

Policy Forum 07-011: First Technical Steps for North Korean Denuclearization

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Article by Jungmin Kang

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I. Introduction

Jungmin Kang, Nautilus Institute Senior Associate and Science Fellow at the Center for International Security and Cooperation (CISAC) at Stanford University, describes the first steps that can be taken

by the DPRK to "irreversibly dismantle its plutonium production programs and move the Six Party Talks forward." In response, he argues, the other five nations should take corresponding actions that might include, "a significant albeit partial lifting of economic sanctions imposed to North Korea by the US, energy and food assistance to North Korea by the other five countries, and legally binding security assurances to North Korea."

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II. Article by Jungmin Kang

- First Technical Steps for North Korean Denuclearization
by Jungmin Kang

Seeking to resolve the North Korean nuclear conundrum, the Six Party Talks are scheduled to begin in Beijing on February 8. North Korea appears ready to accept a shutdown of its the 5 MWe graphite reactor in Yongbon and International Atomic Energy Agency (IAEA) inspection of such a shutdown in return for rewards from the US. The US appears to expect that North Korea will take the first steps toward denuclearization. In this context, optimism on the next round of the Six Party Talks is prevailing although North Korea's latest demands to return to the terms of the US-DPRK Agreed Framework while retaining its nuclear weapons and fissile material has put a fast-moving black cloud on the horizon.

Moreover, considering the Joint Statement of the Six Party Talks of September 19, 2005, which insisted that "The DPRK [be] committed to abandoning all nuclear weapons and existing nuclear programs and returning, at an early date, to the Treaty on the Non-Proliferation of Nuclear Weapons and to IAEA safeguards.", the mere shut-down of the 5 MWe reactor and return of the IAEA inspectors to in Yongbyon, as was done under the 1994 Agreed Framework between the US and North Korea, will not satisfy demands that North Korea take concrete measures toward denuclearization.

As North Korea did in December 2002, IAEA inspectors can be expelled by the North Korean government; and a shut-downed reactor can always be started as was done in 2003. Therefore, further measures will be necessary.

Verification of the North Korean uranium enrichment program and its weapons program would take several years because it is very hard to find relevant clandestine facilities and produced items. Verification and dismantlement of the North Korean nuclear programs will be essential eventually, but do not appear practical as first steps.

However, there are technical measures that North Korea could take in a first stage to irreversibly dismantle its plutonium production programs and move the Six Party Talks forward.

First, the fuel fabrication plant in Yongbyon should immediately be placed under IAEA safeguards, and ideally it should be shutdown, if not immediately destroyed. It is known that North Korea does not at present have sufficient inventory of fresh nuclear fuel for the 5 MWe reactor; the fuel fabrication plant has been shut-down since 1994, but it could be re-opened in 2007. The fuel fabrication plant could also eventually provide fresh nuclear fuel for the 50 MWe reactor in Yongbyon. The fuel fabrication plant is a key facility for enhancing the North Korean plutonium production.

Second, the 5 MWe reactor should be irreversibly shutdown, so it could not be practically restarted. The 5 MWe reactor cannot operate once the nuclear control rod system, which controls nuclear fission reactions in the reactor core, and primary cooling system, which circulates coolant of carbon dioxide removing heat from the reactor, are destroyed.

Third, the fuel now in the 5 MWe reactor, containing about 8-10 kg of plutonium, should be discharged and taken out of North Korea.

Fourth, the 50 MWe reactor should be shutdown. North Korea seems a lot farther than one year away from completing its 50 MW reactor. If constructed, the 50 MWe reactor could produce roughly 50-60 kg of plutonium per year, corresponding to about 10 nuclear bombs worth.

If these four measures are taken, North Korea would not be able to produce any more plutonium. Therefore, they would constitute serious first steps toward North Korean denuclearization.

To match these steps, the other five countries would have to offer corresponding "practically irreversible" steps.

Such steps could, for example, include a significant albeit partial lifting of economic sanctions imposed to North Korea by the US, energy and food assistance to North Korea by the other five countries, and legally binding security assurances to North Korea by the other five parties.

If these mutual first steps could be agreed to, the continuing Six Party Talks could then go further toward North Korean denuclearization.

Such next steps could include declarations by North Korea of its inventory of separated plutonium, of its uranium enrichment program, and of its nuclear weapons program; and it would include shutdown of North Korea's reprocessing plant at Yongbon.

This kind of a staged agreement toward North Korean denuclearization appears possible and desirable.

III. Nautilus invites your responses

The Northeast Asia Peace and Security Network invites your responses to this essay. Please send responses to: napsnet-reply@nautilus.org . Responses will be considered for redistribution to the network only if they include the author's name, affiliation, and explicit consent.

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