

CRS Report for Congress

North Korea's Nuclear Weapons Development and Diplomacy

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Summary

The six parties to the North Korean nuclear negotiations concluded an agreement on February 13, 2007, that specifies two Phases of implementation. The phases provided for a freeze of North Korean nuclear installations at the Yongbyon site, a subsequent disablement of all North Korean nuclear facilities, and a North Korean declaration of “all nuclear programs.” The Agreement also establishes working groups of the six parties on subjects such as U.S.-North Korean normalization of relations, denuclearization of the Korean peninsula, energy and economic cooperation, Japan-North Korea normalization of relations, and a North Korean peace and security mechanism. The Six Party Agreement was negotiated following a North Korean nuclear test in October 2006, the imposition of sanctions against North Korea by the United Nations Security Council, and mounting congressional criticism of Administration policy. The nuclear test signaled progress by North Korea in reprocessing plutonium since 2002 for six to eight atomic bombs.

The Agreement also came about because of changes in Bush Administration policy. Tactically, the Administration ended its unwillingness to negotiate bilaterally with North Korea and actively sought bilateral meetings; the details of the Agreement were negotiated at these meetings.

The implementation of the Initial Phase of the Agreement, which had a 60-day deadline, was delayed until the Bush Administration acceded to North Korean demands for access to foreign banks to deposit \$25 million from frozen accounts at the Banco Delta in Macau — the object of U.S. financial sanctions since September 2005 because of Banco Delta's involvement in North Korean criminal counterfeiting. Following the release of the funds, North Korea shut down its operational nuclear reactor and plutonium reprocessing plant. The Bush Administration asserted in early September 2007 that North Korea had agreed to disclose all of its nuclear programs and disable them by the end of 2007. North Korean statements spoke of steps to implement the 2007 agreement by the end of the year, but they also asserted that the Bush Administration had agreed to reciprocal steps, including the removal of North Korea from the U.S. list of state sponsors of terrorism.

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North Korea's Nuclear Weapons Development and Diplomacy

Most Recent Developments

Assistant Secretary of State Christopher Hill announced on September 2, after two days of talks with North Korea's chief nuclear negotiator, that North Korea had agreed to "provide a full declaration of all their nuclear programs and ... disable their nuclear programs by the end of this year, 2007." The North Korean Foreign Ministry stated on September 4 that North Korea agreed on "practical measures to neutralize the existing nuclear facilities in the D.P.R.K. within this year." The Foreign Ministry also claimed that in return, Hill had agreed to remove North Korea from the U.S. list of terrorism-supporting states and lift economic sanctions under the U.S. Trading with the Enemy Act.¹ Bush Administration officials denied that Hill had made a commitment to remove North Korea from the terrorism list. They stated that removal of North Korea from the terrorism list depended on further progress toward denuclearization. They called on North Korea to improve relations with Japan, including progress in resolving the issue of Japanese kidnapped by North Korea, but they did not describe progress on the kidnapping issue as a condition for removal from the terrorism list.² North Korea also invited nuclear experts from the United States, China, and Russia to visit the main North Korea plutonium nuclear complex at Yongbyon.

The February 2007 Agreement on North Korea's Nuclear Disarmament: Provisions and Implementation

Main Features of the Agreement

1. An Initial phase, or Phase One, with a 60-day timetable.

- North Korea is to freeze ("shut down and seal") its nuclear installations at Yongbyon, including the operating five megawatt nuclear reactor and plutonium reprocessing plant.

¹ David E. Sanger, Nuclear pact broadening North Korea and U.S. say, *New York Times*, September 3, 2007, p. A5. Choe Sang-hun and David E. Sanger. North Korea claims U.S. will remove sanctions, *International Herald Tribune*, September 4, 2007, p. 5.

² May Masangkay and Ko Hirano, U.S. denies accord to remove N. Korea from terrorism list, *Kyodo News*, September 4, 2007.

