



**Department of Energy**  
Office of Civilian Radioactive Waste Management  
Yucca Mountain Site Characterization Office  
P.O. Box 98608  
Las Vegas, NV 89193-8608

**MAY 17 1996**

L. Dale Foust  
Technical Project Officer  
for Yucca Mountain  
Site Characterization Project  
TRW Environmental Safety Systems, Inc.  
Bank of America Center, Suite P-110  
101 Convention Center Drive  
Las Vegas, NV 89109

VERIFICATION OF CORRECTIVE ACTION AND CLOSURE OF DEFICIENCY REPORT  
(DR) YMQAD-96-D014 RESULTING FROM YUCCA MOUNTAIN QUALITY ASSURANCE  
DIVISION'S (YMQAD) SURVEILLANCE YMP-SR-96-007 OF THE CIVILIAN  
RADIOACTIVE WASTE MANAGEMENT SYSTEM MANAGEMENT AND OPERATING  
CONTRACTOR (SCPb: N/A)

The YMQAD staff has verified the corrective action to DR  
YMQAD-96-D014 and determined the results to be satisfactory. As a  
result, the DR is considered closed.

If you have any questions, please contact either Robert B. Constable  
at 794-5580 or John R. Doyle at 794-1465.

Richard E. Spence, Director  
Yucca Mountain Quality Assurance Division

YMQAD:RBC-1756

Enclosure:  
DR YMQAD-96-D014

cc w/encl:

T. A. Wood, HQ (RW-14) FORS  
J. G. Spraul, NRC, Washington, DC  
S. W. Zimmerman, NWPO, Carson City, NV  
R. L. Strickler, M&O, Vienna, VA  
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Records Processing Center

cc w/o encl:

W. L. Belke, NRC, Las Vegas, NV  
J. R. Doyle, YMQAD/QATSS, Las Vegas, NV  
D. G. Sult, YMQAD/QATSS, Las Vegas, NV

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U.S. DEPARTMENT OF ENERGY  
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8 ☐ Performance Report  
☒ Deficiency Report  
NO. YMQAD-96-D014  
PAGE 1 OF 3  
QA: L

PERFORMANCE/DEFICIENCY REPORT

1 Controlling Document:  
Quality Assurance Requirements and Description (QARD), DOE/RW-0333P, Rev. 5

2 Related Report No.  
YMP-SR-96-007

3 Responsible Organization:  
CRWMS M&O

4 Discussed With:  
Norman Bartley

5 Requirement/Measurement Criteria:

QARD, Revision 5, Section 5.0, Paragraph 5.2.2, states in part: "Implementing documents shall include the following information as appropriate to the work to be performed:

A. Responsibilities and organizational interfaces of the organizations affected by the document."

6 Description of Condition:

Contrary to the above requirements, Civilian Radioactive Waste Management System, Management and Operating (CRWMS M&O) Contractor Implementing Line Procedure (NLP)-2-0, Revision 1, "Determination of Importance Evaluations," fails to address interface with Principal Investigators (PI) when performing test interference investigations.

Discussion:

In performance of potential interference evaluations for borehole UE-25 UZ#16 Vertical Seismic Profile (VSP) testing, personnel performing the evaluation failed to identify adverse impacts from work and testing activities associated with the VSP testing program on ongoing testing within neutron-access borehole USW UZ N55. In review of the procedure in place when the original test interference evaluations were performed and the procedure now in effect it was found that no requirement for the interface with the PIs exists. Failure to coordinate with the PI of the neutron-access borehole investigations has led to rendering (Contd. page 3)

7 Initiator

John R. Doyle

Date 11/27/95

9 QA Review

QAR John Doyle

Date 12/5/95

10 Response Due Date

20 DAYS FROM ISSUANCE

11 QA Issuance/Approval

QAR (PRI/AOQAM (DRI)

Date 12.6.95

12 Remedial Actions:

See page 2 of 2 of the attached response.

13 Remedial Action Response By:

Date 25 Mar 96

14 Remedial Action Due Date

N/A N/A

Date 25 Mar 96

15 Remedial Action Response Acceptance

QAR

Date 4/10/96

16 PR Verification/Closure

QAR

N/A

Date

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8  
OR NO. YMQAD-96-D014  
PAGE 2 OF 3  
QA: L

DEFICIENCY REPORT

17 Recommended Actions:

Revise NLP-2-0 to include interface requirements as required by the QARD to preclude interferences with ongoing testing.

