

## **The Sixty Years of the Korea-U.S. Security Alliance: Past, Present, and Future**

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### Abstract

The Republic of Korea (ROK) and the United States have maintained a strong security alliance for 60 years. Throughout that period, North Korea has posed continuing threats that have evolved significantly in recent years. Because North Korea is a failing state, the ROK and the United States must seek to deter, and, if necessary, defeat a range of North Korean challenges, from provocations to major war. They must also be prepared to deal with a North Korean government collapse. All of these challenges potentially involve a ROK/US offensive into North Korea to unify Korea, with significantly different force requirements than the historical defense of Seoul.

North Korea has made all of these challenges more dangerous by developing significant weapons of mass destruction and especially nuclear weapons. The ROK and the United States must do more to collect intelligence on these threats and must field robust offensive and defensive capabilities against them.

ROK demographics will complicate future Korean security efforts. The ROK has experienced low birthrates for several decades now and cannot sustain the historical or current size of its military. The current twenty-two active duty ROK Army divisions are scheduled to be reduced to twelve or so in 2022, which likely is insufficient for successful offensive and stabilization operations in the North. The ROK has several options available for offsetting the loss of ten active duty divisions, but these options tend to involve financial and political costs that the ROK government will be reluctant to accept. Regardless of whether the ROK provides adequate forces, China is likely to intervene into North Korea in any of the scenarios involving ROK/US intervention into the North, forcing the ROK/US to work more closely with China to avoid the possibility of an accidental but disastrous conflict.

Keywords: North Korean WMD Program, ROK, US-ROK security alliance, OPCON transition.

The Korea-U.S. security alliance had its origins in the Korean War. Throughout that war, U.S. and Republic of Korea (ROK) troops fought side-by-side against the attacks by North Korea and the eventual intervention of Chinese troops. At the conclusion of the war, the “ROK-US Mutual Defense Treaty” was signed on October 1, 1953. The Treaty formalized the alliance, guaranteeing ROK security.

Much has changed since 1953. In order to characterize the evolution of the ROK-U.S. security alliance, this article discusses the major changes that have occurred and those that are expected. It focuses on changes in the North Korean threat, changes in the alliance structure, and changes in ROK/US military capabilities. From these, it notes challenges that lie ahead and actions that need to be considered to meet the needs of mutual security.

### **The Evolving North Korean Threat**

The North Korean military threat has changed significantly over the years. These changes have been both quantitative and qualitative. In particular, in recent years the North Korean conventional threat has largely atrophied, while its asymmetric threats have blossomed.

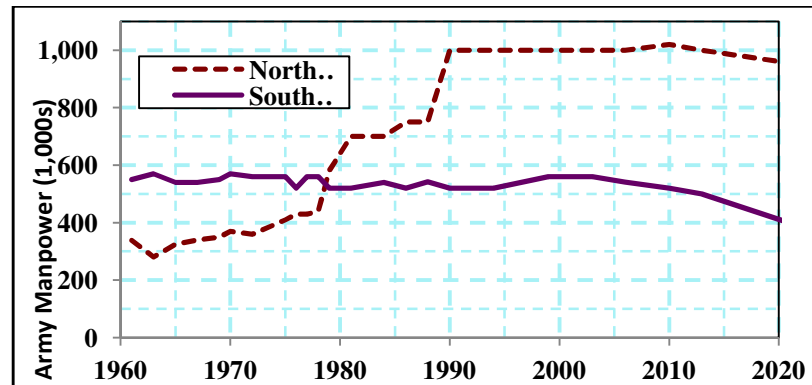
### **Conventional Forces**

At the beginning of the Korean War in 1950, the North Korean military involved conventional forces with some qualitative superiority over ROK forces and U.S. forces on the peninsula at that time, especially in terms of armor/anti-armor. In late-1950, the threat changed with the Chinese intervention in support of North Korea. The large number of Chinese troops overwhelmed the ROK and US forces, driving them back from the Chinese border area. The issues of force quantity and quality continued to play a significant role over the course of the Korean War, with the eventual stalemate reflecting a relative balancing on the peninsula.

In the immediate aftermath of the Korean War, Chinese and US forces were fairly promptly reduced. At the 1953 Armistice, China had thirty-four divisions in Korea. Of these, nineteen departed in 1954-5, and the remaining fifteen divisions departed in 1958.<sup>2</sup> By 1956, China had fewer than 300,000 military personnel in North Korea, and many US forces were had already left or would be leaving in the coming years.<sup>3</sup> In turn, North Korea had only about 350,000 personnel, compared to 720,000 ROK military personnel. Figure 1 shows the evolution of those

forces over time.<sup>4</sup>

**Figure 1: The Size of Korean Army Forces**



Source: 1960-1994, IISS *Military Balance* for each year; 1999-2010, ROK *Defense White Paper* for the given years; 2013 and 2020, author's estimates<sup>5</sup>

Kim Il-sung was the leader of North Korea. It is important to remember that his experience with military operations was primarily in terms of insurgency, both before and during World War II. By the 1960s, he apparently hoped that the government in the South was so unstable that a major insurgency campaign could cause it to collapse, and he attempted such a campaign from 1966 to 1969,<sup>6</sup> including a major effort to kill the ROK President in 1968. He appears to have believed that once the South Korean government was destabilized, an invasion of the South would succeed, despite the relative military balance favoring the South. The failure of that insurgency campaign caused the primacy of guerrilla/insurgent warfare to decline in doctrine and reality in subsequent years.

Dissatisfied with the outcome of efforts in the 1960s, Kim Il-sung turned to creating a more powerful military force. In 1967, one of the Soviet military attaches in North Korea reported: "Up to about 1966, the DPRK's military concept was based on the experiences gained in the anti-Japanese guerrilla struggles of the 1930s and the Patriotic War of 1950-53. Their views were influenced by the strategy and tactics of guerrilla warfare, following primarily Chinese military views. They did not study missiles, nuclear weapons, or the experiences of other armies. In 1966 they started to study the experiences gained by the armies of the

fraternal countries, primarily the Soviet Army.”<sup>7</sup>

US intelligence estimates of North Korean forces grew from under 500,000 in the early-1970s to almost 700,000 by 1978, at which point North Korea had roughly twice as many maneuver battalions, and armor as the ROK forces.<sup>8</sup> This description of the surge in North Korean forces occurred earlier than the surge shown in Figure 1, suggesting that the data used in Figure 1 (from the annual IISS *Military Balances*) lagged behind the actual estimates of North Korean forces.<sup>9</sup> The North Korean Army personnel build-up during the 1970s until the late-1980s was also matched by a build-up of North Korean military equipment, especially armor and artillery, giving North Korea a roughly 2:1 quantitative advantage over the ROK across many aspects of conventional ground force capabilities, despite ROK equipment advances during the 1980s.

In Figure 1, the size of the North Korean ground forces appears to have been fairly constant since roughly 1990. But over this period of time, there have been reports of North Korea having to lengthen its conscription period, lower its physical standards, and draft more women,<sup>10</sup> suggesting the challenges the North has faced in gaining the desired number of personnel. In the coming years, the North Korean conscription age group is due to decline almost 20 percent (according to the 2008 North Korean census), and thus the North Korean military will likely decline somewhat in size, having already applied many of the available means for sustaining the military force size.

The North Korean conventional force build-up of the 1970s and 1980s led to the creation of many heavy force units in the North Korean Army. North Korea created one armor corps and four mechanized corps, each of substantial size. It appeared that North Korea really was working on developing capabilities to support its concept of reunifying the peninsula through a “blitzkrieg” conquest of the South. The heavy forces North Korea was fielding could exploit the improved transportation network of the ROK to advance rapidly to Pusan, possibly getting there before major US forces could react effectively. Some North Korean commentary talked about reaching Pusan within a few weeks.

But North Korean forces have also suffered qualitative problems since the 1970s, problems that have offset their quantitative superiority. Despite North Korea’s spending perhaps one-fourth or more of its GDP on the military, the low North Korean GDP has limited the ability of North Korea to compete with the US and ROK conventional forces that have made such great quality strides in recent decades. North Korean

tanks still largely consist of T-54/55 and T-62 tanks initially developed decades ago. North Korea possesses primarily Mig-21 and older fighter aircraft, developed in the late-1950s. North Korea does not have a defense budget of sufficient size to modernize much of this old equipment. North Korea is largely stuck with antiquated conventional weapon systems that because of their age have become less reliable and difficult to maintain.

The US/ROK qualitative advances have made a North Korean conventional invasion of the ROK almost certain to fail. US/ROK precision munitions could wreck havoc with North Korean forces on roads and otherwise exposed locations. And US/ROK ground force superiority—including armor and artillery—would overwhelm the numerically superior North Korean forces. According to a 2009 article in *The Chosun Ilbo*, “General Sharp, the [earlier] commander of U.S. military forces in South Korea, says he is certain he can defend against any threat from communist North Korea.”<sup>11</sup> Nevertheless, General (Ret) Sharp testified in 2008 that, “North Korea’s arsenal, ‘though aging and unsophisticated’ by U.S. and South Korean standards, ‘still constitutes a substantial threat.’”<sup>12</sup> This is to say that considerable damage would be done to the ROK, especially around Seoul and in areas further north. Given the magnitude of damage that North Korea would do, the ROK government concluded decades ago that it could not return to a ceasefire after a second Korean War, and thereby allow North Korea at some point to execute a third Korean War. Instead, if a North Korean invasion were to fail, the ROK planned years ago to destroy the North Korean regime and reunify the country.<sup>13</sup>

### **Asymmetric Military Means**

North Korean leaders became interested in a range of WMD capabilities as early as the late 1940’s. Still, early North Korean efforts heavily involved basic training in WMD capabilities along with research and development, but very little in the way of producing mature WMD capabilities. This is not to say that North Korea was disinterested in WMD, but rather that it took some time to develop the industrial capabilities especially in light of the massive damage done to North Korea by the bombing campaigns of the Korean War. By the 1980s, North Korea had both the industrial means for producing WMD and their delivery systems, and also the motivation to do so given the shifts in conventional force capabilities noted above.

### ***Starting the North Korean Nuclear Weapon Program***

North Korea had first-hand accounts of the effects of nuclear weapons from World War II. “As the news about the events at Hiroshima and Nagasaki spread throughout the world, nuclear weapons came to be viewed as the ultimate ‘doomsday’ weapon, a perception that was reinforced by Koreans who had been in Hiroshima and Nagasaki at the time of the bombing.”<sup>14</sup> Many of these Koreans returned to North Korea to share their stories.

The United States then sharpened North Korean interest in nuclear weapons during the Korean War. Washington regularly threatened to use nuclear weapons, imposing a kind of “nuclear shadow” on the conventional conflict. For example, in November 1950, when asked if the United States would use the atomic bomb in Korea, “President Truman told reporters that he would take ‘whatever steps are necessary’ to deal with the situation and indicated that the use of nuclear weapons had ‘always been [under] active consideration.’ When he added that the military commander in the field would be ‘in charge of’ their use, the president ignited a political and diplomatic crisis of the first order.”<sup>15</sup> The United States also used threats of nuclear weapon use to push North Korea and China into the Korean War Armistice in 1953. “Since then, a nuclear inferiority complex has pervaded DPRK strategic thinking and foreign policy, leading DPRK leaders to spend their lives and their nation’s resources to make sure that they never again experience this type of coercion.”<sup>16</sup> The North Korean fears were intensified when the United States decided to introduce nuclear weapons into South Korea in early 1958.<sup>17</sup>

As a result, North Korea persistently sought nuclear weapons and nuclear weapon technology from the Soviet Union and its allies.<sup>18</sup> While most of these requests were rebuffed, the Soviet Union did begin nuclear technology training of North Koreans in the Soviet Union in 1956.<sup>19</sup> “The Soviet ‘Atoms for Peace’ initiative, modeled after President Eisenhower’s initiative of the same name, enabled several hundred North Korean students and researchers to be educated and trained in Soviet universities and nuclear research centers.”<sup>20</sup>

### **Starting the North Korean Chemical and Biological Weapon Programs**

North Korea began work on chemical weapons immediately after the Korean War.

