

# **Planning for the Unthinkable: Countering a North Korean Nuclear Attack and Management of Post-Attack Scenarios**

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# **Planning for the Unthinkable: Countering a North Korean Nuclear Attack and Management of Post-Attack Scenarios**

By Bruce E. Bechtol Jr.

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### **I. Introduction**

Bruce E. Bechtol Jr., an Associate Professor of Political Science at Angelo State University, provides this review of North Korea's nuclear weapons capabilities, which reveals a two-track agenda consisting of both a plutonium (proven) and a highly enriched uranium (likely) program. Scenarios involving both of these programs show that North Korea—despite rather primitive capabilities—can deliver a nuclear weapon that would cause casualties in the tens of thousands. Bechtol states, "While a preemptive strike may seem like the obvious answer to a nuclear attack, North Korea's ability to strike back with non-nuclear forces would likely mean a full-scale conflict possibly involving hundreds of thousands of casualties. High-level officials in Washington and Seoul have placed renewed focus on planning for nuclear scenarios on the Korean peninsula—but the bottom line is that preventing and deterring a North Korean nuclear attack must be a high priority."

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### **II. Article by Bruce E. Bechtol Jr.**

- "Planning for the Unthinkable: Countering a North Korean Nuclear Attack and Management of Post-Attack Scenarios"

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#### **Introduction**

North Korea's nuclear program first came to the forefront as a threat to world and regional security in 1994, when former president Jimmy Carter was able to bring Pyongyang back from the brink, and helped to negotiate what would later become known as "The Agreed Framework." Since that time, North Korea has been engaged in on-again, off-again talks with the United States and other key players in the region, conducted numerous acts of brinkmanship with its nuclear program, and conducted two underground nuclear tests—in 2006 and 2010. [1] The frustration caused in the international community by North Korea's many acts of brinkmanship with its nuclear program over a period of more than 16 years—and the corresponding geopolitics discussions that then ensue—tends to detract from the reasons why it is such a concern for the international community. The unthinkable and seldom-discussed threat of a nuclear attack is a nightmare scenario not only for the region, but for all nation-states that have interests on the Korean peninsula.

North Korea shows no realistic signs of giving up its nuclear program any time in the foreseeable future. As Brookings Institution senior scholar Richard Bush articulates, "This is because a DPRK willingness to pursue the bargain proffered in the 6PT would force the regime to make fundamental and unpalatable choices about how to ensure its survival and ensure the security of the state." [2] Following the North Korean attack on the South Korean warship *Cheonan* on March 26, 2010, the South Korean and U.S. militaries showed solidarity in deterring Pyongyang's many potential threats. In the wake of the aftermath, Washington and Seoul conducted several maritime exercises aimed directly at deterring and containing North Korea's military capabilities and its ability to proliferate

WMD. In response to at least one of these exercises, North Korea threatened to continue with a “strong deterrent,” a term Pyongyang has often used to refer to its nuclear program. [3] During the summer of 2010, Pyongyang also claimed it had developed improved nuclear weaponization technology—perhaps giving it the ability to put warheads on ballistic missiles. [4] In its 2009-2010 report assessing nuclear non-proliferation and disarmament, the Arms Control Association gave North Korea the grade of “F”—the lowest possible rating. [5] All of these developments occurred against the backdrop of increased tensions in the security environment on the Korean peninsula during 2009-2010, and ROK-U.S. alliance cooperation that was as strong and cooperative as it has ever been. Thus, North Korea’s capability to conduct a nuclear attack and the abilities of nations with interests in the region (particularly the United States, South Korea, and Japan) have become of paramount concern.

The purpose of this paper will be to outline how the ROK-U.S. Alliance should prepare countermeasures in the case of a North Korean nuclear attack—either on North Korea, or at another key location (likely Japan). As such, it will first be important to describe North Korea’s nuclear capabilities, including the type and number of possible weapons that it could use in a nuclear attack. Once Pyongyang’s nuclear capabilities (as well as capabilities it is developing) are described in this paper, the various types of attack scenarios that the North Koreans could use to implement a nuclear attack will be addressed. Because a nuclear attack would create such horror and destruction—no matter how or where it occurred—the viability of a preemptive strike by U.S. or South Korean forces will be assessed, including how effective this would be, how it would or could occur (there is more than one scenario), and what the likely reaction from North Korea would be. If a nuclear attack does occur, it is important to understand what kind of damage it would cause. Thus, an analysis will be done in this paper of the expected damage from a nuclear attack, the military countermeasures that could be taken, and how consequence management might work. The level of current ROK-U.S. military readiness to deter and defend against a North Korean nuclear attack will also be assessed, and the study will be wrapped up with some conclusions and implications for the future.

