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NUCLEAR ENERGY AGENCY  
RADIOACTIVE WASTE MANAGEMENT COMMITTEE

### Integration Group for the Safety Case (IGSC)

#### Summary Record of the 1st Meeting of the Salt Club

Draft version

Held on 4 December 2012  
at NEA Offices, Issy-les-Moulineaux, France

*This document is to be approved by the members at its 2nd meeting on 16 September 2013.*

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## SALT CLUB 2012 ANNUAL MEETING

### Summary Record of the 1<sup>ST</sup> Annual Meeting

Issy-Les-Moulineaux, France, December 04, 2012

The 1st meeting of the Salt Club (SC-1) took place at the NEA Office in Issy-Les-Moulineaux on December 04, 2012. This summary record reviews the main items and decisions. Annex 1 presents the list of participants. All supporting materials will be posted on the Salt Club internal webpage.

#### 0 Opening Remarks

#### 0 Welcome Note

- Michael Siemann, Head of the Radioactive Waste Management and Radiation Protection Division of the NEA, welcomed the participants and provided practical information of the meeting prior to passing the floor to the Salt Club Chair, Tilmann Rothfuchs.

#### 1.1 Approval of agenda

- The proposed agenda was accepted without changes.

#### 1.2 Revision of Mandate

- Section 3 of the Salt Club Mandate on Membership has been revised. Specifically the term “*responsible ministries*” is inappropriate in describing the political structures of some member countries (e.g. USA). Also noted by the American colleagues is the last sentence in the section which states: “*members have a level of seniority... that they can mobilize resources...*” is inapt although they agreed that the sentence carries mild effect and decided to leave the sentence as is for the time being.

**Decision:** The Salt Club agreed to change “*responsible ministries*” to “*responsible authorities*”.

#### 1.3 Introduction of New Working Group

- 5 organizations, KIT; Los Alamos National Lab; RESPEC; TUC; and TU-BS, have requested to become members of the Salt Club. Introductory presentations were given to the Salt Club by the applicants revealing the core business and activities of their organizations
- An overview of research work performed at the TUC was also presented by Prof. Kurt Mengel. Members who are interested in obtaining further information on mineralogy and geochemistry of rock salt are welcome to contact Prof. Mengel.

**Decision:**

- The Salt Club accepted 5 new member organizations.

- Further applicants should seek contact to the Salt Club via the Chair. They will be accepted to become a new member through e-mail-exchange within the Steering Group

#### 1.4 Election of Chair and Steering Group Members

- The current Chair, T. Rothfuchs, will retire by the end of 2012. He nominated Jörg Mönig (GRS, Germany) to be his successor. Member countries voted for the Chair election.
- With only 4 member countries currently participating in the Salt Club, it was agreed that 2 representatives per country will be nominated. The Chair is not counted as a Steering Group member, but will act as Chair in future meetings. Nominees are:
  - USA: Francis Hansen (Sandia Lab) & Abe Van Luik (US DoE, WIPP);
  - Germany: Enrique Biurrun (DBE Tech) & Walter Steininger (KIT / PTKA);
  - The Netherlands: Erika Neeft (COVRA) & Jacques Grupa (NRG);
  - Poland: Andrzej Chwas (MoE/NED) & a 2<sup>nd</sup> member to be appointed in near future.
- The Secretariat requested each organisation to name a single point of contact who will resume the role as the primary contact member. The following have been identified:

<b>GERMANY</b>	KIT	Marcus Altmaier
	DBE Tech	Wilhelm Bollingerfehr
	BGR	Sandra Fahland
	BMW	Holger Wirth
	TUC	Kurt Mengel
	TU-BS	Joachim Stahlmann
<b>USA</b>	Sandia Lab	Khris Kuhlman
	USDOE	Abe Van Luik
	Los Alamos National Lab	Donald Reed
	RESPEC	Leo Van Sambeek
<b>The Netherlands</b>	NRG	Jacques Grupa
	COVRA	Erika Neeft
<b>Poland</b>	MoE/NED	Andrzej Chwas

- M. Siemann also requested the Salt Club to elect a Deputy Chair.

#### **Decisions:**

- All 4 member countries unanimously agreed to elect Jörg Mönig as the new Chair, until the end of this term, i.e. May 2014;
- The Salt Club accepted all nominated representatives. Andrzej Chwas will seek a 2<sup>nd</sup> Polish member to join the Salt Club;
- The Salt Club has accepted Francis Hansen (Sandia Lab) to be the Deputy Chair, until May 2014.

