Canada's Underground Research Laboratory (URL)

Geographical location

Lac Du Bonnet, eastern Manitoba

When it began or was completed

Site evaluation began in 1978; facility decommissioning was completed in 2015.

Why a Canadian geotechnical achievement?

Constructed and operated by Atomic Energy of Canada Limited (now Canadian Nuclear Laboratories (CNL)) in a granitic pluton on the Canadian Shield in eastern Manitoba, Canada's Underground Research Laboratory (URL) was the first underground laboratory in the world to be constructed specifically to evaluate the concept of nuclear fuel waste disposal in a previously undisturbed geologic environment.

The URL allowed for the advancement of geotechnical engineering and understanding of the behaviour of natural materials (bentonite & rock) in conditions that had not been previously possible. This was done through multidisciplinary studies and technological demonstrations undertaken in a controlled and well characterized underground environment. Studies related to solute transport, excavation stability and excavation damage, materials properties evaluation as well as large-scale multidisciplinary repository sealing demonstrations were completed. These provided technical support for development of current repository design concepts in Canada, and many of the concepts and designs were advanced internationally through publication of hundreds of conference, journal and technical papers.

The URL and the research programs associated with it allowed for completion of numerous advanced university degrees in engineering, geology and geoscience. This expertise has subsequently been disseminated into academic and technical areas of practice in Canada and internationally.

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Key Reference

Thompson, P and Priyanto, D. 2016. **Canada's Underground Research Laboratory (1980-2014)**. Waste Management 2016 Conference (WM2016), March 2016, Phoenix, AZ, USA.

Photographs

Atomic Energy of Canada's URL, surface facilities.

Examining excavation stability in rock having high differential stresses.