Many questions about North Korea’s nuclear capabilities remain—despite the many reports, announcements, negotiations, and the two nuclear tests that Pyongyang has conducted. North Korea has not been transparent about either its intentions or its military capabilities. Thus, the debate over whether North Korea actually has bombs or only “devices,” continues today. The debate over whether or not North Korea has— or will have soon—a warhead that could be mounted on a missile, also continues to exist among policymakers, academics, and intelligence personnel. The debate over North Korea’s intentions with its nuclear program has raged ever since the first nuclear Korean nuclear crisis of 1994. And of course, the fears about proliferation were answered definitively in 2007 when a North Korean-built plutonium reactor was destroyed by Israeli forces in Syria. [6] These many questions and debates are important. They all play a role in planning for countermeasures of an impending or executed North Korean nuclear attack. The goal of this paper is to answer as many of these questions as possible, and to conduct an analysis that will be useful for a possible future ROK-U.S. response.

### **North Korea’s Nuclear Capabilities**

On October 9, 2006, the North Koreans conducted their first plutonium underground nuclear test. At that time, North Korea effectively ended any debate about whether or not they actually had nuclear weapons. Following the test, many analysts assessed it to be at least partially successful detonation of a plutonium nuclear device. [7] According to Siegfried S. Hecker of Stanford University (and former researcher at Los Alamos National Laboratory), “The DPRK aimed for 4 kilotons and got 1 kiloton. That is not bad for the first test. We call it successful but not perfect.” [8] Another researcher, Hui Zhang of the John F. Kennedy School of Government at Harvard University presented an interesting and practical assessment in a paper he delivered in 2007 that said, “If North Korea planned a yield of 4 kt (as reported), the test could not have been a failure. It could

show that Pyongyang already has the confidence to explode a larger nuclear device and is pursuing a much more compact warhead for its missiles.” [9] The bottom line is that in 2006 the North Koreans were able to prove to the world that they had the capability to successfully detonate a plutonium nuclear device—probably a weapon, and at least partially successfully.

On May 25, 2009, North Korea conducted its second underground plutonium nuclear test. [10] Preparations for the nuclear test began as early as May 7, 2009. [11] Most analysts agreed that the explosion from this test was significantly larger than the test conducted during 2006 (which was about 1 Kiloton). A variety of estimates by international experts assessed the power of the explosion to have been at two to six kilotons—and that around four kilotons is the best guess. Of significance for this paper, nuclear experts and scientists assessed at the time that the explosion from a device the size of the one tested in 2009 would be capable of killing tens of thousands of people if detonated over a major city. [12] Official assessments from Washington were also quite compelling. The U.S. Office of the Director of National Intelligence issued the following statement in 2009: “The U.S. Intelligence Community (IC) assesses that North Korea probably conducted an underground nuclear explosion in the vicinity of P’unggye on May 25, 2009. The explosion yield was approximately a few kilotons. Analysis of the event continues.” [13] The test in 2009 was significantly larger (most estimates place it at around four times larger) than the test of 2006. This suggests that the North Koreans were able to improve the “sequencing” process for the detonation of a plutonium nuclear weapon and thus able to get “more bang for their buck.”

While the existence of North Korea’s plutonium program is quite linear, a Highly Enriched Uranium (HEU) facility is far more difficult to detect, because it is far smaller than a plutonium processing facility, can be built underground, and is far less vulnerable to technical intelligence collection means than a large, above-ground facility like the one the North Koreans have at Yongbyon. [14] But after many years of denials from the North Koreans and the largely anti-Bush (politically motivated) support of these denials from many pundits and scholars both in the United States and South Korea (almost exclusively on the left), the evidence, which had been rather compelling since 2002, began to become even more clear (publicly) as the Bush presidency came to a close—and difficult to deny. In a report released to the press in 2009 written by A.Q. Khan, former head of Pakistan’s nuclear program, he stated that North Korea had already possibly enriched small amounts of uranium by 2002. Khan toured a plant in North Korea during 2002 that he claims had at least 3,000 centrifuges. Khan also stated that Pakistan helped the North Koreans with drawings, vital machinery, and technical advice for a period of at least six years. Khan’s travels to North Korea during 2002 took him to a plant that made uranium hexafluoride, a gas vital for the uranium enrichment process. North Korean technicians taught the Pakistanis how to make “Krytons,” electrical switches used in nuclear detonations; in a trade with Pakistan that gave Pyongyang essential equipment and software (though the biggest part of the trade was a “nukes for missiles” deal that gave the Pakistanis No Dong missiles in exchange for HEU technology and assistance). According to Khan’s report, top Pakistani political and military officials not only approved of the collaboration, but also assisted in carrying it out. [15] Meanwhile, in 2009, South Korean officials confirmed to the media that North Korea had built facilities that could manufacture small amounts of HEU. The facilities are underground, and said to be located in Sowi-ri, in the same administrative district of North Pyongan province where the Yongbyon nuclear reactor is located. [16]

