

PRELIMINARY

5/12/92

Originated by:
Kenneth T. McFall
MRD:KTM:SRD:1100
WBS 1.2.9.3

Richard L. Bullock
Technical Project Officer
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OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT QUALITY ASSURANCE (QA) DIVISION
AUDIT NO. YMP-92-18 OF RAYTHEON SERVICES NEVADA (RSN) IN SUPPORT OF THE YUCCA
MOUNTAIN SITE CHARACTERIZATION PROJECT OFFICE

Please be advised that a team of auditors from the Yucca Mountain Quality Assurance Division will conduct a limited scope QA audit of RSN QA Program in Las Vegas, Nevada, during the period of June 22-26, 1992. The audit will be conducted in accordance with the enclosed audit plan.

Observers from the U.S. Nuclear Regulatory Commission, State of Nevada, or other interested parties, may also accompany the team.

You are requested to arrange for appropriate space to hold meetings, provide cognizant personnel to support the audit, and provide audit team access to appropriate current Yucca Mountain Site Characterization Project documentation and records.

if you have any questions, please contact either Mario R. Diaz at 794-7974 or Kenneth T. McFall of Science Applications International Corporation at 794-7280.

OQA:MRD-

Donald G. Horton, Director
Office of Quality Assurance

Enclosure: *on the shelf*
Audit Plan YMP-92-18

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cc w/encl:

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M. Hayes, Esmeralda County Commission, Goldfield, NV

Richard L. Bullock

-3-

bcc w/o encl:

W. R. Dixon, YMP, NV

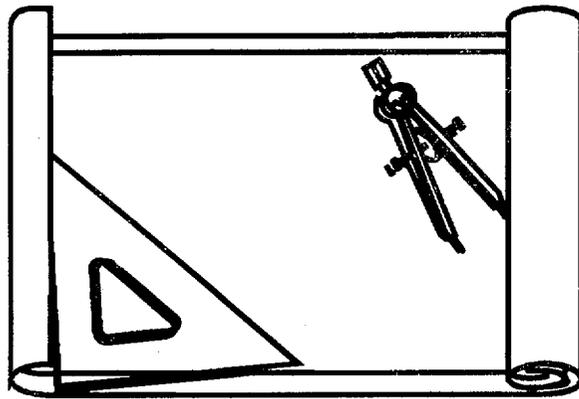
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*Received with letter
3/12/92*

RAYTHEON SERVICES NEVADA



**OCRWM AUDIT
No. 92-18**

10.7

OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

QUALITY ASSURANCE AUDIT PLAN

FOR AUDIT NO. YMP-92-18

OF

RAYTHEON SERVICES NEVADA

LAS VEGAS, NEVADA

JUNE 22 THROUGH 26, 1992

Prepared by: _____ Date: _____

Kenneth T. McFall
Audit Team Leader
Yucca Mountain Quality Assurance Division

Approved by: _____ Date: _____

Donald G. Horton
Director
Office of Quality Assurance

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1.0 SCOPE

This limited scope audit, by a team of auditors from the Yucca Mountain Quality Assurance Division (YMQAD) will evaluate the Raytheon Services Nevada (RSN) Quality Assurance (QA) Program to determine whether it meets the requirements and commitments imposed by the Office of Civilian Radioactive Waste Management (OCRWM). This will be done by verifying implementation and effectiveness of the system in place, as well as verifying compliance with requirements.

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

The programmatic elements to be audited during this limited scope audit are identified in Section 4.0 of this plan.

2.0 AUDIT SCHEDULE

Pre-audit Team/Observer Meeting	8:00 a.m., June 22, 1992 Las Vegas, Nevada
Pre-audit Conference	9:00 a.m., June 22, 1992 Las Vegas, Nevada
Audit Activities	10:00 a.m. to 4:00 p.m. June 22, 1992
	8:00 a.m. to 4:00 p.m. June 23 - 25, 1992
	8:00 a.m. to 11:30 a.m. June 26, 1992
Daily Team Debriefing	4:00 p.m., June 22 - 25, 1992
Post-audit Conference	2:00 p.m., June 26, 1992 Las Vegas, Nevada

3.0 REQUIREMENTS TO BE AUDITED AND APPLICABLE REFERENCES

The requirements to be audited will be contained in the programmatic and technical checklists. These checklists will be developed from the latest available revision of the following documents.

RSN Quality Assurance Program Description Document and current Interim Change Notices (ICNs)

- o Applicable Yucca Mountain Site Characterization Project Office Administrative Procedures - Quality.
- o RSN implementing procedures and current ICNs.

The conduct of the audit will be guided by the documents listed below:

- o Quality Assurance Administrative Procedure (QAAP) 18.2, Revision 5, "Audit Program"
- o QAAP 16.1, Revision 4, "Corrective Action Requests"
- o Yucca Mountain site Characterization Project Audit Observer Inquiry
- o Policy for Participation of State, Tribal and U.S. Nuclear Regulatory Commission Representatives as Observers on U.S. Department of Energy audits, dated July 14, 1987.

4.0 ACTIVITIES TO BE AUDITED

Programmatic Elements

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

- 3.0 Design Control
- 5.0 Instructions, Procedures and Drawings
- 6.0 Document Control
- 19.0 Software Quality Assurance

Program Element 17.0, Quality Assurance Records, will be reviewed on a limited basis since all functions of this element except those of record sources have been taken over by the Management and Operations contractor.

Program Element 20.0, Scientific Investigations, is not applicable to this audit since RSN performs no scientific investigations.

In addition to the above stated program elements, Program Element 2.0, Quality Assurance Organization, will undergo a limited examination to verify compliance with the requirements imposed by Department of Energy System 80, reference letter from C. P. Gertz, YMP:CLC-511.

Technical Areas

The technical areas that will be examined on this audit center on engineering design. The specific products to be reviewed include the following:

- o Drawings
- o Specifications
- o Calculations

Evaluation of the above activities by Technical Specialists will include a determination of adequacy in the following areas:

1. Technical qualifications of engineering and design personnel.
2. Understanding of procedural requirements as they pertain to engineering and design activities.
3. Adequacy of technical procedures.
4. Development of work plans supporting Site Characterization.

5.0 AUDIT TEAM MEMBERS

Kenneth T. McFall, Science Applications International Corporation (SAIC)/YMQAD,
Las Vegas, NV, Audit Team Leader
Neil D. Cox, SAIC/YMQAD, Las Vegas, NV, Auditor
Donald J. Harris, SAIC/YMQAD, Las Vegas, NV, Auditor
Gerard Heaney, SAIC/YMQAD, Las Vegas, NV, Auditor
Richard L. Maudlin, MAC Technical Services/YMQAD, Las Vegas, NV, Auditor
Cynthia H. Prater, SAIC/YMQAD, Las Vegas, NV, Auditor
Keith J.. Lobo, SAIC/YMQAD, Las Vegas, NV, Technical Specialist
William R. Sublette, SAIC/YMQAD, Las Vegas, NV, Technical Specialist

6.0 AUDIT CHECKLISTS

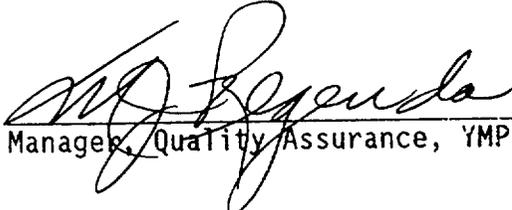
YMP-92-18-01, Programmatic Checklist, will be used during the programmatic portions of this audit.

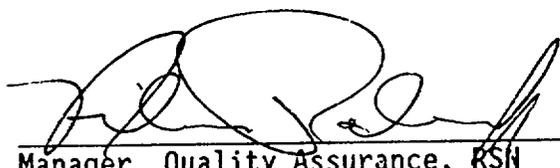
YMP-92-18-02, Technical Checklist, will be used for the examination of technical areas during this audit.

