
QA Review of the LOT Experiment (Phases S2 and A3)

Tim Hicks, Tamara Baldwin

30 Sept 2020

Review objectives

- We are supporting SSM's continuous review of SKB's RD&D Programme
- We want to understand how SKB:
 - assures the quality of work undertaken in its tests and experiments as part of the KBS-3V repository development programme
 - is continuing to improve work in this area
- Our current focus is on the latest phase of the LOT experiment at Äspö
 - dismantling and analysis of parcels S2 and A3

Background

- For many years we have supported SSM's reviews of how QA is applied during the planning, conduct, analysis and reporting of SKB's tests and experiments
- We have aimed to understand
 - SKB's approach to QA
 - how QA procedures have been applied
 - where there may be areas for improvement to give further confidence in the reliability of findings
- Our review work is founded on knowledge of
 - engineered barrier systems and their performance requirements
 - QA in barrier material tests and experiments

General approach to QA reviews

- Reviews are centred on a check-list of quality-affecting issues for experiments and tests
 - framework (purpose, objectives, resources, schedule, QA system)
 - design (variables, techniques, uncertainty, risks)
 - conduct (data collection and control, records, equipment)
 - analysis and reporting (data interpretation, reporting, review)
 - usability of results (verification, use)
- Involve meetings with SKB staff and contractors
- Review of results as documented in project reports

Previous LOT QA reviews



- Focused on QA in LOT tests on
 - copper corrosion processes
 - bentonite behaviour
- Involved project review meetings
 - Äspö HRL
 - contractor labs
 - SKB's offices
- Involved discussions with MKG on concerns about QA in copper corrosion tests
- Following slides set out QA questions from previous reviews

-
- Dismantling parcels and handling samples
 - what procedures and controls were used to mitigate damage to coupons?
 - what checks are done that contractors' project QA plans and procedures for handling materials are implemented?

-
- Analysis of copper corrosion
 - does analysis affect the condition of copper coupons?
 - can measurements be repeated?
 - have measurement uncertainties been reported?
 - is corrosion of the copper tubes being analysed?
 - are tubes representative of repository conditions?

-
- Understanding conditions during LOT
 - have uncertainties in understanding test conditions and corrosion processes been considered?
 - timing of transition from oxic to anoxic conditions
 - alternative interpretations

- Interpreting and reporting results
 - are specific criteria used to differentiate between corrosion processes?
 - are alternative interpretations considered and reported?
 - what criteria are used to judge test representativeness of conditions expected in the repository?
 - how are uncertainties propagated through to statements about copper corrosion under disposal conditions?
 - will all raw data and detailed analyses be reported and available for review?

- QA developments
 - how is SKB developing and improving its approach to QA?