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The Veil Slowly Lifts on North Korea's Nuclear Program

Recent satellite images suggest that North Korea is modernizing its nuclear facilities. This not only suggests that its determination to acquire nuclear weapons is now irreversible, it may also require the international community to rethink how it entices Pyongyang back to the negotiation table, or so argues Axel Berkofsky.

By Axel Berkofsky for ISN

Does North Korea want the bomb? The answer to this question is 'most probably yes', especially if it supports Pyongyang's commitment to defend the country against 'US imperialists' and South Korea's 'puppet regime'. Indeed, the most disconcerting evidence to date of North Korea's determination to develop nuclear weapons came in 2006 and 2009 when it detonated plutonium devices in underground tests. However, more recent reports and satellite imagery suggest that North Korea has made significant progress in the development of its nuclear weapons program over the last 12 - 18 months. Today, North Korea's new leader, Kim Jong-Un, presides over a program that no longer focuses on graphite moderated reactors and plutonium production, but instead on more complex and sophisticated light water reactors (LWR) and uranium enrichment. This, in turn, suggests that - technical problems and financial bottlenecks aside - Pyongyang's determination to develop and deploy nuclear weapons is now all but irreversible.

Mixed signals (again)

This has not stopped North Korea from continuing to send out mixed signals to the international community regarding the true purpose and capabilities of its nuclear program. In February 2012, for example, Kim Jong-Un announced plans to terminate uranium enrichment and allow international inspectors to verify and monitor the country's nuclear facilities. In return, Washington promised to ship much-needed [food aid](#) to North Korea. Pyongyang also agreed on a moratorium on the launch of long-range missiles and declared itself willing to resume the Six-Party Talks (after its *de facto* suspension in 2009).

However, North Korea reverted back to type in April when Pyongyang not only renounced US food and humanitarian aid but also conducted a rocket launch. Despite Pyongyang's claim that the objective of the launch was to place a weather satellite into orbit, the United States and others were quick to label it a test of long-range missile technology. Indeed, while the rocket eventually crashed into the Yellow Sea, it also reaffirmed beliefs that North Korea now has the limited capability to launch missile

technologies and keep them in flight.

Olli Heinonen, former Deputy Director General of the International Atomic Energy Agency (IAEA), also [writes](#) that even if inspectors were allowed to monitor North Korea's nuclear facilities, it would most likely be the sites to which the IAEA was granted access under the 2007 agreement reached at the Six-Party Talks. Accordingly, inspectors would have been limited to verifying whether the so-called Uranium Enrichment Workshop (UEW) (operative since 2009) has been shut down (which it has not). There would have been no inspections of Pyongyang's inventory of low enriched uranium (LEU) or visits to installations that are thought to be part of the conversion and enrichment process.

One bomb per year

Stanford University's Siegfried Hecker - who visited the North's Yongbyon nuclear complex in November 2010 - nevertheless argues that North Korea's enrichment facilities could be converted to produce highly enriched uranium (HEU). He further maintains that the [light water reactor at Yongbyon](#) could be also developed to produce weapons-grade plutonium. Hecker was also shown a small-scale industrial uranium enrichment facility, which he described as "[astonishingly modern](#)" and comparable with modern American counterparts.

Indeed, Olli Heinonen adds further substance to Hecker's observations by confirming that North Korea's reprocessing plant at Yongbyon could also be easily modified to facilitate plutonium separation. Pyongyang's current plutonium stocks are estimated to be between 12 and 40 kilograms, an amount sufficient for up to six nuclear weapons. When the Yongbyon light water reactor is fully operational, Heinonen further estimates that it could annually produce up to 12 kilograms of plutonium. This would provide North Korea with enough fissile material to develop one nuclear bomb per year.

Testing times?

And while concerns that Kim Jong-Un would mark his rise to power by conducting a nuclear test turned out to be alarmist, it nevertheless remains an option. To be sure, a third nuclear test would use up the most of plutonium stocks that Pyongyang has invested significant time and resources into developing. What's more, a further test would inevitably lead to the termination of bilateral food and humanitarian assistance from the United States, Japan and South Korea. Even China - North Korea's only remaining sponsor and financier of note - might decide to halt energy, economic and financial aid to Pyongyang should it decide to undertake a third nuclear test.

