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D Minus Seven Years, and Counting

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The general assumption that underlay the conclusion of the Joint Comprehensive Plan of Action (JCPOA) between the P5+1 and Iran in July 2015 was that Iran would fulfill its part in the deal, at least for the first few years. It was not easy to persuade the US political establishment on this point, since the plan features loopholes and problems. However, the major selling point was President Obama's insistence that the JCPOA extends the Iranian "breakout time" – the time it would take for Iran to produce the first batch of fissile material, the essential component for a nuclear explosive device – from two months to one year. Yet despite this achievement, the main problem with the JCPOA is its "sunset provision," limiting its effectiveness to preset timelines.

The following discussion analyzes what could happen once this sunset period is reached. It does not consider the Iranian plutonium production route, since this is a long term project with present breakout times measurable in years. It also does not deal with the research and development (R&D) of the nuclear explosive mechanisms, which is prohibited but not monitored regularly by the IAEA, or with the weapons' delivery systems that are not part of the JCPOA – and both may well be continuing. The focus here is on the uranium enrichment route to a nuclear weapons capability, which is the critical path within Iran's nuclear project.

According to the JCPOA-imposed timelines for the enrichment project:

- R&D on two centrifuges of each type of the permitted seven gas centrifuge types can proceed immediately. The JCPOA does not stipulate that the R&D must be carried out on the same machines. Thus, a centrifuge can be tested and the design improved, and then be removed and scrapped, and a newer version of the same type can then be installed and tested. Mechanical testing of the machines, without the introduction of uranium, can proceed at both Natanz and Tehran.
- During the eighth year following "implementation day" (in January 2016), Iran will be permitted to install, test, and enrich, using 30 units each of the more advanced IR-6 and IR-8 types.
- Iran will be required to revert the products of the enrichment process to a natural uranium status for an additional two years, thus nullifying the enrichment process.

- Between years ten and fifteen, Iran will be permitted to enrich as much uranium as it wants, as long as the enrichment levels remain below 3.67 percent, suitable for use in power reactors.
- After fifteen years, there will be no limitations on the amounts, locations, and enrichment levels produced by Iran.

Consequently, there is ongoing Iranian R&D on seven advanced types of gas centrifuge uranium enrichment machines, capable of much more efficient enrichment than the present, almost obsolete, IR-1 model, which can go on enriching, with limitations on the amounts of the enrichment production. Thus, in the not too distant future, Iran will presumably have working models of several designs, with a maximum enrichment efficiency ten-fold or more than the present model. The installation of cascades (the setup and interconnections of the many centrifuges necessary for the enrichment process) is prohibited, and the machines cannot be installed at Natanz (the large Iranian enrichment facility) for at least eight years, and then, at a low rate, for two more years.

All these JCPOA timelines mean that if Iran abides by the agreement to the letter, by the eighth year, if not before, Iran can have perfected one or more centrifuge models capable of high rates of enrichment. Iran would be in a situation in which it had already prepared the *capacity* to produce as many centrifuges as it wants and at the rate of production it chooses, even if not actually producing these before the eighth year. By year ten Iran's breakout time will already have been reduced considerably; and by year fifteen Iran is officially permitted to do all it wants, including significant amounts of enrichment to military levels (around 90 percent). The breakout times will then be measured by weeks, not months, assuming its activities in R&D of the nuclear explosive mechanisms were not exposed.

Standing between Iran's capabilities and the application of these capabilities are Iran's formal obligations under the NPT and the JCPOA, the IAEA's verification mechanism, and the ability to make challenge inspections to undeclared installations based on intelligence information.

The catch is the assumption that Iran will continue to abide by its commitments to the JCPOA, and here the problem is twofold. The first issue is that Iran has already sought technologies and technical procurement. The second, more important issue is that preventing Iran from acquiring nuclear weapons cannot be based only on trust. Iran has in the past disregarded its obligations under the NPT; it has also disregarded Security Council demands concerning R&D, including testing, of its missile program. Had there been trust in Iran's abiding by its international commitments, there would have been no need for the "unprecedented" verification mechanism embedded in the JCPOA. And while this verification system has been hailed as the best ever, it is still not foolproof. Its

two main faults are that it cannot search for undeclared sites – that depends on the availability of intelligence that is never perfect – and it has no power to inspect Iran's R&D work on the delivery systems.

But the most important issue is the high probability that after ten years, Iran will proceed with the production of highly enriched uranium, and thus will have the capability to produce nuclear weapons almost at will, with a breakout time reduced to two months, if not less. Thus, the JCPOA is a setback for Iran, albeit probably temporary. The deferment of the issue for ten years or less is minor in the historical timescale. Iran knows how to be patient. There should be little doubt that unless something dramatic changes in the Iranian regime or its policies, it will seek this nuclear capability.

The euphoric greeting of the JCPOA by at least some world leaders eclipsed the fact that this joy may be short-lived. However, if the international community truly wishes to prevent Iran from achieving its nuclear ambitions, the approach of the IAEA Board of Governors to the issue should change. At the very least, Iran should be condemned for its past activities in the nuclear realm. The present atmosphere of focusing only on having avoided the nuclear crisis is not conducive to almost any preventive action regarding the potential scenario of an Iranian breakout after 10-15 years. Under these circumstances, when the countdown ends we will most likely find ourselves facing a nuclear Iran.

