



Department of Energy
Yucca Mountain Site Characterization
Project Office
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Las Vegas, NV 89193-8608

WBS 1.2.9.3
QA

MAR 07 1991

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

VERIFICATION OF COMMITTED CORRECTIVE ACTION FOR STANDARD DEFICIENCY REPORT (SDR) 489, RESULTING FROM YUCCA MOUNTAIN QUALITY ASSURANCE DIVISION (YMQAD) SURVEILLANCE YMP-SR-90-017 OF U.S. GEOLOGICAL SURVEY (USGS)

Be advised that the effective date for the completion of the committed corrective action to SDR 489 has passed with the corrective action remaining incomplete. This renders the verification as unsatisfactory for those items specified below, and is hereby rejected. Please provide a new completion date within ten (10) working days from the date of this letter. Send a copy of your response to Nita J. Brogan, Science Applications International Corporation, Las Vegas, Nevada.

The specific details of corrective actions determined to be unsatisfactory/incomplete are as stated below:

During the course of the follow-up, it was found that the actions taken by USGS were different than specified on their response. Subsequently, an amended response is needed for SDR Items 6.1, 10.1, 13.1 and 15.2. Also, follow-up to SDR Item 21.3 was overlooked and should be completed along with previously mentioned items.

Verification of completion of your corrective action will be performed after the new effective date to be provided. Any subsequent failure to comply with the due date provided will result in elevation of the matter to the appropriate management for action. A copy of the completed SDR actions is enclosed for your information.

YMP-5

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PDR WASTE
WM-11 PDR

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MAR 07 1991

Larry R. Hayes

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If you have any questions, please contact Catherine E. Hampton at 794-7973 or Robert B. Constable at 794-7945.



Donald G. Horton, Director
Yucca Mountain Quality Assurance Division

YMQAD:CEH-2483

Enclosure:
SDR 489

cc w/encl:

J. W. Gilray, NRC, Las Vegas, NV
K. R. Hooks, NRC, Washington, DC 
S. W. Zimmerman, NWPO, Carson City, NV
R. L. Maudlin, MACTEC, Las Vegas, NV, 402
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C. H. Prater, SAIC, Las Vegas, NV, 517/T-06
A. R. Veloso, NTSO, NV

YMPO STANDARD DEFICIENCY REPORT

N-QA-038
4/89

Completed by Originating QA Organization	1 Date 01/25/90		2 Severity Level <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3		Page 1 of 4	
	3 Discovered During YMP-SR-90-017		3a Identified By S. L. Crawford		4 SDR No. 489 Rev. 0	
	5 Organization USGS		6 Person(s) Contacted W. Rodman, A. Handy		7 Response Due Date is 20 Working Days from Date of Transmittal	
	8 Requirement (Audit Checklist Reference, if Applicable) YMP-USGS-QMP-12.01, Rev. 3, para. 5 states, "Specific calibration procedures for each applicable instrument or M&TE...are established in technical procedures (QMP-5.01)...." paragraph 5.1.3 states, "Specific calibration					
Completed by Organization in Block 5	9 Deficiency Technical Procedures (TPs) do not adequately describe the specific measures for calibration and control of measuring test equipment designated for use on YMP activities. Numerous incomplete calibration requirements, discrepancies,					
	10 Recommended Action(s): <input checked="" type="checkbox"/> Remedial <input checked="" type="checkbox"/> Investigative <input checked="" type="checkbox"/> Corrective Identify the remedial actions to be taken to correct the deficiencies noted in Block 9. Investigate the program, process, activities, or documentation to					
	11 QAE/Lead Auditor/Date <i>[Signature]</i> 2/5/90		12 Division Manager/Date <i>[Signature]</i> 2/9/90		13 Project Quality Mgr./Date <i>[Signature]</i> 2/9/90	
	14 Remedial/Investigative Action(s) See Attached					
Completed by Org. QA Org.	15 Effective Date _____					
	16 Cause of the Condition & Corrective Action to Prevent Recurrence See Attached					
	17 Effective Date _____					
	18 Signature/Date <i>[Signature]</i> 3/16/90 <i>[Signature]</i> TTD 3/16/90					
Comp. by Org. QA Org.	19 Response Accepted 6/21/90		QAE/Lead Auditor/Date <i>[Signature]</i> 6/13/90		Division Manager/Date NA	
	20 Corrective Action Verif. Satisfactory		QAE/Lead Auditor/Date		Project Quality Mgr./Date <i>[Signature]</i>	
	21 Remarks Response 4/16/90 - Hayes to Harton see 6/13/90 Amended Response rec'd 6/29/90 Hayes to Harton dated 6/22/90 ANSWERED RESPONSE Hayes to Harton dated OCT 1, 1990 Accepted 10/19/90 - QA:CEH-157 accept amended response 11/11/91 AMENDED RESPONSE HAYES to HARTON DATED MARCH 01, 1991 On ACCOUNT CORRECTIVE ACTION VERIFICATION PERFORMED 02/09-07/91 (SEE ADJUTED REPORT) On					
	22 QA CLOSURE		QAE/Lead Auditor/Date		Division Manager/Date	
PQM/Date						

