



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

QA: L

SEP 13 1994

Les E. Shephard
Technical Project Officer
for Yucca Mountain
Site Characterization Project
Sandia National Laboratories
P.O. Box 5800, Mail Stop 1333
Albuquerque, NM 87185

ISSUANCE OF CORRECTIVE ACTION REQUEST (CAR) YM-94-087 THROUGH
CAR YM-94-099 RESULTING FROM YUCCA MOUNTAIN QUALITY ASSURANCE
DIVISION (YMQAD) AUDIT YMP-94-09 OF SANDIA NATIONAL LABORATORIES
(SCPb: N/A)

Enclosed are CARs YM-94-087 through YM-94-099 generated as a
result of YMQAD Audit YMP-94-09.

Please identify the corrective actions to be taken and
implemented to correct the deficiencies. CAR Continuation
Sheets and instructions for completion have been provided. Send
the originals of your responses to Deborah Sult, YMQAD/QATSS,
101 Convention Center Drive, Suite 640, Las Vegas, Nevada 89109.
Responses to the CARs are due 20 working days from the date of
this letter. Extensions to due dates must be requested in
writing, with appropriate justification, prior to the due dates.

If you have any questions, please contact either Robert B.
Constable at (702) 794-7945 or Kenneth T. McFall at (702)
794-7280.

Richard E. Spence, Acting Director
Yucca Mountain Quality Assurance Division

YMQAD:RBC-5026

Enclosure:
CARs YM-94-087
through YM-94-099

YMP-5

9409230274 940912
PDR WASTE
WM-11
PDR

060003

NH03 1/1
102.7
.. WM-11

Les E. Shephard

-2-

SEP 13 1994

cc w/encl:

J. H. Hines, OQD, AL

T. L. Badredine, M&O/TRW, Las Vegas, NV

~~R. L. Johnson~~, NRC, Washington, DC

S. W. Zimmerman, NWPO, Carson City, NV

R. R. Richards, SNL, Albuquerque, NM, M/S 1333

J. F. Schelling, SNL, Las Vegas, NV

D. G. Horton, OQA (RW-3) NV

R. M. Nelson, Jr., YMSCO, NV

cc w/o encl:

W. L. Belke, NRC, Las Vegas, NV

D. G. Sult, YMQAD/QATSS, Las Vegas, NV

**OFFICE OF CIVILIAN
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8 CAR NO.: YM-94-098
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CORRECTIVE ACTION REQUEST

1 Controlling Document QARD Section XII, Paragraph 12.2.6		2 Related Report No. YMP-94-09	
3 Responsible Organization SNL		4 Discussed With R. Richards/J. Voight/R. Price/W. Olson	
5 Requirement: <p>QATP-12.1, Revisions 3 and 4, Section 4.2, Step 3-g states, A requirement to generate a signed certification regarding the calibration performed that contains the following minimum information: 3rd Bullet - "Identification of the calibration procedure and revision used;" 7th Bullet - "A quantitative statement of the accuracy and precision of the device including results of the calibration and a statement of acceptability."</p> <p>QARD Section III, Paragraph 12.2.6 states, "Measuring and Test Equipment calibration shall include the following information:</p> <p>F. Results of the calibration and statement of acceptability.</p> <p>E. Identification of the implementing document (including revision level) used</p>			
6 Adverse Condition: <p>The calibration performed by MTS System's Corporation on July 13, 1994, for the following equipment located in Building No. 845, Model No. 662-TBA-10; S/N No. 2814 and Model No. LVDT; S/N 106, Model No. ADT; S/N D-5 exhibited the following deficiencies: (1) does not indicate procedure used with revision (2) no quantitative statement of the accuracy and precision of the device including results of the calibration, and a statement of acceptability (3) no indication whether it was with tolerance and (4) some line-outs and write overs.</p>			
9 Does a Significant Condition Adverse to Quality exist? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If Yes, Check One: <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E		10 Does a stop work condition exist? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If Yes - Attach copy of SWO If Yes, Check One: <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C	
13 Response Due Date: 20 Working Days From Issuance			
11 Required Actions: <input checked="" type="checkbox"/> Remedial <input checked="" type="checkbox"/> Extent of Deficiency <input checked="" type="checkbox"/> Preclude Recurrence <input type="checkbox"/> Root Cause Determination			
12 Recommended Actions: 			
7 Initiator Steven P. Nolan <i>Steven P. Nolan 98.94</i>		14 Issuance Approved by: QADD <i>[Signature]</i> for Date <i>9.12.94</i>	
15 Response Accepted QAR _____ Date _____		16 Response Accepted QADD _____ Date _____	
17 Amended Response Accepted QAR _____ Date _____		18 Amended Response Accepted QADD _____ Date _____	
19 Corrective Actions Verified QAR _____ Date _____		20 Closure Approved by: QADD _____ Date _____	

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CORRECTIVE ACTION REQUEST (CONTINUATION PAGE)

5 Requirements (continued)
in performing the calibration."

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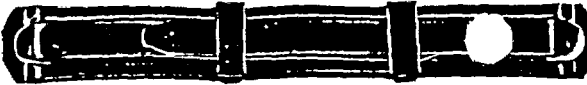
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If it becomes apparent that any of the corrective action due dates cannot be met, a written request for extension must be provided to the identified CAR Coordinator. This request must include justification for the delay and must be provided to the CAR Coordinator prior to the due date.
3. The response must include the dated signature of the Responsible Individual.

