

Issue Brief for Congress

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North Korea's Nuclear Weapons Program

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North Korea's Nuclear Weapons Program

SUMMARY

North Korea's nuclear weapons program became an immediate foreign policy issue facing the United States because of North Korea's refusal to carry out its obligations under the Nuclear Non-Proliferation Treaty (NPT) and other nuclear accords it had signed. North Korea has constructed nuclear reactors and a plutonium reprocessing plant at a site called Yongbyon. U.S. and other foreign intelligence assessments have concluded that North Korea probably has acquired enough weapons-grade plutonium for the manufacture of at least one nuclear weapon.

The United States and North Korea signed an agreement on October 21, 1994, that offers North Korea a package of benefits in return for a freeze of North Korea's nuclear program. Benefits to North Korea include: light water nuclear reactors totaling 2,000 electric megawatts; shipments of "heavy oil"

to North Korea (50,000 tons in 1995 and 500,000 tons annually beginning in 1996 until the first light water reactor is built).

The pace of implementation of the Agreed Framework has been very slow. Instead of the original target date of 2003, it generally is estimated that completion of the light water reactors will not take place until well beyond 2010.

The United States has faced several policy problems since the signing of the Agreed Framework, including securing money annually to finance heavy oil shipments to North Korea (the cost of the oil has risen from about \$30 million in 1995 to over \$100 million), suspicions of clandestine North Korean nuclear activities, and North Korea's development of long range missiles.

MOST RECENT DEVELOPMENTS

On August 7, 2002, U.S. special envoy on North Korea, Jack Prichard, attended the ground breaking ceremony for the two light water reactors, which the United States promised North Korea in the 1994 U.S.-North Korean Agreed Framework. He repeated the Bush Administration's warning that the Administration would suspend the Agreed Framework if North Korea did not begin cooperation with the International Atomic Energy Agency regarding inspection of North Korean nuclear facilities. In his State of the Union speech of January 29, 2002, President Bush declared that North Korea was part of an "axis of evil" group of states that produced and proliferated weapons of mass destruction. Administration officials warned that North Korea's proliferation of weapons of mass destruction could make such weapons available to al Qaeda. On March 19, 2002, President Bush waived, on grounds of national security, certifying to Congress that North Korea was in compliance with the 1994 U.S.-North Korean Agreed Framework. In May, Undersecretary of State John Bolton charged that North Korea was operating a clandestine nuclear program.

BACKGROUND AND ANALYSIS

Bush Administration Policy

As part of a policy review toward North Korea, President Bush issued a statement on June 6, 2001, outlining policy objectives related to implementation of the U.S.-North 1994 Agreed Framework on North Korea's nuclear program, North Korea's missile program, and its conventional forces. He stated that if North Korea took positive actions in response to U.S. policy, the United States "will expand our efforts to help the North Korean people, ease sanctions, and take other political steps." President Bush's designation of North Korea as part of an "axis of evil" in his January 29, 2002 State of the Union address clarified the Administration's policy that emerged after the June 6 statement. The policy is aimed at reducing and/or eliminating basic elements of North Korean military power, including nuclear weapons and/or nuclear weapons-grade materials, weapons of mass destruction (WMDs), and conventional artillery and rocket launchers positioned on the demilitarized zone (DMZ) within range of the South Korean capital, Seoul. The Administration's emphasis on WMDs mounted after the Central Intelligence Agency gained documentary evidence in Afghanistan that al Qaeda seeks WMDs (including nuclear weapons) and plans new attacks on the United States. This reportedly influenced the Bush Administration to broaden the definition of the war against terrorism to include states like North Korea that potentially could supply WMDs to al Qaeda.

The Administration's strategy is to employ public accusations and warnings to pressure North Korea to make policy changes regarding its military assets in line with U.S. objectives. (For a discussion of overall Bush policy toward North Korea, see CRS Issue Brief 98045, *Korea: U.S.-South Korean Relations—Issues for Congress*.) The Bush policy statement of June 6, 2001, declared an objective of "improved implementation of the Agreed Framework relating to North Korea's nuclear activities." According to Administration officials, the policy insists that North Korea soon begin the process of coming into full compliance with

