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

OCT 22 1996

L. D. 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

EVALUATION OF RESPONSE TO CAR YM-96-C-007 RESULTING FROM YMQA SURVEILLANCE YMP-SR-96-019

The Yucca Mountain Quality Assurance staff has evaluated the response to Corrective Action Request (CAR) YM-96-C-007. The response has been determined to be unsatisfactory because of reasons stated in the enclosed CAR.

An amended response is required to be submitted to this office within ten working days of the date of this letter. Send the original of your response to Deborah G. Sult, YMQA/QATSS, P.O. Box 98608, Mail Stop 455, Las Vegas, Nevada 89193-8608. If an extension to the due date is necessary, it must be requested in writing, with appropriate justification, prior to that date.

If you have any questions, please contact either Mario R. Diaz at (702) 794-1489 or Kristi A. Hodges at (702) 794-1464.

for Richard E. Spence
Yucca Mountain Quality Assurance

YMQA:MRD-0141

Enclosure:
CAR YM-96-C-007

cc w/encl:
T. A. Wood, DOE/HQ (RW-14) FORS
J. G. Spraul, NRC, Washington, DC
S. W. Zimmerman, NWPO, Carson City, NV
B. R. Justice, M&O, Las Vegas, NV
D. G. Horton, DOE/OQA, Las Vegas, NV
Records Processing Center

cc w/o encl:
W. L. Belke, NRC, Las Vegas, NV
K. A. Hodges, YMQA/QATSS, Las Vegas, NV
D. G. Sult, YMQA/QATSS, Las Vegas, NV

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Resp: NMSS/PAHL

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CORRECTIVE ACTION REQUEST

1 Controlling Document:	2 Related Report No.
Quality Assurance Requirements and Description (QARD) Document, Revision 5	YMP-SR-96-019

3 Responsible Organization:	4 Discussed With:
Civilian Radioactive Waste Management System Management and Operating Contractor (CRWMS M&O)	L. R. Hayes

5 Requirement:

1. QARD, Supplement III, Paragraph III.2.1, "Planning Scientific Investigations," states:

   "A. Scientific investigations shall be planned in accordance with Section 2.0, Quality Assurance Program."

   QARD, Section 2.0, Paragraph 2.2.5, "Planning Work," states in part, "Planning shall be documented to ensure work is accomplished under suitably controlled conditions. Planning elements shall include, as appropriate:

   A. Definition of the work scope, objectives, and a listing of the primary tasks involved.
   B. Identification of scientific approach or technical methods used to collect, analyze, or study results of applicable work.
   C. Identification of applicable standards and criteria.

(Continued on page 3)

6 Description of Condition:

1. The cited requirements relative to drill and blast monitoring were identified in memoranda and/or non-QA planning documents other than Job Package (JP) 92-20D, "Construction Monitoring in the Ramps, MTL Drifts, and Alcoves," dated July 1994, and Test Planning Package (TPP) T-93-2, "Construction Monitoring in the Exploratory Studies Facility," Revision 4.

   The JP and TPP were not revised to show the planning indicated in the Los Alamos National Laboratory (LANL) memorandum LA-EES-13-LV-02-96-005, dated February 21, 1996, (Elkins to Distribution), Subject: "Strategy for Controlled Blasting and Blast Monitoring in the Thermal Test Alcove."

(Continued on pages 3 & 4)

7 Initiator	9 Does a Stop Work condition exist?
Kristi A. Hodges for Date 7/26/96	Yes ____ No X ; If Yes, Attach copy of SWO If Yes, Check One: A ☐ B ☐ C ☐ D ☐

10 Recommended Actions:

- Describe remedial actions required to correct the specific condition(s) noted.
- Describe investigative actions performed to determine the extent of the condition and the results of the determination.
- Perform a root cause determination in accordance with Administrative Procedure (AP)-16.4Q, "Root Cause Determination."
- Based on the root cause, document action to prevent recurrence, verifying that all actions required in the response have been addressed in accordance with Attachment 9.6 of AP-16.2Q, "Corrective Action and Stop Work."
- Coordinate your response with the YMQAD QA Reviewer (Block 11) prior to its submittal for acceptance.

