



Korea Institute for National Unification

COOPERATIVE
DENUCLEARIZATION
OF NORTH KOREA

Cheon Seongwhun



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Cooperative Denuclearization of North Korea

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Acronyms

ASM	Air-to-Surface Missile
BWPP	Biological Weapons Proliferation Prevention
CFE	Conventional Armed Forces in Europe
CSCAP	Conference on Security and Cooperation in the Asia-Pacific
CTR	Cooperative Threat Reduction
DPRK	Democratic People's Republic of Korea
DTRA	Defense Threat Reduction Agency
EWGPP	Elimination of Weapons Grade Plutonium Production
EXBS	Export Control and Border Security
FMSF	Fissile Material Storage Facility
FSU	Former Soviet Union
GIPP	Global Initiatives for Proliferation Prevention
GTRI	Global Threat Reduction Initiative
HEU	Highly Enriched Uranium
HLW	High Level Waste
IAEA	International Atomic Energy Agency
ICBM	Intercontinental Ballistic Missile
IISS	International Institute for Strategic Studies
ILW	Intermediate Level Waste
INF	Intermediate-Range Nuclear Forces
ISG	Irap Survey Group
ISTC	International Science and Technology Center
ITDB	Illicit Trafficking Database
JNCC	Joint Nuclear Control Commission
KAVA	Korea Arms Verification Agency
KINAC	Korea Institue of Nuclear Nonproliferation and Control
KWP	Korean Workers' Party
LLW	Low Level Waste

Acronyms

LWR	Light Water Reactor
MAEI	Ministry of Atomic Energy Industry
MOX	Mixed Oxide
MPC&A	Materials Protection, Control, and Accounting
NDF	Nonproliferation and Disarmament Fund
NEA/OECD	Nuclear Energy Agency of OECD
NEACD	Northeast Asia Cooperation Dialogue
NIS	National Intelligence Service
NNCA	National Nuclear Management and Control Agency
NNSA	National Nuclear Security Administration
NPT	Non-Proliferation Treaty
NRDC	Natural Resources Defense Council
NSA	Negative Security Assurance
NSG	Nuclear Suppliers Group
NWSS	Nuclear Weapons Storage Security
NWTS	Nuclear Weapons Transportation Security
OECD	Organizations for Economic Co-operation and Development
PSA	Positive Security Assurance
Pu	Plutonium
R&D	Research and Development
ROK	Republic of Korea
SLBM	Submarine Launched Ballistic Missile
STCU	Science and Technology Center of Ukraine
TCNC	Technology Center for Nuclear Control
UF ₆	Uranium Hexafluoride
UNMOVIC	United Nations Monitoring, Verification and Inspection Commission
UNSCOM	United Nations Special Commission
WMD	Weapons of Mass Destruction

Chapter One

Introduction

North Korean Nuclear Crisis

Military Confrontation between North and South Korea

The military forces of the two Koreas confronting each other was the central and pivotal factor that caused the Korean War in 1950 and which has continued subsequent military, political, and psychological hostilities for more than half a century. Although North Korea currently does not enjoy a military edge as much as it did in the 1960s and 1970s and even if South Korea is reluctant to call the North its “main enemy,” the underlining strategic situation has made little change. The Democratic People’s Republic of Korea (DPRK) and the Republic of Korea (ROK) still invest a significant portion of their national wealth on military preparedness.

In particular, the North enjoys incomparable advantages in the area of weapons of mass destruction (WMD). North Korea’s asymmetric military capabilities—WMD, delivery means and a special force—pose a significant threat to South Korea. In particular, according to

General Bell, Commander of the United Nations' Command on the Korean peninsula, "the most pressing concern of these threats is North Korea's nuclear weapons program."¹ Dismantling weapons of mass destruction and the related capabilities of North Korea is a core precondition for peace and prosperity in Korea and it will be a starting point of a genuine unification process.

So far, various efforts to curb North Korean military threat have not been successful. There have been virtually no systematic efforts for that purpose on a regional basis. For example, meetings of CSCAP (Conference on Security and Cooperation in the Asia-Pacific) and NEACD (Northeast Asia Cooperation Dialogue) at the track II level have had years of discussions on how to adopt some modest confidence building measures without tangible agreements. There is no formal channel among the governments in the region to work on negotiating regional arms control measures that could contain the North Korean threat.

On a bilateral basis, North and South Korea have held occasional talks on confidence building and arms control, the most flourishing of which was what happened in the early 1990s. In 1991, Seoul and Pyongyang signed the so-called, Basic Agreement, a comprehensive framework to manage the two sides' relations peacefully. In the military part of the Agreement, the two sides agreed to adhere to the principle of non-aggression and to carry out arms control negotiations. Although North Korean interest in this Agreement has dissipated, South Korea has never lost its aspiration of reviving the Agreement and in particular, the military part. The South's attempts to do so, however, have been blocked by the North's reluctance and

¹ *Statement of General B. B. Bell, Commander of the United States Forces in Korea before the Senate Armed Services Committee, March 7, 2006, p. 6, [2 Cooperative Denuclearization of North Korea](http://armed-</i></p></div><div data-bbox=)*

as a consequence, the Agreement is becoming an antique.

Nuclear-Armed North Korea

On February 10, 2005, North Korea declared that it had built nuclear weapons and would take steps to further bolster its nuclear arsenal.² It is a general belief that the DPRK's nuclear capability has been significantly enhanced since October 2002, when the current North Korean nuclear crisis was triggered. It was estimated beforehand that North Korea had probably extracted enough plutonium for one or two primitive nuclear devices before the International Atomic Energy Agency (IAEA) inspections began in May 1992. Confronted by the U.S. accusation of its secret uranium enrichment program and its consequential violation of the Geneva Agreed Framework, North Korea took a series of provocative steps—by expelling the IAEA inspectors in December 2002, withdrawing from the Non-Proliferation Treaty (NPT) in January 2003, restarting the 5MWe reactor in February 2003, reprocessing 8,017 spent fuel rods by June 2003 and another 8,000 spent fuels in September 2005. As a result, North Korea's nuclear capability has been multiplied, turning a problem into a genuine crisis. To South Korea, the North's nuclear capability is a critical threat to its national security that must be eliminated as a priority.

Since June 2003 when they claimed to have completed reprocessing the 8,017 spent fuel rods and have expanded their nuclear capability several fold, the North Koreans have said that they have a “nuclear deterrent force.” On June 6, a spokesman for the DPRK Foreign Ministry stated that “Our Republic withdrew from the NPT in accordance with the international legal procedures and was freed

services.senate.gov/statemnt/2006/March/Bell%2003-07-06.pdf.

² “Statement of the DPRK's Foreign Ministry,” *Korean Central News Agency*, February

from the obligations of the IAEA safeguard agreement. As far as the issue of a nuclear deterrent force is concerned, the DPRK has the same legal status as the United States and other states possessing a nuclear deterrent force which are not bound to any international law.”³ Three days later, a commentary on the Korean Central News Agency argued that “if the United States keeps threatening the DPRK with nuclear weapons instead of abandoning its hostile policy toward Pyongyang, the DPRK will have no option but to increase its nuclear deterrent force. The purpose of having a nuclear deterrence force is not to intimidate someone but to use human and financial resources for an economic development and a people’s well being by reducing conventional armaments. Unless the United States abandons its anti-North Korea policy, we will establish a strong and physical deterrence force with less money that can wipe out any sophisticated weapons or nuclear weapons.”⁴

A commentary in *Rodong Sinmun* published just after the end of the first round of the Six-Party Talks succinctly described what a nuclear deterrent force means to North Korea.⁵ According to the commentary, a nuclear deterrent force of North Korea can be analyzed from four perspectives. First, it is a necessary means for protecting North Korea’s sovereignty. Strengthening a nuclear deterrent force is a matter associated with the right of a sovereign country. For example, commenting on the result of the first round of the Six-Party Talks, a spokesman for the Foreign Ministry argued

10, 2005.

³ *Rodong Sinmun*, June 7, 2003. This was the first incident when North Korea mentioned a nuclear deterrence force in public.

⁴ “Our nuclear deterrent force is never a means to threaten,” *Korean Central News Agency*, June 9, 2003. This was the first case where the DPRK openly declared its intention to possess a nuclear deterrence force.

⁵ “Our nuclear deterrent force is a means to protect sovereignty,” *Rodong Sinmun*, September 1, 2003.

that the Talks were useless, leaving the country no alternative except reinforcing its nuclear deterrent force in order to secure its sovereignty.⁶

Second, criticizing the United States as having the biggest nuclear arsenal in the world, Pyongyang justifies its nuclear deterrent force as a means of self-defense against nuclear intimidation and military attack by Washington. To North Koreans, equipping itself with a nuclear deterrent force is a necessity of today's political circumstance and is necessary to firmly defend its socialist system. Highlighting that its nuclear deterrent force has a defensive nature, Paik Nam-soon, the Foreign Minister, argued that "Our nuclear program is solely for our self-defense. We denounce al-Qaeda for the barbaric attack of 9/11, which was a terrible tragedy and inflicted a great shock to America."⁷

Third, arguing that the nuclear deterrent force has been acquired indigenously without depending on foreign help, North Korea attempts to use its nuclear capability as a proof to validate its pivotal ideology of *Juche*—self-reliance and academic achievements based on that ideology.

Finally, North Korea maintains that it will not transfer nuclear weapons to other countries. The commentary argues that "We have never said that we will bring our nuclear deterrent force to the United States and fight with Americans or sell them to other countries." In October, 2003, North Korea's Vice Foreign Minister, Choe Su-hon, also remarked that his government had no intention of

⁶ An interview of a DPRK Foreign Ministry spokesman, *Korean Central News Agency*, August 30, 2003.

⁷ Selig Harrison, "Inside North Korea: leaders open to ending nuclear crisis," *Financial Times*, May 4, 2004.

transferring any means of the nuclear deterrence it possessed to the other countries.⁸ In the wake of North Korea's exacerbating of the nuclear crisis in 2005, this particular stance seems to change from time to time. According to Selig Harrison who visited Pyongyang in early April 2005, North Koreans remarked that the transfer of nuclear materials would be included as a negotiating agenda item at the future Six-Party Talks.⁹

Whatever the North Korean rhetoric is, it is very clear that to the North Korean regime, nuclear weapons are a critical military element that can be used as a threat to dominate South Korea in the two countries' rivalry and as a last resort to guarantee the regime's survival and continuity. Realizing the significance of upholding a non-nuclear policy and giving up a nuclear weapon option, South Korea is and will remain a nuclear-weapon-free country, which will position itself with a strategic inferiority when compared to North Korea. Strengthening the ROK-U.S. security alliance and reinforcing intimate cooperation among Seoul, Tokyo, and Washington are the right alternatives to overcome this asymmetric imbalance.

Implications to South Korea's Security

It is often said that nuclear weapons are not usable militarily but that they only have some political values, especially in the case of a small nuclear weapon state like North Korea. But the question of whether nuclear weapons will or will not be used should be answered in a specific context.¹⁰ A small nuclear power obviously

⁸ Anthony Faiola, "N. Korea claims nuclear advance," *Washington Post*, October 3, 2003, p. A01.

⁹ *Yonhap News*, April 16, 2005.

¹⁰ Cheon Seongwhun, "Nuclear-armed North Korea and South Korea's strategic countermeasures," *Korean Journal of Defense Analysis*, Fall 2004, pp. 56-57.

will be very cautious in exercising its nuclear option *vis-à-vis* a big nuclear power because the latter's nuclear retaliation can easily wipe out the former. It is hardly possible for a small nuclear weapon state to use nuclear weapons against a big nuclear power even in the dire circumstances when its own survival is at stake. Thus, it is reasonable to say that North Korea will not be able to use nuclear weapons against the United States in fear of a massive retaliation by means of nuclear and/or conventional weapons.

However, in the North-South Korean relations, North Korea might feel free to intimidate or even attack South Korea with nuclear weapons. As a non-nuclear weapon state, the ROK remains a faithful observant of the Joint Declaration on the Denuclearization of the Korean Peninsula, shortly the Joint Denuclearization Declaration that was entered into effect on January 20, 1992 (Appendix 2). Sustaining a non-nuclear policy is one of the indispensable conditions for South Korea to acquire much-needed international assistance and collaboration before and after a peaceful unification. South Korea is officially under the U.S. nuclear umbrella. This umbrella will be activated at the moment of external invasion to the South, on the basis of the ROK-U.S. mutual security treaty and the U.S. conditional negative security assurance. This means that once attacked by Pyongyang, Washington will exercise a full array of options including a possible use of nuclear weapons to defend Seoul. But South Korea's confidence in the American nuclear umbrella has been diminishing. The credibility of the nuclear umbrella itself has long been questioned throughout the history of an extended deterrence.¹¹ Recent cacophony between the United States and the

¹¹ For example, Kissinger observed that "once the Soviet Union acquired the capacity to threaten the United States with direct nuclear retaliation, the American pledge to launch an all-out nuclear war on behalf of Europe was bound increasingly to lose its sense—and so would the [NATO] alliance's defense strategy..." Henry Kissinger, "Strategy

ROK will also amount to a wane of confidence on the bilateral security alliance in general and the nuclear umbrella in particular.¹² Under these circumstances, North Korea is less likely to worry about nuclear retaliation from the United States in defense of South Korea and thus, may be able to enjoy its freedom to take advantage of nuclear-related options ranging from a threat manipulation to an actual use.

In the operational dimension, assuming that a conventional conflict occurs between the two sides, North Korea can carry out a nuclear test aimed at crushing South Korea's will to fight. Pyongyang can also use a nuclear weapon in the middle of a conflict to change the course of a war in its favor. That is, for North Korea, a nuclear weapon is an ultimate military means that can overwhelm South Korea militarily. It should be noted that the first and the only historic occasion where nuclear weapons were used was when the United States, a nuclear weapon state, used them against Japan, a non-nuclear weapon state.

In the psychological dimension, nuclear weapons will provide highly important benefits to the North Korean military. The very possession of nuclear weapons by North Korea will push the South Korean military and public into a nuclear trap. The South's military leadership, being aware of how ill-prepared its military is to any nuclear-related conflict, will be haunted by a possible nuclear use or threat of use by the North. Such worries will not be confined to the upper-level military hierarchy and will expand to the rank and file, even to the general public. This will eventually have a great

and the Atlantic alliance," *Survival*, Vol. 24 (1982), p. 195.

¹² For the current differences between Seoul and Washington, see Cheon Seongwhun, "North Korea and the ROK-U.S. security alliance," in the forthcoming issue of *Armed Forces and Society*, 2007.

influence on the ROK's military morale, its will to fight, operational strategies, and tactics. What if a nuclear weapon actually explodes immediately before or in the midst of a military conflict? It is quite possible that the responses would be a nation-wide panic, frustration and loss of will to fight, and a subsequent admission of defeat. If North Korea launches a limited but carefully designed military campaign—for example, invading Baekryong Do islands in the West Sea which is a key strategic point or occupying the capital and its metropolitan area by a combination of guerilla warfare and blitz-type operation—and explodes a nuclear weapon to demonstrate its nuclear capability, then a strong voice might be raised in South Korea that there is no choice except succumbing to North Korea's nuclear capability and accepting the new status quo.

Background and Purpose

The second session of the 4th round of the Six-Party Talks was held in Beijing from September 13 to 19 in 2005. An unusually long period of negotiations as a follow-up to the first session held from July 26 to August 7 finally gave birth to a joint statement. To produce such a document after enduring painful discussions is, in itself, a remarkable achievement. It is noted that the joint statement contains several major points that if properly implemented, would have long-term repercussions on regional stability and international peace as well as security on the Korean peninsula.

In fact, since the 4th round of the Six-Party Talks, the process of resolving the current North Korean nuclear crisis has moved beyond the domain of the principle matters. It has entered a new stage of discussing and implementing detailed plans to dismantle North Korea's nuclear capability. The Six-Party Talks have stalled since November 2005 when the 5th round of the Talks was held in Beijing.

According to North Koreans, the U.S. decision to impose financial sanctions against them for their illegal activities such as counterfeiting and money laundering was a major stumbling block for resuming the Six-Party Talks. The United States argues that countering North Korea's illegal financial activities is a law enforcement action separate issue from the Six-Party Talks. The standoff continues while Pyongyang demands on withdrawal of the financial sanctions and Washington refuses to do so. Despite the ongoing difficulties, there is no doubt that the joint statement of the Six-Party Talks has set a milestone for a process to denuclearize North Korea in no distant future.

The immediate and important task is to devise a set of action plans to carry out the dismantling process in an effective, efficient, peaceful and harmonious way. In this respect, the experiences of cooperative threat reduction (CTR) programs by the United States could provide important implications and valuable lessons for the participants of the Six-Party Talks. Applied in a proper manner with due considerations of the particular circumstances on the Korean peninsula, a cooperative denuclearization could be a useful paradigm for realizing a nuclear-weapon-free North Korea, promoting inter-Korean cooperation and guaranteeing a regional stability and peace.

It is noted at this point that the major task of the ongoing Six-Party Talks is to initiate and complete a process of eliminating nuclear weapons and related programs in North Korea and that the process is not applied to South Korea in any way. Some misunderstandings are expressed that dismantling North Korea's nuclear weapons and capacity is a sort of *quid pro quo* for eliminating nuclear threats from the United States and South Korea. For instance, Hwang, Ik Hwan, a senior researcher of the Institute for Disarmament and

Peace of the DPRK argued that:¹³

We are prepared to implement our commitments [expressed in the September 19 Joint Statement of the Six-Party Talks]. We cannot move alone. If we are the only one to move, then the denuclearization is not achieved. When we say denuclearization, we mean the denuclearization of the overall Korean peninsula. We do not mean the denuclearization of the northern part only. So even if we give up the nuclear weapons, the Korean peninsula is not denuclearized.

Such a view was also repeatedly expressed by the North Korean delegation at the 17th NEACD meeting held on April 10-11, 2006 in Tokyo, Japan. This argument not only misrepresents the *raison d'être* of the Six-Party Talks but also runs the risk of disarranging the process of the Talks itself. It should be emphasized that the southern part of the Korean peninsula has been denuclearized for almost two decades.

On the one hand, according to President George Bush's unilateral initiative on September 27, 1991, the U.S. tactical nuclear weapons were withdrawn from South Korea. Then President Roh Tae Woo confirmed the absence of nuclear weapons by declaring on December 18, 1991 that "there do not exist any nuclear weapons whatsoever, anywhere in the Republic of Korea." A practical implication of President Roh's December declaration was that U.S. nuclear weapons were completely removed from the South. President Bush's initiative was welcomed and promptly reciprocated in October 1991 by then President Mikhail Gorbachev of the Soviet

¹³ Ik Hwan Hwang, "The ultra approach in realizing the denuclearization on the Korean peninsula," a paper prepared for the International Conference on *Peace and Security in Northeast Asia* organized by the Institute of International Studies and the Center for Korean Studies of Fudan University, on December 14-16, 2005, Shanghai, China.

Union. Thus, the withdrawal of U.S. nuclear weapons from the South has been maintained by a tacit agreement between Washington and Moscow. This means that a reintroduction of U.S. nuclear weapons into South Korea will need a prior consultation or at least prior notification to Russia with full and reasonable justifications.

On the other hand, despite North Korea's persistent violations, the ROK government sticks to the letter and spirit of the Joint Denuclearization Declaration. While it was revealed in 2004 that the South had failed to report on all of its nuclear research activities on several occasions in the past, Seoul took prompt remedial measures and restored international credibility.¹⁴ For instance, in the midst of rising international suspicions about past reporting failures and facing North Korean allegations of South Korea's secret nuclear weapons development,¹⁵ the ROK government declared a new non-nuclear policy on September 18, 2004. Dubbed as "the four principles of the peaceful uses of nuclear energy," this policy inherits spirits and commitments expressed in previous non-nuclear policies. The first was President Roh Tae Woo's Declaration on Denuclearization and Everlasting Peace on the Korean Peninsula on November 8, 1991, and the second was the Joint Denuclearization Declaration. The new non-nuclear policy is a result of the 300th National Security Council meeting and contains the following four

¹⁴ Cheon Seongwhun, *Toward Greater Transparency in Non-Nuclear Policy: A Case of South Korea* (Seoul: Korea Institute for National Unification, 2005).

¹⁵ For example, the deputy at the DPRK mission at the United Nations Han Song Ryul criticized that the United States exercised a double standard favoring South Korea against North Korea and said that the South's uranium experiment was perceived as a threat to the North, *Yonhap News*, September 9, 2004. In his speech at the United Nations General Assembly on October 1, 2004, the DPRK Vice Foreign Minister Choe Su Hon argued that everything should be cleared about South Korea's secret nuclear weapon development program, which should be a condition for North Korean participation in the Six-Party Talks, *Rodong Shinmun*, October 1, 2004.

major principles (Appendix 12):

- Reconfirm the ROK government position that it has no intention to develop or possess nuclear weapons.
- Express the ROK government determination that it will firmly hold on to the principle of nuclear transparency and reinforce international cooperation, including full cooperation with the IAEA inspection.
- Reconfirm the ROK government intention that it will sincerely abide by international non-proliferation norms and rules such as the Non-Proliferation Treaty and the Joint Denuclearization Declaration.
- Declare the ROK government desire to expand the peaceful uses of nuclear energy, based on international confidence obtained by the efforts according to the above three principles.

As a follow-up measure to the new non-nuclear policy, the National Nuclear Management and Control Agency (NNCA) was established in October 2004. The Ministry of Science and Technology of the ROK decided to institute the NNCA to replace the Technology Center for Nuclear Control (TCNC) in order to strengthen its national safeguards system and to enhance its nuclear transparency. The NNCA is mandated to carry out missions such as technically supporting the Ministry of Science and Technology in safeguards, physical protection and export control.¹⁶ The NNCA was replaced and further strengthened by the Korea Institute of Nuclear Nonproliferation and Control (KINAC) on July 7, 2006.¹⁷

¹⁶ *NNCA Newsletter*, January/February 2005, Daejeon, South Korea, <http://www.nnca.re.kr>.

¹⁷ *KINAC Newsletter*, 06-3, 2006, Daejeon, South Korea, <http://www.kinac.re.kr>.

Based on this background, this study pays attention to the concept and practices of cooperative threat reduction and intends to apply previous experiences to denuclearize North Korea in a cooperative manner. This study consists of six major parts. In Chapter One, North Korean nuclear crisis is summarized and the reasons of the study are presented. Considering the importance and potential of applying the cooperative denuclearization concept to the Korean peninsula, past experiences and lessons of the concept are studied in Chapter Two. In Chapter Three, motivations for cooperative denuclearization of North Korea and various possible geopolitical circumstances—scenarios where a cooperative denuclearization process can be initiated are analyzed in detail. Chapter Four investigates North Korea’s nuclear infrastructure and capability, which is the target of cooperative denuclearization. In Chapter Five, the study examines how to accomplish cooperative denuclearization of North Korea. Technical considerations, incremental stages, and cost factors are addressed in detail. Finally in Chapter Six, the study is summarized by identifying key issues in the road ahead and by recommending policy considerations and options for the Six-Party Talks participants and other countries interested in cooperative denuclearization of North Korea.

In short, the Six-Party Talks process has entered a new stage of negotiating and implementing detailed action plans. One way to guarantee an eventual success of the process would be to learn from past experiences of similar historical examples and apply the valuable lessons to the case of the current North Korean nuclear crisis. CTR experiences by the United States could be important and valuable in this respect. By investigating North Korea’s nuclear capability and CTR experiences around the world, this study will provide the ROK government and public with analytical assessments that will help them understand where they stand now and should be

heading for in the future. By highlighting the importance of an inter-Korean engagement in the process of resolving North Korean nuclear crisis, this study will also provide foreign readers with an opportunity to grasp the reality the two Koreas face and the vision they are striving to realize.

Chapter Two

Cooperative Denuclearization: Experiences and Lessons

Origin and Implementation of Cooperative Denuclearization

Legal Foundation

The United States initiated cooperative threat reduction (CTR) programs to dismantle WMD in the former Soviet Union and convert other dual-use military capabilities for peaceful uses where possible. After a failed coup in Moscow in 1991 and the subsequent disintegration of the Soviet Union, it emerged as a top U.S. security concern to safeguard the Soviet nuclear weapons that were deployed in the four republics—Belarus, Kazakhstan, Russia and Ukraine—and to prevent nuclear weapons, materials, equipment, and scientists from leaving the republics. Based on the initiative of Senators Sam Nunn and Richard Lugar, the U.S. Congress established the “Soviet Nuclear Threat Reduction Act of 1991” on November 27, 1991 (see Appendix 1). This Act—H.R.3807 (P.L. 102-228)—was an amendment to the legislation for implementing the Treaty on Conventional Armed Forces in Europe (CFE).

According to the Nunn-Lugar Act, the U.S. Congress took particular notes on three major changes of the international security environments.¹⁸

- Soviet President Gorbachev has requested Western help in dismantling nuclear weapons, and President Bush has proposed U.S. cooperation on the storage, transportation, dismantling, and destruction of Soviet nuclear weapons;
- The profound changes underway in the Soviet Union posed three types of danger to nuclear safety and stability, as follows:
 - A. Ultimate disposition of nuclear weapons among the Soviet Union, its republics, and any successor entities that is not conducive to weapons safety or to international stability;
 - B. Seizure, theft, sale, or use of nuclear weapons or components; and
 - C. Transfers of weapons, weapons components, or weapons know-how outside of the territory of the Soviet Union, its republics, and any successor entities, that contribute to worldwide proliferation; and
- It is in the national security interests of the United States (A) to facilitate on a priority basis the transportation, storage, safeguarding, and destruction of nuclear and other weapons in the Soviet Union, its republics, and any successor entities, and (B) to assist in the prevention of weapons proliferation.

Based on this awareness, the U.S. Congress decided to allocate special funds to run the CTR programs with the following three objectives:¹⁹

- Destroy nuclear weapons, chemical weapons, and other weapons,

¹⁸ *Soviet Nuclear Threat Reduction Act of 1991, H.R.3807 (P.L. 102-228)*, November 27, 1991, SEC. 211. NATIONAL DEFENSE AND SOVIET WEAPONS DESTRUCTION.

¹⁹ *Ibid.*, SEC. 212. AUTHORITY FOR PROGRAM TO FACILITATE SOVIET WEAPONS DESTRUCTION.

- Transport, store, disable, and safeguard weapons in connection with their destruction,
- Establish verifiable safeguards against the proliferation of such weapons. Such cooperation may involve assistance in planning and in resolving technical problems associated with weapons destruction and proliferation.

After the crisis of the Soviet bloc ameliorated in 1992 and 1993, many in the United States, both within and without the government, remained concerned about the risk and repercussions of a possible diversion or loss of control of nuclear weapons and other WMD. Emerging incidents of illicit trafficking of nuclear or radiological materials—nuclear smuggling—supported these concerns. For instance, the IAEA has been maintaining the Illicit Trafficking Database (ITDB). The ITDB is the IAEA’s information system on incidents of illicit trafficking and other unauthorized activities involving nuclear and other radioactive materials that have occurred since 1993. According to the ITDB, as of December 31, 2005, a total of 827 confirmed incidents were reported by the participating member states (see Figure 2.1).²⁰ Of the 827 confirmed incidents, 224 incidents involved nuclear materials, and 26 incidents involved both nuclear and other radioactive materials. Confirmed incidents involving various nuclear materials are shown in Figure 2.2.²¹ Confirmed incidents involving HEU and plutonium are detailed in Table 2.1.²²

²⁰ International Atomic Energy Agency, *Illicit Trafficking and Other Unauthorized Activities Involving Nuclear and Radioactive Materials*, August 21, 2005, p. 4, http://www.iaea.org/NewsCenter/Features/RadSources/PDF/fact_figures2005.pdf.

²¹ *Ibid.*, p. 5.

²² *Ibid.*, p. 6.

Figure 2.1 Confirmed Illicit Trafficking Incidents from 1993 to 2005

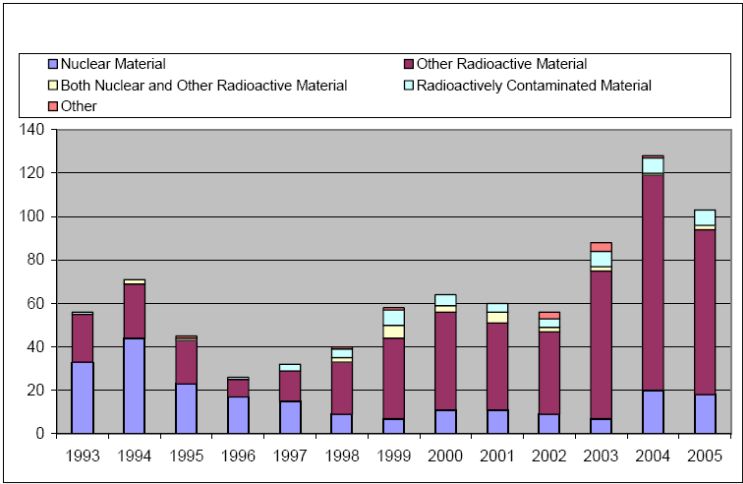
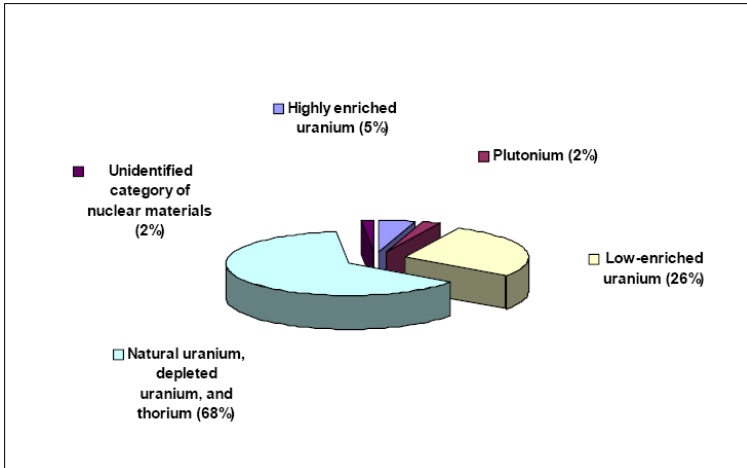


Figure 2.2 Confirmed Illicit Incidents Involving Nuclear Materials from 1993 to 2005



Note: The total is higher than 100% because some incidents involved more than one category of nuclear materials.

Table 2.1 Confirmed Illicit Incidents Involving HEU and Plutonium from 1993 to 2005

Date	Location	Material Involved	Incident Description
1993-05-24	Vilnius, Lithuania	HEU/ 150g	4.4t of beryllium including 140kg contaminated with HEU were discovered in the storage area of a bank.
1994-03	St.Petersburg, Russian Federation	HEU/ 2.972kg	An individual was arrested in possession of HEU, which he had previously stolen from a nuclear facility. The material was intended for illegal sale.
1994-05-10	Tengen-Wiechs, Germany	Pu/ 6.2g	Plutonium was detected in a building during a police search.
1994-06-13	Landshut, Germany	HEU/ 0.795g	A group of individuals was arrested in illegal possession of HEU.
1994-07-25	Munich Germany	Pu/ 0.24g	A small sample of PuO ₂ -UO ₂ mixture was confiscated in an incident related to a larger seizure at Munich Airport on 1994-08-10.
1994-08-10	Munich Airport, Germany	Pu/ 363.4g	PuO ₂ -UO ₂ mixture was seized at Munich airport.
1994-12-14	Prague, Czech Republic	HEU/ 2.73kg	HEU was seized by police in Prague. The material was intended for illegal sale.
1995-06	Moscow, Russian Federation	HEU/ 1.7kg	An individual was arrested in possession of HEU, which he had previously stolen from a nuclear facility. The material was intended for illegal sale.
1995-06-06	Prague, Czech Republic	HEU/ 0.415g	An HEU sample was seized by police in Prague.
1995-06-08	Ceske Budejovice, Czech Republic	HEU/ 16.9g	An HEU sample was seized by police in Ceske Budejovice.

1995-05-29	Rousse, Bulgaria	HEU/ 10g	Customs officials arrested a man trying to smuggle HEU at the Rousse customs border check point.
2000-12	Karlsruhe, Germany	Pu/ 0.001g	Mixed radioactive materials including a minute quantity of plutonium were stolen from the former pilot reprocessing plant.
2001-07-16	Paris, France	HEU/ 0.5g	Three individuals trafficking in HEU were arrested in Paris. The perpetrators were seeking buyers for the material.
2003-06-26	Sadahlo, Georgia	HEU/ ~170g	An individual was arrested in possession of HEU upon attempt to illegally transport the material across the border.
2005-03 to 2005-04	New Jersey, USA	HEU/ 3.3g	A package containing 3.3g of HEU was reported lost.
2005-06-24	Fukui, Japan	HEU/ 0.017g	A neutron flux detector was reported lost at an NPP.

In consequence, the CTR began to be accepted as a part of a long-term threat reduction and non-proliferation efforts, as depicted by Former Secretary of Defense William Perry to be “defense by other means.”²³ The CTR programs today are praised as “the Marshall Plan of nuclear nonproliferation” and the world is believed to be safer because of the devoted efforts of these programs.²⁴

Since its inception in 1991, the Nunn-Lugar Act has been expanded many times in terms of its roles and mission areas.²⁵ At least four

²³ Amy Woolf, “Nonproliferation and threat reduction assistance: U.S. programs in the former Soviet Union,” CRS Report for Congress, RL31957, April 19, 2005, p. 6.

²⁴ James Goodby, *et al.*, *Cooperative Threat Reduction for a New Era*, Center for Technology and National Security Policy, National Defense University, September 2004, pp. 1-2, <http://www.ndu.edu/ctnsp/publications.html>.

²⁵ For detail legislative mandates covering the CTR programs, see Appendix II of the U.S. Government Accountability Office, *Cooperative Threat Reduction*, GAO-05-329,

major expansion efforts have been noted. First, in 1993, the Cooperative Threat Reduction Act was adopted as a part of the National Defense Authorization Act for the Fiscal Year 1994 by the U.S. Congress to specify authorized programs and a fund management (see Appendix 3). With this Act, the CTR programs received direct funding into their own budget, rather than having DOD move its funds already budgeted for other purposes into the CTR programs. At this time, experts from other U.S. government agencies were brought in and from 1997, each of these agencies began to take management and budgetary responsibility for the projects they were involved in.²⁶

Second, Senators Nunn and Lugar joined Senator Pete Domenici in 1996 to introduce the Defense Against Weapons of Mass Destruction Act—commonly known as the “Nunn-Lugar-Domenici Act”—that strengthened the Nunn-Lugar authorities in the former Soviet Union and provided WMD expertise to first responder units in the U.S. cities.²⁷ That is, the Nunn-Lugar-Domenici Act intended to enhance domestic preparedness and charged federal agencies with putting systems into place that would protect American people against terrorist attacks.²⁸

Third, in November 2003, the U.S. Congress decided to expand the Nunn-Lugar Act and a new bill—commonly called the “Nunn-Lugar Expansion Act”—was passed as a part of the National Defense Authorization Act for the Fiscal Year 2004 (see Appendix 11). The

June 30, 2005.

²⁶ James Goodby, *et al.*, *Cooperative Threat Reduction for a New Era*, p. 5.

²⁷ This Act was adopted in *Public Law 104-201* on September 23, 1996. “Nunn-Lugar report,” August 2005, http://lugar.senate.gov/reports/Nunn-Lugar_Report_2005.pdf.

²⁸ *Department of Defense Report to Congress, Volume I, Domestic Preparedness Program in the Defense Against Weapons of Mass Destruction*, May 1, 1997, <http://www.fas.org/spp/starwars/program/domestic/1.html>.

section 1308 of this Act authorized the Nunn-Lugar program to operate outside the former Soviet Union to “assist the United States in the resolution of a critical emerging proliferation threat or permit the United States to take advantage of opportunities to achieve its long-standing nonproliferation goals.”

Finally, a White House review of the CTR programs and their achievements, combined with the aftermath of September 11th terror attack, led to an expansion to support the war on terrorism.²⁹ For instance, President Bush announced seven new initiatives to combat WMD proliferation and threats on February 11, 2004 in a speech at the National Defense University.³⁰ According to this expansion, the Bush administration was able to use \$50 million of unallocated CTR funds outside the former Soviet Union in the fiscal year 2004. And in October 2004, the CTR funds were used for the first time outside of the former Soviet Union to secure chemical weapons in Albania. The Nunn-Lugar Expansion Act also provided \$5 million for expanding the Materials Protection, Control, and Accounting (MPC&A) program to countries outside the former Soviet Union and an additional \$5 million to study options for helping other countries in improving their export control systems. Senator Lugar

²⁹ James Goodby, *et al.*, *Cooperative Threat Reduction for a New Era*, p. 6.