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CORRECTIVE ACTION REQUEST (CONTINUATION PAGE)



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OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT U.S. DEPARTMENT OF ENERGY WASHINGTON, D.C.		8 CAR NO.: YM-94-097 PAGE: 1 OF 1 QA
CORRECTIVE ACTION REQUEST		
1 Controlling Document QATP 07-01, Revision 01		2 Related Report No. YMP-94-09
3 Responsible Organization SNL	4 Discussed With R. Price	
5 Requirement: QATP 07-01, Revision 01, Procurement Acceptance Verification, Section 4.1.1 - When procurement of services such as engineering and consulting or analysis are involved, the Delegated Representative (1) shall accept the service by one or all of the following methods:...review of objective evidence for conformance to procurement document requirements, such as reports, contractor documents, etc.		
6 Adverse Condition: Contrary to the above requirements calibration certificates were accepted by the SNL Delegated Representative when they did not conform to the procurement document requirements Amendment 6 to Contract No. 66-1662. The calibrations were on Torque, Serial No. 2814, dated 7-13-94, 662-10A-10, Serial No. 1814, dated 7-12-94, ADJ, Serial No. 0-5, dated 7-13-94. The following was missing from the calibration certificates: <ul style="list-style-type: none">- Results of calibration and statement of acceptability.- Identification of the implementing document (including revision level) used in performing the calibration. Also, the method and interval of calibration for each device was not defined, based on the type of equipment, stability characteristics, required accuracy, intended use, and other conditions affecting measurement control.		
9 Does a Significant Condition Adverse to Quality exist? Yes ___ No <u>X</u> If Yes, Check One: <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E	10 Does a stop work condition exist? Yes ___ No <u>X</u> ; If Yes - Attach copy of SWO If Yes, Check One: <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C	13 Response Due Date: 20 Working Days From Issuance
11 Required Actions: <input checked="" type="checkbox"/> Remedial <input checked="" type="checkbox"/> Extent of Deficiency <input checked="" type="checkbox"/> Preclude Recurrence <input checked="" type="checkbox"/> Root Cause Determination		
12 Recommended Actions: Extent of deficiency should evaluate reports and contractor documents in addition to calibration certificates.		
7 Initiator John R. Matras	14 Issuance Approved by: <u>John R. Matras</u> Date <u>9/12/94</u> QADD <u>John R. Matras</u>	
15 Response Accepted QAR _____ Date _____	16 Response Accepted QADD _____ Date _____	
17 Amended Response Accepted QAR _____ Date _____	18 Amended Response Accepted QADD _____ Date _____	
19 Corrective Actions Verified QAR _____ Date _____	20 Closure Approved by: QADD _____ Date _____	

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 - C. Root Cause Determination - Identify the root cause of the condition as determined through investigative action. (Required for all Significant Conditions Adverse to Quality or for any Condition Adverse to Quality if requested by OQA)
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If it becomes apparent that any of the corrective action due dates cannot be met, a written request for extension must be provided to the identified CAR Coordinator. This request must include justification for the delay and must be provided to the CAR Coordinator prior to the due date.
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GUIDELINES FOR ROOT CAUSE DETERMINATION

When it is established that an investigation to determine root cause is required, the following guidelines may assist in the determination:

- 1) Clarify the specific condition. Pertinent clarifying questions must be asked and answered as accurately as possible.
 - a) What happened?
 - b) Where did the condition occur?
 - c) When did the condition occur?
 - d) What was the extent of the condition?
 - e) Who was involved?
 - f) In what manner did it happen?
 - g) What reasons are given by knowledgeable personnel for why it happened?
- 2) Obtain information related to the identified condition.
 - a) Investigate, in detail, the specific condition adverse to quality.
 - b) Interview personnel.
 - c) Review pertinent documents.
 - d) Use quality tools (cause & effect diagrams, flowcharting, Pareto analysis, comparative analysis, etc.).
 - e) Identify and collect data needed to get to the root cause.
- 3) Most root causes fall into one or more of the following generic categories. Specific review of these areas may be useful in arriving at cause determination:
 - a) Procedures
 - b) Personnel
 - c) Management systems
 - d) Supervision
 - e) Training
 - f) Communications
 - g) Scientific investigation/design methods
 - h) Human factors
 - i) Reliability considerations
 - j) Miscellaneous or multiple areas

