

Proactive Options for Countering North Korea's Nuclear Capability

Report for the 2006/2007 Sam Nunn Security Program Non-Proliferation Exercise

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1 Introduction

The 2006/2007 class of fellows of the Sam Nunn Security Program at Georgia Tech was tasked with determining how to best respond to the threat posed by the nuclear weapons capability of the Democratic People's Republic of Korea (DPRK; North Korea). The class was divided into four teams, three of which analyzed the situation from different perspectives and proposed suitable measures, with the remaining team compiling the analysis results, expanding on them, and recommending a final set of measures. The three analysis teams were asked to select one of the following perspectives [8]: a) forcible roll-back and other proactive measures are needed ("Team Hammer"); b) diplomacy can achieve verifiable disarmament ("Team Olive Branch"); and c) deterrence is the cheapest and most effective course ("Team Strangelove"). This report summarizes the findings of "Team Hammer".

2 Analysis Process

The process used by the team started with an analysis of the strategic implications of a nuclear-armed DPRK. Next, the internal motivation of the DPRK with respect to nuclear weapons was assessed within the context of four situation models, and an initial set of potential proactive measures was generated. The advantages and disadvantages of each potential measure were examined and a shortlist of the most promising ones was discussed in more depth. Alternative approaches were taken into account as well, before identifying the set of recommended measures. Finally, the impact of science and technology on the implementation of this set was addressed. Figure 1 outlines this process.

3 Strategic Implications of North Korean Nuclear Weapons

The DPRK's demonstrated ability to detonate a nuclear weapon changes the strategic balance both for its immediate neighbors and for the United States (US). Even its current, limited level of capability carries significant implications, which are likely to worsen as the DPRK continues to refine and expand its arsenal and associated deployment options based on its domestic nuclear and missile programs [4]. Actual use of a nuclear device would have an even higher level of strategic impact.

3.1 General Implications

In addition to the general threat posed by nuclear weapons in the hand of any rogue state, the isolated and peculiar nature of North Korean culture may cause misunderstandings and miscalculations that have the potential to lead to the use of nuclear weapons, e.g. during a preemptive attack on the Republic of Korea (ROK; South Korea). Threats

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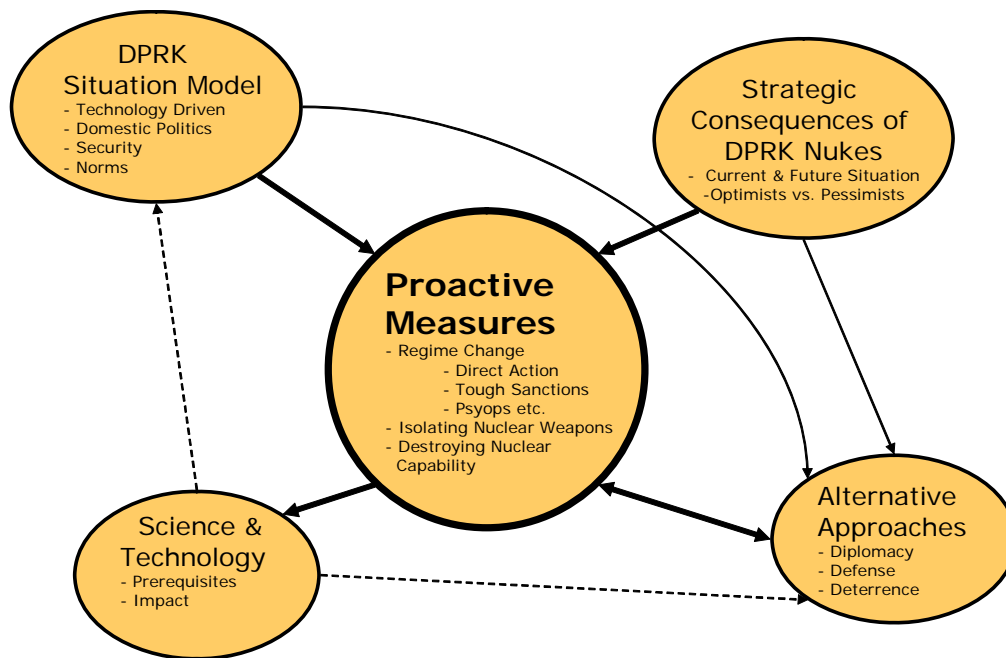


