

ONKALO – Underground rock characterization facility for in-situ testing for nuclear waste repository

E. Johansson
Saanio & Riekkola Oy, Helsinki, Finland
T. Siren, K. Kemppainen
Posiva Oy, Eurajoki, Finland

ABSTRACT

As part of the preparations for the design of an underground repository for radioactive waste at Posiva's Olkiluoto site on the west coast of Finland, there has been considerable site investigation work. Except the extensive surface based investigations, Posiva started in 2004 the construction of an underground characterisation facility termed the 'ONKALO'. The ONKALO has now been completely excavated to the anticipated repository depth i.e. 430–450 m. The research conducted in the ONKALO gives further information on the bedrock and groundwater conditions of the final disposal site, as well as on the impact of the construction. The ONKALO provides an excellent opportunity to investigate the rock at tunnel scale, to conduct in-situ testing in rock, to develop excavation and final disposal techniques in realistic conditions. The ONKALO has aided in collecting the data needed, supported by a Preliminary Safety Assessment, for the application of the construction license that was submitted in the end of 2012. On February 11, 2015 Finnish Nuclear Safety Authority STUK concluded in its statement that the criteria set forth in the Nuclear Energy Act are fulfilled and the final disposal facility can be built to be safe.

The target is to begin disposal operations in 2022. According to current plans, the final disposal would end in 2112 and the repository would be sealed up by 2120. The testing in the ONKALO still continues several years. This presentation presents the development of rock characterization and field testing activities in Posiva's nuclear waste repository programme.

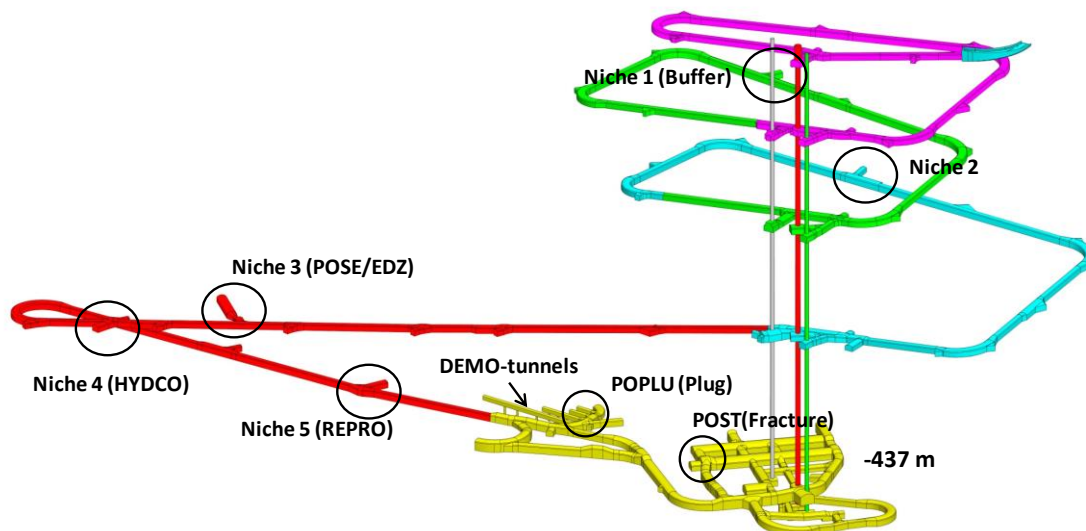


Figure 1 – Layout of the ONKALO facility and locations for different *in-situ* test sites.