



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

AUG 0 1 1995

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

EVALUATION OF RESPONSES TO CORRECTIVE ACTION REQUEST (CAR)
YM-95-045 AND CAR YM-95-046 RESULTING FROM YUCCA MOUNTAIN
QUALITY ASSURANCE DIVISION'S (YMQAD) AUDIT YM-ARP-95-12 OF
THE U.S. GEOLOGICAL SURVEY (USGS) (SCPB: N/A)

The YMQAD staff has evaluated the partial responses to CARs
YM-95-045 and YM-95-046. The responses have been determined
to be satisfactory with the following conditions:

Since the proposed remedial action relative to comment
resolution on CAR YM-95-046 only addresses Stagecoach Road
fault evaluation manuscript, while the audit identified
mandatory comment resolution issues with three of the four
studies evaluated (Bare Mountain, Paintbrush Canyon, as well
as Stagecoach Road Investigation), actions taken relative to
comment resolution will be applied to all three reports.

Relative to both CARs YM-95-045 and YM-95-046, YMQAD will
assign a representative to overview the USGS surveillance
activities described in those responses. Any changes of timing
or status of the USGS surveillance will be coordinated with
YMQAD such that a YMQAD representative will be able to verify
these activities as they are on-going.

If you have any questions, please contact either Robert B.
Constable at 794-7945 or Kenneth O. Gilkerson at 794-7738.

Richard E. Spence, Director
Yucca Mountain Quality Assurance Division

YMQAD:RBC-4110

Enclosure:
CARs YM-95-045 and
YM-95-046

YMP-5

9508070402 950801
PDR WASTE PDR
WM-11

NH03 11
WM-11
102.7

Larry R. Hayes

-2-

AUG 01 1995

cc w/encl:

~~S. G. Spraul~~, NRC, Washington, DC
S. W. Zimmerman, NWPO, Carson City, NV
T. H. Chaney, USGS, Denver, CO
R. W. Craig, USGS, Las Vegas, NV
D. D. Porter, SAIC, Golden, CO
D. G. Horton, OQA (RW-3) NV
W. E. Barnes, YMSCO, NV

cc w/o encl:

W. L. Belke, NRC, Las Vegas, NV
D. G. Sult, YMOAD/QATSS, Las Vegas, NV

660031

**OFFICE OF CIVILIAN
RADIOACTIVE WASTE MANAGEMENT
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8. CAR NO. YM-95-046
PAGE 1 OF 2
QA

CORRECTIVE ACTION REQUEST

1. CONTROLLING DOCUMENT: QARD, Revision 2
2. RELATED REPORT NO.: YM-ARP-95-12

3. RESPONSIBLE ORGANIZATION: USGS
4. DISCUSSED WITH: M. Chornack, J. Whitney, L. Anderson

5. REQUIREMENT:
QARD, Rev. 2, Paragraph 2.2.29F, states: "Mandatory comments from the review shall be documented and resolved before approving the document."

6. ADVERSE CONDITION:

- Many of the "nonmandatory" technical comments appeared to be "mandatory." One technical reviewer had six pages of nonmandatory comments which the reviewer indicated had to be incorporated into the report to make the study technically correct.
- 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.
- 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 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 QMP-3.04, Revision 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

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

10. Does a stop work condition exist? Yes No; 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:
In the extent of deficiency evaluation determine impact for past deliverables which may not have had technical comments resolved appropriately.

7. Initiator: Kenneth O. Gilkerson *Kenneth O. Gilkerson* 6/21/95
14. Issuance Approved by: QADD *[Signature]* Date 6.22.95

15. Response Accepted: QAR *[Signature]* Date 7/27/95
16. Response Accepted: QADD *[Signature]* Date 7.31.95

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-95-046
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CORRECTIVE ACTION REQUEST (CONTINUATION PAGE)

Block 6 (continued)

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 "nonmandatory" were in fact "mandatory." When six pages of "nomandatory" comments by a technical reviewer are prefaced by the remarks that incorporation of the nonmandatory 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.

