



Policy Memo

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On January 20, 2014, Iran began implementing the Joint Plan of Action (JPOA) negotiated between Tehran and the P5+1 (Britain, China, France, Germany, Russia, and the United States) and agreed to in Geneva on November 24, 2013. This “interim” accord represents places the first meaningful constraints on Iran’s nuclear capability in more than a decade. This brief memo outlines the implications of the JPOA on Iran’s nuclear program and identifies the basic components of a comprehensive agreement sufficient to ensure the peaceful nature of Iran’s nuclear program.

Benefits of the Joint Plan of Action

The JPOA freezes and modestly rolls back the most dangerous elements of Iran’s nuclear program for at least the next six months. The goal is to provide a diplomatic window to negotiate a final, comprehensive deal to resolve the Iranian nuclear crisis and prevent Iran from acquiring nuclear weapons. The deal is important because it prevents Iran from creeping much closer to a nuclear weapons capability while talks continue – something that almost certainly would have happened in the absence of the agreement. More specifically, the interim agreement, if fully implemented, produces four major benefits:

First, the agreement lengthens Iran’s nuclear “breakout” timeline (the time required to produce weapons-grade uranium, WGU). The Institute for Science and International Security (ISIS) estimates it would currently take as little as 1.3 to 2.3 months for Iran to produce one bomb’s worth of weapons-grade uranium (WGU) using a combination of its 3.5 percent and 20 percent uranium stockpile if Iran used its 10,000 currently

operating centrifuges; if it used all 18,000 installed (but not currently operating) centrifuges, it could do so in 1 to 1.6 month¹.

However, under the terms of the deal, Iran has agreed to stop enriching to 20 percent and neutralize its existing 20 percent stockpile through a mix of dilution and oxidation. According to ISIS's David Albright, if Iran stops 20 percent enrichment and neutralizes its 20 percent stockpile (through a mix of dilution and oxidation, as called for by the JPoA), this would lengthen the breakout time for WGU using 10,000 centrifuges to 3.1 to 3.5 months; if all 18,000 centrifuges were used, the breakout time would be 1.9 to 2.2 months². Under either set of calculations, the time for breakout effectively doubles as a result of the agreement. In contrast, in the absence of the deal, Iran may have been able to shorten its breakout timeline over the next six months to as little as two weeks.

Moreover, the agreement freezes Iran's centrifuge capacity and caps the 3.5 percent LEU stockpile, which addresses the concern that Iran could otherwise expand its centrifuge capacity over the next six months to the point that it could rapidly "skip a step," jumping straight from 3.5 percent LEU to WGU before Tehran's activities could be detected or stopped.

Second, the Geneva deal improves verification procedures, making a nuclear breakout at Natanz or Fordow almost inconceivable. Prior to the JPoA, IAEA inspectors visited Natanz and Fordow every one-to-two weeks, but under the deal, they will visit every day. Given the timelines discussed above, there would be no way under the JPoA for Iran to divert its stockpile of LEU, reconfigure its centrifuges to produce weapons-grade material, and race to a bomb at declared facilities without getting caught in ample time for the United States, Israel, or other countries to react to interdict the process.

Third, the deal puts the breaks on the plutonium track to a nuclear weapon. The major concern in this regard is the Arak heavy water reactor (HWR) which, once complete, could produce enough plutonium, if reprocessed, for one or two nuclear bombs a year. Although Arak was unlikely to be completed for at least a year even before the JPoA,

some worried that Tehran might rush to make the HWR operational by loading fuel into the reactor, effectively making it immune from military attack, and thereby providing an unstoppable plutonium pathway to nuclear weapons. The JPoA, however, prevents Iran from constructing any more fuel assemblies for Arak, prohibits it from loading the fuel it already has, and stops it from transferring heavy water to the reactor. Superficial construction on Arak can continue, but these measures will further delay construction of Arak and ensure that Iran cannot make it operational so long as the agreement remains in place. As a further precaution, the agreement also prohibits Iran from engaging in reprocessing activities or constructing a reprocessing facility to separate the plutonium required for nuclear weapons.

Finally, the JPoA makes it more difficult for Iran to construct a parallel, covert nuclear infrastructure. Although most analysts focus on breakout scenarios relying on overt, declared facilities, another danger is the construction of clandestine sites to produce weapons-grade material. (Indeed, Iran's two existing enrichment facilities, Natanz and Fordow, were initially built in secret.) Under the JPoA, however, it would be much more difficult for Iran to build a covert program without getting caught since the deal requires early notification of nuclear facilities and greatly expands inspector access to centrifuge production and assembly facilities, as well as uranium mines and mills. Keeping close tabs on these foundational capabilities would make it more difficult for Iran to divert technology and materials to secret labs. Limiting centrifuge production to the sole purpose of repairing existing installed machines – another element of the JPoA – puts further constraints on diversion.

Requirements for a Comprehensive Agreement

The aim of the interim JPoA is to buy time for a comprehensive nuclear accord. Such an agreement must meaningfully and verifiably prevent Iran from acquiring nuclear weapons by:

- Further lengthening breakout timelines. The final agreement should include sufficient technical constraints to ensure the timeframe between the initiation

of breakout and the production of fissile material for one or more weapons is sufficient to allow interdiction.

- Shortening detection timelines. Verification mechanisms must be in place to ensure that breakout activities would be detected the IAEA inspectors and through other means at the earliest possible stage.
- Provide assurances against a covert nuclear infrastructure. Transparency and verification mechanisms should be sufficient to detect construction of covert fuel-cycle facilities and weaponization activities.

