



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

MAY 10 1996

Robert W. Craig
Acting Technical Project Officer
for Yucca Mountain
Site Characterization Project
U.S. Geological Survey
101 Convention Center Drive
Suite 860
Las Vegas, NV 89109

EVALUATION OF CLARIFICATION OF THE AMENDED SUPPLEMENTAL RESPONSE TO
CORRECTIVE ACTION REQUEST (CAR) YMQAD-96-C002 RESULTING FROM YUCCA
MOUNTAIN QUALITY ASSURANCE DIVISION'S (YMQAD) AUDIT OF U.S. GEOLOGICAL
SURVEY (USGS) (SCPB: N/A)

The YMQAD staff has evaluated the clarification of the amended
supplemental response to CAR YMQAD-96-C002. This response
clarified questions related to the original supplemental response,
dated January 19, 1996, and is satisfactory in supporting conclusions
drawn in that letter.

This correspondence also establishes the date by which a schedule for
having independent reviewers re-examine USGS technical products. This
date is May 1, 1996. Verification of completion of the corrective
action will be performed after that date.

If you have any questions, please contact either Robert B. Constable
at 794-5580 or James Blaylock at 794-1420.

Richard E. Spence, Director
Yucca Mountain Quality Assurance Division

YMQAD:RBC-1633

Enclosure:
CAR YMQAD-96-C002

cc w/encl:
J. G. Spraul, NRC, Washington, DC
S. W. Zimmerman, NWPO, Carson City, NV
D. G. Horton, OQA (RW-3) NV
T. H. Chaney, USGS, Denver, CO
W. E. Barnes, YMSCO, NV
Records Processing Center

cc w/o encl:
W. L. Belke, NRC, Las Vegas, NV
James Blaylock, YMQAD, NV
D. G. Sult, YMQAD/QATSS, Las Vegas, NV

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PDR WASTE PDR
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CORRECTIVE ACTION REQUEST

1 Controlling Document: QARD, Rev. 2
2 Related Report No.: YM-ARP-95-12, CARsYM-95-046 & 045

3 Responsible Organization: USGS
4 Discussed With: M. Chornack, J. Whitney, L. Anderson

5 Requirement:
Note: This CAR is issued to supercede CARs YM-95-046 (see A statements) and YM-95-045 (see B statements) in order to implement the revised OCRWM Corrective Action Program. These CARs were combined due to the similar deficient conditions and the proposed corrective actions.
A. QARD, Rev. 2, Paragraph 2.2.29F, states: "Mandatory comments from the review shall be documented and resolved before approving the document."
B. QARD, Rev. 2, Paragraph 2.2.9A states: "Review criteria shall be established before performing the review. These criteria shall consider applicability, correctness, technical adequacy, completeness, accuracy, and compliance with established requirements."

6 Description of Condition:
A. 1. Many of the "non-mandatory" technical comments appeared to be "mandatory." One technical reviewer had six pages of non-mandatory comments which the reviewer indicated had to be incorporated into the report to make the study technically correct.
2. There was no documented evidence that the author resolved mandatory comments if the initial disposition of the reviewer's comments was a rejection by the author.
3. Discussion: An examination of the Technical and QA reviews of the Stagecoach Road fault, the Bare Mountain fault zone, and the Paintbrush Canyon fault investigations reports performed by USGS resulted in a number of issues requiring consideration for process improvement.
The mandatory comments made by Larry Anderson (USBR Geologist) were responded to by the author with a number of Larry Anderson's comments being rejected. There is no documentation of how these disagreements were resolved. The same observations were made in the technical reviews of the Bare Mountain and Paintbrush Canyon fault investigations. The USGS procedure (continued)

7 Initiator: Kenneth O. Gilkerson Date 1/9/96
9. Does a stop work condition exist? Yes ___ No ; If Yes, Attach copy of SWO
If Yes, Check One: A B C D

10. Recommended Actions:
In the extent of deficiency evaluation, determine impact for past deliverables which may not have had technical comments resolved appropriately.