Figure 1: Analysis Process

of turning Seoul into a “sea of fire” ([14], [25]) over perceived US interference are even more serious when the offended party possesses nuclear weapons and a widespread network of agents and means of infiltration in the ROK [17]. The DPRK’s almost religious commitment to national greatness and independence exaggerates this issue, and imposes limits on any concessions that it may agree to in diplomatic negotiations (and feel compelled to honor afterwards). Its need for money may compel it to sell nuclear secrets or actual nuclear weapons to third parties, both state and non-state actors.

On the other hand, the DPRK has had a stable government for decades, and its leadership has not exhibited any eschatological traits, quite the opposite – Kim Jong-il and his associates seem to be very concerned with their own comfort and survival [3]. Credible deterrence aimed at leadership targets therefore has the potential to work. North Korea also does not have a widespread international followership to serve as a fifth column. Among rogue nations seeking nuclear weapons, the DPRK therefore seems less dangerous than e.g. Iran (cf. [10]). Like in all dictatorships, however, stability is linked to the personal and political survival of the leader. While a military coup seems unlikely, the unclear succession planning may leave the country in limbo for long enough to enable a descent into chaos should Kim Jong-il meet his fate by accident, illness or intention. In this case, safeguarding the country’s nuclear weapons would be a difficult task [20]. The discussion of applicable situation models in Section 4 below provides more insight into these aspects.

Apart from the strategic implications of these direct threats, the DPRK as an example of a successful clandestine nuclear weapons program creates yet another negative precedent encouraging proliferation, particularly with respect to Iran. History so far has shown that most states do in fact “get away” with the development of nuclear weapons (Pakistan, India, Israel; cf. [21]) due to the proliferation paradox: Once nuclear capability is a *fait*

accompli, fear about its use forces even superpowers to treat the new member of the nuclear club with care, and refrain from any overly aggressive acts, including attempts at regime change. This paradox – harsh words and harsh measures before nuclear capability is achieved, yet much more circumspect behavior afterwards – only encourages those states who seek nuclear weapons to accelerate their efforts. Even the relatively severe sanctions officially imposed by the UN Security Council after North Korea’s nuclear weapons test are already being softened in their implementation by neighboring states (e.g. South Korea and the People’s Republic of China [PRC]) that have a vested interest in avoiding any destabilization of a nuclear-armed North Korean regime [19].

While some cases of nuclear proliferation clearly make the Pessimist’s case (e.g. Iran) and others support the Optimist theory (e.g. Israel) [13], the DPRK cannot be easily classified into either category, and thus a customized approach to dealing with this threat is advocated.

3.2 Current Capability

Currently, the DPRK likely only possesses relatively few, relatively bulky weapons [19]. This would enable attacks by ship, truck or plane, with the weapon installed inside a cargo container. Likely targets are population centers, ports and naval assets (e.g. US bases and carrier battle groups) in the region, but – if detection is avoided, or a commercial plane is used – targets further inland can be struck as well. Given enough time, containerized weapons could also be deployed worldwide, by the DPRK itself or by aligned non-state actors. This scenario significantly increases the nuclear threat to the US and Europe, particularly given North Korea’s track record as a prolific proliferator of conventional weapons and related technology [3]. Announcing that it has handed over a nuclear device to a third party, or intends to do so, would also present another “red line” that the DPRK may be inclined to cross, and would likely result in increased worldwide security measures with attendant damage to international trade and economy.

3.3 Enhanced Capability

Miniaturizing nuclear devices for use with ballistic and cruise missiles will significantly increase the immediate threat to the international community, and particularly to Japan and the US. In addition to the ability to quickly reach additional targets, miniaturized devices are also easier to deploy clandestinely, including through third parties and non-state actors, and are easier to disperse and protect. Increasing the number of available nuclear devices will facilitate the creation of a survivable second-strike capability; at a certain point it will become impossible to destroy or seize all weapons. A large existing stockpile also reduces the value of only destroying the DPRK’s nuclear weapons manufacturing capability, which would be easier to achieve than targeting individual finished weapons.

