by the JCPOA and UNSCR 2231.

Figure 1: JCPOA Limits on Iran and their Duration⁷¹

Limit on Iran	Duration	Date
<ul style="list-style-type: none"> UN heavy arms embargo 	5 years	October 18, 2020
<ul style="list-style-type: none"> UN ballistic missile restrictions Manufacture of IR-6 and IR-8 centrifuge rotors prohibited (but after 8 years up to 200 of each are allowed) 	8 years	October 18, 2023
<ul style="list-style-type: none"> Research with uranium on IR-4, IR-5, IR-6, and IR-8 centrifuges is prohibited (but after 8.5 years it is allowed for a single IR-4, IR-5, IR-6 and IR-8 machine at Natanz, and up to 30 IR-6s and 30 IR-8s may be tested) 	8.5 years	April 18, 2024
<ul style="list-style-type: none"> Operating centrifuges reduced to 5,060 IR-1 machines, with a total centrifuge numbers capped at 6,104 IR-1s and no new introduction of IR-1s JCPOA Joint Commission must review and approve approval of changes to centrifuge research and development plan Joint Commission working group must approve purchase of dual-use materials 	10 years	October 18, 2025
<ul style="list-style-type: none"> Iran can replace IR-1 centrifuges with the equivalent capacity of IR-6 and IR-8 machines 	11-15 years	2026-2030
<ul style="list-style-type: none"> Uranium enrichment level cannot exceed 3.67% uranium-235 Uranium enrichment only permitted at Natanz Uranium may not be introduced to centrifuge cascades at the Fordow facility Uranium stockpile limited to 300 kilograms of 3.67% enriched material No heavy water moderated nuclear power reactors permitted in Iran, and no accumulation of heavy water Reprocessing of spent nuclear fuel (to separate plutonium) is prohibited Joint Commission oversees IAEA access requests to inspect undeclared sites 	15 years	October 18, 2030
<ul style="list-style-type: none"> Continuous monitoring of centrifuge production facilities 	20 years	October 18, 2035
<ul style="list-style-type: none"> Continuous monitoring of uranium mines and mills Joint Commission (of P5+1, EU, & Iran) to hold quarterly meetings, or by request, to oversee the JCPOA implementation (with dispute resolution mechanism) 	25 years	October 18, 2040

<ul style="list-style-type: none"> • Iran will ship spent nuclear fuel (<i>e.g.</i>, from the Bushehr reactor) out of Iran. • Nuclear weaponization work prohibited [note that this duplicates requirements of NPT Article II] • Implementation of modified Code 3.1 of the Subsidiary Arrangements to its Safeguards Agreement [requiring prior submission of nuclear facility design information to the IAEA] 	Permanent	N/A
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Figure 2 below provides a corresponding table of obligations for the P5+1 with regard to relaxing sanctions on Iran in return for the limitations described in **Figure 1**. The reader will note that such relief is *not* time-limited, but rather permanent.

Figure 2: JCPOA Requirements for Sanctions Relief⁷²

Sanctions Relief for Iran	Duration
United States	
<ul style="list-style-type: none"> • Cease application of economic sanctions against Iran’s oil and banking sectors, allowing Iranian banks and companies to reconnect with international systems • Remove designation of certain entities and individuals • Allow licensed non-U.S. entities owned or controlled by a U.S. person to engage in activities with Iran permitted under JCPOA • Allows sale of commercial passenger aircraft to Iran • Allow import licenses for Iranian-origin carpets and foodstuffs • Address state or local laws preventing full implementation of JCPOA by encouraging officials to adhere to JCPOA policy • From 8 years after “Adoption Day” (October 18, 2015), seek legislative action to terminate/modify nuclear related sanctions 	Permanent
European Union	
<ul style="list-style-type: none"> • Terminate all provisions of EU Regulation related to Iran’s nuclear program (<i>i.e.</i>, sanctions on financial and banking transactions; transactions in Iranian Rial; provision of U.S. banknotes to Iranian government; access to SWIFT messaging systems; insurance services; Iranian crude oil and petrochemical product sales; investment; transactions with Iranian energy and shipping sector; trade in gold and other precious metals; trade with automotive sector) • Remove sanctions designations on specific individuals and entities • Refrain from re-introducing sanctions terminated under JCPOA 	Permanent

Source: Arms Control Association

Sanctions “Snapback”

Though the JCPOA undertook to delay the progress of Iran’s march toward the possession of a large fissile material production capability and a large stock of uranium or plutonium, the drafters of

the JCPOA generally refused to place *permanent* limits on Iran's nuclear capacity. As set forth above, the most meaningful restrictions the JCPOA imposed upon Iran's nuclear program were subject to so-called "sunset" provisions, whereby these restraints would expire in time, thereafter, leaving Iran facing no legal constraint upon its uses of nuclear materials and technology. (The JCPOA did contain a permanent provision whereby Tehran promised not to develop nuclear weapons, but this simply duplicated the basic obligation already imposed upon Iran by Article II of the NPT "not to manufacture or otherwise acquire nuclear weapons or other nuclear explosive devices"⁷³ – a restraint that Iran had clearly felt free to disregard for many years.)

Under the JCPOA, however, the P5+1 powers were not subject to merely transitory obligations. If they wished to remain faithful to the JCPOA, they would have to *continue* to avoid sanctioning Iran for its nuclear activity indefinitely: no "sunset" time limits were put on the sanctions relief provisions in the deal. The JCPOA, therefore, was a structurally asymmetric arrangement strongly favoring Iran, amounting to the P5+1 promising *permanent* nuclear sanctions relief to Iran in return merely for a *temporary* suspension of the destabilizing activity to which those very sanctions had been a response. Eventually, Iran would be entirely free to do all that it had done before 2015 in terms of building up its fissile material capabilities, and more.

Yet there was one sole safeguard built into the structure of the JCPOA and the accompanying UNSCR: the so-called "snapback" provisions. Specifically, UNSCR 2231 of 2015 provided that 10 years after "Adoption Day" – a date defined as 90 days after the passage of that resolution on October 18, 2015⁷⁴ – all the provisions of the resolution:

shall be terminated, and none of the previous resolutions described in paragraph 7(a) shall be applied, the Security Council will 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.⁷⁵

The reference to paragraph 7(a) above ensured that this provision covered all prior Security Council sanctions resolutions on Iran: UNSCRs 1696 (2006), 1737 (2006), 1747 (2007), 1803 (2008), 1835 (2008), 1929 (2010) and 2224 (2015).⁷⁶ Should termination occur, therefore, all UN sanctions against Iran's nuclear program would evaporate completely. Without any further intervening action, this would occur on October 18, 2025 (a.k.a. "Termination Day.")⁷⁷

This was not *necessarily* to be the end of the matter, however, for UNSCR 2231 also provided that under one specific set of circumstances, such termination of prior UN sanctions would *not* take place.⁷⁸ To wit, termination of UNSCR 2231 and prior UN sanctions on Iran would fail to occur if:

...within 30 days of receiving a notification by a JCPOA participant State of an issue that the JCPOA participant State believes constitutes significant non-performance of commitments under the JCPOA, it shall vote on a draft resolution to continue in effect the terminations in paragraph 7(a) of this resolution ... [and] if the Security Council does not adopt a resolution under paragraph 11 to continue in effect the terminations in paragraph 7(a), then effective midnight Greenwich Mean Time after the thirtieth day after the notification to the Security Council described in paragraph 11, all of the provisions of resolutions 1696 (2006), 1737 (2006), 1747 (2007), 1803 (2008), 1835 (2008), and 1929 (2010) that have been terminated pursuant to paragraph 7(a) shall apply in the same manner as they applied before the adoption of this resolution⁷⁹

This phrasing is convoluted, but it is clear enough – and indeed, arguably, quite ingenious. More simply put, this provision says that if any JCPOA participant State were not happy with Iran's conduct under the deal, it could invoke its right to hold a UNSC vote on a resolution continuing UNSCR 2231's termination of sanctions. If this resolution failed to pass, Iran sanctions would continue in place as before. Significantly, therefore, because permanent members of the UNSC enjoy the power to veto Council resolutions,⁸⁰ any JCPOA

participant State which was a permanent member could move to keep UN sanctions in place by invoking its right to such a vote and then *vetoing* the continuation resolution.

