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**NUCLEAR ENERGY AGENCY  
RADIOACTIVE WASTE MANAGEMENT COMMITTEE**

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**WORKING PARTIES ACHIEVEMENTS AND PLANS**

*This document supports Item 8 of the draft proposed agenda of the 44th session of the RWMC.*

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## FORUM ON STAKEHOLDER CONFIDENCE

### INTRODUCTION

The integration of wider socio-political considerations is a major challenge for all waste management programmes. The RWM provides a forum for information exchange in this area that also allows for exchange of views with relevant stakeholders. The Forum on Stakeholder Confidence is composed of nominees from NEA Member countries with responsibility, overview, and/or experience in the field of stakeholder interaction and confidence. The FSC meets at least once per year, typically alternating between two meeting formats. Regular (annual) FSC meetings focus on information exchange among the members and in-depth discussion of specific topics. National workshops and community visits, hosted by a member institution, allow for interaction with a broader range of stakeholders in the national context, on topics of concern to the stakeholders. These workshops provide FSC members with an opportunity to view the inner workings of waste-management programmes, the methods they have employed for stakeholder interactions, the successes and failures they have had. At workshops, involved stakeholders express directly their own views about the methods by which they have been involved in the decision-making.

### Reference documents

Strategic document: <http://www.nea.fr/html/rwm/docs/2001/rwm-fsc2001-2-rev2.pdf>

FSC Phase-3 Programme of work (2010-...): NEA/RWM/FSC(2010)1

Mandate: NEA/RWM(2005)13/REV2 (updated 8 January 2010)

### Core Group Members

FSC chairperson is Janet Kotra (US NRC). Core Group members include: Jo-Ann Facella (NWMO), Sébastien Farin (ANDRA), Mariano Molina (ENRESA), Jay Redgrove (UK NDA) and Eva Simic (Swedish National Council for Nuclear Waste).

### HIGHLIGHTS

- FSC-11 regular meeting in September 2010, including topical sessions on “Cooperating with Regional Elected Authorities”, on “Seeking Transparency”, and on “Broadening Journalists’ Knowledge Base”. Presentations on societal aspects of memory complemented other RWM work on Preservation of Records, Knowledge and Memory.
- Open event: 10-year Anniversary Colloquium, held at the OECD Conference Centre in September 2010, including more than 100 participants.
- On-line survey to evaluate the FSC and to collect suggestions for new themes of study.
- Contribution to the Retrievability and Reversibility (R&R) Project conference in December 2010.

## ACTIVITIES AND ACCOMPLISHMENTS SINCE RWMC-43 (MARCH 2010)

### *Activities and Projects*

- **Meeting of the FSC**

FSC-11 was held 14 and 16 September 2010 at NEA, Issy-les-Moulineaux, France. In the context of the 10-year Anniversary the regular meeting was opened to interested stakeholders. Alongside RWM specialists and local stakeholders representing long time NEA Member countries, new stakeholders joined us from Poland, Romania, and Slovenia.

- **10-year Anniversary Colloquium**

An open event was held at the OECD Conference Centre in Paris on 15 September 2010. More than 100 participants – FSC members and other stakeholder representatives of civil society and institutions from the 16 participating FSC countries – gathered to take stock of change and progress in the governance of RWM over the past decade, to learn from community stakeholders about issues of central importance, and to formulate guidance to the FSC about the themes and concerns that should be examined in future activities.

- **FSC Informal Evaluation**

An online survey was conducted in summer 2010 among the entire FSC list of contacts (over 400 names) to obtain stakeholders' evaluation of FSC approaches and products, and to identify new themes and activities. More than 70 suggestions were received. On the occasion of the 10-year Anniversary Colloquium an informal evaluation was performed, building on the questionnaire, of the FSC methods and approaches for learning and the large body of reports and other publications. It emerged there that the National Workshops and Community Visits organised by the FSC (7 in 10 years) are perhaps the most popular and effective means of joint learning. Several reports published by the FSC were identified as particularly useful to practitioners and largely shared. Foremost is "Stepwise Decision Making" (2004), of which the full report and summary flyer are both available online. The "way forward" suggestions for topics and activities gathered during the online evaluation are currently analysed in order to provide strategic recommendations to the FSC Core Group regarding the originality and the pertinence of these suggestions.

- **Theme 1: Link Between RD&D and Stakeholder Confidence**

At the FSC-11 meeting a topical discussion on Memory included presentations on the UK Nuclear Archives and the Swiss study on Markers. Other presentations considered the treatment of socio-scientific aspects of the safety case.

Input to the R&R Project was achieved through an FSC-11 presentation of how R&R may be discussed with stakeholders, and through a paper for the Reims conference (Dec. 2010) reviewing FSC reflection on the topic over the past ten years.

- **Theme 2: Changing Dynamics of Interaction Among RWM Institutions and Stakeholder Confidence**

An FSC-11 topical session on "Seeking Transparency" benefited from presentations on European Commission initiatives and on joint work by the NEA/CNRA Working Group on Public Communication of Nuclear Regulatory Organisations and the Working Group on Transparency Activities of the European Nuclear Safety Regulators Expert Group (ENSREG).