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CORRECTIVE ACTION REQUEST

1 Controlling Document OCRWM QARD DOE/RW-0333P, Revision 0		2 Related Report No. YMP-94-09	
3 Responsible Organization SNL		4 Discussed With L. Shephard	
5 Requirement: Section 5.0, Paragraph 5.2.2, "Contents of Implementing Documents" states in part: "Implementing documents shall include the following information as appropriate to the work to be performed: (C) A sequential description of the work to be performed including controls for altering the sequence of required inspections, tests, and other operation. The organization responsible for preparing the document shall determine the appropriate level of detail. (D) Quantitative or qualitative acceptance criteria sufficient for determining that activities were satisfactorily accomplished...."			
6 Adverse Condition: Contrary to the above, SNL's QAIPs do not meet all of the requirements of the OCRWM QARD as identified by those specific examples cited and referenced below: 1. The record packaging process implemented for procurement records is not addressed in QAIP 04-01 or QAIP 17-03. QAIP record sections do not clearly identify what records are processed individually and what records are processed as record packages. The record packaging process should be reflected in all applicable procedures. 2. The detail in QAIP 20-02 (Scientific Notebooks) is insufficient to provide a Scientific Notebook that would be suitable for use in licensing. The instructions in the QAIP are merely a restatement of the guidance provided in the QARD. Scientific Notebooks should be of a type and quality that would be suitable in a court of law. Unsatisfactory conditions that were found included: (1) use of looseleaf notebooks, (4) non-sequentially			
9 Does a Significant Condition Adverse to Quality exist? Yes ___ No <u>X</u> If Yes, Check One: <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E		10 Does a stop work condition exist? Yes ___ No <u>X</u> ; If Yes - Attach copy of SWO If Yes, Check One: <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C	
		13 Response Due Date: 20 Working Days From Issuance	
11 Required Actions: <input checked="" type="checkbox"/> Remedial <input checked="" type="checkbox"/> Extent of Deficiency <input checked="" type="checkbox"/> Preclude Recurrence <input type="checkbox"/> Root Cause Determination			
12 Recommended Actions: 1. Correct the identified deficiency. 2. Evaluate all QAIPs to determine level of detail needed to adequately implement them. 3. Evaluate for impact to quality.			
7 Initiator <i>Kenneth McFall</i> Charles E. Betts <i>for</i> 9/8/94		14 Issuance Approved by: <i>M. W. White</i> QADD <i>for</i> Date 9-12-94	
15 Response Accepted QAR _____ Date _____		16 Response Accepted QADD _____ Date _____	
17 Amended Response Accepted QAR _____ Date _____		18 Amended Response Accepted QADD _____ Date _____	
19 Corrective Actions Verified QAR _____ Date _____		20 Closure Approved by: QADD _____ Date _____	

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6 Adverse Condition (continued)
numbered pages.

3. The detail in QAIP 01-05, although incorporating the appropriate requirements from QARD 5.2.2 A through I, is not clearly delineated and confusing by providing several options for inclusion of requirements in work agreements. Consequently, work agreements are written that do not address, either by incorporation or reference as not applicable, all of the procedural/QARD requirements.
4. The level of detail in QAIPs 02-05 and 02-06, although addressing the appropriate QARD 2.2.1.1 requirements, is not sufficient for personnel to adequately implement the procedures. The procedures incorporate the QARD requirements, but do not include sufficient implementing details or process steps for people to adequately comply with the requirements. For example, SNL staff do not adequately assign training to achieve or maintain proficiency and do not adequately complete training and qualification requirements.
5. The detail in QAIP 19-01 (Software) is insufficient to provide that acquired or developed software would be suitable for use in licensing. The requirements in the QAIP are merely a restatement of the QARD Supplement I requirements. Unsatisfactory conditions were in verification and validation control of acquired and developed software, change control and use of software.

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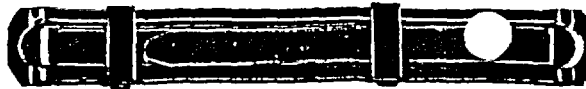
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CORRECTIVE ACTION REQUEST (CONTINUATION PAGE)



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8 CAR NO.: YM-94-095

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CORRECTIVE ACTION REQUEST

1 Controlling Document
DOP 3-17, Revision 0

2 Related Report No.
YMP-94-09

3 Responsible Organization
SNL

4 Discussed With
V. Tidwell

5 Requirement:

DOP 3-17, Revision 0, Preparing Technical Information Documents, Section 5.1.1 requires, "...technical information documents...contain a specific reference to...the quality assurance level assigned...."

6 Adverse Condition:

Several published papers examined did not contain reference to the quality assurance level. Examples of this are SAND94-0443C: "Fracture-Matrix Interaction in Topopah Spring Tuff: Experiment and Numerical Analysis" and SAND90-2261: "Research Program to Develop and Validate Models for Flow and Transport Through Unsaturated, Fractured Rock."

