

# **On the Nuclear Issue of North Korea**

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**Abstract:** In this paper, the authors first estimate North Korea's capability to make a nuclear bomb, and then analyze the dangers that a nuclear peninsula would bring about to Northeast Asia and the NPT regime. Finally the authors give their views on the resolution of this issue. It's stressed that realizing peace and stability on a nuclear-weapon-free Korean Peninsula should be the major goal, and addressing North Korean security concerns is the key point in resolving the Korean nuclear issue.

## **1. Introduction**

After the Cold War, the proliferation of Weapons of Mass Destruction has aroused extensive concerns in the world. There are good reasons to believe that the current nuclear crisis on the Korean Peninsula is one of the most challenging problems in this regard. This issue involves not only the American-Korean relationship, but also directly affect the Northeast Asia security and the global non-proliferation regime. How to find a way out of the nuclear stalemate on the Korean Peninsula is a thorny but important and urgent issue that the international community has to resolve.

## **2. An Estimate on North Korea's Capability to Make a Nuclear Bomb**

The question of whether North Korea has already possessed nuclear weapons directly determines the nature of this issue and the possible approaches to solve the problem. For the time being, there is no immediate answer to this question, but only guesses from some sources. Here, we would like to make a technical assessment on North Korea's ability to build a nuclear device.

From the technical perspective, one has to master the following three important elements to produce a nuclear device: principle of the bomb, configuration of the bomb, and nuclear materials.

There are mainly two kinds of nuclear devices: atomic bomb and hydrogen bomb. The design of an H-bomb is very sophisticated, and it's impossible to produce an H-bomb without some nuclear tests. Therefore we believe that currently North Korea can not possibly master the technologies to make an H-bomb. However, the design of an atomic bomb is relatively simple. Since the 1980s there have been many open materials introducing in detail the principle and structure of atomic bombs. For example, Nuclear Weapons Databook and U.S. Nuclear Weapons: the Secret

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<sup>1</sup> The views expressed here are those of the authors and do not necessarily represent opinions of their institutions.

History.<sup>2</sup> Some information in this regard is also available on Internet. There are numerous nuclear scientists and engineers in North Korea, so there should be no difficulty for them to master the knowledge.

There are two different designs for an atomic device: gun-type and implosive-type. For plutonium materials, only implosive-type can be adopted. Designed in a simple form, the materials inside could be fabricated into a sphere. Although there are some technical problems to be solved for this kind of design, for a country like North Korea who has a long history in nuclear materials studies, there should be no special difficulty in designing this kind of rude nuclear device.

As for North Korea's amount of nuclear materials, there are many guesses and estimates in the world. According to some estimates from U.S. sources, North Korea has reprocessed some fuel rods from the 5 MW reactor at Yongbyon, and separated 12-14 kilograms of plutonium, which is enough for one or two bombs.<sup>3</sup> Besides, there is an unconfirmed report saying that about 56 kilograms of plutonium was smuggled from Russia in the early 1990s.<sup>4</sup>

Apart from the above three major elements, one certainly need to acquire some other things in order to make an atomic bomb, such as the initiating system, the neutron source, the computer codes, the detonation experiments and so on. All these are within the capabilities of most contemporary states. In fact, a great deal of information concerning nuclear weapon designing has been declassified during the 1980-90s, and some advanced specialized computer codes for nuclear device designing can be obtained from open channels. So we should say that in the 1980-90s, many non-nuclear weapon states have in many respects got much better conditions to build an atomic bomb than the United States during the 1940s.

Since North Korea is close in distance to South Korea, Japan, and the U.S. military bases in this region, it's relatively easy for it to establish a deterrent force. It dose not have to produce advanced, long distance and high yield nuclear weapons, and only several rude nuclear atomic bombs will work. This kind of rude plutonium bomb does not necessarily need nuclear test, and some conventional detonation experiments are enough. According to some calculations, an implosive-type nuclear device with several kilograms of plutonium in a simple form of solid core can produce a yield up to hundreds or thousands of tons, with a size that could be fit by some existing delivery means in North Korea.

Based on the above analysis, we can say that there are no essential technical barriers for North Korea to build a rude nuclear device. So it's our judgement that North Korea has the capability to make rude nuclear weapons.

