



The Korean Peninsula Energy Development Organization
600 3rd Avenue, 12th Floor
New York, NY 10004

**Protocol between the Korean Peninsula Energy Development Organization
and the Government of the Democratic People's Republic of Korea
on Training for the Implementation of a Light-Water Reactor Project**

The Korean Peninsula Energy Development Organization (hereinafter referred to as "KEDO") and the Government of the Democratic People's Republic of Korea (the Democratic People's Republic of Korea is hereinafter referred to as the "DPRK"),

Reaffirming that KEDO and the DPRK shall faithfully perform their respective obligations under the Agreement on Supply of a Light-Water Reactor Project (hereinafter referred to as the "LWR project") to the DPRK between KEDO and the Government of the DPRK, signed on December 15, 1995 (hereinafter referred to as the "Agreement") and protocols to the Agreement,

Desiring to conclude a protocol in accordance with Article VII of the Agreement concerning training for the DPRK's safe operation and maintenance of the light-water reactor plants (hereinafter referred to as the "Protocol"),

Have agreed as follows:

ARTICLE 1

DEFINITIONS

1. "Site" means the site specified in the Site Take-over Certificate issued by the DPRK to KEDO as well as other working areas which shall enjoy the same status as specified in the Protocol between KEDO and the Government of the DPRK on Site Take-over, Site Access and Use of the Site for the Implementation of a LWR Project.
2. "Utility" means the DPRK entity designated or recognized by the Government of the DPRK as the operator of the LWR plants.

ARTICLE 2

GENERAL PRINCIPLES

1. KEDO shall design and implement a comprehensive training program in accordance with standard nuclear industry practice for the DPRK's operation and maintenance of the LWR plants (hereinafter referred to as the "Training Program").
2. KEDO may assign to its prime contractor the design and implementation of the Training Program. KEDO's prime contractor may subsequently assign any of its portion of the implementation of the Training Program to other organizations.
3. KEDO shall retain overall responsibility for the Training Program, including any portions assigned to its prime contractor or other organizations.
4. In accordance with Article VII, paragraph 1 of the Agreement, the DPRK shall be responsible for providing a sufficient number of qualified candidates for the Training Program. A sufficient number of qualified candidates is specified in Article 3, paragraph 3 of the Protocol.
5. Trainees who receive training shall comply with the safety- and security-related rules and regulations of the facilities where they receive training and shall conduct themselves at all times in a decent and professional manner.
6. Compensation for the death or injury of any trainee or for damage to the property of any trainee during training, including during travel to or from locations of training, shall be provided in accordance with and limited to the insurance referred to in Article 5.3(e) of this Protocol arranged for trainees.
7. Without prejudice to its obligations under the Supply Agreement, the DPRK shall indemnify and hold harmless KEDO, its prime contractor and other organizations from and against all claims, damages, losses, and expenses arising out of or resulting from training, except in the case of willful misconduct or gross negligence by KEDO, its prime contractor and other organizations.