This remarkable set of provisions is known as Iran sanctions “snapback.” Under its terms, it was thus entirely within the discretion of Britain, China, France, Russia, or the United States – the five permanent members of the UNSC, who were all JCPOA participant States upon adoption of UNSCR 2231 – to keep sanctions in place against Iran after October 15, 2025, entirely *unilaterally*.

The Collapse of the JCPOA

The Obama administration seems to have hoped that securing the JCPOA would help catalyze better behavior from Iran more generally. As this author summarized things when still in government,

President Obama ... – picking up themes he had earlier voiced upon coming into office, when he famously offered an “extended hand” to Iran and in a Farsi-subtitled video on the occasion of the Persian New Year expressed his desire for “renewed exchanges among our people and opportunities for partnership and commerce”⁸¹ – declared upon finalizing the JCPOA that the deal would give Iran a chance to “move in a different, less provocative direction.”⁸² Indeed, the JCPOA itself declared that the participants anticipated that “full implementation of this JCPOA will positively contribute to regional and international peace and security.”⁸³

Unfortunately, this did not happen, and Obama’s “extended hand” was spurned by the clerical regime in Tehran. If anything, its behavior became worse, with Iran evidently being made more aggressively self-confident by the sanctions relief that accompanied the JCPOA, thus becoming an even more dangerous regional actor than before.

Iran did much better economically as a result of JCPOA sanctions relief, particularly with regard to oil sanctions, and

as former Secretary of State John Kerry embarked upon a sort of diplomatic world tour to encourage business ties with Iran.⁸⁴ According to the Central Bank of Iran, the country's economy grew 12.5 percent over the 2016-17 period, compared to the nearly 6 percent shrinkage it had suffered over 2014-15 under international sanctions before the JCPOA.⁸⁵

Unfortunately, that wealthier and more confident Iran also felt freer to act out dangerously. Iran's defense budget rose significantly, for instance, and its malign activities in the Middle East increased. Iran expanded its practice of unlawful detentions of Americans and Europeans. The Iranian Revolutionary Guard Corps' Qods Force expeditionary arm deepened its involvement in Syria, and became the headquarters cadre for Iran's proxy militia forces in Iraq. Iran funded an expansion in the development of a huge arsenal of ever more sophisticated ballistic and cruise missile and explosive drone capabilities.

Unfortunately [too], simply developing this destructive technology was not enough. Iran chose to proliferate missiles and missile production technology to clients such as Lebanese Hizbollah terrorists and the Houthis in Yemen to attack critical civilian infrastructure and energy facilities alike. Iran's broader support for international terrorism also continued, and even accelerated, to include directing a bomb plot in the heart of Europe that was foiled by French, Belgian, and German authorities in 2018.⁸⁶ By early 2018, in fact, an empowered and emboldened Iran seemed to be on the verge of consolidating an axis of malevolent influence or control that stretched from the Mediterranean to the Indian Ocean.

Iran's financial support for regional destabilization accelerated after the JCPOA. Billions of dollars went to prop up the Assad regime in Syria, for instance, with more than \$700 million or so annually to Lebanese Hizbollah, and perhaps \$100 million a year to Palestinian groups such as Hamas and Palestinian Islamic Jihad.⁸⁷

Despite the Obama administration's hopes, Iran was only "empowered and emboldened in its malign activities."⁸⁸

Thus was the stage set for the eventual collapse of the JCPOA, particularly after Donald Trump's victory in the 2016 U.S. presidential election. On the campaign trail, Trump had been unremittingly hostile to the JCPOA, describing it as having been "incompetently negotiated"⁸⁹ and decrying the sanctions relief given to Iran under the deal. ("We should have kept the money.")⁹⁰

In office, President Trump continued such themes, now with what he said was the intention of fixing the deal or negotiating a better one. One of his main arguments against the JCPOA related to the merely temporary nature of the restrictions on Iran's nuclear development - that is, its "sunset" clauses, which have been described above. In October 2017, Trump declared that:

I am directing my administration to work closely with Congress and our allies to address the deal's many serious flaws so that the Iranian regime can never threaten the world with nuclear weapons. These include the deal's sunset clauses that, in just a few years, will eliminate key restrictions on Iran's nuclear program.⁹¹

This direction was the basis for a U.S. diplomatic effort in late 2017 and early 2018 to develop a solution to the problem working with the EU-3 powers of Britain, France, and Germany. Central to those discussions, which were led by State Department official Brian Hook and by the author of this paper,⁹² was the question of Iran's "breakout time" to nuclear weaponization.

Nuclear weapons "breakout time" is a complicated and in some respects problematic concept. As one expert has attempted to explain it,

[i]n technical terms, breakout refers to when a state achieves nuclear weapons capability as a *fait accompli* before it can be stopped by diplomatic pressure or military

action. Opinions differ on what constitutes “nuclear weapons capability,” but it is generally accepted as the moment when a country has enough fissile material to make one nuclear device.⁹³

The definition of how much nuclear material this means is also somewhat contested. The IAEA defines a “Significant Quantity” (SQ) of weapon-usable fissile material as “the approximate amount of nuclear material for which the possibility of manufacturing a nuclear explosive device cannot be excluded.”⁹⁴ In terms of direct use nuclear material, one SQ is defined as 25 kilograms of enriched uranium or eight kilograms of separated plutonium,⁹⁵ though most experts believe the IAEA’s figures to be overestimates (*i.e.*, that one can actually make a workable nuclear weapon with smaller quantities of those materials).⁹⁶

“Breakout time” is conventionally used to refer to the amount of time it would take for a country (*e.g.*, Iran) to produce enough weapons-grade material for its first weapon. Inasmuch as having enough *fissile material* for a weapon is not the same thing as having actually turned that material *into* a weapon, of course, the total amount of time to reach “weapon in hand” status will be somewhat longer, depending upon a variety of factors related to the complexity of one’s weapon design and how much pre-preparation of relevant components one has undertaken. Nevertheless, “breakout time” defined as “the time until one has enough material for a weapon” has long been an important measure of assessing a country’s proximity to nuclear weapons status.