its obligations to the International Atomic Energy Agency (IAEA). The Administration asserts that North Korea must begin this process well prior to the point when the Agreed Framework specifies that North Korea must be in full compliance, since the IAEA states that, once North Korea allows a full range of IAEA inspections, the IAEA will need three to four years to determine whether North Korea is in full compliance with the Nuclear Non-Proliferation Treaty, to which it is a signatory. U.S. officials reportedly have said that point will come by 2005 when construction of the light water nuclear reactors promised to North Korea under the Agreed Framework will reach the stage of delivery of nuclear components. Beginning in July 2001, Administration officials warned that if North Korea does not begin the process of compliance with its obligations to the IAEA, the Administration would suspend the light water reactor project. State Department spokesman Richard Boucher declared on November 30, 2001, that North Korea must start compliance “now” and that: “You have to start early. It’s not a matter of showing up the day before the containment vessel [carrying the nuclear components] arrives; it’s a matter of working over a period of something like three years.” When President Bush waived certification in March 2002 that North Korea was in compliance with the Agreed Framework, Administration officials asserted that this was an added warning to North Korea to begin the process of compliance with its obligations to the IAEA.

The following is background related to North Korea’s nuclear program, the 1994 Agreed Framework, and U.S. policy since the Agreed Framework.

North Korea’s Nuclear Program

From the U.S. standpoint, a key purpose of the U.S.-North Korean Agreed Framework of October 21, 1994 is to address the North Korean nuclear program, especially the potential of that program to produce nuclear weapons. North Korea has several nuclear facilities which have the potential to produce nuclear weapons. Most are located at Yongbyon, 60 miles of the North Korean capital of Pyongyang. The key installations are:

- **An atomic reactor, with a capacity of about 5 electrical megawatts, constructed between 1980 and 1987:** it reportedly is capable of expending enough uranium fuel to produce about 7 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 for 4-5 nuclear weapons.
- **two larger (estimated 50 electrical megawatts and 200 electrical megawatts) atomic reactors under construction 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.

- **a plutonium reprocessing building about 600 feet long and several stories high:** Hans Blix, head of the International Atomic Energy Agency (IAEA), said after his visit to North Korea in May 1992 that the facility fit the definition of a plutonium reprocessing plant where weapons grade Plutonium-239 is separated from a reactor's spent fuel. North Korea completed one reprocessing line in 1993. IAEA inspectors in March 1994 saw evidence that North Korea was constructing a second reprocessing system in the building, which would double plutonium production capacity.

Satellite photographs reportedly also show that the atomic reactors have no attached power lines, which they would have if used for electric power generation. Hans Blix and a number of U.S. and South Korean experts have speculated that North Korea might have built a hidden "pilot" plutonium reprocessing laboratory as a prototype for the large reprocessing installation.

Persons interviewed for this study believe that North Korea developed the two reactors and the apparent reprocessing plant with its own resources and technology. It is believed that Kim Chong-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 (North Korea's version of the KGB) 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. The training of nuclear scientists at North Korean universities reportedly is intense. North Korea has uranium deposits, estimated at 26 million tons. North Korea is believed to have one uranium producing mine.

Disclosure of the Kumchangri Underground Complex

U.S. intelligence agencies reportedly became aware of the Kumchangri underground facility in the second half of 1996. The Defense Intelligence Agency (DIA) reportedly prepared a classified report at the end of 1997, which concluded that the facility, located about 25 miles north of Yongbyon, "possibly could be a nuclear weapons-related facility by 2003." The report stated that: "The function of this site has not been determined, but it could be intended as a nuclear production and/or storage site." The DIA began to brief staff members of key congressional committees concerning the Kumchangri site in the spring of 1998. According to staffers privy to the briefing, the DIA over several months provided detailed information indicating that North Korea was constructing a nuclear installation. In August 1998, the *New York Times* and the *Washington Post* revealed the intelligence findings. Press reports also indicated that U.S. intelligence agencies are monitoring at least ten more North Korean installations of a suspicious nature. The Clinton Administration responded to the disclosure by pressuring North Korea to allow the United States access to the Kumchangri facility. An agreement was reached on March 16, 1999, providing for multiple inspections of the site in return for at least 500,000 tons of new U.S. food aid for North Korea. The first visit took place in May 1999, a second in May 2000. Administration officials declared that no evidence of nuclear activity was found. However, previous reports indicated that North Korea had removed equipment from the facility.

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 are in North Korea. Russian military officials confirmed the presence of Russian nuclear and missile scientists inside North Korea in January 1994. In 1999 and early 2000, reports appeared that U.S. intelligence agencies had information that China was supplying important components and raw materials for North Korea's missile program.

