Building on the Opportunity of the IAEA Report on Iran

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ABOUT THE AUTHORS

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Brief Analysis

Despite technical setbacks and political indecision, the military dimensions of Iran's nuclear program apparently continue and will become even more challenging over time.

The alarming headlines following last week's publication of the latest International Atomic Energy Agency (IAEA) report on Iran's nuclear activities and their likely military dimensions have revived the debate about how best to deal with the challenge. During this weekend's Asia Pacific Economic Cooperation summit in Hawaii, President Obama defended sanctions on Iran, saying they have "enormous bite." But he apparently encountered opposition for more such measures in meetings with the Russian and Chinese presidents. The IAEA Board of Governors will tackle the issue in Vienna on November 17-18, and the strength of any resolution passed at the meeting will be an indication of the level of international agreement on how to deal with Iran.

New and Old Concerns

The IAEA report laid out the evidence that, despite denials, Iran is working on the building blocks for making nuclear weapons. The details regarding the nuclear program's suspected military dimension are in addition to already known areas of concern: the continued production of enriched uranium, the shift to higher-enriched uranium that would shorten the time to reach weapons-grade level, the concealment of nuclear activities and related construction, and Tehran's history of problematic cooperation with the IAEA.

The report also expressed the agency's continuing concern regarding Iran's noncompliance with its safeguards obligations and previous IAEA and Security Council resolutions -- behavior that has left the IAEA unable to provide assurances about the absence of undeclared nuclear material and activities in Iran. In this regard, the agency's findings of a possible military dimension to the nuclear program are particularly troubling.

Despite the report's detailed evidence, gaps remain in the IAEA's knowledge. The most important findings and gaps are highlighted below.

Military-Related Activities

According to the report, Iran carried out a structured program of activities relevant to the development of a nuclear explosive device until the end of 2003, with at least some of that work likely persisting into the present. For the first time, the IAEA has published organizational details of this program. The schema is complex: some activities were confined to the original program, while others shifted to different bodies. In any case, despite the changes, the report concludes that Iran's military-related nuclear activities probably continue today.

The report shows how Iran's activities in three technical areas -- the "green salt" project (an intermediate step in producing feed material for uranium enrichment), high explosives development, and re-engineering the Shahab-3 missile's reentry vehicle -- were consolidated under the so-called AMAD Plan from the late 1990s to early 2000s. Although the IAEA reported a halt in these activities in late 2003 and early 2004, it also noted that personnel involved in these efforts were deployed to other military-related entities, where some activities were subsequently resumed. For instance, work involving neutron initiators, triggering systems, mathematical modeling, and implosion experiments continued. The report further implies that Iran has knowledge of a fairly advanced nuclear weapon design and has tested some of its components, though it has not used actual nuclear material in those experiments.

Uranium Enrichment

Iran's fuel-enrichment plant (FEP) at Natanz has continued to operate with a monthly production rate of 140-150 kg of low-enriched uranium hexafluoride (UF6). Despite having no apparent need for the material, Iran continues to produce and stock it. The current total cumulative production -- 4,922 kg of UF6 -- would be sufficient for four atomic bombs if further enriched to weapons grade.

Such high enrichment levels would be difficult to achieve with the unreliable IR-1 centrifuges currently in place at Natanz. Yet the situation would change if Iran succeeded in its ongoing development of two more-advanced centrifuge types, known as IR-2m and IR-4. Assuming it is able to overcome remaining design problems and probable lack of special materials, Tehran would still need to bring approximately 2,000 of these new centrifuges into commission and run them for a few months before it could produce enough high-enriched uranium for a nuclear device. This breakout capability is achievable by 2013.

The Tehran Research Reactor. Earlier this year, Iran announced its intention to triple production of 20 percent enriched uranium, saying the step was needed to manufacture fuel for the Tehran Research Reactor (TRR), which produces medical isotopes. This objective appears to have evolved since then. The IAEA report indicated that Iran is continuing with its efforts to produce fuel for the IR-40 heavy-water reactor in Arak (the construction of which the UN Security Council asked Iran to halt, given concerns that it could produce plutonium, a nuclear explosive entirely different from high-enriched uranium). The TRR will be used to irradiate a test fuel assembly for the Arak reactor, a process expected to last several months. Consequently, Tehran is now saying that the increased production of 20 percent enriched fuel is needed for this purpose.

Signs of Parallel, Undisclosed Production

Concealment and denial have been hallmarks of Iran's nuclear activities, adding to the international community's lack of confidence in its declarations. Even now, the nuclear program's full extent is unclear. Iran built a number of its uranium enrichment facilities covertly (e.g., the Kalaye workshops in Tehran, the main and pilot FEPs at Natanz, and the Fordow FEP constructed inside a mountain near Qom), declaring them to the IAEA only after other countries made their existence known to the agency. Iran also failed to disclose its P2 centrifuge development until challenged on the issue by IAEA inspectors in 2004. The agency is still awaiting information about the construction of additional enrichment facilities that Tehran announced in 2009. And earlier questions regarding Iran's laser enrichment program remain unanswered.

This track record only exacerbates broader concerns about the possible existence of undeclared nuclear facilities and related materials in Iran. Accordingly, the latest IAEA report, like previous ones, emphasizes how Tehran has conducted much of its work in secrecy, increasing its enrichment capacity in the process.

In publishing these detailed findings, the IAEA has refocused the public debate and diplomatic discussion surrounding Iran's nuclear program. The challenge of maintaining international unity in dealing with the problem nonetheless remains. One test of this week's IAEA board meeting will be whether it can produce a strong resolution backed by all five permanent members of the UN Security Council (the United States, Russia, China, Britain, and France). In the longer term, the international community must remain mindful that despite technical setbacks and political indecision, the military dimensions of Iran's nuclear activities have apparently persisted and will therefore become even more challenging over time.

Olli Heinonen, a senior fellow at Harvard University's Belfer Center for Science and International Affairs, formerly served as deputy director-general and head of the Department of Safeguards at the IAEA. ❖

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