APPROVAL

RAYTHEON SERVICES NEVADA

**QUALITY ASSURANCE PROGRAM DESCRIPTION
For
THE YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT**

Approved by:  Date: 10/31/91
Manager, Quality Assurance, YMP

Approved by:  Date: 10/31/91
Manager, Quality Assurance, RSN

Approved by:  Date: 10-31-91
Technical Project Officer/
Yucca Mountain Operations Manager



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

WBS 1.2.9.3
QA

APR 22 1992

Richard L. Bullock
Technical Project Officer
for Yucca Mountain
Site Characterization Project
Raytheon Services Nevada
101 Convention Center Drive
Phase II, Suite P-250
Las Vegas, NV 89109

YUCCA MOUNTAIN QUALITY ASSURANCE DIVISION (YMQAD) REVIEW AND ACCEPTANCE OF
QUALITY ASSURANCE PROGRAM DESCRIPTION (QAPD) CHANGE NOTICE (CN) C TO THE
RAYTHEON SERVICES NEVADA (RSN) QAPD 002, REVISION 0

The YMQAD has completed its review of QAPD CN C to the RSN QAPD-002,
Revision 0. QAPD CN C is accepted based on the YMQAD determination that
the changes delineated are consistent with the requirements stated in the
Office of Civilian Radioactive Waste Management QARD, Revision 4, and do
not represent a degradation of quality assurance requirements.

If you have any questions, please contact either Catherine E. Hampton at
(702) 794-7973 or FTS (702) 794-7973 or John E. Therien at (702) 794-7862
or FTS (702) 794-7862.

A handwritten signature in cursive script that reads "R. E. Spence".

Richard E. Spence, Director
Yucca Mountain Quality Assurance Division

YMQAD:CEH-2997

cc:
J. W. Gilray, NRC, Las Vegas, NV
M. J. Regenda, RSN, Las Vegas, NV
D. J. Tunney, RSN, Las Vegas, NV
J. E. Therien, SAIC, Las Vegas, NV

POLICY STATEMENT

RAYTHEON SERVICES NEVADA

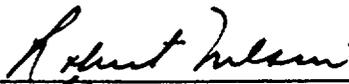
**QUALITY ASSURANCE PROGRAM DESCRIPTION
For
THE YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT**

It is the policy of Raytheon Services Nevada (RSN) to establish and maintain a documented Quality Assurance Program. The purpose of the Quality Assurance Program is to assure that RSN will continually achieve satisfactory quality of performance in all areas of its operational activities through the application of effective management systems in conformance with programmatic objectives.

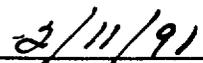
All RSN personnel involved in the performance of quality-affecting functions shall comply with the policies and requirements of the Quality Assurance Program Description and procedures that implement the Quality Assurance Program. Each member of Management is responsible to assure that all quality-affecting work performed under their cognizance is in compliance with the requirements of the Quality Assurance Program.

The Quality Assurance Manager, YMP is responsible for the establishment, implementation and verification of the Quality Assurance Program to assure compliance with the policies and requirements set forth herein. The Quality Assurance Manager, YMP is also responsible for keeping management informed as to the status of the RSN YMP Quality Program.

The Yucca Mountain Project Technical Project Officer is responsible for achieving and maintaining the quality of the program in support of the Yucca Mountain investigations. The Quality Assurance Division provides those checks and balances necessary to assure proper implementation of the Program.



GENERAL MANAGER



DATE

APPROVAL
RAYTHEON SERVICES NEVADA
QUALITY ASSURANCE PROGRAM DESCRIPTION
For
THE YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT

Approved by:  Date: 3/2/92
Manager, Quality Assurance, YMP

Approved by:  Date: 3/3/92
Manager, Quality Assurance, RSN

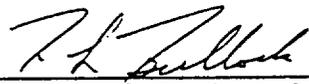
Approved by:  Date: 3-4-92
Technical Project Officer/
Yucca Mountain Operations Manager

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For
THE YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT

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POLICY STATEMENT	1	0	N/A
TABLE OF CONTENTS	2	0	C
1.0 ORGANIZATION	8	0	C
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3.0 DESIGN CONTROL	4	0	B
4.0 PROCUREMENT DOCUMENT CONTROL	3	0	B
5.0 INSTRUCTIONS, PROCEDURES, PLANS AND DRAWINGS	2	0	B
6.0 DOCUMENT CONTROL	3	0	B
7.0 CONTROL OF PURCHASED ITEMS AND SERVICES	4	0	B
8.0 IDENTIFICATION AND CONTROL OF MATERIALS, PARTS, COMPONENTS, AND SAMPLES	1	0	B
9.0 CONTROL OF PROCESSES	2	0	B
10.0 INSPECTION	2	0	B
11.0 TEST CONTROL	3	0	N/A
12.0 CONTROL OF MEASURING AND TEST EQUIPMENT	3	0	B
13.0 HANDLING, STORAGE, AND SHIPPING	2	0	N/A
14.0 INSPECTION, TEST, AND OPERATING STATUS	1	0	N/A
15.0 CONTROL OF NONCONFORMING ITEMS	3	0	N/A

	<u>TITLE</u>	<u>TOTAL PAGES</u>	<u>REV NUMBER</u>	<u>CHANGE NOTICE NUMBER</u>
16.0	CORRECTIVE ACTION	2	0	N/A
17.0	QUALITY ASSURANCE RECORDS	3	0	C
18.0	AUDITS	4	0	B
19.0	COMPUTER SOFTWARE	1	0	B
20.0	SCIENTIFIC INVESTIGATIONS	1	0	N/A
	APPENDIX A - RSN QA PROGRAM BASIS	2	0	C

SECTION 1 ORGANIZATION

1.0 GENERAL

The Raytheon Services Nevada (RSN) Organization is described herein.

1.1 ORGANIZATION STRUCTURE

Raytheon Services Nevada is responsible to the DOE Yucca Mountain Site Characterization Project Office (YMPO) for providing architecture and engineering services to support the investigations at Yucca Mountain. Responsibilities include Title I and II Design of surface and subsurface facilities, Title III Inspection of Mining, Drilling, Facilities Construction, Nondestructive Testing, Materials Testing, Field Surveying, Microfilming of YMP Records, and Engineering Support Services. RSN is responsible for the establishment and implementation of a Quality Assurance Program. RSN may delegate to others, such as contractors, agents or consultants, the work of establishing and implementing the QA Program or any part thereof, but retains the overall responsibility for the program.

The overall organizational structure, lines of communication, authorities and duties of persons and organizations affecting quality is established in this document. The Quality Assurance Program provides for the achievement of quality by the line organization and the verification of quality by the QA organization. While the line organizations are responsible for performing the activities properly, the QA organization will verify the proper performance of work through implementation of appropriate controls. The organizational structure is defined in Figure 1 of this Section. The responsibilities and authority of key personnel are as follows:

- 1.1.1 General Manager, RSN has the responsibility for establishing, administering, and enforcing the overall QA program.
- 1.1.2 Deputy General Manager reports to the General Manager and is responsible for the QA program as it applies to the engineering support.

- 1.1.3 The YMP Technical Project Officer (TPO) is responsible to the Yucca Mountain Site Characterization Project Office Project Manager for directing activities in support of the project in accordance with this QAPD and implementing procedures. The TPO has responsibility for approval of the QAPD, changes thereto, and interpretation thereof. All technical and quality assurance implementing procedures will be approved by the TPO. The TPO is responsible for reviewing implementing technical and quality assurance procedures. The TPO will be the prime interface with other participants. The Yucca Mountain Project organization will consist of Field Operations, Systems Engineering, Site Characterization Design, and Administration.
- 1.1.3.1 The Site Characterization Design Department is responsible for providing for the design of the Site Characterization Facility (SCF) and other facilities as assigned by the Project Office. Designs will produce analyses, drawings and specifications as appropriate to the assigned project.
- The Site Characterization Design Department will provide qualified personnel to accomplish the requirements above and to manage the criteria flow, set and monitor schedules and to review drawings and specifications to established criteria.
- 1.1.3.2 The Systems Engineering Department will provide qualified personnel to: manage interfaces, control configuration, control computers and software, and manage and control the project procedures.
- 1.1.3.3 The Field Operations Department is responsible for providing qualified personnel to control field changes, provide material testing, monitor construction, provide geophysical logging, consult on drilling operations, and provide geological and hydrological services.
- 1.1.3.4 The Project Administration Department will provide qualified personnel for budgetary control, long-range planning, Planning and Control Systems (PACs), the Project Microfilm Center (until this responsibility is assumed by the Civilian Radioactive Waste Management Systems Management and Operating Contractor - CRWMS M&O), and general clerical support as required.