North Korea's Delivery Systems

North Korea is developing missiles believed capable of delivering nuclear warheads. In June and July 1998, Secretary of Defense Cohen and other U.S. military officials disclosed that North Korea had succeeded in developing a "Nodong" missile with a range estimated at 600 miles, capable of covering South Korea and part of Japan. North began deploying Nodong missiles in late 1998. Since March 1994, U.S. intelligence agencies have reported that North Korea was developing two longer range Taepo Dong ballistic missiles whose range likely would include, in the first stage, all of Japan including Okinawa and, in the second stage, U.S. territories in the Western Pacific and possibly Alaska and Hawaii. On August 31, 1998, North Korea test fired a three stage rocket, apparently the prototype of the Taepo Dong-1; 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. 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.

These projections led the Clinton Administration to press North Korea for a new round of talks over North Korea's missile program. In talks held in March 1999 and July 2000, North Korea demanded \$1 billion annually in exchange for a promise not to export missiles. North Korea said to U.S. negotiators that it would not negotiate on its missile development/deployment program, apparently contradicting the offer reported by Russian President Vladimir Putin in July 2000. U.S. negotiators reportedly rejected North Korea's demand for \$1 billion but offered a lifting of U.S. economic sanctions against North Korea in exchange for an agreement on missiles. 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.

State of Nuclear Weapons Development

In August 2001, Secretary of Defense Donald Rumsfeld stated in Moscow that "North Korea possessed enough plutonium to produce two to three, maybe even four to five nuclear warheads." This was largest official U.S. estimate of the possible number of North Korean nuclear weapons. U.S. intelligence agencies had disclosed an estimate that North Korea had extracted enough plutonium from its nuclear reactor to produce one or two nuclear weapons.

However, in December 2001, the U.S. National Intelligence Council issued a revised finding that “North Korea has produced one, possibly two, nuclear weapons.” North Korea’s approximately 70 day shutdown of the five megawatt reactor in 1989 gave it the opportunity to remove nuclear fuel rods, from which plutonium is reprocessed. State Department officials estimated that North Korea may have acquired six to eight kilograms of plutonium from the five megawatt reactor at Yongbyon, enough, they say, for possibly one bomb. However, the U.S. Central Intelligence Agency and the Defense Intelligence Agency 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 CIA and DIA apparently based their estimate on the 1989 shutdown of the five megawatt reactor. David Albright of the Institute for Science and International Security produced in 1994 a detailed study of the 1989 reactor shutdown and concluded that if North Korea removed all of the fuel rods from the reactor during the shutdown, the rods would have contained 14 kilograms of plutonium.

South Korean and Japanese intelligence estimates reportedly are 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 2 or 3 atomic bombs. Some individual U.S. Government experts believe that under optimum conditions, North Korea could have produced close to 20 kilograms of plutonium since 1989.

There also is a body of analysis suggesting that North Korea could produce more nuclear weapons from a given amount of plutonium than standard intelligence estimates have believed. State Department and U.S. intelligence estimates of the plutonium/bomb production ratio are close to the IAEA standard that a non-nuclear state would need about eight kilograms of plutonium to produce a nuclear bomb. However, IAEA spokesman, David Kyd, stated in August 1994 that Agency officials have known for some time that the eight kilogram standard was too high. He said that the IAEA retained it because of the wishes of member governments.

Kyd was reacting to a report of the National Resources Defense Council. Using North Korea as a standard non-nuclear state, the report concluded that a non-nuclear state with “low technology” could produce a one kiloton bomb (a small atomic bomb but “with the potential to kill tens of thousands of people”) with three kilograms of plutonium. A non-nuclear state with “medium technology” could produce a one kiloton bomb with 1.5 kilograms of plutonium.

Before the National Resources Defense Council released the report, the U.S. Department of Energy in January 1994 lowered its mean estimate of plutonium required for a small atomic bomb from eight to four kilograms. Secretary of Defense Perry suggested in July 1994 that, with a higher level of technology that believed, North Korea could produce more nuclear weapons with a given amount of plutonium: “If they had a very advanced technology, they could make five bombs out of the amount of plutonium we estimate they have.”

Russian and U.S. intelligence agencies also reportedly have learned of significant technological advances by North Korea towards 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* of 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. In July and December 1993 respectively, the journal *Nucleonics* (July 8) and NBC News reported that North Korea had converted reprocessed plutonium from a liquid form to pure metal, apparently prior to 1993. Nuclear experts describe this action as the last step prior to the final assembly of an atomic bomb.

Additionally, there are a number of reports and evidence that 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." In August 1994, members of Germany's parliament and Chancellor Kohl's intelligence coordinator stated that they had been briefed that a German citizen arrested in May 1994 with a small amount of plutonium, smuggled from Russia, had connections with North Korea. 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.

