U.S. DEPARTMENT OF ENERGY

OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

QUALITY ASSURANCE AUDIT PLAN

FOR AUDIT NO. YMP-92-16

OF

SCIENCE APPLICATIONS INTERNATIONAL CORPORATION

LAS VEGAS, NEVADA

MAY 18 THROUGH 22, 1992

Prepared by: Richard L. Maudlin Date: 04-16-92
Richard L. Maudlin
Audit Team Leader
Yucca Mountain Quality Assurance Division

Approved by: R. W. Cle for Donald G. Horton Date: 4/16/92
Donald G. Horton
Director
Office of Quality Assurance

1.0 SCOPE

This limited scope audit will evaluate the Science Applications International Corporation (SAIC) Quality Assurance (QA) program to determine whether it meets the requirements and commitments imposed by the Office of Civilian Radioactive Waste Management (OCRWM). This will be done by verifying implementation and effectiveness of the system in place, as well as verifying compliance with requirements. The audit will take place in Las Vegas, Nevada, with trips to the Nevada Test Site as necessary for verification of field activities and operations.

In addition to follow-up on open Corrective Action Requests, a representative sample of discrepancies identified during previous QA audits and surveillances of SAIC will be included in the scope of this audit to determine the effectiveness of SAIC corrective actions.

The programmatic elements and technical areas to be audited, as well as those programmatic elements not included in this audit, are identified in Section 4.0 of this plan.

2.0 AUDIT SCHEDULE

Pre-Audit Team/Observer Meeting	8:30 a.m., May 18, 1992 Las Vegas, Nevada
Pre-Audit Conference	9:15 a.m., May 18, 1992 Las Vegas, Nevada
Audit Activities	10:15 a.m. to 4:00 p.m. May 18, 1992 Las Vegas, Nevada
	8:30 a.m. to 4:00 p.m. May 19 - 21, 1992 Las Vegas, Nevada
Daily Meeting with SAIC Management	8:00 a.m., May 19-22, 1992 Las Vegas, Nevada
Post-Audit Conference	10:00 am, May 22, 1992 Las Vegas, Nevada

There will also be a daily closed meeting of the audit team and observers starting at 4:15 p.m. to discuss the results of each day's activities.

3.0 REQUIREMENTS TO BE AUDITED AND APPLICABLE REFERENCES

The requirements to be audited will be contained in the programmatic checklists. These checklists will be developed from the latest revision of the following Technical and Management Support Services (T&MSS) documents:

- o T&MSS Quality Assurance Program Description (SAIC-90/80082)
- o T&MSS Software Quality Assurance Plan (T&MSS/ISD 90/013)
- o Yucca Mountain Site Characterization Project Office Administrative Procedures - Quality
- o T&MSS Standard Practice Procedures
- o T&MSS Operating Procedures
- o T&MSS Work Instructions

The conduct of the audit will be guided by the documents (latest revision) listed below:

- o Quality Assurance Administrative Procedure (QAAP) 18.2, Revision 5, "Audit Program"
- o QAAP 16.1, Revision 4, "Corrective Action Requests"

4.0 ACTIVITIES TO BE AUDITED

Programmatic Elements

SAIC activities associated with the following QA Program elements will be audited:

5.0	Instructions, Procedures, Plans, or Drawings
6.0	Document Control
17.0	Quality Assurance Records
19.0	Software Quality Assurance
20.0	Scientific Investigation Control

Programmatic Element 3.0, Design Control, was considered during development of this audit plan but was not included since SAIC has no current activities for which this element applies.

In addition to the above, Criteria 12.0, Control of Measuring and Test Equipment, will be re-evaluated based on the marginal acceptance identified in the previous audit YMP-92-08.

Technical Areas

WBS NUMBER	TITLE
1.2.5.4.2	Meteorology
1.2.5.4.5	Radiological Monitoring

If the audit team identifies a need to verify additional programmatic or technical areas during the audit, they will be added to the audit checklists and verified accordingly.

5.0 AUDIT TEAM MEMBERS

Richard L. Maudlin, MACTEC/YMQAD, Las Vegas, Nevada, Audit Team Leader
James Blaylock, U.S Department of Energy (DOE)/YMQAD, Las Vegas, Nevada, Auditor
Robert B. Constable, DOE/YMQAD, Las Vegas, Nevada, Auditor
Mario R. Diaz, DOE/YMQAD, Las Vegas, Nevada, Auditor
Diane Harrison-Giesler, DOE/YMP, Las Vegas, Nevada
Dwight Hoxie, USGS, Denver, Colorado, Technical Specialist
John R. Matras, SAIC/YMQAD, Las Vegas, Nevada, Auditor
Thomas J. Higgins, SAIC/YMQAD, Las Vegas, Nevada, Audit Team Leader-in-Training and Lead Technical Specialist

6.0 AUDIT CHECKLISTS

Two checklists will be employed during the audit. These are YMP-92-16-01 for programmatic requirements and YMP-92-16-02 for the technical portion of the audit.

W/LTR 4/16/92

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9204270368 15Dpp.

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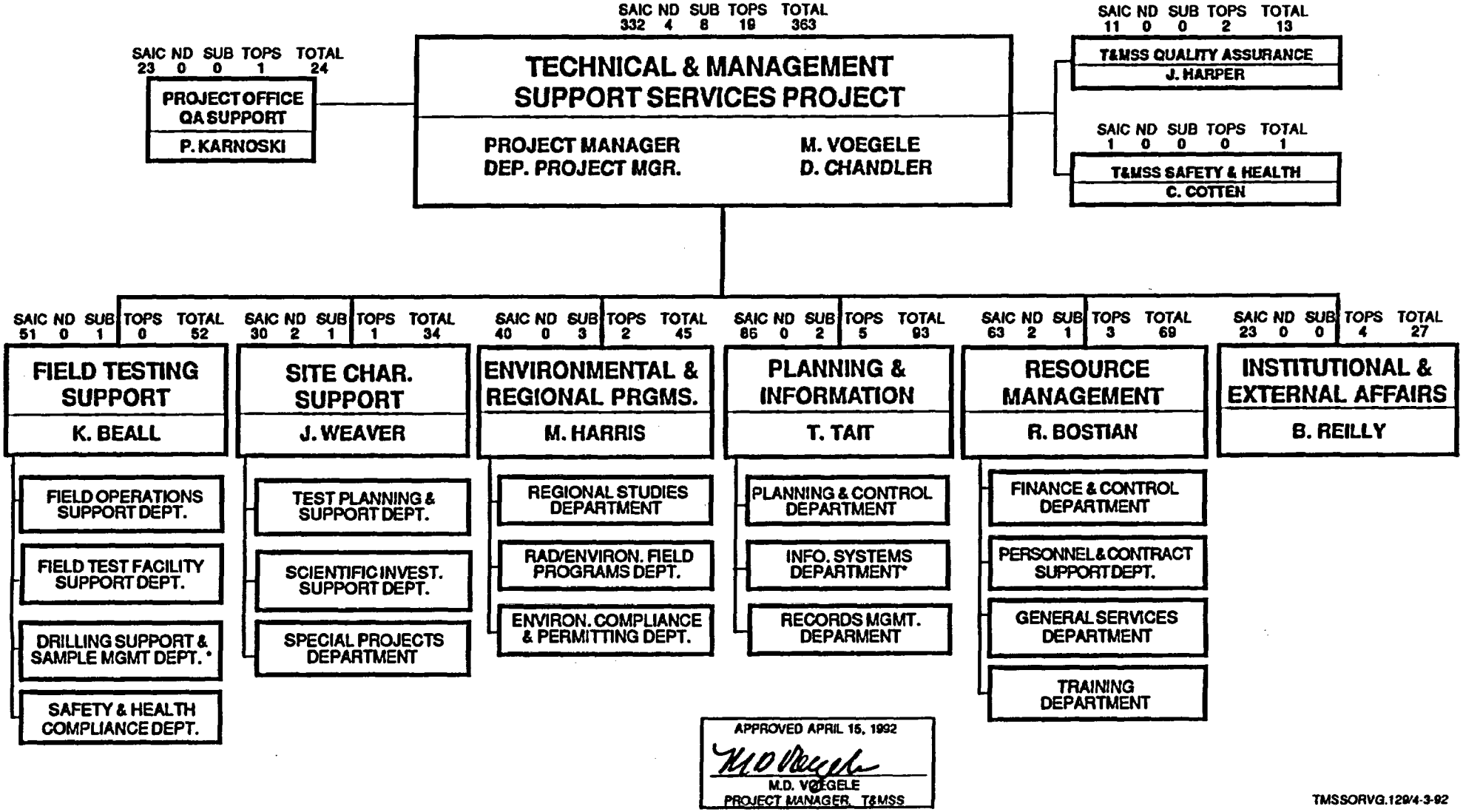
SAIC ND SUB TOPS TOTAL
332 4 8 19 363
TECHNICAL & MANAGEMENT SUPPORT SERVICES PROJECT
PROJECT MANAGER M. VOEGELE
DEP. PROJECT MGR. D. CHANDLER
SAIC ND SUB TOPS TOTAL
23 0 0 1 24
PROJECT OFFICE QA SUPPORT
P. KARNOSKI
SAIC ND SUB TOPS TOTAL
11 0 0 2 13
T&MSS QUALITY ASSURANCE
J. HARPER
SAIC ND SUB TOPS TOTAL
1 0 0 0 1
T&MSS SAFETY & HEALTH
C. COTTEN
SAIC ND SUB TOPS TOTAL
51 0 1 0 52
FIELD TESTING SUPPORT
K. BEALL
FIELD OPERATIONS SUPPORT DEPT.
FIELD TEST FACILITY SUPPORT DEPT.
DRILLING SUPPORT & SAMPLE MGMT DEPT.*
SAFETY & HEALTH COMPLIANCE DEPT.
SAIC ND SUB TOPS TOTAL
30 2 1 1 34
SITE CHAR. SUPPORT
J. WEAVER
TEST PLANNING & SUPPORT DEPT.
SCIENTIFIC INVEST. SUPPORT DEPT.
SPECIAL PROJECTS DEPARTMENT
SAIC ND SUB TOPS TOTAL
40 0 3 2 45
ENVIRONMENTAL & REGIONAL PRGMS.
M. HARRIS
REGIONAL STUDIES DEPARTMENT
RAD/ENVIRON. FIELD PROGRAMS DEPT.
ENVIRON. COMPLIANCE & PERMITTING DEPT.
SAIC ND SUB TOPS TOTAL
86 0 2 5 93
PLANNING & INFORMATION
T. TAIT
PLANNING & CONTROL DEPARTMENT
INFO. SYSTEMS DEPARTMENT*
RECORDS MGMT. DEPARMENT
SAIC ND SUB TOPS TOTAL
63 2 1 3 69
RESOURCE MANAGEMENT
R. BOSTIAN
FINANCE & CONTROL DEPARTMENT
PERSONNEL & CONTRACT SUPPORT DEPT.
GENERAL SERVICES DEPARTMENT
TRAINING DEPARTMENT
SAIC ND SUB TOPS TOTAL
23 0 0 4 27
INSTITUTIONAL & EXTERNAL AFFAIRS
B. REILLY
APPROVED APRIL 15, 1992
M.D. VOEGELE
PROJECT MANAGER, T&MSS
TMSSORVG.129/4-3-92

OFFICE OF CIVILIAN
RADIOACTIVE WASTE MANAGEMENT
U.S. DEPARTMENT OF ENERGY
WASHINGTON, D.C.

AUDIT/SURVEILLANCE
NO 92-16-01

QUALITY ASSURANCE CHECKLIST

ORGANIZATION EVALUATED	[x] EXTERNAL	[x] AUDIT	
SAIC/T&MSS (PARTICIPANT)	[ ] INTERNAL	[ ] SURVEILLANCE	PREPARED BY _____ DATE 5/14/92
DATES OF EVALUATION			
May 18-22, 1992			

CONTROLLING DOCUMENT (Title, Number, Revision)	ACTIVITY EVALUATED
T&MSS QAPD, SAIC-90/8002, Revision 3	PROGRAM ELEMENTS: 5, 6, 12, 17, 19, & 20

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	* RESULTS
	PROGRAMMATIC CHECKLIST		

ELEMENT:	TITLE:	PAGE:
5	Instructions, Procedures, Plans and Drawings	2
6	Document Control	11
12	Control of Measuring and Test Equipment	16
17	Quality Assurance Records	26
19	Software Quality Assurance	34
20	Scientific Investigation Control	43

* INDICATE RESULTS: SATISFACTORY (SAT), UNSATISFACTORY (UNSAT), NOT APPLICABLE (N/A)

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	* RESULTS
	Program Element 5: INSTRUCTIONS, PROCEDURES, PLANS, & DRAWINGS		
5-1	SP 1.1, Revision 7, Para. 5.1.2 Verify that a custodian has been assigned for the preparation and maintenance of each SP and OP.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS *Record objective evidence reviewed, method of verification, personnel contacted*	RESULTS
5-2	SP 1.1, Revision 7, Para. 5.1.15 Verify review packages contain the following: 1. Form T&MSS/098, Document approval form with list of designated reviewers 2. Form TMSS/095, Review and Comment form 3. Draft procedures 4. Any new or revised forms (Custodian)		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
5-3	SP 1.1, Para. 5.1.18 Verify that an information copy of the review package is sent to the Training Manager for coordination of training requirements.		
5-4	SP 1.1, Para. 5.1.18 Verify activities for the coordination of training requirements.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
5-5	SP 1.1, Para. 5.1.27 Verify criteria for determining what is a substantive change. (Custodian)		
5-6	SP 1.1, Para. 5.1.27 Verify what happens when a substantive change is identified. (Custodian)		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	• RESULTS
5-7	SP 1.1, Para. 5.1.27, Note (1) Verify how it is determined a comment is major. (Custodian)		
5-8	SP 1.1, Para. 5.1.27, Notes (1) and (2) Verify how this note works. (Custodian) 1. Verify that resolutions are documented on form T&MSS/098. 2. (a) Verify that the document is resubmited to all original reviewers (or designee).		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	* RESULTS
5-9	SP 1.1, Para. 5.1.27 & Note Verify that the flow chart (Exhibit I) correctly represents 5.1.27 and Note.		
5-10	SP 1.1, Para. 5.4.2e Obtain a list of VICN numbers from DCC and select (5) five records packages. VICN Number — WI only Number		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
5-11	SP 1.1, Para. 5.4.2 Verify the following: f) That the time and date of approval by APM and T&MSS QAM are recorded in red ink on each change page; and a note that the approval was verbal. g) that the VICN number is recorded in red ink in the upper corner of each changed page.		
5-12	SP 1.1, Para. 5.4.2 (h) Verify that if work is performed by other than the VICN author that documentary evidence was submitted to the Training Manager showing that they have been trained to, or as a minimum, have read, the VICN.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
5-13	SP 1.1, Para. 5.4.2 (h) Verify how the author is identified.		
5-14	SP 1.1, Para. 5.4.2 (h) Verify who performed the work.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
5-15	SP 1.1, Para. 5.4.3 Verify that a Custodian was assigned by the Responsible Manager. Verify that: a) Approval of the ICN or revision is obtained within (2) two working days of receipt of verbal in accordance with Section 5.3. b) Verify how the DCC 2 working day timeframe start and stop time is recorded c) Verify if a revision is required 1) The revision is complete in 2 working day. 2) The revision is performed in accordance with paragraph 5.2		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
	Program Element 6: DOCUMENT CONTROL		
6-1	SP 1.34, Rev. 5, Para. 5.1.1 Verify that a document custodian has been assigned.		
6-2	SP 1.34, Rev. 5, Para. 5.1.2 Verify the document custodian obtains or prepares the following: Para. 5.1.2(a) o The approved document. Para. 5.1.2(d) o The CDIA (TMSS/030/1) providing explicit instructions.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
6-3	SP 1.34, Rev. 5,Para. 5.1.3 Verify the document custodian submits the document package to the DCC for distribution.		
6-4	SP 1.34, Rev. 5, Para. 5.2.1 Verify the DCC: o Stamps controlled documents with a red "Controlled Copy" stamp. Para. 5.2.2 o Prepares DTAR (TMSS/029/2) Para. 5.2.3 o Transmits document copies accompanied by DTAR.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
6-5	SP 1.34, Rev. 5, Para. 5.3.1.1 Verify the document holder signs the DTAR and returns it to the DCC.		
6-6	SP 1.34, Rev. 5, Para. 5.3.1.2 Verify the DCC Input Receipt of the DTAR onto the CDIS.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
6-7	SP 1.34, Rev. 5, Para. 5.3.2 Verify the DCC: Para. 5.3.2.1 o Issues Reminder Notices if DTAR not returned. Para. 5.3.2.2 o Issues decontrolled Notices (TMSS/033/1) if no response to Reminder Notice. Para. 5.3.2.3 o Delinquent document holders removed for the distribution list.		
6-8	SP 1.34, Rev. 5, Para. 5.5.1 Verify uncontrolled documents are not used to perform quality-affecting activities.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	* RESULTS
6-9	SP 1.34, Rev. 5, Para. 5.6 Verify the DCC: Para. 5.6.1 o Maintains a database of controlled documents. Para. 5.6.2 o Transmits hardcopy of Master List to the LRC monthly. Para. 5.6.3 o Transmits a list of assigned controlled documents to document holders upon initial issuance.		
6-10	SP 1.34, Rev. 5, Para. 5.6.5 Verify document holders are responsible for the maintenance and control of their document collections.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
	Program Element 12: CONTROL OF MEASURING AND TEST EQUIPMENT		
12-1	SP 2.4, Revision 5, Para. 5.1.4.1 Verify that the M&TE Custodian established an M&TE list for calibration standards containing: a. Identification number b. Calibration due date c. QA/non-QA status d. Location e. Manufacturer/vendor f. Model g. General description h. Equipment range and accuracy i. Status		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
12-2	SP 2.4, Revision 5, Para. 5.1.4.2 Verify that the M&TE Custodian has established a history file for each M&TE device used as a Standard or for calibration that contains the following: a. Certificate of calibration and traceability to calibration. b. Performance check data. c. Nonconformances, as applicable. d. Documented evidence of review of certificate of calibration/conformance for compliance to Purchase Order requirements (Ref: Paras. 5.1.3.2 and 5.1.3.4).		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
12-3	SP 2.4, Revision 5, Para. 5.1.5.1.c Verify that the certificate of calibration for the M&TE used for calibration or as a Standard, contains the following: a. Equipment to be calibrated - Manufacturer, model and serial number, identification number. b. Calibration Standards - Manufacturer, model and serial number, calibration due date. c. Accuracy of the calibration instrument (plus/minus value) and units of measurement. d. Calibration procedure number and revision. e. Calibration data recorded - as found (prior to calibration) - as left (after calibration) f. Note from procedure. g. Signature of individual performing the calibration and date of calibration. h. Responsible manager's signature documenting the review of calibration data and date.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	* RESULTS
12-4	SP 2.4, Revision 5, Para. 5.1.6.1 1. Verify that T&MSS Calibration Standards are traceable to NIST, or other recognized agencies. 2. Verify that T&MSS Calibration Standards had an accuracy greater than that of the equipment being calibrated. Para. 5.1.7.1 3. Verify that handling and storage of M&TE used as Standards or for calibration are consistent with T&MSS procedures.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS *Record objective evidence reviewed, method of verification, personnel contacted*	RESULTS
12-5	SP 2.4, Revision 5, Para. 5.2.1.1 1. Verify that users of M&TE requiring calibration are notified two months prior to calibration due date. Para. 5.2.1.3 2. Verify that out-of-service tag(s) are placed on M&TE if calibration of device is not completed within the month that the calibration is due. Para. 5.4.1 3. Verify that an NCR was issued when an M&TE was found out-of-tolerance and was used for quality-affecting work since the previous calibration.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS *Record objective evidence reviewed, method of verification, personnel contacted*	RESULTS
12-6	SP 2.4, Revision 5, Paras. 5.6.1 and 5.6.2 1. Verify that calibration frequency extensions do not exceed 30 calendar days and have been approved by the Department Manager. Para. 5.6.5 2. Verify that calibration extensions have been submitted to the LRC within 10 working days (Ref: 7.1). Paras. 5.8.6 and 5.8.7 3. Verify that calibrated items ready for use but not in service are kept in a controlled area and a log is maintained to document personnel entry/egress from the storage facility.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	* RESULTS
12-7	SP 2.4, Revision 5, Para. 5.8.8 1. Verify that calibrated items ready for use are documented on a Storage Data Sheet (SDS) containing information required by procedure. Para. 7.1 2. Verify that SDSs are transmitted to the LRC within 10 working days after they have been completed.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	* RESULTS
12-8	SP 2.5, Revision 3, Para. 5.1.5.1.c Verify that the certificate of calibration for OE contains the following: a. Equipment to be calibrated - Manufacturer, model and serial number, identification number. b. Calibration Standards - Manufacturer, model and serial number, calibration due date. c. Accuracy of the calibration instrument (plus/minus value) and units of measurement. d. Calibration procedure number and revision. e. Calibration data recorded - as found (prior to calibration) - as left (after calibration) f. Note from procedure. g. Signature of individual performing the calibration and date of calibration. h. Responsible Manager's signature documenting the review of calibration data and date.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
12-9	SP 2.5, Revision 3, Para. 5.3.1.1 1. Verify that the Responsible Manager has developed a matrix or schedule for maintenance and calibration of OE including the following information: a. Components within a system requiring maintenance and calibration. b. Type of maintenance and calibration for each component. c. Frequency of maintenance and calibration for each component. d. Identification of applicable documents for maintenance and calibration. Para. 5.6.1 2. Verify that OE not in use is stored in a controlled access storage area that meets vendor requirements.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	* RESULTS
12-10	SP 2.5, Revision 3, Para. 5.7.8 1. Verify that calibrated items ready for use but not in service are documented on SDS containing requirements from same paragraph. Para. 5.7.12 2. Verify that items removed from No. 1 above cannot be returned to storage without re-calibration. Para. 7.1 3. Verify the SDS have been transmitted to the LRC after they have been completed.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
	Program Element 17: QUALITY ASSURANCE RECORDS		
17-1	SP 1.36, Rev. 8, Para.5.1.1.4 Verify that, if when a records package number is issued by the LRC, the following is provided. o A records package title o A records package identifier o A records source name and organization o A quality-affecting designation (QA; QA:NA)		1.50 1.50 1.50 1.50

