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

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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 (fitted with internal burners) at higher elevations be connected to propane tanks in winter 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 TEAM MEMBERS AND OBSERVERS

Responsibility	Individual
Audit Manger	James Blaylock
Audit Team Leader	Richard Maudlin
Auditors	Edward Cocoros
	Robert Constable
	Mario Diaz
	Catherine Hampton
	Charles Warren
	Wesley Williams
Technical Specialists	Richard Crawley (Lead)
	Dale Ambos
	Robert Cameron
Observers	Teak Verma (USNRC)
	John Buckley (USNRC)
	Bruce Mabrito (USNRC)
	Englebrecht Von Tiesenhausen Clark County, Nevada
	Susan Zimmerman State of Nevada
	Frank Nash TRW

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

2. Organizational Procedures:

OP 1.1, R2	OP 1.4, R2
OP 1.5, R2	OP 1.9, R0
OP 1.14, R0	OP 1.13, R0
OP 2.5, 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-001, R1
WI-MET-002, R1/ICN1	WI-REC-001, R2
WI-RM-148, R1	WI-RM-149, R1
WI-RM-156, 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/H 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☐	OQA Catherine Hampton 10/25/91

15 Verification of Corrective Action:

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

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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.

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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. P. Cocoros, 6/21/91 6/21/91	1☐ 2☒ 3☐	OQA Anthony M. Hangtaja 10/25/91

15 Verification of Corrective Action:

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

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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.