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Mr. Ralph Stein, Director  
Engineering and Licensing Division  
Civilian Radioactive Waste Management  
Department of Energy  
1000 Independence Avenue  
Washington, D.C. 20545

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Dear Mr. Stein:

The NRC staff has completed its review of the DOE Generic Position Paper on Retrievability and Retrieval which was transmitted to the NRC on June 28, 1985. Our comments are presented in the enclosure.

As we expressed to your staff in our meeting on July 31, 1985, we believe the Generic Position Paper contains useful information that should foster a better understanding of retrievability and retrieval between the DOE, NRC, and the affected States and Tribes,

Our comments are presented in two parts. The first part focuses on general comments that address significant areas where we believe reexamination and revision by DOE are necessary. These broad comments were addressed in the DOE/NRC meeting of July 31, 1985, related to this subject. The agreements reached regarding these general comments were included in the published minutes of that meeting. The second part presents detailed comments and suggested revision to enhance clarity and understanding of the Position Paper.

Should you or your staff find you would like to discuss any of the comments, please feel free to contact, at your convenience, Dr. Jerome R. Pearing (FTS 427-4648) of our staff.

Sincerely,

WM Record File

WM Project 1

109.4

Docket No. \_\_\_\_\_

PDR ✓

LPDR \_\_\_\_\_

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GORN

(Return to WM, 623-SS)

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Hubert J. Miller, Chief  
Repository Projects Branch  
Division of Waste Management  
Office of Nuclear Material Safety  
and Safeguards

Enclosure:  
As stated

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\* telephonically  
conferred 8/29/85  
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8/29/85

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NRC STAFF COMMENTS ON THE DOE POSITION PAPER  
ON RETRIEVABILITY AND RETRIEVAL FOR A GEOLOGIC REPOSITORY

I. GENERAL COMMENTS

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

The emphasis of the document appears to be on equipment prototype and demonstrations, whereas the site specific geotechnical problems possibly will create the most severe difficulties. In this regard, the impact of the host rock characteristics on retrievability, and associated T-M-H-C 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. The NRC staff considers that additional sections devoted to host rock characteristics and site-specific concerns would greatly enhance the position paper.

It is therefore recommended that DOE expand Chapter 3, "Design Requirements" to add emphasis to host rock design conditions. This might be accomplished by adding a subsection to Section 3.0, which addresses broader aspects of design affecting retrieval. Specifically, the revision should consider aspects of rock behavior, thermal characteristics, opening design, support design, and the general impacts of coupled effects on retrieval design requirements.

2. DEMONSTRATION OF RETRIEVAL EQUIPMENT AND METHODS

The NRC staff observes that the position could be enhanced by including further discussion concerning (a) the analysis of the retrieval method and (b) clarification of the interrelationship of proof-of-principle, prototype development, and performance confirmation.

It is suggested that DOE expand Section 3.4 of the paper to place greater emphasis on the development of methods (not just equipment) necessary to retrieve from hostile (and possibly) abnormal conditions.

In addition, further discussion of the topical areas of interest for the "mock-up" to be used during proof-of-principle should 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

As now written, the terminology related to the duration of the retrievability period does not appear to be consistent with 10 CFR Part 60 and the DOE Mission Plan. As described in 10 CFR Part 60.111(b), the Commission in its licensing decision, has the authority to specify either a longer or shorter time period than the "50 years after waste emplacement operation" now specified.

It is recommended that the language used in 10 CFR 60 and the Mission Plan on the period of retrievability and retrieval matters be incorporated into the position. This should include the redrafting of the chart on page 8 to make it consistent with the Mission Plan. All discussions regarding a "shorter period" should be revised to include the possibility of either a shorter or longer period.

### 4. RETRIEVAL DEFINITION

DOE, in the position paper, states that waste removal for reasons other than public health and safety and resource recovery is not governed by the position. The NRC staff observes that the way it is stated implies such removal is simply not governed at all.

The NRC staff recommends that DOE state that all activities related to waste handling that are not associated with retrieval will be subject to appropriate NRC regulations where these actions are addressed in the position paper.