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
17-2	SP 1.36, Rev. 8, Para. 5.1.1.5 Verify the record source maintains the records package until complete, ensuring: o Adequate storage to prevent damage or loss of incomplete records o One hour fire-rated safes with U.L. Label used for completed QA records. o When dual storage is used, records are in separate locations.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
17-3	SP 1.36, Rev. 8, Para. 5.1.2.2 Verify that final technical and scientific reports include: o Pre-assigned accession number, or o "Readily Available" in lieu of accession number Para. 5.1.2.3 o The word "Draft" on first page of draft documents. Para. 5.1.2.4 o Correct WBS number o Quality-affecting designation Para. 5.1.2.9 o No colored paper Para. 5.1.2.10 o Legible documents		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	* RESULTS
17-4	SP 1.36, Rev. 8, Para. 5.1.3.4 Verify that temporary records are not submitted on the same magnetic tape as permanent records.		
17-5	SP 1.36, Rev. 8, Para. 5.1.4.1 Verify oversized records are submitted with form TMSS/009/1.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	* RESULTS
17-6	SP 1.36, Rev. 8, Para. 5.1.5 Verify authentication and preparation of QA records prior to submittal to the LRC: Para. 5.1.5.2 o Is the submittal part of a records package Para. 5.1.5.3 o Is the records package in the LRC Para. 5.1.5.4 o Is the record (records package) identified as "Privileged" Para. 5.1.5.5 o Is a Table of Contents prepared o Is the record (records package) signed and dated by authenticator		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
17-7	SP 1.36, Rev. 8, Para. 5.2.2 Verify privileged record submitted on form TMSS/010 and identified as privileged.		
17-8	SP 1.36, Rev. 8, Para. 5.2.3 Verify individual and non-QA records are submitted no later than 10 working days after completion.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
17-9	SP 1.36, Rev. 8, Para. 5.2.4 Verify QA records are submitted no later than 10 working days after authentication.		
17-10	SP 1.36, Rev. 8, Para. 5.2.6 Verify that when a records package is complete o LRC is notified o Segments are reviewed o Table of Contents signed and dated o Table of Contents authenticated		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
17-11	SP 1.36, Rev. 8, Para. 5.3.1 Verify records discrepancies are: o Resolved within 10 working days o Notification to LRC if resolution not forthcoming within 10 working days		
17-12	SP 1.36, Rev. 8, Para. 5.4.1 Verify a Records Request form is completed to retrieve a record.		
17-13	SP 1.36, Rev. 8, Para. 5.4.2 Verify appropriate authorization or identification for retrieval of privileged records.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
	Program Element 19: SOFTWARE QUALITY ASSURANCE		
19-1	SP 1.56, Para. 5.12.1 Verify how a Software Product is placed into the Software Library. Obtain a list of all quality-affecting software products. Obtain assignments for the following: SQA Analyst Software Librarian User Prime User/PI Developer Team Leader Strategic Planning Manager		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	* RESULTS
19-2	SP 1.56, Para. 5.12.1 Verify change control status by looking for: a) Stamp placed on document b) A copy of the Software Product in the Software Development Folder d) Verify how a Software Product is determined to be a YMP Software Configuration Item. (YMP/88-4 & AP-3.6Q)		
19-3	SP 1.56, Para. 5.13.1 Verify that the CML is updated according to Exhibit I instructions.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
19-4	SP 1.56, Para. 5.13.2 Verify that SCMS Baseline status reports according to Exhibit 2 "Requirements for Maintaining the SCMS Baseline."		
19-5	SP 1.56, Para. 5.13.2 Verify that the report tracks SCL progress and schedules for submittal of the SVVR.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
19-6	SP 1.56, Para. 5.13.4 Verify how users request software documentation. Verify that this documentation is transmitted to DCC for controlled distribution. Verify users on controlled distribution.		
19-7	SP 1.56, Para. 5.1.1 (a) Get copy of CML verify the Software Classification Form (SCF) by obtaining a copy of selected SCFs user requirements document (5.2.1), Software Requirements Specification, Test Plan, Test Report.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
19-8	SP 1.52 Para. 5.1.1 (b) Verify: a. How it is determined that an SP has not been previously classified, and b. the correct assignment of software type (Exhibit 1).		
19-9	SP 1.52 Para. 5.1.2 to 5.1.6 Verify SCF is correctly filled out.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
19-10	SP 1.5.2 Para. 5.2.1 Verify that the users requirements document is completed in accordance with Exhibit 2.		
19-11	SP 1.5 Paras. 5.8, 5.9, 5.10, 5.11 Verify that the CRF have been completed in accordance with this section.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	* RESULTS
19-12	SP 1.52 Para. 5.2.2(b) Verify that if software conversion is required follow the steps in paragraph 5.8.		
19-13	SP 1.52 Para. 5.2.3 Verify that for existing Software all available documentation was obtained from the Supplier and includes: a. Design description and specifications b. Programmer and User Manuals c. Source code and listings d. V&V reports		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	* RESULTS
19-14	SP 1.52 Para. 5.3 Verify that the SRS was prepared, reviewed and approved in accordance with SP 1.55.		
19-15	SP 1.52 Para. 5.3.2 (b) Verify that if the Software Type is ES that will be modified or maintained by the Suppler, the SRS is written as a contract specification to document the scope of work, deliverables and all applicable QA requirements of the OCRWM QARD and T&MSS SQAP to be met by the Software Product and Supplier Updates.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
19-16	SP 1.52 Para. 5.7.2.4 Verify that SS is handled in SP 1.28 as a non-quality affecting item.		
19-17	SP 1.52 Para. 5.11.4 (e) Verify how temporary access to the Software Product is granted to the Prime User/PI or User.		
19-18	SP 1.52 Para. 5.11.7 (b) (c) Verify that the completed Test Plan meets the guidelines in Exhibit 3 and is filed in the SW development folder.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
	Program Element 20: SCIENTIFIC INVESTIGATION CONTROL QAPD, Rev. 3		
20-1	Ref. Section 20.1 Verify that prior to the start of scientific investigations, a planning document containing the attributes in Section 20.1 is developed.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	* RESULTS
20-2	Ref. Section 20.2 Verify that planning document review and approval including changes thereto is accomplished in accordance with the requirements of Section 20.2.		
20-3	Ref. Section 20.3 Verify that when Technical Procedures are used to control scientific investigations, the procedures provide the attributes listed in Section 20.3.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
20-4	Ref. Section 20.4 Verify that when Scientific Notebooks are used to control scientific investigations, the notebooks are maintained in accordance with the requirements of Section 20.4 and the OCRWM QAPD.		
20-5	Ref. Section 20.5 Verify that T&MSS has identified ongoing field investigations to preclude inadvertent interruption, to assure operational compatibility, and that the location of field investigations if clearly identified.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
20-6	Ref. Section 20.6 Verify that activities used to develop new methods or procedures for scientific investigations or critical processes are documented, reviewed for adequacy, and approved by qualified persons prior to use.		
20-7	Ref. Section 20.7 Verify documentation and qualification of personnel for data interpretation and analysis is accomplished in accordance with the requirements of Section 20.7.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
20-8	Ref. Section 20.8 Verify that reporting of scientific investigation results is accomplished in accordance with the requirements of Section 20.8.		
20-9	Ref. Section 20.9 Verify that records of scientific investigations are processed in accordance with the requirements of Section 20.9 and Section 17 of the T&MSS QAPD.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
20-10	Ref. Section 20.10 Verify the performance of technical reviews of activities associated with scientific investigations in accordance with Section 20.10 and T&MSS procedures and instructions.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
20-11	WI-RH-153, Revision 1, Para. 5.1.9 1. Verify that when radioactive sources were shipped, the maximum radiation level on the exterior was less than 0.5 mrem/hr. Paras. 5.2.8, 5.2.10, 5.2.11, and 5.2.12 2. Verify that radioactive waste was shipped with the paperwork required by pertinent paragraphs. Para. 7.2 3. Verify that records packages were sent to the LRC within 10 days of authentication.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
20-12	WI-RM-150, Revision 1, Para. 6.0 1. Verify that prior to transport, the radioactive material was decontaminated to the lowest possible levels, sent in packages meeting DOE Order 5480.3, and was approved by Health Physics personnel. Para. 7.1.3 2. Verify that radiation surveys were documented on a Radiological Survey Sketch and met requirements of same paragraph. Para. 9.2 3. Verify that records packages have been sent to the LRC within 10 days of authentication.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
20-13	WI-RM-156, Revision 1, Para. 3.1.1 1. Verify that an area for radwaste collection and short term storage has been established. Paras. 3.1.6 and 3.1.10 2. Verify that material in temporary storage is surveyed and documented accordingly. Para. 5.2 3. Verify that records packages were sent to the LRC within 10 days of authentication.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	* RESULTS
20-14	WI-RM-770, Revision 3 Verify that requirements of the procedure are followed when the methods for operation of the E-PERM are performed. Use the whole procedure for that purpose.		
20-15	WI-RM-801, Revision 3, Para. 6.1.1 1. Verify that prior to performing a soil sampling, the sampling location has been ground surveyed and documented as per WI-RM-143. Paras. 7.1 through 7.4 2. Verify that each soil sample record package segment contains: a. Soil Sample Datasheet b. Technical Data Information Form c. Sample Transfer Datasheet (if sent to controlled area)		

OFFICE OF CIVILIAN
RADIOACTIVE WASTE MANAGEMENT
U.S. DEPARTMENT OF ENERGY
WASHINGTON, D.C.

AUDIT/SURVEILLANCE
NO 92-16-02

QUALITY ASSURANCE CHECKLIST

ORGANIZATION EVALUATED	[x] EXTERNAL [ ] INTERNAL	[x] AUDIT [ ] SURVEILLANCE	PREPARED BY D. Hoxie/W. Bliss DATE 5/15/92
DATES OF EVALUATION 5/18-22/92			
CONTROLLING DOCUMENT (Title, Number, Revision) (See Body of Checklist)			ACTIVITY EVALUATED Meteorolgy, Environmental Radiological Monitoring

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	* RESULTS
	METEOROLOGY, WBS 1.2.5.4.2 Ref: SP 8.3.1.12.2.1, Revision 0		
M-1	What is the purpose and scope of the Meteorological Monitoring Program. In particular, what is the intended use of the meteorological data?		
M-2	How were the monitoring sites selected (i.e. what was the rationale for each site)?		

* INDICATE RESULTS: SATISFACTORY (SAT), UNSATISFACTORY (UNSAT), NOT APPLICABLE (N/A)

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
M-3	What meteorological parameters are measured at each site?		
M-4	What meteorological data are required as input for air-quality dispersion modeling?		
M-5	Are the monitoring site locations and data collection activities appropriate and adequate to accomplish the objectives of the Meteorological Monitoring Program?		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
M-6	The data presented in Table 1.3-2, refer to Yucca Flat, which is 32 km east of Yucca Mountain. What historical meteorological data are available for Beatty, Nevada?		
M-7	Is the Bond Gold Mine at Beatty, Nevada, considered NOT to be a source of air pollution in the Yucca Mountain area? Does the Bond Gold Mine monitor particulate emissions and dispersion?		
M-8	What "error-checking algorithms" will be used and how will they be used to check data quality (p. 2-3)?		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
M-9	What "approved and validated computer-averaging routine" is being or will be used to "generate seasonally-averaged (sic) graphic outputs" (p. 2-4)?		
M-10	How were the instrument tolerances listed in Table 3.3-2 established?		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
	Ref: WI MET-002		
M-11	Describe the method for measuring/monitoring barometric pressure at the a. Main Site, and b. remote sites.		
M-12	Describe the placement and operation of the net-radiation sensor at the Main Site and the procedure followed to test and calibrate this sensor.		
M-13	Describe the method for measuring/monitoring relative humidity and dew-point temperature at the a. Main site, and b. remote sites.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	* RESULTS
	Ref: WI-MET-003		
M-14	What data loggers are being used to collect site data and to what extent are data logger routines used to reduce the raw data?		
M-15	What software QA controls apply to data loggers and their internal data-reduction routines?		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	* RESULTS
M-16	What meteorological data reports have been prepared since July 1, 1991?		
M-17	How does the Meteorological Monitoring Program interface with and support the Radiological Monitoring Program?		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
	ENVIRONMENTAL RADIOLOGICAL MONITORING, WBS 1.2.5.4.5 RADIOLOGICAL MONITORING PLAN, REVISION 1		
RM-1	What are the sources of the technical requirements that drive this program? (e.g. NRC, EPA, etc.)		
RM-2	What are these requirements quantitatively? (e.g. What is the specific requirement on Carbon-14?)		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	• RESULTS
RM-3	What is the hierarchy of documents that links these requirements and the Work Instructions (WIs) by which the work is done? (Names, document numbers, order)		
RM-4	Please describe how you have organized your work. Give the specific goals of each aspect of the program. In each case, how do these goals fulfill the requirements.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	* RESULTS
RM-5	Please relate your QA Grading Reports to your organization of work.		
RM-6	Please discuss your Grading Reports. Compare and contrast.		
RM-7	How do you incorporate a Grading Report into the specific details of the work? (i.e. specific actions to ensure quality)		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
RM-8	Ref: RADMP 3-2 The RADMP introduces the Preoperational Radiological Monitoring Plan and the Operational Radiological Monitoring Plan which are said to be different from the baseline plan. A. Please describe the separate phases of the radiological monitoring plan. B. How do the data quality objectives differ among the plans?		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
RM-9	Ref: RADMP 3-9 The RADMP was developed to "...produce and implement a program consistent with existing NTS environmental monitoring programs." A. Did T&MSS assure that NTS programs are adequate for YMP requirements? B. Did T&MSS review the NTS programs to assure that changes to the NTS program did not significantly alter the RADMP program? C. Did T&MSS personnel attend any Effluent and Emissions Monitoring Work Group meetings during the reporting period?		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
	D. If not, why not?		
	E. If so, was an attendance report filed and did it record any impact of NTS program operations on YMP operations?		
	F. Does the YMP have a plan to assume operation of REECo and EPA stations in the event of a cutback of DP activities or a revision of NTS monitoring which may diminish the effectiveness of the YMP program?		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
RM-10	Ref: Scientific Investigation Package The Scientific Investigation Package states that the YMP radiation monitoring program relies on REECo and EPA air monitoring stations. A. Did T&MSS review their station location requirements to assure that they meet YMP requirements? B. If so, was a comparative report filed? C. If not, is there a procedure to conduct such a review? D. When will such a review be conducted? E. Does the RADMP program have duplicate or coincident sampling locations with REECo and EPA locations for data verification, i.e. duplicate TLD stations or duplicate air sampling stations? F. If not, explain why this is unnecessary. G. If so, was a comparison report issued?		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
	H. Will you deliver me a copy of the comparison report after this meeting?		
	I. What are the data quality objectives for acceptability of the replicate sampling? (Should be approximately + 10% to meet overall DQO of + 15%)		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
RH-11	Ref: SIP 3-5 Laboratory analysis...is...performed by a qualified vendor. A. What is used to determine if a laboratory is a "qualified vendor?" B. What qualifications are required of a qualified vendor? C. Do you understand the relationship of these qualified vendor requirements and those of the "CLP" requirements? (CLP refers to the Contract Laboratory Program performance requirements of the EPA). D. If so, explain how the CLP requirements apply to the YMP.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	• RESULTS
RM-12	What five procedures/WIs are used the most? Who are the individuals that use them?		
RM-13	Question several of those individuals about significant procedural details.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
RM-14	Ref: SIP 3-22 If you find I-129 (iodine-129) in milk, how will you explain its origin? In other words, if during the baseline or intervening studies, you find I-129 in milk, whether or not it may be a false positive, how are you going to explain its origin? A. Has the investigator explored appropriate references to justify his answer? B. Does the investigator exhibit knowledge of the impact of such a "positive" analytical result on the RADMP program? (Influential criteria in his answer: - immediate resampling - review of previous results - review of QA criteria)		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS *Record objective evidence reviewed, method of verification, personnel contacted*	RESULTS
RM-15	Ref: RADMP 2-5, Sec. 2.1.5 The Plan states that the Environmental Protection Agency, Office of Radiation Programs - Las Vegas Facility (EPA/ORP-LV) has agreed to assist in quality control (QC) for radon measurements. A. Does T&MSS have this agreement in writing? B. Does it include performance requirements for both parties? C. Has T&MSS reviewed EPAs procedures and are you satisfied with them? D. If not, what are the problems. E. Has T&MSS verified traceability of EPAs radon QC to an acceptable standard such as the National Institute of Standards and Testing (NIST, formerly NBS)?		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	* RESULTS
	F. Was a review of EPA's QC exposure process made during this audit period?		
	G. Explain the data quality requirements specified to EPA for their QC assistance.		
	H. Does EPA provide T&MSS with a report of exposures for calibrating T&MSS devices.		
	I. Will you please supply me with a copy of that report following this meeting?		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
RH-16	REF: RADMP 3-1 Item 7 notes on page 3-1 that you will compare air dispersion estimates of release to far-field monitoring data in the event of an unplanned release of radioactive material. A. What air dispersion models has the program planned to use? B. Are these in line with those used at other nuclear facilities? C. Has the model been exercised? D. Is there a periodic review of release estimate models? E. Was an update made or new model implemented during this reporting period?		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
RH-17	Ref: RADMP 3-1 Item 6 on page 3-1 of the RADMP allows for the detection and quantification of unplanned releases (of radioactivity). A. Has an emergency response plan been developed? B. Is an emergency response plan being developed? C. What will be the basic plan for handling an emergency created by the unplanned release of radioactivity? D. Has the Federal Emergency Response Administration (FEMA) Federal Response Plan (FRP) and/or the Federal Radiological Emergency Response Plan (FRERP) been consulted for their application to Yucca Mountain operations?		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
RM-18	Ref: 3-4, Scientific Investigation Plan (SIP) The SIP notes six air sampling activities: o Airborne particulates sampling o Iodine sampling o C-14 sampling (C02) o Tritium sampling o Man-made inert gas and radon/radon sampling and monitoring, and (sic) o Radon/radon progenies sampling and monitoring A. How were the results of these activities reported? B. Will you please supply me with a copy of that report following this discussion? C. Was a data validation done on the results reported? D. Explain who did it and generally describe their procedures. E. Did the data validator provide a written report of this work? F. Is that report available in the records center?		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
RM-19	Ref: WI-RM-312 All CAS operational and calibration checks are made against a lavinar flow element (LFE) device. The device comes with a calibration curve, probably furnished by its manufacturer. A. How was the accuracy of the LFE verified? B. What is the period between verifications? C. Was a verification made during this audit period? D. Is the operating manuals and WI close at hand?		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	* RESULTS
RM-20	Ref: WI-RM-770 (For site Visit) A. Review field sampling location(s) with E-PERM installation. Check: - Height above ground - Standard among stations - E-PERM shelter - Observations (other samples etc.) B. Review lab set-up and location of equipment. C. Review storage of E-PERMs. D. Were any surveillances of the radon monitoring program conducted during the audit period. E. If so, review or get copy of the report. F. Review qualifications of personnel. G. Review oversight and supervision. H. Discuss interactions with EPA ORP-LV for understanding, documentation, etc.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	* RESULTS
RM-21	Ref: WI-RM-770 A. How is QA/QC maintained for the SPER-1 E-PERM reader? B. What is the lead health physicists responsibility in the QC of the E-PERM reader? C. May I have a copy of form TMSS/195, E-PERM Data and Radon Concentration Calculation sheet at the end of this discussion? (For site visit review records on a sample period, results, etc. for sample control and E-PERM control.)		
RM-22	Explain how a radioactive source would be received, verified, stored, controlled, and monitored in the RADM Program.		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
RM-23	Ref: General Other than EPA and REECo, were there other contractors working on the YMP under the RADMP procedures during this audit period? If so, who and how was their work performance reviewed and approved?		
RM-24	What activities are performed which are not performed under WI-RMs and explain what procedural guides are used for these activities?		

