



# Toward a Final Nuclear Deal with Iran

By Benjamin Armbruster July 17, 2014

The United States and its five international partners, the United Kingdom, France, China, Russia, and Germany—known as the P5+1—are nearing their self-imposed July 20 deadline to reach a final agreement with Iran on the future of the country’s nuclear program. The parties are currently in Vienna, Austria, working out the contours of a comprehensive deal. Diplomats are telling reporters that the two sides remain far apart on key issues and talks to extend the negotiation process have reportedly begun.

The general outline of what the P5+1 and Iran hope to achieve this week was laid out in the Joint Plan of Action, or JPOA—the interim agreement signed in Geneva, Switzerland, in November 2013 that froze Iran’s nuclear program and allowed for increased inspections in exchange for modest sanctions relief.<sup>1</sup> The International Atomic Energy Agency, or IAEA, the United Nations’ nuclear watchdog, has since reported that Tehran has been in full compliance with that interim deal.<sup>2</sup>

According to the JPOA, the two sides agreed that the final deal would be “a long-term comprehensive solution” to the Iranian nuclear issue. The deal would last for a decade or more, according to senior administration officials, and “involve a mutually defined enrichment program with practical limits and transparency measures to ensure the peaceful nature of the program.”

A negotiated agreement with the Iranians that ensures its nuclear program is used only for peaceful purposes would require the following three key components.

---

## 1. Strong and effective verification and monitoring mechanisms

The most important component of a final deal with Iran will be the scope and size of the verification regime monitoring Iran’s nuclear program. Iran is party to the Treaty on the Non-Proliferation of Nuclear Weapons and subject to IAEA monitoring of its declared nuclear facilities. The long crisis over Iran’s nuclear ambitions stems from its lack of transparency with the IAEA and evidence of a secret weapons program. The interim nuclear agreement reached last November in Geneva dramatically increased the scope of inspections and the information that the international community has on Iran’s efforts; a final deal will require an even more robust program of full transparency.

To be comprehensive, any agreement will have to include implementation of the “Additional Protocol” to Iran’s safeguards agreement with the IAEA, giving the U.N. nuclear watchdog the authority to inspect nuclear-related sites outside of Iran’s declared program, including any nondeclared sites without prior notification. The latter, as the Arms Control Association, or ACA, notes, “is a strong deterrent against any clandestine nuclear weapons work.”<sup>3</sup> Many other nations have taken similar steps, including South Africa, which abandoned its nuclear weapons program in the 1990s and announced in 2002 that it would adhere to the Additional Protocol.<sup>4</sup> And South Korea disclosed its nuclear work after ratifying the Additional Protocol in 2004.<sup>5</sup> Iran itself signed the Additional Protocol in 2003, but its parliament never ratified it,<sup>6</sup> and Iran announced in 2006 that it would cease its implementation.<sup>7</sup>

A strong monitoring and verification program will be the primary guard against a so-called breakout—a situation in which Iran decides to use its nuclear facilities to enrich uranium to weapons-grade levels. If the Iranians decided to return to a weapons-grade enrichment program, close inspections would be able to detect it and would allow the United States and its international partners enough time to respond to prevent Iran from building a nuclear weapon.

---

## 2. A limited civilian nuclear program

As the JPOA states, all sides must agree on the size and scope of Iran’s civilian nuclear program. There are two paths toward creating the material needed for a nuclear weapon—using plutonium or uranium. Iran currently has the capacity for both.

### The plutonium path at Arak

On the plutonium side, the final deal will likely determine the future of Iran’s yet-to-be-completed heavy-water reactor at Arak. Iran agreed to freeze construction at Arak as part of the interim agreement and has thus far done so. At the same time, it maintains that the reactor will be used to produce medical isotopes, but the United States and its allies fear Arak’s potential, as experts say the facility can also be configured to develop nuclear weapons.

Iranian leaders have said they oppose shutting down the facility as part of the final deal, but they have also indicated that they are willing to modify its design to reduce the amount of weapons-grade plutonium available in its spent fuel while at the same time keeping the Arak reactor running for medical purposes.