- North Korea will “invite back” the IAEA to monitor the freeze at Yongbyon. This is the same role that the IAEA had from 1994 until December 2002 under the 1994 U.S.-North Korean Agreed Framework.
- As these arrangements are made, North Korea is to receive 50,000 tons of heavy oil. South Korea reportedly will finance this shipment.
- North Korea “will discuss” with the other six parties “a list of all its nuclear programs, including plutonium extracted from used fuel rods” from the five megawatt reactor (which North Korea claims to have reprocessed into nuclear weapons-grade plutonium).
- North Korea and the United States will “start bilateral talks aimed at resolving bilateral issues and moving toward full diplomatic relations.” The United States “will begin the process of removing” North Korea from the U.S. list of state sponsors of terrorism and “advance the process of terminating” economic sanctions against North Korea under the U.S. Trading with the Enemy Act.
- North Korea and Japan will “start bilateral talks” toward normalization of relations on the basis of settlement of “outstanding issues of concern” (which Japan interprets to include the issue of North Korea’s kidnapping of Japanese citizens).
- Although unstated in the agreement, a defacto component of the Initial Phase was Christopher Hill’s pledge to resolve the issue of U.S. sanctions against Banco Delta and the freezing of North Korean accounts within 30 days of February 13, 2007.

Implementation of Phase One. There was little implementation of the Initial Phase by the 60-day deadline of April 13, 2007. North Korea demanded the release of all of the \$25 million in its accounts in Banco Delta before it would implement its obligations in Phase One. Amidst reported disagreement between the State and Treasury Departments, the Bush Administration decided on April 10, 2007, to accept North Korea and allow the release of the entire \$25 million.³ However, instead of withdrawing the money in cash, North Korea demanded assurances from the Bush Administration that the U.S. Treasury Department would not penalize any foreign banks that received transferred money from North Korea’s Banco Delta accounts. It also proposed that a U.S. bank facilitate the transfer the money to a North Korean account in a foreign bank. In June 2007, the Bush Administration and the Russian government arranged for the money to be transferred through the New York Federal Reserve Bank to Russia’s central bank, which then forwarded the money to a private

³ Lee Dong-min, Interview with former White House official Victor Cha, Vantage Point, June 2007, p., 22-24.

bank that maintained a North Korean account.⁴ A key result of this appears to be a collapse of the Bush Administration's anti-counterfeiting policy toward North Korea. Since September 2005, the Treasury Department had imposed sanctions on Banco Delta and had warned banks in numerous countries to stop doing business with North Korea because of North Korea's counterfeiting of U.S. currency, cigarettes, and pharmaceuticals.

Assistant Secretary Hill then visited Pyongyang, the first time an American official had been there since October 2002. North Korea also invited a team from the IAEA to Pyongyang to negotiate the return of IAEA monitors to Yongbyon. IAEA monitors moved into Yongbyon in July 2007 and certified that the Yongbyon nuclear installations were shut down. South Korea delivered the 50,000 tons of heavy oil promised to North Korea.

2. "Next Phase" or Phase Two.

Following the initial phase is a "Next Phase" without a timetable or deadline specified for implementation. (This will be referred to as Phase Two.)

- North Korea is to make "a complete declaration of all nuclear programs."
- A "disablement of all existing nuclear facilities."
- North Korea is to receive "economic, energy and humanitarian assistance up to the equivalent of 1 million tons of heavy fuel oil, including the initial shipment of 50,000 tons of heavy oil."

3. Five Working Groups.

Ongoing with the Initial Phase and Phase Two is the establishment and functioning of five working groups to negotiate key issues. Agreements reached by the working groups "will be implemented as a whole in a coordinated manner." The working groups will deal with the following subjects:

- Denuclearization of the Korean Peninsula;
- Normalization of North Korea-U.S. relations;
- Normalization of North Korea-Japan relations;
- Economy and energy cooperation; and
- Northeast Asia peace and security mechanisms.

4. Separate Permanent Peace Forum.

Negotiation in a separate forum of a "permanent peace regime on the Korean Peninsula" by the "directly related parties." In the late 1990s, the United States,

⁴ Jay Solomon, Money transfer advanced North Korea pact, *The Wall Street Journal Asia*, June 15, 2007, p. 8.

