

August 2, 1985

Mr. John Greeves  
Chief of Engineering Branch  
Division of Waste Management  
Nuclear Regulatory Commission  
Silver Spring, Maryland

SUBJECT: Summary of NRC/DOE Meeting on Retrievability  
and Retrieval on August 31, 1985

Dear Mr. Greeves:

Please find attached for your concurrence, our report on the above mentioned meeting.

Sincerely,

*DW. G*

Virgil Lowery

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SUMMARY OF NRC/DOE MEETING ON  
RETRIEVABILITY AND RETRIEVAL

DATE/LOCATION OF MEETING:

July 31, 1985, Forrestal Building, Room BE069,  
1000 Independence Avenue  
Washington, D.C.

ATTENDEES/ORGANIZATIONAL AFFILIATION:

A list of attendees is attached as Enclosure 1.

BACKGROUND/FACTS:

The purpose of the meeting was to discuss a generic position paper prepared by DOE on Retrievability and Retrieval. DOE provided the aforementioned document to NRC on June 28, 1985, and stated in their transmittal letter that the purpose of the document is to fully describe all design, construction, operation, and maintenance requirements associated with high level nuclear waste retrievability. Furthermore, DOE stated in the transmittal letter that their objective is to utilize the position to arrive at a common understanding of the design requirements associated with retrieval within the repository program and between DOE and NRC. The transmittal letter and the position are attached as Enclosure 2. A copy of the meeting agenda is attached as Enclosure 3.

Prior to the meeting, NRC provided DOE with written comments which are attached as Enclosure 4. A short telephone conversation to clarify some of NRC comments took place on July 24, 1985.

The meeting started with a DOE presentation summarizing their generic position on retrievability and retrieval. This presentation is attached as Enclosure 5. The rest of the meeting was devoted to discussions between DOE and NRC staff on the DOE position and NRC comments, as well as discussions by state representatives.

## NRC OBSERVATIONS

### 1. IMPACT OF HOST ROCK/WASTE EMPLACEMENT/EQUIPMENT INTERACTIONS

- The emphasis of the document appears to be on equipment prototype and demonstrations, whereas the geotechnical problems possibly will create the most severe difficulties.
- The impact of the host rock characteristics on retrievability, and associated T-M-C-H response to waste emplacement, needs further elaboration. It is recognized that much of the work is site-specific, however, generic aspects and DOE's intentions can be identified, as they were under the ventilation and storage sections. A balance of treatment between equipment design and geotechnical concerns is desirable.

Sections devoted to host rock characteristics and site-specific concerns would greatly enhance the position.

### 2. DEMONSTRATION OF RETRIEVAL EQUIPMENT AND METHODS

- The NRC observed that the position would be enhanced by including further discussion concerning (a) the analysis of the retrieval method and (b) clarification of the relationship of Proof-of-Principle, Prototype Development, and Performance Confirmation.
- Further discussion of the topical areas of interest for the "mock-up" to be used during Proof-of-Principle needs to be addressed, as well as why these areas are important and how they will be incorporated into the Prototypical Development work and their impact on Performance Confirmation Plans.

### 3. DURATION OF RETRIEVABILITY PERIOD

- NRC observed that the retrieval decision period (i.e. 50 years in part 60) could be longer or shorter based on license conditions set by the Commission.

### 4. RETRIEVAL DEFINITION

- Restating that waste removal for reasons other than public health and safety and resource recovery is not governed by this position implies such removal is simply not governed at all. Stating the governing guidelines would be sufficient to satisfy this issue.

### 5. WASTE PACKAGE

- The NRC observed that little information is provided related to waste package operations and design, related to retrieval and non retrieval activities.

## 6. POST RETRIEVAL ISOLATION CAPABILITY

- Although consideration was given to the geotechnical aspects of partial retrieval, it is felt further discussion on retrieval methodology and how it affects the repository isolation capability should be included in the position. Aspects related to areas adjacent to the retrieval area and to geohydrological and geochemical considerations should be considered.

## 7. OTHERS

- NRC noted that retrieval issues for salt sites and any site that incorporates long horizontal hole concepts should receive early attention by both NRC and DOE.
- NRC regulations will cover site decommissioning even after complete retrieval (i.e. removal of all waste from a repository).
- DOE believes the question of in-situ testing requirements related to retrievability (i.e. incorporation of testing related to retrievability design and methodology within the in-situ testing plan) is a site-specific topic. NRC would like to see it included in the in-situ test plans.

## DOE OBSERVATIONS

None

## STATE OBSERVATIONS

One of the state representatives expressed concern as to the disposition of the repository once retrieval is completed. Retrieval might have an effect on part of the underground environment such as aquifers, therefore it would not be prudent for the DOE to simply walk away from the site. It was also suggested that a section on "decommissioning" be included as part of the text in the revised position paper with wording to show the intent of restoring the site to an acceptable condition.

It was requested that the states have a participatory roll in the decision making in any retrieval action. For example, the retrieval document Page 1, second paragraph, final sentence, should be revised to include those who are involved in "Siting".

Concern was expressed that the proof-of-principle tests might be conducted in other salt domes which would not give similar conditions to those at the subject repository.

The state representative was pleased that the last sentence on page 7 of the retrieval position document would be deleted by DOE. He expressed some concern however as to the lack of discussion of other forms of waste possibly being emplaced. It was felt that the document should discuss what other forms of waste would have to be considered for retrieval.