³⁰ President Bush proposed the following seven measures: (1) to expand the Proliferation Security Initiative to address more than shipments and transfers; (2) to strengthen the laws of all nations and international controls that govern proliferation; (3) to expand efforts to keep weapons from the Cold War and other dangerous materials out of the wrong hands; (4) to create a safe, orderly system to field civilian nuclear plants without adding to the danger of weapons proliferation; (5) only states that have signed the Additional Protocol be allowed to import equipment for their civilian nuclear programs; (6) to create a special committee of the IAEA Board which will focus intensively on safeguards and verification; and (7) no state under investigation for proliferation violations should be allowed to serve on the IAEA Board of Governors—or on the new special committee. “President announces new measures to counter the threat of WMD,” The National Defense University, February 11, 2004, <http://www.whitehouse.gov/news/releases/2004/02/20040211-4.html>.

introduced to the Senate the Nunn-Lugar Cooperative Threat Reduction Acts of 2004 and 2005, respectively for further removing some restrictions associated with using the CTR funds outside of the former Soviet Union. For instance, the two bills (S. 2980 on November 16, 2004 and S. 313 on February 8, 2005) with virtually the same contents seek to remove the \$50 million cap and restrictions on spending money for chemical weapons destruction.

Implementation and Achievements

Within the U.S. administration, the CTR is an interagency business among the Departments of Defense, State, Energy and Commerce.³¹ For example, the DOD mostly provides general policy directions and expertise on weapons security and dismantlement. The DOS takes lead in negotiating various agreements to provide target countries with specific assistance in the CTR programs. It also manages two science and technology centers in Moscow and Kiev. The DOE takes charge of improving the security and controls of nuclear materials and facilities and providing employment opportunities to weapons scientists. The DOC participates in projects to establish effective export control systems in the target countries.

From an initial funding of \$400 million made available by reallocating the DOD budget in 1992, CTR expenses including nuclear, chemical and biological weapons have expanded and grown to include average appropriations of approximately \$1 billion per year, divided among the Departments of Defense, State, and Energy. Between 1992 and 2004, roughly \$12 billion has been allocated by the U.S. Congress to manage all the CTR programs in the former

³¹ Amy Woolf, "Nunn-Lugar cooperative threat reduction programs: issues for congress," CRS Report for Congress, 97-1027F, March 23, 2001, p. 5.

Soviet Union.³² The achievements made by the three Departments are summarized as follows.

The Department of Defense

The DOD under President Bush defines four objectives of the CTR programs:³³

- Dismantle FSU (former Soviet Union) WMD and associated infrastructure,
- Consolidate and secure FSU WMD and their related technology and materials,
- Increase transparency and encourage higher standards of conduct, and
- Support defense and military cooperation with the objective of preventing proliferation.³⁴

The DOD states that the CTR programs pursuing these four objectives support a set of National Security Presidential Directives on weapons of mass destruction in December 2002, on bio-defense for the 21st century in April 2004, and on domestic nuclear detection in April 2005.³⁵ Since 1992, the DOD has spent about 400 million

³² James Goodby, *et al.*, *Cooperative Threat Reduction for a New Era*, p. 13.

³³ *Cooperative Threat Reduction Annual Report to Congress, Fiscal Year 2006* (Washington, D.C.: The Department of Defense, December 2004), p. 1, http://www.ransac.org/documents/fy06_ctr_annual_report_to_congress.pdf#search='Cooperative%20Threat%20Reduction%20Annual%20Report%20to%20Congress.'

³⁴ The four key objectives outlined by the DOD of the Clinton Administration are (1) to destroy nuclear, chemical, and other weapons of mass destruction; (2) to transport, store, disable, and safeguard these weapons in connection with their destruction; (3) to establish verifiable safeguards against the proliferation of these weapons, their components, and weapon-usable materials; and (4) to prevent the diversion of scientific expertise that could contribute to weapons programs in other nations. *Cooperative Threat Reduction* (Washington, D.C.: U.S. Department of Defense, April 1995), p. 4.

³⁵ *Cooperative Threat Reduction Annual Report to Congress, Fiscal Year 2007* (Washington, D.C.: The Department of Defense, 2006), p. 1, http://www.nti.org/e_research/official_docs/dod/2006/040705.pdf#search='Cooperative%20Threat%20Reduction%20

U.S. dollars annually.³⁶ As Table 2.2 shows, most of the time, the Administration’s request for CTR funding has been approved in the Congress with no change.³⁷

Table 2.2 CTR Funding: Requests and Authorization (\$ millions)

Fiscal Year	1992	1993	1994	1995	1996	1997	1998	1999
Request	\$400	\$400	\$400	\$400	\$371	\$328	\$382.2	\$440.4
Auth.	\$400	\$400	\$400	\$400	\$300	\$364.9	\$382.2	\$440.4
Fiscal Year	2000	2001	2002	2003	2004	2005	2006	
Request	\$475.5	\$458.4	\$403	\$416.7	\$450.8	\$409.2	\$415.5	
Auth.	\$475.5	\$443.4	\$403	\$416.7	\$450.8	\$409.2	\$410.4	
Total Request for FY1992~FY2006 \$6150.5				Total Authorization for FY1992~FY2006 \$6096.4				

In the field of dismantling nuclear weapons and infrastructures, the CTR programs have made significant achievements. As Table 2.3 illustrates, as of June 2005, more than 6,600 nuclear warheads were deactivated.³⁸ The strategic triad of the Cold War was dismantled to

Annual Report to Congress.

³⁶ In a broad sense, “CTR” refer to all programs managed by the Departments of Defense, State, Energy and Commerce. In a narrow sense, “CTR” often indicates programs managed by the DOD. “The CTR fund” indicates the DOD budget allocated for its CTR programs.

³⁷ This table is based on the table 1 (CTR funding: requests and authorization) of Amy Woolf, “Nonproliferation and threat reduction assistance: U.S. programs in the former Soviet Union.”

³⁸ Jeffrey Read, “Reported accomplishments of selected threat reduction and nonproliferation programs,” *RANSAC Policy Update*, July 2005, p. 2, <http://www.>

a great extent: 582 ICBMs, 148 Bombers, and 549 SLBMs. The future projections of the dismantling process are also presented in the Table.

Table 2.3 Cumulative Numbers of Weapons and Infrastructures Dismantled

Program	Current Cumulative Reduction	2007 Projection	2012 Projection
Warheads Deactivated	6632	7792	8567
ICBMs Destroyed	582	766	1140
ICBM Silos Eliminated	477	485	485
ICBM Mobile Launchers Eliminated	30	139	355
Bombers Eliminated	148	150	150
Nuclear ASMs Destroyed	789	829	829
SLBM Launchers Eliminated	420	472	572
SLBMs Eliminated	549	609	669
SSBNs Destroyed	28	32	32
Nuclear Test Tunnels/ Holes Sealed	194	194	194

(Current cumulative reduction as of June 6, 2005; Projections as of December 31, 2004)

Several projects have been undertaken to achieve the four objectives

[ransac.org-threat_reduction_accomplishments_2005.pdf](#).

set for the CTR programs.³⁹ First, the strategic nuclear arms and WMD infrastructure elimination program seeks to take military facilities out of service that could be used to develop a country's WMD capabilities. Such facilities include ICBM liquid propellant plants, airbases for bombers, and weapons storage sites. Second, the nuclear weapons safety and security project assists Russia in improving the security, safety, and control of its nuclear weapons during storage and transport, which consists of two programs—nuclear weapons storage security (NWSS) program and nuclear weapons transportation security (NWTs) program. Third, the Russian chemical weapons destruction and demilitarization program assists Russia in destroying its chemical weapons nerve agents in a safe and environmentally sound manner. Fourth, the biological weapons proliferation prevention (BWPP) program aims at preventing the proliferation and use of biological weapons. Finally, the fissile material storage facility (FMSF) program helps provide a safe and environmentally sound storage for weapon-grade fissile material.

The Department of State

The DOS manages one fund and two programs for meeting the overarching purposes of the CTR programs.⁴⁰ The Nonproliferation and Disarmament Fund (NDF) supports efforts to halt the proliferation of WMD, to contain the spread of advanced conventional weapons, and to enable a dismantling of existing WMD and their delivery means. The U.S. Congress has appropriated approximately \$15 million for the NDF on an annual basis since 1993.

³⁹ *Ibid.*, pp. 3-6.

⁴⁰ *Ibid.*, pp. 9-11.

The Nonproliferation of WMD Expertise program broadly supports the engagement and permanent redirection of former weapon scientists worldwide. The program has three subprograms. First, the DOS manages two science research centers—the International Science and Technology Center (ISTC) in Moscow and its companion Science and Technology Center of Ukraine (STCU) in Kiev. Originally, the efforts to engage Russian nuclear scientists started with small-scale collaborations between researchers from the U.S. nuclear weapon laboratories and corresponding Russian research centers. This “lab-to-lab” program helped to build trust between the two countries and was later augmented in the mid 1990s by the ISTC and the STCU.⁴¹

These centers are multilateral research organizations that provide scientists from the former Soviet Union with funding for pursuing peaceful research opportunities. They also seek to assist the former Soviet Union to learn about market economies and encourage these scientists to integrate into the international scientific community. That is, these science research centers are intended for a human-oriented conversion. The ISTC was founded in Moscow in 1992 and as of November 2000, about 30,000 scientists from 400 research institutes in the four republics were working on 1,156 projects at the cost of 316 million U.S. dollars. In 1995, the STCU was established and as of mid-2000, around 6,700 scientists were participating in 290 projects and 42 million U.S. dollars were expended.⁴² As of 2005, the ISTC had provided more than 58,000 scientists and engineers with peaceful research opportunities in almost 2,100 research projects and the STCU had engaged more than 13,000

⁴¹ Richard Stone, “News focus,” *Science*, January 13, 2006, p. 171.

⁴² *Nuclear Status Report: Nuclear Weapons, Fissile Material, and Export Controls in the Former Soviet Union* (Monterey: Monterey Institute of International Studies, June 2001), pp. 68-74.

experts as of September 2004.

Second, the Bio-Chem Redirection program helps to transition biological and chemical weapons scientists and experts from the former Soviet Union to peaceful and civilian research works. Third, the Bio-Industry Initiative program created after the September 11 attack seeks to dismantle former biological weapons production facilities in the former Soviet Union and to accelerate drug and vaccine production to combat both regional and global disease.

The Export Control and Border Security (EXBS) program helps countries strengthen their export controls by improving their legal and regulatory capacity and their border security capabilities. The EXBS program has a specific purpose of countering an illegal export or smuggling of dangerous materials and technologies and focuses particularly on proliferation-sensitive nations in Eurasia.

The Department of Energy

The DOE has contributed to the cooperative threat reduction by operating several programs.⁴³ First, the Global Initiatives for Proliferation Prevention—GIPP program (formerly the Russian Transition Initiative) seeks to prevent the migration of WMD expertise by engaging former weapons experts in peaceful efforts, that is, by providing employment opportunities for Russian nuclear scientists and engineers. Through April 2005, GIPP-related projects had engaged over 16,000 weapons scientists in over 750 projects and had created over 3,000 civilian jobs for the former WMD workers. Under the GIPP program, the Nuclear City Initiative—NCI

⁴³ Jeffrey Read, “Reported accomplishments of selected threat reduction and nonproliferation programs,” pp. 6-9.

had been carried out from 1998 to 2003.⁴⁴ The NCI intended to bring commercial enterprises to Russia's closed nuclear cities with the purpose of reducing the size of the weapons complexes and preventing a brain drain. Some members of the U.S. Congress questioned the value and effectiveness of the NCI.

Second, the DOE has focused on Material Protection, Control and Accounting (MPC&A) techniques to Russian nuclear facilities by operating the International Nuclear Materials Protection and Cooperation program. This program helps prevent terrorists from acquiring nuclear weapons and materials in two ways: (1) security and elimination of nuclear weapons and materials at their source and (2) installation of radiation detection equipment at border crossings and ports. The program started with less than \$3 million in the FY 1993 and the amount increased to \$73 million in the FY1995 and \$169 million in the FY2001. Between the FY1993 and the FY2005, the U.S. Congress appropriated nearly \$1.8 billion for the MPC&A program.⁴⁵ All of these funds were used to improve security at nuclear warhead and nuclear material storage facilities in Russia. The DOE's National Nuclear Security Administration (NNSA) has identified 105 nuclear sites and 243 buildings that may need to improve their security systems.

Third, the Global Threat Reduction Initiative (GTRI), announced on May 26, 2004, is to identify, secure, and remove or destroy nuclear and other radioactive materials around the world in order to prevent terrorists from acquiring nuclear or dirty bomb material. Fourth, the HEU transparency implementation program is to ensure that HEU

⁴⁴ Amy Woolf, "Nonproliferation and threat reduction assistance: U.S. programs in the former Soviet Union," p. 34.

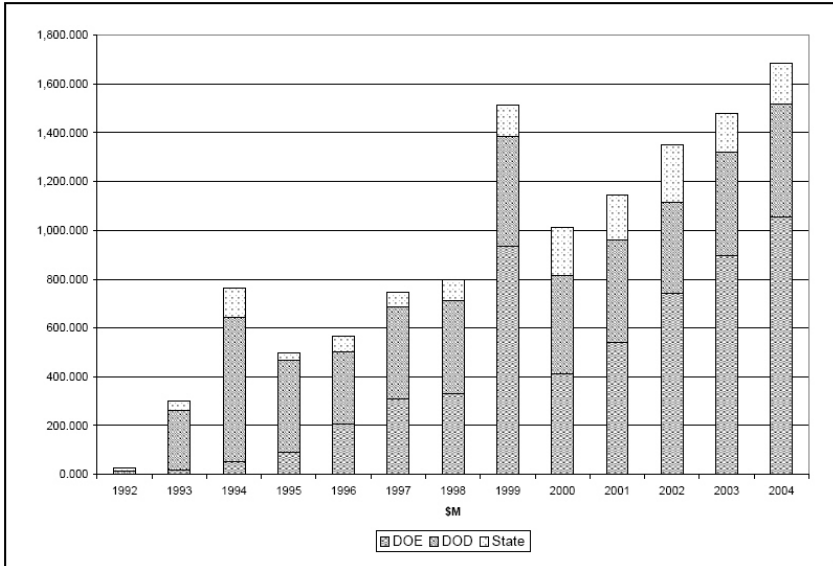
⁴⁵ *Ibid.*, p. 28.

purchased from Russia under the 1993 purchase agreement originates from dismantled Russian nuclear weapons. Fifth, the Elimination of Weapons Grade Plutonium Production (EWGPP) program aims at helping Russia eliminate its weapon-grade plutonium producing reactors by shutting them down and replacing them with fossil fuel power plants in order to provide electricity and heat to the cities dependent on these reactors. Finally, the Russian fissile materials disposition program is a part of a coordinated effort to eliminate 68 metric tons of U.S. and Russian surplus weapon-grade plutonium. The program seeks to irradiate the excess plutonium in nuclear reactors as part of a mixed oxide (MOX) fuel.

A breakdown of the funding provided by the three U.S. Departments for the CTR programs between 1992 and 2004 is shown in Figure 2.3.⁴⁶ The Department of Defense funding remains steady at a level of 400 million dollars, while the Departments of State and Energy maintain various levels of funding throughout the period.

⁴⁶ James Goodby, *et al.*, *Cooperative Threat Reduction for a New Era*, p. 14.

Figure 2.3 The CTR Funding by the U.S. Agencies from 1992 to 2004



Problems Encountered in the Course of an Implementation

During the past 15 years, the CTR programs have encountered many problems. These problems have produced various negative phenomena, for example, standing in the way of a swift fulfillment of the CTR objectives, diminishing support for the CTR programs both in the public and expert domains, causing diplomatic tension among the concerned countries, or arousing worries about WMD proliferation and subsequent security dangers. These problems can be categorized into five areas as follows:⁴⁷

- *Political Attention:* Throughout the implementation, robust political support for the CTR programs is very rarely demonstrated and often is more rhetorical than real. For

⁴⁷ Kenneth Luongo and William Hoehn III, "Reform and expansion of cooperative threat reduction," *Arms Control Today*, June 2003, pp. 11-15.

example, the Russian government showed an unwillingness to get rid of the internal security and bureaucratic problems that frequently hindered an implementation. In the United States, insufficient political attention has resulted in limitations or restrictions on funding, bureaucratic battles, and implementation delays.⁴⁸ Some members of the U.S. Congress raised concerns that the fund cannot be properly spent in the corrupt Russian system. Others pointed out that Russians continue to modernize their nuclear forces while taking U.S. money. And those in the executive branch less supportive of the CTR programs placed legal or bureaucratic barriers in the way of implementation or lowered the priority of the programs in the budget debate.⁴⁹

- *Access and Transparency*: The lack of access to Russian facilities and insufficient transparency of relevant information is a pervasive impediment to the progress. Request for proper access and transparency triggers suspicion of virtual espionage on the Russian side, and in reciprocity, rejection of the request causes resentment and hard-line attitudes on the American side. Russians showed dual attitudes on the CTR programs. For example, Russian defense minister Sergei Ivanov publicly stated that his country has fully protected its nuclear materials and warheads and denied the necessity of better physical protection. However, other Russian officials showed strong

⁴⁸ Two American experts on the CTR programs, Joel Wit and Jon Wolfsthal at the Center for Strategic and International Studies, highlighted political skepticism of the CTR programs faced within the United States. Author's conversation with the experts at the *Workshop on Cooperative Threat Reduction Program for North Korea's Weapons of Mass Destruction* co-sponsored by the Center for Strategic and International Studies and the Sejong Institute, January 28, 2005, Seoul, South Korea.

⁴⁹ Rose Gottemoeller, "Cooperative threat reduction beyond Russia," *Washington Quarterly*, Spring 2005, pp. 145-146.

interests in the CTR and G8 Global Partnership programs. They even argued that Russia need all of the G8 Global Partnership funding.⁵⁰

- *Lack of an Overarching Coordinator and an Integrated Strategy:* Bipartisan calls for nominating a dedicated CTR coordinator for the President have been rejected. Creation of a coordinator and the development of an integrated strategy under his leadership will be necessary for improving the effectiveness and efficiency of the CTR programs.
- *Excess WMD Scientists:* The two main strategies for redirecting WMD scientists and engineers for peaceful purposes—research contracting and technology-driven commercialization—are not providing many career-changing opportunities. The research contracting strategy remains essential for many scientists but the duration of most projects does not exceed three years and most of the weapon scientists working on these projects are not being converted completely from weapons work but are mostly being temporarily detoured. The commercialization strategy has some successes but yields few real results, often due to a project's failure to conform to market needs. In particular, creating successful business enterprises in Russia is difficult because of the systemic barriers to business creation in that country.
- *Funding:* Funding for the CTR programs is a litmus test of political support for the programs. Those who are against the CTR programs are tempted to demonstrate their will by cutting available funds for the programs. In some cases, problems encountered in the course of an implementation

⁵⁰ Ibid., p. 149.

are holding back a progress and in turn, cause funding backlogs. While some in the United States opposes U.S. financial contributions to the CTR programs, others expressed the necessity of increasing U.S. funding for the programs. For instance, a bipartisan task force convened by the Secretary of Energy, in 2001, called for much higher funding. The resulting Baker-Cutler report outlined U.S. expenditures of \$30 billion over 8-10 years to achieve rapid success in securing materials and warheads in the former Soviet Union.⁵¹

The G8 Global Partnership Against the Spread of WMD

The September 11th terror triggered a further expansion of the CTR programs. The G8 countries committed themselves to prevent terrorists, or those that harbor them, from acquiring or developing nuclear, chemical, radiological and biological weapons, missiles, related materials, equipment, and technologies. Gathered at Kananaskis, Canada, on June 27, 2002, the G8 countries declared six principles to prevent terrorists, or those that harbor them, from gaining access to WMD or materials. They also decided to expand the CTR-type projects and to work in partnership, bilaterally and multilaterally, to develop, coordinate, implement and finance new or expanded projects to address nonproliferation, disarmament, counter-terrorism, nuclear safety and environmental issues (Appendix 8).

The G8 countries agreed to raise a fund of \$20 billion by the end of 2012. Half of the money will be funded by the United States and

⁵¹ Howard Baker and Lloyd Cutler, *A Report Card on the Department of Energy's Nonproliferation Programs with Russia* (Washington, D.C.: Department of Energy,

other partners will raise the other half. The U.S. portion of \$10 billion is basically the money already appropriated for the CTR programs managed by the U.S. government. For example, President George W. Bush's budget request for CTR programs in fiscal year 2005 is about \$1 billion, of which \$472 million would be designated for the DOE programs, \$409 million for the DOD, and \$108 million for the DOS. Therefore, the Global Partnership programs do not have the United States bear additional financial burdens. As of 2006, 23 countries joined the Global Partnership programs. Currently, Russia and Ukraine are two recipient countries of the various Global Partnership programs.

The Global Partnership is one of the major issues at the G8 summit meetings. The Evian Action Plan of 2003 (Appendix 9) and the Sea Island Action Plan of 2004 (Appendix 10) underscored the long-term commitment of the G8 countries.⁵² The G8 Summit in Gleneagles in June 2005 also issued a long statement to reiterate the importance of cooperative threat reduction and their commitment to meet the challenge of WMD proliferation.⁵³

Lessons of Ukraine and Libya

Ukraine and Libya are two excellent models for drawing lessons for cooperative denuclearization of North Korea. Ukraine and Libya made courageous decisions to renounce their WMD capabilities and ambitions in a peaceful way and with the full support of the international community. The origins and evolutions of the

January 10, 2001), p. A-1.

⁵² G8 Senior Group, *G8 Global Partnership Annual Report*, June 2005, http://www.fco.gov.uk/Files/kfile/PostG8_Gleneagles_GPWGAnnualReport2005.pdf.

⁵³ *Gleneagles Statement on Non-Proliferation*, June 2005, http://www.fco.gov.uk/Files/kfile/PostG8_Gleneagles_CounterProliferation.pdf.

proliferation problems of the two countries were different but their end results were the same—dismantling of their WMD capabilities and the corresponding rewards and compliments from the international society.

Ukraine as a nuclear-armed republic of the former Soviet Union has become a major recipient of the CTR programs. While Russia maintains a status as a nuclear weapon state, Ukraine was transformed itself into a non-nuclear weapon state by abandoning all its nuclear weapons and related capabilities. On the other hand, Libya turned around the traditional path that had the country labeled as a rogue regime like North Korea and provided another good example of how to resolve a seemingly intractable nonproliferation problem in a peaceful way. Libyan authorities' determination to renounce their WMD options is worth careful scrutiny for the success of cooperative denuclearization of North Korea.

Ukraine

As the Cold War ended and the Soviet Union became disintegrated, the four republics where the Soviets' nuclear arsenals and infrastructures were located—Belarus, Kazakhstan, Russia and Ukraine made an agreement that the status of a nuclear weapon state be inherited by Russia. There was opposition to this agreement. For example, the Ukrainian military that held about 1,900 nuclear weapons was anxious to keep them.

As a consequence, the Ukrainian government sought a specific security guarantee from Russia and the United States. In the trilateral statement signed on January 14, 1994, then Presidents Bill Clinton and Boris Yeltsin reaffirmed to then Ukrainian President Leonid Kravchuk that they would provide the following positive and negative security assurances for the country as a non-nuclear

weapon state party to the NPT (see Appendix 4):⁵⁴

- Respect the independence and sovereignty and the existing borders of the CSCE member states and recognize that border changes can be made only by peaceful and consensual means;
- Refrain from the threat or use of force against the territorial integrity or political independence of any state;
- Reaffirm that none of their weapons will ever be used except in self-defense or otherwise in accordance with the Charter of the United Nations;
- Refrain from economic coercion designed to subordinate to their own interest the exercise by another CSCE participating state of the rights inherent in its sovereignty and thus to secure advantages of any kind;
- Seek immediate U.N. Security Council action to provide assistance to Ukraine if it should become a victim of an act of aggression or an object of a threat of aggression in which nuclear weapons are used; and
- Not to use nuclear weapons against any non-nuclear weapon state [including Ukraine], except in the case of an attack on themselves, their territories or dependent territories, their armed forces, or their allies, by such a state in association or alliance with a nuclear weapon state.

On December 5, 1994, a similar security commitment was provided for Ukraine from the United States, the Russian Federation and the United Kingdom of Great Britain and Northern Ireland (see Appendix 5).⁵⁵

⁵⁴ *Trilateral Statement by the Presidents of the United States, Russia and Ukraine*, January 14, 1994.

⁵⁵ *Memorandum on Security Assurances in connection with Ukraine's accession to the Treaty on the Non-Proliferation of Nuclear Weapons*, December 5, 1994.

This security assurance became a political basis upon which subsequent technical and financial assistance were bestowed from abroad, mainly from the United States. And this assistance has helped Ukraine to get rid of the nuclear capabilities on its soil. Some of its nuclear elements have been converted to civilian sectors for the benefit of peaceful uses of nuclear energy. For example, in order to keep nuclear experts, technologies and materials from going abroad, the Science and Technology Center of Ukraine (STCU) was established in 1995.

Ukraine's transformation from a nuclear weapon state to a non-nuclear weapon state was facilitated by the following positive factors. First, the political leadership in the Ukraine had no reservation about forgoing its nuclear capability. Neighboring upon Russia with a huge nuclear stockpile, Ukraine clearly understood that possessing a modest number of nuclear weapons did not favor itself, only irritating Russia's security concerns. Second, since Ukraine's nuclear capability was a part of the Soviet Union's, complete transparency was assured from the beginning. That is, whereabouts and amounts of all nuclear weapons, sensitive nuclear materials and related equipments were all accounted for by Russia. Third, Ukraine's record of adhering to international agreements had no taint of dishonesty because it had just entered the international community. It had full expectations of foreign assistance for building a newly created nation, with no intentions of losing its credibility by cheating potential helpers in the world.

These factors that helped to speed up the process of taking off a nuclear weapon coat from the Ukraine are not present in North Korea. To make matters worse, the North is, in many ways, placed on the opposite side of the fence. The history of the North Korean nuclear problem shows that the North Korean leadership has

manifested an ill-natured deception and unyielding persistence for acquiring nuclear weapons. Throughout its history, the North's nuclear weapon development program has been disguised by the Pyongyang regime's peaceful rhetoric of having no intention to go nuclear. North Korean authorities, of course, stubbornly exerted themselves in furtive efforts to acquire nuclear weapons at the back door. Under the banner of "having neither intention nor capability to develop nuclear weapons," guided by the late President Kim Il Sung, this pattern of rhetorical deception on the one hand and persistent obsession to realize nuclear ambition on the other had continued until April 2003 when North Korea finally revealed that they had nuclear weapons at the Three-Party Talks in Beijing.⁵⁶

There have been several examples manifesting North Korea's duality and dishonesty. First, by signing the Joint Denuclearization Declaration with South Korea in 1991, North Korea promised not to possess reprocessing or enrichment facilities. But the IAEA inspections that were carried out just six months later found that the North had already constructed and operated a large-scale reprocessing facility—what they called a radiochemical laboratory. Indeed, the Joint Denuclearization Declaration was a stillborn child from the beginning.

Second, the Pakistani government's investigation of Dr. Abdul

⁵⁶ It was during the conversation with the editor-in-chief of NHK in October 1977 that Kim Il Sung first publicly expressed his intention not to develop nuclear weapons. At an interview with the president of Iwanami Shoten on September 26, 1991, he declared to have neither intention nor capability to develop nuclear weapons. At a luncheon with the South Korean delegation for the South-North High-Level Talks on February 20, 1992, Kim Il Sung stated that "We do not intend to have a nuclear confrontation with neighboring big powers and in addition, it is unimaginable to develop nuclear weapons that can wipe out Korean people," *Rodong Sinmun*, Feb. 21, 1992.

Qadeer Khan and subsequent revelation of a nuclear smuggling network in early 2004 showed that there had been significant level of nuclear cooperation between North Korea and Pakistan. During the last decade, technologies, equipment and materials related to uranium enrichment had flown from Pakistan into North Korea. This is a clear violation of the Joint Denuclearization Declaration, the Geneva Agreed Framework, and the NPT.

Third, at the NPT withdrawal statement issued in January 2003, the DPRK government reasserted itself that it did not have any intention to go nuclear and invited the United States to verify their statement.⁵⁷ About three months later, the government statement was nullified at the Beijing Three-Party Talks when the DPRK representative Lee Gun informed to the U.S. representative James Kelly that North Korea already had nuclear weapons.⁵⁸ Mr. Lee's remark was the first case where a high-level North Korean authority revealed that Pyongyang possessed nuclear weapons. Since June 2003, North Koreans have stated that they have a "nuclear deterrent force."

In short, what the North Korean regime has shown to the international society as regards its nuclear ambition is indeed a historical masterpiece of ill-natured deception and unyielding persistence. Threats posed by North Koreans will be brought to an end only when such persistent deception no longer can serve as a guiding principle of their thinking and policy-making behavior. It is also noted that North Korea has lost its credibility by

⁵⁷ *Rodong Sinmun*, Jan. 11, 2003.

⁵⁸ Foreign Minister Paik Nam Soon and Vice Foreign Minister Kim Gye Gwan reconfirmed North Korea's possession of nuclear weapons when they met a U.S. Congress delegation led by Representative Curt Weldon in late May 2003, *Dong-a Ilbo*, Jun. 3, 2003.

renewing on the various international agreements and by carrying out illegal activities such as counterfeiting and money laundering. To make matters worse, on February 10, 2005, North Korea declared it had built nuclear weapons and would take steps to further bolster this nuclear arsenal. It is widely held that the North's nuclear capability has been significantly enhanced since October 2002, when the current nuclear crisis was triggered, making peaceful resolution of the crisis a truly difficult task.

Libya

The Libyan Foreign Ministry announced in December 2003 that Libya would dismantle its programs related to producing weapons of mass destruction. It also declared to sign the Chemical Weapons Convention, the Biological and Toxin Weapons Convention, and the IAEA's Additional Protocol. Libya's decision to give up its efforts to acquire WMD was fresh and shocking in itself. Such a decision was made possible by the senior leadership having a good grasp of the changing realities in the international community. The country's leader Muammar el-Qaddafi remarked that the world has changed a lot and Libya will be safer without WMD than with it. He further demanded North Korea and Iran to follow his lead and to relieve the sufferings of the people in their countries.⁵⁹

The Libyan government demonstrated its non-WMD volition by deed not just by words. Immediately after the announcement in December, Libya opened its WMD capabilities—weapons, production facilities, equipment, drawings and materials, etc—to the IAEA, the United States and the United Kingdom. Libya's manifested openness and cooperation has allowed for a prompt dismantlement of its WMD capabilities and demonstrated how the

⁵⁹ *Chosun Ilbo*, December 23, 2003.

tools used in the CTR programs can be applied to the case of a rouge state.⁶⁰ Libya declared 12 sites that had been involved in its covert nuclear weapons development program since the 1980s and agreed to sign the Additional Protocol, giving the IAEA full access to its nuclear weapons program. Libya also opened 18 locations that could have, from a technical standpoint, provided support to a nuclear weapons research and development program.⁶¹ On January 22, 2004, nuclear weapon design information obtained by Libya was sent to the United States and four days later, about 55,000 pounds of nuclear-related materials were also airlifted to the United States. Based on a series of inspections, the IAEA concluded that Libya's nuclear weapons program was still in an early stage—three to seven years away from producing a nuclear weapon.⁶² And the U.S. government is currently using \$2.5 million from the Department of State's Nonproliferation and Disarmament Fund to assist Libya in disarming its WMD capabilities. At the moment, Libya is ineligible for the Department of Defense money since it is still on the list of state sponsors of terrorism.⁶³

⁶⁰ James Goodby, *et al.*, *Cooperative Threat Reduction for a New Era*, pp. 33-34.

⁶¹ *Implementation of the NPT Safeguards Agreement of the Socialist People's Libyan Arab Jamahiriya*, GOV/2004/12, February 20, 2004.

⁶² James Goodby, *et al.*, *Cooperative Threat Reduction for a New Era*, p. 34.

⁶³ Sharon Squassoni and Andrew Feickert, "Disarming Libya: weapons of mass destruction," CRS Report for Congress, RS21823, April 22, 2004, p. 6. The U.S. sanctions against other countries for their support for international terrorism are four basic types: (1) ban on arms-related exports and sales, (2) controls on dual-use item exports (requires 30-day congressional notification), (3) prohibition on economic assistance, and (4) miscellaneous financial and other restrictions, including U.S. opposition to World Bank, IMF loans, and ban on DOD contracts over \$100,000. Sharon Squassoni, "Globalizing cooperative threat reduction: a survey of options," CRS Report for Congress, RL32359, January 27, 2005, pp. 34-35. There is a possibility that an unobligated CTR fund of the DOD is used for Libyan scientists. For example, Senator Lugar has noted that the NDF allocated for Libya "does not have the size, scope, or experience to do dismantlement operations, to employ nuclear scientists, or undertake longer-term nonproliferation efforts." Senator Richard Lugar, "Opening statement for hearing on Libya—next step in U.S. bilateral relations," Senate Foreign

Such a clear-cut behavior has brought about a great deal of confidence by the international society. The United States has promptly responded to the Libyan action. Most of the economic sanctions were lifted in the spring of 2004 and their bilateral diplomatic relations were normalized on June 28.⁶⁴ Except for still being on the list of nations sponsoring terror, most of the restrictions once imposed on Libya have been removed. Just six months after Libya's decision to forgo all WMD-related programs, the United States gave Libya two big rewards—normalizations of economic and diplomatic relations.

By doing so, the United States has set a clear objective of demonstrating to the rest of the world that “if you give up WMD efforts in the first place, you will get promptly what you want from us.” That is, the case of Libya has become a role model for thwarting WMD proliferation attempts in the various corners of the world by persuading the perpetrators to discard pro-WMD obsessions.

This fact is meaningful in that the announcement of opening up full diplomatic relations between the United States and Libya came right after the end of the third round of the Six-Party Talks. The announcement had an effect of pushing North Korea to accept the U.S. proposal made at the Talks. Washington offered Pyongyang a three-month nuclear-freeze period for North Korea not only to stop all its nuclear-related activities but also to present all necessary

Relations Committee, February 26, 2004.

⁶⁴ On February 26, 2004, the White House announced that it would: (1) lift the ban on using U.S. passports in Libya, (2) permit U.S. citizen expenditures inside Libya, (3) allow U.S. companies to negotiate business contracts with Libya, (4) invite Libya to open a diplomatic interests section in Washington, and (5) begin exploring joint humanitarian projects with Libya.

information to achieve and verify complete dismantlement of its nuclear capability.

Some argue that North Korea is different from Libya because the United States has not held direct talks with the North while there had been a series of secret bilateral contacts between Washington and Tripoli via London. This is not quite true because of the fact that as the Six-Party Talks proceed, the delegates from Washington and Pyongyang have spent large amount of time at the bilateral meetings.

In the case of Libya, more important was that Libya regained confidence from the world by admitting that it committed the bombing of the Pan American airliner and taking full responsibility. A minimal basis for negotiations, be it secret or formal, is mutual confidence that open-minded talk is feasible and an agreement can be complied with. Observing the behavioral patterns of North Korea, it is questionable whether Pyongyang has given such confidence to Washington. In the nuclear area, in particular, North Korea's deceitful behavior is quite notable as described above.

There are four lessons the North Korean regime can learn from the Libyan example. First, regardless of how much efforts had been made, it is better to stop a nuclear weapons development program now rather than continuing it. The Saddam Hussein regime was removed by force largely because it refused to fully reveal the WMD-related information and frequently deceived the United Nations. Iran has been having difficulties by not committing itself to completely renounce nuclear ambitions. Contrariwise, Libya is moving forward for a better future of the nation and the people and it is fully supported and welcome as a new member of the international society.

Second, rather than sustaining the argument of so-called “word for word, action for action,” the North Korean leadership should be courageous enough to unilaterally give up its nuclear capability. A piecemeal approach and salami tactics that were North Korea’s trump cards in the 1990s would be no more workable this time. It is reasonable and sensible to follow a sequential approach to resolve the North Korea nuclear problem. But the initial step has to be taken by the DRPK because it committed wrongdoings that should have not been done in the first place.

