School of Geological Disposal

- Basis for developing safe geological disposal

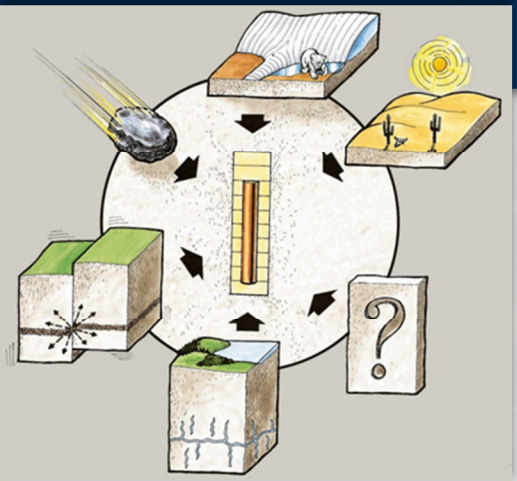
Äspö Hard Rock Laboratory, Sweden

Oct.14-18, 2019

SKB International and SKB are delighted to once again offer a scientific training course covering important issues governing a national nuclear waste disposal programme. The course from last year has been slightly updated based on last year's experiences and feedback.

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.



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.

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/SGD2019

Further information contact:
erik.moller@skb.se

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When:	October 14-18, 2019
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/SGD2019* (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, waste treatment, geological alternatives (Crystalline/clay/salt), direct disposal vs. processed/treated waste, etc.
- The KBS-method
- Safety assessment fundamentals.
- Waste matrix, criteria and inventory
- Geological barrier
- Site Descriptive Modelling (SDM)
- Engineered barrier systems (EBS)
- Biosphere and climate
- Siting processes:
  - ✓ Site investigation: techniques and measurements, detailed field- and laboratory experiments
  - ✓ Public relations and social responsibilities – Experiences from success and failures
- Stepwise licensing of repositories in Sweden
  - ✓ Interaction between implementer and regulator;
  - ✓ RD&D programme
  - ✓ Future plans
- Social Aspects of Nuclear Waste Disposal
- International outlook

Study visits to:

- Central Interim Storage of Spent Nuclear Fuel - Clab
- Canister Laboratory
- Äspö Research Village;
  - ✓ Chemistry laboratory,
  - ✓ Multipurpose test facility,
  - ✓ Material science laboratory &
  - ✓ Hard Rock Laboratory (URL)

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Preliminary schedule

Time	Day 1 - 14th Oct.	Day 2 - 15th Oct.	Day 3 - 16th Oct.	Day 4 - 17th Oct.	Day 5 - 18th 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	➢ **Towards radioactive waste disposal world wide** ➢ 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 ➢ **Regulation, IAEA, national requirements**		➢ **Engineered Barrier system (EBS) Criteria and demands** ➢ Canister ➢ Cementitious materials	➢ **The siting process** in Sweden, continued. ➢ Comparison and decision	➢ **Social aspects of nuclear waste disposal** ➢ Public acceptance ➢ Confidence building
1h.	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
13:00 – 15:00	➢ **Safety assessment fundamentas**	➢ **The Geological Barrier:** Rock types, Structural geology, Rock Mechanics, Hydrogeology, Chemistry	➢ **Engineered Barrier system (EBS) Criteria and demands** ➢ Clay barrier (Buffer & Backfill)	➢ **Knowledge management** ➢ Data handling ➢ Quality assurance ➢ Competence	➢ **Stepwise licensing of repositories in Sweden** ➢ Interaction between implementer and regulators. ➢ Future plans
30 min	BREAK	BREAK	BREAK	BREAK	BREAK
15:30 – 17:00	➢ **Waste matrix, criteria and inventory (SNF, ILW, LILW)**	➢ **Site Descriptive Modell** (SDM) – a systematic way of collecting all data to give an optimal description of the rock volume	➢ **Biosphere and Climate** ➢ Ecosystem ➢ Transport in biosphere	➢ **Presentation and visit to the Central Interim Storage facility (Clab)**	➢ Summary and course evaluation. ➢ Examination and certificate of completion of the School of Geological Disposal.
Evening activity	Sunday 13th Oct.: Welcome Reception	Course Dinner			

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