9 Does a Significant Condition
Adverse to Quality exist? Yes ___ No X
If Yes, Check One: ☐ A ☐ B ☐ C ☐ D ☐ E

10 Does a stop work condition exist?
Yes ___ No X; If Yes - Attach copy of SWO
If Yes, Check One: ☐ A ☐ B ☐ C

13 Response Due Date:
20 Working Days
From Issuance

11 Required Actions: ☒ Remedial ☒ Extent of Deficiency ☒ Preclude Recurrence ☐ Root Cause Determination

12 Recommended Actions:

7 Initiator
Keith Kersch *Robert C. Kersch*
9/8/94

14 Issuance Approved by
QADD *[Signature]* for Date 9.12.94

15 Response Accepted

QAR Date

16 Response Accepted

QADD Date

17 Amended Response Accepted

QAR Date

18 Amended Response Accepted

QADD Date

19 Corrective Actions Verified

QAR Date

20 Closure Approved by:

QADD Date

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8 CAR NO.: YM-94-094
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QA

CORRECTIVE ACTION REQUEST

1 Controlling Document QARD DOE/RW-0333P		2 Related Report No. YMP-94-09	
3 Responsible Organization SNL		4 Discussed With M. Tucker	
5 Requirement: QARD DOE/RW-0333P, Section 17.0, Revision 0, Subsection 17.2.10A, states, "Quality assurance records shall be temporarily stored in a container or facility with a fire rating of 1 hour, or dual storage shall be provided."			
6 Adverse Condition: Contrary to the identified requirement, the following records were missing from one of the copies of the identified training files maintained in dual storage: Connie S. Chocas - Confirmation of Familiarization Activities, dated 6/15/90 for QAIP 03-02, Revision 00, signed by C. Chocas 6/21/90 Test Completion Record, dated 6/21/90 for QAIP 03-02, Revision 00, signed by Warren Miller 6/25/90 John E. Gauthier - Training confirmation Form, dated 4/29/94 for Manual - Guidebook for Interactions Between DOE and NRC, signed by J. E. Gauthier 7/18/94			
9 Does a Significant Condition Adverse to Quality exist? Yes <u> </u> No <u>X</u> If Yes, Check One: <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E		10 Does a stop work condition exist? Yes <u> </u> No <u>X</u> ; If Yes - Attach copy of SWO If Yes, Check One: <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C	
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12 Recommended Actions:			
7 Initiator Mary G. McDaniel <i>Mary G. McDaniel</i> 9/8/94		14 Issuance Approved by: <i>[Signature]</i> QADD <i>[Signature]</i> for Date 9.12.94	
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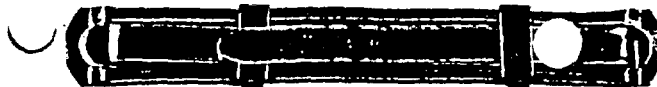
1. **Corrective Action Response for CAR # _____**
 - A. **Remedial Action** - Describe actions required to correct the specific conditions noted. (Required for all CARs)
 - B. **Extent of the Deficiency** - Describe the investigative actions performed to determine the extent of the condition and the results of the determination. (Required for all Significant Conditions Adverse to Quality or for any Condition Adverse to Quality if requested by OQA)
 - C. **Root Cause Determination** - Identify the root cause of the condition as determined through investigative action. (Required for all Significant Conditions Adverse to Quality or for any Condition Adverse to Quality if requested by OQA)
 - D. **Corrective Action to Preclude Recurrence** - Identify the actions required to address the root cause of the condition in order to preclude recurrence. (Required for all Significant Conditions Adverse to Quality or for any Condition Adverse to Quality if requested by OQA)
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If it becomes apparent that any of the corrective action due dates cannot be met, a written request for extension must be provided to the identified CAR Coordinator. This request must include justification for the delay and must be provided to the CAR Coordinator prior to the due date.
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⁸ CAR NO. _____
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CORRECTIVE ACTION REQUEST (CONTINUATION PAGE)



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OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT U.S. DEPARTMENT OF ENERGY WASHINGTON, D.C.		8 CAR NO.: <u>YM-94-093</u> PAGE: <u>1</u> OF <u>1</u> QA	
CORRECTIVE ACTION REQUEST			
1 Controlling Document QAIP 17-3, Revision 1		2 Related Report No. YMP-94-09	
3 Responsible Organization SNL		4 Discussed With M. Tucker	
5 Requirement: QAIP 17-3, Revision 1, Section 4.1, Step 7. states the LRC staff "...shall complete processing of records/record packages by:...transmitting the records within 30 days of acceptance by the LRC."			
6 Adverse Condition: Contrary to the identified requirement, procurement records are not being forwarded to the M&O Records Management Organization (Central Records Facility) for retention but are retained by SNL. For example, refer to: Supporting Information for Close-Out Package for Purchase Requisition 23-9583 Supporting Information for Close-Out Package for Purchase Requisition 78-6654			
9 Does a Significant Condition Adverse to Quality exist? Yes <u> </u> No <u>X</u> If Yes, Check One: <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E		10 Does a stop work condition exist? Yes <u> </u> No <u>X</u> ; If Yes - Attach copy of SWO If Yes, Check One: <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C	
		13 Response Due Date: 20 Working Days From Issuance	
11 Required Actions: <input checked="" type="checkbox"/> Remedial <input checked="" type="checkbox"/> Extent of Deficiency <input checked="" type="checkbox"/> Preclude Recurrence <input type="checkbox"/> Root Cause Determination			
12 Recommended Actions: Take action to submit procurement records to CRF or identify in appropriate SNL procedures how quality-related procurement records are being managed and preserved. Address applicable requirements of QARD DOE/RW-0333P.			
7 Initiator Mary G. McDaniel <i>Mary G. McDaniel</i> 9/8/94		14 Issuance Approved by QADD <i>[Signature]</i> for Date 9.12.94	
15 Response Accepted QAR _____ Date _____		16 Response Accepted QADD _____ Date _____	
17 Amended Response Accepted QAR _____ Date _____		18 Amended Response Accepted QADD _____ Date _____	
19 Corrective Actions Verified QAR _____ Date _____		20 Closure Approved by: QADD _____ Date _____	