This “breakout time” metric became an important part of U.S. nuclear diplomacy in the last months of the JCPOA. As of 2018, Iran’s estimated timeline to being able to produce enough fissile material for a nuclear weapon stood at about 12 months.⁹⁷ The Trump Administration did not *like* this fact – believing, of course, that the best answer for an Iranian breakout period was to push it toward infinity – but it was willing to explore the possibility of a diplomatic *modus vivendi* that would at least prevent the problem from getting worse, as continued adherence to the JCPOA would otherwise inevitably ensure

that it did as restrictions on Iran's nuclear capabilities gradually expired.

Accordingly, under President Trump's abovementioned mandate in October 2017 to fix the JCPOA's "many serious flaws," Brian Hook and this author traveled to a number of European capitals⁹⁸ for discussions⁹⁹ on whether it might be possible to agree upon a way forward with the EU-3.¹⁰⁰

We proposed to lock in place what was then a 12-month Iranian "breakout" period for having enough fissile material for a nuclear weapon by securing a commitment from the EU-3 that if Iran built up nuclear capabilities that shrunk that period to *less* than 12 months, they would join us in imposing powerful sanctions on Tehran. If we could thus lock in a permanent commitment to the then-*status quo* of a 12-month period, in other words – as well, ideally, as a European commitment to sanction Iran if it pressed ahead with its missile program, which at that point was indeed starting to worry the Europeans greatly – we would have something to bring back to President Trump so that he could say he had fixed what he himself had identified as the biggest flaws of the JCPOA."¹⁰¹

The Europeans, however, rejected this idea. They agreed that they did not *wish* Iran to build up its nuclear capabilities further and thus cause the 12-month "breakout period" to shrink, but they weren't actually willing to do anything about it. They had agreed in the JCPOA itself to permit Iran to build up such capabilities after a few years' delay, and the American proposal – to impose sanctions on Iran should that period fall below 12 months – was to them politically unacceptable, amounting to at least a partial repudiation of the JCPOA. As this author later summarized, "it would be a violation of the JCPOA to sanction Iran for doing what the JCPOA permitted it to do,"¹⁰² and the Europeans could not bring themselves to depart from any provision of the JCPOA even at the cost of blessing Iran's emergence as a "virtual" nuclear weapons possessor.

Accordingly, the Trump administration achieved no breakthrough in fixing the “sunset” problem. Making matters worse, in an extraordinary and hugely successful covert operation, Israel had by that point stolen an enormous collection of documents and other records from Iran that offered unprecedented insight into Iran’s prior nuclear weapons work under the so-called “Amad” program up until around 2003.

This “nuclear archive” detailed the Amad Plan’s effort to manufacture no fewer than five 10-kiloton nuclear weapons, build a missile suitable for delivering them, and to conduct an underground nuclear test. The treasure trove of documents exfiltrated to Israel also detailed Iran’s abovementioned decision in the fall of 2003 to reduce the size of its nuclear weapons program and restructure it, halting the formal Amad effort itself but not ceasing all weapons-relevant work. Instead, some of the dual-use aspects of this work had been transitioned to a variety of limited successor activities – presumably in order to help protect them from scrutiny and shield Iran from accountability.¹⁰³

Significantly, the Israelis are reported to have briefed their American counterparts on this nuclear archive at some point in early 2018.¹⁰⁴ Between the EU-3’s rejection of the U.S. proposal to cap Iran’s nuclear capacities at the 12-month “breakout” level and these new revelations about Iran’s continuing dishonesty and obvious nuclear weapons ambitions, there was thereafter no chance of Washington remaining in the JCPOA. President Trump duly announced in May 2018 that the United States was pulling out.¹⁰⁵

The American “Maximum Pressure” Campaign

Having left the JCPOA in search of a way to press Iran to accept more meaningful and enduring restrictions on its nuclear program – and hopefully also restrictions on its aggressive missile development efforts and support for destabilizing proxy militia groups and terrorist organizations in the Middle East – the Trump administration moved rapidly to step up pressures against the Iranian regime. As Secretary of State Mike Pompeo laid out in a major policy speech after President Trump had withdrawn from the JCPOA, the United States sought a

new and better agreement with Iran. In those remarks, Pompeo made clear that the new U.S. policy on Iran had 12 key objectives in such a future agreement:

First, Iran must declare to the IAEA a full account of the prior military dimensions of its nuclear program, and permanently and verifiably abandon such work in perpetuity.

Second, Iran must stop enrichment and never pursue plutonium reprocessing. This includes closing its heavy water reactor.

Third, Iran must also provide the IAEA with unqualified access to all sites throughout the entire country.

Iran must end its proliferation of ballistic missiles and halt further launching or development of nuclear-capable missile systems.

Iran must release all U.S. citizens, as well as citizens of our partners and allies, each of them detained on spurious charges.

Iran must end support to Middle East terrorist groups, including Lebanese Hizballah, Hamas, and the Palestinian Islamic Jihad.

Iran must respect the sovereignty of the Iraqi Government and permit the disarming, demobilization, and reintegration of Shia militias.

Iran must also end its military support for the Houthi militia and work towards a peaceful political settlement in Yemen.

Iran must withdraw all forces under Iranian command throughout the entirety of Syria.

Iran, too, must end support for the Taliban and other terrorists in Afghanistan and the region, and cease harboring senior al-Qaida leaders.

Iran, too, must end the IRG Qods Force's support for terrorists and militant partners around the world.

And too, Iran must end its threatening behavior against its neighbors - many of whom are U.S. allies. This certainly includes its threats to destroy Israel, and its firing of missiles into Saudi Arabia and the United Arab Emirates. It also includes threats to international shipping and ... destructive cyberattacks.¹⁰⁶

To give Iran incentives to engage in discussions that might result in such a deal, the nuclear sanctions that President Obama had lifted were promptly restored, and a whole campaign of additional pressures was developed, all under the rubric of what came to be known as the Trump Administration's "maximum pressure" campaign.

Between 2018 and 2021, the Trump administration imposed more than 1,500 sanctions on Iran or on foreign companies or individuals who did business with Iran. They targeted big institutions, such as the supreme leader's office, the Revolutionary Guards and the Central Bank, as well as individuals. Among those sanctions were government and judicial officials, members of the military and proxy militias, scientists and manufacturers of military equipment, banks and businesses, foundations, and shipping and trading companies.¹⁰⁷

Not surprisingly, in addition to inflicting considerable harm and pain upon its Iranian targets, this campaign was enormously aggravating and frustrating to the EU-3 governments, which now had to endure not merely Washington's repudiation of their prized JCPOA but also the hardships of restricting their *own* commercial and financial dealings with Iran to stay clear of U.S. sanctions penalties. In an effort to get around this latter problem, several European governments¹⁰⁸

tried to establish a mechanism for trade between Europe and Iran that was not subject to restriction by U.S. sanctions.

This “Instrument in Support of Trade Exchanges” (INSTEX)¹⁰⁹ aimed to create an alternative commercial mechanism based around non-dollar-denominated transactions.¹¹⁰ Conducted entirely independently of the U.S.-dominated hub-and-spoke global financial system, these INSTEX transactions – *e.g.*, in the form of commodity barter arrangements – would in principle be immune to American sanctions pressures, which have broad reach because so much of the activity of the international financial system involves, passes through, or in some other way touches U.S. banking institutions.