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<sup>2</sup> Chuck Hansen, U.S. Nuclear Weapons: the Secret History, A Division of Crown Publishers, inc. 1988; T. Cochran et al., Nuclear Weapons Databook vol. I: US Nuclear Force and Capabilities, NRDC, 1984.

<sup>3</sup> Larry A. Niksch, "North Korea's Nuclear Weapons Program," Congressional Research Service, The Library of Congress, Order Code IB1141, Oct. 9,2002,p.5; David Albright, Frans Berkhout and William Walker, Plutonium and Highly Enriched Uranium 1996, pp.295-306; David Albright, North Korea's Current and Future Plutonium and Nuclear Weapon Stock, ISIS Issue Brief, Jan.15, 2003.

<sup>4</sup> Larry A. Niksch, "North Korea's Nuclear Weapons Program," p.6; Lee Wha Rang, North Korean Nuclear Arsenal, <http://www.kimsoft.com/korea/nk-nukes.htm>.

If North Korea had obtained some amount of plutonium, then the possibility cannot be excluded that it possesses several nuclear weapons already. Even if North Korea had not yet possessed nuclear weapons for the moment, predictably it could make some nuclear weapons in a short time if it reprocesses the existing spent fuel.

### **3. The Possible Consequences that a North Korea with Nuclear Weapons Would Bring About**

It's still not clear where the North Korea will go in the next step. However, it's obvious that a nuclear North Korea would bring great impact on the regional security and global non-proliferation regime.

In the Japanese history, there have always been some voices advocating developing nuclear weapons in Japan. A nuclear North Korea might provide Japan a pretext to develop nuclear force. In South Korea it's reported that it once had a nuclear weapon program, and was forced to give up under the U.S. pressure.<sup>5</sup> If North Korea develop nuclear forces, and Japan goes to nuclear, then South Korea must feel pressure to develop nuclear weapons. Of course Japan and South Korea have some other options to deal with that situation like strengthening cooperation with the United States in missile defence and nuclear umbrella, but the possibility cannot be ruled out that they choose to develop their own nuclear forces.

If Japan and South Korea have their own nuclear weapons, the allied relations among the United States, Japan and South Korea will change, and the Northeast Asia security structure will face major adjustment. So, North Korea's nuclearization will bring great uncertainty to the strategic structure of this region.

Non-proliferation and counter-proliferation are among the priorities of the U.S. national policies. A North Korea with nuclear force is not in the interests of the U.S. regional and global security. The United States will not accept a North Korea with nuclear force. If no agreement can be concluded on the nuclear standoff between these two countries, a series of political, economical or military conflicts will come up, which would greatly endanger the security and stability of this region.

The increase of the number of nuclear weapon states in Northeast Asia would also cause new security peril in this region. The probability of nuclear accident and nuclear war would rise. And the prospect of nuclear weapons' falling into terrorists' hands would get more worrisome.

So far, North Korea is the only state that has withdrawn from the NPT treaty and declared to develop nuclear deterrent force. If this issue could not be resolved appropriately, it would create a negative precedent, which would heavily impair the NPT regime.

A North Korea with nuclear force will lead to chain reactions which are unfavorable to China's security. China is focusing on economic development, and a stable and secure periphery environment is crucial to its economic development and

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<sup>5</sup> Selig S. Harrison ed., *Japan's Nuclear Future: the Plutonium Debate and East Asian Security*, A Carnegie Endowment Book, 1996, pp.4-13.

social stability. Therefore, realizing peace and stability on a nuclear-weapons-free Korean Peninsula serves best the interests of China. So, China actively supports de-nuclearization on this Peninsula. There should be no doubt that realizing de-nuclearization of the Korean Peninsula is the common aim for all states concerned in this region.

#### **4. Approaches to Settle the Korean Nuclear Crisis**

It's infeasible to de-nuclearize the Korean Peninsula by military means. Considering that North Korea may possibly have had nuclear weapons already, in such case, military actions would lead to a disastrous result. Even if North Korea has no nuclear weapons, its conventional military force should not be underestimated. A military conflict or war on this Peninsula would cause heavy casualties and destruction, which neither Japan nor South Korea can bear. And other neighboring countries like Russia and China might also get involved. So the military approach will never do, and only peaceful and diplomatic means can work.