- **Theme 3: Media, Internal and External Communication, and Stakeholder Confidence**

A topical session on Broadening Journalists' Knowledge Base and Contacts included presentations by the OECD NEA Head of External Relations and Public Affairs, by a journalist from NucNet.

Finnish Regulators presented a short course organized for journalists and a participant told of her experience.

- **Theme 4: Tools and Processes to Help Society Prepare and Manage Decisions (e.g., about Technology, Sites) through Stakeholder Involvement**

An FSC-11 topical session on Cooperating with Regional Elected Authorities, forming the second in a series, included a presentation by a county council covering a municipality that will host a geological repository. Further presentations considered interactions with local civil society in choosing the exact emplacement of a future repository, and engaging with local economic actors.

The 10-year Anniversary Colloquium included a plenary presentation on “Partnering for Long-Term Management of Radioactive Waste” followed by a panel of local and institutional stakeholders from five countries.

- **Theme 5: Increasing the Value of Waste Management Facilities to Local Communities**

The 10-year Anniversary Colloquium included a plenary presentation on “Building a Durable Relationship Between a Host Community, a Facility, and Major Institutional Players with Quality of Life in Mind” followed by a panel of local stakeholders from five countries.

An invitation was launched for the 8th FSC National Workshop and Community Visit (Gimo, Sweden, 4-6 May 2011) centring on “Actual Implementation of a Spent Nuclear Fuel Repository: Seizing Opportunities”.

- **Theme 6: The Symbolic Dimension**

The 10-year Anniversary Colloquium included a plenary presentation by an artist on the “FSC as a contribution to understanding between technicians and civil society”, and by a sociologist on the symbolic aspects of RWM in public perception.

- **Theme 7: FSC Knowledge Consolidation and Transfer**

- The 10-year Anniversary Colloquium included plenary presentations on “Joint Assessment of the FSC as a Framework for Learning” by academics who notably acknowledged the FSC homepage as a major resource providing materials for reflection and for teaching.

- An “FSC Glossary” was drafted. It was decided at FSC-11 that a handbook-glossary was needed to inform new FSC members, as well as external stakeholders, of consolidated knowledge. Based on a review of FSC literature since 2000, this report of approximately 30 pages will show how the FSC has addressed and defined central concepts such as: confidence and trust, transparency, stakeholder and public, effective dialogue, stepwise decision-making, reversibility, retrievability, local community, safety, local partnership.

### ***Knowledge Consolidation and Transfer***

- **Publications and Documents**

- *More Than Just Concrete Realities: The Symbolic Dimension of Radioactive Waste Management.* The report presents key issues and examples in order to build awareness of the importance of symbols and symbolism in communicating about perceptions and interpretations of radioactive waste and its management.

- *Proceedings of the National Workshop “Repositories and Host Regions: Envisaging the Future Together*, held in Bar-le-Duc, France, April 2009.

- *Partnering for Long-term Management of Radioactive Waste – Evolution and Current Practice in Thirteen Countries.* This major publication includes a Secretariat study of changes seen in the

stakeholder engagement area over the past decade, based on comparisons with the survey taken at the time of initiating the FSC.

- A “10-year Record of Learning: Factual List of Activities and of Investigated Topics, and of People Who Contributed to Them” [NEA/RWM/FSC(2010)2]. This lists the thematic presentations and discussions of the first eleven Regular Meetings of the FSC (2000-2010) and the exceptional Brainstorming Workshop (2007) and 10-year Anniversary Colloquium (2010), along with the themes of the seven FSC National Workshops and Community Visits. As much as possible, the name and affiliation of the persons who made presentations at each particular event are also reported, and the persons who have served on the successive Core Groups guiding the FSC are identified. Hyperlinks to all FSC publications are provided.
- Articles in NEA News on the 10-year Anniversary Colloquium, and the presentation on siting issues made by C. Pescatore at the invitation of the Blue Ribbon Commission On America's Nuclear Future (September 21, 2010).
- Contribution to the article by Luis Echávarri "Peut-il y avoir une gestion des déchets nucléaires compatible avec le Développement durable? Un point de vue international", published in the *Revue politique et parlementaire* (Oct. 2010).
- A “seed paper” was developed at the request of the RWMC to help structure thinking for the ICGR, Yokohama, October 2011; it reviews main lessons learned by the FSC in the area of “National Commitment, Regional and Local Confidence”.
- The FSC produced two new flyers on the “Partnership approach” (see Theme 4 above), both available on the FSC homepage [www.oecd-nea.org/fsc](http://www.oecd-nea.org/fsc) .
- All presentations from FSC-11 and the 10-year Anniversary Colloquium were made freely available on the FSC homepage (downloadable to any visitor, without password protection).

