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PDR ☒

LPDR _____

Distribution:

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(Return to WM, 623-SS)

Mr. John J. Linehan
Section Leader, Repository Projects
Branch
Division of Waste Management
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Re: Notice of Availability; Draft Generic Technical
Position on Licensing Assessment Methodology for
High-Level Waste Geologic Repositories (49 Fed.
Reg. 32,695)

Dear Mr. Linehan:

These comments are submitted on behalf of the Edison Electric Institute (EEI) and Utility Nuclear Waste Management Group (UNWGM) in response to the above-referenced notice. We have reviewed the Draft Generic Technical Position on Licensing Assessment Methodology for High-Level Waste Geologic Repositories ("Draft GTP" or "Draft") and consider it a very important document.

Licensing of a high-level waste repository is a basically new element of NRC's regulatory activities, many aspects of which have no applicable precedents. The guidance of the type outlined in the Draft GTP is certainly needed. The initiative taken in its publication, and NRC's willingness to receive and respond to comments, is to be commended. It is hoped that this is one of a series of such guidance documents -- to be issued as the program progresses and the licensing process evolves with time.

We do believe, however, that the document could be improved and offer the specific suggestions contained in the enclosed Detailed Comments. In addition, general comments follow regarding the importance of emphasizing the iterative nature of the repository evaluation process; the need to introduce and discuss in the Draft GTP the concept of "reasonable assurance"; and the need for careful application of the methods of probabilistic risk assessment (PRA).

The Draft GTP correctly indicates, in a number of places (e.g., pp. 12, 25 and Figures 2 and 3), the iterative nature of the data collection and performance assessment process. However, the Draft calls for detailed information at early stages in the program before it may be possible to be highly specific. This should be avoided, and a number of the enclosed Detailed Comments address the

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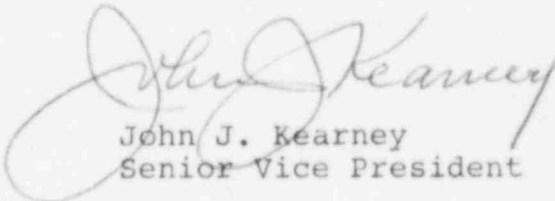
need for revisions to preclude specifying more exact information than is likely to be available at a particular time. We believe that care should be exercised to avoid requiring detailed information in Site Characterization Plans which may not be relevant to the NRC's determination of whether site characterization should be allowed to proceed.

The reasonable assurance standard will be applied by the Commission in its consideration of the DOE repository program. The amount and quality of information necessary to meet the reasonable assurance standard, however, will vary throughout the siting and licensing process. For example, at the construction authorization stage the quantum of proof necessary to meet the standard will be greater than at the point when three sites are selected as candidate sites, but less than at the license-to-receive-and-possess stage. This concept of the reasonable assurance standard -- which can be met by various quanta of proof at various points in time -- should be introduced and explained in the Draft.

We agree that the NRC should seek to apply the methods of PRA to evaluating the various scenarios to be considered in the licensing of a repository and determining which scenarios are truly significant. However, we urge that great care be used in the application of PRA techniques as a requirement in the licensing process. We think that much more needs to be done in the development of PRA techniques for repository licensing, recognizing that PRA's are not yet used formally in the licensing of nuclear reactors -- which are understood in great detail.

We appreciate the opportunity to comment on the Draft GTP. Please let us know if you would like to discuss any of the issues raised in these comments in greater detail.

Sincerely,



John J. Kearney
Senior Vice President

JJK:jhd
Enclosure

EEI/UNWMG DETAILED COMMENTS ON THE DRAFT
GENERIC TECHNICAL POSITION ON LICENSING ASSESSMENT
METHODOLOGY FOR HIGH-LEVEL WASTE GEOLOGIC REPOSITORIES

p. 4 The word "it" should be inserted between the words "that" and "is" in the eleventh line of the full paragraph appearing on the middle of the page.

p. 5 To be more specific, the designation "Subpart E" should be inserted between "Part 60" and "contains" in the first line of the second paragraph of section 1.2.2.1.

p. 6 The fourth and fifth lines on this page imply that §60.111(b) requires, without qualification, "that the option of waste retrieval be preserved during operation." However, the cited section of the regulation actually provides for the establishment of time periods on a case-by-case basis and this is emphasized in Supplementary Information accompanying adoption of the regulation (48 Fed. Reg. 28,197-98). This should be properly noted in the GTP, and could be reflected by dropping the words "during operation."

