Department of Energy
Washington, DC 20585

JUN 27 1989

Mr. B. J. Youngblood, Deputy Director
Division of High-Level Waste Management
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Youngblood:

In December, 1988, DOE produced the Exploratory Shaft Location Documentation Report, Gnirk et. al., (NVO-326), which presented a historical summary of information relevant to locating, relocating, and designing the exploratory shafts for site characterization at the Yucca Mountain site. NVO-326 specifically described related events prior as well as subsequent to, publication of SAND84-1003, the report by Bertram on the NNWSI Exploratory Shaft Site and Construction Method Recommendation Report, August, 1984 (Bertram, 1984), but did no new analyses and was not intended to be a Subpart G document.

In February, 1989, DOE produced a Technical Assessment Review (TAR) (Yucca Mountain Project Review Record Memorandum: Exploratory Shaft Facility Title I Design Acceptability Analysis and Comparative Evaluation of Alternative ESF Locations, February,1989 (YMP/89-3). A part of that TAR, the Comparative Evaluation, evaluated alternative exploratory shaft locations with respect to differences in waste isolation potential and potential adverse effects of shaft sinking, and assessed what influence, if any, these differences might have had on the selection of the preferred shaft location, had they been an explicit consideration in the location selection process

With respect to both NVO-326 and the Comparative Evaluation of YMP/89-3, DOE assumed that the specific location of Exploratory Shaft-2 (ES-2) was within one of the five preferred areas delineated in Bertram, 1984. In fact NVO-326 states on page 66 that:

> *The new locations [e.g. the new locations for ES-1 and ES-2] are within the Coyote Wash ESF site area identified and recommended on the basis of the results of the ES site screening activity in 1982 (Bertram, 1984).*

As you know (letter from Linehan to Kunich, Aug 19, 1987), a plot of the location of the shafts shows that the actual site of ES-2 is located about 130 feet northeast of the Bertram preferred area that was selected for the location of the exploratory shaft.

The Comparative Evaluation of YMP/89-3 of the ES locations explicitly compiled and presented site characteristics for the five preferred areas in Bertram (1984) relative to waste isolation potential and the potentialy adverse affects of shaft construction. The data base for parameters related to

locations outside the preferred areas (such as the actual ES-2 location) contains information at the same level of detail, but was not explicitly tabulated in the report.

The effect on waste isolation that this location difference is thought to have is currently judged to be insignificant. This conclusion is based upon the Comparative Evaluation itself and on the assessments of impacts of the shafts on the ability of the site to isolate wastes contained in Section 8.4 of the SCP. However, we do consider it prudent to reserve our final judgement on the significance of the location difference until we have available the results of an ongoing assessment and review the significance of an anomoly in an earlier electrical resistance survey. This review will consider the results of the Technical Assessment Review which is underway, evaluating the geophysical anomaly (USGS, Open File Report, 82-182, 1982) and geologic mapping results (Dixon, 1982, Scott and Bonk, 1984) completed near the current shaft locations. A copy of the letter announcing this Technical Assessment review is attached for your information.

If you have any question regarding the above actions, please contact me, FTS 896-6046 or Jerome Saltzman, FTS 896-9692.

Ralph Stein

Ralph Stein
Associate Director for Systems
Integration and Regulations
Office of Civilian Radioactive
Waste Management

Attachment

cc: K. Stablein, NRC
R. Loux, State of Nevada
C. Johnson, State of Nevada
D. Bechtel, Clark County, NV
S. Bradhurst, Nye County, NV
M. Baugham, Lincoln County, NV

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WBS #1.2.6
"QA: N/A"

MAY 25 1989

Leslie J. Jardine, LLNL, Livermore, CA
Larry R. Hayes, USGS, Las Vegas, NV
Richard J. Herbst, LANL, Los Alamos, NM
Thomas O. Hunter, SNL, 6310, Albuquerque, NM
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Joseph C. Calovini, H&N, Las Vegas, NV
Robert F. Pritchett, REECo, Las Vegas, NV
Richard L. Bullock, F&S, Las Vegas, NV
Addanki M. Sastry, MACTEC, Las Vegas, NV

