School of Geological Disposal

Äspö Hard Rock Laboratory, Sweden

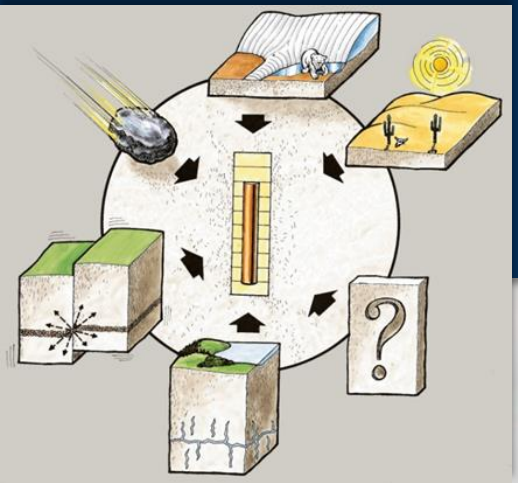
Oct. 22-26, 2018

SKB International and SKB are delighted to offer a scientific training course covering important issues governing a national nuclear waste disposal programme.

Based on the experiences gained by SKB during the past 40 years the course will present the planning and execution of a successful programme. The starting point being a strategic and graded approach with an early safety prediction via detailed understanding of processes, research achievements and gains in correctly defined targets and how this leads to a communicative safety case based on a solid and well defined safety assessment.

You are hereby invited to participate in a five-day training course at the beautiful Äspö Research Village, in the Oskarshamn archipelago.

The overall objective of the training course is to provide participants with an understanding on how to acquire the relevant knowledge needed to start or proceed in the development of a safety case and safety assessment for a geological nuclear waste disposal facility.



The course is given by senior experts from SKB, many with world renowned reputation in their field, and will cover the relevant topics for geological disposal of nuclear waste. The course programme will launch from the fundamentals of safety assessment and its defined safety functions. We will present SKB's experiences and knowledge based on selective research, successful experiments confirming assumptions and share experiences gained from failures. The lectures and discussions will provide extensive, profound information coupled to cutting edge applications when applicable. We aim to transfer theoretical knowledge and practical experience to the course participants efficiently and effectively all in an informal and inclusive atmosphere encouraging open discussions and networking.

Attendants will obtain course material (English), information material about SKB, and general information on Oskarshamn such as map, tourist information, etc. during the welcome reception to further enhance the positive experience of the course.

Full course details and a registration form are available at SKB web site: www.skb.se/2018-SGD

Further information contact: erik.moller@skb.se

SKB International AB

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When:	October 22-26, 2018
Time:	One full workweek, 08:00-17:00
Location:	Äspö Research village, accommodation in Oskarshamn
Price:	€4000, including lunches & local transport, one dinner
Registration:	*www.skb.se/2018-SGD* (limited number of participants)

Participant profile: Employees in waste management organisations, regulators and supporting technical organisations with a few years of experience in safety assessment, engineered barrier development and/or repository design.

Scientific areas to be covered

- General introduction and roadmap of the School of Geological Disposal.
- Introduction of the back-end of the fuel cycle; International requirements, waste categories (WAC), waste treatment, geological alternatives (Crystalline/clay/salt), direct disposal vs. processed/treated waste, etc.
- The KBS-method and safety analyses.
- Spent fuel characteristics of importance for the long-term safety of a geological repository
- Engineered barrier systems (EBS)
  - ✓ Canister, criteria and requirements
  - ✓ Buffer and backfill; criteria and requirements
- Geology:
  - ✓ Petrology, mineralogy and plate tectonics
  - ✓ Quaternary geology
  - ✓ Structure geology – from data collection to modelling
  - ✓ Hydrogeology
- Siting processes:
  - ✓ Site investigation: techniques and measurements, detailed field- and laboratory experiments
  - ✓ Public relations and social responsibilities – Experiences from success and failures
- Transportation system and security issues, non-proliferation perspectives
- Interaction between implementer and regulator;
  - ✓ RD&D programme
  - ✓ Experience from Environmental court hearings
- Social Aspects of Nuclear Waste Disposal

Study visits to:

- Central Interim Storage of Spent Nuclear Fuel - Clab
- Canister Laboratory and Instrument workshop
- Äspö Research Village; Chemistry lab., Bentonite lab. & Hard Rock Laboratory (URL)

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Preliminary schedule

Time	Day 1 - 22nd Oct.	Day 2 - 23rd Oct.	Day 3 - 24th Oct.	Day 4 - 25th Oct.	Day 5 - 26th Oct.
08:00 - 09:30	➢ **Introduction** ➢ Participants presentation & expectations	➢ **The role of the Äspö** HRL in the Swedish nuclear waste management programme. ➢ Study visit to **the Äspö Research Village** incl.: ➢ Safety instructions ➢ Tunnel visit ➢ Bentonite & ➢ Chemical Laboratory	➢ Study visit to **Canister laboratory**. ➢ Non-destructive testing ➢ Friction stir welding ➢ Instrumentation workshop	➢ **The siting process** in Sweden: ➢ Selection ➢ Investigations	➢ **Interaction between implementer and regulators.** ➢ Early political discussion ➢ The RD&D process ➢ Application process for licence to construct
30 min	BREAK		BREAK	BREAK	BREAK
10:00 – 12:00	➢ **Overview of Nuclear Waste and Repository concepts** in different geological environments		➢ **Geological Barrier**, incl.: ➢ Host rock types ➢ Petrology ➢ Mineralogy ➢ Fracturing ➢ Hydrology ➢ Chemistry	➢ **The siting process** in Sweden, continued. ➢ Comparison and decision	Cont. ➢ Consequence and Future plans based on response from The Swedish Radiation Safety Authority and The Swedish Environmental Court
1h.	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
13:00 – 15:00	➢ **Safety assessment fundamental**	➢ **Engineered Barrier system** (EBS) - Criteria and demands incl.: ➢ Canister ➢ Buffer ➢ Backfill	➢ **Geology**, from basic to Safety assessment: ➢ Thermal, mechanical properties. ➢ Structural geology ➢ Seismology Hydraulic and chemical conditions	➢ Presentation and visit to the **Central Interim Storage facility** (Clab)	➢ **Transport system** ➢ National/international regulations ➢ Design of a nuclear/radioactive waste transport system ➢ Safety and security aspects
30 min	BREAK	BREAK	BREAK	BREAK	BREAK
15:30 – 17:00	➢ **Characteristics of the SNF**	➢ EBS cont.	➢ **Site Descriptive Modell** (SDM) – a systematic way of collecting all data to give an optimal description of the rock volume	➢ Social aspects of nuclear waste disposal ➢ **Public acceptance** and **confidence building**	➢ Summary and course evaluation. ➢ Examination and certificate of completion of the School of Geological Disposal. (*depending on transportation options, course may close around 16:00*)
Evening activity	Sunday 21st Oct.: Welcome Reception	Course Dinner			

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