In addition, the second citation to "§60.112," in the 17th line should be changed to "§60.122."

p. 7 The first sentence of the third full paragraph on the page states:

The NRC staff considers that the proposed EPA Standard requires a formal probabilistic treatment of releases, similar to the probabilistic risk analyses (PRA) used for the analysis of nuclear power plants and other applications, be a part of the decision-making process.

PRA's, however, are not formally required in nuclear plant licensing. Accordingly, the quoted sentence would be more correct if it ended with the word "releases."

Finally, the footnote on the page refers to Working Draft 4 of 40 CFR Part 191, dated April 17, 1984. The current version of Working Draft 4 is dated May 21, 1984.

p. 8 Section 1.2.3, which begins on this page, discusses only the formal ASLB hearing process. The NRC

staff's extensive review, however, should at least be mentioned. This could be done by -- as a minimum -- inserting the words "After careful review of an application by the NRC staff," at the beginning of the second paragraph of the section.

p. 9

The fifth sentence of the first full paragraph on this page states that "In the discovery phase any relevant information -- data analysis, draft reports, field notebooks, internal memoranda -- can be obtained in the process of identifying issues for the hearing." Under Commission procedures, however, the scope of discovery is controlled by the issues, and follows their identification. See e.g., 10 CFR §2.740(b). Accordingly, the quoted sentence should be corrected by replacing the words "identifying issues" with "preparing."

In addition, the first sentence of the second full paragraph on this page states that, "on the basis of the evidence presented during the hearing, the ASLB will reach findings with respect to all the criteria of 10 CFR Part 60" (emphasis added). The meaning of "all the criteria" is not clear. However, there is no requirement in the regulations that the Licensing Board address individually each and every technical criterion presented in Part 60. Accordingly, the quoted sentence should be clarified by eliminating the words "all the."

p. 10

The first full sentence of section 3.1.1 on this page states that:

The central question that will underly the NRC staff review of DOE site characterization programs is:
"Will the programs produce the information required to conduct a licensing assessment?"

As phrased, however, the question implies too much certainty at an early stage of the program. Accordingly, the question should be rephrased, to be more consistent with the iterative nature of the characterization and assessment process, to read: "Can the programs be reasonably expected to produce the information required to conduct a licensing assessment?"

The iterative nature of the processes should also be more clearly reflected in the next two paragraphs. This can be done by inserting the words "an iterative process, as shown in Figure 3, involving" between "requires" and "the" in the first line of

the second paragraph. In the ninth and tenth lines of the second paragraph, "Conversely" and "will" should be changed to "In addition," and "may," respectively. Finally, the word "iterative" should be inserted between the words "the" and "site" in the second line of the paragraph beginning at the bottom of the page.

p. 11

The word "consultation" is misspelled in the seventh line of this page.

In addition, the second-to-last full sentence on this page states "In tentatively establishing component requirements, DOE must systematically document:

- (1) Why the proposed level of performance is necessary and sufficient;
- (2) What level of reliability is to be associated with the proposed level of performance;
- (3) What rationale exists for the decision-making process that led to the proposed level of performance, including the timing of the decision.

(Emphasis added.) The need for full documentation of the timing of the decision, however, is unclear. Accordingly, the sentence should end with the word "performance," in item (3), above.

Finally, the last full sentence on the page indicates that appropriate levels of precision and accuracy for waste package tests are to be "established" when component requirements are first set. This implies, however, more certainty than is likely to exist at such an early stage. Accordingly, and to be more consistent with the tentative establishment of component requirements, mentioned in the preceding sentence of the Draft GTP, the word "established" should be changed to "preliminarily determined."

p. 12

The last sentence of the last full paragraph indicates that, in connection with the EPA standard, "quantitative rigor" will be required. The meaning of this expression, however, is unclear; particularly within the context of the uncertainties which are discussed on this same page. Accordingly, the sentence should be reworded, perhaps as follows: "In any case, application of the EPA Standard will require quantitative analyses and the DOE application must be prepared accordingly."

pp. 12-14 Section 2.1.2, "Identification of Licensing Issues," prescribes in the first full sentence that:

Site Characterization Plans [SCP's] should be issue-oriented documents, as specified in NRC's "Standard Format and Content for Site Characterization Reports" (Regulatory Guide 4.17).

The current version of Regulatory Guide 4.17, however, states that the objective of site characterization should be to describe the site, the conceptual design, uncertainties and limitations, and the detailed programs for additional work. Such descriptions, and the SCP's themselves, then serve as vehicles for identifying and resolving issues. This seems reasonable, and should permit the preparation of a document that is factual in nature, and which presents a logical sequence of topics.