Perhaps the most compelling aspect of the evidence dealing with Pyongyang’s HEU weaponization program came from information released by the North Koreans. In June 2009 the state-run Korean Central News Agency released a formal statement that said, “the process of uranium enrichment will be commenced.” [17] North Korea’s public disclosure did not satisfy some analysts who continued to politicize this important national security issue. Selig Harrison (a reporter and author who has since 2003 been an outspoken opponent of any evidence regarding North Korea’s HEU program) stated in Congressional testimony on June 17, 2009, “The prospects for capping the arsenal at its present level have improved as a result of Pyongyang’s June 13 announcement admitting that it has an R&D program for uranium enrichment. Since this program is in its early stages, and it not yet actually

enriching uranium, there is time for the United States to negotiate inspection safeguards...” [18] Harrison’s testimony failed to address evidence regarding North Korea’s “nukes for missiles” deal with Pakistan (now widely known), or the facilities at Sowi-ri, (not to mention the collaboration with Iran since at least 2003). [19] The North Koreans followed up the June 2009 statement with yet another announcement on September 4, 2009. The DPRK Permanent Representative to the UN said in a letter to the President of the UNSC, “Experimental uranium enrichment has successfully been conducted to enter into completion phase.” [20] South Korea’s Minister of Unification released a statement to the press in 2009 saying that North Korea was assessed to have had an HEU program long before the U.S. publicly released the accusation in 2002. [21] In fact, if one is to go back to that year (2002), an unclassified CIA point paper that was distributed to Congress stated, “We recently learned that the North is constructing a plant that could produce enough weapons-grade uranium for two or more nuclear weapons per year when fully operational—which could be by mid-decade.” [22]

Yet more evidence regarding North Korea’s HEU program came to light during November 2010, when officials from the DPRK took Stanford University scholar Siegfried S. Hecker on a tour of an HEU facility that he said had more than 2,000 centrifuges. In his report he stated, “At the fuel fabrication site, we were taken to a new facility that contained a modern, small industrial-scale uranium enrichment facility with 2,000 centrifuges that was recently completed and said to be producing low enriched uranium (LEU) destined for fuel for the new reactor.” Hecker further commented on the facility when he said in part, “Nevertheless, the uranium enrichment facilities could be readily converted to produce highly enriched uranium (HEU) bomb fuel (or parallel facilities could exist elsewhere) and the LWR could be run in a mode to produce plutonium potentially suitable for bombs, but much less suitable than that from their current reactor.” [23] Hecker also referred to a new Light Water Reactor facility that was under construction, which he was shown. Jack Pritchard, president of the Washington, D.C.-based, Korea Economic Institute was also shown the facility. [24] It is unclear if the facilities shown to the Stanford University scholar are the same facilities reported in the South Korean press in February 2009 (at Sowi-ri). It is possible that equipment from these facilities could have been moved to the site shown to the Americans in November 2010. Also possible, and perhaps more likely, is the assessment that the North Koreans have more than one facility capable of producing and weaponizing HEU. In fact according to press reports, the American envoy to the International Atomic Energy Agency (IAEA), Glyn Davies, articulated to the 35-member governing board of the IAEA that there is a “clear likelihood” Pyongyang has constructed other uranium enrichment facilities. He also reportedly stated that it is likely North Korea had been pursuing such a capability long before it publicly admitted to it (as articulated earlier). [25]

According to experts in South Korea, an HEU facility (like the one at Sowi-ri discussed earlier) could produce one or two nuclear devices per year. [26] Based on what is now a great deal of evidence, North Korea’s HEU program has progressed far beyond the “R&D” stage. In fact, it appears to be very close (if not past the completion phase) to producing HEU weapons. As stated in this author’s recent book, “Based on the evidence presented, this program is far beyond the R&D stage and may be close to (if not already finished) producing HEU weapons. In fact, North Korea is likely to conduct a test of an HEU device when the leadership there feels the geopolitical situation warrants it. Such a test will put to rest the statements of the many naysayers in the United States and South Korea who have denied its existence since it was first disclosed publicly in 2002.” [27] Activity consistent with nuclear test preparations was reported at a facility in North Korea during November of 2010. [28] Thus, based on the evidence regarding North Korea’s highly secretive nuclear program, Pyongyang is now capable—or nearly capable—of producing two types of nuclear weapons. North Korea’s two-track nuclear program consists of building both plutonium- and HEU-based weapons systems. Based on this assessment, military officials and policymakers should plan accordingly.