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^B CAR NO. _____
PAGE _____ OF _____
QA

CORRECTIVE ACTION REQUEST (CONTINUATION PAGE)

1. Corrective Action Response for CAR # YM-95-46

A. Remedial Actions: The manuscript "Paleoseismic Investigations of the Stagecoach Road Fault, Southeastern Yucca Mountain, Nye County, Nevada" by C.M. Menges and others has been retracted from DOE and USGS Headquarters reviews and is currently undergoing a third technical review (see YM- CAR-95-045). Upon completion of this third review, the response draft of the manuscript will be provided to the two initial reviewers along with responses to their comments (mandatory and non-mandatory). Acceptance or rejection by the two initial reviewers of responses to their comments will be documented. Comment resolution for any rejected comment responses also will be documented. Following comment resolution of the technical comments, the manuscript will receive another QA review and TPO review. When these reviews have been completed and comments resolved, if any, the manuscript will be sent simultaneously to DOE for concurrence and USGS Headquarters for Director's approval.

B. Extent of Deficiency: A YMP-USGS surveillance is planned to investigate the extent of this deficiency. A supplemental response will be submitted to identify the results.

C. Root Cause Determination: The root cause will be determined based upon the results of the YMP-USGS surveillance. A supplemental response will be submitted to identify the root cause. One apparent root cause for the lack of documentation of comment resolution is that the governing QMP (3.04) does not require the reviewer to evaluate the response to a comment.

D. Corrective Action to Preclude Recurrence: The actions to prevent recurrence will be determined based on the results of the YMP-USGS surveillance. A supplemental response will be submitted to identify the actions to prevent recurrence and the due dates for the actions. An interim action is being taken to modify QMP-3.04 to require reviewer acceptance or rejection of comment responses for mandatory comments.

2. Names of individuals assigned responsibility and anticipated completion date.

A. Chris Menges will respond to comments and make appropriate changes to the manuscript. The report is expected to be sent to DOE and USGS Headquarters by September 2, 1995.

B. Larry Hayes and Tom Chaney will submit a supplemental response by November 17, 1995. (Step 1 as identified in the surveillance plan has been completed. Step 2 is scheduled to be completed by mid-August 16, Step 3 by mid-October, and Step 4 by early

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CAR NO. _____
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CORRECTIVE ACTION REQUEST (CONTINUATION PAGE)

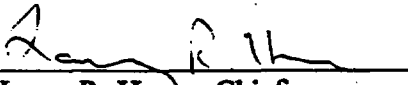
November. November 17, 1995 represents step 5.)

C. Larry Hayes and Tom Chaney will submit a supplemental response by November 17, 1995. (Step 1 as identified in the surveillance plan has been completed. Step 2 is scheduled to be completed by mid-August 16, Step 3 by mid-October, and Step 4 by early November. November 17, 1995 represents step 5.)

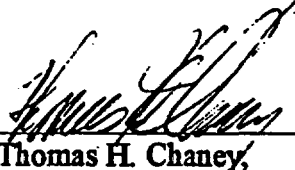
D. Larry Hayes and Tom Chaney will submit a supplemental response by November 17, 1995. (Step 1 as identified in the surveillance plan has been completed. Step 2 is scheduled to be completed by mid-August 16, Step 3 by mid-October, and Step 4 by early November. November 17, 1995 represents step 5.)

Martha Mustard will modify QMP-3.04 by August 14, 1995.

3. Signatures of responsible individuals


Larry R. Hayes, Chief
Yucca Mountain Project Branch

7/21/95
Date


Thomas H. Chaney,
Quality Assurance Manager

7/21/95
Date



United States Department of the Interior

GEOLOGICAL SURVEY



Yucca Mountain Project Branch
101 Convention Center Drive, Suite 860
Las Vegas, NV 89109

INFORMATION COPY

July 12, 1995

Memorandum

To: Distribution

From: *RLH* Larry R. Hayes, Chief, Yucca Mountain Project Branch, U.S. Geological Survey

Subject: Adequacy of U.S. Geological Survey-Yucca Mountain Project Branch (USGS-YMPB) Technical Reports

Over the past two (2) years, concerns have come to light concerning the adequacy of two U.S. Geological Survey-Yucca Mountain Project Branch (USGS-YMPB) technical reports. The first of these reports has been criticized from within the USGS as well as by the U.S. Department of Energy (DOE); concerns about the second report were identified during a recent DOE audit.