### ***Outreach, Presentation and Stocktaking***

- A flyer on “The Partnership Approach to Siting and Developing Radioactive Waste Management Facilities” and on the new worldwide trend “From Information and Consultation to Citizen Influence and Power” in RWM were posted on the FSC homepage [www.oecd-nea.org/fsc](http://www.oecd-nea.org/fsc) in English, French and Japanese.
- Invited presentations were made to the European Nuclear Energy Forum “Transparency” working group in Brussels. The FSC was recognised as a model for this group. To aid in transferring methodology and knowledge, an invitation was extended to the ENEF “Transparency” group to attend the 2011 FSC National Workshop to take place in Sweden.
- A presentation on “Decision-Making on RWM Facility Siting” that drew on FSC learning was made to UIMP Summer Course, Santander, Spain, 21-23 June 2010.
- A presentation was made to ICEM'10, 3-7 October 2010 – Tsukuba, Japan.
- An invited talk was given by the Secretariat regarding FSC lessons learned on siting to the Blue Ribbon Commission On America's Nuclear Future (September 21, 2010).
- A paper was delivered at the Reims Conference of the R&R Project (Dec. 2010) and that conference modelled on FSC practices by organizing round table discussions amongst all participants.
- A 3-hour lecture was delivered at the University of Versailles on the lessons learnt by the FSC in the area of risk governance.

- The “10-year Record of Learning: Factual List of Activities and of Investigated Topics, and of People Who Contributed to Them” was made freely available on the FSC homepage.

## **MAJOR AREAS OF ACTIVITY FORESEEN IN 2011 – 2012**

### ***Activities and Projects***

- The 8th FSC National Workshop and Community Visit entitled “Actual Implementation of a Spent Nuclear Fuel Repository: Seizing Opportunities” will be held in Gimo, Sweden, 4-6 May 2011. The invitation was extended to local stakeholders in several FSC countries and their input will be reflected in the final programme (questions for discussion by round tables).
- The 12th Meeting of the FSC is planned for 13-15 September 2011.
- The “seed paper” on “National Commitment, Regional and Local Confidence” for the ICGR, Yokohama, October 2011, will be further developed in view of supporting the RWMC in making a Collective Statement at term.
- Continued development of the “FSC Glossary”.
- Flyers will be drafted on “Stakeholder Involvement Techniques” and “The Symbolic Dimension of RWM”.
- New studies on siting, and on potential definitions of what constitutes “willing consent” by communities.

### ***Knowledge Consolidation and Transfer***

- **Publications Expected**
  - Proceedings of topical sessions and workshop.
  - Flyers on “Stakeholder Involvement Techniques” and “The Symbolic Dimension of RWM”.
  - An “FSC Glossary” examining major concepts considered by the FSC since its inception.
  - Siting and “willing consent” studies.

### ***Outreach, presentation and stocktaking***

- Plenary presentation on “Socially functional processes to manage the safe disposal of nuclear waste” at the Stockholm Spring Talks (May 2011).
- Plenary presentation at ICGR 2011.
- Participate in and support (as needed) RWMC projects on Reversibility and Retrievability, on Preservation of RK&M Across Generations, and RWMC-RF initiatives.

## INTEGRATION GROUP FOR THE SAFETY CASE (IGSC)

### INTRODUCTION

The IGSC serves as the main technical advisory body to the RWMC on deep geological disposal of long-lived and high-level radioactive waste. The focus of its work is on methodologies and strategies for characterising and evaluating disposal sites as well as on repository design and safety assessment aspects for various waste types. The work activities of the IGSC promote pooling of resources, sharing and synthesis of understanding and experience, and communication of findings to varied audiences.

The programme of work reflects two major directions for the IGSC in the coming years. The first is a renewed emphasis on the technical and methodological issues at the heart of the safety case (i.e., safety assessment), as there have been significant advances. The second theme is the integration of long-term safety imperatives with operational and engineering considerations, which are of immediate concern as programmes approach licensing and construction phases of repository development. The PoW also emphasises increased coordination by IGSC with the main RWMC and its working bodies.

### Reference Documents

IGSC Foundation Document:	NEA/RWM/IGSC(2000)10
Mid-Term IGSC Programme of Work:	NEA/RWM/IGSC(2007)16/REV
Update of IGSC Activities and Accomplishments:	NEA/RWM/IGSC (2010)7
IGSC Mandate:	NEA/RWMC/IGSC(2010)6

### IGSC Chair and Core Group Members (as of IGSC-12)

IGSC chairperson is Klaus-Jürgen RÖHLIG (TU Clausthal, Germany). Members of the Core Group are: Fabrice BOISSIER (ANDRA), Paul GIERSZEWSKI (NWMO). Allan HEDIN (SKB), Doug ILETT (UKEA), Hiroyuki UMEKI (JAEA), Abe VAN LUIK (USDOE/WIPP).

### HIGHLIGHTS

- Workshop of Review of Methodologies for Safety Assessment (MeSA) project in May 2010 to address cross-cutting issues amongst all task groups and identify high-level messages.
- IGSC-12 Meeting (Oct. 2010, Paris): Topical session on optimization.
- 20<sup>th</sup> Clay Club Meeting (Sept. 2010) Topical session on “anomalous piezometric heads” in clay formations.
- Summary brochures from AMIGO and EBS project have been published as have been the CLAYTRAC report and the report on Self-Sealing Properties of Clays.