ARTICLE 3

DESIGN AND IMPLEMENTATION OF THE TRAINING PROGRAM

1. The Training Program on the safe operation and maintenance of the LWR plants shall be divided as follows: Stage 1, which shall include, as appropriate, classroom training, laboratory training, workshop training, full-scope simulator training and/or on-the-job training; and, Stage 2, which shall include on-the-job experience at the Site.
2. KEDO shall notify the DPRK of the outline of Stage 1 of the Training Program, including job categories, the period of training for each year, the number of Trainees, the schedule, courses and locations, within six months after the effective date of the turnkey contract between KEDO and its prime contractor, provided the Utility structure plan has been agreed between KEDO and the DPRK as specified in Article 6, paragraph 1 of the Protocol. Starting within six months after the provision of the outline of Stage 1 of the Training Program, the DPRK shall provide a sufficient number of qualified candidates, in accordance with Article 2, paragraph 4 of the Protocol, stage by stage without hindrance to KEDO's Training Program, in conformity with a schedule agreed between the two sides. The Training Program shall begin within six months after the DPRK provides such candidates. KEDO shall notify the DPRK of the outline of Stage 2 of the Training Program as soon as practicable after the start of the Training Program. The outline of Stage 1 and the outline of Stage 2, as referenced in this paragraph, shall provide an overview of the entire Training Program.
3. For the purpose of the Protocol, a sufficient number of qualified candidates means 790 qualified candidates. If from among these 790 candidates less than 529 are selected for entry into Stage 1 of the Training Program, the DPRK shall provide additional qualified candidates within one month of written request by KEDO.
4. KEDO shall train 529 DPRK nationals selected for the Training Program (hereinafter referred to as "Trainees") either as instructors (hereinafter referred to as "Instructors") or as operators, shift supervisors, maintenance staff, technical support staff, radiation protection staff, chemistry staff, quality assurance staff, shift technical advisors, craftsmen or management of the LWR plants (hereinafter referred to as "Staff and Management"). In some cases, Trainees in the Training Program may be trained in more than one of the above categories.
5. The Training Program shall occur in any or all of the following locations, as deemed necessary by KEDO: within the Site; at a location outside the Site in the DPRK agreed between KEDO and the DPRK; any other locations agreed between KEDO and the DPRK; and any other country deemed necessary by KEDO.

6. Stage 1 of the Training Program may include courses such as those specified in the Annex 1 of the Protocol.
7. When Trainees participate in the Training Program at locations outside the DPRK, KEDO shall take appropriate measures available to it to ensure the smooth entry and exit, and the safety of such Trainees and their property.
8. Article XII of the Agreement shall apply to all equipment, materials, documents and other items related to the Training Program or provided to the DPRK in connection with training.
9. If sudden illness, disablement, injury, death or other emergency situation develops with respect to a Trainee during the Training Program both within and outside the DPRK, immediate notification shall be made by the appropriate side, and KEDO and the DPRK shall cooperate to the extent possible.

ARTICLE 4

COMPLETION OF THE TRAINING PROGRAM

1. The Training Program shall consist of 55,973 person-weeks of training, including 15,573 person-weeks of training in Stage 1 of the Training Program and 40,400 person-weeks of on-the-job experience in Stage 2 of Training Program. (The end of Stage 1 of the Training Program is hereinafter referred to as the "Completion of Stage 1 of the Training Program" and the end of Stage 2 of the Training Program, which shall signify the end of the entire Training Program, is hereinafter referred to as the "Completion of Stage 2 of the Training Program.") Completion of Stage 2 of the Training Program shall occur no later than the start of shipment to the Site of nuclear fuel for the first LWR plant.
2. Upon the Completion of Stage 1 of the Training Program, the DPRK shall assume full responsibility for all aspects of training related to the Utility's safe operation and maintenance of the LWR plants, including the implementation of its own training program, other than on-the-job experience which KEDO shall provide under Stage 2 of the Training Program.

ARTICLE 5

TRAINING PROGRAM RESPONSIBILITIES – WITH RESPECT TO KEDO

1. KEDO shall provide and pay for 15,573 person-weeks of training, including remedial training as necessary, under Stage 1 of the Training Program during which time it shall train as many Trainees as possible up to 529 Trainees. KEDO shall provide and pay for 40,400 person-weeks of training in the form of on-the-job experience under Stage 2 of the Training Program. The start date and amount of training for Trainees in Stage 1 and Stage 2 of the Training Program shall vary according to the positions such Trainees are expected to fill in the Utility. Such positions shall be specified in the Utility structure plan referenced in Article 6, paragraph 1 of the Protocol.
2. If upon the Completion of Stage 1 of the Training Program, KEDO has not certified at least one Instructor for each course in the Utility training program, as specified in Article 6, paragraph 3 (a) of the Protocol, KEDO shall continue to provide training for relevant Trainees who are receiving training as Instructors until at least one Instructor for each course in the Utility training program has been certified by KEDO.
3. KEDO's financial responsibilities with respect to the Training Program shall consist of providing and paying for:
 - a. Stage 1 of the Training Program and training in the form of on-the-job experience under Stage 2 of the Training Program, as specified in paragraph 1 of this Article;
 - b. full-scope-simulator building and facilities such as classrooms, conference rooms, warehouses for training equipment and materials, offices for instructors, and other facilities, which are deemed necessary by KEDO for running the Training Program in the DPRK;
 - c. equipment which is deemed by KEDO as an integral part of the Training Program;
 - d. materials to run the Training Program, as deemed necessary by KEDO, including a training manual which shall contain a detailed syllabus, course outlines, lesson plans, materials for use by Trainees during the Training Program, and other procedures common in a standard nuclear industry training program. Such materials may be in the Korean language;
 - e. reasonable travel arrangements and/or costs when the Training Program takes place at locations outside the DPRK, including air transportation other than between the DPRK and Beijing, sea transportation and ground transportation, accommodation, meals, and traveler's insurance for Trainees, as KEDO deems necessary. KEDO shall notify the DPRK of details regarding