11 QA Review: Kenneth O. Gilkerson Date 1/9/96
12 Response Due Date: N/A
~~20 working days from issuance~~ 1/11/96

13 Affected Organization QA Manager Issuance Approval:
Printed Name ROBERT B. CONSTABLE Signature [Signature] Date 1.16.96

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14 Remedial Actions:
See Responses to CARs YM-95-045 and YM-95-046

15 Investigative Actions:
See Responses to CARs YM-95-045 and YM-95-046

16 Root Cause Determination:
See Responses to CARs YM-95-045 and YM-95-046

17 Action to Preclude Recurrence:
See Responses to CARs YM-95-045 and YM-95-046

18 Response by: N/A Date	19 Corrective Action Due Date:
20 Response Accepted QAR N/A Date	21 Response Accepted AOQAM N/A Date
22 Amended Response Accepted QAR N/A <i>[Signature]</i> Date 4/21/96	23 Amended Response Accepted AOQAM N/A <i>[Signature]</i> Date 5/9/96
24 Corrective Actions Verified QAR Date	25 Closure Approved by: AOQAM Date

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A. Block 6 - Adverse Condition (Continuation)

procedure QMP-3.04, Rev. 6, requires that mandatory comments be resolved, but does not require that this resolution of how it was resolved to be documented. The procedure does require that the Chief, ESIP sign the comment sheet indicating that the author's responses to the reviewer comments are adequate, but this does not assure resolution of mandatory comments. Further discussions with the signatory (for Chief, ESIP) for the reports review disclosed that he only briefly reviewed the reports and did not in fact assure that mandatory comments were resolved. Discussions with one of the reviewers disclosed that no one in USGS ever contacted him about resolving his mandatory comments on this review...or any other.

Another issue denoted in the review of technical comments to this study was that many of the comments depicted as "non-mandatory" were in fact "mandatory." When six pages of "non-mandatory" comments by a technical reviewer are prefaced by the remarks that incorporation of the non-mandatory comments will result in the study being technically correct, it would appear that these technical comments should have been "mandatory" comments. It is recommended that management review the definitions for "mandatory" in the procedure for consistent application by the reviewers. All comments relative to technical adequacy and accuracy are mandatory.

B. Block 6 - Adverse Condition (Continuation)

Contrary to the above, the technical review of quaternary faulting studies have failed to adequately address the above described requirements resulting in an unacceptable product.

Discussion:

The quaternary faulting studies relative to the Stagecoach Road investigation (SCP 8.3.1.17.4.6) have been completed, reviewed and submitted to YMSCO (DOE) for review and concurrence. Although a technical review and QA review was performed by USGS, the report "Paleoseismic Investigations of the Stagecoach Road Fault, Southeastern Yucca Mountain, Nye County, Nevada," contain numerous technical errors which detract significantly from what is basically a good study. Examples include:

1. Table 1 provides age boundaries for subdivisions of the Quaternary Period, but these are not followed consistently in the text.
2. Tables 4 and 7 list 6 TL dates and 4 U-series dates. The text says that age estimates are derived from 11 TL and 3 U-series dates. Sample HD 1439 is provided a date on table 7 but cannot be located on the trench logs.
3. The dates discussed for sequences D and F in trench SCR-TI are reversed.

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AMENDED RESPONSE - YMQAD-96-C-002

This amended response rescinds previous responses submitted for this Corrective Action Request (CAR). This response provides a summary of the decisions made in a meeting between the U.S. Geological Survey (USGS) and the Yucca Mountain Site Characterization Project Office on March 7, 1996. In the meeting it was agreed that two principal issues would be addressed by the USGS in an amended response for this CAR.

- 1) The USGS would describe what they believed to be the root cause of review problems, and
- 2) The USGS would propose an approach to re-evaluate the adequacy of technical review comment resolution for the "qualified" USGS reports prepared between 1989 and 1991.

The review process used by the USGS is similar to review processes used throughout the scientific community.

Block 14: Remedial Actions:

The author has revised the manuscript "Paleoseismic Investigations of the Stagecoach Road Fault, Southeastern Yucca Mountain, Nye County, Nevada" per the review comments received from the technical auditor. The manuscript was revised enough that it was determined a new technical review by one of the original technical reviewers was appropriate. This review is now complete. Following QA review and TPO review, the manuscript will be re-submitted to DOE for concurrence and to USGS Headquarters for Director's approval.

Block 15: Investigative Actions:

A 1995 assessment of summary information for reports prepared by the USGS for the Yucca Mountain Project (YMP) was undertaken by:

William W. Dudley, Jr., USGS, Yucca Mountain Project Branch (YMPB) Senior Science Advisor for Hydrology
John S. Stuckless, USGS, YMPB Senior Science Advisor for Geology
William E. Wilson, USGS (Retired 1990), Clear Creek Hydrogeology, Inc.

