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**THE LIGHT-WATER REACTOR PROJECT**



## 1. The Agreed Framework

North Korea has tried to develop nuclear power since the 1960's. In the early 1980's it launched a project to build a small size nuclear reactor on its own. Later, in December 1985, Moscow and Pyongyang signed an agreement in which the Soviet Union promised to help North Korea to construct nuclear power plants. Pyongyang's efforts to develop nuclear power were continued throughout the past years.

Although it became a member of the Nuclear Non-Proliferation Treaty (NPT) in December 1985, North Korea did not conclude the safety agreement with the International Atomic Energy Agency (IAEA) for the next six years, thereby increasing the suspicion of the international community over its intent. The international community increased its pressure on North Korea to assure the transparency of Pyongyang's nuclear program. The IAEA requested a "special inspection" in order to investigate the nuclear activities of North Korea. Pyongyang, however, refused such a request and declared North Korea's withdrawal from the NPT on March 12, 1993. The North Korean nuclear issue escalated tension between the two Koreas as the situation became aggravated to a point where

the international community placed sanctions against North Korea while Pyongyang proclaimed the possibility of a war.

Meanwhile, in a series of efforts to resolve the nuclear crisis, the ROK government announced the Declaration of the Denuclearization of the Korean peninsula (November 8, 1991) and the Declaration of the Absence of Nuclear Weapons (December 18, 1991). In addition, after three rounds of meetings between the representatives of the two Koreas held from December 16 to December 31, 1991, South Korea finally convinced North Korea to sign on the Joint Declaration of the Denuclearization of the Korean Peninsula.

This joint declaration was a promise between the two Koreas made public to work together to make the Korean peninsula a nuclear-free area. Although it was expected to be a significant step toward peace in the peninsula, North Korea's withdrawal from the NPT shattered such hopes.

Therefore, when North Korea declared its withdrawal, South Korea tried its best to build an international coalition to stop Pyongyang's attempts to develop nuclear weapons.

As a result, North Korea and the United States came to sign the Agreed Framework in Geneva on October 21, 1994. In the Agreed Framework, North Korea promised to: remain under the NPT regime; accept the IAEA inspections, including the special inspection, of all its nuclear facilities; completely freeze all past and future nuclear activities; eventually dissolve all existing nuclear facilities; abide by the intra-Korean joint declaration of denuclearization; and resume intra-Korean dialogue. In return, the United States agreed to: arrange a way to provide North Korea with two 1,000MWe light-water reactors by the year 2003; supply up to 500,000 tons of heavy oil every year to substitute for energy for-

gone by the freeze of nuclear reactors; ease trade and investment sanctions against North Korea; and establish liaison offices in each other's capitals.

## **2. Implementation of the Agreed Framework**

In implementing the light-water reactor (LWR) project according to the Agreed Framework, the ROK government maintained the following principles:

First, South Korea should take the central role in the process. There should not be any obstacle in supplying the South Korean standard model reactors to North Korea. The participation of South Korea in every process, including the establishment of an international consortium, designing, manufacturing, and constructing of the reactors, and management of the LWR project, must be guaranteed in proportion to its contribution.

Second, the provision of light-water reactors must be carried out in a way to contribute to the improvement of intra-Korean relations. It should foster the implementation of the Basic Agreement between the South and the North and lead to visible improvement in the relations.

Third, the provision of the reactors should be carried out on the premise that the Agreed Framework is being implemented by North Korea with sincerity. North Korea, in return, must freeze its nuclear activities and abide by the IAEA safeguards agreement. In particular, Pyongyang must implement the Joint Declaration of the Denuclearization of the Korean Peninsula and resume intra-Korean

dialogue as promised in the Agreed Framework.

Fourth, the LWR project must be carried out with public support and based on a national consensus. In order to play the central role in the process, the government should implement the project with a more comprehensive strategy that are formulated on rational and objective basis and blessed with public support and participation. Based on these principles, the ROK government has carefully prepared for the successful implementation of the LWR project.