YMPO STANDARD DEFICIENCY REPORT
CONTINUATION SHEET

N-QA-038
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8 Requirement (continued)

procedures for individual equipment are established, as applicable, as a separate and complete technical procedure or included as a part of a technical procedure of wider scope. If developed as a separate document, the calibration procedure is referenced in and attached to the primary technical procedure for an activity." Paragraph 5.1.7 requires, "The PI assesses out of calibration requirements in the technical procedure..." Paragraph 5.1.10 requires "Reference standards are to be stored and handled as described in an approved technical procedure to maintain the required accuracy and characteristics of the sample." QMP-12.01 contains many other specific requirements for implementation of a calibration program.

YMP-USGS-QMP-5.01, Rev. 2, para. 5.3.1 states, "Technical procedures shall contain all necessary information required to achieve full compliance with the YMP-USGS-QAPP requirements for site investigation control. These requirements, at a minimum, are as included in Attachment 1..." Attachment 1 is an annotated format for USGS technical procedure, including calibration and M&TE provisions. Relevant parts of technical procedures include:

1. Para. 2.2 For all graded QA Level I or II activities, data collected from using this procedure and any equipment calibrations or recalibrations that may be required shall be in accordance with this technical procedure. Variations are allowed only if and when this procedure is formally revised, or otherwise modified, as described in Para. 8.
2. Para. 4.4 Materials/Equipment Required: (List equipment and materials needed...State accuracy or operating range and any handling, storage and shipping requirements per YMP-USGS-QMP-12.01 and 13.01)
3. Para. 4.6.1 QUANTITATIVE/QUALITATIVE CRITERIA: (Specify quantitative criteria, e.g. tolerances, operating limits...)
4. Para. 4.7 Limitations: (List any constraints that might affect the results obtained...)
5. Para. 5.0 CALIBRATION REQUIREMENTS. All instruments and methods shall be calibrated in compliance with the Instrument Calibration Procedure (YMP-USGS-QMP-12.01) prior to obtaining graded QA Level I or II data...
6. Para 5.1 Calibration Responsibility:
7. Para. 5.2 Calibration Procedures: All calibrations, unless otherwise specified, shall be performed according to manufacturer's range and accuracy specifications. (List the instruments/methods that require calibration.)
8. Para. 5.2.1 Calibration of the (summarize the procedure(s) for each instrument and method listed in Para. 5.2. Reference manufacturer's procedure or the applicable USGS technical procedure, when possible. State frequency of required calibration.)

YMPO STANDARD DEFICIENCY REPORT
CONTINUATION SHEET

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8 Requirement (continued)

9. Para. 5.3 Calibration Records:

10. Para. 5.4 Labeling of Equipment Calibration Status:

11. Para. 7.0 QUALITY ASSURANCE RECORDS.

Specific items from this procedure that shall constitute a record are (List all forms, calibration records...that are anticipated to be produced).

