



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

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M E M O R A N D U M

DATE: July 13, 1990

FOR: John J. Linehan, Director, HLPD, Division of High-Level
Waste Management, M/S 4 H 3

FROM: John W. Gilray, Sr. DR - YMP

SUBJECT: YMP Site Report for the month of June, 1990

I. QUALITY ASSURANCE

A. QA Organization Change

DOE announced on July 9, 1990, a proposed Office of Civilian Radioactive Waste Management (OCRWM) reorganization. The YMPD under the management of Carl Gertz would report directly to the Director of OCRWM John Bartlett. Also it is proposed that Don Horton presently the YMP QA Division Director would be assigned the OCRWM Director of the Office of Quality Assurance reporting directly to John Bartlett. Don Horton's office would be located in Washington, D. C., and this office will be responsible for developing program quality assurance requirements and overseeing compliance; and for interface with the NRC regarding QA issues. This change of course would necessitate a new appointment for the YMP QA Division Director. This proposed organization is expected to become effective July 16, 1990.

102.
WM-1
NH03

B. Determining Items and Activities Under the Control of the YMP QA Program

The YMP Assessment Team completed the listings of items and activities which fall under the control of the YMP QA Program and these two lists have been approved by the YMP Quality Review Board with some minor exceptions. These lists were prepared in accordance with YMP Administration Procedure 6.17Q, "Determination of the Importance of Items and Activities" which meets NUREG 1318. The lists are expected to be officially released by August 1, 1990. The participants, after receiving these two lists, will be responsible for determining the extent the QA controls will apply to their activities and items and will follow YMP Administrative Procedure AP-5.28, "Quality Assurance Grading". It may be of benefit to the NRC to request the YMP to provide a presentation on the development, control and use of these two lists.

C. QA for New Site Characterization Work

The YMP QA organization is considering the merits of conducting QA surveillances in September of the quality related activities and procedures associated with the proposed Midway Valley trenching and Calcite Silica investigation at the Yucca Mountain. This would be followed up with readiness reviews in December of 1990 to determine if the YMP has the necessary plans, procedures, QA controls and resources to start scientific investigations at the Midway Valley and the Calcite Silica areas by January 1990 providing the site permits are issued or relief is granted. The YMP would invite the NRC and the State of Nevada to observe these surveillance and readiness reviews in order to assist them in determining the extent the YMP QA program is in place and acceptable to start the above work.

D. Quality Assurance Program Description Document (QAPD) and Quality Assurance Requirements Document (QAR)

The YMPD is awaiting NRC acceptance of the QAPD and QAR. The participants of the YMP are presently working under the controls of their approved QA program plans which meet YMP 88-9 Rev 2. The participants have copies of the QAPD and QAR and will not be instructed to update their procedures to meet these documents until final resolution and NRC comments and acceptance have been accomplished. However, the YMP QA procedures are being modified to be consistent with the QAPD and QAR.

E. YMP Trend Analysis Program

The QA procedures for implementing the YMP Trend Analysis Program should be officially released by the first part of August. A copy will be sent to Ken Hooks by this office as soon as it is released.

F. Management Internal Reviews of YMP Activities

As noted in the last monthly on-site report there has been two significant internal reviews (audits) performed by the YMP QA organization of the YMP procedures and quality related activities. The report documenting the first review has been previously submitted to NRC. The report on the second review is enclosed. In essence the review team determined that the procedures and implementation of the procedures were effective with the exception of 2 minor standard deficiency reports. The major QA activities reviewed were (1) scientific investigation and design control associated with Study Plans, (2) the determination of items and activities under the control of the QA program, (3) procurement document control, (4) control of purchased items and services, (5) identification and control of items, samples and data, (6) control of measuring and test equipment and (7) the handling, storage and shipping of items.

II. WASTE PACKAGE

The LLNL monthly status report for the month of June is enclosed. It is encouraged that comments and/or questions regarding the contents of this report be directed through this office for action and resolution in order to minimize the impact on the YMP.

There are no new issues that this office has identified that have not been brought to management's attention.

cc w/encs: K. Hooks, M/S 4 H3; J. Bunting, M/S 4 H3; J. Latz
w/o encs: R. Stein, C. P. Gertz, R. E. Loux, M. Glora,
G. Cook, D. M. Kunihiro, D. Weigel, R. E. Browning, M/S 4 H3;
R. Bernero, M/S 6 A4; H. Thompson, M/S 17 G21; H. Denton,
M/S 17 F2; S. Gagner, M/S 2 G5; L. Kovach, M/S NLS260



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Lawrence Livermore National Laboratory

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June 29, 1990

WBS 1.2.9
"QA: N/A"

Carl Gertz, Project Manager
Department of Energy
Nevada Operations Office
Yucca Mountain Project Office
P.O. Box 98518
Las Vegas, Nevada 89193-8518

SUBJECT: Yucca Mountain Project Status Report - JUNE 1990

Attached is the June Project Status Report for LLNL's participation in the Yucca Mountain Project.

If further information is required, please contact Deborah A. Kiraly of my staff at FTS 543-4571.

Sincerely,

Leslie Jardine

Leslie Jardine
LLNL Technical Project Officer
for YMP

LJJ
LJJ/DK/dk

cc:
Distribution

DISCLAIMER

The LLNL Waste Management Project cautions that any information is preliminary and subject to change as further analyses are performed or as an enlarged and perhaps more representative data base is accumulated. These data and interpretations should be used accordingly.