I believe we all agree that any concerns about the adequacy of USGS-YMPB technical reports must be given serious consideration. Therefore, following discussion of this issue with you, I have asked Larry McInroy of our QA Office to conduct a comprehensive surveillance of USGS-YMPB technical reports to determine if the concerns identified in the above reports are relatively isolated events or not. The approach Larry will take is presented in the attachment, which we have previously discussed.

Your cooperation in this important activity will be appreciated.

Attachment

Distribution:

R. Williams, USGS, Denver, CO
R. Craig, USGS, Las Vegas, NV
M. Chornack, USGS, Denver, CO
D. Gillies, USGS, Denver, CO
R. Luckey, USGS, Denver, CO
B. Parks, USGS, Denver, CO
Z. Peterman, USGS, Denver, CO
W. Dudley, USGS, Denver, CO
J. Stuckless, USGS, Denver, CO
R. Lewis, USGS, Denver, CO
T. Brady, USGS, Denver, CO

cc: W. Barnes, YMSCO, Las Vegas, NV
D. Horton, DOE/OQA, Las Vegas, NV
R. Dyer, YMSCO, Las Vegas, NV
S. Jones, YMSCO, Las Vegas, NV
D. Foust, M&O/TRW, Las Vegas, NV
R. Hirsch, USGS, Reston, VA
V. Schneider, USGS, Reston, VA
T. Chaney, USGS, Denver, CO
L. Ducret, USGS, Denver, CO
J. Flager, USGS, Denver, CO

**INVESTIGATIVE APPROACH
TO DETERMINE THE
ADEQUACY OF USGS-YMPB DELIVERABLES**

July 7, 1995

BACKGROUND

The Department of Energy (DOE) Performance-Based Audit YM-AR-95-012, conducted June 8-16, 1995, identified a U.S. Geological Survey-Yucca Mountain Project Branch (USGS-YMPB) draft report (prior to DOE and USGS approval) which contained editorial and minor technical problems (See attached DOE Audit Report). The draft report had been submitted to DOE and the Director's Office without completing the final step of the USGS-YMPB technical review process in accordance with YMP-USGS QMP-3.04. The request for DOE and Director's approval was retracted prior to their review and approval.

CONCERNS

Several general questions have been identified as a result of the DOE audit finding.

- 1) Are the identified problems generally isolated to the subject report or do other USGS-YMPB reports contain similar problems?
- 2) Do the results of the audit indicate a breakdown in compliance with the USGS-YMPB Report Processing Procedures?
- 3) Are sufficient resources being allocated for report development and review?
- 4) Are there weaknesses in our report review and processing procedures that need to be resolved?

INVESTIGATIVE APPROACH

To answer these general questions, an investigation in the form of a Quality Assurance Surveillance, will be performed jointly by the YMP-USGS QA Office and the USGS-YMPB technical staff, assisted by technical staff from outside the USGS-YMPB. The approach of the surveillance has been designed to focus on the following specific questions:

- 1) Are the technical reviewers sufficiently independent?
- 2) Are the technical reviewers performing adequate reviews?
 - Are technical reviewers' technical qualifications and experience appropriate?
 - Are the technical reviewers conscientious in performing the reviews?
- 3) Are technical reviewers given sufficient advance notice and time for an appropriate review?
- 4) Is an adequate editorial review being conducted?
- 5) Are the technical and editorial comments adequately resolved?
- 6) Are authors, reviewers, and management fully complying with the USGS-YMPB report processing procedures?

