



## State Department Explanation of Iran's Newly Produced 3.5 Percent Enriched Uranium Falls Short

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June 5, 2015

The core of the State Department's explanation in the last few days appears to be that Iran meets the conditions of the Joint Plan of Action (JPA) once it feeds newly produced low enriched uranium (LEU) hexafluoride gas into the uranium conversion plant at Esfahan. Although this condition is part of what the Joint Plan of Action requires, it is not the whole requirement and not the problem at issue.

The State Department's point that Iran must return the stock of 3.5 percent LEU hexafluoride to its pre-JPA level is without dispute. While in meetings in October and November 2013 with one of us, senior National Security Council officials made clear that they wanted a condition in the JPA that would cap the amount of 3.5 percent LEU hexafluoride as part of achieving what they called a freeze in Iran's nuclear program. However, Iran would be allowed to continue enriching uranium during the JPA and therefore would generate new LEU hexafluoride. How then to operationalize this requirement? The solution was conceptually simple but depended on a facility Iran was then building, called the Enriched UO<sub>2</sub> Powder Plant (EUPP). This plant is designed to take LEU hexafluoride and convert it to enriched uranium dioxide (UO<sub>2</sub>) for subsequent use in making nuclear power reactor fuel. Because it was well known that Iran's nuclear facilities often face delays and technical problems, officials recognized that the plan of depending on such a facility carried some risks. Nonetheless, the U.S. requirement was operationalized in the JPA in the following manner:

"Beginning when the line for conversion of UF<sub>6</sub> enriched up to 5% to UO<sub>2</sub> is ready, Iran has decided to convert to oxide UF<sub>6</sub> newly enriched up to 5% during the 6 month period, as provided in the operational schedule of the conversion plant declared to the IAEA."

In the fall of 2013, the EUPP was expected to open in a few months, and Iran expected oxide production to rapidly follow. However, the conversion plant became operational only in July 2014. It has also encountered operational difficulties. It only recently started making enriched uranium dioxide. As of May 2015, the plant had made only 151 kilograms (kg), completing the conversion to oxide of only a tiny fraction of the newly produced LEU. The size of the newly produced stock is comprised of 2,720 kg of LEU hexafluoride already fed into the EUPP, another roughly 1,100 kg produced but not yet fed into the plant, and a few hundred kilograms of LEU hexafluoride expected to be produced in late May and June 2015. These amounts total to about 4,000 kg of 3.5 percent LEU hexafluoride, enough to potentially make 2-3 nuclear weapons if further enriched to weapon-grade uranium. (For those seeking more detail, in terms of the mass of uranium, this LEU stock is about 2,700 kg. This means that so far, about six percent of the enriched uranium has been converted into oxide form.)

Based on International Atomic Energy Agency (IAEA) reporting to member states, the problems in making enriched uranium oxide were apparent by the fall of 2015. According to a senior US official who discussed the matter with one of us at the time, the administration decided not to make a major issue about the lack of oxide production, stating that the important fact was that the intermediate material was not in

hexafluoride form. The emphasis was placed on the feeding of the newly produced hexafluoride into the plant by the end of a JPA period, regardless of whether it was being made into oxide.

No one is disputing that Iran has met the narrow condition of feeding all of the material into the plant in the past or doubting it can do so by the end of June 2015. After all, this condition does not amount to much. Technically to meet the condition, Iran has to connect LEU hexafluoride cylinders to the plant's process lines and begin feeding the LEU gas into the plant. It cannot be excluded that the feeding progresses slowly and some fraction of the LEU remains for some time in hexafluoride form in the cylinders connected to the EUPP's conversion lines. But ignoring this possibility as overly nitpicky, the feeding process is straightforward. However, achieving the remaining part of the condition set forth by the JPA, namely making the LEU oxide, has been anything but easy.

As a result, concluding that Iran has met the JPA condition to "convert to oxide UF6 newly enriched up to 5%," is incorrect. Maybe Iran can do so by the end of June, but we are skeptical, as we [stated](#) earlier. The State Department appears to be more confident. Given the stridency of their criticisms of those who have raised the oxidization issue, the State Department should explain the basis for their confidence. So far, the explanation has involved citing unnamed government nuclear experts as having a solution or working on the problem without providing any substance or even publicly acknowledging the oxidization condition in the JPA.

All of this being said, one has to ask whether this issue really matters. Yes, the LEU hexafluoride inventory will likely be capped and the intermediate products are less useful in a breakout than LEU hexafluoride. However, there are other aspects of this issue that are important to consider. The administration relied on a technical remedy (the use of the EUPP) that Iran had not yet demonstrated it could carry out. This raises further questions. Are there provisions being put into the comprehensive deal that also lack technical credibility and will cause unforeseen problems later?

If Iran is going to meet a cap of 300 kg of LEU, as stipulated in the April framework agreement, almost all, or perhaps all, of the LEU at the EUPP will have to be removed from Iran or blended down to natural uranium. With all the intermediate chemical forms and problems at the plant, can the LEU be blended down or removed in a safe and timely manner? Currently, the plant holds almost 1,700 kilograms of LEU (uranium mass) in intermediate chemical forms. At some opportune moment, will Iran seize upon the controversy to argue that these intermediate LEU products should be exempted from a 300 kg LEU cap? Yet, allowing the cap to increase above 300 kg would threaten the U.S. requirement that Iran would need at least 12 months to breakout and produce enough weapon-grade uranium for a bomb.

The oxidation provision is arguably not being fulfilled, since barely any uranium oxide has been produced during the initial JPA period and its two extensions. However, the language in the provision may allow some wiggle room for Iran to claim that the plant is still not "ready," although the language in the provision was meant to capture Iran's plans at the time the JPA was signed, which were that the plant would soon be operational. But the State Department has not made this argument in the last few days. It has posited that Iran has only to meet the weaker "hexafluoride cap" condition and not the oxidation one. However, this approach carries risks. It is effectively ignoring a potential violation. In this case, the potential violation refers to Iran not producing the enriched uranium oxide at the end of the initial six month period of the JPA and again after its first extension. **The choosing of a weaker condition that must be met cannot be a good precedent for interpreting more important provisions in a final deal.** Moreover, it tends to confirm the views of critics that future violations of a long term deal will be downplayed for the sake of generating or maintaining support for the deal.

We welcome a debate and value the State Department's frankness. But in this case, we believe the State Department has some explaining to do, publicly. Shooting the messengers is not going to make this issue go away. The deal is too important to all of us.