The NRC Draft GTP, however, seems to suggest something quite different; namely, that all specific licensing issues should be identified first, and then that plans for addressing them should be prepared. The problem with this is basically two-fold. First, many relevant issues will develop during the investigatory process, and can't be identified at the outset. Second, issues -- many of which are complexly interrelated -- will be evolving over a significant period of time.

Rather than issue-oriented, SCP's should be topic-oriented. As such, SCP's can be prepared, at the early stage required, so as to present a useful plan for obtaining additional information concerning a site, based on what is already known. Information known and gained can then be used -- properly -- to frame and resolve licensing issues.

Also, in section 3.1.2, the Draft GTP states, beginning in the first line of the last full paragraph on page 13 that:

... licensing assessments are divided into safety assessments and environmental assessments. As indicated in Section 1.1, the focus of this Technical Position is on safety assessments.

In fact, the Draft GTP appears to deal almost exclusively with safety, rather than the environmental matters presented in Part 51. If the Draft is

restricted to only the safety aspects of licensing assessment, this should be more clearly stated. If the methodology is intended to be more general, however, the required environmental documentation and analysis should be fully addressed.

pp. 15-16

Page 15 presents a number of "major, performance-related questions." The first sentence on page 16 then states that "The NRC staff considers that the Site Characterization Plans must include the detailed plans for resolution of each of these questions." Detailed plans, however, might be impossible at the early Site Characterization Plan stage. Accordingly, the word "detailed" should be changed to "projected" in the quoted sentence.

p. 16

The second sentence of the first full paragraph of section 3.2.1.1 implies that computer codes will require benchmarking, verification and validation. Further, the third sentence of the last full paragraph on the page states that:

The models and codes selected by DOE for use in performance assessment must be justified by using the results of site-specific experiments and by comparing predictions with appropriate natural analogs.

It appears likely, however, that many codes and models used to predict the behavior of the repository system will simply not be amenable to benchmarking, verification, validation and justification by means of site-specific experiments. Many of the phenomena of interest, such as the sorption and desorption of radionuclides, will take place over very long periods of time and distances of many kilometers. It seems impossible to expect that all of these phenomena will have been measured experimentally, as part of the modeling process. Rather, many codes and models will simply have to represent geohydrological processes widely agreed upon by the geotechnical community as representing the best understanding of what might be expected to occur in the geohydrological setting. To reflect this, the words "where practicable" should be inserted between "codes" and "will" in the first sentence referenced above; and between "must" and "be" in the second referenced sentence.

p. 18

The second paragraph of section 3.3.1 states:

The NRC staff considers that the Site Characterization Plans should address in detail the approach the DOE intends to take toward assessing operational safety and retrievability.

The earliness of the Site Characterization Plan stage, however, may not allow for such a description for each potential site. Accordingly, the words "in detail" should be removed from the quoted sentence, and "planned" inserted between the words "the" and "approach."

p. 22

The last three lines on this page provide that the method chosen by DOE to identify release scenarios must "encourage strong involvement of all these interested parties [e.g., affected Indian tribes and state and federal governments] in order that they may be satisfied that their concerns have been addressed fairly." This statement could be misinterpreted, however, and be read as requiring special processes and procedures for the selection of scenarios. To help avoid such a misunderstanding, the words "in the processes and procedures prescribed in the Atomic Energy Act, Nuclear Waste Policy Act and DOE and NRC regulations" should be inserted between "parties" and "in" in the above-quoted language.

p. 24

The last paragraph on this page states that:

The NRC staff considers that the Site Characterization Plans should include either the details of or the detailed plans for the development of a post-closure risk assessment methodology that adequately addresses the requirements of the EPA standard.

At the early, Site Characterization Plan stage, however, the details of, or detailed plans for developing, post-closure risk assessment methodology may not be available. Accordingly, the words "detailed of or the detailed" should be replaced with the word "projected."

Figure 1

ACRS input will be made available to both the NRC Staff and Licensing Board. Accordingly, the diagram should include dotted lines between the "ACRS" and both the "STAFF" and "ASLB" blocks.

- Figure 2 The reference to "Appendix C Methodology" should be specified in terms of a particular document (e.g., presumably, NUREG-0960).
- Figure 3 To improve clarity, the flow through the logic diagram should be indicated with arrows.
- Appendix For the sake of clarity, the first appendix should be identified as "Appendix 1."
- Appendix 2 For easy reference and completeness, Appendix 2 should contain all of the technical criteria prescribed in Subpart E of Part 60, rather than only particular selections.