

# **Japanese R&D Program for Making Safety Case for Geological Repository**

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## **Abstract**

The Japan Nuclear Cycle Development Institute (JNC), successor to the Power Reactor and Nuclear Fuel Development Corporation (PNC) as of 1st October 1998, completed a second progress report (referred to as H12) on research and development for geological disposal of high-level waste (HLW) in Japan and submitted it to the Atomic Energy Commission (AEC) of Japan in November 1999. H12 documents progress made since the publication of the first progress report (H3) in 1992 and will be presented to the Japanese Government for assessment by the year 2000. The purpose of the work was specified in a report published in April 1997 by the Advisory Committee on Nuclear Fuel Cycle Backend Policy of the AEC entitled "Guidelines on Research and Development Relating to Geological Disposal of High-Level Radioactive Waste in Japan" (hereafter the AEC Guidelines). The primary objective of H12, as specified in the AEC Guidelines, is to present an outline of "the technical reliability of geological disposal in Japan". It should also provide input for the siting and regulatory processes, which will be set in motion after the year 2000.

Demonstration of technical reliability relies on two fundamental principles. Firstly, that a properly sited and designed repository with a robust engineered barrier system is intrinsically safe because it eliminates potential major disruptive processes and ensures that any releases of radionuclides in the far future will have no significant health effects. The second principle is that a detailed, realistic-conservative safety assessment of the engineered and natural barrier system can demonstrate a wide margin of safety for the proposed disposal concept in Japan. This paper presents an executive-level description of the application of these two principles to the safety case for the Japanese HLW program.