Other evidence, albeit circumstantial, includes numerous reports in 1994 of poor security at Russian nuclear facilities; a warning in June 1994 by the Director of the FBI that Russian criminal organizations "may already have the capability to steal nuclear weapons, nuclear weapons components or weapons-grade material"; the close connections that North Korean intelligence and military organs have had with the former KGB and elements of the Soviet/Russian military; the network of agents North Korea is known to have inside Russia; and the publicized North Korean attempts — some apparently successful according to Russian military officials — to recruit Soviet/Russian nuclear experts, including missile experts capable of designing nuclear warheads. The Japanese newspaper, *SANKEI SHIMBUN*, reported on June 9, 1996, that Kim Chong-u, a leading North Korean economic official, asserted in a meeting with State Department officials on April 26, 1996, that South Korea and Japan would have to deal with four North Korean missiles with nuclear warheads if they didn't provide North Korea with food.

In March 2000, President Clinton notified Congress that he could not certify that North Korea was not acquiring enriched uranium for the production of nuclear weapons. 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. In May 2002, U.S. Undersecretary of State John Bolton cited the U.S. intelligence estimate of December 2001 (see above) in accusing North Korea of operating a secret nuclear program.

Diplomatic Background to the Agreed Framework and Amending Agreements

In 1991, the Bush Administration took several actions aimed at securing from North Korea adherence to Pyongyang's obligations as a signatory of the Nuclear Non-Proliferation Treaty (NPT); North Korea had signed the treaty in 1985. Bush Administration actions included the withdraw of U.S. nuclear weapons from South Korea in late 1991. North Korea entered into two agreements, which specified nuclear obligations. In a denuclearization agreement signed in December 1991, North Korea and South Korea pledged not to possess nuclear weapons, not to possess plutonium reprocessing or uranium enrichment facilities, and to negotiate a mutual nuclear inspection system. In January 1992, North Korea signed a safeguards agreement with the International Atomic Energy Agency (IAEA), providing for regular IAEA inspections of nuclear facilities. In 1992, North Korea rebuffed South Korea regarding implementation of the denuclearization agreement, but it did allow the IAEA to conduct six inspections during June 1992-February 1993.

In late 1992, the IAEA found evidence that North Korea had reprocessed more plutonium than the 80 grams it had disclosed to the Agency. In February 1993, the IAEA invoked a provision in the safeguards agreement and called for a "special inspection" of two concealed but apparent nuclear waste sites at Yongbyon. The IAEA believed that a special inspection would uncover information on the amount of plutonium which North Korea had produced since 1989. North Korea rejected the IAEA request and announced on March 12, 1993, an intention to withdraw from the NPT.

The NPT withdrawal threat led to low and higher level diplomatic talks between North Korea and the Clinton Administration. North Korea "suspended" its withdrawal from the NPT when the Clinton Administration agreed to a high-level meeting in June 1993. However, North Korea continued to refuse both special inspections and IAEA regular inspections of facilities designated under the safeguards agreement. In May 1994, North Korea refused to allow the IAEA to inspect the 8,000 fuel rods, which it had removed from the five megawatt reactor. In June 1994, North Korea's President Kim Il-sung reactivated a longstanding invitation to former U.S. President Jimmy Carter to visit Pyongyang. Kim offered Carter a freeze of North Korea's nuclear facilities and operations. Kim took this initiative after China reportedly informed him that it would not veto a first round of economic sanctions, which the Clinton Administration had proposed to members of the U.N. Security Council.

The Clinton Administration reacted to Kim's proposal by dropping its sanctions proposal and entering into a new round of high-level negotiations with North. This negotiation led to the Agreed Framework of October 21, 1994. Two amending agreements were concluded in 1995: a U.S.-North Korean statements in Kuala Lumpur, Malaysia in June and a supply contract for the provision of nuclear reactors to North Korea, concluded in December.

The Agreed Framework: Provisions, Implementation, Costs, Future Issues

U.S. Objectives: Primacy to the Freeze of North Korea's Nuclear Program

The heart of the Agreed Framework and the amending accords is a deal under which the United States will provide North Korea with a package of nuclear, energy, economic, and diplomatic benefits; in return North Korea will halt the operations and infrastructure development of its nuclear program. The Agreed Framework commits North Korea to "freeze its graphite-moderated reactors and related facilities" within one month of October 21 with the freeze to be monitored by the IAEA. Ambassador Robert Gallucci, who negotiated for the United States, stated that "related facilities" include the plutonium reprocessing plant. According to Gallucci, the freeze includes a halt to construction of the 50 and 200 megawatt reactors and a North Korean promise not to refuel the five megawatt reactor. The Agreed Framework also commits North Korea to "cooperate" with the United States in finding a way to store the fuel rods removed from the five megawatt reactor in May 1994 "in a safe manner that does not involve reprocessing in the DPRK [North Korea]." Clinton Administration officials reportedly said that a secret "confidential minute" to the Agreed Framework prohibits North Korea from construction of new nuclear facilities elsewhere in North Korea.