QUALITY ASSURANCE CHECKLIST (continuation sheet)

ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	• RESULTS
RM-25	Ref: General RADMP 7-1 (EH-0173T, Order 5400.1) How does the YMP annual report coincide with the NTS Annual Site Environmental Report? What documents guide the reporting of YMP radiological monitoring data?		

CAR NO.	SUMMARY OF OPEN CARs DEFICIENCY	RESPONSIBLE FOR ACTION
YM-92-20	I. MOST OF THE CALIBRATION CERTIFICATES DO NOT CONTAIN ACCURACY OF THE STANDARD(S) USED FOR THE CALIBRATION. II. SEVERAL COCs DID NOT CONTAIN THE FOLLOWING: o SAIC PURCHASE ORDER NUMBER o NAME OF PERSON RESPONSIBLE FOR PERFORMING THE CALIBRATION o IF ITEM CALIBRATED HAS MULTIPLE RANGE OF OPERATIONS, THE CERTIFICATE SHALL SHOW AT LEAST FIVE POINTS OF CALIBRATION o PROCEDURE/INSTRUCTION, WITH REVISION, USED TO PERFORM THE CALIBRATION o STATEMENT THAT THE ITEM CALIBRATED IS WITHIN THE SPECIFIED ACCURACY IN ALL OPERATING RANGES	J. HARPER, D. SORENSEN

SUMMARY OF ACTIONS TO CORRECT DEFICIENCIES
CAR YMP-92-20

SUMMARY OF ACTION	*RESPONSIBILITY*	*COMPLETION DATE*
1. REMEDIAL ACTION PART I. ACCURACY OF CALIBRATING DEVICE		
A. ICN TO SP 1.28 ISSUED TO REQUIRE VENDOR TO SUBMIT ACCURACY OF CALIBRATING DEVICE	**J. HARPER R. BOSTIAN**	**01/27/92**
B. PREVIOUS CALIBRATIONS - COMPARISON WILL BE MADE OF ACCURACY OF CAL. DEVICE VS. ACCURACY OF EQUIPMENT TO ASSURE CAL. DEVICE HAS THE GREATER ACCURACY	**J. HARPER D. SORENSEN**	**05/29/92**
REMEDIAL ACTION PART II. CERTIFICATIONS OF CALIBRATION		
THREE OF THE FIVE DEVICES ARE NON-QUALITY AFFECTING ALTHOUGH PREVIOUSLY USED FOR QA ACTIVITIES, THE DEVICES WERE DOWNGRADED TO QA/NA AND DATA COLLECTED IS NOW DESIGNATED AS NON-QUALITY AND WILL NOT BE USED IN QUALITY APPLICATIONS	**D. SORENSEN**	**NO ACTION REQUIRED**
DEVICE 17919 - ALL INFO PROVIDED EITHER DIRECTLY OR INDIRECTLY (MIL-STD-45662A). SINGLE RANGE DEVICE, THEREFORE 5 CALIBRATION POINTS NOT REQUIRED.	**D. SORENSEN**	**NO ACTION REQUIRED**
DEVICE 7948 - PROCEDURE & REV NUMBER AND ACCURACY STATEMENT CONTAINED IN RECORDS PACKAGE SUPPLIED BY VENDOR	**D. SORENSEN**	**NO ACTION REQUIRED**

SUMMARY OF ACTIONS TO CORRECT DEFICIENCIES
CAR YMP-92-20

SUMMARY OF ACTION	*RESPONSIBILITY*	*COMPLETION DATE*
2. INVESTIGATIVE ACTION		
PART I. ACCURACY OF CALIBRATING DEVICE A COMPARATIVE EVALUATION WILL BE MADE OF ACCURACY OF STANDARDS VS DEVICE.	**J. HARPER D. SORENSEN**	**05/29/92**
ACCEPTABILITY OF THE M&TE DEVICE AND DATA OBTAINED THROUGH USAGE WILL BE EVALUATED. ANY DEFFICIENT WILL BE DOCUMENTED VIA NCR.		
PART II. CERTIFCATES OF CALIBRATION		
PROCUREMNT DOCUMENTS AND COCs WILL BE REVIEWED TO DETERMINE ANY NECESSARY CORRECTIVE ACTION MISSING INFORMATION WILL BE OBTAINED.	**J. HARPER D. SORENSEN**	**05/29/92**

SUMMARY OF ACTIONS TO CORRECT DEFICIENCIES
CAR YMP-92-20

SUMMARY OF ACTION	*RESPONSIBILITY*	*COMPLETION DATE*
3. CORRECTIVE ACTION TO PRECLUDE RECURRENCE		
PART I. ACCURACY OF CALIBRATION DEVICES	**J. HARPER R. BOSTIAN**	**01/27/92**
CONTROLLING PROCEDURE MODIFIED TO ASSURE CLARITY OF ACCURACY REQUIREMENT		
PART II. CERTIFICATES OF CALIBRATION		
SP. 1.28 REVIEWED AND MODIFIED FOR CLARITY OF APPLICABILITY AND CONTENTS OF COC	**J. HARPER**	**05/29/92**
PERSONNEL RETRAINED IN PROCEDURE		

ORIGINAL
THIS IS A RED STAMP

OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT U.S. DEPARTMENT OF ENERGY WASHINGTON, D.C.

8 CAR NO.: YM-92-020
DATE: 2/5/92
SHEET: 1 OF 2
QA

CORRECTIVE ACTION REQUEST

1 Controlling Document	2 Related Report No.
T&MSS QAPD, Revision 4	Audit 92-08

3 Responsible Organization	4 Discussed With
SAIC	D. Sorensen/G. Donaldson

5 Requirement:

T&MSS QAPD, Revision 4, Section 12, Paragraph 12.2.B states in part, "Calibration standards shall have accuracy greater than the equipment being calibrated."

T&MSS Standard Practice Procedure SP 1.28, Revision 5, Page 27, Section 1100, states in part, "The (Calibration) Certificate shall contain the following:

a. SAIC Purchase Order number.

c. Name of person responsible for performing the calibration.

j. If the item to be calibrated has a multiple range of operations, the certificate shall show at least five points of calibration... (con't)

6 Adverse Condition:

Several requirements to be recorded on the Certificate of Calibration of various M&TE are missing.

Most of the calibration certificates do not contain the accuracy of the Standard(s) used for the calibration. Without this information, it is not possible to verify and attest that this accuracy is greater than the equipment that was calibrated.

Additionally, the Certificates of Calibration for the following M&TE ID numbers did not contain the information required by items a, c, j, n , and p of Section 5 above.

09064*, 01578, 03353, 17919, 17948

* The certificate for this instrument contained 4 sheets of paper. Only three were traceable to the instrument.

9 Does a significant condition adverse to quality exist? Yes___ No X If Yes, Circle One: A B C	10 Does a stop work condition exist? Yes___ No X ; If Yes - Attach copy of SWO If Yes, Circle One: A B C D	11 Response Due Date: 20 working days from issuance

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

13 Recommended Actions:

7 Initiator M. Diaz 1/30/92 Date 2-5-92	14 Issuance Approved by: QADD Date 2/5/92
15 Response Accepted QAR Date	16 Response Accepted QADD Date
17 Amended Response Accepted QAR Date 3-31-92	18 Amended Response Accepted QADD for Date 4/6/92.
19 Corrective Actions Verified QAR Date	20 Closure Approved by: QADD Date

REV. 08/91

OFFICE OF CIVILIAN
RADIOACTIVE WASTE MANAGEMENT
U.S. DEPARTMENT OF ENERGY
WASHINGTON, D.C.

8 CAR NO.: YM-92-020
DATE: 2/5/92
SHEET: 2 OF 2
QA

CORRECTIVE ACTION REQUEST (Continuation Page)

5 Requirements (continued)

n. Procedure/instruction with revision, used to perform the calibration.

p. Statement that the item calibrated is within the specified accuracy in all operating ranges."

6 Adverse Condition (continued)

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RADIOACTIVE WASTE MANAGEMENT
U.S. DEPARTMENT OF ENERGY
WASHINGTON, D.C.

CAR NO. YM-92-020
DATE: March 11, 1992
PAGE: 1 OF 4
QA

CORRECTIVE ACTION REQUEST (Continuation Page)

CORRECTIVE ACTION RESPONSE TO CAR YM-92-020
3/11/92

1. Remedial Action

The following describes actions taken to correct specific deficiencies noted.

Part I. Accuracy of the Calibrating Device

ICN 1 to Revision 5 of SP 1.28 was issued on January 27, 1992 to require the vendor to submit to T&MSS the accuracy of the calibrating device. For each quality affecting calibration previously performed, the accuracy of the calibrating device will be compared to the accuracy of the equipment being calibrated to assure that the calibrating device has a greater accuracy.

James Harper and Dennis Sorensen of T&MSS are assigned the responsibility for completion of these actions. The completion date is May 29, 1992.

Part II. Certifications of Calibration

For each of the specific five M&TE items identified in part 6 of the CAR, the applicable certificate was evaluated by the T&MSS technical and QA inspection personnel against the information requirements. In some cases the alleged missing information was present on the certificate. In no case was all five items of information missing on all five cited certificates of calibration. Where information was actually missing, the information was located or actions are under way to made the certificate complete, e.g., the calibration service vendor will be requested to supply required information.

Three of the five devices cited on the CAR are non-quality affecting and, thus, no actions are required.

Concerning the requirements, in some cases items j. and k. do not apply, i.e., item j. applies only when an instrument has multiple ranges of operation and k. is applicable only if the instrument is digital.

The information that follows is the current status of the completeness and corrective action for the five specific M&TE certificates of calibration identified by item ID numbers:

Ltr L 92-1673- 3/16/92

CORRECTIVE ACTION REQUEST (Continuation Page)

ID Number	Completeness/Corrective Action
09064	All information was present except for the procedure and revision number and multiple calibration points. The purchase number information (PO 39-920013-94) was provided on associated vendor documentation directly traceable to the certificate of calibration. The vendor will not be requested to supply information because this instrument was reclassified as QA/NA. Therefore no corrective action is required.
01578	All information was present except for the (PO) Number. It is our contention that "Rated Accuracy" is equivalent to "Accuracy". The PO information (PO 39-920399-94) is now provided. This instrument was reclassified as QA/NA. Therefore no corrective action is required.
03353	All information is present except for procedure and revision. The certificate illustrates that item is accurate to the degree required by ANSI N323-1978. The PO did not require five points of calibration. This instrument was reclassified as QA/NA. Therefore there is no deficiency. No additional information is required.
17919	All information is provided either directly or indirectly by reference to MIL-STD-45662A. This instrument is a single range instrument; therefore, item j is not required. No corrective action is required.
17948	All information is presented except for the statement of accuracy statement and the vendor procedure and revision number used to perform the calibration; however the procedure was furnished as part of the records package supplied with the certificate. No action is required except that vendor will be required to state that the item calibrated has the required accuracy.

The individual assigned responsibility for assuring completion of these actions is Dennis Sorensen of T&MSS. The anticipated completion date is May 29, 1992.

2. Investigative Action

The following describes actions taken (or, to be taken) to determine the extent of the conditions adverse to quality.

Part I. Accuracy of the Calibrating Devise

For all quality affecting M&TE devices, an evaluation of accuracy of the calibrating standards relative to each calibrated device will be made. Additional evaluations will document the acceptability of the M&TE item and the data obtained through usage. NCRs will be prepared to document any case of deficient data (That data obtained from devices that were nonconforming to accuracy requirements).

The individuals assigned responsibility for completion of these actions are Dennis Sorensen and James B. Harper of T&MSS. The anticipated completion date is May 29, 1992.

Part II. Certificates of Calibration

The procurement documents and the certificates of calibration for all devises used and for those devises received where use is anticipated will be reviewed to determine if corrective action is necessary. Supplemental information will be obtained to augment or correct deficient certificates.

The individual assigned responsibility for completion of these actions is Dennis Sorensen of T&MSS. The anticipated completion date is May 29, 1992.

3. Root Cause Determination

Part I Accuracy of Calibrating Device

The controlling procedure for specifying certificate of calibration requirements misstated the accuracy requirement for calibrating standards. It requested the accuracy of the calibrated item.

Part II Certificates of Calibration

The root cause of these deficiencies is lack of attention to detail during the technical and QA review of procurement documents, the receipt inspection process and the process for acceptance of calibration services. During each of these activities, the accountable reviewer should confirm that each required certificate of calibration item has been translated to applicable documentation.

OFFICE OF CIVILIAN
RADIOACTIVE WASTE MANAGEMENT
U.S. DEPARTMENT OF ENERGY
WASHINGTON, D.C.

CAR NO. YM-92-020
DATE: March 11, 1992
PAGE: 4 OF 4
QA

CORRECTIVE ACTION REQUEST (Continuation Page)

4. Corrective Action to Preclude Recurrence

Part I Accuracy of Calibrating Devices

The controlling procedures, SP 1.28, was modified by ICN 1 to revision 5 to ensure that the instructions are clear with respect to the accuracy requirement for calibrating standards. No further action is required.

Part II Certificates of Calibration

SP 1.28 will be reviewed and modified as appropriate to assure clarity of the applicability and contents of the certificate of calibration. Personnel will be retrained on the procedure. The individuals assigned this action are R.S. Bostian and J.B. Harper. This action will be complete by April 15, 1992.

A checklist is now used by QA personnel during the receipt inspection process to assure that documentation of adherence to calibration requirements is complete. No additional action is required.

Response Approved: _____ Date: 3/17/92
Responsible Manager

OFFICE OF CIVILIAN
RADIOACTIVE WASTE MANAGEMENT
U.S. DEPARTMENT OF ENERGY
WASHINGTON, D.C.

CAR NO. YM 92-020
DATE: 3-26-92
PAGE: 1 OF 4
QA

CORRECTIVE ACTION REQUEST (Continuation Page)

CORRECTIVE ACTION RESPONSE TO CAR YM-92-020
3/11/92

Ammended Response
3/26/92

1. Remedial Action

The following describes actions taken to correct specific deficiencies noted.

Part I. Accuracy of the Calibrating Device

ICN 1 to Revision 5 of SP 1.28 was issued on January 27, 1992 to require the vendor to submit to T&MSS the accuracy of the calibrating device. For each quality affecting calibration previously performed, the accuracy of the calibrating device will be compared to the accuracy of the equipment being calibrated to assure that the calibrating device has a greater accuracy.

James Harper and Dennis Sorensen of T&MSS are assigned the responsibility for completion of these actions. The completion date is May 29, 1992.

Part II. Certifications of Calibration

For each of the specific five M&TE items identified in part 6 of the CAR, the applicable certificate was evaluated by the T&MSS technical and QA inspection personnel against the information requirements. In some cases the alleged missing information was present on the certificate. In no case was all five items of information missing on all five cited certificates of calibration. Where information was actually missing, the information was located or actions are under way to make the certificate complete, e.g., the calibration service vendor will be requested to supply required information.

Three of the five devices cited on the CAR are non-quality affecting and, thus, no actions are required. However, these three devices (ID-09064, 01578, and 03353) were used in activities formerly classified as quality affecting. Since these same three devices were downgraded to QA/NA (See Grading Reports RFP1-A, RFP-2, RFP-3 and RFP-4) all resulting data is now designated as Non-Quality and will not be used in a quality affecting application.

Concerning the requirements, in some cases items j. and k. do not apply, i.e., item j. applies only when an instrument has multiple ranges of operation and k. is applicable only if the instrument is digital.

The information that follows is the current status of the completeness and corrective action for the five specific M&TE certificates of calibration

Ltr. dtd 3/26/92 - L92-1673

CORRECTIVE ACTION REQUEST (Continuation Page)

ID Number	Completeness/Corrective Action
09064	All information was present except for the procedure and revision number and multiple calibration points. The purchase number information (PO 39-920013-94) was provided on associated vendor documentation directly traceable to the certificate of calibration. The vendor will not be requested to supply information because this instrument was reclassified as QA/NA. Therefore no corrective action is required.
01578	All information was present except for the (PO) Number. It is our contention that "Rated Accuracy" is equivalent to "Accuracy". The PO information (PO 39-920399-94) is now provided. This instrument was reclassified as QA/NA. Therefore no corrective action is required.
03353	All information is present except for procedure and revision. The certificate illustrates that item is accurate to the degree required by ANSI N323-1978. The PO did not require five points of calibration. This instrument was reclassified as QA/NA. Therefore there is no deficiency. No additional information is required.
17919	All information is provided either directly or indirectly by reference to MIL-STD-45662A. This instrument is a single range instrument; therefore, item j is not required. No corrective action is required.
17948	All information is presented except for the statement of accuracy statement and the vendor procedure and revision number used to perform the calibration; however the procedure and accuracy statement were furnished as part of the records package supplied with the certificate. No action is required.

2. Investigative Action

The following describes actions taken (or, to be taken) to determine the extent of the conditions adverse to quality.

Part I. Accuracy of the Calibrating Device

For all quality affecting M&TE devices, an evaluation of accuracy of the calibrating standards relative to each calibrated device will be made. Additional evaluations will document the acceptability of the M&TE item and the data obtained through usage. NCRs will be prepared to document any case of deficient data (That data obtained from devices that were nonconforming to accuracy requirements).

The individuals assigned responsibility for completion of these actions are Dennis Sorensen and James B. Harper of T&MSS. The anticipated completion date is May 29, 1992.

Part II. Certificates of Calibration

The procurement documents and the certificates of calibration for all devices used and for those devices received where use is anticipated will be reviewed to determine if corrective action is necessary. Supplemental information will be obtained to augment or correct deficient certificates.