such arrangements prior to the departure from the DPRK of the Trainees concerned. For exceptional cases concerning air travel arrangements between the DPRK and Beijing, including death, injury, sudden illness and other cases of humanitarian emergency of Trainees, KEDO and the DPRK shall consult to determine which party shall assume financial responsibility; and,

- f. Spare parts, wear parts and consumables for the full-scope simulator in accordance with Annex 1, paragraph 8 of the Agreement.
4. Upon the Completion of Stage 1 of the Training Program, KEDO shall turn over to the Utility training program facilities and equipment within the Site and materials, prepared in connection with the Training Program, as deemed necessary by KEDO. KEDO shall turn over the full-scope simulator 22 months prior to the scheduled loading of fuel for the first LWR plant. All facilities, materials and equipment, including the full-scope simulator, specified in this paragraph shall be used only for the purposes of the Utility training program. KEDO shall supply those items specified in Annex 2 of the Protocol.
5. Except as specified in paragraph 2 of this Article and in Annex 2 of this Protocol, upon the Completion of Stage 2 of the Training Program, KEDO shall have completed all its responsibilities, financial or otherwise, with respect to the Training Program.

ARTICLE 6

TRAINING PROGRAM RESPONSIBILITIES - WITH RESPECT TO THE DPRK

1. The DPRK, following consultations with KEDO, shall establish, and KEDO and the DPRK shall agree upon a Utility structure plan and a Utility training plan as specified in paragraphs 2 and 3 of this Article, respectively. Agreement on the Utility structure plan shall occur within three months after entry into force of the Protocol. Agreement on the Utility training plan shall occur within 12 months after KEDO provides the outline of Stage 1 of the Training Program to the DPRK as specified in Article 3, paragraph 2 of the Protocol. The Utility structure plan shall specify the organizational structure of the Utility. The Utility training plan shall specify details aimed at ensuring that staffing requirements for the Utility's safe operation and maintenance of the LWR plants, as specified in the Utility structure plan, are achieved.
2. The Utility structure plan referenced in paragraph 1 of this Article shall include, but not be limited to:

- a. an organization plan for the Utility, which shall include the following: an organization chart; a list of major job positions, including, for each position a description of responsibilities; qualifications for job positions, including relevant work experience and/or training; and, requirements for continuing training;
 - b. a sequence advancement process which details the sequence for advancement from one job position to another;
 - c. staffing requirements for the Utility's operation and maintenance of the LWR plants, including staffing needs during each month prior to initial fuel load.
3. The Utility training plan referenced in paragraph 1 of this Article shall include, but not be limited to:
 - a. courses to be taught in the Utility training program;
 - b. a schedule for entrants into the Utility training program;
 - c. the number of entrants to be trained in specific positions;
 - d. the schedule of training such entrants shall receive;
 - e. the date such entrants are expected to be certified;
 - f. a program for refresher training and retraining for relicensing or extension of existing licenses;
 - g. a training transition schedule, which shall specify the process for the DPRK assuming training responsibilities following the Completion of Stage 1 of the Training Program.
 4. Courses in the Utility training program shall be taught only by Instructors certified by KEDO to teach such courses or by DPRK nationals who are trained as Utility training program teachers by such Instructors.
 5. DPRK nationals who shall receive on-the-job experience, as specified in the Utility training plan, and who successfully complete the Utility training program shall, for the purpose of securing on-the-job experience, take part in Stage 2 of KEDO's Training Program. The amount of on-the-job experience such DPRK nationals shall receive under Stage 2 of the Training Program shall be specified in the outline of Stage 2 of the Training Program, and shall depend upon the positions within the Utility they are expected to fill and available opportunities to receive such on-the-job experience. Upon completion of such

