



Department of Energy
 Yucca Mountain Site Characterization
 Project Office
 P. O. Box 98608
 Las Vegas, NV 89193-8608

WBS 1.2.9.3
 QA

OCT 30 1991

Larry R. Hayes
 Technical Project Officer
 for Yucca Mountain
 Site Characterization Project
 U.S. Geological Survey
 101 Convention Center Drive
 Suite 860
 Las Vegas, NV 89109

VERIFICATION OF CORRECTIVE ACTION AND CLOSURE OF CORRECTIVE ACTION
 REQUEST (CAR) YM-91-050 RESULTING FROM YUCCA MOUNTAIN QUALITY ASSURANCE
 DIVISION (YMQAD) AUDIT YMP-91-05 OF U.S. GEOLOGICAL SURVEY

The YMQAD staff has verified the corrective action to CAR YM-91-050 and
 determined the results to be satisfactory. As a result, the CAR is
 considered closed.

If you have any questions, please contact either Catherine E. Hampton at
 794-7973 or A. Edward Cocoros at 794-7242.

Richard E. Spence, Director
 Yucca Mountain Quality Assurance Division

YMQAD:CEH-522

Enclosure:
 CAR YM-91-050

cc w/encl:
 K. R. Hooks, NRC, Washington, DC
 S. W. Zimmerman, NWPO, Carson City, NV
 T. H. Chaney, USGS, Denver, CO

cc w/o encl:
 J. W. Gilray, NRC, Las Vegas, NV
 N. J. Brogan, SAIC, Las Vegas, NV, 517/T-08
 D. D. Porter, SAIC, Golden, CO

*Add: K. R. Hooks 4/1 Encl
 11
 WM-11
 102.7
 NH03
 11*

**OFFICE OF CIVILIAN
RADIOACTIVE WASTE MANAGEMENT
U.S. DEPARTMENT OF ENERGY
WASHINGTON, D.C.**

14 CAR NO.: YM-91-50
DATE: 5/30/91
SHEET: 1 OF 2
QA
WBS No.: 1.2.9.3

CORRECTIVE ACTION REQUEST

1 Controlling Document YMP-USGS-QAPP-01, R5, YMP-USGS-QMP-5.01, R4	2 Related Report No. Audit No. YMP 91-05
---	---

3 Responsible Organization USGS	4 Discussed With T. E. Chaney/L. R. Hayes
------------------------------------	--

10 Response Due 6/28/91	11 Responsibility for Corrective Action L. R. Hayes, USGS TPO	12 Stop Work Order Y or N N
----------------------------	--	--------------------------------

5 Requirement:

(1) Para. 2.5: The USGS shall establish requirements for the selection, indoctrination, and training of personnel performing or verifying activities that affect quality The requirements shall establish position descriptions, set forth minimum personnel qualifications . . . prior to initiation of activities that affect quality." (2) YMP-USGS-QMP-5.01, R4, Para. 5.4, "A technical review of the technical procedure and its revisions shall be performed by a subject matter expert"

6 Adverse Condition:

A review of USGS procedure SP-06, R2, was performed by C. Langer. In accordance with USGS-QMP-3.07, a "Technical Reviewer Selection Form" was completed. The basis of qualifications for the reviewer was familiarity with the subject. The basis of qualification does not establish the minimum qualifications required, nor does it establish a basis to support that the individual is a subject matter expert.

7 Recommended Action(s):

Identify the remedial action(s) to be taken to correct the deficiencies noted in Block 6. Investigate the program process, activities or documentation to determine the extent and depth of similar deficient conditions on the CAR. Identify these deficiencies and provide

8 Initiator S. Dana <i>S. Dana</i>	Date: 5/30/91	9 Severity Level - 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/>	13 Approved By: OQA <i>Catherine H. [Signature]</i>	Date: 5/30/91
--	------------------	---	--	------------------

15 Verification of Corrective Action:

Corrective Action Verification attached. [Signature]
10/23/91

16 Corrective Action Completed and Accepted: OAR <i>[Signature]</i> Date <u>10/23/91</u>	17 Closure Approved By: OQA <i>R.C. [Signature]</i> <u>10/30/91</u>
---	--

**OFFICE OF CIVILIAN
RADIOACTIVE WASTE MANAGEMENT
U.S. DEPARTMENT OF ENERGY
WASHINGTON, D.C.**

CAR NO.: YM-91-50
DATE: 5/30/91
SHEET: 2 OF 2

**CORRECTIVE ACTION REQUEST
(continuation sheet)**

7 Recommended Action(s) (continued)

the measures required to correct them. Identify the cause of the condition and the planned corrective action to prevent recurrence.