The individuals assigned responsibility for completion of these actions are Dennis Sorensen and James B. Harper of T&MSS. The anticipated completion date is May 29, 1992.

3. Root Cause Determination

Part I Accuracy of Calibrating Device

The controlling procedure for specifying certificate of calibration requirements misstated the accuracy requirement for calibrating standards. It requested the accuracy of the calibrated item.

Part II Certificates of Calibration

The root cause of these deficiencies is lack of attention to detail during the technical and QA review of procurement documents, the receipt inspection process and the process for acceptance of calibration services. During each of these activities, the accountable reviewer should confirm that each required certificate of calibration item has been translated to applicable documentation.

OFFICE OF CIVILIAN
RADIOACTIVE WASTE MANAGEMENT
U.S. DEPARTMENT OF ENERGY
WASHINGTON, D.C.

CAR NO. YM-92-020
DATE: 3-26-92
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QA

CORRECTIVE ACTION REQUEST (Continuation Page)

4. Corrective Action to Preclude Recurrence

Part I Accuracy of Calibrating Devices

The controlling procedure, SP 1.28, was modified by ICN 1 to revision 5 to ensure that the instructions are clear with respect to the accuracy requirement for calibrating standards. No further action is required.

Part II Certificates of Calibration

SP 1.28 will be reviewed and modified as appropriate to assure clarity of the applicability and contents of the certificate of calibration. Personnel will be retrained on the procedure. The individuals assigned this action are R.S. Bostian and J.B. Harper. This action will be complete by May 29, 1992.

A checklist is now used by QA personnel during the receipt inspection process to assure that documentation of adherence to calibration requirements is complete. No additional action is required.

Management Approval D K Chamberlain DATE 3/27/92

Department of Energy
Washington, DC 20585

WBS 1.2.9.3
QA

DEC 2 3 1991 ORIGINAL SENT TO HARPER JB

John H. Nelson
Technical Project Officer
for Yucca Mountain
Site Characterization Project
Science Applications International Corporation
The Valley Bank Center, Suite 407
101 Convention Center Drive
Las Vegas, NV 89109

OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT QUALITY ASSURANCE (QA) AUDIT YMP-92-08 OF SCIENCE APPLICATIONS INTERNATIONAL CORPORATION (SAIC) IN SUPPORT OF THE YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT

Please be advised that a team of auditors from the Yucca Mountain Quality Assurance Division of the Office of Quality Assurance will conduct a QA audit of selected portions of SAIC QA program at Las Vegas, Nevada, during the period January 27-30, 1992. The audit will be conducted in accordance with the enclosed audit plan.

Observers from the State of Nevada, U.S. Nuclear Regulatory Commission, U.S. Department of Energy/Headquarters, or other interested parties, may also accompany the team. It is anticipated that approximately five auditors/observers will be present at the audit.

You are hereby requested to arrange for appropriate space to hold meetings, provide cognizant personnel to support the audit, and provide team access to necessary SAIC documentation and records.

If you have any questions, please contact either James Blaylock at 794-7913 or Robert B. Constable at 794-7945.

R. C. Spence For

Donald G. Horton, Director
Office of Quality Assurance

OQA:JB-1378

Enclosure:
Audit Plan YMP-92-08

DEC 23 1991

cc w/encl:
D. G. Horton, HQ (RW-3) FORS
R. W. Clark, HQ (RW-3.1) FORS
D. D. Shelor, HQ (RW-30) FORS
S. L. Skuchko, HQ (RW-331) FORS
J. W. Gilray, NRC, Las Vegas, NV
K. R. Hooks, NRC, Washington, DC
R. J. Brackett, TESS, Fairfax, VA
J. A. Jackson, TESS, Las Vegas, NV
R. R. Loux, NWPO, Carson City, NV
S. W. Zimmerman, NWPO, Carson City, NV
Cyril Schank, Churchill County
Commission, Fallon, NV
J. W. Bingham, Clark County
Commission, Las Vegas, NV
D. A. Bechtel, Clark County
Comprehensive, Las Vegas, NV
E. von Tiesenhausen, Clark County
Comprehensive, Las Vegas, NV
L. L. Vaughan, Esmeralda County
Commission, Goldfield, NV
P. J. Goicoechea, Eureka County
Commission, Eureka, NV
Gloria Derby, Lander County
Commission, Battle Mountain, NV
M. L. Baughman, Lincoln County
Commission, Pioche, NV
Keith Whipple, Lincoln County
Commission, Pioche, NV
C. E. Jackson, Mineral County
Commission, Hawthorne, NV
Frank Sperry, White Pine County
Commission, Ely, NV
Robert Campbell, County of Inyo, Bishop, CA
Robert Michener, County of Inyo, Bishop, CA
C. H. Prater, SAIC, Las Vegas, NV, 517/T-06
P. E. Seidler, SAIC, Las Vegas, NV, 517/T-18

OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

QUALITY ASSURANCE AUDIT PLAN

FOR

AUDIT NUMBER YMP-92-08

OF

SCIENCE APPLICATIONS INTERNATIONAL CORPORATION

LAS VEGAS, NEVADA

JANUARY 27 THROUGH 30, 1992

Prepared by: Robert B Constable Date: 12-18-91
Robert B. Constable
Audit Team Leader

Approved by: N. E. Spence For Date: 12/20/91
Donald G. Horton
Director
Office of Quality Assurance

ENCLOSURE

1.0 SCOPE

This limited scope audit will evaluate the effectiveness of the Science Applications International Corporation (SAIC) Quality Assurance (QA) program in meeting the requirements and commitments imposed by the Office of Civilian Radioactive Waste Management (OCRWM). This will be done by verifying implementation and effectiveness of the system in place, as well as verifying compliance with requirements.

A representative sample of discrepancies identified during previous audits and surveillance of SAIC will be included in the scope of this audit to determine the effectiveness of SAIC corrective actions.

The programmatic elements to be audited, as well as, the programmatic element not included in this audit, are identified in Section 4.0 of this plan.

2.0 AUDIT SCHEDULE

Pre-audit Team/Observer Meeting	8:00 a.m. January 27, 1992
Pre-audit Conference	9:00 a.m. January 27, 1992
Audit Activities	9:30 a.m. - 4:00 p.m. January 27, 1992
	8:00 a.m. - 4:00 p.m. January 28 - 29, 1992
	8:00 a.m. - 11:30 a.m. January 30, 1992
Daily Team Debriefing	4:00 p.m. - 5:00 p.m. January 27 - 29, 1992
Post-audit Conference	2:00 p.m. January 30, 1992

3.0 REQUIREMENTS TO BE AUDITED AND APPLICABLE REFERENCES

The requirements to be audited will be contained in the pre-approved programmatic checklist. The checklist will be developed from the latest revision of the following documents:

- o Technical and Management Support Services (T&MSS) Quality Assurance Program Description
- o T&MSS Organization Procedures
- o T&MSS Standard Practice Procedures
- o T&MSS Work Instructions
- o Applicable Yucca Mountain Project Administrative Procedures (Quality)

The audit will be conducted in accordance with the U.S. Department of Energy (DOE) documents listed below:

- o OCRWM Quality Assurance Administrative Procedure (QAAP) 18.2, Revision 4, "Audit Program"
- o OCRWM QAAP 16.1, Revision 4, "Corrective Action"
- o Audit Observer Inquiry
- o Policy for Participation of State, Tribal, and U.S. Nuclear Regulatory Commission Representatives as Observers on DOE Audits, dated July 14, 1987
- o High Level Waste Division Procedure for Conducting Observation Audits of DOE High Level Waste Repository Program QA Audits

4.0 ACTIVITIES TO BE AUDITED

Programmatic Elements

4.0 Procurement Document Control
7.0 Control of Purchased Items and Services
8.0 Identification and Control of Items, Samples, and Data
10.0 Inspection
12.0 Control of Measuring and Test Equipment
13.0 Handling, Storage, and Shipping
14.0 Inspection, Test, and Operating Status

As defined by the Audit Schedule, Programmatic Element 9.0 would normally be audited at this time; however, SAIC excludes implementation of this element based on their scope of work.

5.0 AUDIT TEAM MEMBERS

Robert B. Constable, Audit Team Leader, DOE/Yucca Mountain Quality Assurance Division (YMQAD)
A. Edward Cocoros, Auditor, MAC Technical Services Company/YMQAD
Mario R. Diaz, Auditor, DOE/YMQAD
Albert C. Williams, Auditor, DOE/YMQAD

6.0 AUDIT CHECKLISTS

The following checklist will be used to conduct the audit:

92-08-1 Programmatic Checklist

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

WBS 1.2.9.3
QA

MAR 3 1 1992

Michael D. Voegele
Technical Project Officer
for Yucca Mountain
Site Characterization Project
Science Applications International Corporation
The Valley Bank Center, Suite 407
101 Convention Center Drive
Las Vegas, NV 89109

OFFICE OF QUALITY ASSURANCE (OQA) AUDIT YMP-92-08 OF SCIENCE APPLICATIONS INTERNATIONAL CORPORATION (SAIC) SUPPORT OF THE YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT

Enclosed is the report for Quality Assurance (QA) Audit No. YMP-92-08. The audit was conducted by the Yucca Mountain Quality Assurance Division at the SAIC facilities in Las Vegas, Nevada, and at the Nevada Test Site in Mercury, Nevada, during the period of January 27-30, 1992.

During the course of this audit, the audit team generated one Corrective Action Request.

Response to the CAR (which was transmitted via separate letter) is due by the date indicated in Block 11 of the CAR. A response to this audit report is not necessary. The subject audit is considered completed as of the date of this letter; however, the open CAR will continue to be tracked until it has been closed to the satisfaction of the Audit Team Leader and the Director, OQA.

If you have any questions, please contact either Mario R. Diaz at 794-7974 or Robert B. Constable at 794-7945.

R. E. Spence For

Donald G. Horton, Director
Office of Quality Assurance

OQA:MRD-2646

Enclosure:
Audit Report YMP-92-08

ael D. Voegele

NT

cc w/encl:
J. W. Bartlett, HQ (RW-1) FORS
D. G. Horton, HQ (RW-3) FORS
R. W. Clark, HQ (RW-3.1) FORS
J. W. Gilray, NRC, Las Vegas, NV
K. R. Hooks, NRC, Washington, DC
R. R. Loux, NWPO, Carson City, NV
S. W. Zimmerman, NWPO, Carson City, NV
Cyril Schank, Churchill County
Commission, Fallon, NV
J. W. Bingham, Clark County
Commission, Las Vegas, NV
D. A. Bechtel, Clark County
Comprehensive, Las Vegas, NV
E. von Tiesenhausen, Clark County
Comprehensive, Las Vegas, NV
L. L. Vaughn, Esmeralda County
Commission, Goldfield, NV
P. J. Goicoechea, Eureka County
Commission, Eureka, NV
Gloria Derby, Lander County
Commission, Battle Mountain, NV
L. Baughman, Lincoln County
Commission, Pioche, NV
Keith Whipple, Lincoln County
Commission, Pioche, NV
C. E. Jackson, Mineral County
Commission, Hawthorne, NV
P. Niedzielski-Eichner, Nye County,
Fairfax, VA
Frank Sperry, White Pine County
Commission, Ely, NV
Robert Campbell, County of Inyo, Bishop, CA
Robert Michener, County of Inyo, Bishop, CA
Tom Colandrea, EEI, San Diego, CA
S. L. Bolivar, LANL, Los Alamos, NM
Dean Wolf, LLNL, Livermore, CA
[redacted]
J. A. Jackson, M&O/TRW, Las Vegas, NV
W. J. Glasser, REECo, Las Vegas, NV
M. J. Regenda, RSN, Las Vegas, NV, M/S 403
R. R. Richards, SNL, 6310, Albuquerque, NM
S. J. Trillo, SAIC, Las Vegas, NV, 517/T-12

EXECUTIVE SUMMARY

The audit determined that Science Applications International Corporation (SAIC) is satisfactorily implementing effective Quality Assurance Program controls in accordance with their Quality Assurance Program Description and implementing procedures. Program Elements 4.0, 7.0, 8.0, 10.0, 13.0, and 14.0 were identified as effective by the audit team. Program Element 12.0, "Control of Measuring and Test Equipment," was considered to be marginally effective because of various deficiencies identified in the area of calibration.

As a result of the audit, one Corrective Action Request (CAR) was issued to document calibration certificate deficiencies. In addition, six deficient conditions identified by the audit team were corrected by SAIC prior to the post-audit meeting. Details of the CAR and deficient conditions corrected during the audit are documented in Sections 5.2 and 5.3 of this report.

1.0 INTRODUCTION

This report contains the results of the U.S. Department of Energy (DOE) Office of Civilian Radioactive Waste Management (OCRWM) Office of Quality Assurance (OQA) Quality Assurance (QA) Audit No. YMP-92-08 of the Technical and Management Support Services (T&MSS) contractor, Science Applications International Corporation (SAIC). The audit was performed by a team of auditors from the Yucca Mountain Quality Assurance Division (YMQAD) during the period of January 27 through 30, 1992 at the SAIC offices in Las Vegas, Nevada. The auditors evaluated QA Program Elements 4.0, 7.0, 8.0, 10.0, 12.0, 13.0, and 14.0.

2.0 AUDIT SCOPE

The audit evaluated effectiveness of the SAIC QA Program in meeting the requirements and commitments imposed by the OCRWM. Specifically, the effectiveness of QA requirements delineated in the T&MSS Quality Assurance Program Description (QAPD) and implementing procedures were evaluated. Deficiencies identified during the previous OQA audit, No. YMP-91-06, were considered during this audit to determine effectiveness of corrective action.

The QA Program Elements evaluated during the audit are as follows:

4.0 Procurement Document Control
7.0 Control of Purchased Items and Services
8.0 Identification and Control of Items, Samples, and Data
10.0 Inspection
12.0 Control of Measuring and Test Equipment
13.0 Handling, Storage, and Shipping
14.0 Inspection, Test, and Operating Status

3.0 AUDIT TEAM

Robert B. Constable, Audit Team Leader, DOE/YMQAD
A. Edward Cocoros, Auditor, MAC Technical Services Company (MACTEC)/YMQAD, Programmatic Elements 4.0 and 7.0
Mario R. Diaz, Auditor, DOE/YMQAD, Programmatic Elements 12.0 and 13.0
Charles C. Warren, Auditor, MACTEC/YMQAD, Programmatic Element 8.0
Albert C. Williams, Auditor, DOE/YMQAD, Programmatic Elements 10.0 and 14.0

4.0 PERSONNEL CONTACTED

For personnel contacted during the audit, see Enclosure 1.

5.0 AUDIT RESULTS

5.1 Program Element Effectiveness

For Program elements 4.0, 7.0, 8.0, 10.0, 13.0, and 14.0, SAIC is satisfactorily implementing effective QA Program controls in accordance with the T&MSS QAPD and implementing procedures. Effectiveness of Program Element 12.0, "Control of Measuring and Test Equipment" was considered to be marginally effective because of various deficiencies identified in the area of calibration. Calibration related deficiencies included insufficient/incorrect information entered on certificates of calibration, incorrect equipment identification numbers indicated on equipment lists, errors in tagging equipment as active/inactive, and incorrect information regarding equipment status. The majority of these deficiencies required only remedial action and were corrected during the audit. Those deficiencies not corrected during the audit were documented on a Corrective Action Request (CAR).

5.2 Corrective Actions Requests

One CAR, YM-92-020, was issued as a result of the audit. This CAR documents noncompliance with the T&MSS QAPD and Standard Practice Procedure SP 1.28, "Control of Purchased Items and Services," in the area of information required to be included on Certificates of Calibration. An information copy of CAR YM-92-020 is included in Enclosure 4.

5.3 Corrective Action Taken During the Audit

The following deficient conditions requiring only remedial action were corrected during the audit by SAIC personnel:

1. An adverse condition was noted during the audit relative to Paragraph 7.8 of Section 7.0 of T&MSS QAPD, Revision 4, in that contrary to the requirement of the QAPD, interfaces which were to be established to ensure that specific types of recommended dispositions for a supplier generated Nonconformance Report were to be referred to T&MSS for approval, had not been referenced in any T&MSS QA implementing procedures. SP 1.28, Revision 5, ICN 2, issued with an effective date of January 21, 1992, corrected this deficiency.

2. T&MSS Work Instruction WI-RM-702, Revision 4, "Near Field Continuous Air Sample Operation," required that records package segments be prepared in accordance with SP 1.36, "Records Management: Record Source Implementation," within 10 days of completing continuous air sampler filter exchanges. T&MSS personnel were not preparing records package segments within the 10-day requirement nor did they intend to prepare these segments until a composite of filters was accumulated. This condition was corrected during the audit by the issuance of Interim Change Notice (ICN) No. 1 to WI-RM-702, to remove the 10-day requirement for preparation of records package segments.

3. T&MSS SP 1.25, Revision 4, "Acceptance of Items and Services," requires that partial shipments be documented on Receiving Inspection Reports (RIRs) by recording the word "partial" in the quantity received column. Contrary to this requirement, one RIR for Purchase Order (PO) 920437-94 did not indicate "partial" when a partial shipment was received and one RIR for PO 920431-94 did not have "partial" entered in the required column. These deficient RIRs were corrected to comply with procedural requirements prior to completion of the audit.

4. T&MSS Organization Procedure OP 1.8, Revision 2, "Certification of Inspection Personnel," requires that completion of training, testing, and/or experience and proposed method of qualification for inspectors be documented on T&MSS 144/1 forms. Contrary to these requirements, two of three Level III inspectors that were certified by experience, did not have this experience documented on their T&MSS 144/1 form. Corrections to T&MSS 144/1 Forms were made prior to the completion of the audit.

5. SP 2.4, Revision 4, "Control of Measuring and Test Equipment," Paragraph 5.1.5.1, states in part, "...The M&TE Custodian establishes an M&TE List. The M&TE List shall include as a minimum: identification number, calibration frequency, calibration due date, equipment accuracy." The following items/elements were found not in compliance with these requirements and were corrected as indicated:

   a. The serial numbers of B-G-A Probes identification (ID) numbers 03353 and 03354 did not coincide with those shown on the Measuring and Test equipment (M&TE) List. The numbers were checked against files and the M&TE List was corrected accordingly.

   b. A review of Certificates of Calibration for balances with ID nos. 03104 , 03310, and 16516 were found not to meet the tolerance for accuracy as prescribed in the M&TE List. After reviewing their history files and verifying that no work had been done with balances, the items were requalified for nonquality-affecting activities.

   c. Calibration frequency and calibration due dates for the following ID numbers on the M&TE List were missing: 16358, 16497, 01515, 20001, 20002, 03373, 03374, 03385, 03386, 16432, 16428, and 09312. Missing calibration information for this equipment was checked, verified and incorporated in the M&TE List. The M&TE List was updated during the audit and ICN 3 to SP 2.4, Revision 4 was issued to clarify the minimum required information for the M&TE List.

6. SP 2.4, Revision 4, Paragraph 7.1 states, "The Responsible Manager submits the following QA records within 10 working days in accordance with SP 1.36:

   1. Technical basis for the extension of calibration frequencies as developed in Section 5.6..."

Documentation requesting extensions of calibration frequencies were not submitted within 10 working days:

1. Nos. 09056, 09058, 09059, 09060, and 09225 memo dated January 6, 1992;

2. Nos. 03104, 03310, and 16516 memo dated November 6, 1991;

3. wind sensor at NTS Area 60 memo dated May 22, 1991; and

4. No. 09239 - memo dated January 20, 1992

Upon discovery of this deficiency, the records were sent to the Local Records Center on a transmittal form dated January 29, 1992. These were the only instances found during the audit where extensions of calibration frequencies were documented on memos.

5.4 Audit Details

For details of items and activities examined during the audit, see Enclosures 2 and 3.

6.0 RECOMMENDATIONS

1. When procedures are developed to allow examination of interfaces between T&MSS QAPD requirements and those reflected in implementing procedures, SAIC personnel should promptly evaluate the effectiveness of interfaces for Criteria 4 and 7 involving T&MSS procedures SPs 1.25, 1.28, and OPs 1.3, 1.4, and 1.7.