“In 1954 the Soviet Union and China transferred certain special technologies as well as chemical agents and means of protection against them captured from the Japanese and Kuomintang during World War II to the Korean People's Army [KPA]. The next five years were marked by the swift development of the DPRK chemical industry. Despite the fact that the country possessed considerable deposits of natural raw materials, it proved to be a rather difficult task to create domestic capacities for producing chemical weapons. In 1964 the DPRK concluded a contract with Japan for deliveries of agricultural chemicals. Under their guise, components came into the country initially for synthesis of tabun and mustard gas, and later chlorine and phosphorus-containing organic compounds were imported.”<sup>21</sup>

According to the South Korean Ministry of Defense, “North Korea recognized the importance of chemical warfare and issued Kim Il Sung's ‘Declaration for Chemicalization’ at the end of 1961. The defense ministry has since begun to build research and production facilities, exerting its utmost efforts to produce chemical weapons.”<sup>22</sup> We lack information on the timing or extent of North Korean chemical weapon development, though it appears that only modest quantities were produced before the 1980s.

North Korea’s aggressive pursuit of biological weapons did not occur until later.

#### *Shifting the North Korean Focus to Asymmetric Means*

We do not know when the North ramped up its asymmetric military capability programs, but it appears to have been in the early 1980s, with perhaps some activity in the late-1970s. Thus, in the early 1980s the development of vehicles needed to support North Korean mechanized brigades shifted to producing self-propelled artillery, potentially for use with chemical weapons, leaving the mechanized forces, largely a mainly truck mobile force. The early 1980s also saw major North Korean work on ballistic missiles, apparently starting with the import of Russian Scud missiles (and the earlier import of FROG missiles), which North Korea subsequently reverse engineered and began to produce.<sup>23</sup> By the late-1980s, North Korea was fielding chemical and nuclear weapons and probably biological weapons, along with ballistic missiles and long-range artillery to use as delivery systems.

We do not know for certain what factors affected this North Korean shift, but several appear likely. First, during the 1970s and 1980s the US military and the military forces of its allies grew from a position of military inferiority to the Soviet Union to a highly competitive status. Those same qualitative advances would have significantly affected North Korea had a conflict occurred on the Korean peninsula. The first full demonstration of the changes occurred with the US attacks on Iraqi forces in Operation Desert Storm in 1990-1991, but the shift was very apparent much earlier to military power experts. Second, it became clear that the US qualitative advances were ongoing and would likely lead, over time, to a US position of conventional superiority—a condition which has indeed developed. A poor country like North Korea could not compete with such developments, given the high cost of the conventional force capabilities that the United States was pursuing. North Korea needed a cheaper alternative. And although chemical and biological weapons were not cheap, they were far less expensive than the conventional force capabilities pursued by the United States. Third, throughout the period following the Korean War, nuclear weapons demonstrated their value as a critical measure of national power and deterrence capability, both key interests of the North Korean regime.

### **The Development of North Korean Nuclear Weapons**

From the 1960s through early 1980s, the Soviet Union and China refused to assist North Korea in building nuclear weapons.<sup>24</sup> So, North Korea settled for the next best option, focusing on reactor development to produce the fissile material needed for those weapons. “The Soviets built a research reactor, the IRT-2000, and associated nuclear facilities at Yongbyon in the 1960s. North Korean specialists trained at these facilities and by the 1970s were prepared to launch a nuclear program without external assistance.”<sup>25</sup> The research reactor originally used ten percent enriched uranium. Likely seeking to obtain highly enriched uranium (HEU, to divert HEU from the reactor to its nuclear weapons program), North Korea modified the reactor in the early 1970s to employ eighty percent HEU supplied by the Soviets;<sup>26</sup> the U.S. Hiroshima bomb apparently used this level of HEU.<sup>27</sup>

Since the Soviet Union and China continued to oppose North Korea’s building nuclear weapons, Pyongyang built its own reactor to produce plutonium for nuclear weapons at Yongbyon in the early 1980s.<sup>28</sup> “In 1981 the USSR, Czechoslovakia, and East Germany still rejected the



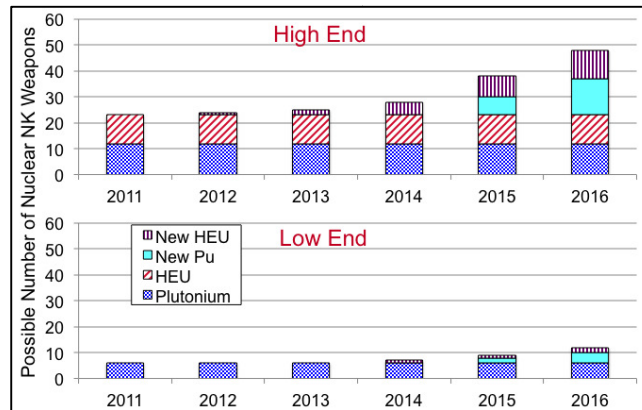
DPRK's nuclear requests, no matter how cooperatively the North Koreans behaved during the talks. What eventually induced the Kremlin to adopt a more helpful attitude toward Kim Il Sung's nuclear plans was the spectacular improvement in Soviet-DPRK relations in 1984. Facing increasing diplomatic isolation and American pressure, Moscow felt it advisable to reach reconciliation with Pyongyang, even if this required the fulfillment of certain 'problematic' North Korean requests."<sup>29</sup>

North Korea's work on the Yongbyon nuclear facilities was clearly oriented to developing nuclear weapons. Thus, despite a severe lack of commercial power in North Korea, "The reactors at Yongbyon -- the site that initially attracted world concern about Pyongyang's nuclear intentions -- were never hooked up to the country's electrical energy grid, nor are they today. They have been exclusively used for harvesting weapons-grade plutonium."<sup>30</sup>

North Korea made Yongbyon the focal point for producing fissile material for North Korean nuclear weapons, including the development of a plutonium reprocessing plant to deal with the "wastes" coming out of the new reactor. The reactor operated from the mid-1980s until 1994 when it was inactivated by the "Agreed Framework" between the United States and North Korea. North Korea then operated the reactor again from 2003 to 2007. These periods help define the amount of plutonium that North Korea may have produced for nuclear weapons.

This is important because the United States appears to have little information on the actual number of North Korean nuclear weapons. Instead, North Korea nuclear capabilities are measured in terms of the possible amounts of critical nuclear materials that North Korea has available, assuming that these materials either have been or could be converted into nuclear weapons. Two experts have provided low and high estimates of the number of nuclear weapons that North Korea could possibly possess, by fissile material source, as shown in Figure 2.<sup>31</sup> But note that these numbers actually reflect the amount of fissile material of each kind that North Korea might possess which could be used to produce weapons.

**Figure 2: The Potential Number of North Korean Nuclear Weapons**



Source: Albright and Walrond

North Korea has traditionally produced plutonium for its nuclear weapons, and may also have produced sufficient HEU for nuclear weapons. North Korea reprocessed plutonium from the nuclear wastes of the Yongbyon 5 MWe nuclear plant that was shutdown in 2007, yielding perhaps as much as 50 kilograms of plutonium, enough to make six to twelve nuclear weapons. North Korea’s smaller research reactor at Yongbyon might have also contributed some nuclear wastes for reprocessing. In the mid-1990s, Pakistan assisted North Korea in setting up uranium enrichment, though it is not known when North Korea actually began enrichment to produce weapons grade HEU. Nevertheless, by 2013 North Korea may have already enriched enough HEU for up to eleven nuclear weapons, as shown in Figure 2. “Pakistani scientist Abdul Qadeer Khan also said that North Korea may have been enriching uranium on a small scale by 2002, with ‘maybe 3,000 or even more’ centrifuges, and that Pakistan helped the country with vital machinery, drawings and technical advice for at least six years.”<sup>32</sup> The estimate of sufficient HEU for up to eleven nuclear weapons becomes part of the high-end estimate for North Korea in Figure 2.

According to this estimate, North Korea has sufficient plutonium and HEU for approximately six to twenty-five nuclear weapons today. We do not know how many weapons North Korea actually has produced, nor whether any are small enough to fit on North Korean ballistic missiles. But the US Defense Intelligence Agency<sup>33</sup> and some ROK experts<sup>34</sup>

argue that they *might* have created nuclear weapons of the appropriate size for mounting on a ballistic missile.

In the future, North Korea will continue uranium enrichment, is preparing a new nuclear plant for operation, and may even try to restart its nuclear plant that it closed in 2007.<sup>35</sup> North Korea might even be operating three or four uranium enrichment facilities beyond the one at Yongbyon; it almost certainly has at least one more facility (which was assumed in the numbers used to create Figure 2).<sup>36</sup> North Korea's new reactor could produce significantly more plutonium than the old one did.<sup>37</sup> Not counting the old reactor being returned to service, Albright and Walrond projected that by 2016 North Korea could have weapons-grade materials for twelve to forty-eight nuclear weapons.

Interestingly, North Korea likely produced a nuclear device by early 1990, before plutonium from Yongbyon would have been available.<sup>38</sup> If so, North Korea likely acquired plutonium and/or HEU from an external source in the 1980s, which would adjust many timelines of North Korean nuclear weapon development and increase the nuclear weapons North Korea might have today. Indeed, Pakistani nuclear proliferator Dr. A. Q. Khan said, “. . . that during a visit to North Korea in 1999, he toured a mountain tunnel. There his hosts showed him boxes containing components of three finished nuclear warheads, which he was told could be assembled for use atop missiles within an hour.”<sup>39</sup> Three nuclear weapons would be more than the U.S. estimate of one to two at that time, based on the plutonium that North Korea had produced.<sup>40</sup> North Korea may be able to produce more nuclear weapons than their fissile materials would support because of weapons-grade material reaching North Korea from third parties. Russian intelligence has reported that North Korea received 56 kilograms of plutonium from Russia in 1993,<sup>41</sup> sufficient for up to ten nuclear weapons. But this report is often discounted because of a lack of firm proof (including in the work that produced Figure 2), even though it may be true.

The size and character of this threat is important. A few North Korean nuclear weapons that are too large to be delivered by ballistic missiles would be extremely different from a threat of nearly 50 nuclear weapons, many able to be mounted on ballistic missiles. We do not know where the North Korean threat will be across this spectrum.