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**LAWRENCE LIVERMORE NATIONAL LABORATORY
(LLNL)
YUCCA MOUNTAIN PROJECT (YMP) STATUS REPORT**

JUNE 1990

1.2.1 SYSTEMS

1.2.1.1 Management and Integration

Staff continued development and review of software QA procedures and guidelines. The Software Configuration Management Specialist left LLNL to accept another position. Replacement action has been initiated.

1.2.1.2.4 Systems Engineering Implementation

Staff reviewed the draft Configuration Management Plan.

Staff attended the Technical Data Advisory Group (TDAG) meeting in Las Vegas on June 20.

1.2.1.4.2 Waste Package Performance Assessment

Staff transmitted review comments on June 28 to YMPO on NRC's draft report, "Phase 1 Demonstration of the Nuclear Regulatory Commission's Capability to Conduct a Performance Assessment for a HLW Repository."

Staff participated in the meeting of the National Academy of Sciences Panel on Coupled Processes in Menlo Park on May 30. The next meeting of the panel is scheduled for July 26-27.

Staff participated in a YMP working meeting at Lawrence Berkeley Laboratory (LBL), Berkeley on June 19 on volcanic scenarios. Our emphasis was on transient and long term changes in hydrology.

1.2.1.4.5 Geochemical Modeling and Data Base Development

Completed verification of the EQ3/6 data base. Issue of the data base to other participants is scheduled for late July.

1.2.2 WASTE PACKAGE

1.2.2.1 Management and Integration

LLNL received the Waste Package Design Requirements comment package including reviewer disposition of the proposed comment responses. Work is in progress to resolve those remaining open items.

Staff met with OCRWM staff at LLNL on June 5-6 to discuss the container design and the Waste Package Implementation Plan.

Staff participated in a Waste Package Panel Workshop at LLNL with the Surface Based Testing core group on June 7.

Staff participated in a Gas Flow Panel Workshop in Denver with the Surface Based Testing Core Group on June 22.

1.2.2.2 Near Field Environment Modeling and Testing

A response was made to the State of California SCP comments (CA comment #23).

Staff participated in an International Atomic Energy Agency (IAEA) Advisory Group Meeting on the Performance of Engineered Barriers in Deep Geological Repositories held in Vienna, Austria on May 21-25.

Completed PACs network input.

Chemical and Mineralogical Properties of the WP

Continued consideration and planning of natural analogue site work.

Completed the outline for the Preliminary Waste Package Environment Report. Continued work on revising the Study Plan.

Completed comment resolution for the paper "In Situ Observation of the Alpha/Beta Cristobalite Transition Using High Voltage Electron Microscopy."

Planning continued for discussions with LANL on mineral stability work and plans as part of the coordination of efforts.

Staff provided input emphasizing geochemical concerns to a working meeting in Berkeley on June 19 on volcanic scenarios.

Hydrologic Properties of WP Environment

Continued suction potential measurements of G-Tunnel Tuff.

Completed repair of the environmental chamber. Testing of the chamber is now proceeding.

Code development work on the prototype version of the V-TOUGH code continued with emphasis placed on testing the phase change criteria. Code development work commenced on pre- and post processors for three-dimensional modeling using the V-TOUGH code.

Continued work on the development of the Individual Software Plan for the V-TOUGH code and on activity plans. Continued work on refinements to the long-range plan for hydrology.

Completed second review of the paper by W. Lin, A. Ramirez and D. Watwood entitled "Temperature Measurements from the Prototype Engineered Barrier System Field Test."

Staff participated in the Unsaturated Zone Hydrology Peer Review in Las Vegas on June 4-6, and presented the paper "Modeling Unsaturated Hydrothermal Flow in the Near-Field Environment."

Staff presented a paper entitled "Engineered Barrier Systems and Canister Orientation Studies for the Yucca Mountain Project, Nevada," at the International Symposium for Unique Underground Structures in Denver on June 11-13.

Staff participated in the American Geophysical Union (AGU) Spring meeting and presented the paper entitled "Role of Water in Fractured Healing of Topopah Spring Tuff."

Staff presented the paper entitled "Hydrologic Impacts on Waste Isolation Yucca Mountain Prospective Repository Nevada" to the US/USSR Joint Conference on Environmental Hydrology and Hydrogeology in Leningrad on June 18-22.

Mechanical Attributes of the WP Environment

Continued resolution of study plan review comments.

Staff participated in the 31st US Rock Mechanics Symposium in Golden, Colorado on June 18-20.

Review comments have been received and incorporated into the paper entitled "In Situ Changes in the Moisture Content of Heated Welded Tuff Based on Thermal Neutron Measurements."

EBS Field Tests/ESF Test Design

Continued work on the final report for the G-Tunnel Prototype Test.

1.2.2.3 Waste Form and Materials Testing

Waste Form Testing - Spent Fuel/Glass

Glass Flow-Through Dissolution Testing at 25 and 70°C was initiated at LLNL. These scoping experiments will aid in model development.

A preliminary technical direction letter was drafted and sent to Karl Notz at Oak Ridge National Laboratory (ORNL). This letter describes data that will be obtained from the Characteristics Data Base at ORNL.

LLNL staff held technical discussions with W. Stringfield (OCRWM) and D. Stahl (SAIC) on the contents and design parameters that will be contained in the Waste Form Characteristics Report (Milestone M03).

The Carbon-14 Test Plan was received from Battelle, Pacific Northwest Laboratory (PNL). A draft activity plan was completed by LLNL for the Carbon-14 Testing activity.

The Pressurized Tube Test Plan was received from PNL.

LLNL has drafted activity plans for the Glass Waste Form Testing that is being conducted at Argonne National Laboratory.