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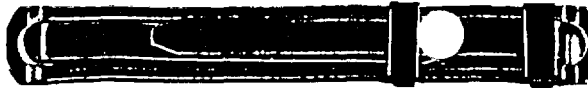
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^B CAR NO. _____
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CORRECTIVE ACTION REQUEST (CONTINUATION PAGE)



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8 CAR NO.: YM-94-092
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QA

CORRECTIVE ACTION REQUEST

1 Controlling Document
QATP 02-05, Revision 02

2 Related Report No.
YMP-94-09

3 Responsible Organization
SNL

4 Discussed With
R. Richards

5 Requirement:

QARD DOE/RW-0333P, Section 2.2.11.C. specifies that affected organization programs ensure that personnel are indoctrinated and trained to achieve initial proficiency, maintain proficiency, and adapt to changes. QATP 02-05, Revision 02, Sections 5.3 and 5.4, Steps 1, state in part that the SNL YMP Manager determines what additional orientation and training is required to ensure that proficiency is maintained for changes in WBS assignment, procedures, responsibilities, positions, or technology.

6 Adverse Condition:

Contrary to the above requirements, no objective evidence could be found to demonstrate that individuals, performing work subject to QARD requirements, are evaluated to determine if changes in WBS assignments, procedures, responsibilities, positions or technology require additional training for the individuals to maintain proficiency.

Examples of failure to demonstrate any type of evaluation to determine maintenance of proficiency include:

- Joe F. Schelling
- Daniel J. Zimmerer
- Ronald B. Price
- William A. Olsson

9 Does a Significant Condition
Adverse to Quality exist? Yes No X
If Yes, Check One: ☐ A ☐ B ☐ C ☐ D ☐ E

10 Does a stop work condition exist?
Yes No X; If Yes - Attach copy of SWO
If Yes, Check One: ☐ A ☐ B ☐ C

13 Response Due Date:
20 Working Days
From Issuance

11 Required Actions: ☒ Remedial ☒ Extent of Deficiency ☒ Preclude Recurrence ☐ Root Cause Determination

12 Recommended Actions:

7 Initiator Kenneth McFall
James George for 9/8/94

14 Issuance Approved by [Signature]
QADD [Signature] Date 9.12.94

15 Response Accepted
QAR Date

16 Response Accepted
QADD Date

17 Amended Response Accepted
QAR Date

18 Amended Response Accepted
QADD Date

19 Corrective Actions Verified
QAR Date

20 Closure Approved by:
QADD Date

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8 CAR NO. _____
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8 CAR NO.: YM-94-091
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QA

CORRECTIVE ACTION REQUEST

1 Controlling Document QAIP 16-01, Revision 2, Corrective Action		2 Related Report No. YMP-94-09
3 Responsible Organization SNL	4 Discussed With R. Richards	
5 Requirement: QAIP 16.01, Section 6.1, Step 1 states in part: "Initiator shall promptly identify deviations...and initiate the corrective action process by completing the Corrective Action Request (CAR)...." (Section 3.1, Defines adverse conditions as deviations, failures, malfunctions, deficiencies, etc.)		
6 Adverse Condition: Contrary to the above, CARs 94-02, 94-04 and 94-05 address an explicit deviation (condition adverse to quality) from specified requirements (i.e., shall); however, this CAR has been classified as an "observation" which is defined in QAIP 16-01, Section 3.4 as an observed and documented potential adverse condition. QAIP 16-01, Section 3.5 further defines that potential adverse conditions are conditions which if left uncorrected, could lead to an adverse condition (i.e., deviation).		
9 Does a Significant Condition Adverse to Quality exist? Yes <u> </u> No <u>X</u> If Yes, Check One: <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E	10 Does a stop work condition exist? Yes <u> </u> No <u>X</u> ; If Yes - Attach copy of SWO If Yes, Check One: <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C	13 Response Due Date: 20 Working Days From Issuance
11 Required Actions: <input checked="" type="checkbox"/> Remedial <input checked="" type="checkbox"/> Extent of Deficiency <input checked="" type="checkbox"/> Preclude Recurrence <input checked="" type="checkbox"/> Root Cause Determination		
12 Recommended Actions: Take action to review all observations. If the observation identifies a departure from an approved procedure, document the deviation in accordance with approved procedures. Include in your response the cause and actions to preclude reoccurrence.		
7 Initiator Richard L. Maudlin <i>R. Maudlin</i> 09/08/94	14 Issuance Approved by: <i>[Signature]</i> for Date 9.12.94 QADD	
15 Response Accepted QAR Date	16 Response Accepted QADD Date	
17 Amended Response Accepted QAR Date	18 Amended Response Accepted QADD Date	
19 Corrective Actions Verified QAR Date	20 Closure Approved by: QADD Date	