9 Deficiency (continued)

and inconsistencies were noted during a review of 22 TPs (of 34 listed for "active" M&TE).

Examples include: (Referenced items refer to the attached list of comments to TPs reviewed during Surveillance YMP-SR-90-017)

1. Many TPs do not identify ranges, accuracy, tolerance, and interval for performance of calibration and acceptance of calibration data. (Item 1.1, 1.2, 2.1, 4.2, 11.2, 12.1, 15.2, 17.1, 19.2, 21.2)
2. Many TPs do not identify the specific standards and equipment to be used to perform calibration, or identify requirements for such standards and equipment to be calibrated and controlled traceable to NIST. (Item 1.1, 3.4, 4.4, 4.5, others not specifically listed)
3. Some TPs identify M&TE in paragraph 4.4 (required equipment), but do not identify accuracy, range, or calibration provisions. Some listed equipment did not appear to be included on the Quarterly Calibration Record. (Item 4.3, 8.4, 9.2, 10.3, 20.1, 20.2, 21.1, 21.2)
4. Some TPs do not identify complete calibration procedures, particularly where several different components are calibrated as a system. (Item 3.2, 4.1, 10.2, 18.2)
5. Some TPs describe "user checks" or "inspections"; actual periodic calibration to traceable standards is not identified. (Item 11.1, 14.1, 15.1)
6. Some TPs that describe operator calibration of analytical instruments such as mass spectrometers, gas chromatographs, and pH meters do not provide storage, handling, identification, approved source, required composition and purity, traceability to NIST or equivalent, and other controls "to maintain the required accuracy and characteristics of the sample". (Item 6.2, 13.1, 21.4, 22.3)
7. Some TPs do not specifically require post-use calibration when equipment is taken out of service or returned for factory service.

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CONTINUATION SHEET

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9 Deficiency (continued)

(Item 8.3, 9.1, 10.1)

8. Some TPs appear to describe "equal accuracy" calibration without justification of need or acceptability of the method.
(Item 2.2, 6.1, 22.1)

9. Additional miscellaneous discrepancies include:

- a. Annual periodic calibration is not on Quarterly Calibration Record or on equipment calibration labels. (Item 21.3)
- b. A non-approved calibration supplier was identified. (Item 19.1)
- c. Alternate undefined calibration methods are allowed. (Item 12.1)
- d. Conflicting calibration and use precision and accuracy are identified. (Item 5.1)
- e. Incorrect parameters and dimensions are used (Item 2.3, 14.2, 21.1)
- f. Incorrect procedure reference or unclear requirements are identified. (Item 3.1, 5.2, 7.1)
- g. Other (Item 3.5, 5.3, 6.3, 8.1)

No action is needed for items 3.3 and 16.1.

10 Recommended Actions (continued)

determine the extent and depth of similar deficient conditions listed as examples on the SDR. Identify these deficiencies and provide the measures required to correct them. Identify the cause of the condition and the planned corrective action to prevent recurrence.

On February 04 thru 07, 1991, a follow-up to SDR 489 was performed at the United States Geological Survey (USGS) facility in Denver, Colorado to verify if the corrective actions as noted in responses and amended responses had been effectively implemented. The results of this verification are as follows:

1. SDR Items 1.1 & 1.2: Reviewed Revision 1 of HP-26, Paragraph 5.0 which states that the steel tape as referenced in this procedure is the "reference tape" by which other tapes are calibrated against. The "reference tape" is only calibrated once and re-calibration is not performed. The original calibration of the "reference tape" described in HP-26 is documented and traceable to NIST.

Corrective action resolves SDR condition.

2. SDR Item 2.1: Reviewed HP-56, Revision 2, Paragraph 4.4 which was found to reference the required operating range of 5 to 844 mm/min and 2% accuracy.

Corrective action resolves SDR condition.

3. SDR Item 2.2: Reviewed HP-56, Revision 2, Paragraph 5.2.1.2 which makes reference to the application of the "Graduated Cylinder". Paragraph 4.4 specifies the "Graduated Cylinder" accuracy as meeting ASTM Class B and Federal Specification NNN-C-940.