Third, no confession is too late or worse than hiding the truth. If North Korea confesses its secret nuclear development programs, history shows that it will be acquitted rather than being held accountable. Libya in the middle of pursuing nuclear weapons and South Africa after successfully acquiring them confessed to the world that they were developing nuclear weapons. They revealed all their information and accepted full inspections from the IAEA to validate their declarations. It should be made clear, however, that when a country confesses, it must exhibit a strong determination to be fully transparent about its nuclear programs without allowing for a bit of vagueness. Only then, the rest of the world will begin to believe what it says.

Finally, it is better not to cause a friction but to cooperate with the IAEA. The difficulties faced by Iran largely come from its conflict with the IAEA. On the contrary, Libya is in full cooperation with the IAEA, greatly facilitating in the verification of its declaration and consequently accelerating the process of receiving the promised rewards. It is quite surprising that it took only six months to open up full diplomatic relations between the United States and Libya—a country whose presidential residence was once bombed by American air strikes.

Based on the above analysis, the environments under which Ukraine and Libya have abandoned nuclear weapons and North Korea will do so in the future can be compared as in Table 2.4.

Table 2.4 Comparisons among Ukraine, Libya, and North Korea

	Nuclear Weapons	Potential Threat	Political Willingness to Forgo Nukes	International Credibility	Transparency Before De-nuke*	Political/ Security Rewards	Economic Rewards	Regime Continues after De-nuke
Ukraine	Possess	From Russia	Strong	Medium	High	Conditional NSA and PSA	Assistances in De-nuke and Economic Development	Yes
Libya	In Development	From Israel	Strong	Low	Low (Clandestine Development)	Conditional NSA and PSA/ Diplomatic Normalization with the U.S.	Removal of Economic Sanctions/ Assistance in De-nuke	Yes
North Korea	Possess	From the U.S. and South Korea	Weak	Very Low	Low (Clandestine Development)	Demanding Diplomatic Normalization with the U.S. and Removal of U.S. Threat	Demanding Removal of Economic Sanctions/ Assistances in Energy and Economic Development	?

* De-nuke: Denuclearization

Chapter Three

Motivations and Possible Scenarios

Motivations

Inching toward a Peaceful Unification

Cooperative denuclearization of North Korea aims at higher than the previous arms control efforts on the Korean peninsula and in Northeast Asia. It directly focuses on eliminating rather than containing and living with the most dangerous military threat from North Korea. It is also a multilateral attempt that will be supported by the international community. The multilaterally managed initiative under international supervision and guarantees will produce significant pressures on North Korea's habitual practices of treaty violations and it will promote a greater compliance behavior. In summation, a cooperative denuclearization of North Korea, if successful, will become the first practical and international project to eliminate a major part of the North Korean military threat in a substantial way. It goes without saying that this will pave a concrete way for a peaceful unification on the Korean peninsula.

Depending on the political circumstances, this cooperative denuclearization initiative can be linked with a master plan of reforming and reconstructing North Korean economy—the Korean Peninsula Marshall Plan. Reducing North Korea’s military threat, particularly its WMD threat, is an indispensable condition for a massive economic assistance to the country. That is, economic assistance is justified only when it is accompanied with visible signs of a threat reduction. In this respect, cooperative denuclearization can become a linkage point between a threat reduction of North Korea and the Korean Peninsula Marshall Plan.

Eliminating Threat by Mutual Cooperation

Cooperative denuclearization puts an emphasis on cooperation in mutual ways. In international relations, cooperation occurs “when states adjust their policies in a coordinated way, such that each state’s efforts to pursue its interests facilitate rather than hinder the efforts of other states to pursue their own interests.”⁶⁵ The fundamental basis of cooperation is to recognize the existence of the other party as a sovereign entity. In this context, cooperation highlights the interdependent nature of the concerned countries, mutual coordination of their policies, tangible rewards and benefits through cooperation, and the prospect for resultant trust building and better relations.

Cooperative denuclearization of North Korea can become a success only if it attains cooperation both from North Korea and the international community, core members of which would be the participants of the Six-Party Talks. Cooperation from North Koreans is important because, compared with coercion, it can play a better

⁶⁵ Steve Weber, *Cooperation and Discord in U.S.-Soviet Arms Control* (Princeton: Princeton University Press, 1991), p. 6.

role in reducing the nuclear threat now and sustaining the nuclear-free status in the future. Cooperation from the international society is essential because it could provide North and South Korea with a web of opportunities for political support, technical assistance and financial contributions. Multilateral supervision will allay concerns of treaty violations by enhanced deterrence and detection efforts. It also helps to minimize compliance disputes by discouraging absurd criticism or unfair accusations about verification and monitoring either from North Korea or from any other participant.

Animating Positive Elements and Providing an Outlet for a Better Future

The underlying philosophy of cooperative threat reduction is not an absolute but a partial negation of what has been done by a target country. Based on this philosophy, the action plan of cooperative denuclearization has two folds. On the one hand, it is to identify and promote positive elements of the country and foster and sustain constructive environments for its reform and change. Such efforts will provide North Koreans with face saving and have them feel their national sovereignty not harmed. On the other hand, it is to promote a coexistence and symbiosis between the target and the other countries concerned. This philosophy has led to the format of a partial dismantlement and a partial conversion of nuclear capabilities in Russia and Ukraine.

Similarly, a detailed action plan of cooperative denuclearization of North Korea should be derived from this philosophy. Such a plan will encourage sincere participation of North Korean government and people. It will also make it easy for the governments of the concerned countries including South Korea to attain domestic support—an essential condition of their active participation. By intensifying people-to-people collaboration, increasing psychological

understanding in favorable terms, and minimizing differences and promoting a convergence, joint work for cooperative denuclearization based on a strong willingness of North and South Korea is expected to have themselves better prepared and to multiply the synergistic effects for launching a smooth unification process.

Being a Human-Oriented Approach

A main part of cooperative denuclearization is to contain and manage the personnel involved in various nuclear-related programs. To provide jobs and secure living conditions for scientists and technicians sends a clear message to them that they can be acquitted of their past misbehaviors. It will also demonstrate that their interests will not be harmed only if they are in full assistance with cooperative denuclearization. Such a cooperative endeavor with proper care for containing its workforce involved in the nuclear weapons development programs will help draw genuine cooperation from North Koreans and subsequently, will enhance the effectiveness and efficiency of dismantling the North's nuclear capability. Such human-oriented cooperative denuclearization holds a significant symbolic meaning as well, that South Korea—the major player managing the unification process—will embrace North Koreans as many as it can and call to account as few as possible for wrongdoings committed during the division of the Korean peninsula.

Possible Scenarios

In the Case the Six-Party Talks Succeed

If the Six-Party Talks succeed, cooperative denuclearization will become a critical part of negotiating and implementing the Talks. As a focal point of the Six-Party Talks, cooperative denuclearization will transcend the Talks from negotiations to an implementation stage. Therefore, it is meaningful to highlight the key aspects of the

Joint Statement agreed on September 19, 2005 that are related to cooperative denuclearization (Appendix 13).

- Peaceful and Verifiable Denuclearization

The six parties reaffirmed the *verifiable* denuclearization of the Korean peninsula in a *peaceful* manner. The importance of a *verifiable* denuclearization should be noted because its verification will be a key determinant of the ultimate success of the Talks.

- Nuclear Disarmament and Security Assurances

North Korea is committed to abandoning all nuclear weapons and related programs and returning at an early date to the international non-proliferation regimes. Thus, in terms of the letters of the joint statement, all nuclear warheads and existing nuclear programs—both plutonium and uranium enrichment—will have to be dismantled. In this course, North Korea will rejoin the membership of the NPT and the IAEA, sign the Additional Protocol, and accept the IAEA full-scope safeguards inspections. By articulating that it is the prime objective of the Six-Party Talks to dismantle North Korea's existing nuclear weapons and infrastructures, the joint statement is an international proof that North Korea is indeed a nuclear weapon state. In return, the United States and South Korea affirmed that there are no nuclear weapons on the Korean peninsula, and the United States reaffirmed its intention not to attack or invade North Korea with nuclear or conventional weapons. Although Seoul and Washington delivered similar commitments on several occasions in the past, it is valuable that such commitments are reaffirmed clearly in the multilateral forum where China and Russia are also participants. Thus, North Korea's dismantlement and the U.S. security assurance

will have an effect of removing the most serious security threats perceived by South and North Korea, respectively.

- **Peaceful Uses of Nuclear Energy**

The DPRK stated the right to peaceful uses of nuclear energy and the other parties expressed their respect to this. And they agreed to discuss the subject of the provision of a light-water reactor to North Korea at an appropriate time in the future. Formal recognition of the North's right of peaceful uses of nuclear energy has, in itself, profound positive implications. It represents due respect to North Korean sovereignty given by the five countries of the Talks—another layer of assurances to allay the security concerns of the North Korean leadership.

Discussion on a light-water reactor will begin only when the six parties conclude that the dismantlement process of the nuclear warheads and related programs cannot be reversed. If this moment comes to true and when a light-water reactor project is revived in the future, it will have a greater symbolic meaning than just a carrot to North Korea. Supposing that all five members of the Six-Party Talks make contributions to the project one way or another, it will be a symbol of multilateral cooperation and partnership, gathering together to eliminate a significant security threat in Northeast Asia and to prevent a potential security concern of the world from being materialized.

- **Permanent Peace and Security Cooperation**

The directly related parties will negotiate a permanent peace regime on the Korean peninsula at an appropriate separate forum and the six parties agreed to explore ways and means for promoting security cooperation in Northeast Asia. At the moment, the Korean peninsula is yet to escape the quagmire of

the Cold War, and technically, North Korea and China on the one side and South Korea and the United States on the other side are still at war. Having in mind this harsh reality, this agreement of the joint statement indeed presents a path toward changing the decades-long held status quo by dismantling the remaining Cold War structure on the peninsula, thus, establishing a milestone for a sustainable peace and stability in the region.

Other Scenarios

Even if the Six-Party Talks fail, cooperative denuclearization should be an essential milestone in the process of Korean unification. This means that advance preparation for cooperative denuclearization is necessary regardless of the result of the Talks. Assuming the Six-Party Talks are derailed, cooperative denuclearization will depend on how the North Korean regime will develop in the future. Five possible scenarios are conceivable. According to the scenarios, four different levels of North Korean cooperation on dismantlement and resultant transparency can be identified from the best, the second best, next to worst and the worst.⁶⁶

- **Continuance of the Kim Jong Il Regime**

Kim Jong Il will maintain his power or his favorite will succeed him. Authoritarian rules and the secretive nature of the regime will persist. North Korea is not expected to fully cooperate with dismantlement and verification. It will play its traditional bargaining tactic of “minimize the cost and maximize the benefit.” Despite international pressures like U.N. sanctions, the North will not give up its WMD capabilities all at once but only

⁶⁶ If the Six-Party Talks succeed, the level of North Korean cooperation would be either the best or the second best.

in sequence, probably first nuclear, then biological and lastly chemical weapons. We can envision similar situations as encountered by the United Nations Special Commission (UNSCOM) and the United Nations Monitoring, Verification and Inspection Commission (UNMOVIC) for Iraq during the 1990s. The level of cooperation and transparency is graded “next to worst.”

- Regime Change and a New Pro-Democracy Regime

Kim Jong Il regime will be toppled either by *coup d’etat* or by implosion from the grass roots and be replaced by a new leadership. A new regime will disconnect itself with the past history of the Kim Il Sung and Kim Jong Il eras. It will promote democracy and freedom, carry out market-oriented economic reforms, and value human rights. North and South Korea will be on the verge of unification in the near future. We can expect fullest cooperation from the North Korean leadership for cooperative denuclearization. A similar intensity of the inspection performed by the ISG—Iraq Survey Group could be anticipated. Thus, the level of cooperation and transparency is rated as “the best.”

- Peaceful Unification by South Korea

South Korea will be lucky enough to have an unexpected chance to achieve unification on its terms like West Germany. The unification process will move smoothly under South Korean government’s firm control. The ROK will remain the historically legitimate entity representing Korean people on the Korean peninsula. There exists a suspicion that South Korea would retain nuclear fuel recycling programs developed by

North Korea.⁶⁷ However, South Koreans bare in mind the key lessons of the German unification. That is that without allaying the security concerns of the regional countries and without giving up WMD-related capabilities thoroughly, it is not possible to realize unification. In that sense, a concern of South Korea charmed by the North Korean fuel recycling capability will and should dissipate during the course of unification. So we can expect a unified Korea to become fully cooperative with denuclearization of previous North Korea both as a main architect and as a key player. Here too, a similar intensity of the inspection performed by the ISG in Iraq could be expected. Therefore, the level of cooperation and transparency becomes “the best.”

- Strong Intervention by China

There are two possibilities conceivable in this scenario. The first is that China intervenes heavily in the unification process led by South Korea, strong enough to affect not only the process but also the shape of unification. The second is North Korea being absorbed by China when it collapses, as suggested by Ambassador Charles Prichard.⁶⁸ In either case, Chinese intervention is likely to limit the fullest collaboration with cooperative denuclearization of North Korea. In particular, China will be reluctant to reveal its nuclear ties with North Korea in the past, if any. If there was trade between Chinese nuclear warhead design technology and Pakistani HEU

⁶⁷ Jon Wolfsthal, “Nuclear threat reduction in North Korea,” a paper prepared for *Joint CSIS-Carnegie Project on Korean Threat Reduction*, September 20, 2004, p. 11.

⁶⁸ Charles Pritchard, “Korean reunification: implications for the United States and Northeast Asia,” a paper presented at *the International Symposium on Peace and Prosperity in Northeast Asia*, organized by the Uri Party Foundation, on January 13, 2005, in Seoul, South Korea, pp. 9-10.

technology,⁶⁹ China may even feel burdensome to hold North Korea accountable for trading its missiles with Pakistani assistance of the HEU program—a similar demeanor of its own. Meanwhile, since Beijing strives to position itself as a new responsible power in the world, it would like to avoid political blames or burdens to be caused by its ambivalent attitudes on North Korean nuclear weapons. It is expected that China will do its best to reveal North Korea’s nuclear programs while minimizing any hint of its involvement. In this scenario, at most, “the second best” level of cooperation and transparency is expected.

- Chaos in North Korea

During the course of leadership change, North Korea falls into chaos and even a civil war could occur. In this situation, it will be difficult to apply any institutional measure to control North Korea’s WMD and related capabilities. It cannot be ruled out that some weapons and materials will be used within North Korea as in the Iran-Iraq war in the 1980s or smuggled into terrorist organizations abroad. Cooperative denuclearization of North Korea cannot be carried out in this scenario. Thus, the level of cooperation and transparency becomes “the worst.” Only if the situation is transformed into other scenarios—regime change, peaceful unification or Chinese intervention, cooperative denuclearization could be implemented.

⁶⁹ William Broad and David Sanger, “As nuclear secrets emerge in Khan inquiry, more are suspected,” *New York Times*, December 26, 2004.

Chapter Four

North Korea's Nuclear Capability

North Korea's nuclear capability is classified into four categories. The first category is nuclear infrastructure, showing that how the North's various governmental and science organizations are linked. It also details its nuclear-related institutions and facilities. The second is the amount of fissile materials North Koreans have obtained and the third is the degree of weaponization they have achieved. The last category is the possible number of nuclear warheads that North Korea is estimated to possess as of the year 2006.

Nuclear Infrastructure

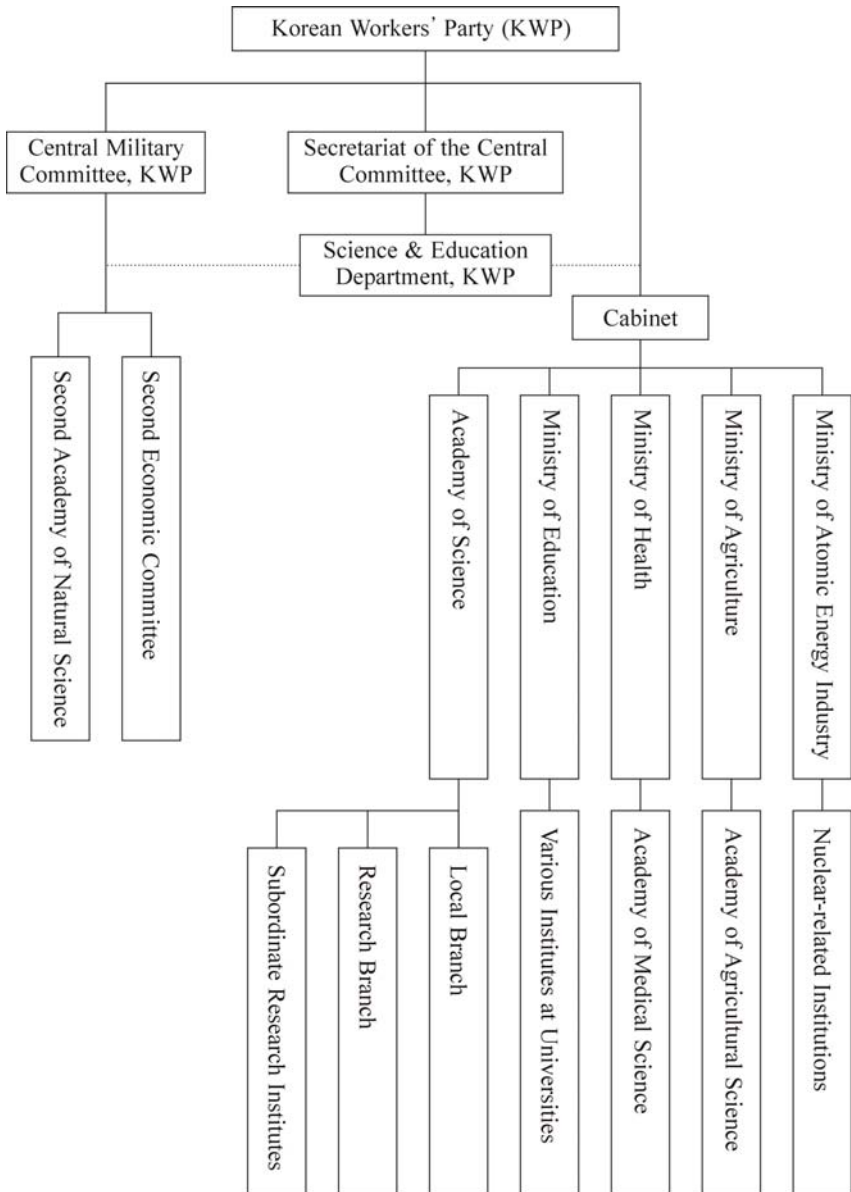
According to the DPRK Constitution, there are three key mandates given to the science and technology field. The first is to put emphasis on the importance of technology innovation and economic development. Article 27 states that "The DPRK carry out economic activities by forwarding issues of technology development at first, facilitating scientific technology and people's economic development,

and laboriously campaigning for nationwide technology innovation, ...” The second mandate is to articulate *Juche*—self-reliance—as a main basis in scientific development. Article 50 of the Constitution states that “The DPRK roots *Juche* in all scientific research activities, strongly embraces advanced technologies, exploits new areas, and upgrades science and technology abilities to a world level.” The third is to demand discipline and cooperation among scientists. Article 51 states that “The DPRK set forth and carry out the right plans for scientific development and reinforce creative collaboration among scientists, technicians, and producers.” Under these ideological guidelines, North Korea’s nuclear weapons development programs have been ongoing.

As the DPRK is a party-centered communist country, the Korean Workers’ Party—KWP—presides over all science-related organizations (Figure 4.1).⁷⁰ The KWP’s Central Military Committee has two organizations: the Second Academy of Natural Science and the Second Economic Committee. The Second Academy of Natural Science was formerly the National Defense Academy and it is in charge of defense related research. The Second Economic Committee governs the national economy in the defense sectors. Within the Cabinet, is the Ministry of Atomic Energy Industry (MAEI).

⁷⁰ *An Introduction to North Korea 2000* (Seoul: The Ministry of Unification, 2000), p. 409.

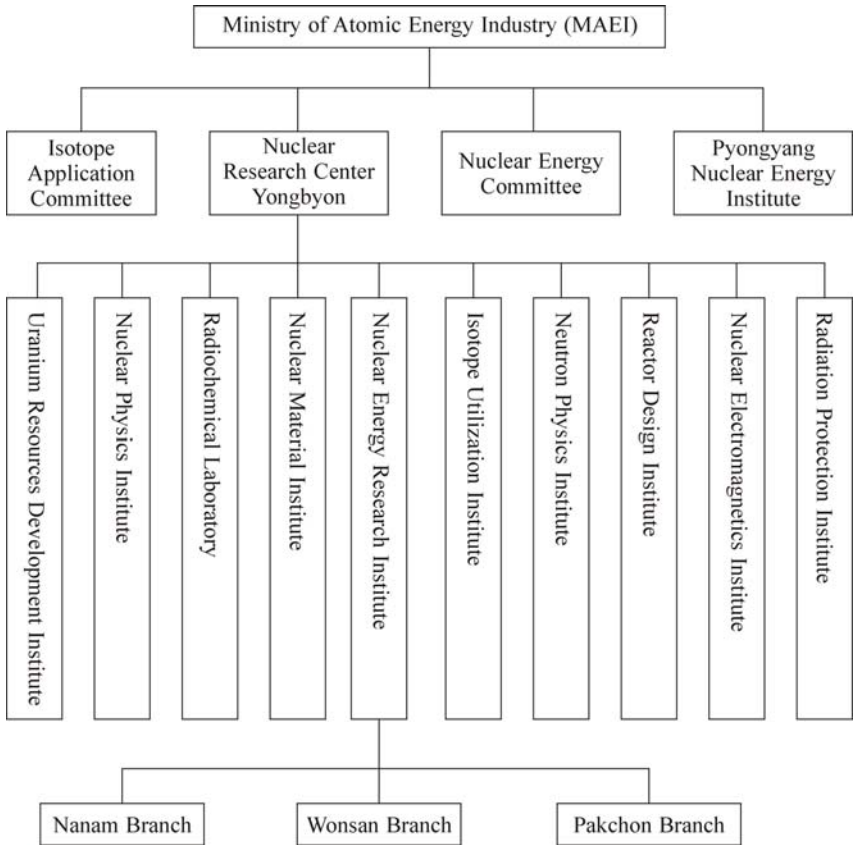
Figure 4.1 North Korea's Governmental and Science Organization



Under the Ministry of Atomic Energy Industry, there are many nuclear-related institutes and research centers (Figure 4.2).⁷¹ Under the Ministry, there are two committees (Isotope Application Committee and Nuclear Energy Committee), one research center at Yongbyon, and one nuclear energy institute in Pyongyang. The Yongbyon nuclear research center consists of 10 specific institutions: (1) Uranium Resources Development Institute, (2) Nuclear Physics Institute, (3) Radiochemical Laboratory, (4) Nuclear Material Institute, (5) Nuclear Energy Research Institute, (6) Isotope Utilization Institute, (7) Neutron Physics Institute, (8) Reactor Design Institute, (9) Nuclear Electromagnetics Institute, and (10) Radiation Protection Institute. The Nuclear Energy Research Institute, originally established as a sub-organization of the Academy of Science in December 1952, has three branches at Nanam, Wonsan and Pakchon.

⁷¹ *Ibid.*, p. 413.

Figure 4.2 North Korea's Nuclear-Related Institutions



Under this organizational framework, North Korea has more than a dozen major nuclear facilities. Some of them were operating within the IAEA safeguards, some of them have halted their operations, and others had been frozen under an agreement between the IAEA and the DPRK. Table 4.1 shows these facilities and their IAEA safeguards status as of December 2002.⁷² The IAEA safeguards have been suspended since December 2002 after Pyongyang’s secret HEU program was revealed, erupting in the current North Korean nuclear crisis in October that year.

Table 4.1 North Korea’s Key Nuclear Facilities

Location of Facility	Type/Status	IAEA Safeguards
Power Reactor		
Sinpo (Kumho)	Light-water, 1000 MWe: ground broken in August 1997	Yes
Yongbyon	Gas-graphite, natural uranium, 5MWe, operations frozen	IAEA verifying freeze in operations
Yongbyon	Gas-graphite, natural uranium, 50MWe, constructions halted	IAEA verifying construction freeze
Taechon	Gas-graphite, natural uranium, 200MWe, constructions halted	IAEA verifying construction freeze
Research Reactor		
Yongbyon	IRT-2000, Pool-type, HEU, 4MWt: operating	Yes
Yongbyon	Critical assembly	Yes
Pyongyang	Sub-critical assembly	Yes

⁷² R. Jones and M. McDonough, *Tracking Nuclear Proliferation: A Guide in Maps and Charts, 1998* (Washington, D.C.: Carnegie Endowment for International Peace, 1999), p. 159.

Processing (Plutonium Extraction)		
Yongbyon	Partially completed: operations frozen	Yes
Pyongyang	Partially completed: operations frozen	No
Uranium Processing		
Pyongyang	Uranium mining: status unknown	N/A(not applicable)
Sunchon	Uranium mining: status unknown	N/A
Pyongsan	Uranium mining: status unknown	N/A
Pakchon	Uranium mining: status unknown	N/A
Yongbyon	Uranium purification (UO ₂) facility, operating	Yes
Yongbyon	Fuel fabrication facility, operations frozen	Yes
Yongbyon	Pilot-scale fuel fabrication facility; dismantled, according to North Korean officials	No

The IRT-2000 reactor and the critical assembly at Yongbyon were covered by the IAEA safeguards agreement signed in May 1992. According to the Geneva Agreed Framework, the following five nuclear facilities had been frozen: a 5MWe Graphite-Moderated Reactor at Yongbyon, a Fuel Fabrication Facility at Yongbyon, a Radiochemical Laboratory and two unfinished Graphite-Moderated reactors, a 50MWe one at Yongbyon, and a 200MWe one at Taechon. These are the facilities that, collectively, have the potential to produce nuclear material for creating nuclear weapons.⁷³ The UN Security Council, in November 1994, requested the IAEA to take all steps deemed necessary to monitor the freeze of the North Korean

⁷³ For the detail technical parameters of North Korean reactors, see David Albright and Kevin O'Neill, eds., *Solving the North Korean Nuclear Puzzle* (The Institute for Science and International Security : Washington, D.C. , 2000), pp. 160-165.

nuclear activities. The term “freeze” was defined by the IAEA to be “any movements of nuclear material or equipment within the facilities under the freeze, any maintenance work by an operator, and any transfers of nuclear materials from the facilities” that must be carried out under the IAEA’s observation or under other IAEA arrangements. “Any nuclear equipment and components related to the freeze including items manufactured for the two reactors under construction” must be monitored by the IAEA, as well.⁷⁴ The mining and milling operations at Pyongsan, Sunchon and Pakchon were not subject to the “freeze” and therefore IAEA inspectors were not allowed to visit these facilities. The Uranium Purification Facility was only permitted to produce yellow cake and IAEA inspectors verified this facility. The Fuel Fabrication Facility includes fuel storage facilities covered by the safeguards agreement the DPRK signed with the IAEA in 1992. North Koreans argued that the Pilot-Scale Fuel Fabrication Facility at Yongbyon had been dismantled, but this remains to be proven. According to the IAEA’s interview with North Korean officials in February 1998, North Korea claimed that the facility was destroyed in a fire prior to the initial IAEA inspection in 1992 and all the records of the facility had been destroyed, including those for manufacturing the first reactor core for the 5MWe reactor.⁷⁵

Fissile Materials

Fissile materials consist of plutonium and highly-enriched uranium.⁷⁶

⁷⁴ The U.S. General Accounting Office, *Nuclear Nonproliferation: Difficulties in Accomplishing IAEA’s Activities in North Korea*, 1998, p. 8.

⁷⁵ Jones, R. and M. McDonough, *Tracking Nuclear Proliferation: A Guide in Maps and Charts*, 1998, p. 160, footnote h.

⁷⁶ Cheon Seongwhun, “Assessing the threat of North Korea’s nuclear capability,”

Amount of Plutonium

North Korea can indigenously separate plutonium from the spent fuels of the IRT-2000 research reactor and the 5MWe reactor, having started to operate since 1965 and 1985 respectively. A possibility was raised that the North might have secretly imported plutonium from abroad.⁷⁷ It is not included in the analysis, however, because there is no open evidence to support this possibility.

(1) IRT-2000 Research Reactor

The initial 2MWth capacity of the IRT-2000 reactor was upgraded to 8MWth. According to a South Korean nuclear expert, the Soviet Union probably supplied approximately 40kg of the fuels with 36% enrichment in the late 1980s.⁷⁸ The International Institute for Strategic Studies (IISS) estimated that North Korea could have employed this reactor to produce small amounts of plutonium, generating an estimated 2-4 kg in total.⁷⁹

(2) 5MWe Reactor

The amount of plutonium produced by the 5MWe reactor comprises material reprocessed in the early 1990s, additional plutonium extracted from the 8,017 spent fuel rods in the first half of 2003, and plutonium reprocessed in the middle of 2005. According to its operational periods, four different amounts of plutonium have been

Korean Journal of Defense Analysis, Fall 2006, pp. 39-46.

⁷⁷ When the CIA conducted a review of intelligence on North Korea's nuclear capability in April 2003, it included re-examination of previous intelligence showing that the North had imported plutonium secretly from Russia or a former Soviet republic during the 1990s. Bill Gertz, "CIA shifts on North Korean nukes," *Washington Times*, July 4, 2003.

⁷⁸ Shin Sungtaek, "North Korea's capability to develop nuclear weapons," a paper presented at the *Unification Forum* of the Seoul National University on April 29, 2004, Seoul, South Korea.

⁷⁹ *North Korea's Weapons Programmes: A Net Assessment* (London: The International Institute for Strategic Studies, January 2004), p. 38.

produced in the 5MWe reactor.

- January 1986 – April 1989

The reactor began its operations in January 1986 and stopped its operations in April 1989 for some time.⁸⁰ A key factor is to establish what portion of the reactor core was unloaded in early 1989 when it was shut down for a period, from 70 days to 100 days,⁸¹ depending on different estimates due to technical reasons as stated by the North Koreans. This has been an issue of the so-called “suspicions of nuclear activities in the past.”⁸² Due to the breakdown of the Agreed Framework, clearing these suspicions is becoming difficult. According to North Korea, the radiochemical laboratory had only undertaken one reprocessing campaign of the fuel discharged from March to May in 1990.⁸³ Assuming that the entire reactor core fuel rods or the most heavily irradiated half of them were discharged, at a reprocessing loss rate of 10-30%, it is estimated that 6.5-8.5kg or 5-6kg of plutonium were produced, respectively.⁸⁴

⁸⁰ “Overview of North Korea’s nuclear fuel-cycle facilities in the early 1990s,” in David Albright and Kevin O’Neill, eds., *Solving the North Korean Nuclear Puzzle* (Washington, D.C.: The Institute for Science and International Security, 2000), pp. 148, 163.

⁸¹ David Albright, “How much plutonium did North Korea produce?” in David Albright and Kevin O’Neill, eds., *Solving the North Korean Nuclear Puzzle* (Washington, D.C.: The Institute for Science and International Security, 2000), p. 115.

⁸² According to the Agreed Framework (Article IV.3), when a significant portion of the LWR project is completed, but before delivery of key nuclear components, the DPRK will “come into full compliance with its safeguards agreement with the IAEA including taking all steps that may be deemed necessary by the IAEA,” which is meant to eliminate any suspicion about the past.

⁸³ David Albright, “Inconsistencies in North Korea’s declaration to the IAEA,” in David Albright and Kevin O’Neill, eds., *Solving the North Korean Nuclear Puzzle* (Washington, D.C.: The Institute for Science and International Security, 2000), p. 88.

⁸⁴ *North Korea’s Weapons Programmes: A Net Assessment*, p. 37.

- Summer 1989 – April 1994

The 5MWe reactor had restarted its operation in the summer of 1989 and stopped its operation in April 1994.⁸⁵ This forms the largest quantity of plutonium available to North Korea, making it the primary concern for the IAEA and the United States. North Korea claims to have reprocessed spent fuel rods from mid-January to the end of June 2003.⁸⁶ Assuming that the spent fuel rods contain 25-30kg of plutonium and a reprocessing loss rate of 10-30%, the IISS estimated that North Korea could produce 17.5-27kg of plutonium.⁸⁷

By inviting a delegation of American experts in January 2004 and demonstrating its nuclear capability, North Korea attempted to quell international doubts about whether the reprocessing had really been completed. Siegfried Hecker, senior fellow at Los Alamos National Laboratory later testified to the Senate Committee on Foreign Relations Hearing that during the visit, the North Koreans had shown a metal case that contained a wooden box with two glass jars each containing 150 grams of plutonium oxalate powder and 200 grams of plutonium metal. According to Hecker, the green color of the plutonium oxalate powder was consistent with plutonium oxalate that has been stored in air for some time and the surface and color of plutonium metal were consistent with moderately oxidized

⁸⁵ “Overview of North Korea’s nuclear fuel-cycle facilities in the early 1990s,” p. 148.

⁸⁶ North Koreans told Siegfried Hecker that they reprocessed all 8,000 spent fuel rods in the radiochemical laboratory in one continuous campaign from mid-January 2003 to the end of June 2003. Siegfried Hecker, Senate Committee on Foreign Relations Hearing on *Visit to the Yongbyon Nuclear Scientific Research Center in North Korea*, January 21, 2004, p. 6. At a meeting with Ambassador Charles Pritchard on July 8, 2003 in New York, North Koreans informed the United States that they completed the reprocessing on June 30 and began to weaponize the extract plutonium. David Sanger, “North Korea says it has made fuel for atom bombs,” *New York Times*, July 15, 2003.

⁸⁷ *North Korea’s Weapons Programmes: A Net Assessment*, p. 43.

plutonium metal from a casting.⁸⁸

Conversely, it has been alleged that the observed activity levels at the radiochemical laboratory are insufficient to indicate the 8,000 spent fuel rods have been reprocessed. This assertion is unconvincing. The delegation members provided samples of the clothing they wore during their visit to the Yongbyon complex, from which signature traces of a reprocessing were detected. According to David Albright of the Institute for Science and International Security, traces of plutonium byproducts such as Americium that had been collected from the clothing could be analyzed to determine how recently reprocessing had occurred.⁸⁹ South Korean experts reportedly understand that North Korea used special “carbon bed” filters to cut Krypton emissions and degrade the U.S. estimates of how much plutonium was extracted.⁹⁰ There is also strong but inconclusive evidence that North Korea may have built a second secret reprocessing plant.⁹¹ Furthermore, after the IAEA’s years of accumulated experience with North Korean abilities, Director-General Mohamed ElBaradei concluded that the spent fuel rods must have been reprocessed and converted into fuel for four to six nuclear devices.⁹² Finally, in early 2005, the United States determined that the spent fuel rods were indeed reprocessed into weapon-grade plutonium, and informed its Asian allies of

⁸⁸ Siegfried Hecker, Senate Committee on Foreign Relations Hearing on *Visit to the Yongbyon Nuclear Scientific Research Center in North Korea*, p. 8.

⁸⁹ Glenn Kessler, “N. Korea nuclear estimate to rise,” *Washington Post*, April 28, 2004, p. A01.

⁹⁰ George Wehrfritz and Richard Wolffe, “How North Korea got the bomb,” *Newsweek*, October 27, 2003, p. 18.

⁹¹ David Sanger and Thom Shanker, “North Korea hides new nuclear site, evidence suggests,” *New York Times*, July 20, 2003.

⁹² David Sanger and William Broad, “North Korea said to expand arms program,” *New York Times*, December 6, 2004.

such.⁹³

- February 2003 – March 2005

North Korea restarted operation of the 5MWe reactor in February 2003 just four months after the second nuclear crisis had erupted in October 2002 and continued its operation until March 2005.⁹⁴ The IISS estimated that 4-6kg of plutonium per year may have been produced—an original amount of 6-7kg minus a reprocessing loss of 10-30%.⁹⁵

North Korea argued on May 11, 2005 that it successfully finished taking out 8,000 spent fuels from the 5MWe reactor.⁹⁶ According to Hecker, 8,000 spent fuels were unloaded beginning in April 2005 and reprocessing to extract plutonium started in late June.⁹⁷ The reprocessing was presumably finished in September 2005. In October 2005, North Koreans told a U.S. delegation headed by Governor Bill Richardson of New Mexico that they completed reprocessing the spent fuels taken out April 2005.⁹⁸ Thus, North Korea would obtain an additional 8-12kg of plutonium from the reactor core operated from February 2003 to March 2005.