3.4 Intentional Use or Accidental Detonation

The first nuclear device to be detonated in anger since the end of World War 2 will likely trigger immediate and severe worldwide consequences, no matter where in the world the explosion takes place. Apart from the psychological impact on populations and markets, increased security measures would have a direct effect on international trade and travel, resulting in strains on the global economic system.

If even a single nuclear detonation were to occur inside the United States, far-reaching changes in everyday life would occur [18]. Severe measures would have to be taken to prevent any nuclear or conventional follow-on

attacks, and the nation's economy would likely suffer from an even greater loss than that caused by the September 11th attacks. The economic impact would be exacerbated if the attack were to destroy a target of critical importance, e.g. Lower Manhattan, a major West Coast port, or key government facilities in Washington, DC. Determining those responsible for an attack, deciding if and how to retaliate against them, and assigning blame for whatever homeland security failures allowed the attack to succeed would likely put a significant additional strain on the nation's already polarized political system.

Furthermore, widespread misconceptions exist about the danger of nuclear explosions to those not within the direct blast or fallout areas. The general population might not distinguish between the nationwide devastation of Cold War-era all-out attack scenarios and an isolated nuclear detonation, and massive panic and disruptions may result even though most of the country will not suffer any direct effects. While the US has survived the destruction of major cities (e.g. Atlanta 1864, San Francisco 1906), and both Hiroshima and Nagasaki were rebuilt within a few years after being partially destroyed by nuclear weapons ([11], [16]), the interconnected nature and increased sensitivity of modern society will likely multiply the perceived impact of a nuclear attack.

4 Applying Situation Models

Using historical examples and formulating predictive models based on these examples is necessary to devise policy but it must be done carefully, especially in this case due to the uniqueness of the DPRK. Few regimes in the world have a cult of personality as strong as that of the DPRK, where media is used to create a larger-than-life public image of both Kim Il-song and Kim Jong-il [15]. This portion of the analysis will briefly highlight relevant aspects of the history of the DPRK and relate it to four explanatory models[‡] for nuclear proliferation. These are the *Technology Model*, the *Domestic Model*, the *Normative Model* and the *Security Model*.

The **Technology Model** states that once peaceful nuclear technology is developed, the opportunity cost of producing nuclear weapons decreases. The more steps of the process are accomplished domestically, the more likely it is for a state to pursue the development of nuclear devices. This may be true in part, but in the case of the DPRK evidence seems to indicate that this is not the main driver for Pyongyang. The DPRK has traditionally pursued plutonium extracted from its spent low enriched uranium (LEU) fuel rods and has not pursued highly enriched uranium (HEU) until recently. The cost to transition from LEU to HEU is considerable. Experimentation on HEU processes, which was the cause for the US administration to blame Pyongyang of cheating, only began after the 1994 agreement. In reality, the DPRK seems to have embarked on the pursuit of nuclear weapons since the early 1960's with the acquisition of its first research reactor [2]. The technology model by itself is not sufficient to explain the desire for the DPRK to pursue nuclear weapons.

The **Normative Model** stipulates that nuclear weapons are a symbol of prestige (or are not) and therefore it pushes states to develop them (or give them up). In the immediate aftermath of the Korean War, the DPRK rose over the ROK in terms of quality of life, technology and military power [26]. Since the mid-1960s, however, the ROK began to catch up with its northern neighbor, and finally surpassed it in the mid-1980s. The fall of the USSR

[‡] It is important to note that these models assume rationality on the part of the states involved.

triggered the beginning of a steep decline in the DPRK, finally leading to the famines of the 1990s and a loss of 75% of its industrial base [26]. This decline in the DPRK's pride seems to indicate that the pursuit of nuclear weapons can be a means to attain something that is reserved for elite countries only. By obtaining nuclear weapons, the DPRK can claim to be a member of the haves and rise over the have-nots, while at the same time gaining negotiating power. North Korean pride is considered to be a major driving force for Pyongyang's pursuit of nuclear weapons but it does not fully explain its reasons for doing so.