From about 1980 to the present, nearly 800 USGS-YMPB deliverables have been produced. The list, identified from the Local Records Center (LRC) database, is further categorized as follows:

<u>Category</u>	<u>Number</u>	<u>*Reports Subject To Surveillance</u>
*Open File Reports (OFRs)	255	255
*Water Resources Investigation Report (WRIRs)	46	46
*Maps	21	21

* Journal Articles	80	80
Abstracts	214	
Symposia	7	
Bulletin	13	
Review of Miscellaneous Reports	22	
Proceedings of Conferences, etc. (published)		121
Lawrence Berkeley Laboratory Reports	9	
* Analysis Paper	5	5
	<u>798</u>	<u>407</u>

The categories identified with an asterisk have been determined to be the products more significant to the USGS-YMPB technical credibility and, therefore, our more important technical contributions to the DOE Site Characterization Program. They are, consequently, the categories which will be the subject of this surveillance.

The surveillance will be conducted in a series of steps.

Step 1: A tabulation of all reports subject to surveillance will be generated to identify:

- the publication name and number;
- the author(s);
- the reviewer(s);
- the level of effort (man hours) of the reviews; and
- the number of comments generated by each reviewer and number of comments fully addressed.

Step 2: A team, appointed by the Chief, YMPB, will review the tabulation to evaluate if

- the reviewers were sufficiently independent of the work performed;
- the level and technical adequacy of review effort were adequate;
- if the review comments were adequately classified as mandatory or non-mandatory;
- the reviewers comments (both technical and editorial) were adequately resolved:

Step 3: The team will select about 40 (10 percent) of the more significant technical publications to review in more detail. The selection will be random, or possibly based on information developed in Step 2. The purpose of the review will be to more fully evaluate the adequacy of resolution of the reviewers comments and evaluate if the reports contain technical or editorial errors.

Step 4: The QA Office member(s) of the team will prepare a report to the Chief, YMPB, to summarize the results of the investigation and to recommend further action, if appropriate.

Step 5: The Chief, YMPB, will notify the DOE and USGS Headquarters of results and present an action plan to resolve identified concerns, if appropriate.

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B. CAR NO. YM-95-045
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QA

CORRECTIVE ACTION REQUEST

1. CONTROLLING DOCUMENT: QARD, Revision 2
2. RELATED REPORT NO.: YM-ARP-95-12

3. RESPONSIBLE ORGANIZATION: USGS
4. DISCUSSED WITH: C. Menges, L. Anderson, M. Chornack

5. REQUIREMENT:
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. ADVERSE CONDITION:
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. These errors were discussed with and concurred by the Principal Investigator and author. The report contains numerous technical errors which detract significantly from what is basically a good study. Examples include:

- Table 1 provides age boundaries for subdivisions of the Quaternary Period, but these are not followed consistently in the text.
- 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.
- The dates discussed for sequences D and F in trench SCR-TI are reversed.

9. Does a Significant Condition Adverse to Quality exist? Yes No
If Yes, Check One: A B C D E
10. Does a stop work condition exist? Yes No; If Yes, Attach copy of SWO
If Yes, Check One: A B C
13. Response Due Date: 20 WORKING DAYS AFTER ISSUANCE

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

12. Recommended Actions:

7. Initiator Kenneth O. Gilkerson *Kenneth O. Gilkerson* 6/21/95
14. Issuance Approved by *[Signature]* Date 6.22.95

15. Response Accepted QAR *[Signature]* Date 7/27/95
16. Response Accepted QADD *[Signature]* Date 7.31.95

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-95-045
PAGE 2 OF 2
QA

CORRECTIVE ACTION REQUEST (CONTINUATION PAGE)

Block 6 (continued)