⁹³ Glenn Kessler, “North Korea may have sent Libya nuclear material, U.S. tells allies,” *Washington Post*, February 2, 2005, p. A01.

⁹⁴ The director of the Yongbyon nuclear complex told Siegfried Hecker who visited North Korea in August 2005 that the reactor operated from February 2003 to the end of March 2005. Siegfried Hecker, “Technical summary of DPRK nuclear program,” a paper presented at the *2005 Carnegie International Non-Proliferation Conference*, Washington, D.C., November 8, 2005.

⁹⁵ *North Korea's Weapons Programmes: A Net Assessment*, p. 109, note 22.

⁹⁶ Statement of a DPRK Foreign Ministry Spokesman, *Korean Central News Agency*, May 11, 2005.

⁹⁷ The director of the Yongbyon nuclear complex told Siegfried Hecker that reprocessing almost finished in late August. Siegfried Hecker, “Technical summary of DPRK nuclear program.”

⁹⁸ *Yonhap News*, November 15, 2005.

- Post June 2005

The 5MWe reactor was reloaded and operations resumed in mid-June 2005.⁹⁹ Small steam plume was found at the top of the cooling tower of the reactor, which indicates that the reactor is running.¹⁰⁰ As long as the reactor operates, it will produce an additional 4-6kg of plutonium per year.

(3) Total Amount of Plutonium: Present and the Future

Adding all the plutonium produced by the IRT-2000 research reactor and the 5MWe reactor, it is estimated that North Koreans possess 32.5-51.5kg of plutonium as of September 2005. This stockpile will be expanding as 4-6kg of plutonium is accumulated annually.

Amount of HEU

Though far less developed and smaller scale than the plutonium program, North Korea is believed to have maintained the HEU program at least since the mid-1990s.¹⁰¹ If North Korea has gained more than routine foreign technical assistance and cooperation, it may have attained a significant HEU production capability. It is possible that uranium hexafluoride (UF₆) or HEU itself was imported and/or even made in North Korea.

In 2004, IAEA inspectors found evidence that some 36% enriched

⁹⁹ Siegfried Hecker, "Technical summary of DPRK nuclear program."

¹⁰⁰ http://www.isis-online.org/images/dprk/dg_11sep05_5mwe_ann.jpg.

¹⁰¹ Pakistan is believed to have been a main source of North Korea's HEU program. The two sides' military cooperation was accelerated in the 1990s since Pakistani Prime Minister Benazir Bhutto visited Pyongyang in December 1993. Abdul Qadeer Khan, the father of Pakistan's nuclear weapon, visited North Korea more than a dozen times. Under investigation of his nuclear smuggling network, Dr. Khan told investigators that he was engaged with North Korea on the sale of HEU equipment and saw three nuclear devices while visiting Pyongyang in late 1990s. David Sanger, "Pakistani tells of North Korean nuclear devices," *New York Times*, April 13, 2004.

uranium found in Iran originated from Russia,¹⁰² illustrating how enriched uranium is moving around the world without the proper supervision of the IAEA. Libya attempted to obtain a total of 20 tons of UF₆—sufficient for 10 small nuclear devices. It was reported that based on scientific analysis in the United States, the 1.6 tons of UF₆ Libya successfully purchased through the Khan network was probably produced in North Korea.¹⁰³ At the least, it is speculated that North Korea was, in one way or another, involved in the illegal trafficking of UF₆ to Libya.

The international intelligence community has also begun to reveal some of the considerable material in the DPRK HEU program. For instance, according to the U.S. National Intelligence Estimate of June 2002, the CIA understands Pakistan shared with the DPRK high-speed centrifuge technology, information on the construction of a uranium-triggered nuclear device, and the test data of such a weapon.¹⁰⁴ Countering Selig Harrison's argument of the United States' lacking credible evidence,¹⁰⁵ former high-level U.S. officials claim that in mid-2002, the U.S. government had acquired clear evidence that North Korea obtained equipment and material for a centrifuge facility that, when complete, could produce HEU sufficient enough for two or more nuclear devices annually. Particularly persuasive evidence came from Dr. Khan's confession, in which he claimed he provided Pyongyang with prototypes and

¹⁰² William Broad, "Uranium traveled to Iran via Russia, inspectors find," *New York Times*, February 28, 2004.

¹⁰³ David Sanger and William Broad, "Tests said to tie deal on uranium to North Korea," *New York Times*, February 2, 2005. There is a different argument that this UF₆ actually originated in Pakistan. Glenn Kessler and Dafna Linzer, "Nuclear evidence could point to Pakistan," *Washington Post*, February 3, 2005, p. A18.

¹⁰⁴ Seymour Hersh, "The cold test," *New Yorker*, January 27, 2003.

¹⁰⁵ Selig Harrison, "Did North Korea cheat?" *Foreign Affairs*, January/February 2005, pp. 99-110.

design information on the centrifuge machine.¹⁰⁶

With the revealing evidence and indications in mind, it is therefore a fair assumption that North Korea has acquired small amounts of HEU either from a direct import or by operating a small number of centrifuge machines to enrich the UF₆ obtained from abroad and/or made within North Korea.

Weaponization

The weaponization process is categorized into three elements: design/manufacture/high-explosive test; nuclear test; and miniaturization.¹⁰⁷

Design/Manufacture/High-Explosive Tests

High-explosive tests were conducted during two distinct periods: 1983-October 1994 and 1997-September 2002. From the early 1980s until the Geneva Agreed Framework was signed in October 1994, testing was undertaken at the Yongbyon Nuclear Complex in a nearby streambed, which appeared to be related to developing an implosion system for a nuclear device.¹⁰⁸ The ROK government has revealed that North Korea conducted approximately 70 high-explosive tests from 1983 to 1994 at Yongbyon.¹⁰⁹ According to a high-ranking official of the Russian FSB, the KGB submitted a report titled “303K” to the Politburo in February 1990 that concluded North Korea had successfully developed a high-explosive

¹⁰⁶ Mitchell Reiss, *et al.*, “Red-handed: the truth about North Korea’s weapons programs,” *Foreign Affairs*, March/April, 2005, pp. 142-148.

¹⁰⁷ Cheon Seongwhun, “Assessing the threat of North Korea’s nuclear capability,” pp. 46-51.

¹⁰⁸ *North Korea’s Weapons Programmes: A Net Assessment*, p. 46.

¹⁰⁹ *Chosun Ilbo*, July 10, 2003.

device for nuclear weapon applications.¹¹⁰

North Korea resumed high-explosive tests from 1997 at the Yongduk-dong site, 40km north of Yongbyon and 15km southeast of Kumchang-ri area. This area was suspected of harboring underground nuclear facilities and inspected by the U.S. delegation in 1999 and 2000. Some 70 tests had been carried out by September 2002, the resurgence of which had been known to ROK government since April 1998.¹¹¹ The renewed high-explosive tests were also reported to the Chairman of the ROK Joint Chiefs of Staff during his December 2002 visit to the U.S. Defense Intelligence Agency in Washington.¹¹² It remains unclear whether the tests were intended to increase the reliability of a nuclear device, to improve an existing weapon design, or to develop a new device.

Considering that North Korea has continued high-explosive tests for almost two decades, the IISS has concluded that the U.S. assessment—that the North has built simple fission-type nuclear devices without a nuclear testing—has become more plausible.¹¹³ Notably, North Korean Vice Foreign Minister Choe Su Hon declared that the DRPK extracted plutonium from 8,017 spent fuel rods and weaponize them to serve as a deterrent against the increasing U.S. nuclear threat.¹¹⁴

¹¹⁰ *Yonhap News*, September 20, 2003.

¹¹¹ Testimony of the Director of the South Korea's National Intelligence Service (NIS) at the Intelligence Committee of the ROK Parliament, on July 9, 2003, *Dong-a Ilbo*, July 10, 2003.

¹¹² *Chosun Ilbo*, July 10, 2003.

¹¹³ *North Korea's Weapons Programmes: A Net Assessment*, p. 46.

¹¹⁴ "Minister: N. Korea has nuclear deterrent," *New York Times*, September 28, 2004.

Nuclear Tests

According to a report submitted to the Senate Select Committee on Intelligence in August 2003, the CIA assessed that “North Korea has produced one or two simple fission-type nuclear weapons and has validated the designs without conducting yield-producing nuclear tests.”¹¹⁵ This was the first time that the CIA publicly stated that the North’s technology was sufficiently advanced such that a nuclear test would not be necessary.¹¹⁶ The report cited the high-explosive tests as removing the need for a nuclear test. The CIA also suggested that North Korea had derived a tactical advantage from ambiguity over its nuclear capability.

In the Fall of 2004 rumors circulated in Seoul and Washington that North Korea would soon conduct a nuclear test. It was also reported that the United States observed signs of increased activity that might be associated with a test and began to closely monitor the North.¹¹⁷ The huge explosion near the Chinese border in early September 2004 was initially mistaken for a nuclear test and caused a brief alert in South Korea. North Korea views a nuclear test as a strategic card which can demonstrate to the world its nuclear deterrent force and intimidate the ROK and the United States. Thus, if North Korea decides to escalate tensions on the Korean peninsula for political/strategic advantages, a nuclear test is likely to be conducted as was a series of missile tests in July 2006.

¹¹⁵ *SSCI Questions for the Record Regarding 11 February 2003 DCI World Threat Briefing*, p. 18, http://www.fas.org/irp/congress/2003_hr/021103qfr-cia.pdf. The CIA must mean plutonium bombs. In general, nuclear tests may not be needed for uranium bombs, but would be necessary for plutonium bombs as design is more complicated.

¹¹⁶ David Sanger, “New CIA concerns on North Korean weapons,” *New York Times*, November 9, 2003.

¹¹⁷ David Sanger and William Broad, “High blast in North Korea not a ‘nuclear event,’ Powell says,” *New York Times*, September 12, 2004.

The revelations about the nuclear smuggling network of Dr. Khan, one of the main clients of which was North Korea, rekindled a long-held speculation that the last Pakistani nuclear test on May 30, 1998 may have been conducted in cooperation with North Korea.¹¹⁸ Unlike the previous five tests, the sixth tested a plutonium bomb. Some commentators believe that the plutonium might have been supplied by North Korea. According to one pro-North Korean view, a 14 kilotons (kt) DPRK plutonium device was tested on May 30, 1998 in the Baluchistan desert.¹¹⁹ Such speculation could be resolved easily if Pakistan allows the test site to be inspected by the IAEA or the Preparatory Commission for the Comprehensive Nuclear Test-Ban Treaty Organization.

On October 9, 2006, North Korea conducted an underground nuclear test in the vicinity of the Chik-tong, P'unggye-yok site. The Korea Institute of Geoscience and Mineral Resources in South Korea reported a seismic event at 10:35 AM Korea time with a magnitude of 3.58 to 3.7 on the Richter scale. Due to an unexpectedly small yield, there was an initial confusion whether it was a true nuclear test or a conventional explosion. A week later, the U.S. Office of the Directorate of National Intelligence released an official statement saying that "Analysis of air samples collected on October 11, 2006 detected radioactive debris which confirms that North Korea conducted an underground nuclear explosion in the vicinity of P'unggye on October 9, 2006. The explosion yield was less than a kiloton."¹²⁰ The test took place a day after the anniversary of Kim

¹¹⁸ David Sanger and William Broad, "Pakistan may have aided North Korea A-test," *New York Times*, February 27, 2004.

¹¹⁹ *North Korea's Nuclear Tests in Pakistan*, March 19, 2004, <http://www.kimsoft.com/2004/nk-pk-test.htm>.

¹²⁰ "Statement by the Office of the Directorate of National Intelligence on the North Korea Nuclear Test," October 16, 2006, http://www.dni.gov/announcements/20061016_release.pdf.

Jong Il's accession to the post of General Secretary of the Korean Workers' Party in 1997, and a day prior to the 61st anniversary of the founding of the Party. The test also took place on the day Japan's new Prime Minister Shinzo Abe arrived in Seoul for his first visit to South Korea. The international community was furious about the test and decided to take a harsh response against North Korea's provocative behavior. On October 14, 2006 the United Nations Security Council adopted a resolution 1718, which contains strong economic sanction measures targeting the Kim Jong Il regime (see Appendix 14).

Miniaturization

Miniaturization is an engineering process that makes a nuclear device have a smaller yield, a physically smaller size, and/or lighter weight. It enhances the projection capability of a nuclear weapon by increasing its adaptability to various delivery means and a subsequent mobility to diverse regions. Tactical nuclear weapons—one application for a miniaturization—were first deployed from the 1950s. The smallest and lightest nuclear device deployed by the United States was the Davy Crockett. Fielded from 1961 to 1971, this weapon could be launched from 120-mm or 150-mm recoilless rifles, at a range of 2-4km. The W54 warhead weighed 23.3kg and had a variable yield of 0.01-1kt.¹²¹

North Korea probably has a mixed record of miniaturization. On the one hand, the most basic way of miniaturization is to create a smaller-yield nuclear device by reducing the amount of nuclear fissionable material, which North Korea can probably achieve. To date, the criterion for calculating the possible number of North

¹²¹ Robert Norris, *et al.*, "Deploying the bomb," in Stephen Schwartz, ed., *Atomic Audit: the Cost and Consequences of U.S. Nuclear Weapons since 1945* (Washington,

Korean nuclear devices has been the 22kt plutonium device dropped on Nagasaki. Since North Korea would be able to make smaller-yield nuclear devices, such a fixed yardstick may hinder a comprehension of the substance and flexibility of the North's nuclear force.

On the other hand, it seems that North Korea has faced technical difficulties in producing nuclear devices sufficiently small and light enough to be fitted onto missiles. For example, the South Korean intelligence community assessed that North Korea's nuclear devices, if any exist, would be first-generation type with a heavy mass.¹²² The Nodong and Scud missiles are unable to carry such a weight. On July 9, 2003, the Director of South Korea's National Intelligence Service (NIS) testified to the Parliament that North Korea had continued to develop nuclear weapons suited for a missile delivery but lacked the technical capability to manufacture such devices.¹²³ At an Intelligence Committee meeting of the Parliament convened 5 days after the DPRK Foreign Ministry's February 10 statement, the NIS briefed that North Korea could have developed 1-2 nuclear weapons but failed to miniaturize them, only capable of carrying them by aircraft.¹²⁴

Some U.S. intelligence officials believe that the Yongduk-dong test site indicates that North Korea intends to develop sophisticated devices for the Nodong missile. This suggests North Korea is attempting to combine their two most advanced weapons

D.C.: Brookings Institution, 1998), p. 156.

¹²² *Chosun Ilbo*, July 1, 2003. For example, the "Fat Man" dropped on Nagasaki used 6.1kg of plutonium, and was 3.7m long, 1.5m in diameter, and weighed 4,909kg.

¹²³ *Dong-a Ilbo*, July 10, 2003.

¹²⁴ *Chosun Ilbo*, February 16, 2005.

technologies—nuclear weapons and missiles.¹²⁵ According to the IISS, if A.Q. Khan provided North Korea with nuclear weapon design information, it would substantially assist in a miniaturization to fit the Nodong missiles.¹²⁶ The IISS added that even without foreign assistance, North Korea may have been able to develop a device over the past decade that is suited for delivery by Nodong missiles.¹²⁷


The amount of fissile materials obtained and the weaponization process achieved by North Korea are summarized in Table 4.2.

¹²⁵ David Sanger, “CIA said to find North Korean nuclear advances,” *New York Times*, July 1, 2003.

¹²⁶ U.S. intelligence officials are concerned that Dr. Khan may have provided North Korea and Iran with warhead design information. Bill Powell and Tim McGirk, “The man who sold the bomb,” *Time*, February 14, 2005, p. 18.

¹²⁷ *North Korea’s Weapons Programmes: A Net Assessment*, p. 46.

Table 4.2 North Korea’s Fissile Materials and Weaponization

Fissile Materials (kg)			Weaponization Process			
Plutonium		HEU	Design/ Manufacture/ High- Explosive Test	Nuclear Test	Miniaturiza- tion	
IRT-2000 Reactor		2-4	Small amount of HEU is imported or produced by enriching UF ₆ obtained abroad and/or made within NK.	1983-2002: Approximately 140 high-explosive tests conducted.	On October 9, 2006 the first nuclear test conducted in an underground facility.	Small-yield devices may be possible. Smaller and lighter devices for missiles may face technical difficulties.
5MWe Reactor	Jan. 1986- Apr.1989	5-8.5				
	Summer 1989- Apr. 1994	17.5-27				
	Feb. 2003- Mar. 2005	8-12				
	Since June 2005	Not extracted (4-6 annually)				
 Total Plutonium Reprocessed: 32.5-51.5						

Possible Number of Nuclear Warheads

The precise amount of nuclear materials necessary for a nuclear device depends on the technical capabilities of the scientists and engineers as well as the desired yield. According to the Natural Resources Defense Council (NRDC), designers with low technical skills would need 4kg of plutonium for a 5kt yield, 5kg for a 10kt yield, and 6kg for a 20kt yield. Designers with medium technical skills would need 2.5kg of plutonium for a 5kt yield, 3kg for a 10kt

yield, and 3.5kg for a 20kt yield.¹²⁸ A low-level of technical capability could produce the first-generation nuclear weapon dropped on Nagasaki, while a high-level technical capability reflects the most advanced and sophisticated skills of nuclear weapon states.

Without question, North Korea has the low-level technologies required to make primitive nuclear devices. Furthermore, it may have attained some medium-level technologies.¹²⁹ General consensus suggests that once nuclear materials are acquired, there are few technically insurmountable barriers. For instance, the Directors of U.S. National Laboratories briefed Senator John Biden that terrorists could feasibly produce a nuclear bomb. This theory was proved by the construction of a device made entirely from commercial parts bought without breaking any laws, except for obtaining the nuclear material itself.¹³⁰ Dr. Hecker has confirmed that North Korea's industrial-scale reprocessing facility is in good repair. He said that North Koreans demonstrated the requisite facilities, equipment, and technical expertise required for reprocessing at the scale in question, adding that they answered all the technical questions about the reprocessing chemistry very competently.¹³¹

North Korean officials seem confident in their technical skills. According to Selig Harrison, North Korean Vice Foreign Minister Kim Gye-gwan warned the United States to "remember that the bomb dropped by the U.S. at Nagasaki was made after four months of preparation. It's now a half century later, and we have more up-

¹²⁸ "NRDC nuclear notebook: North Korea's nuclear program 2003," *Bulletin of the Atomic Scientists*, March/April, 2003, p. 76.

¹²⁹ Ibid.

¹³⁰ *Remarks of Senator John Kerry on New Strategies to Meet New Threats*, June 1, 2004, p. 3, http://www.johnkerry.com/pressroom/speeches/spc_2004_0601.html.

¹³¹ Siegfried Hecker, Senate Committee on Foreign Relations Hearing on *Visit to the Yongbyon Nuclear Scientific Research Center in North Korea*, p. 7.

to-date technologies, so you can come to your own conclusions on this matter.”¹³² The spokesman of the DPRK’s Foreign Ministry also alluded to an enormous North Korean investment in the project: “If the DPRK-U.S. relations is not as hostile as nowadays, why would we have poured such tremendous efforts into reinforcing defense capability and making special weapons when economy is difficult?”¹³³

The Foreign Ministry statement on February 10, 2005 is an official declaration to the world that North Korea is a nuclear weapon state. The number of nuclear devices North Korea may possess depends on the North’s technical capability and the target yield. Assuming that three different yield-types are available (5kt, 10kt, and 20kt), and that the critical mass for each yield follows the NRDC criteria, as of the year 2006, North Korea would be able to possess the number of nuclear devices of each yield as described below.

Low-Level Technical Capability

Table 4.3 shows the possible numbers of 5kt, 10kt, and 20kt nuclear devices and their combinations if the DPRK possesses a low-level technical capability. If North Korea possesses one particular type of device only, it could have 8-13 of 5kt, 6-10 of 10kt, or 5-9 of 20kt, respectively. If the North has all three types of devices at once, one possibility could be 5-10 of 5kt, one 10kt and one 20kt each. If North Korea is presumed to have two types of devices, the following possession scenario would be possible: (1) 6-10 of 5kt and two of 10kt, (2) 4-8 of 10kt and two of 20kt, (3) 5-10 of 5kt and two of 20kt. When an unknown number of uranium devices made of a small

¹³² Selig Harrison, “Inside North Korea: leaders open to ending nuclear crisis,” *Financial Times*, May 4, 2004.

¹³³ *Korean Central News Agency*, November 3, 2002.

amount of HEU is added, it will amount to the number of nuclear devices North Korea could possess at the moment.

Table 4.3 Possible Number of Nuclear Devices with Low-Level Technology

Yield/ Amount of Pu	5kt/4kg	10kt/5kg	20kt/6kg
Possible Number of Nuclear Devices	8-13	6-10	5-9
	5-10	1	1
	6-10	2	
		4-8	2
	5-10		2

Medium-Level Technical Capability

Table 4.4 shows the possible numbers of plutonium-made nuclear devices possessed by the DPRK if it has a medium-level technical capability. If North Korea only possesses a single type of device, it could have 13-21 of 5kt, 11-17 of 10kt, or 9-15 of 20kt, respectively. If the North has all three types of devices at once, one possibility could be 8-15 of 5kt, two 10kt and two 20kt each. If North Korea is presumed to have two types of devices, the possible possession scenarios are: (1) 8-16 of 5kt and 4 of 10kt, (2) 6-13 of 10kt and 4 of 20kt, (3) 7-15 of 5kt and 4 of 20kt.

Table 4.4 Possible Number of Nuclear Devices with Medium-Level Technology

Yield/ Amount of Pu	5kt/2.5kg	10kt/3kg	20kt/3.5kg
Possible Number of Nuclear Devices	13-21	11-17	9-15
	8-15	2	2
	8-16	4	
		6-13	4
	7-15		4

Chapter Five

Cooperative Denuclearization of North Korea

For devising a systematic, multilateral, and cooperative process to denuclearize North Korea, this study proposes that the following three major components to be incorporated. The first is to address technical or functional considerations that could come up with in working out a feasible denuclearization process. The second is to take a step-wise approach to develop the practical stages of implementing a cooperative denuclearization process. The third is to deliver the issue of cost and to outline an expected expense of cooperative denuclearization of North Korea.¹³⁴

Technical Considerations

There are five elements to be defined or determined in the preparation

¹³⁴ An earlier version of the three components was appeared in Cheon Seongwhun, “The CTR on the Korean peninsula: setting the unification process in motion,” a paper prepared for the *Workshop on Cooperative Threat Reduction Program for North Korea’s Weapons of Mass Destruction* co-sponsored by the Center for Strategic and International Studies and the Sejong Institute, January 28, 2005, Seoul, South Korea.

of developing a cooperative denuclearization process for North Korea. The first is to define the target of cooperative denuclearization—namely, the threat components—in a technical sense and to determine the methods of eliminating nuclear threats. The second is to design a multilateral partnership approach for denuclearizing North Korea in a cooperative way. The third is to define the standard of verification with due consideration of inherent uncertainty in North Korea’s WMD programs. The fourth is to create a new verification body to supervise the denuclearization process. The last element is to develop a well-prepared reward system for North Koreans, assuming that the process is agreed and participated fully by North Korea.

Threat Components and Threat Reduction Methods

Drawing on the four key elements of a weapon capability—weapons, infrastructure, material and personnel,¹³⁵ this study defines these four elements as threat components to be eliminated through a cooperative denuclearization process in North Korea. And there exist basically two threat reduction methods. The one is to *dismantle* weapons and weapon-related capabilities, which encompasses *disassembling* nuclear devices and *decommissioning* nuclear facilities. The other is to *convert* remaining infrastructures, materials, and personnel into commercial and peaceful uses.

Multilateral Partnership Approach to Cooperative Denuclearization of North Korea

A cooperative denuclearization process in North Korea must be multilateral in nature. Scale and expertise of and politics involved in the denuclearization process make it inevitable for the process to be

¹³⁵ Elisa Harris, “Threat reduction and North Korea’s CW and BW programs,” a paper prepared for *Joint CSIS-Carnegie Project on Korean Threat Reduction*, September 20, 2004, p. 10.

formulated and implemented in a multilateral manner.

A multilateral approach makes sense in the following reasons.¹³⁶ First, fair burden sharing among the partners will make it easier for them to take part in a cooperative denuclearization process. Multilateral contribution will reduce the risk of imposing a heavy burden on any one state. Demonstrating that many countries participate in a cooperative denuclearization process, multilateral participation will draw domestic political support of each participating country as well as the international support on the denuclearization process. Second, each partner country with different skills and resources can have various contributions to the practice of cooperative denuclearization. For instance, the United States and Russia have ample experiences and skills necessary to dismantle nuclear warheads, while South Korea shares a common language and culture with North Korea. Third, multilateral partnership will help making it reliable and sustainable to carry on a cooperative denuclearization process. A multilateral participation of those with common interests—*coalition of willing*—must be better prepared to deal with policy changes of an individual partner country.

Based on the recognition of the merits of a multilateral formula, a CSIS study compares skills and abilities of possible participants of cooperative denuclearization of North Korea. The comparison is summarized in Table 5.1.¹³⁷ According to this analysis, South Korea is asked to take on heavy financial burdens because its technical skills and CTR experiences are below average while it has high political motivation to and high financial capacity for the

¹³⁶ Joel Wit, *et al.*, *The Six Party Talks and Beyond: Cooperative Threat Reduction and North Korea* (Washington, D.C.: The Center for Strategic and International Studies, 2005), p. III.

¹³⁷ *Ibid.*, p. 33.

cooperative denuclearization.

Table 5.1 CSIS Version: Partners and Their Characteristics

Country	Technical Skills	Financial Capacity	Political Will	CTR Experiences
United States	Very High	Medium	Medium	Very High
South Korea	Medium	High	High	Low
China	High	Medium	Medium	Low
Japan	High	High	Medium	Medium
Russia	High	Low	Low	High
European Union	High	Low	Low	Medium

Uncertainty and Verification Standard

Uncertainty is an inevitable test in dealing with North Korea’s WMD programs. Uncertainty derives from many factors: North Korea’s obsession to WMD, its secretive nature, its deliberate and deceitful tactics, technical infeasibility of perfect accounting of WMD-related materials, North Korean scientists’ negligence on bookkeeping, North Korean officials’ lack of conception and recognition of the importance of transparency, and intelligence failure from the part of Western intelligence community, etc. Since partial conversion will allow North Korea to keep certain dual-use capabilities for peaceful purposes, it is going to be impossible to eliminate sources of potential uncertainty root and branch. Under the circumstances, it is technically infeasible and politically unreasonable to insist on a so-called “absolute” verification standard. It intends to achieve waterproof verification, which is simply idealistic. Belief in absolute verification is more likely to hamper rather than promote arms control negotiations. In this regard,

verifiability of the Bush administration's CVID principle¹³⁸ should not stretch itself to absolute verification.

Then, there exist two alternatives: “adequate” or “effective” verification. Adequate verification standard was first introduced by President Richard Nixon in 1969 when he gave guidelines to the SALT I negotiating team.¹³⁹ It had been held during the Nixon, Ford, and Carter administrations. Admiral Moorer defined adequate verification during a SALT II hearing as “any Soviet cheating which would pose a significant military risk or affect the strategic balance would be detected by our intelligence in time for the United States to respond effectively.”¹⁴⁰

Effective verification standard was adopted by the Reagan administration. President Reagan took a harsh view on the Soviet Union and pursued more rigorous approach toward verification of compliance than previous administrations. Effective verification is more rigid and tight, compared to adequate verification. Adequate verification holds “substantive” view of attempting to identify any evasion large enough scale to pose a significant security risk. Compared to this, effective verification standard combines a “legalistic” view of considering every violation important regardless of its scale and a “metaphysical” view of seeking to prove the absence of noncompliance rather than just demonstrating

¹³⁸ Bush administration has upheld a principle of completely, verifiably and irreversibly dismantling—CVID—of North Korea's nuclear weapons program. For more on the CVID principle, see Cheon Seongwhun, “Nuclear-armed North Korea and South Korea's strategic countermeasures,” pp. 61-63.

¹³⁹ Michael Krepon, “The political dynamics of verification and compliance debates,” in William Potter, ed., *Verification and Arms Control* (Lexington: Lexington Books, 1985), p. 138.

¹⁴⁰ T.H. Moorer, *The SALT II Treaty Hearings before the Senate Foreign Relations Committee* (Washington, D.C.: US Government Printing Office, 1979), Part 2, pp. 239-240.

compliance.¹⁴¹ Another criteria distinguishing adequate and effective verification would be that treaty contents were shaped by verification technologies in the former while treaty contents determined and developed verification means and methods in the latter. Effective verification standard that proved successful during intense arms control negotiations since the 1980s would be an appropriate verification standard in the case of North Korea. Probably, verification activities conducted by the Iraq Survey Group would be at the highest pitch of effective verification.

Creating a New Verification Body

North Korea expelled IAEA inspectors in December 2002 and withdrew from the NPT in January 2003. At present, even if the North promises to dismantle its nuclear weapon capabilities, there is no legal entity to carry out verification immediately. Since North Korea is out of legal reach in nonproliferation areas and has maintained very tense relationship with the IAEA, it is less likely that the IAEA will lead the future verification activities in North Korea. The Joint Nuclear Control Commission (JNCC) that was established in 1992 to verify the Joint Denuclearization Declaration is not going to be a good candidate either. The prime reason is that North Korea's relentless violations of inter-Korean agreements made the Declaration meaningless in any practical sense. Another reason is that the cooperative denuclearization process in the future could encompass chemical, biological, and possibly missiles as well as nuclear weapons. Thus, it should be kept in mind that a new verification organization with wider mission and mandate would be needed for cooperative denuclearization of North Korea.

¹⁴¹ For the three schools of verification standard and their implications, please refer to Allan Krass, *Verification: How Much is Enough?* (Lexington: Lexington Books, 1985), pp. 140-152.

Therefore, it is reasonable to create a new verification body to meet the new demand raised by a cooperative denuclearization process for North Korea. Previously, there were some thoughts on possible formats of a verification organization.¹⁴² Since early 2003, however, North Korean nuclear problem has gone through many important changes. Most visible is that North Korea expanded its nuclear capability and subsequently, has declared to have a nuclear deterrent force. Another is that five rounds of the Six-Party Talks were held since June 2003. The Talks have special importance when devising a new verification body. It is believed that five participants except North Korea will want to play a certain role in verification for strategic, political, or even commercial reasons. Thus, there are five possible formats of creating a new verification body.

1. IAEA only
2. IAEA + the United States
3. IAEA + the United States + South Korea
4. IAEA + the United States + South Korea + China, Japan, and Russia
5. IAEA + any financial and/or technical contributors including the Six-Party Talks participants, some European Union member states, Canada, Australia, or South Africa

In any new verification organization, IAEA participation would be important to demonstrate that North Korean nuclear problem is a global issue—not just restricted to inter-Korean or U.S.-DPRK bilateral sphere. In addition to its technical expertise and field experiences, the IAEA would serve as a political symbol of

¹⁴² Cheon Seongwhun, “North Korea’s nuclear problem: political implications and inspection formats,” *Verifying North Korean Nuclear Disarmament: a Technical Analysis* (Washington, D.C.: Carnegie Endowment for International Peace, June 2003), pp. 41-42.

upholding the nonproliferation regime, reflecting the interests of all the NPT member states. South Korea's participation is also essential due to the following two reasons. First, South Korean security is most directly threatened by North Korea's WMD capabilities. Second, according to the ROK Constitution, North Korean soil belongs to South Korean territory. It is the solemn constitutional right and duty for South Korean government and people to verify what has happened and will happen in the northern part of their territory. Thus, Seoul should be the major player of a cooperative denuclearization process. U.S. participation also cannot be questioned in that the very idea of cooperative denuclearization was conceived in the United States and it is the most experienced and well-prepared country in this field.

In order to guarantee a smooth implementation, a mechanism is also necessary to deal with compliance disputes that seem inevitable. The importance of a dispute resolution mechanism has been demonstrated by the fact that every major arms control treaty is equipped with such an institution—for example, the Standing Consultative Commission of the SLAT, the Special Verification Commission of the INF Treaty, the Joint Consultative Group of the CFE Treaty, and the Joint Compliance and Inspection Commission of the START. By working in professionalism based on technical facts and scientific expertise, such a mechanism will be able to minimize a danger of politicizing minor violations and causing unnecessary tension and difficulties.

Reward Systems

All participants of the Six-Party Talks assume that North Korea receive some rewards in return for abandoning WMD options. For example, during the Seoul-Washington summit meeting on September 14, 2006, President Bush stressed the potential benefits

to North Korea if the country returns to the Six-Party Talks and ultimately gives up nuclear ambitions.¹⁴³ Criticizing President Bush's handling of the North Korean nuclear problem, the New York Times editorial also argued that "The only approach with even the remotest chance of success is to persuade these regimes that they do not need nuclear weapons to ensure their survival, and that there will be real rewards for good behavior."¹⁴⁴ The questions are "how much" the rewards are provided and "by whom." A broad spectrum of rewards can be considered in the case of North Korea. At one extreme of the *minimalist approach*, the rewards will be narrowly confined to technical, financial and human resources necessary to dismantle WMD and related infrastructures.

At the other extreme of the *maximalist approach*, the rewards will be comprehensive in their scope and depth. For example, there are three areas where specific rewards could be provided: economic, political and security. In the economic area, for instance, the Korean Peninsula Marshall Plan will be activated under strong support from the Six-Party Talks participants and the international community. In the political area, the U.S.-DPRK and Japan-DPRK relations are normalized and thus, the cross-recognition between two Koreas and four neighboring powers is completed on the Korean peninsula. In terms of security, the United States alone or with other Six-Party Talks participants will provide North Korea with a legalistic and formal treaty-type comprehensive security assurance. The contents of such an assurance would be beyond what was guaranteed to

¹⁴³ "First and foremost, the incentive is for Kim Jong-il to understand there is a better way to improve the lives of his people than being isolated; that stability in the region is in his interests, the ultimate interests for the people of North Korea to be able to benefit and for families to be able to have food on the table," <http://www.whitehouse.gov/news/releases/2006/09/print/20060914-5.html>.

¹⁴⁴ "Mr. Bush's nuclear legacy," *New York Times*, September 2, 2006.

Ukraine or Libya and would contain promises not to attempt at regime change, to scrap anti-North Korea attitudes and policies, and to replace the armistice agreement with a new bilateral peace treaty between Pyongyang and Washington, etc. In addition, if North Korea has recourse to the Ukrainian example, the North might ask the United States to consult its security when threatened¹⁴⁵ or to provide expertise and support in helping it develop a national armed force as tangible American commitments to its security.¹⁴⁶

In reality, neither the minimalist nor the maximalist approach is likely to be appropriate to meet the challenges ahead in the North Korean case. The minimalist approach is not enough to persuade North Korea to give up WMD ambitions. It is obvious that the North wants more than what the minimalist approach is willing to offer. Some rewards surpassing the minimalist's offer is a necessary condition to foster auspicious environments for negotiating and implementing a cooperative denuclearization process and sustaining the WMD-free status in North Korea. On the other hand, the maximalist approach is too magnanimous. A cooperative denuclearization process should avoid a pitfall that it might be misused to turn feeble North Korea into a new powerful force without reforming its internal system, thus threatening South Korea's security and hampering peaceful unification. So a delicate balance should be struck between the two approaches, and the whereabouts on the reward spectrum will be largely dictated by the factors in the political domain. The scope of rewards, to a large extent, will be proportional to the degree that North Korea changes positively and inter-Korean relations improve.

¹⁴⁵ Rose Gottemoeller, "A deal that worked," *New York Times*, April 26, 2003.

¹⁴⁶ Leon Sigal, "A cooperative threat reduction program for dismantling North Korea's ballistic missiles," a paper prepared for *Joint CSIS-Carnegie Project on Korean Threat Reduction*, September 20, 2004, p. 14.