North Korea, South Korea, and China negotiated unsuccessfully over a Korean peace agreement.

Issues and Prospects for the Agreement

Statements by the Bush Administration and the North Korean government indicate that implementation of Phase Two of the 2007 Agreement on North Korea's Nuclear Disarmament will be a new negotiation rather than just an implementation of the provisions of Phase Two. They suggest that prospects for Phase Two depend on how five issues will be negotiated.

One is the completeness of North Korea's disclosure of its nuclear programs. Christopher Hill has stated on numerous occasions that North Korea's disclosure must include details of the highly enriched uranium program, which the United States has long claimed that North Korea possesses⁵ but that North Korea has repeatedly denied. Another component of the disclosure issue is whether North Korea will disclose the amount of nuclear weapons-grade plutonium it has reprocessed since it reopened its Yongbyon nuclear facilities in early 2003. A third component is whether North Korea will disclose the number of atomic bombs it possesses. A fourth is whether North Korea will disclose the location of all of its nuclear facilities, materials, and atomic bombs that are not at Yongbyon.

The second issue is the definition of "disablement" of nuclear facilities: U.S. officials have defined disablement as rendering nuclear facilities inoperable in ways that North Korea would have difficulty reversing. Experts state that there are several forms of "hard" disablement that would fit the U.S. definition but that there are other forms of disablement that could be described as soft, easily reversible.⁶

A third issue is verification of North Korea's disclosed nuclear facilities. Phase Two of the 2007 Agreement on North Korea's Nuclear Disarmament does not mention verification of disclosed facilities, but U.S. officials have stressed its importance.⁷ The role of the IAEA is limited to monitoring the freeze of the known nuclear installations at Yongbyon under Phase One. For any facilities or materials disclosed by North Korea beyond Yongbyon, a verification system would have to be negotiated. Moreover, U.S. and South Korean intelligence analysts reportedly believe that North Korea has large numbers of nuclear facilities underground and in mountains.⁸ North Korea has a history of rejecting intrusive inspections by the IAEA. Its September 2007 invitation to U.S., Chinese, and Russian experts to visit

⁵ US envoy stresses urgency in resolving N. Korea's uranium enrichment program, *Yonhap News Agency*, June 26, 2007.

⁶ For the assessment of nuclear experts David Albright and South Korea's Dr. Kim Tae-woo on definition of disablement, see Hopes of nuclear freeze as six-party talks resume, *Chosun Ilbo* (internet), February 8, 2007.

⁷ Lee Joo-hee, U.S. to address N.K. missiles after nuclear talks, *Korea Herald* (internet), August 27, 2007.

⁸ Jon Herskovitz, Money may not pry nuclear secrets from North Korea, *Reuters News*, July 20, 2007.

Yongbyon raises the possibility that an alternative verification mechanism could be established.

The fourth issue likely will be the Bush Administration's response to North Korea's conditions for implementation of Phase Two: removal of North Korea from the U.S. list of terrorism-supporting countries and abrogation of economic sanctions against North Korea under the U.S. Trading with the Enemy Act. In U.S.-North Korean bilateral talks leading up to and after the 2007 Agreement on North Korea's Nuclear Disarmament, Assistant Secretary of State Christopher Hill reportedly linked removal of North Korea from the terrorism list with a satisfactory nuclear settlement.⁹ The abrogation of U.S. economic sanctions likely would have little impact on U.S. trade and investment with North Korea. President Clinton lifted many sanctions in 2000; U.S.-North Korean trade has remained near zero, and there has been no significant U.S. business investment in North Korea. Removal of Pyongyang from the U.S. terrorism list, however, could have a deep impact on U.S.-Japan relations. Since 2000, Japan has urged the Clinton and Bush administrations to keep North Korea on the terrorism list until North Korea resolves the issue of its kidnapping of Japanese citizens.¹⁰ In U.S.-North Korean bilateral talks leading up to and after the February 2007 nuclear agreement, Assistant Secretary of State Christopher Hill reportedly urged North Korea to improve relations with Japan, but Bush Administration officials have been ambivalent on whether progress on the kidnapping issue is a condition for removal of North Korea from the terrorism list.¹¹