We have only limited information on North Korean uses of its nuclear weapons. It already uses them to deter ROK and US action against the North, including casting a “nuclear shadow” that allows it to

commit provocations. But if conflict were actually to develop between the United States/ROK and North Korea, when and how would North Korea use its nuclear weapons? North Korean diplomats did talk with their Eastern European allies as early as the mid-1970s, before they had nuclear weapons, about having nuclear weapons and being prepared to use them against the United States and our allies: “By now the DPRK also has nuclear warheads and carrier missiles, which are targeted on the big cities of South Korea and Japan, such as Seoul, Tokyo, and Nagasaki, as well as on the local military bases, such as Okinawa.”<sup>42</sup>

In 1976, a North Korean diplomat told a Hungarian colleague that, “‘Korea cannot be unified in a peaceful way. They [the North Koreans] are prepared for war. If a war occurs in Korea, it will be waged by nuclear weapons, rather than by conventional ones.’”<sup>43</sup> Joe Bermudez notes that in interviews with North Korean [DPRK<sup>44</sup>] leaders, he was told: “. . . the United States has prevented the unification of Korea and threatened the existence of the DPRK with nuclear weapons.” “A primary motivation for the DPRK to develop nuclear, biological, and chemical weapons is to ensure national survival by deterring potential South Korean or American aggression.”<sup>45</sup> So if deterrence fails (as could occur in various ways), North Korea would likely use its nuclear weapons, seeking to prevent the destruction of the regime that is an almost certain outcome if conflict is limited to conventional weapons, given US conventional superiority. Still, some experts reject this position, arguing that if North Korea ever uses a nuclear weapon, the United States would “turn North Korea into a parking lot.” But what US President would want history to show that he killed perhaps ten million innocent North Koreans with nuclear weapons?

In a conflict with the ROK/US, if the North Korean regime faced destruction, Kim Jong-il reportedly told his father during the first North Korean nuclear crisis in 1993, “Great Leader! I will be sure to destroy the Earth! What good is this Earth without North Korea?”<sup>46</sup> North Korea could not cause this kind of damage with conventional weapons, but could certainly cause major damage with North Korean WMD, and especially nuclear and contagious biological weapons.

### ***North Korean Biological Weapons***

The North Korean biological weapons program is by far the most difficult WMD program to characterize—the information on it is highly uncertain. A series of quotes from the program help characterize it.

- “In the 1980s, the military turned to the development of biological weapons according to Kim Il-sung’s directive that ‘poisonous gas and bacteria can be used effectively in war.’ ... The North is also suspected of maintaining numerous facilities for cultivating and producing the bacteria of anthrax and other forms of biological weapons.”<sup>47</sup>
- “The DPRK acceded to the Biological and Toxin Weapons Convention (BTWC) in March 1987, but many analysts believe it violates its commitments by maintaining a secret BW development program and possible stocks of weaponised agent. . . . Verification of BTWC compliance is extremely difficult under any circumstances due to the dual-use nature of biotechnology and the problem in differentiating between offensive and defensive BW research programs. Furthermore, BW facilities do not require much space, so are easy to conceal.”<sup>48</sup>
- “In 1993, the Russian Foreign Intelligence Service, successor to the Soviet Union’s KGB, released a statement that said, in part: ‘North Korea is performing applied military-biological research in a whole number of universities, medical institutes and specialized research institutes. Work is being performed in these research centers with inducers of malignant anthrax, cholera, bubonic plague and smallpox. Biological weapons are being tested on the island territories belonging to the DPRK (Democratic Peoples Republic of Korea).’ Mr. Gordon Oehler, director of the CIA’s Non-Proliferation Center, confirmed this Russian report.”<sup>49</sup>
- “The most likely agents for weaponisation are *Bacillus anthracis* (anthrax), *Yersinia pestis* (plague), *Vibrio cholerae* (cholera), and botulinum toxin. . . . If North Korea were to use biological weapons, KPA Special Forces or special agents under KWP control would probably disperse the BW in South Korea or Japan, while seeking to escape detection. This might precede a large DPRK military operation such as invasion in order to degrade ROK and U.S. response capacity. In a limited conflict scenario, where it wished to

avoid escalation, Pyongyang might have an incentive to use BW, since it would offer plausible deniability.”<sup>50</sup>

Nothing appears known about the quantity of North Korean BW that might be available, which would affect the extent of North Korean use. But BW can be relatively quickly constituted, likely in the form of sprays or bombs. So if North Korea plans ahead for military operations, it could have substantial BW for its intended uses. Moreover, BW matches North Korean military culture, given the North Korean emphasis on Special Forces due to Kim Il-sung’s role as an insurgent leader in World War II. Special Forces could be inserted into the ROK or Japan or even the United States in peacetime, carrying BW, with little chance of discovery. That BW would significantly empower these North Korean personnel.

### *North Korean Chemical Weapons*

The North Korean chemical weapons program has more evidence, having involved very significant efforts since the 1970s. “Eight different factories in North Korea have produced lethal chemicals, such as nerve, blister, blood, vomiting agents, as well as tear gas, and at present they are stored in six different facilities. Their quantity is estimated to be somewhere between 2,500-5,000 tons.”<sup>51</sup> “Chemical weapons can be delivered by virtually all DPRK fire support systems. This includes most artillery, multiple rocket launchers (including those mounted on CHAHO-type boats), mortars, FROG and SCUD missiles, and some bombs.”<sup>52</sup>

It is possible to estimate the number of CW munitions that might exist. Thus, if half of 2,500 tons (some 1,250 tons) of CW were dedicated to North Korean artillery, and artillery shells or rockets on average carried three to five kilograms of CW, then North Korea could have some 250,000 to 400,000 CW artillery shell and rockets. This number would be doubled if North Korea has 5,000 tons of CW. “U.S. Army General Leon LaPorte, former Commander, U.S. Forces Korea, asserted in August 2005 that North Korean leaders do not consider CW to be WMD, and ‘current North Korean doctrine states that every third [artillery] round fired would be a chemical round.’”<sup>53</sup> Some CW would also be delivered by tactical ballistic missiles—perhaps 150 tons if CW warheads averaged 300 kilograms of CW and North Korea had 500 CW warheads. This would leave hundreds of tons of CW for use in bombs or

as bulk agents.

North Korea developed its CW capabilities over time, gradually increasing the threat. With such large CW capabilities today, one source suggests a possible pattern for North Korean CW employment by ballistic missile in a conflict. “If it were to use CW, it would likely target ROK and U.S. military facilities in the South, including command and control centres and transport facilities such as airfields and ports – the latter to deny access to U.S. reinforcements. Hwasŏng (Scud) missiles would be the likely delivery system. Since their accuracy is poor, the KPA would have to launch several missiles at each target, so as to saturate the area with chemical agents and degrade enemy operations.”<sup>54</sup>

### ***North Korean Ballistic Missiles***

“While U.S. policymakers tend to focus on efforts to acquire long-range missile capability, Pyongyang’s inventory of short-range and medium-range road-mobile ballistic missiles poses a more imminent threat. It may have deployed over 600 short-range Scud variants and possibly as many as 320 medium-range Nodong missiles. The Musudan, another road-mobile, liquid fuelled ballistic missile, has not been flight tested (at least in the North), but ROK intelligence believes it was deployed in 2007. It is believed to be nuclear capable and could potentially strike Guam.”<sup>55</sup> These numbers were as of 2009. In December 2012, North Korea successfully tested a missile of intercontinental range, though as a satellite launch vehicle rather than a ballistic missile requiring an appropriate reentry vehicle/warhead. Still, these North Korean capabilities will almost certainly continue to develop. Table 1 provides some estimates of the number of missiles and launchers of each type, as well as their approximate range.

***Table 1: North Korean Ballistic Missiles in 2013***

Missile type	Number	Launchers	Range (kms)
Toksa (KN-02)	50?	9-27?	120
Scud B/C/D/ER	600+	< 100	300-500+
NoDong	200+	< 50	1,000
Musudan	75-150	< 50	3,000-4,000
KN-08	?	6+	6,000+

Sources: OSD, 2012; Bermudez, 2011; NCNK, 2013; ICG, 2009<sup>56</sup>

These capabilities have developed over time. The Scud B was first flight tested in 1984, and the Scud-C in 1986, both achieving initial operational capability in 1988. Development of the NoDong occurred mainly in the 1990s, with Musudan development starting in the 1990s and carrying into the 21<sup>st</sup> century, and the KN-02 development over much the same period.<sup>57</sup>

### **Evolving ROK/US Military Capabilities**

This section examines the evolution in ROK/US military capabilities. In particular, it discusses the command and control of the military portion of the alliance the development of ROK military capabilities, and the development of US military capabilities relative to operations in Korea.

#### **Command and Control**

The United Nations Command (UNC) exercised command and control of ROK, US, and allied forces during the Korean War. After the armistice, the UNC continued to exercise command and control of ROK and US forces, though the UNC staff was largely US personnel. In 1968, a combined staff was formed for planning purposes, bringing ROK personnel more into the process. This arrangement evolved further in 1971 into an integrated field army headquarters.<sup>58</sup>

In 1978, the ROK and the United States created the Combined Forces Command (CFC). CFC involves tight integration of US and ROK forces: “The CFC is commanded by a four-star U.S. general, with a four-star ROK Army general as deputy commander. Throughout the command structure, binational manning is readily apparent: if the chief of a staff section is Korean, the deputy is American and vice versa. This integrated structure exists within the component commands as well as the headquarters.”<sup>59</sup> At the action-officer level, ROK and US personnel work together and generally sit next to each other in the same offices; they prepare integrated war plans based upon shared intelligence and (largely) shared objectives. The Combined Forces Command is based at the Yongsan Army Base in central Seoul, directly next to the ROK Ministry of National Defense and Joint Staff, allowing close coordination with these ROK organizations.

Despite the closeness created by CFC, there have still been ROK and US differences on many issues. Especially during the administration of



ROK Presidents Kim Dae-jung and Roh Moo-hyun (1998 to 2008), the ROK government placed a high priority on reconciliation with North Korea, and to achieve this objective avoided actions that might offend North Korea, such as preparing for a North Korean collapse (halted by President Roh in April 2005)<sup>60</sup> or executing a counteroffensive against North Korea. Indeed, in 2005 the ROK Defense Minister even denied the existence of any plan that, “. . . included destruction of the North Korean military.”<sup>61</sup>

These differences in the security perspective reinforced the CFC focus on defending against a North Korean invasion of the ROK. Less attention has been paid to the diverse issues to be handled in a counteroffensive (like stabilization of the North, North Korean demilitarization, or securing weapon stocks). Issues such as the forces required or the policies to be pursued in a counteroffensive or in dealing with a Chinese intervention do not appear to have had much public discussion, in large part because of the potential political ramifications. The failure to discuss these issues may leave CFC inadequately prepared in these areas.

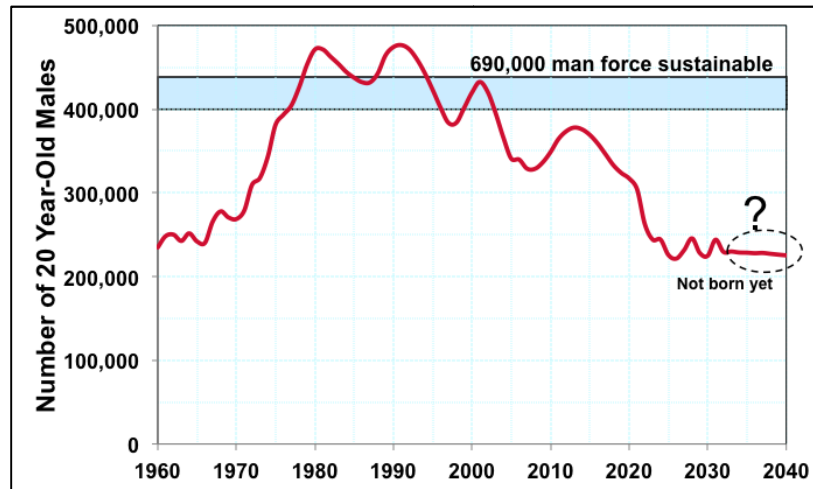
### **The Changing ROK Military Capabilities**

The ROK military has developed substantial conventional force capabilities since the Korean War. This is particularly true with regard to conventional military equipment, where the ROK today deploys advanced tanks, artillery, fighter aircraft, surface combatant ships, and submarines, with South Korean industry producing products in each category. There are few qualitative military areas in which ROK forces today are not superior to the North in a one-on-one comparison, and the ROK qualitative conventional advantages are likely to grow over time. Still, the ROK only spends about \$9 billion per year on military research and development and acquisitions,<sup>62</sup> and thus the growth of qualitative improvements is not as fast as many would prefer.