2. T&MSS/SAIC should develop a system that permits obtaining information about any piece of M&TE utilizing the unique equipment ID number instead of the PO number. This is important because the majority of POs contain multiple items and therefore, it is often difficult to obtain records for a single items.

3. Storage requirements for M&TE should be required to cross-reference or address manufacturer's recommendations.

4. Memos such as the ones issued to document requests for extension of calibration frequencies should have unique identification numbers for traceability purposes.

7.0 ENCLOSURES

Enclosure 1: T&MSS Personnel Contacted During The Audit
Enclosure 2: Audit Details
Enclosure 3: Objective Evidence Reviewed During The Audit
Enclosure 4: Information Copy of CAR

ENCLOSURE 1

PERSONNEL CONTACTED DURING THE AUDIT

OCRWM AUDIT NO. YM-92-08
T&MSS PERSONNEL CONTACTED

NAME	PRE-AUDIT MEETING	CONTACTED DURING AUDIT	POST-AUDIT MEETING
S. Baron		X	
R. Bostian	X	X	
D. Chandler	X		X
J. Clark	X	X	X
L. Croft	X	X	X
G. Donaldson		X	X
J. Dunham	X		X
V. Ford			X
J. Gonzales	X	X	X
J. Harper	X	X	X
M. Harris	X		X
J. Jacobson	X		X
K. Johnson			X
J. Kapton		X	
A. Keyes	X	X	X
F. Lofftus		X	
W. MacNabb	X		
J. Nelson	X		X
W. Osenbaugh	X	X	X
J. Prince	X	X	X
G. Prowell		X	
R. Rinderman	X	X	X
P. Rogers	X		
J. Ryan		X	
C. Sorensen	X	X	X
R. Spooner			X
A. Temple		X	
J. Weaver	X		

ENCLOSURE 2

AUDIT DETAILS

AUDIT DETAILS

The following is a summary of programmatic activities evaluated during the audit. A list of objective evidence reviewed for these activities, including procedure titles, is contained in Enclosure 3.

4.0 Procurement Document Control

The evaluation of this element was conducted by reviewing objective evidence and interviewing SAIC/T&MSS personnel relative to the following QA requirements documents:

- o SP 1.28, Revision 5
- o OP 1.4, Revision 3

Ten Purchase Requisitions (PRs) developed since the last audit were reviewed for the following attributes: processing in accordance with SP 1.28, Revision 5 and OP 1.4, Revision 3, specifically such items as identification of quality classification, adequate identification of the scope of work, identification of qualified suppliers, requirements for inclusion of commercial catalog descriptions, adequate commercial-grade justification statements, inspection requirements, technical and QA requirements, and adequate QA, technical, and finance department reviews. The 10 POs resulting from these PRs and supporting objective evidence, were reviewed for the following attributes:

- o POs were being processed in accordance with SP 1.28, Revision 5 and OP 1.4, Revision 3.
- o POs were consistent with the corresponding PRs.
- o Documented reviews and approval of Procurement Documentation Review Checklists.
- o Approval signatures on the PO by appropriate technical and QA personnel.
- o Procurement packages contained the required documents.

Based on the sample of PRs and POs reviewed, Procurement Document Control was found to be implemented effectively.

7.0 Control of Purchased Items and Services

Evaluating the implementation of this element was performed in part during the evaluation of Criteria 4, 10, and 13 while reviewing QA procedures SP 1.25, Revision 4, SP 1.28, Revision 5, and OP 1.4, Revision 3. The implementation of the T&MSS QAPD, Revision 4, Section 7.0, and QA procedures OP 1.3, Revision 3, and OP 1.7, Revision 3, were also evaluated as part of Criterion 7.0. The supplier evaluation methods, checklists, and reports documentation were evaluated, and compliance with OP 1.3 was verified. The implementation of OP 1.7 was

verified by reviewing objective evidence of the maintenance of the Quality Supplier Lists 91-04, Revision 0, dated 10/15/91 and 92-01, Revision 0, dated 1/6/92. The lists were reviewed quarterly and were revised as required quarterly and between quarterly revisions when needed. The implementation of Criterion 7.0 was considered to be effective.

8.0 Identification and Control of Items, Samples, and Data

Compliance with the T&MSS QAPD and implementing procedures for the identification and control of items, samples, and data was evaluated. Because of the limited scope of work being performed by T&MSS, the evaluation was restricted to equipment used in support of meteorological and radiation monitoring activities; continuous air sampling for radiation monitoring; and data produced from meteorological monitoring activities. A sample of equipment at the Nevada Test Site was examined to verify that identification and traceability of this equipment was in compliance with the requirements of the QAPD and implementing procedures. Identification and control of near and far field continuous air sample was examined to verify compliance to T&MSS Work Instructions (WIs), and a sample of meteorological data was reviewed to evaluate compliance to T&MSS SPs and WIs. With exception of one area of noncompliance with WI-RM-702 regarding timely preparation of records package segments, all activities were found to be in compliance with specified requirements. This area of noncompliance was corrected prior to completion of the audit and Criterion 8 was considered to be effective.

10.0 Inspection

Primarily two procedures implement the requirements of this criteria. The procedures are SPs 1.25, and 1.28. Audit activities verified there were no engineered items procured from July 1, 1991 to January 27, 1992. During this period, there were 37 POs written for the purchase of items or services which have a QA rating. Eleven of the 37 (30%) were reviewed for content required by the procedure. This included reviewing the RIR and the Basis for Acceptance of Services (BAS). Also verified, was the inspection and hold area which consisted of a locked room on the fourth floor in the office services area. Seven suppliers that furnished items or services were identified on the QSL. Audit activity also verified five inspection personnel are members of the T&MSS QA organization, are qualified, and are independent of organizational unit responsible for the activity being inspected. Criterion 10 is being effectively implemented.

12.0 Control of Measuring and Test Equipment

Measuring and Test Equipment (M&TE) and Operating Equipment (OE) lists provided by SAIC M&TE custodian were used to verify that procedural requirements were reflected in calibration documentation. With exception of the deficiencies listed in Section 5.3 of the Audit Report that were corrected during the audit, and the calibration certificate deficiencies documented on CAR YM-92-020, control and documentation of M&TE and OE were found to be in compliance with procedural requirements. Because of the various deficiencies identified, Criterion 12 was considered marginally effective.

13.0 Handling, Storage, and Shipping

RIRs associated with nine POs were reviewed to verify compliance to procedural requirements for RIRs, Certificates of Conformance, hold for testing conditions, and conditions requiring issuance of nonconformance reports.

Segregated areas for nonconforming items identified as M&TE and used for calibration activities were reviewed. All documentation, conditions, and areas reviewed were found to comply with procedural requirements.

14.0 Inspection, Test, and Operating Status

Procedures containing the requirements for this criteria from T&MSS QAPD include SP 1.22, Revision 1, SP 1.23, Revision 4, SP 1.25, Revision 4, SP 1.37, Revision 4, and SP 2.4, Revision 4,. Audit activities verified that these procedures provided for identification of the status of inspection and test activities to ensure that required inspections and tests are performed and that unacceptable items are not inadvertently installed, used or operated. The procedures also make provisions for the use of status indicators and give authority to personnel to attach and remove he status indicators. These indicators are the "QA Hold" tag from SP 1.23, Exhibit 2 and the "Accept/Hold for Test" tag from SP 1.25, Exhibit 4. Implementation of SP 1.23 was verified by assuring the attachment of "QA HOLD" tags to equipment in the hold area. Implementation of SP 1.25 could not be verified. To the extent audited, Criterion 14 is being implemented effectively.

ENCLOSURE 3

OBJECTIVE EVIDENCE

OBJECTIVE EVIDENCE REVIEWED DURING THE AUDIT

PLANS:

T&MSS QAPD, Revision 4, Quality Assurance Program Description

PROCEDURES/INSTRUCTIONS:

T&MSS SP 1.22, Revision 1, Stop Work Order
T&MSS SP 1.23, Revision 4, Nonconformance Reporting
T&MSS SP 1.25, Revision 4, Acceptance of Items and Services
T&MSS SP 1.28, Revision 5, Control of Purchased Items and Services
T&MSS SP 1.37, Revision 4, Deficiency Reporting System
T&MSS SP 2.2, Revision 2, Scientific Investigation Control
T&MSS SP 2.4, Revision 4, Control of Measuring and Test Equipment
T&MSS SP 2.5, Revision 2, Maintenance and Control of Operating Equipment
T&MSS OP 1.3, Revision 3, Supplier Evaluation
T&MSS OP 1.4, Revision 3, Review and Verification of Procurement Documents
T&MSS OP 1.7, Revision 3, Development and Maintenance of Qualified Supplier List
T&MSS WI-MET-002, Revisions 2, Operation and Performance Checks of MET Monitoring Equipment
T&MSS WI-MET-003, Revision 1 & 2, Instructions for Processing Current Data
T&MSS WI-RM-702, Revision 4, Near Field Continuous Air Sampler Operation
T&MSS WI-RM-703, Revision 1, Far Field CAS Operation

PURCHASE REQUISITIONS:

5707173/39	5707947/39	5707944/39	5707650/39
5707655/39	5707769/39	5707683/39	5707152/39
5732958/39	5707676/39		

PURCHASE ORDERS:

920590-94	920244-94	920422-94	920045-94
920431-94	920427-94	920533-94	880137-54
920541-94	920434-94	920558-94	920268-94
920534-94	920013-94	920585-94	920586-94
920602-94	920326-94	920572-94	910078-65
920405-94			

QUALIFIED SUPPLIER LIST (QSL):

QSL 91-04, Revision 0, dated 10/15/91

QSL 92-01, Revision 0, dated 1/6/92

SUPPLIER EVALUATION REPORTS:

Alnor Nuclear Corp.
Oak Ridge Detection Lab.
Reuter Stokes
SAIC Environmental Application Div.
VWR Scientific
Ludlum Measurement Inc.
RAD Elec. Inc.
Ringards Metrology
Teledyne Isotopes
Teledyne Geotech

MISCELLANEOUS:

M&TE List dated 1/24/92
OE List dated 1/24/92
SP 1.28, Revision 5, ICN 2, Effective Date 1/31/92
QSL Change Notice, Effective Date 91-04, Revision 1, dated 10/22/91
8 copies of TMSS/002/5, Procurement Document Review Checklist (Commercial Grade)
2 copies of TMSS/008/5, Procurement Document Review Checklist (other than Commercial Grade)
10 copies of TMSS/004/1, Qualified Supplier List
10 copies of TMSS/005/1, Qualified Supplier List Index
10 copies of TMSS/006/1, Qualified Supplier List (QSL)
5 copies of TMSS/007/1, Procurement Document Review Log
10 copies of TMSS/016/4, Supplier Evaluation Report
10 copies of TMSS/017/1, Supplier Evaluation Checklist Cover Sheet
3 copies of TMSS/018/8, Supplier Evaluation Checklist
4 copies of TMSS/019/1, Supplier, Evaluation Checklist Calibration Services
10 copies of TMSS/094/1, Basis of Acceptance of Services
J. K. Prince memorandum to R. Rinderman, dated January 25, 1992, requesting the removal of Pacific Northwest Laboratories (PNL) from the QSL.
T&MSS Organizational Chart (1/10/92)
QA Receiving Log
Training Attendance Record (Lesson Plan No. 91012, Revision 0)

EQUIPMENT (ITEMS):

Rockwell Totalizer, Barcode 20162
Kurtz Flow Calibrator, Barcode 20071
BP Transducer, Barcode 17942
Canberra Alpha Beta, Barcode 20210
Sartorius Balance, Barcode 16516

CONTINUOUS AIR SAMPLES:

FF 21, 1/13/92 to 1/23/92
FF 25, 1/13/91 to 1/20/92
NF 6, 1/14/92 to 1/21/92
NF 11, 1/7/92 to 1/14/92
NF 67, 1/7/92 to 1/14/92
FF 23, 1/13/92 to 1/20/92
FF 28, 1/3/92 to 1/9/92
NF 6, 1/7/92 to 1/14/92
NF 11, 1/14/92 to 1/21/92
NF 67, 1/14/92 to 1/21/91

METEOROLOGICAL DATA FILES:

A 02061	A 02141	A 02201	A 02271
A 03131	A 03281	A 04101	A 04241
A 05081	A 05221	A 06041	

M&TE (BY BARCODE NO.):

01578	03093	0180	09068
09064	09231	09240	03353
00768	03104	03310	16516
16429	01509	01510	01511
17908	20197	21098	20199
09063	03098	03233	16431
16432	17904	17921	17922
17923	17924	17943	17946
17947	17[illegible]	17951	

RIRS FOR THE FOLLOWING PURCHASE ORDERS:

920434-94	920068-94	920516-94	920586-94
920013-94	920326-94	910078-94	920405-94
920431-94	920327-94	920373-94	920422-94
920429-94	920437-94	920541-94	920601-94
920610-94			

CALIBRATION RECALL LETTERS (BY DATES):

1/24/92	12/20/91	11/25/91	10/25/91

EXTENSIONS TO CALIBRATION (BY BARCODE NO./DATES):

09058, dated 1/6/92
09059
09060
09056
09225
03104, dated 11/6/91
03310
16516
09239, dated 1/20/92
Wind Sensors at NTS 60, dated 5/22/91

PERSONNEL CERTIFICATION RECORDS (T&MSS 144/1):

F. Lofftus	R. Rinderman	S. Nolan	J. Ryan	A. Temple

ENCLOSURE 4

INFORMATION COPY OF CAR

(BLANKS ON CAR FORM ARE INTENTIONAL)

THIS IS A RED STAMP

OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT U.S. DEPARTMENT OF ENERGY WASHINGTON, D.C.

8 CAR NO.: YM-92-020
DATE: 2/5/92
SHEET: 1 OF 2
QA

CORRECTIVE ACTION REQUEST

1 Controlling Document	2 Related Report No.
T&MSS QAPD, Revision 4	Audit 92-08

3 Responsible Organization	4 Discussed With
SAIC	D. Sorensen/G. Donaldson

5 Requirement:

T&MSS QAPD, Revision 4, Section 12, Paragraph 12.2.B states in part, "Calibration standards shall have accuracy greater than the equipment being calibrated."

T&MSS Standard Practice Procedure SP 1.28, Revision 5, Page 27, Section 1100, states in part, "The (Calibration) Certificate shall contain the following:

a. SAIC Purchase Order number.

c. Name of person responsible for performing the calibration.

j. If the item to be calibrated has a multiple range of operations, the certificate shall show at least five points of calibration... (con't)

6 Adverse Condition:

Several requirements to be recorded on the Certificate of Calibration of various M&TE are missing.

Most of the calibration certificates do not contain the accuracy of the Standard(s) used for the calibration. Without this information, it is not possible to verify and attest that this accuracy is greater than the equipment that was calibrated.

Additionally, the Certificates of Calibration for the following M&TE ID numbers did not contain the information required by items a, c, j, n , and p of Section 5 above.

09064*, 01578, 03353, 17919, 17948

* The certificate for this instrument contained 4 sheets of paper. Only three were traceable to the instrument.

9 Does a significant condition adverse to quality exist? Yes___ No X If Yes, Circle One: A B C	10 Does a stop work condition exist? Yes___ No X ; If Yes - Attach copy of SWO If Yes, Circle One: A B C D	11 Response Due Date: 20 working days from issuance

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

13 Recommended Actions:

7 Initiator	14 Issuance Approved by:
M. Diaz 1/30/92 Date 2-5-92	QADD Date 2/5/92
15 Response Accepted	16 Response Accepted
QAR Date	QADD Date
17 Amended Response Accepted	18 Amended Response Accepted
QAR Date	QADD Date
19 Corrective Actions Verified	20 Closure Approved by:
QAR Date	QADD Date

OFFICE OF CIVILIAN
RADIOACTIVE WASTE MANAGEMENT
U.S. DEPARTMENT OF ENERGY
WASHINGTON, D.C.

8 CAR NO.: YM-92-020
DATE: 2/5/92
SHEET: 2 OF 2
QA

CORRECTIVE ACTION REQUEST (Continuation Page)

5 Requirements (continued)

n. Procedure/instruction with revision, used to perform the calibration.

p. Statement that the item calibrated is within the specified accuracy in all operating ranges."

6 Adverse Condition (continued)

Civilian Radioactive Waste Management System

Management & Operating Contractor

Records Package Table of Contents

WBS: 1.2.9.3
QA: QA
Page: 1 of: 1

Complete only applicable items.

Transmittal Date: 5-7-92	Records Package Identifier: QRP 1.2.9.3
Records Source Name: Robert B. Constable	Quality-affecting Designation: QA
Records Package Date: 5-7-92	Tracking Number: N/A
Title/Description: Audit Report YMP-92-08 of SAIC	
QA Records Package RD 5/7/92	

Individual Records Dates	Individual Titles/Groups of Records	Individual Page Counts
12/23/91	OQA:JB-1378, w/o encl.	2
12/20/91	Audit Plan YMP-92-08	4
3/31/92	OQA: MRD-2646.	21
N/A	N/A	N/A

Subtotal Page Count	27
Total Page Count	27

Compiled by: Robert B Constable	Date: 5/6/92
Authenticated by: Maria Gu	Date: 5-7-92
LRC Acceptance	Date

Blank copies of this form may

0004 (11/91) REV 0

YMP-091-R0
3/2/92

YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
TRANSMITTAL/RECEIPT ACKNOWLEDGMENT

Record/ Package Date	Title/Description	Page Count	Tracking Number/ Identifier	Record Filmed
5-7-92	Audit Report YMP-92-08 of SAIC	28	QRP 1.2.9.3	

Instructions for access to privileged records:

Record Source: [signature] Participant Organization: YMP	Date: 5/6/92
LRC Receipt:	Date:
LRC Acceptance:	Date:
LRC Transmittal:	Date:
CRF Acceptance:	Date:

U.S. DEPARTMENT OF ENERGY

OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

OFFICE OF QUALITY ASSURANCE

AUDIT REPORT

OF

SCIENCE APPLICATIONS INTERNATIONAL CORPORATION

AUDIT NO. YMP-91-06

JUNE 17 THROUGH JUNE 21, 1991

Prepared by: Richard L. Maudlin Date: 07-09-91
Richard L. Maudlin
Audit Team Leader
Yucca Mountain Quality Assurance Division

Approved by: James B. Lonford for Date: 7/10/91
Donald G. Horton, Director
Office of Quality Assurance

9107220202 3pp.

EXECUTIVE SUMMARY

Overall, it was determined, with the exception of those areas identified below, Science Applications International Corporation (SAIC) is satisfactorily implementing an effective Quality Assurance Program in accordance with the SAIC Quality Assurance Program Description and implementing procedures.

There was one (1) area identified during the audit as ineffective, three (3) areas identified as marginally effective, and three (3) areas identified as indeterminate. The area identified as ineffective related to the control of calibration at the site and office in Las Vegas. In the area of procurement, implementation was found to be effectively implemented; however, procedures which control this process were difficult to track in that they crossed several criterion boundaries. Based on this concern, procurement as it relates to the procedures was considered marginally effective. Several deficiencies were found in the area of procedural implementation of Criteria 5, which were corrected during the audit. Based on the number of problems observed, this area also was considered marginally effective. Due to the lack of activity and/or evaluation and a lack of flowdown of requirements, the areas of Quality Assurance (QA) Program (Grading and Qualified Data), Design Control, Software Quality Assurance and Scientific Investigation (Meteorological Monitoring) were considered indeterminate.

The Yucca Mountain Quality Assurance Division Audit Team identified 14 deficiencies during the audit. All but two (2) two of these deficient conditions were resolved prior to the post-audit conference. The Corrective Action Request (CAR) associated with calibration was deemed as a significant deficiency; the CAR associated with corrective action was not identified as a significant deficiency. Unresolved deficiencies were documented on CARs as detailed in Section 6.1 and Enclosure 5 of this report.