The assessment concerned 143 reports having Local Records Center submittal dates subsequent to May 1989 (Attachment A) and was performed on tabulated information for these 143 documents. The tabulated information provided for each document included the report number, title, authors, technical reviewers, and time available for, or spent on the review. From this information, along with their familiarity with reviewer education, work experience, and/or

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professional reputation, the assessors were asked to independently evaluate the technical reviewer independence, qualifications, and probable adequacy of the technical reviews. The results of this effort are tabulated in Attachment A and summarized as follows:

Reviewer Independence

For ninety-seven percent of the documents, one or more of the assessors was familiar with one or more of the reviewers of a specific document and could attest to their ability to perform an unbiased, objective review. A further evaluation of the assessment indicated:

- for thirty percent of the documents, all three assessors could attest to the independence of one or more of the document reviewers;
- for forty-five percent of the documents, two of the three assessors could attest to the independence of one or more of the document reviewers;
- for twenty-two percent of the documents, one of the three assessors could attest to the independence of one or more of the document reviewers; and
- for three percent of the documents, none of the assessors were familiar with the document reviews, and therefore none could attest to their independence.

Reviewer Qualifications

For ninety-four percent of the documents, one or more of the assessors could attest to the technical ability of one or more of the document reviewers to adequately perform the review. A further evaluation of the assessment indicated:

- for thirty-two percent of the documents, all three assessors could attest to the technical ability of one or more of the document reviewers to adequately perform the review;
- for forty-two percent of the documents, two of the three assessors could attest to the technical ability of one or more of the document reviewers to adequately perform the review;
- for twenty percent of the documents, one of the three assessors could attest to the technical ability of one or more of the document

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reviewers to adequately perform the review;

- for five percent of the documents, none of the three assessors were familiar with the education and experience of the document reviewers, and therefore could not attest to their technical ability to perform the review; and
- for one percent (2 occurrences) one of the three assessors indicated that one of the document reviewers may not have been technically qualified to perform the specified document review.

Review Adequacy

For seventy-nine percent of the documents, one or more of the assessors could conclude that the publication received an adequate review. A further evaluation of the assessment indicated:

- for seventeen percent the documents, all three assessors could conclude that the publication received an adequate review;
- for twenty-seven percent of the documents, two of the three assessors could conclude that the publication received an adequate review;
- for thirty-five percent of the documents, one of the three assessors could conclude that the publication received an adequate review;
- for eighteen percent of the documents, none of the assessors could conclude that the publication received an adequate review; and
- for three percent (4 occurrences) one or more of the assessors concluded that the publication may not have received an adequate review.

It is reasonable to conclude that the YMP-USGS document review process consistently selects adequately qualified and independent reviewers. The attempt to judge the adequacy of the review based upon the tabulated information provided was only partially successful because not all of the review documentation identified the actual hours expended on performing the review. A large number of the publication packages identified only the dates the reviewer received and returned the package. In some instances, the reviewer retained the document for many months, obviously not a reasonable indicator of the time spent on the actual review.

Twenty-three (23) of the 143 documents (approximately 16%) were selected and reviewed by

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one assessor, W. E. Wilson, to provide an independent, in-depth evaluation of the review process and comment resolution documentation based upon the objective evidence contained in the publication review package.

From these evaluations the review process, as implemented by the authors and fifty-one (51) document reviewers, was assessed.

Table B provides a list of the twenty-three publication review packages evaluated, the number of reviewers for each specified document, and an assessment of the overall review adequacy based upon the documentation contained in the publication review package.

As indicted in the table, of the twenty-three (23) publication review packages the evaluation identified three (3) documents in which the technical adequacy of the review could not be assessed due to lack of review documentation in the publication package. It should be noted that two of these documents were reviewed prior to the YMP-USGS QA Program (May 1989), and none of these reports are identified as qualified in the Automated Technical Data Tracking system.

Based upon the evaluation of the 23 report packages, the assessment identified that uncertainties occurred during comment resolution primarily between 1989 and 1991 (Attachment B). Consequently, during the March 7th meeting, agreement was reached that reports between 1989 and 1991 would be re-evaluated. In subsequent USGS meetings it was decided that 1992 reports would be added to this re-evaluation to increase the number of reports.

Twelve candidate reports have been identified for possible re-evaluation (Attachment C). The reports were those identified by the Automated Technical Data Tracking system as "qualified" USGS data developed between 1989 and 1992 within the Project Records system. Nine of the twelve reports were selected for the re-evaluation (those asterisked on Attachment C) to avoid evaluation of multiple reports with the same or similar authorship. Documentation contained within each report file will be evaluated by comparing the reviewed draft, the reviewer comment sheets, and the final draft to determine if the author addressed reviewer comments and if appropriate changes were included in the final report. Results of this investigation will be reported in a supplemental response and the need for further actions, if any, will be included in that response.