Corrective action resolves SDR condition.

4. SDR Item 2.3: The "QA Calibration" form referenced in SDR 489 has been replaced by the "Notification of Calibration Status" form. This form does not make reference to accuracy. Also, this form is not considered by USGS as a QA Record. The "Calibration Register" is a QA Record, but does not make reference to accuracy.

Corrective action resolves SDR condition.

5. SDR Item 3.1: The 2600 foot steel tape is not used to calibrate the pressure transducer/data logger system. The 2600 foot steel tape is only used to establish the first set point from which the pressure transducer/data logger is then calibrated from.

Corrective action resolves SDR condition.

6. SDR Item 3.2: Reviewed "Minor Modification" to HP-60 and HP-71 dated 06/20/90. Paragraph 5.2.1 in HP-60 and Paragraph 5.2.1 in HP-71 have been modified to address the calibration of the pressure transducer and 21X micrologger as a "system".

Corrective action resolves SDR condition.

7. SDR Item 3.3: Reviewed "Minor Modification" to HP-71. Paragraph 5.2.1 has been revised to require calibration of the 21X-transducer system at the same time as calibration of the pressure transducer which is described in HP-60.

Corrective action resolves SDR condition.

8. SDR Item 3.4: HP-60, Revision 1, Paragraph 4.3 describes the methods for measuring water levels in wells and references HP-75. HP-75 describes the standards (2600 foot steel tape) and references HP-26 which describes the accuracies of the steel tape. HP-26 describes the specific calibration methods for the 2600 foot steel tape.

Corrective action resolves SDR condition.

9. SDR Item 3.5: See results of review for SDR Items 4.4 (a) and (b).

10. SDR Item 4.1: A review of HP-71, Revision 0, Paragraph 5.2 and HP-60, Revision 1, Paragraph 5.2 revealed that the pressure transducer and data logger are calibrated as a "system". The system calibration is required to be performed in accordance with the manufactures recommendations.

11. SDR Item 4.2: A review of "Minor Modification" , dated 06/20/90 reflects changes to HP-60 and HP-71 regarding the "frequency of calibration" of the transducer/datalogger as referenced in the response.

Corrective action resolves SDR condition.

12. SDR Item 4.3: HP-60, Revision 1, Paragraph 4.2.3.2 describes the use of the "Digital Multimeter" (DM). The procedure states that the DM is only used to detect water level, subsequently, calibration is not required.

Corrective action resolves SDR condition.

13. SDR Item 4.4(a): Calibration of the "Barometric Pressure Transducer" is described in HP-60, Revision 1, Paragraph 5.2.3.

SDR ITEM 4.4(b): "Minor Modification" dated 06/20/90 added the "Barometric Transducer" to HP-60, Section 4.4 (Required Equipment).

Corrective action resolves SDR condition.

14. SDR Item 4.5: The "Minor Modification" dated 06/20/90 adds a statement to HP-60, Revision 1, Paragraph 5.2.2. This statement references barometric calibration intervals. Paragraph 5.2.3 of HP-60 describes calibration requirements for barometer. Calibrated barometers are used to calibrate transducers at specific wells at specific altitudes.

Corrective action resolves SDR condition.

15. SDR Item 5.1: A review of HP-26, Revision 1, Paragraph 4.6.1 (Quantitative/Qualitative Criteria for Steel Tapes) and HP-75, Revision 1, Paragraph 4.5 (Quantitative/Qualitative Criteria for Steel Tapes) were found to be in agreement with each other.

Corrective action resolves SDR condition.

16. SDR Item 5.2: A review of "Minor Modification" dated 06/20/90 clarifies HP-75, Revision 1, Paragraph 4.2.4.1 by requiring a wooden clamp to be placed at the first hold point so that the second hold point would not compromise the first hold point.

Corrective action resolves SDR condition.

17. SDR Item 5.3: Review of "Minor Modification" dated 06/20/90 provides for the adding of a reference to HP-75, Revision 1, Paragraph 5.2.3. This reference is to an explanation of the "correction factor" in HP-75. The reference is to: "Robinson and others, 1988, Pages 12-14. A review of the reference (Robinson and others, 1988, Pages 12-14) revealed that correction factors were addressed.