11 QA Review:	12 Response Due Date:
for KAH Date 7/26/96	20 Working Days From Issuance

13 Affected Organization QA Manager Issuance Approval:

Richard E. Spence (Printed Name) Signature Date 7/26/96

Exhibit AP-16.2Q.1-1 Enclosure Rev. 07/03/95

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CORRECTIVE ACTION REQUEST

14 Remedial Actions:

15 Investigative Actions:

16 Root Cause Determination:

17 Action to Preclude Recurrence:

18 Response By: Date	19 Corrective Action Completion Due Date
20 Response Accepted QAR Date	21 Response Accepted AOQAM Date
22 Amended Response Accepted QAR Date	23 Amended Response Accepted AOQAM Date
24 Corrective Actions Verified QAR Date	25 Closure Approved by: AOQAM Date

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5 Requirement: (Continued)

D. Identification and selective application, or development, of appropriate implementing documents.
E. Identification of field and laboratory testing equipment, or other equipment.
G. Identification of QA program verifications of the work performed.
H. Identification of prerequisites, special controls, environmental conditions, processes, or skills."

2. Administrative Procedure (AP)-16.2Q, "Corrective Action and Stop Work," Rev. 1, Paragraph 6.1, "Significant Deficiencies," states in part, "A condition is a significant deficiency if it meets one or more of the following criteria: c) an adverse quality trend exists as identified in AP-16.3Q."

AP-16.3Q, "Trend Evaluation and Reporting," Rev. 0, Attachment 9.5, "Trend Evaluation Guidelines," states in part, "1. Review and evaluate the deficiency data file for indications of quality trends in three primary areas: . . b) Quality program-related trends. . . 2. . . . The following conditions serve as a guide: d) Deficiencies are of a programmatic nature, apparently not limited to a specific Affected Organization. e) Previously identified corrective actions apparently are ineffective in reducing the number or severity of deficiencies. f) Recurring deficiencies appear to be related to a possible single root cause."

6 Description of Condition: (Continued)

1. (Cont'd)

Revision of the planning documents was required by Yucca Mountain Site Characterization Project Administrative Procedure (YAP) 5.5, "Test Planning Package Development and Implementation," and YAP 5.6, "Field Work Activation," or presently required by YAP 5.7, "ESF Testing Field Work Packages," Revision 0. An example of criteria that should have been included in a JP/TPP revision is that of investigation and interface controls between Sandia National Laboratories (SNL) and Construction in providing test results after each blast to allow for reconfiguration of blast plans, when warranted.

Based upon review of this memorandum, it was found that the Project is working to direction provided in memoranda from the Test Coordination Office rather than approved quality program implementing documents. It is recognized that a Field Work Package (FWP) was distributed for review on June 17, 1996. This FWP does include some of the general information that should have been incorporated in JP/TPP revisions; however, its distribution was after the completion of blast monitoring for the Thermal Test Alcove.

In addition, on June 24, 1996, LANL memorandum LA-EES-13-LV-06-96-022, (N. Elkins and T. Ricketts to C. Statton), Subject: "Blast Monitoring for Northern Ghost Dance Fault Alcove," was issued summarizing a strategy for blast monitoring in the Northern Ghost Dance Fault Alcove. This memorandum states, "a formal plan is being put together for blast monitoring in the NGDFA by SNL and TCO, with input and acceptance from the A/E." Since there is no formal process for planning field testing activities other than the YAP 5.7 FWP process, it is apparent that the technical direction will be documented in an informal plan that is outside of the QA program and the recently established YAP 5.7 work planning process.

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6 Description of Condition: (Continued)

2. Based upon a review of the Deficiency Document Trend Database, similar instances of using memoranda and/or informal plans to plan/control work activities, or to establish interfaces between Affected Organizations were documented in the three CARs indicated below. Although organizations and procedures have recently changed, the deficient condition is the same; therefore, a recurring deficiency exists, which constitutes an adverse quality trend. Based upon this, it is evident that former corrective actions were not effective in eliminating the use of informal plans, letters, and memoranda to control quality-affecting work activities.

   A. On 12/9/94, CAR YM-95-013 was generated to document that organizational interfaces and responsibilities for QA activities; e.g., construction monitoring, were being established in non-QA LANL Work Plans (WP). It was determined that these plans contained quality-affecting technical detail that belonged in the appropriate JP/TPP.

   B. On 1/30/95, CAR YM-95-025 was generated upon closure of the above cited CAR. It was determined that the issue would be better addressed at a Project level. The corrective action eliminated use of the non-QA plans and emphasized the adequacy of Project-level (JP/TPP) procedures to control the planning of field work. The CAR was verified and closed with the following discussion statement:

      "There is a remaining concern that technical information contained in discarded WPs, although once deemed valuable, will no longer be available to those supporting field activities. It is imperative that technical direction be controlled through the appropriate DOE procedures and not through internal documents; i.e., letters or memoranda, that do not receive appropriate technical and quality reviews. . . ."