1.1.4 Full-time Matrix Support Organizations

RSN organizations that provide full-time support to YMP are described in implementing procedures.

- 1.1.4.1 The Manager, Quality Assurance, RSN (MQA/RSN) reports to the General Manager and has been delegated the responsibility for establishing, maintaining and managing the overall RSN Quality Assurance Program.

The Manager, Quality Assurance, RSN has delegated the responsibility for the Yucca Mountain Project (YMP) Quality Assurance Program to the Manager, Quality Assurance, YMP.

- 1.1.4.1.1 The Manager, Quality Assurance, YMP (MQA/YMP) reports directly to the MQA/RSN and has the management responsibility and authority to direct and control quality assurance functions to ensure that Program quality assurance objectives are consistently met. The MQA/YMP has direct access to, and maintains liaison with, the TPO, other managers and management of other affected organizations. This reporting relationship provides the organizational freedom and authority to identify quality problems; initiate, recommend, or provide solutions; and prevent or control further processing, delivery, or use of nonconforming items or activities, until disposition is obtained.

The MQA/YMP is responsible for coordination, integration, and overview of Program quality assurance activities and for ensuring that appropriate quality management, policy, training, and verification controls are in place. The MQA/YMP has appropriate management and quality assurance knowledge and experience and has no responsibilities that prevent his full attention to quality activities. This position has sufficient freedom from cost and schedule when opposed to quality considerations.

The responsibilities of the MQA/YMP are to:

- a. Establish integrated Program quality assurance policies and requirements in controlled documents.
- b. Coordinate development of the YMP quality assurance program documents including the QAPD, and quality assurance procedures.

- c. Provide quality assurance guidance and direction to affected organizations.
- d. Serve as the focal point for YMP quality assurance activities; provide coordination within RSN and assure that Program activities affecting quality are conducted in accordance with the RSN QA Program Requirements.
- e. Overview Program quality assurance activities by conducting verifications and selectively participating in verification activities, such as assessments, readiness reviews, or audits, and issues schedules for audits and surveillances.
- f. Review controlled documents for inclusion of quality assurance requirements. Approves all technical and quality assurance procedures.
- g. Assure development and implementation of a quality assurance indoctrination program for all Program personnel.
- h. Establish and maintain the indoctrination and training requirements for QA personnel as well as maintaining their qualification and training records.
- i. Maintain effective communication with Project and upper management personnel relative to the status of the quality assurance program; status of resolution of issues, trends, and significant conditions adverse to quality.
- j. Manage the QA staff.
- k. Ensure that QA personnel who perform activities affecting quality are qualified by experience, education or training to perform assigned tasks.
- l. Verify the adequacy and effectiveness of organizations and subtier organizations QA programs.
- m. Reviews and approves the QAPD, revisions to and the interpretation thereof.

1.1.4.1.1.1 Quality Assurance Sections The MQA/YMP is assisted in the execution of duties by three QA sections (i.e., Quality Assurance Engineering, Quality Control, and Audits and Surveillance) that report to the MQA/YMP. These sections have the responsibility to direct and control quality assurance functions as defined in implementing procedures.

1.1.5 As-Needed Matrix Support Organizations

RSN organizations that provide matrix support on an as needed basis are described in implementing procedures.

1.2 DELEGATION OF WORK

When RSN delegates work to other program participants, a qualified individual or organization from within the delegating office shall be accountable for the quality of the delegated work.

1.3 RESOLUTION OF DISPUTES

Should disputes involving quality arise at any given organizational level, the dispute shall be elevated to the MQA/YMP and the other responsible manager(s), and if necessary to the General Manager. If a dispute between RSN and another project participant cannot be resolved, the dispute will be elevated to the DOE YMP Director, Quality Assurance (DQA) for resolution.

1.4 RESOLUTION OF ALLEGATIONS

Allegations of inadequate quality shall be resolved in accordance with appropriate DOE Administrative Procedures.

1.5 STOP WORK PROVISIONS

Provisions for issuing and lifting Stop Work Orders/Requests shall be developed and implemented by the MQA/YMP. Provisions shall include the following factors:

- a. Criteria and methodology for Stop Work and for lifting Stop Work Orders/Requests.
- b. Exact definition of work being stopped.
- c. Authorities and responsibilities.

1.6 PROGRAM APPLICABILITY

This Quality Assurance Program Description applies to all items and activities of all organizations affecting quality. The organization structures and responsibilities are clearly established in this plan and implementing procedures so that the results described below are obtained.

- 1.6.1 Quality is achieved and maintained by those who have been assigned responsibility for performing the work.
- 1.6.2 Quality achievement is verified by persons or organizations not directly responsible for performing the work. Verification of conformance to established requirements (acceptance) is accomplished by the QA organization unless specifically exempted in this Quality Assurance Program Description. Design verification is accomplished by the Design organization.

1.7 ORGANIZATION INTERFACES

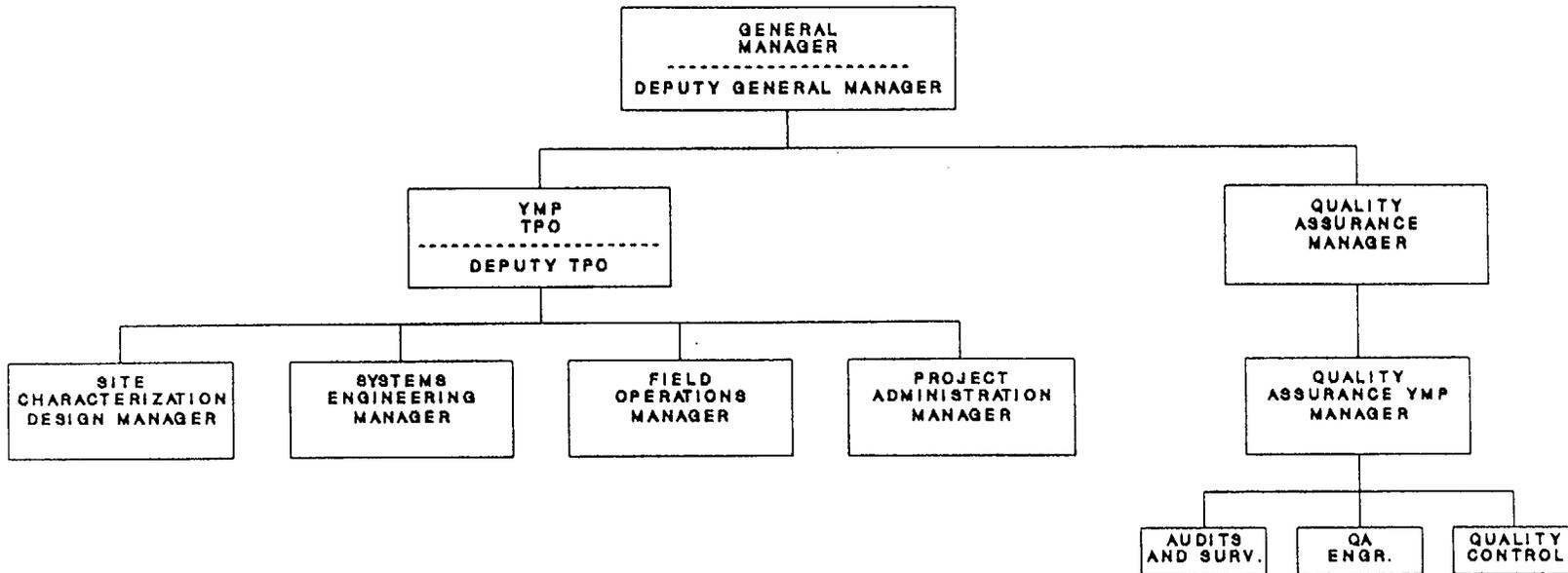
If more than one organization is involved in the execution of activities affecting quality, then the responsibility and authority of each organization will be established clearly and documented.