1.0 INTRODUCTION

This report contains the results of the Office of Civilian Radioactive Waste Management (OCRWM) Quality Assurance (QA) Audit YMP 91-06 of Science Applications International Corporation (SAIC) conducted at Las Vegas, Nevada on June 17 through June 21, 1991. The audit was conducted by an audit team from the Yucca Mountain Quality Assurance Division (YMQAD) of the Office of Quality Assurance in accordance with the approved Audit Plan (reference: Correspondence OQA: JB-3881, dated 05/22/91).

2.0 AUDIT PURPOSE AND SCOPE

The audit evaluated the adequacy and effectiveness of implementation of the SAIC Quality Assurance Program associated with the Mined Geologic Disposal System. Specifically, the audit evaluated the effectiveness of QA requirements specified in the SAIC Quality Assurance Program Description (QAPD) and associated implementing procedures. In addition, technical aspect specifically related to Meteorological Monitoring and Radiological Monitoring were evaluated.

The programmatic elements and technical activities audited are identified below:

Programmatic Elements

1.0 Organization
2.0 Quality Assurance Program
3.0 Design Control
4.0 Procurement Document Control
5.0 Instructions, Procedures, Plans, and Drawings
6.0 Document Control
7.0 Control of Purchased Items and Services
8.0 Identification and Control of Items, Samples, and Data
10.0 Inspection
12.0 Control of Measuring and Test Equipment
13.0 Handling, Shipping, and Storage
14.0 Inspection, Test, and Operating Status
15.0 Control of Nonconforming Items
16.0 Corrective Action
17.0 Quality Assurance Records
18.0 Audits
19.0 Software Quality Assurance
20.0 Scientific Investigation Control

The audit did not address programmatic elements 9 and 11 since SAIC is performing no activities to which these elements are applicable.

Technical Activities

Technical Specialists reviewed and evaluated the following technical activities listed by Work Breakdown Structure (WBS) Number.

Meteorological Monitoring Plan, Revision 1, June 5, 1989
WBS 1.2.5.4.2 Meteorological

Radiological Monitoring Plan, Revision 1, December 1990
WBS 1.2.5.4.5 Radiological

In addition, the technical specialist evaluated the above activities to determine adequacy in the following areas:

1. Technical qualifications of scientific personnel.

2. Understanding of procedural requirements as they pertain to scientific investigation activities.

3. Adequacy of Technical Procedures (Work Instructions).

4. Development of Study Plans, as applicable, work supporting the Site Characterization Plan, and any related work products.

3.0 AUDIT TEAM AND OBSERVERS

Audit team members and observers are listed in Enclosure 1.

4.0 SUMMARY OF AUDIT RESULTS

4.1 Program Effectiveness

Overall, except in those areas identified below, it appears that SAIC is satisfactorily implementing an effective QA Program in accordance with the SAIC QAPD and implementing procedures. The area that was found to be ineffective (Calibration Control) is considered to be significant since it has been repetitively identified. The areas that were found to be marginally effective do not significantly impact implementation or prevent SAIC from continuing work. Implementation in the areas of QA Program (Grading and Qualified Data), Design Control, Software Quality Assurance and Scientific Investigation (Meteorological Monitoring) were found indeterminate due to a lack of implementation or evaluation and a lack of flowdown of upper-tier documents.

4.2 Programmatic Audit Activities

Details of programmatic audit activities that are documented in Enclosure 2.

4.3 Technical Activities

The scope of the technical audit included activities that are described in (2) Management Plans:

Meteorological Monitoring Plan, Revision 1, June 5, 1989
WBS 1.2.5.4.2 Meteorological

Radiological Monitoring Plan, Revision 1, December 1990
WBS 1.2.5.4.5 Radiological

Meteorological Monitoring

The Meteorological Monitoring Program was technically reviewed for consistency with the SAIC QAPD and implementing Work Instructions (WI). The Meteorology Monitoring Study Plan, Rev. 0, April 1, 1991, was issued the week before the audit began. Therefore, it was not reviewed in the context of this audit.

However, the following WIs were evaluated in this audit: WI-MET 001, WI-MET 002, and WI-MET-005. WI-MET-003 was not considered because no data processing was being done. The only activity taking place is the collection and temporary storage of meteorological data by the site technician.

Only those SAIC documents generated since the December 1, 1990, up to the present time of this audit, were considered in support of the technical evaluations presented in this summary.

1. Selecting of methods, analyzers, or samples: Adequate - installed meteorological instrumentation is acceptable for the task at hand. This opinion is based on a review of instrument operational specifications in relation to Environmental Protection Agency (EPA) requirements, status reports, and equipment maintenance and repair records.

2. Training: Adequate - Three personnel were evaluated and found to be qualified for their assigned positions. Training records are complete. This evaluation is based on a review of training records and interviews with the Task Manager, Dennis Sorensen, and the Site Technician, Joe Conway.

3. Installation of Equipment: Adequate - The required acceptance inspection, installation, and calibration procedures were completed for the meteorological monitoring equipment. This technical evaluation was based upon a review of Test forms and entries in the Site Log Books maintained at Bldg 4522, Area 25 Nevada Test Site. However, it was recommended that the precipitation gauges (filled with antifreeze) at higher elevations be mounted on propane tanks (available) to increase the accuracy of measurement of frozen precipitation. Additionally, it was recommended that wind shields be placed around these gauges to reduce wind effects on precipitation catch.

4. Calibration (Addressed under programmatic Criterion 12): Deficiencies were noted and CAR YM-91-063 was written. (see Criterion 12 for details.) During the field portion of the audit (June 19 and 20, 1991) certain calibration requirements were verified (e.g., placement of the North Stake for aligning wind direction sensors, use of calibration tags, etc.). It was recommended that the wooden stakes (at least one was broken) be replaced by resurveyed steel posts. The net radiometer had been removed from the main site because of the inability to find a certified vendor to calibrate it.

5. Zero/Span checks and adjustments: Not evaluated; however, the Site Technician explained how these checks were done.

6. Control checks and their frequency: Adequate. This evaluation was based on a review of the Site Logs, Field System Audit and In-house System Audit forms (see Enclosure 4) to determine visit frequency. It was noted that the remote sites were not being visited as frequently as directed in WI-MET-002. This potential quality affecting condition was corrected during the audit. See Concerns Corrected During the Audit for details.

7. Preventative and Remedial Maintenance: Adequate - Records indicate that individual instrument performance checks were done on a regular basis, and remedial maintenance was done in a timely manner. The Site Technician competently demonstrated performance checks on wind direction and speed indicators (40-mile Wash) and on a precipitation gauge (Main Tower).

8. Recording and validating data: Adequate - Meteorological data are recorded on magnetic tape with a strip-chart backup. Missing digital data can be filled in through a process which digitize the strip chart data although this is not done on site. Data collected prior to February 1991 had been sent to SAIC, San Diego for processing and validation. Data collected from February 1991 to the time of the audit was stored on site. No data validation is performed on-site. Data validation is on hold until a Software Quality Assurance Plan (SQAP) is implemented at the Project Office in Las Vegas. This technical evaluation is based on interviews with Grover Prowell, Paul Fansioli, and Joe Conway. Also, the most recent Field System Audit was reviewed (see Enclosure 4).

9. Data Quality Assessment (precision and accuracy): Indeterminate - Data handling procedures are independently audited during an In-House System Audit (see Enclosure 4) and individual instruments are vendor-calibrated annually. Weekly performance checks provide additional confidence in instrument worthiness. However, it is difficult to assess data quality because neither statistical summaries nor data interpretation is being performed at this time.

Because no data analysis, validation, or data reduction into statistical products is currently being done, the effectiveness of the Meteorological Monitoring Program is indeterminate. The overall effectiveness can be judged only through a review of the collection and storage of raw data. All data summary/interpretation activities are on hold pending the implementation of the Software QA Plan recently approved.

The data being collected is for the express purpose of supporting the radiological monitoring program. Specifically, these inputs will be used to compute a concentration parameter to be used in dispersion modeling. Currently, data is not in a statistical format and data interpretation activities have not yet commenced. Thus, dispersion modeling is on hold. Consequently, the effectiveness of the Meteorological Program is indeterminate at this time.

Radiological Monitoring

The Radiological Monitoring Program was technically reviewed for consistency and relevance to generally accepted methods for a program of this type. Prior to the audit certain documents were reviewed in order to prepare for the actual audit. Documents reviewed are listed in Enclosure 4.

Personnel were interviewed and activities observed in order to determine the effectiveness of the program. The initial interview with the Radiological Monitoring group manager established the base upon which the technical portion was conducted. The position descriptions, required qualification and training file was reviewed for each individual to verify their qualification. In-house training requirements were reviewed and each individual has completed extensive training relative to their position. Further, the training records are located in two different locations, one being the local records center and the other is the training center.

The full complement of staff has a very good understanding of the overall objectives of the department and feel that the training received on project is adequate for the duties they are performing. Each individual is performing duties covered by his/her position description. As questions were posed to the staff and/or activities are undertaken the very first thing each individual did was to refer the his/her Radiological Monitoring Instruction Manual. This manual contains the WIs. This point clearly demonstrates that indoctrination to always refer to procedures prior to performing activities is well implemented.

A trip to the field was conducted to review field facilities and activities. The Field Radiological Monitoring Facility was found to contain the appropriate manuals to perform the necessary tasks. These manuals were being properly maintained and current. Instruments were available and equipment/instruments were tagged,

and calibration was current. Radioactive sources were sufficiently controlled and the cabinet well marked. Effectively the lockup was under three different keys, the facility lock, the control cabinet (where the access log and key to source cabinet is kept), and finally the source cabinet itself.

Continuous Air Sampling Station, Number 10, was evaluated. The Radiological Technician explained and demonstrated what activities took place and how those activities were documented. The air sample was placed in a plastic bag and attached to the appropriate paperwork, which was completed in the field and taken back to the facility. These samples are kept under lock for control and protection, prior to be sent to an independent laboratory for analysis. Due to a delay in procurement, no samples have been sent out for analysis. It is anticipated that in the future, samples will be sent for analysis on a quarterly schedule.

The opinion of the Technical Specialist is that the Field Radiological Monitoring Group personnel possess the required qualification and knowledge to perform the activities identified within their position descriptions and that the activities performed in support of the Radiological Monitoring Program are being implemented effectively.

4.4 Summary of Deficiencies

The YMQAD Audit Team identified fourteen (14) deficiencies during the audit. All but two (2) two of these deficient conditions were resolved prior to the post-audit conference. The unresolved deficiencies identified problems with the adequacy of calibration documentation and the closure of a SAIC Quality Finding Report (QFR) prior to completion of all the corrective actions. These unresolved deficiencies were documented on CARs YM-91-063 and YM-91-064. A synopsis of the CARs and of the twelve (12) deficiencies corrected during the audit are presented in Section 6.0 of this report. An information copy of each CAR may be found in Enclosure 5.

5.0 AUDIT MEETINGS AND PERSONNEL CONTACTED

The pre-audit conference was held at SAIC on June 17, 1991. Daily meetings were held with SAIC management and staff to discuss audit results from the previous day. Daily meetings were also held with the audit team and observers to discuss audit activities and potential conditions adverse to quality. The audit concluded with a post-audit conference held at SAIC on June 21, 1991. Enclosure 1 identifies audit team members and observers. Enclosure 3 identifies personnel contacted during the audit and those who attended the pre-audit and post-audit conferences.

6.0 SYNOPSIS OF CORRECTIVE ACTION REQUESTS AND DEFICIENCIES CORRECTED DURING THE AUDIT.

6.1 Corrective Action Requests

YM-91-063 Information as contained on the M&TE List did not agree with what actually existed. Examples include: instruments requiring annual calibration did not require calibration, instruments not at location noted on list, equipment shown as active on the list when really was inactive, etc.

YM-91-064 QFR 91-016 was closed; however, evidence noted during this audit found that the deficiencies still existed.

6.2 Concerns Corrected During the Audit

The following deficiencies were considered isolated occurrences, and requiring only remedial action, were corrected during the audit:

1. QAPD, Rev 3, Section 20, Subsection 20.3 states in part: "The use of Technical Procedures is one method by which scientific investigations are controlled . . . . Technical procedures shall provide for the following as appropriate:

   a. Requirements, objectives, methods, and characteristics to be tested or observed;

   b. Prerequisites such as calibrated instrumentation, adequate equipment, readiness of facilities, controlled environments, etc;

   c. Mandatory verification points, as applicable;

   d. Acceptance and rejection criteria including required levels of accuracy and precision, as appropriate;

   e. Methods of documenting or recording data and results including precision and accuracy;

   f. Methods of data reduction if it is part of a test, or reference to procedures containing the information;

   g. Provisions for ensuring that perquisites have been met, special training or qualification requirements for personnel performing scientific investigations are met, and personnel responsibilities are defined;

   h. Procedures are detailed to the extent that investigation can be repeated by personnel who are skilled in the state of the art of the field of investigation without recourse to originator(s);

i. Potential sources of uncertainty and error in technical procedures are controlled as required; and

j. Suspect input data are identified and controlled as required."

Contrary to the above, SP 1.30, "Preparation, Review and Approval of Work Instructions" only addresses items b, d, and h above. This condition was resolved through review of SP 2.2 which was found to address the remainder of the requirements.

2. SP 2.4, Rev. 3, para. 5.1.5.2, requires the M&TE custodian establish a history file for each M&TE device containing certificates of calibration . . . .

Contrary to this requirement, history files for 3 of 9 M&TE devices sampled did not contain certificates of calibration. The devices were wind speed sensor (ID# 03134), Wind Speed/Wind Direction Sensor (ID# 09312), and Barometric Pressure Transducer (ID# 17911). All of these instruments are active in the field and on an annual calibration cycle. The three missing certifications of calibration were found; however, the problem was indicative of other calibration problems and was subsequently documented in CAR YM-91-063.

3. SP 1.23, para. 5.7.1 states: "After discovery of an indeterminate or nonconforming condition, but prior to affecting correction of the condition, initiate a Conditional Release, Form T&MSS/190/1 providing . . . ." Paragraph 7.1 states: "Submit a record package in accordance with reference 3.1.4 containing the following . . ., (a) . . ., (b) T&MSS/190/1 Conditional Release."

Contrary to the above requirements, the packages for Non-conformance Reports (NCRs) 91-002 through 91-007 did not contain the copies of the Conditional Releases which were referenced in the NCRs. Copies of the missing conditional releases were found and placed in the files for all the NCRs.

4. OP 1.1, para. 5.6, item #2 states: "Ensure that any observations/minor inconsistencies are trended in accordance with OP 1.6, Trend Analysis." Contrary to the above, observations are not being trended. Prior to the completion of the audit, OP 1.1 was revised to delete the requirements for trending observations.

5. T&MSS QAPD, Rev. 2, para. 6.3 states in part: "All changes to documents except for 'minor' changes shall be reviewed and approved by the same organization that approved the original."

SP 1.65, Rev. 1, para. 5.1.9 states: "Stamp the first page of the VM/VTI with an approval stamp that contains, at a minimum, signature/date to document, prior to issue, the review by the technical reviewer and approval by the Department Manager and QA."

All the vendor manuals already approved to be controlled documents have been declared uncontrolled documents. However, the governing implementing procedure does not explain or permit this type of action. On May 23 and June 19, 1991, instructions were given to Document Control personnel to remove all vendor manuals in use. This action was done by a Document custodian using the Controlled Document Insurance Authorization Form T&MSS/030/1 without QA concurrence and indicating that 3 of those forms were not QA related (QA:N/A). To rectify the above, an interoffice memorandum (IOM) was written dated 06/20/91 by the Rad/Met Monitoring Department Manager to the SAIC QA Manager indicating direction to decontrol all vendor manuals identified on pages 1 and 2 of the attachment to the IOM. Concurrence for this action was obtained from the QA Manager.

6. WI-MET-002, para. 4.1.1, Site Visit Procedure states: "Determine the operational status of the system at least twice each week."

   Contrary to the above, the site technician is visiting the remote sites (40-mile wash, Yucca Mountain, Coyote Wash, and Alice Hill) only three times every two weeks. As a result of the above, WI-MET-002 was revised to delete the two-week requirement.

7. QARD, Sect. 18.1, indicates that audits shall include technical evaluations of the applicable procedures, instructions, techniques and items as well as programmatic compliance.

   Contrary to the above, T&MSS implementing procedures lack definition as to how this will be accomplished. To resolve the above, OP 1.1 was revised to include requirements for technical reviews during audits. Written justification was provided as to the adequacy of technical reviews performed on previous audits.

8. SP 1.35, Rev. 1, para. 7.1 states: "The custodian submits a record package containing the following to the Local Records Center (LRC) concurrent with or, at a maximum, within 10 working days of the approval signature date: (a) A copy of the approved T&MSS document, and (b) Form T&MSS/098/1."

   The SQAP, Rev. 0, was transmitted to the LRC contrary to the procedural requirements. Only a Draft of the SQAP was submitted with the applicable forms. The SQAP was approved on 05/31/91. On 06/20/91 a copy of the SQAP containing all the required approval signatures was submitted to the LRC.

9. SP 1.2, Rev. 5, para. 7.0 states: "The preparer of the QAPD submits a records package containing the following to the LRC concurrent with or, at a maximum, within 10 working days of the submission of the approved revision to the DCC: (a) Copy of the approved QAPD revision, and (b) Form T&MSS/098/1."

Contrary to the above, Rev. 2 of the QAPD package was found at the LRC containing only the reference forms. Revisions 1, 3, and 4 were not found. On 06/20/91, Revisions 1, 2, 3 and 4 of the QAPD were officially submitted to the LRC which resolves the noted conditions.

10. OP 1.6, Trend Analysis, para. 5.1.11 indicates the QA Manager reviews, approves and issues the Trend Analysis Report with minimum distribution to the following individuals: (a) . . ., (b) . . ., and (c) Project Office Quality Assurance Division Director.

    Contrary to this requirement, there is no formal system which will assure that the specified documents (i.e.; Interoffice Memorandum) will be distributed to those individuals outside of the SAIC (T&MSS), (i.e., the Director of P.O. QA). Example: During the audit it was noted that the distribution list of the Quality Deficiencies Trending Report dated 04/29/91 did not contain the Project Office QA Division Director's name and there was no objective evidence substantiating that a copy had been hand been sent to that office. During the audit a copy was hand carried to the Directors office. Prior to completion of the audit, a formal transmittal letter dated 05/10/91 from the SAIC QA Manager to D. G. Horton was provided which reflected the formal transmittal of the SAIC Quality Deficiency Trending Report for the period of 07/01/90 through 03/31/91.

11. SP 1.30, Rev. 3, paras. 5.4.1, 5.4.2, and 5.4.3 requires in part: The staff member prepares a written statement providing justification for cancellation of a WI that is no longer needed. Obtain approval signatures of the APM responsible for the WI and the SAIC QAM. Upon request of approval, submit to the DCC.

    Some WIs have been canceled without following procedural requirements (i.e., WI-MET-004 Rev. 0, and WI-AQ-012 Rev. 0) were canceled on February 14, 1991; however, the DCC as well as the LRC do not have all the pertinent documentation required for cancellation of those WIs. Pertinent QA records were produced and transmitted to the LRC in order to meet the requirements for voiding the two (2) WIs.

12. SP 1.1, Rev. 4, paras. 5.4.1 and 5.4.2 requires in part: The custodian prepares a written statement providing justification for cancellation of a procedure that is no longer needed and obtains approval on the written statement from the APM, and other APMs (for SPs only) and the QAM. Paragraph 5.4.3 requires: Upon request approval, the custodian submits the approval statement to the DCC. Paragraph 7.4 requires: The custodian submits a records package containing the justification of the cancellation to the LRC concurrent with, or, at a maximum, within 10 working days of submission to the DCC.

Some procedures have been canceled without the required documentation. Furthermore, QA records of those cancellations are missing (i.e., SP 1.20, Rev. 2 was canceled as of 05/28/91 and OP 1.13 and OP 2.5 were canceled as of 05/13/91). On 06/20/91 pertinent QA records for the above mentioned procedures were produced and transmitted to the LRC as required.