Incremental Stages

The whole process of cooperative denuclearization in North Korea—dismantling nuclear capability, conversion, verification, and monitoring of nuclear-free status—will be highly dependent on the way North Korean nuclear crisis comes to a conclusion. If the Six-Party Talks succeed and the crisis is resolved peacefully, North Korea is highly likely to fully cooperate with the dismantlement and verification process by revealing all relevant information and allowing unlimited access to all key assets and places. If the Talks fail, however, the cooperative denuclearization process will depend on the other scenarios described in the Chapter Three. For example, if Kim Jong Il regime survives, the international pressures or sanctions would be imposed against North Korea. In more hopeful cases like regime change or peaceful unification by South Korea, a cooperative denuclearization process can be applied more swiftly and thoroughly. In the worst case when North Korea is in chaos, a cooperative denuclearization process would be applicable only after the chaotic situation is settled.

Despite political uncertainties, however, a set of work on dismantling nuclear weapons and related infrastructures and verification is, in itself, a scientific, technical and physical business largely independent of political considerations. That is, a cooperative denuclearization process will have certain formats and inherent technical characteristics regardless of how the current nuclear crisis is brought to an end in the political domain. This is why an advance preparation for a cooperative denuclearization process is meaningful as well as necessary.

In principle, dismantling North Korea's nuclear capability, verification, and permanent monitoring could be carried out

incrementally according to the following stages. The same step-wise approach could be applicable to the North's chemical, biological and missile capabilities as well.

Stage One: Halting All Activities and Opening Relevant Information
The following steps will be taken in sequence.

Halting All Activities

North Korea should terminate all nuclear-related activities. For each of the four threat components, the following measures will be implemented.

- *Nuclear Weapons*: halting all activities concerned with using nuclear weapons and wielding a nuclear deterrence force including deployment, transfer, test, demonstration and discussion about uses of nuclear weapons.
- *Infrastructures*:
 1. Nuclear devices: halting all activities related to manufacturing nuclear devices including R&D and production of nuclear devices, high-explosive test, nuclear test, construction of facilities, and purchase of equipments.
 2. Enrichment: halting all activities related with R&D and experiments of HEU; and stopping construction and purchase of related facilities and equipments.
 3. Reprocessing: halting operation of the 5MWe reactor and the radiochemical laboratory and construction of 50MWe and 200MWe reactors; shutdown of the nuclear fuel fabrication facility; and stopping construction and purchase of related facilities and equipments.

- *Materials:*
 1. Nuclear devices: halting production and purchase of materials used for manufacturing nuclear devices including R&D, high-explosive test, and nuclear test.
 2. Enrichment: halting R&D and production of yellowcake, UF₆, HEU, and other related materials; and stopping developing uranium mines.
 3. Reprocessing: halting production of nuclear fuel, transfer of spent fuel, and separation of plutonium.
- *Personnel:* shutdown all facilities related to nuclear devices, nuclear R&D, and nuclear material production such as the Yongbyon nuclear complex, and military facilities where nuclear devices are stored; and blocking these facilities from access of scientists, technicians, military personnel, and other related workforce.

Opening Relevant Information

All relevant information about nuclear weapons, enrichment, reprocessing, personnel, and related activities and capabilities are released. If North Korean nuclear crisis is resolved peacefully, the information will be presented by North Korea on a voluntary basis. If not, information will be released by coercion. It is necessary as well as desirable that halting all activities and opening relevant information occur almost simultaneously. According to the four threat components, the following information should be opened.

- *Nuclear Weapons:* timing of manufacture, design information, yields, locations, and command/control system of nuclear devices.
- *Infrastructures:*
 1. Nuclear devices: lists and locations of facilities and equipment related with R&D and manufacture of

- nuclear devices, high-explosive test, and nuclear test.
2. Enrichment: lists and locations of all imported equipment and technologies and identifications of their foreign sources (probably, according to the NSG guidelines), and all domestically produced equipment and technologies; lists, locations and operation records of facilities related with R&D and production; and design information of centrifuges and enrichment plant.¹⁴⁷
 3. Reprocessing: the current status of the 16 facilities reported to the IAEA; and operating records of the 5MWe reactor, the radiochemical laboratory, and the nuclear fuel fabrication facility since December 2002 when the IAEA inspection was terminated.
- *Materials:*
 1. Nuclear devices: lists and locations of materials related with R&D and manufacture of nuclear devices, high-explosive test, and nuclear test.
 2. Enrichment: lists and locations of all materials (yellowcake, UF₆, HEU, etc.) that are imported or domestically produced.
 3. Reprocessing: information regarding so-called ‘past nuclear activities’ before May 1992 when North Korea first accepted the IAEA *ad hoc* inspection; the current status of the about 8,017 spent fuels that were stored in dry cans until December 2002; exact amount of additional plutonium produced in 2005; and amount, status and locations of all the nuclear fuels produced by North Korea.

¹⁴⁷ For details of revealing enrichment-related information, please refer to Fred McGoldrick, *The DPRK Enrichment Program: a Freeze and Beyond*, Policy Forum Online 02-29A (Berkeley: The Nautilus Institute, January 2003).

- *Personnel*: military personnel and civilians involved in manufacture, deployment, transfer, store and use of nuclear devices; scientists and technicians worked for producing and using nuclear materials; and other workforce such as military and paramilitary units responsible for guarding nuclear infrastructures.

Stage Two: Ad Hoc Inspections

Ad hoc inspections are carried out to validate the information revealed at the first stage and draw a complete picture of North Korea's nuclear weapon development program. They will have to begin as soon as the requirements at the first stage are met. An estimate of time frame would be from several months to several years depending on the situations, particularly the level of North Korean cooperation. If *ad hoc* inspections take an unusually long time, a cooperative denuclearization process can move on to the next stage by beginning to dismantle those objects confirmed by *ad hoc* inspections.

The Technical Tools for Cooperative Denuclearization

Among the 13, so-called, "CTR tools" identified by James Goodby *et al.*,¹⁴⁸ eight tools are applicable to the North Korean case. The five tools should be immediately taken at the second stage. They are:

- Improving physical control of items of interests,
- Improving accountability for items of interests,
- Preventing the leakage of technology to unauthorized recipients,
- Preventing the export of nuclear weapons, materials, and

¹⁴⁸ The CTR tools are a set of methods used in the former Soviet Union for the various CTR programs. James Goodby, *et al.*, *Cooperative Threat Reduction for a New Era*, pp. 7, 40.

- equipment,
- Supporting alternative power sources such as conventional power plants.

During *ad hoc* inspections, North Korean whistle blowers will play a critical role. Those personnel well informed of nuclear programs, sites, and infrastructures are an asset as much valuable as modern high-tech intelligence gathering means. In this respect, another active preparation measure would be to cultivate reliable insiders in North Korea by providing them with political security as well as economic incentives.

Stage Three: Dismantlement and Conversion

At stage three, nuclear devices, facilities, and equipment are dismantled irreversibly and verifiably. For disassembling nuclear devices, U.S. expertise is essential and Russia can also provide technical contributions. As was investigated in Chapter II, Washington and Moscow have compiled extensive amount of information and experiences on dismantling nuclear weapons, especially since the START Treaty was signed in July 1991.¹⁴⁹ Unlike the previous arms control agreement, for example, the Intermediate-Range Nuclear Forces (INF) Treaty, the START Treaty was the first international arms reduction treaty that limited nuclear warheads as well as delivery vehicles.¹⁵⁰

For dismantling nuclear facilities and equipments, other western

¹⁴⁹ *The Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Reduction and Limitation of Strategic Offensive Arms*, signed in Moscow, on July 31, 1991.

¹⁵⁰ The INF Treaty eliminated an entire category of delivery vehicles—ballistic missiles, cruise missiles, or aircraft with ranges from 500 to 5,500 km, but the Treaty was short of dismantling warheads.

countries with advanced nuclear power industry could contribute their expertise and resources. Up until today, 90 commercial power reactors, more than 250 research reactors and many other nuclear fuel cycle facilities have been partially or fully shut down in the world.¹⁵¹ The IAEA, the Nuclear Energy Agency of the Organizations for Economic Co-operation and Development (OECD/NEA), and the World Nuclear Association have also accumulated large amount of experiences with decommissioning reprocessing plants. In general, proven techniques and equipment are available for decommissioning major nuclear facilities. When developing a strategy of decommissioning, the following factors need be taken into account:¹⁵²

- Safety and environmental issues,
- Requirements for possible reuse of the facility and/or site,
- Quantity and type of waste produced,
- Availability of waste disposal sites,
- Worker dose,
- Cost and availability of funding.

According to one study, a process of decommissioning a nuclear facility can be divided into the following three steps:¹⁵³

- “Safe storage” of keeping original outer contamination barrier and blocking and sealing operating systems,
- “Cocooning” of partially dismantling the facility and reducing the size of outer contamination barrier,
- “Greenfield” of removing all remaining materials, equipment, and parts of the facility and keeping

¹⁵¹ Whang Jooho, *Dismantlement and Radioactive Waste Management of DPRK Nuclear Facilities*, CMC Occasional Paper (Albuquerque: Sandia National Laboratories, 2005), p. 19.

¹⁵² Ibid.

¹⁵³ Michael May, *et al.*, *Verifying the Agreed Framework* (Livermore: Center for Global Security Research, April 2001), p. 75.

contamination to an acceptable level.

Decommissioning nuclear facilities requires proper treatment, packaging, storage, and disposal of waste materials. The following facilities are necessary for managing the wastes from decommissioning the 5MWe reactor and the radiochemical laboratory:¹⁵⁴

- Immediate needs: canning station, dry storage pit, packaging station for overseas transport, decontamination facilities, and low level waste (LLW) storage,
- Mid-term needs: decontamination and packaging stations for metal, concrete and graphite, and LLW disposal site,
- Long-term needs: interim storage facilities for high level waste (HLW) and intermediate level waste (ILW), and disposal repository for HLW and ILW.

At the third stage, plutonium and HEU acquired by North Korea should be moved out to a third country. They can be made usable for nuclear power plants of the country by converting plutonium into MOX and by diluting HEU into LEU. Since North Korea's plutonium and HEU are solely for military purposes, it will add to the symbolic value that one of the nuclear weapon states takes charge of them. Any remaining spent fuels and the fuels loaded in the 5MWe reactor will have to be transferred to a third country as well.¹⁵⁵

¹⁵⁴ Whang Jooho, *Dismantlement and Radioactive Waste Management of DPRK Nuclear Facilities*, p. 37.

¹⁵⁵ During the 1994 nuclear crisis and its aftermath, there were extensive discussions within the U.S. government as to how to handle the removal and disposal of the spent nuclear fuels from Yongbyon. China was one of the countries considered as a final disposal site for the spent fuel. Russia or Western Europe was preferred destinations for the materials. Author's conversation with Jon Wolfsthal, Center for Strategic and International Studies, on August 18, 2006.

Conversion will be an important issue at this stage. Level of conversion will be contingent upon the four threat components. For example, nuclear devices will be dismantled completely with zero possibility of conversion. All personnel, in principle, will be converted for peaceful purposes because “dismantling” personnel is meant to kill or put them in custody or let them earn their living without using their talents. However, if North Korea’s nuclear capability does harm anyone either by North Korea or by terrorist organizations, those responsible should be held accountable. Most of nuclear infrastructures will be dismantled while relatively large portion of materials could be converted for commercial uses.

There are many technical tools for cooperative denuclearization. Among the 13, so-called, “CTR tools” identified by James Goodby *et al.*,¹⁵⁶ three tools are applicable to the North Korean case at the stage three. They are:

- Diverting technical and scientific expertise to civil purposes,
- Assisting in the conversion of defense industries or weapons laboratories to civil operations,
- Removing nuclear weapons, fissile materials, and equipment for producing weapon-useable fissile materials from countries of concern.

The CSIS study proposed scientific redirection efforts focus on the following four areas:¹⁵⁷

- Nuclear scientists and engineers are engaged in non-military and basic research or cooperation in their areas of expertise through international projects funded and

¹⁵⁶ James Goodby, *et al.*, *Cooperative Threat Reduction for a New Era*, p. 40.

¹⁵⁷ Joel Wit, *et al.*, *The Six Party Talks and Beyond: Cooperative Threat Reduction and North Korea*, pp. 62-63.

participated by cooperative denuclearization partner countries.

- Some of the scientists and engineers can be redirected toward joint commercial projects such as medicine, agriculture, uranium mining, etc. South Korean industry and private companies can play a leading role in helping with this redirection efforts.
- Weapon experts and trained workers can be assigned to deliver public services to North Korean people. Like other recipient countries of the CTR programs, displaced scientists and workers may be paid to work for housing, education, health, and other elementary civilian functions.
- Nuclear experts who were engaged in design, construction, and operation of major nuclear facilities and nuclear weapon scientist who manufactured nuclear devices can help with the dismantlement, decommissioning, and conversion activities.

It is also noted that a CSIS study identified nine components as the major objects of cooperative denuclearization in North Korea.¹⁵⁸ Four components are related with nuclear weapons: weaponized plutonium, non-nuclear weapon components, key production components and equipment, and new spent fuel. Five components are concerned with nuclear material production: IRT reactor, 5MWe reactor, reprocessing plant and wastes, uranium mining and processing facilities, and nuclear scientists and technicians. For each component, the study identifies cooperative denuclearization options, potential leadership country, and other participating countries.

¹⁵⁸ Ibid., pp. 49-64.

Stage Four: Ongoing Monitoring and Verification

At stage four, ongoing monitoring and verification will carry on for a considerable period of time to guarantee that non-nuclear status in North Korea is firmly established and maintained. Depending on the political environments, North Korea may be able to rejoin the NPT and the IAEA membership before the fourth stage. However, regular inspections applied to normal NPT member countries will be possible only after a long period of ongoing monitoring and verification. Trust from the international community that North Korea will not repeat the nuclear weapon path is the key for the North's regaining a normal status in the nonproliferation area. International confidence on the DPRK non-nuclear policy will be heavily influenced by the changes in the North Korean political system. Unification led by South Korea may be the surest way to dispel international suspicions on the northern half of the Korean peninsula.

The Issues of Cost

The estimated cost of a cooperative denuclearization process in North Korea largely depends on under which political circumstance the initiative is agreed upon and in which format it is structured. The cost of running a verification organization, conducting inspections and dismantling nuclear weapons and infrastructures is mainly technical expenses, less likely to be influenced by the political circumstances. The cost of rewards, however, will be significantly affected by the factors in the political domain.

Since there exists so much uncertainty at the very early stage of devising a cooperative denuclearization process, the cost estimates cannot but be notional at this point. Rather than attempting to estimate overall costs of the initiative, this study mostly presents

experiences in other examples as a basis for further deliberations of the cost aspect of cooperative denuclearization of North Korea.

Cost of Verification: Inspection and Administration of an Inspection Body

The UNSCOM carried out the UN-mandated inspection mission in Iraq until the end of 1998. A total of about 900 people worked for the organization annually.¹⁵⁹ Among them, a staff of over 200 personnel per year worked for a long-term basis and they consist of inspectors, weapon experts, policy officers, support personnel, and aircrew. Rest was non-permanent workforce employed for short-term missions, frequently visiting Iraq mostly for inspections and monitoring. The majority of the Commission's workforce was provided by member states of the United Nations and some U.N. staff was also seconded to the Commission. Governments and the United Nations took charge of the salaries of their corresponding personnel while the Commission bore the costs of travel and daily subsistence, which helped to keep the cost of the Commission to a minimum. Within this arrangement, the UNSCOM spent around \$35 million per year and that did not include the cost of significant in-kind support given by several governments such as U-2 operational costs, sample analysis, and procurement of equipments. On a preliminary basis, assuming that just an ongoing monitoring was continued, the Commission estimated annual cost of \$50 million for the salaries of 300 permanent and 400 short-term personnel and \$25 million for transportation, communication, and travel, etc.

The size of Iraq's territory is about 434,920 square kilometers, roughly twice as large as the Korean peninsula (98,000 and 121,500

¹⁵⁹ *UNSCOM's Comprehensive Review* (Monterey: Monterey Institute for International Studies, January 1999).

square kilometers for South and North Korea, respectively). Assuming the same scale of inspection efforts with similar U.N. assistance to be put in North Korea, which means more intense inspections in a smaller region, the cost estimate of inspections and ongoing monitoring would be \$35 million and \$75 million per year, respectively. According to an expert at the Sandia National Laboratories, a regional verification organization supervising non-nuclear Korean peninsula would need around 10 administrative personnel, 20 supporting staff, and 30 inspectors, and a total cost of \$10 million per year.¹⁶⁰

Although not multilateral, another example of running a verification organization would be the On-Site Inspection Agency—OSIA, whose mission was to verify arms control treaties signed with the Soviet Union. Between 1988 and 1996, the OSIA spent some \$445 million implementing and verifying arms control measures including the INF Treaty (\$233 million), START I Treaty (\$105 million), and the Threshold Test Ban Treaty (\$76 million).¹⁶¹ For three years since June 1, 1988 when the INF Treaty entered into effect, the OSIA verified dismantling of 2,692 intermediate-range missiles. For another 10 years until the end of May 2001, the Agency carried an ongoing monitoring mission. During 1989, 1990, and 1991, the OSIA asked for its annual budget of \$50 million.¹⁶² Considering the scale of mission and geographical areas to be covered, the cost of verifying a cooperative denuclearization process in North Korea would not greatly exceed the expenses of the OSIA.

¹⁶⁰ Author's discussion with John Olsen, a specialist at the Sandia National Laboratories, Albuquerque, New Mexico, April 29, 2003.

¹⁶¹ Arjun Makhijani, *et al.*, "Dismantling the bomb," in Stephen Schwartz, ed., *Atomic Audit: The Costs and Consequences of U.S. Nuclear Weapons since 1940* (Washington, D.C.: Brookings Institution, 1998), p. 339.

¹⁶² Lewis Dunn and Amy Gordon, *Arms Control Verification & the New Role of On-Site Inspection* (Lexington: Lexington Books, 1990), p. 245.

Cost of Disassembling and Decommissioning

The cost of dismantling nuclear weapons takes a very little portion of the total expense demanded by maintaining nuclear weapons development programs. According to one study, the United States spent some \$5,821 billion between 1940 and 1996 for its nuclear weapons programs. The cost includes building, deploying, targeting and controlling, and dismantling nuclear weapons, defending against others' nuclear arsenals, and nuclear waste management and environmental protection. The estimated cost of dismantling nuclear warheads and delivery means during this time was \$31.1 billion, only 0.5 percent of the total expenses.¹⁶³

Cost of disassembling a nuclear device will depend on various technical factors including complexity of weapon design, yield of the device, and others. The United States runs two plants for disassembling nuclear warheads—Pantex and Y-12. The plants dismantled 1,393 warheads in 1995, and 1,064 warheads in 1996.¹⁶⁴ In each year, Department of Energy spent nearly \$642 and \$690 million at the plants, respectively.¹⁶⁵ And two-thirds of the expenses (\$428 and \$460 million) were largely in support of dismantlement and storage mission. With a rough calculation, it can be estimated that average cost of dismantling a nuclear warhead was 307,000 dollars in 1995 and 432,000 dollars in 1996. Assuming that North Korea possesses 10-20 nuclear devices, the cost of dismantling the North's nuclear devices would reach approximately \$4-10 million if disassembled at Pantex or Y-12 plant.

It is decommissioning nuclear facilities and other infrastructures that

¹⁶³ Stephen Schwartz, ed., *Atomic Audit: The Costs and Consequences of U.S. Nuclear Weapons since 1940* (Washington, D.C.: Brookings Institution, 1998), p. xxii.

¹⁶⁴ Arjun Makhijani, *et al.*, "Dismantling the bomb," p. 332, note 14.

¹⁶⁵ *Ibid.*, pp. 332-335.

probably take the longest time and a lion's share of expenses. At least 5 nuclear facilities once frozen under the Agreed Framework—the 5MWe, 50MWe, and 200MWe reactors, the radiochemical laboratory, and the nuclear fuel fabrication plant—should be decommissioned completely. The following examples will be helpful to estimate the decommissioning costs.

When the United States dismantled 425MWth (about 85MWe) graphite-moderated reactor at the Hanford Reservation, it cost 25 million dollars,¹⁶⁶ which means about 300,000 dollars per 1MWe. For a 72MWe light-water reactor to be decommissioned at Shippingport in the United States, it cost a total of \$91.3 million, \$1.27 million per 1MWe.¹⁶⁷ South Korean scientists generally estimate that it will cost about \$1 million per 1MWe for a light water reactor. According to the OECD/NEA, the cost of decommissioning varies depending upon the type of reactor. As shown in Table 5.2, a graphite-moderated reactor costs much higher than other types due to the greater amount of radioactive material involved. The estimated cost of Tokai-1—the only Japanese Magnox reactor—includes the cost of arranging a disposal site.¹⁶⁸

¹⁶⁶ Michael May, *et al.*, *Verifying the Agreed Framework*, p. 75.

¹⁶⁷ http://mext-atm.st.go.jp/atomica/owa/fig_img?fig_path=/images/05/05-02-01/01.gif.

¹⁶⁸ Whang Jooho, *Dismantlement and Radioactive Waste Management of DPRK Nuclear Facilities*, p. 22.

Table 5.2 Decommissioning Cost for Selected Reactor Types

Type	US dollars/KWe
Most Western Pressurized Water Reactor	200-500
VVER	330 or more
Boiling Water Reactor	300-550
CANDU Reactor	270-430
UK Magnox	2,600 or less
Tokai-1	4,700 or less

According to this criterion, the decommissioning cost of 5MWe reactor at Yongbyon would be \$13-23.5 million. Since the 50MWe and 200MWe reactors are at the stage of construction, the decommissioning cost of the three reactors would be no greater than \$13-23.5 million. Larry Nicksch remarked that South Korean officials reportedly estimated \$500 million,¹⁶⁹ which seems wide of the mark. A CSIS report estimated that a total cost of cooperative denuclearization of North Korea would reach \$200-500 million.¹⁷⁰

For the radiochemical laboratory, it will cost more than the reactors. When decommissioning a reprocessing plant in Belgium with an annual capacity of 210 tons, it cost \$235 million. The reprocessing facility at the Yongbyon nuclear complex has a similar capacity of 220 tons. Since the Belgian facility dealt with much more spent fuels

¹⁶⁹ Larry Nicksch, *North Korea's Nuclear Weapons Program*, Issue Brief for Congress (Washington, D.C.: The Library of Congress, May 1, 2003), p. 13.

¹⁷⁰ Joel Wit, et al., *The Six Party Talks and Beyond: Cooperative Threat Reduction and North Korea*, p. III.

and consequently, was more contaminated than the radiochemical laboratory, the decommissioning cost in case of North Korea would not exceed what was spent in Belgium.

Cost of Rewards

A wide spectrum of various reward packages is conceivable. The scale, time-length, and cost of rewards will heavily depend on the political circumstances and the objectives set by a cooperative denuclearization process. At this early moment, reward plans in three areas—economic, political and security—can only be notional.

In the economic area, the minimalist approach will confine rewards to technical, financial, and human resources to disassemble nuclear devices, decommission nuclear facilities, and convert remaining infrastructure and personnel into commercial uses. The cost of verification, dismantlement and decommission discussed above corresponds to this narrowly focused rewards. Ashton Carter gave a general estimate of tens of millions of dollars per year for a ten-year period for applying Nunn-Lugar program to North Korea.¹⁷¹ North Korea may get some additional economic benefits—maybe cash—in exchange for the HEU and plutonium it renounces.¹⁷²

According to one estimate, scientists, technicians, and other workforce involved in nuclear development in North Korea are numbered around 3,000.¹⁷³ Among these, the top class nuclear experts are thought to count only in a few dozen and less than 100

¹⁷¹ Ashton Carter, *Implementing a Denuclearization Agreement with North Korea*, Testimony before the Committee on Foreign Relations, U.S. Senate, July 15, 2004, p. 4.

¹⁷² In case of Ukraine, Kiev got fuel rods for its nuclear power plant in return for forgoing the HEU contained in its nuclear weapons. Rose Gottemoeller, “A deal that worked.”

¹⁷³ Larry Niksch, *North Korea's Nuclear Weapons Program*, p. 6.

people in total.¹⁷⁴ Although quite small in number compared to Russia and Ukraine, it is a matter of urgency not to permit brain drain of these experts and their knowledge. South Korea may be able to absorb most of them and redirect their talents for peaceful purposes. Its nuclear industry, academic institutions, and research organizations could host competent scientists and technicians, and provide education, training, and job opportunities for them.

Resuming provision of 500,000 tons of heavy fuel oil would be a modest incentive between the minimalist's narrow and the maximalist's comprehensive rewards. It costs some \$100 million annually.¹⁷⁵ For rehabilitating North Korean economy and meeting basic humanitarian demands in a systematic way, various economic benefits could also be devised on the middle ground between the two end points of the reward spectrum.

Although the light water reactor (LWR) project terminated at the moment, it can revive and become a part of a comprehensive reward package for North Korea. The joint statement of the 4th round of the Six-Party Talks expressed respect to North Korea's right to peaceful uses of nuclear energy and the North has a strong will to operate light-water reactors on its soil. The LWR project could be an issue to which the United States can show some flexibility. An estimated total cost of the LWR project is some \$5 billion, and up until May 2003, \$1.2 billion were expended. For constructing a grid network that is essential to make use of electricity produced by the LWR project will bear additional cost of some \$750 million. The amount of money needed for the LWR and its related projects may be trivial compared to total cost for a comprehensive reward package. If the

¹⁷⁴ Jon Wolfsthal, "Nuclear threat reduction in North Korea," p. 8.

¹⁷⁵ *KEDO Annual Report of 2001*, http://www.kedo.org/pdfs/KEDO_AR_2002.pdf.

Korean Peninsula Marshall Plan is launched in harmony with cooperative denuclearization of North Korea, for example, enormous sums of money should be poured into North Korea.

In the political area, it would be a minimalist approach for the United States, Japan and North Korea to maintain business-like relationship just enough to carry on a cooperative denuclearization process. Full normalization of the bilateral relations and subsequent completion of the cross-recognition on the Korean peninsula would be the maximalist approach.

In the security area, repeated remarks by President Bush and other government officials in the United States not to attack North Korea would be a form of minimalist approach. Providing modest security assurance of which the United States becomes a party and thus, sharing security assurance burdens with other Six-Party Talks participants, would be possible as an in-between security incentive. For example, at the Senate confirmation hearing of U.S. Secretary of State, Condoleezza Rice remarked that the United States is willing to provide North Korea with multilateral security assurances if the North is prepared to give up its nuclear weapons program, verifiably and irreversibly.¹⁷⁶ The positive and negative security assurances given to Ukraine by the United States and Russia would be another example of a modest security assurance. The maximalist approach would be for the United States to sign a peace treaty with North Korea replacing the armistice agreement and to help the North develop its armed forces, which is highly unlikely under the current circumstances.

¹⁷⁶ Condoleezza Rice's answer to Senator Lisa Murkowski's question, "Confirmation hearing of Condoleezza Rice," *New York Times*, January 18, 2005.

Chapter Six

Key Issues and Recommendations

Political circumstances surrounding the current North Korean nuclear standoff are unstable and no one is sure of how the crisis will develop in the near future. Despite political uncertainties, however, a set of works on dismantling nuclear weapons and related infrastructures and verification is, in itself, a scientific, technical and physical business largely independent of political considerations. That is, a cooperative denuclearization process has certain formats and inherent technical characteristics regardless of how the current nuclear crisis is brought to an end in the political domain. This is why advance preparation for cooperative denuclearization of North Korea is meaningful and necessary.

There is a set of key issues that will be encountered in carrying out a cooperative denuclearization process in North Korea. These issues are derived from the past cooperative denuclearization experiences, international relations especially in the nonproliferation area, geopolitical situations in Northeast Asia, and unique characteristics of the Korean peninsula. Some issues will trigger policy debates

among the members of the Six-Party Talks as well as within each government. In this final Chapter, these key issues are identified into four different categories: (1) policy implications from the past experiences, (2) providing security assurances to North Korea, (3) role division and financial burden sharing, and (4) other relevant issues. For each issue, policy considerations or recommendations for the Six-Party Talks participants and other countries interested in cooperative denuclearization of North Korea are presented.

Policy Implications from the Past Experiences

The Lessons from Ukraine and Libya Forgoing Nuclear Weapons

The lessons of Ukraine and Libya provide the following policy implications to the DPRK.

- *Give up Nuclear Weapons:* The North Korean leadership should not have any reservation about forgoing its nuclear capability. Neighboring upon Russia and China and confronted with the United States, all of which have huge nuclear stockpiles, the DPRK should clearly understand that possessing a modest number of nuclear weapons will not serve its national or regime interests, only irritating the nuclear weapon states' security concerns and raising tension on the Korean peninsula.
- *Expect Full Compensations:* North Korea should not doubt that economic assistance and security guarantees be provided if it renounces nuclear weapons. It does not have to worry about the cost or burden to be incurred by a cooperative denuclearization process either.
- *Expect the U.S. Swift and Positive Responses:* The DPRK must believe that the United States will respond swiftly by providing the carrots it promised to deliver including full diplomatic relations if North Korea accepts the U.S.

demand to give up its nuclear ambitions.

- *Give up the Concept of Simultaneity*: North Korea should not stick to the principle of simultaneity—what is called, the “word for word, action for action” argument. An initial step must be taken by the DRPK because it is the country that committed wrongdoings that should have not been done in the first place. Rather than using such a demand to delay negotiations, the North had better show more positive attitudes and demonstrate, in word and deed, its willingness to initiate a denuclearization process.
- *Do not Hesitate to Confess*: Later confession is better than hiding the truth. And a future compliance is much more important than the past violations. By a sincere confession and promise not to repeat the same mistakes, North Korea can restore its credibility and expect enormous international support and assistance. Thus, North Koreans should not hesitate to reveal what it has developed against the promises they had made to the international community.
- *Restore Good Relationship with the IAEA*: The North Korean authorities should recognize that holding a good relationship with the IAEA is very important. North Korea must make decisions to rejoin the IAEA membership and to invite the IAEA inspectors to the Yongbyon nuclear complex.

The Lessons from the CTR Experiences in the Former Soviet Union

During the past 15 years, the CTR programs have encountered many problems. These problems can occur in the North Korean case as well. The Lessons from the past CTR experiences will guide the participating countries in cooperative denuclearization of North Korea to take the following policy considerations.

- *De-politicization of the Issue and Maintaining Domestic Support:* Every country to participate in cooperative denuclearization should gather broad domestic political support for its decision to join the denuclearization process. Without each government's strong willingness upheld by its domestic support, the country's interests and contributions to the cooperative denuclearization process will diminish as time goes. In this regard, it should be avoided that the denuclearization process is too much politicized at the initial stage. Superheated interests due to political reasons can be easily dissipated and be replaced by nonchalance.
- *Enhance Access and Transparency:* The inherent closed nature of the North Korean society will be a major stumbling block to a cooperative denuclearization process. For example, in the North-South Korean arms control talks, North Korea has revealed their very negative attitudes on verification and transparency, often hampering the inter-Korean military talks. Like in the Russian case, request for proper access and transparency is likely to trigger North Korean suspicion of virtual espionage. It will be essential to demonstrate to the North Korean authorities that their concerns about espionage are groundless by referring to various cases occurred in the former Soviet Union. To educate North Koreans of the values of transparency and openness as basic principles of today's international community will be important as well. As in the case of retraining and redirecting weapons scientists, South Korea can provide proper venues and opportunities for this purpose.
- *Designate an Overarching Coordinator:* Denuclearization of North Korea is meant to complete the so-far half-achieved mission of the nuclear-weapon free Korean

peninsula. As much as the mission is important, it is essential to have a leadership that takes strong rights and responsibilities. The ROK government should designate an overarching policy coordinator in charge of cooperative denuclearization of North Korea. Development and management of an integrated strategy under his leadership will be necessary for improving the effectiveness and efficiency of the cooperative denuclearization process. The denuclearization policy coordinator should be given a status of an ambassador extraordinary and plenipotentiary and report directly to President of the ROK.

- *Employ WMD Scientists in South Korea:* The two main strategies for redirecting WMD scientists and engineers for peaceful purposes—research contracting and technology-driven commercialization—are not providing many career-changing opportunities in the former Soviet Union. In particular, the commercialization strategy yields few real results because creating successful business enterprises in Russia is difficult due to the systemic barriers to business creation in that country. Thus, rather than trying to absorb North Korean scientists within North Korea, it may be better for South Korean government and commercial firms to hire them. As one of the greatest successful models of market economy, South Korea is well prepared to redirect the weapon scientists' talents into peaceful and commercial uses. With same language and culture, South Koreans also are ready to educate North Korean scientists of the values and functioning principles of market economy and commercial business.

Pragmatic Approaches for a Smooth Cooperative Denuclearization Process

Past experiences working inside North Korea for implementing the Geneva Agreed Framework as well as various CTR experiences in Russia present several practical approaches that could be applicable to the North Korean case in order to help ensure that a cooperative denuclearization process moves smoothly.¹⁷⁷

- *Take a Flexible Non-Adversarial Approach:* It is necessary to build effective working relationships between cooperative denuclearization partners and North Korean authorities. Building trust, establishing credibility, and demonstrating sincerity will be very important. Foreign partners should show they are in North Korea for a specific purpose of denuclearization and not attempt to bribe or spy on the North.
- *Show the Benefit of Cooperation Is Not One-Sided But Mutual:* Cooperative denuclearization programs should be organized in ways that North Koreans believe they are not being unilaterally exploited but getting as much benefits as other partners. That is, building an effective working relationship will require involving North Koreans in cooperative denuclearization projects from the beginning, sharing with them information and technology, and using training programs for North Korean scientists and engineers.
- *Work the North Korean System:* It is necessary to enlist the help of the DPRK government's different bureaucracies and local authorities to move projects forward. Although North Korea is a dictatorial regime, different organizations and individuals will have different interests and these

¹⁷⁷ Joel Wit, et al., *The Six Party Talks and Beyond: Cooperative Threat Reduction and North Korea*, pp. 20-30.

differences can be utilized to resolve various problems occurring in the course of cooperative denuclearization.

- *Contain Compliance Disputes:* While disputes are inevitable in the various stages of denuclearization, it is important that such disputes be kept from escalating out of control and having negative influences on the whole denuclearization process.
- *Combine Political and Technical Talks Harmoniously:* Political and technical dialogues should be used in a mutually complementary way. The former can help make breakthroughs in stalled technical talks, and vice versa, the latter can help change political atmosphere more pragmatic and favorable.
- *Be Consistent and Persistent:* Cooperative denuclearization partners should be consistent and persistent in order to induce cooperation from North Korea. Past experiences indicate that North Koreans may initially reject what appear to be reasonable requests but more often than not eventually agree.
- *Emphasize Political and Economic Utilities of Cooperative Denuclearization:* Projects with economic utility and political appeal to key elites in North Korea can foster favorable environments for a smooth denuclearization process. For instance, the U.S. Department of Energy worked with the Russian Ministries of Atomic Energy and Emergency Situations to develop situation crisis centers. These watch centers were supposed to provide emergency communications in the event of a nuclear accident. Russian leaders showed great interest in this project because they wanted to improve the Russian communication system that the 1986 Chernobyl disaster had proven quite inadequate.

The U.S. cooperation to solve this problem was also visible and comprehensible to important political elites in Moscow.¹⁷⁸ In relation to this, CTR experiences in Russia also noted that starting with pilot projects and hiring local companies as subcontractors have induced the interests of Russians.

Providing Security Assurances to North Korea

Providing security assurances to North Korea will be an indispensable part of any agreement to induce North Korea to give up its nuclear weapons. It has been advocated by the North Koreans that their key rationale for developing nuclear weapons is a military threat posed by the United States. Whether or not this rationale is justified, Washington has had a deep understanding that a form of security assurances should be given to Pyongyang so as to make a negotiated resolution of North Korean nuclear problem possible and workable. This understanding was reflected in the Geneva Agreed Framework signed in October 1994. Article III.1 of the Agreed Framework states that “The United States will provide formal assurances to the DPRK, against the threat or use of nuclear weapons by the United States.”