The first draft of an activity plan to cover future (non-scoping) Flow-Through Glass Dissolution tests was completed.

Staff participated in a Glass Waste Form Technical Exchange Meeting on June 14-15 at Argonne National Laboratory, to assess the glass waste modeling and testing activities that are being conducted by glass waste form producers and LLNL-YMP.

Staff attended the annual Materials Characterization Center (MCC) meeting on June 27-28 in Seattle. Presentations addressed the primary variables that can be used to characterize the initial state of spent fuel inventory (existing and projected). The two primary variables are burn-up and fission gas release. Presentations and discussions occurred on the methodology used for selection of the Approved Testing Materials (ATMs) and for representing the distribution of properties for spent fuel inventory. This is the first meeting in which fuel vendors provided information on recent and new UO_2 fuel designs that will be available for utility reactors.

Integrated Radionuclide Release

No significant activities.

Thermodynamic Data Determination

No significant activities.

Container Materials Modeling and Testing

Completed the first series of screening tests to establish the susceptibility to pitting of the six candidate container materials in chlorine containing water. At room temperature, all candidates withstood chlorine concentrations much higher than anticipated at Yucca Mountain. Elevated temperature tests are scheduled to begin in July.

1.2.2.4 Waste Package Design

Staff visited Babcock and Wilcox at Alliance, Ohio on June 27-28 to perform a technical assessment preparatory to contract closeout.

1.2.5 REGULATORY AND INSTITUTIONAL

NRC Interaction Support

Initial planning of the agenda for the NWTRB meeting in late August was coordinated with YMPO and OCRWM.

Site Characterization Program

The LLNL draft comment responses for the statutory SCP were completed and sent to YMPO. Comments were addressed from the Edison Electric Institute, the California Energy Commission, the Environmental Protection Agency, the U.S. Department of Interior, Lincoln County Nevada, and the State of Nevada Preliminary Letters.

Regulatory Review

No significant activities.

Study Plan Coordination

Technical review was completed and sent to YMPO on the SNL Study Plan 8.3.1.4.3.1, R0, "Systematic Acquisition of Site-specific Subsurface Information."

Semiannual Progress Reports

Corrections to the draft Semi-annual Progress Report were given to SAIC.

1.2.9 PROJECT MANAGEMENT

1.2.9.1 Management

Staff attended the YMPO training and records meeting in Las Vegas on June 20-21.

1.2.9.2 Project Control

Staff participated in the Project Control Meeting in Las Vegas on June 5.

Staff participated in the Life Cycle Cost meeting in Las Vegas on June 7.

Completed Contractor Work Breakdown Structure.

Continuing PACs development for WBS 1.2.2.

Reviewed and revised FY91 Project Priorities Listing.

Attended YMPO FY91 Budget Planning Meeting in Las Vegas on June 15.

1.2.9.3 Quality Assurance

Developed responses to identified deficiencies during YMP Audit 90-02.

Conducted internal Audit 90-04, Training and Personnel Qualifications and Review of Technical Publications, June 18-22.

Conducted Surveillance S90-04 to verify completion of Readiness Review action items for Activity J-20-8.1, Actinides and Technetium Thermodynamic Determinations. Transmitted surveillance report S90-04 to YMPO.

Conducted Surveillance S90-05 of Activity J-20-8.9 to verify conformance to procedures for the verification of source data and changes to the data base.

A surveillance of the Babcock and Wilcox subcontract (WBS 1.2.2.4.2) was conducted on June 27-28.

Approved Instron Corporation as a Qualified Supplier of Technical Services.

Transmitted to YMPO responses to SDRs 536-541 and 544 resulting from YMPO audit 90-02.

Transmitted to YMPO the report of LLNL-YMP Audit 90-03, QA Program Management. Nonconformance Report LLNL-048 and LLNL-YMP responses to SDR 504 and Surveillance Observation YMP-SR-90-024-001 were also submitted.

Transmitted to YMPO LLNL-YMP FY90 Quality Assurance Surveillance Schedule, Rev. 1 and LLNL-YMP FY90 Quality Assurance Audit Schedules, Rev. 4.

Began actions to revise the LLNL-YMP QAPP and Quality Procedures in response to the changed requirements in the recently revised OCRWM Quality Assurance Requirements Document (QARD).

Attended Yucca Mountain Project Office Quality Committee Meeting in Albuquerque on June 14.

Attended meeting at Oak Ridge National Laboratory, June 21, to discuss Waste Form Characterization Studies to be conducted under the LLNL-YMP QA Program.

Conducted a training session for a new contract QA staff member who will be responsible for implementing QP 16.2, Rev. 1 "Trend Analysis."

LLNL PROJECT STATUS REPORT DISTRIBUTION

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WBS 1.2.9.3

QA

JUL 06 1990

Carl P. Gertz, Project Manager, YMP, NV

YUCCA MOUNTAIN PROJECT OFFICE (PROJECT OFFICE) CORRECTIVE ACTION REVIEW I-02
OF PROJECT OFFICE, TECHNICAL AND MANAGEMENT SUPPORT SERVICES, AND
MAC TECHNICAL SERVICES COMPANY SUPPORT OF THE YUCCA MOUNTAIN PROJECT
(NN1-1990- 3573)

Enclosed is the report for Corrective Action Review I-02. This is the second
of two corrective action reviews and was conducted by the Project Office at
the Las Vegas, Nevada, facilities on June 11-15, 1990.

During the course of the review, the review team generated two Standard
Deficiency Reports (SDRs) and ten recommendations.