amount of on-the-job experience, each DPRK national shall receive a Participation Statement, as referenced in Article 8, paragraph 5 of the Protocol. The Participation Statement shall state the amount of on-the-job experience the DPRK national has received following his completion of the Utility training program.

6. KEDO shall allow access to the Site for DPRK nationals who participate in the Utility training program in addition to those who participate in Stage 2 of the Training Program, as specified in paragraph 5 of this Article. Details regarding such access shall be agreed between KEDO and the DPRK in accordance with Article 11 of the Protocol.

ARTICLE 7

ENROLLMENT AND REMOVAL OF TRAINEES FROM THE TRAINING PROGRAM

1. KEDO, after consultation with the DPRK, shall select DPRK nationals for the Training Program based upon entry requirements established by KEDO. Such entry requirements, which KEDO shall provide to the DPRK as soon as possible within two months after the Utility structure plan is agreed, shall be in accordance with standard nuclear industry practice and shall include education, medical and other requirements commensurate with job responsibilities.
2. For the purpose of selecting Trainees for the Training Program as specified in paragraph 1 of this Article, the DPRK shall provide to KEDO detailed information and documentary evidence about each candidate, including the candidate's medical history, educational history, professional experience and other relevant information. Such information and documentary evidence shall be provided to KEDO when the DPRK provides a sufficient number of qualified candidates for the Training Program as specified in Article 3, paragraph 2 of the Protocol.
3. If KEDO determines that a Trainee may be unable to satisfactorily complete the Training Program and be certified, KEDO may either remove the Trainee from the Training Program after consultation with the DPRK or provide remedial training to allow such Trainee to satisfactorily complete the Training Program and be certified.

ARTICLE 8

CERTIFICATION OF TRAINEES

1. KEDO shall keep records related to a Trainee's participation in the Training Program, including examinations and written evaluations of performance during practical training. KEDO shall provide a copy of such records to the DPRK on a continuous basis throughout the Training Program.
2. Certification of Trainees shall occur no later than the Completion of Stage 1 of the Training Program unless as otherwise specified in Article 5, paragraph 2 of the Protocol. Upon determination by KEDO, following notification from the authorities who have been assigned by KEDO to implement the Training Program, that a Trainee has successfully completed Stage 1 of the Training Program, KEDO shall issue to the Trainee a Certification Diploma. Such Certification Diploma shall signify that the Trainee has completed Stage 1 of the Training Program. KEDO shall notify the DPRK at the same time it issues such Certification Diploma.
3. The determination that a Trainee is ready to receive a Certification Diploma shall be based upon objective evidence that a Trainee has satisfactorily completed Stage 1 of the Training Program. Such evidence shall include satisfactory performance on written and oral examinations as well as satisfactory performance during practical training in the simulator, plant, laboratory, workshop and/or on the job.
4. Upon receiving a Certification Diploma, Trainees shall be incorporated into the Utility. All persons who work in the Utility shall first be certified by the Utility plant manager.
5. Upon receiving a Certification Diploma, Trainees who received training as Instructors shall begin to teach in the Utility training program. Upon receiving a Certification Diploma, Trainees who received training as Staff and Management and who shall receive on-the-job experience, as specified in the outline of Stage 2 of the Training Program, shall participate in Stage 2 of the Training Program. The amount of on-the-job experience such Trainees shall receive under Stage 2 of the Training Program shall be specified in the outline of Stage 2 of the Training Program, and shall depend upon the positions within the Utility they are expected to fill and available opportunities to receive such on-the-job experience. Upon completion of such amount of on-the-job experience each Trainee shall receive a Participation Statement which shall state the amount of on-the-job experience he has received during Stage 2 of the Training Program.

