

Development of Repository Concepts for Volunteer Siting Environments



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Nuclear Waste Management Organization of Japan (NUMO)

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Preface

The primary objective of government policy, and of NUMO in implementing this policy, is to ensure that a repository for Japan's high-level radioactive waste is designed and located so as to provide secure isolation of the waste and adequate safety for present and future generations. This requires that the site of a repository has to be chosen carefully and an associated repository concept is selected which is appropriate for its specific geological and environmental conditions.

At NUMO, we have chosen to implement a volunteering approach to siting. This is constrained by the use of "Siting Factors" which ensure that only locations which have sufficient geological stability are considered – an important factor in a country like Japan which lies in a tectonically active region. The potential diversity of volunteer sites puts particular constraints on the process of repository concept development – requiring that we maintain a range of possible options to ensure maximum flexibility to tailor this concept to the conditions found at a particular site.

Our term "Repository Concept" includes not only the design and layout of the disposal system but also the associated evaluation of operational and long-term safety and an assessment of socio-economic aspects. A particular challenge lies in the development of such concepts in an open and transparent manner which allows all key stakeholders to become actively involved, particularly the community hosting the facility and its neighbours. A logical structure allowing systematic development of repository concepts has been established, taking into account the close linkage between site information, repository design and safety assessment. We think it is very important to identify such a logical structure from the outset of the siting programme, which can be consistently applied to later site investigation stages.

This report outlines the background, principles and status of our repository concept development work and discusses how it might progress during our staged siting and implementation programme. A companion report (NUMO, 2004) discusses the development and application of the previously mentioned Siting Factors.

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