

Mr. Carl P. Gertz, Director
Waste Management Project Office
U. S. Department of Energy
M/S 523
Las Vegas, Nevada 89109

FEB 19 1988

Dear Mr. Gertz:

By letter dated February 12, 1988, the staff forwarded to you its plan for the upcoming site visit on the Department of Energy's (DOE) seismic monitoring program at Yucca Mountain. In Section 2.0, "Approach and Activities," of the plan, there were several preparatory activities given. Two of these activities included the identification of documents that should be available on site and the generation of questions that could be used as general guidance during the visit.

Hence, the purpose of this letter is to provide you with a set of questions that will help DOE prepare for the visit. The specific questions are contained in Enclosure 1 and are listed under corresponding items that were originally identified in Enclosure C of the February 12, 1988 letter. Several of the questions discuss documents that should be available during the visit. Enclosure 2 is a copy of the itinerary/agenda that will be used during the trip. These questions and agenda have been previously discussed with Ms. Mary Lou Brown of Science Applications. If you require any additional information, please contact the cognizant staff member for the audit, Mr. Joe Holonich at FTS 492-3403.

Sincerely,

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B. J. Youngblood, Branch Chief
Operations Branch
Division of High-Level Waste Management
Office of Nuclear Material Safety
and Safeguards

Enclosures: As stated

cc: R. Stein, DOE-HQ
R. Loux, State of Nevada
M. Glora, SAIC

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NH16

ENCLOSURE 1

ELEMENTS OF A SEISMIC MONITORING DATA ACQUISITION NODE

General items:

- o Item 1: Overall description, in both text and figures, of data acquisition system including seismic station configuration, telemetry links, and type(s) of seismometers, signal amplification and transmission (if applicable) equipment, and data acquisition and recording equipment.

Question 1: Is this information kept up to date in an operations logbook?

Question 2: Is there a SIP which governs the seismic monitoring activity?

Question 3: What are the technical and QA procedures that are being applied to the seismic monitoring activities?

Question 4: How are the technical procedures developed?

Question 5: How are changes to the technical procedures handled?

Question 6: Are all of the seismic monitoring activities considered Q-Level 1?

- o Item 2: Data acquisition and recording equipment, if seismic data are telemetered to the node, otherwise data playback and recording equipment.

Question 1: Is the equipment purchased from manufacturers or is it built in-house?

Question 2: What is the process by which equipment is purchased or built?

Question 3: If it is purchased equipment, is it modified to suit special requirements of the seismic monitoring network?

Question 4: If it is purchased equipment, are the manufacturer's performance and calibration specifications accepted as is or are they verified?

Question 5: If it is in-house equipment, are there performance and calibration specifications for the equipment?

Question 6: If it is built in house, how is it covered by the QA program?

Question 7: Is backup or replacement equipment needed?

Question 8: How is the equipment labeled?

- o Item 3: Equipment for temporary seismic stations and a description of procedures for the deployment of temporary stations in the event of significant earthquakes or other seismic events in the network vicinity.

Note: Questions under Item 2 are applicable here also.

Question 1: Are there written standard procedures for the deployment of the temporary seismic stations?

- o Item 4: Data storage facility including a description the data management system and the means used to preserve the quality of the seismograms.

Question 1: Are the physical data media well-marked with unambiguous permanent labels?

Question 2: If the data are packaged in a container (eg. paper seismograms in a box or magnetic tape reels in a can) are the labels on both the data media and on the container?

Question 3: Are the data stored in an orderly manner that would facilitate retrieval?

Question 4: Is there a written log of what data is stored and where it is located?

Question 5: If the data are on magnetic media, are there written procedures for periodically refreshing the data to minimize degradation due to demagnetization?

Question 6: Are light-sensitive records protected from sources of light?

- o Item 5: Overall description, in both text and figures, of data analysis system including a description, and the capability of demonstration, of the data processing stream from raw data to determined earthquake parameters, the data processing equipment, the earthquake parametric data archival procedures.

Question 1: Is this information kept up to date in an operations logbook?

Question 2: Is software used in the data analysis? Has it been verified and validated?

- o Item 6: Audits: Has this activity been audited internally or by WMPD? Are any non-conformances pending or corrective actions underway?

Data acquisition items:

- o Item 7: Description of data acquisition system response including the seismometer response to ground motion and the passbands of the amplification, transmission, acquisition, and recording equipment.

Question 1: Is this information kept up to date in an operations logbook?

Question 2: Is software used in the data acquisition process? Has it been verified and validated?

- o Item 8: Logs of modifications, and a description of logging procedures, to the data acquisition system including changes to the seismic and telemetry network configurations, equipment replacements, and changes in seismic station sensitivities.