7.0 REQUIRED ACTIONS

Responses to the CARs listed in Section 6.1 of this report are required within 20 days of issuance as stated in Block 10 of each CAR and detailed in the CAR transmittal letter. Upon receipt of acceptable responses and satisfactory verification of all corrective actions, the CARs will be closed and SAIC will be notified in writing of the closure.

8.0 LIST OF ENCLOSURES

Enclosure 1: Audit Team Members and Observers
Enclosure 2: Audit Details
Enclosure 3: Personnel Contacted During the Audit
Enclosure 4: Objective Evidence Reviewed During the Audit
Enclosure 5: Information Copies of CARs

AUDIT DETAILS

The following is a summary of programmatic activities evaluated during the audit. A list of objective evidence reviewed by Criterion can be found in Enclosure 4.

1.0 Organization

The evaluation of organization was conducted to determine compliance to Section 1 of the SAIC Quality Assurance Program Description (QAPD) and supporting implementing procedures. The evaluation included questioning of key management SAIC personnel assigned to the Yucca Mountain Project (YMP) to determine the understanding and awareness of the organizational structure, lines of communication, authority, duties, and responsibilities. It was determined that all personnel identified in organizational charts understood procedural requirements and the organizational structure in place to implement the SAIC organizational requirements. Implementation of requirements was effective and timely. The following SAIC personnel were interviewed: Project Manager and Technical Project Officer, Deputy Project Manager, QA Manager, and Assistant Project Managers. Objective evidence evaluated in this area is identified in Enclosure 4.

2.0 QA Program

Evaluation of QA Requirements (Attachment "D" of the QAPD); Program Planning and Controls (SP 1.2); QAPD Management Review (SP 1.2); Interface Controls (Attachment "B" of QAPD); Program Requirements Matrices (SP 1.2); and Implementing Procedures and Instructions indicated that implementation of QAPD requirements through procedural control accomplished the intent of upper tier documents in an efficient and effective manner. No deficiencies were noted or recorded in these areas. Procedural compliance was satisfactory.

Evaluation of Readiness Reviews (SP 1.60) and Management Assessment (SP 1.32) indicated one (1) readiness review had been conducted in the area of Radiological Monitoring and one (1) Management Assessment had been conducted on June 20, 1990. The annual requirement for Management Assessments had not been met as of this date. SAIC had documented this deficiency on Quality Finding Report (QFR) 026. Rescheduling of this event until later this year was the proposed resolution of QFR 026. Other than this one incident, procedural compliance was found to be satisfactory.

QA Grading is required to be performed in accordance with AP 5.28. Procedures were found to be in place. Implementation was not evaluated at this time. Since implementation was not evaluated, effectiveness in this area is indeterminate.

Acceptance of data generated outside of the approved QA program is to be accomplished in accordance with AP 5.9. As of the time of the audit, no activity has been performed in this area. Implementation is considered indeterminate.

Evaluation of Personnel Selection and Training (SP 1.31) and QA Classification and Job Descriptions (SP 1.42) was accomplished by selecting three (3) SAIC personnel answering to each of five (5) managers. A total of 15 SAIC personnel files were selected for review (see Enclosure 4). Review of these records indicated personnel selection, training assignments, QA classification, education verification, experience verification and job descriptions were as required. Procedural compliance was considered satisfactory.

3.0 Design Control

T&MSS has no design input responsibility. Their design control activity is limited to review of the design inputs of other project participants. Due to this limited responsibility, the only SAIC procedures applicable to Design Control and the only ones examined during this audit were SP 1.62 (Peer Review) and SP 2.3 (Review of T&MSS Technical Documents).

Since December 1990, only one (1) Technical Review has been completed and processed by the SAIC Local Records Center. One other Technical Review was conducted in this time frame, however, the Technical Review package has not been compiled and forwarded to the LRC as a record. For this reason it was not reviewed. No Peer Reviews have been conducted since December 1990. The one Technical Review Package examined was (see Enclosure 4) complete with all details and signatures for planning, review and approval.

Even though no deficiencies were identified in this criterion, the implementation of Design Control, is considered indeterminate because only one sample was available for examination.

4.0 Procurement Document Control

Procurement activities for both Criterion 4 and 7 are addressed in procedures: SP 1.23, SP 1.25, SP 1.28, SP 1.65, OP 1.3, OP 1.4, and OP 1.7. The above procedures cover the general topics of planning, identification of technical specifications, vendor approval, receipt and control of purchased items and services, and changes to procurement document. Nine (9) purchase requisitions (see Enclosure 4) were specifically checked for the following attributes: processing in accordance with SP 1.28, inclusion on the Qualified Suppliers List, Receipt Inspection as appropriate, evidence of required QA reviews, control of vendor documentation, and control of changes to the original procurement documents. In addition a sample of non-quality procurement documents was taken for review to assure that they had been properly statused (see Enclosure 4).

The Procurement Document Review Log was checked for the nine (9) quality affecting procurement documents reviewed. The log reflected that the QA reviews had been performed. However, a problem was noted with PO 39-920022-65. The QA signature was after the purchase order (P.O.) date. The original copy of the P.O. was lost while in the concurrence cycle. Evidence was provided that no quality affecting work had been initiated, subsequently the QA review did precede any work.

All revisions of the Qualified Suppliers List (QSL) from the last audit were checked (see Enclosure 4). The QSL had been issued quarterly and revised as needed, included an index, and had the appropriate QA signatures. The Supplier Evaluation Reports (see Enclosure 4) were reviewed to verify compliance. Procedural implementation in this area was considered satisfactory.

5.0 Instructions, Procedures, Plans, and Drawings

The evaluation of this program activity consisted of a review of 20 Standard Practice Procedures, seven (7) Organizational Procedures, and 10 Working Instructions (see Enclosure 4) for compliance with SP 1.1, SP 1.2, SP 1.30, and SP 1.35. Several procedural deviations were observed during the audit which related to the process of approving procedures and other pertinent documents and their associated QA records. However, SAIC personnel were able to correct all of the noted deficiencies prior to the post-audit conference. Based on the noted problems, the effectiveness in this area was determined to be marginal.

6.0 Document Control

The evaluation of document control was conducted to determine compliance with the requirements of SP 1.34 and SP 1.65. Controlled documents such as the SAIC QAPD, Software QA Plan, SPs, OPs, and WIs were reviewed to assure identification and distribution of such documents were accomplished in accordance with the approved procedures. The results indicate that compliance in this area was satisfactory.

7.0 Control of Purchased Items and Services

For the most part, implementation of this section was performed while evaluating Criteria 4. SAIC uses two (2) procedures, SP 1.28 and SP 1.25 as the primary documents for implementation of Criterion 4 and 7, SP 1.28 implements Criteria 4, 7, 10, and 13; SP 1.25 implements 4, 7, 8, and 10. Procedurally the SPs flow to describe the process and frequently cross from one criteria to another. The SAIC (T&MSS) Requirements Matrix provides a reference, but it is not considered an effective way to accomplish the task. Although there were no CARs identified during the audit of Criteria 4 and 7. Criteria 4, 7, 10, and to a lesser extent Criteria 8 and 13 are a procedural collage. The SPs do not reference downward to the 5 applicable Organizational Procedures (OPs) that are an

integral part of the implementation. Following the procedures to understand which criteria is being implemented by a given step is difficult. In some instances, single paragraphs within the procedure are shown to implement requirements from more than one criterion. This condition could potentiality cause a problem in the future. Based on this concern, SAIC management agreed to provide additional clarification regarding the interface between criteria. Overall, implementation as observed during the audit in this area was found acceptable; however, due to this procedural concern, the area of Criteria 4 and 7 were identified as marginally effective.

8.0 Identification and Control of Items, Samples and Data

The evaluation of Criteria 8 was conducted to determine compliance with QAPD Section 8 and SP 1.25, SP 1.28, and SP 1.50. The review included an examination of the identification process for items, samples and data (see Enclosure 4) and a check for traceability. Implementation reviewed in this area was found to be in full compliance with the applicable procedures.

10.0 Inspection

Two procedures, SP 1.25 "Acceptance of Items and Services" and SP 1.2 "Possession, Procurement, Shipment, and Receipt of Radioactive Materials" are used by SAIC to implement the requirements of this element. The certification of the only inspector was verified. The activities related to the implementation of the procedure requirements were verified which included the review of six (6) Receiving Inspection Records, the inspection and hold areas, qualifications of Suppliers, the use of "accept" and "hold" tags. To the extent audited, Criteria 10 is being implemented effectively.

12.0 Control of Measuring and Test Equipment

Evaluation of control of measuring and test equipment was performed by review of the M&TE Equipment List, component history files, documentation for designation of standards, storage practices for standards and equipment, labeling of equipment, and requests for extensions of equipment calibration frequencies.

In addition to reviewing the M&TE Equipment List for compliance to SP 2.4, a sample of nine (9) items was selected and component history files for these items were examined. This examination included a review for required calibration certificates and documentation of traceability in accordance with SP 2.4. The evaluation of M&TE also included a review of six (6) pieces of equipment in the field to verify that equipment status, location, and labeling was in accordance with the M&TE Equipment List and SP 2.4. Deficiencies identified during this evaluation were documented on CAR YM-91-063.

It should be noted that this is the second time the OCRWM audit team has found this area ineffective. The first time was on Audit 90-08. Also, this area has been audited extensively by SAIC's internal audit program and each time it has been found ineffective. Management needs to take strong measures to bring this area into compliance.

13.0 Handling, Shipping and Storage

The evaluation of Criteria 13 was conducted to determine compliance with the SAIC QAPD, Section 13 and SP 1.12 and SP 1.28. Individuals interviewed in this area were knowledgeable of the process and applicable requirements. Though implementation was limited, areas reviewed (see Enclosure 4) were found to be in compliance with the applicable procedures.

14.0 Inspection, Test and Operating Status

Evaluation of Inspection, Test, and Operating Status was conducted by assuring that procedures controlling these activities reflected T&MSS QAPD requirements and verifying compliance of T&MSS personnel to applicable procedures. With exception of the deficiencies identified under criterion 12 regarding calibration labeling, procedural adequacy and implementation for criterion 14 were found to be satisfactory.

15.0 Control of Nonconforming Items

The auditing of this element consisted of the verification of the implementation of quality assurance procedure SP 1.23 "Nonconformance Reporting." The activities related to 14 of 26 nonconformance reports (NCRs), which had been developed during the calendar year to date, were reviewed and one nonconforming item was noted. This was corrected during the audit.

It was established that an NCR Report Log is being adequately maintained. The proper forms were used and the procedure requirements were implemented, and hold tags and a hold area were used. Where conditional releases were issued the requirements of the procedure was followed. NCR record packages were complete and were submitted to the LRC within the required time frame. To the extend audited, Criteria 15 is being implemented effectively.

16.0 Corrective Action

The verification of the implementation of the requirements of this element was performed by reviewing the implementation of quality procedures SP 1.17, "Deficient Reporting System," and OP 1.6, "Trend Analysis." It was established that a QA Deficiency Reporting System Log is being effectively maintained. The documentation of four (4)

Management Corrective Action Reports (MCAR) and 20 Quality Finding Reports (QFR) were in order except for one (1) nonconformance which was reported as CAR No. YM-91-064. Responses to the MCARS and QFR's were within the time limit required. It was verified that Trend Analysis information is being assimilated and a Trend Analysis Report is issued in a timely manner.

The effectiveness of the implementation of SP 1.22, "Stop Work Order," could not be evaluated since no Stop Work Orders have been issued to date. To the extent audited Criteria 16 is being implemented effectively.

17.0 QA Records

Evaluation of six (6) QA records packages and other objective evidence (see Enclosure 4), was reviewed to determine compliance with SP 1.36. Packages were reviewed for required information, completeness, legibility, authentication and transmittal documentation. In addition, records were retrievable, access was controlled, and storage and processing was found to be in compliance with the procedure.

18.0 Audits

The evaluation of Criteria 18 was conducted to determine compliance with SAIC QAPD, Section 18, and OP 1.1, OP 1.2, OP 1.3, and OP 1.5. During the review, it was found that the following requirements were not being implemented as required by the procedure: (1) there was no evidence of trending of observations, (2) no evidence that the QAPD addressed requirements for technical evaluations to be performed during audits, and (3) no evidence that Leads were being identified for surveillances. All of these items were corrected during the course of the audit. All other aspects of implementation were considered satisfactory.

19.0 Software Quality Assurance

The evaluation of Criteria 19 included a review for compliance with the SAIC Software Quality Assurance Plan (SQAP), Rev 0. Procedures to implement the SAQP were approved but had not been issued as of the time of the audit. A review of implementing procedures indicated a conflict between SP 1.52 (quality affecting) and SP 1.45 (non quality affecting). The procedures served a parallel purpose in the initial evaluation of software. In addition, a review of the SQAP indicated a failure to incorporate two QARD requirements (i.e., justification for not performing software validation and the basis for identification of a software deficiency in accordance with Section 16 of the QARD). Objective evidence reviewed in this area is noted in Enclosure 4. All deficiencies were corrected during the audit. Since implementation had not occurred, the area was found to be indeterminate.

20.0 Scientific Investigation

Meteorological Monitoring:

The evaluation of Criterion 20 in the area of Meteorological Monitoring was conducted by attempting to evaluate T&MSS planning documents and procedures applicable to monitoring activities for compliance to QAPD requirements. However, it was found that the SAIC planning document for Meteorological Monitoring activities (Scientific Investigation Implementation Package For Meteorological Monitoring) was not yet approved and the only approved documents were SAIC Work Instructions WI-MET-001,002, and 003. This deficient condition regarding lack of an approved planning document was previously recognized by SAIC QA and documented on MCAR No. 91-002. An evaluation of SAIC activities associated with data gathering, storage, equipment maintenance, performance auditing, and calibration checks for compliance to approved WIs was conducted and found to be satisfactory. However, because no data review, analysis, or reporting has been performed by SAIC, effectiveness of controls for this criterion could not be determined.

Radiological Monitoring:

The Radiological Monitoring activity was appraised by reviewing the Environmental Investigation Implementation Package for Radiological Monitoring, "TMSS/RFPD-91/003," Rev. 0, and the Scientific Investigation Package (SIP) for Radiological Monitoring, "T&MSS/RFPD-91/003," Rev. 0, for Compliance to SAIC procedure SP 2.2, Scientific Investigation Control. No deficiencies were identified.

The Revision 0 record package was completely processed by the LRC and microfilmed. The Revision 1 record package was still in hard copy state but had been accepted by the LRC. Revision 1 of the SIP was being implemented in the Las Vegas office and at the Yucca Mountain Site in compliance with all requirements. Data collected to be processed as records were safely stored and protected, implementing procedures called WIs were all controlled and the manuals up to date. Training of investigators and supervisors had been completed prior to start of work. Measurement and Test Equipment was not specifically in the scope of the auditor examining this area but that equipment which was viewed during this portion of the audit was all properly labeled and adequately protected and controlled.

All requirements for scientific investigation which are listed in the OCRWM QARD are addressed in procedure SP 2.2, Scientific Investigation Control and also included in "TMSS/RFPD-91/003." All activities being implemented in Radiological Monitoring are judged to be in compliance with SP 2.2 and the Scientific Investigation Package TMS/RFPD-91/003.

PERSONNEL CONTACTED DURING THE AUDIT

Name	Organization	Per-Audit Meeting	During Audit	Post-Audit Meeting
W. Andrews	SAIC/TSD	X	X	
K. Beall	SAIC/APM	X		X
R. Bostian	SAIC/APM	X		X
T. Caselli	SAIC		X	
P. Chadwick	SAIC/TD		X	X
D. Chandler	SAIC/APM	X		
J. Clark	SAIC/QAL	X	X	X
J. Conway	SAIC		X	
L. Croft	SAIC/EFP	X		
G. Donaldson	SAIC		X	
J. Estella	SAIC/STAFF		X	X
J. Feedar	SAIC		X	
P. Fransioili	SAIC		X	
K. Gilkerson	SAIC/QA	X	X	
A. Gil	SAIC		X	
R. Gonzales	SAIC/APM	X		X
T. Grant	SAIC		X	
J. Harper	SAIC/QA	X	X	X
M. Harris	SAIC/APM	X	X	X
G. Heaney	SAIC		X	
R. Helms	SAIC/STAFF	X		
K. Hodges	SAIC/QA		X	X
D. Hulbert	SAIC/STAFF	X		
K. Johnson	SAIC/QA	X	X	X
C. Jorgenson	SAIC		X	
D. Keller	SAIC		X	
R. Kimble	SAIC/PS	X		
J. King	SAIC/APM	X		
L. Lee	SAIC		X	
F. Loftus	SAIC		X	
J. Low	SAIC/ISD	X		X
M. Lugo	SAIC/APM	X		X
J. Narron	SAIC		X	
J. Nelson	SAIC/PM	X	X	X
S. Nolan	SAIC		X	
R. McCarthy	SAIC/TD	X		
W. McNabb	SAIC/PM	X		X
W. Osenbaugh	SAIC		X	
K. Prince	SAIC/RFPD	X	X	X
G. Prowell	SAIC		X	
B. Reinderman	SAIC		X	
J. Ryan	SAIC/PRO	X		
K. Schwartzrabur	SAIC/ISD	X	X	
K. Shenk	SAIC		X	
S. Simms	SAIC/FTS	X		
L. Smith	SAIC		X	

Name	Organization	Per-Audit Meeting	During Audit	Post-Audit Meeting
D. Sorensen	SAIC/R-EFPD	X	X	X
R. Spooner	SAIC/QA			X
T. Tait	SAIC/APM	X		
A. Temple	SAIC		X	
C. Tung	SAIC		X	
P. Warner	SAIC/RMD	X		X
D. Witham	SAIC		X	
J. Statler	SAIC/DM	X		
M. Voegeh	SAIC/DPM	X		

OBJECTIVE EVIDENCE REVIEWED DURING THE AUDIT

CRITERIA 1

1. SAIC Interoffice Memo (RS Bostian to Staff dated 06/14/91)

CRITERIA 2

1. Attachment "A" of QAPD
2. Attachment "B" of QAPD
3. QAPD approval letter signed by YMPO QA
4. QA Requirements Matrices
5. Review and Approval pages of 49 SPs, 12 OPs, 9 WIs
6. Records Lists (Section 7.0 Records) of SPs
7. Indoctrination/ Training folders for the following:

M. Gloria	C. Flum
P. Standish	E. McCann
G. Donaldson	C. Tung
K. Shenk	P. Warner
J. Low	J. Ryan
J. Ashton	W. Frey
V. Rochester	

CRITERIA 3

Technical Review Package - T&MSS/RFPD-91-003 dated 06/10/91, Accession # NNA 910214.0165

CRITERIA 4 AND 7

1. PR 5581262 - PO 14-910105-65
   PR 5602927 - PO 14-910103-65
   PR 5602937 - PO 39-920022-65
   PR 5581047 - PO 14-910343-94
   PR 5628518 - PO 14-910343-01-94
   PR 5602935 - PO 14-910346-94
   PR 5628511 - PO 39-920104-94
   PR 5679847 - PO 39-920243-94
   PR 5628532 - PO 39-920244-94

2. QSL: 90-04, RO-5; 91-01, RO-3; 91-02, RO-1

3. Non-QA Purchase Orders:

PO 39-920058-94	Workstation equipment
PO 39-920008-16	Reproduction Supplies
PO 39-920080-94	Telephone/Computer Outlets

PO 39-920206-94 Copies of Report Univ of Mich.
PO 39-920108-16 Computer Interface
PO 39-920021-16 Telecommunications Equipment

4. Supplier Evaluation Reports
Atmospheric Instrumentation Reports
Climatronics Corp.
John Fluke Manufacturing Co.
Packard/Canberra
RAD Electronic, Inc.
Tech/Ops Landover, Inc.
US EPA

CRITERIA 5 & 6

1. Standard Practices:

SP 1.2, R5
SP 2.3, R3
SP 1.1, R5
SP 1.31, R4
SP 1.64, R0
SP 1.28, R4
SP 1.14, R1
SP 1.22, R1
SP 1.23, R3
SP 1.12, R1
SP 1.3, R2
SP 1.21, R1
SP 1.42, R3
SP 1.39, R1

2. Organizational Procedures:

OP 1.1, R2
OP 1.5, R2
OP 1.14, R0
OP 2.5, R0
OP 1.4, R2
OP 1.9, R0
OP 1.13, R0

3. Interim Change Notices (ICN)

SP 1.1, R5, ICN #1
SP 1.28, R4, ICN #1

4. *Canceled Procedures:*

SP 1.8, R0, Canceled on 05/02/91
SP 1.43, R0, Canceled on 11/19/90
SP 1.20, R2, Canceled on 05/28/91

5. Work Instructions:

WI-ISD-006, R2
WI-MET-002, R1/ICN1
WI-RM-148, R1
WI-RM-156, R1
WI-MET-001, R1
WI-REC-001, R2
WI-RM-149, R1
WI-RM-801, R3

CRITERIA 8

1. Sample Transfers: ST-A25-052291-4, ST-A25-041891, ST-A25-041091-2, ST-A25-930191-1, ST-A25-020691-2, and ST-A24-061891-4.