Block 16: Root Cause Determination:

Basically the root cause of the review problems has been a weakness in the management of the comment resolution part of the process. A contributing cause was that the implementing procedure did not require documentation from the reviewer to evaluate an author's response(s) to the review comments.

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Block 17: Actions to Preclude Recurrence:

To deal with the root cause, two actions have been taken already:

The implementing procedure (QMP-3.04) has been revised to require the documentation of the author-reviewer comment resolution process.

Management responsibilities have been re-enforced at weekly meetings between Earth Science Investigations Program (ESIP) Team Chiefs and the ESIP Chief. These meetings have been conducted since the beginning of the FY to discuss managerial oversight issues to try to foresee problems before they occur.

In addition, the following management oversight actions are being implemented:

Milestone progress meetings are being convened with the M&O and DOE to ensure data, ideas, or conclusions are being communicated so technical "surprises" do not occur.

Weekly meetings between ESIP and the Quality Assurance Office are being conducted to discuss quality-assurance-related problems to 1) ensure an ongoing dialogue, 2) address issues before they become problems, and 3) resolve problems that do arise.

All USGS abstracts are sent to the YMPB Senior Science Advisors at the time the report is sent to colleague review. Based upon the Science Advisors' knowledge and experience, they select reports for which they will provide additional reviews.

Block 18: Response by:

Robert W. Craig 4/11/96
Robert W. Craig, Chief, Yucca Mountain Project Branch Date

Block 19: Corrective Action Due Date:

Supplemental Response to be submitted by May 1, 1996.

Report	Independence	Qualifications	Adequacy
LRC 89.M.000072 RPT OFR-84-552	III	III	III
LRC 89.M.000104 RPT OFR-89-1-SCO	SSS	SSS	SSS
LRC 89.M.000105 RPT OFR-89-1-TAY	SSI	SSI	SSI
LRC 89.M.000140 RPT I-1884	SSI	SSI	SSI
LRC 89.M.000141 RPT I-1994	SSS	SSS	SSS
LRC 89.M.000153 RPT HARDEN-89.0153	SSS	SSS	SSS
LRC 89.M.000154 RPT BRADBUR-89.0154	SII	SSI	SII
LRC 90.M.000001 RPT OFR-88-553	SII	SSI	SII
LRC 90.M.000002 RPT OFR-88-570	SII	SSI	SII
LRC 90.M.000004 RPT HOXIE-D-90.0004	SII	SII	SII
LRC 90.M.000008 RPT CZARNEC-90.0008	SII	SII	SII
LRC 90.M.000009 RPT GALLOWA-90.0009	SSI	SSI	SSI
LRC 90.M.000010 RPT THENHAU-90.0010	SSI	SSI	SSI
LRC 90.M.000061 RPT OFR-89-446	SII	SSI	III
LRC 90.M.000062 RPT OFR-88-664	SII	SSI	III
LRC 90.M.000066 RPT OFR-90-113	SII	SII	SII

Report	Independence	Qualifications	Adequacy
LRC 90.M.000075 RPT SPENGLE-90.0075	SSI	SSI	SII
LRC 90.M.000076 RPT OFR-88-436	SII	SII	SII
LRC 90.M.000077 RPT FAIRER-90-0077	SSI	SSI	SII
LRC 90.M.000081 RPT OFR-89-682ABC	SII	SII	SII
LRC 90.M.000083 RPT OFR-89-3	SSS	SSS	SSS
LRC 90.M.000085 RPT MALDONA-90.0085	SSI	SSI	SSI
LRC 90.M.000086 RPT OFR-89-359	SSI	SSI	SSI
LRC 90.M.000093 RPT OFR-89-234	SSS	SSS	SSI
LRC 90.M.000094 RPT I-2049	SSS	SSS	SSS
LRC 90.M.000095 RPT OFR-89-139	SSI	SII	SII
LRC 90.M.000096 RPT OFR-90-87	SSS	SSS	SSS
LRC 90.M.000097 RPT OFR-89-133	SII	SII	SII
LRC 90.M.000102 RPT OFR-90-356	SSS	SSS	SII
LRC 91.M.000001 RPT OFR-90-354	SSI	SSS	SII
LRC 91.M.000002 RPT SZABO B-91.0002	SSS	SSS	SSS
LRC 91.M.000004 RPT OFR-90-474	SSI	SSI	SSI