ANNOUNCEMENT OF ACTIONS UNDERWAY BY THE YUCCA MOUNTAIN PROJECT OFFICE (PROJECT OFFICE) IN RESPONSE TO U.S. NUCLEAR REGULATORY COMMISSION (NRC) CONCERNS REGARDING THE GEOPHYSICALLY INFERRED FAULT IN THE VICINITY OF THE PROPOSED EXPLORATORY SHAFT LOCATION

At the direction of the Office of Civilian Radioactive Waste Management in response to NRC concerns regarding an inferred fault near the proposed Exploratory Shaft Facility (ESF), the Project Office will conduct a Technical Assessment Review (TAR) of the relevant geological and geophysical data, and its interpretation. If necessary, the review will also consider the potential impact the inferred fault may have on the exploratory shaft and ESF Title II design. The enclosure describes the purpose and scope of the TAR, which will be conducted in accordance with Quality Management Procedure (QMP)-02-08. This transmittal satisfies the requirements of Section 3.2, QMP-02-08, of the TAR Notice.

The NRC is expected to raise this potential fault as a Site Characterization Plan comment, and it is important to respond adequately and promptly. The TAR will begin immediately, and it is expected to be completed by mid-July. We anticipate that the required level of support of the team members will average half-time for the next 6-8 weeks.

The purpose of the TAR is contained in the enclosed TAR Plan. Also provided in the enclosure is a preliminary schedule for the review, a list of participating organizations, and composition of the TAR Team. You are requested to make arrangements for appropriate staff to participate in the TAR. A list of suggested team members is included in the enclosed plan. If the named individuals are unavailable, please provide alternates with equivalent qualifications. As the Project Office Designee, Science Applications International Corporation (SAIC) is to conduct the TAR in accordance with this announcement. Richard Lee of SAIC has been named Chairman of the TAR team. The TAR will be initiated with the distribution of training materials and the TAR Package. All team members will be contacted by the TAR Chairperson or their group leader regarding individual assignments and schedule. It is expected that all team members will be asked to attend a tour

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of the Coyote Wash area on June 7, 1989. Additional time in the field may be required of members on the geology team. It is also expected that all team members would be present at the SAIC offices for the week of June 26 to caucus on the TAR Review Memorandum.

David C. Dobson, Chief of the Regulatory Interactions Branch, will be the DOE lead in the TAR. If you have any questions about the details in this letter, please contact him at (702) 794-7940 or FTS 544-7940 or Richard C. Lee of SAIC at (702) 794-7134, or FTS 544-7134.

Maxwell B. Blanchard

Maxwell B. Blanchard, Director
Regulatory and Site Evaluation Division
Yucca Mountain Project Office

YMP:DCD-4016

Enclosures:
1. TAR Notice w/Schedule
2. TAR Team

MAY 25 1989

cc w/encls:
S. H. Kale, HQ (RW-20) FORS
Ralph Stein, HQ (RW-30) FORS
Stephan Brocoum, HQ (RW-221) FORS
Jeffrey Kimball, HQ (RW-221) FORS
Mohammed Mozumder, HQ (RW-22) FORS
David Siefken, Weston, Washington, DC
David Fenster, Weston, Washington, DC
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D. P. Klein, USGS, Denver, CO
Adel Zhody, USGS, Denver, CO
M. P. Chornack, USGS, Denver, CO

TECHNICAL ASSESSMENT REVIEW NOTICE

N-QA-010
1/89

Revision 0

To Yucca Mountain Project Manager Date May 18, 1989

Technical Area to be Reviewed Technical Assessment Review Notice: Geologic & Geophysical Evidence Pertaining to Structural Geology in the Vicinity of the Proposed Exploratory Shaft

WBS No.: 1.2.3.2.1 (see attachment 1)

Review Date June 7 1989 Location Las Vegas Time see attachment 1

Technical Assessment Review Chairperson Richard C. Lee

Based on a review of the qualification documentation, this Technical Assessment Review Chairperson is qualified to execute the responsibilities of QMP-02-08 with respect to the scope and purpose of this Technical Assessment Review.