### **Different Scenarios for a North Korean Nuclear Attack**



Because the evidence now points to North Korea's development of a two-track nuclear weaponization program, an examination of the types of scenarios for a nuclear attack is possible, based on these capabilities. There are many possibilities for what the North Koreans can do—particularly if one keeps in mind how clever Pyongyang has been in planning for its asymmetric capabilities. [29] It is this skill that the North Koreans have developed for planning around allied defenses and using the element of surprise and “thinking out of the box” that makes planning for an attack initiated by Pyongyang so difficult and vital. Thus, the goal in this section is to provide examples of some—but not all—of the scenarios North Korea could use for a nuclear attack.

A plutonium nuclear weapons capability is one that all analysts can agree the North Koreans hold in their arsenal. But there are several things about a plutonium capability that one must keep in mind. A successful plutonium weapon is generally going to be larger than an HEU weapon. Because of the amount of explosives needed and the size of the weapon, a plutonium weapon is also considered to be far more difficult to fit on a missile as a warhead than an HEU weapon. [30] This does not mean that North Korea has not developed alternative means (bombs). The delivery means for a plutonium bomb are rather diverse. But considering the assessment that to date any weapon the North Koreans would have would be very primitive, one can reasonably assume that the weapon would have to be quite large, would have a primitive triggering or implosion mechanism to cause the nuclear weapon to detonate, and would have a fission process that would possibly not detonate the weapon to its full capability (as with the assessed production of the underground nuclear test of 2006).

Given the asymmetric thinking that the North Koreans are well known for integrating into their planning process, there are a number of delivery systems for a plutonium bomb that the North Koreans could use. The first and most obvious method would be to simply drop a plutonium bomb from an aircraft. The North Koreans have aircraft that are assessed to be capable of conducting such a mission. The H-5 aircraft is the Chinese version of the old Soviet IL-28 light bomber. The Chinese are thought have given many of these aircraft to the North Koreans sometime during or after the 1960s, and there are currently around 80 H-5s in the North Korean air force inventory. [31] The H-5 is an old aircraft (though likely well maintained by the North Korean air force), it is very vulnerable to air defenses in both South Korea and Japan, and the North Koreans would likely have to limit the weight of the weapon that it carried just for it to get off of the ground. The weight limits of the H-5 are important for consideration. This may have been the reason for the relatively low projected yield of the nuclear weapons the North Koreans tested underground in 2006 and 2009. By limiting the size of the weapon, they may have been testing a device that would be small enough to fit onto one of their aircraft, yet large enough to produce an explosion that would kill tens of thousands of people. [32] Despite the sophistication of Japanese and South Korean air defenses, using asymmetry, and even trickery, it is possible that a North Korean aircraft might be able to trick its way into South Korean or Japanese airspace. But it would take intricate planning, and a lot of luck. Thus, one has to believe that if this is one of the planned delivery systems for a nuclear weapon, it is unlikely to be the primary choice.

Another delivery means for a nuclear weapon that is far more ominous would be that of using a ship disguised as a merchant cargo vessel or a trawler. This is far more ominous than it sounds on the surface. In times of tension, Japanese and South Korean port authorities would likely be on the lookout for North Korean ships transiting their ports. But what must be considered in the North Korean modus operandi is that the method of surprise has often been a key aspect of any operation or provocation. What makes the scenario of a ship sailing into a Japanese or South Korean port and then detonating a nuclear weapon even more compelling is the fact that the North Koreans often “re-flag” their ships, sailing under the flags of other nations (this has been a largely successful mode of operation for them in the past). [33] There are two key advantages for using a merchant ship or a specially equipped fishing trawler as a delivery means for a nuclear weapon: 1) It would be much easier to get this delivery means past defensive measures in South Korea or Japan because of the high scale of merchant vessel traffic that transits their ports; and 2) a primitive weapon would probably be less limited by size than a weapon carried on an aircraft such as the H-5.

The scenarios for using a ship as the delivery means for a nuclear weapon are diverse—and perhaps this is what makes them so ominous. A merchant ship or a fishing trawler could be equipped with a primitive nuclear device and then sailed into a major South Korean port city such as Busan or Pohang, or Ulsan. Once the weapon was detonated in such a populous area, it would likely kill tens of thousands of people (even if it were a primitive weapon). In a port like Pohang, the possibility exists that it would also kill a large number of military personnel (in addition to the high civilian casualty count), as it is also the home of a ROK Marine division. The Pohang area is also frequently the site of combined training with U.S. and ROK Marines, and if it was during such a time period the possibility exists that many U.S. personnel would be counted among the casualties as well. [34] Busan is a key reception and staging portal to the Peninsula. [35] Detonating a nuclear weapon there would shut down a key shipping and air node. Busan would be very vulnerable to an attack due to the high population and symbolism—it was the only spot not overrun by the DPRK during the Korean War and thus, from Pyongyang’s perspective, carries with it the shame associated with the notion of a “foreign stronghold” in Korea. [36] There is also a large Japanese presence there. [37] Last, it is located in the province where much of the political power comes from in South Korea. Literally all the presidents (up to and including Lee Myungbak), with the exception of Kim Dae-jung, have hailed from Gyeongsang-do. [38]