18 Investigative Actions:

See page 1 of 2 of the attached response.

19 Root Cause Determination:

Not applicable.

20 Action to Preclude Recurrence:

Not applicable.

21 Response by:

*[Signature]*

Date 25 Mar 96

22 Corrective Action Completion Due Date:

N/A (26) 25 Mar 96

23 Response Accepted

QAR

*[Signature]*

Date 4/12/96

24 Response Accepted

AOQAM

*[Signature]*

Date 5.2.96

25 Amended Response Accepted

QAR

N/A

Date

26 Amended Response Accepted

AOQAM

N/A

Date

27 Corrective Actions Verified

QAR

*[Signature]*

Date 5/4/96

28 Closure Approved by:

AOQAM

*[Signature]*

Date 5/15/96

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8 ☐ Performance Report  
☒ Deficiency Report  
NO. YMQAD-96-D014  
PAGE 3 OF 3  
QA: L

PR/DR CONTINUATION PAGE

Block 6 (continued)

USW UZ N55 useless for further natural infiltration studies.

Presently, NLP-2-0 only requires that individuals performing test interference evaluations utilize "the best available design, test planning, or field activity information, (e.g., system descriptions, preliminary drawings, specifications, job or test planning packages, etc.)." As has been shown in the case of USW UZ N55 this information is inadequate at best. Test Planning Packages and Job Packages (JP) and any previously performed test interference evaluations do not provide a complete picture when reviewing for test interference on new work.

In addition, Criteria letter YMP-USGS-33121G-C1, Revision 1, stipulated that the PI be contacted prior to "any proposed road construction." This letter was an attachment to Job Package 91-9 for USW UZ N55.

Also, JP 91-9 was not referenced as an input reference document for the Determinations of Importance Evaluations of Borehole UE-25 UZ#16 VSP testing.

# 18. Investigative Action

The essence of the deficiency identified in this DR is failure of the DIE for UZ#16 Geophone Installation and Vertical Seismic Profiling (VSP), BAAA00000-01717-2200-00093 Rev 00, to recognize the potential test impacts of the UE-25 UZ#16 (UZ#16) VSP work activities. The DIE determined that construction of the UZ#16 planned seismic road for VSP Line B.1 (which is referred to as a seismic line in the original planning documents) posed no test interference to on-going natural infiltration tests (neutron moisture tests) at USW UZN-55 (UZN-55). Based on NCR YMSCO-96-0013 and subsequent Surveillance Record YMP-SR-96-007, UZN-55 was compromised for further data collection by a seismic road constructed through the test area.

The purpose of the investigative action is to determine the extent and impact of this deficiency. The extent of this deficiency was determined by reviewing all DIEs that involved surface grading and/or topographic alterations, as part of the annual DIE review required per M&O procedure NLP-2-0. The proximity of existing infiltration study boreholes (neutron boreholes) was then considered for those DIEs. As indicated in LV.SED.NEB.03/96-025 (attached), the results determined that this deficiency is an isolated case.

The DIEs listed below evaluate surface disturbing activities in the vicinity of neutron moisture tests. The approval dates of the listed DIEs occurred after the approval date of the UZ#16 DIE, which is 12/20/94. The potential test interferences were identified in each DIE. A resulting DIE requirement for Principle Investigator (PI) notification prior to work initiation was applied. Test interference impacts were obviated for the near-by neutron moisture tests. Therefore, this DR is only applicable the to UZ#16 DIE and no other DIEs are applicable.

DI TITLE/NUMBER	DATE
DIE for USW UZ-7a Access Road and Drill Pad BAA000000-01717-2200-00097 Rev 00	9/21/94
DIE for Surface Based Testing Drill Pad and Access Road Construction BAA000000-01717-2200-00098 Rev 01	4/18/95
DIE for Rehabilitation and Testing of Borehole USW G-2 BAAAC0000-01717-2200-00001 Rev 00	6/7/95
DIE for Ghost Dance Fault (GDF-T5) Trench Excavation BAAAD0000-01717-2200-00004 Rev 00	6/16/95
DIE for SBT Drilling USW UZ-7a BAAAF0000-01717-2200-00007 Rev 00	2/6/95
DIE for Modification/Construction of Ghost Dance Fault Trench GDF-T3[T3A] & GDF-T4 BAAAD0000-01717-2200-00010 Rev 01	6/23/95

