



NUCLEAR POWER IN KOREA

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Before addressing the issue of public and utility acceptance of nuclear power in Korea, let me briefly explain the Korean nuclear power program and development plan for a passively safe nuclear power plant in Korea. At present, there are eight PWRs and one CANDU in operation; two PWRs are under construction, and contract negotiations are underway for one more CANDU and two more PWRs, which are scheduled to be completed by 1997, 1998 and 1999, respectively. According to a recent forecast for electricity demand in Korea, about fifty additional nuclear power plants with a generating capacity of 1000MWe are required by the year 2030. Until around 2006, Korean standardized nuclear power plants with evolutionary features such as those in the ALWR program are to be built, and a new type of nuclear power plant with passive safety features is expected to be constructed after 2006.

The worldwide demand for safer and economically competitive nuclear power plants is influencing the Korean nuclear power program. A comprehensive investigation into advanced reactor concepts is being made. One of the new concepts is passively safe reactor systems. Major plant design features of the passive plants being considered in Korea are:

- Passive safety systems
- Core damage frequency less than 10^{-5} per reactor year
- Modular construction and system simplification.

The type and size of the plant will be determined during the first phase of the project. Also, the concept of barge transportation to sites of factory-fabricated power plants will be closely investigated for the passive plants.

The passive reactor development program will be pursued in four phases. During the first phase, from 1991 to 1993, the conceptual design will be carried out based on selected new design features and utility requirements. In the second phase, from 1994 to 1996, design technologies will be established, which will be applied to the basic design. The most important activity during this period will be the verification/performance tests. From 1997 to 2001, detailed design will be done in parallel with licensing discussions. Finally, during five years starting with 2002, the passively safe plant is expected to be constructed.

This project will be financially supported by the government and the utility, Korea Electric Power Corporation (KEPCO). KAERI will be responsible for fuel and NSSS engineering. Architecture/engineering will be done by Korea Power Engineering Company (KOPEC), and Korea Heavy Industry and Construction Company (KHIC) will manufacture the components and equipment.

The technical development effort led by the U.S. for safer and economically competitive systems, which may be realized by the passively safe nuclear reactor concept, will be of great value to the development of the future nuclear program in Korea. Korea is planning to carry out international joint R&D in the areas of new design features, verification and performance tests of the future passively safe nuclear reactors.

Now let me explain the public and utility acceptance of nuclear power in Korea. Due to the lack of natural energy resources in Korea, the nuclear share in electricity production has been growing, since the first nuclear electricity generation in 1978, to a point where about 50% of electricity is presently supplied by nuclear power plants. The ambitious nuclear power program has been implemented without much argument by the Korean government and state-controlled utility, KEPCO. However, public acceptance is becoming an issue, especially with rapid democratization taking place in Korea. Anti-nuclear groups have great concerns about the safety of nuclear power plants and some "anti-nukes" do not understand the difference between nuclear power plants and nuclear weapons.

The Korean government is making a serious effort to increase public understanding of the safety of nuclear power plants and radioactive waste storage and disposal. In addition, the Korean government has recently introduced a program of benefits for residents near nuclear power plants. By this program, common facilities such as community centers and new roads are constructed, and scholarships are given to the local students.

Nuclear power is accepted positively by the utility and reasonably well by the public in Korea.