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GUIDELINES FOR ROOT CAUSE DETERMINATION

When it is established that an investigation to determine root cause is required, the following guidelines may assist in the determination:

- 1) Clarify the specific condition. Pertinent clarifying questions must be asked and answered as accurately as possible.
 - a) What happened?
 - b) Where did the condition occur?
 - c) When did the condition occur?
 - d) What was the extent of the condition?
 - e) Who was involved?
 - f) In what manner did it happen?
 - g) What reasons are given by knowledgeable personnel for why it happened?
- 2) Obtain information related to the identified condition.
 - a) Investigate, in detail, the specific condition adverse to quality.
 - b) Interview personnel.
 - c) Review pertinent documents.
 - d) Use quality tools (cause & effect diagrams, flowcharting, Pareto analysis, comparative analysis, etc.).
 - e) Identify and collect data needed to get to the root cause.
- 3) Most root causes fall into one or more of the following generic categories. Specific review of these areas may be useful in arriving at cause determination:
 - a) Procedures
 - b) Personnel
 - c) Management systems
 - d) Supervision
 - e) Training
 - f) Communications
 - g) Scientific investigation/design methods
 - h) Human factors
 - i) Reliability considerations
 - j) Miscellaneous or multiple areas



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8 CAR NO.: YM-94-090
PAGE: 1 OF 1
QA

CORRECTIVE ACTION REQUEST

1 Controlling Document QAIP 16-03, Revision 2		2 Related Report No. YMP-94-09	
3 Responsible Organization SNL		4 Discussed With R. Richards	
5 Requirement: QAIP 16-03, Revision 2, Section 5.0, Paragraph 5.1 states in part: "Prepare and submit a QA Program Report at least quarterly to SNL YMP TPO and a copy to the YMP QA Division...."			
6 Adverse Condition: Contrary to the above, (1) Quarterly QA Program Reports for May 1993 through July 1993 and August 1993 through October 1993 do not provide documented evidence of being copied to YMP QA Division, and (2) Quarterly QA Program Report for May 1993 through July 1993 (2nd quarter report) was not issued until 11/10/93 which fell into the 4th quarter period (i.e., 11/93 - 1/94).			
9 Does a Significant Condition Adverse to Quality exist? Yes ___ No <u>X</u> If Yes, Check One: <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E		10 Does a stop work condition exist? Yes ___ No <u>X</u> ; If Yes - Attach copy of SWO If Yes, Check One: <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C	
13 Response Due Date: 20 Working Days From Issuance			
11 Required Actions: <input checked="" type="checkbox"/> Remedial <input type="checkbox"/> Extent of Deficiency <input type="checkbox"/> Preclude Recurrence <input type="checkbox"/> Root Cause Determination			
12 Recommended Actions: Take the necessary actions to transmit the copies of the noted QA Program Reports to YMP QA Division. Provide the reason why the 2nd quarter report was not issued until the 4th quarter.			
7 Initiator Richard L. Maudlin <i>R. Maudlin</i> 09/08/94		14 Issuance Approved by: QADD <i>[Signature]</i> for Date 9-12-94	
15 Response Accepted QAR _____ Date _____		16 Response Accepted QADD _____ Date _____	
17 Amended Response Accepted QAR _____ Date _____		18 Amended Response Accepted QADD _____ Date _____	
19 Corrective Actions Verified QAR _____ Date _____		20 Closure Approved by: QADD _____ Date _____	

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8 CAR NO.: YM-94-089
PAGE: 1 OF 1
QA