The **Security Model** can be summarized by George Shultz's statement that "proliferation begets proliferation." States that feel threatened by nuclear neighbors will seek security through alliances with other nuclear states, agreements with their nuclear neighbors, or they will attempt to develop or obtain their own nuclear weapons. The DPRK sees itself surrounded by states that threaten its existence or exert coercive power over it. Two of these states, the US and the PRC, have nuclear weapons and openly acknowledge that they do not desire Pyongyang to become a nuclear power. In 1993, the DPRK announced that it would withdraw from the Non Proliferation Treaty (NPT), which almost led to armed conflict with the US. The crisis was resolved by the "Agreed Framework" that emerged after a trip to Pyongyang by former US President Jimmy Carter[§]. One of the major clauses in that agreement was that Washington would formally assure Pyongyang that it would not use nuclear weapons against the DPRK, a statement which North Korea had always pursued. In 2003 the US administration detected "cheating" by the DPRK and subsequently discontinued its supply of energy aid, stating that it would not grant any nonaggression assurances to Kim's regime. This prompted the DPRK to withdraw from the NPT and aggressively pursue the extraction of plutonium. This act would seem to indicate that after feeling threatened, the DPRK resorted to obtaining nuclear weapons. However, the uniqueness of the North Korean case again demands further explanations that this model cannot provide.

The **Domestic Model** postulates that state leaders, motivated by self interest, push for or against the development of nuclear weapons. Due to the veil of secrecy surrounding the DPRK, it is difficult to determine exactly the inner workings of Pyongyang. After the death of his father, Kim Jong-il's biggest competitor for power within the DPRK was the military, who he appeased by promoting them more often than members of the worker's party. The internal struggle and collapse of the quality of life within the DPRK continues to generate pressure on the Kim regime [19]. Demonstrating that the North Korean struggle of the last two decades was not fruitless would justify his decisions and could provide much needed support for his leadership. Possession of even simple nuclear weapons increases the domestic prestige of the North Korean regime by underlining its technological and military prowess and by providing for an increase in deterrence and defensive capability against foreign invasion. This further reduces the likelihood of any effective domestic uprising. The DPRK's leadership therefore likely sees its nuclear capability as a valuable insurance policy [3].

[§] This agreement included the replacement of the graphite-moderated nuclear reactors (that could easily produce weapons-grade Plutonium) with light water reactor (LWR) power plants. During the transition period, oil for heating and electricity was to be provided by the international community, and the US was to provide formal assurances against the use of nuclear weapons against North Korea [1].

In summary, the DPRK seems to use its nuclear program as a tool to obtain aid and formal nuclear nonaggression assurances from the US; independently, the domestic development of nuclear weapons boosts North Korean national pride and generates domestic support for Kim Jong-il's regime.

5 Developing Proactive Options

The team generated multiple options for proactive approaches to mitigating the North Korean nuclear threat. Measures were grouped under the following categories: a) bringing about regime change; b) destroying or disabling the DPRK's nuclear weapons or nuclear weapons plants; and c) keeping the DPRK from transferring any nuclear weapons outside the country. Table I shows the complete matrix of measures that were taken into account, as well as an initial, rough analysis of advantages, disadvantages, probability of success, direct cost, etc. Potential courses of action with a sufficiently high cost-to-benefit ratio and probability of success are discussed below.

5.1 Proactive Regime Change Options

Fostering regime change inevitably leads to the issue of which regime will succeed the current one. Attempts to remove Kim Jong-il and his circle may lead to the ascension of hard-line but unknown military commanders or bureaucrats who may feel moved to consolidate their power through harsh measures. However, internally-driven regime change through a military coup or popular uprising could likely be achieved through cutting off the oil and food supply [3]. Any US attempt at covert overthrow of the DPRK regime would have to pass legal and congressional review.