- 1.7.1 The external interfaces between organizations and the internal interfaces between organizational units and changes thereto are documented. All interface responsibilities will be defined and documented. The interfaces between RSN, and the other Nevada Test Site (NTS) Support Contractors, the Project Office, and the Participating Organizations are briefly described below. Specific interfaces are described in DOE Administrative Procedures and RSN Implementing Procedures.
 - 1.7.1.1 Reynolds Electrical and Engineering Company (REECO) - RSN is responsible for inspection and surveillance of drilling, mining, and construction performed by REECO and its sub-contractors. RSN may purchase equipment through REECO and utilizes their calibration facility for the calibration of measuring and test equipment.
 - 1.7.1.2 Lawrence Livermore National Laboratory (LLNL) - RSN receives direction through the Project Office to support LLNL in site investigations. RSN provides LLNL support in site package design, handling, and fabrication as part of the on-site waste package characterization program.

- 1.7.1.3 Los Alamos National Laboratory (LANL) - RSN receives direction through the Project Office to support LANL in site investigations.
- 1.7.1.4 Sandia National Laboratories (SNL) - RSN receives direction through the Project Office to support SNL in site investigations.
- 1.7.1.5 Science Applications International Corporation/Technical & Management Support Services (SAIC/T&MSS) is the integrating contractor for the Project Office and interfaces with RSN in providing broad technical, operational, and managerial support for Yucca Mountain Site Characterization Project activities.
- 1.7.1.6 United States Geologic Survey (USGS) - RSN receives direction through the Project Office to support USGS in site investigations. Additionally, RSN provides USGS with Geology/Hydrology personnel who work in accordance with the USGS QAPD and Procedures. RSN Quality Assurance is not responsible for audit or surveillance of these activities.
- 1.7.1.7 Yucca Mountain Site Characterization Project Office (YMPO) - The Project Office manages and provides technical direction of the activities of RSN through the issuance of technical and programmatic direction and QA programmatic direction. RSN is responsible to the Project Office for technical activities assigned in the YMP Work Breakdown Structure Dictionary (WBS), and project-specific technical plan.
- 1.7.1.8 Civilian Radioactive Waste Management Systems Management and Operating Contractor (CRWMS M&O) - RSN submits quality assurance records to the Las Vegas Local Records Center operated by the CRWMS & M&O.
- 1.7.2 From an overall Yucca Mountain Site Characterization Project standpoint, the above interfaces are exchanges of technical requirements of work to be performed and liaison until completion of work. The Yucca Mountain Site Characterization Project DOE Administrative Procedures (APs) provide the implementing interface controls utilized by RSN while RSN's implementing procedures describe the methods of conducting inter-organizational interfaces.

RAYTHEON SERVICES NEVADA

YMP ORGANIZATION CHART *



1-8

* SEE IMPLEMENTING PROCEDURES FOR MATRIX ORGANIZATIONS

FIGURE 1-1

QAPD-002
REVISION 0
CHANGE NOTICE C

SECTION 2

QUALITY ASSURANCE PROGRAM

2.0 GENERAL

The RSN organization has developed this document as its program description of the Quality Assurance Program that it will implement. The RSN Quality Assurance Program consists of the RSN QAPD and the Quality Assurance Procedures and Project Procedures and instructions which comply with the OCRWM QARD requirements.

2.1 SCOPE

The scope of activities that constitute the RSN QA program is described in implementing procedures and instructions and includes ESF Surface and Subsurface Design; Field Surveillance and Inspections of Construction; Drilling and Mining; Materials Testing; Field Surveying; and Microfilming YMP Project Records. Additional activities may be included at the direction of the YMP Project Office. Figure 2-1 of this Section depicts the document hierarchy describing this program. The RSN QA program is implemented by line organization staff, management, and the quality assurance staff.

2.2 RSN QA PROGRAM

2.2.1 QA Requirements

The quality assurance requirements for the OCRWM Program are identified in the OCRWM QARD and its Appendix A, Amplifications of Quality Assurance Program Requirements for the Mined Geologic Disposal System (MGDS). Appendix A to this document lists the requirements documents upon which the RSN QA Program is based.

2.2.2 YMP APQs

The quality-related YMP Administrative Procedures (APQs) provide the implementing interface controls utilized between the Project Office and the RSN activities. RSN procedures and instructions will address the YMP APQs which pertain to RSN's scope of work. APQs used directly by RSN are identified in the implementing procedures.

2.2.3 RSN QAPD

The RSN QAPD describes the provisions established by RSN to implement the requirements of the OCRWM QARD, the RSN organizational responsibilities and authorities for achieving and verifying quality, the interfaces between RSN and the Project Office, and the overall QA program. Provisions are described in the RSN QAPD to meet each applicable section of the OCRWM QARD. The RSN QAPD is reviewed by appropriate RSN management, and approved by MQA/YMP, MQA/RSN and the TPO prior to submittal to the Project Office for approval. The Policy Statement is signed by the General Manager.

2.2.4 Software Quality Assurance Plans

Software Quality Assurance Plans (SQAPs) are developed and approved in accordance with Section 19 of this QAPD.

2.2.5 RSN Implementing Procedures and Instructions

The RSN procedures and instructions will be consistent with the OCRWM QARD and this QAPD. They will delineate the specific administrative and quality assurance controls used to implement the QA requirements as well as provide instructions for RSN personnel performing activities affecting quality. Review and approvals of procedures and instructions are described in Sections 5 and 6 of this QAPD. RSN Project Procedures and Instructions are developed by the TPO; Quality Assurance Procedures and Instructions are developed by the MQA/YMP.

2.2.6 QA Requirements Matrix

Provision shall be established that demonstrate through a matrix system that the requirements of the QARD are properly documented and covered by the QAPD, implementing procedures, and instructions.

2.2.7 Delegated Work

The delegation of work activities through consultants, sub-contracts, etc., is controlled as described in Section 1.2 of this QAPD. The RSN QA organization reviews and approves subcontractor QA program documents.

2.2.8 Quality Assurance Program Controls

Quality Assurance controls are applied to items and activities affecting quality that are performed by the RSN organization in accordance with DOE Administrative Procedures. The RSN QA Program invokes controls over activities through procedures and instructions. Verification of the effectiveness of the controls is accomplished by internal audits and surveillances, external audits, surveys of RSN suppliers, and document reviews by the QA organization.

2.2.9 Readiness Reviews

Management performs readiness reviews as deemed appropriate. Readiness reviews are used to ensure that specified prerequisites and programmatic requirements of major scheduled/planned activities have been satisfied prior to starting that activity.

2.2.10 Determination of Importance and Graded QA for Items and Activities

The determination of importance of items and activities and the application of the "graded" approach to QA will be consistent with the OCRWM QARD and DOE Administrative Procedures.

2.2.11 "Qualified" Data

The QA Program provides for the acceptance of data or data interpretations for use in licensing activities that were not generated under the controls of the YMP Quality Assurance Program. Once accepted, these data are classified as "qualified" for licensing purposes. Specific methods of acceptance of these data are described in DOE Administrative Procedures consistent with the requirements of NUREG 1298.

2.2.12 Personnel Selection, Indoctrination and Training

Personnel assigned to perform activities that affect quality will receive appropriate indoctrination and training prior to performing work. Procedures will address the performance of indoctrination, training, and qualification activities. Management and supervisory personnel determine the extent and need of training for personnel based on the scope, complexity and nature of the activity and on the education, experience and proficiency of the person. Proficiency shall be maintained and additional training may be required at the discretion of management. The Program Support staff verifies the education and work experience of personnel. Management establishes job descriptions for each job position in the quality program. Personnel selected for these positions shall have the education, experience, and training commensurate with the functions identified in the position description. Initial qualification shall be documented.

- 2.2.12.1 Verification personnel such as Lead Auditors and Inspectors will be qualified in the principles, techniques, and requirements of the verification activity being performed (e.g., Audits, Inspections) in accordance with approved procedures and instructions which reflect the requirements established in the OCRWM QARD and ANSI/ASME NQA-1. Qualification records for these personnel will be maintained.
- 2.2.12.2 Classroom training will be performed in accordance with approved lesson plans. Other forms of training include group instructions, on the job training, and procedural reading assignments. All training is documented.
- 2.2.12.3 Records associated with indoctrination and training shall reflect attendance sheets, objective and content of the program material presented, and date(s) of attendance as applicable.
- 2.2.12.4 After the initial personnel qualification evaluation, the job proficiency of personnel who perform activities affecting quality will be evaluated and documented at least annually. Proficiency evaluations may be performed in conjunction with periodic or day-to-day employee performance evaluations. Proficiency evaluations will be performed by managers or supervisors who have responsibility for the activities being performed or verified.