Since Carter administration, the United States has maintained the conditional negative security assurance (NSA) policy. According to the conditional NSA, Washington will not use nuclear weapons against any non-nuclear weapon state which is a party to the NPT or “any comparable internationally binding agreement not to acquire nuclear explosive devices,” *except* [emphasis added] in the case of an attack on the U.S., its territories or armed forces, or its allies, by a

¹⁷⁸ Rose Gottemoeller, “Cooperative threat reduction beyond Russia,” pp. 151-152.

non-nuclear weapon state “allied to” or “associated with” a nuclear weapon state in carrying out or sustaining the attack.¹⁷⁹ This exception has made it possible for South Korea to be under U.S. nuclear umbrella against a North Korean attack. For example, if the North allied with China or Russia attacks the South, Pyongyang could face a severe retaliatory attack from Washington. The security assurance given to the DPRK at the Agreed Framework is believed to be no more than this conditional NSA.

However, Pyongyang has perceived that Washington’s conditional negative security assurance is still a nuclear threat to it and thus, strongly demanded that this threat be eliminated. To North Koreans, only withdrawal of U.S. nuclear weapons in South Korea does not meet their demand because the U.S. nuclear threat still exists despite the withdrawal.¹⁸⁰ During the DPRK-U.S. high-level talks in the 1990s, North Korea has requested an official document to guarantee the elimination of U.S. nuclear threat. In a more concrete way, North Korean officials have argued that nuclear weapon states should provide non-nuclear weapon states with an unconditional and legally binding promise not to use nuclear weapons.¹⁸¹ Therefore, Pyongyang

¹⁷⁹ Speech of Secretary of State Cyrus Vance at the 1978 U.N. Special Session on Disarmament, *U.N. Document A/S-10/AC.1/30*.

¹⁸⁰ According to the various statements made by North Korean leaders, the ROK/U.S. joint military exercises, U.S. nuclear weapons in Okinawa and other U.S. bases in Asia, and U.S. strategic nuclear forces are major components of American nuclear threats to their country.

¹⁸¹ For example, North Korea criticized that the NPT just reflected the situations of the past and was discriminatory and unbalanced. The North argued that the NPT should be revised in accordance to the changed circumstances nowadays and proposed that the following measures be incorporated into a new NPT: to prohibit the deployment of nuclear weapons on the other countries’ territories, the high seas and the outer space, to guarantee the creation of nuclear weapon free zones, to provide an unconditional and legally binding security assurance against the threat or use of nuclear weapons, to ban nuclear testing comprehensively, and to accomplish a general and complete nuclear disarmament. A speech of the North Korean chief delegate at the Third Preparatory Committee Meeting for

may have wished to believe Washington's assurances in the Agreed Framework as an unconditional security guarantee.

North Korean insistence on the unconditional security assurance is simply idealistic and beyond international consensus. Providing security assurances from five official nuclear weapon states, namely, P5 is nothing new. Since the inception of the NPT, various forms of security assurances have been provided, individually or collectively, to the non-nuclear weapon state parties of the NPT. There exist two distinct forms of the security assurances: conditional negative security assurance (NSA) and positive security assurance (PSA). The security guarantees provided to Ukraine are within the limits outlined by these two security assurances. The NSA and the PSA have been refined as time goes and nuclear weapon states have reached on a greater consensus on the contents of the security assurances as described below. Under these circumstances, North Korean cannot and should not expect to get an exceptional treatment beyond the existing security assurances given to all the non-nuclear weapon states parties to the NPT.

Conditional Negative Security Assurance Is What the DPRK Can Receive Most

Unilaterally initiated by the United States almost 30 years ago, the conditional negative security assurance has become a virtually universal security assurance to non-nuclear weapon states nowadays.

the 1995 NPT Extension Conference on September 13, 1994, in Geneva, *FBIS-EAS-94-184*, September 22, 1994. In his address at the 49th session of the U.N. General Assembly on October 5, 1994, North Korean Vice Foreign Minister Suhon Choe also emphasized that in order to be an impartial treaty, the NPT should contain the following measures: an unconditional assurance against the threat or use of nuclear weapons, a promise of no-first-use of nuclear weapons, a total ban of the use of nuclear weapons, a stop of the production of nuclear weapons, a presentation of time table to eliminate nuclear weapons completely, *FBIS-EAS-94-196*, October 11, 1994.

Except China, the rest of the P5 has made an identical statement of NSA in April 1995 (Appendix 6).

In particular, France noted that it has sought as much as possible to harmonize the content of its negative assurances with those of the other nuclear weapon states and that it is pleased that this effort has been successful. As a result, the content of the declarations concerning the negative security assurances of France, the United States, the Russian Federation, and the United Kingdom are practically identical.

Positive Security Assurance Has Been Refined

Just before the signing of the NPT, the United States, then the Soviet Union, and the United Kingdom each declared to the U.N. Security Council:¹⁸²

its intention, as a permanent member of the United Nations Security Council, to seek immediate Security Council action to provide assistance, in accordance with the Charter, to any non-nuclear weapon state party to the treaty on the non-proliferation of nuclear weapons that is a victim of an act of aggression or an object of a threat of aggression in which nuclear weapons are used.

This positive security assurance was adopted in the Security Council Resolution 255 on June 19, 1968, just before the signing of the NPT. A number of non-nuclear weapon states expressed, since then, the views that positive security assurance is nothing more than that already contained in the U.N. Charter. Furthermore, the statements made by the three nuclear weapon states amount to only their

¹⁸² Lewis Dunn, *Containing Nuclear Proliferation*, Adelphi Paper 263 (London: The International Institute for Strategic Studies, 1991), p. 43.

intentions and subject to the right of veto in the Security Council.¹⁸³

With the two remaining nuclear weapon states' joining the NPT (China in March and France in August 1992, respectively), nuclear weapon states have been strongly asked to strengthen positive security assurance. On April 11, 1995, the Security Council unanimously approved Resolution 984 that revised and expanded the existing positive security assurance (Appendix 7). The resolution recognizes that the Security Council will act immediately in accordance with the relevant provisions of the Charter of the United Nations, in the event that non-nuclear weapon states parties to the NPT are the victim of an act of, or object of a threat of, aggression in which nuclear weapons are used. It also invites U.N. members to take appropriate measures in response to a request from the victim for technical, medical, scientific or humanitarian assistance. The resolution also expresses the Security Council's intention to recommend appropriate procedures, in response to any request from a non-nuclear-weapon state party to the NPT that is the victim of such an act of aggression, regarding compensation under international law from the aggressor for loss, damage or injury sustained as a result of the aggression.

Persuade North Korea to Return to International Non-Proliferation Regimes

Except the United Nations, the NPT is the largest international gathering where 189 countries are signatories as of the year 2006. Regaining the membership of the NPT is obviously an important layer of security guarantees for North Korea since it is the unique and most authoritative international regime that renders its

¹⁸³ Aga Shahi, "Defense, disarmament, and collective security," *Nonoffensive Defense: A Global Perspective* (New York: UNIDIR, 1990), p. 184.

signatories (non-nuclear weapon state) legally binding security assurances. Under the NPT, five nuclear weapon states have made both conditional negative and positive security assurances as described above.

As a result, no nuclear weapon state could dare to use or threaten to use nuclear weapons against North Korea unless it breaches the exception clause of the conditional negative security assurance, which is that a non-nuclear weapon state initiates an attack to nuclear weapon states or its allies. That is, in case of the Korean peninsula, as long as the DPRK remains in the NPT, forgoes communizing the ROK by force, and does not proliferate its WMD technology and materials abroad, its security will be legally guaranteed by the NPT membership. The Six-Party Talks participants should, therefore, persuade North Korea to return to the NPT by emphasizing the security merits of the Treaty.

Role Division and Financial Burden Sharing

Rationale for the ROK Active Participation in All Aspects of Cooperative Denuclearization

If a cooperative denuclearization process is launched in the DPRK, it will be the first East Asian country where the CTR concept is put into practice. In addition, North Korea is the country whose legal entity is strongly disputed by a key partner of cooperative denuclearization—South Korea. Thus, in terms of role division and financial burden sharing, there exist two important factors that must be factored into formulating a cooperative denuclearization process for North Korea. They are cultural affinity and legal justification.

The importance of culture especially in dealing with North Korea cannot be emphasized too much. A CSIS study listed five major

adverse working conditions in North Korea, four of which were related with cultural aspects.¹⁸⁴

- Among North Koreans, there exist strong suspicions about Americans and foreigners. A similar problem was observed in Russia, but xenophobia in the DPRK will be much more distinct and deep-rooted.
- While the rule of law in the written document ensures commitment between parties in the West, personal relationships framed on Confucian ethics more than written agreements are the essential condition for cooperation and trust in the DPRK.
- Stressful working conditions in North Korea will present significant challenges in carrying out a cooperative denuclearization process. During the Agreed Framework implementation, Americans were exposed to constant danger of carbon monoxide poison, electrocution, minor injuries, other accidents, and inappropriate medical care.
- North Koreans have different safety cultures way below the Western standard, which will create various hurdles. While Americans prepare for all contingencies to minimize hazards, the North Koreans often put more emphasis on speed than safety.

Having these adverse working conditions in mind, South Korea is expected to play an outstanding role. Facilitated by the same language and psychological affinity, South Korea, as a *cultural cushion* between North Korea and the other Six-Party Talks participants, will guarantee to ameliorate most of these problems.

¹⁸⁴ Joel Wit, et al., *The Six Party Talks and Beyond: Cooperative Threat Reduction and North Korea*, pp. 19-20.

At the same time, legal aspects must be appropriately taken into account. Legal aspects consist of two parts: the one is duties and obligations according to international nonproliferation norms and regimes such as the NPT or other multilateral agreements like the joint statement of the Six-Party Talks. The other, often missing in the denuclearization debate but crucial for a successful end result of a cooperative denuclearization process, is duties and obligations bestowed by the ROK Constitution. According to the ROK Constitution, North Korean soil belongs to South Korean territories (Article 3).¹⁸⁵ Therefore, it is the solemn right and duty for South Korean government and people to verify what has happened and will happen in the northern part of their territories. As Korean unification comes nearer, the importance of this second part of the legal aspects is more likely to be highlighted.

¹⁸⁵ The Article 3 of the ROK Constitution stipulates that “The territories of the Republic of Korea shall be the Korean peninsula and its affiliated islands.”

Adding these two factors to the CSIS study result, possible partners and their characteristics can be modified as in the following Table 6.1.

Table 6.1 Modified Version: Partners and Their Characteristics

Country	Technical Skills	Financial Capacity	Political Will	CTR Experiences	Cultural Affinity	Legal Justification
United States	Very High	Medium	Medium	Very High	Low	Medium
South Korea	Medium	High	High	Low	Very High	Very High
China	High	Medium	Medium	Low	Medium	Medium
Japan	High	High	Medium	Medium	Medium	Medium
Russia	High	Low	Low	High	Low	Medium
European Union	High	Low	Low	Medium	Low	Medium

According to the revised version, South Korea is the only country with very high cultural affinity and legal justification. Therefore, the South's role cannot be limited to heavy financial burdens. The ROK government and people have every reason to actively take part in all

aspects of a cooperative denuclearization process for the DPRK. It is a constitutional right and duty of South Korea. In addition, South Korea can play a role of *bridging force* that can link North Koreans with rest of the international community.

Cooperative denuclearization in North Korea does not have to restrict its partners only to the Six-Party Talks participants plus the European Union. Founded on the principle of *coalition of willing*, it can invite every country willing to have their own contributions to resolving one of the most important security problem in the international community. For example, Kazakhstan may express its interests in joining the cooperative denuclearization process. Kazakhstan has technical experiences to shut down the Aktau reactor on the Caspian Sea, and may be able to provide valuable information to South Korea.

Active Participation of the ROK in the G8 Global Partnership Programs

The ROK government began to take part in the G8 Global Partnership programs since June 2004 when the Sea Island G8 summit meeting was held. Since then, South Korea contributed 250,000 dollars to a conventional power plant construction project at Zheleznogorsk, Russia and additional 250,000 dollars to a Russian nuclear submarine decommission project. Besides this, Seoul has continued to provide a modest fund for the ISTC in Russia, for instance, 710,000 dollars in 2005.

The G8 Global Partnership can be a useful platform to address the issue of financial burdens. Providing appropriate financial resources will be a key task in a cooperative denuclearization process for North Korea. Observing the utter failure of the LWR project where their government paid lion's share of expenses, South Koreans are

hardly likely to support another large sums of financial burdens. They just do not want to see the ROK government relegated to the role of silent paymaster. On the other hand, the G8 countries as well as other G8 Global Partnership participants will have strong common interests to eliminate WMD capabilities of the DPRK. Thus, shared political motivations are believed to exist among the G8 global partners to expand the recipient country list and develop new cooperative denuclearization projects in other countries. In fact, some U.S. government officials have raised the possibility of applying the G8 Global Partnership programs to the DPRK.¹⁸⁶ Such political interests can be buttressed by the enormous financial capacity (\$20 billion) of the programs.

South Korea's active participation in the G8 Global Partnership programs now can be a valuable investment for the future. South Korean financial contributions to and technical and political experiences in the programs could become an asset to be fully utilized later in North Korea. That is, the South's participation would provide Seoul with moral and political high ground to demand reciprocal contributions to cooperative denuclearization of North Korea from the G8 Global Partnership participants.

The LWR Project is Still an Option

Although the LWR project terminated at the moment, it can revive and become a part of a comprehensive reward package for North Korea. In this regard, resuming provision of 500,000 tons of heavy fuel oil would be a modest incentive to the North as well. Considering North Korea's a strong desire to operate light-water reactors on its soil, the joint statement of the 4th round of the Six-

¹⁸⁶ Joel Wit, *et al.*, *The Six Party Talks and Beyond: Cooperative Threat Reduction and North Korea*, p. 8.

Party Talks expressed their respect to North Korea's right to peaceful uses of nuclear energy.

The LWR project could be an option that can reduce the cost of denuclearizing North Korea as well as motivate the North to accept the cooperative denuclearization process. Basically, a political deal would be possible between the United States and the DPRK, based on the principle of reciprocity. That is, Washington shows some flexibility by permitting the LWR project to revive at Shinpo, a northeastern part of North Korea. By complementing the KEDO framework within the Six-Party Talks format, the LWR project can be easily restructured and completed. At the same time, North Korea could agree to use electricity produced by the two light-water reactors but not to take advantage of other technical expertise or byproducts of the LWR project.

In short, North Korea's right to the LWR could be limited to operating the reactors and using the electricity produced. All the nuclear fuels must be imported from abroad and all the spent fuels sent back to the exporting country or a third country that wants to store them. This format could ameliorate concerns that North Korea could retain nuclear know-how under the LWR cover and one day resume its nuclear weapons development program. It is also possible that South Korean technicians could be in charge of operating the reactors. If so, North Korea will have to designate the LWR compound and vicinities as a special area under extraterritoriality and bestow South Korean technicians diplomatic immunities.

Other Relevant Issues

Conversion and Redirection

At this early moment, it is not clear whether North Koreans are willing to accept the idea of conversion and redirection. It was reported that U.S. negotiators of the Six-Party Talks, after the September 19th joint statement was agreed in 2005, suggested cooperative denuclearization ideas to North Korean diplomats. But North Korean response was very negative and they did not want to talk about it at that time.¹⁸⁷

Assuming that North Koreans are interested in cooperative denuclearization, conversion of some nuclear facilities toward peaceful purposes is an important incentive that can induce strong motivations of North Koreans to cooperate with international denuclearization efforts. North Korean motivations come in two folds. On the one hand, by identifying and promoting positive elements of North Korea and thus, fostering constructive environments for its better change, conversion efforts will provide North Koreans with face saving and have them feel their national sovereignty not harmed. On the other hand, conversion will give North Koreans some tangible economic benefits and let them realize their skill can be utilized in productive and beneficial ways.

Redirection of nuclear scientists, engineers, and trained workers is a major task that should be successfully fulfilled so as to cut off brain drain from North Korea and to reinforce nonproliferation regimes. In addition to channeling their existing skills and expertise to commercial projects, redirection contains retraining of workers who were not exposed to commercial application of their expertise in

¹⁸⁷ Richard Stone, "News focus," p. 171.

order to make their skills better fit into commercial projects.

A CSIS study presents three specific projects for conversion and redirection:¹⁸⁸

- A multilateral peaceful nuclear research center focusing on the production of radioactive isotopes for medical, agricultural and industrial purposes.
- An International Science and Technology Center in Pyongyang as a multilateral center to provide internationally funded opportunities for North Korean scientists and technicians.
- Joint ventures to mine North Korean uranium ore and other related minerals.

Centers for the purpose of conversion and retraining do not have to be newly constructed or be placed in North Korea. There exist several reasons. First, unlike previous CTR experiences, an important difference of a cooperative denuclearization process in North Korea is that inter-Korean relations will have improved drastically or even reached a virtual unification when the process comes to the conversion and retraining phase. Thus, a distinction between North Korea and South Korea then will not have had as much implications as it has today. Second, North Korean facilities and sites are causing serious safety concerns. They were poorly built or managed, and possibly are highly contaminated. Finally, South Korea has developed an excellent infrastructure of conversion and retraining. The South maintains a superb network of private or governmental institutions, centers and universities on nuclear energy, safety, and personnel training.

¹⁸⁸ Joel Wit, *et al.*, *The Six Party Talks and Beyond: Cooperative Threat Reduction and North Korea*, p. IV.

Therefore, rather than using North Korean facilities or establishing a new center in North Korea, it would be cost-effective to take advantage of already existing scientific infrastructures in South Korea. It is, therefore, recommended that internationally available fund for conversion and retraining would be channeled into South Korea.

Importance of Swift Inspection and Advance Preparation

It is an urgent matter to dispatch inspection teams to key sites in North Korea as soon as the inspection is allowed. Swift inspection is essential to find out what happened since December 2002 and establish full accountability of North Korean nuclear activities. By seizing and controlling nuclear-related sites promptly and minimizing chances of being tampered, swift inspection will make sure that North Korea's nuclear capabilities remain intact. The initial inspection teams should secure personnel as well as nuclear weapons and infrastructure in order to effectively prevent destruction of evidence, looting, or smuggling.

In this regard, Iraq presents an important lesson. Major Iraqi nuclear sites had been so heavily looted before being seized by the allied forces that it was impossible to find out whether nuclear materials were missing.¹⁸⁹ In case of North Korea, regardless of information opened voluntarily or coercively, it is worried that North Korea may try to carry destroying evidences into extremes. This brings to the fore the necessity that some preparation measures must be taken even before a cooperative denuclearization process is agreed on in order to thwart thoroughly North Korea's anticipated attempts to disrupt valuable evidences.

¹⁸⁹ Barton Gellman, "Iraqi nuclear site is found looted," *Washington Post*, May 4, 2003, p. A01.

In particular, South Korea and the United States need to form shadow inspection teams in advance, train and educate inspectors, and promote teamwork. The joint inspection teams will consist of civilian and military experts on nuclear weapons, nuclear fuel cycle, verification, nonproliferation, North Korean military affairs, and Korean culture and language. These joint teams will become a major part of the multilateral verification body that will take charge of the whole dismantling process from initial seize of the sites and capabilities to ongoing monitoring and verification after dismantlement. Organizing a shadow inspection team is not a brand new idea. In the wake of emerging North Korean nuclear problem in the early 1990s, Seoul and Washington jointly formed such a team and carried out cooperative inspection training both in the United States and South Korea. Since then, the ROK Ministry of National Defense has maintained its own verification organization—Korea Arms Verification Agency (KAVA).

In this regard, a recent joint inspection exercise held between the ROK and the United States is an auspicious sign for future bilateral cooperation. On September 11-16, the Defense Threat Reduction Agency (DTRA) dispatched verification experts to Seoul and carried out a joint inspection exercise with KAVA officers.¹⁹⁰ It was not known whether the exercise covered nuclear weapons and related materials. There is no doubt that it should provide a momentum for the two countries to prepare themselves for verifying denuclearization of North Korea in the future.

¹⁹⁰ *JoongAng Daily*, September 12, 2006.

APPENDIX ONE

Soviet Nuclear Threat Reduction Act of 1991, H.R.3807 (P.L. 102-228), November 27, 1991

An Act

To amend the Arms Export Control Act to authorize the President to transfer battle tanks, artillery pieces, and armored combat vehicles to member countries of the North Atlantic Treaty Organization in conjunction with implementation of the Treaty on Conventional Armed Forces in Europe.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

TITLE II--SOVIET WEAPONS DESTRUCTION

PART A--SHORT TITLE

SEC. 201. SHORT TITLE.

This title may be cited as the “Soviet Nuclear Threat Reduction Act of 1991.”

PART B--FINDINGS AND PROGRAM AUTHORITY

SEC. 211. NATIONAL DEFENSE AND SOVIET WEAPONS DESTRUCTION.

(a) Findings. --The Congress finds--

- (1) that Soviet President Gorbachev has requested Western help in dismantling nuclear weapons, and President Bush has proposed

United States cooperation on the storage, transportation, dismantling, and destruction of Soviet nuclear weapons;

- (2) that the profound changes underway in the Soviet Union pose three types of danger to nuclear safety and stability, as follows:
 - (A) ultimate disposition of nuclear weapons among the Soviet Union, its republics, and any successor entities that is not conducive to weapons safety or to international stability;
 - (B) seizure, theft, sale, or use of nuclear weapons or components;
 - and (C) transfers of weapons, weapons components, or weapons know-how outside of the territory of the Soviet Union, its republics, and any successor entities, that contribute to worldwide proliferation; and
- (3) that it is in the national security interests of the United States
 - (A) to facilitate on a priority basis the transportation, storage, safeguarding, and destruction of nuclear and other weapons in the Soviet Union, its republics, and any successor entities, and
 - (B) to assist in the prevention of weapons proliferation.

(b) Exclusions.--United States assistance in destroying nuclear and other weapons under this title may not be provided to the Soviet Union, any of its republics, or any successor entity unless the President certifies to the Congress that the proposed recipient is committed to--

- (1) making a substantial investment of its resources for dismantling or destroying such weapons;
- (2) forgoing any military modernization program that exceeds legitimate defense requirements and forgoing the replacement of destroyed weapons of mass destruction;
- (3) forgoing any use of fissionable and other components of destroyed nuclear weapons in new nuclear weapons;
- (4) facilitating United States verification of weapons destruction carried out under section 212;
- (5) complying with all relevant arms control agreements; and
- (6) observing internationally recognized human rights, including the

protection of minorities.

SEC. 212. AUTHORITY FOR PROGRAM TO FACILITATE SOVIET WEAPONS DESTRUCTION.

(a) In General.--Notwithstanding any other provision of law, the President, consistent with the findings stated in section 211, may establish a program as authorized in subsection (b) to assist Soviet weapons destruction. Funds for carrying out this program shall be provided as specified in part C.

(b) Type of Program.--The program under this section shall be limited to cooperation among the United States, the Soviet Union, its republics, and any successor entities to (1) destroy nuclear weapons, chemical weapons, and other weapons, (2) transport, store, disable, and safeguard weapons in connection with their destruction, and (3) establish verifiable safeguards against the proliferation of such weapons. Such cooperation may involve assistance in planning and in resolving technical problems associated with weapons destruction and proliferation. Such cooperation may also involve the funding of critical short-term requirements related to weapons destruction and should, to the extent feasible, draw upon United States technology and United States technicians.

PART C--ADMINISTRATIVE AND FUNDING AUTHORITIES

SEC. 221. ADMINISTRATION OF NUCLEAR THREAT REDUCTION PROGRAMS.

(a) Funding.--

(1) Transfer authority.--The President may, to the extent provided in an appropriations Act or joint resolution, transfer to the appropriate defense accounts from amounts appropriated to the Department of Defense for fiscal year 1992 for operation and maintenance or from balances in working capital accounts

established under section 2208 of title 10, United States Code, not to exceed \$400,000,000 for use in reducing the Soviet military threat under part B.

(2) Limitation.--Amounts for transfers under paragraph (1) may not be derived from amounts appropriated for any activity of the Department of Defense that the Secretary of Defense determines essential for the readiness of the Armed Forces, including amounts for--(A) training activities; and (B) depot maintenance activities.

(b) Department of Defense.--The Department of Defense shall serve as the executive agent for any program established under part B.

(c) Reimbursement of Other Agencies.--The Secretary of Defense may reimburse other United States Government departments and agencies under this section for costs of participation, as directed by the President, only in a program established under part B.

(d) Charges Against Funds.--The value of any material from existing stocks and inventories of the Department of Defense, or any other United States Government department or agency, that is used in providing assistance under part B to reduce the Soviet military threat may not be charged against funds available pursuant to subsection (a) to the extent that the material contributed is directed by the President to be contributed without subsequent replacement.

(e) Determination by Director of OMB.--No amount may be obligated for the program under part B unless expenditures for that program have been determined by the Director of the Office of Management and Budget to be counted against the defense category of the discretionary spending limits for fiscal year 1992 (as defined in section 601(a)(2) of the Congressional Budget Act of 1974) for purposes of part C of the Balanced Budget and Emergency Deficit Control Act of 1985.

SEC. 222. REPAYMENT ARRANGEMENTS.

(a) Reimbursement Arrangements.--Assistance provided under part B to

the Soviet Union, any of its republics, or any successor entity shall be conditioned, to the extent that the President determines to be appropriate after consultation with the recipient government, upon the agreement of the recipient government to reimburse the United States Government for the cost of such assistance from natural resources or other materials available to the recipient government.

(b) Natural Resources, Etc.--The President shall encourage the satisfaction of such reimbursement arrangements through the provision of natural resources, such as oil and petroleum products and critical and strategic materials, and industrial goods. Materials received by the United States Government pursuant to this section that are suitable for inclusion in the Strategic Petroleum Reserve or the National Defense Stockpile may be deposited in the reserve or stockpile without reimbursement. Other material and services received may be sold or traded on the domestic or international market with the proceeds to be deposited in the General Fund of the Treasury.

SEC. 223. DIRE EMERGENCY SUPPLEMENTAL APPROPRIATIONS.

It is the sense of the Senate that the committee of conference on House Joint Resolution 157 should consider providing the necessary authority in the conference agreement for the President to transfer funds pursuant to this title.

PART D--REPORTING REQUIREMENTS

SEC. 231. PRIOR NOTICE OF OBLIGATIONS TO CONGRESS.

Not less than 15 days before obligating any funds for a program under part B, the President shall transmit to the Congress a report on the proposed obligation. Each such report shall specify--

- (1) the account, budget activity, and particular program or programs from which the funds proposed to be obligated are to be derived and the amount of the proposed obligation; and

- (2) the activities and forms of assistance under part B for which the President plans to obligate such funds.

SEC. 232. QUARTERLY REPORTS ON PROGRAM.

Not later than 30 days after the end of each quarter of fiscal years 1992 and 1993, the President shall transmit to the Congress a report on the activities to reduce the Soviet military threat carried out under part B. Each such report shall set forth, for the preceding quarter and cumulatively, the following:

- (1) Amounts spent for such activities and the purposes for which they were spent.
- (2) The source of the funds obligated for such activities, stated specifically by program.
- (3) A description of the participation of the Department of Defense, and the participation of any other United States Government department or agency, in such activities.
- (4) A description of the activities carried out under part B and the forms of assistance provided under part B.
- (5) Such other information as the President considers appropriate to fully inform the Congress concerning the operation of the program under part B.

APPENDIX TWO

Joint Declaration on the Denuclearization of the Korean Peninsula, January 20, 1992

The South and the North,

Desiring to eliminate the danger of nuclear war through denuclearization of the Korean peninsula, and thus to create an environment and conditions favorable for peace and peaceful unification of our country and contribute to peace and security in Asia and the world,

Declare as follows;

1. The South and the North shall not test, manufacture, produce, receive, possess, store, deploy or use nuclear weapons.
2. The South and the North shall use nuclear energy solely for peaceful purposes.
3. The South and the North shall not possess nuclear reprocessing and uranium enrichment facilities.
4. The South and the North, in order to verify the denuclearization of the Korean peninsula, shall conduct inspection of the objects selected by the other side and agreed upon between the two sides, in accordance with procedures and methods to be determined by the South-North Joint Nuclear Control Commission.
5. The South and the North, in order to implement this joint declaration, shall establish and operate a South-North Joint Nuclear Control Commission within one month of the effectuation of this joint declaration.

6. This Joint Declaration shall enter into force as of the day the two sides exchange appropriate instruments following the completion of their respective procedures for bringing it into effect.

Chung Won-shik

Prime Minister of the Republic of Korea

Yon Hyong-muk

Premier of the Administration Council of the Democratic People's
Republic of Korea

APPENDIX THREE

Cooperative Threat Reduction Act of 1993, H.R.2401 (P.L. 103-160), November 30, 1993¹

TITLE XII--COOPERATIVE THREAT REDUCTION WITH STATES OF FORMER SOVIET UNION

SEC. 1201. SHORT TITLE.

This title may be cited as the ‘Cooperative Threat Reduction Act of 1993.’

SEC. 1202. FINDINGS ON COOPERATIVE THREAT REDUCTION.

The Congress finds that it is in the national security interest of the United States for the United States to do the following:

- (1) Facilitate, on a priority basis, the transportation, storage, safeguarding, and elimination of nuclear and other weapons of the independent states of the former Soviet Union, including—
 - (A) the safe and secure storage of fissile materials derived from the elimination of nuclear weapons;
 - (B) the dismantlement of (i) intercontinental ballistic missiles and launchers for such missiles, (ii) submarine-launched ballistic missiles and launchers for such missiles, and (iii) heavy bombers; and
 - (C) the elimination of chemical, biological and other weapons capabilities.
- (2) Facilitate, on a priority basis, the prevention of proliferation of weapons (and components of weapons) of mass destruction and destabilizing conventional weapons of the independent

¹ A part of the *National Defense Authorization Act for the Fiscal Year 1994*.

states of the former Soviet Union and the establishment of verifiable safeguards against the proliferation of such weapons and components.

- (3) Facilitate, on a priority basis, the prevention of diversion of weapons-related scientific expertise of the independent states of the former Soviet Union to terrorist groups or third world countries.
- (4) Support (A) the demilitarization of the defense-related industry and equipment of the independent states of the former Soviet Union, and (B) the conversion of such industry and equipment to civilian purposes and uses.
- (5) Expand military-to-military and defense contacts between the United States and the independent states of the former Soviet Union.

SEC. 1203. AUTHORITY FOR PROGRAMS TO FACILITATE COOPERATIVE THREAT REDUCTION.

(a) IN GENERAL- Notwithstanding any other provision of law, the President may conduct programs described in subsection (b) to assist the independent states of the former Soviet Union in the demilitarization of the former Soviet Union. Any such program may be carried out only to the extent that the President determines that the program will directly contribute to the national security interests of the United States.

(b) AUTHORIZED PROGRAMS- The programs referred to in subsection (a) are the following:

- (1) Programs to facilitate the elimination, and the safe and secure transportation and storage, of nuclear, chemical, and other weapons and their delivery vehicles.
- (2) Programs to facilitate the safe and secure storage of fissile materials derived from the elimination of nuclear weapons.
- (3) Programs to prevent the proliferation of weapons, weapons

components, and weapons-related technology and expertise.

- (4) Programs to expand military-to-military and defense contacts.
- (5) Programs to facilitate the demilitarization of defense industries and the conversion of military technologies and capabilities into civilian activities.
- (6) Programs to assist in the environmental restoration of former military sites and installations when such restoration is necessary to the demilitarization or conversion programs authorized in paragraph (5).
- (7) Programs to provide housing for former military personnel of the former Soviet Union released from military service in connection with the dismantlement of strategic nuclear weapons, when provision of such housing is necessary for dismantlement of strategic nuclear weapons and when no other funds are available for such housing.
- (8) Other programs as described in section 212(b) of the Soviet Nuclear Threat Reduction Act of 1991 (title II of Public Law 102-228; 22 U.S.C. 2551 note) and section 1412(b) of the Former Soviet Union Demilitarization Act of 1992 (title XIV of Public Law 102-484; 22 U.S.C. 5901 et seq.).

(c) UNITED STATES PARTICIPATION- The programs described in subsection (b) should, to the extent feasible, draw upon United States technology and expertise, especially from the private sector of the United States.

(d) RESTRICTIONS- Assistance authorized by subsection (a) may not be provided to any independent state of the former Soviet Union for any year unless the President certifies to Congress for that year that the proposed recipient state is committed to each of the following:

- (1) Making substantial investment of its resources for dismantling or destroying its weapons of mass destruction, if such state has an obligation under a treaty or other agreement to destroy or dismantle any such weapons.

- (2) Foregoing any military modernization program that exceeds legitimate defense requirements and foregoing the replacement of destroyed weapons of mass destruction.
- (3) Foregoing any use in new nuclear weapons of fissionable or other components of destroyed nuclear weapons.
- (4) Facilitating United States verification of any weapons destruction carried out under this title, section 1412(b) of the Former Soviet Union Demilitarization Act of 1992 (title XIV of Public Law 102-484; 22 U.S.C. 590(b)), or section 212(b) of the Soviet Nuclear Threat Reduction Act of 1991 (title II of Public Law 102-228; 22 U.S.C. 2551 note).
- (5) Complying with all relevant arms control agreements.
- (6) Observing internationally recognized human rights, including the protection of minorities.

SEC. 1204. DEMILITARIZATION ENTERPRISE FUND.

(a) DESIGNATION OF FUND- The President is authorized to designate a Demilitarization Enterprise Fund for the purposes of this section. The President may designate as the Demilitarization Enterprise Fund any organization that satisfies the requirements of subsection (e).

(b) PURPOSE OF FUND- The purpose of the Demilitarization Enterprise Fund is to receive grants pursuant to this section and to use the grant proceeds to provide financial support under programs described in subsection (b)(5) for demilitarization of industries and conversion of military technologies and capabilities into civilian activities.

(c) GRANT AUTHORITY- The President may make one or more grants to the Demilitarization Enterprise Fund.

(d) RISK CAPITAL FUNDING OF DEMILITARIZATION- The Demilitarization Enterprise Fund shall use the proceeds of grants received under this section to provide financial support in accordance with subsection (b) through transactions as follows:

- (1) Making loans.
 - (2) Making grants.
 - (3) Providing collateral for loan guaranties by the Export-Import Bank of the United States.
 - (4) Taking equity positions.
 - (5) Providing venture capital in joint ventures with United States industry.
 - (6) Providing risk capital through any other form of transaction that the President considers appropriate for supporting programs described in subsection (b)(5).
- (e) ELIGIBLE ORGANIZATION- An organization is eligible for designation as the Demilitarization Enterprise Fund if the organization--
- (1) is a private, nonprofit organization;
 - (2) is governed by a board of directors consisting of private citizens of the United States; and
 - (3) provides assurances acceptable to the President that it will use grants received under this section to provide financial support in accordance with this section.
- (f) OPERATIONAL PROVISIONS- The following provisions of section 201 of the Support for East European Democracy (SEED) Act of 1989 (Public Law 101-179; 22 U.S.C. 5421) shall apply with respect to the Demilitarization Enterprise Fund in the same manner as such provisions apply to Enterprise Funds designated pursuant to subsection (d) of such section:
- (1) Subsection (d)(5), relating to the private character of Enterprise Funds.
 - (2) Subsection (h), relating to retention of interest earned in interest bearing accounts.
 - (3) Subsection (i), relating to use of United States private venture capital.
 - (4) Subsection (k), relating to support from Executive agencies.
 - (5) Subsection (l), relating to limitation on payments to Fund

personnel.

(6) Subsections (m) and (n), relating to audits.

(7) Subsection (o), relating to record keeping requirements.

(8) Subsection (p), relating to annual reports.

In addition, returns on investments of the Demilitarization Enterprise Fund and other payments to the Fund may be reinvested in projects of the Fund.

(g) EXPERIENCE OF OTHER ENTERPRISE FUNDS- To the maximum extent practicable, the Board of Directors of the Demilitarization Enterprise Fund should adopt for that Fund practices and procedures that have been developed by Enterprise Funds for which funding has been made available pursuant to section 201 of the Support for East European Democracy (SEED) Act of 1989 (Public Law 101-179; 22 U.S.C. 5421).

(h) CONSULTATION REQUIREMENT- In the implementation of this section, the Secretary of State and the Administrator of the Agency for International Development shall be consulted to ensure that the Articles of Incorporation of the Fund (including provisions specifying the responsibilities of the Board of Directors of the Fund), the terms of United States Government grant agreements with the Fund, and United States Government oversight of the Fund are, to the maximum extent practicable, consistent with the Articles of Incorporation of, the terms of grant agreements with, and the oversight of the Enterprise Funds established pursuant to section 201 of the Support for East European Democracy (SEED) Act of 1989 (22 U.S.C. 5421) and comparable provisions of law.