The fifth issue is whether North Korea will add conditions to implementation of Phase Two. Statements by Pyongyang indicate the possibility that North Korea may raise up to three added conditions. One would be a demand for heavy oil shipments for multiple years rather than the one year specified in the Agreement on North Korea's Nuclear Disarmament. A second demand would be for a clear commitment by the United States and the other Six Party governments to construct light water nuclear reactors (LWRs) inside North Korea. North Korea long has conditioned any complete dismantlement of its nuclear programs to the completion of construction of LWRs — thus setting a timetable for dismantlement many years into the future. The third demand would be for military concessions by the United States to reduce the size and limit the deployments and military exercises of U.S. forces in and around the Korean peninsula. North Korean officials have stated repeatedly since March 2005 that the United States would have to make military concessions as part of “denuclearization of the Korean peninsula.” The politically

⁹ What ‘new ideas’ did Washington offer Pyongyang? Chosun Ilbo (internet), December 2, 2006. US offered to remove N Korea from terror list — S Korea, Dow Jones International News, December 26, 2006. FM Song: U.S. May take interim steps to remove N.K. from terrorism list, Yonhap News Agency, March 3, 2007.

¹⁰ Japan warns US over NKorea row, Agence France Presse, September 4, 2007. The White House, Roundtable Interview of the President by the Foreign Print Media, August 30, 2007. President Bush related that “I assured Prime Minister Abe that we’re not going to forget the abduction issue....”

¹¹ Ibid. In his August 30, 2007 interview with the foreign media, President Bush avoided a direct answer to the question of whether the Japanese kidnapping issue was a direct condition for removing North Korea from the terrorism list.

powerful North Korean military leadership appears to place priority on securing military concessions from the United States. In July 2007, the North Korean military command proposed bilateral military-to-military talks with the U.S. military.

North Korea's Nuclear Programs

Plutonium Program

Most of North Korea's plutonium-based nuclear installations are located at Yongbyon, 60 miles from the North Korean capital of Pyongyang. They are the facilities covered by the 1994 U.S.-North Korean Agreed Framework and by Phase One of the February 2007 Six Party Nuclear Agreement. (For more information see CRS Report RS21391, *North Korea's Nuclear Weapons: Latest Developments*, by Sharon Squassoni) The key installations are as follows:¹²

- *An atomic reactor, with a capacity of about 5 electrical megawatts that began operating by 1987.* It is capable of expending enough reactor fuel to produce about 6 kilograms of plutonium annually — enough for the manufacture of a single atomic bomb annually. North Korea in 1989 shut down the reactor for about 70 days; U.S. intelligence agencies believe that North Korea removed fuel rods from the reactor at that time for reprocessing into plutonium suitable for nuclear weapons. In May 1994, North Korea shut down the reactor and removed about 8,000 fuel rods, which could be reprocessed into enough plutonium (25-30 kilograms) for 4-6 nuclear weapons. North Korea started operating the reactor again in February 2003, shut it down in April 2005, and said it had removed another 8,000 fuel rods. According to newly resumed IAEA monitors, North Korea shut down the reactor in July 2007.
- *Two larger (estimated 50 megawatts and 200 electrical megawatts) reactors under construction at Yongbyon and Taechon since 1984.* According to U.S. Ambassador Robert Gallucci, these plants, if completed, would be capable of producing enough spent fuel annually for 200 kilograms of plutonium, sufficient to manufacture nearly 30 atomic bombs per year. However, when North Korea reopened the plutonium program in early 2003, reports indicate that construction on the larger reactors was not resumed.
- *A plutonium reprocessing plant about 600 feet long and several stories high.* The plant would separate weapons grade plutonium-239 from spent nuclear fuel rods for insertion into the structure of atomic bombs or warheads. U.S. intelligence agencies reportedly detected North Korean preparations to restart the plutonium reprocessing plant in February and March 2003.