Accordingly, Pyongyang may decide to save its plutonium for 'later' and instead conduct a uranium bomb test. However, to undertake such a test, not only would North Korea need to demonstrate that it has produced a sufficient amount of highly enriched uranium, it would also need to show that it has developed a suitable bomb design. Currently, little is known about North Korea's ability to undertake either project. Finally, Pyongyang may opt not to test anything at all but instead speed up the production of highly enriched uranium. This would save plutonium while still demonstrating the country's determination to develop nuclear weapons.

And it may well be the case that North Korea is currently playing for time. In June 2012, Pyongyang [announced](#) that it does not have any plans to conduct another nuclear test 'at present'. The announcement followed the publication of satellite images that suggest that the Tonghae Satellite Launching Ground - also referred to as Musudan-ri rocket launch site - is undergoing a [major upgrade](#). Other satellite images show that North Korea has also resumed work on its new [experimental light water reactor](#) (ELWR), which Pyongyang claims will produce energy for civilian use. The pictures also suggest that Pyongyang has made significant progress towards completion of the light water reactor

containment building. Reports suggest that the next step in construction involves the loading of heavy components, such as the pressure vessel, steam generator, and pressurizer (which could take up to a year).

More recent satellite images show that North Korea has also placed a [dome on a light water reactor](#) at Yongbyon. Experts believe that the reactor could be used to produce plutonium and – subject to alterations – highly enriched uranium. The construction also reflects that, despite agreeing in 2007 to dismantle its plutonium program, North Korea was secretly working on a parallel light water reactor (LWR) program. The covert program aimed to develop an experimental 100 megawatt of thermal capacity (MWth) reactor and a ‘Uranium Enrichment Workshop’ (‘UEW’) (which was built in 2009). And while some analysts suggest that it may still be more than several years before the site is operational, others regard the emplacement of the dome as a significant development.

No turning back?

Differences in expert opinion also extend to questions regarding Pyongyang’s ability to solve one of the major challenges confronting North Korea’s nuclear weapons program: manufacturing a warhead small enough to fit atop a missile. While exploding a nuclear device underground is relatively simple, manufacturing and mounting a warhead onto a missile is an altogether different proposition. And given the level of secrecy surrounding Pyongyang’s nuclear program, it remains difficult to verify how close the country is to mastering the technology necessary to mount a warhead onto a missile.

However, the recent advancements made by North Korea suggest that negotiating an end to the country’s nuclear program could become even more difficult in the months and years ahead. The more time passes without progress, the less relevant the Six-Party Talks become, at least as far as Pyongyang is concerned. After North Korea all but indefinitely suspended its participation in the talks in the wake of its second nuclear test in 2009, Pyongyang has yet to agree to return to the negotiation table. And while Pyongyang announced in July that it was ‘ready’ to resume talks, past experience suggests that the international community should keep an open mind. Indeed, in light of the recent satellite images, the resumption of the Six-Party Talks might be the last thing that North Korea actually wants. Instead, the only way to get Pyongyang back to the negotiating table might be to transform the Six-Party talks into a multilateral donor forum that provides North Korea with aid in return for the dismantling of its nuclear weapons programs.

Smart or dumb?

Given past experience, the continued production of highly enriched uranium could in the months ahead be accompanied by all-too-familiar episodes of North Korean nuclear brinkmanship and blackmail. As a country with little else than missile and nuclear programs to bargain with, Pyongyang may be tempted to seek economic and financial concessions out of interested parties, most notably the United States, South Korea and Japan. However, the carrot-and-stick policies employed by Washington, Seoul and Tokyo are by no means as irresistible as they were at the turn of the century. That said, Pyongyang’s ‘all-or-nothing’ strategy of accelerating its nuclear weapons program in order to grab international attention will likely pay dividends even throughout periods of economic hardship. It may also vindicate analysts and scholars who warn against labeling North Korea’s ruling elite as ‘erratic’ or ‘confused’. Brinkmanship may, instead, be the ‘smartest’ policy option that North Korea has at its disposal.

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