Gallucci and other officials emphasized that the key policy objective of the Clinton Administration was to secure a freeze of North Korea's nuclear program in order to prevent North Korea from producing large quantities of nuclear weapons grade plutonium through the operations of the 50 and 200 megawatt reactors and the plutonium reprocessing plant at Yongbyon. Gallucci referred to the prospect of North Korea producing enough plutonium annually for nearly 30 nuclear weapons if the 50 and 200 megawatt reactors went into operation. The Administration's fear was that North Korea would have the means to export atomic bombs to other states and possess a nuclear missile capability that would threaten Japan and U.S. territories in the Pacific Ocean. The freeze, thus, is intended to attain U.S. policy goals related to nuclear non-proliferation and the NPT and prevent the emergence of a significant regional nuclear security threat.

However, the Agreed Framework does not resolve the question of North Korea's existing achievements regarding the production and acquisition of plutonium and the production of nuclear weapons. The freeze will not prevent North Korea from producing a few nuclear weapons if, according to the U.S. and foreign intelligence reports cited earlier, North Korea has enough plutonium, sufficient technology to manufacture them, and hidden facilities such as a pilot plutonium reprocessing laboratory, about which IAEA Director Blix and others have speculated. Pyongyang's continued small stockpile option appears to be a major weakness of the Agreed Framework.

Benefits to North Korea

Light Water Nuclear Reactors. North Korea is to receive two light water reactors (LWRs) with a generating capacity of approximately 2,000 megawatts. The Agreed Framework set a "target date" of 2003. The United States is obligated to organize an

international consortium arrangement for the acquisition and financing of the reactors. The Clinton Administration and the governments of South Korea, Japan, and other countries established in March 1995 the Korean Peninsula Energy Development Organization (KEDO) to coordinate the provision of the LWRs. North Korea initially rejected negotiating with either KEDO or South Korea over the LWR project, demanding that it deal only with the United States and that it would accept only U.S. reactors. North Korea and the United States reached an agreement in Kuala Lumpur, Malaysia, in June 1995 under which North Korea agreed to negotiate with KEDO. The Kuala Lumpur agreement left South Korea's role in the project unclear. However, South Korea's role has become apparent because of South Korea's participation in subsequent KEDO- North Korea negotiations, which concluded a supply contract in December 1995 and follow-up protocol accords in 1996. KEDO signed the supply contract with North Korea in December 1995. With the groundbreaking at the reactor site in August 1997, KEDO officials changed the estimated completion date from 2003 to 2007; other experts predict a much later date.

KEDO's estimated cost of the reactors in 1994 is currently \$4.6 billion. Other estimates have been \$5.5-6.0 billion. South Korea is to supply the reactors through a South Korean company as the main contractor; and South Korea and Japan will provide most of the financing. The Clinton Administration's objective was to secure all the money for the light water reactors from other governments. It approached Western European and Southeast Asian countries about financial assistance. An agreement reached by KEDO members on November 9, 1998, sets South Korea's contribution at \$3.22 billion, Japan's contribution at \$1 billion, and the European Union's contribution at \$76 million.

The supply contract will add to the financial costs. KEDO accepted several of North Korea's demands for construction of auxiliary facilities: ports, roads, a nuclear waste storage facility, and a reactor simulator. KEDO rejected North Korea's demand that KEDO finance modernization of North Korea's electric power grid. The cost of this has been estimated at \$750 million. North Korea reissued the demand in an amended form in U.S.-North Korean talks in March 2000, calling for U.S. "compensation" for electricity shortages because the light water nuclear reactors will not be completed by 2003.

Clinton Administration officials noted that before construction begins, the United States, in accord with the Atomic Energy Act, must enter into a bilateral nuclear cooperation agreement with North Korea, since U.S. technology is incorporated into the South Korean light water reactors that North Korea will receive. Administration officials stated that light water reactors are less dangerous than North Korea's current graphite reactors, partly because plutonium produced from light water reactors is more technologically difficult to use in the manufacture nuclear weapons. They also asserted that North Korea will have to secure enriched uranium fuel for light water reactors from outside North Korea. This, the officials claimed, will give the United States leverage on the supply of fuel if North Korea should violate the Agreed Framework. However, non-government nuclear experts assert that North Korea could use the original supply of fuel for the reactors to produce enough plutonium annually for up to 70 atomic bombs before the United States could react by seeking a cutoff of future fuel shipments. Ambassador Gallucci acknowledged that "a technical possibility" exists that North Korea could use light water reactors to produce plutonium for nuclear weapons. Moreover, exercising U.S. leverage over the supply of fuel would require that potential suppliers of fuel like China and Russia coordinate their policies with the United States. The Agreed Framework and subsequent U.S. statements have provided no information on the projected costs of supplying the reactor fuel.