Another state representative suggested that the wording on page 12, third line from the bottom, "high water pressure" be re-worded to avoid confusion with inundation.

## AGREEMENTS

### AGREEMENTS BASED ON THE SIX NRC WRITTEN COMMENTS

1. DOE agreed to expand Chapter 3, Design Requirements, to cover and add emphasis to host rock design conditions. DOE agreed to add a subsection to Section 3.0, in which DOE will address broader aspects of retrieval design. Specifically, DOE committed to consider aspect of rock behavior, thermal characteristics, opening design, support design, and the general impacts of coupled effects on retrieval design requirements.
2. Section 3.4 will be expanded to place greater emphasis on the development of methods (not just equipment) necessary to retrieve from hostile (and possibly) abnormal conditions. This will also be part of the added language to satisfy comment #1.
3. The language used in the Mission Plan on the period of retrievability etc. will be incorporated into the position. This will include the re-drafting of the chart on page 8 to make it consistent with the Mission Plan. All discussions regarding a "shorter period" will be deleted to include the possibility of either a shorter or longer period.
4. DOE agreed to state that all activities related to waste handling that are not associated with retrieval will be subject to appropriate NRC regulations where these action are addressed in the position paper.
5. DOE agreed to acknowledge requirement of need to maintain containment during retrieval consistent with 10 CFR 60.135b(3)) and to commit to the use of retrieval methods that will allow compliance with the requirement. The position will also make it clear that during credible abnormal events, a breached container could also be retrieved.
6. Section 4.1 will be renamed: Integrity of the Natural and Engineered Barriers. This section will include recognition that, during partial retrieval, geohydrologic, geochemical, and adjacent areas aspects will be incorporated, and that the integrity of engineered barriers will also be addressed.

### GENERAL AND MISCELLANEOUS AGREEMENTS

1. DOE will remove the sentence referring to the effect of temporary interruptions in waste emplacement on page 7.
2. It was requested (and agreed by DOE) that footnote #6 will be put into the text using the language from Part 60 regarding a "reasonable schedule" to retrieve. The observation will be made (not as a redefinition) that retrieval should be done as quickly as is safely practicable.

3. The tone of the Position is not meant to restrict the NRC by removing flexibility at a later stage. Rather the objective was to provide clear guidance to the repository designers. The position will be changed to explicitly note that flexibility exists. (Such as on p. 20 regarding need for monitoring). These areas will also be brought to the attention of the DOE in the formal NRC written response.
4. For NRC and DOE to arrive at a common understanding of the site-specific design requirements associated with retrieval, DOE must provide and NRC must review site and design specific information. It was agreed that this would be provided in future meetings and documents by DOE and reviewed by NRC for each of the sites to be characterized. Dates for the development of these products and associated meetings will be proposed by DOE within 90 days.
5. DOE and NRC agreed to include and discuss retrievability (to the extent possible) on the agenda for the site-specific in-situ test plan meetings.
6. NRC agreed to provide formal comments on DOE's Position Paper within 30 days. DOE will revise the paper based on the July 31 agreements, the formal NRC comments, and internal DOE comments. The revised position will then be issued to the projects as an appendix to the Generic Requirements Document. Concurrently, copies will also be provided to the NRC for information.

It was agreed that the DOE position paper when revised, based on the discussion and agreements at the meeting, should represent a reasonable interpretation of 10 CFR 60 as a generic-level statement of requirements.

#### AGREEMENTS BASED ON STATE COMMENTS

1. Mississippi requested (and DOE agreed) that a specification be included in the position regarding the decommissioning of the repository in the event of full retrieval, consistent with the 10 CFR 60 requirements on termination of the license. The last sentence of that paragraph will also be modified.
2. Frank Kendorski (representing several salt states), asked that "high water pressure" be reworded so as not to infer the sudden inflow of water. This will be reworded, but it was DOE's intent to infer the inflow of water. Suggested reworking may be "sudden inflow" in lieu of "high water pressure".
3. DOE agreed to the Mississippi comment that the word "siting" be added to page 1 to infer a certain amount of state involvement in retrievability activities.

## OPEN ITEMS

1. DOE plans to develop policies on both resource recovery and the disposition of retrieved waste (e.g. ultimate disposal of retrieved waste). It was identified that these are important topics which will have to be addressed prior to license application.
2. The development of a DOE position on performance confirmation program was identified as a high priority open issue at the July 18 ESF meeting. It was agreed that the implications of the performance confirmation program on retrieval by the duration of the retrieval decision period is an important subset of the overall program and reinforces the high priority previously established.
3. Future interactions are required between DOE and NRC to clarify what requirements for retrieval must be placed on TRU and other forms of radioactive wastes. Currently 10 CFR 60 requires all radioactive materials emplaced underground to be retrievable. Also, the definition of high level waste (i.e., whether or not TRU is classified as high level waste,) is under review by NRC. If TRU is not classified as high level waste, then the DOE is not required to emplace TRU in the repository, and the decision to emplace would be based upon the cost of designing and manufacturing retrievable packages for TRU waste and the implications of shipping the material off-site. NRC also pointed out that the potential exists for an exclusion to the retrieval requirements if it can be assured that the health and safety of the public is not adversely impacted. There is a need to resolve this open issue as quickly as feasible to provide guidance to DOE.

APPROVED:

NRC

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DATE

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DOE

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