## ACTIVITIES AND ACCOMPLISHMENTS SINCE RWMC-43 (MARCH 2010)

### *Activities and Projects*

- **Meeting of the IGSC-12**

IGSC-12 was held 19-21 October at NEA, Issy-les-Moulineaux, France.

A Topical session was devoted to "Optimisation". It was agreed that this topic will be taken forward in a joint workshop proposed to take place with the Regulators' Forum. A proposal will be developed for discussion with the core groups of the IGSC and the RF.

- **Engineered Barriers Systems (EBS) Project**

The overall EBS project, jointly sponsored by the NEA and the European Commission (EC), was designed to develop greater understanding of how to achieve the necessary integration for the successful design, testing, modelling and performance assessment of EBS for deep underground disposal of radioactive waste. The series of workshops addressed in sequence the various stages of the design and optimisation cycle for EBS.

A brochure has been developed to summarise topics and conclusions of the full series of four EBS workshops, drawing on updated examples from national programmes. The final report was published by EC as a joint NEA-EC report entitled : The Joint EC/NEA Engineered Barrier System Project : Synthesis Report (EBSSYN) (2010 - EUR 24232).

- **AMIGO Project**

The AMIGO project (Approaches and Methods for Integrating Geologic Information in the Safety Case) is a series of workshops focused on collection and integration of geologic information (e.g., geophysical, hydrogeological, geochemical, structural) into PA models and the overall Safety Case. The AMIGO project was launched to better understand the state-of-the-art in collecting and integrating all types of geologic information in the safety case.

The 3rd AMIGO workshop (and last in the series) took place in 2008 in Nancy, France. A brochure entitled "Geoscientific Information in the Radioactive Waste Management Safety Case" was published in 2010 (NEA 6395). It summarises the key messages and lessons learnt over the entire AMIGO project, including all three workshops and the questionnaire results.

- **IGSC Cross-cutting Issues: Workshop on Cementitious Materials**

An ad-hoc series of technical workshops on the theme of such "cross-cutting issues" was approved as follow-on to the IGSC projects on EBS and geoscience (AMIGO and geosphere stability) and as a natural extension in terms of integrating their outcomes.

A workshop – entitled "Cementitious Materials in Safety Cases for Geological Repositories for Radioactive Waste: Roles, Evolution and Interactions" – was hosted by ONDRAF/NIRAS from 17-19 November 2009 in Brussels, Belgium. A technical visit to the Mol facility was also provided. The workshop focussed on the interactions of cement with EBS, other repository components, and the geosphere. It also examined the integration and treatment of all this information in safety cases and, ultimately, the implications for safety. The proceedings including a synthesis are now ready for publication.

- **Review of Methodologies for Safety Assessment (MeSA)**

Since 1991, when the last significant NEA document on the topic of safety assessment methods brochure, "Radioactive Waste Disposal: Review of Safety Assessment Methods" had been published, the context and application of safety assessment have evolved considerably – notably with the development of the broader "safety case" concept and with the further development (and, in some

cases, peer review) of national safety cases. Although specific aspects of safety assessment have been addressed in international projects, it has been found timely to conduct a comprehensive review of progress over the last decades and a new project was started by IGSC in 2008.

The first phase of the project was a desk study in 2008-2009, with participation from more than 20 organisations in 11 member countries, took the form of a series of “issue papers” (not intended for publication) addressing key aspects of safety assessment: relationship to the safety case, safety assessment flow chart, site description and scenario development, modelling, safety and performance indicators, treatment of uncertainties, and regulatory issues.

A second phase of the MeSA project concentrating on the evolutions in methods for safety assessment, was carried out in 2010. It included:

- further work on the key issues, with special attention to safety and performance indicators;
  - a workshop in May 2010, to address cross-cutting issues and identify high-level messages pre-drafting of a state-of-the-art report on safety assessment methods;
  - in depth discussions at the IGSC-12 meeting in October 2010.
- **Clay Club**

The Clay Club held two meetings in 2010. The first meeting took place in Nantes on April 2010 to plan further activities. It was scheduled in accordance with the 4th International Conference on Clays in Natural and Engineered Barriers for Radioactive Waste Confinement. The second meeting, commemorating also the 20th anniversary of the Clay Club, took place September 2010 in Toronto.

At the ClayClub-20, a special session was organized to share knowledge on anomalous piezometric heads in sedimentary formations and to define key issues in the annual workshop (21-23 September in Toronto, Canada). In discussing the presentations of the Topical Session the Clay Club noted that anomalous pressures are commonly observed in sedimentary environments and that multi-disciplinary studies (e.g. THMC coupling) and improvement of measurement techniques (e.g. anomalous pressure in low permeability) are needed to further investigate this scientific question and incorporate the results into site investigation strategy. Although the role of anomalous pressures in the safety case was not discussed within the Clay Club at this stage, the Clay Club noted that anomalous heads constitute an interesting topic and follow-up on this topic in the context of the safety case would be expected within the next years.