Moreover, in quantitative terms the ROK military is suffering from severe demographic problems, as shown in Figure 3. The ROK is experiencing only an average of about 1.2 births per woman per lifetime, and has had insufficient births to sustain the military conscription pool for some 30 years. The result is that the manpower pool available for the ROK military is shrinking. This is important because: (1) the ROK is still primarily a conscript military (some 70 percent of active duty personnel are conscripts); (2) the ROK accepts as volunteers or drafts

almost all young men in the appropriate age cohort; and, (3) women are still a very limited part of the ROK military. Figure 3 shows how the conscription age cohort has changed over time and will be falling precipitously over the coming decade or so. In addition, the ROK presidents have decreased the conscription period over the years, dropping it for the ROK Army from thirty-six months after the Korean War and again in the late-1960s and much of the 1970s to twenty-four

**Figure 3: Size of Conscription Age Cohort**



Source: Korean Statistical Information Service at <http://kosis.kr/eng/>

months in 2003 and twenty-one months in 2010. President Park Geun-hye promised to drop it further to eighteen months during her presidential campaign. The conscription period is critical because any reduction in it leads to a direct reduction in the number of conscripted military personnel.

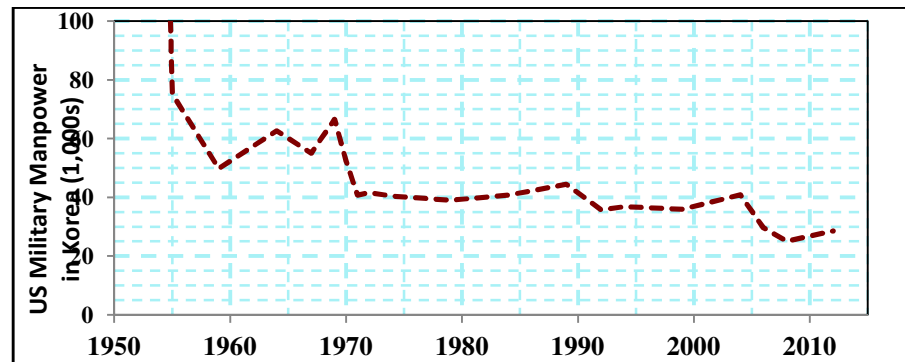
The ROK Army has borne the brunt of the manpower reduction associated with these demographic challenges. ROK Army personnel have been reduced from 560,000 to 500,000 in 2012 and are scheduled to be reduced to about 390,000 personnel by 2022. While the ROK Army has yet to reduce the number of its active duty combat divisions, it will soon need to begin that process, and plans to reduce from twenty-two to twelve active duty divisions by 2022.

The ROK military has attempted to deal with this manpower crisis as part of its Defense Reform Plan—its plan for military modernization. In 2005, the Defense Reform Plan 2020 anticipated major military budget growth to provide a technology versus manpower tradeoff. But much of that budget growth and the resulting technology acquisition have not happened. Thus, the 2005 military budget projection for 2013 was approximately 41.5 trillion won, whereas in reality the budget for 2013 is 34.3 trillion won,<sup>63</sup> some 7.2 trillion won (about \$6 billion) short, or about 17 percent of the total military budget. Much of this shortfall has occurred in the Defense Ministry’s R&D and acquisition budget, limiting what the Defense Ministry can acquire. Thus even though the ROK is finishing its third KDX-3 destroyer with Aegis capabilities, it has yet to acquire an interceptor for performing missile defense from these ships.

### The Changing US Military Commitment to the ROK

Historically, assessments of the US commitment to the US/ROK alliance have tended to focus on the size and character of US forces based in Korea in peacetime. Figure 4 shows the approximate trend in these numbers over the period since the Korean War. While the US deployments have gone through peaks and valleys, the overall trend is downward, which has worried many in the ROK.

**Figure 4: US Military Forces in Korea**



Source: DoD<sup>64</sup>

Despite the visibility of the US forces based in Korea, these forces constitute a small percentage of the total US commitment to support Korea in a conflict situation. The ROK Defense White Papers anticipate

that, “US augmentation forces, including the Army, Navy, Air Force and Marine Corps, are comprised of approximately 690,000 troops, 160 naval vessels and 2,000 aircraft. These forces will be deployed in the event of a contingency to defend the ROK.”<sup>65</sup> Historically, the US Army of ten active duty combat divisions planned to deploy five active duty combat divisions and supporting forces to each of two major simultaneous conflicts, if needed. In addition, the United States has maintained some prepositioned military equipment in Korea to facilitate the rapid deployment of some military units.

The US experiences in Iraq and Afghanistan have significantly affected US planning of military commitments. The United States has learned that conflicts tend to be protracted over years rather than ending in just a matter of months. To manage protracted conflicts, the US Army needs to commit forces on a rotational basis, keeping some personnel in the United States for reset after overseas commitments and then training and otherwise preparing those forces before deploying them overseas again. The Army prefers a boots-on-the-ground (BOG) ratio of 1:2, which means that for each year of overseas deployment, forces should be at their home bases for two years. This ratio meets the needs of personnel who all serve as volunteers (not conscripts), in part because roughly half of them are married.

In most circumstances, this rotational process allows for deployment of only about one-third of the US Army (about three active duty divisions) at any given time. Assuming that US reserve component forces would be heavily mobilized in support of operations in Korea, the United States Army could provide perhaps five divisions of ground combat forces,<sup>66</sup> and this force would be reduced by combat forces committed to contingencies anywhere else outside of the United States. With *no other major contingency going on in the world*, these five divisions could be committed to Korea with associated support forces, constituting roughly the US Army fraction of 690,000 US personnel that the ROK appears to be counting on. If some US Army forces are committed elsewhere in the world, fewer forces would be available to Korea unless the United States was prepared to accept a reduced rotation base.

The United States has also provided a “nuclear umbrella” to Korea—a commitment that, if necessary, the United States would use US nuclear weapons in response to adversary threats. This commitment became formalized in January 1958 with the deployment of US tactical nuclear

weapons to Korea. At the time, the United States was downsizing its conventional force deployments in Korea (see Figure 4) and Japan to reduce its military costs, and thus nuclear weapons were used much as nuclear weapons had been used in Europe: to threaten the adversary with nuclear attack, should it launch a conventional invasion. The United States deployed nuclear weapons in the ROK up until the early 1990s, when President Bush withdrew tactical nuclear weapons from many forward deployed locations. The number of nuclear weapons deployed in Korea rose to about 1,000 in the mid-1960s, and fell to a constant of around 100 in the 1980s.<sup>67</sup>

The situation in Korea changed with regard to nuclear weapons in the 1990s, in response to North Korean efforts to develop its own nuclear weapons. The North Korean nuclear weapon test in 2006 led to calls for a stronger US “nuclear umbrella” and potential redeployment of nuclear weapons to Korea. But thus far the United States has argued that its strategic nuclear weapons are adequate to handle any need for nuclear weapons in Korea, and thus nuclear weapons need not be redeployed to Korea.

### **Thinking About the Future of the Alliance**

The military component of the ROK/US alliance continues to evolve. As we look into the future, there is more concern that conflict could occur in Korea because of the relative instability in North Korea in the aftermath of the succession from Kim Jong-il to Kim Jong-un. The potential for conflict will require major US and ROK efforts to deter North Korea, linked to preparations to defeat North Korea if deterrence fails.

### **Potential Scenarios for Future Conflict with North Korea**

North Korea continues to be a failing state. (Ret) General Walter Sharp, once US commander in Korea, summarized the situation in North Korea this way: “Combined with the country’s disastrous centralized economy, dilapidated industrial sector, insufficient agricultural base, malnourished military and populace, and developing nuclear programs, the possibility of a sudden leadership change in the North could be destabilizing and unpredictable.”<sup>68</sup> And the possibility of sudden leadership change is demonstrated by: (1) the leadership changes and extensive purges that have gone on since Kim Jong-un succeeded his father;<sup>69</sup> (2) the reported assassination attempt against Kim Jong-Un;<sup>70</sup>

and (3) the extreme North Korean threats made especially from February to April of this year. Indeed, North Korea declared war on the ROK and the United States as part of that process.<sup>71</sup> This is not to imply that leadership/regime change will happen soon, but rather that it could.

This potential for regime change could lead to several kinds of major conflicts in Korea.

- **North Korean Invasion of the ROK.** It is unlikely that North Korean regime will order an invasion of the ROK because the North cannot readily conquer the South. But the North could invade the ROK as a diversionary war intended to avoid a coup attempt by rallying the North Korean military against the ROK and United States.
- **North Korean Government Collapse.** The North Korean regime could fail. Given the likely lack of a North Korean leadership succession plan, factions could form that might eventually cause the North Korean government to collapse. The resulting humanitarian disaster, potentially coupled with civil war, instability, and massive refugee flows, would likely compel Chinese and ROK/US intervention into the North. While some in the ROK would prefer to intervene with nongovernmental humanitarian organizations, in practice those organizations would have their aid shipments interdicted by the North Korean military and criminal organizations, and they would not be able to create a secure environment in North Korea—ROK military force would be required to manage these challenges.
- **Escalatory Spiral.** Alternatively, North Korea has regularly used provocations in the past to demonstrate regime empowerment and divert attention from regime failings by focusing attention on the external enemy. Should North Korea carry out a limited attack on the ROK, especially one like the artillery attack on Yeonpyeong Island in 2010, the ROK has promised to respond strongly with what would almost certainly be a significant escalation.<sup>72</sup> Given the North Korean bluster earlier this year, North Korea would almost have to escalate in response, possibly leading to an escalatory spiral resulting in a major war.

Historically, most ROK and US military planning has been for defending against a North Korean invasion. Much less attention has been paid to the counteroffensive that would proceed into the North in responding to the North's invasion. In practice, all three of these scenarios would eventually involve ROK/US operations into North Korea, likely with the objective of Korean unification. Will the ROK and the United States have the ability to pursue such operations successfully?