OFFICE OF CIVILIAN
RADIOACTIVE WASTE MANAGEMENT
U.S. DEPARTMENT OF ENERGY
WASHINGTON, D.C.

CAR NO. YM-91-50
DATE: _____
SHEET: _____ OF _____

CORRECTIVE ACTION REQUEST
(continuation sheet)

CORRECTIVE ACTION RESPONSE:

1. CORRECTIVE ACTION FOR DEFICIENT CONDITION (CAR No. YM-91-50)

- A. **Extent of Deficiency:** The completed "Technical Reviewer Selection Form" was examined. The form does not list minimum qualifications required to establish a basis for a reviewer as a subject matter expert. An investigation is underway by the Geologic Division QA Implementation Specialists to evaluate the technical procedures for seismology (SPs) to determine if similar deficiencies exist. The results of this investigation will be outlined in a supplemental response by 8-1-91.
- B. **Root Cause:** The Technical Reviewer Selection Form states only "Familiarity with subject" to describe the qualifications of the reviewer. Upon further examination of the reviewer qualifications, it has been determined that the statement is not in error; however, the statement is too brief to achieve an understanding of the reviewer's qualifications. If the investigation reveals other causes, the results will be outlined in the 8-1-91 supplemental response.
- C. **Remedial Action:** The Technical Reviewer Selection Form will be completed as follows:
Name -- Charles Langer
Title -- Seismologist
Employer -- USGS, Branch of Geologic Risk Assessment
Basis of Qualification -- Charles Langer earned his master's degree in Geophysics from the Virginia Polytechnic Institute State University, Blacksburg, Virginia. He has been employed as a seismologist with the USGS since 1972 and has authored 85 professional papers in his field.

The Branch Chief, K.M. Shedlock, has determined the reviewer to be "familiar with the subject" and considers the reviewer's ability to be far above the acceptable minimum qualification standard. Therefore, there was no adverse impact on the quality of the review that was conducted. If the investigation reveals similar deficiencies, appropriate remedial actions will be taken and the results will be outlined in the 8-1-91 supplemental response.

- D. **Corrective Action to Prevent Recurrence:** At this point, this condition appears to be an isolated occurrence. The Branch Chief is aware of the information to be included on the forms, through coordination with the Geologic Division QA Implementation Specialists to correct the one form. If the investigation indicates other instances, appropriate preventive measures will be outlined in the 8-1-91 supplemental response.

RESPONSE APPROVED BY: _____

Lang R. H

DATE: 6/28/91

Ltr dtd 6/28/91 - Change to Horton

OFFICE OF CIVILIAN
RADIOACTIVE WASTE MANAGEMENT
U.S. DEPARTMENT OF ENERGY
WASHINGTON, D.C.

CAR NO. YM-91-050

DATE: _____

SHEET: _____ OF _____

CORRECTIVE ACTION REQUEST
(continuation sheet)

Response Accepted: S Davis 7/11/91
QAR Date

Response Accepted: Anthony Hampton Jr 7-13-91
QQA Date

OFFICE OF CIVILIAN
RADIOACTIVE WASTE MANAGEMENT
U.S. DEPARTMENT OF ENERGY
WASHINGTON, D.C.