¹² Albright, David and O'Neill, Kevin. *Solving the North Korean nuclear puzzle.* Washington, D.C., Institute for Science and International Security Press, 2000. pp. 57-82.

According to press reports, the CIA estimated in late 2003 that North Korea had reprocessed some of the 8,000 fuel rods. In January 2004, North Korean officials showed a U.S. nuclear expert, Dr. Sigfried Hecker, samples of what they claimed were plutonium oxalate powder and plutonium metal. Dr. Hecker later said in testimony before the Senate Foreign Relations Committee (January 21, 2004) that, without testing, he could not confirm whether the sample was metallic plutonium “but all observations I was able to make are consistent with the sample being plutonium metal.” IAEA monitors in July 2007 stated that the reprocessing plant was not in operation.

Satellite photographs reportedly also show that the five megawatt reactor has no attached power lines, which it would have if used for electric power generation.

Persons interviewed for this study believe that North Korea developed the five megawatt reactor and the reprocessing plant with its own resources and technology. It is believed that Kim Jong-il, the son and successor of President Kim Il-sung who died in July 1994, directs the program, and that the military and the Ministry of Public Security implement it. North Korea reportedly has about 3,000 scientists and research personnel devoted to the Yongbyon program. Many have studied nuclear technology (though not necessarily nuclear weapons production) in the Soviet Union and China and reportedly Pakistan.

Highly Enriched Uranium (HEU) Program

North Korea’s secret highly enriched uranium (HEU) program appears to date from at least 1996. Hwang Jang-yop, a Communist Party secretary who defected in 1997, has stated that North Korea and Pakistan agreed in the summer of 1996 to trade North Korean long-range missile technology for Pakistani HEU technology.¹³ Other information dates North Korea-Pakistan cooperation to 1993. The Clinton Administration reportedly learned of it in 1998 or 1999, and a Department of Energy report of 1999 cited evidence of the program. In March 2000, President Clinton notified Congress that he was waiving certification that “North Korea is not seeking to develop or acquire the capability to enrich uranium.” The Japanese newspaper *Sankei Shimbun* reported on June 9, 2000, the contents of a “detailed report” from Chinese government sources on a secret North Korean uranium enrichment facility inside North Korea’s Mount Chonma. Reportedly, according to a CIA report to Congress, North Korea attempted in late 2001 to acquire “centrifuge-related materials in large quantities to support a uranium enrichment program.”¹⁴

¹³ Kim Min-cheol. Hwang tells of secret nuke program. *Choson Ilbo* (Seoul, internet version), July 5, 2003.

¹⁴ Pincus, Walter. N. Korea’s nuclear plans were no secret. *Washington Post*, February 1, 2003. P. A1.

The CIA estimated publicly in November 2002 that North Korea could produce two atomic bombs annually through HEU beginning in 2005;¹⁵ other intelligence estimates reportedly project a bomb producing capability between 2005 and 2007. Ambassador Robert Gallucci, who negotiated the 1994 U.S.-North Korean Agreed Framework, and Mitchell Reiss, head of the State Department's Policy Planning Bureau until 2004, have stated that a functioning North Korean HEU infrastructure could produce enough HEU for "two or more nuclear weapons per year." The *Washington Post* of April 28, 2004, quoted an U.S. intelligence official saying that a North Korean HEU infrastructure could produce as many as six atomic bombs annually. Administration officials have stated that they do not know the locations of North Korea's uranium enrichment program or whether North Korea has assembled the infrastructure to produce uranium-based atomic bombs.¹⁶

International Assistance

Knowledgeable individuals believe that the Soviet Union did not assist directly in the development of Yongbyon in the 1980s. The U.S.S.R. provided North Korea with a small research reactor in the 1960s, which also is at Yongbyon. However, North Korean nuclear scientists continued to receive training in the U.S.S.R. up to the demise of the Soviet Union in December 1991. East German and Russian nuclear and missile scientists reportedly were in North Korea throughout the 1990s. Since 1999, reports have appeared that U.S. intelligence agencies had information that Chinese enterprises were supplying important components and raw materials for North Korea's missile program.¹⁷