   C. On 4/28/95, CAR YM-95-026, Revision 1, was generated to document that memoranda were being used as the vehicle to communicate test related data needs and requirements between the CRWMS M&O, LANL, and SNL, rather than establishing implementing documents to control those interfaces. The corrective action eliminated the use of memoranda and established a process for documenting data requests and/or clarifications between the design organization and Principle Investigators.

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CORRECTIVE ACTION REQUEST RESPONSE

14 Remedial Actions:

Field work package FWP-ESF-96-002 was issued 8/9/96. Additional drill and blast detail requested by YMQAD is included in this document. The issuance of this FWP along with implementation of the responses to the DRs resulting from surveillance YMP-SR-96-019 adequately addresses concerns related to blast monitoring.

15 Extent of Condition and Impact:

Impacts have been/will be mitigated by remedial action identified in block 14. Six ESF testing activities are currently covered by TPPs and JPs.

16 Root Cause Determination prepared in accordance with AP-16.4Q is attached.

17 Action to Preclude Recurrence:

The ESF TCO will transition all existing TPPs and JPs implementing active tasks to FWPs by 2/16/97. This will ensure the most recent standards, policies and administrative controls are being applied to ESF scientific investigations planning.

LANL QA will provide a briefing to ESF TCO Project Engineers regarding both how QARD requirements are incorporated into FWPs, and guidance on including adequate detail in controlled documents to implement work.

18 Corrective Action Completion Due Date:	19 Response by:			
2/16/97	☑ Initial ☐ Amended	Larry Hayes	Date 9/30/96	Phone 5-5152

RH for LRH

20 Response Accepted		21 Response Accepted	
QAR	Date	AOQAM	Date

Exhibit AP-16.2Q.1-2 Rev. 07/15/96

9/30/96

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Refer to Subsection 5.2 and 5.3 of AP-16.4Q for amplification of information.

1. Identify the adverse condition.

   YMQAD maintains that the ESF TCO has attempted to use memoranda to implement QARD requirements on a recurring basis since January 1995.

2. Indicate *Where* the condition was found.

   The latest example of the condition cited by YMQAD was 2 memoranda identified during surveillance YMP-SR-96-019. These memos were LA-EES-13-LV-02-96-005 and LA-EES-13-LV-06-96-022.

3. Note *When* the condition was first found.

   The dates of the above listed memoranda were February 21, 1996 and June 24, 1996 respectively. The corresponding corrective action request, YM-96-C-007, was issued 7/26/96.

4. Select which major program element(s) was affected. (Waste Acceptance, Storage, Transportation, or Repository.)

   Repository/Scientific Investigations are affected by this condition.

5. Denote the specific area(s) or discipline(s) of the major program element the condition occurred. (e.g., engineering, design, ES&H)

   This CAR relates to test coordination.

6. Determine if the condition is isolated or recurring.

   The condition is related to blast monitoring in the ESF, however, it has also been linked to CARs YM-96-025 and YM-95-026.

7. Determine if the condition is hardware (item) or programmatic (procedures, personnel) related or both.

   The condition is programmatic in nature.

8. Denote what organizations are affected by this condition (M&O, USGS, Weston, OCRWM, etc.).

   M&O organizations are affected by this condition.

9. Document the changes that have taken place that could have caused the condition.

Recent changes to test coordination activities had not yet been applied to Construction Monitoring activities.

10. Determine the need for sketches or photographs.

No sketches or photographs apply to this condition.

11. Determine the need for laboratory tests.

No laboratory tests apply to this condition.

12. Identify the physical evidence examined.

No physical evidence relates to this condition.

13. Note the relevant documents reviewed.

See attached.

14. Document any other information that may be pertinent to supporting the selection of the correct root cause.

See attached.

15. Interviews conducted: ☐ Yes ☑ No
If Yes, refer to page 3 of this attachment.

No interviews will be conducted specifically for this RCD. However, discussions that took place during the course of surveillance YMP-SR-96-019 were considered in documenting information for item 14.

RI or designee: (Print)	Signature:	Date:
Andrew Burningham		9/30/96

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ROOT CAUSE DETERMINATION QUESTIONNAIRE

TELEPHONE OR PERSONAL INTERVIEW RECORD

Person Interviewed: (Print)		Title:	
N/A			
Organization/Location:	**Telephone No.:**	**Date/Time:**	**CAR No./DR No.:**

Interview Details:

Interviewer

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Root Cause Code:	CAR No./DR No.:
3Ac	YM-96-C-007

Root Cause:

Most recent standards, policies, and administrative controls not used.

Justification or Rationale for Selected Root Cause:

The evidence indicates that if the FWP process would have been applied to construction monitoring, the adverse condition would have been prevented. The FWP system can be modified more easily and lends itself for a level detail grater than that in Job Packages.