#### 2.1 Salt Compendium

- Abe Van Luik explained the situation at the SMRI and also the reasons why the Salt Club cannot be a SMRI member. He then proposed 2 options for the Salt Club members to gain access to the SMRI database: (i) join SMRI as an individual organization at an annual cost

of \$1000 – 2000 US; or (ii) purchase a PDF version with no rights to updates at ~\$ 500 US. Due to the existence and current completeness of the SMRI database, the Salt Compendium will not be further developed. Further information to join the SMRI can be obtained via Leo Van Sambeek.

- Francis Hansen informed the Salt Club members that a Salt Atlas entitled: “The Salt Mine: a digital atlas of salt tectonics” issued by the Texas Bureau of Geology currently exists. The atlas provides information of salt formations as well as detailed modeling of tectonics. The link to obtain further information of this atlas will be provided by F. Hansen. The cost of this atlas is about \$ 80 US.
- Both BGR (Sandra Fahland) and COVRA (Ewoud Verhoef) have agreed to inform the Salt Club members whether their salt reports can be accessed by the public and will provide the links should the reports are available online;
- NEA Secretariat will remove the draft report from the Salt Club web page.

## **2.2 Natural Analogue Workshop**

- Jörg Mönig reported the key outcomes of the Natural Analogue Workshop which was held in Sept 2012, in Braunschweig. The workshop concluded that more natural analogue studies on geo-technical barriers are required as most NA studies have been focused on salt integrity. Other topics that require further studies include: (i) microbial activity in salt; (ii) deformation of anhydrite; (iii) fluid inclusions; and (iv) gas storage.
- Workshop proceedings will be published as a NEA R-type report. Abe Van Luik and Jacques Grupa (or a colleague from the Netherlands) agreed to review the proceedings and publication is anticipated to complete by May 2014.
- The Salt Club considers microbial activity is an important topic and agreed to add this new work activity into the Programme of Work (PoW). Don Reed (LANL) and Artur Meleshyn (GRS) are collaborating on this effort with the Polish scientists.
- The Salt Club considers Compaction of Crushed Salt a further important topic. Frank Hansen will seek for US analogs together with Leo van Sambeek.

## **2.3 US/German Workshop on Salt Research**

### **3<sup>rd</sup> US/German Geotechnical workshop:**

- Francis Hansen reported the key outcomes of the 3<sup>rd</sup> Workshop. The workshop was organized by Sandia National Laboratories in Albuquerque, NM on October 8-11, 2012. More than 60 participants attended the workshop. Three (3) main topics were discussed in this workshop:
  - Safety case for HLW disposal in salt: Gorleben’s preliminary safety analysis, from the domal salt perspective, was discussed. In addition to the review of the US ability to support a safety case from a bedded salt perspective;
  - Benchmark modeling: German salt modeling researchers and SNL had signed a MoU previously for a joint project to formulate a strategy for generic modeling of thermo-mechanical field scale tests. German researchers have projected the possibility to undertake testing of WIPP salt to adapt their constitutive models for bedded salt analysis;
  - Reconsolidation of granular salt: a key technical issue for German repositories, WIPP (i.e. panel closure options), and design and performance of salt repositories for heat-generating waste in the US. It was evident from the workshop that the international database of salt reconsolidation research is extensive and continues to deepen.
- Much effort was placed on building new collaborations and researcher-to-researcher relationships among the many newer and younger members of the research community to aid in knowledge transfer and succession planning. There were also renewed discussions

about other possible field-scale collaborations to exploit our respective URL resources.

- Proceedings of the workshop will be issued in March 2013.

## **2<sup>nd</sup> US/German workshop on Actinide and Brine Chemistry (ABC Salt II)**

- The ABC-Salt (II) workshop on actinide brine chemistry was held on Nov 7-8, 2011 in Karlsruhe. The workshop was co-organized by the Karlsruhe Institute of Technology, Institute for Nuclear Waste Disposal (KIT-INE) and the Los Alamos National Laboratory, Carlsbad Office (LANL-CO).
- The aim of the workshop was to present new scientific investigations and discuss advanced approaches to establish a better understanding of the aqueous geochemistry and radiochemistry required to predict the long-term safety of a salt-based nuclear waste repository.
- Proceedings are now published and can be found at the Salt Club internal web page <http://home.nea.fr/download/igsc/saltclub/index.html>.

