



WM DOCKET CONTROL CENTER

Department of Energy
Nevada Operations Office
P. O. Box 14100
Las Vegas, NV 89114-4100

199

WM Record File

102.2

WM-Project

Docket No.

FDR

LDR

Distribution:

J. C. WmHR

(Return to Wm, 623-SS)

APR 25 1983

S. M. Coplan
Project Manager
Division of Waste Management
U.S. NRC
Washington, DC 20555

DOE/NRC CONCEPTUAL DESIGN WORKSHOP

Attached is the proposed final version of the closeout comments for the Conceptual Design Workshop that was held on January 24-25, 1983 at Sandia. I have signed the documents assuming there is no inaccuracy in the statement of what was accomplished.

I will be in Washington this week. I hope that I can pick up my signed copy of the summary. If there is any problem, please do not hesitate to call me on Jim Fiore's phone number (353-4068) at DOE-HQ.

Donald L. Vieth

Donald L. Vieth, Director
Waste Management Project Office

WMPO:DLV-374

Enclosure:
As stated

8311280052 830425
PDR WASTE
WM-11 PDR

102/84/199^H

00107

CLOSEOUT COMMENTS OF NRC AND DOE ON THE CONCEPTUAL DESIGN WORKSHOP

SANDIA NATIONAL LABORATORIES
Albuquerque, New Mexico
January 24-25, 1983

The following are points raised by NRC.

Observations

1. The discussion regarding the possible use of an incline rather than a vertical shaft as access to the repository did not reveal any specific factors that could represent latent problems. NRC perceived that use of an incline might provide several advantages.
2. The approach to the development of an in situ test plan for Yucca Mountain, i.e., the use of G-tunnel, with similar rock type and stress regime, for development of methodology is technically reasonable.
3. The use of a variety of assumptions about the geologic setting and different data sets in design and analysis is a potential source of confusion in an SCR. NRC thought that it would be prudent to either establish a reference set of assumptions and a reference data set or clearly state the assumptions and data that were used in each particular facet of design or analysis and explain why the use of different data and assumptions do not materially affect the overall design.
4. Horizontal emplacement of waste packages, as proposed by Sandia, has obvious and significant economic and operational advantages. However, questions regarding borehole stability, compatibility with backfill emplacement, and assurance of retrievability are such that NRC is concerned about whether adequate confidence can be developed in this scheme prior to a license application without some level of demonstration.

Items for Further Discussion

1. The technical basis on which the engineered systems performance objectives will be met.
2. The proposed physical and phenomenological models that will be used in the analysis and design of the repository in the unsaturated zone of Yucca Mountain.
3. The philosophy and technical approach to be used in specifying and developing borehole and shaft seals for a repository in the unsaturated zone at Yucca Mountain.
4. The philosophy, logic, and proposals for an approach of comingling of waste (commercial high level, defense high level, commercial spent fuel, and commercial TRU) in a repository in unsaturated tuff.

Information Requested

Viewgraphs

1. Preliminary Repository Layouts and Elevations, Showing Incline
2. Waste Emplacement Configurations
3. Temperature Buildup in Drifts for Vertical and Horizontal Emplacement Scenarios
4. Repository Sealing Elements and Approach Used
5. Waste Emplacement Factors
6. NNWSI-RSP Elements
7. Comparison of Tuff Properties and Average Properties, by Zones
8. Conceptual Pictures of Drilling and Overcoring Equipment for Emplacement Holes
9. Tuff Concrete Studies and Properties
10. Confined and Unconfined Thermal Expansion Data
11. Heated Block Experiment
12. Projected Variations in Stress with Depth (2 View Graphs - Hustrulid)
13. Pillar Factors of Safety
14. Global Average Safety Factors Around Openings
15. Table Showing Temperature Buildup and Heat Removal Requirements for Various Emplacement Scenarios
16. Summary Table on Hydrothermal Analysis
17. Statistics on Various Mechanical Miners
18. Thermal Conductivity of Tuff and Remaining Work on Thermal Properties
19. Thermal Expansion
20. G-Tunnel Field Experiments, In-Situ Stress, Summary of Results
21. Stability of Openings: Repository Spatial Relations, Technical Constraints, Summary of Results
22. Rock Mass Classification
23. Waste Emplacement - Specified Conditions
24. Shaft Statistics - Mt. Taylor and Yucca Mtn.
25. Shaft Lining Stability at Mt. Taylor

Other Information

- Geologic Logs for GU-3 and G-4 Coreholes
- Seisviewer Coreholes Data for G1, GU-3, and G-4
- List of Design or Geoengineering Codes That Will be Used by NNWSI Project in the Analysis of the Repository

The following are the points raised by DOE.

Observations

1. The workshop provided SNL technical staff supporting the NNWSI Project with a good understanding of the questions important in a regulatory arena and the requirements necessary to address issues of importance.
2. The workshop provided good insight into the logic of NRC personnel with regard to how they will review information important to licensing.

3. The meeting was conducted in a professional and open manner which facilitated an efficient and constructive discussion of design basis and design philosophy.

4. NRC indicated that the list of geomechanical properties presented by Ron Price appears to bound those expected to be measured or determined for input to the repository design.

Items for Discussion at Future Meetings

1. The basis on which stability of underground openings will affect the protection of health and safety for a radiological hazard.

2. The aspects of design NRC expect to review as part of the license review.

3. The sampling procedures needed to assure NRC that samples taken for the purpose of mechanical testing are representative of the geologic media.

Information Requested

None

Donald L. Vieth 4/25/83
Donald L. Vieth
Director
Waste Management Project Office
DOE/NV

Seth Coplan
Project Manager
Division of Waste Management
NRC