Corrective action resolves SDR condition.

18. SDR Item 6.2: Reviewed HP-91, Revision 2, Paragraph 4.2.9. This paragraph details the controls to assure standard buffer solution values are within the required tolerances for PH meters.

Corrective action resolves SDR condition.

19. SDR Item 6.3: HP-91, Revision 2, Paragraph 4.2.8.1 (b) & (c) describe how linearity of conductance meters is performed during calibration. Sub-Paragraph (b) describes the method for checking linearity during calibration.

Corrective action resolves SDR condition.

20. SDR Item 7.1: Reviewed "Minor Modification" dated 06/05/90 to HP-93, Revision 0, Paragraph 5.0 which revises the reference to HP-71 for the calibration of 21X microloggers.

Corrective action resolves SDR condition.

21. SDR Item 8.1: Review of "Minor Modification" dated 06/18/90 adds requirements to HP-95, Revision 0 for the 024A Wind Direction Sensor to be calibrated at the time of installation in the field and prior to removal.

Corrective action resolves SDR condition.

22. SDR Item 8.2: QMP 12.01, Revision 5, Paragraph 5.1.2 discusses the application of commercial devices such as: rulers, measuring tapes, levels, compasses, etc., are excluded from calibration requirements except if specified in the technical procedure.

Corrective action resolves SDR condition.

23. SDR Item 8.3: See action taken on SDR Item 8.1.

Corrective action resolves SDR condition.

24. SDR Item 8.4: HP-95, Revision 0, Paragraph 4.4 was found to list a "Wind Direction Sensor".

Corrective action resolves SDR condition.

25. SDR Item 9.1: Reviewed "Minor Modification" dated 06/18/90. HP-96, Revision 0, Paragraph 5.2.1 has been revised to address requirements for re-calibration of "Wind Sensors".

Corrective action resolves SDR condition.

26. SDR Item 9.2: Reviewed calibration record dated 01-29-91 and found the wind speed sensor listed.

Corrective action resolves SDR condition.

27. SDR Item 10.2: SP-97 identifies that "All calibrations, unless otherwise specified, shall be performed according to manufacturer's range and accuracy specifications." The amended response appears to resolve the SDR condition.

28. SDR Item 10.3: The relative humidity and temperature probe in "inactive" and subsequently is not listed on the Calibration Register. One the probe becomes active, it will be listed on the register.

Corrective action resolves SDR condition.

29. SDR Item 11.1 & 11.2: Reviewed "Minor Modification" dated 06/19/90 to HP-100, Revision 0. The revision removes the requirement for calibration and replaces it with operational checks. Details of the performance of the operational checks are included in the procedure change.

Corrective action resolves SDR condition.

30. SDR Item 12.1: HP-115, Revision 1, Paragraph 4.2.2 reflects that operational checks are performed on the surveying level and surveying rod. HP-115 has removed any requirements for calibration.

Corrective action resolves SDR condition.

31. SDR Item 14.1: Reviewed "Minor Modification" dated 06/04/90 to HP-165, Revision 0, Paragraph 5.2. The change states that the coring device is calibrated at the factory. Upon receipt, only a receipt inspection will be performed.

Corrective action resolves SDR condition.

32. SDR Item 14.2: Closed based upon response.

33. SDR Item 15.1: Reviewed "Minor Modification" dated 06/20/90 to HP-166, Revision 0, Paragraph 5.2. Paragraph 5.2 spells out the acceptance criteria for the functional/operational check of the Pygmy Current (Flow) Meter.

Corrective action resolves SDR condition.

The following evaluations were performed by Jim Blaylock and Robert Constable.