Scope of Technical Assessment Review: See Attachment 1

Purpose of Technical Assessment Review: See Attachment 1

Signed Richard C. Lee

Reviewed and Approved:

James B. Taylor 5/18/89

Project Quality Manager Date

Attachments:

Background, Purpose and Scope of Technical Assessment Review

ENCLOSURE 1

BACKGROUND, PURPOSE AND SCOPE OF TECHNICAL ASSESSMENT REVIEW: GEOLOGIC AND GEOPHYSICAL EVIDENCE PERTAINING TO THE STRUCTURAL GEOLOGY IN THE VICINITY OF THE PROPOSED EXPLORATORY SHAFT LOCATION

Background: U. S. Geological Survey Open File Report 82-182 (OFR 82-182) shows an interpretation of geophysical resistivity data that indicates a fault may be present near the proposed exploratory shaft site. The NRC has reviewed OFR 82-182 and may request a summary of the actions DOE has taken to address the fault shown by that report. In addition, the NRC may request a summary of the DOE actions that were taken to address the recommendations in Bertram (1984) for additional detailed geological and geophysical work in the vicinity of the exploratory shaft site. The work proposed in the Bertram report was completed; there is a letter report from Dixon to Vieth (1982) on geological mapping and open file reports summarize additional drilling and geophysical work completed in response to the recommendations.

The NRC staff have also expressed interest in an inferred fault near the exploratory shafts shown on SCP Figure 1-40. This figure is based on faults interpreted from geophysical data shown on a map in U. S. Geological Survey Open File Report 84-792. The OFR report does not give any detail on the data on which the map is based, although OFR 82-182 is referenced. R. Stein (DOE/HQ) requested in March, 1989, that DOE be prepared to talk to NRC on this topic by the end of April, 1989. Although a date for discussion with the NRC has not been firmly established, it is envisioned that this TAR will serve as the basis for such an interaction.

Purpose: The purpose of the TAR is to: (1) review the data and interpretations on which OFR 82-182 is based; (2) review the results of other geologic and geophysical investigations that relate to the possibility of faulting in the vicinity of the exploratory shafts; and (3) after reviewing the data, the TAR Team will determine the interpretations allowed by the evidence on the presence or absence of faulting in the vicinity of the exploratory shafts.

The TAR team will also review the existing documentation to determine: (1) how the geologic and geophysical data were considered in making the decision on the location of exploratory shafts; and (2) whether the recommendations of the Bertram (1984) report were adequately implemented.

Scope of Technical Assessment Review: The following tasks will be accomplished by the Technical Assessment Review Team. The findings of the team will be documented in narrative form in the Review Record Memorandum.

1. Review the data collection and processing techniques, and subsequent interpretations, which form the basis for the proposed existence of the small fault shown near the location of the exploratory shafts in U. S. Geological Survey Open File Report 82-182. The TAR team will establish and document criteria for the technical reviews. They will then summarize the original objective and purpose of the work, the limitations of the data, and they will evaluate the interpretations (including alternatives) supported by the data. If appropriate, sources for review criteria will be identified.

2. The TAR Team will determine what other geologic and geophysical data are available that may bear on the presence or absence of a fault near the location of the exploratory shafts. The TAR team will review any such data discovered and determine the original purpose of the work, the implications of the data with respect to the presence or absence of faulting in the vicinity of the exploratory shafts, and the limitations of the data.

3. At the discretion of the TAR chairperson, the reviews described in 1 and 2, above, may also include a detailed field review of the geologic mapping in the vicinity of the exploratory shafts, or field reviews of the geophysical work by members of the TAR team, or qualified designees. Prior to conducting any proposed field reviews, the TAR team shall establish and document criteria for the review.

4. After completing Items 1, 2 and 3, the TAR team will determine whether the possible fault shown in U. S. Geological Survey Open File Report 82-182 was adequately considered during the selection of the exploratory shaft location. The team will develop criteria for the determination, and then evaluate the impacts on the exploratory shaft and ESF Title II design process if it was concluded that a fault did exist.

5. The TAR Team should consider, and make recommendations on, future work that should be undertaken as a result of the findings of the technical assessment.