6. Reactor operators, senior reactor operators and other persons requiring licenses who work in the Utility in such positions shall first obtain required licenses from the DPRK nuclear regulatory authority at a relevant time.

ARTICLE 9

REVIEW AND CERTIFICATION OF THE TRAINING PROGRAM

1. In order to demonstrate that the Training Program is in accordance with standard nuclear industry practice, KEDO, in consultation with KEDO's Nuclear Safety Advisory Group, shall organize an independent group of internationally recognized nuclear training experts (hereinafter referred to as the "Experts Group") to conduct an independent review of the Training Program three months prior to the anticipated Completion of Stage 1 of the Training Program. KEDO and the DPRK shall cooperate with such review and shall make all necessary provisions for the Experts Group to conduct its work. Upon completing its review, the Experts Group shall make its report available to KEDO and the DPRK.
2. In the event the Experts Group is unable to determine that the quality and effectiveness of the Training Program are in accordance with standard nuclear industry practice, KEDO shall take all required corrective actions to ensure it is in accordance with nuclear industry practice. KEDO shall ensure that the Training Program has been determined by the Experts Group to be in accordance with nuclear industry practice prior to the Completion of Stage 1 of the Training Program.
3. In order to certify that the Utility training program is in accordance with standard nuclear industry practice, the Experts Group shall conduct a review of the Utility training program every 6-12 months, as deemed necessary by KEDO. The first review shall occur 6-12 months after the Completion of Stage 1 of the Training Program, as deemed necessary by KEDO. The final review shall be the review that occurs when the Utility training program is certified by the Experts Group 3-6 months before the date of the start of shipment of any nuclear fuel to the Site. The DPRK shall cooperate with such review and shall make all necessary provisions for the Experts Group to conduct its work. Upon completing its review, the Experts Group shall make its report available to KEDO and the DPRK.
4. In the event the Experts Group is unable to certify that the quality and effectiveness of the Utility training program are in accordance with standard nuclear industry practice, the DPRK shall take all corrective actions to ensure it is in accordance with nuclear industry practice. If requested by the DPRK, KEDO shall immediately cooperate with the DPRK so that the Utility training

program will be certified as soon as practicable. Such cooperation shall include the provision by KEDO of equipment and materials, as deemed essential by KEDO, and the experts in LWR training specified in Article 10, paragraph 1 of the Protocol.

5. The Utility training program shall be certified by the Experts Group and staffing requirements for the Utility's operation and maintenance of the LWR plants, as agreed in the Utility structure plan specified in Article 6 of the Protocol, shall be achieved prior to the start of shipment to the Site of the fuel for initial fuel loading for the first LWR plant.

ARTICLE 10

COOPERATION

1. For the purpose of providing consultation and technical advice in connection with the Utility training program, KEDO, following the Completion of Stage 1 of the Training Program, shall provide and pay for a limited number of experts in LWR training who shall provide advice and support to the Utility training program staff until the final certification of the Utility training program as specified in Article 9, paragraphs 3 and 4 of the Protocol. The number of experts referenced in this paragraph shall vary according to the stage of training provided under the Utility training program, but shall not at any time exceed five. The experts, if necessary, shall provide advice and support on the most effective way to provide training in accordance with standard nuclear industry practice.
2. In order to provide advice, if necessary, in the event of an emergency, KEDO shall provide to the DPRK eight advisors with experience as licensed senior reactor operators in the reference plants from the time of plant take-over until the first fuel reload of the first LWR plant. The DPRK shall permit at least one of these advisors to be in the control room of the first LWR plant at all times during this period.
3. The provision of advisors as specified in this Article shall in no way relieve or be interpreted as relieving the DPRK of its obligations and responsibilities as specified in Article XI of the Agreement. The DPRK shall indemnify and hold harmless KEDO, the advisors and the organizations to which they are affiliated from and against all claims, damages, losses and expenses arising out of or resulting from the provision of advice specified in this Article.
4. The DPRK shall make all necessary provisions for the experts and advisors provided by KEDO, as specified in paragraphs 1 and 2 of this Article, and shall cooperate with such experts and advisors.

