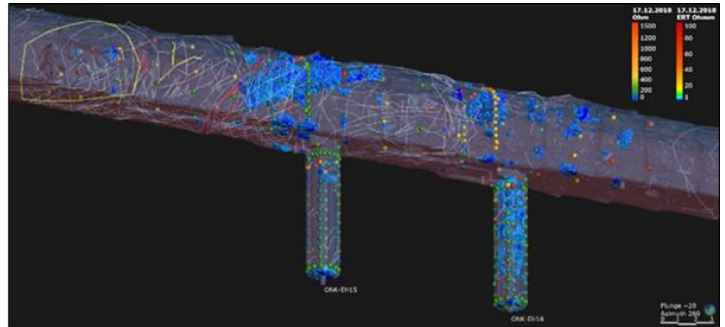


FULL-SCALE IN SITU SYSTEM TEST (FST) – CONTINUED BY ENGINEERED BARRIER BEHAVIOUR IN ONKALO® (EBBO)

Nuclear Waste Management Organization (NWMO) is responsible for designing and implementing Canada’s plan for the safe, long-term management of used nuclear fuel. Radioactive Waste Management (RWM) is responsible for the development of a geological disposal facility and other radioactive waste management solutions in the UK. Both NWMO and RWM participated in the FST and are currently participating in the EBBO.



Concrete plug sealing of the demonstration tunnel.



Approximately 600 sensors are constantly measuring the development of the FST system, including the sealing system.

DESCRIPTION OF THE PROJECT

The FST was carried out in ONKALO®, Posiva’s actual final disposal facility, at the disposal depth of 420 m in 2018–2019. The FST included design, manufacture and installation of the whole disposal system and comprehensive instrumentation for monitoring the evolution. Two deposition holes, bored in the floor of a demonstration tunnel, host each a canister surrounded by bentonite clay buffer. Inside the canisters heating elements were simulating decay heat emitted by spent fuel. The tunnel is about 50 m long and it was filled with bentonite backfill and it was closed with a steel-reinforced low pH concrete plug, the newest in the world.

The EBBO is a continuation of FST and it is carried out in 2020–2022. In the EBBO experiment, 587 electrical resistivity tomography, pressure and humidity sensors and inclinometers and gas monitors are giving information about the evolution of the FST system and sealing system.

DELIVERED CLIENT VALUE

The FST produced unique new information and experience on all aspects (*time, cost, feasibility, processes etc.*) of installation of a complete full-scale final disposal system. Furthermore, via EBBO, the FST continues to produce information of the early evolution of the disposal system and enables verifying the theoretical performance models.

FST and EBBO provide globally unique, experience-based information to NWMO and RWM, thus supporting them in planning and implementation of their respective projects.