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Implication and Repercussion of North Korea's Fifth Nuclear Test

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Characteristics of North Korea's Fifth Nuclear Test

North Korea carried out the 5th nuclear test on 9th September, 2016. The characteristics of its fifth nuclear test, either claimed by North Korea or proven scientifically, can be summed up as follows: 1) enhanced nuclear explosive power; 2) advanced stage of manufacturing nuclear warheads; and 3) improved ability to control nuclear tests. First of all, the North showed off its strengthened nuclear explosive power that the existing nuclear tests have so far failed to prove. The explosive power of the last three nuclear tests conducted by the regime was about 4 to 6 kiloton (kt), but this time the explosive power was estimated to be minimum of 10 kt to the maximum of 30 kt. Therefore, it would be fair to assume that the Democratic People's Republic of Korea (the DRPK) has acquired the skills of manufacturing "standard nuclear bomb" through its fifth nuclear test since fission weapon normally has an explosive power of roughly 20 kt. Second, Pyongyang appears to have improved the technology for manufacturing nuclear warheads and created the conditions needed for its production. The North announced that it had confirmed the performance

of standardized nuclear warheads. A nuclear warhead manufacturing program consists of a nuclear detonator test, a test to manufacture nuclear warheads, and the test to strategize nuclear warheads. In other words, the 5th nuclear test demonstrates that the DPRK is just one step away from entering the stage of implementing the actual strategy. North Korea already boasted that it has acquired the ability to produce nuclear materials on a massive scale and strengthened the effective operational capability. What we can derive from its statement is that Pyongyang seems to have acquired enough nuclear materials on a large scale and advanced the ability to control the loss of nuclear materials in the manufacturing process of nuclear warheads. Third, the North regime has put an emphasis on its ability to control nuclear tests by announcing that "neither a leakage of nuclear materials nor nuclear-caused negative impact on the environment have been found." Such comments were made in an attempt to ease the concerns of Beijing on the negative implications of nuclear tests conducted by Pyongyang. Furthermore, the North's self-claimed, improved ability to control nuclear tests could influence the scientific accountability of the results of nuclear tests carried out by Korea and the U.S. in collecting the nuclear-chemical materials.

North's March toward Nuclear Advancement in the Future

The DPRK is expected to build on their confidence of having acquired enough technical capability for developing nuclear warheads and actively strengthen the ability to produce major nuclear materials, including plutonium, high enriched uranium, tritium, and lithium-6, all of which are necessary components for manufacturing nuclear weapons on a massive scale. Pyongyang will also attempt to expand the production of enriched uranium by increasing the number of centrifuges, rather than plutonium, since it is easier to hide high enriched uranium-related facilities when compared to facilities with plutonium.

<Estimates of Nuclear Material Stocks in North Korea in 2016 and 2020>

	December, 2016		December, 2020	
	Plutonium Stocks	High Enriched Uranium Stocks	Plutonium Stocks	High Enriched Uranium Stocks
A Scenario (Open Facilities)	19~48kg	200kg	31~64kg	360kg
B Scenario (Extended Facilities)		330kg		650kg
C Scenario (Non-identified Facilities under the Suspicion)		570kg		1130kg

Should North Korea establish a system that enables acquiring a stable supply of nuclear materials, their next step would be to start manufacturing standardized-nuclear warheads on a large scale. The North Korean regime, at least no later than 2022 - a year that celebrates 10 years into Kim Jung-un's ruling, will put forth efforts to have more stable nuclear power in place by possessing at least 70 to 80 nuclear weapons - a nuclear capability similar to that of Pakistan. The increase of nuclear warheads will be determined by the number of nuclear stocks, the technological level of making nuclear weapons smaller, the rate of loss of nuclear materials, and the composition ratio of types of nuclear weapons. In particular, if Pyongyang adopts a strategic approach to its nuclear pursuit, centering around small-scale nuclear weapons through nuclear advancement, it is likely to possess the maximum number of nuclear warheads as presented in the table below, which indicates the increasingly growing number of nuclear weapons directly targeting South Korea. Table below shows the estimates of the nuclear warheads that can be produced by the regime under the assumption that it will utilize all the nuclear materials exclusively in manufacturing nuclear warheads.

<Nuclear Warheads Estimates Manufactured by North Korea in 2016 and 2020>¹⁾

	Number of Plutonium Bomb		Number of Uranium Bomb		Total Number	
	2016	2020	2016	2020	2016	2020
Scenario A	3~16	5~21	5~20	9~36	8~36	14~57
Scenario B			8~33	16~65	11~49	21~86
Scenario C			14~57	28~113	17~73	33~134

Moreover, the DPRK is highly likely to conduct a nuclear test to launch miniaturized nuclear warheads mounted on ballistic missiles sooner than later. This year alone, North Korea has intensively focused on testing 11 ballistic missile launches. The regime has tested all kinds of ballistic missiles with the exception of KN-08, and applied lessons learned from those tests in enhancing range, flight safety, accuracy, fuel required to propel the missile, and operational and technical capabilities. The North is soon expected to announce the actual deployment of nuclear missiles regardless of whether it has completed acquiring the operational capability of nuclear missiles.

