R&R project status report following the Toronto meeting of October 2008

Reversibility & Retrievability Project

8-10 October, 2008
REVERSIBILITY AND RETRIEVABILITY PROJECT

Draft Status Report following the
R&R Project meeting
Toronto, Canada
8-10 October, 2008
C. Pescatore, with the assistance of the Core Group

Project Overview

• R&R project agreed at RWMC-40 (March 2007)
  – Main goal: to raise awareness of the issues around R&R
  – Particular focus on policy and regulatory issues

• Proposed timeline: new NEA document(s) in 2011, preceded by a conference in France in late 2010
Topical Session at RWMC-41 (March 2008)

- Presentations from Canada, France, Germany, Sweden and USA on responses to draft guidelines/questionnaire
- Discussion focused on drivers, scope, communications and decision making
- RWMC agreement to start a Project, with method of funding and structure, and to proceed with a revised questionnaire.
- 1st Working Group meeting Fall 2008 in Toronto to prepare for a report at RWMC-42 in 2009

Questionnaire and Guidelines

- Revised questionnaire was distributed to RWMC members on 23 May 2008

- Responses received from 13 countries:
  - Austria, Belgium, Canada, Czech Republic, Finland, France, Germany, Hungary, Japan, Korea, Switzerland, the UK and the USA.

- Response expected from Spain.
Toronto meeting

- Participation from 10 countries, IGSC and FSC
- Organized in a way to give everyone an active role
- Sessions organized around the questionnaire
- Each session discussed the questionnaire responses, with a view
  (a) to start work on the first progress report
  (b) to decide on main issues and directions of work

Toronto meeting: R&R “Scale”

- A proposal was presented by Andra to continue work on an R&R “Scale” within the project
- It was agreed to pursue the question within the framework of the R&R project
Session – Historical Development (1)

- A variety of historical paths are evident in the responses
- Programmes that have not yet reached the stage of in-depth public debate on geological disposal have not yet encountered R&R questions (e.g., Belgium, Japan, Czech R., ...)
- Programmes in which reversibility and/or retrievability are legal, worked-out requirements one way (USA, Switzerland) or another (Sweden, Finland) do not regard them as major implementation issues
- Some programmes that are still undergoing public debate are wrestling with R&R issues (e.g. France, Canada)

Session – Historical Development (2)

- In countries where retrievability or reversibility is a policy requirement, this has typically arisen through political will and/or societal dialogue.
- Access to resources and performance confirmation are economic and technical motivations. Societal motivations include lack of familiarity and discomfort with absence of active control, accessibility and repressability.
- Issues involving the meaning of safety, ethical questions, financing and transfer of information to future generations are typically also involved.
Session – Terminology

• “Retrievability” is fairly widely used, generally as defined in NEA-3140
• Often applied only pre-closure, sometimes post-closure
• “Reversibility” is less widely used, sometimes with reference to decision making
• Other terms such as flexibility and adaptability are also used for decision making
• Agreement not to lump R&R together indiscriminately. They are distinct ideas. Need to agree to definition for the project purposes.

Session – Terminology

• Guidance from Project’s questionnaire:
  – Reversibility, refers to the ability to reverse decisions or processes;
  – Retrievability, refers the ability to retrieve entire waste packages;
  – Recoverability, refers the ability to recover emplaced materials.
Session – Policy

- No compromises on safety, both long- and short-term
- To the extent that design and implementation are modular, adaptable and step-by-step, reversibility is good engineering practice
- Retrievability adds to the complexity of the repository design.
- Retrievability requirements are harder to implement as add-ons to pre-existing designs
- There are varied views on whether retrievability should be incorporated into design even when it is not a requirement

Session – Stakeholder Communications

- It is important to avoid raising false expectations through imprecise communications; this is difficult.
- Different understandings of terminology between the technical and non-technical communities leads to confusion.
- Terms need to be simple and easy to understand.
- Stepwise decision making, allowing for reversibility and adaptability, is a means to increase familiarity and trust. It is also a means to optimize the system from both a technical and societal viewpoint.
Session – Stepwise Decision Making

- There are clear links between reversibility of processes and stepwise decision making, although the two concepts are not identical.
- Few if any countries have detailed processes in place for either.
- It is not possible to predict the path of a stepwise or adaptive process too far in advance, so it is reasonable not to have processes that are highly detailed – but the principles to be applied should be clear from the outset.
- A need was expressed to review the FSC work on stepwise decision making, and follow-up on it especially as it relates to reversibility.

Session – Regulatory Implementation

- Very few countries have regulatory requirements related to R&R other than requirements to verify compliance with legal obligations re R&R.
- Designs must meet safety requirements regardless of retrievability.
- The relationship between retrievability and operational safety has not yet been investigated.
  - May R&R requirements contribute to operational safety? May operational safety not include requirements that favour R&R?
Session – Monitoring

- There are differences between monitoring for purposes of performance confirmation for designers vs. post-closure monitoring to detect problems.
- Technical and non-technical communities have differing views and expectations.
- It is unlikely that a repository would be left unmonitored as long as regulators exist.
- More research and development on monitoring is likely to be necessary to support continued controls.
- The type and intensity of monitoring will also depend on the repository design.

Session – Practical Issues

- There are differences in host geology – in some host rocks, keeping a repository open beyond a period of several decades may not be feasible. It is not clear, however, whether this statement is supported by engineering studies.
- Financial issues:
  - There is general agreement that current generations should finance design, with or without design features to promote retrievability or reversibility.
  - Financing for actual retrieval (Who? Why? How?) is an open question.
Session: R&R “Scale”

- The concept needs to be tailored to its purpose and audience
- A simpler, more-easily understood scale, with fewer steps, is more likely to be useful
- Main attributes of interest appear to be, in the order:
  - stages in repository development;
  - stages in the approach to passive safety
  - ease of retrieval;

Session: The Way Forward (1)

- A major outcome of this meeting is to be a report to the RWMC in March on the findings of the working group and plans for future work
- Report is now being written based on the responses to the questionnaire and discussions both during and after the October meeting
- Recommendations to the RWMC and other groups are desirable.
Session: The Way Forward (2)

- Next WG meeting tentatively planned for 2-4 June 2009 in Paris
- Topics to be discussed could include:
  - terminology
  - decision-making processes
  - the role of monitoring
  - limitations on retrievability or reversibility
  - the relationship between retrievability or reversibility and operational safety (nuclear and non-nuclear)
- This meeting would also begin planning for the proposed conference in late 2010

Session: The Way Forward (3)

- Three tasks before the next WG meeting:
  - R&R scale proposal (task group: France, Belgium, UK)
  - review of NEA-3140 vis-à-vis questionnaire responses (all WG members)
  - possibly a review of the role of R&R in advanced programmes (e.g. Sweden, Finland where R&R appear to be less important now than in the past)
Session: The Way Forward (4)

- The schedule of the various tasks is as follows:
  - Draft report to be sent to IGSC and FSC Core Groups by mid-January
  - Revised draft to be distributed to RWMC members by mid-February
  - Task group on scale to complete its work by mid-April
  - WG member reviews of NEA-3140 to be done between mid-February and mid-April
  - Other tasks in preparation for June meeting to be started after mid-February

Forseeable Interactions

- Interaction with FSC on decision-making processes will be helpful
- Interaction with IGSC is likely to increase at a later stage, when the scale proposal is more developed and as technical issues are raised in other discussions
- Broader audiences (e.g. stakeholder representatives, ethicists, policy specialists) will need to be involved in later phases