TM-47040

Second Technical Meeting of the International Project on Human Intrusion in the Context of Disposal of Radioactive Waste (HIDRA)

- Close Out -

5 December 2014

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Topics

- Plans to complete documents and recommendations
- Terminology
- Key Messages
- Summary of Recommendations for WASSC/RASSC
- Proposal for Future Project and Path Forward for Table of Examples

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Plans for Completion

- Short list of ideas for future project by end of January 2015
- Input for individual chapters completed by end of February 2015 (including WG review)
- Text for recommendations to WASSC submitted to participants for review by end of February 2015
- Leads will consolidate inputs and circulate complete draft of report to all participants by end of June 2015
- Final recommendations to WASSC by end of May 2015
- Compile input for brochure and distribute to participants for review with document
- Feedback from participants on draft by end of September
- Final editing and completion of the document (?)
- Participants are encouraged to continue to submit examples (summary table being prepared)

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Differences

	Operations	Closure	Surveillance Security	No Surveillance or Or Security	
				Memory	No memory
IAEA	Active No Inadv. Intrusion	Active No Inadv. Intrusion	Active No Inadv. Intrusion	Passive Possible Inadv. Intrusion	None Intrusion Assumed
ICRP	Direct No Inadv. Intrusion	Indirect No Inadv. Intrusion	Indirect No Inadv. Intrusion	Indirect No Inadv. Intrusion	None Intrusion Assumed

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Terminology

- Recommended Classes of Stylized Scenarios? – How to describe?
- Likelihood, Possibility, Chance, Potential for, Probability???
- Active/Direct, Passive/In-Direct, Institutional Controls/Oversight

Conclusions/Messages

- HI Unique to Radioactive Waste – Robustness (isolate and contain is good..) – Cautiousness…
- Seek measures to reduce Potential for and Consequences of Intrusion
- Inherent benefit of geologic disposal vs near surface
- Differences in use of optimization for near surface (WAC) and geologic disposal (robustness)
- Interpretation of Results (“not yes or no”, design support, WAC, etc.)
- Optimization and role in decision making for Safety Case – iterative approach over the lifecycle (link with protective measures)
- Recommended Representative Scenarios for development of stylized scenarios to address ICRP, IAEA, NEA

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Conclusions/Messages

- Examples of Protective Measures – identify effective measures
- Importance of Effective Communication (Comm. Strategy) early and throughout lifecycle and involvement interested parties – purpose and cautious assumptions (tie to first bullet)
- Proper context for Uncertainty in Human Actions (potential, location, timing, effectiveness of barriers…)
- Knowledge is best kept with active engagement with local community – it is in their interest to maintain knowledge

Potential Recommendations to WASSC

- Add emphasis on role of communication for HI and positive use for robustness (design, operations) and protective measures that are taken to reduce potential for and consequences of intrusion – provide context for measures that are taken for the member of the public

- Take account of HI related recommendations from ICRP 122 when considering update to Safety Standards
  - Reduce potential for and consequences of HI
  - oversight concept

- Effectiveness of passive controls (uncertainty in timing), terminology (e.g., institutional control)…

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Potential Recommendations to WASSC

- Remove “speculative” when discussing human intrusion (SSG-23) or clarify or caution that “speculative” scenarios should be avoided – place more emphasis on stylized… check whether contradictory with existing regulations

- Protective measures, defense-in-depth

Potential Topics for Follow-on Project

- Practical examples of Implementation/Application (PRISMA for near surface and country for geologic disposal) – consequence analysis
- Application of Optimisation (HI or more broad standalone project)
- Review/use country examples (summary table, potential use for example application)
- Highlight differences between geologic and near-surface
- Decision making – Interpretation of results (e.g., WAC)
- Timing of loss of passive control/memory
- Natural resources
- Future Human Actions (effects on groundwater flow)

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Path Forward for Table of Examples

- Include Table in this report ?
- Develop Standard Format (IAEA)
- Need help to populate table (volunteer?)
- National Examples in the HIDRA working folder

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Closing Remarks

- We have successfully addressed the primary objectives that were identified in the project plan
- Key result was creation of a forum for the sharing of information and experiences
- Encourage participants to continue to communicate regarding human intrusion (everyone faces similar challenges)

Thank You

- Thank you to all the participants for the active and open sharing of ideas and concerns in the Plenary Sessions and contributions for report
- Thank you to the Working Group leads, your leadership has been critical for development of the document
- Thank you to Lucy, Yumiko and the IAEA

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- Paragraph 1.22(iii), "*After its closure, the safety of the disposal facility is provided for by means of passive features inherent in the characteristics of the site and the facility and the characteristics of the waste packages, together with certain institutional controls, particularly for near surface facilities. Such institutional controls are put in place to prevent intrusion into facilities and to confirm that the disposal system is performing as expected by means of monitoring and surveillance*."

IAEA SSG-29

- "*As active means can be relied upon only for a limited period (up to a few hundred years), the possibility of human intrusion into the facility after such a period should be considered when assessing the safety of a near surface disposal facility*."
- "*The use of passive measures, such as conservation of information in the form of markers and archives, including international archives, will reduce the risk of human intrusion over a longer period than is foreseen for active institutional controls, and should be considered*."

ICRP 122

- "*Three main time frames have to be considered: time of direct oversight, when the disposal facility is being operated and is under active supervision; time of indirect oversight, when the disposal facility is partly or fully sealed where indirect regulatory, administrative or societal oversight might continue; and time of no oversight, when the memory of the disposal facility has been lost.*"

- *"Inadvertent human intrusion into the geological disposal facility is not a relevant scenario during the period of direct or indirect oversight."*

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