Designee: (Print)	Signature:	Date:
Andrew Burningham		9/30/96
RI: (Print)	**Signature:**	**Date:**
Larry Hayes	RE for LRH	9/30/96

Item 13 cont.

- CAR YM-96-C-007
- CAR YM-95-013
- CAR YM-95-025
- CAR YM-95-026
- JP 92-020D "Construction Monitoring in the Ramps, MTL Drifts, and Alcoves", FCR 94/344, August 16, 1994.
- TPP T-93-2 "Construction Monitoring in the Exploratory Studies Facility", Revision 3, January 1995.
- Memorandum LA-EES-13-LV-02-96-005 Elkins to Distribution "Strategy for Controlled Blasting and Blast Monitoring in the Thermal Test Alcove - TRW-1996-1362", February 21, 1996.
- Memorandum LA-EES-13-LV-06-96-022 Elkins/Ricketts to Statton, "Blast Monitoring for Northern Ghost Dance Fault Alcove", June 24, 1996.
- YAP-5.7Q, "ESF Testing Field Work Package", Revision 0, April 25, 1996.
- Field Work Package FWP-ESF-96-002 "Construction Monitoring in the Exploratory Studies Facility", Revision 0, August 9, 1996.

Item 14 cont.

The initial investigation indicates root cause codes 1 and 3 are the most likely areas driving the condition. The following questions derived from AP-16.4Q attachment 9.5 and concerns raised in CAR YM-96-C-007 were posed in an effort to identify the specific root cause. Responses to the questions are based on the documentation identified in item 13 and discussions during and following surveillance YMP-SR-96-019.

Was no procedure/plan used to do the job because it: did not exist, was unavailable, or ineffective?

Implementing documents were used to accomplish this work. They included JP 92-20D, QAIP 2-4, Work Agreement WS-0065, TP-237, TP-249, QCP-011, and TCP-2.17. The YMQAD surveillance team leader indicated that no organization acknowledged working to ESF TCO memorandum.

Was the procedure/plan wrong or incomplete due to: failing to address necessary items, incorrect information, typographical errors, or incorrect sequencing?

JP 92-20D provided a high level tie between various construction monitoring activities to include blast monitoring. While the JP did not provide the level of detail found in the memoranda, it did list procedures necessary to implement the work and require the test-related as-builts be included in the record package for the activity.

Was the condition caused by an error while attempting to follow the procedure?

Participants followed applicable procedures.

Were standards, policies, and administrative controls (SPAC): adequate to control the work, descriptive enough, and communicated correctly?

The SPAC used in the development of TPP T-93-2 and JP 92-20D were reflected in those documents. More recent SPAC applied to FWPs had not yet been applied to this work. The intent of memorandum LA-EES-13-LV-02-96-005 was not to direct work, but to inform DOE of the process participants intended to use following teammate procedures. This memorandum was incorrectly identified as "QA:L" instead of "QA:N/A". The memorandum LA-EES-13-LV-06-96-022 was issued to document results of a meeting. Again the intent was not to direct work with the correspondence, but to transmit information. The

memorandum indicated that the information was to be captured in a formal plan (i.e. FWP or Work Agreement).

Had SPACs recently changed?

YAP-5.7Q was issued on April 25, 1996 as an improved process for planning and implementing field work. The introduction paragraph in FWPs requires a statement reiterating that work is to be performed in accordance with the FWP and controlled implementing documents. The TPP and JP for construction monitoring had not yet been transitioned to a FWP.

Were drawings not updated or modified to reflect "as-built" conditions?

JP 92-20D called for as-built information to be included in the records package for construction monitoring activities.

Did the condition occur because no one was accountable or responsible for the specific task?

Responsible organizations were identified in JP 92-20D. DR YM-96-033 noted that organizational titles needed to be updated.

Did the condition recur because past corrective actions were inadequate, initiated too late, or not implemented at all?

The corrective action resulting from CARs YM-95-025 and YM-95-026 do not directly relate to this condition. YM-95-025 resulted in the eliminate of Work Plans which described non-quality affecting work. YM-95-026 was specific to Principal Investigator/ Architect/Engineer data transfers where no procedures existed. The current condition is based on YMQAD's assertion that quality affecting detail was omitted from implementing documents. While the development of the FWP process did not directly result from the corrective action to YM-95-025, implementation of the FWP process should have provided the level of detail needed to satisfy YMQAD's concerns.