2.2.13 Management Assessments

Management assessments of the QA Program shall be conducted at least annually. The assessment will be performed by management above or outside the QA organization by, or at the direction of, the Technical Project Officer. The management assessment will determine the effectiveness of the system and management controls that are established to achieve and assure quality, and the adequacy of resources and personnel provided to the QA program. These evaluations are performed, documented, and reported to upper management. Any conditions adverse to quality identified in these assessments will be documented and tracked.

2.2.14 Management Information Reporting and Tracking

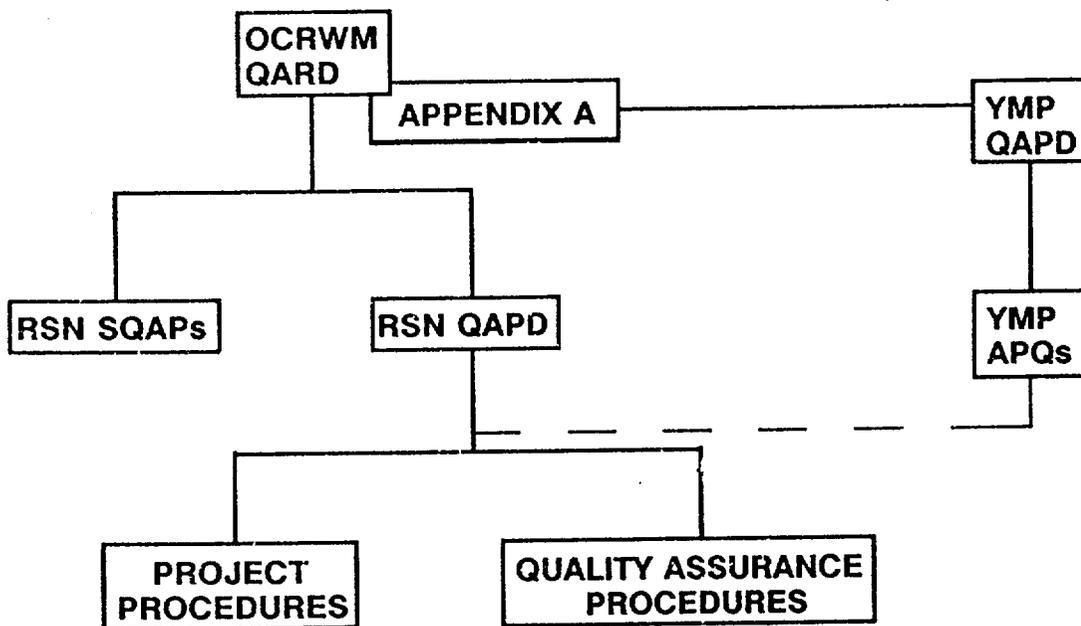
Communication and information systems will be established to ensure timely reporting, dissemination, and tracking of quality assurance management information such as the status of QA program implementation, status of resolutions of significant conditions adverse to quality, and summaries of management and QA overview results. This information may be found in reports, meetings, results, audits and surveillances, trending reports, etc. and will be furnished to RSN upper management and to the Project Office at least quarterly.

2.2.15 Surveillance

Surveillances shall be conducted to assess the quality of items and activities. These shall be conducted in accordance with procedure(s) which meet the requirements of the QAPD.

Figure 2-1

QUALITY ASSURANCE PROGRAM RSN DOCUMENT HIERARCHY



SECTION 3

DESIGN CONTROL

3.0 GENERAL

RSN is responsible for the Surface and Subsurface Design of the SCF, and other facilities as assigned by DOE. Design activities are accomplished in accordance with written procedures which comply with the requirements of the documents specified in Appendix A of this QAPD. These procedures describe the systems engineering process by which Design activities, from conceptual design through final design are planned, controlled, and implemented; and describe the control of design inputs, interfaces, outputs, changes and deficiencies.

3.1 SCOPE OF DESIGN CONTROL

The Site Characterization Facility Design is uniquely affected by considerations of the waste isolation characteristics of natural barriers and ultimately affects those barriers. Therefore, RSN has adopted design-related definitions specified by the Quality Assurance Requirements Document. The terms Design, Design Information, and Design Activities are used in this program description as follows:

3.1.1 Design

The design incorporates specifications, drawings, criteria, performance requirements and configuration of the natural and engineered structures, systems, components and barriers of the Mined Geological Disposal System. The act of defining the above technical requirements at each developmental stage of final design (that is, from conceptual design through final design). Design control measures are exercised at each stage of the design.

3.1.2 Design Information

This includes data collection and analysis activities that are used in supporting design development and verification. This includes general plans and detailed procedures for data collection and analyses and related information such as tests results and analyses. Data analysis includes the initial step of data reduction as well as broad-level system analysis, such as performance assessments, which integrate many other data and analysis of individual parameters.

3.1.3 Design Activities

Activities related to the design process, including data collection and analysis activities that are used in supporting design development and verification.

3.2 RSN CONTROL OF DESIGN ACTIVITIES

3.2.1 Systems Engineering

RSN will comply with the DOE Systems Engineering approach for control and management of design activities.

3.2.2 Design Inputs

Conventional design uses inputs such as applicable codes and standards, tables of material properties, etc. RSN implements procedures for selection and approval of, and changes to, inputs in that category.

3.2.2.1 Site Characteristics and Test Requirements Inputs

RSN reviews such inputs and returns comments to the Project Office with any requests for modification.

Data that will be needed to be qualified to support a license application but was not collected under the controls of a QA program meeting the QA program requirements of 10 CFR 60 Subpart G or this document shall be qualified in accordance with Section 2.2.1.0 of this QAPD prior to use in support of license application activities.

Methods for technical information flow to and from the Project technical data base and the Project Reference Information Base (RIB) are delineated in approved procedures.

3.2.2.2 Basis for Design

RSN develops Basis for Design Documents (BFD) which identify the Site characteristics and test requirements inputs and regulatory requirements inputs applicable to the RSN design of the SCF.

3.2.3 Design Process

Design activities are conducted by RSN. Quality affecting computer programs used in design are controlled in accordance with Section 19 of this document. RSN is required (1) to prescribe its design processes at the level of detail necessary to permit the design to be performed in a correct manner; and (2) to ensure that such activities are documented in a timely manner and in sufficient detail to support facility design, construction, and operation; and (3) to permit verification that the design meets the established requirements.

Design processes are required to provide for planned, documented, controlled analyses, and to include the following features:

- a. Legible analysis documents in a form suitable for reproduction, filing, and retrieval.
- b. Sufficient detail as to purpose, method, assumptions, design input, references, and units to enable an individual technically qualified in the subject to review and understand the analysis and verify adequacy of the results without recourse to the originator.
- c. Provisions for ensuring that calculations are identifiable for retrieval (e.g., by subject, originator, reviewer, and date; or by other unique identifying data).

3.2.4 Design Verification

RSN is responsible for the verification of its designs. One or more of the following methods shall be used for design verification: design reviews, the use of alternate calculations or the performance of qualification tests. Procedures for design verification shall require the identification of the reviewers, the area or features reviewed, and the resolution methods for resolving comments.

Design verification procedures assure the following:

- a. Criteria for determining the method of verification are established.
- b. Responsibilities of the persons performing the verification or validation are defined.

- c. Areas or features to be verified are specified.
- d. Extent of documentation is defined.

3.2.4.1 Technical Reviews

- a. Technical reviews shall be performed when the information or document under review is within the state of the art and is based on accepted standards, criteria, principles, and practices.
- b. Technical reviews shall be used when documents, activities, material, or data require technical evaluation for applicability, correctness, adequacy, completeness, and assurance that established requirements are satisfied.
- c. Technical reviews shall be performed by individuals with sufficient technical knowledge of the area under review.
- d. Results shall be documented.