## **1 — The Korean Peninsula Energy Development Organization**

Immediately after the signing of the Agreed Framework, the United States, Japan, and South Korea began a series of talks at both high and working levels. Based on the agreement among the three countries, the ROK government took initiatives in establishing the the Korean Peninsula Energy Development Organization (KEDO), an international organization that would be responsible for the financing and supply of a light-water reactor project in North Korea. (March 9, 1995)

The purpose of KEDO as specified in the agreement on its establishment are to:

- provide for the financing and supply of two reactors of the Korean standard nuclear plant model with a capacity of 1,000MWe;
- provide for the supply of interim energy alternatives until the construction of the first light-water reactor unit; and
- provide for the implementation of any other measures

deemed necessary to carry out the objectives of the Agreed Framework.

On July 20, 1995, KEDO opened its office in New York and appointed the Executive Director—an American—and two Deputy Executive Directors—a Korean and a Japanese.

The organs of KEDO include the Executive Board, the Secretariat, the General Conference, and the Advisory Committee. Among them, the highest decision-making body is the Executive Board, which consists of one representative of each of the original members, the United States, Japan, and the Republic of Korea, and its decisions are made by a consensus among these representatives.

In addition to these original three, the members of KEDO currently include seven other countries—Finland, Canada, New Zealand, Australia, Indonesia, Chile, and Argentina. The European Union, along with several other countries, is also expressing a strong interest in joining the Organization.

As an international organization responsible for the financing and supply of the LWR project to North Korea, KEDO has capacity to negotiate with the North on the project, undertake site surveys, and sign a commercial contract with the Korea Electric Power, Co. for the supply of the reactors.

## **2 — The LWR Talks Between the KEDO and the North**

### ***Signing of The Supply Agreement***

At the signing of the Agreed Framework, the United States and North Korea agreed to conclude the supply agreement within six months. Accordingly, the experts from both sides held three

rounds of meetings.

The main issues at the LWR talks between the two sides were which types of reactor would be supplied and who would play the central role in supplying them. The two sides could not reach an agreement until April 21, 1995, six months after the signing of the Agreed Framework. North Korea arbitrarily declared the suspension of the talks and threatened to lift the freeze on its nuclear program; it was Pyongyang's usual brinkmanship tactic. In spite of various difficulties, the two sides resumed semi-high level talks. Finally, North Korea accepted the reality that there was no other alternative but to accept the Korean standard model.

The delegations of the United States and North Korea held talks in Kuala Lumpur, Malaysia, from May 19 to June 12, 1995, and reaffirmed their political commitments to implement the Agreed Framework and resolved pending issues. The Joint Press Statement provided that:

- KEDO would be responsible for the LWR project;
- the United States would serve as the principal point of contact with the North for the LWR project;
- the LWR project would consist of two pressurized light-water reactors with two coolant loops and a generating capacity of 1,000 MWe each and the reactor model would be selected by KEDO;
- and the two sides would begin the talks to sign the supply agreement. The Kuala Lumpur agreement ended the controversy over the selection of the reactor model and the prime contractor. It also enabled South Korea to participate in the talks with North Korea as a member of KEDO.

North Korea agreed that the selection of the reactor model would be made by KEDO. According to the provisions of the KEDO Establishment Agreement, this was equivalent to Pyongyang's public acceptance of the Korean standard model built by a South Korean company.

Immediately before the Kuala Lumpur agreement, KEDO held a meeting of the Executive Board in Seoul and reaffirmed the provision of the Korean standard model and the central role of South Korea as the basic principles in carrying out the LWR project. In particular, the KEDO Executive Board decided to use South Korea's Ulchin No. 3 and No. 4 reactors as the reference plants for the Korean standard model. The board also selected the Korea Electric Power Co. as the prime contractor for the LWR project.

In accordance with the Joint Press Statement, KEDO and the North began three-month long talks on September 30, 1995. The two sides finally signed the Agreement on Supply of a Light-water Reactor Project to the North, a backbone of the LWR project, on December 15. This Supply Agreement stated that KEDO would provide two pressurized light-water reactor units with two coolant loops and a generating capacity of 1,000 MWe each to the North on a turnkey basis and that the North would repay KEDO for each plant in equal, semiannual installments, free of interest, over a 20-year term including a three-year grace period.