Responses to the SDRs (which were transmitted via separate letter) are due
within five working days of the date of the transmittal letter. This part
of the subject corrective action review is considered complete as of the date
of this letter; however, any open SDRs will continue to be tracked until
each one has been closed to the satisfaction of the review team leader and
the Project Office.

Written responses to the recommendations are not required.

If you have any questions, please contact either James Blaylock at 794-7913
or Frank J. Kratzinger at 794-7163 of the Project Office Quality Assurance
staff.

A handwritten signature in dark ink, appearing to read "Donald G. Horton", is positioned above the typed name.

Donald G. Horton, Director
Quality Assurance
Yucca Mountain Project Office

YMP:JB-3940

Enclosure:
Corrective Action Review I-02 Report

Carl P. Gertz

-2-

JUL 06 1990

cc w/encl:

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Richard Spence, SAIC, Las Vegas, NV, 517/T-08

PROJECT OFFICE QUALITY ASSURANCE REPORT FOR
THE YUCCA MOUNTAIN PROJECT OFFICE CORRECTIVE ACTION REVIEW OF
THE YUCCA MOUNTAIN PROJECT OFFICE,
TECHNICAL AND MANAGEMENT SUPPORT SERVICES,
AND
MAC TECHNICAL SERVICES COMPANY
CORRECTIVE ACTION REVIEW I-02
CONDUCTED JUNE 11-15, 1990

Prepared by:

Frank J. Kratzinger
Frank J. Kratzinger
Review Team Leader

Date:

7/5/90

Approved by:

James B. Blaylock Jr.
Donald G. Horton, Director
Quality Assurance
Yucca Mountain Project Office

Date:

7/6/90

EXECUTIVE SUMMARY

The following is the Corrective Action Review Team's summation of the acceptability of each individual criterion of the Yucca Mountain Project Office (Project Office) Quality Assurance Plan (QAP), as reviewed, and the implementation of the requirements of the Systems Engineering Management Plan (SEMP). The summation is the result of measuring the implementation of the Project Office Quality Management Procedures (QMPs), Administrative Procedures (Quality) (AP-Qs), and Branch Technical Procedures (BTPs).

For instances in which open Standard Deficiency Reports (SDRs) or Headquarters's Deficiency Reports (DRs) had already been issued against the criterion being reviewed, no additional SDRs were generated.

1. Criterion II--Quality Assurance Program (Graded QA)

The implementation of AP-6.17Q has been adequate and effective in developing a review package. Limited portions of AP-5.28Q and BTP-QRB-001 have been adequately and effectively implemented to date in setting up a review by the Quality Review Board (QRB).

2. Criterion III--Scientific Investigation and Design Control (Study Plans and the SEMP)

Except for SDR No. 521, previously written on the timeliness of the reviewers' qualifications, the study plans reviewed for Midway Valley and Calcite-Silica were in compliance with the procedural requirements and are acceptable.

Two areas of implementation of the requirements of the SEMP were reviewed; readiness reviews and technical assessments. During the corrective action review, it was determined that no readiness reviews had been conducted between December 1988 and the present. Two technical assessment review packages were available and met the procedural requirements. Based on this review, the implementation of technical assessments review package requirements of the SEMP appear to be adequate.

3. Criterion IV--Procurement Document Control Criterion VII--Control of Purchased Items and Services

The review team for procurement activities selected a documentation review that was generated subsequent to Headquarters Surveillance OCRWM-SR-89-008 and Project Office Surveillance YMP-SR-89-069. These two surveillances addressed procurement activities performed by Yucca Mountain Project Office and Technical and Management Support Services (T&MSS) from December 1988 through July 1989, and identified deficiencies in both criteria. The extent of the deficiencies, accompanied by the fact that many of the reports remain open, provided the basis for selecting the scope of this portion of the review.

Based on the previous deficiencies and the issuance of a Corrective Action Request by the Project Office (which summarizes the procurement issues) the review team concludes that procurement activities subject to the requirements of QAP Sections IV and VII performed prior to the two referenced surveillances were performed to a deficient procurement system. The procurement system was evaluated to be ineffective.

4. Criterion VIII--Identification and Control of Items, Samples, and Data

Activities reviewed were in compliance with procedural requirements and appear to be acceptable.

5. Criterion XII--Control of Measuring and Test Equipment

The Air Quality Monitoring and Meteorological Monitoring Programs are operating under open SDRs that have been written against the calibration of measuring and test equipment in addition to the SDR identified during this review. Work is continuing, but the data being obtained must be considered indeterminate because of the use of instruments and equipment that have not been calibrated or are out of calibration. This area is considered ineffective.

Calibration of measuring and test equipment in the Radiological Monitoring area could not be verified since work has been stopped since September 1989, by internal directive. This area must be considered indeterminate.

Activities associated with the Control of Measuring and Test Equipment have been turned over to T&MSS effective May 1, 1990.

6. Criterion XIII--Handling, Storage, and Shipping

Activities reviewed were in compliance with procedural requirements and appear to be acceptable.

1.0 INTRODUCTION

This report contains the results of a corrective action review of Yucca Mountain Project Office (Project Office), Technical and Management Support Services (T&MSS), and MAC Technical Services Company (MACTEC) support of the Yucca Mountain Project for the time period from December 1988 until the present. The review was conducted at facilities located in Las Vegas and the Nevada Test Site, Nevada, on June 11-15, 1990. The Quality Assurance (QA) program requirements to be verified were taken from the Project Office Quality Assurance Plan (QAP) (NNWSI/88-9, Revision 4).