Merchant and naval ports would also be very susceptible to attack if North Korea chose to use a ship as the delivery means to attack Japan. A merchant ship or fishing trawler could make a port call at the cities of Yokohama or Sasebo (among many others). Yokohama opens into Tokyo Bay, and is a highly populated area where Japanese casualties would be maximized. Sasebo is also the home of a large U.S. Navy base. A detonation of a nuclear device there would cause not only a large amount of Japanese deaths (likely in the thousands), but would also have the potential to kill thousands of Americans—both military and civilians. [39]

If one is to wonder why North Korea would attack Japan instead of South Korea (or in addition to South Korea), the answer is rather simple: A nuclear attack on Japan immediately before a full-scale war were to commence on the Korean peninsula (or soon thereafter) would create immense problems in both the ROK-U.S. alliance and the Japan-U.S. alliance. Such an attack would likely cause such outrage among the Japanese populace, that the Prime Minister would be pressured to take immediate action against the North Koreans. This would of course cause great angst in Seoul, where any direct Japanese involvement in a war on the Korean peninsula would likely be simply unacceptable. As the United States sought to navigate the diplomatic and military minefields that seeking an acceptable solution to both of its key allies in East Asia would cause, North Korean conventional forces could be advancing through the Cheorwon Valley and the Kaesong-Munsan Corridor. Indeed, a North Korean nuclear attack on Japan would strike not only a tragic blow to the country affected, but would likely be successful in causing political turmoil that would create vulnerabilities in the military reactions of the United States, South Korea, and Japan.

When considering scenarios that revolve around a North Korean nuclear attack using an HEU weapon, there are differences that are significant if compared to possible attack instances involving a plutonium weapon. First of all, while it makes sense that North Korea has either completed construction of an HEU weapon or is close to doing so, there is no definitive proof that this is the case. Evidence remains sketchy and the North Koreans have not been forthcoming in their disclosure of information regarding the HEU program (except for the two earlier referenced statements to the UN). But the many anecdotal pieces of evidence when put together like pieces in a puzzle, do form a picture of a program built with the help of the Pakistanis, with years to achieve maturation, and the resources and know-how to build a legitimate weapon. [40] Thus, scenarios for this paper will be articulated based on the assessment that North Korea has completed weaponization of its HEU program—or will do so in the near future.

The thing that makes an HEU program particularly threatening when compared to a plutonium program, is that HEU weaponization lends itself to building a warhead for a missile. In fact, this appears to be exactly the direction in which Pyongyang is heading. An evaluation of evidence

uncovered when Libya gave up (in its entirety) its nuclear program shows that they had received the designs for a 500 kilogram HEU warhead for a missile from the Pakistanis. The plans also had Chinese writing on them, so one must assume (as have most analysts) that the Pakistanis took blueprints and designs for an HEU warhead given to them by the Chinese and passed them on to the Libyans. This is important when it comes to North Korea because the Pakistanis also reportedly provided the same blueprints to both the North Koreans and the Iranians. [41] The danger to the region in Northeast Asia is that a 500 kilogram warhead can easily fit onto a No Dong missile (which the North Koreans also sold to the Pakistanis and is likely the reason for that particular design). The Libyans were reportedly trying to acquire the No Dong missile from the North Koreans before they agreed to dismantle their nuclear program under the eyes of international inspectors. [42] According to numerous sources, since at least 2003, the North Koreans and Iranians have been collaborating on perfecting a design for an HEU warhead that could be mounted on a No Dong—known as the Shahab-3 in Iran—and this is not only the most likely missile that Pyongyang would use in a nuclear attack involving an HEU weapon, but also the most likely delivery means that Iran would use, should Tehran choose to initiate a nuclear attack (presumably against Israel). [43] The No Dong missile is the platform that would offer the most stability for a 500 kilogram nuclear warhead. Thus, one needs to consider the range of the No Dong. South Korean and U.S. military officials now assess that the No Dong has a range of up to 1,500 kilometers. [44] This means that a nuclear-armed No Dong missile now has the range to hit Tokyo, or other key nodes in Japan—including U.S. bases in Okinawa. It also means that the same type of missile, fired from a different trajectory, could hit key nodes in South Korea, such as Busan, Gunsan, or even Jeju Island. The big question of course is whether or not North Korea has completed its HEU weaponization program, and (perhaps just as importantly) perfected the design for a 500 kilogram HEU warhead that would be mounted on a No Dong missile. Launching a nuclear capable missile at Japan would create all of the same alliance issues that were discussed earlier involving the plutonium weapons. If several missiles, or a “volley,” were launched at Japan, that would make it more difficult to use ballistic missile defense systems to shoot them down. The same applies if this tactic were to be used against South Korea. Of course, an HEU weapon could also be launched using the bomber aircraft described earlier, or even using a ship sailing into an unsuspecting port (also described earlier when addressing the Plutonium program).