INSTEX was not a success, however, as its European architects had underestimated the degree to which it was at that point even *possible* for Iranians both to (a) conduct trade in ways that did not touch *any* institution subject to U.S. Treasury Department jurisdiction and (b) to do so with a European partner which itself had no *other* financial interests or activity that did so.

As it turned out ... the topography of that U.S.-dominated financial network was *so* compelling that it was very hard to find European companies willing to participate. Even though their specific transactions with Iran might not *themselves* involve U.S. dollars or pathways through U.S. banks, European firms could only truly immunize themselves against potential U.S. sanctions for trading with Iran by entirely severing *all* their ties to *all* U.S. financial networks or anyone who used them – and this was something that no sane European company was willing to do.¹¹¹

Accordingly, Iran bristled at the Europeans’ inability to offer more than merely humanitarian goods¹¹² – which the Americans were expressly willing to permit,¹¹³ and transactions for which were thus not subject to U.S. sanctions in the first place. INSTEX was eventually disbanded after having processed only one single transaction.¹¹⁴

Meanwhile, the Trump “maximum pressure” campaign produced very real pain in its Iranian targets, resulting in the clerical regime cutting back some of the financial support it had previously been giving to terrorists and other proxy groups in the Middle East during the period of Obama sanctions relief. As the *New York Times* recounted nearly a year into the U.S. campaign,

Syrian militiamen paid by Iran have seen their salaries slashed. Projects Iran promised to help Syria’s ailing economy have stalled. Even employees of Hezbollah, the Lebanese group that has long served as Iran’s closest Arab ally, say they have missed paychecks and lost other perks.

Iran’s financial crisis, exacerbated by American sanctions, appears to be undermining its support for militant groups and political allies who bolster Iranian influence in Iraq, Syria, Lebanon and elsewhere.

“The golden days are gone and will never return,” said a fighter with an Iranian-backed militia in Syria who recently lost a third of his salary and other benefits. “Iran doesn’t have enough money to give us.”¹¹⁵

The “maximum pressure” campaign did not dissuade Iran from its nuclear ambitions – and indeed by at least mid-2019, Tehran had begun to violate the terms of the JCPOA by beginning to exceed limits on the size of Iran’s enriched uranium stockpile and the purity of the enriched uranium it possessed.¹¹⁶ Nevertheless, the campaign clearly did have an effect upon Iran’s efforts to destabilize the Middle East. Adding to Iran’s pain, moreover, a U.S. airstrike in early 2020 killed Qasem Soleimani, the feared head of the Iranian Revolutionary Guard Corps (IRGC) “Qods Force,” which for years had supported and sponsored radical foreign militias and terrorist groups in the region.¹¹⁷

Less successfully, the United States also attempted to step up international pressures on Iran in 2020 by invoking the abovementioned “snapback” provisions of UNSCR 2231,¹¹⁸ thereafter claiming that all UN sanctions on Iran – specifically, UNSCRs 1696 (2006), 1737 (2006), 1747 (2007), 1803 (2008), 1835 (2008), 1929 (2010),

and 2224 (2015)¹¹⁹ - had been reinstated. In the heat of foreign diplomatic irritation with President Trump for pulling out of the JCPOA, however, most countries refused to acknowledge the legitimacy of this move, arguing that because the Americans had pulled out of the JCPOA, the United States no longer had the right as a “participant State” under UNSCR 2231 to invoke “snapback.”

In this debate, the Trump administration probably had the stronger legal argument, for UNSCR 2231 had expressly defined the “JCPOA participants” as “China, France, Germany, the Russian Federation, the United Kingdom, the United States, the European Union, and Iran” without any other qualification, and no alteration to the text of that Resolution had subsequently occurred.¹²⁰ Yet the international politics of the moment ran very much against Washington, and no other major powers joined the United States in viewing UNSC sanctions against Iran as having been restored.¹²¹ This was where things lay when Donald Trump lost the 2020 election and Joe Biden succeeded him as president.

The Current Stalemate – and a Possible Way Forward

The Biden Administration came into office eager to restart negotiations with Iran¹²² to restore the JCPOA and perhaps to layer some additional new agreement on top of it. Unfortunately, however, the Biden administration’s desperate effort to engage with the Iran nuclear issue accomplished precisely nothing, and the ensuing years have seen only a litany of continued Iranian nuclear expansion, patently unacceptable demands, and worsening regional provocations by Tehran.¹²³ By early 2023, in fact, U.S. officials believed Tehran’s “breakout time” had shrunk to “about 12 days.”¹²⁴

That said, all may not yet be lost, for there remains at least one diplomatic gambit that has still to be tried, and which might perhaps offer the basis for a viable way forward now that Donald Trump has taken office once more. The following pages will explain this approach, which for now, relies upon the continued availability of a full restoration of international sanctions against Iran under UNSCR 2231.

This Critical Year of 2025

The opportunity in question, however, has its own form of “sunset,” as UNSCR 2231 will expire on October 18, 2025.¹²⁵ When it does, so also will the UN sanctions “snapback” mechanism for re-imposing global, legally-binding sanctions on Iran pursuant to the seven UNSCRs passed between 2006 and 2015. After that,

... the only way to place further UN sanctions pressures on Iran to restrain or punish its behavior would be through an entirely new Security Council vote – passage of which would all but inevitably be vetoed by the now essentially pro-proliferation revisionist regimes of Russia and China. That means Iran has only to wait a bit longer until it is given a sort of “get out of jail free card” from the United Nations, pretty much no matter what it does in building up its nuclear program.¹²⁶

Nonetheless, the impending “Termination Day” deadline also means that at least a little time still remains in which to use the threat of “snapback” – or, more likely, the actual *imposition* of restored international sanctions – to catalyze agreement upon new and more enduring restrictions on Iran’s nuclear program.

Implications of the JCPOA “Sunsets”

As the reader will recall, the “sunset” provisions of the JCPOA begin to expire in 2025, and most of them are to disappear by 2030. As described above, the JCPOA thus condoned the eventual emergence of Iran as a sort of “virtual” nuclear weapons state – one able, *in complete conformity with the JCPOA*, to employ as many sophisticated centrifuges at it desires, to enrich uranium to whatever level it wants, and to hold as large a stockpile of enriched uranium it wishes. There is nothing good about that scenario, and it is certainly the case that President Trump’s withdrawal from the deal has forced us to confront an Iran that possesses a large and rapidly expanding fissile material program much sooner than would have been the case under the JCPOA.

Yet precisely *because* of this accelerated timetable, the international community faces this nuclear Iran while “snapback” sanctions still remain available as a diplomatic tool. Had everyone complied with the JCPOA, Iran would only have begun building nuclear capacity as it is currently doing long *after* Termination Day, and hence long after the UN sanctions “snapback” provisions of UNSCR 2231 had also evaporated. Moreover, continued adherence to the JCPOA would have prevented either the United States or European countries from employing their *own* national sanctions to put extra pressure on Tehran, for under that deal they had forsworn imposing any more nuclear sanctions on Iran.

As it is, however, the early U.S. withdrawal allows us a powerful tool that we would not otherwise have had under the JCPOA when faced with an expanding nuclear Iran. As this author put it in remarks in May 2024 at the Lawrence Livermore National Laboratory (LLNL), “since this is ... not 2035, the responsible countries of the world still have options – and *better* options than we would have had if the United States had not pulled out and it were today 2035.”¹²⁷

The “Snapback” Option that Still Remains

What might such a “snapback”-based approach look like? The basic idea would be fairly simple. The United States and the EU-3 countries – joined by the EU itself, which is also defined as a JCPOA participant State by UNSCR 2231 – would propose the substantive framework for a JCPOA successor deal and give Iran the chance either to accept it or to face the resumption of full UN sanctions.