The head of Iran's atomic energy organization, Ali Akbar Salehi, indicated as much last month, saying the amount of plutonium the reactor will produce will be drawn down from around 22 pounds per year to around 2 pounds per year.<sup>8</sup> Experts say 20 pounds to 22 pounds of plutonium is needed for one nuclear weapon.<sup>9</sup>

"We are currently busy redesigning that reactor to arrange for that alteration," Salehi reportedly told Iranian media.

While both sides have reportedly said the Arak issue is no longer a problem, the key issue is whether Iran will agree to reconfigure Arak in such a way that will make it more difficult to revert the facility back to its original design.<sup>10</sup>

### The uranium path: Subterfuge and centrifuges

U.S. intelligence concluded in 2007 that Iran halted its work on nuclear weapons in 2003; top intelligence officials have since said that the Iranians have not decided on whether to build a nuclear weapon but are keeping the option open.<sup>11</sup> Because of their relative mastery of the uranium path versus the plutonium path, if the Iranians were to decide to build a nuclear weapon, they would probably choose the uranium path and most likely at undeclared enrichment facilities.<sup>12</sup> This uranium enrichment program has been the focus of international scrutiny for more than a decade as the IAEA revealed the extent of Tehran's evasion about the nature of its uranium program.

Given Iran's historical lack of transparency and the likelihood of a nuclear program existing prior to 2004, the United States and its allies should be skeptical when Iran maintains that the current uranium program is entirely peaceful.<sup>13</sup> According to the JPOA, the future of Iran's uranium nuclear program as part of the final deal will be "consistent with its practical needs" in terms of current and future civilian energy. However, determining and agreeing on what Iran's practical needs are is the most difficult aspect of the negotiations, and disagreements on this issue could delay or even derail a final deal.

That enrichment capacity and "practical needs" designation rests on the number of centrifuges Iran deploys, operates, and develops. Iran currently has just over 19,000 first-generation IR-1 centrifuges installed—with nearly 10,000 in operation—at two separate facilities in Natanz and Fordow, and about 1,000 advanced IR-2M machines at Natanz.<sup>14</sup> The IR-2M machines can enrich uranium to weapons grade at a much faster pace than the first-generation model. According to a recent report by the ACA, "Experts assess that 25,000 IR-2M centrifuges would likely have a similar capacity as 100,000 IR-1 centrifuges."<sup>15</sup>

As noted above, assessments of Iran’s “practical needs” vary widely based on the points of view of the respective governments involved in the negotiations. Indeed, some say that the Iranians can meet their energy needs with 20 percent of its current capacity by operating just 2,000 IR-1 machines instead of the 10,000 it currently uses, and with cooperation by the international community in supplying additional nuclear fuel. Meanwhile, Iranian officials, including the supreme leader via Twitter, have said Iran would need well over 100,000 IR-1 centrifuges in operation, or some variation thereof, to meet current and future demands, including allowances for research and development of more modern nuclear technologies.<sup>16</sup>

A deal lies somewhere in the middle of these two positions. As such, reaching agreement on this issue will require creative thinking and difficult compromises to address Iran’s practical needs for civilian nuclear energy but also to ensure that Iran will not be able to quickly break out and enrich uranium to weapons-grade levels if it chooses to do so.

### Possible military dimensions of Iran’s nuclear program

The Iranians will also have to address questions about past possible military dimensions, or PMD, of its nuclear program in order for the IAEA to make a full and comprehensive assessment that Iran’s program is entirely peaceful. Moreover, determining how far the Iranians have come in mastering other aspects of weaponizing nuclear material outside of the uranium enrichment process, including work on explosive triggers and delivery devices, will give the international community a more informative picture of exactly how long it would take for Iran to assemble the materials needed for a weapon and to build and test it.

IAEA Director General Yukiya Amano recently said that Iran is showing signs of cooperation on this issue, as it has not done in the past.<sup>17</sup> But the IAEA’s PMD probe of Iran is unlikely to be finished before any nuclear deal between the P5+1 and Iran. The conclusion of this process likely will prove to be difficult given the probability that Iran had previously engaged in nuclear weapons work, coupled with their insistence that they have never sought nuclear weapons.