### **Preemptive Strikes: A Viable Planning Option?**

The scenarios described earlier paint a rather ominous picture of the kind of threat that a nuclear-equipped North Korea could present to the region. Even if one adopts the best case scenario and assesses North Korea has not developed its HEU program to fruition or yet developed a capability to mount a nuclear warhead on a missile (perhaps a very dangerous assumption), there is no doubt that right now North Korea has the ability to use delivery means for its proven plutonium program, such as an H-5 aircraft or a non-descript merchant vessel. These capabilities lead one to ask the question, would a preemptive strike be the best methodology for preventing a North Korean nuclear attack? If so, how would it be carried out, and what would be the reaction from the North Korean government? In a September 2010, speech given at a seminar co-sponsored by the Korea Defense Forum and the Northeast Asia Peace and Security Forum, the Chairman of the South Korean Presidential Commission for National Security Review, Lee Sang-woo, stated in part, “Only when it possesses the ability to attack targets precisely with non-nuclear weapons and incapacitate North Korea’s WMD ability before it is used will South Korea, which maintains a nonnuclear military policy, be able to head off North Korea’s military edge.” [45] Perhaps in response to this very publicly disseminated statement, North Korea’s propaganda services stated on September 17, 2010, that their nation was ready for a preemptive strike by South Korea, articulating in part, “it will get nothing but miserable self-destruction.” [46]

The problem of carrying out a preemptive strike against North Korea is exacerbated by the fact that the locations of its nuclear weapons (bombs or warheads for missiles) are unknown. What is known



is that these weapons are unlikely to be located either at Yongbyon (for plutonium) or Sowi-ri (for HEU). In fact, it is very likely that the nuclear weapons are dispersed to several places in North Korea. [47] For plutonium bombs (Estimates vary, but North Korea may have processed enough plutonium for up to 15 nuclear weapons), each bomb may literally be dispersed at a different location. [48] Based on delivery means, it is likely that one or more are dispersed near airfields where they could be deployed aboard bomber aircraft, or near ports where they could be loaded onto merchant vessels. They could also be dispersed to naval bases where the merchant craft could be brought in for loading of the nuclear devices. In the case of an HEU weapon—if it exists already—there is no estimate on how many exist. If the North Koreans have perfected the methodology for mounting a 500-kilogram warhead on a No Dong, the obvious place to expect these weapons to be deployed would be near No Dong bases. There are several in the country. [49] The issue that makes this all the more ominous is the fact that a No Dong can be launched from a Transporter-Erector-Launcher, and thus could be moved to any mobile location in the country, from where the missile could be launched. Thus, the option of a preemptive strike will have to involve much more than simply taking out all of the weapons—even if their locations were known. The other factor that is key when one assesses the possibility and results of a preemptive strike, is what the reaction of the North Koreans would be. North Korea is in possession of hundreds of long-range artillery systems deployed along the DMZ with South Korea that are capable of hitting Seoul. [50] In addition, up to 20 percent of these systems are assessed to be equipped with chemical munitions. [51] An attack could be initiated within a matter of minutes because all of these systems already sit within firing positions. In addition, North Korea would be likely to use all of the tools that were quickly available in its arsenal to strike back at South Korea and the United States. This would include what is likely to be attacks by its Special Operations Forces and the more than 800 short- and mid-range missiles in its arsenal. [52] All of this means that the ROK-U.S. alliance would have to go after more than just sites where nuclear weapons were believed to be deployed. Any preemptive strike would have to include a strike on command and control facilities, any airfields where aircraft with nuclear weapons could be deployed (as well as airfields where fighters could be launched in retaliation), long-range artillery sites along the DMZ, naval bases and ports where ships could be carrying nuclear weapons, and key leadership nodes in Pyongyang. In short, the only way to even be modestly sure that the nuclear weapons, the means to control them, and the ability to mount a massive retaliatory strike could be destroyed, would be to start an all-out war. Thus, in any planning for a preemptive strike, the assumption that this would start a full-scale war should be an integral part of the process.