### 5. WASTE PACKAGE

The NRC staff observes that little information is provided concerning waste package operations and design, related to retrieval and non-retrieval activities. The NRC staff recommends that the requirement to maintain containment during retrieval consistent with 10 CFR Part 60.135(b)(3) and for the use of retrieval methods that will allow compliance with the rule be addressed in the position paper.

### 6. POST RETRIEVAL ISOLATION CAPABILITY

Although consideration was given to some geotechnical aspects of partial retrieval in the position paper, the NRC staff recommends further

discussion on retrieval methodology and on how it affects the repository isolation capability should be included in the position. The NRC staff also recommends that aspects related to areas adjacent to the retrieval area and to geohydrological and geochemical considerations be considered. In particular, the NRC staff suggests that Section 4.1 be renamed: "Integrity of the Natural and Engineered Barriers." The discussion presented could be expanded to recognize that the effects of geohydrologic, geochemical, and adjacent area aspects should be addressed during partial retrieval along with the integrity of engineered barriers.

## II. Detailed Comments

### 1. Page 1, 1st Paragraph, 1st Sentence (and footnote on bottom of page 1).

This sentence and the associated footnote utilize the phrase "spent fuel and high-level waste" in the definition of "waste" that is subject to retrieval from a geologic repository (and subject to the provisions of the Position Paper).

#### Comment:

The definition of "high-level radioactive waste" or "HLW" that is provided in 10 CFR 60.1 includes "irradiated reactor fuel." Therefore, if the DOE Position Paper is to be consistent with the original and still current intent and wording of Part 60, the Position Paper terminology should be changed to read "spent fuel and other high-level waste." The position paper should also acknowledge that although the emphasis in this paper is on spent fuel and reprocessed waste, under 10 CFR Part 60.102(b)(4), the retrieval requirements of 10 CFR Part 60 would apply to all radioactive waste material emplaced.

### 2. Page 1, Second Paragraph, Last Sentence

"The objective is to establish a standardized understanding of retrievability and retrieval for the Department of Energy and those who are involved in the design and in the regulation of repositories."

Comment

The NRC's understanding of retrievability and retrieval is based upon 10 CFR Part 60 and the NWPAs. It is therefore suggested that the sentence be revised as follows: "The objective is to foster a standardized generic understanding of retrievability and retrieval for use in the siting, design, and operation of repositories."

3. Page 2, Last Sentence

"The removal of emplaced waste for performance confirmation, inspection, analysis, or any other purpose not directly related to public health and safety (and the environment) or resource recovery will not be considered retrieval and will not be governed by the requirements set forth here."

Comment:

To preclude misunderstanding that such removal activities may not be governed by any regulations, it is suggested that the following sentence be added for clarity: "It should be noted, however, that such removal activities are still subject to all applicable NRC regulations governing movement of waste and public and worker's health and safety during surface or underground operations."

4. Section 2, General Requirements, Page 3, First Sentence

"The design of the waste-retrieval capability of the repository shall be based on all instructions and specifications in this statement of position."

Comment:

The design of the waste-retrieval capability of the repository must conform to the requirements of the NWPAs and 10 CFR Part 60. Recommend this sentence be modified to read: "The design of the waste-retrieval capability of the repository shall conform to the NWPAs and 10 CFR Part 60, and the instructions and specifications in this statement of position." This wording would clearly present to the reader the appropriate hierarchy of documents.

5. Section 2.1, Retrievability, Page 3, Second Line

"The repository shall be designed, constructed, and operated so that at any time within the limits set forth in this statement of position it will be possible to retrieve any or all of the waste emplaced for disposal."

Comment:

The time limits for retrievability and retrieval are set forth in 10 CFR Part 60.111(b). Recommend the phrase "in this statement of position" be changed to "in 10 CFR Part 60.111(b)."

6. Section 2.1, Retrievability, Page 4, Last Sentence

"The act of retrieving any or all of the emplaced waste shall be considered complete and in compliance with this statement of position at the time waste is brought back to the surface of the repository."