Question 1: Is there a standard form that is used to log these modifications?

Question 2: Is this information kept up to date in an operations logbook?

- o Item 9: Logs of data acquisition system outages including periods of seismic station and telemetry inoperation and data losses at the node due to failures of the acquisition or recording equipment or failures in the data storage system.

Question 1: Is there a standard form that is used to log these modifications?

Question 2: Is this information kept up to date in an operations logbook?

- o Item 10: Logs of data acquisition system maintenance.

Question 1: Is there a standard form that is used to log this maintenance?

Question 2: Is this information kept up to date in an operations logbook?

Data analysis items:

- o Item 11: If the data acquisition system is not full-time, that is, an event-only acquisition system, a description of the algorithm, and its threshold parameters provide used for the detection and analysis of seismic events.

Question 1: Is this information kept up to date in an operations logbook?

- o Item 12: Description, and the capability of demonstration, of playback and recording procedures for data acquired from event-only acquisition systems.

Question 1: Is this information kept up to date in an operations logbook?

- o Item 13: Descriptions of the crustal and attenuation models used to determine the location and size of the earthquakes respectively.

Question 1: Is this information kept up to date in an operations logbook?

- o Item 14: If appropriate, a description, and the capability of demonstration, of procedures for the routine determination of earthquake mechanisms.

Question 1: Is this information kept up to date in an operations logbook?

Data reporting items:

- o Item 15: Overall description of data reporting procedures including the periodic reporting of data acquisition system operations and seismic data analysis.

Question 1: Is this information kept up to date in an operations logbook?

Question 2: Is there a periodically published document describing the status of the seismic monitoring network and including a summary of earthquake parameters determined for the reporting period?

Question 3: Is the document described in Question 2 published in a timely manner following the reporting period?

Question 4: Have any technical reports been issued? Have they undergone technical and/or Peer Review?

- o Item 16: Description of the capabilities and procedures for either real-time or periodic data exchange with the operators of other seismic networks whose data would augment the data acquisition system.

Question 1: If a real-time or periodic data exchange exists, are the parameters described in Item 6 known for the data received?

Question 2: Is this information kept up to date in an operations logbook?

Question 3: Is there a distribution list for reporting data? How is it determined?

ENCLOSURE 2

ITINERARY/AGENDA
SEISMIC MONITORING PROGRAM VISIT
February 29 - March 3, 1988

February 28 Part of team arrives in Denver

February 29

9:44 a.m. Remainder of team arrives in Denver U228

1:00 p.m. Entrance Meeting

 Introduction NRC/DOE
 DOE Presentation

2:00 p.m. Staff Evaluation Activities

5:00 p.m. NRC Meeting

March 1

9:00 a.m. Staff Evaluation Activities

12:00 p.m. Lunch

2:00 p.m. Complete Staff Evaluation

3:00 p.m. NRC Meeting

5:21 p.m. Leave Denver via U283 arrive Vegas 6:05 p.m.

March 2

9:00 a.m. Visit Seismic Monitoring Stations

12:00 p.m. Lunch

1:00 p.m. Continue Visits and Evaluation Activities

3:00 p.m. NRC Meeting

4:00 p.m. Exit Meeting

5:00 p.m. Complete Visit

March 3

8:00 a.m. Leave Las Vegas for DCA

OFFICIAL CONCURRENCE AND DISTRIBUTION RECORD

LETTER TO: Mr. Carl P. Gertz, Director
Waste Management Project Office
U. S. Department of Energy
M/S 523
Las Vegas, Nevada 89109

FROM: B. J. Youngblood, Branch Chief
HLOB/DHLWM/NMSS


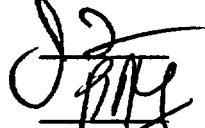
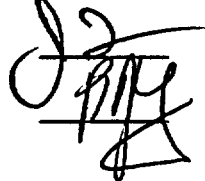
SUBJECT: TO PROVIDE CERTAIN QUESTIONS TO PREPARE DOE FOR SITE VISIT

DATE: FEB 19 1988

DISTRIBUTION

R. E. Browning	R. L. Johnson	P. T. Prestholt
M. J. Bell	K. Stablein	Br. Secy (1)
B. J. Youngblood	J. Kennedy	R. Ballard
J. O. Bunting	NMSS r/f	HLOP r/f
J. J. Linehan	Central Files	S. Coplan

CONCURRENCES

ORGANIZATION/CONCUREE	INITIALS	DATE
HLOB/J. Holonich		02/19/88
HLOB/J. Linehan		02/19/88
HLOB/B. J. Youngblood		02/19/88