North Korea's Delivery Systems

North Korea's missile launchings of July 4, 2006, re-focused U.S. attention on North Korea's missile program and Pyongyang's apparent attempts to develop long-range missiles that could strike U.S. territories. North Korea succeeded by 1998 in developing a "Nodong" missile with a range estimated at up to 900 miles, capable of covering South Korea and most of Japan. North Korea reportedly deployed nearly 100 Nodong missiles by 2003. On August 31, 1998, North Korea test fired a three-stage rocket, apparently the prototype of the Taepodong I missile; the third stage apparently was an attempt to launch a satellite. U.S. intelligence estimates reportedly concluded that such a missile would have the range to reach Alaska, Guam, and the Northern Marianas Commonwealth. Media reports in early 2000 cited U.S. intelligence findings that without further flight tests, North Korea could deploy an intercontinental ballistic missile that would be capable of striking Alaska, Hawaii, and the U.S. west coast. Japan's *Sankei Shimbun* newspaper reported on August 6, 2003, that North Korea and Iran were negotiating a deal for the export of the long-

¹⁵ CIA unclassified point paper distributed to Congress, November 19, 2002.

¹⁶ Kessler, Glenn. New doubts on nuclear efforts by North Korea. *Washington Post*, March 1, 2007. P. A1.

¹⁷ ROK source views CIA report on DPRK production of plutonium. *Chungang Ilbo* (internet version), February 25, 2001. Gertz, Bill. Pyongyang's launch met by indifference. *Washington Times*, May 16, 1999. p. C1.

range Taepo Dong-2 missile to Iran and the joint development of nuclear warheads. U.S. officials claimed in September 2003 that North Korea had developed a more accurate, longer-range intermediate ballistic missile that could reach Okinawa and Guam (site of major U.S. military bases) and that there was evidence that North Korea had produced the Taepodong II, which could reach Alaska, Hawaii, and the U.S. west coast.

However, the apparent failure of the Taepodong missile launched July 4, 2006, indicated that North Korea had not succeeded in developing such a long-range missile. However, evaluations of all seven of the missiles launched on July 4, 2006, by intelligence agencies of the United States and other governments reportedly have concluded that North Korea has increased the accuracy of its Scud and Nodong missiles and that the launches displayed the ability of North Korea's command and control apparatus to coordinate multiple launchings of missiles at diverse targets.¹⁸ (For additional information, see CRS Report RS21473, *North Korean Ballistic Missile Threat to the United States*, by Steve Hildreth.)

The Clinton Administration to press North Korea for new talks over North Korea's missile program. In talks held in 1999 and 2000, North Korea demanded \$1 billion annually in exchange for a promise not to export missiles. U.S. negotiators rejected North Korea's demand for \$1 billion but offered a lifting of U.S. economic sanctions. This laid the ground for the Berlin agreement of September 1999, in which North Korea agreed to defer further missile tests in return for the lifting of major U.S. economic sanctions. President Clinton formalized the lifting of key economic sanctions against North Korea in June 2000. North Korea continued the moratorium, but it appears to have used Pakistan and Iran as surrogates in testing intermediate-range missiles based on North Korean technology.¹⁹

State of Nuclear Weapons Development

A CIA statement of August 18, 2003, reportedly estimated that North Korea had produced one or two simple fission-type nuclear weapons and had validated the designs without conducting yield-producing nuclear tests.²⁰ The initial estimate of one or two nuclear weapons is derived primarily from North Korea's approximately 70-day shutdown of the five megawatt reactor in 1989, which would have given it the opportunity to remove nuclear fuel rods, from which plutonium is reprocessed. The U.S. Central Intelligence Agency (CIA) and the Defense Intelligence Agency (DIA) reportedly estimated in late 1993 that North Korea extracted enough fuel rods for about 12 kilograms of plutonium — sufficient for one or two atomic bombs. The

¹⁸ An expert is amazed by the targeting accuracy: an exclusive report based on complete data on the landing points of North Korean missiles. *Yomiuri Weekly* (Tokyo) in Japanese, August 6, 2006. p. 22-23.