Comment:

This sentence and footnote No. 3 do not provide a clear understanding of the potential requirement for temporary storage as addressed in Section 3.3, page 14. The requirement of 10 CFR Part 60.21(c)(12) applies. To enhance clarity, it is suggested that the following sentence be added: "Plans for alternate storage of the radioactive waste will be provided in the license application." Suggest that this sentence also be added to Section 3.3, page 14 next to last line after the sentence ending in the word "necessary."

7. Section 2.2, Reasons for Retrieval, Page 5, First Sentence

"Retrieval would be a reversal of the emplacement and isolation mission of the repository."

Comment:

This sentence leaves room for ambiguity. We suggest the sentence be changed to read: "Retrieval would involve a reversal of the emplacement decision for affected waste materials."

8. Section 2.2, Resource Recovery and Economics, Page 6, First Sentence

"If, at the time before permanent closure, the Department of Energy elects to recover any or all of the waste inventory, this recovery will be accomplished under the Department's authority and policy of resource recovery."

Comment:

To avoid the potential for misunderstanding that such recovery would not come within the purview of NRC, it is recommended that the following sentence be added: "Retrieval for this purpose must also meet the requirements of NWPA and 10 CFR Part 60."

9. Section 2.2, Resource Recovery and Economics, Page 6, Second Paragraph First Sentence

"All other operations in which the emplaced waste is moved, relocated, or transported to another area of the repository (surface or underground) for reasons other than those stated in this section shall be the responsibility of the repository operations management under the authority of the operating license. This handling of the waste shall not be considered retrieval and shall not be governed by any regulations, standards, or requirements in this statement of position."

Comment:

To avoid the potential for misunderstanding, suggest this sentence be revised as follows:

"All other operations in which the emplaced waste is moved, relocated, or transported to another area of the repository (surface or underground) for reasons other than those stated in this section shall be carried out by the DOE in accordance with the provisions of the license and NRC regulations."

10. Section 2.2., Resource Recovery and Economics, Page 6, Last Sentence

"This handling of the waste shall not be considered retrieval and shall not be governed by any regulations, standards, or requirements in this statement of position."

Comment:

Although handling of waste, as described above, would not be governed by retrieval requirements, it would be governed by other appropriate regulations. We recommend replacing the words: "and shall not be governed by any regulations, standards, or requirements in this statement of position," with "must be carried out in accordance with the provisions of the repository license and all applicable regulations."

11. Section 2.3, Duration of the Retrievability Period, Page 6, 1st Sentence

"The period of time during which the repository must be prepared to begin the retrieval of any or all of the emplacement waste shall be that period of time during which waste is being emplaced and a period of time thereafter sufficient..."

Comment:

In 10 CFR Part 60.111(b)(1) the above period of time is identified as the period throughout which the option of waste retrieval is to be preserved. To enhance clarity and to increase understanding, the parenthetical remark "(i.e., the time throughout which the option of waste retrieval is to be preserved)" be inserted in line two between the words "waste" and "shall."

12. Section 2.3, Duration of the Retrievability Period, Page 7, Line 1

"By rule, this period of time, defined as the retrievability period..."

Comment:

Recommend the word "herein" be inserted before the word "defined" to clearly indicate that the term "retrievability period" is not defined within the rule.

13. Section 2.3, Duration of the Retrievability Period, Page 7, Second Line

"...the retrievability period is not to exceed 50 years from the start of waste emplacement."



Comment:

Recommend the words "is not to exceed" be replaced with "extends up to" to be consistent with 10 CFR Part 60.111(b)(1). Also recommend the phrase "unless a different time period is approved or specified by the Commission" be added for the same reason as above.

14. Section 2.3, Duration of the Retrievability Period, Page 7, Third Line

"....(see diagram next page)"

Comment

The diagram presented on page 8 is not consistent with the text or the Mission Plan (Part 1, Section 3.1.6.1.2, page 53, and Part 2, page 32). Recommend the diagram be modified to provide consistency.