With some luck, Iran would accept this proposal, and a successor agreement would be worked out and brought into force – backed by a UNSCR – prior to October 18, 2025. (This might even take the form of a legally-binding treaty, subject in the United States to Senate advice and consent.) Much more likely, however, one or more of these elements would not occur in time. Iran might well reject such a deal, for instance, and even if a framework agreement were reached, a fully fleshed-out replacement agreement might not be ready in time. (Such an approach might also face a veto at the UNSC from the increasingly truculent and disruptive Russian and Chinese regimes.) In such

circumstances, however, one or more of the EU-3 states, or the EU itself, would invoke “snapback” pursuant to the terms of UNSCR 2231, thereby restoring full pre-JCPOA, UN sanctions on Iran.

The point of these sanctions would not be to punish Iran *per se*, at least not initially, but rather to create an incentive structure conducive to successful diplomacy. The United States and its European partners would seek to continue negotiations with Iran, and were Tehran to approach such talks constructively and accept reasonable terms, those Western states would move to ensure appropriate sanctions relief at the UNSC. (Sanctions *relief* for Iran, at least, would be unlikely to face a Russian or Chinese veto!) To be sure, “this relief would have to be bargained for and win support of the Security Council” and would thus “need to be earned on the merits of a new agreement.”¹²⁸ But that is precisely what diplomacy is for.

If Iran remained intransigent, of course, no such relief from “snapped-back” UN sanctions would be sought, and such sanctions would therefore remain in place indefinitely. In that eventuality, the purpose of these sanctions would expand to include outright punishment, for the objective would then be to replicate (or to exceed) the pressure Iran faced from the Trump administration, in order to cut back the resources that would thereafter be available to the regime in Tehran for its nuclear program, its development of long-range missile and drone capabilities, and its sponsorship of terrorism and proxy militias in the Middle East and farther afield. Not incidentally, moreover, such pressures would send a powerful signal to other would-be nuclear weapons-seekers and violators of international law that such destabilizing misbehavior entails tremendous costs and risks, thus helping buttress the tottering global nuclear nonproliferation regime and helping deter such actions elsewhere.

The Europeans Begin to See the Light?

Notably, it is the *Europeans* who control the most important diplomatic tool. As described earlier, the United States has *already* invoked UNSCR 2231 “snapback,” – thus, in theory, UN sanctions are *already* back in place. Since the world largely ignores that or pretends otherwise, however, the crucial step now will have to be the invocation

of “snapback” by one or more of the JCPOA’s European participants. If they are willing to take this step, diplomacy still has at least some opportunity to try to negotiate a solution to the Iranian nuclear crisis.

And, promisingly, there may in fact be some chance of them doing so. Given the continuing massive expansion of Iran’s fissile material program and its obstruction of IAEA inspection activities – as well as Tehran’s reckless and destabilizing support for proxy Shi’ite militias in Iraq, its alliance with the brutal Assad regime in Damascus, its continued sponsorship of Hezbollah terrorists in Lebanon, its encouragement of genocidal Hamas violence against Israel, its supply of drones and cruise and ballistic missiles that Houthi forces in Yemen have been using against international shipping, and its direct use of long-range missiles and drones against Israel – it is perhaps not surprising that European officials now look upon diplomatic engagement with Iran through more jaundiced eyes than they did some years ago. Indeed, as this author has pointed out, European diplomats today are starting to say things that sound remarkably like the talking points that *U.S.* officials made *to them* back in 2017-18.¹²⁹

Specifically, European officials involved in the Iran matter seem to be starting to recognize several critical things about the Iran problem today that they refused to acknowledge before:

- First, they now increasingly understand that we must avoid squandering the opportunity to use sanctions to pressure Iran to limit its nuclear program. Back then, that meant *not* sticking to the JCPOA’s forswearing of all such sanctions into the future. Today, it means not letting October 2025 pass without triggering UN sanctions “snapback” in the event that there’s not a new and better deal with Iran in place by that point.
- Second, the Europeans seem increasingly now to understand that it really does make no sense to try to isolate the “Iran nuclear file” from other hugely problematic aspects of Iran’s behavior, such as its continuing missile provocations, its destabilization of

its neighbors, and its penchant for conducting subversive operations on foreign soil, even in Europe.

- Third, the Europeans seem to understand that we need to replace and extend the JCPOA sunset clauses with more enduring limitations on Iranian nuclear capabilities. They didn't seem to care much back in 2017 that key JCPOA restrictions would evaporate eventually, but they apparently care now – and they realize that it's actually a *terrible* idea to condone, as the JCPOA did, eventually allowing Iran to enrich as much weapons-grade uranium as it wants.
- Fourth and finally, in order to achieve the abovementioned objectives, the Europeans also now seem to understand that the international community needs to increase pressure on Iran as quickly as possible.¹³⁰

One can only regret that it took seven years for European diplomats to come to these realizations, but it does appear that at least *some* consideration is being given to invocation of the “snapback” remedy. The British ambassador to the United Nations, for instance, has said that “we will continue to keep all diplomatic options on the table, including triggering UN snap back before October 2025, if necessary.”¹³¹

Conclusion

This paper has outlined the basis of a new diplomatic and sanctions push to negotiate an end to the Iranian nuclear crisis. It may, in fact, be the only real chance that remains.

The author, of course, makes no claim that such a “snapback”-based effort would be any kind of a miracle cure. There are, as the old English proverb has it, many possible “slips ‘twixt the cup and the lip,” and recognizing the need for such an approach is not the same thing as being able to adopt one. Nor is adopting such an approach the same thing as getting Iran to agree to a new deal, nor ensuring that

implementation of a new agreement is sustained and successful. The recent slippage of both China and (especially) Russia into a more “pro-proliferation” modes,¹³² not least as supporters and – in Russia’s case – quasi-allies of the Iranian regime, also lessens the odds of success, both by making UNSC cooperation less likely and by surely making Iran more inclined toward defiance.

Indeed, in Western diplomatic terms, judging from recent reports that Biden administration officials attempted to persuade Europe *not* to censure Iran at the IAEA Board of Governors,¹³³ it may be that in a historic role reversal, the Americans under his administration had become a bigger obstacle to diplomatic effectiveness right now than the Europeans. Nevertheless, with President Trump again in charge of American policy toward Iran, it may be that a new “snapback”-based Iran diplomatic push can yet be mounted – with U.S. and European officials working closely together – to help address the Iranian crisis and improve international peace and security in the Middle East.

If officials can bring themselves to act before the “snapback” opportunity *itself* “sunsets” in October 2025, there remains a chance that a bold new Euro-American initiative can use UNSCR 2231 as a tool to support negotiations with Iran. Time, however, is very short.