The “Self Sealing” report was published in 2010 and the electronic version is available on the NEA website (NEA 6184).

The mandate of the Clay Club [NEA/RWM/CLAYCLUB(2010)3/PROV] was updated and extended through to December 2013. The ClayClub-20 meeting decided on a financial mechanism to support future Clay Club projects.

- **Sorption Project**

The Phase III for the Sorption Project has been underway since November 2007, with 12 participating organisations, to produce a Guideline Document which addresses thermodynamic sorption model development and the use of such models building a safety case. Since 2008 a Technical Direction Team has been contracted to undertake the main drafting task, together with the appointment of other experts to provide specific inputs and to undertake review tasks.

Accommodating input from a joint TDB and Sorption project symposium held on 17 - 19 May 2010, in Karlsruhe, Germany, a final draft report has been prepared that was approved by the member of the Sorption management board as well as by the sponsoring organisations. The final report is expected to be published in 2011.

- **TDB Project**

A new phase – Phase IV – entered into force in 2008, comprising a continuation and extension of the Iron review, a review of thermodynamics of species and compounds of Molybdenum, and a revision of the auxiliary data. These three reviews have all been started. The Iron and Tin reviews from Phase III of the TDB project are being peer-reviewed and will be published in 2011.

### ***Knowledge Consolidation and Transfer***

- **Publications and Documents**

- Geoscientific Information in the Radioactive Waste Management Safety Case - Main Messages from the AMIGO Project; NEA#06395, ISBN: 978-92-64-99138-5, available online
- Rôle des informations géoscientifiques dans le dossier de sûreté pour la gestion des déchets radioactifs - Principales conclusions du Projet AMIGO ; NEA#06396, ISBN: 978-92-64-99139-2, available online
- The Joint EC/NEA Engineered Barrier System Project : Synthesis Report (EBSSYN) (2010 - EUR 24232).
- Self-sealing of Fractures in Argillaceous Formations in the Context of Geological Disposal of Radioactive Waste - Review and Synthesis; NEA#06184, ISBN: 978-92-64-99095-1; available online.

### ***Outreach, Presentation and Stocktaking***

- IGSC “identity flyer” on the IGSC mission, membership and activities.
- A final draft for the IGSC ‘Fact Sheet on the Safety Case’ was approved for publication by the IGSC (after a final review by the Core Group). The fact sheet explains the concept and major elements of a safety case.
- A survey was conducted in 2009 to review how IGSC members utilise information on the NEA web site, and to establish priorities for updates and improvements to the IGSC web pages.
- Co-sponsorship and participation of Clay Club in general scientific meetings and conferences— which was continued with the “4<sup>th</sup> Conference on Clays in Natural and Engineered Barriers for Radioactive Waste Confinement” -- to foster knowledge transfer from related disciplines and other industrial applications.
- IGSC contributions to the reversibility and retrievability project as well as input on emerging issues for the RWMC-RF (especially regarding very long timescales).
- IGSC participation in the NEA Nuclear Science Committee’s Expert Group on Assay Data of Spent Fuel, in order to ensure that radionuclides of interest for waste disposal can be considered for inclusion in future databases and testing programmes.
- Information sharing (including national programme data, with permission) and coordination with EC PAMINA project, which examines and documents methodological aspects of safety cases, with a focus on uncertainty management.

## **MAJOR AREAS OF ACTIVITY FORESEEN IN 2011 – 2012**

### ***Activities and Projects***

- **Review of Methods of Safety Assessment (MeSA)**

The MeSA project will take stock of progress made in the field of safety assessment methodology since the early 1990’s and publish its final report.

- **Update of the Safety Case brochure**

It was agreed within the MeSA project that it is difficult to draw a clear dividing line between safety assessment and the safety case – and in fact, that it is not necessarily useful to make a sharp delineation. The MeSA project has highlighted that the existing definitions of the safety case merit clarification in order to (a) re-establish the central role of safety assessment in the safety case, and (b) reflect some recent advances in approaches and methods in safety cases.

Given these findings, the IGSC approved to update the safety case brochure. A draft should be provided to IGSC-13.

- **Update to the FEPs Database**

In 2000, OECD/NEA published a database on “Features, Events and Processes (FEPs) for Geologic Disposal of Radioactive Waste” that has been utilised and referred to in several national safety assessments. There also exists an updated version (NEA 2006) which, beside of some modifications of the database and software itself, contains additional project-specific databases. Another NEA product related to FEP databases is the FEPCAT, a catalogue of FEPs developed by the Clay Club for argillaceous media. Recent work, e.g. in the frame of the INTESC (the International Experiences in Safety Cases for Geological Repositories) project (NEA 2009), indicates an evolving but perhaps also decreasing role of FEP databases in the sense that they become mainly a tool for checking completeness in a system (and scenario) description that has been derived earlier or using other methods.

The IGSC decided to form an ad-hoc task group to prepare a formal proposal for decision whether IGSC should develop further the NEA FEP database.

