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Denver Research Center
Ground Control Division

May 7, 1986

Mr. Banad Jagannath, Project Manager
Engineering Branch
Division of Waste Management, NMSS
Nuclear Regulatory Commission
1920 Norfolk Avenue
Bethesda, MD 20814

Dear Mr. Jagannath:

Enclosed are the comments and questions generated from our review of the document, "Retrievability: Strategy for Compliance Demonstration".

If you have any questions regarding the review or if we can provide any additional information, I can be reached at FTS 776-0741.

Sincerely,

Frederick K. Allgaier

for R. L. Mundell
Supervisory Mining Engineer

Enclosures

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"RETRIEVABILITY: STRATEGY FOR COMPLIANCE DEMONSTRATION"

Reviewed by D. Conover, M. DeMarco, R. Holub, and R. Kneisley

Page 2, Section 1.4, Basic Assumptions

It is unclear why the last assumption is necessary to develop a sound retrieval program.

Page 4, Section 2.0, Regulatory Requirements

Paragraph 1 - Is the list of major retrieval citations included in the appendix complete?

Page 7, Section 2.4, Allowable Waste Residuals

Will the ability to leave waste in the repository without exceeding the containment performance requirements be demonstrated in some way during performance confirmation?

Page 17, Section 3.2.2.2, Transporter Subsystem

Has overcoring technology been demonstrated for 36 in dia holes that would allow it to be considered as an alternative retrieval method?

Page 17, Section 3.3.1, Repository Layout

A reference should be provided for the basis on which the standoff distance was determined in order to limit the drift wall temperature to 50° C for 50 years.

Page 28, Section 4.2, Radiation

There is a possibility that because of leaching, entrainment, and evaporation of highly radioactive and hot waste material that radioactive material other than radon and thoron and their daughters will be airborne.

It is doubtful that radon concentration is going to reach 3000 pCi/ℓ in a repository; 3000 pCi/ℓ is the MSHA concentration at which ventilation must be introduced or masks worn. For radiation workers, the radon daughters working levels (WL) cannot exceed 0.3 WL, which are usually accompanied by only 60-80 pCi/ℓ of Rn. Reduction of WL is much easier than Rn because it can be done locally by means of moveable air cleaners, which is much cheaper than installing ventilation into all parts of the repository.

Page 29 and 32, Figures 17 and 20

An explanation should be given for the difference in peak borehole wall temperatures between vertical emplacement (227° C - Fig 17) and horizontal emplacement (213° C - Fig 20).

Page 34, Section 4.3, Rock Stability

Is borehole stability based on the use of liners?

Add to the last sentence, "as part of performance confirmation".

Page 40, Section 5.1.2, Waste-Package Removal

Step 8 - Waste Package Removal--Provide an example of an environmental change within a storage borehole that does not constitute an adverse condition.

Page 47, Section 6.3.1.4, Retrieval Backup System

It is necessary to explain what constitutes "anticipated adverse conditions". No previous differentiation has been provided between an "adverse condition" and a "noncredible scenario".

Page 48, Section 6.4.1, Documentation

Consider adding another operation to the list - Pre-emplacement waste-package handling.

Page 48, Section 6.4.2, Drift Maintenance

Drift maintenance will require sealed access drifts to be opened, ventilated, and finally inspected. This has not yet been discussed.

Page 50, Section 6.6.4.1, Failure Analysis

Since retrieval from horizontal boreholes will depend on hole/liner stability, tests designed and performed to determine liner material/strength requirements are critical.