ARTICLE 11

ARRANGEMENTS FOR THE IMPLEMENTATION OF THE PROTOCOL

KEDO and the DPRK shall have consultations to ensure the expeditious and smooth implementation of the Protocol. Such consultations, which shall include technical experts from KEDO and the DPRK as needed, shall occur upon the request of either side at the Site or at any other mutually agreed place.

ARTICLE 12

GENERAL PROVISIONS

1. The Protocol shall enter into force on the date of its signature.
2. The Annexes of the Protocol shall be an integral part of the Protocol.
3. The Protocol may be amended by written agreement between the two parties. Any amendment shall enter into force on the date of its signature.
4. Article XV of the Agreement shall apply to any disputes arising under the Protocol.

IN WITNESS WHEREOF, the undersigned, being duly authorized, have signed the Protocol.

Done at Pyongyang on the ____ of 20 October in duplicate in the English language.

ANNEX 1

The courses to be taught in the Training Program shall reflect the Utility structure plan and an assessment of the qualifications of Trainees in the Training Program, and may include:

1. An orientation course to familiarize senior Staff and Management with fundamental nuclear theory and to provide an introduction to the LWR plant. (2 weeks)

2. Basic development courses to familiarize Trainees with the fundamental operation of the LWR plant. Basic development courses may include courses in fundamental nuclear theory and nuclear plant systems.

(18 weeks)

3. Specialized courses to provide detailed skills and knowledge required for specific job functions. Specialized courses may include:

a) Operations courses, including courses in plant operation and main control room operation. (26 weeks)

b) Mechanical maintenance courses, including courses in: general mechanical maintenance; the refueling machine; the steam generator; reactor coolant pumps; turbines; pumps and valves; non-destructive examination; and, diesel generators. (15-19 weeks)

c) Electrical maintenance courses, including courses in: general electrical maintenance; generators; automatic voltage regulators; transformers; breakers; protection relays; motor operated valve and motors; power electronics; and, inverters. (16-17 weeks)

d) Instrumentation and control courses, including courses in: general instrumentation and control maintenance; nuclear instrumentation; reactor protection; rod control; rod position indication; governors; and, integrated logic systems. (15-16 weeks)

e) Computer courses, including courses in: general computer operation; software training; and, hardware training. (29-47 weeks)

f) Chemistry courses, including a course in general chemistry and radiochemistry. (17 weeks)

- g) Reactor engineering courses, including courses in: general core management; nuclear fuel/core management; the core operating limit supervision system; core protection; and nuclear fuel design. (28 weeks)
 - h) Radiation control courses, including courses in: general radiation control; radiation analysis and assessment; and, radioactive material management. (13 weeks)
 - i) A procurement course. (11 weeks)
 - j) A quality assurance course. (12 weeks)
 - k) Simulator courses, including courses in: basic simulator training; simulator maintenance; simulator hardware; and, simulator software. (26-38 weeks)
 - l) Instructor courses following applicable specialized courses, as appropriate. (10 weeks)
4. A craftsman maintenance course. (12-16 weeks)
5. Startup courses to focus on special startup requirements. (2-6 weeks)

* Length of each course, provided in parentheses, is approximate and subject to change at KEDO's discretion

ANNEX 2

KEDO shall provide the items listed below:

1. A full-scope simulator.
2. Facilities and equipment related with the full-scope simulator, consisting of:
 - a. Computer rooms, computer equipment, and air conditioning.
 - b. Simulator control rooms (including the remote panel room) and video recording and playing facilities for post-training critique.
 - c. Classrooms.
 - d. Instructor offices.
 - e. Recreational and meeting area.
 - f. Video recording facilities
 - g Maintenance facilities, consisting of:
 - rooms for the spare part stock
 - rooms and equipment for repairs
 - rooms and equipment for software modification
 - maintenance team offices

KEDO shall provide warranties for the building and equipment of the full-scope simulator referred to above. The warranty for the building and hardware of the full-scope simulator shall expire two years after they are turned over to the DPRK and the warranty for the software shall expire three years after such simulator is turned over to the DPRK.