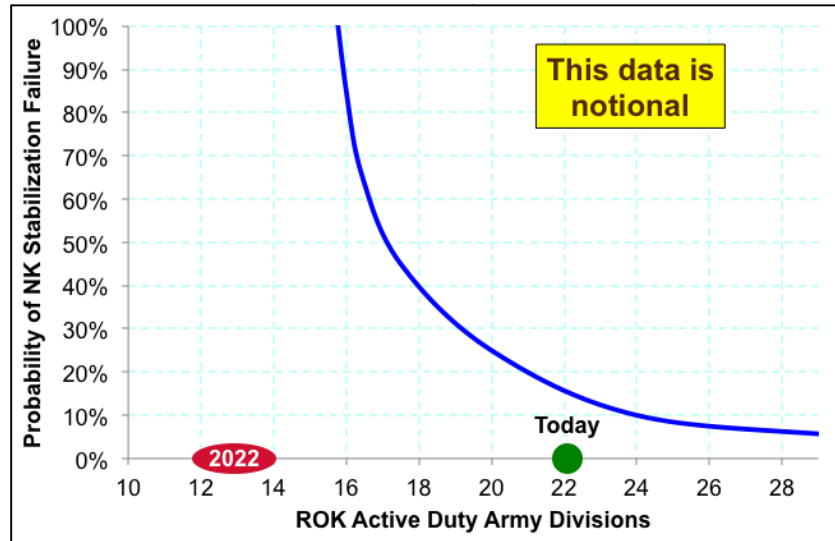
### **Performing Military Operations Against North Korea**

The ROK Defense Reform Plan (DRP) 2020 developed in 2005 recognized the ROK demographic challenges described above. It specifically focused on preparing a technology versus manpower tradeoff, whereby advanced technology would compensate for the anticipated military manpower reductions. But the tradeoff was focused on a defense against a North Korean invasion, during which time North Korean forces, assaulting the South, would significantly expose themselves to ROK and US fire. Thus, much of the focus of the DRP 2020 was on improved firing, using artillery, tactical aviation, and armor. But offensive operations into North Korea face different challenges. Such operations are far more dependent on military ground force manpower. The ROK would do less large-scale killing of assaulting North Korean forces, and more in other efforts: attempting to find those forces and defeat them in their protected positions, coopting North Korean forces and demobilizing them, finding and securing weapon caches (especially WMD), stabilizing areas in response to North Korean insurgency and criminal activity, and delivering humanitarian aid to starving North Koreans. While technology can compensate for army manpower reductions to some extent, it is unable to provide the same kind of leverage against these missions as it can against a North Korean invasion.

Thus, the ROK Army plan to reduce from twenty-two to perhaps twelve or so active duty divisions in 2022 (and fewer beyond that time) could imperil Korean unification. Figure 5 provides a conceptual framework for thinking about this issue. Even with the ROK Army's twenty-two divisions today, there is some risk that the combined ROK and US ground forces would be insufficient to stabilize North Korea. As the United States experienced in Iraq after its 2003 invasion, an insurgency will likely develop in the North along with a criminal network that will destabilize the situation. The declining size of the

ROK Army will increase the risk of stabilization failure. Put simply, below a certain size, the ROK Army and the other available forces may be insufficient to stabilize North Korea, should a collapse occur. Note that the data shown in Figure 5 is notional; the ROK needs to analyze this tradeoff seriously before deciding the future of the ROK Army.

**Figure 5: Sufficiency of ROK Army Forces for a North Korean Government Collapse?**



There are several options for compensating for the lost ROK Army active duty forces, including:

1. **Obtaining Greater US Force Commitments.** As noted in the discussion of the rotation base above, the US Army will be stretched thin to meet existing force commitments to Korea in the case of a major conflict. The US Army is thus unlikely to provide replacements for the ten ROK divisions being reduced.
2. **Maximize ROK Army Active Duty Force Size.** The ROK can avoid some of the reduction in its Army's divisions if it can absorb more volunteers. On average, a ROK noncommissioned officer (NCO) serves about six years compared to a ROK conscript who serves only 21 months.



By increasing the number of ROK Army NCOs, the ROK Army will become larger. Alternatively, the ROK government could decide to lengthen the conscription period from the current twenty-one months to twenty-four months (increasing the Army size by about 50,000 in 2022) or to twenty-seven months (increasing the Army size by about 100,000 in 2022). Lengthening the conscription period would be almost impossible to do politically unless the ROK populace decides that successful unification would be worth such a sacrifice.

3. **Rely More Heavily on ROK Army and Marine Reserves.** The ROK has for decades possessed substantial reserve forces, mainly supporting the ROK Army.<sup>73</sup> As of 2010, the ROK Army had some twenty-two reserve divisions and some 3.2 million personnel serving in the reserves.<sup>74</sup> But the vast majority of ROK reserve personnel serve a maximum of three days per year, not nearly sufficient to sustain military skills and develop unit cohesion. Moreover, the vast majority of ROK reserves is not organized into units, rather serving as individual replacements, apropos to a defense of the ROK rather than military operations into North Korea. Intervention into the North would require more ROK Army/Marine reserve units to augment the ROK combat and ROK specialty (e.g., counter WMD) forces, and these personnel would require much greater training, something the ROK government has been reluctant to organize and pay for.<sup>75</sup>
4. **Co-opt More North Korean Forces.** Today, it would be difficult for the ROK military to co-opt North Korean forces; North Koreans appear to generally feel that ROK-led unification would not be in their interest. But a protracted ROK effort at psychological operations with the North Koreans might convince at least some that unification would be in their interest. If the ROK were then prepared to feed and pay North Korean forces and treat them well, the ROK might be able to co-opt some combination of units and individuals. This should be particularly true in a North Korean collapse scenario that devolves into a civil war in the

North, as some units would fear defeat and destruction by other factions in such a war and be more likely to accept ROK assistance in exchange for their cooperation.

5. **Seek Chinese Intervention and Support.** The ROK has no force that could rapidly deploy along the Chinese border in North Korea to avert the need or ability of Chinese forces to intervene into a North Korean government collapse or other conflict scenarios. And North Korea also deploys few forces along the Chinese border. China could therefore choose to intervene in any of the conflict scenarios discussed above and would likely do so to avert massive refugee flows from North Korea. The ROK likely needs to recognize the potential Chinese initiative. More importantly, the ROK will likely need to seek Chinese intervention as ROK forces decline below a critical mass for stabilization and other needed missions. The downside of such an approach could be that China would choose not to withdraw from North Korea in the aftermath of an intervention and might even try to establish a puppet North Korean government to rule the area that it occupies. But such a decision by China would be costly, as a government controlling only areas North of Pyongyang would likely not be independently viable, especially in terms of food production. The cost involved might deter such action by China, especially if the ROK provided key security guarantees to China. For example, a key guarantee could be that the United States would not base forces in the former North Korea once the initial stabilization effort in North Korea was completed.

Among these options, the first (US) option is the least likely to be a solution. The United States is unlikely to be prepared to deploy US forces that the ROK wants, let alone adding beyond that the equivalent of the ten divisions that the ROK anticipates reducing.

The ROK needs to find a means among the other four options for making up the ten active duty ground combat divisions it could be losing. Note that options two and three both would face potentially serious political opposition in the ROK and would also significantly increase the manpower costs of the ROK military. But they would be the self-reliant approaches. For example, the ROK might actually want to retain a total

of eighteen active duty divisions (rather than going down to twelve), but make one regiment out of every three a reserve regiment, or one battalion out of every three a reserve battalion.<sup>76</sup> This kind of approach would be applied to the infantry regiments or battalions and also for all support forces within each division. But to make this option work, the reserve units would likely need a training schedule akin to that of the US Army reserve component, which trains almost forty days each year (one weekend each month, two weeks each summer). The ROK Army might attract young men to serve in this manner if they were paid attractively for their training time—at least minimum wage—and if colleges and businesses were told that such an approach was required to make unification possible, whenever it might happen. Only about 65,000 reserves would be required to serve in this manner within the ground combat forces, a number of reservists that the Defense Ministry might be able to recruit with appropriate incentives. The manpower cost might be as high as KRW 160 billion per year, a presumably feasible investment, and equipment could be provided by not reducing the equipment of units that would have otherwise been terminated.

In contrast, co-opting North Korean forces could be far less expensive and would thus seem to require a modest effort. And there would be collateral benefits for pursuing such an alternative, including preparing North Koreans more generally for unification and reducing societal support for a North Korean insurgency post-unification.

But even if the ROK develops these other approaches, it may still need to depend on China to assist in dealing with the collapse of any North Korean government or any counteroffensive into North Korea following a North Korean invasion or an escalatory spiral. China would likely need to handle North Korean forces and territory north of Pyongyang, given the apparent disposition of North Korean active duty and reserve forces. This would likely come as a considerable shock to South Koreans, but it is inherently a tradeoff between ROK investments in military forces versus ROK willingness to depend on Chinese assistance. China deploys modest-sized ground forces in its Shenyang Military Region adjoining North Korea—about eight division equivalents in the People's Liberation Army. China has more forces in neighboring military regions, but these would take some time to deploy to the North Korean border.

Whether or not the ROK plans to depend on Chinese forces to help in the event of conflict, Chinese forces are likely to enter North Korea to

stop refugees entering China and to achieve other objectives. “According to PLA researchers, contingency plans are in place for the PLA to perform three possible missions in the DPRK. These include: 1) humanitarian missions such as assisting refugees or providing help after a natural disaster; 2) peacekeeping or ‘order keeping’ missions such as serving as civil police; and 3) ‘environmental control’ measures to clean up nuclear contamination resulting from a strike on North Korean nuclear facilities near the Sino-DPRK border and to secure nuclear weapons and fissile materials.”<sup>77</sup> Any such Chinese intervention would need to be coordinated with the ROK/US to avoid accidental conflict that could escalate into a war that neither side would want. This coordination might include drawing a separation line that the Chinese would agree not to advance below and ROK/US forces would agree not to advance above. Coordination might also include a Chinese agreement to withdraw from North Korean territory once the ROK was able to provide adequate stabilization beyond the separation line. But even the latter agreement may require an augmented ROK military force to avoid protracted Chinese intervention because, with projected forces, the ROK may not be able to really stabilize the area it initially occupies, let alone the area that China occupies.

### **OPCON Transition**

Since 1978, the Combined Forces Command has been a major focus of the ROK/US alliance. But in 2006, the ROK and the United States agreed to transfer the operational control (OPCON) of ROK forces in wartime from the Combined Forces Command (CFC) to the ROK government.<sup>78</sup> The following year, the transition was set to occur in February 2012. As envisioned at that time, OPCON transition would mean the dissolution of CFC, the creation of a ROK military command, and the creation of a separate US Korea Command (KORCOM) that would assume a supporting role to the Korean command.

OPCON transition was initially urged by President Roh Moo-hyun, who sought to recognize the growth in ROK military capabilities and the independence of the ROK military. At the time, the US military agreed to the concept because it, too, wanted to recognize ROK military accomplishments, but also because it hoped that in preparing for OPCON, the ROK would over time assume a greater share of the cost of the defense of South Korea. Meanwhile, some in the ROK have worried that after transitioning OPCON, the United States would gradually

withdraw its military forces from the ROK and eventually abandon the ROK alliance. Most Koreans are not eager for such an outcome.

The preparation for OPCON transition has led to a strengthened ROK military that is more involved in defending the ROK, as noted above. But other hoped-for changes have not occurred. For example, the ROK has fallen well short of approving defense budgets consistent with its Defense Reform Plan 2020 formulated in 2005 (the 2013 ROK defense budget of about \$30 billion is about \$7 billion short of the 2005 plan), let alone assuming an even greater share of the defense costs. And some changes were likely not anticipated. For example, over the last sixty years the United States has discouraged ROK retaliation against limited North Korean attacks, fearing that such retaliation could lead to an escalatory spiral. As a result, the ROK normally did not retaliate against North Korean provocations despite, for example, three North Korean attempts to kill the ROK President, including one that killed a number of his ministers and another that killed his wife. But in the aftermath of the shelling of Yeonpyeong Island in November 2010, the ROK now has plans for serious retaliation against North Korean armed attacks in the future, a major change in policy that was likely not expected.

In June 2010, the ROK and US Presidents met and decided to delay OPCON transition until December 2015. They cited the North Korean sinking of the South Korean warship, *Cheonan*, as indicative of a hostile environment in which an OPCON transition would be unwise. And within the last year, there have been further discussions of delaying OPCON transition, perhaps using a circumstance-based criterion for OPCON transition such as North Korean abandonment on its nuclear weapons.