Another alternative for a more controlled regime change would be to invade the DPRK and then install a desirable new government. However, North Korea's defensive posture as well as international opinion (and South Korean sensitivities) practically preclude any invasion from the south or led by the United States. On the other hand, convincing the PRC that it is in its best interest to bring about regime change in North Korea, through covert or military means, seems to be a more promising approach. China should be interested in avoiding a nuclear arms race among its neighbors. A permanently nuclear North Korea will encourage other states in the region (ROK, Japan [12]) to acquire nuclear weapons in response. China's desire to become a major player on the world stage could also be used to let the PRC carry part or most of the burden of any proactive measures, assuming that their motivation is to actually work towards a disarmed DPRK, and not just to use the DPRK as a tool to weaken the US's influence and standing in Asia and around the globe.

Another difficulty is created by the reluctance of the PRC to pursue military action toward the DPRK: it has repeatedly stated that any measures in reaction to the nuclear test should not include military options [19]. Finally, South Korea, according to its constitution, would have to claim control of the entire peninsula once Pyongyang's regime falls. The likelihood that the PRC would return the northern portion of the peninsula to the ROK after deposing the Kim regime is uncertain at best.

Table I: Some Options for Proactive Measures

| Option | | Analysis | | | | Cost to US/Allies | | Cost to DPRK | |
|--|--|--|--|------------------------|------------------------|-------------------|-------------|--------------|-------------|
| Category | Description | Advantages | Disadvantages and Repercussions | Probability of Success | Time to desired effect | Lives | \$ | Lives | \$ |
| Regime Change | Invasion by South Korea | Reunification under ROK leadership | ROK will likely not support it, China may intervene, refugees, KJI may use chemical weapons; Destruction of Seoul, terrorist attacks on ROK and US, international opinion, reunification costs | Medium | Weeks - Months | High | High | High | High |
| | Invasion or Take-Over by China | US is not directly involved, PRC likely to be effective, involves China (fame & blame) | ROK may not like ROC as neighbor, uncertain path to reunification, China not likely to play along; Destruction of Seoul, terrorist attacks on ROK and US, reunification costs | High | Weeks - Months | Medium | Medium | High | High |
| | Trade Embargo | Reduces amount of resources available for KJI to develop weapons, accepted by international community | DPRK may see it as act of war; ROC may not cooperate, will affect population most, didn't help with Iraq/Iran | Low | Years | None | Low | Low | Medium |
| | Financial Isolation | Reduces amount of resources available for KJI to develop weapons, hits elite most, accepted by international community | DPRK may see it as act of war; ROC may not cooperate, didn't help with Iraq/Iran | Low | Years | None | Low | Low | Medium |
| | Power, Oil and/or Food Embargo | Could propel DPRK's military to revolt, accepted by international community (to a degree) | Could push the DPRK to engage in full fledged war, famine could lead to refugees flooding ROK/PRC and international outcry | Low/Medium | Months | None | Low | High | Medium |
| | Assassination of KJI and his Inner Circle | Would only affect DPRK elite | Hard to achieve, new leader could be worse than KJI, failed attempt could foster more support for KJI, legality | Low/Medium | Months | Low | Medium | Low | Low |
| | Fostering Military Coup | No external military needed | New leader could be worse than KJI, military could pursue nukes more avidly, could cause civil war or collapse | Medium/Low | Months - Years | None | Medium | Low/Medium | Low |
| | Disabling DPRK Military | Would remove the ability of KJI to attack and threat his neighbors and control his own population | Would be difficult to achieve, country plunged into chaos/civil war, refugees | Low | Months - Years | Low/Medium | Medium/High | Low/Medium | Medium/High |
| | Fostering Popular Uprising | No external military needed | Difficult to achieve (leadership cult), could lead to extreme measures by DPRK military, credibility issue (cf. Iraq, Vietnam) | Low | Months - Years | None | Medium | Medium/High | Medium |
| Enticing KJI to Retire/Emigrate | Nonviolent approach; cult of personality would disappear and make the DPRK look more like a normal country | Difficult to convince KJI that he would be safe and comfortable enough; new leader may be worse | Low | Months - Years | None | Medium | None | Low | |