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About the Author

Dr. Christopher Ford is Professor of International Relations and Strategic Studies with Missouri State University’s School of Defense and Strategic Studies, and a Distinguished Visiting Fellow with the Pharos Foundation at Oxford. In prior government work, he served as U.S. Assistant Secretary of State for International Security and Nonproliferation, also performing the duties of the Under Secretary for Arms Control and International Security. This essay is a lightly edited version of a paper [originally published by the Center for Global Security Research at the Lawrence Livermore National Laboratory](#), and is used here with permission.

The opinions expressed herein are entirely the author’s own, and do not necessarily reflect the views of anyone else.

Notes

- (1) IAEA Director-General Rafael Grossi, *Verification and monitoring in the Islamic Republic of Iran in light of United Nations Security Council Resolution 2231 (2015)*, GOV/2024/26, May 27, 2024, 2, 5.

<https://www.iaea.org/sites/default/files/24/06/gov2024-26.pdf>. Accessed September 18, 2024. For more on the Additional Protocol, see note 6 below.

- (2) Grossi, *Verification and monitoring in the Islamic Republic of Iran*, 3, 20.
- (3) Grossi, *Verification and monitoring in the Islamic Republic of Iran*, 6, 21.
- (4) Grossi, *Verification and monitoring in the Islamic Republic of Iran*, 3, 6.
- (5) The Additional Protocol (AP) is an agreement that supplements baseline IAEA nuclear safeguards in any given country, providing IAEA inspectors with more robust authorities to verify that no undeclared nuclear materials or facilities exist there. It was developed after revelations about Iraq's nuclear weapons program after 1991 made clear the limitations of traditional safeguards agreements. In this regard, the AP "significantly increases the IAEA's ability to verify the peaceful use of all nuclear material in States with comprehensive safeguards agreements." As of March 2024, Additional Protocols were in place with 141 states, as well as the European uranium enrichment consortium EURATOM. See IAEA, "Additional Protocol," <https://www.iaea.org/topics/additional-protocol>; For the model terms the IAEA provides for the negotiation of such protocols, see IAEA, *Model Protocol Additional to the Agreement(s) Between State(s) and the International Atomic Energy Agency for the Application of Safeguards*, INFCIRC/540, September 1997, <https://www.iaea.org/sites/default/files/infcirc540.pdf>.

There is little question that the AP provides vital investigative authorities for the IAEA, and its universalization as the new global safeguards standard is a high priority goal for U.S. officials and other likeminded nonproliferation leaders. Nevertheless, there is irony in the fact that even the AP proved demonstrably inadequate in the face of denial and deception on Iran's scale. This was explicitly recognized even by IAEA Director-General El-Baradei in 2005: "Given Iran's past concealment efforts over many years, such transparency measures should extend beyond the formal requirements of the Safeguards Agreement and Additional Protocol and include access to individuals, documentation related to procurement, dual use equipment, certain military owned workshops and research and development locations." See IAEA Director-General Mohammed El-Baradei, *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran*, GOV/2006/67, September 2, 2005, 11, 50. <https://www.iaea.org/sites/default/files/documents/gov2005-67.pdf>. Accessed September 18, 2024.

- (6) The amount of work done in the process of enriching uranium is measured in "separative work units" (SWU), a unit of measurement that "indicates the energy input relative to the amount of uranium processed, the degree to which it is enriched (*i.e.*, the extent of increase in the concentration of the U-235 isotope relative to the remainder) and the level of depletion of the remainder - called the 'tails.' The [SWU] unit ... measures the quantity of separative work performed to enrich a given amount of uranium a certain amount when feed and product quantities are expressed in kilograms." For present purposes, the key point about the number of SWUs it takes to enrich uranium is that most of the work is done at *lower* levels of enrichment. By the time material is enriched even to 20 percent U-235, the vast majority of the work of getting that material to an optimal weapons-grade level of around 90 percent has already been accomplished. Remarkably few additional SWUs - and hence very little time - are needed to push uranium from 20 percent to 90 percent, and very few indeed to bring uranium already at the 60 percent level up to weapons grade. "The curve flattens out so much because the mass of material being enriched progressively diminishes to these amounts, ... so [it] requires less effort relative to what has already been applied to progress a lot further in percentage enrichment. The relatively small increment of effort needed to achieve the increase from normal levels is the reason why enrichment plants are considered a sensitive technology in relation to preventing weapons proliferation" See World Nuclear Association, "Uranium Enrichment," October 11, 2022, <https://world-nuclear.org/information-library/nuclear-fuel-cycle/conversion-enrichment-and-fabrication/uranium-enrichment>.
- (7) Grossi, *Verification and monitoring in the Islamic Republic of Iran*, 5.
- (8) Grossi, *Verification and monitoring in the Islamic Republic of Iran*, 5-6.

- (9) Grossi, *Verification and monitoring in the Islamic Republic of Iran*, 7 & 14-16.
- (10) Grossi, *Verification and monitoring in the Islamic Republic of Iran*, 7 & 17.
- (11) See, e.g., Francois Murphy, "IAEA Report: Iran installs more centrifuges at Fordow enrichment plant," Reuters, June 13, 2024, <https://www.reuters.com/world/middle-east/iaea-report-iran-installs-more-centrifuges-fordow-enrichment-plant-2024-06-13/>.
- (12) For more on the complexities and challenges of "virtual" nuclear weapons status, see, e.g., Christopher A. Ford, "Nuclear Weapons Reconstitution and its Discontents: Challenges of 'Weaponless Deterrence,'" in *Deterrence: Its Past and Future*, George P. Shultz, Sidney D. Drell, & James E. Goodby, eds. (Hoover Institution Press, 2011), 131-215.
- (13) See David Albright, Sarah Burkhard, Spencer Faragasso, and Andrea Stricker, *Analysis of IAEA Verification and Monitoring Report – February 2024*, Institute for Science and International Security, March 4, 2024, 1 & 16, https://isis-online.org/uploads/isis-reports/documents/Analysis_of_February_2024_IAEA_Iran_Verification_Report_March_4_2024_Final.pdf.
- (14) See Laurence Norman, "Biden Administration Presses Allies Not to Confront Iran on Nuclear Program," *Wall Street Journal*, May 27, 2024, <https://www.wsj.com/world/middle-east/u-s-opposes-european-plan-to-censure-iran-over-nuclear-work-85ad7fc6>.
- (15) IAEA Board of Governors, "NPT Safeguards Agreement with the Islamic Republic of Iran," GOV/2024/39, June 5, 2024, 2-6. <https://www.iaea.org/sites/default/files/documents/gov2024-39.pdf>.
- (16) See generally, e.g., Kelsey Davenport, "Timeline of Nuclear Diplomacy with Iran, 1967-2023," Arms Control Association, <https://www.armscontrol.org/factsheets/Timeline-of-Nuclear-Diplomacy-With-Iran>. Accessed September 18, 2024; Iran Watch, "A History of Iran's Nuclear Program," Wisconsin Project on Nuclear Arms Control, December 19, 2023, <https://www.iranwatch.org/our-publications/weapon-program-background-report/history-irans-nuclear-program>.
- (17) See, e.g., U.S. Institute of Peace, "The Iran Primer," January 22, 2020, <https://iranprimer.usip.org/blog/2020/jan/22/iran-and-npt/>.
- (18) See William Burr, "U.S.-Iran Nuclear Negotiations in 1970s Featured Shah's Nationalism and U.S. Weapons Worries," *National Security Archive*, Electronic Briefing Book No. 268, January 13, 2009, <https://nsarchive2.gwu.edu/nukevault/ebb268/>.
- (19) Iran Watch, "A History of Iran's Nuclear Program."
- (20) See generally, e.g., Gordon Carera, "AQ Khan: the most dangerous man in the world?" BBC, October 10, 2021, <https://www.bbc.co.uk/news/world-asia-58857827>.
- (21) See IAEA Director-General Mohammed El-Baradei, *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran*, GOV/2005/67, September 2, 2005, 5-7, 14, 16, 18, & 21. <https://www.securitycouncilreport.org/atf/cf/%7B65BFCF9B-6D27-4E9C-8CD3-CF6E4FF96FF9%7D/Iran%20GOV200567.pdf>.
- (22) See U.S. Department of State, *Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments*, August 2005, 72-73. <https://2009-2017.state.gov/documents/organization/52113.pdf>.
- (23) *Ibid.*, p. 80. Article II of the NPT provides that "Each non-nuclear-weapon State Party to the Treaty undertakes not to receive the transfer from any transferor whatsoever of nuclear weapons or other