2.0 CORRECTIVE ACTION REVIEW SCOPE

The following program elements were reviewed to assess compliance with the Project Office QAP and the Project Office implementing Quality Management Procedures (QMPs), Administrative Procedures (Quality) (AP-Qs), and Branch Technical Procedures (BTPs):

- 2.0 Quality Assurance Program (Graded QA)
- 3.0 Scientific Investigation Control and Design Control (study plans and implementation of the System Engineering Management Plan)
- 4.0 Procurement Document Control
- 7.0 Control of Purchased Items and Services
- 8.0 Identification and Control of Items, Samples and Data
- 12.0 Control of Measuring and Test Equipment
- 13.0 Handling, Shipping, and Storage

The following program elements of the Project Office QAP are considered not applicable to the scope of work at the present time:

- 9.0 Control of Processes
- 10.0 Inspection
- 11.0 Test Control
- 14.0 Inspection, Test, and Operating Status

The balance of the program elements were reviewed during the first review and addressed in Corrective Action Review Report I-01, dated May 8, 1990.

3.0 REVIEW TEAM PERSONNEL

The Corrective Action Review Team consisted of the following personnel:

<u>Individual</u>	<u>Responsibility</u>
Frank J. Kratzinger	Review Team Leader
Neil D. Cox	Reviewer

Kenneth O. Gilkerson	Reviewer
Gerard Heaney	Reviewer
Richard A. Kettell	Reviewer
Robert H. Klemens	Reviewer
Richard Spence	Reviewer
Art Spooner	Reviewer
Rod Schaffer	Observer, DOE/HQ

4.0 SUMMARY OF REVIEW RESULTS

4.1 Statement of Program Effectiveness

The following is the Corrective Action Review Team's summation of the acceptability of each individual criterion of the Project Office QAP (as reviewed) and the implementation of the requirements of the Systems Engineering Management Plan (SEMP). The summation is the result of measuring the implementation of Project Office QMPs, AP-Qs, and BTPs.

For instances in which open Standard Deficiency Reports (SDRs) or Headquarters's Deficiency Reports (DRs) had already been issued against the criteria being reviewed, no additional SDRs were generated.

1. Criterion II--Quality Assurance Program (Graded QA)

The implementation of AP-6.17Q has been adequate and effective in developing a review package. Limited portions of AP-5.28Q and BTP-QRB-001 have been adequately and effectively implemented to date in setting up a review by the Quality Review Board (QRB).

2. Criterion III--Scientific Investigation and Design Control (Study Plans and the SEMP)

Except for SDR No. 521, previously written on the timeliness of the reviewer's qualifications, the study plans reviewed for Midway Valley and Calcite-Silica were in compliance with the procedural requirements and are acceptable.

Two areas of implementation of the requirements of the SEMP were reviewed; readiness reviews and technical assessments. During the corrective action review, it was determined that no readiness reviews had been conducted between December 1988 and the present.

Two technical assessment review packages were available and met the procedural requirements. Based on this review, the implementation of technical assessment review package requirements of the SEMP appear to be adequate.

3. Criterion IV--Procurement Document Control
Criterion VII--Control of Purchased Items and Services

The review team for procurement activities selected a documentation review that was generated subsequent to Headquarters Surveillance OCRWM-SR-89-008 and Project Office Surveillance YMP-SR-89-069. These two surveillances addressed procurement activities performed by Yucca Mountain Project Office and T&MSS from December, 1988 through July, 1989, and identified deficiencies in both criteria. The extent of the deficiencies, accompanied by the fact that many of the reports remain open, provided the basis for selecting the scope of this portion of the review.

Based on the previous deficiencies and the issuance of Corrective Action Request CAR-90-003 by the Project Office (which summarizes the procurement issues) the review team concludes that procurement activities subject to the requirements of QAP Sections IV and VII performed prior to the two referenced surveillances were performed to a deficient procurement system. The procurement system was evaluated to be ineffective.

4. Criterion VIII--Identification and Control of Items, Samples, and Data

Activities reviewed were in compliance with procedural requirements and appear to be acceptable.

5. Criterion XII--Control of Measuring and Test Equipment

The Air Quality Monitoring and Meteorological Monitoring Programs are operating under open SDRs that have been written against the calibration of measuring and test equipment, in addition to the SDR identified during this review. Work is continuing, but the data being obtained must be considered indeterminate because of the use of instruments and equipment that have not been calibrated or are out of calibration. This area is considered ineffective.

Calibration of measuring and test equipment in the Radiological Monitoring Area could not be verified since work has been stopped since September 1989, by internal directive. This area must be considered indeterminate.

6. Criterion XIII--Handling, Storage, and Shipping

Activities reviewed were in compliance with procedural requirements and appear to be acceptable.

In the opinion of the Corrective Action Review Team, the Project Office QA Program is ineffective in the following areas:

1. Plans and procedures identified in Criteria IV, VII, and XII (ineffective)
2. Implementation of procedures identified in Criteria IV and XII (ineffective)

Based on the information discussed above, additional actions are required by the Project Office to ensure that sufficient controls are in place for the overall control of its quality-related activities.

4.2 Summary of Technical Activities

There were no technical activities conducted during this review.

4.3 Summary of Findings

A total of two Standard Deficiency Reports (SDRs) were generated as a result of this review. Information copies of the SDRs are included in Enclosure 2. Committed corrective action dates obtained during the review are indicated in parentheses after the synopsis of the SDRs in Section 6. Additionally, 10 recommendations were made by the review team and are included in Section 6 of this report.