In addition, the Supply Agreement reiterated the responsibilities imposed upon the North under the Agreed Framework, including the following:

- The North should remain a party to the NPT.
- The North should continue the freeze on its nuclear activi-

ties and dismantle its graphite-moderated reactors and related facilities.

- The North should not transfer any nuclear equipment or technology or nuclear material outside of its territory.
- The North would permit resumption of ad hoc and routine inspections under the North's safeguards agreement with the IAEA.
- The North would come into full compliance with its IAEA safeguards agreement.

The agreement also specified procedures needed for the successful completion of the LWR project, including those related to contacts, communication, transportation, protection of personal safety, and nuclear liability.

### ***The Talks on Protocols***

At the time the two sides signed the Supply Agreement, KEDO and North Korea agreed to provide detailed procedures through the continued talks to resolve the issues in writing protocols on more than ten areas. Accordingly, the first stage of the talks began in New York from last April on areas of the juridical status, privileges and immunities, and consular protection, transportation, and communication. After the two-month long talks, the two sides agreed on the Protocol on the Juridical Status, Privileges and Immunities, and Consular Protection on May 22, 1996 and both the Protocol on Transportation and the Protocol on Transportation on June 14, 1996. These three protocols were formally signed and went into effect on July 11 in the same year.

The Protocol on the Juridical Status, Privileges and Immunities,

and Consular Protection provides all KEDO professional staff and KEDO delegations with privileges and immunities equal to those enjoyed by official diplomats. It also provides the KEDO contractor persons with the similar privileges and immunities, including safety protection and consular protection.

The Protocol on Transportation ensures appropriate and efficient transportation of KEDO persons and materials by providing sea and air transportation routes. The protocol also provides that KEDO person may enter and exit the project site without visas through the entry and exit points specified in it. In the event of any urgency, including medical emergencies, the protocol assures that the North will cooperate and take measures to assist KEDO person in accordance with internationally accepted practices. In detail, the North is to open two new sea routes, one for the barges that transport materials within 15-20 miles from the coastal line and the other for the vessels that carry persons and materials in international waters. In addition, a new air route from Beijing to Sonduk via Air Koryo is to be established. More efficient and economic routes are to be made available prior to the full-swing stage of the project, including the start of the power block excavation.

The Protocol on Communication permits KEDO, its contractors, subcontractors, and KEDO person to establish secure and independent means of communication for the smooth implementation of the LWR project. Prior to the arrangement for independent satellite telecommunication, they may place international and long distance calls, transmit and receive facsimile and data communications through the means available in North Korea.

Later, in the second stage, the talks on protocols on site take-over and the use of services were started at the end of July and the two

sides finally reached a working-level agreement on the wording of the protocols on September 26, 1996. These protocols are yet to be formally signed by both sides.

The Protocol on Site Take-over, Site Access and Use of the Site prescribes the scope and the use of the project sites, including the reactor sites and quarters for KEDO person, and customs procedures for entry and exit of equipment and materials needed for the completion of the LWR project. The Protocol on the Use of Services stipulates prices for labor, commodities, and other services North Korea would provide for the project. There still remain seven or eight more protocols to be signed on such areas as quality assurance and actions in the events of noncompliance.

### **3— The LWR Project Site Survey**

Starting from August 15, 1995, KEDO conducted six site surveys at the area near Sinpo City, South Hamkyong Province of North Korea. The first and second surveys were conducted by a group of experts from the United States, Japan, and South Korea under the supervision of KEDO. Starting from the third surveys, the Korea Electric Power took over these studies as a pre-project service and, therefore, South Korean experts began to lead the surveys.

A total of fifteen experts including nine South Koreans participated in the third site survey held from December 16, 1995 to January 16, 1996. They surveyed the topography of the project site and produced a map in a scale of 1:1,000.