¹⁹ Gertz, Bill. Pakistan's missile program aided by North Korea. *Washington Times*, September 14, 1998. p. A1. Alon, Ben-David. Iran successfully tests Shahab 3. *Janes Defence Weekly* (internet version), July 9, 2003. Coughlin, Con. China, N. Korea send experts to hone Iran's long-range missiles. *New York Times*, November 23, 1997. p. A5.

²⁰ Sanger, David E. North Korea's bomb: untested but ready, C.I.A. concludes. *New York Times*, November 9, 2003. p. 4.

CIA and DIA apparently based their estimate on the 1989 shutdown of the five megawatt reactor.²¹

South Korean and Japanese intelligence estimates reportedly were higher: 16-24 kilograms (Japan) and 7-22 kilograms (South Korea). These estimates reportedly are based on the view that North Korea could have acquired a higher volume of plutonium from the 1989 reactor shutdown and the view of a higher possibility that North Korea removed fuel rods during the 1990 and 1991 reactor slowdowns. Russian Defense Ministry analyses of late 1993 reportedly came to a similar estimate of about 20 kilograms of plutonium, enough for two or three atomic bombs. General Leon LaPorte, former U.S. Commander in Korea, stated in an interview in April 2006 that North Korea possessed three to six nuclear weapons before the 1994 U.S.-North Korean Agreed Framework.²²

Russian intelligence agencies also reportedly have learned of significant technological advances by North Korea toward nuclear weapons production. On March 10, 1992, the Russian newspaper *Argumenty I Fakty* (Arguments and Facts) published the text of a 1990 Soviet KGB report to the Soviet Central Committee on North Korea's nuclear program. It was published again by *Izvestiya* on June 24, 1994. The KGB report asserted that "According to available data, development of the first nuclear device has been completed at the DPRK nuclear research center in Yongbyon." The North Korean government, the report stated, had decided not to test the device in order to avoid international detection.

Additionally, a number of reports and evidence point to at least a middle-range likelihood that North Korea may have smuggled plutonium from Russia. In June 1994, the head of Russia's Counterintelligence Service (successor to the KGB) said at a press conference that North Korea's attempts to smuggle "components of nuclear arms production" from Russia caused his agency "special anxiety." U.S. executive branch officials have expressed concern in background briefings over the possibility that North Korea has smuggled plutonium from Russia. One U.S. official, quoted in the *Washington Times*, July 5, 1994, asserted that "There is the possibility that things having gotten over the [Russia-North Korea] border without anybody being aware of it." The most specific claim came in the German news magazine *Stern* in March 1993, which cited Russian Counterintelligence Service reports that North Korea had smuggled 56 kilograms of plutonium (enough for 7-9 atomic bombs) from Russia.

If, as it claims, North Korea reprocessed the 8,000 nuclear fuel rods in 2003 that it had moved from storage at the beginning of that year, North Korea gained an additional 25-30 kilograms of plutonium, according to Dr. Sigfried Hecker in his testimony before the Senate Foreign Relations Committee on January 21, 2004. Dr. Hecker, former director of the Los Alamos Laboratories, had visited North Korea's Yongbyon nuclear complex in January 2004. U.S. officials and nuclear experts have stated that this amount of plutonium would give North Korea the potential to produce

²¹ Ibid., p. 111-166. Kim Kyoung-soo. North Korea's weapons of mass destruction: problems and prospects. Elizabeth, New Jersey, and Seoul, Hollym, 2004. pp. 27-50.

²² Kang Chan-ho. Former USFK commander: transfer of wartime control should not be carried out overnight. *Joong Ang Ilbo* (Seoul), April 3, 2006. p. 13.

between four to eight atomic bombs.²³ Nuclear expert David Albright estimated in February 2007 that North Korea had a stockpile of reprocessed plutonium of 28-50 kilograms, enough for between 5 and 12 nuclear weapons.²⁴ These estimates appear to be based on projections that a country like North Korea would need 6-8 kilograms of plutonium to produce one atomic bomb. The IAEA has had a standard that a non-nuclear state would need about eight kilograms of plutonium to produce an atomic bomb.