The responsible testing organization, U.S. Geological Survey (USGS), indicates via their response to NCR-YMSCO-96-0013, that while UZN-55 has been rendered "useless" for future infiltration studies as a result of the fact that the VSP road was not built according to plan, the damage to

UZN-55 resulted in no impacts on data. Borehole UZN-55 is no longer needed for neutron moisture meter calibrations and calibration standards were complete and are available (YMP-SR-96-007). UZN-55 will not be used for future YMP site data collection.

## **12. Remedial Action**

As predicted in earlier correspondences between YMQAD/QATSS and the DI Manager, there are no immediate remedial actions (e.g., stop work, DIE revisions) necessary. The UZ#16 VSP work is complete and has ceased. In addition, UZN-55 has been abandoned with respect to current and future neutron moisture testing. Therefore, the UZ#16 DIE will be deleted based on the recommendation from the Surface Based Testing Organization. The investigative action concluded that this deficiency is an isolated case and no other DIEs are involved.

It is implied in the Description of Condition section of this DR that the earlier version of the DIE procedure, NLP-2-0 Rev 01, is inadequate and resulted in this deficiency. However, the UZ#16 DIE was performed to revision 00 of NLP-2-0 which did not contain the organizational interface requirement (i.e., requiring the requesting organizations to review and sign the DIEs, before approval) that exist in revision 01. The investigative action found that this deficiency was not repeated using revision 01 of NLP-2-0, although similar activities were evaluated. This DR is not applicable to DIEs performed per NLP-2-0 Rev 01. Therefore, a procedural revision is not necessary as part of remedial action for this DR.

Coincidentally, NLP-2-0 was revised during the investigative action of this DR. Consideration was given to the deficiency identified during the latest revision to NLP-2-0 Rev 02. For instance, the DIE preparer is now required to review available information on items or activities in the vicinity of the activity being evaluated (e.g., criteria letters). Also, applicable affected organizations (e.g., testing organizations) in addition to the DIE requesting organizations are now designated as DIE reviewers. This additional guidance was provided to further enhance organizational interfaces, thereby minimizing the potential for future recurrence of this deficiency.

A root cause analysis is not necessary for this DR. The circumstances that lead to this deficiency were not repeated in subsequent DIEs. The DIE preparer was not aware that seismic lines preparation required construction of a road up to 40 feet wide at certain locations. Procedurally requiring the requesting organization to review the DIE is effective, as is supported by the investigation of other DIEs, at eliminating inconsistencies between the evaluated activities in the DIEs and actual field activities. Data on what constitutes a test interference to neutron moisture test has not been established by USGS. Without this data, DIEs conservatively require PI notification prior to the initiation of surface disturbing activities in the vicinity of neutron boreholes. This requirement is effective at preventing test interference to neutron moisture tests.

As indicated above, the deficiency is an isolated case. The procedural enhancements provided in the later versions of the DIE procedure (i.e., NLP-2-0, Revision 01 & 02) are effective at preventing the recurrence of this deficiency. Therefore, further action to preclude recurrence is not necessary.

**Interoffice Correspondence**  
**Civilian Radioactive Waste Management System**  
**Management & Operating Contractor**



TRW Environmental  
Safety Systems Inc.

WBS: 1.2.1.11

QA: N

SCP: N/A

**Subject**  
Annual DIE Reviews

**Date**  
March 6, 1996  
LV.SED.NEB.03/96-025

**From**  
P. S. Hastings

**To**  
DI Files: 510, 512, 514,  
520.01, 520.02

**cc**  
J. D. Agnew  
N. E. Bartley  
T. C. Geer  
J. E. Houseworth  
J. M. Skov  
RFW R. F. Wemheuer  
DI Staff  
LVRPC

**Location/Phone**  
TES3/423/554  
702.794.1946

The purpose of this IOC is to document the completion of annual DIE, WIE, and TIE reviews.

NLP-2-0/Rev 01 requires review on an annual basis of approved DIEs, WIEs, and TIEs with respect to critical assumptions and input data. Based on the effective date of this procedure (March 6, 1995), any of these documents that are a year old or older as of March 6, 1996 were required to be reviewed.