### **Expected Damages and Consequence Management**

As discussed earlier, even a small nuclear detonation of four kilotons or less, such as the North Korean test of 2009, would probably kill tens of thousands of people if it occurred in a densely populated area. According to Rand analyst Bruce Bennett, even a one-kiloton nuclear attack against a city like Busan could cause up to 72,000 casualties, depending on where the weapon was detonated (an attack on Seoul would likely cause even more casualties). [53] This is important for North Korea because if Pyongyang did choose to conduct a nuclear attack the two most likely countries targeted would be Japan or South Korea. This becomes all the more compelling if one is to consider the fact that some 220,000 foreigners live in Seoul. [54] In this author's view, Seoul would be a less likely target of a nuclear weapon than another major city in South Korea because of its close proximity to North Korea and because this is considered the historic "crown jewel" of Korean art, culture, and society by both North and South Korea (besides, North Korea can rain havoc on Seoul with chemical weapons fired by missiles and long-range artillery). But there are large numbers of foreigners in other South Korean metropolitan areas as well, and certainly the same applies to Japan. What all this means is that a nuclear attack on South Korea or Japan will not just kill civilian nationals. It is likely to also kill a great number of foreigners (many of them Americans), and if certain key metropolitan areas are targeted, a large number of military personnel as well. Another important aspect of the results of a nuclear attack on South Korea or Japan is the terror

aspect. There are several large cities in both South Korea and Japan. For anyone who has ever lived in either one of these vibrant East Asian nations, it is a routine experience to be caught in what are now world-famous traffic jams. [55] Because many metropolitan areas in both South Korea and Japan are so densely populated, a nuclear attack would likely lead to widespread panic and terror that would spread nationwide. It is for this reason (and because such a large portion of the civilian populace would be killed) that a nuclear detonation in one of these areas would likely be considered an act of terror. The evacuation of civilians from South Korea would be particularly tough. The large number of American civilians who live in South Korea would make it literally the largest non-combatant evacuation (NEO) ever conducted in U.S. history. [56] United States Forces Korea (USFK) annually conducts NEO exercises, but obviously since no one has ever gone through such a large evacuation before, the real thing would present huge challenges for USFK, U.S. military air and sea lift, and for civilian transport services that would undoubtedly need to be called in to help. [57]

In the cases of consequence management for the governments of South Korea and Japan, the amount of deaths and injuries would be so high that whichever country was attacked (with nuclear weapons) would undoubtedly have to ask for foreign assistance in order to deal with what would be a dire medical need. The only case study one can analyze is the aftermath of the atomic bombing of Hiroshima and Nagasaki in 1945. The medical aftermath for the civilian populace who survived the attack in both areas was nothing short of catastrophic. [58] Today, both South Korea and Japan are modern, cosmopolitan nations. But the amount of medical personnel that would be needed after a successful nuclear attack on one of their major cities or ports would still likely be insufficient for the sudden influx of badly wounded people. In addition to the overwhelming medical issues that would ensue following a nuclear attack, consequence management would have to involve confronting the environmental issues that would probably cause repercussions all over East Asia. [59] As retired U.S. Army Colonel John M. Collins articulated in an article in 2003, “A gigantic crater caused by a nuclear device would instantaneously breach U.S.-ROK forward defenses and release a lethal radioactive cloud that would envelope all forces down-wind if just one nuclear weapon erupted anywhere beneath the westernmost third of the DMZ. [60] In short, consequence management for both South Korea and Japan would involve both medical and environmental emergency procedures. While international efforts would likely help to eradicate much of the stress on the medical systems that such an event would cause, the environmental fallout from a nuclear attack would likely cause problems that could take as long as a generation to solve.

### **The Military Readiness of ROK and U.S. Forces for a North Korean Nuclear Attack**

The military forces in Korea (ROK and U.S.) annually train at least twice a year for scenarios that involve fighting a force-on-force conflict with North Korea, North Korean crisis situations, and other scenarios that the ROK-U.S. alliance could potentially confront in the future. A nuclear scenario is also something that ROK and U.S. forces train for—and plan for—as part of their routine military readiness (usually in command-post exercises). According to open sources in the press and elsewhere, OPLAN 5027 and other corresponding war-plans include planning for a nuclear scenario and also include preemptive strike options. [61] There are political problems of course when one addresses how a North Korean nuclear strike (either impending or one that has just occurred) would be responded to. Colonel John Collins addressed this in the following quote: “Any of the U.S. options described above could trigger uncontrollable escalation that would create appalling casualties on both sides of the DMZ and promise a Pyrrhic victory at best. Unilateral actions by the United States without unqualified ROK agreement and willing participation every step of the way would be immoral as well as ill-advised.” [62] Colonel Collins gets to the center of the problem when he addresses agreement between South Korea and the United States. Any response to a nuclear attack from North Korea would have to involve a process where both nations agreed on exactly the type of action to be taken. And much of this would be contingent on where the attack occurred, how many casualties it inflicted, and (of course) the political leanings of the governments in both Seoul and

Washington.