Oil at No Cost. Prior to the construction of light water reactors, the Agreed Framework commits the United States to facilitate the provision to North Korea of “alternative energy” to compensate for the freeze of nuclear facilities. The alternative energy is to be “heavy oil”. In January 1995, the Clinton Administration arranged for the shipment of 50,000 metric tons of U.S. heavy oil to North Korea. This was followed by a shipment of 100,000 metric tons of oil in October 1995. Starting in October 1996, the United States is to facilitate shipments of 500,000 metric tons of heavy oil to North Korea annually until the first of the two light water reactors becomes operational. The Administration financed the initial shipment of 50,000 tons of oil with \$4.5 million from appropriated Defense Department funds designated for “emergency expenses. The European Union joined KEDO’s executive board in May 1997 and has provided over \$15 million annually for the oil shipments. The Administration has had little success in securing financial support from Southeast Asian and Persian Gulf countries despite repeated requests. The annual cost of the heavy oil has risen from about \$30 million in 1995 to over \$100 million in 2001.

The Agreed Framework states that the heavy oil is “for heating and electricity production.” North Korea has only one oil-fired electrical power plant, but 500,000 tons of oil annually exceeds the capacity of this plant. Other potential uses of heavy oil are for ship transport and steel production. U.S. officials disclosed in February 1995 that North Korea had “diverted” a “small amount” of the heavy oil received in January to industrial uses. Ambassador Gallucci hinted that it was used in steel production. He said that the United States and North Korea had agreed on procedures to ensure against further diversions. However, A General Accounting Office report in late 1999 described periodic breakdowns in the U.S. system of monitoring North Korea’s use of the heavy oil. President Clinton notified Congress in March 2000 that he could not certify that North was not diverting heavy oil for unauthorized purposes.

Diplomatic Representation. The United States and North Korea announced in the Agreed Framework an intention to open liaison offices in each other’s capital and establish full diplomatic relations if the two governments make progress “on issues of concern to each side.” By April 1995, most technical arrangements for liaison offices were completed. However, North Korea since has displayed more reluctance to finalize arrangements. Ambassador Gallucci asserted that a full normalization of diplomatic relations would depend on a successful resolution of non-nuclear military issues, especially the heavy deployment of North Korean conventional military forces along the demilitarized zone separating North and South Korea and North Korea’s program to develop and sell to other governments longer range missiles. In October 1999, William Perry, the Administration’s Special Adviser on North Korea, cited normalization of diplomatic relations as one of the benefits which the United States could offer North Korea for new agreements on nuclear and missile issues.

Lifting the U.S. Economic Embargo. The Agreed Framework specifies that within three months from October 21, 1994, the two sides will reduce barriers to trade and investment, including restrictions on telecommunications services and financial transactions. This required the Clinton Administration to relax the U.S. economic embargo on North Korea, which the Truman Administration and Congress put in place during the Korean War. On January 20, 1995, the Administration announced initial measures, including permission for telecommunications links with North Korea, permission for U.S. citizens to use credit cards in North Korea, permission for American media organizations to open offices in North Korea, permission for North Korea to use U.S. banks in financial transactions with third

countries, and permission for U.S. steel companies to import magnesite from North Korea. North Korea pressed the Clinton Administration to end all economic sanctions. In U.S.-North Korean talks in September 1999, the United States agreed to end a broader range of economic sanctions in exchange for a North Korean moratorium on future missile testing. President Clinton ordered the end of most economic sanctions in June 2000.

North Korean Obligations Beyond the Freeze of the Nuclear Program

North Korea's primary obligation is the freeze of its nuclear program. However, as the time comes for delivery to North Korea of plant and equipment for the light water reactors, the Agreed Framework alludes to certain other obligations for Pyongyang. Ambassador Gallucci and other Clinton Administration officials were more specific in describing these. They have disclosed the existence of a secret minute that the Administration and North Korea concluded in conjunction with completion of the Agreed Framework. North Korea, however, has not acknowledged such a secret minute.