3.2.5 Design Change Control

Changes to RSN completed design-related documents, including design input documents, are justified and processed using the same methods applied to the preparation of the original document. Changes, with the exception of minor changes as described in Section 6.0, are reviewed and approved by the organizations that reviewed and approved the original design document except where a department was originally responsible for approving the design document is no longer responsible. In these cases, the RSN Project management will designate a new responsible organization to review the document changes.

The impact of design changes on procedures and training is evaluated.

3.2.6 Design Deficiency Control

Deficiencies in approved design-related documents generated by RSN and in design information used by RSN are controlled and resolved in accordance with Section 16. The impact of such design document deficiencies on work previously performed using the affected document, is evaluated and corrective measures, if necessary, are applied.

SECTION 4

PROCUREMENT DOCUMENT CONTROL

4.0 GENERAL

Procurement is accomplished in accordance with written procedures which comply with the requirements of the documents specified in Appendix A of this QAPD. Procurement of items is accomplished through REEC or another procuring organization. Procurement of services is accomplished through RSN Procurement. Procedures for the procurement of items and services describe the process by which procurement planning is accomplished; the process by which procurement documents and revisions are prepared, reviewed, approved and controlled, the contents of procurement packages, and the responsibilities for executing procurement document control activities. In addition, these procedures will describe the involvement of the RSN Quality Assurance organization.

4.1 PROCUREMENT DOCUMENT PLANNING, PREPARATION, REVISION, REVIEW, AND APPROVAL

Procedures are established and implemented for the control of procurement documents. The procedures define the methods and responsibilities for procurement planning and for preparation, review, and approval of procurement documents and changes thereto. Procurement planning includes identifying the need for a specific service, determining the specific work to be accomplished, identifying appropriate technical and quality requirements, and identifying sources for the work.

4.2 PROCUREMENT DOCUMENT CONTROL

RSN initiates procurement packages including the following, as appropriate, in the procurement document package:

- 4.2.1 A Statement of the scope of work to be performed by the supplier.
- 4.2.2 Technical requirements:
 - a. Reference to, and/or inclusion of, specific plans, drawings, specifications, codes, standards, regulations, procedures, or instructions that describe the services to be furnished.

- b. Identification of acceptance requirements for monitoring and evaluation of supplier performance.
- c. Technical acceptance/rejection criteria.

4.2.3 Quality Assurance Program requirements:

- a. Quality Assurance requirements addressing applicable elements of the program commensurate with the scope, complexity, and safety implications of the work, as determined by the procurement requestor.
- b. Permission for the supplier to work under the umbrella of the purchaser's quality assurance program, at purchaser option, when appropriate to the nature of the procurement, provided that the scope of the activity is adequately addressed therein. When these circumstances apply, the procurement documents will specify which parts of the purchaser's QA program are applicable to the supplier's work efforts.
- c. Requirement for the supplier to incorporate appropriate provisions of the Quality Assurance Program in subtier procurement documents.

4.2.4 At each tier of procurement, the right of purchaser or designated or authorized parties, access to supplier facilities and records for verification, such as inspection and/or audit.

4.2.5 Documentation required of the supplier, including submittal of schedules, nature of documentation (i.e., information, review, or approval) and designation of retention items and disposition requirements for those records maintained by the supplier.

4.2.6 Requirements for reporting and review or approval of nonconformance dispositions.

4.3 **PROCUREMENT DOCUMENT REVIEW**

4.3.1 Documented technical and quality assurance review of procurement document packages are performed to ensure that the documents include all necessary requirements and provisions. These reviews are performed by qualified QA and technical personnel who have access to pertinent background information.

- 4.3.2 Procurement documents and changes are reviewed to verify that the procurement documents:
- a. Have been prepared in accordance with procedural requirements.
 - b. Reflect adequate quality assurance requirements.
 - c. Include applicable regulatory, design basis, and related technical information, and that these requirements are correctly stated.
- 4.3.3 Procedures include provisions for analysis of exceptions requested or specified by the supplier, to assess potential impact of such exceptions on intent of the procurement documents or on quality of the service.

4.4 PROCUREMENT DOCUMENT CHANGES

Changes to procurement documents, other than minor changes as described in Section 6, receive the same degree of control as utilized for the original documents.

SECTION 5

INSTRUCTIONS, PROCEDURES, PLANS AND DRAWINGS

5.0 GENERAL

RSN conducts quality affecting activities in accordance with approved procedures, instructions, plans, or drawings that are appropriate to the work or activity and are consistent with the requirements of the documents identified in Appendix A and this QAPD. They shall include or reference appropriate quantitative or qualitative acceptance criteria as required for determining that described activities have been satisfactorily accomplished.

5.1 PREPARATION, DISTRIBUTION, AND CONTROL

5.1.1 Instructions, procedures, plans, or drawings shall be prepared by either the RSN Yucca Mountain Project Line Organization or the Quality Assurance Organization, which ever is responsible for implementing the activity. Instructions, procedures, plans and drawings shall be available prior to the start of quality affecting activities.

5.1.2 These documents shall be reviewed, approved, distributed, and controlled as described in Section 6 of this document.

5.2 RESPONSIBILITY FOR DEVELOPMENT OF INSTRUCTIONS, PROCEDURES, PLANS AND DRAWINGS

Technical Project Officer has the responsibility for the development of the following documents:

- a. Project Procedures
- b. Software Quality Assurance Plans for the SCF
- c. Technical documents including drawings and specifications
- d. Instructions for Project personnel

The MQA/YMP has the responsibility for the development of the following documents:

- a. Quality Assurance Procedures

- b. The Quality Assurance Program Description
- c. Instructions for Quality Assurance personnel

5.3 CHANGE CONTROL

All changes to instructions, procedures, plans, and drawings are required to be processed in accordance with approved procedures.

5.4 QUALITY ASSURANCE RECORDS

Controlled documents shall delineate those documents generated as a result of implementation or which are designated as Quality Assurance records.

SECTION 6

DOCUMENT CONTROL

6.0 GENERAL

Procedures ensure that Program documents affecting quality are prepared, reviewed, approved, issued and revised in a prescribed and controlled manner.

This section describes provisions established to control the preparation, revision, review, approval, and issuance of documents affecting quality.

The documents which shall be controlled are only those documents which specify quality requirements or prescribe activities affecting quality such as instructions, procedures, plans and drawings.

6.1 RSN DOCUMENT CONTROL

6.1.1 Document Preparation, Review, Approval, and Revision

Documents that specify quality and/or technical requirements or prescribe activities affecting quality are prepared; reviewed for adequacy, completeness, and correctness prior to approval and issuance; approved; and issued and distributed and revised in accordance with written procedures. Procedures for preparation and revision of plans, manuals, procedures, instructions, and other documents address, as a minimum, the following requirements:

- a. Identification of the individuals or organizations responsible for the preparation, revision, review, approval, and release of the document. The QA organization reviews and concurs with controlled documents that contain or implement quality assurance requirements.
- b. Review of documents affecting quality by individuals or organizational elements with responsibility for implementation to assure technical adequacy.
- c. Review of documents affecting quality by individuals other than the preparer of the document.

- d. Access by reviewing organizations to pertinent background data or information to assure a complete review.
- e. Resolution of review comments for which resolutions are considered mandatory by the reviewing organization, prior to approval and issuance of the document. Review comments and resolutions are to be documented and maintained in accordance with approved procedures.
- f. Independent review to assure technical adequacy including the correct translation of design requirements.

Changes to documents, other than those defined as minor changes, are considered major changes and shall be reviewed and approved by the same organizations that performed the original review and approval, unless other organizations are specifically designated by the organization responsible for the document.

Minor changes to documents, such as inconsequential editorial corrections or clarifications, are not subject to the same review and approval as the original documents. To avoid possible omission of a required review, the types of minor changes that are not subject to such review and approval, and the authority for such a decision, is clearly delineated in approved procedures.

6.1.2 Issuance and Distribution

Document issuance and distribution are controlled to ensure that correct, applicable, and current documents are available to the personnel performing prescribed activities, prior to commencing work and at the location where work is performed. Approved procedures delineate the responsibility and authority for such releases. Documents which require verification that are released prior to verification are identified as such and controlled and authorized for release by signature approval, with the described bases for release.