Report	Independence	Qualifications	Adequacy
LRC 91.M.000006 RPT OFR-89-567A	SII	SII	III
LRC 91.M.000007 RPT OFR-90-569	SSS	SSS	SII
LRC 91.M.000008 RPT OFR-91-105	SII	SII	III
LRC 91.M.000009 RPT OFR-90-362	SSS	SSS	SII
LRC 91.M.000010 RPT OFR-91-46	SII	SII	SII
LRC 91.M.000012 RPT OFR-90-369	SSI	SSS	SSS
LRC 91.M.000014 RPT OFR-90-355	SSI	SSS	SSI
LRC 91.M.000015 RPT OFR-90-41	SSS	SSS	SSS
LRC 91.M.000016 RPT OFR-90-500	SSI	SSI	III
LRC 91.M.000019 RPT WRIR-89-4025	SSI	SSI	SSI
LRC 91.M.000020 RPT OFR-92-458	SSS	SSS	SSS
LRC 91.M.000026 RPT HEVESI-91.0026	SSS	SSS	SSS
LRC 91.M.000027 RPT LEWIS R-91.0027	SSI	SII	III
LRC 91.M.000028 RPT NELSON-91.0028	SII	III	III
LRC 91.M.000029 RPT REHEIS-91.0029	SSI	SSS	SSS
LRC 91.M.000030 RPT SCHIMSC-91.0030	SSI	SSI	SSI

Report	Independence	Qualifications	Adequacy
LRC 91.M.000032 RPT TURRIN-91.0032	SSI	SSI	SII
LRC 91.M.000033 RPT OFR-91-620	SSI	SSI	SSI
LRC 91.M.000035 RPT ODUM J-91.0035	SSI	SSI	SSUS
LRC 91.M.000038 RPT WHITNEY-91.0038	SSI	SSI	III
LRC 91.M.000058 RPT GOMBERG-91.0058	SII	SII	III
LRC 91.M.000059 RPT GOMGERG-91.0059	SII	SII	SII
LRC 91.M.000060 RPT ROSENBA-91.0060	SSS	SSI	SSI
LRC 91.M.000062 RPT OFR-93-269	SSI	SSI	SSI
LRC 91.M.000067 RPT BROCHER-91.0067	SSI	SSI	SII
LRC 91.M.000068 RPT STUCKLE-91.0068	SSS	SSS	SSS
LRC 91.M.000072 RPT OFR-90-615	SSI	SSI	SII
LRC 91.M.000073 RPT GP-1001	SSI	SSI	SSI
LRC 91.M.000074 RPT ZIMMERM-91.0074	SSI	SSI	III
LRC 91.M.000075 RPT WRIR-88-4168	SSI	SSI	SSI
LRC 91.M.000076 RPT OFR-90-49	SSI	SSI	SSI
LRC 91.M.000077 RPT OFR-90-37	SSI	SSI	SSI

Report	Independence	Qualifications	Adequacy
LRC 91.M.000078 RPT HEVESI-91.0078	SSS	SSS	SSS
LRC 91.M.000081 RPT OFR-91-178	SSI	SII	SII
LRC 91.M.000091 RPT WRIR-92-4016	SSS	SSS	SSS
LRC 91.M.000092 RPT OFR-91-118	SSS	SSS	SSI
LRC 91.M.000094 RPT ZIMMERM-91.0094	SSS	SSS	SII
LRC 91.M.000095 RPT CZARNEC-91.0095	SSI	SIUS	IUSUS
LRC 91.M.000103 RPT FLINT A-91.0103	SSS	SSS	SSS
LRC 91.M.000107 RPT FLINT A-91.0107	SSS	SSS	SII
LRC 91.M.000108 RPT KLENKE-91.0108	III	III	III
LRC 91.M.000113 RPT ZIMMERM-91.0113	SSI	SSI	III
LRC 91.M.000118 RPT ZIMMERM-91.0118	SSS	SSS	SII
LRC 91.M.000132 RPT OFR-91-241	SII	III	III
LRC 91.M.000134 RPT OFR-92-28	SSS	SSS	SII
LRC 91.M.000144 RPT OFR-91-341	SSS	SSS	SSS
LRC 91.M.000149 RPT OFR-87-596	SSI	SSI	III
LRC 91.M.000156 RPT OFR-91-493	SII	SSI	SSI

