

An outline of the study on geological repository in Sweden

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The authors introduce the outline of the study on the geological repository in Sweden, which have been collected at the time of the International conference 'Geological repositories - political and technical progresses-' held in Stockholm on 7-December 10, 2003. Swedish fundamental policy for nuclear waste is the deposition in the geological repository without re-processing, as high-level radioactive wastes. Those wasters will be disposed to the geological repository composed of crystalline rocks of the depth about 500m below ground.

1. Site selection by SKB (Sweden nuclear fuel and waste commissioned company)

Four electric power companies those own the nuclear power plants established the Sweden nuclear fuel and a waste commissioned company (SKB) as an implementing organization of geological disposal. SKB started the site selection from the early 1990s. Feasibility studies in eight self-governing bodies were conducted from 1993 to 2000, and obtained consents by Oskarshamn and Osthrammar, and is conducting site investigation in these two self-governing bodies now. At 2007 age, the result of site investigation and an environmental impact assessment will be obtained, and one disposal site will be selected. Then, the applications for permission of detailed characteristic investigation and construction for final repository will be submitted.

2. CLAB (Central interim storage facility for spent nuclear fuel)

There are four nuclear power plants in Sweden, and they generate about 8000t nuclear waste by 2010. They are stocked in shallow underground as high-level radioactive wastes, without re-processing them. Concentration interim storage facility for spent nuclear fuel (CLAB) has already been built near the Oskarsham nuclear power plant. CLAB stocks the waste of 3200t or more in the canisters in the pools. The temperature of water in pool rises to 36 degrees centigrade.

3. Aspo hard rock laboratory

Aspo hard rock laboratory was constructed in 1995 for the purpose of research in the real geologic environments. This underground facility is located in a depth of about 450m. This facility is not intended to be used for final repository, but designed just for only research. Water leaks occur at many places although bed rocks are composed of pre-Cambrian granitic rocks. The salt concentration of seepage water is relatively high compared to present sea water, and regarded as old sea water.

Main research subjects are as follows.

- 1) To develop and test methods for investigating the bedrock
- 2) To refine and tests methods for adopting the deep repository to the local properties of the rock.
- 3) To obtain a better scientific understanding of the safety of the deep repository.
- 4) To develop, test and demonstrate the technology that will be used in the deep repository.
- 5) To survey the evaluation methods for the functions as natural barriers of bed rocks (surveys on groundwater flows, investigation of chemistry composition) .