nuclear explosive devices or of control over such weapons or explosive devices directly, or indirectly; not to manufacture or otherwise acquire nuclear weapons or other nuclear explosive devices; and not to seek or receive any assistance in the manufacture of nuclear weapons or other nuclear explosive devices." See United Nations, *Treaty on the Non-Proliferation of Nuclear Weapons*, (signed July 1, 1968) (entered into force March 5, 1970) [hereinafter "NPT"], at Art. II, <https://disarmament.unoda.org/wmd/nuclear/npt/text/>.

- (24) Iran Watch, "Remarks by Alireza Jafarzadeh on New Information on Top Secret Projects of the Iranian Regime's Nuclear Program," Wisconsin Project on Nuclear Arms Control (August 14, 2002), <https://www.iranwatch.org/library/ncri-new-information-top-secret-nuclear-projects-8-14-02>.
- (25) Jeffrey Lewis, "NCRI did not discover Natanz," *Arms Control Wonk*, October 28, 2006, <https://www.armscontrolwonk.com/archive/201274/ncri-did-not-discover-natanz/>.
- (26) U.S. National Intelligence Council, *Iran: Nuclear Intentions and Capabilities*, National Intelligence Estimate, November 2007, https://www.dni.gov/files/documents/Newsroom/Reports%20and%20Pubs/20071203_release.pdf.
- (27) See, e.g., Steve Fetter and Frank von Hippel, "A Step-by-Step Approach to a Global Fissile Materials Cutoff," *Arms Control Today* 25, no. 8, October 1995, <https://cissm.umd.edu/research-impact/publications/step-step-approach-global-fissile-materials-cutoff>.
- (28) U.S. National Intelligence Council, "Iran: Nuclear Intentions and Capabilities," 5.
- (29) U.S. National Intelligence Council, "Iran: Nuclear Intentions and Capabilities," 5. Oddly, and in a seeming self-contradiction, after having said that they assessed with "high confidence" that Iran had "halted its nuclear weapons program," the NIE's drafters also declared later that the Department of Energy and the National Intelligence Council assessed "with only moderate confidence that the halt to those activities represents a halt to Iran's entire nuclear weapons program." (Perhaps those two organizations had seen through the disingenuousness of the NIE's top-line phrasing seeming to suggest, falsely, that after the autumn of 2003 Iran was not still making progress along the road to a nuclear weapons capability.)
- (30) Ewen Macaskil, Dan De Luce, and Julian Borger, "EU ministers strike Iran deal," *The Guardian*, October 22, 2003, <https://www.theguardian.com/world/2003/oct/22/iran.politics1>.
- (31) See, e.g., IAEA Director-General Mohammed El-Baradei, *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran*, GOV/2004/11, February 24, 2004, 11 & 69, <https://www.iaea.org/sites/default/files/documents/gov2004-11.pdf>.
- (32) See, e.g., IAEA Director-General Mohammed El-Baradei, *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran*, GOV/2004/60, September 1, 2004, 3 & 7. <https://www.iaea.org/sites/default/files/documents/gov2004-60.pdf>.
- (33) Samples taken at something called the Kalaye Electric Company in August 2003, for instance, "revealed the presence of high enriched uranium (HEU) particles and low enriched uranium (LEU) particles which were not consistent with the nuclear material in the declared inventory of Iran." See IAEA Director-General Mohammed El-Baradei, *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran*, GOV/2003/75, November 10, 2003, 3 & 9, <https://www.iaea.org/sites/default/files/documents/gov2003-75.pdf>. Reportedly, some of this contamination reached enrichment levels of 36% U-235. See Iran Watch, "Farayand Technique," Wisconsin Project on Nuclear Arms Control, December 21, 2003, <https://www.iranwatch.org/iranian-entities/farayand-technique>.
- (34) IAEA, *Communication dated 26 November 2004 received from the Permanent Representatives of France, Germany, the Islamic Republic of Iran and the United Kingdom concerning the agreement signed in Paris on 15 November 2004*, INFCIRC/637, November 26, 2004, 3. <https://www.iaea.org/sites/default/files/publications/documents/infcircs/2004/infcirc637.pdf>.

- (35) Iran Watch, "A History of Iran's Nuclear Program."
- (36) IAEA Director-General Mohammed El-Baradei, "Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran," 3 & 7.
- (37) IAEA "Iran Starts Feeding Uranium Ore Concentrate at Uranium Conversion Facility," August 8, 2005, <https://www.iaea.org/newscenter/pressreleases/iran-starts-feeding-uranium-ore-concentrate-uranium-conversion-facility>.
- (38) IAEA Director-General Mohammed El-Baradei, "Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran," 11 & 45.
- (39) IAEA Board of Governors, *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran*, GOV/2006/14, February 4, 2006, 1-2, <https://www.iaea.org/sites/default/files/documents/gov2006-14.pdf>.
- (40) UN Security Council, *Resolution 1696 (2006)*, S/RES/1696 (2006), 2, <https://documents.un.org/doc/undoc/gen/n06/450/22/pdf/n0645022.pdf>.
- (41) Article 41 of the UN Charter authorizes the UNSC to "decide what measures not involving the use of armed force are to be employed to give effect to its decisions, and it may call upon the Members of the United Nations to apply such measures. These may include complete or partial interruption of economic relations and of rail, sea, air, postal, telegraphic, radio, and other means of communication, and the severance of diplomatic relations." Charter of the United Nations (signed June 26, 1945) (entered into force October 24, 1945) [hereinafter "UN Charter"], Art. 41, <https://www.un.org/en/about-us/un-charter/full-text>.
- (42) UN Security Council, *Resolution 1736 (2006)*, S/RES/1736, December 27, 2006, 2, <http://unscr.com/en/resolutions/doc/1736>.
- (43) *Resolution 1736*, 2-4 & 3-8.
- (44) *Resolution 1736*, 4-5 & 12. An annex to Resolution 1737 listed these several entities. *Resolution 1736*, 8-9.
- (45) Christopher A. Ford, "Law, Iran and the Bomb," New Paradigms Forum, October 7, 2009), <https://www.newparadigmsforum.com/p110>.
- (46) David Sanger & William J. Broad, "U.S. and Allies Warn Iran Over Nuclear 'Deception,'" *New York Times*, September 25, 2009, <https://www.nytimes.com/2009/09/26/world/middleeast/26nuke.html>.
- (47) See, e.g., Robin Pomeroy, "Iran says has enriched 17 kg uranium to 20 percent purity," *Reuters*, June 23, 2010, <https://www.reuters.com/article/idUSTRE65M1CS/>.
- (48) See, e.g., "Iran's Bushehr nuclear plant begins operation," BBC, May 10, 2011, <https://www.bbc.co.uk/news/world-middle-east-13351134>.
- (49) IAEA Director-General Yukiya Amano, *Implementation of the NPT Safeguards Agreement and relevant provisions of Security Council resolutions in the Islamic Republic of Iran*, GOV/2011/65 (November 8, 2011), [in Annex] 3 & 12, <https://www.iaea.org/sites/default/files/documents/gov2011-65.pdf>.
- (50) Amano, *Implementation of the NPT Safeguards Agreement*, [in Annex] 3 & 13-14.
- (51) Amano, *Implementation of the NPT Safeguards Agreement*, 10 & 50 [main body of report].
- (52) Amano, *Implementation of the NPT Safeguards Agreement*, 7 & 38.