Inspections. The Agreed Framework contains a clause which the Administration claims constitutes a North Korean obligation to allow the IAEA to conduct the special inspection of the two suspected nuclear waste sites at Yongbyon in conjunction with the delivery of equipment for the light water reactors. However, the Agreed Framework does not refer to "special inspections." It does state: "When a significant portion of the LWR [light water reactor] 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, following consultations with the Agency, with regard to verifying the accuracy and completeness of the DPRK's initial report on all nuclear material in the DPRK." Ambassador Gallucci contended that this binds North Korea to accept a special inspection before the key nuclear components of the first light water reactor are delivered to North Korea, if the IAEA still wishes to conduct a special inspection. However, North Korean descriptions of its obligations omit reference to special inspections.

Gallucci also stated in congressional testimony that the Agreed Framework did not restrict the right of the IAEA to invoke special inspections if it discovered any new North Korean nuclear activities. Gallucci said that the Agreed Framework only restricted the IAEA with respect to the two suspected nuclear waste sites, concerning which the IAEA demanded special inspections in 1993.

President Bush's statement of June 6, 2001, on U.S. policy toward North Korea asserted that the Administration would seek "improved implementation of the Agreed Framework relating to North Korea's nuclear activities." Administration officials said that North Korea must comply fully with its obligations to the IAEA or face a suspension of the light water reactor project prior to the time when nuclear components for the reactors are to be delivered to North Korea. U.S. officials reportedly have stated that the time for delivery of the nuclear components could be late 2003 or 2004. They have warned that North Korea must begin to comply soon since the IAEA says it will need three to four years to complete its work of verifying North Korea's past nuclear activities. Statements by Administration officials in November 2001, including a statement by President Bush, pressed North Korea to begin compliance with the IAEA immediately.

Disposition of Fuel Rods from the Five Megawatt Reactor. Following Kim Il-sung's offer of a nuclear freeze to former President Carter, Administration officials stressed the importance of securing North Korean agreement to the removal to a third country of the 8,000 fuel rods which North Korea removed from the five megawatt reactor in May 1994. The Administration abandoned the objective of securing an immediate removal of the rods after the negotiations started in August 1994. It also gave up support for the IAEA's attempts to inspect the fuel rods in order to gain information on the amount of weapons grade plutonium that North Korea secured from the five megawatt reactor prior to 1994. The Agreed Framework provided for the storage of the rods in North Korea and a North Korean promise not to reprocess plutonium from the rods. It also provides for subsequent talks on the "ultimate disposition" of the rods. The Administration also has agreed to provide technical assistance to North Korea for the safe storage of the fuel rods in a hard encasement. The encasement process began on April 27, 1996. Over 90% of the fuel rods had been encased in May 1998 when North Korea suspended the encasing in protest over the slow deliveries of heavy oil. In U.S.-North Korean negotiations in August 1998, North Korea agreed to complete the encasing. It was completed by September 1999.

The State Department asserts that the Agreed Framework constitutes a North Korean commitment to allow the removal of the rods from North Korea "when significant nuclear components begin to be delivered for the first LWR." The Department adds that "The fuel must be completely shipped out of North Korea by the time the first LWR is completed." The Agreed Framework does not specify removal of the fuel rods, but the supply contract states that the fuel rods will be transferred "from the DPRK." The South Korean Government reportedly estimates that the cost of removal would be around \$70 million. Other South Korean experts reportedly place the costs of storage and removal higher, around \$200 million. The supply contract does not specify who would assume the cost of dismantlement.

Dismantlement of Nuclear Installations. The Agreed Framework states that "Dismantlement of the DPRK's graphite-moderated reactors and related facilities will be completed when the LWR project is completed." A State Department interpretation holds that dismantlement will begin when the first light water reactor is installed and completed when the second reactor is fully installed. South Korean government experts reportedly estimate that dismantlement of the 50 and 200 megawatt reactors will cost about \$500 million but that dismantlement of the radioactive five megawatt reactor and the plutonium reprocessing plant will require a much higher cost.

The Perry Initiative, October 1999

The 1998 North Korean long range missile launch and the disclosure of the Kumchangri suspected nuclear underground site prompted the Clinton Administration to reassess its policy toward North Korea. The result was the Perry initiative. William Perry, former Secretary of Defense and Special Advisor to the President and Secretary of State on North Korea, outlined a revised U.S. strategy in a report of October 1999. The Perry report asserted that the Agreed Framework should continue in order to prevent North Korea from producing a "significant number of nuclear weapons." It recommended two sets of new U.S.-North Korea negotiations with the objectives of securing (1) "verifiable assurances" that North Korea does not have a secret nuclear weapons program, and (2) "verifiable cessation" of North Korea's missile program. Perry recommended a step by step negotiating

process. Perry proposed that, in return for commitments by North Korea on the nuclear and missile issues, the United States should normalize diplomatic relations with North Korea, relax economic sanctions against North Korea, and “take other positive steps” to “provide opportunities” for North Korea. Perry stated that such U.S. initiatives should be coordinated with similar actions by Japan and South Korea.