The six-party talks in Beijing in August was a good step to the peaceful solution of this issue. However, the North Korean and U.S. delegations put forward contradictory preconditions. The United States requires the North Korea to scrap its nuclear weapons program first before talking other issues, while North Korea demands a non-aggression treaty with the United States as a precondition to give up its nuclear program.

In order to find the right direction to settle the issue, it's necessary to analyze North Korea's motivations of developing nuclear weapons.

In the past decades, confronting with the military alliance of the United States, Japan and South Korea, North Korea has always been showing worries on its security. During the Korean War, North Korea was subject to nuclear threats by the United States. Since 1976, the U.S. started the Team Spirit joint military exercises with South Korea, which involved practice in using nuclear weapons in this region.<sup>6</sup> It's not hard to imagine how irritating it was to North Korea. After the cold war, the feeling of isolation and the example of the Gulf War actually provided new incentives for North Korea to develop nuclear weapons. Many people in the world believe that the role of nuclear weapons in safeguarding national security and resisting superpower's armed intervention could never be replaced by other means. This is something that many relatively small or weak states are well aware. The comment made by the Indian former Army Chief of Staff General K. Sundarji is very typical. He said:" [Coalition members] could go in because the United States had nuclear weapons and Iraq didn't," "The Gulf War emphasized once again that nuclear weapons are the ultimate coin of power."<sup>7</sup> The just ended Iraq War might hint to the North Korean leaders that

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<sup>6</sup> Daniel A. Pinkston, "North Korean Motivations for Developing Nuclear Weapons," [cns.miis.edu/research/korea/dprkmotv.pdf](http://cns.miis.edu/research/korea/dprkmotv.pdf); "North Korean Nuclear Developments: An Updated Chronology," [cns.miis.edu/research/korea/nuc/chr4789.htm](http://cns.miis.edu/research/korea/nuc/chr4789.htm).

<sup>7</sup> Keith B. Payne, *Deterrence in the 2nd Nuclear Age*, The University Press of Kentucky, 1996, p.28.

conventional weapons are unreliable in confronting with the United States. So, we believe that North Korea is not only playing a political card but has strong security-oriented motivations for acquiring nuclear weapons.

Though Pyongyang has both security and economic concerns, no doubt security concern is the first priority. One can imagine that the collapse of Saddam Hussein's empire must have given Korean leaders a serious warning, and President Bush's well-known phrase of the "axis of evil" and the "preemptive nuclear strike" policy might have seriously upset the North Koreans and made Pyongyang more strongly determined to rely on nuclear deterrence. So it's reasonable to believe that North Korea would not abandon its nuclear program unless it gets credible security assurance. Economic aid is needed, but it's the second consideration. Poverty does not necessarily threaten a regime. Many regimes in poor countries can survive for very long time. For the North Korean leaders, the regime's survivability and national security definitely take precedence over economic goals. Therefore, addressing the security concerns of North Korea is the key point to settle the issue.

There were some precedents of de-nuclearization in the world. Ukraine, as a Republic of the former Soviet Union, gave up its nuclear forces after obtained a security assurance from the United States and Russia. In the case of North Korea, We believe it's possible for it to abandon its nuclear program if its security concerns were relieved. By doing this, North Korea can not only obtain economic aid, but also get out of political isolation, turn into international community, and create a good basis for the unity of the Korean Peninsula. Pyongyang's consent of participating in the six-party talks is a positive signal, which indicates that it is willing to negotiate to solve this issue. Therefore, the United States and other states concerned should consider an appropriate arrangement to give Pyongyang a reliable security assurance.

Of course, the package of solution should include strict and effective verification measures, so that North Korea's nuclear program be disarmed completely and irreversibly.

## **5. Conclusion**

The North Korean nuclear issue is a challenge in the field of security and non-proliferation; it's also a touchstone to test whether those countries concerned can closely cooperate to jointly safeguard regional security. If North Korea's nuclear program would continue to develop without any control, there would be chain reactions that seriously damage the regional security and global non-proliferation regime. So, all the states concerned should strengthen cooperation, sincerely address Korean security concerns, dispel its motivation for nuclear weapons, and ultimately realize the peace and stability on a nuclear-weapons-free peninsula.