

COMPREHENSIVE SAFETY CHECK ON NUCLEAR REACTORS

(Short-term response in Korea to Japan earthquake/Tsunami on March 11)

Background

President Lee Myung-bak on March 17 ordered an across-the-board safety check on South Korea's nuclear reactors, as Japan's nuclear crisis set the alarm bells ringing in the near-neighbor country.

Although nuclear facilities are superb and safe, it should take an opportunity to review their safety to prevent a nuclear crisis in light of the Japanese-style nuclear troubles.

The Ministry of Education, Science and Technology (MEST) on March 21, established a plan for comprehensive safety check on nuclear reactors after deliberation of the Nuclear Safety Commission (NSC).

Basic Direction

A special team should be formed, which comprises staff from regulatory body and related government departments, and the specialists.

It should perform safety check on 21 nuclear power plants in operation, a research reactor (Hanaro), and a fuel facility. It should scrutinize possible loopholes, evaluate current design and operation of nuclear reactors, and identify safety measures to secure nuclear safety against the worst-ever situation (*beyond design earthquake* → *beyond design Tsunami* → *loss of AC power* → *severe accident in multiple-units*). Intensive evaluation should be done on nine reactors that have been in operation for more than 20 years.

It should communicate with stakeholders, including local governments, local residents, non-governmental environmental supervisory organizations, and licenses. The results of the safety check should be publicly available.

Evaluation Areas for Nuclear Power Plants

A. Earthquake and Tsunami

- Safety of structures under earthquake
- Structural design of the facilities used to prevent tsunami and flooding by typhoon
- Seawall against tsunami and flooding
- Recovery measures and appropriateness in case of SBO caused by earthquake

B. Inundation

- Emergency power and recovery measures against flooding
- Location of power connection parts vulnerable to flooding
- Ultimate heat sink under flooding
- Maintaining the function of spent fuel pool cooling under flooding
- Fire protection measures

C. Severe Accidents

- Severe accident mitigation features
- Measures to cope with loss of power and depletion of cooling water
- Severe accident management plan

D. Emergency Response

- Emergency plan and related manuals on earthquake and tsunami
- Environmental Radiation Monitoring

E. NPPs in Long-Term Operation and New NPPs

- Installation and maintenance of hydrogen control system
- Severe accident management guideline
- Maintenance of major active components
- Aging management of nuclear power plants in long-term operation
- Operating procedures and implementation design changes

Schedule

A. Nuclear Facilities

- Kori site : March 28 - April 1
- Wolsong site : April 4 - April 6
- Ulchin site : April 7 - April 9
- Yonggwang site : April 11 - April 13
- Research reactor and fuel facility (in Daejeon) : April 14 - April 15

B. Medical Treatment Institutions for Radiation Emergency

- Kori site : March 30 - April 1
- Wolsong site : April 6
- Ulchin site : April 7 - April 8
- Yonggwang site : April 13 - April 15

After consolidating evaluation results and communicating them with stakeholders, it will be completed by the end of April.