- (53) Amano, *Implementation of the NPT Safeguards Agreement*, 8 & 43. The interested reader will find Iran's efforts related to procuring nuclear related and dual use equipment and materials by military related individuals and entities discussed in more detail in Sections C.1 and C.2 of the November 2011 report's Annex. Amano, *Implementation of the NPT Safeguards Agreement*, [in Annex] 4-6 & 18-26. Undeclared pathways for producing nuclear material are covered in Amano, *Implementation of the NPT Safeguards Agreement* [in Annex] 7 & 27-30. Nuclear weapons development information and documentation from a clandestine nuclear supply network is discussed in Amano, *Implementation of the NPT Safeguards Agreement*, [in Annex] 7-8 & 31-37. Finally, development of and component testing for an indigenous nuclear weapon design are discussed in Amano, *Implementation of the NPT Safeguards Agreement*, [in Annex] 8-12 & 38-65.
- (54) Amano, *Implementation of the NPT Safeguards Agreement*, 8 & 44.
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- (56) David Albright, Paul Brannan, Mark Gorwitz, & Andrea Stricker, "ISIS Analysis of IAEA Iran Safeguards Report: Part II – Iran's Work and Foreign Assistance on a Multipoint Initiation System for a Nuclear Weapon," Institute for Science and International Security, November 13, 2011, 5-6, https://isis-online.org/uploads/isis-reports/documents/Foreign_Assistance_Multipoint_Initiation_System_14Nov2011.pdf.
- (57) Joby Warrick, "Russian scientist Vyacheslav Danilenko's aid to Iran offers peek at nuclear program," *Washington Post*, November 13, 2011, https://www.washingtonpost.com/world/national-security/russian-scientist-vyacheslav-danilenkos-aid-to-iran-offers-peek-at-nuclear-program/2011/11/12/gIQAeuiCJN_story.html.
- (58) Albright et al, *ISIS Analysis of IAEA Iran Safeguards Report: Part II.*
- (59) David Albright, Olli Heinonen, & Serena Kelleher-Vergantini, "IAEA Visit to the Parchin Site," Institute for Science and International Security, September 22, 2015, https://isis-online.org/uploads/isis-reports/documents/IAEA_Visit_to_the_Parchin_Site_September_22_2015_Final_1.pdf. Stolen Iranian photographs released by Israel in 2018 show what is said to be the large implosion chamber at Parchin before it was dismantled. See David E. Sanger and Ronen Bergman, "How Israel, in Dark of Night, Torched Its Way to Iran's Nuclear Secrets," *New York Times*, July 15, 2018, <https://www.nytimes.com/2018/07/15/us/politics/iran-israel-mossad-nuclear.html>.
- (60) UN Security Council, *Resolution 1803 (2008)*, S/RES/1803, March 3, 2008, <https://documents.un.org/doc/undoc/gen/n08/257/81/pdf/n0825781.pdf>.
- (61) See UN Security Council, *Resolution 1929 (2010)*, S/RES/1929, June 9, 2010, 4-8 & 8-24. <https://documents.un.org/doc/undoc/gen/n10/396/79/pdf/n1039679.pdf>.
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- (72) Davenport, "The Joint Comprehensive Plan of Action (JCPOA) at a Glance."
- (73) United Nations, "Treaty on the Non-Proliferation of Nuclear Weapons."
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- (78) UN Security Council, *Resolution 2231*, 3 & 9.
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- (80) See UN Charter, *supra*, at Art. 27(3) ("Decisions of the Security Council on all other matters [apart from merely procedural ones] shall be made by an affirmative vote of seven members including the concurring votes of the permanent members."), <https://www.un.org/en/about-us/un-charter/full-text>. Barack Obama, "Videotaped Remarks by The President in Celebration of Nowruz," Obama White House Archives, March 20, 2009, <https://obamawhitehouse.archives.gov/the-press-office/videotaped-remarks-president-celebration-nowruz>.
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- (92) Hook was later appointed to be U.S. Special Envoy for Iran, where he led the U.S. "maximum pressure" campaign against Tehran, but at the time of these JCPOA negotiations he served as director of the Policy Planning Staff at the Department of State. When efforts first began to fix the "sunset clause" problem in 2017, the author of this paper served as Special Assistant to the President and National Security Council Senior Director for Weapons of Mass Destruction and Counterproliferation, but in January 2018 he became Assistant Secretary of State for International Security and Nonproliferation.
- (93) Simon Henderson, *Iranian Nuclear Breakout: What It Is and How to Calculate It*, Washington Institute for Near East Policy, March 24, 2021, <https://www.washingtoninstitute.org/policy-analysis/iranian-nuclear-breakout-what-it-and-how-calculate-it>.
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- (95) IAEA, "IAEA Safeguards Glossary, 2001 Edition," 23; For additional nuance related to specific isotopes of the metals in question, it is worth noting that the eight-kilogram figure for plutonium being defined as "Pu containing less than 80% Pu-238. For enriched uranium, it is specified that the 25-kilogram figure applies to Highly Enriched Uranium (HEU) enriched to greater than or equal to ("≥") 20% of U-235. (Note also that

IAEA figures give an eight kilogram SQ figure for U-233.). IAEA, "IAEA Safeguards Glossary, 2001 Edition," 23. A specific level of enrichment is not specified for the 25-kilogram HEU figure; most commentators refer to 90% enriched uranium as weapons-grade material, but uranium at any level of enrichment beyond around 20% – which is the definition of HEU – can in theory be used. As explained by the Nuclear Threat Initiative, "[a]ll HEU is weapons-usable, but the lower the enrichment level the greater the amount of material required to achieve a critical mass – the amount of material required to build a bomb. States with nuclear weapons typically use so-called weapons-grade HEU, which is typically defined as 90% HEU or above, to minimize weapons' size. Smaller and lighter nuclear weapons are much easier to deliver; ballistic missiles in particular can only deliver highly miniaturized nuclear weapons." Nuclear Threat Initiative, "Nuclear 101: Module 2 – Uranium Enrichment," 2023, <https://tutorials.nti.org/nuclear-101/uranium-enrichment/>.

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