2. NF-CAS: 10 Barcode 03087, 10 Flow Totalizer Barcode 03040, 6 Barcode 03125, 6 Flow Totalizer Barcode 03040.

3. NF: 11 CAS Barcode 03126, 11 CAS Flow Totalizer Barcode 03001.

4. Cassettes at: Coyote Wash YMP (Start 02/20/91-Stop 02/27/91), Alice Hill (Start 02/20/91-Stop 02/27/91), and Yucca Mountain (Start 02/20/91-Stop 02/27/91).

5. Strip Charts Main Site YMP: (Start 06/06/91-0513 PST-Stop 06/12/91 0891 PST Barometric Pressure), (Start 05/17/91 0628 PST-Stop 05/22/91 1240 PST Dewpoint), (Start 04/25/91 0525 PST-Stop 05/02/91 0413 PST 10M Wind Speed, and (Start 04/25/91 0526 PST-Stop 05/02/91 0423 PST Delta Temperature.

CRITERIA 10

1. Receiving Inspection Reports:

   14-910074-1A
   14-910075-1A
   14-910343-1C
   39-920011-1A
   39-920013-1A
   39-920227-1A

2. T&MSS QA Qualified Suppliers List (QSL) Effective date 91-02, Rev. 0, April 4, 1991.

3. Certification Record (T&MSS/144/1 Form) for James Narrow, Level III Receiving/Source Inspector.

CRITERIA 12

1. M&TE Equipment List.

2. Memo to M&TE Custodian dated 2-5-91 designating Calibration Standards.

3. Memos approving calibration frequency extensions for Wind Speed/Wind Direction Sensors 0912 & 0913.

4. Calibration History Files for the following equipment:

   Balance 03310
   Barometric Pressure Transducer 17911

Digital Multi-Meter 16402
Oscilloscope 09068
Relative Humidity Sensor 17951
Temperature Sensor 17924
Wind Direction Sensor 03130
Wind Speed Sensor 03134
Wind Speed/Wind Direction Sensor 09312

5. The following equipment in the field:

Balance 03310
Digital Multi-Meter 16402
Oscilloscope 09068
Precipitation Gage 17913
Wind Speed Sensor 03134
Wind Direction Sensor 03130
Barometric Pressure Transducer 16429

CRITERIA 13

1. Quality Assurance Receiving Log.

2. Purchase Order 39-920227.

3. Purchase Order 39-920013.

4. Equipment Related to Order 39-920227.

5. Equipment Related to Order 39-920013.

CRITERIA 14

1. Nonconformance Report 91-021, Rev. 0.

2. The following tagged equipment:

Trace Level Radon Detector S/N 536
Trace Level Radon Detector S/N 537
Environmental Products Flow Meter S/N 633
Field Equipment listed under Criterion 12

CRITERIA 15

1. Nonconformance Reports:

NCR 91-001 thru NCR 91-009
NCR 91-013
NCR 91-016
NCR 91-017
NCR 91-018
NCR 91-021

2. SAIC Interoffice Memos

   - J.B. Harper to J.H. Nelson, Issuance of Management Corrective Action Reports, March 15, 1991.
   - D.K. Chandler to J.B. Harper, Response on "Stop-work" rational for audit A91-03, March 20, 1991.
   - Harper to J.H. Nelson, Audit Report A91-03, March 28,1991.
   - R.J. Spooner to J.B. Harper, Conditional Release Forms NCR91-002-1 thru NCR91-008-1.

3. T&MSS Hold Tags: Serials CR91-001-1 thru CR91-001-1, CR91-013-1, CR91-016-1 thru CR91-018 and CR91-021-1.

4. Nonconformance Report Log

CRITERIA 16

1. QA Deficiency Reports:

   Management Corrective Action Reports: .MCAR-91-0001 thru MCAR-91-004.

2. Quality Finding Reports: QFR 91-001 thru 91-020.

3. Trend Analysis Reports:

   - J.B. Harper letter to distribution, Subject: T&MSS Trending Analysis Report for May 1, 1990 thru October 31, 1990 dated 11/13/90.
   - J.B. Harper letter to J.H. Nelson Subject: Quality Deficiencies Trending Report dated April 20, 1991.
   - J.B. Harper letter to D. Horton Subject: Quality Deficiencies Report dated May 10, 1991.
   - QA Deficiency Report Status Log.
   - QA/MCCAR Status Report 6/19/91.
   - T&MSS QA Audit A91-03 Report.
   - MTE&ME Equipment List dated June 19, 1991.

CRITERIA 17

1. Six QA records packages consisting of 90 pages.
2. Twelve Record Source Transmittal Forms T&MSS 137/2 (RSTF).
3. Twelve Record Source Transmittal Forms T&MSS 010/2 (RSTF).
4. Record Tracking Number Log (Not QA).
5. Ten Record Segments, TM-0311, TM-0302, TM-0299.
6. Three Special Instructions Forms T&MSS 009/1.
7. Two Bounce Backforms T&MSS 012/1.
8. UL Label on 1 hr fire rated cabinets.

CRITERIA 18

1. First Quarter T&MSS Surveillance Schedule & transmittal memo dated 01/07/91.
2. Second Quarter T&MSS Surveillance Schedule & transmittal memo dated 04/02/91.
3. T&MSS 1991 Internal Audit Schedule dated 12/10/90.
4. T&MSS 1991 Revised Internal Audit Schedule & transmittal memo dated 05/31.91.
5. Interoffice memo dated 02/21/91 for audit report A 91-02.
6. Interoffice memo dated 03/28/91 for audit report A 91-03.
7. Interoffice memo dated 04/30/91 for audit report A 91-04.
8. Audit Report A 91-06 dated 06/07/91.
9. Lead Auditor Qualification/Certification for: Steven P. Nolan, Kristi A. Hodges, Robert J. Spooner, and Kenneth O. Gilkerson.
10. Qualified Suppliers List 91-02, Rev. 2.
11. Supplier Evaluation Report, RAD Electric Inc. dated 03/01/91.
12. Audit Package A-91-001, A-91-002,A-91-003 and A-91-004.
13. T&MSS Surveillance Report Status Log.

14. Surveillance Packages 91-001, 91-002, 91-003, 91-005 and 91-007.

15. Supplier Evaluation Reports: Teledyne Isotopes dated 01/28/91, Hi-QA Environmental dated 03/15/91, Kurz Instruments Inc. dated 02/22/91.

16. SER Notifications for: Teledyne Isotopes dated 01/30/91 and TMA/Eberline dated 01/25/91.

17. A-91-01S.

CRITERIA 19

1. 1991 Software Request Log.

2. Software Request and Classification Forms (SRCF) T&MSS/067/2.
   SRCF 005.91
   SRCF 011.91.TIMS
   SRCF 015.91.ADB.TIMS
   SRCF 018.91
   SRCF 023.91
   SRCF 029.91
   SRCF 033.91ADB
   SRCF 037.91
   SRCF 041.91
   SRCF 047.91

3. Software Inventory

CRITERIA 20

Meteorological Monitoring:

WI-MET-001, Meteorological Monitoring: Receiving, Acceptance Testing, and Performance Auditing of Meteorological Monitoring Equipment, October 2, 1990.

WI-MET-002, Meteorological Monitoring: Operation and Calibration Checks of Meteorological Monitoring Equipment, October 2, 1990.

WI-MET-003, Data Processing Instructions, March 7, 1991.

WI-MET-005, Maintenance and Repair/Rework, October 2, 1990.

Calibration Certificate - Rotronics Humidity Sensor.

T&MSS/107/2, Site Visit Checklist - Remote Sites.

T&MSS/110/3, Site Visit Checklist - Main Site.

T&MSS/134/2, In-House Meteorological Monitoring System Audit Form.

Reviewed audit performed October 30, 1990.

T&MSS/133/3, Meteorological Monitoring Station System Audit Form.
Reviewed system audits for: Coyote Wash - October 24, 1990
40-Mile Wash - October 23, 1990
Yucca Mountain - October 24, 1990
Alice Hill - October 22, 1990

T&MSS/087/1, Digital Data Interruption Log.
Reviewed form for June 10, 1991.

T&MSS/108/1, Data Transmittal Record.
Reviewed form for June 12, 1991.

Radiological Monitoring:

Radiological Monitoring Plan, Rev. 1, dated December 1990.

Scientific Investigation Package for Radiological Monitoring, Rev. 1, dated May 1991.

T&MSS Standard Practice Procedures:

a. SP 1.36, Records Management: Record Source Implementation, Rev. 3, effective 1/7/91.

b. ICN number 1, to the above document, effective 11/13/90.

c. SP 1.62, Peer Reviews, Rev. 0, effective 11/12/90.

d. SP 1.63, Procedure Implementation Index, Rev. 1, effective 03/29/91.

e. SP 2.2, Scientific Investigation Control, Rev. 1, effective 04/17/91.

f. SP 2.3, Review of T&MSS Technical Documents, Rev. 2, effective 04/19/91.

T&MSS Work Instructions:

a. WI-RM-101, Organization, Administration, and Responsibilities, Rev. 0, effective 09/14/90.

b. WI-RM-104, RFPD Records Handling, Rev. 1, effective 12/14/90.

c. WI-RM-113, Inventory Control, Rev. 0, effective 09/14/90.

d. WI-RM-114, System Evaluation, Rev. 1, effective 11/16/90.

e. WI-RM-116, Siting of Monitoring Stations, Rev 0, effective 09/14/90.

f. WI-RM-125, Computerized Data Bases, Rev 0, effective 09/14/90.

g. WI-RM-139, Alphanumeric Identification, Rev. 0, effective 09/14/90.

h. WI-RM-141, Source Control, Rev. 0, effective 09/14/90.

i. WI-RM-150, Transfer of Materials between Controlled Areas, Rev. 0, effective 09/21/90.

j. WI-RM-151, Release of Materials from Controlled Areas, Rev. 0, effective 09/21/90.

k. WI-RM-153, Shipping Radioactive Material, Rev. 0, effective 09/14/90.

l. WI-RM-190, Equipment Control, Rev. 0, effective 09/14/90.

m. WI-RM-197, Equipment Tag Out, Rev. 0, effective 09/14/90.

n. The following Work Instruction dealing with detection equipment operation and calibration:

WI-RM-201, Rev. 0, effective 09/14/90
WI-RM-202, Rev. 0, effective 09/14/90
WI-RM-203, Rev. 0, effective 09/14/90
WI-RM-204, Rev. 0, effective 09/14/90
WI-RM-205, Rev. 0, effective 09/14/90
WI-RM-206, Rev. 0. effective 09/14/90
WI-RM-207, Rev. 0, effective 12/21/90
WI-RM-208, Rev. 0, effective 12/21/90

o. WI-RM-310, Continuous Air Sampler Performance Testing, Rev. 2, effective 01/18-91.

p. WI-RM-312, Continuous Air Sampler Calibration, Rev. 1, effective 12/17/90.

q. The following Work Instructions dealing with Multi Channel Analyzers operation and calibration:

WI-RM-450, Rev. 0, effective 12/21/90
WI-RM-451, Rev. 0, effective 12/21/90
WI-RM-455, Rev. 0, effective 12/21/90
WI-RM-470, Rev. 0, effective 09/14/90
WI-RM-471, Rev. 0, effective 09/14/90

r. The following Work Instructions dealing with Thermometers, Barometers, Air Flow operation and testing:

WI-RM-601, Rev. 0, effective 09/14/90
WI-RM-602, Rev. 0, effective 09/14/90
WI-RM-604, Rev. 0, effective 09/14/90
WI-RM-610, Rev. 0, effective 09/14/90\
WI-RM-611, Rev. 0, effective 09/14/90
WI-RM-620, Rev. 0, effective 09/14/90
WI-RM-624, Rev. 0, effective 09/14/90
WI-RM-630, Rev. 0, effective 09/14/90
WI-RM-631, Rev. 0, effective 09/15/90
WI-RM-632, Rev. 0, effective 09/14/90

s. WI-RM-702, Near Fields Continuous Air Sampler Operation, Rev. 3, effective 04/04/91.

t. Radiological Monitoring Instruction Manual, Rev. 15, dated 06/01/91. This manual contains all the current work instructions for the FRED.

u. A MTE and ME list, dated June 17, 1991.

v. A copy of T&MSS Record Package for Quality Finding Report 91-006.

w. A listing of number classification assignments for sample identification.

x. Copy of two letters Prince to Sorensen, dated 05/16/91 and 05/28/91, canceling certain Work Instructions, justifying the cancellation and citing where requirements have been transferred.

y. Micro R. Meter — Model 19
PNL ID # 62596

Ludlum Count Ratemeter — Model 12
T&MSS ID # 03316
T&MSS ID # 09062
T&MSS ID # 03317

Insurment Source Check Data Sheet 01/16/91.
Memo WBS: JSM 91-12151 - subject Readiness Review
Training packages in LRC of K. Shenk, C. Tung, D. Witham, K. Prince, D. Sorensen prior to 05/24/91.

Individual training records of K. Shenk, C. Tunk, D. Witham, K. Prince, D. Sorensen from 05/24/91 to present.

INFORMATION COPIES OF CORRECTIVE ACTION REQUESTS

OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
U.S. DEPARTMENT OF ENERGY
WASHINGTON, D.C.

14CAR NO.: YM-91-063
DATE:
SHEET: 1 OF 2
QA
WBS No.: 1.2.9.3

CORRECTIVE ACTION REQUEST

1 Controlling Document	2 Related Report No.
SP 2.4, Rev. 3, Control of M&TE	YMP-91-06

3 Responsible Organization	4 Discussed With
SAIC (T&MSS)	D. Sorensen

10 Response Due	11 Responsibility for Corrective Action	12 Stop Work Order Y or N
20 days from iss.	D. Sorensen	N

5 Requirement:

T&MSS Procedure SP 2.4, Revision 3, "Control of Measuring and Test Equipment" states the following:

Paragraph 5.1.5.1

M&TE Custodian Establish an M&TE List (Exhibit 1).

NOTE

Information described on the M&TE List shall include, but not be limited to: identification number (DOE property number), manufacturer, model, description, calibration

6 Adverse Condition:

Contrary to Paragraph 5.1.5.1, a sample of nine items from the M&TE List dated June 17, 1991, indicated the following errors:

1. R/E Sensor 16403 indicated by the M&TE List to require an annual calibration when investigated, was found not to require calibration annually.

2. Temperature Sensor 16426 indicated by the M&TE List to require an annual calibration when investigated, was found not to require calibration annually.

3. Barometric Pressure Transducer 16429 shown to be located at the Coyote Wash remote site, was not found at this location.

7 Recommended Action(s):

Identify the remedial action(s) to be taken to correct the deficiencies noted in Block 6. Investigate the program process, activities or documentation to determine the extent and depth of similar deficient conditions on the CAR.

8 Initiator Date:	9 Severity Level -	13 Approved By: Date:
C. Warren, 6/21/91 C. Warren	1☒ 2☐ 3☐	QA Catherine Hampton 10/25/91

15 Verification of Corrective Action:

16 Corrective Action Completed and Accepted:	17 Closure Approved By:
QAR _____ Date _____	QA _____

OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT U.S. DEPARTMENT OF ENERGY WASHINGTON, D.C.

CAR NO.: YM-91-063
DATE:
SHEET: 2 OF 2

CORRECTIVE ACTION REQUEST (continuation sheet)

5 Requirements (continued)

frequency, equipment range and accuracy, calibration due date, location of the M&TE, and status. The status is identified as: A = active, R= out of service, C = out of calibration, M - missing, D = delinquent, I = inactive, S - inactive calibrated.

Paragraph 5.1.5.2

M&TE Custodian — Establish a history file for each M&TE device containing certificates of calibration and traceability to procurement documentation, calibration/performance audit data, work instructions, and any additional information as applicable.

Paragraph 5.3.2

Technician — Apply a T&MSS calibration label (Exhibit 3) to each piece of M&TE after it has been successfully calibrated.

6 Adverse Condition (continued)

4. Digital Multimeter 16402 indicated by the M&TE List to be active, was found in an inactive status in the field.

5. Oscilloscope 09068 indicated by the M&TE List to be active, was found in an inactive status in the field.

Contrary to Paragraph 5.1.5.2, a sample of nine history files indicated certificates of calibration were not included for the following items:

1. Wind Speed Sensor 03134
2. Wind Speed/Wind Direction Sensor 09312
3. Barometric Pressure Transducer 17911

Contrary to Paragraph 5.3.2, a sample of six items from the M&TE List indicated the following calibration labeling errors:

1. Precipitation Gage 17913 - No calibration label applied.
2. Wind Direction Sensor 03130 - Inaccurate Cal. Due Date Information.
3. Wind Speed Sensor 03134 - Inaccurate Cal. Due Date Information.

It should be noted that deficiencies similar to those documented above were identified on T&MSS Quality Finding/Management Corrective Active Action Report (QFR) 91-016. However, the QFR was closed during the audit.

7 Recommended Action(s) (continued)

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.

OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT U.S. DEPARTMENT OF ENERGY WASHINGTON, D.C.

14CAR NO.: YM-91-064
DATE:
SHEET: 1 OF 2
QA
WBS No.: 1.2.9.3

CORRECTIVE ACTION REQUEST

1 Controlling Document	2 Related Report No.
SP 1.37, Rev. 3	YMP-91-06

3 Responsible Organization	4 Discussed With
SAIC (T&MSS)	J. Harper

10 Response Due	11 Responsibility for Corrective Action	12 Stop Work Order Y or N
20 days from iss.	J. Harper	N

5 Requirement:

SP 1.37, Revision 3, Paragraph 5.3.1 states, "Verify that the corrective action commitments have been satisfactorily implemented and completed."

6 Adverse Condition:

QFR No. 91-016, Block 22 reported, as a statement of verification of corrective action, "...that the RFPD/FFPD Equipment List was revised to contain the correct data." This was dated 6/18/91. A review of a copy of the Equipment List dated 6/17/91 still contained incorrect entries which were noted during the DOE Audit 91-06 conducted at the NTS.

7 Recommended Action(s):

Identify the remedial action(s) to be taken to correct the deficiencies noted in Block 6. Investigate the program process, activities or documentation to determine the extent and depth of similar deficient conditions on the CAR.

8 Initiator Date:	9 Severity Level -	13 Approved By: Date:
A. F. Cocoros, 6/21/91 6/21/91	1☐ 2☒ 3☐	QQA Catherine Harper 10/25/91

15 Verification of Corrective Action:

16 Corrective Action Completed and Accepted:	17 Closure Approved By:
QAR _____ Date _____	QQA _____

OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT U.S. DEPARTMENT OF ENERGY WASHINGTON, D.C.

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CORRECTIVE ACTION REQUEST (continuation sheet)

7 Recommended Action(s) (continued)

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.