Report	Independence	Qualifications	Adequacy
LRC 91.M.000160 RPT OFR-91-623	SSI	SSI	SSI
LRC 91.M.000161 RPT OFR-91-367	SSI	SSI	SII
LRC 91.M.000163 RPT OFR-93-438	SSI	SSI	SII
LRC 91.M.000164 RPT OATFIEL-91.0164	SSI	SSI	SII
LRC 91.M.000172 RPT WRIR-93-4025	SII	SII	SII
LRC 91.M.000174 RPT OFR-91-478	SSI	SSI	SSI
LRC 91.M.000176 RPT I-2201	SSI	SSI	SSI
LRC 91.M.000178 RPT TERHUNE-91.0178	SSS	SSS	SSS
LRC 91.M.000181 RPT KUMAR S-91.0181	SSI	SSS	SSI
LRC 91.M.000188 RPT OFR-92-657	III	III	III
LRC 92.M.000002 RPT OFR-91-572	SSI	SSI	SSI
LRC 92.M.000006 RPT WRIR-92-4065	SII	SII	SII
LRC 92.M.000011 RPT I-1985	SSI	SSI	SSI
LRC 92.M.000023 RPT OFR-86-175	SSS	SSS	SSI
LRC 92.M.000045 RPT OFR-79-277	SII	SII	III
LRC 92.M.000072 RPT OFR-84-649	SSI	SSI	SSI

Report	Independence	Qualifications	Adequacy
LRC 92.M.000078 RPT OFR-86-420	SSI	SSI	SII
LRC 92.M.000079 RPT WRIR-86-4015	SSS	SSS	SSL
LRC 92.M.000080 RPT WRIR-86-4359	SSS	SSS	SSI
LRC 92.M.000088 RPT MP-1897	SII	SII	III
LRC 92.M.000089 RPT BLAKELY-92.0089	SSI	SSI	SSI
LRC 92.M.000207 RPT OFR-92-137	SSI	SII	SII
LRC 92.M.000208 RPT OFR-92-343	SSI	SSI	SII
LRC 92.M.000217 RPT BALCH A-92.0217	SII	SII	III
LRC 92.M.000219 RPT WRIR-93-4144	SII	III	III
LRC 92.M.000222 RPT OFR-92-340	SSI	SSI	SII
LRC 92.M.000227 RPT OFR-91-125	SSS	SSS	III
LRC 92.M.000233 RPT OFR-92-572	SSS	SSS	III
LRC 92.M.000236 RPT WRIR-93-4000	SSI	SSI	SSI
LRC 92.M.000238 RPT OFR-92-490	SSI	SSI	SSI
LRC 92.M.000246 RPT KWICKLI-92.0246	SSS	SSS	SSI
LRC 92.M.000258 RPT OFR-92-450	SSS	SSI	SSI

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LRC 92.M.000273 RPT OFR-93-60	SSI	SSS	SSS
LRC 93.M.000002 RPT OSTERKA-93.0002	SSS	SSS	SSS
LRC 93.M.000017 RPT OFR-93-73	SSI	SII	IIUS
LRC 93.M.000036 RPT OFR-93-651	SII	SII	SII
LRC 93.M.000048 RPT ISTOK J-93.0048	SSI	SSI	SSI
LRC 93.M.000049 RPT OFR-93-477	SSS	SSS	SSS
LRC 93.M.000069 RPT FRIDRIC-93.0069	SSS	SSS	SSS
LRC 93.M.000092 RPT NELSON-93.0092	SSI	SSI	SII
LRC 94.A.100263 RPT SAVAGE-94.0016	SII	SII	III
LRC 94.A.100550 RPT GILMORE-91.0057	SSI	SSI	SII
LRC 94.A.100651 RPT I-MAP-NO # YET	SSI	SSI	SII
LRC 94.A.100808 RPT KARASAKI-92.204	SSS	SSS	SSI
LRC 94.A.100810 RPT FAUNT C-94.0052	SSS	SSS	SSI
LRC 94.M.000009 RPT OFR-87-121	SSI	SII	III
LRC 94.M.000012 RPT ANDERSON-94.0012	SII	SII	III
LRC 94.M.000020 RPT OFR-93-369	SSI	SSI	SII