All current (i.e., not superseded) DIEs, WIEs, and TIEs issued before January 1, 1996 have been reviewed. Several documents have been recommended for revision, but none require immediate processing. More rigorous documentation of the results of this review is underway and will follow in a similar IOC to file, including a summary of DIEs, WIEs, and TIEs which will be recommended for revision or deletion. This IOC summarizes the results of the review and documents that no immediate revisions are required.

Obviously, those DIEs, WIEs, and TIEs which have been superseded or formally cancelled were not reviewed. Similarly, those documents to be superseded by the pending Surface DIE (currently in manager's review for final approval) were not reviewed. Other documents which describe work that has been completed have been recommended for formal cancellation (in each of these cases, the requesting organization will concur with the deletion recommendation).

No DIEs, WIEs, or TIEs were identified for immediate revision (i.e., to correct conditions adverse to quality) based on invalid or out-of-date assumptions, or changes in critical references or methodology. A waste isolation evaluation that is an input to the current Subsurface ESF DIE will require revision to incorporate a new analytical model (for consistency). Although preliminary estimates indicate that the subsurface water use limit is expected to be reduced, the resulting revised limits are not expected to unduly conflict with the current actual use of water during construction. A DIE revision to address this change is informally underway, and will be formally scheduled as a result of this review.

Most of the reviewed documents contained non-critical references and input data (i.e., those whose changes do not have no affect on the resulting controls) that have been revised (e.g., draft Job Packages, drawings, specifications, etc.). However, the conclusions for the applicable DIEs, WIEs, or TIEs are still valid and were not affected by these revisions.

In a generic conclusion that applies to multiple DIEs, the reference describing the TFM reporting procedure (or in some cases, the TFM Management Plan) will need to be changed as a result of a recent revision to the procedure (YAP-2.8Q, currently at Rev. 1). The TFM procedure (or the TFM Management Plan) is referred to in various DIE requirements for TFM reporting, and therefore is considered a critical input document. However, YAP-2.8Q is a project-wide procedure and is required training for YMP personnel with designated TFM reporting responsibilities. Therefore, processing the revisions (i.e., to refer to the procedure more generically to avoid similar instances in the future) is deferrable until other circumstances (e.g., changes in scope of the evaluated activities) warrant a DIE change.

This review included an investigation of the extent of condition for Deficiency Report (DR) YMQAD-D-014. The potential impacts to surface infiltration tests as occurred in the DIE for UE-25 UZ#16 Geophone Installation and Vertical Seismic Profiling, BAAA00000-01717-2200-00093, were considered. Each of the DIEs with surface-disturbing activities in close proximity to surface infiltration tests were found to contain a control requiring notification to the Principle Investigator prior the work initiation.

Upon completion of the final documentation associated with the conduct of this set of reviews, a schedule for revisions will be established based on the priority of the recommended changes. Subsequent to this review, annual reviews will be conducted based roughly on the anniversary date of approval of each DIE, WIE, or TIE.

Any questions should be directed to Robert Wemheuer at 794-7233.



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8 ☐ Performance Report  
☒ Deficiency Report  
NO. YMQAD-96-D014  
PAGE OF  
QA: L

PR/DR CONTINUATION PAGE

Corrective Action Verification to Deficiency Report YMQAD-96-D014

A. Investigative Actions:

Verified letter Hastings to DI Files (LV.SED.NEB.03/96-025) documenting investigative actions taken, reviewing for extent and impact, to determine that that identified deficiency was an isolated case.

B. Remedial Action

Verified Implementing Line Procedure NLP-2-0, Rev. 2 "Determination of Importance Evaluations" effective 3/15/96:

o Para. 5.1 A has been revised that the preparer reviews the " best available design, test planning, or field activity information including information on items or activities in the vicinity of the planned activity, with the designer or principle investigator as necessary ( e.g. system descriptions, analyses, preliminary drawings, specifications, criteria letters, ... "

o Para. 5.2.4 gives direction that "The RO and AO Representatives shall review the draft DIE to ensure that the description of the activities is correct and that the recommended controls are feasible."

C. Root Cause Determination:

None Required

D. Action to preclude Recurrence:

None Required

This DR is considered closed.

QAR

John R. Doyle

Date

5/9/96.