## **2.4 FEP catalogue HLW in rock salt**

- Jörg Mönig explained the FEP and scenario development experiences in the ISIBEL project and its subsequent application in the preliminary Gorleben safety analysis. He then further indicated a Salt FEP catalogue will be developed by combining the US Used Fuel Disposition Campaign (UFDC) FEP list with the German Gorleben VSG FEP list.
- Geoff Freeze also described the identification and screening process in the developing the UFDC FEPs.
- In response to a comment raised by Jacques Grupa on the risk of screening out FEPs based on low probability, Jörg Mönig replied that no FEPs will be eliminated based on their low probabilities nor without sound technical basis. Both J. Mönig and C. Leigh have also confirmed that, at present, they do not foresee integrating the Salt FEP catalogue into the NEA international FEP database.

## **2.5 Salt Knowledge Archive**

- Tilmann Rothfuchs reported to the Salt Club that a preliminary list of keywords, organized in a 2 level hierarchical manner, has been created. Salt Club members are welcome to provide their input to further improve the keyword list.
- Christi Leigh presented the US Salt Investigations Technical Expansive Database (SITED), a digital record archive containing experimental test results conducted at WIPP and other US sites. To evaluate the possibility of creating the Salt Archive using the US SITED as a background structure, C. Leigh will provide database access to the German and Dutch colleagues by end of Dec 2012. A conference call among the European participants will be held in March 2013 and another conference call including the US project participants will be held after Easter. C. Leigh further indicated that Khris Kuhlman will be the US lead in the work.
- The Secretariat reminded the Chair that work activities should be planned in accordance with the current term duration of the Salt Club which goes till May 2014. The Salt Club recognizes that it is unlikely to complete the development of the Salt Archive by May 2014, however, it was decided that a more solid developmental plan will be available by the end of the term and IGSC approval to extend the project will then be sought.

## **2.6 Current Salt Activities**

- Jörg Mönig gave a brief presentation on the preliminary safety assessment of Gorleben. Followed by a presentation on US efforts in safety and performance assessment of salt repositories by David Sevougian. D. Sevougian noted that until new US disposal policy is established, DOE will continue to focus on developing “generic” repository systems. With respect to salt performance assessment (PA) activities, he indicated that the next step is to design a generic Salt PA model.

### **3.0 Review of Programme of Work (PoW)**

- The Salt Club agreed to add two (2) activities to the 2012-2014 PoW: (i) Actinide and Brine Chemistry (ABC) Salt Workshop; and (ii) study microbial activities in salt.
- The Salt Club also agreed to merge the Safety Case Archive, Activity WP5, into the Salt Knowledge Archive WP4. G. Kwong to revise the PoW.

### **4.0 Review of the Salt Club web pages**

- The Salt Club members agreed to provide inputs to G. Kwong in order to further improve the Salt Club web pages. Following the meeting, G. Kwong will resend the web page link to all members and K. Le Bot will provide login assistance should it be required.

### **5.0 Other Businesses**

- The 4<sup>th</sup> US / German Geotechnical Workshop has been scheduled for Sept 16-22, 2013 in Berlin. Point of contact is Walter Steininger ([walter.steininger@kit.edu](mailto:walter.steininger@kit.edu)).
- The 3<sup>rd</sup> US-German workshop on actinide and brine chemistry in a salt repository (ABC Salt III) has been scheduled for April 15-17, 2013 in Santa Fe, NM. Contacts are Marcus Altmaier ([marcus.altmaier@kit.edu](mailto:marcus.altmaier@kit.edu)) and Don Reed ([dreed@lanl.gov](mailto:dreed@lanl.gov)).
- Next Salt Club annual meeting has been tentatively scheduled for Sept 18. G. Kwong will confirm location and time of the next meeting after consulting NEA management.

**Note:** On December 6, 2012, NEA's approval has been granted to hold the 2<sup>nd</sup> annual meeting on September 18, 2013 in Berlin.

**Annex 1 List of Participants**

**1<sup>st</sup> Salt Club meeting**  
 Held on 4 December 2012  
 at the NEA Offices, Issy-les-Moulineaux, France  
**Participant list**

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