| Destroying or Disabling Nuclear Weapons and Facilities | Conventional Aerial Bombing of Nuclear Sites | Sends clear message, fewer casualties than all-out invasion | Will lead to DPRK attack on Seoul, maybe on all of ROK; international opinion; unlikely to destroy all weapons/facilities | Low | Days - Weeks | Low | Medium | Medium | Medium |
| | Nuclear bombing of Nuclear Sites | High probability of neutralizing weapons program | High civilian casualties, nuclear fallout, international opinion, bad precedent | High | Hours | None | Medium | High | High |
| | Raids on Nuclear Installations | Minimal effect on the civilian population, sends clear message | High probability of US casualties, may lead to all out war | Medium/Low | Hours - Days | Low/Medium | Medium | Medium | Medium |
| | Disabling Nuclear Weapons through Sabotage | Could seem as DPRK's incompetency if properly executed | Unknown if it works until DPRK tries to detonate one; DPRK may detect and reverse; embarrassment/consequences for US if plan is uncovered | Medium | Weeks - Months | Low | Medium | Low | Low |
| | Arranging "Accidental Detonation" | Could seem as DPRK's incompetency if properly executed, would send clear signal to other proliferators, would shut down DPRK nuclear program | embarrassment/consequences for US if plan is uncovered; high number of DPRK casualties; fallout affecting neighboring countries | Medium/High | Weeks - Months | Low | Medium | Medium | Medium/High |
| | Disabling Nuclear Facilities through Sabotage | Could seem as DPRK's incompetency if properly executed | Only affects future weapons production; embarrassment/consequences for US if plan is uncovered | Medium | Weeks - Months | Low | Medium | Low/Medium | Medium |
| | Arranging "Reactor Accident" | Could seem as DPRK's incompetency if properly executed, would send clear signal to other proliferators, would shut down DPRK nuclear program | Only affects future weapons production; embarrassment/consequences for US if plan is uncovered; potential fallout | Medium | Weeks - Months | Low | Medium | Medium/High | Medium |
| | Bribing DPRK Scientists to Leave Program | Accepted by international community, no casualties | Unlikely to reach all key personnel, retribution against family members | Low | Months - Years | None | Low/Medium | Low | Low |
| | EMP Attack | Low number of casualties on both sides | Outdated DPRK equipment likely rather insensitive to EMP; EMP will affect PRC and ROC much more; bad precedent of nuclear detonation | Low | Days - Weeks | None | Low/Medium | Low | Medium |
| Isolation of Nukes | Disabling DPRK's Power Grid | Overt (carbon strips) or covert (sabotage/raids); few casualties | Nuclear installations likely have backup generators; does not reduce existing weapons, DPRK will see it as act of war; will affect civilians most | Low | Weeks - Months | Low | Low/Medium | Low/Medium | Medium |
| | Full Export Quarantine of DPRK | Will keep DPRK from deploying and disseminating nuclear weapons or nuclear technology | Hard to achieve properly, could lead to war; needs to be maintained indefinitely | Medium/Low | Weeks | Low | Medium/High | Medium | Medium/High |
| | Disrupting Cargo Movement Inside DPRK | Would hinder the movement of material necessary for the DPRK's nuclear program, effectively slowing it down, also reducing the traffic of goods necessary for the country to operate | Would affect civilian population most, hard to implement, would be seen as act of war | Low | Months | Low | Medium | Low/Medium | Medium |
| | Disabling DPRK Missile Installations (Raids) | Minimal effect on the civilian population | High probability of US casualties, could lead to all out war against the US and the ROK, will not affect ground-deployed nuclear weapons | Low | Days | Low/Medium | Medium | Low | Medium |

5.2 Destroying or Disabling Nuclear Weapons and Nuclear Weapons Facilities

Direct action to destroy or disable North Korea's nuclear capability is another obvious option. However, a direct bombing campaign, unlike the Israeli raid on the Iraqi reactor at Osirak, is unlikely to yield the desired results. North Korea's nuclear weapons facilities are deliberately spread throughout the country and many are hardened against all but nuclear attack. Furthermore, the DPRK has made it clear that any military action against its territory would result at least in the destruction of Seoul, if not a full attack against the ROK and its allies, which is a credible threat. Securing Congressional and UN approval for any overt attack would be difficult as well.

