

NRC INTERNATIONAL TRAVEL TRIP REPORT

Traveler, Office, Division, Phone Number

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Dates of Travel and Countries/Organizations Visited

May 24-30, 2015
Vienna, Austria; International Atomic Energy Agency (IAEA)

Subject

An IAEA Plenary Technical Meeting of GEOSAF Part II, the International Project on Demonstration of the Operational and Long-Term Safety of Geological Disposal Facilities for Radioactive Waste

Desire Outcome

The objective is to review and finalize an IAEA technical document (or TECDOC) that the core group of GEOSAF Part II has been working on in the past 12 months. The Plenary will also review a draft accompanying report on high-level-waste repository operational safety and provide comments to its affiliated working products. The traveler will participate in working group meetings built into the Plenary to provide U.S. perspectives on the draft document and report. The Plenary will also discuss and develop plans for future, follow-on activities of GEOSAF II.

Results Achieved

The Plenary reviewed the final, draft IAEA technical document (TECDOC) for GEOSAF II, which attempts to integrate the pre-closure, operational aspects of a radioactive waste geological disposal safety case with post-closure safety considerations and assessment. The purpose of the TECDOC is to provide preliminary guidance to geological repository implementers such that the concept of safety case, safety envelop, design target, and the as-built-state can be integrated into a framework whereby the final as-built-state delivers the safety functions required to ensure post-closure safety. The core group of GEOSAF II presented their revisions to the draft TECDOC by considering comments from the last plenary meeting in May 2014. The Plenary approved the revision with additional comments and revision requests from meeting participants. The core group will incorporate the comments and finalize the TECDOC and IAEA will publish the TECDOC as a standard IAEA report subsequently.

The Plenary also conducted three working group meetings to review a working product, a matrix of subject topics related to repository operational safety as discussed or mentioned within existing IAEA documents. The Plenary provided its recommendations about the topics of interest in operational safety to the task group. The task group, still working on the accompany report, will incorporate these recommendations to their final report, which will be publish in electronic format on the IAEA GEOSAF II web site once it has been completed in 2016.

The plenary conducted another set of working group meetings to identify potential follow-ups of GEOSAF II. IAEA also identified monitoring for compliance control and closure decision-making and siting and site characterization as future, potential projects per recommendations from member states.

Summary of Trip

The plenary meeting of GEOSAF II was held in Vienna, Austria, on May 26 – 29, 2015, with the objectives to build consensus on the final products of the plenary meetings started in May 2013. More specifically, the Plenary is (1) to agree on and approve the content of the GEOSAF II TECDOC, (2) to review the working products from the operational safety task group and provide recommendations to the group to finalize the draft report on operational safety, and (3) to identify potential follow-on activities for GEOSAF II.

At the second plenary meeting of GEOSAF II in May 2014, the group reviewed a revised draft TECDOC for GEOSAF II, which will become the final deliverable of the GEOSAF II project upon final revision and approval by the Plenary in 2015. At the May 2014 meeting, the Terms of Reference (ToR) of a complementary product of the TECDOC, a separate report on repository operational safety, was also presented to the Plenary for review and discussion.

The meeting began with a summary of the GEOSAF II project and the results achieved in the last plenary in 2014. It was followed by highlights of the final draft TECDOC, including (1) the basic concepts of safety envelop, design target, and as-built-state of geological repository safety, (2) compliance control and (3) deviation (from design target) management. Two examples were presented by the Swedish implementer SKB and French regulator ASN to illustrate the use of the basic concepts and the tools in the TECDOC. The Switzerland implementer NAGRA then presented and discussed its progress in siting, research and development (including the experiments at the Mt. Terri underground research laboratory that are among the main areas of interest within the international DECOVALEX project). The Plenary ended the first day of meeting by comments to the final draft TECDOC and by the conclusion that the TECDOC was close enough to its final approvable form for the core group to incorporate the plenary's recommendations and to produce a publishable version for IAEA.

The second day of the plenary meeting was devoted to the accompanying report on operational safety. The task group of the report met several times during the last six months to skim-read existing IAEA documents, including TECDOCs, IAEA standards and guidance, to identify topical areas that may be related to geological repository operational safety. The product, as a result of these activities, is a comprehensive matrix of operational safety topics versus existing IAEA documents. The task group presented the Terms of Reference (ToR) of the accompanying report, the topics and issues to be discussed in the report, the methodology and analysis applied to the matrix. The Plenary was then divided into three working groups to identify topical areas that are of most interest to member states, either within or outside the topical areas listed in the matrix. The working groups subsequently presented their conclusions to the entire plenary for discussion. The plenary wrapped up the second day by agreeing on deliverables of the operational safety task group and the understanding that a potential workshop between GEOSAF II and the NEA EG-OS projects to synergize the two projects.

The lessons-learned from the WIPP incidents in 2014 were the primary topics of interest for the morning of the third day. Members of the Plenary that are also involved in the EU SITEX and JOPRAD projects then presented and discussed perspectives from these projects that are

relevant to GEOSAF II. The plenary was then divided into working groups to identify potential follow-on projects of GEOSAF II. Before the end of the day, the working groups presented their findings for the considerations of the entire plenary. Among the subject areas identified by the working groups are: (1) compilation of requirements and potential guidance on operational safety of deep geological repository, with assistance from domain subject matter experts, (2) concurrent mining and waste emplacement activities, (3) emergency response and preparation, (4) management of conflicting pre- and post-closure requirements, (5) application and definition of safety envelop, (6) compliance control during pre-closure phase, (7) document and record management during pre-closure phase, (8) retrievability during normal and accidental situations, and (9) monitoring and R&D programs to support long term safety demonstration. The Plenary also discussed details of a potential joint workshop with the NEA EG-OS project to identify synergy and collaborations on operational safety. IAEA officials also suggested that member states are very interested in guidance on monitoring for compliance and closure, and on siting and site characterization.

The GEOSAF II project was wrapped up on the fourth day by discussing, among others, the consolidated recommendations to the core group on the final TECDOC version, the proposed, potential follow-on projects of GEOSAF II, the operational safety report, and the potential joint NEA/IAEA operational safety workshop. Among the topics of interest for the joint workshop are: (1) mining experience / lessons learned used by implementers and regulators, (2) concurrent activities in mining and waste emplacement, (3) monitoring for compliance and closure, (4) conflicting requirements for pre- and post-closure safety, (5) emergency response and preparation, and (6) WIPP lessons learned.

Pending Actions/Planned Next Steps for NRC

The GEOSAF II core group and the operational safety task group were tasked to finalize the TECDOC and the accompanying operational safety report, respectively. NRC staff will follow up with IAEA on the publication of the two reports. IAEA will work with NEA to determine the contents, date and place for the proposed joint operational safety workshop and notify member states of the opportunity to provide inputs and to participate in the workshop. NRC staff will plan to be part of this workshop. The U.S., in particular, DOE WIPP, was listed as a potential subject area of interest to the workshop for the purpose of assembling international experiences on gaps of IAEA guidance to operational safety. No action on the part of NRC staff on this subject is expected.

Points for Commission Consideration/Interest

The content of this report may be of interest to the Commission. There are no actions that the Commission needs to take as a result of this meeting.