34. SDR Item 17.1: HP-168 notes that the pyrometer sensors may have up to 25% error under non ideal conditions, however, Paragraph 4.7 notes that these conditions are under artificial or shaded conditions for which an alternate measurement technique should be used. The accuracy and range are a function of two parameters: the LI-COR silicon photodiode and temperature as it affects the "Campbell Scientific 21X Datalogger". The former is the dominate source of error compared to the latter. The pyranometer is calibrated by the factory. Certificates of calibration were available for the following LI-COR Pyranometer Sensors: S/N PY7703, 7702, 5482, and 5486. The calibration spans low daylight to full daylight conditions.

Corrective action resolves SDR condition.

35. SDR Item 18.1: The USGS HP-170, Revision 0 references the vendors manual. The relevant range/accuracy pages from those models cited, (Model 107 Temperature Probe and 21X Datalogger), are attached to this summary.

Corrective action resolves SDR condition.

36. SDR Item 19.1: A "Minor Change" has been made to HP-175, Revision 2, dated 06/04/90. The change made provision for calibration to be performed by an approved YMP-USGS vendor. Subsequently, the reference to TSI has been removed. The vendor manual indicates accuracy within the range specified in HP-175. The 21X Micrologger data is included in the response to SDR Item 18.

Corrective action resolves SDR condition.

37. SDR Item 19.2: HP-175 has been updated to state that hot wire anemometer accuracy limits are specified in vendor literature.

Corrective action resolves SDR condition.

38. SDR Item 20.1: All equipment other than equipment identified as "For Information Only" was found to be calibrated on calibration records (3 exceptions of items not yet used were listed in paragraph 4.4.3). These items will be added and calibrated when required for use. (b) SP-11, Revision 2 (07/26/90) is issued to update Paragraph 4.4.3 - Calibration Instrumentation.

Corrective action resolves SDR condition.

39. SDR Item 20.2: Revision 1 of SP-11 incorporated these requirements: Paragraph 4.4 reads....."for accuracy and/or operational ranges of specific equipment or instrumentation listed below, references should be made to manufactures operating and instruction manuals listed in Paragraph 9.0.

Corrective action resolves SDR condition.

40. SDR Item 21.1: GCP-12, Revision 3 was issued 07/16/90. (a) High purity rhenium and tantalum ribbon tolerance of $\pm 10\%$ purity was deleted from paragraph 4.4.2 (Chemical Laboratory). (c) Optical pyrometer was deleted from paragraph 4.4.2 (Chemical Laboratory). (d) Graduated cylinders are now covered by paragraph 4.4.2 statement...graduated cylinders and glass/plastic centrifuge tubes (accuracies in all ranges $\pm 5\%$) will be standard lab equipment.

Corrective action resolves SDR condition.

41. SDR Item 21.1(b): GCP-12, Paragraph 4.4.2 was revised to read 18×10^6 ohms resistivity.

Corrective action resolves SDR condition.

42. SDR Item 21.2: Range and accuracy is stated in Paragraph 4.2.4 of GCP-12 and references Paragraph 4.6.1 for operation checks.

Corrective action resolves SDR condition.

43. SDR Item 21.4: Control of standards, identification and traceability are through NBS (NIST) certification. Certs for Rubidium Chloride and Strontium Carbonate were acceptable.

Corrective action resolves SDR condition.

44. SDR Item 22.1: GCP-16, Revision 3, Paragraph 5.2.3 revised to satisfy the requirement.

Corrective action resolves SDR condition.

45. SDR Item 22.2: GCP-16, Revision 3, Paragraph 4.6 replaces paragraph 4.6.1.3 of Revision 2.

Corrective action resolves SDR condition.

46. SDR Item 22.3: GCP-16, Revision 3, Paragraph 5.2 calibration procedures addresses this requirement.

Corrective action resolves SDR Condition.

During the course of the follow-up it was found that USGS had revised the corrective action specified on their original responses and had not notified the Project Office QA of these changes. Prior to completion of this follow-up report, USGS has provided an up-dated response on 03/01/91 for SDR Items 8.2, 10.2, 11.2, and 12.1. The amended responses were found to be acceptable and verification was performed based on these amended responses.

The following SDR items have not been resolved and are as of this time still open: SDR Items 6.1, 10.1, 13.1, 15.2, and 21.3. Presently, USGS is in the process of evaluating and defining the criteria for which equipment is subject to "calibration" verses an "operational check." This action will play a major role in the ability to follow-up and close the remaining open items.