A different approach would be to try to sabotage the DPRK's nuclear weapons program through infiltrators or by bribing North Korean personnel. At the least, disrupting nuclear facilities would limit the amount of new weapons that the DPRK could produce. Sabotaging the weapons themselves, to keep them from detonating, is another option**. However, any sabotage could be discovered and reversed, leading to a restored weapons capability.

Taking this approach to the extreme, infiltrated or locally recruited saboteurs could attempt to induce a catastrophic failure in one of the DPRK's reactors or processing facilities, or even detonate one or more of the DPRK's nuclear weapons while in storage or transit in-country. This would not only destroy the North Korean nuclear program without the need for external military action, but it would also send a strong message about the inherent dangers of clandestine nuclear programs to any country considering proliferation. However, it will be difficult to infiltrate the DPRK nuclear program. In addition, the consequences of radioactive fallout and likely civilian casualties would make the necessary Congressional approval hard to secure.

5.3 Isolation of North Korea's Nuclear Capability

If the conclusion is reached that the DPRK's nuclear weapons cannot be destroyed, disabled or removed, the final option would be to physically isolate North Korea in order to prevent any transfer or deployment of nuclear devices or nuclear technology to outside the country. Due to its position between the heavily-guarded DMZ in the south and the Chinese-guarded Yalu and Tuman rivers in the North, this approach seems more feasible for the DPRK than, for example, Iran with its multiple neighbors and mountainous borders. However, North Korea has highly developed capabilities for infiltrating the South, including stealthy submarines [3], which makes a successful seal-off unlikely. As with most other proactive measures, North Korea would likely see enforced isolation as a *casus belli*. The issue that the PRC and the ROK are only partially supporting the Proliferation Security Initiative (PSI) also indicates that effectively isolating the DPRK will be a difficult task [19]. Furthermore, this is an open-ended solution that would require continuous operations.

6 Alternative Approaches

While the options discussed above are based primarily on a belief that a proactive roll-back or isolation of nuclear capabilities is necessary to minimize the threat of the North Korean nuclear weapons program, there are a few other approaches which merit discussion. These beliefs can be summarized as *diplomacy*, *defense*, and *deterrence*.

** The low yield of the DPRK's recent nuclear test could have been the result of such an attempt.

Proponents of **diplomacy** believe that verifiable North Korean disarmament can be achieved through the use of “carrots” that offer appeal incentives packages for rewarding disarmament as well as “sticks” that make the cost of refusing disarmament too high. Potential incentives for disarmament may include aid in using nuclear technology for peaceful purposes such as power generation. Potential disincentives for non-compliance could include moderate and specific sanctions that would prod the DPRK into accepting the incentives package without deflating its ego or destroying its economy, as complete economic, financial, and food aid sanctions might do. Yet this somewhat soft approach has the potential to set a precedent of weak and benign repercussions for those who do proliferate, which could have the unintended consequence of encouraging states like Iran to continue on the path towards proliferation without fear of reprisal [10]. Proponents of diplomacy seem to presume that the DPRK’s intentions are to improve relations with the United States, but one could argue that the recent North Korean nuclear tests point to an elaborate bluff over the past few years aimed at gaining time for the pursuit of nuclear capabilities ([6], [23]).

Advocates of **defense** are of the opinion that proliferation is non-reversible and that the only viable option for minimizing a North Korean nuclear threat against the United States is to increase the physical security of the nation through a combination of missile defense, border security, military posturing, and intelligence gathering which will give the US the upper hand in detecting and neutralizing any attempted North Korean nuclear attack. However, this would in essence admit defeat in the sense that there would be no direct punishment for the DPRK’s nuclear weapons program, again setting a precedent for other states that proliferation does not warrant retaliation. If there are no costs associated with a nuclear weapons program other than solely economic ones, a plethora of other states may join in and create a nuclear arms race. Additionally, this idea of defense without retaliation on the proliferators is a departure from current US policy which has warned states about the dangers of proliferation and the likelihood of repercussions. In light of this, defense should not be considered as a standalone response to the DPRK’s recent nuclear tests, but as an additional response to be used in conjunction with other proactive measures [22].