The Clinton Administration took an initial step in line with Perry’s recommendations when it negotiated an agreement with North Korea in Berlin in September 1999 in which North Korea agreed to defer further missile launch tests in return for actions by the Clinton Administration to lift major U.S. economic sanctions. The next planned step, a high-level North Korean visit to Washington, was stalemated over North Korea’s demand of preconditions. Following the dramatic summit meeting between the leaders of North Korea and South Korea, the Clinton Administration announced officially the lifting of economic sanctions on June 19, 2000. North Korea responded by reaffirming its agreement to defer missile launch tests. North Korea also sent a high-level official to Washington in October 2000 followed by Secretary of State Madeleine Albright’s visit to North Korea. These talks focused on the missile issue. After an inconclusive U.S.-North Korean meeting in Rome in May 2000 on the nuclear issue and the second U.S. visit to the Kumchangri site that same month, the Clinton Administration put aside this element of the Perry initiative, concentrating instead on missiles.

Role of Congress

Congress potentially could exercise legislative initiatives on a number of provisions of the Agreed Framework related to U.S. benefits to North Korea. This is especially the case regarding a relaxation of the U.S. economic embargo, the establishment of liaison offices, or a subsequent establishment of full diplomatic relations. Passage of sense of Congress resolutions or issuance of committee reports constitute means for Congress to voice opinion on the implementation of the Agreed Framework.

Congress has voiced much skepticism regarding the Agreed Framework, but its actions have given the Administration flexibility in implementing U.S. obligations. Congress so far has played three roles. First, there have been numerous oversight hearings. Second, Congress included in the Omnibus Appropriations bill for FY1999 (H.R. 4328) the requirement that the President certify progress in negotiations with North Korea over the nuclear, missile, and other issues before the Administration could allocate money to KEDO operations. President Clinton issued two such certifications in March and May 1999. H.R. 4328 also called on the President to name “a very senior presidential envoy” as “North Korea Policy Coordinator” to conduct a review of U.S. policy and direct negotiations with North Korea. This resulted in President Clinton’s appointment of William Perry as a special adviser and the issuance of the Perry report in October 1999. Third, Congress has considered and approved Administration requests for funds to finance implementation. Congress approved for fiscal years 1996, 1997, 1998, and 1999 Administration requests for \$22 million, \$25 million, \$30 million and \$35 million respectively for U.S. support of KEDO and \$20 million for the encasing of nuclear fuel rods. For FY2000, the Administration raised its request to \$55 million. Congress appropriated only \$35 million, but President Clinton secured an additional \$18 million, using discretionary clauses in foreign operations legislation. For FY2001, Congress appropriated the entire \$55 million

requested by the Clinton Administration. For FY2002, the Bush Administration has requested a funding increase to \$95 million because of the rising cost of over \$100 million annually for the heavy oil supplied to North Korea.

On October 20, 1994, President Clinton sent a letter to North Korean leader, Kim Jong-il, stating that he “will use the full powers of my office” to carry out U.S. obligations related to light water reactors and alternative energy (oil). President Clinton added that if contemplated arrangements for light water reactors and alternative energy were not completed, he would use the powers of his office to provide light water reactors and alternative energy from the United States “subject to the approval of the U.S. Congress.”

Another role for Congress is that of review of a prospective U.S.-North Korea nuclear agreement that the Administration will have to negotiate with North Korea if, as expected, South Korean-produced light water reactors contain U.S. nuclear technology. Under the Atomic Energy Act, the President must conclude such a nuclear agreement and submit it to Congress before U.S. nuclear technology or equipment can be transferred to a foreign country. The President must submit a nuclear agreement to the Senate Foreign Relations Committee and the House International Relations Committee, accompanied by a Nuclear Proliferation Assessment Statement prepared by the Arms Control and Disarmament Agency. Congress has 30 days of continuous session to consider the agreement; it can either adopt a resolution of disapproval or consent to the agreement by taking no action.

On May 15, 2000, the House of Representatives passed H.R. 4251, which would give Congress a more direct role in any U.S.-North Korean bilateral nuclear cooperation agreement. H.R. 4251 would mandate that Congress vote approval of a nuclear cooperation pact before it would go into effect. Such a requirement, should it become law, would be, in effect, a congressional vote on whether to continue implementation of the Agreed Framework.