Document control procedures include the following provisions:

- a. Identification and marking of documents.
- b. Use of receipt acknowledgment document transmittal forms.
- c. Maintenance of controlled document distribution lists.

- d. Marking, removal, or destruction of obsolete or superseded controlled documents.
 - e. Maintenance of an index (controlled document list) giving revision status for controlled documents.
- 6.1.3 Controlled document recipients are responsible for acknowledging document receipt; ensuring that the latest authorized documents are available at the workplace; and that obsolete or superseded documents are so identified, destroyed, or returned.

SECTION 7

CONTROL OF PURCHASED ITEMS AND SERVICES

7.0 GENERAL

Procedures, which comply with the requirements of the documents specified in Appendix A, ensure that purchased services are controlled in accordance with specified requirements. Services are procured through RSN. Items are procured through REECO or another procuring organization. The extent of RSN responsibility in procurement of items is described in DOE Administrative Procedures. Procedures describe RSN involvement in the procurement of items through REECO or another procuring organization.

7.1 RSN CONTROL OF PURCHASED SERVICES

Procedures are established to control purchased services. The system for control of purchased services includes:

a. Procurement planning

Procurement planning is accomplished and documented as early as practicable to provide appropriate interface compatibility and to ensure a systematic approach to the procurement process. Planning is performed to determine what is to be accomplished; how is it to be accomplished; when is it to be accomplished; and who is to accomplish it. Requirements for supplier quality assurance programs are specified in the solicitation package.

b. Supplier selection

For RSN procurement of services, RSN is responsible for soliciting bids and awarding contracts. Source selection officials are responsible for evaluating bid offers and proposals.

Procurements are subject to the Federal Acquisition Regulations (FAR) and Department of Energy Acquisition Regulations (DEAR). Supplier's quality assurance programs are evaluated either before or after contract placement and any quality deficiencies are corrected prior to initiating quality-affecting work.

It is recognized that some of the research and analysis required for site characterization requires the services of specialists, or of institutions or agencies whose work does not ordinarily involve formal quality assurance activities. In these instances, selection is based on technical capability, and establishment of quality assurance measures appropriate to the services to be performed at the outset of their work.

c. Bid Evaluation

The bid evaluation process determines the extent of the supplier's ability to meet the procurement document requirements. Based on the type of procurement, bid evaluations consider the following subjects:

- Technical considerations.
- Quality assurance requirements.
- Personnel of potential supplier.
- Past performance of potential supplier.

d. Supplier performance evaluation

Methods and criteria for evaluating supplier performance for RSN procurement activities are delineated in approved procedures.

Interfaces with the supplier are established to ensure that the performance measurement methods are appropriate, adequate, and understood by each involved organization. The methods used include establishment and evaluation of performance objectives; review of supplier's records and nonconformance controls; and performance of reviews, audits, and surveillances. This documentation is evaluated to determine the supplier's quality assurance program effectiveness.

e. Supplier generated document control

Supplier generated documents are submitted in accordance with the requirements delineated in the procurement documents. These documents are reviewed, and evaluated to ensure conformance to the procurement requirements. As a minimum, RSN ensures the supplier provides documentation that identifies the procurement requirements met, as well as documentation identifying procurement requirements that have not been met.

f. Change control

Changes to procurement documents of purchased services are evaluated in the same manner and with the same criteria as the original procurement documents.

g. Acceptance of services

Services are accepted by one or more of the following methods:

1. Results of source verification, audits or surveillances.
2. Technical verification of data produced.
3. Review of objective evidence for conformance to the procurement document requirements.
4. Evaluation of suppliers certificates of conformance for services to ensure validity and documentation of results.

h. Control of Nonconformances

The disposition of services not meeting procurement document requirements are accomplished, through approved procedures. These procedures include provisions for: evaluation of the nonconforming condition; submittal of the nonconformance document to RSN by the supplier, as directed by RSN; RSN disposition of supplier's recommendation of corrective action; verification of the implementation of the disposition; and maintenance of supplier submitted nonconformance documents.

7.2 RSN CONTROL OF ITEMS

Procedures consistent with the DOE Administrative Procedures describe RSN interfaces and responsibilities in the Control of Items. The system for control of purchased items includes:

a. Procurement Planning

RSN prepares Technical Requirements Packages which establish the technical and quality assurance requirements for procurements. The packages consist of drawings and specifications, which are developed in accordance with Section 3.0 of this QAPD. The Technical Requirements Packages are reviewed for adequacy by Technical and Quality Assurance personnel and approved for release by the line organization.

b. Bid Evaluation

Technical and Quality Assurance personnel will evaluate proposals. If the selected proposal results in changes to the design documents, these will be controlled in accordance with Section 3.0 of the QAPD.

c. Supplier Selection

RSN will provide technical assistance to the procuring organization in the evaluation of supplier's facilities and capabilities.

d. Verification Activities

RSN will participate in verification activities at the supplier's facility to the extent specified in the Technical Requirements Package.

e. Supplier Submittals

RSN will review and approve supplier submittals which pertain to the design of the item.

f. Nonconformances

RSN will review and approve Nonconformances to design documents. Changes to the design document will be controlled in accordance with Section 3.0 of this QAPD.

g. Changes

Changes to procurement documents shall be subject to the same degree of control as used in the preparation of the original document.

h. Acceptance

RSN will accept items by receipt inspection, post installation testing or other methods as specified in procurement documents.

SECTION 8

IDENTIFICATION AND CONTROL OF MATERIALS, PARTS, COMPONENTS, AND SAMPLES

8.0 GENERAL

RSN is not responsible for the identification and control of materials, parts, and components. RSN will specify requirements for identification and control of materials, parts, and components in design documents. RSN is responsible for the collection and testing of samples. Responsibilities for the collection of samples are defined in DOE Administrative Procedures. RSN will conduct tests on samples as required by the project participants. RSN procedures will provide for the following:

- a. Accountability of samples while in RSN possession, including auditable records of transfers of accountability between RSN and other participants.
- b. Traceability of samples to the applicable RSN documents, such as documentation which identifies the location, depth and other information requested by the Principle Investigator.

8.1 SAMPLE IDENTIFICATION

Samples will be identified by placing identification directly on the sample when possible, on the sample's containers, or on labels or tags attached to the samples or the sample's containers. Sample identification shall be verified prior to release for testing or analysis.

8.2 SAMPLE TRACEABILITY

Identification systems shall assure traceability of samples to the appropriate documentation such as drawings, specifications, purchase orders, technical reports, drilling location and logs, (including well bore and depth), test records, installation and use records, inspection documents, and nonconformance reports. Controls are established to preclude the inadvertent use of incorrect or defective samples. Traceability of samples from initial acquisition through final disposition is required. Measures shall be taken to preclude the use of samples that cannot be identified.

SECTION 9

CONTROL OF PROCESSES

9.0 GENERAL

Quality affecting processes in support of Engineered Items and Scientific Investigations shall be controlled in accordance with written procedures or instructions.

9.1 CONTROL OF SPECIAL PROCESSES

9.1.1 Scope of RSN Special Processes

Nondestructive Testing is the only special process that RSN performs. Nondestructive testing services are provided as matrix support by the RSN Quality Assurance Division at the Nevada Test Site.

9.1.2 Requirements for Special Processes

- 9.1.2.1 Special processes shall be controlled by instructions, procedures, drawings, checklists, travelers, or other appropriate means which shall ensure that process parameters, including acceptance criteria, are identified and controlled, and that special environmental conditions are maintained.
- 9.1.2.2 Personnel implementing these processes shall be appropriately indoctrinated and trained as required by Section 2 of this QAPD.
- 9.1.2.3 Special process procedures and personnel shall be qualified and/or certified in accordance with applicable codes, standards, and specifications, such as SNT-TC-1A, 1980. The qualification process shall utilize the actual working procedure.
- 9.1.2.4 Special process equipment shall be checked out (e.g., calibrated, inspected, etc.), qualified, and certified in accordance with specified requirements. These requirements shall implement the requirements of applicable codes, standards, and specifications.

9.1.3 Quality Assurance Overview

The quality assurance organization reviews and approves special process procedures. Additionally, the quality assurance organization shall monitor the development and implementation of special process qualification activities through the conduct of source and field verification, audits and surveillances.

