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To: ESTOutreach Resource
Cc: Jim Williams
Subject: Attn: Chrisitan Jacobs
Attachments: 06-29-12 HLW Comments to NRC.pdf

Sent on behalf of Jim Williams and Ken Niles.

RE: Identification and Prioritization of the Technical Information Needs Affecting Potential Regulation of Extended Storage and Transportation of Spent Nuclear Fuel", May 2012.

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June 29, 2012

U.S. Nuclear Regulatory Commission
Washington, D.C. 2055-0001
ESTOutreach@nrc.gov (Christian Jacobs)

Identification and Prioritization of the Technical Information Needs Affecting Potential Regulation of Extended Storage and Transportation of Spent Nuclear Fuel

The Western Interstate Energy Board's High-Level Radioactive Waste Committee¹ greatly appreciates the opportunity to submit comments on NRC's Draft Report for Comment, "Identification and Prioritization of the Technical Information Needs Affecting Potential Regulation of Extended Storage and Transportation of Spent Nuclear Fuel", May 2012.

1. The Component-Phenomena Framework. We find the component-phenomena framework developed for review of findings regarding the level of knowledge, the regulatory significance, and prioritized regulatory research areas (sections 3-6) very useful and helpful in understanding the NRC Extended Storage-Transportation program.

2. The Evaluation of Technical Information. We also find the evaluation of technical information needs (Appendix A) very useful as a basis for understanding the degradation phenomena, and the gaps in assessments to date. We continue to recommend NRC sponsorship of an in-person seminar with selected state officials to develop and broaden state government understanding of EST issues. The May 2012 Draft Report for Comment would provide a good text for such a seminar.

¹ The WIEB High-Level Waste Committee consists of gubernatorial appointees from eleven Western states (Arizona, California, Colorado, Idaho, Nebraska, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming).

3. The Lack of Monitoring Capabilities. When contemplating potential changes in NRC regulations to allow extended storage and transport of SNF, the general lack of monitoring capabilities (Table 3-1) seems particularly noteworthy. The implication is that NRC might extend storage and transportation exclusively based on its understanding of the phenomena observed in removal to dry storage, but with little or no actual information about the status of cladding, fuel baskets, neutron absorbers or other components as their condition evolves over subsequent decades.

Yet monitoring is assigned a Level 2 research priority, and the reasoning is not fully developed in Table 6-1. It is not clear whether monitoring of selected phenomena within cask systems involves technology that simply does not exist or technology that is available but seems impractical to develop? We suggest a fuller discussion of the reasons for the current lack of monitoring capability, and the rationale for assigning monitoring a Level 2 research priority.

4. Projection of Damage-Degradation Phenomena. Page A1-1 states, “Many of the degradation phenomena important for fuel and cladding are correlated to the condition of the material prior to loading into dry storage.....These phenomena cannot be monitored in a sealed container....(D)egradation of cladding breaches (on removal to dry storage: JMW) provides information to characterize the state of the fuel and cladding system for future handling.” This circumstance—that SNF is inspected only once, when it is removed to dry storage, and many key phenomena cannot be monitored, before or after—raises several questions that seem fundamental to the EST project:

- How precise is the inspection of SNF when it is removed from pools? Does the information collected at that moment provide a reliable basis for projection of key degradation phenomena 50, 100, 200 years into the future?
- Would the prioritized research program proposed in Section 6 provide the reliable basis for such projection? Even if so, one presumes that its results would not apply to SNF now in dry storage.
- Even with an improved research basis, the application would depend on the scope and accuracy of the data collected when SNF is removed from pools. Do current SNF inspection programs reliably provide this data, or would they need to be substantially enhanced?
- How adequate is current dry transfer technology to address the issues that may be revealed when SNF is removed from dry storage for transport?

5. External Monitoring. Phenomena for which Table 3-1 indicates that monitoring or inspection capability exists appear to involve components external to the storage system. (Most involve concrete overpacks, metallic seals or cask bolts.) We suggest a discussion of the monitoring-inspection methods more detailed than that provided in Table 6-1.

- Do the methods involve occasional visual inspections?

- Is reliable trend data collected?
- Do we understand the implications of such trends for safety in extended storage and subsequent transportation?
- Are there linkages between the external components that can be visually inspected and internal components regarding which we have no current status information?

6. Assumptions. The assumptions listed on pages 2-1 and 2-2 should be accompanied by further discussion, here or elsewhere in the report:

- Why are only UOX and MOX fuels considered? What does this leave out?
- Why are only current methods of storage considered? Is it not possible that EST could require revised storage and/or transportation methods?
- Why is the current burnup limit of 62.5 GWd/MTU appropriate for NRC's EST investigation?
- Why is extended wet storage not considered? Is it established that degradation in wet storage is much less than in dry storage, and/or that the fuel-handling capabilities associated with wet storage will be retained?
- Does the last assumption "bullet" imply that EST focuses on dry cask storage under 10 CFR Part 72, and is assumed to have no implications for subsequent transportation under 10 CFR Part 71? Does the NRC EST inquiry have implications for Part 71 as well as Part 72?

7. Types and Cost of Research. While we recognize that the purpose of this report is to identify research priorities, we would appreciate some discussion of the types of research required, the likely costs, and the expected time required to produce useful results. Would these research priorities be "folded into" a current NRC research program, or they require a new or greatly expanded program? Does the research involve laboratory analysis mainly? Would research on metal fatigue or the propagation of existing cladding flaws (pg. 6-5) reflect the stresses of subsequent transportation as well as in storage?

8. Repackaging of Damaged or Degraded SNF. Page 1-2 says that "damaged or degraded SNF can be safely and securely transported with appropriate repackaging", and notes that such repackaging is guided by current regulations." This raises several questions that may warrant further discussion:

- Once SNF has been removed from a pool and placed in dry storage, can we know (in the absence of monitoring) whether SNF has suffered further damage or degradation?
- Does repackaging of such damaged or degraded fuel require "dry transfer" facilities? Is "dry transfer" proven? Fully available?
- How does dry transfer deal with sealed canisters that may contain damaged or degraded fuel? One assumes that it cannot repackage such fuel in a new sealed canister.
- In sum, is current repackaging technology up to the potential challenges of extended storage/transport?

9. Regulatory Application of EST Information. The report should discuss how NRC intends to apply existing and enhanced knowledge in decisions to grant ISFSI license extensions. Based on information from an inspection when an assembly is removed from wet to dry storage, would NRC systematically assign probabilities to 40 different degradation phenomena and their interactions in order to project the condition of the fuel and cask systems after each decade of dry storage? Or, might the assessment involve a less systematic application of NRC's expert judgment at the time of the license extension request?

10. Research, Yes. Regulatory Basis, No. We appreciate the framework for assessment of EST research priorities, and we agree that the regulatory research areas identified in Table 6-1 should be addressed. However, we believe that the research results must be combined with dramatic improvements in the capability to monitor in-cask degradation phenomena in order to provide a basis for multiple ISFSI license extensions.

Thank you for your consideration. Please call Jim Williams (WIEB, 303-573-8910 x6) if you have questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Ken Niles", with a stylized, cursive script.

Ken Niles
Committee Chair
High-Level Radioactive Waste