### Ballistic missiles

The U.N. Security Council has previously called on Iran to suspend uranium enrichment and cease work on ballistic missile technology, the presumed delivery vehicle of an Iranian nuclear weapon, while negotiations to resolve the crisis take place. The Joint Plan of Action says that a comprehensive deal must address those U.N. Security Council resolutions “with a view toward bringing to a satisfactory conclusion the U.N. Security Council’s consideration of this matter.”

While the interim agreement has essentially implemented the enrichment freeze the United Nations had sought, Iran still continues work on ballistic missiles. The lead U.S. negotiator with Iran, Undersecretary of State Wendy Sherman, addressed this issue during a congressional hearing back in February. “[I]f we can get to the verifiable assurance that [the Iranians] cannot obtain a nuclear weapon, ... then a delivery mechanism, important as it is, is less important,” she said.<sup>18</sup> Nonetheless, Iran will need to reassure the international community about its ballistic missile program as the United States and its allies remain concerned about Iranian missiles that can deliver a nuclear weapon.<sup>19</sup>

---

### 3. Sanctions relief

The Obama administration assembled a strong and comprehensive international coalition on Iran and imposed—with the help of the U.S. Congress—a set of crippling sanctions on the Islamic Republic that was a key factor in bringing the Iranians to the negotiating table.

The JPOA forecasts that a final nuclear agreement would “comprehensively lift UN Security Council, multilateral and national nuclear-related sanctions, including steps on access in areas of trade, technology, finance, and energy, on a schedule to be agreed upon.”

In the event that such a deal is reached, the Obama administration will need to work with Congress to progressively lift nuclear-related sanctions as it is able to verify that Tehran is in full compliance. President Barack Obama should exercise his executive authority to waive the nuclear-related sanctions for a period of time, perhaps a year or two, to allow the Iranians to gain confidence with the international community that it is in full compliance with the final agreement. Doing this would keep sanctions on the books in case of backsliding and makes sense for an interim period. If Tehran continues to stay in compliance, Congress would eventually need to amend the legislation to permanently lift the sanctions.

By that time, sanctions expert Kenneth Katzman of the Congressional Research Service recently said, “Iran would be presumably complying for two years. And you would have a two-year track record where Iran would say, we have fulfilled what we promised for two years. ... we would have a two-year track record of Iran complying and at that point Iran would be demanding termination of some sanctions.”<sup>20</sup>

---

## Conclusion

The United States and its allies and partners in the Middle East, particularly Israel, will be more secure with Iran's nuclear program under lock and key, with a robust international system of inspections to verify that Iran has no nuclear weapons program. This is possible if a final deal can be reached with a strong inspections program. In addition, this will be the best way to reduce the likelihood of other undesirable scenarios in the region such as nuclear proliferation by other states, terrorist groups gaining access to fissile material or nuclear weapons, or another conflict in the Middle East, should a possible Iranian nuclear weapons program spark a military strike by the United States or Israel.

If the P5+1 reach a final nuclear deal with Iran, opponents face a choice between supporting an agreement that will put inspectors on the ground with unprecedented access to Iran's nuclear facilities and beyond or a greater likelihood of an Iranian bomb with the prospect of another war in the Middle East. The comprehensive deal laid out in the Joint Plan of Action is a good deal for American security. It is the best path to prevent an Iranian bomb and to avoid another war.

*Benjamin Armbruster works with the National Security team at the Center for American Progress.*