In early 2013, the ROK and the United States prepared an alternative approach to OPCON transition. This new approach would apparently retain CFC or a similar command structure, but designate a ROK officer as the commander and a US officer as his deputy. This approach would thus retain many of the strengths of CFC, but must still be ratified by the ROK and US governments.<sup>79</sup>

### **Dealing with North Korean WMD**

Because North Korea likely understands that it cannot win a conflict limited to conventional weapon capabilities, it would likely use WMD in the three types of conflict scenarios. And in particular, as the North

Korean nuclear weapon arsenal grows, especially into the tens of weapons, and the North fields nuclear weapons that can be delivered by ballistic missiles, any conflict in Korea could well see the use of nuclear weapons. Therefore, after six decades of planning mostly for a North Korean conventional force invasion of the ROK, the ROK/US must now focus more seriously on the North Korean WMD threats.

Some of the basic concepts of modern deterrence developed after World War II. During the Cold War, the United States focused on deterring Soviet military actions. In the late-1940s, the United States and Western European countries formed NATO to defend themselves against and thereby deter Soviet aggression. The United States sought to protect its allies by using so-called “extended deterrence”—deterring attacks against its allies that were of no immediate threat to the United States, but which, if they had been successful, would have left the United States more isolated and vulnerable in the world. Moreover, the United States threatened to use nuclear weapons, if needed, to stop a Soviet conventional force advance into Western Europe or Soviet nuclear weapon use against Western Europe, creating the US “nuclear umbrella” that was and remains part of extended deterrence. By the 1960s, the United States talked of deterring Soviet attacks (and especially nuclear attacks on the United States) by threatening the assured destruction of Soviet cities using massive nuclear strikes.<sup>80</sup> The assured destruction threat was viewed as a credible deterrent, even though the subsequent Soviet retaliation would mean the destruction of US cities. Indeed, the Soviet risk aversion also carried over to being reluctant to attack Western Europe, even though the Soviets might well win, because of the US escalation that they might suffer.

Many of these same concepts have been applied to Korea over the years. The United States has supported the ROK with an extended deterrence guarantee against a North Korean invasion, simultaneously threatening North Korea with US nuclear weapons against North Korean aggression. The ROK/US summit in 2009 included such commitments as part of the “Joint Vision” statement of the summit: “The Alliance is adapting to changes in the 21st Century security environment. We will maintain a robust defense posture, backed by allied capabilities which support both nations’ security interests. The continuing commitment of extended deterrence, including the U.S. nuclear umbrella, reinforces this assurance.”<sup>81</sup> In traditional military planning for Korea, this commitment means that the United States will provide conventional and (if necessary)

nuclear weapon capabilities to defend the ROK against North Korean aggression. This commitment is intended to assure ROK national security but also to convince the ROK that it does not need the independent ability to defeat North Korea. In addition, the United States does not want the ROK to develop its own nuclear weapon capabilities, an action that would likely destabilize Northeast Asia.

Still, the evolving North Korean threat requires that the traditional approach to deterring North Korea be altered. In particular, any of the three conflict types discussed above would see the North Korean leadership in desperate circumstances, their survival potentially jeopardized unless they take military action.<sup>82</sup> Indeed, the conflicts described generally would reflect risk-taking behavior, undermining the key basis of Cold War deterrence.

In the future, deterring of North Korea must increasingly focus on denying of North Korea's objectives. Denial requires demonstrating that the costs to the North from any given provocation will be greater than any possible benefits. Thus, if the North Korean regime considers invading the ROK to avert a military coup, the North Korean leaders need to be convinced that any invasion of the ROK will fail miserably and lead to the almost-immediate destruction of their regime. Alternatively, if the regime considers limited attacks on the ROK for internal political purposes, the ROK/US need to show North Korea that any such provocation will actually hurt North Korean internal political control. How would this be done?

At the high end of North Korean threats, US deterrence must focus on the ability to destroy the regime rather than killing millions of innocent civilians. The core value of the regime is its own survival, and thus the North Korean regime needs to be convinced that it will be destroyed in the immediate wake of any major military attack on the ROK, making a diversionary war a non-option for them. Interestingly, the North Korean leader often goes into hiding for weeks or longer even when committing a provocation,<sup>83</sup> apparently seeking to avoid personal vulnerability. Deterrence of such North Korean actions might therefore be strengthened by telling North Korea that the ROK/US knows where Kim Jong-un's location during such a crisis time.

There is a related aspect of denial that is critical: preventing North Korea's use of WMD. Such an effort needs to focus on those involved in actually employing WMD. While North Korea has not explained its nuclear weapon command and control system, at least one South Korean

report says that for the ballistic missile force, “‘To prevent a possible provocation by a rogue unit officer or prevent mistakes in the chain of command to launch missiles, a two and three-tiered safety system is also in place.’ There is also the authentication code, which remains a secret to everyone except the supreme commander, chief of General Staff and unit commander.”<sup>84</sup> If this report is true, the ROK/US need regularly to track and to be prepared to eliminate these three individuals if North Korea starts a major war or moves well into an escalatory spiral. Doing so could short-circuit missile delivery of WMD. The ROK/US should seek to deter WMD use by all North Korean military personnel by announcing that any North Korean personnel involved in launching or delivering WMD against the ROK or the United States will be considered at least an accessory to a major war crime, and mercilessly hunted down.

Because even limited North Korean attacks could lead to an escalatory spiral, the ROK/US must also seek to deter North Korean provocations. The major benefit that the North Korean regime usually seeks with such provocations is to manage internal political challenges. The ROK/US should threaten to undermine North Korea’s internal political stability if it carries out such provocations. For example, ROK/US radio broadcasts and leaflets sent into North Korea could note that, in the North Korean shelling of Yeonpyeong Island in 2010, only one-fourth of the fired North Korean artillery hit the large Yeonpyeong Island, and a quarter of the rounds did not explode—horrendous performance for artillery forces. These failures were due to some combination of: (1) poor artillery; (2) poor artillery shells and rockets; (3) inadequate training; and, (4) North Korean soldiers refusing to fire at their ROK brothers. All of these reasons for the poor North Korean artillery performance suggest that there more problems in North Korea than the regime is willing to admit, frustrating regime attempts to divert attention from regime failings.

Or the ROK/US could broadcast into North Korea that Kim Jong-un and his father before him are responsible for much of the starvation in North Korea. Kim Jong-un and his father have apparently misappropriated several billion dollars from the North Korean government and put it into Kim family accounts in overseas banks. The North Korean military in particular should ask why these funds are not being used to buy food for their personnel, many of whom are underfed and even starving.



The ROK/US also need to prepare to eliminate all North Korean WMD once a major conflict begins. In peacetime, the ROK Defense Minister told the National Assembly that, ““There are about 100 sites related to the nuclear’ program in North Korea. . . .”<sup>85</sup> Thus, the entire WMD program might have 200 to 300 facilities that would need to be targeted. While some of these facilities may be subject to air attack early in a campaign to prevent WMD use, all will eventually require a visit by ground forces to account for the WMD, remove and destroy any weapons, clean up any contamination, detain any WMD scientists, and secure documentation of the WMD efforts. Such efforts will require a major commitment of ground forces.

In addition, China, the ROK, the United States, Russia, and Japan all need to be involved in preventing North Korean WMD proliferation. Of particular concern will be the movement of WMD from North Korean black market personnel to Chinese gangs, which movement China needs to take the lead in stopping. While the United States worries that WMD proliferated along this route might eventually be used against the United States, the WMD may also fall into the hands of dissident groups in China and be used against the Chinese government—a threat justifying serious Chinese efforts to prevent North Korean WMD proliferation.

### **Conclusion**

The ROK/US alliance has a rich history since the Korean War. This history of deterrence, cooperation, and brotherhood is a spectacular example for international relations. Nevertheless, the ROK and the United States will face new challenges in the future, ones that force new efforts to strengthen the alliance and accomplish its basic objectives. The sustained strength of the ROK/US alliance will be essential to maintaining peace in Northeast Asia, as well as to handling serious conditions such as a North Korean government collapse when and if they happen.

### **Notes:**

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<sup>1</sup> This article represents the views of the author and does not necessarily reflect the opinions or policies of The RAND Corporation or its research sponsors. It was originally prepared for a conference of the Council on Korea-U.S. Security Studies and other organizations held June 26-27, 2013.

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<sup>2</sup> Zhihua Shen and Yafeng Xia, "China and the Post-War Reconstruction of North Korea, 1953-1961," Woodrow Wilson International Center for Scholars, May, 2012, p. 3, at: [http://www.wilsoncenter.org/sites/default/files/NKIDP\\_Working\\_Paper\\_4\\_China\\_and\\_the\\_Postwar\\_Reconstruction\\_of\\_North\\_Korea.pdf](http://www.wilsoncenter.org/sites/default/files/NKIDP_Working_Paper_4_China_and_the_Postwar_Reconstruction_of_North_Korea.pdf).

<sup>3</sup> Two of eight US divisions were withdrawn in early 1954. The withdrawal of four of the remaining six divisions was announced in August 1954. Richard Cavendish, "Troop Withdrawals from Korea," *History Today*, Volume 54, Issue 8, 2004, at: <http://www.historytoday.com/richard-cavendish/troop-withdrawals-korea>.

<sup>4</sup> In addition, both North and the ROK had air and navy forces, but these were always much smaller than the Army forces in terms of the number of personnel.

<sup>5</sup> David Albright, and Christina Walrond, "North Korea's Estimated Stocks of Plutonium and Weapon-Grade Uranium," Institute for Science and International Security (ISIS), August 16, 2012, at: [http://isis-online.org/uploads/isis-reports/documents/dprk\\_fissile\\_material\\_production\\_16Aug2012.pdf](http://isis-online.org/uploads/isis-reports/documents/dprk_fissile_material_production_16Aug2012.pdf).

<sup>6</sup> A particularly interesting account of the North Korean campaign from 1966 to 1969 is contained in Major Daniel P. Bolger, *Scenes from an Unfinished War: Low Intensity Conflict in Korea, 1966 – 1969*, Leavenworth Papers #19, U.S. Army Command and General Staff College, 1991. Bolger estimated the North Korean Army as having 345,000 personnel in November 1966, versus 600,000 UNC ground forces, implying about 550,000 ROK ground force personnel. Despite the disparity in the personnel numbers favoring the ROK, Bolger estimates that the North had slightly more regular divisions, more tanks, and, more than twice as much artillery.

<sup>7</sup> "The History of North Korean Attitudes Toward Nuclear Weapons and Efforts to Acquire Nuclear Capability," Woodrow Wilson International Center, May 17, 2005, Document 20 (16 February 1976) at: <http://www.wilsoncenter.org/topics/pubs/edossier141.pdf>.

<sup>8</sup> Don Oberdorfer, *The Two Koreas: A Contemporary History*, (Reading, PA: Addison-Wesley, 1997), p. 102.

<sup>9</sup> Because this information is taken from annual IISS reports, the size of the North Korean Army was apparently underreported during part or all of the period prior to 1990. A similar "build-up" of North Korean Special Forces was reported between 2000 and 2010, with the number of SOF growing from 100,000 in the *Defense White Paper 2000* to 200,000 in the *Defense White Paper 2010*. This growth was apparently more an adjustment in the intelligence on North Korean Special Forces or a recategorization of North Korean forces rather than a doubling in the size of these forces.

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<sup>10</sup> “Recruiting Difficulties Lead DPRK to Discard Conscription Standards,” IFES, NK Brief No. 08-5-29-1, May 29, 2008, at: <http://ifes.kyungnam.ac.kr/eng/m05/s10/content.asp?nkbriefNO=209&GoP=%201>. In practice, while some sources note that North Korea drafts all young men, the 200,000 or so young men turning conscription age each year could provide two million or so male military personnel if the reported ten year conscription period were employed. But only about 1.2 million or so active duty male military and security service personnel are serving their initial ten years, with the rest of the forced filled by males after their initial ten years of service: plus female personnel. This 60% or so military/security service by North Korean men partially reflects physical difficulties, but more likely reflects a decision not to draft many politically unreliable young men.