The fourth site survey team consisted of twenty-three experts, including sixteen South Koreans, and was conducted from January 16 to February 24, 1996. The survey team conducted a seismological

test to examine the rock bed, fathomed underground water, and analyzed soil quality. Two twelve-ton containers of equipment were shipped from Pusan, South Korea, to Rajin, North Korea, via a vessel owned by Tongyong, a South Korean ocean transportation company, and then delivered to the project site at Sinpo.

The fifth site survey was conducted participated by seven South Korean experts from April 25 to May 7. The survey team collected data on the conditions of the existing infrastructure in the Yanghwa Port area.

The sixth site survey was conducted from July 6 to July 30. Thirteen South Korean experts worked side by side with North Korean technicians in five teams to study earthquake and soil quality, water ways, environment and general management. They came up with plans for preparing the preliminary safety analysis reports and the environmental reports by reprocessing the data provided by North Korea. These reports would provide valuable information when KEDO takes over the project site from the North Korean government and acquires the permission for the LWR construction in the future. At the end of August, 1996, the Korea Electric Power submitted to KEDO a summary report on the site based on the results from the six surveys. According to the report, the Sinpo area was appraised to have no serious safety problems as a prospective site for the LWR project. After a thorough examination of the report, KEDO would pass it to North Korea which would then issue the permission for the site take-over.

The seventh site survey was supposed to be held in October 1996. This time, the survey team was to conduct a detailed examination of soil quality, prepare for the development of infrastructure, and survey the site boundaries. This survey, however, is temporarily with-

held due to the increased tension in intra-Korean relations. Nevertheless, several more site surveys are expected to be conducted in the future.

#### **4 — The Preparation of the Prime Contract**

The Korea Electric Power Co. was officially designated as the prime contractor for the LWR project on March 19, 1996. As an agreement on such a decision was signed between KEDO and the South Korean company, talks on the prime contract became a pressing task for the LWR project.

To sign a formal commercial contract with the Korea Electric Power, the KEDO Secretariat prepared a draft for the prime contract in July 1996 and asked the members of the Executive Board and the prospective prime contractor to review it. KEDO wishes to sign the contract with the Korean Electric Power sometime in 1997.

#### **5 — The Site Preparation Work**

After the signing of the Supply Agreement and the protocols on privileges and immunities, transportation, and communication, KEDO began the site preparation works. The ROK government, too, made itself ready to begin the site preparation as soon as some essential issues, including the conclusion of the protocols on site take-over and the use of services, are cleared between KEDO and the North and a temporary contract for the initiation of the LWR project signed between KEDO and the Korea Electric Power.

### **3. The Significance and Tasks of the LWR Project**

Before full-scale implementation of the LWR project, various complex issues still remain to be resolved, including the talks on additional protocols between KEDO and the North, talks on the prime contract between KEDO and the Korean Electric Power, and an agreement among the interested parties on the sharing of expenses. Above of all, however, sincere efforts by North Korea to implement the LWR project is the most crucial factor for the success of the project.

At the same time, finding ways to resolve the North Korean nuclear issue by developing proper measures to sustain the freeze on North Korea's nuclear activities and to completely dispose of its spent fuel are another difficult tasks. Once the above issues are resolved, the Korea Electric Power will supervise the LWR project and, with the participation of numerous cooperating companies, the project will proceed through the following stages: designing → manufacturing and purchasing → construction → test run → operation.

Through the supply of the Korean standard model reactors to North Korea, South Korea wishes to assist the fellow Koreans living in the North because its advanced nuclear technology can increase the well-being of the North Korean residents. Furthermore, an increase in intra-Korean exchanges and cooperation during the ten plus years of construction will become a breakthrough in opening a new chapter for the co-prosperity of the national community.

When the LWR project becomes fully under way, the South Korean government should:

- consider safety and efficiency in designing, manufacturing, constructing, and managing of the project;
- utilize this opportunity for direct intra-Korean contacts to produce visible improvement in intra-Korean relations that is corresponding to the successful progress of the project; and
- do its best to consolidate the structure of intra-Korean cooperation in order to create an environment that would be appropriate for the establishment of a national community.