- **Scenarios**

Scenario development methods considerably evolved in national programmes since a workshop on this topic held in 1999. These developments include a tendency towards a more prominent role of safety functions, in some cases accompanied by tools such as safety function indicators supporting scenario development.

Since it is a role of the IGSC to better and more systematically structure and foster exchange of information and experiences on such subjects, there is a need for an IGSC project on scenario development. The main objective of the project would be to review the tools and methods used, identify commonalities and contribute to their transferability.

A MeSA ad hoc task group will prepare a proposal for consideration at the IGSC-13, for a scenario development workshop to be held in 2012 or 2013.

- **Indicators for Safety Assessment**

Within the NEA MeSA project the current status about the use of indicators in safety assessment was compiled using existing information from national and international projects and information available from previous NEA questionnaires, particularly from the International Experiences in Safety Cases for Geological Repositories (INTESC), the Long-Term Safety Criteria (LTSC) and the Timescales initiative. It became clear that there exists a strong diversity of terminology, definitions and characteristics of indicators used. In order to better understand these diversities, a review was performed during the MeSA project on the use of indicators by organisations from different member countries of OECD/NEA.

Based on a re-evaluation of the reports and detailed information from MeSA, a comprehensive list with indicators and reference values will be compiled and a status report on the use of indicators in safety assessment developed to clarify the diversity of terminology, definitions and characteristics of

indicators used, provide support for further development in the area and promote mutual understanding.

- **Gas Migration and FORGE /MoDeRn Participation**

The topic of gas migration was considered of high priority by the technical community represented in the IGSC will organise a Topical Session at IGSC-13 in 2011.

- **Preparing for the construction licence of a deep geological repository (workshop)**

A joint IGSC-RF workshop on “Preparing for the construction licence of a deep geological repository : Challenges and good practices” is foreseen in January 2012.

- **Enlarged Status Report on R&D**

The IGSC will address the achievements and further needs for R&D for implementing geological disposal. The work will use a Nirex and a EC report. The current related work under the EC Technological Platform will be taken into account.

- **Safety Case Symposium**

It is planned to organise a new edition of a Safety Case symposium, probably in 2013.

- **Organisational Issues In Safety Cases**

A proposal will be developed regarding further work on the topic of “organisational issues in safety cases.” Key issues and challenges will be further defined and the timeframes and mechanisms for future work will be recommended. Links will be made also with a proposed study (in 2011 or beyond) on factors that contribute to achieving confidence in safety cases.

- **Clay Club Workshop**

The Clay Club is organising a workshop on emerging technologies and methods for observation of clays at the microscopic level to be held in Karlsruhe, Germany, on 6-8 September 2011.

- **The 13th Meeting of the IGSC planned for week of 18 October 2010.**

### ***Knowledge Consolidation and Transfer***

- **Publications Expected**

- Proceedings of the workshop on Cementitious Materials in Safety Cases for Geological Repositories.
- Update the 2004 brochure on the safety case.
- Report on safety indicators.
- Enlarge status report on R&D
- State-of-the-art report on safety assessment methods.

### ***Outreach, presentation and stocktaking***

- The safety case flyer will serve as the model for an on-going series of flyers. Flyers under development and topics under consideration are (a) Geosphere stability in crystalline rocks; (b) Engineered barrier systems (EBS); the concept and evolution of the safety case, taking account of the international symposium and INTESC; and the outcomes and conclusions of the workshops on geosphere stability in crystalline rock and AMIGO-3.
- Continue participation in EG on Assay Data of SF.

- Participate in, and support (as needed), RWMC project on reversibility and retrievability, 2nd RWMC-RF workshop, other RWMC-RF initiatives (i.e., on very long timescales).
- Coordination with the EC on FORGE (gas migration) and MoDeRN (monitoring technology) projects. Evaluate possibility for co-organised workshops and international conferences in the 2010-2012 timeframe.
- Publication in technical journals of papers by Clay Club addressing Fault Zones and CLAYTRAC
- Publication of the CLAYTRAC project results in open scientific (i.e., peer-reviewed) literature.
- Publication of proceedings of 4th International Conference on Clays in Natural and Engineered Barriers for Radioactive Waste Confinement in Physics and Chemistry of the Earth

## **WORKING PARTY ON MANAGEMENT OF MATERIALS FROM DECOMMISSIONING AND DISMANTLING (WPDD)**

### **INTRODUCTION**

The WPDD serves as the main technical advisory body to the RWMC on decommissioning of nuclear facilities. The focus of its work is on methodologies and strategies for the analysis of decommissioning policy, strategy and regulation, including the related issues of management of materials, release of buildings and sites from regulatory control and associated cost estimation and funding. Beyond policy and strategy considerations, the WPDD also reviews practical considerations for implementation such as techniques for characterisation of materials, for decontamination and for dismantling.

The NEA Co-operative Programme for the Exchange of Scientific and Technical Information Concerning Nuclear Installation Decommissioning Projects (CPD) is a joint undertaking under Article 5 of the NEA Statute working under its own Agreement which ensures confidentiality of the information exchanged. The current 5-year Agreement expires end of December 2013.

