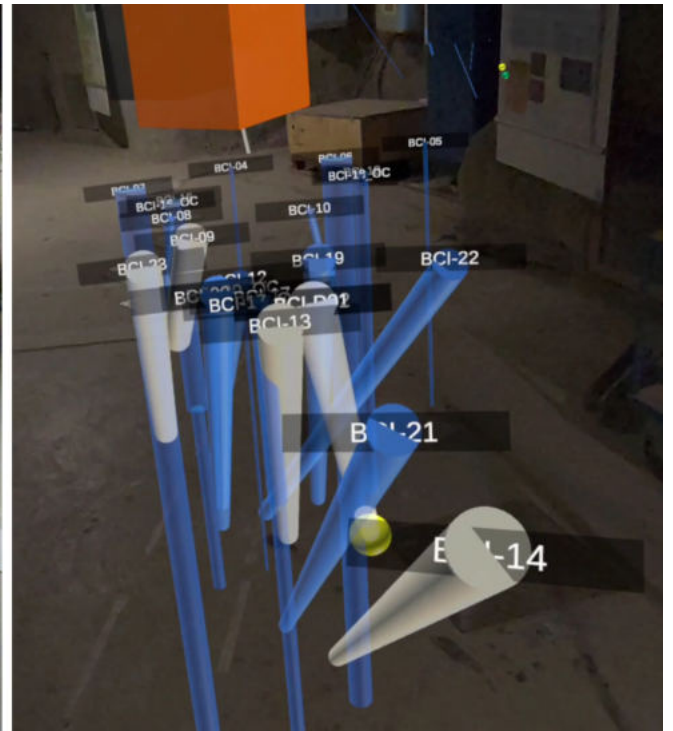
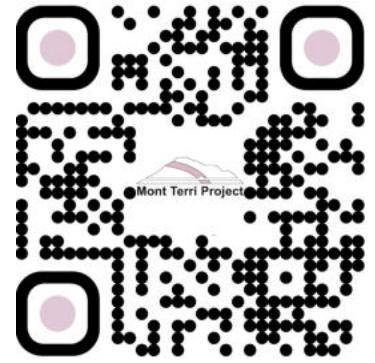


Mont Terri Project Underground Rock Laboratory

Report period: December 8–14, 2025

Assembled and edited by swisstopo, St-Ursanne



Spotlight of the week: As part of the doctoral thesis “XR-KIS: An Extended Reality-based Information System for Knowledge Management in Nuclear Facilities” by Pascal Mosler (Technical University of Darmstadt, Germany), an innovative Extended Reality based system was developed to make complex technical knowledge in nuclear facilities more accessible, easier to share, and available for long-term use. Nuclear facilities have very long life cycles, which makes sustainable knowledge management particularly important. Although the Mont Terri rock laboratory is not a nuclear facility, it offers conditions comparable to deep geological repositories, making it a demanding and safe test environment. Using a Meta Quest 3 headset supporting Virtual Reality for remote use and Augmented Reality on-site, the research demonstrated how geometric and semantic information can be spatially overlaid in situ. The system was developed together with swisstopo and tested during two short research stays at Mont Terri, during which two Master’s theses were also conducted. It enables users to view BIM objects together with semantic data linked to visible and hidden objects, including boreholes. Features such as virtual drawing, pathfinding, and multi-user support enhance collaboration and orientation. Potential use cases at Mont Terri include employee and contractor onboarding, visitor activities, and maintenance operations. Overall, this project produced a prototype Extended Reality based system that supports Knowledge Management across the entire underground laboratory.

CI-D (Diffusion Across 10-Year-Old Concrete/Claystone Interface) experiment

- On Tuesday, December 9, U. Mäder (RWC) and L. Martin (Nagra) performed preparation work for the decommissioning of the CI-D tracer injection experiment.

CL (CO2LPIE-CO2 Long-Term Periodic Injection) experiment

- From Monday to Tuesday, December 8–9, J. Gisiger and A. Jakupi (Solexperts) switched the surface connection lines of the packersystems in BCL09 and BCL11. The new injection interval is now BCL11_INT02 and the new monitoring intervals are BCL09_INT01, BCL09_INT02, BCL09_INT03 and BCL11_INT03. The reason for this is, that it has been judged that the multipackersystem in BCL11 is more suitable than the one in BCL09. All SysMoGs were bypassed during the manipulation (**Figure 1**).
- On Friday, December 12, J. Windisch (swisstopo) took sample #14 from the circulation interval of BCL-11.

MH (Long-Term Monitoring of Heaves and Displacement) experiment

- From Monday to Friday, December 8–12, S. Condamin, N. Mosar, R. Rajkumar, L. Chen, E. Borlat and L. Mosimann (swisstopo) carried out the precision leveling to monitor height changes in the rock laboratory and the safety gallery (**Figure 2**).
- From Thursday to Friday, December 11–12, J. Windisch and S. Condamin (swisstopo) read out the data from the Meteo-Loggers in the Safety Gallery and replaced their batteries.

SW-A (Large-Scale Sandwich Seal in Opalinus Clay) experiment

- On Friday, December 12, J. Windisch (swisstopo) refilled the HPT of shaft 1.

Visits

Day	Date	Group Name	Group Size	Visitors Guide
Wed	10.12.2025	SBB Infrastruktur	11	H. Hauser (freelance)
Thu	11.12.2025	Intera Inc.	11	R. Nicol (swisstopo)
Fri	12.12.2025	Rückblick VBSA-Klimafonds 2025	20	D. Jaeggi (swisstopo)

Figures



Figure 1: CL: Fixing the new flow lines for the injection (S. Schefer, swisstopo).



Figure 2: MH: Measuring in the dark with illuminated tools makes for a perfect picture... (J. Windisch, swisstopo).