RETRIEVAL DEMO TP COMMENTS

MAR 15 1989

NOTE TO: Joseph O. Bunting, Jr., Chief
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FROM: John J. Linehan, Director
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SUBJECT: COMMENTS ON INTERNAL DRAFT TECHNICAL POSITION ON DEMONSTRATION OF RETRIEVABILITY DURING SITE CHARACTERIZATION

We offer the following general comments on the subject draft. Because we understand that you have directed your staff to revise the draft, we will avoid comment on all but the points we consider most significant, so that the revision can more easily address them. In general, we believe that substantial revision is advisable to assure that all essential issues are covered.

1. The draft does not present in easily identifiable form the key issues to be addressed in this technical position (TP). It does not, for example, suggest what kinds and levels of testing and analyses the U. S. Department of Energy (DOE) should consider in lieu of testing with actual spent fuel or high-level waste (HLW) packages to provide assurances that retrieval will comply with applicable occupational exposure limits, or that radiolytic effects have been adequately accounted for in retrieval system design. The draft does not attempt to clarify what is meant by "off-normal" conditions, and generally skirts the question of the kinds of failure modes and degrees of hostile conditions DOE will need to address in demonstrating retrievability under simulated repository conditions. It does not even attempt to clarify the "normal" conditions that should be addressed.

Nor does the draft TP address in any detailed way the question of how much demonstration is enough -- the level of confidence the staff believes is necessary in assessing the probable risks and benefits of retrieval in order to decide whether to undertake it. This issue in turn involves such critical questions as:

a) What level of confidence or doubt concerning compliance with overall repository performance objectives must be reached -- how bad do things have to get -- before DOE should consider retrieval of any emplaced waste package? How widespread must observed degradation or predicted failure of waste packages be to justify retrieval? (This will go far to help define the "off-normal" conditions under which retrievability must be demonstrated in order for a licensing board to grant a construction authorization.)

b) How far should DOE take its demonstration in order to provide the needed level of confidence in assessing the likely impacts of retrieval? When is "retrieval" of any waste package considered completed for purposes of 10 CFR Part 60? (This overall issue would encompass both the numbers of

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repetitions of each kind of operation, and the number of different operations leading from gaining access to the waste to removing it "from the underground location at which the waste had been previously emplaced for disposal" under the definition of retrieval in Section 60.3. Given the vagueness of this definition, it is possible that it does not cover follow-on activities that would presumably be subject to 10 CFR Part 20 and other NRC mission-related requirements. These activities would include, for example, the repackaging of wastes for re-emplacement, and the disposal of activated discarded canisters, equipment, and host rock from retrieval operations. Although these activities may not be within an appropriate scope for this TP, the staff should consider what additional guidance or clarification by rule may be needed to assure that workers and the public will be appropriately protected at the "tail end" of retrieval.)

2. The draft does not present in easily identifiable form the key elements of the TP itself. Although the draft clearly cites the relevant provision of 10 CFR Part 60, it does not establish a traceable logic between these and the staff's position concerning what DOE will need to show in order to demonstrate compliance. The closest thing to key elements appears on pages 22-23, in the discussion of what the retrieval system must be shown to accomplish, and the identification of systems, components, and parameters crucial to waste retrievability. These key considerations seem thoughtful and technically sound, but they lose the persuasiveness they would otherwise enjoy if they were explicitly related to specific provisions of the rule. In addition, they are nowhere set forth in the "Technical Position" part, which is supposed to provide a clear, concise summation of the principal points of guidance. Nor are they explicitly linked to the specific subjects, such as the information to be gained from excavation tests, that have been selected for detailed examination in the rest of the discussion.

3. The draft does not attempt to substantiate a basis for the estimated time during which the option to retrieve must be preserved under Section 60.111(b). This estimated time is itself based in part on the approximated time for repository construction and waste emplacement. Rather than undertaking to establish an independent, technically defensible basis for construction and emplacement times, or a basis for the staff to recommend Commission approval of an alternative period for maintaining retrievability under Section 60.111(b)(1), the draft accepts without question DOE's statement that repository construction and waste emplacement operations will take 34 years. The draft then concludes on page 12 that "the retrieval schedule for present purposes would be, at most, 34 years after retrieval commences," [emphasis added]. This position is taken despite DOE's view, noted in the draft, that retrieval may require more time per unit of waste than emplacement. The draft TP also does not take a position on the DOE view that there would be no time limit on partial retrieval if emplacement operations are continuing. There may be a basis for adopting DOE's initial estimate, and for not addressing other DOE positions on the retrieval period, but it is not apparent from a reading of the draft itself.

4. The draft appears to suggest under 4.1.6. on page 15 that the Commission might issue a construction authorization prior to the completion of a satisfactory DOE demonstration of retrievability. 10 CFR 60.31(a)(2) makes it very clear that the Commission may authorize construction only if, among other things, it determines that the site and design comply with the performance objectives and criteria of Subpart E, which includes the retrievability objective. While it is true that DOE is required under 10 CFR 60.24 to update its application in a timely manner, the purpose of this requirement is to enable the Commission to review new information pertinent to the issuance of a license to possess waste at the repository -- not to enable the Commission to judge after the fact whether a prerequisite for construction authorization had been met. The TP should therefore not state or imply that any additional testing and demonstration to correct deficiencies in the CA application "would ... be contemporaneous with repository construction." It may even be unwise to include in a guidance document a statement that "all aspects of retrievability that could potentially be limited by site characteristics ... should be resolved ... prior to construction authorization. Under our rules, the retrievability issue must be resolved before a CA can be issued. To say that it should be resolved is to suggest otherwise.

5. Two additional suggestions that would enable the TP to avoid having to deal with diversionary comments:

a) The references to anticipated and unanticipated processes and events on pages 24 and 26 should be deleted, since these terms by definition refer only to post-closure performance.

b) The use of unexplained technical terms such as "mpbx," "acoustic emission output," "lithophysae-poor (TSW_2)," and "'ubiquitous' or 'compliant' joint model" obscures communication with interested lay members of the public, including state and Congressional policy-makers. Such terms may also inadvertently suggest that obscurity is intended. These and other unusual technical terms should be deciphered, either in a footnote or in the text.

If you have any questions or comments, please contact Brian Thomas of my staff.

ORIGINAL SIGNED BY

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