CORRECTIVE ACTION REQUEST

1 Controlling Document QAIP 02-04, Revision 1, Conducting and Documenting Analysis		2 Related Report No. YMP-94-09
3 Responsible Organization SNL	4 Discussed With C. Brechtel/D. Kessel	
5 Requirement: QAGR 1.2.3.2.6.2.3, Surface Facilities Field Tests and Characterization Measurements, invoked QAIP 02-04 for calculations associated with rock quality measurement.		
6 Adverse Condition: Calculations associated with the WBS identified above, use a Monte Carlo subroutine. There is no evidence that the calculations were conducted in accordance with the requirements of QAIP 02-04.		
9 Does a Significant Condition Adverse to Quality exist? Yes___ No <u>X</u> If Yes, Check One: <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E	10 Does a stop work condition exist? Yes___ No <u>X</u> ; If Yes - Attach copy of SWO If Yes, Check One: <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C	13 Response Due Date: 20 Working Days From Issuance
11 Required Actions: <input checked="" type="checkbox"/> Remedial <input checked="" type="checkbox"/> Extent of Deficiency <input checked="" type="checkbox"/> Preclude Recurrence <input type="checkbox"/> Root Cause Determination		
12 Recommended Actions:		
7 Initiator <u>James Blaylock</u> <u>9/9/94</u> James Blaylock	14 Issuance Approved by: QADD _____ Date _____	
15 Response Accepted QAR _____ Date _____	16 Response Accepted QADD _____ Date _____	
17 Amended Response Accepted QAR _____ Date _____	18 Amended Response Accepted QADD _____ Date _____	
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8 CAR NO.: YM-94-088

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CORRECTIVE ACTION REQUEST

1 Controlling Document
QAIP 01-05, Revision 07

2 Related Report No.
YMP-94-09

3 Responsible Organization
SNL

4 Discussed With
R. Richards

5 Requirement:

QARD DOE/RW-0333P, Revision 0, Section 5.2.2, A through I, specifies the "Content of Implementing Documents." SNL QAIP 01-05, Revision 07, Section 4.1 states in part that if Work Agreements (WAs) govern scientific investigation work, then the WA needs to reference Technical Procedures (TPs) that address elements a. through k., or if a scientific notebook is used without TPs, then elements a. through k. need to be addressed in the WA.

6 Adverse Condition:

Contrary to the above requirements, WAs are not referencing TPs or if the Scientific Notebook method is used, the WAs are not addressing the required Section 4.1, Step 1, Note 2, No. 2, a. through k. elements. A review of the WAs produced numerous examples of the deficient condition.

Some examples of this condition include: WA-0040, WA-0131, and WA-0095, -0096 and -0097.

9 Does a Significant Condition
Adverse to Quality exist? Yes ___ No X
If Yes, Check One: ☐ A ☐ B ☐ C ☐ D ☐ E

10 Does a stop work condition exist?
Yes ___ No X; If Yes - Attach copy of SWO
If Yes, Check One: ☐ A ☐ B ☐ C

13 Response Due Date:
20 Working Days
From Issuance

11 Required Actions: ☒ Remedial ☒ Extent of Deficiency ☒ Preclude Recurrence ☐ Root Cause Determination

12 Recommended Actions:

7 Initiator *Kenneth McFall* 9/8/94
James George *for*

14 Issuance Approved by: *[Signature]*
QADD *[Signature]* for Date 9.12.94

15 Response Accepted
QAR Date

16 Response Accepted
QADD Date

17 Amended Response Accepted
QAR Date

18 Amended Response Accepted
QADD Date

19 Corrective Actions Verified
QAR Date

20 Closure Approved by:
QADD Date

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If it becomes apparent that any of the corrective action due dates cannot be met, a written request for extension must be provided to the identified CAR Coordinator. This request must include justification for the delay and must be provided to the CAR Coordinator prior to the due date.
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8 CAR NO.: YM-94-087
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CORRECTIVE ACTION REQUEST

1 Controlling Document QAIP 16-01, Revisions 1, 2 and 3, Corrective Action		2 Related Report No. YMP-94-09	
3 Responsible Organization SNL		4 Discussed With J. Voight/C. Jaramillo/D. Hawkinson	
5 Requirement: <p>A. Section 6.1, Step 2 states: SNL YMP QA shall determine if the deviation is a significant condition adverse to quality as defined in Subsection 3.8."</p> <p>B. Section 6.2, Step 1 states in part: "Responsible Mgt PI/TL shall...identify proposed remedial actions...." (Note: Section 3.6 indicates remedial actions are to include a determination of impact on previously completed work and an investigation into the extent of the adverse condition.)</p> <p>C. Section 6.4, Step 1 states in part: "...shall verify satisfactory completion of corrective actions and document objective evidence that was used to verify completion and effectiveness of those actions.... Verify all deviation remedial actions were completed as specified...."</p>			
6 Adverse Condition: <p>Contrary to the above, objective evidence (SNL CARs 93-23, 93-32, 93-36, 93-38, 94-11, 94-12, and 94-25) reviewed reveals that: (1) there was one case noted where determination of significance was not addressed, (2) in all but one case reviewed, remedial actions did not include a determination of impact on previously completed work and an investigation into the extent of the adverse condition, (3) in all but one instance, verifications of corrective action do not detail specific objective evidence that was used to verify completion and effectiveness of those actions, (4) in two instances CARs were closed without verification of completion of all corrective action.</p>			
9 Does a Significant Condition Adverse to Quality exist? Yes <u>X</u> No <u> </u> If Yes, Check One: <input checked="" type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E		10 Does a stop work condition exist? Yes <u> </u> No <u>X</u> ; If Yes - Attach copy of SWO If Yes, Check One: <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C	
13 Response Due Date: 20 Working Days From Issuance			
11 Required Actions: <input checked="" type="checkbox"/> Remedial <input checked="" type="checkbox"/> Extent of Deficiency <input checked="" type="checkbox"/> Preclude Recurrence <input checked="" type="checkbox"/> Root Cause Determination			
12 Recommended Actions: <p>1. For Item 1 in Block 6, evaluate CAR 93-36 for significance and document results (remedial only).</p> <p>2. For Item 2 in Block 6, the following is recommended: A. Determine that extent of this deficiency.</p>			
7 Initiator Richard L. Maudlin <i>RMaudlin</i> 09/08/94		14 Issuance Approved by QADD <i>[Signature]</i> Date 9/12/94	
15 Response Accepted QAR _____ Date _____		16 Response Accepted QADD _____ Date _____	
17 Amended Response Accepted QAR _____ Date _____		18 Amended Response Accepted QADD _____ Date _____	
19 Corrective Actions Verified QAR _____ Date _____		20 Closure Approved by: QADD _____ Date _____	