6. Following completion of the tasks described above, the TAR Team will compile a report which summarizes the results of the assessment, and specifically addresses at least the following topics:

   A. Historical perspective: summarize the sequence of events that occurred relevant to this topic, and the documents that exist in YMP files regarding the geological and geophysical work.

   B. Geophysical perspective: summarize the past work, the rationale for conducting the studies, the interpretations (and alternatives) that are consistent with the data, and the limitations of the data.

   C. Geological perspective: summarize the rationale for, and the results of, the past studies, the interpretations (and alternatives) that are consistent with the data, and the limitations of the data.

   D. Results of field checks (optional): summarize any work accomplished, and what results are indicated.

E. Summary and recommendations, to include, at a minimum: (A) assessment of the data relevant to the possible presence of a fault near the proposed ESF, (B) evaluation of whether the available data were adequately considered during the process of selecting the proposed shaft locations; (C) perspective on the possible impact on Title II design if the presence of a fault was demonstrated; and (D) recommendations for further action.

Logistical Information for the Technical Assessment Review

The first meeting of the Technical Assessment Review Team will be convened by the Review Chairman in May, 1989, in Las Vegas. The current schedule is shown below. Members of the team will be named by the Review Chairman, who will establish and document criteria for their selection. Team members will be notified of further details as they become available.

ESF Resistivity Fault TAR Schedule

Week	Goal
May 22, 1989	TAR Chairman makes contact with each team member; Initiate TAR and distribute Plan; Define and qualify team; distribute TAR Package.
May 26	Team members have telephone conferences with team leaders; reading assignments are completed; strategies are defined.
May 30	Preparation for field trip to Coyote Wash area; continuation of work.
June 7	Field trip to Coyote Wash taking one full day in field; one to four days of additional verification work as required by Geology team leader.
June 12	Any re-interpretation of geologic data completed.
June 19	Any re-interpretation of resistivity data completed.
June 26	TAR team caucus; complete preliminary draft of RRM.
July 10	Final RRM completed.
July 17	Transmit TAR Data Package to Document Control.

REFERENCES

Bertram, S.G., 1984, NNWSI Exploratory Shaft Site and Construction Method Recommendation Report, SAND 84-1003, Sandia National Laboratories, Albuquerque, NM.

Letter from G. Dixon to D.L. Vieth, July 16, 1982, discussing detailed geologic mapping of 5 sites recommended by Ad Hoc TOC Committee.

Smith, C. and H.P. Ross, 1982, Interpretation of Resistivity and Induced Polarization Profiles with Severe Topographic Effects, Yucca Mountain Area, Nevada Test Site, Nevada, USGS OFR 82-182, Open File Report, U.S. Geological Survey.

USGS (U.S. Geological Survey), 1984, A Summary of Geologic Studies Through January 1, 1983, of a Potential High-Level Radioactive Waste Repository Site at Yucca Mountain, Southern Nye County, Nevada, USGS OFR 84-792, Open File Report, U.S. Geological Survey.

TAR Team

YMPO Branch Chief responsible for TAR: David Dobson
TAR Chairperson: Richard Lee — SAIC FTS 544-7134
TAR Secretary: Marshall Davenport — SAIC FTS 544-7661

Team Members:	Team/discipline	
Dave Dobson	Geology	YMPO FTS 544-7940
Mohammad Mozumder	Geophysics	DOEHQ FTS 896-5684
Jeff Kimball	Geophysics & Geology	DOEHQ FTS 896-1063
Ernie Hardin	Geophysics (Team Leader)	SAIC FTS 544-7617
Terry Grant	Geology (Team Leader)	SAIC FTS 544-7647
Forrest Peters	Geophysics (QA Specialist)	SAIC FTS 544-7753
David Cummings	Geophysics & Geology	SAIC FTS 544-7835
Gerald L. Shideler	Geology	USGS FTS 776-1273
Adel Zhody	Geophysicist	USGS FTS 776-1222
Richard Snyder	Geology	USGS FTS 776-1263
Dave Fenster	Geology	Weston 202-646-6647
Thomas E. Hinkebein	Engineering	SNL FTS 846-0580

ENCLOSURE 2