### **Reference Documents**

WPDD Mandate

NEA/RWM/WPDD(2010)9

CPD Agreement: 01 January 2009. In force until 2013). Its term may be extended thereafter for such further periods of time as are agreed, in writing, by the Participants. (not an OLIS document)

### **Core Group Members**

WPDD chairperson is Ivo TRIPPUTI (SOGIN, Italy). Members of the Core Group are: Jean-Guy NOKHAMZON (CEA, France), Michel DUTZER (ANDRA, France), Doug METCALFE (NRC, Canada), Gérard LAURENT (EDF, France), Jan CARLSSON (SKB, Sweden), Henrik EFRAIMSSON (SSM, Sweden), Rateb ABU-EID (US-NRC, USA) and Juan Luis SANTIAGO (ENRESA, Spain).

### **CPD Management Board**

CPD chairperson is Jean-Guy NOKHAMZON (CEA, France).

### **HIGHLIGHTS**

- The mandate of the WPDD has been extended until 2013
- The WPDD-11 Annual Meeting was held in Washington, D.C., hosted by USDOE, and comprised a special session on the US Decommissioning Scene and a topical session on “R&D and Innovation Needs for Decommissioning”; following the meeting a site visit to DOE’s Savannah River Site was offered.
- Reports on Lessons Learnt from Decommissioning, Applying Decommissioning Experience to New Build and on Decommissioning Cost Estimation have been published.

- The DCEG held its 3<sup>rd</sup> plenary meeting in Paris, on 3<sup>rd</sup> of June including a topical session on “Cost Control on Decommissioning Projects” and a site visit to CEA research facilities at Fontenay-aux-Roses.
- Three new projects have joined the CPD programme: the European Commission’s Joint Research Center Ispra (ISPRA) (*EC*), the United States Department of Energy, Office of Environmental Management (DOE-EM) (*United States*) and Chubu Electric Power Company (*Japan*).

## ACTIVITIES AND ACCOMPLISHMENTS SINCE RWMC-43 (MARCH 2010)

### *Activities and Projects*

- **Meeting of the WPDD**

The WPDD held its 11<sup>th</sup> meeting in November 2010 in Washington, DC. The group took advantage of the meeting being hosted by the US DOE and organised a special session on the US decommissioning scene, covering both commercial and legacy sites. Practical aspects were highlighted at a site visit to DOE’s Savannah River Site.

- **Standardised List of Items for Costing Purposes (“The Yellow Book”)**

A project to provide an update to the NEA document Nuclear Decommissioning: A Proposed Standardised List of Items for Costing Purposes (“The Yellow Book”), began in 2009. The project is a collaborative effort between the NEA, the IAEA and the European Commission (DG-ENER). The deliverable from the project will present an updated version of the standardised cost structure first published in 1999 and will include an associated Users’ Manual which gives general guidance on developing a cost estimate for decommissioning a nuclear facility and, in particular, on using the standardised cost structure. It is intended that the cost structure laid out in the new “Yellow Book” (the “International Structure for Decommissioning Costing (ISDC)”) will lend itself to greater harmonisation of cost reporting, and will facilitate easier comparison and better understanding of different cost estimates. A final draft consolidated report of “ISDC” has been prepared for approval by WPDD Core Group in June 2011.

- **Lessons Learned from Decommissioning Projects**

The report from this study provides a synthesis on current practice in applying lessons from decommissioning to the design and operation of new reactor systems. It notes that several advances being made for reasons of extended plant lifetime, greater safety, improved maintenance provisions, lower waste production and reduced doses to the workforce would also be beneficial for decommissioning. The project took account of inputs from regulatory authorities, electrical utilities, decommissioners and waste management organisations. In addition the NEA report, a short policy report on the same issue was developed in collaboration with the IAEA, which took account also of the results of a parallel IAEA study on design lessons from decommissioning.

- **Information on D&D Activities Internationally**

To facilitate information exchange amongst professionals, an updated version of the Map of International Activities on Decommissioning and Dismantling has been published. This document is being maintained as an information reference on ongoing international activities addressing decommissioning issues. The 2010 updated version has been finalized and released.



- **The NEA Co-operative Programme for the Exchange of Scientific and Technical Information Concerning Nuclear Installation Decommissioning Projects (CPD)**

In 2010 three new projects joined the programme: (a) the EC Joint Research Centre, ISPRA (Legacy Waste Retrieval); (b) US DOE-EM (Portsmouth GDP); and (c) the Chubu Electric Power Company (Hamaoka 1&2 NPP). The Technical Advisory Group (TAG), through which the programme's technical and scientific exchanges take place, met twice during 2010: at Barsebäck (Sweden) and at Marcoule (France). Meetings in 2011 are scheduled to take place in Italy (SOGIN) and in Germany (KIT).

The work of the two current task groups of the TAG has continued during 2010:

- Task Group on Decontamination and Dismantling of Concrete Structures – a final report has been completed and forwarded to RWMC/WPDD to consider its publication as NEA report.
- Task Group on Remote Handling Techniques – the work has been finalized and a report will be forwarded to the RWMC/WPDD to consider its publication as NEA report.