15. Section 2.3, Duration of the Retrievability Period, Page 7, Third Line through Sixth Line

"The duration of the retrievability period (the period of time during which retrieval can be initiated) can be adjudicated by the Nuclear Regulatory Commission on a case-by-case basis or part of the construction authorization process."

Comment:

In order to be consistent with 10 CFR Part 60, we recommend this sentence be replaced by "This different time period may be established on a case-by-case basis consistent with the emplacement schedule and the planned performance confirmation program."

16. Section 2.3, Duration of the Retrievability Period, Page 7, Paragraph 2, First Sentence

"The repository license application may include a petition for a shorter retrievability period (10 CFR Part 60.111(b)(1))."

Comment:

10 CFR Part 60.111(b)(1) states "the geologic repository operations area shall be designed so that any or all of the emplaced waste could be retrieved on a reasonable schedule starting at any time up to 50 years after waste emplacement operations are initiated, unless a different time period is approved or specified by the Commission." In order to maintain consistency with the rule recommend the word "shorter" be changed to "different" as both a shorter or longer period may be considered.

17. Section 2.3, Duration of the Retrievability Period, Page 7, Paragraph 2, Last Sentence

"This period will continue for no more than 50 years whether or not the waste emplacement operations have been completed and the repository is a caretaker status."

Comment:

In order to maintain consistency with 10 CFR 60.111(b)(1), recommend the phrase "unless a different time period is approved or specified by the Commission." be added to the above sentence.

18. Section 2.3, Duration of the Retrievability Period, Page 7, Last Sentence

"No temporary interruptions of the waste-emplacement schedule shall cause the retrievability period to extend beyond 50 years."

Comment:

Prior recommended revisions eliminates the need for this sentence. Suggest it be deleted after completion of the prior revisions.

19. Section 2.4, Time for Retrieval, Page 9, First Line

"If the full inventory of emplaced waste is to be retrieved, the retrieval shall be accomplished as quickly as safely practicable."

Comment:

To maintain consistency with 10 CFR Part 60.111(b)(3) it is recommended that this sentence be modified to read: "If the full inventory of emplaced waste is to be retrieved, the retrieval shall be accomplished on a reasonable schedule, i.e., one that would permit retrieval in about the same time as that devoted to construction of the geologic repository operations area and the emplacement of waste".

20. Section 2.4, Time for Retrieval, Page 9, Second Line

"This does not mean that all equipment, systems, and procedures must be designed, constructed, and operated in a constant state of readiness for the retrieval of the complete inventory."

Comment:

Recommend the word "designed" be deleted. Retrieval equipment, systems, and procedures should be designed (to an appropriate level of detail) as discussed throughout Section 3 of this document and shown in the diagram on Page 19.

21. Section 2.4, Time For Retrieval, Page 9, Second Paragraph, First Through Third Lines

"The Department of Energy fully expects and anticipates that the retrieval of the entire inventory of waste will require a lengthy period of preparation."

Comment:

Recommend the words "fully expects and," be deleted and the word "will" be changed to "may" since the document is generic and, for some sites and/or designs, the period of preparation may not be lengthy.

22. Section 2.4, Time For Retrieval, Page 9, Second Paragraph,  
Next to Last Line

"To the extent it is feasible, retrieval should be accomplished in the approximate time necessary to originally construct the repository and emplace the waste."

Comment:

We recommend the words of 10 CFR Part 60.111(b)(3) be used when addressing retrieval schedule. A possible replacement is "The repository will be designed so that retrieval can be accomplished in about the same time as that devoted to construction of the repository operations area and the emplacement of wastes." Footnote 6 should then be changed to reflect this point also.

23. Section 2.5, Affected Waste Types, Page 10, 11

The entire section.

Comment:

This paragraph indicates that no waste or container characteristic should preclude retrieval, but neither in this section nor in any other part of the Position Paper is it acknowledged that the waste package must be designed and (retrieval must be carried out) in a manner such as to maintain waste containment within the waste package consistent with the requirements of 10 CFR 60.135(b)(3). We recommend that the following words be added to the 1st paragraph of Section 2.5: "Waste packages shall be designed and retrieval methods shall be such as to maintain waste containment within the waste package during transportation, handling, and retrieval as required by 10 CFR 60.135(b)(3). During credible abnormal events, breached containers shall be retrieved consistent with all applicable NRC requirements."