Of course, being able to plan for and recognize an impending North Korean nuclear attack is contingent on good intelligence. The United States and South Korea have a huge array of intelligence collection systems that target North Korea. In fact, South Korea is able to rely on its ally for some of the most sophisticated collection systems ever fielded—and these systems significantly enhance the planning process. [63] But the fact of the matter is that North Korea is perhaps the most opaque country on earth, and thus the well-guarded secrecy that Pyongyang is able to use to protect its planning, its weapons systems, and the type of attacks that it will conduct in a nuclear scenario, limits the capabilities of the ROK-U.S. military alliance in being able to actually verify that a nuclear attack is impending. [64] That takes us back to the dilemma of once again evaluating the level of tensions on the Korean peninsula, clear-cut evidence that Pyongyang is actually readying a nuclear-equipped delivery means for an attack on South Korea or Japan, and the political leanings of the governments in Seoul and Washington. To address this dilemma, during October of 2010, South Korea and the United States set up a joint military committee specifically designed to deter threats from North Korea's nuclear weapons capabilities (and other WMD threats). The committee, now known as the "Extended Deterrence Policy Committee," was formed as a result of the annual Security Consultative Meeting between U.S. Defense Secretary Gates and South Korean Defense Minister Kim. It is the first such committee that the United States has created with a non-NATO ally. [65]

In any scenario, Seoul is likely to be reluctant to support a nuclear attack on North Korea. The reasons for this are obvious. If a full-scale war were to erupt on the Korean peninsula, the end state that would be planned for would be a reunification of Korea under a liberal democratic government in Seoul (this is a stated policy goal). [66] This means that a reunified Peninsula under Seoul would then have a large area in North Korea that had just been decimated by a nuclear attack. If the nuclear attack by allied forces were to follow a North Korean nuclear attack (in other words if the allied nuclear attack was not a preemptive strike), this would then mean that the government in Seoul would have the huge and ominous task of having to clean up not one, but two nuclear-strike sites. As discussed earlier, this would have environmental and population ramifications for as long as a generation. It thus appears likely, that whether the situation called for a preemptive strike (if the level of intelligence available was able to show that this was necessary), or responding to a strike that had just been made, the South Korean government is most likely to push for a response that is carried out by conventional weapons systems.

### **Conclusions**

Based on the evidence presented in this paper, it is obvious that even using the most primitive type of nuclear weapon, North Korea could launch a nuclear strike that would likely kill tens of thousands of people in either South Korea or Japan. This is a capability that North Korea possesses right now. If and when North Korea is able to perfect the technology for fitting an HEU warhead to a missile (if they have brought their HEU weaponization program to fruition, and this may already be the case), North Korea will be able to launch a strike from mobile missiles at either South Korea or Japan. No matter what preparations are made to prepare for such an attack, the casualties would be enormous—as would be the second order effects for as long as a generation. Intelligence on North Korea's intentions is sketchy at best, and thus limits the likelihood of a preemptive strike. A preemptive strike is also limited by the ramifications. Because of North Korea's ability to strike back and its unpredictable government, any preemptive strike would have to be so widespread and large-scale that there is almost no doubt it would cause an all-out war on the Korean peninsula. All of these assessments put together add up to the premise that avoiding a nuclear war of any kind on the Korean peninsula can and should remain a high priority. There will be no winners, only varying degrees of great loss.

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[65] See “S. Korea, U.S. to Set Up Joint Body to Deter N. Korea’s Nuclear Threats,” Yonhap News, October 8, 2010, <http://english.yonhapnews.co.kr/national/2010/10/08/0301000000AEN20101008008500315.HTML>; and Deok-hyun Kim, “S. Korea, U.S. Prepared for ‘Instability’ in N. Korea,” Yonhap News, October 8, 2010, <http://english.yonhapnews.co.kr/national/2010/10/09/4/0301000000AEN20101009000800315F.HTML>.

[66] See Sun-won Park, “Strategic Posture Review: South Korea,” *World Politics Review* (March 17, 2010), [http://www.brookings.edu/articles/2010/0317\\_korea\\_park.aspx](http://www.brookings.edu/articles/2010/0317_korea_park.aspx).

#### **IV. Nautilus invites your responses**

The Northeast Asia Peace and Security Network invites your responses to this report. Please send responses to: [bscott@nautilus.org](mailto:bscott@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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