Report	Independence	Qualifications	Adequacy
LRC 94.M.000021 RPT OFR-93-690	SSS	SSS	SSS
LRC 94.M.000039 RPT OFR-92-201	SSI	SSI	SSI
LRC 94.M.000041 RPT OFR-94-54	SSS	SSS	SSS
LRC 94.M.000042 RPT OFR-94-312	SSI	SSI	SII
LRC 94.M.000053 RPT DALEY T-94.0053	SSI	SSI	SII
LRC 95.M.000002 RPT OFR-94-303	SII	SII	SII
LRC 95.M.000004 RPT OFR-94-305	SSS	SSS	SSI
LRC 95.M.000005 RPT OFR-93-98	SSI	SSI	SII
LRC 95.M.000006 RPT OFR-94-317	SSI	SSI	SII
LRC 95.M.000007 RPT OFR-94-451	SII	SSI	SII
LRC 95.M.000009 RPT OFR-94-318	SSS	SIUS	SIUS
LRC 95.M.000010 RPT OFR-94-456	SSI	SSI	SII
LRC 95.M.000011 RPT OFR-94-311	III	III	III
LRC 95.M.000012 RPT OFR-93-89	SII	SII	SII
LRC 95.M.000013 RPT OFR-94-342	SSS	SSS	SSS

Legend

S: Satisfactory
US: Unsatisfactory
I: Indeterminate

The following table provides a list of the twenty-three publication review packages evaluated, the number of reviewers for each specified document, and an assessment of the overall review adequacy based upon the documentation contained in the publication review package.

Document Identification	Number of Reviewers	Overall Review Adequacy
90M000004/HOXIED90.0004	2	I
90M000008/CZARNEC9.0008	2	I
90M000075/SPENGLE90.0075	2	S
91M000020/OFR92-458	4	S
91M000026/HEVESI91.0026	2	S
91M000060/ROSENBA91.0060	2	S
91M000062/OFR93-269	2	S
91M000068/STUCKE91.0068	2	S
91M000077/OFR90-37	2	I
91M000103/FLINTA91.0103	2	S
91M000160/OFR91-623	3	S
91M000174/OFR91-478	2	S
91M000188/OFR92-657	2	S
92M000078/OFR86-420	2	S
92M000207/OFR92-137	2	S
92M000208/OFR92-343	2	S
92M000219/WRIR93-4414	2	S
92M000227/OFR91-125	2	S
92M000246/KWICKLI92.0246	2	S
93M000002/OSTERKA93.0002	2	S
93M000049/OFR93-477	4	S
94A100263/SAVAGE94.0016	2	S
94A100550/GILMORE91.0057	2	S

LEGEND

S - Satisfactory
I - Indeterminate

ATTACHMENT C

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<u>Data Tracking Number</u>	<u>Title/Description on Technical Data Information Form</u>
* GS930108312212.001	THE INFLUENCE OF LONG-TERM CLIMATE CHANGE ON NET INFILTRATION AT YUCCA MOUNTAIN, NEVADA, BY A.L. FLINT, L.E. FLINT, & J.A. HEVESI
GS930108312312.002	HYDROLOGIC RESPONSES TO EARTHQUAKES, JUNE 28-29, 1992, AT YUCCA MOUNTAIN, NEVADA, BY GRADY M. O'BRIEN AND PATRICK TUCCI. BASED ON DATA FROM USW WELLS H-3, H-5, AND H-6, AND FROM UE-25P #1.
* GS930108312312.003	EARTHQUAKE-INDUCED WATER-LEVEL FLUCTUATIONS AT YUCCA MOUNTAIN, NEVADA, JUNE, 1992 BY G.M. O'BRIEN. BASED ON DATA FROM WELLS USW H-5, USW H-6, USW H-3, AND UE-25 P #1.
GS920508312313.005	"EARTHQUAKE-INDUCED WATER-LEVEL FLUCTUATIONS AT YUCCA MOUNTAIN, NEVADA, APRIL 1992" BY G. M. O'BRIEN.
* GS921208314212.015	GEOPHYSICAL INVESTIGATIONS OF CONCEALED FAULTS NEAR YUCCA MOUNTAIN, SOUTHWEST NEVADA, BY D.A. PONCE
* GS920208315215.009	"STRONTIUM ISOTOPE GEOCHEMISTRY OF CALCITE FRACTURE FILLING IN DEEP CORE, YUCCA MOUNTAIN, NEVADA - A PROGRESS REPORT" BY Z. PETERMAN, J. STUCKLESS, B. MARSHALL, S. MAHAN, AND K. FUTA.
* GS921208315215.028	PALEOHYDROLOGIC IMPLICATIONS OF THE STABLE ISOTOPIC COMPOSITION OF SECONDARY CALCITE WITHIN THE TERTIARY VOLCANIC ROCKS OF YUCCA MOUNTAIN, NEVADA BY JOSEPH F. WHELAN AND JOHN S. STUCKLESS.
GS930108315215.004	LEAD ISOTOPIC COMPOSITION OF PALEOZOIC AND LATE PROTEROZOIC CARBONATE ROCKS IN THE VICINITY OF YUCCA MOUNTAIN, NV, BY R.E. ZARTMAN AND L.M. KWAK.
* GS930108315215.008	PRELIMINARY STUDY OF LEAD ISOTOPES IN THE CARBONATE-SILICA VEINS OF TRENCH 14, YUCCA MOUNTAIN. BY R.E. ZARTMAN AND L.M. KWAK