4. Figure references provided in the text for the 108 ± 10 ka date in trench SCR-T3 are incorrect.
5. On table 9 the colluvial wedge listings do not agree with the wedges illustrated on figures 9 and 10. Also the last two events in SCR-T3 are reversed.
6. Table 10 lists stratigraphic separation for the most recent event "Z" for SCR T-1 and T-3. Using the definition of stratigraphic separation on the table this is not possible. Also event T is SCR T-3 is provided a colluvial wedge thickness, but no wedge is indicated on Table 9 or on the figures.
7. On the trench logs (Plates II and III), the measurements provided on Table 10 cannot always be reproduced.
8. The number of faulting events interpreted in the trenches is not consistently presented in the text.
9. On page 94 the text discussed fracture terminations below unit H1, but the figures indicate they terminate below H3c.
10. At the bottom of page 95, event X should be event Y as indicated on the figures.
11. Some of the dates presented on Figure 11 were not used to constrain event timing, but this is not stated in the text on the table.
12. Unit boundary symbols on the logs (solid line boundaries) cannot be substantiated in the field.
13. Trench T2 was excavated but not logged or discussed in the report. The absence of faulting in this trench serves to limit the width of the SCR fault and should be documented.

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⁸ CAR NO. _____
PAGE _____ OF _____
QA

CORRECTIVE ACTION REQUEST (CONTINUATION PAGE)

1. Corrective Action Response for CAR # YM-95-45

A. Remedial Actions: The report "Paleoseismic Investigations of the Stagecoach Road Fault, Southeastern Yucca Mountain, Nye County, Nevada" by C.M. Menges and others has been retracted from DOE and USGS Headquarters reviews. The Technical Auditor (Audit YM-ARP-95-12) is documenting his comments as a formal review under QMP-3.04. The first author will provide responses to those comments and make the appropriate changes to the manuscript. Reviewer's acceptance/rejection of the comment responses will be documented, comment resolution will be documented for any disputed comments (see YM-CAR-95-046), and the Team Chief for Geologic Studies will confirm that the manuscript is ready for further processing. Following comment resolution of the technical comments, the manuscript will receive another QA review and TPO review. When these reviews have been completed and comments resolved, if any, the manuscript will be sent simultaneously to DOE for concurrence and USGS Headquarters for Director's approval.

B. Extent of Deficiency: A YMP-USGS surveillance is planned to investigate the extent of this deficiency (see attached surveillance plan). A supplemental response will be submitted to identify the results and to provide a due date for any remedial actions necessary for the identified publications.

C. Root Cause Determination: The root cause will be determined based upon the results of the YMP-USGS surveillance. A supplemental response will be submitted to identify the root cause.

D. Corrective Action to Preclude Recurrence: The actions to prevent recurrence will be determined based on the results of the YMP-USGS surveillance. A supplemental response will be submitted to identify the actions to prevent recurrence and to provide a due date for the actions.

2. Names of individuals assigned responsibility and anticipated completion date.

A. Chris Menges will respond to comments and make appropriate changes to the manuscript. The report is expected to be sent to DOE and USGS Headquarters by September 2, 1995.

B. Larry Hayes and Tom Chaney will submit a supplemental response by November 17, 1995. (Step 1 as identified in the surveillance plan has been completed. Step 2 is scheduled to be completed by mid-August 16, Step 3 by mid-October, and Step 4 by early November. November 17, 1995 represents step 5.)

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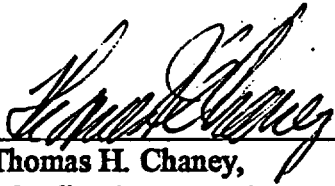
CORRECTIVE ACTION REQUEST (CONTINUATION PAGE)

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3. Signatures of responsible individuals

 7/21/95
Larry R. Hayes, Chief, Date
Yucca Mountain Project Branch

 7/21/95
Thomas H. Chaney, Date
Quality Assurance Manager



United States Department of the Interior

GEOLOGICAL SURVEY



Yucca Mountain Project Branch
101 Convention Center Drive, Suite 860
Las Vegas, NV 89109

INFORMATION COPY

July 12, 1995

Memorandum

To: Distribution

From: *RLK* Larry R. Hayes, Chief, Yucca Mountain Project Branch, U.S. Geological Survey

Subject: Adequacy of U.S. Geological Survey-Yucca Mountain Project Branch (USGS-YMPB) Technical Reports

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I believe we all agree that any concerns about the adequacy of USGS-YMPB technical reports must be given serious consideration. Therefore, following discussion of this issue with you, I have asked Larry McInroy of our QA Office to conduct a comprehensive surveillance of USGS-YMPB technical reports to determine if the concerns identified in the above reports are relatively isolated events or not. The approach Larry will take is presented in the attachment, which we have previously discussed.

