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

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30 Sept 2020

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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

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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

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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

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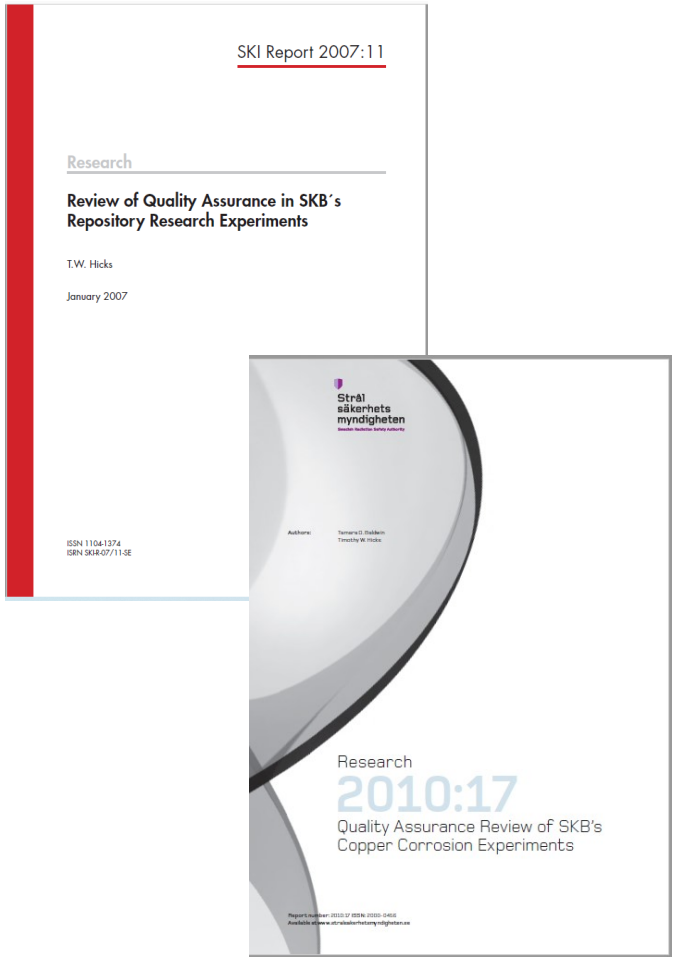
Previous LOT QA reviews



- 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

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QA questions 1/5

- 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?

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QA questions 2/5

- 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?

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QA questions 3/5

- 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

QA questions 4/5

- 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?

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QA questions 5/5

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