In addition, a CPD 25 year report had been drafted by the CPD and was forwarded to the RWMC/WPDD to consider its publication as NEA report.

### ***Knowledge Consolidation and Transfer***

- **Publications and Documents**

- Decommissioning Considerations for New Nuclear Power Plants - English, 16 pages, published: 06/07/10; NEA#06833, ISBN: 978-92-64-99132-3, available online
- Applying Decommissioning Experience to the Design and Operation of New Nuclear Power Plants - English, 56 pages, published: 04/21/10; NEA#06924, ISBN: 978-92-64-99118-7, available online
- Intégration du retour d'expérience du démantèlement à la conception et l'exploitation des futures centrales nucléaires ; NEA#06946, ISBN: 978-92-64-99130-9, available online
- Cost Estimation for Decommissioning - An International Overview of Cost Elements, Estimation Practices and Reporting Requirements; NEA#06831, ISBN: 978-92-64-99133-0, available online
- Towards Greater Harmonisation of Decommissioning Cost Estimates - English, 16 pages, published: 03/22/10; NEA#06867, ISBN: 978-92-64-99093-7, available online
- Vers une harmonisation des estimations des coûts du déclassement ; NEA#06868, ISBN: 978-92-64-99094-4, available online
- A Map of International Activities on Decommissioning and Dismantling; NEA/RWM/WPDD(2010)10; OECD, Paris, 2010 [unclassified]

### ***Outreach, Presentation and Stocktaking***

- Démantèlement des installations nucléaires (brochure) - C'est possible et cela a été fait ; NEA#06830, available online
- Stilllegung kerntechnischer Anlagen (decommissioning brochure) - Machbar und gemacht.; NEA#06922, available online
- Il Decommissioning degli Impianti Nucleari - Si può, ed é stato fatto; NEA#06955, available online
- Avveckling av kärntekniska anläggningar (Swedish version of Decommissioning of Nuclear Facilities), NEA#06983
- Article “Decontamination and dismantling of radioactive concrete structures”; NEA News, 2010 Volume 28, No. 2

## MAJOR AREAS OF ACTIVITY FORESEEN IN 2011 – 2012

### *Activities and Projects*

- **Management of Large Components from Decommissioning,**

A Task Group on management of large Components (MLC) from Decommissioning, including decision logic on selection of management strategy, was established in November 2009. This group will produce a guidance document that sets out the factors relevant to the decision about whether large components should be segmented into smaller pieces and then packaged in standard waste packages for storage and ultimate disposal, or whether the component should be removed from a decommissioning site as one or more large components and then retained in that form for storage and eventual disposal or recycling. The report will also address the regulatory approval process and public acceptance issues. A 90-page report has been produced, presented at WPDD-11 and has gained preliminary agreement for publication. It will be forwarded to the Core Group to gain final approval. The study findings will be presented to RWMC-44.

- **Trends in R&D for Decommissioning**

A Task Group on R&D Needs for Decommissioning was established following the WPDD annual meeting in November 2009. This group is undertaking a study aimed at defining the elements of a decommissioning project which have the greatest potential for future improvement through R&D and/or innovation and to outline associated R&D projects which should be considered for future funding by governments or by the decommissioning industry. A topical session was held at WPDD-11 meeting in Washington DC. The group's work progressed producing basic elements of the final study.

- **Radiological characterization and decommissioning**

A proposal has been prepared for a study on Radiological Characterization and Decommissioning (RCD). The work was initiated in 2010 and a project lay out has been produced by a scoping group. A formal task group will be established by the WPDD to perform the study. It will organise a topical session at WPPD-12. Synergies with the R&D Task Group will be sought.

- **The NEA Co-operative Programme for the Exchange of Scientific and Technical Information Concerning Nuclear Installation Decommissioning Projects (CPD)**

Meetings of the Technical Advisory Group (TAG), through which the programme's technical and scientific exchanges take place, are scheduled to take place in 2011 in Italy (SOGIN) and in Germany (KIT).

- **WPDD-12**

The 12th annual meeting of the WPDD will take place in Paris on 15-17 November. It has been suggested to use one day of the meeting to commemorate the WPDD's 10th anniversary by organising a special session open to WPDD stakeholders. The topic of strategies on site characterisation during the plant lifetime has been proposed for this session.

- **ICEM-2011**

The 14<sup>th</sup> International Conference on Environmental Remediation and Radioactive Waste Management (ICEM-2011) will take place in Reims on 25-29 September. A special session is scheduled on lessons learned from 25 years of decommissioning work at the OECD/NEA.

***Knowledge Consolidation and Transfer***

• **Publications Expected**

- Decontamination and Dismantling of Concrete Structures – a technical report prepared by the CPD
- Remote Handling Techniques – a technical report prepared by the CPD
- International Structure for Decommissioning Costing- a technical report prepared by the WPDD

***Outreach, presentation and stocktaking***

- 25 Years Information Exchange under the CPD Agreement - a Progress Report.