



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555  
AUG 31 1988

Mr. Ralph Stein, Acting Associate Director  
Office of Systems Integration and Regulations  
Office of Civilian Radioactive Waste  
Management  
U. S. Department of Energy, RW-24  
Washington, D. C. 20545

Dear Mr. Stein:

Subject: Evaluation of Nevada Nuclear Waste Storage Investigation (NNWSI)  
Project's February 19, 1988, Responses to Action Items and  
Information Requests

- References:
- (1) Letter, Gertz (DOE) to Linehan (NRC), dated February 19, 1988
  - (2) Letter, Coplan (NRC) to Vieth (DOE), dated April 14, 1983
  - (3) NRC-NNWSI Project Exploratory Shaft Design/Construction Meeting Summary, August 27-28, 1985
  - (4) Summary of Meeting on Proposed Changes to the NNWSI Project Exploratory Shaft Facility (ESF), April 14-15, 1987

In a letter to NRC dated February 19, 1988, (Reference (1)), the NNWSI Project provided responses to eight ESF-related Action Items and Information Requests. The NRC staff has reviewed these responses, and this letter describes the results of that review.

The eight Action Items and Information Requests addressed by the NNWSI Project in Reference (1) originate in references (2), (3), and (4). A list of these items is enclosed. All these items specifically deal with seal design, seal materials, placement methods, and seal testing. The NNWSI Project responses generally refer to various Sandia National Laboratories reports that contain information on seals (e.g., SAND83-1778, SAND84-2641, and SAND84-1895) and exploratory shaft lining (e.g., SAND83-7068 and SAND83-7069).

The NRC staff considers that the adequacy of the seal design, materials, placement methods, and testing should be evaluated in conjunction with DOE's preliminary performance analysis and the ESF design. The results of the preliminary performance analysis should provide insight into the importance of seals, drainage, and ESF layout in meeting the overall performance objectives. If DOE places high performance requirements on the seals in the ESF design, then the seal design should meet stringent acceptance criteria. However, if seals are not heavily relied upon to meet the performance objectives, their design may be based upon less rigorous acceptance criteria.

Hence, NRC cannot adequately evaluate the information forwarded in the February 19, 1988 letter until DOE provides the preliminary performance analysis. In addition, the NNWSI Project's forthcoming responses to open items on the ESF design (including NRC Consultation Draft Site Characterization Plan [CDSCP] Point Papers on Section 8.4) could also

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affect the NRC staff evaluation of the seal design. In particular, the NNWSI Project's response to the NRC CDSCP Objection on shaft locations would have to be considered by the NRC staff in the evaluation of the adequacy of the information on the seal design. I therefore recommend that DOE submit the above-mentioned materials early on so that NRC staff can proceed with the review of DOE's position on seal design issues.

There remains a substantial number of open items--including those discussed in this letter--from References 2, 3, and 4 as well as from the NRC staff CDSCP point papers related to exploratory shaft locations, design, construction, and sealing. At the July 18-19, 1988 NRC-DOE ESF meeting and in an August 19, 1988 NRC letter to DOE the NRC proposed that a meeting be scheduled in the near future to discuss how each open item can be resolved and a schedule for resolution. This meeting is now scheduled for October 18-20, 1988. King Stablein (FTS 492-0446) of my staff will continue to work with your staff concerning details of this meeting.

If you have any questions concerning this letter please contact Mr. Stablein.

Sincerely,

*JSI*

John J. Linehan, Acting Chief  
Operations Branch  
Division of High-Level Waste Management  
Office of Nuclear Material Safety  
and Safeguards

Enclosure: As stated

cc: C. Gertz, DOE/NV-WMPO  
R. Loux, State of Nevada  
D. Dawson, SAIC

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Note: Stablein concurred on  
8/29/88 draft

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LIST OF ACTION ITEMS AND INFORMATION REQUESTS ADDRESSED BY THE NNWSI PROJECT  
IN THE LETTER FROM C. GERTZ (DOE) TO J. LINEHAN (NRC), DATED FEBRUARY 19, 1988

1. 487IR IIIb - Discuss recognition of possible need for remedial measures to maintain postclosure isolation capabilities due to penetration of targeted geological/hydrological structures.
2. 885AI 22 - A decision (and the implication of such a decision) on whether the DOE will remove the liner at permanent closure or use it as part of the long term sealing system has not been determined.
3. 885AI 23 - A discussion of sealing materials and placement method and timing for exploratory boreholes from the ES will be provided in a future meeting on repository design.
4. 483IR Id - I. Shaft and Seal Design Considerations  
d. Describe the seal design and materials.
5. 483IR IIIa - III. Sealing or Grouting Plans and Procedures  
a. Describe how the seals are expected to perform in sealing the exploratory shaft. Describe tests done, both laboratory and field, to determine their long-term durability and their compatibility, both chemical and physical, to the host rock environment.
6. 483IR IIIb - b. Describe the placement methods.
7. 483IR IIIc - c. Describe remedial methods to be used if sealing methods are not adequate.
8. 483IR IVc - IV. Construction Testing and Inspection Plans and Procedures  
c. Describe test and inspection procedures to be used after sealing of the shaft to assess the results of the sealing effort in controlling adverse effects. Include information such as grout strength tests, visual identification of seal condition, records of water inflow, assessment of seal bond to host rock, and logging of drill holes.