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CAR YM-96-C- 007: Response Evaluation

Based upon the following evaluation, the submitted response has been determined to be unacceptable:

Block 14 Remedial Actions:

CAR-007 states that the draft FWP "does include some of the general information that should have been incorporated in JP/TPP revisions . . ." Since the JP and TPP did not address drill and blast monitoring activities, the issuance of FWP-ESF-96-002, "Construction Monitoring in the Exploratory Studies Facility," with general guidelines is considered a positive step. However, the FWP does not include the work planning detail found in memoranda and/or informal plans reviewed during Surveillance YMP-SR-96-019.

By title, the FWP covers all construction monitoring in the ESF. The subject memoranda/informal plans covered specific scopes of work; e.g., the Thermal Test Alcove and the Northern Ghost Dance Fault Alcove, with specific criteria applied therein to each. If FWPs are intended to meet QARD Section 2.2.5, this type of information needs to be incorporated; perhaps in FWP addenda, with sufficient detail to describe the activities/technical criteria that apply to each affected organization.

The submitted response does not commit to discontinuing the use of memoranda/informal plans to establish technical criteria and direct ESF testing activities, nor does it commit to incorporating the information/types of information found in the memoranda/informal plans into existing/future FWPs.

The response indicates that the FWP and implementation of DR responses adequately addresses blast monitoring concerns. For clarification, the DRs issued as a result of the surveillance address issues that are not directly tied to CAR-007; therefore, their resolutions will not impact the outcome of this deficiency document.

Block 15. Extent of Condition and Impact:

The response suggests that remedial actions taken have mitigated any potential quality impact; however, there were several problem areas and concerns associated with drill and blast activities in the Thermal Test Alcove. Some of these problems could have been mitigated had work planning been effective.

Once again, the response does not address the use of memoranda/informal plans to establish and communicate technical direction from the TCO. Because these documents were outside of the Q program, work planning and subsequent implementation occurred without benefit of an independent review and approval process. However, because there were memoranda/informal plans with technical detail surpassing that in the JP, TPP, FWP, and PI procedures, it is defensible that coordination between the affected organizations occurred, although outside of the QA program.

The response indicates that six ESF testing activities that are covered by JPs and TPPs. It is not clear whether these activities are also impacted by the CAR condition, only that associated JPs and TPPs are yet to be transitioned to FWPs.

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Block 16 - Root Cause:

Questionnaire #s:

1 Unacceptable - It has not been suggested that the TCO has used memoranda or informal plans to implement QARD requirements, these documents are outside of the Q program and can not implement Q requirements. The issue is that work planning for specific work scopes has occurred outside of the Q program and general documents have been used to demonstrate compliance with Q requirements.

2-8 Acceptable.

9 Unacceptable - indicates that changes; i.e., the FWP procedure, had not been applied to construction monitoring. This is only partially the cause of the deficiency since, as stated in Block 14, the approved FWP addressed general information related to drill and blast monitoring and not the strategies for specific alcove construction monitoring that were contained in the memoranda/informal plans.

10-12 Acceptable.

13 May need to be expanded.

14 Unacceptable - GENERAL root cause code 1 and 3 are indicated as likely causes; however, the analysis does not identify BASIC or ROOT cause codes. Emphasis is placed on why codes do not apply rather than determining the cause.

Block 17 - Action to Preclude Recurrence:

Transitioning existing TPPs/JPs to FWPs will only preclude recurrence if FWPs are expanded to include the detail that has typically been found in memoranda and informal plans. The submitted root cause analysis takes issue with whether a recurring condition exists; however, the history of the former corrective action documents clearly demonstrates that the condition is repetitive in nature.

A briefing to TCO personnel will only be effective if there is agreement between DOE, M&O, and LANL QA regarding what is necessary to meet QARD requirements for work planning. The TCO contends that it has met the QARD requirements by issuance of a general planning document, although the agreements between the affected organizations regarding specific work scopes are absent from that document. Note that a reference in the FWP to memoranda that contain specific detail is not considered adequate, particularly because these documents are not readily available when the FWP package is distributed for review.

Discussion:

A repetitive condition exists in the use of memorandum and informal plans to establish/document technical criteria for ESF testing activities. The existence of this documentation is not a QA concern; however, based on review of documents during the drill and blast surveillance, it is apparent that work planning was accomplished informally and not translated into formal planning documents that are subject to independent review and approval and document control.

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Much effort has been applied to generation of memoranda and plans that detail work to be accomplished and the technical criteria to be applied. Likewise, much effort has been applied in the FWP process to extracting what is perceived as non-Q management/administrative controls from Q activities. It is suggested that for future ESF testing activities, less emphasis be placed on what is Q and non-Q and more emphasis placed on documenting what is planned and accomplished.

K. A. Hodges — 10-15-96

Kristi A. Hodges, QAR — Date