5.0 CORRECTIVE ACTION REVIEW MEETINGS

5.1 Pre-review Conference

A pre-review conference was held with Project Office, T&MSS, and MACTEC personnel at 10:00 a.m. on June 11, 1990. The purpose, scope, and proposed agenda for the review were presented and the review team was introduced. A list of those attending is provided in Enclosure 1.

5.2 Personnel Contacted During the Review

(See Enclosure 1).

5.3 Post-review Conference

The post-review conference was held at 2:00 p.m. on June 15, 1990, at the offices of the Yucca Mountain Project in Las Vegas, Nevada. The preliminary SDRs and recommendations were presented to the Project Office, T&MSS, and MACTEC. A list of those attending the post-review conference is provided in Enclosure 1.

6.0 SYNOPSIS OF STANDARD DEFICIENCY REPORTS AND RECOMMENDATIONS

6.1 Standard Deficiency Reports (Committed Corrective Action Completion)

SDR No. 548 Procurement activities for QA Level I and II items, which were stopped by an SDR commitment until QMP-04-01 was revised, were continuing to occur without the required revision to the QMP. (06/15/90)

SDR No. 549 Required calibration data was missing when the form used for the data recording was revised to remove the space allocated to record the data. (07/30/90)

6.2 Recommendations

1. Criterion III

- a. AP-1.10Q requires study plan review requests by the Project Office to establish review criteria. Although the letters for the study plans reviewed by the Corrective Action Review Team (i.e., "Location and Recency of Faulting Near Prospective Surface Facilities" and "Characterization of the Quaternary Regional Hydrology") direct the reviewing organizations to review the study plans in accordance with procedure AP-1.10Q, the procedure does not in itself establish explicit review criteria. The procedure requires the Project Office to provide review criteria and establishes guidelines for the types of criteria for management, QA, and regulatory reviews (e.g., QA will review for compliance to Project quality assurance requirements). These general guidelines identified in the procedure do not provide adequate review criteria. It should be noted that these study plans were reviewed to Revision 0 of AP-1.10Q. Revision 1 to that document provides some minimum review criteria for QA for future studies, but still requires the Project Office to provide review criteria.

The Project Office should identify the review criteria that were applicable at the time of the study plan reviews (applicable QA requirements, applicable regulatory requirements, applicable DOE requirements and Project plans) and determine that the reviewers utilized this criteria during their reviews. Assurances should be established that no applicable requirements or regulatory documents were missed. If any discrepancies are identified, a new review should be conducted.

- b. During the review of the DRSs for the Location and Recency of Faulting Near Prospective Surface Facilities Study Plan, two unresolved issues raised concern as to how the Project Office tracks future commitments and unresolved issues to ensure adequate resolution. One reviewer's comments regarding the Quality Assurance Level Assignment (QALA) approvals resulted in an open-ended commitment to revise the study plan following full implementation of NUREG 1318. The criteria for determining quality assurance levels changed in December 1988 with the revision to the Project Office QAP. This study plan was approved in May 1989 with QALAs inconsistent with the Project Office QAP requirements. Subsequent to this, the study plan has not been revised and the methodology for application of graded quality assurance has once again changed. Another issue regards a comment on this study plan submitted by Sandia National Laboratories (SNL) to the Project Office in September, 1989 after approval of the study plan (correspondence Hunter to Gertz dated 09/15/89). Although this comment was identified after approval of the study plan, it was identified as an action item and placed in the records package. No other information could be found in records regarding how the comment in this letter was resolved. Interviews of Project Office/T&MSS personnel has yet to determine how this comment was handled. The Project Office should develop controls for tracking (1) issues that will not be immediately resolved during the issuance of a document or (2) issues identified subsequent to document approval to ensure that documents are revised as necessary.
- c. AP-1.10Q, Paragraph 5.2.6, requires that the review of study plans is performed by qualified staff. Documentation of the qualifications of reviewers are required to be completed prior to initiation of the review.

The qualifications of reviewers for Study Plan 8.3.1.5.2.1, "Characterization of the Quaternary Regional Hydrology," and Study Plan 8.3.1.17.4.2, "Location and Recency of Faulting Near Prospective Surface Facilities," were documented after the review was completed.

This deficiency was previously identified during Corrective Action Review I-01 in SDR No. 521. It is recommended to include these study plans in the corrective action response for SDR No. 521.

- d. The QMP-06-03 review of the MGDS Systems Requirements (SR) document showed inconsistencies in the manner in which the document review sheets were being completed. Examples include:

- o The revision number of the document was not always indicated.
- o The type of review was not always indicated.
- o Comments responded to were not always accepted by the commentator.
- o No resolution was indicated for several comments.

These examples are similar to those identified by James Blaylock in a letter to Donald G. Horton in which it is recommended to perform another review of the document.

- e. Ensure that requirements from the SEMP are clearly addressed in the implementing procedure QMP-02-08. It was noted that some of the requirements were addressed only by definitions in the procedure and not as required actions in the procedure, which normally implement requirements. An example of this condition is the requirement from the SEMP for items to be included in the review record memorandum that documents the technical assessment review. Presently, this information is only addressed in the definition of a review record memorandum in QMP-02-08, Revision 0. The requirements contained in a definition were addressed in the review record memorandum for those technical assessments that were reviewed.
- f. Ensure that the procedure contains the necessary level of detail to provide a consistent report and documentation. As an example of this condition, it was noted that different forms were being created for generic applications such as documenting qualifications. A form of this type could be developed and included in the procedure to save time, and to provide uniform documentation and consistency between reviews.
- g. Include a records package concept in the indexing practice of the Local Records Center (LRC) and Central Records Facility (CRF). This type of indexing provides for the retrieval of the total package versus the individual subparts of the package and provides other valuable information, such as the number of completed packages. Information regarding the

total number of completed packages was unavailable during this review. Package or unit information will also assist in the retrieval of the technical assessment records and other related review information.