(i) INITIAL IMPLEMENTATION- The Board of Directors of the Demilitarization Enterprise Fund shall publish the first annual report of the Fund not later than January 31, 1995.

(j) TERMINATION OF DESIGNATION- A designation of an organization as the Demilitarization Enterprise Fund under subsection (a) shall be temporary. When making the designation, the President

shall provide for the eventual termination of the designation.

SEC. 1205. FUNDING FOR FISCAL YEAR 1994.

(a) **AUTHORIZATION OF APPROPRIATIONS-** Funds authorized to be appropriated under section 301(21) shall be available for cooperative threat reduction with states of the former Soviet Union under this title.

(b) **LIMITATIONS-**

- (1) Not more than \$15,000,000 of the funds referred to in subsection (a) may be made available for programs authorized in subsection (b)(6) of section 1203.
- (2) Not more than \$20,000,000 of such funds may be made available for programs authorized in subsection (b)(7) of section 1203.
- (3) Not more than \$40,000,000 of such funds may be made available for grants to the Demilitarization Enterprise Fund designated pursuant to section 1204 and for related administrative expenses.

(c) **AUTHORIZATION OF EXTENSION OF AVAILABILITY OF PRIOR YEAR FUNDS-** To the extent provided in appropriations Acts, the authority to transfer funds of the Department of Defense provided in section 9110(a) of the Department of Defense Appropriations Act, 1993 (Public Law 102-396; 106 Stat. 1928), and in section 108 of Public Law 102-229 (105 Stat. 1708) shall continue to be in effect during fiscal year 1994.

SEC. 1206. PRIOR NOTICE TO CONGRESS OF OBLIGATION OF FUNDS.

(a) **NOTICE OF PROPOSED OBLIGATION-** Not less than 15 days before obligation of any funds for programs under section 1203, the President shall transmit to the appropriate congressional committees as defined in section 1208 a report on the proposed obligation. Each

such report shall specify--

- (1) the activities and forms of assistance for which the President plans to obligate such funds;
- (2) the amount of the proposed obligation; and
- (3) the projected involvement of the departments and agencies of the United States Government and the private sector of the United States.

(b) **REPORTS ON DEMILITARIZATION OR CONVERSION PROJECTS-** Any report under subsection (a) that covers proposed demilitarization or conversion projects under paragraph (5) or (6) of section 1203(b) shall contain additional information to assist the Congress in determining the merits of the proposed projects. Such information shall include descriptions of--

- (1) the facilities to be demilitarized;
- (2) the types of activities conducted at those facilities and of the types of nonmilitary activities planned for those facilities;
- (3) the forms of assistance to be provided by the United States Government and by the private sector of the United States;
- (4) the extent to which military activities and production capability will consequently be eliminated at those facilities; and
- (5) the mechanisms to be established for monitoring progress on those projects.

SEC. 1207. SEMIANNUAL REPORT.

Not later than April 30, 1994, and not later than October 30, 1994, the President shall transmit to the appropriate congressional committees a report on the activities carried out under this title. Each such report shall set forth, for the preceding six-month period and cumulatively, the following:

- (1) The amounts obligated and expended for such activities and the purposes for which they were obligated and expended.
- (2) A description of the participation, if any, of each department

and agency of the United States Government in such activities.

- (3) A description of the activities carried out and the forms of assistance provided, and a description of the extent to which the private sector of the United States has participated in the activities for which amounts were obligated and expended under this title.
- (4) Such other information as the President considers appropriate to fully inform the Congress concerning the operation of the programs and activities carried out under this title, including, with respect to proposed demilitarization or conversion projects, additional information on the progress toward demilitarization of facilities and the conversion of the demilitarized facilities to civilian activities.

SEC. 1208. APPROPRIATE CONGRESSIONAL COMMITTEES DEFINED.

In this title, the term ‘appropriate congressional committees’ means--

- (1) the Committee on Foreign Relations of the Senate, the Committee on Foreign Affairs of the House of Representatives, and the Committees on Appropriations of the House and the Senate, wherever the account, budget activity, or program is funded from appropriations made under the international affairs budget function (150);
- (2) the Committees on Armed Services and the Committees on Appropriations of the Senate and the House of Representatives, wherever the account, budget activity, or program is funded from appropriations made under the national defense budget function (050); and
- (3) the Committee to which the specified activities of section 1203, if the subject of separate legislation, would be referred under the rules of the respective House of Congress.

SEC. 1209. AUTHORIZATION FOR ADDITIONAL FISCAL YEAR 1993 ASSISTANCE TO THE INDEPENDENT STATES OF THE FORMER SOVIET UNION.

(a) AUTHORIZATION OF APPROPRIATIONS- There is hereby authorized to be appropriated for fiscal year 1993 for 'Operation and Maintenance, Defense Agencies' the additional sum of \$979,000,000, to be available for the purposes of providing assistance to the independent states of the former Soviet Union.

(b) AUTHORIZATION OF TRANSFER OF FUNDS- The Secretary of Defense may, to the extent provided in appropriations Acts, transfer from the account 'Operation and Maintenance, Defense Agencies' for fiscal year 1993 a sum not to exceed the amount appropriated pursuant to the authorization in subsection (a) to--

- (1) other accounts of the Department of Defense for the purpose of providing assistance to the independent states of the former Soviet Union; or
- (2) appropriations available to the Department of State and other agencies of the United States Government for the purpose of providing assistance to the independent states of the former Soviet Union for programs that the President determines will increase the national security of the United States.

(c) ADMINISTRATIVE PROVISIONS-

- (1) Amounts transferred under subsection (b) shall be available subject to the same terms and conditions as the appropriations to which transferred.
- (2) The authority to make transfers pursuant to this section is in addition to any other transfer authority of the Department of Defense.

(d) COORDINATION OF PROGRAMS- The President shall coordinate the programs described in subsection (b) with those authorized in the other provisions of this title and in the provisions of the Freedom for Russia and Emerging Eurasian Democracies and Open

Markets Support Act of 1992 (Public Law 102-511) so as to optimize the contribution such programs make to the national interests of the United States.

APPENDIX FOUR

Trilateral Statement by the Presidents of the United States, Russia and Ukraine, January 14, 1994

Presidents Clinton, Yeltsin and Kravchuk met in Moscow on January 14. The three Presidents reiterated that they will deal with one another as full and equal partners and that relations among their countries must be conducted on the basis of respect for the independence, sovereignty and territorial integrity of each nation.

The three Presidents agreed on the importance of developing mutually beneficial, comprehensive and cooperative economic relations. In this connection, they welcomed the intention of the United States to provide assistance to Ukraine and Russia to support the creation of effective market economies.

The three Presidents reviewed the progress that has been made in reducing nuclear forces. Deactivation of strategic forces is already well underway in the United states, Russia and Ukraine. The Presidents welcomed the ongoing deactivation of RS-18s(SS-19s) and RS-22s(SS-24s) on Ukrainian territory by having their warheads removed.

The Presidents look forward to the entry into force of the START I Treaty, including the Lisbon Protocol and associated documents, and President Kravchuk reiterated his commitment that Ukraine accede to the Nuclear Non-Proliferation Treaty as a non-nuclear-weapon state in the shortest possible time. Presidents Clinton and Yeltsin noted that entry into force of START I will allow them to seek early ratification of START II. The Presidents discussed, in this regard, steps their countries would take to resolve certain nuclear weapons questions.

The Presidents emphasized the importance of ensuring the safety and security of nuclear weapons pending their dismantlement.

The Presidents recognize the importance of compensation to Ukraine, Kazakhstan and Belarus for the value of the highly-enriched uranium in nuclear warheads located on their territories. Arrangements have been worked out to provide fair and timely compensation to Ukraine, Kazakhstan and Belarus as the nuclear warheads on their territory are transferred to Russia for dismantling.

Presidents Clinton and Yeltsin expressed satisfaction with the completion of the highly-enriched uranium contract, which was signed by appropriate authorities of the United States and Russia. By converting weapons-grade uranium into uranium which can only be used for peaceful purposes, the highly-enriched uranium agreement is a major step forward in fulfilling the countries' mutual non-proliferation objectives.

The three Presidents decided on simultaneous actions on transfer of nuclear warheads from Ukraine and delivery of compensation to Ukraine in the form of fuel assemblies for nuclear power stations.

Presidents Clinton and Yeltsin informed President Kravchuk that the United States and Russia are prepared to provide security assurances to Ukraine. In particular, once the START I Treaty enters into force and Ukraine becomes a non-nuclear-weapon state party to the Nuclear Non-Proliferation Treaty (NPT), the United States and Russia will:

- Reaffirm their commitments to Ukraine, in accordance with the principles of the CSCE Final Act, to respect the independence and sovereignty and the existing borders of CSCE member states and recognize that border changes can be made only by peaceful and consensual means; and reaffirm

their obligation to refrain from the threat or use of force against the territorial integrity or political independence of any state, and that none of their weapons will ever be used except in self-defense or otherwise in accordance with the Charter of the United Nations;

- Reaffirm their commitment to Ukraine, in accordance with the principles of the CSCE Final Act, to refrain from economic coercion designed to subordinate to their own interest the exercise by another CSCE participating state of the rights inherent in its sovereignty and thus to secure advantages of any kind;
- Reaffirm their commitment to seek immediate UN Security Council action to provide assistance to Ukraine, as a non-nuclear-weapon state party to the NPT; if Ukraine should become a victim of an act of aggression or an object of a threat of aggression in which nuclear weapons are used; and
- Reaffirm, in the case of Ukraine, their commitment not to use nuclear weapons against any non-nuclear-weapon state party to the NPT, except in the case of an attack on themselves, their territories or dependent territories, their armed forces, or their allies, by such a state in association or alliance with a nuclear weapon state.

Presidents Clinton and Yeltsin informed President Kravchuk that consultations have been held with the United Kingdom, the third depositary state of the NPT, and the United Kingdom is prepared to offer the same security assurances to Ukraine once it becomes a non-nuclear-weapon state party to the NPT.

President Clinton reaffirmed the United States commitment to provide technical and financial assistance for the safe and secure dismantling of nuclear forces and storage of fissile materials. The United States has

agreed under the Nunn-Lugar program to provide Russia, Ukraine, Kazakhstan and Belarus with nearly USD 800 million in such assistance, including a minimum of USD 175 million to Ukraine. The United States Congress has authorized additional Nunn-Lugar funds for this program, and the United States will work intensively with Russia, Ukraine, Kazakhstan and Belarus to expand assistance for this important purpose. The United States will also work to promote rapid implementation of the assistance agreements that are already in place.

For the United States of America:

William J. Clinton

For Ukraine:

Leonid Kravchuk

For the Russian Federation:

Boris Yeltsin

APPENDIX FIVE

Memorandum on Security Assurances in connection with Ukraine's accession to the Treaty on the Non-Proliferation of Nuclear Weapons, December 5, 1994

The United States of America, the Russian Federation, and the United Kingdom of Great Britain and Northern Ireland,

Welcoming the accession of Ukraine to the Treaty on the Non-Proliferation of Nuclear Weapons as a non-nuclear-weapon state,

Taking into account the commitment of Ukraine to eliminate all nuclear weapons from its territory within a specified period of time,

Noting the changes in the world-wide security situation, including the end of the Cold War, which have brought about conditions for deep reductions in nuclear forces.

Confirm the following:

1. The United States of America, the Russian Federation, and the United Kingdom of Great Britain and Northern Ireland, reaffirm their commitment to Ukraine, in accordance with the principles of the CSCE Final Act, to respect the Independence and Sovereignty and the existing borders of Ukraine.
2. The United States of America, the Russian Federation, and the United Kingdom of Great Britain and Northern Ireland, reaffirm their obligation to refrain from the threat or use of force against the territorial integrity or political independence of Ukraine, and that none of their weapons will ever be used against Ukraine except in self-defense or otherwise in

- accordance with the Charter of the United Nations.
3. The United States of America, the Russian Federation, and the United Kingdom of Great Britain and Northern Ireland, reaffirm their commitment to Ukraine, in accordance with the principles of the CSCE Final Act, to refrain from economic coercion designed to subordinate to their own interest the exercise by Ukraine of the rights inherent in its sovereignty and thus to secure advantages of any kind.
 4. The United States of America, the Russian Federation, and the United Kingdom of Great Britain and Northern Ireland, reaffirm their commitment to seek immediate United Nations Security Council action to provide assistance to Ukraine, as a non-nuclear-weapon State Party to the Treaty on the Non-Proliferation of Nuclear Weapons, if Ukraine should become a victim of an act of aggression or an object of a threat of aggression in which nuclear weapons are used.
 5. The United States of America, the Russian Federation, and the United Kingdom of Great Britain and Northern Ireland, reaffirm, in the case of the Ukraine, their commitment not to use nuclear weapons against any non-nuclear-weapon State Party to the Treaty on the Non-Proliferation of Nuclear Weapons, except in the case of an attack on themselves, their territories or dependent territories, their armed forces, or their allies, by such a state in association or alliance with a nuclear weapon state.
 6. The United States of America, the Russian Federation, and the United Kingdom of Great Britain and Northern Ireland will consult in the event a situation arises which raises a question concerning these commitments.

This Memorandum will become applicable upon signature.

Signed in four copies having equal validity in the English, Russian and Ukrainian languages.

APPENDIX SIX

P5 Statements on Negative Security Assurances, April 5, 1995 (Excerpts)

The Russian Federation (S/1995/261)

Russian Federation will not use nuclear weapons against non-nuclear-weapon States Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, except in the case of an invasion or any other attack on the Russian Federation, its territory, its armed forces or other troops, its allies or on a State towards which it has a security commitment, carried out or sustained by such a non-nuclear-weapon State in association or alliance with a nuclear-weapon State.

The United Kingdom (S/1995/262)

The United Kingdom will not use nuclear weapons against non-nuclear-weapon States Parties to the Treaty on the Non-Proliferation of Nuclear Weapons except in the case of an invasion or any other attack on the United Kingdom, its dependent territories, its armed forces or other troops, its allies or on a State towards which it has a security commitment, carried out or sustained by such a non-nuclear-weapon State in association or alliance with a nuclear-weapon State.

In giving this assurance the United Kingdom emphasizes the need not only for universal adherence to, but also for compliance with, the Treaty on the Non-Proliferation of Nuclear Weapons. In this context I wish to make clear that Her Majesty's Government does not regard its assurance as applicable if any beneficiary is in material breach of its own non-proliferation obligations under the Treaty on the Non-Proliferation of Nuclear Weapons.

The United States (S/1995/263)

The United States reaffirms that it will not use nuclear weapons against non-nuclear-weapon States Parties to the Treaty on the Non-Proliferation of Nuclear Weapons except in the case of an invasion or any other attack on the United States, its territories, its armed forces or other troops, its allies, or on a State towards which it has a security commitment, carried out or sustained by such a non-nuclear-weapon State in association or alliance with a nuclear-weapon State.

France (S/1995/264)

France reaffirms that it will not use nuclear weapons against non-nuclear-weapon States Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, except in the case of an invasion or any other attack on France, its territory, its armed forces or other troops, or against its allies or a State towards which it has a security commitment, carried out or sustained by such a State in alliance or association with a nuclear-weapon State.

It seems to us natural that it is the signatory countries to the Treaty on the Non-Proliferation of Nuclear Weapons — that is to say, the overwhelming majority of countries in the world — who should benefit from these assurances, since they have made a formal non-proliferation commitment. Furthermore, in order to respond to the request of a great many countries, France has sought as much as possible to harmonize the content of its negative assurances with those of the other nuclear powers. We are pleased that this effort has been successful. The content of the declarations concerning the negative security assurances of France, the United States of America, the Russian Federation and the United Kingdom of Great Britain and Northern Ireland are henceforth practically identical.

China (S/1995/265)

1. China undertakes not to be the first to use nuclear weapons at any time or under any circumstances.
2. China undertakes not to use or threaten to use nuclear weapons against non-nuclear-weapon States or nuclear-weapon-free zones at any time or under any circumstances. This commitment naturally applies to non-nuclear-weapon States parties to the Treaty on the Non-Proliferation of Nuclear Weapons or non-nuclear-weapon States that have entered into any comparable internationally-binding commitment not to manufacture or acquire nuclear explosive devices.
3. China has always held that, pending the complete prohibition and thorough destruction of nuclear weapons, all nuclear-weapon States should undertake not to be the first to use nuclear weapons and not to use or threaten to use such weapons against non-nuclear-weapon States and nuclear-weapon-free zones at any time or under any circumstances. China strongly calls for the early conclusion of an international convention on no-first-use of nuclear weapons as well as an international legal instrument assuring the non-nuclear-weapon States and nuclear-weapon-free zones against the use or threat of use of nuclear weapons.

APPENDIX SEVEN

United Nations Security Council Resolution 984 on Security Assurances, April 11, 1995

The Security Council,

Convinced that every effort must be made to avoid and avert the danger of nuclear war, to prevent the spread of nuclear weapons, to facilitate international cooperation in the peaceful uses of nuclear energy with particular emphasis on the needs of developing countries, and reaffirming the crucial importance of the Treaty on the Non-Proliferation of Nuclear Weapons to these efforts,

Recognizing the legitimate interest of non-nuclear-weapon States Parties to the Treaty on the Non-Proliferation of Nuclear Weapons to receive security assurances,

Welcoming the fact that more than 170 States have become Parties to the Treaty on the Non-Proliferation of Nuclear Weapons and stressing the desirability of universal adherence to it,

Reaffirming the need for all States Parties to the Treaty on the Non-Proliferation of Nuclear Weapons to comply fully with all their obligations,

Taking into consideration the legitimate concern of non-nuclear-weapon States that, in conjunction with their adherence to the Treaty on the Non-Proliferation of Nuclear Weapons, further appropriate measures be undertaken to safeguard their security,

Considering that the present resolution constitutes a step in this direction,

Considering further that, in accordance with the relevant provisions of the Charter of the United Nations, any aggression with the use of nuclear weapons would endanger international peace and security,

1. *Takes note* with appreciation of the statements made by each of the nuclear-weapon States (S/1995/261, S/1995/262, S/1995/263, S/1995/264, S/1995/265), in which they give security assurances against the use of nuclear weapons to non-nuclear-weapon States that are Parties to the Treaty on the Non-Proliferation of Nuclear Weapons;
2. *Recognizes* the legitimate interest of non-nuclear-weapon States Parties to the Treaty on the Non-Proliferation of Nuclear Weapons to receive assurances that the Security Council, and above all its nuclear-weapon State permanent members, will act immediately in accordance with the relevant provisions of the Charter of the United Nations, in the event that such States are the victim of an act of, or object of a threat of, aggression in which nuclear weapons are used;
3. *Recognizes further* that, in case of aggression with nuclear weapons or the threat of such aggression against a non-nuclear-weapon State Party to the Treaty on the Non-Proliferation of Nuclear Weapons, any State may bring the matter immediately to the attention of the Security Council to enable the Council to take urgent action to provide assistance, in accordance with the Charter, to the State victim of an act of, or object of a threat of, such aggression; and *recognizes also* that the nuclear-weapon State permanent members of the Security Council will bring the matter immediately to the attention of the Council and seek Council action to provide, in accordance with the Charter, the necessary assistance to the State victim;
4. *Notes* the means available to it for assisting such a non-nuclear-weapon State Party to the Treaty on the Non-Proliferation of Nuclear Weapons, including an investigation into the situation and appropriate measures to settle the dispute and restore international peace and security;
5. *Invites* Member States, individually or collectively, if any non-

nuclear-weapon State Party to the Treaty on the Non-Proliferation of Nuclear Weapons is a victim of an act of aggression with nuclear weapons, to take appropriate measures in response to a request from the victim for technical, medical, scientific or humanitarian assistance, and affirms its readiness to consider what measures are needed in this regard in the event of such an act of aggression;

6. *Expresses* its intention to recommend appropriate procedures, in response to any request from a non-nuclear-weapon State Party to the Treaty on the Non-Proliferation of Nuclear Weapons that is the victim of such an act of aggression, regarding compensation under international law from the aggressor for loss, damage or injury sustained as a result of the aggression;
7. *Welcomes* the intention expressed by certain States that they will provide or support immediate assistance, in accordance with the Charter, to any non-nuclear-weapon State Party to the Treaty on the Non-Proliferation of Nuclear Weapons that is a victim of an act of, or an object of a threat of, aggression in which nuclear weapons are used;
8. *Urges* all States, as provided for in Article VI of the Treaty on the Non-Proliferation of Nuclear Weapons, to pursue negotiations in good faith on effective measures relating to nuclear disarmament and on a treaty on general and complete disarmament under strict and effective international control which remains a universal goal;
9. *Reaffirms* the inherent right, recognized under Article 51 of the Charter, of individual and collective self-defence if an armed attack occurs against a member of the United Nations, until the Security Council has taken measures necessary to maintain international peace and security;
10. *Underlines* that the issues raised in this resolution remain of continuing concern to the Council.

Source: United Nations document S/RES/984, 11 April 1995
Adopted unanimously

APPENDIX EIGHT

Statement by G8 Leaders, the G8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction, June 27, 2002

The attacks of September 11 demonstrated that terrorists are prepared to use any means to cause terror and inflict appalling casualties on innocent people. We commit ourselves to prevent terrorists, or those that harbour them, from acquiring or developing nuclear, chemical, radiological and biological weapons; missiles; and related materials, equipment and technology. We call on all countries to join us in adopting the set of non-proliferation principles we have announced today.

In a major initiative to implement those principles, we have also decided today to launch a new G8 Global Partnership against the Spread of Weapons and Materials of Mass Destruction. Under this initiative, we will support specific cooperation projects, initially in Russia, to address non-proliferation, disarmament, counter-terrorism and nuclear safety issues. Among our priority concerns are the destruction of chemical weapons, the dismantlement of decommissioned nuclear submarines, the disposition of fissile materials and the employment of former weapons scientists. We will commit to raise up to \$20 billion to support such projects over the next ten years. A range of financing options, including the option of bilateral debt for program exchanges, will be available to countries that contribute to this Global Partnership. We have adopted a set of guidelines that will form the basis for the negotiation of specific agreements for new projects, that will apply with immediate effect, to ensure effective and efficient project development, coordination and implementation. We will review

over the next year the applicability of the guidelines to existing projects.

Recognizing that this Global Partnership will enhance international security and safety, we invite other countries that are prepared to adopt its common principles and guidelines to enter into discussions with us on participating in and contributing to this initiative. We will review progress on this Global Partnership at our next Summit in 2003.

The G8 Global Partnership: Principles to prevent terrorists, or those that harbour them, from gaining access to weapons or materials of mass destruction

The G8 calls on all countries to join them in commitment to the following six principles to prevent terrorists or those that harbour them from acquiring or developing nuclear, chemical, radiological and biological weapons; missiles; and related materials, equipment and technology.

1. Promote the adoption, universalization, full implementation and, where necessary, strengthening of multilateral treaties and other international instruments whose aim is to prevent the proliferation or illicit acquisition of such items; strengthen the institutions designed to implement these instruments.
2. Develop and maintain appropriate effective measures to account for and secure such items in production, use, storage and domestic and international transport; provide assistance to states lacking sufficient resources to account for and secure these items.
3. Develop and maintain appropriate effective physical protection measures applied to facilities which house such items, including defense in depth; provide assistance to states lacking sufficient resources to protect their facilities.

4. Develop and maintain effective border controls, law enforcement efforts and international cooperation to detect, deter and interdict in cases of illicit trafficking in such items, for example through installation of detection systems, training of customs and law enforcement personnel and cooperation in tracking these items; provide assistance to states lacking sufficient expertise or resources to strengthen their capacity to detect, deter and interdict in cases of illicit trafficking in these items.
5. Develop, review and maintain effective national export and transshipment controls over items on multilateral export control lists, as well as items that are not identified on such lists but which may nevertheless contribute to the development, production or use of nuclear, chemical and biological weapons and missiles, with particular consideration of end-user, catch-all and brokering aspects; provide assistance to states lacking the legal and regulatory infrastructure, implementation experience and/or resources to develop their export and transshipment control systems in this regard.
6. Adopt and strengthen efforts to manage and dispose of stocks of fissile materials designated as no longer required for defence purposes, eliminate all chemical weapons, and minimize holdings of dangerous biological pathogens and toxins, based on the recognition that the threat of terrorist acquisition is reduced as the overall quantity of such items is reduced.

The G8 Global Partnership: Guidelines for New or Expanded Cooperation Projects

The G8 will work in partnership, bilaterally and multilaterally, to develop, coordinate, implement and finance, according to their

respective means, new or expanded cooperation projects to address (i) non-proliferation, (ii) disarmament, (iii) counter-terrorism and (iv) nuclear safety (including environmental) issues, with a view to enhancing strategic stability, consonant with our international security objectives and in support of the multilateral non-proliferation regimes. Each country has primary responsibility for implementing its non-proliferation, disarmament, counter-terrorism and nuclear safety obligations and requirements and commits its full cooperation within the Partnership.

Cooperation projects under this initiative will be decided and implemented, taking into account international obligations and domestic laws of participating partners, within appropriate bilateral and multilateral legal frameworks that should, as necessary, include the following elements:

- i. Mutually agreed effective monitoring, auditing and transparency measures and procedures will be required in order to ensure that cooperative activities meet agreed objectives (including irreversibility as necessary), to confirm work performance, to account for the funds expended and to provide for adequate access for donor representatives to work sites;
- ii. The projects will be implemented in an environmentally sound manner and will maintain the highest appropriate level of safety;
- iii. Clearly defined milestones will be developed for each project, including the option of suspending or terminating a project if the milestones are not met;
- iv. The material, equipment, technology, services and expertise provided will be solely for peaceful purposes and, unless otherwise agreed, will be used only for the purposes of implementing the projects and will not be transferred. Adequate

measures of physical protection will also be applied to prevent theft or sabotage;

v. All governments will take necessary steps to ensure that the support provided will be considered free technical assistance and will be exempt from taxes, duties, levies and other charges;

vi. Procurement of goods and services will be conducted in accordance with open international practices to the extent possible, consistent with national security requirements;

vii. All governments will take necessary steps to ensure that adequate liability protections from claims related to the cooperation will be provided for donor countries and their personnel and contractors;

viii. Appropriate privileges and immunities will be provided for government donor representatives working on cooperation projects; and

ix. Measures will be put in place to ensure effective protection of sensitive information and intellectual property.

Given the breadth and scope of the activities to be undertaken, the G8 will establish an appropriate mechanism for the annual review of progress under this initiative which may include consultations regarding priorities, identification of project gaps and potential overlap, and assessment of consistency of the cooperation projects with international security obligations and objectives. Specific bilateral and multilateral project implementation will be coordinated subject to arrangements appropriate to that project, including existing mechanisms.

For the purposes of these guidelines, the phrase “new or expanded cooperation projects” is defined as cooperation projects that will be initiated or enhanced on the basis of this Global Partnership. All funds disbursed or released after its announcement would be included in the

total of committed resources. A range of financing options, including the option of bilateral debt for program exchanges, will be available to countries that contribute to this Global Partnership.

The Global Partnership's initial geographic focus will be on projects in Russia, which maintains primary responsibility for implementing its obligations and requirements within the Partnership.

In addition, the G8 would be willing to enter into negotiations with any other recipient countries, including those of the Former Soviet Union, prepared to adopt the guidelines, for inclusion in the Partnership.

Recognizing that the Global Partnership is designed to enhance international security and safety, the G8 invites others to contribute to and join in this initiative.

With respect to nuclear safety and security, the partners agreed to establish a new G8 Nuclear Safety and Security Group by the time of our next Summit.

APPENDIX NINE

Global Partnership Against the Spread of Weapons and Materials of Mass Destruction, A G8 Evian Action Plan, June 2, 2003

The Global Partnership Against the Spread of Weapons and Materials of Mass Destruction, which we launched last year at the Kananaskis Summit, has made significant progress over the past year toward realizing the objective of preventing terrorists, or those who harbour them, from acquiring or developing nuclear, chemical, radiological, and biological weapons; missiles; and related materials, equipment, and technology.

With our determined commitment, significant progress has been made:

- Substantial sums have already been pledged by Partners towards their Kananaskis commitment to raise up to \$20 billion over ten years;
- The Russian government has made welcomed decisions to ensure implementation of guidelines, in particular full exemption of assistance from taxation, duties and other charges. Other guidelines have also been intensively addressed;
- The recent conclusion of the Multilateral Nuclear Environment Programme for the Russian Federation has demonstrated substantial progress in translating the Global Partnership initiative into concrete actions;
- All Partners have actively engaged in determining co-operation projects to be undertaken, and some significant projects have already been launched or expanded, in accordance with our priorities identified in Kananaskis;
- Outreach activities have been undertaken to invite and

facilitate non-G8 countries to participate and contribute, as a result of which Finland, Norway, Poland, Sweden and Switzerland have indicated their interest in joining the Global Partnership as donors.

We commit ourselves to an active programme to continue the implementation of the initiative and to achieve substantial progress by the next Summit. Our goals are:

- To pursue the universal adoption of the non-proliferation principles;
- To reach our Kananaskis commitment of raising up to \$20 billion over ten years through contributions from new donors or additional pledges from Partners;
- To significantly expand project activities, building upon preparatory work to establish implementing frameworks and to develop plans for project activities, as well as to sustain steady progress in projects already underway. We will continue to review progress in initiation and implementation of projects over the coming year, and to oversee co-ordination of projects, in order to review priorities, avoid gaps and overlaps, and assess consistency of projects with international security objectives, in accordance with our priorities;
- To resolve all outstanding implementation challenges and to review the implementation of all guidelines in practice, keeping in mind the need for uniform treatment of Partners, reflecting our co-operative approach;
- To expand participation in the Global Partnership to interested non-G8 donor countries that are willing to adopt the Kananaskis documents. While still focusing on projects in Russia, we mandate the Chair to enter into preliminary discussions with new or current recipient countries including those of the former Soviet Union that are prepared to adopt the

Kananaskis documents, as the Ukraine has already done ;

- To inform other organisations, parliamentary representatives, and publics of the importance of the Global Partnership.

APPENDIX TEN

G8 Action Plan on Nonproliferation, Sea Island, June 9, 2004

At Evian, we recognized the proliferation of weapons of mass destruction and their delivery systems, together with international terrorism, as the pre-eminent threat to international peace and security. This challenge requires a long-term strategy and multi-faceted approaches.

Determined to prevent, contain, and roll back proliferation, today, at Sea Island, we announce an action plan to reinforce the global nonproliferation regime. We will work together with other concerned states to realize this plan.

All states must fulfill their arms control, disarmament, and nonproliferation commitments, which we reaffirm, and we strongly support universal adherence to and compliance with these commitments under the relevant multilateral treaties. We will help and encourage states in effectively implementing their obligations under the multilateral treaty regimes, in particular implementing domestically their obligations under such treaties, building law enforcement capacity, and establishing effective export controls. We call on all states that have not already done so to subscribe to the Hague Code of Conduct against Ballistic Missile Proliferation.

We strongly support UN Security Council Resolution 1540, calling on all states to establish effective national export controls, to adopt and enforce effective laws to criminalize proliferation, to take cooperative action to prevent non-state actors from acquiring weapons of mass destruction, and to end illicit trafficking in such weapons, their means

of delivery, and related materials. We call on all states to implement this resolution promptly and fully, and we are prepared to assist them in so doing, thereby helping to fight the nexus between terrorism and proliferation, and black markets in these weapons and related materials.

1. Nuclear Nonproliferation

The trafficking and indiscriminate spread of sensitive nuclear materials, equipment, and technology that may be used for weapons purposes are a threat to us all. Some states seek uranium enrichment and plutonium reprocessing capabilities for weapons programs contrary to their commitments under the Treaty on the Non-Proliferation of Nuclear Weapons (NPT). We reaffirm our commitment to the NPT and to the declarations made at Kananaskis and Evian, and we will work to prevent the illicit diversion of nuclear materials and technology. We announce the following new actions to reduce the risk of nuclear weapons proliferation and the acquisition of nuclear materials and technology by terrorists, while allowing the world to enjoy safely the benefits of peaceful nuclear technology.

- To allow the world to safely enjoy the benefits of peaceful nuclear energy without adding to the danger of weapons proliferation, we have agreed to work to establish new measures so that sensitive nuclear items with proliferation potential will not be exported to states that may seek to use them for weapons purposes, or allow them to fall into terrorist hands. The export of such items should only occur pursuant to criteria consistent with global nonproliferation norms and to states rigorously committed to those norms. We shall work to amend appropriately the Nuclear Suppliers Group (NSG) guidelines, and to gain the widest possible support for such measures in the future. We aim to have appropriate measures

in place by the next G8 Summit. In aid of this process, for the intervening year, we agree that it would be prudent not to inaugurate new initiatives involving transfer of enrichment and reprocessing equipment and technologies to additional states. We call on all states to adopt this strategy of prudence. We will also develop new measures to ensure reliable access to nuclear materials, equipment, and technology, including nuclear fuel and related services, at market conditions, for all states, consistent with maintaining nonproliferation commitments and standards.

- We seek universal adherence to IAEA comprehensive safeguards and the Additional Protocol and urge all states to ratify and implement these agreements promptly. We are actively engaged in outreach efforts toward this goal, and ready to offer necessary support.
- The Additional Protocol must become an essential new standard in the field of nuclear supply arrangements. We will work to strengthen NSG guidelines accordingly. We aim to achieve this by the end of 2005.
- We support the suspension of nuclear fuel cycle cooperation with states that violate their nuclear nonproliferation and safeguards obligations, recognizing that the responsibility and authority for such decisions rests with national governments or the Security Council.
- To enhance the IAEA's integrity and effectiveness, and strengthen its ability to ensure that nations comply with their NPT obligations and safeguards agreements, we will work together to establish a new Special Committee of the IAEA Board of Governors. This committee would be responsible for preparing a comprehensive plan for strengthened safeguards and verification. We believe this committee should be made up of member states in compliance with their NPT and IAEA

commitments.

- Likewise, we believe that countries under investigation for non-technical violations of their nuclear nonproliferation and safeguards obligations should elect not to participate in decisions by the IAEA Board of Governors or the Special Committee regarding their own cases.

2. Proliferation Security Initiative

We reiterate our strong commitment to and support for the Proliferation Security Initiative (PSI) and the Statement of Interdiction Principles, which is a global response to a global problem. We will continue our efforts to build effective PSI partnerships to interdict trafficking in weapons of mass destruction, their delivery systems, and related materials. We also will prevent those that facilitate proliferation from engaging in such trafficking and work to broaden and strengthen domestic and international laws supporting PSI. We welcome the increasing level of support worldwide for PSI, which now includes all G8 members. The Krakow meeting commemorating PSI's first anniversary, attended by 62 countries, evidences growing global support.

We will further cooperate to defeat proliferation networks and coordinate, where appropriate, enforcement efforts, including by stopping illicit financial flows and shutting down illicit plants, laboratories, and brokers, in accordance with national legal authorities and legislation and consistent with international law. Several of us are already developing mechanisms to deny access to our ports and airports for companies and impose visa bans on individuals involved in illicit trade.

We encourage all states to strengthen and expand national and

international measures to respond to clandestine procurement activities. Directly, and through the relevant international mechanisms, we will work actively with states requiring assistance in improving their national capabilities to meet international norms.

3. The Global Partnership Against Weapons and Materials of Mass Destruction

Since its launch by G8 Leaders two years ago at Kananaskis, the Global Partnership has become a significant force worldwide to enhance international safety and security. Global Partnership member states, including the six new donors that joined at Evian, have in the past year launched new cooperative projects in Russia and accelerated progress on those already underway. While much has been accomplished, significant challenges remain. We recommit ourselves to our Kananaskis Statement, Principles, and Guidelines as the basis for Global Partnership cooperation.

- We recommit ourselves to raising up to \$20 billion for the Global Partnership through 2012.
- Expanding the Partnership to include additional donor countries is essential to raise the necessary resources and to ensure the effort is truly global. Today we welcome the decisions of Australia, Belgium, the Czech Republic, Denmark, Ireland, the Republic of Korea, and New Zealand to join.
- We will continue to work with other former Soviet states to discuss their participation in the Partnership. We reaffirm that Partnership states will participate in projects according to their national interests and resources.
- We reaffirm that we will address proliferation challenges worldwide. We will, for example, pursue the retraining of Iraqi and Libyan scientists involved in past WMD programs. We

also support projects to eliminate over time the use of highly-enriched uranium fuel in research reactors worldwide, secure and remove fresh and spent HEU fuel, control and secure radiation sources, strengthen export control and border security, and reinforce biosecurity. We will use the Global Partnership to coordinate our efforts in these areas.