In the aftermath of any agreement, the international community must also maintain the will and capability (and authority) to take effective action, including the use of military force if necessary, to prevent Iran's acquisition of enough fissile material for a nuclear weapon if breakout is detected³.

A comprehensive agreement that met these conditions would prevent and deter Iran from racing or sneaking to a nuclear bomb and, should the regime nevertheless decide to do so, provide ample time for the international community to interdict the process before it was completed. By itself, the JPoA is not sufficient to achieve these objectives since it leaves Iran's breakout timeline too short and lacks sufficient verification and transparency measures, including an accounting of the past military dimensions of Iran's program, for an enduring solution. Still, the JPoA is a very good first step.

As the P5+1 seeks to build on this progress in the next six to 12 months, some international figures⁴ and analysts have argued for the complete dismantling of Iran's fuel -cycle activities⁵. Nevertheless, given the Iranian regime's enormous commitment of financial resources – estimated to be at least \$100 billion – and political capital to defend the Islamic Republic's nuclear "rights," Supreme Leader Ayatollah Ali Khamenei is not likely to agree to these maximalist demands regardless of the threat of additional sanctions and targeted military strikes⁶.

Instead of adopting a maximalist position that seeks an ideal-but-unachievable agreement, the P5+1 should strive for a sufficient and achievable one: an accord that significantly limits fuel-cycle activities under stringent conditions and verification procedures designed to preclude Iran's ability to rapidly produce nuclear weapons. A "sufficient" deal would have several major components:

- Significant constraints on uranium enrichment, including: a cap on enrichment at the 5 percent level sufficient for civilian nuclear power reactors but far from bomb-grade; neutralizing or otherwise limiting the size of Iran's domestic stockpile of LEU to below one-bomb's worth of material; limits on the number, quality and/or output of centrifuges; and limit the number and size of enrichment facilities.
- Significant constraints on the plutonium track, including: dismantling Arak, converting Arak to a proliferation-resistant light water reactor, or otherwise neutralizing the facility; and prohibiting the future construction of reprocessing facilities.
- An intrusive inspections regime, including: ratification and implementation of the IAEA Additional Protocol, allowing inspections of undeclared facilities; requirements for early notification of new nuclear sites; more frequent inspections and 24/7 remote surveillance of key facilities; monitoring centrifuge research, development and production facilities, and uranium mines; and enhanced monitoring of trade in sensitive goods and technologies.
- Transparency into past military dimensions of the Iranian nuclear program, including: accounting for past weapons-related research and development; and providing IAEA access to key research facilities and scientists.

Taken together, these measures would substantially lengthen breakout timelines, shorten detection timelines, and provide assurances against an Iranian covert infrastructure. The significant constraints imposed on Iran's program by such a

proposal may be difficult for Tehran to stomach. But if paired with meaningful sanctions relief, it has a much better chance of success than insisting on the complete dismantling of Iran's program. Crucially, irrespective of whether the P5+1 formally recognize a right to enrichment (a step U.S. negotiators correctly say they will not do), the fact of limited enrichment under a sufficient deal would still allow Khamenei and President Hassan Rouhani to claim Iran's asserted rights had nevertheless been respected. Thus, unlike a maximalist approach, a deal that allows some limited enrichment under stringent constraints offers the regime a face-saving way out. Given the reprehensible conduct of the Iranian regime, an outcome that allows the supreme leader to save face with his people is unpalatable. But it is clearly preferable to a world in which the same regime marches toward an atomic bomb.

¹ Patrick Migliorini, David Albright, Houston Wood, and Christina Walrond, "Iranian Breakout Estimates, Updated September 2013," *Institute for Science and International Security*, October 24, 2013, http://isis-online.org/uploads/isis-reports/documents/Breakout_Study_24October2013.pdf.

² Fredrik Dahl, "Iran Nuclear Deal Seen Reducing Bomb Risk Despite Israeli Concerns," *Reuters*, November 24, 2013, http://uk.reuters.com/article/2013/11/24/uk-iran-nuclear-capability-idUKBRE9AN0DQ20131124?utm_content=bufferdc837&utm_source=buffer&utm_medium=twitter&utm_campaign=Buffer.

³ For a discussion of these requirements, see Robert Einhorn, "Is a 'Good' Deal Possible?" (Brookings Institution), October 24, 2013, <http://www.brookings.edu/research/speeches/2013/10/24-nuclear-deal-possible-iran-einhorn>.

⁴ "Transcript of Netanyahu's UN General Assembly Speech," *Haaretz*, October 1, 2013, <http://www.haaretz.com/news/diplomacy-defense/1.550012>.

⁵ Michael Singh, "Iran Nuclear Talks: A Brief History and the Road Ahead," Policy Notes, No. 15 (Washington Institute for Near East Policy), October 2013, https://www.washingtoninstitute.org/uploads/Documents/pubs/PolicyNote15a_Singh.pdf.

⁶ See Colin H. Kahl, "Inflection Point: Requirements for an Enduring Diplomatic Solution to the Iranian Nuclear Challenge," (Center for a New American Security), November 2013, http://www.cnas.org/sites/default/files/publications-pdf/CNAS_InflectionPoint_Kahl.pdf; and Colin H. Kahl, "The Danger of New Iran Sanctions," *The National Interest*, December 31, 2013, <http://nationalinterest.org/commentary/the-danger-new-iran-sanctions-9651>.