24. Section 3, Design Requirements, Page 12, Paragraph 1, Second Line

"These requirements and criteria are to be used in conjunction with all other design criteria that have been established by the Department of Energy."

Comment:

10 CFR Part 60.130 through 60.135 present design criteria pertinent to retrieval addressing the repository operations area and the waste package. Recommend the words "the design criteria of 10 CFR Part 60 and" be inserted between the words "with" and "all" to recognize this guidance.

25. Section 3, Design Requirements, Page 12, Paragraph 2, First Line

"All persons responsible for the design and construction of a repository shall bear in mind at all times that the primary function of the repository is to provide containment and isolation for the waste."

Comment:

Recommend the word "primary" be deleted as the containment and isolation of waste is the sole purpose of the repository.

26. Section 3, Design Requirements, Page 12, Paragraph 2, Third Line

"Retrievability and retrieval constitute a contingency that must be incorporated into the design."

Comment:

10 CFR 60.111 identifies retrievability along with protection against radiation, exposure, and release of radioactive material as performance objectives requiring design considerations. In order to provide the necessary emphasis to ensure appropriate consideration of design requirements, recommend this sentence be reworded as follows: "Although its true that retrieval is a contingency and the decision to retrieve may never be made, nevertheless, retrievability is a performance objective that must be incorporated into the design."

27. Section 3, Design Requirements, Page 12, Second Paragraph, Third Sentence

"This contingency shall not affect or unnecessarily complicate the design of the repository to the exclusion, compromise, or interference with the primary function of the repository."

Comment

In order to preclude the possibility for misunderstanding, recommend this sentence be reworded as follows: "Design requirements and criteria associated with retrieval should not unnecessarily complicate or dominate repository design."

28. Section 3, Design Requirements, Page 12, Third Paragraph, Last Sentence

"These conditions or design bases shall potentially include such credible events as failed containers (loss of containment through a mechanical breach), stuck waste packages (pinched borehole liner or packing material), disoriented emplacement boreholes, high water pressure, release of radionuclides (as limited by 10 CFR Part 20), or any other circumstances that could affect the safety and mechanical removal of the emplaced waste."

Comment:

For clarification, recommend the phrase "(as limited by 10 CFR Part 20)," be deleted as it may be misinterpreted by some readers.

29. Section 3.0, Design Requirements, Page 13, First Sentence

"The physical act of retrieval shall be designed to minimize occupational health and safety hazards due to radiation exposure, high temperatures, and other underground safety risks."

Comment:

We recommend adding the following two sentences:

"In particular the design should allow all operations to be carried out in conformance with 10 CFR Part 20. An amendment in the repository license may be required for any action which would substantially increase difficulty of retrieval as specified in 10 CFR Part 60.46(a)(1)."

30. Section 3.3, Temporary Storage, Page 14, Fifth Line

"...the repository operations management..."

Comment:

As DOE has the responsibility for repository operations, recommend the above phrase be changed to: "The DOE." Suggest this change be made where ever it appears in the document.

31. Section 3.4, Demonstration of Retrieval Equipment and Methods

Proof-of-Principle Demonstration, Page 16, Paragraph 2

"The mock-up of actual retrieval equipment shall be in sufficient detail to provide, before the license application, a level of confidence that the planned method of retrieval is in principle, feasible."

Comment:

To be more definitive, the level of confidence should be specified as that which provides reasonable assurance that the planned method of retrieval is feasible. In addition, it is not clear what is actually meant by "mock-up of actual retrieval equipment." Information regarding type, nature, and extent of "mock-up" would clarify this point. Information related to what is meant by "sufficient detail" as it relates to the specific thermal, mechanical, hydrologic and chemical (T-M-H-C) parameters should be addressed and a discussion of the degree to which the "mock-up" will address them would also be helpful. It is recommended that this section be expanded to provide more discussions on the proof-of-principle mock-up demonstration which DOE is planning to accomplish before the license application.