Promoters of **deterrence** agree that verifiable roll-back of the DPRK’s nuclear program is next to impossible, but that deterrence provides a better solution to the North Korean threat. This approach is based on the assumption that Kim Jong-il and the North Korean leadership are mainly concerned with their own well-being and can be deterred from using their nuclear weapons by the threat of devastating diplomatic and military consequences. However, while Kim Jong-il and his leadership may be assumed to operate under rationality in terms of self-preservation, their resulting actions may not be quite as obvious as one would think. Many scholars agree that Kim Jong-il and the North Korean leadership’s history of decision making has been erratic in the sense that they may not appear to be rational actions from a Western perspective (yet make sense from Kim Jong-il’s perspective). Additionally, North Korean leadership has shown a decided tendency towards misperceiving international actions and their intentions, which makes it difficult to predict which actions would lead to successful deterrence [3]. Furthermore, deterrence does not remove the nuclear weapons in question; the nations engaged in deterrence will be required to uphold this policy for decades to come. Finally, the foundation of a policy of deterrence is the ability to attribute the nuclear weapon used to its source with 100% accuracy that will withstand international scrutiny. In the case of the DPRK, this is not guaranteed, especially if the signatures of the DPRK’s reactors are not catalogued

(which is most likely the case; cf. [7], [9]). Due to this uncertainty, deterrence would not necessarily prevent the DPRK from transferring nuclear weapons to non-state actors who could then use them as a means of terrorism [5].

7 Conclusions

The strategic implications of a nuclear-armed DPRK, both through the direct threat it poses and through the situation serving as an example to other would-be proliferators like Iran, are too serious for the US not to marshal an effective response. While diplomatic action is a necessary step, past experience indicates that by itself it will not lead to a permanent resolution of the situation. Likewise, while deterrence is an important element of the national security strategy, and is expected to influence the actions of the North Korean leadership to a degree, it can not be counted on to provide an effective permanent safeguard against nuclear threats from rogue nations like North Korea. Neither are purely defensive measures likely to succeed. Thus, proactive options need to be considered in order to neutralize the nuclear threat posed by the DPRK.

7.1 Recommended Measures

Based on the options outlined in Sections 5 and 6, and the analyses documented in Sections 3 and 4, Team Hammer recommends the pursuit of two proactive approaches, one overt and one covert. The most promising overt approach involves encouraging the Chinese government to effect regime change in North Korea, preferably through non-military means, and preferably resulting in reunification under ROK leadership. This will draw heavily on measures from the diplomatic toolkit, but the “stick” of direct US/ROK intervention and/or nuclearization of Japan may be necessary to move the PRC government towards action. In parallel, a covert program aimed at sabotaging the DPRK’s nuclear weapons and facilities should be undertaken. This would have the additional benefit of discouraging potential imitators like Iran, particularly if spectacular or catastrophic damage can be induced.

7.2 Impact of Science and Technology

While the recommended overt approach will rely mainly on established tools of the diplomatic trade, the covert activity will require significant technological support: signals intelligence and other national technical means to determine DPRK locations and personnel involved, expertise from DoE and the National Laboratories to develop the most effective methods for sabotage and disruption, and advanced communications, weapons and stealth technology for inserting and exfiltrating any covert operatives to perpetrate the sabotage or to recruit and guide North Korean personnel. The availability of futuristic weapons systems like the Airborne Laser (ABL), non-nuclear Electromagnetic Pulse (EMP) devices or mobile High-Energy Radio Frequency (HERF) generators would greatly benefit this effort.

7.3 Next Steps

The first steps for the two recommended approaches can be taken in parallel as well. Diplomatic steps to convince China to play a more proactive role should be initiated without delay to jump-start the overt strategy. On the covert side, informal talks within the Special Operations Forces community and the CIA Directorate of Operations should be organized, in preparation of official approval and mission planning and to accelerate the development of specialized weapons and technology. This would provide the United States with powerful fall-back options in the all-too-likely case that diplomacy alone proves unable to reduce the North Korean nuclear threat.

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