The question of whether North Korea produced additional nuclear weapons with the plutonium that it apparently acquired after 2003 may depend on whether North Korea is able to develop a nuclear warhead that could be fitted onto its missiles. Experts believe that the one or two atomic bombs developed earlier likely are similar to the large-size plutonium bomb dropped by the United States on Nagasaki in August 1945. However, North Korea has few delivery systems that could deliver such a bomb to a U.S. or Japanese target. Thus, Pyongyang probably would not produce additional Nagasaki-type bombs but would retain its weapons-grade plutonium until it could use it to produce a nuclear warhead. Statements by U.S. officials reflect an apparent uncertainty over whether North Korea has achieved a warheading capability.²⁵

According to press reports in late 2002, the CIA concluded that North Korea accelerated its uranium enrichment program in the 1999, 2000, and 2001. According to *U.S. News and World Report*, September 1, 2003, the CIA estimated that North Korea could produce a uranium-based atomic weapon by the second half of 2004. Another report, in the *Washington Post*, April 28, 2004, stated that U.S. intelligence officials had “broadly concluded” that a North Korean uranium enrichment program would be operational by 2007, producing enough material for as many as six atomic bombs.²⁶ However, U.S. officials have stated that they know less about the secret uranium enrichment program (HEU) than they know about the plutonium program. North Korea received designs for uranium enrichment centrifuges from Pakistan nuclear “czar,” A.Q. Khan, and has attempted to purchase overseas key components for uranium enrichment centrifuges; but some of these purchases have been blocked.²⁷ Assistant Secretary of State Christopher Hill stated on September 28, 2005, that “where there is not a consensus is how far they [North Korea] have gone with this [the HEU program].”²⁸

²³ Kessler, Glenn. N. Korea nuclear estimate to rise. *Washington Post*, April 28, 2004. p. A1. U.S. Expert says N. Korea has plutonium to make 8 bombs. *Yonhap News Agency*, January 2, 2006.

²⁴ David Albright and Paul Brannan. *The North Korean Plutonium Stock*, February 2007. Institute for Science and International Security, February 20, 2007.

²⁵ Cloud, David S. and Sanger, David E. U.S. aide sees arms advance by North Korea. *New York Times*, April 29, 2005. p. A1. Morgan, David. U.S. not certain North Korea has nuclear weapons. *Reuters News*, February 28, 2005.

²⁶ Kessler, N. Korea nuclear estimate to rise, *Washington Post*, April 28, 2004. p. A1.

²⁷ Albright and Hinderstein, *Dismantling the DPRK’s nuclear weapons program*, pp. 35-36.

²⁸ Parties concur N.K. has HEU material, but disagree on program’s progress: Hill. *Yonhap* (continued...)

For Additional Reading

CRS Report RL31555, *China and Proliferation of Weapons of Mass Destruction and Missiles: Policy Issues*, by Shirley A. Kan.

CRS Report RL31785, *Foreign Assistance to North Korea*, by Mark E. Manyin.

CRS Report RL33567, *Korea: U.S.-South Korean Relations — Issues for Congress*, by Larry A. Nicksch.

CRS Report RL31696, *North Korea: Economic Sanctions*, by Dianne E. Rennack.

CRS Report RS21473, *North Korean Ballistic Missile Threat to the United States*, by Steve Hildreth.

CRS Report RL33324, *North Korean Counterfeiting of U.S. Currency*, by Raphael F. Perl and Dick K. Nanto.

CRS Report RL33709, *North Korea's Nuclear Test: Motivations, Implications, and U.S. Options*, by Emma Chanlett-Avery and Sharon Squassoni.

CRS Report RS21391, *North Korea's Nuclear Weapons: Latest Developments*, by Sharon Squassoni.

²⁸ (...continued)

News Agency, September 29, 2005.