32. Section 3.4, Proof-of-Principle Demonstration, Page 16, Last Paragraph

"If the repository operations management plans to backfill before the end of the retrievability period, the proof-of-principle mock-up demonstration shall show the feasibility of using the equipment fabricated at the time to (re) mine either backfill material or rock (rock simulating consolidated backfill) which has been heated to temperatures representative of retrieval conditions."

Comment:

As many other aspects of the repository environment besides temperature will bear upon the capability of equipment to retrieve (i.e., mechanical, hydrological, chemical, etc.) it is suggested that the wording "...which

has been heated to temperatures representative of retrieval conditions be replaced with "in a simulated T-M-H-C environment representative of the anticipated repository environment at the time of retrieval."

33. Section 3.4, Development of Prototypical Equipment, Page 17, First Paragraph

"After the proof-of-principle demonstration, a development period for advanced prototype retrieval equipment and procedures will be required. The purpose of this prototypical development shall be to establish full confidence in the overall retrieval capability under geotechnical conditions approximating those of the actual repository environment."

Comment:

It is not clear what is meant by "advanced prototype retrieval equipment." Recommend this section be expanded to provide adequate detail of the prototypical development activities contemplated.

34. Section 3.4, Development of Prototypical Equipment, Page 17, First Paragraph Last Sentence

"These conditions would include lithologies, temperature, and hydrologic properties similar to those likely to be encountered in the repository."

Comment:

Forces acting upon the host rock during potential periods of retrieval include the combined thermal-mechanical-hydrologic-chemical effects due to waste emplacement loading. Recommend the phrase "and the combined T-M-H-C effects due to waste emplacement" be inserted between "properties" and "similar."

35. Section 3.4, Development of Prototypical Equipment, Page 17, Second Paragraph

"It may take place at a location that approximates the geologic conditions of the proposed repository site, as long as a reasonable correlation exists between the sites."



Comment:

In addition to geologic conditions, one must consider such factors as in situ stress, repository geometries, and the combined effects of T-M-H-C on the geologic condition when attempting to correlate site environment affecting retrieval. Recommend this sentence be modified to reflect this consideration. Furthermore, in development programs for underground mining/tunnelling machinery, there are usually two phases of testing/demonstration, above ground and underground. The above ground testing can take place anywhere. The underground testing is preferably accomplished in the same rock under the same conditions where the equipment will ultimately be used. Rationale for selection of the underground testing location should be provided to enhance understanding of the proposed underground testing program.

36. Section 3.4, Development of Prototypical Equipment, Page 17,  
Last Sentence

"All documentation and results, as obtained, from the development and demonstration of prototypical retrieval equipment shall be given to the Commission prior to the time the license to receive and possess is granted."

Comment:

The reporting requirements of 10 CFR Part 60 are applicable. We suggest modifying the second sentence to read as follows: "All documentation and results, as obtained, from the development and demonstration of prototypical retrieval equipment shall be provided to the Commission in accordance with 10 CFR Part 60."

37. Section 3.4, Development of Prototypical Equipment, Page 18,  
First Sentence

"The waste container used in the retrieval demonstration shall be of a size and weight approximating the actual container that is planned for the disposal of waste at the repository."

Comment:

The potential for retrieval occurring late in the emplacement time period exist, and may involve waste containers that are in a condition different from that of original emplacement. This situation should be considered. Recommend this sentence be reworded as follows:

"The waste container used in the retrieval demonstration shall be of a size, weight, and condition approximating that of the actual container that may be retrieved from the repository."

38. Section 4.1, Integrity of the Geologic Barriers, Page 20, Last Paragraph

"If all of the waste is retrieved (because, for example of a loss of confidence in the site) no further protection of the integrity of the geologic barriers is necessary."