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13 Recommended Action(s) (continued)

- B. Identify the cause of the condition.
 - C. Determine what actions are necessary to preclude reoccurrence.
 - D. Identify the impact on quality due to not implementing this requirement.
3. For Item 3 in Block 6, the following is recommended: (see recommended actions for Item 2 above)
4. For SNL CARs 93-36 and 94-25 in Item 4 of Block 6, take the necessary action to complete verification of ALL items identified in the response to the CARs. Also, evaluate the extent of the identified condition and what actions will be taken to preclude reoccurrence.

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GUIDELINES FOR ROOT CAUSE DETERMINATION

When it is established that an investigation to determine root cause is required, the following guidelines may assist in the determination:

- 1) Clarify the specific condition. Pertinent clarifying questions must be asked and answered as accurately as possible.
 - a) What happened?
 - b) Where did the condition occur?
 - c) When did the condition occur?
 - d) What was the extent of the condition?
 - e) Who was involved?
 - f) In what manner did it happen?
 - g) What reasons are given by knowledgeable personnel for why it happened?
- 2) Obtain information related to the identified condition.
 - a) Investigate, in detail, the specific condition adverse to quality.
 - b) Interview personnel.
 - c) Review pertinent documents.
 - d) Use quality tools (cause & effect diagrams, flowcharting, Pareto analysis, comparative analysis, etc.).
 - e) Identify and collect data needed to get to the root cause.
- 3) Most root causes fall into one or more of the following generic categories. Specific review of these areas may be useful in arriving at cause determination:
 - a) Procedures
 - b) Personnel
 - c) Management systems
 - d) Supervision
 - e) Training
 - f) Communications
 - g) Scientific investigation/design methods
 - h) Human factors
 - i) Reliability considerations
 - j) Miscellaneous or multiple areas

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8 CAR NO.: YM-94-099
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CORRECTIVE ACTION REQUEST

1 Controlling Document QAIP 20-02, Paragraph 4.1		2 Related Report No. YMP-94-09	
3 Responsible Organization SNL		4 Discussed With D. Kessel/J. Potts	
5 Requirement: Scientific Notebooks shall be reviewed by a competent independent individual to verify there is sufficient detail to retrace the investigation and confirm the results, if feasible, or report the investigation and achieve comparable results without recourse to the original investigator.			
6 Adverse Condition: Contrary to the requirement above: 1. WA-0071 SN, "Rock Mass Quantitative Index Derived from NRG Core Data," Section 2, the methodology for determining the parameter Jc in the RMR rock mass classification process was not traceable. 2. Documentation is insufficient in the WA-0116 SN, "Alcove Elast Project," Section 4 (Video Logs of Boreholes), and Section 6 (Analysis); missing titles of name, column headings, data units, acronyms, and insufficient description of methodology. 3. Laboratory Notebook: YMSCP Fracture Properties Experiments, WA-0091, Task 4 (Fracture Surface Testing in Support of ESF Design), NRG-4-537.8, Test ID YMP No. 4. Test control parameters delta and zero were not defined.			
9 Does a Significant Condition Adverse to Quality exist? Yes___ No <u>X</u> If Yes, Check One: <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E		10 Does a stop work condition exist? Yes___ No <u>X</u> ; If Yes - Attach copy of SWO If Yes, Check One: <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C	
13 Response Due Date: 20 Working Days From Issuance			
11 Required Actions: <input checked="" type="checkbox"/> Remedial <input checked="" type="checkbox"/> Extent of Deficiency <input checked="" type="checkbox"/> Preclude Recurrence <input checked="" type="checkbox"/> Root Cause Determination			
12 Recommended Actions:			
7 Initiator James Eleylock <i>Blaylock</i> 9/9/94		14 Issuance Approved by: QADD <i>[Signature]</i> Date 9.12.94	
15 Response Accepted QAR _____ Date _____		16 Response Accepted QADD _____ Date _____	
17 Amended Response Accepted QAR _____ Date _____		18 Amended Response Accepted QADD _____ Date _____	
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