2. Criteria IV and VII

- a. An interagency agreement with the United States Geologic Survey for services utilized on the Yucca Mountain Project is being processed in the absence of approved Project Office procedures for quality-affecting procurements. The absence of such procedures is identified in both Headquarters and Project Office deficiency reports and should be resolved as soon as possible.
- b. The existing DRs and SDRs that have been issued against the procurement process should be closed as soon as possible. The conditions cited on the DRs and SDRs, when implemented after completion of the corrective action, should provide elements for an acceptable procurement program.
- c. While reviewing receipt inspection records, the following was noted:
 - o Some receipt inspection records were not legible. This condition has been identified in a previous SDR.
 - o For records pertaining to Purchase Order PO 14-900170, the attached documentation did not reference the PO number. If these documents became detached, they would not be traceable to the PO.

It is recommended that legible copies be maintained of receipt inspection records and that each page of the document be clearly identified with a PO number to assure traceability of the documentation.

7.0 RECOMMENDED ACTION

A written response is required for each SDR delineated in Section 6. Responses to each SDR are due within five working days from the date of the SDR transmittal letter. Upon response, acceptance, and satisfactory verification of all remedial and corrective actions, the SDRs will be closed and the Project Office will be notified (by letter) of the closure.

Written responses to the recommendations are not required.

ENCLOSURE 1

CORRECTIVE ACTION REVIEW I-02
PERSONNEL CONTACTED

NAME	ORGANIZATION	TITLE	CONTACTED		
			PRE- REVIEW	DURING REVIEW	POST- REVIEW
Barton, Robert V.	YMP	Deputy Director RSED	X	X	X
Blaylock, James	YMP	Project Office QA	X	X	X
Clark, James E.	SAIC	PO QA Liaison		X	
Constable, Robert B.	YMP	Project Office QA	X		
Conway, Z. J.	SAIC	Site Technician		X	
Cox, Neil D.	SAIC	Project Office QA	X	X	X
Dussman, Monica M.	SAIC	Mgr. Env. Programs		X	
Dymmel, George D.	YMP	Branch Chief Systems		X	
Edwards, Roxanne	YMP	Systems Engineering	X	X	X
Estella, John W.	SAIC	Staff Advisor		X	
Gilkerson, Ken O.	SAIC	QA Eng.	X	X	X
Gilray, John	NRC	Observer			X
Grant, Terry A.	SAIC	Senior Geologist		X	
Gron, Laura	SAIC	LRC Supervisor		X	
Hardin, Ernest L.	SAIC	Assessment Team Leader		X	
Harris, Michael W.	YMP	Manager RSD			X
Heaney, Jerry	SAIC	Project Office QA	X	X	X
Horton, Donald G.	YMP	Director QA	X		X
Karas, Nadine R.	SAIC	QRB Admin. Ass't.		X	
Kettell, Richard A.	SAIC	Project Office QA	X	X	X
Kirk, Ann R.	SAIC	Staff Member		X	
Klemens, Robert H.	SAIC	Project Office QA	X	X	X
Kratzinger, Frank J.	SAIC	Project Office QA	X	X	X
LaMonica, Larry B.	SAIC	Assessment Team Leader		X	
Lewis, Chris	Harza	Acting Curator		X	
Luthiger, Peter J.	SAIC	Site Technician		X	
Maxwell, Frank R.	YMP	Physical Science			X
Merritt, David W.	Harza	Tech. Staff Assistant		X	
Milsap, Brenda	SAIC	LRC Staff		X	
Murthy, Ram B.	YMP	QRB Chairman	X		X
Pendleton, Martha W.	SAIC	Integrator		X	
Petrie, Ted	YMP	Branch Chief			X
Phillips, Garth	YMP	Contract Specialist		X	
Prowell, Grover H.	SAIC	Staff Member		X	
Ryan, James F.	SAIC	Senior Buyer		X	
Samuolis, Peter R.	SAIC	Engineer		X	
Schaffer, Rod	Westin	QA Engineering	X	X	
Shaler, John E.	SAIC	APM Tech. Support		X	X
Smith, Steve C.	SAIC	QRB Secretary		X	
Spence, Richard E.	SAIC	Project Office QA	X	X	X

CORRECTIVE ACTION REVIEW I-02
PERSONNEL CONTACTED

NAME	ORGANIZATION	TITLE	CONTACTED		
			PRE- REVIEW	DURING REVIEW	POST- REVIEW
Spooner, Art	Westin	QA Engineering		X	X
Taylor, Charles T.	SAIC	QA Engineering		X	
Therien, John E.	SAIC	QA Integrator			X
Voltura, Nancy A.	YMP	Project Office QA		X	
Waddell, John D.	SAIC	System Engrg. Manager		X	
Wilmot, Edwin L.	YMP	Deputy Project Manager	X	X	
Wilson, Winfred	YMP	Site Manager	X		
Woolfolk, Steve W.	SAIC	RFPD Manager		X	X