Comment:

This sentence leaves room for misunderstanding and could be interpreted that DOE may not be planning to redress the site after retrieval. Recommend adding a sentence that clearly state that DOE is planning to redress the site to an acceptable condition.

39. Section 4.1, Integrity of the Geologic Barriers, Page 21, First Paragraph

"After retrieval, the decision to reuse emplacement rooms shall be based on cost, space efficiency, and other operational considerations at the discretion of the repository operations management."

Comment:

Suggest replacing the phrase "and other operational considerations at the discretion of the repository operations management." with "and other operational and safety considerations at the discretion of DOE and in accordance with 10 CFR Part 60 requirements."

40. Section 4.1, Integrity of the Geologic Barriers, Page 21, Fifth Line

"If after waste retrieval, new waste is emplaced in the same area, all the original performance requirements for the geologic barriers in that area of the repository shall remain unchanged."

Comment:

Recommend the words: "requirements for the geologic barriers in" be replaced with: "objectives for" to maintain consistency with the terminology of 10 CFR Part 60 and to include consideration of all aspects of the repository.

41. Section 4.3, Monitoring and Verification, Page 22, First Paragraph

"No ongoing monitoring of individual waste packages shall be required for the maintenance of the retrieval capability."

Comment:

Because performance confirmation requires establishment of a program involving waste packages and geotechnical and design parameters affecting retrievability and retrieval which includes surveillance, measurements, testing, evaluation, reporting, and recommendations for changes, a separate program solely to demonstrate the capability to retrieve emplaced waste would be duplicative. Recommend this sentence be modified to reflect this point by inserting the words "over and above that required for performance confirmation as identified in 10 CFR Part 60 Subpart F."

42. Section 5, Performance Confirmation, Page 26, Second Paragraph

"The removal, whether temporary or permanent, [of] emplaced waste from the performance area(s) shall be done for the purposes of inspection, analysis, and research and will not be classified as retrieval. Actual retrieval, as defined in this statement of position, from performance confirmation areas shall be made only for reasons of public health and safety or resource recovery."

Comment:

Because the performance confirmation program has not yet been well defined, we suggest this paragraph be rewritten as:

"The removal, whether temporary or permanent, of emplaced waste from the performance area(s) when done for the purposes of inspection, analysis, and research will not be classified as retrieval. Actual retrieval, as defined in this statement of position shall be made only for reasons of public health and safety or resource recovery."

43. Section 5, Performance Confirmation, Page 27, First Sentence

"This 'simulated retrieval' from the performance confirmation area(s) will continue through the retrievability period of the repository and will, in effect, demonstrate that retrieval is possible until the termination of the retrievability period."

Comment:

Removal of packages for performance confirmation reasons may take place under conditions that are not completely representative of retrieval conditions as they may be situated in special "performance confirmation areas." Therefore, the phrase "will... demonstrate" may be too definite. We suggest use of the phrase, "will help to demonstrate." A similar change should also be made to the preceding sentence.

44. Section 5, Performance Confirmation, Page 27, First Sentence

"This 'simulated retrieval' from the performance confirmation area(s) will continue through the retrievability period of the repository and will, in effect, demonstrate that retrieval is possible until the termination of the retrievability period."

Comment:

In order to enhance understanding that the performance confirmation activities, which will be conducted to ensure that the natural and engineering features of the repository are within design limits, will also serve to provide necessary monitoring, data, and analyses related to

retrievability; it is suggested that an additional sentence be added after the above cited sentence as follows:

"In addition, the performance confirmation activities identified in 10 CFR Part 60, Subpart F will serve to provide necessary monitoring, data, analyses, and verification related to retrievability and retrieval."

45. Section 5, Performance Confirmation, Page 27, Last Paragraph

"The period of retrievability shall continue in full force and effect until the Nuclear Regulatory Commission has reviewed and approved the performance confirmation program."

Comment:

It is suggested that the above sentence be modified to read as follows:

"The period of retrievability shall continue in full force and effect in accordance with 10 CFR Part 60 until the Nuclear Regulatory Commission has reviewed the information obtained from the performance confirmation program and NRC amends the license."