4. Nonproliferation Challenges

- The DPRK's announced withdrawal from the NPT, which is unprecedented; its continued pursuit of nuclear weapons, including through both its plutonium reprocessing and its uranium enrichment programs, in violation of its international obligations; and its established history of missile proliferation are serious concerns to us all. We strongly support the Six-Party Process, and strongly urge the DPRK to dismantle all of its nuclear weapons-related programs in a complete, verifiable, and irreversible manner, a fundamental step to facilitate a comprehensive and peaceful solution.
- We remain united in our determination to see the proliferation implications of Iran's advanced nuclear program resolved. Iran must be in full compliance with its NPT obligations and safeguards agreement. To this end, we reaffirm our support for the IAEA Board of Governors' three Iran resolutions. We note that since Evian, Iran has signed the Additional Protocol and has committed itself to cooperate with the Agency, and to suspend its enrichment and reprocessing related activities. While we acknowledge the areas of progress reported by the Director General, we are, however, deeply concerned that Iran's suspension of enrichment-related activity is not yet comprehensive. We deplore Iran's delays, deficiencies in cooperation, and inadequate disclosures, as detailed in IAEA

Director General reports. We therefore urge Iran promptly and fully to comply with its commitments and all IAEA Board requirements, including ratification and full implementation of the Additional Protocol, leading to resolution of all outstanding issues related to its nuclear program.

- We welcome Libya's strategic decision to rid itself of its weapons of mass destruction and longer-range missiles, to fully comply with the NPT, the Additional Protocol, the Biological and Toxin Weapons Convention (BWC), and the Chemical Weapons Convention (CWC), and to commit not to possess missiles subject to the Missile Technology Control Regime. We note Libya has cooperated in the removal of nuclear equipment and materials and taken steps to eliminate chemical weapons. We call on Libya to continue to cooperate fully with the IAEA and the Organization for the Prohibition of Chemical Weapons.

5. Defending Against Bioterrorism

Bioterrorism poses unique, grave threats to the security of all nations, and could endanger public health and disrupt economies. We commit to concrete national and international steps to: expand or, where necessary, initiate new biosurveillance capabilities to detect bioterror attacks against humans, animals, and crops; improve our prevention and response capabilities; increase protection of the global food supply; and respond to, investigate, and mitigate the effects of alleged uses of biological weapons or suspicious outbreaks of disease. In this context, we seek concrete realization of our commitments at the fifth Review Conference of the BWC. The BWC is a critical foundation against biological weapons' proliferation, including to terrorists. Its prohibitions should be fully implemented, including enactment of penal legislation. We strongly urge all non-parties to join the BWC promptly.

6. Chemical Weapons Proliferation

We support full implementation of the CWC, including its nonproliferation aspects. We strongly urge all non-parties to join the CWC promptly, and will work with them to this end. We also urge CWC States Parties to undertake national legislative and administrative measures for its full implementation. We support the use of all fact-finding, verification, and compliance measures, including, if necessary, challenge inspections, as provided in the CWC.

7. Implementation of the Evian Initiative on Radioactive Source Security

At Evian we agreed to improve controls on radioactive sources to prevent their use by terrorists, and we have made substantial progress toward that goal. We are pleased that the IAEA approved a revised Code of Conduct on the Safety and Security of Radioactive Sources in September 2003. We urge all states to implement the Code and recognize it as a global standard.

We have agreed to export and import control guidance for high-risk radioactive sources, which should only be supplied to authorized end-users in states that can control them. States should ensure that no sources are diverted for illicit use. We seek prompt IAEA approval of this guidance to ensure that effective controls are operational by the end of 2005 and applied in a harmonized and consistent manner. We support the IAEA's program for assistance to ensure that all countries can meet the new standards.

8. Nuclear Safety and Security

Since the horrific 1986 accident at Chernobyl, we have worked with Ukraine to improve the safety and security of the site. We have already made a large financial contribution to build a safe confinement over the remnants of the Chernobyl reactor. We are grateful for the participation and contributions made by 21 other states in this effort. Today, we endorse international efforts to raise the remaining funds necessary to complete the project. We urge Ukraine to support and work closely with us to complete the confinement's construction by 2008 in a way that contributes to radiological safety, in particular in Ukraine and neighboring regions.

An effective, efficient nuclear regulatory system is essential for our safety and security. We affirm the importance for national regulators to have sufficient authority, independence, and competence.

APPENDIX ELEVEN

*The Nunn-Lugar Expansion Act, P.L. 108-136, November 24, 2003*²

TITLE XIII—COOPERATIVE THREAT REDUCTION WITH STATES OF THE FORMER SOVIET UNION

Sec. 1301. Specification of Cooperative Threat Reduction programs and funds.

Sec. 1302. Funding allocations.

Sec. 1303. Limitation on use of funds until certain permits obtained.

Sec. 1304. Limitation on use of funds for biological research in the former Soviet Union.

Sec. 1305. Requirement for on-site managers.

Sec. 1306. Temporary authority to waive limitation on funding for chemical weapons destruction facility in Russia.

Sec. 1307. Annual certifications on use of facilities being constructed for Cooperative Threat Reduction projects or activities.

Sec. 1308. Authority to use Cooperative Threat Reduction funds outside the former Soviet Union.

SEC. 1301. SPECIFICATION OF COOPERATIVE THREAT REDUCTION PROGRAMS AND FUNDS.

(a) SPECIFICATION OF CTR PROGRAMS.—For purposes of section 301 and other provisions of this Act, Cooperative Threat Reduction programs are the programs specified in section 1501(b) of the National Defense Authorization Act for Fiscal Year 1997 (Public Law 104–201; 110 Stat. 2731; 50 U.S.C. 2362 note).

² A part of the *National Defense Authorization Act for the Fiscal Year 2004*.

(b) FISCAL YEAR 2004 COOPERATIVE THREAT REDUCTION FUNDS DEFINED.—As used in this title, the term “fiscal year 2004 Cooperative Threat Reduction funds” means the funds appropriated pursuant to the authorization of appropriations in section 301 for Cooperative Threat Reduction programs.

(c) AVAILABILITY OF FUNDS.—Funds appropriated pursuant to the authorization of appropriations in section 301 for Cooperative Threat Reduction programs shall be available for obligation for three fiscal years.

SEC. 1302. FUNDING ALLOCATIONS.

(a) FUNDING FOR SPECIFIC PURPOSES.—Of the \$450,800,000 authorized to be appropriated to the Department of Defense for fiscal year 2004 in section 301(19) for Cooperative Threat Reduction programs, the following amounts may be obligated for the purposes specified:

- (1) For strategic offensive arms elimination in Russia, \$57,600,000.
- (2) For strategic nuclear arms elimination in Ukraine, \$3,900,000.
- (3) For nuclear weapons transportation security in Russia, \$23,200,000.
- (4) For nuclear weapons storage security in Russia, \$48,000,000.
- (5) For activities designated as Other Assessments/Administrative Support, \$13,100,000.
- (6) For defense and military contacts, \$11,100,000.
- (7) For chemical weapons destruction in Russia, \$200,300,000.
- (8) For biological weapons proliferation prevention in the former Soviet Union, \$54,200,000.
- (9) For weapons of mass destruction proliferation prevention in the states of the former Soviet Union, \$39,400,000.

(b) REPORT ON OBLIGATION OR EXPENDITURE OF FUNDS FOR OTHER PURPOSES.—No fiscal year 2004 Cooperative Threat Reduction funds may be obligated or expended for a purpose other than a purpose listed in paragraphs (1) through (9) of subsection (a) until 30 days after the date that the Secretary of Defense submits to Congress a report on the purpose for which the funds will be obligated or expended and the amount of funds to be obligated or expended. Nothing in the preceding sentence shall be construed as authorizing the obligation or expenditure of fiscal year 2004 Cooperative Threat Reduction funds for a purpose for which the obligation or expenditure of such funds is specifically prohibited under this title or any other provision of law.

(c) LIMITED AUTHORITY TO VARY INDIVIDUAL AMOUNTS.—

- (1) Subject to paragraphs (2) and (3), in any case in which the Secretary of Defense determines that it is necessary to do so in the national interest, the Secretary may obligate amounts appropriated for fiscal year 2004 for a purpose listed in any of the paragraphs in subsection (a) in excess of the specific amount authorized for that purpose.
- (2) An obligation of funds for a purpose stated in any of the paragraphs in subsection (a) in excess of the specific amount authorized for such purpose may be made using the authority provided in paragraph (1) only after—
 - (A) the Secretary submits to Congress notification of the intent to do so together with a complete discussion of the justification for doing so; and
 - (B) 15 days have elapsed following the date of the notification.
- (3) The Secretary may not, under the authority provided in paragraph (1), obligate amounts for a purpose stated in any of paragraphs (5) through (8) of subsection (a) in excess of 125 percent of the specific amount authorized

for such purpose.

SEC. 1303. LIMITATION ON USE OF FUNDS UNTIL CERTAIN PERMITS OBTAINED.

(a) **IN GENERAL.**—The Secretary of Defense shall seek to obtain all the permits required to complete each phase of construction of a project under Cooperative Threat Reduction programs before obligating significant amounts of funding for that phase of the project.

(b) **USE OF FUNDS FOR NEW CONSTRUCTION PROJECTS.**—Except as provided in subsection (e), with respect to a new construction project to be carried out by the Department of Defense under Cooperative Threat Reduction programs, not more than 40 percent of the total costs of the project may be obligated from Cooperative Threat Reduction funds for any fiscal year until the Secretary of Defense—

- (1) determines the number and type of permits that may be required for the lifetime of the project in the proposed location or locations of the project; and
- (2) obtains from the State in which the project is to be located any permits that may be required to begin construction.

(c) **IDENTIFICATION OF REQUIRED PERMITS FOR ONGOING INCOMPLETE CONSTRUCTION PROJECTS.**—With respect to an incomplete construction project carried out by the Department of Defense under Cooperative Threat Reduction programs, the Secretary shall identify all the permits that are required for the lifetime of the project not later than 120 days after the date of the enactment of this Act.

(d) **USE OF FUNDS FOR CERTAIN INCOMPLETE CONSTRUCTION PROJECTS.**—Except as provided in subsection (e), with respect to an incomplete construction project carried out by the Department of Defense under Cooperative Threat Reduction programs for which construction has not yet commenced as of the date of the

enactment of this Act, not more than 40 percent of the total costs of the project may be obligated from Cooperative Threat Reduction funds for any fiscal year until the Secretary obtains from the State in which the project is located the permits required to commence construction on the project.

(e) EXCEPTION TO LIMITATIONS ON USE OF FUNDS.—The limitation in subsection (b) or (d) on the obligation of funds for a construction project otherwise covered by such subsection shall not apply with respect to the obligation of funds for a particular project if the Secretary—

- (1) determines that it is necessary in the national interest to obligate funds for such project; and
- (2) submits to the congressional defense committees a notification of the intent to obligate funds for such project, together with a complete discussion of the justification for doing so.

(f) DEFINITIONS.—In this section, with respect to a project under Cooperative Threat Reduction programs:

- (1) INCOMPLETE CONSTRUCTION PROJECT.—The term “incomplete construction project” means a construction project for which funds have been obligated or expended before the date of the enactment of this Act and which is not completed as of such date.
- (2) NEW CONSTRUCTION PROJECT.—The term “new construction project” means a construction project for which no funds have been obligated or expended as of the date of the enactment of this Act.
- (3) PERMIT.—The term “permit” means any local or national permit for development, general construction, environmental, land use, or other purposes that is required for purposes of major construction in a state of the former Soviet Union in which the construction project is being or is proposed to

be carried out.

SEC. 1304. LIMITATION ON USE OF FUNDS FOR BIOLOGICAL RESEARCH IN THE FORMER SOVIET UNION.

(a) **LIMITATION ON USE OF FUNDS.**—Except as provided in subsection (b), none of the funds authorized to be appropriated pursuant to section 1302 for biological weapons proliferation prevention may be obligated to begin any collaborative biodefense research or bioattack early warning and preparedness project under a Cooperative Threat Reduction program at a facility in a state of the former Soviet Union until the Secretary of Defense notifies Congress that the Secretary—

- (1) has determined, through access to the facility, that no offensive biological weapons research prohibited by international law is being conducted at the facility; and
- (2) has determined that appropriate security measures have begun to be, or will be, put in place at the facility to prevent theft of dangerous pathogens from the facility.

(b) **AVAILABILITY OF FUNDS FOR DETERMINATIONS.**—Of the funds referred to in subsection (a) that are available for projects referred to in that subsection, up to 25 percent of such funds may be obligated and expended for purposes of making determinations referred to in that subsection.

(c) **FACILITY DEFINED.**—In this section, the term “facility” means the buildings and areas at a location in which Cooperative Threat Reduction program work is actually being conducted.

SEC. 1305. REQUIREMENT FOR ON-SITE MANAGERS.

(a) **ON-SITE MANAGER REQUIREMENT.**—Before obligating any Cooperative Threat Reduction funds for a project described in subsection (b), the Secretary of Defense shall appoint one on-site manager for that project. The manager shall be appointed from among employees of the Federal Government.

(b) **PROJECTS COVERED.**—Subsection (a) applies to a project—

- (1) to be located in a state of the former Soviet Union;
- (2) which involves dismantlement, destruction, or storage facilities, or construction of a facility; and
- (3) with respect to which the total contribution by the Department of Defense is expected to exceed \$50,000,000.

(c) **DUTIES OF ON-SITE MANAGER.**—The on-site manager appointed under subsection (a) shall—

- (1) develop, in cooperation with representatives from governments of countries participating in the project, a list of those steps or activities critical to achieving the project's disarmament or nonproliferation goals;
- (2) establish a schedule for completing those steps or activities;
- (3) meet with all participants to seek assurances that those steps or activities are being completed on schedule; and
- (4) suspend United States participation in a project when a non-United States participant fails to complete a scheduled step or activity on time, unless directed by the Secretary of Defense to resume United States participation.

(d) **AUTHORITY TO MANAGE MORE THAN ONE PROJECT.**—

- (1) Subject to paragraph (2), an employee of the Federal Government may serve as on-site manager for more than one project, including projects at different locations.
- (2) If such an employee serves as on-site manager for more than one project in a fiscal year, the total cost of the projects for that fiscal year may not exceed \$150,000,000.

(e) **STEPS OR ACTIVITIES.**—Steps or activities referred to in subsection (c)(1) are those activities that, if not completed, will prevent

a project from achieving its disarmament or nonproliferation goals, including, at a minimum, the following:

- (1) Identification and acquisition of permits (as defined in section 1303).
- (2) Verification that the items, substances, or capabilities to be dismantled, secured, or otherwise modified are available for dismantlement, securing, or modification.
- (3) Timely provision of financial, personnel, management, transportation, and other resources.

(f) NOTIFICATION TO CONGRESS.—In any case in which the Secretary of Defense directs an on-site manager to resume United States participation in a project under subsection (c)(4), the Secretary shall concurrently notify Congress of such direction.

(g) EFFECTIVE DATE.—This section shall take effect six months after the date of the enactment of this Act.

SEC. 1306. TEMPORARY AUTHORITY TO WAIVE LIMITATION ON FUNDING FOR CHEMICAL WEAPONS DESTRUCTION FACILITY IN RUSSIA.

(a) TEMPORARY AUTHORITY.—The conditions described in section 1305 of the National Defense Authorization Act for Fiscal Year 2000 (Public Law 106–65; 22 U.S.C. 5952 note) shall not apply to the obligation and expenditure of funds available for obligation during fiscal year 2004 for the planning, design, or construction of a chemical weapons destruction facility in Russia if the President submits to Congress a written certification that includes—

- (1) a statement as to why the waiver of the conditions is important to the national security interests of the United States;
- (2) a full and complete justification for the waiver of the conditions; and
- (3) a plan to promote a full and accurate disclosure by Russia

regarding the size, content, status, and location of its chemical weapons stockpile.

(b) EXPIRATION.—The authority in subsection (a) shall expire on September 30, 2004.

SEC. 1307. ANNUAL CERTIFICATIONS ON USE OF FACILITIES BEING CONSTRUCTED FOR COOPERATIVE THREAT REDUCTION PROJECTS OR ACTIVITIES.

(a) CERTIFICATION ON USE OF FACILITIES BEING CONSTRUCTED.—Not later than the first Monday of February each year, the Secretary of Defense shall submit to the congressional defense committees a certification for each facility for a Cooperative Threat Reduction project or activity for which construction occurred during the preceding fiscal year on matters as follows:

- (1) Whether or not such facility will be used for its intended purpose by the government of the state of the former Soviet Union in which the facility is constructed.
- (2) Whether or not the government of such state remains committed to the use of such facility for its intended purpose.
- (3) Whether those actions needed to ensure security at the facility, including secure transportation of any materials, substances, or weapons to, from, or within the facility, have been taken.

(b) APPLICABILITY.—Subsection (a) shall apply to—

- (1) any facility the construction of which commences on or after the date of the enactment of this Act; and
- (2) any facility the construction of which is ongoing as of that date.

SEC. 1308. AUTHORITY TO USE COOPERATIVE THREAT REDUCTION FUNDS OUTSIDE THE FORMER SOVIET UNION.

(a) **AUTHORITY.**—Subject to the provisions of this section, the President may obligate and expend Cooperative Threat Reduction funds for a fiscal year, and any Cooperative Threat Reduction funds for a fiscal year before such fiscal year that remain available for obligation, for a proliferation threat reduction project or activity outside the states of the former Soviet Union if the President determines each of the following:

- (1) That such project or activity will—
 - (A) (i) assist the United States in the resolution of a critical emerging proliferation threat; or
 - (ii) permit the United States to take advantage of opportunities to achieve long-standing nonproliferation goals; and
 - (B) be completed in a short period of time.
- (2) That the Department of Defense is the entity of the Federal Government that is most capable of carrying out such project or activity.

(b) **SCOPE OF AUTHORITY.**—The authority in subsection (a) to obligate and expend funds for a project or activity includes authority to provide equipment, goods, and services for such project or activity utilizing such funds, but does not include authority to provide cash directly to such project or activity.

(c) **LIMITATION ON TOTAL AMOUNT OF OBLIGATION.**—The amount that may be obligated in a fiscal year under the authority in subsection (a) may not exceed \$50,000,000.

(d) **LIMITATION ON AVAILABILITY OF FUNDS.**—

- (1) The President may not obligate funds for a project or activity under the authority in subsection (a) until the President makes each determination specified in that subsection with respect to such project or activity.
- (2) Not later than 10 days after obligating funds under the authority in subsection (a) for a project or activity, the

President shall notify Congress in writing of the determinations made under paragraph (1) with respect to such project or activity, together with—

- (A) a justification for such determinations; and
- (B) a description of the scope and duration of such project or activity.

(e) **ADDITIONAL LIMITATIONS AND REQUIREMENTS.**— Except as otherwise provided in subsections (a) and (b), the exercise of the authority in subsection (a) shall be subject to any requirement or limitation under another provision of law as follows:

- (1) Any requirement for prior notice or other reports to Congress on the use of Cooperative Threat Reduction funds or on Cooperative Threat Reduction projects or activities.
- (2) Any limitation on the obligation or expenditure of Cooperative Threat Reduction funds.
- (3) Any limitation on Cooperative Threat Reduction projects or activities.

APPENDIX TWELVE

Four Principles on the Peaceful Use of Nuclear Energy, September 18, 2004

The Standing Committee of the National Security Council held its 300th meeting today to discuss the issue of the IAEA inspections on the experiments involving nuclear materials, as well as the position of the government of the Republic of Korea on this matter.

The government of the Republic of Korea has been actively taking part in the efforts of the international community for the peaceful use of nuclear energy, ensuring transparency, and nuclear non-proliferation. Through the ratification of the Additional Protocol, the Republic of Korea has further demonstrated its strong resolve to achieve such goals. Recently, the government of the Republic of Korea has voluntarily reported to the IAEA, the findings on nuclear experiments carried out in the past. Regrettably, however, there have been some incidents of misunderstanding and unfounded allegations. Thus, the government of the Republic of Korea pronounces the following four principles on the peaceful use of nuclear energy.

First, the government of the Republic of Korea reaffirms that it does not have any intention to develop or possess nuclear weapons.

The government of the Republic of Korea has not planned or pursued any nuclear programs intended for military purposes and there will be no change in this policy in the future. In addition, the government of the Republic of Korea reaffirms that it will not take part in any international activities or exchanges related to the development of nuclear weapons.

Second, the government of the Republic of Korea will firmly maintain its principle of nuclear transparency, and will strengthen its cooperation with the international community to this end.

The Republic of Korea will faithfully abide by and implement the international agreements on nuclear non-proliferation to which it is a state party, including the IAEA Safeguards Agreement and the Additional Protocol. In addition, the Republic of Korea will strictly adhere to its commitments under relevant bilateral agreements.

The government of the Republic of Korea highly appreciates all the activities of the IAEA to maintain nuclear transparency, and expects that the IAEA inspection activities on nuclear experiments in the Republic of Korea will be highly professional and impartial. The government of the Republic of Korea will fully cooperate throughout the inspections process. In accordance with the results of the inspections, the Republic of Korea will take all necessary measures to ensure the confidence and understanding of the international community.

Third, the government of the Republic of Korea will faithfully abide by international agreements on nuclear non-proliferation.

The government of the Republic of Korea will faithfully abide by the agreements on nuclear non-proliferation including the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) and the Joint Declaration on the Denuclearization of the Korean Peninsula. The government of the Republic of Korea will take necessary domestic measures to strengthen its control over nuclear materials, and will also actively participate in the international efforts to this end.

The government of the Republic of Korea hopes that the international

community will reflect on the efforts of the government of the Republic of Korea, and actively cooperate with us so that all pending issues concerning the Republic of Korea can be dealt with in an impartial manner based on the facts.

Fourth, with the confidence of the international community, the government of the Republic of Korea will expand the peaceful use of nuclear energy.

As a country with a high level of dependency on nuclear energy, the Republic of Korea wishes to emphasize that the peaceful use of nuclear energy is a crucial national policy objective.

With the recent incidents, the government of the Republic of Korea will seek the greater confidence of the international community and strive for a higher level of transparency, and against this backdrop will make efforts to ensure stability in the use of nuclear energy and expand the peaceful use of nuclear energy.

The government of the Republic of Korea will deal with this matter in a responsible manner to ensure that the confidence of the international community in its nuclear policy will be sustained.

The government of the Republic of Korea seeks the confidence of our citizens on the position of the government on nuclear non-proliferation and peace, and calls for their full understanding and support in this regard.

APPENDIX THIRTEEN

Joint Statement of the 4th Round of the Six-Party Talks, September 19, 2005³

The Fourth Round of the Six-Party Talks was held in Beijing, China among the People's Republic of China, the Democratic People's Republic of Korea, Japan, the Republic of Korea, the Russian Federation, and the United States of America from July 26th to August 7th, and from September 13th to 19th, 2005.

Mr. Wu Dawei, Vice Minister of Foreign Affairs of the PRC; Mr. Kim Gye Gwan, Vice Minister of Foreign Affairs of the DPRK; Mr. Kenichiro Sasae, Director-General for Asian and Oceanian Affairs, Ministry of Foreign Affairs of Japan; Mr. Song Min-soon, Deputy Minister of Foreign Affairs and Trade of the ROK; Mr. Alexandr Alekseyev, Deputy Minister of Foreign Affairs of the Russian Federation; and Mr. Christopher Hill, Assistant Secretary of State for East Asian and Pacific Affairs of the United States attended the talks as heads of their respective delegations.

Vice Foreign Minister Wu Dawei chaired the talks.

For the cause of peace and stability on the Korean Peninsula and in Northeast Asia at large, the Six Parties held, in the spirit of mutual respect and equality, serious and practical talks concerning the denuclearization of the Korean Peninsula on the basis of the common understanding of the previous three rounds of talks, and agreed, in this context, to the following:

³ <http://usinfo.state.gov/eap/Archive/2005/Sep/19-210095.html>.

1. The Six Parties unanimously reaffirmed that the goal of the Six-Party Talks is the verifiable denuclearization of the Korean Peninsula in a peaceful manner. The DPRK committed to abandoning all nuclear weapons and existing nuclear programs and returning, at an early date, to the Treaty on the Non-Proliferation of Nuclear Weapons and to IAEA safeguards. The United States affirmed that it has no nuclear weapons on the Korean Peninsula and has no intention to attack or invade the DPRK with nuclear or conventional weapons. The ROK reaffirmed its commitment not to receive or deploy nuclear weapons in accordance with the 1992 Joint Declaration of the Denuclearization of the Korean Peninsula, while affirming that there exist no nuclear weapons within its territory. The 1992 Joint Declaration of the Denuclearization of the Korean Peninsula should be observed and implemented. The DPRK stated that it has the right to peaceful uses of nuclear energy. The other parties expressed their respect and agreed to discuss, at an appropriate time, the subject of the provision of light water reactor to the DPRK.

2. The Six Parties undertook, in their relations, to abide by the purposes and principles of the Charter of the United Nations and recognized norms of international relations. The DPRK and the United States undertook to respect each other's sovereignty, exist peacefully together, and take steps to normalize their relations subject to their respective bilateral policies. The DPRK and Japan undertook to take steps to normalize their relations in accordance with the Pyongyang Declaration, on the basis of the settlement of unfortunate past and the outstanding issues of concern.

3. The Six Parties undertook to promote economic cooperation in the fields of energy, trade and investment, bilaterally and/or multilaterally. China, Japan, ROK, Russia and the US stated their willingness to provide energy assistance to the DPRK. The ROK reaffirmed its proposal of July 12th 2005 concerning the provision of 2 million

kilowatts of electric power to the DPRK.

4. The Six Parties committed to joint efforts for lasting peace and stability in Northeast Asia. The directly related parties will negotiate a permanent peace regime on the Korean Peninsula at an appropriate separate forum. The Six Parties agreed to explore ways and means for promoting security cooperation in Northeast Asia.

5. The Six Parties agreed to take coordinated steps to implement the afore-mentioned consensus in a phased manner in line with the principle of “commitment for commitment, action for action.”

6. The Six Parties agreed to hold the Fifth Round of the Six-Party Talks in Beijing in early November 2005 at a date to be determined through consultations.

APPENDIX FOURTEEN

U.N. Security Council Resolution 1718, October 14, 2006⁴

The Security Council,

Recalling its previous relevant resolutions, including resolution 825 (1993), resolution 1540 (2004) and, in particular, resolution 1695 (2006), as well as the statement of its President of 6 October 2006 (S/PRST/2006/41),

Reaffirming that proliferation of nuclear, chemical and biological weapons, as well as their means of delivery, constitutes a threat to international peace and security,

Expressing the gravest concern at the claim by the Democratic People's Republic of Korea (DPRK) that it has conducted a test of a nuclear weapon on 9 October 2006, and at the challenge such a test constitutes to the Treaty on the Non-Proliferation of Nuclear Weapons and to international efforts aimed at strengthening the global regime of non-proliferation of nuclear weapons, and the danger it poses to peace and stability in the region and beyond,

Expressing its firm conviction that the international regime on the non-proliferation of nuclear weapons should be maintained and recalling that the DPRK cannot have the status of a nuclear-weapon state in accordance with the Treaty on the Non-Proliferation of Nuclear Weapons,

⁴ *Action Prevents Provision of Nuclear Technology, Large-Scale Weapons, Luxury Goods to Country; Permits Inspection of Cargo to Ensure Compliance*, <http://www.un.org/News/Press/docs/2006/sc8853.doc.htm>.

Deploring the DPRK's announcement of withdrawal from the Treaty on the Non-Proliferation of Nuclear Weapons and its pursuit of nuclear weapons,

Deploring further that the DPRK has refused to return to the six-party talks without precondition,

Endorsing the Joint Statement issued on 19 September 2005 by China, the DPRK, Japan, the Republic of Korea, the Russian Federation and the United States,

Underlining the importance that the DPRK respond to other security and humanitarian concerns of the international community,

Expressing profound concern that the test claimed by the DPRK has generated increased tension in the region and beyond, and determining therefore that there is a clear threat to international peace and security,

Acting under Chapter VII of the Charter of the United Nations, and taking measures under its Article 41,

1. Condemns the nuclear test proclaimed by the DPRK on 9 October 2006 in flagrant disregard of its relevant resolutions, in particular resolution 1695 (2006), as well as of the statement of its President of 6 October 2006 (S/PRST/2006/41), including that such a test would bring universal condemnation of the international community and would represent a clear threat to international peace and security;
2. Demands that the DPRK not conduct any further nuclear test or launch of a ballistic missile;
3. Demands that the DPRK immediately retract its announcement of withdrawal from the Treaty on the Non-Proliferation of Nuclear

Weapons;

4. Demands further that the DPRK return to the Treaty on the Non-Proliferation of Nuclear Weapons and International Atomic Energy Agency (IAEA) safeguards, and underlines the need for all States Parties to the Treaty on the Non-Proliferation of Nuclear Weapons to continue to comply with their Treaty obligations;
5. Decides that the DPRK shall suspend all activities related to its ballistic missile programme and in this context re-establish its pre-existing commitments to a moratorium on missile launching;
6. Decides that the DPRK shall abandon all nuclear weapons and existing nuclear programmes in a complete, verifiable and irreversible manner, shall act strictly in accordance with the obligations applicable to parties under the Treaty on the Non-Proliferation of Nuclear Weapons and the terms and conditions of its International Atomic Energy Agency (IAEA) Safeguards Agreement (IAEA INFCIRC/403) and shall provide the IAEA transparency measures extending beyond these requirements, including such access to individuals, documentation, equipments and facilities as may be required and deemed necessary by the IAEA;
7. Decides also that the DPRK shall abandon all other existing weapons of mass destruction and ballistic missile programme in a complete, verifiable and irreversible manner;
8. Decides that:
 - (a) all Member States shall prevent the direct or indirect supply, sale or transfer to the DPRK, through their territories or by their nationals, or using their flag vessels or aircraft, and whether or not originating in their territories, of:
 - (i) any battle tanks, armoured combat vehicles, large calibre artillery systems, combat aircraft, attack helicopters, warships, missiles or missile systems as defined for the purpose of the United Nations Register on Conventional Arms, or related

materiel including spare parts, or items as determined by the Security Council or the Committee established by paragraph 12 below (the Committee);

(ii) all items, materials, equipment, goods and technology as set out in the lists in documents S/2006/814 and S/2006/815, unless within 14 days of adoption of this resolution the Committee has amended or completed their provisions also taking into account the list in document S/2006/816, as well as other items, materials, equipment, goods and technology, determined by the Security Council or the Committee, which could contribute to DPRK's nuclear-related, ballistic missile-related or other weapons of mass destruction-related programmes;

(iii) luxury goods;

(b) the DPRK shall cease the export of all items covered in subparagraphs (a) (i) and (a) (ii) above and that all Member States shall prohibit the procurement of such items from the DPRK by their nationals, or using their flagged vessels or aircraft, and whether or not originating in the territory of the DPRK;

(c) all Member States shall prevent any transfers to the DPRK by their nationals or from their territories, or from the DPRK by its nationals or from its territory, of technical training, advice, services or assistance related to the provision, manufacture, maintenance or use of the items in subparagraphs (a) (i) and (a) (ii) above;

(d) all Member States shall, in accordance with their respective legal processes, freeze immediately the funds, other financial assets and economic resources which are on their territories at the date of the adoption of this resolution or at any time thereafter, that are owned or controlled, directly or indirectly, by the persons or entities designated by the Committee or by the Security Council as being engaged in or providing support for, including through other illicit means, DPRK's nuclear-related, other weapons of mass

destruction-related and ballistic missile-related programmes, or by persons or entities acting on their behalf or at their direction, and ensure that any funds, financial assets or economic resources are prevented from being made available by their nationals or by any persons or entities within their territories, to or for the benefit of such persons or entities;

(e) all Member States shall take the necessary steps to prevent the entry into or transit through their territories of the persons designated by the Committee or by the Security Council as being responsible for, including through supporting or promoting, DPRK policies in relation to the DPRK's nuclear-related, ballistic missile-related and other weapons of mass destruction-related programmes, together with their family members, provided that nothing in this paragraph shall oblige a state to refuse its own nationals entry into its territory;

(f) in order to ensure compliance with the requirements of this paragraph, and thereby preventing illicit trafficking in nuclear, chemical or biological weapons, their means of delivery and related materials, all Member States are called upon to take, in accordance with their national authorities and legislation, and consistent with international law, cooperative action including through inspection of cargo to and from the DPRK, as necessary;

9. Decides that the provisions of paragraph 8 (d) above do not apply to financial or other assets or resources that have been determined by relevant States:

(a) to be necessary for basic expenses, including payment for foodstuffs, rent or mortgage, medicines and medical treatment, taxes, insurance premiums, and public utility charges, or exclusively for payment of reasonable professional fees and reimbursement of incurred expenses associated with the provision of legal services, or fees or service charges, in accordance with national laws, for routine holding or maintenance of frozen funds,

other financial assets and economic resources, after notification by the relevant States to the Committee of the intention to authorize, where appropriate, access to such funds, other financial assets and economic resources and in the absence of a negative decision by the Committee within five working days of such notification;

(b) to be necessary for extraordinary expenses, provided that such determination has been notified by the relevant States to the Committee and has been approved by the Committee; or

(c) to be subject of a judicial, administrative or arbitral lien or judgement, in which case the funds, other financial assets and economic resources may be used to satisfy that lien or judgement provided that the lien or judgement was entered prior to the date of the present resolution, is not for the benefit of a person referred to in paragraph 8 (d) above or an individual or entity identified by the Security Council or the Committee, and has been notified by the relevant States to the Committee;

10. Decides that the measures imposed by paragraph 8 (e) above shall not apply where the Committee determines on a case-by-case basis that such travel is justified on the grounds of humanitarian need, including religious obligations, or where the Committee concludes that an exemption would otherwise further the objectives of the present resolution;
11. Calls upon all Member States to report to the Security Council within thirty days of the adoption of this resolution on the steps they have taken with a view to implementing effectively the provisions of paragraph 8 above;
12. Decides to establish, in accordance with rule 28 of its provisional rules of procedure, a Committee of the Security Council consisting of all the members of the Council, to undertake the following tasks:
 - (a) to seek from all States, in particular those producing or possessing the items, materials, equipment, goods and technology referred to in paragraph 8 (a) above, information regarding the

actions taken by them to implement effectively the measures imposed by paragraph 8 above of this resolution and whatever further information it may consider useful in this regard;

(b) to examine and take appropriate action on information regarding alleged violations of measures imposed by paragraph 8 of this resolution;

(c) to consider and decide upon requests for exemptions set out in paragraphs 9 and 10 above;

(d) to determine additional items, materials, equipment, goods and technology to be specified for the purpose of paragraphs 8 (a) (i) and 8 (a) (ii) above;

(e) to designate additional individuals and entities subject to the measures imposed by paragraphs 8 (d) and 8 (e) above;

(f) to promulgate guidelines as may be necessary to facilitate the implementation of the measures imposed by this resolution;

(g) to report at least every 90 days to the Security Council on its work, with its observations and recommendations, in particular on ways to strengthen the effectiveness of the measures imposed by paragraph 8 above;

13. Welcomes and encourages further the efforts by all States concerned to intensify their diplomatic efforts, to refrain from any actions that might aggravate tension and to facilitate the early resumption of the six-party talks, with a view to the expeditious implementation of the Joint Statement issued on 19 September 2005 by China, the DPRK, Japan, the Republic of Korea, the Russian Federation and the United States, to achieve the verifiable denuclearization of the Korean peninsula and to maintain peace and stability on the Korean peninsula and in North-East Asia;
14. Calls upon the DPRK to return immediately to the six-party talks without precondition and to work towards the expeditious implementation of the Joint Statement issued on 19 September 2005 by China, the DPRK, Japan, the Republic of Korea, the

Russian Federation and the United States;

15. Affirms that it shall keep DPRK's actions under continuous review and that it shall be prepared to review the appropriateness of the measures contained in paragraph 8 above, including the strengthening, modification, suspension or lifting of the measures, as may be needed at that time in light of the DPRK's compliance with the provisions of the resolution;
16. Underlines that further decisions will be required, should additional measures be necessary;
17. Decides to remain actively seized of the matter.

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