<sup>11</sup> “U.S. General Says Forces Ready to Counter N. Korean Attack,” *Chosun Ilbo*, July 15, 2009.

<sup>12</sup> William C. Mann, “General: South Korea Defenses Lacking,” Associated Press, April 3, 2008.

<sup>13</sup> “South Korean state television said yesterday that Seoul and Washington have a plan to topple the North Korean government if the Stalinist state attacks the South. The Korean Broadcasting System said that rather than simply driving back the North’s troops, the plan provides for a counteroffensive to seize Pyongyang and try to topple the government of Kim Il-sung.” “KBS reports plan to topple Kim Il Sung,” *Washington Times*, March 25, 1994, p. 16. In addition, the former South Korean president, Kim Young-sam, said: “Once a major military confrontation occurs, North Korea will definitely be annihilated.” Ranan R. Lurie, “In a Confrontation, ‘North Korea Will Definitely Be Annihilated,’” *Los Angeles Times* (Washington Edition), March 24, 1994, p. 11.

<sup>14</sup> Joseph S. Bermudez, “The Democratic People’s Republic of Korea and Unconventional Weapons,” in Peter R. Lavoy, et. al., eds., *Planning the Unthinkable: How New Powers Will Use Nuclear, Biological, and Chemical Weapons*, (Ithaca: Cornell University Press, 2000), p. 184.

<sup>15</sup> Roger Dingman, “Atomic Diplomacy during the Korean War,” *International Security*, Vol. 13, No. 3 (Winter, 1988-1989), pp. 65-66.

<sup>16</sup> Joseph S. Bermudez, “The Democratic People’s Republic of Korea and Unconventional Weapons,” p. 185.

<sup>17</sup> This introduction of battlefield nuclear weapons (Honest John missiles and nuclear artillery shells) was an apparent violation of the Armistice Agreement that prohibited introducing new weapons into Korea.

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<sup>18</sup> Balazs Szalontai, and Sergey Radchenko, "North Korea's Efforts to Acquire Nuclear Technology and Nuclear Weapons: Evidence from Russian and Hungarian Archives," Woodrow Wilson International Center for Scholars, Cold War International History Project, Working Paper #53, August 2006, at: [www.wilsoncenter.org/topics/pubs/WP53\\_web\\_final.pdf](http://www.wilsoncenter.org/topics/pubs/WP53_web_final.pdf)

<sup>19</sup> "North Korea Profile: Nuclear Overview," available at [http://www.nti.org/e\\_research/profiles/NK/Nuclear/index.html](http://www.nti.org/e_research/profiles/NK/Nuclear/index.html).

<sup>20</sup> Siegfried S. Hecker, "Lessons learned from the North Korean nuclear crises," *Daedalus*, Winter 2010, pp. 44-45, at: [iis-db.stanford.edu/pubs/22801/Hecker.pdf](http://iis-db.stanford.edu/pubs/22801/Hecker.pdf).

<sup>21</sup> "North Korean Chemical Weapons Program," Federation of American Scientists, at: <http://www.fas.org/nuke/guide/dprk/cw/index.html>.

<sup>22</sup> The Korean Ministry of National Defense, *Defense White Paper, 2000*, p. 58; this information is repeated in The Korean Ministry of National Defense, *Defense White Paper, 2008*, pp. 39-40. "In May 1996 ROK Foreign Minister Yu Chong-ha reported to the National Assembly that it was estimated North Korea possessed approximately 5,000 tons of biological and chemical weapons. Given the extensive production facilities, this later estimate may constitute the low end of the actual stockpile." "Chemical Weapons Program," Federation of American Scientists, at: <http://www.fas.org/nuke/guide/dprk/cw/index.html>.

<sup>23</sup> There is some work that challenges this interpretation of events in North Korea. See, for example, Markus Schiller, *Characterizing the North Korean Nuclear Missile Threat*, The RAND Corporation, 2012, at: [http://www.rand.org/pubs/technical\\_reports/TR1268.html](http://www.rand.org/pubs/technical_reports/TR1268.html).

<sup>24</sup> "North Korea asked the Soviet Union in 1963 and China in 1964 for help in developing nuclear weapons of its own, but was rebuffed. . . North Korea began to develop its own program in the late 1970s." Lee Jae-Bong, "U.S. Deployment of Nuclear Weapons in 1950s South Korea & North Korea's Nuclear Development: Toward Denuclearization of the Korean Peninsula," *The Asia-Pacific Journal*, Vol. 8-3-09, 2009, at: [http://japanfocus.org/-Lee-Jae\\_Bong/3053](http://japanfocus.org/-Lee-Jae_Bong/3053).

<sup>25</sup> Hecker, "Lessons learned from the North Korean nuclear crises," pp. 44-45, at: [iis-db.stanford.edu/pubs/22801/Hecker.pdf](http://iis-db.stanford.edu/pubs/22801/Hecker.pdf).

<sup>26</sup> Joseph S. Bermudez Jr., "Exposing North Korea's Secret Nuclear Infrastructure—Part 2," *Jane's Intelligence Review*, 1 August 1999.

<sup>27</sup> "The Hiroshima bomb, for example, employed about 50kg of 80% enriched uranium." "North Korea: Nuclear Capabilities: Methodology," available at:

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[http://www.nti.org/e\\_research/profiles/NK/Nuclear/44.html](http://www.nti.org/e_research/profiles/NK/Nuclear/44.html) (accessed on Mar. 21, 2008).

<sup>28</sup> “The technology that North Korea chose was attractive for several reasons. Based on 1950s technology originally developed by France and the UK (to produce plutonium for their nuclear-weapons programs), the basic reactor designs were available in the public domain and relatively straightforward to build and operate. Since the raw materials for these reactors – large quantities of natural uranium and graphite – could be found locally, Pyongyang was able to pursue an indigenous nuclear programme with minimal dependence on foreign assistance.” International Institute for Strategic Studies, “North Korea’s Nuclear Weapons Programme,” IISS Strategic Dossier, Chapter 4, 2009.

<sup>29</sup> Szalontai, *op. cit.*, p. 20.

<sup>30</sup> Nicholas Eberstadt, “A Skeptical View,” *Wall Street Journal*, September 21, 2005, p. 26.

<sup>31</sup> David Albright, and Christina Walrond, “North Korea’s Estimated Stocks of Plutonium and Weapon-Grade Uranium,” Institute for Science and International Security (ISIS), August 16, 2012, at: [http://isis-online.org/uploads/isis-reports/documents/dprk\\_fissile\\_material\\_production\\_16Aug2012.pdf](http://isis-online.org/uploads/isis-reports/documents/dprk_fissile_material_production_16Aug2012.pdf).

<sup>32</sup> R. Jeffrey Smith, and Joby Warrick, “Pakistani Scientist Depicts More Advanced Nuclear Program in North Korea,” *Washington Post*, December 28, 2009, at: [http://www.washingtonpost.com/wp-dyn/content/article/2009/12/27/AR2009122701205\\_pf.html](http://www.washingtonpost.com/wp-dyn/content/article/2009/12/27/AR2009122701205_pf.html)

<sup>33</sup> In a controversial congressional hearing, an intelligence community report was quoted as saying: “A new assessment by the Pentagon’s intelligence arm has concluded for the first time, with ‘moderate confidence,’ that North Korea has learned how to make a nuclear weapon small enough to be delivered by a ballistic missile. The assessment . . . cautions that the weapon’s ‘reliability will be low,’ . . .” But, “the director of national intelligence, James R. Clapper Jr., released a statement saying that the assessment did not represent a consensus of the nation’s intelligence community and that ‘North Korea has not yet demonstrated the full range of capabilities necessary for a nuclear armed missile.’” Thom Shanker, David E. Sanger, and Eric Schmitt, “Pentagon Finds Nuclear Strides by North Korea,” *New York Times*, April 11, 2013, at: <http://www.nytimes.com/2013/04/12/world/asia/north-korea-may-have-nuclear-missile-capability-us-agency-says.html>.

<sup>34</sup> For example, from three years ago, “‘Although the North Koreans carried out two nuclear tests, analysts in the West doubt that they have successfully loaded warheads onto missiles,’ Seoul-based researcher Kim Tae-woo said. ‘But I can say with certainty that they are extremely close. They might have done so

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already.” Dr. Kim is one of the foremost ROK experts on North Korean nuclear weapon development. See “North Korea Has Resumed All Nuclear Work, South Says,” Nuclear Threat Initiative, Oct. 6, 2010, at: [http://gsn.nti.org/gsn/nw\\_20101006\\_5059.php](http://gsn.nti.org/gsn/nw_20101006_5059.php)

<sup>35</sup> Choe Sang-Hun and Mark Landler, “North Korea Threatens to Restart Nuclear Reactor,” *New York Times*, April 2, 2013, at: <http://www.nytimes.com/2013/04/03/world/asia/north-korea-threatens-to-restart-nuclear-reactor.html>.

<sup>36</sup> “Meanwhile, U.S. State Department spokesman Philip Crowley commented on recent media reports that the North has three to four more undisclosed uranium enrichment facilities besides the Yongbyon complex. ‘We’re very conscious of the fact that in the recent revelations to American delegations, what they saw did not come out of thin air. It certainly reflects work being done at least one other site, so this remains a significant area of concern.’ ‘N.Korea’s Nuke Tech ‘Much More Advanced’ Than Iran’s,” *Chosun Ilbo*, December 16, 2010, at: [http://english.chosun.com/site/data/html\\_dir/2010/12/16/2010121600386.html](http://english.chosun.com/site/data/html_dir/2010/12/16/2010121600386.html).

<sup>37</sup> Jeffrey Lewis and Nick Hansen, “Start-up of North Korean Experimental Light Water Reactor Could Begin by Mid-2013 if Fuel is Available,” *38 North*, May 1, 2013, at: <http://38north.org/2013/05/yongbyon050113/>.

<sup>38</sup> Margaret Shapiro, “1990 KGB Document Concluded North Korea Had ‘Nuclear Device,’” *Washington Post*, June 25, 1994, p. 17, and Han, Hosuk, “The US-DPRK Relations at the Close of the 20th Century and the Prospect for United Korea at the Dawn of the 21st Century,” 2000, at: <http://www.kimsoft.com/2000/hanho.htm>.

<sup>39</sup> Smith, 2009; “A. Q. Khan’s Network,” no date.

<sup>40</sup> “North Korean Nuclear Weapons: CIA Estimate for Congress,” FAS.org, November 19, 2002, at: <http://www.fas.org/nuke/guide/dprk/nuke/cia111902.html>.

<sup>41</sup> Larry A. Niksch, *North Korea’s Nuclear Weapons Program*, Washington, D.C.: Congressional Research Service, October 21, 2002, p. 7, at: <http://fpc.state.gov/documents/organization/14823.pdf>.

<sup>42</sup> “The History of North Korean Attitudes Toward Nuclear Weapons and Efforts to Acquire Nuclear Capability,” Document 20.