Characteristics of the Future Development

First, the Republic of Korea (ROK) will face a severe security vulnerability for the time being when considering the North's nuclear capability, its willingness, and its strategy. The rationale for this argument is that there has been a lack of capability to effectively deter the North's nuclear pursuit and ability to defend against it although the South has been directly exposed to the risks associated with its nuclear weapons. Another factor lying behind the security threat is that Pyongyang has

1) Estimates above were calculated under the assumption that manufacturing one plutonium bomb takes two to six kg of plutonium, producing one uranium bomb takes 10 to 40 kg of high enriched uranium, and the loss rate for nuclear material in the process of manufacturing nuclear warhead is 20%.

strongly expressed its willingness for physical provocations against Seoul, of which intensity continues to increase. The North recently announced that it will mobilize "all the necessary military means, including nuclear weapons" and "preemptively or directly attack the South," making the intensity and the frequency of its threats rise. What North Korea's heightened threats indicate is that it includes not only the U.S. but also Korea in the lists of countries, which fall under the potential influence of the actual deployment of nuclear weapons and that it has adopted an offensive nuclear strategy, including preemptive nuclear attacks. Second, major regional powers, including South Korea, will soon be faced with a severe strategic dilemma. First of all, the domestic conflicts over how to address the North's nuclear issues will primarily be intensified within South Korea. The conflicts and subsequent challenges will be largely witnessed in three directions as follows: 1) strengthened sanctions vs active intervention toward the North; 2) strengthened independent deterrent capability vs enhanced ROK-US alliance; and 3) controversies over China's willingness and influence. Washington will be seriously contemplating between transitioning to intervention policy toward Pyongyang and maintaining the current arm-twisting policy before the North's nuclear advancement poses a direct threat to the security on the American soil. Beijing also needs to make a strategic decision between the instability of North Korea and the one in Northeast Asia. Tokyo will also be confronted with a dilemma between strengthening its deterrent capability for self-help and relying on the U.S. extended deterrent capability. Moscow is now at a crossroads over whether it should continue a strategic cooperation with Beijing regarding issues on the Korean Peninsula. Third, the international sanctions and the level of pressure placed on North Korea will continue to rise in the future in the midst of all the combined challenges. China and Russia are expected to agree on the tougher U.N. Security Council resolution and major countries' independent sanctions will also be strengthened. However, the effects of sanctions will be determined by China's restriction on importing raw materials from North Korea, China and Russia's disapproval over employing North Korean workers, and the U.S. willingness of fully implementing a secondary boycott.

Direction toward Resolving Challenges

First, nuclear threats from North Korea should be realistically re-evaluated. We have thus far underestimated the North's nuclear capability. Sometimes we questioned the North's willingness to possess nuclear weapons and other times we were preoccupied by the type of myth that North Korea's nuclear weapons had been developed, designed to target only the U.S. Crafting an effective strategy and maintaining such strategy for a long period of time will primarily require a cool-headed evaluation. Second, we should always stay vigilant about the possible counter-effects and side-effects that could be caused by our hasty overreaction. We should realistically distinguish the areas between what we can do and cannot do, and focus our resources and efforts as a nation on pressing challenges and possible strategies. The imminent and pressing goal of our time is to promote the wellbeing of our people and strengthen national capability for survival as a whole by deterring provocations from the North Korean regime. Therefore, all-out-efforts are required to build our own deterrent capability against North Korea in addition to strengthening the extended deterrence of the Korea-U.S. alliance. However, in the process, one should be wary not to overly consume our national power in a policy, isolated from the reality. Lastly, we should make efforts to establish our own peace and denuclearization program, which aims to help us stay firm on pursuing our ultimate goal - achieving denuclearization of the DPRK. So far the following claims have been put forth: "sanctions-denuclearization" frame of the international community vs "peace treaty-denuclearization" frame of China vs "disarmament-peace treaty" frame of North Korea. The ROK should establish our own independent frame that does not violate the interests of our neighbors while taking the lead in the current situation in the midst of the mixed claims. The frame of "sanctions-denuclearization-peace regime" could make a good alternative to the current situation. To this end, a trilateral strategic dialogue between Korea, the U.S., and China should be initiated based on our common understanding and agreement



on the goals of sanctions shared between Korea and the U.S. In addition to that, a cooperative relationship on implementing sanctions against North Korea should be promoted in the process of trilateral strategic dialogue and the peace regime and the peace treaty, both of which are independently pursued by an individual country, should be put forward in harmony with each other. ©KINU 2016

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