---

## Endnotes

- 1 International Atomic Energy Agency, "Joint Plan of Action" (2013), available at <http://www.iaea.org/Publications/Documents/Infircs/2013/infirc855.pdf>.
- 2 Hayes Brown, "New IAEA Shows Iran Complying with Nuclear Agreement," ThinkProgress, February 20, 2014, available at <http://thinkprogress.org/world/2014/02/20/3313861/iaea-report-shows-iran-complying-nuclear-agreement/>.
- 3 Kelsey Davenport, Daryl G. Kimball, and Greg Thielmann, "Solving the Iranian Nuclear Puzzle: Toward a Realistic and Effective Comprehensive Nuclear Agreement" (Washington: Arms Control Association, 2014), available at [http://armscontrol.org/files/files/ACA\\_Iran\\_Briefing\\_Book\\_Update\\_June\\_2014.pdf](http://armscontrol.org/files/files/ACA_Iran_Briefing_Book_Update_June_2014.pdf).
- 4 International Atomic Energy Agency, "Non-Proliferation of Nuclear Weapons and Nuclear Security: IAEA Safeguards Agreements and Additional Protocols" (2005), available at <http://www.iaea.org/Publications/Booklets/nuke.pdf>.
- 5 Daniel A. Pinkston, "South Korea's Nuclear Experiments," James Martin Center for Nonproliferation Studies, November 9, 2004, available at <http://cns.miis.edu/stories/041109.htm>.
- 6 United States Institute of Peace, "Timeline of Iran's Nuclear Activities," available at <http://iranprimer.usip.org/resource/timeline-irans-nuclear-activities> (last accessed July 2014).
- 7 Paul K. Kerr, "Iran's Nuclear Program: Tehran's Compliance with International Obligations" (Washington: Congressional Research Service, 2014), available at <http://fas.org/sgp/crs/nuke/R40094.pdf>.
- 8 Fredrik Dahl and Michelle Moghtader, "Iran Says it is Redesigning Arak Reactor to Cut Plutonium Capacity," Reuters, June 12, 2014, available at <http://www.reuters.com/article/2014/06/12/us-iran-nuclear-arak-idUSKBN0EN0WK20140612>.
- 9 Ibid.
- 10 Louis Charbonneau and Parisa Hafezi, "Exclusive: Centrifuges Emerge as Key Sticking Point in Iran Nuclear Talks," Reuters, May 15, 2014, available at <http://www.reuters.com/article/2014/05/15/us-iran-nuclear-idUSBREA4E0GI20140515>.
- 11 *The New York Times*, "Key Judgments from a National Intelligence Estimate on Iran's Nuclear Activity," December 4, 2007, available at [http://www.nytimes.com/2007/12/04/washington/04text.html?pagewanted=all&\\_r=2&](http://www.nytimes.com/2007/12/04/washington/04text.html?pagewanted=all&_r=2&).
- 12 Ben Armbruster, "Israeli Intelligence Agrees with U.S. and IAEA that Iran has not Decided on Nuke Weapons," ThinkProgress, March 19, 2012, available at <http://thinkprogress.org/security/2012/03/19/446997/isreal-iran-us-iaea-nukes/>.
- 13 *The New York Times*, "Key Judgments from a National Intelligence Estimate on Iran's Nuclear Activity."
- 14 Davenport, Kimball, and Thielmann, "Solving the Iranian Nuclear Puzzle: Toward a Realistic and Effective Comprehensive Nuclear Agreement."
- 15 Ibid.
- 16 Siavosh Ghazi, "Iran's Supreme Leader Reveals Demands in Nuclear Talks," Agence France-Presse, July 8, 2014, available at <http://news.yahoo.com/nuclear-team-defend-irans-rights-khamenei-194020395.html>.
- 17 Fredrik Dahl, "U.N. Nuclear Chief Upbeat on Iran but says Bomb Probe Will Take Time," Reuters, June 2, 2014, available at <http://www.reuters.com/article/2014/06/02/us-iran-nuclear-iaea-idUSKBN0ED0S020140602>.
- 18 Greg Thielmann, "Iranian Missiles and the Comprehensive Nuclear Deal" (Washington: Arms Control Association, 2014), available at [http://armscontrol.org/files/Iran\\_Brief\\_Iranian\\_Missiles\\_Comprehensive\\_Nuclear\\_Deal.pdf](http://armscontrol.org/files/Iran_Brief_Iranian_Missiles_Comprehensive_Nuclear_Deal.pdf).
- 19 Louis Charbonneau and Parisa Hafezi, "Exclusive: Iran Pursues Ballistic Missile Work, Complicating Nuclear Talks," Reuters, May 15, 2014, available at <http://www.reuters.com/article/2014/05/15/us-iran-nuclear-missiles-idUSBREA4E11V20140515>.
- 20 Ben Armbruster, "Pro-Diplomacy Groups Ask House Committee Leaders To Clarify Iran Letter On Lifting Sanctions," ThinkProgress, June 19, 2014, available at <http://thinkprogress.org/world/2014/06/19/3450794/pro-diplomacy-groups-ask-house-committee-leaders-to-clarify-iran-letter-on-lifting-sanctions/>.