CAR NO. YM-91-50
DATE: _____
SHEET: _____ OF _____

CORRECTIVE ACTION REQUEST
(continuation sheet)

1. **SUPPLEMENTAL RESPONSE FOR DEFICIENT CONDITION NOTED IN CORRECTIVE ACTION REQUEST NO. YM-91-50**

- A. **Extent of Deficiency:** As outlined in the 6/28/91 response, the evaluation of seismology procedures (SPs) was completed. No additional discrepancies were noted during this evaluation. To assure that the deficient condition has been fully addressed, the QA Implementation Specialists have expanded the investigation to include other technical procedures, specifically for geology (GPs), hydrology (HPs), and geochronology (GCPs). This more extensive investigation will take additional time to complete, and the results of the investigation will be outlined in another supplemental response by 9/16/91.
- B. **Root Cause:** There has been no change to the root cause provided in the 6/28/91 response. If the additional investigation reveals other causes, the results will be outlined in the 9/16/91 supplemental response.
- C. **Remedial Action:** The 6/28/91 response requires some clarification of actions. The deficient Technical Reviewer Selection Form will be corrected by the Branch Chief to include a more descriptive statement regarding the basis for qualification of the technical reviewer. The information listed in the 6/28/91 concerning the technical reviewer is part of the information that the Branch Chief would consider when the selection of a technical reviewer outside the YMP is made and documented on the Technical Reviewer Selection Form. Any remedial actions taken or to be taken as a result of the additional investigative actions will be outlined in a supplemental response by 9/16/91.
- D. **Corrective Action to Prevent Recurrence:** There is no change to the 6/28/91 response at this time. If the additional investigative actions indicate other deficiencies, appropriate preventive measures will be established and outlined in the 9/16/91 supplemental response.

RESPONSE APPROVED BY: Larry R. Hayes DATE: 8-1-91
Larry R. Hayes, YMP-USGS Technical Project Officer

Response Accepted: S. Davis 8/5/91
QAR Date

Response Accepted: Catherine Hampton for 8-16-91
OQA Date

Ltr dtd 8/1/91 - Hayes to Hampton

OFFICE OF CIVILIAN
RADIOACTIVE WASTE MANAGEMENT
U.S. DEPARTMENT OF ENERGY
WASHINGTON, D.C.

CAR NO. YM-91-50
DATE: 9-16-91
SHEET: 1 OF 1

CORRECTIVE ACTION REQUEST
(continuation sheet)

1. **SUPPLEMENTAL RESPONSE FOR DEFICIENT CONDITION NOTED IN
CORRECTIVE ACTION REQUEST NO. YM-91-50**

The following information is provided to supplement the 6-28-91 and 8-1-91 responses.

- A. **Extent of Deficiency:** The investigative actions are complete. Technical Reviewer Selection Forms for YMP-USGS technical procedures have been examined. In addition to the form originally cited in this CAR, five (5) other forms were corrected.
- B. **Root Cause:** There has been no change to the root cause provided in the 6-28-91 response as a result of the investigation.
- C. **Remedial Action:** The discrepant Technical Reviewer Selection Forms identified during the investigative phase have been corrected. The remedial actions are complete.
- D. **Corrective Action to Prevent Recurrence:** Appropriate Branch Chiefs were notified of the discrepant conditions. By working with the QA Implementation personnel and by correction of the forms, the Branch Chiefs are now aware of the proper statements to be included on the Technical Reviewer Selection Forms. No additional actions are needed.

RESPONSE APPROVED BY: [Signature] DATE: 9/16/91

For Larry R. Hayes, YMP-USGS Technical Project Officer

Response Accepted:

QAR

[Signature]

Date

9/30/91

Response Accepted:

OQA

[Signature]

Date

10/2/91

etc dtd 9/17/91 - Cheney to Norton

VERIFICATION ACTION

FOR

CAR-YMP-91-50

The following Technical Reviewer Selection Forms were reviewed and it was verified that the remedial action defined for CAR-YMP-91-50 was satisfactorily implemented:

Document	Reviewer
SP-06, R2	Charles Langer
GCP-03, R2	Hugh T. Millard
GCP-04, R3	Hugh T. Millard
GCP-07, R2	R. A. Zielinski
GCP-16, R3	Gary P. Landis
GCP-22, R0	Hugh T. Millard
GCP-29, R1	Don L. Sawatzky


A. E. Cocoros
10/23/91