Dilbert March 03-04-91



United States Department of the Interior

GEOLOGICAL SURVEY
BOX 25046 M.S. 425
DENVER FEDERAL CENTER
DENVER, COLORADO 80225



IN REPLY REFER TO:

1.2.9.3.2
QA:NA

March 1, 1991

D. G. Horton, Quality Assurance Director
Yucca Mountain Project Office
U.S. Department of Energy
P.O. Box 98518
Las Vegas, NV 89193-8518

SUBJECT: AMENDED RESPONSE TO SDR-489 ON CALIBRATION REQUIREMENTS
IN TECHNICAL PROCEDURES

At the request of the YMPO surveillance team, an amended response to Standard Deficiency Report 489 has been prepared to clarify USGS actions regarding technical procedures. A further amended response regarding items 6.1, 10.1, 13.1, and 15.2 will be submitted by March 15, 1991. This schedule will allow time for further on-going coordination between the USGS YMP Quality Assurance Office and the DOE/YMPO Quality Assurance Division regarding the acceptability of operational checks versus calibrations.

If you have any questions, please contact Martha Mustard (FTS 776-1418), or Ardell Whiteside (303) 279-7242.

Sincerely,

for *Larry R. Hayes*

Larry R. Hayes,
Technical Project Officer
Yucca Mountain Project Branch
U.S. Geological Survey

MHM/DHA
Enclosure

cc w/enclos:

E. H. Roseboom, USGS, Reston, VA
N. J. Trask, USGS, Reston, VA
M. W. Reynolds, USGS, Reston, VA
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J. Blaylock, DOE/YMPO, Las Vegas, NV
J.J. Brogan, SAIC, Las Vegas, NV (Original enclosure)
R.W. Gray, IMD/Las Vegas, NV
S. Berkel, IMD/Las Vegas, NV
A.M. Whiteside, SAIC, Golden, CO
T.M. Mendez-Vigo, SAIC, Golden, CO
LRC File 3.16.01-3 (SDR-489)
QA logbook

cc w/o enclos: -

D. Zesinger, USGS, Las Vegas, NV

Amended Response To SDR-489
March 1, 1991

The following response amends the March 16, 1990 original response, the June 22, 1990 amended response, and the October 1, 1990 amended response.

Block 14 Remedial/Investigative Action(s):

HP-97 states in part, "All calibrations, unless otherwise specified, shall be performed according to manufacturer's range and accuracy specifications." The Assman mechanically-aspirated hygrometer fitted with NIST certified mercury thermometers (wet bulb/dry bulb standard) has not yet been received by the PI, therefore the NIST certificate is not available at this time. (Reference SDR comment 10.2)

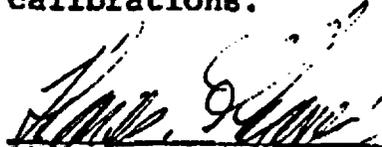
HP-100 has been revised to state that calibration is not required as a part of the technical procedure. (Reference SDR comment 11.1 and 11.2)

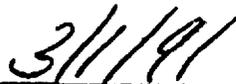
HP-115 has been revised to state calibration is not required as a part of the technical procedure; however, the Survey Level requires an operational check. (Reference SDR comment 12.1)

QMP-12.01, R5, para. 5.1.2, states in part "Certain commercial devices (e.g. rulers, measuring tapes, levels, compasses, or other such items) are generally excluded from calibration requirements unless specified in a technical procedure ..." No further changes are needed to HP-95 for SDR comment 8.2.

All actions for the above items are now complete.

A further amended response regarding items 6.1, 10.1, 13.1, and 15.2 will be submitted by March 15, 1991. This schedule will allow time for further on-going coordination between the USGS YMP Quality Assurance Office and the DOE/YMPO Quality Assurance Division regarding the acceptability of operational checks versus calibrations.


Thomas H. Chaney
YMP-USGS Associate Quality Assurance Manager


Date