ENCLOSURE 2

YMPO STANDARD DEFICIENCY REPORT

N-QA-038
4/89

Completed by Originating QA Organization	1 Date June 15, 1990		2 Severity Level <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3		Page 1 of 2
	3 Discovered During CA Review I-02		3a Identified By R.H. Klemens		4 SDR No. 549 Rev. 0
	5 Organization T&MSS		6 Person(s) Contacted J. Conway/M. Dussman		7 Response Due Date is 20 Working Days from Date of Transmittal
	8 Requirement (Audit Checklist Reference, if Applicable) BTP-AQ-004, Revision 1, Para. 5.1, requires that when calibrating particulate samplers, the type, range, and accuracy of the pressure transducers will be recorded on the Particulate Sampler Calibration Check (PSCC) Form.				
Completed by Originating QA Organization	9 Deficiency Contrary to the above requirement, this is not being done since Revision 1 of BTP-AQ-004 revised the PSCC form and deleted the space used to record the type, range, and accuracy.				
	10 Recommended Action(s): <input checked="" type="checkbox"/> Remedial <input type="checkbox"/> Investigative <input checked="" type="checkbox"/> Corrective Identify the remedial action to be taken to correct the deficiency noted in Block 9. Identify the cause of the condition and the planned action to				
	11 QAE/Lead Auditor/Date <i>R.H. Klemens 6/12/90</i>		12 Division Manager/Date <i>N/A</i>		13 Project Quality Mgr./Date <i>John D. [Signature] 6-19-90</i>
Completed by Organization in Block 5	14 Remedial/Investigative Action(s) 15 Effective Date _____				
	16 Cause of the Condition & Corrective Action to Prevent Recurrence 17 Effective Date _____				
	18 Signature/Date				
Comp. by Orig. QA Org.	19 Response Accepted	QAE/Lead Auditor/Date	Division Manager/Date	Project Quality Mgr./Date	
	20 Corrective Action Verif. Satisfactory	QAE/Lead Auditor/Date	Division Manager/Date	Project Quality Mgr./Date	
	21 Remarks				
	22 QA CLOSURE	QAE/Lead Auditor/Date	Division Manager/Date	PQM/Date	

YMI STANDARD DEFICIENCY REPORT
CONTINUATION SHEET

N-QA-038
2/89

SDR No. 549

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6 Persons contacted (continued)

8 Requirement (continued)

9 Deficiency (continued)

10 Recommended Actions (continued)

prevent recurrence.

YMPO STANDARD DEFICIENCY REPORT

N-QA-038
4/89

Completed by Originating QA Organization	1 Date June 15, 1990		2 Severity Level <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3		Page 1 of 2	
	3 Discovered During CA Review I-02		3a Identified By A.W. Spooner		4 SDR No. 548 Rev. 0	
	5 Organization T&MSS		6 Person(s) Contacted J. Ryan/J. Shaler		7 Response Due Date is 20 Working Days from Date of Transmittal	
	8 Requirement (Audit Checklist Reference, if Applicable) SDR Number 354, Revision 0, Remedial/Investigative Action(s) states in part, "All quality level 1 and 2 (sic) procurements will be suspended until approval of QMP-04-01, Revision 1." 9 Deficiency Contrary to the remedial actions specified in the above SDRs, Quality Level I and II procurement activities have continued. Reference the following Purchase Requisitions/Orders: 10 Recommended Action(s): <input checked="" type="checkbox"/> Remedial <input checked="" type="checkbox"/> Investigative <input checked="" type="checkbox"/> Corrective Identify the remedial action to be taken to correct the deficiency noted in Block 9. Investigate the program, process, activities, or documentation to					
Completed by Organization in Block 5	11 QAE/Lead Auditor/Date <i>Frank H. [Signature]</i> 6/18/90		12 Division Manager/Date N/A		13 Project Quality Mgr./Date <i>[Signature]</i> 6/18/90	
	14 Remedial/Investigative Action(s) 15 Effective Date _____					
	16 Cause of the Condition & Corrective Action to Prevent Recurrence 17 Effective Date _____					
	18 Signature/Date					
Comp. by Orig. QA Org.	19 Response Accepted		QAE/Lead Auditor/Date		Division Manager/Date	
	20 Corrective Action Verif. Satisfactory		QAE/Lead Auditor/Date		Division Manager/Date	
	21 Remarks					
22 QA CLOSURE		QAE/Lead Auditor/Date		Division Manager/Date		PQM/Date

YMPO STANDARD DEFICIENCY REPORT
CONTINUATION SHEET

N-QA-038
2/89

SDR No. 548

Page 2 of 2

6 Persons contacted (continued)

8 Requirement (continued)

SDR Number 348, Revision 0, Remedial/Investigative Action(s), Revision 1, item (3), states in part, "QMP-04-01, Revision 1 will supersede existing SAIC CPIs for T&MSS related procurements; future requisitions submitted through this office shall be reviewed and processed in accordance with QMP-04-01, Revision 1 for completeness."

In summary, Quality Level I and II procurements are suspended until Revision 1 of QMP-04-01 is approved/issued; or the Remedial/Investigative Action sections of the above SDRs are amended and approved. As of the date of this review, QMP-04-01, Revision 0, is current.

9 Deficiency (continued)

PO 14-910009-65	Order Date	03/08/90
PO 14-900171-65	Order Date	12/18/89
PO 14-900170-65	Order Date	12/18/89
PO 14-910001-65	Order Date	02/06/90

PR R 5544376	Approved	05/02/90
PR R 5515997	Approved	05/02/90
PR R 5544400	Approved	05/02/90

10 Recommended Actions (continued)

determine the extent and depth of similar deficient conditions listed as examples on the SDR. Identify the cause of the condition and the planned action to prevent recurrence.