<sup>43</sup> This quote is from a report by one of the Hungarian Foreign Ministry staff, based on a 1976 conversation with one of the staff of the North Korean Embassy in Hungary, in Balazs Szalontai and Sergey Radchenko, “North Korea’s Efforts to Acquire Nuclear Technology and Nuclear Weapons: Evidence from Russian and Hungarian Archives,” Woodrow Wilson International Center for Scholars,

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Cold War International History Project, Working Paper #53, (August 2006), Document No. 28, 55, at: [www.wilsoncenter.org/topics/pubs/WP53\\_web\\_final.pdf](http://www.wilsoncenter.org/topics/pubs/WP53_web_final.pdf).

<sup>44</sup> The formal name of North Korea is the Democratic People's Republic of Korea, or DPRK.

<sup>45</sup> Joseph S. Bermudez, "The Democratic People's Republic of Korea and Unconventional Weapons," in Peter R. Lavoy, Scott D. Sagan, and James J. Wirtz, eds., *Planning the Unthinkable: How New Powers Will Use Nuclear, Biological, and Chemical Weapons*, (Ithaca: Cornell University Press), 2000, p. 183.

<sup>46</sup> Kim, Hyun Sik, "The Secret History of Kim Jong Il," *Foreign Policy*, September/October 2008.

<sup>47</sup> The Korean Ministry of National Defense, *Defense White Paper, 2000*, p. 58.

<sup>48</sup> International Crisis Group, "North Korea's Chemical and Biological Weapons Programs," Asia Report No. 167, 18 June 2009, p. 10, at: <http://www.crisisgroup.org/en/regions/asia/north-east-asia/north-korea/167-north-koreas-chemical-and-biological-weapons-programs.aspx>.

<sup>49</sup> Frederick R. Sidell, et. al., *Medical Aspects of Chemical and Biological Warfare*, 1997, pp. 461-462, at: <http://www.nbc-med.org/SiteContent/HomePage/WhatsNew/MedAspects/Ch-21electrv699.pdf>. This document cited the original source as J. Fialka "CIA says North Korea appears active in biological, nuclear arms," *Wall Street Journal*, Feb 25, 1993, p. A-10.

<sup>50</sup> International Crisis Group, op. cit., p. 12.

<sup>51</sup> The Korean Ministry of National Defense, *Defense White Paper, 2000*, p. 58; this information is repeated in The Korean Ministry of National Defense, *Defense White Paper, 2008*, pp. 39-40. "In May 1996 ROK Foreign Minister Yu Chong-ha reported to the National Assembly that it was estimated that North Korea possessed approximately 5,000 tons of biological and chemical weapons. Given the extensive production facilities, this later estimate may constitute the low end of the actual stockpile." Federation of American Scientists web site at: <http://www.fas.org/nuke/guide/dprk/cw/index.html>.

<sup>52</sup> Defense Intelligence Agency, *North Korea Handbook*, PC-2600-6421-94, 1994, pp. 3-15 to 3-16.

<sup>53</sup> International Crisis Group, op. cit., p. 8.

<sup>54</sup> *Ibid.*

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<sup>55</sup> International Crisis Group, “North Korea’s Nuclear and Missile Programs,” Asia Report No. 168, 18 June 2009, p. 8, at: [http://www.crisisgroup.org/~media/Files/asia/north-east-asia/north-korea/168\\_north\\_koreas\\_nuclear\\_and\\_missile\\_programs.ashx](http://www.crisisgroup.org/~media/Files/asia/north-east-asia/north-korea/168_north_koreas_nuclear_and_missile_programs.ashx)

<sup>56</sup> Office of the Secretary of Defense, “Military and Security Developments Involving the Democratic People’s Republic of Korea, 2012, Annual Report to Congress,” p. 15, at <http://www.defense.gov/pubs/ReporttoCongressonMilitaryandSecurityDevelopmentsInvolvingtheDPRK.pdf>; Joseph S Bermudez Jr., “Behind the lines - North Korea's ballistic missile units,” *Jane’s Intelligence Review*, June 14, 2011, at <http://www.janes.com/products/janes/defence-security-report.aspx?id=1065929816>; “Profiles of Key North Korean Missiles,” The National Committee on North Korea, Updated April 4, 2013, at: [http://www.ncnk.org/resources/publications/North\\_Korea\\_missile\\_profiles.pdf](http://www.ncnk.org/resources/publications/North_Korea_missile_profiles.pdf); International Crisis Group, “North Korea’s Nuclear and Missile Programs,” *op. cit.*, p. 31.

<sup>57</sup> International Crisis Group, “North Korea’s Nuclear and Missile Programs,” *op. cit.*, pp. 7-9.

<sup>58</sup> US Forces Korea, “Combined Forces Command: Mission of the ROK/US Combined Forces Command,” at: <http://www.usfk.mil/usfk/cfc.aspx>.

<sup>59</sup> *Ibid.*

<sup>60</sup> See, for example, Barbara Demick, “S. Korea Rejected U.S. Plan on North,” *Los Angeles Times*, April 16, 2005.

<sup>61</sup> William Arkin, “A Little Denial Here, a Little There,” *Washington Post*, October 15, 2005.

<sup>62</sup> The ROK Defense Ministry’s Force Improvement Program provides the funding for research and development and acquisition. In 2013, that budget is KRW 10.1 trillion won, which at current exchange rates is less than \$9 billion. See Jae Ok Paek, “2013 ROK Defense Budget: Priorities and Tasks,” *ROK Angle*, Issue 84, Korea Institute for Defense Analyses, p. 2.

<sup>63</sup> Jae Ok Paek, “2013 ROK Defense Budget: Priorities and Tasks,” *ROK Angle*, Issue 84, Korea Institute for Defense Analyses, May 2, 2013, at: [http://www.kida.re.kr/eng/publication/pcrm\\_click.asp?NUid=2063](http://www.kida.re.kr/eng/publication/pcrm_click.asp?NUid=2063).

<sup>64</sup> Department of Defense, “Active Duty Military Personnel Strengths by Regional Area and by Country (309A),” found for the various years at: <http://siadapp.dmdc.osd.mil/personnel/MILITARY/miltop.htm>.



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<sup>65</sup> Republic of Korea Ministry of National Defense, *2006 Defense White Paper*, p. 56, at: <http://www.mnd.go.kr>. A similar statement is included in the *2010 Defense White Paper*.

<sup>66</sup> See US Army, *2011 Army Posture Statement*, “Addendum F, Army Force Generation (ARFORGEN).” This addendum includes a figure showing that with the 1:2 “boots on the ground” (BOG) ratio preferred by the US Army, some fifteen active duty and five reserve BCTs might be available at any given time, the equivalent at that time to five divisions.

<sup>67</sup> Hans M. Kristensen, “US Nuclear Weapons In South Korea,” 2004-2005, at: <http://www.nukestrat.com/korea/Koreanukes.pdf>.

<sup>68</sup> “USFK commander warns of possible N.K. instability,” 2010.

<sup>69</sup> James Pearson, “New KPA chief hints at unprecedented military shake-up,” North Korea News, May 22, 2013, at: <http://www.nknews.org/2013/05/new-kpa-chief-hints-at-unprecedented-military-shake-up/>.

<sup>70</sup> It is reported that “North Korean leader Kim Jong Un faced an assassination attempt in Pyongyang last year [in 2012] during a power struggle in a military bureau.” See Chang Se-jeong and Ser Myo-ja, “Attempt to kill Jong-un took place in 2012: Source,” *JoongAng Ilbo*, March 14, 2013, at: <http://korea.joongAngdaily.joinsmsn.com/news/article/Article.aspx?aid=2968561>.

<sup>71</sup> According to the North Korean official state media on March 29, 2013, “From this moment, the north-south relations will be put at the state of war and all the issues arousing between the north and the south will be dealt with according to the wartime regulations.” “North-South Relations Have Been Put at State of War: Special Statement of DPRK,” Korean Central News Agency, March 30, 2013, at: <http://www.kcna.co.jp/index-e.htm>

<sup>72</sup> “Historically, South Korean governments have tried to de-escalate military tensions in the wake of North Korean aggression. But the sinking of the *Choenan* and the shelling of Yeonpyeong Island in December 2010 changed the political dynamics in South Korea. Since then, Seoul has promised swift responses to any Pyongyang sponsored attack.” Yuka Hayashi and Julian E. Barnes, “U.S., Seoul Plan Response In Case Of North Korean Attack,” *Wall Street Journal*, March 26, 2013, p. 7.

<sup>73</sup> The ROK Marines have had a negligible reserve logistical force. But the Ministry of National Defense is reportedly experimenting with the creation of ROK Marine combat reserves.

<sup>74</sup> Republic of Korea Ministry of National Defense, *2010 Defense White Paper*, p. 340, at: <http://www.mnd.go.kr>.

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<sup>75</sup> In recent years, the ROK government has sought to limit defense budget increases in order to facilitate greater growth in social programs. In addition, ROK society has opposed significant expansion in the length of reserve force training

<sup>76</sup> The author understands that at the infantry squad level, about 20 percent of personnel in ROK active duty ground force divisions is already made up of reservists, and these personnel would need to be retained in those positions.

<sup>77</sup> Bonnie Glaser, Scott Snyder, and John S. Park, "Keeping an Eye on an Unruly Neighbor: Chinese Views of Economic Reform and Stability in North Korea," Center for Strategic and International Studies and the U.S. Institute of Peace, January 3, 2008, p. 19.

<sup>78</sup> Because the commander of the CFC has always been a US general, some talk of OPCON transition as being from the United States to the ROK. But the transition is, in reality, from CFC to the ROK.

<sup>79</sup> Song Sang-ho, "Allies agree on new combined command," *Korea Herald*, June 2, 2013, at: <http://www.koreaherald.com/view.php?ud=20130602000282>.

<sup>80</sup> To deter a Soviet nuclear attack, the United States threatened to destroy 50 percent of the Soviet industrial capacity and 20-25 percent of the Soviet population, which meant roughly half of the Soviet urban population. See Alain C. Enthoven and K. Wayne Smith, *How Much Is Enough? Shaping the Defense Program, 1961-1969*, (New York: Harper & Row, 1971), p. 175.

<sup>81</sup> The White House, "Joint Vision for the Alliance of The United States Of America and the Republic of Korea," Washington, D.C., June 16, 2009, at: [http://www.whitehouse.gov/the\\_press\\_office/Joint-vision-for-the-alliance-of-the-United-States-of-America-and-the-Republic-of-Korea/](http://www.whitehouse.gov/the_press_office/Joint-vision-for-the-alliance-of-the-United-States-of-America-and-the-Republic-of-Korea/)

<sup>82</sup> Even in the collapse scenario, the leaders of the various factions would likely be under pressure or attack from their neighbors, jeopardizing the survival of these leaders.

<sup>83</sup> For example, Kim Jong-un had no public appearances for several weeks before either the December 2012 Unha III launch or the February 2013 third nuclear weapon test. See: "N. Korean Propaganda Outlet Indicates Nuclear Test Might Not Happen," NKNews, February 11, 2013, at: <http://www.NKnews.Org/2013/02/North-Korea-Propaganda-Outlet-Indicates-Nuclear-Test-Might-Not-Happen/>

<sup>84</sup> "Who Has His Finger on the Nuclear Button in N.Korea?," *Chosun Ilbo*, Feb. 23, 2012, at: [http://english.chosun.com/site/data/html\\_dir/2012/02/23/2012.3022301441.html](http://english.chosun.com/site/data/html_dir/2012/02/23/2012.3022301441.html). The "unit commander" is apparently the commander of the North Korean Strategic Rocket Forces.

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<sup>85</sup> “Seoul suspects about 100 sites in N.K. linked to nuclear program,” *Korea Herald*, Oct. 5, 2009, at: <http://view.koreaherald.com/kh/view.php?ud=2009.1005000097&cpv=0>.