Your cooperation in this important activity will be appreciated.

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M. Chornack, USGS, Denver, CO
D. Gillies, USGS, Denver, CO
R. Luckey, USGS, Denver, CO
B. Parks, USGS, Denver, CO
Z. Peterman, USGS, Denver, CO
W. Dudley, USGS, Denver, CO
J. Stuckless, USGS, Denver, CO
R. Lewis, USGS, Denver, CO
T. Brady, USGS, Denver, CO

**cc: W. Barnes, YMSCO, Las Vegas, NV
D. Horton, DOE/OQA, Las Vegas, NV
R. Dyer, YMSCO, Las Vegas, NV
S. Jones, YMSCO, Las Vegas, NV
D. Foust, M&O/TRW, Las Vegas, NV
R. Hirsch, USGS, Reston, VA
V. Schneider, USGS, Reston, VA
T. Chaney, USGS, Denver, CO
L. Ducret, USGS, Denver, CO
J. Flager, USGS, Denver, CO**

**INVESTIGATIVE APPROACH
TO DETERMINE THE
ADEQUACY OF USGS-YMPB DELIVERABLES**

July 7, 1995

BACKGROUND

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CONCERNS

Several general questions have been identified as a result of the DOE audit finding.

- 1) Are the identified problems generally isolated to the subject report or do other USGS-YMPB reports contain similar problems?
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- 1) Are the technical reviewers sufficiently independent?
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 - Are the technical reviewers conscientious in performing the reviews?
- 3) Are technical reviewers given sufficient advance notice and time for an appropriate review?
- 4) Is an adequate editorial review being conducted?
- 5) Are the technical and editorial comments adequately resolved?
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*Maps	21	21

*Journal Articles	80	80
Abstracts	214	
Symposia	7	
Bulletin	13	
Review of Miscellaneous Reports	22	
Proceedings of Conferences, etc. (published)		121
Lawrence Berkeley Laboratory Reports	9	
*Analysis Paper	5	5
	<u>798</u>	<u>407</u>

The categories identified with an asterisk have been determined to be the products more significant to the USGS-YMPB technical credibility and, therefore, our more important technical contributions to the DOE Site Characterization Program. They are, consequently, the categories which will be the subject of this surveillance.

The surveillance will be conducted in a series of steps.

Step 1: A tabulation of all reports subject to surveillance will be generated to identify:

- the publication name and number;
- the author(s);
- the reviewer(s);
- the level of effort (man hours) of the reviews; and
- the number of comments generated by each reviewer and number of comments fully addressed.

Step 2: A team, appointed by the Chief, YMPB, will review the tabulation to evaluate if

- the reviewers were sufficiently independent of the work performed;
- the level and technical adequacy of review effort were adequate;
- if the review comments were adequately classified as mandatory or non-mandatory;
- the reviewers comments (both technical and editorial) were adequately resolved:

Step 3: The team will select about 40 (10 percent) of the more significant technical publications to review in more detail. The selection will be random, or possibly based on information developed in Step 2. The purpose of the review will be to more fully evaluate the adequacy of resolution of the reviewers comments and evaluate if the reports contain technical or editorial errors.

Step 4: The QA Office member(s) of the team will prepare a report to the Chief, YMPB, to summarize the results of the investigation and to recommend further action, if appropriate.

Step 5: The Chief, YMPB, will notify the DOE and USGS Headquarters of results and present an action plan to resolve identified concerns, if appropriate.