ATTACHMENT C -

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<u>Data Tracking Number</u>	<u>Title/Description on Technical Data Information Form</u>
* GS921208316111.002	RELICT COLLUVIAL BOULDER DEPOSITS AS PALEOCLIMATIC INDICATORS IN THE YUCCA MOUNTAIN REGION, SOUTHERN NEVADA, BY JOHN W. WHITNEY AND CHARLES D. HARRINGTON.
* GS920783117412.022	SEISMICITY AND FOCAL MECHANISMS FOR THE SOUTHERN GREAT BASIN OF NEVADA AND CALIFORNIA IN 1991.
* GS920783117461.002	PHOTOGEOLOGIC AND KINEMATIC ANALYSIS OF LINEAMENTS AT YUCCA MOUNTAIN, NEVADA: IMPLICATIONS FOR STRIKE-SLIP FAULTING AND OROCLINAL BENDING, BY J.M. O'NEILL, J.W. WHITNEY, & M.R. HUDSON.

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WASHINGTON, D.C.**

- Corrective Action Request
 Stop Work Order

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AMENDED RESPONSE TO YMQAD-96-C002

This response replaces earlier responses for YMQAD CARS YM-95-045 AND -046

Block 14: Remedial Actions:

The author has revised the manuscript "Paleoseismic Investigations of the Stagecoach Road Fault, Southeastern Yucca Mountain, Nye County, Nevada" per the review comments received from the technical auditor. The manuscript was revised enough that it was determined that a new technical review by one of the original technical reviewers was appropriate. When this technical review phase has been completed, the author will send his responses and a copy of the revised text to the technical auditor for evaluation. QA review, TPO review and re-submittal to DOE for concurrence and to USGS Headquarters for Director's approval has been delayed due to this additional technical review. We anticipate re-submittal to DOE and concurrent re-submittal for USGS Director's approval by March 15, 1996.

Block 15 Investigative Actions:

Although the subject report still contained technical inconsistencies due to unresolved comments, the USGS report process was not fully completed for this report. USGS Director's approval was still required for the report. Evaluation criteria for that approval includes assuring adequate response to reviewer comments. The evaluation for Director's approval is likely to have identified the unresolved technical comments or inconsistencies and should be the final determination for adequate technical review and comment resolution.

The subject report was a FY94 milestone to DOE. The acceptance criteria given in PACs specifically stated that the milestone was met when the report was submitted for USGS approval and DOE concurrence.

Block 16 Root Cause Determination:

The root cause of this condition is that the USGS review procedure (QMP-3.04) did not require reviewer evaluation of the responses. Instead this responsibility was handled as a management review (either Team Chief or Program Chief, depending on which revision of QMP-3.04 was in effect). The management review was to "determine, based on technical adequacy, reviewer's comments, and author's responses, if the documents are ready for further processing". Please note that this management review was not limited to resolution of mandatory comments. Non-mandatory comments that "had to be incorporated into the report to make the study technically correct" would be included in this management review. Resolution of comments was reflected in the revision of the report, if necessary. The particular Team Chief responsible for this report was operating under the assumption that this review was being done on his behalf before he was asked to

1/19/96 Craig G. Spence

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sign the review forms.

Block 17: Actions to Prevent Recurrence:

QMP-3.04 has been revised (Rev. 7) to require reviewer involvement in the resolution of mandatory comments. Also, due to extensive discussions as a result of this CAR, all Team Chiefs now understand this function.

Block 18 Response By: Robert W. Craig 1/19/96
Robert W. Craig, Chief, Yucca Mountain Project Branch / Date

Block 19 Corrective Action Due Date: March 15, 1996