9.1.4 Evidence of Accomplishment of Special Processes

Provisions for recording evidence of acceptable accomplishment of special processes shall be established.

SECTION 10

INSPECTION

10.0 GENERAL

RSN is responsible for the inspection of facilities which it designs. The requirements of this section apply to engineered items and do not apply to scientific investigations. The MQA/YMP is responsible for the Title III Inspection of surface and subsurface facilities, and drilling activities. Inspections are conducted in accordance with procedures or instructions which meet the requirements of the QARD. The inspection procedures and instructions shall meet ASME NQA-1 Basic Requirement 10 and Supplement 10S-1 and the following:

10.1 INSPECTION PLANNING

Inspection planning shall provide:

- a. Criteria for determining when inspections of each work operation are to be conducted.
- b. Identification of required procedures, drawings, and specifications including revisions.
- c. Specification of necessary measuring and test equipment, including accuracy requirements.
- d. Identification of hold points.

Quality Assurance with input from the technical organization will develop inspection plans.

10.2 PERSONNEL QUALIFICATIONS

Personnel performing inspections shall be qualified in accordance with Section 2 of this QAPD including Supplement 2S-1 and Appendix 2A-1 of NQA-1. Inspection personnel shall not report directly to the immediate supervisors who are responsible for performing the work being inspected.

10.3 RECORDS

Inspection records shall include:

- a. Characteristics inspected and objective evidence of the results.
- b. Identification of the inspection criteria or reference documents used to determine acceptance.
- c. Identification of the measuring and test equipment used during the inspection.

10.4 INSPECTION HOLD POINTS

Mandatory inspection hold-points will be established as necessary. When such hold or witness points are established, work may not proceed without the specific consent of the responsible representative. These hold or witness points will be indicated in documents controlling the activity. Consent to waive any specified hold or witness point will be documented before work can be continued beyond the designated hold or witness point.

SECTION 11

TEST CONTROL

11.0 GENERAL

This section applies to prototype, qualification, production, proof, construction, pre-operational, and operational tests performed by RSN in support of the project. Testing procedures and instructions shall comply with the applicable requirements of the documents specified in Appendix A of this QAPD.

11.1 GENERAL DISCUSSION

Tests required to verify conformance of an item to specified requirements and to demonstrate that items will perform satisfactorily in service will be planned and executed. Characteristics to be tested and test methods to be employed will be specified. The test procedures will be implemented by trained and appropriately qualified personnel in accordance with Section 2 of this QAPD including Supplement 2S-1 and Appendix 2A-1 of NQA-1.

11.2 TEST REQUIREMENTS

Test requirements and acceptance or rejection criteria, including required levels of precision and accuracy, will be provided or approved by the organization responsible for the design of the items to be tested, unless otherwise designated. Required tests, including, as appropriate, prototype qualification tests, production tests, proof tests prior to installation, construction tests, pre-operational tests, and operational tests will be controlled. Test requirements and acceptance or rejection criteria will be based upon specified requirements contained in applicable design or other pertinent technical documents.

11.3 TEST PROCEDURES

11.3.1 Test Instructions, Procedures and Drawings Instructions, procedures, and drawings for tests shall be prepared in accordance with the requirements of Section 5 of this document and Supplement 11S-1 of NQA-1. Test procedures or instructions shall contain criteria for determining when a test is required and how the test is performed. The determination of when a test is required is made by the organization requesting the test.

- 11.3.2 Test Prerequisites Test procedures shall include or reference test objectives and provisions for assuring that prerequisites for the given test have been met, that adequate instrumentation is available and used, that necessary monitoring is performed, and that suitable environmental conditions are maintained. Prerequisites shall include the following, as applicable: (1) calibrated instrumentation, (2) appropriate equipment, (3) completeness of item to be tested, (4) trained or appropriately qualified personnel, (5) condition of test equipment and the item to be tested, (6) suitable and controlled environmental conditions, and (7) provisions for data acquisition and storage.
- 11.3.3 Potential Sources of Error The potential sources of uncertainty and error in test procedures which must be controlled and measured to assure that tests are well controlled shall be identified.
- 11.3.4 Alternatives In lieu of specifically prepared written test procedures, appropriate sections of related documents, such as American Society for Testing and Materials (ASTM) methods, Supplier manuals, equipment maintenance instructions, or approved drawings or travelers with acceptance criteria, can be used. Such documents shall include adequate instructions to assure the required quality of work.

11.4 TEST RESULTS

Test results shall be documented and their conformance with acceptance criteria evaluated by a responsible authority to assure that test requirements have been satisfied.

11.5 TEST RECORDS

Test records shall, as a minimum, identify the following:

- o Item tested
- o Date of test
- o Tester or data recorder identification
- o Type of observation
- o Results and acceptability
- o Action taken in connection with any deviations noted
- o Person evaluating results

- o **Records of nonconformances**
- o **Record of measuring and test equipment used for testing**

SECTION 12

CONTROL OF MEASURING AND TEST EQUIPMENT

12.0 GENERAL

This section establishes the RSN requirements for the control and use of Measuring and Test Equipment (M&TE). M&TE is controlled in accordance with the requirements of Appendix A of this QAPD. The TPO is responsible for establishing and implementing the calibration program.

Maintaining Accuracy of Equipment

Measures will be established to ensure that tools, gages, instruments, and other measuring and test equipment used in activities that affect quality are properly controlled, calibrated, and adjusted at specified periods to maintain accuracy within necessary limits.

12.1 PURPOSE OF EQUIPMENT

Measuring and test equipment are devices or systems used to measure, gage, test, or inspect either to control or to acquire data to verify conformance to a specified requirement, or to establish characteristics or values not previously known.

Specific requirements for control of measuring and test equipment are listed below:

12.1.1 Selection

Selection of measuring and test equipment will be controlled to assure that such equipment is of proper type, range, and accuracy to accomplish the function of determining conformance to specified tolerance requirements. Each device will have a unique identification number. This number will be recorded on the data sheet, log, etc., along with the measurement taken, to ensure traceability of the measurement to the device that was used to take the measurement.

12.1.2 Calibration

Measuring and test equipment will be calibrated against certified equipment having known valid relationships to the National Institute of Standards and Technology or other nationally recognized standards and will be calibrated, adjusted, and maintained at prescribed intervals. If no nationally recognized standards exist, the basis for calibration will be documented. Calibrating standards should have equal or greater accuracy than equipment being calibrated. Calibrating standards with the same accuracy may be used if it can be shown to be adequate for the requirements and the basis of acceptance is documented and authorized by responsible management. The management authorized to perform this function shall be identified.

12.1.3 Control

The method and interval of calibration for each item will be defined, based on the type of equipment, stability characteristics, required accuracy, precision, intended use, degree of usage and other conditions that affect measurement control. Measuring and test equipment must be labeled, tagged, or otherwise documented in a fashion which indicates the due date of the next calibration and to provide traceability to calibration data. If measuring and test equipment is found to be out of calibration, an evaluation will be made and documented of the validity of previous results obtained and of the acceptability of items previously inspected, tested or data gathered since last calibration. Devices that are out of calibration will be tagged or segregated and will not be used until they have been recalibrated. If any measuring or test equipment is found to be out of calibration consistently, then it shall be repaired or replaced. A calibration will be performed when the accuracy of equipment is suspect.

12.1.4 Commercial Devices

Calibration and control measures are not required for rulers, tape measure, levels, and other devices, if normal commercial equipment provides adequate accuracy.

12.1.5 Handling and Storage

Measuring and test equipment will be handled and stored properly to maintain accuracy.

12.1.6 Records

Records will be maintained and equipment will be marked suitably to indicate calibration status. Calibration records will identify the calibration procedure (including revision) utilized to perform the calibration.

12.2 QUALITY ASSURANCE OVERVIEW

The quality assurance organization will assure the effectiveness of the calibration program by surveillance and audits.

SECTION 13

HANDLING, STORAGE AND SHIPPING

13.0 GENERAL

RSN has the responsibility for handling, storage and shipping of equipment and of samples (during testing). RSN will meet the applicable requirements of the documents specified in Appendix A of this QAPD.

13.1 GENERAL REQUIREMENTS

Measures will be established to control the packaging, handling, storage, shipping, cleaning, and preservation of material and equipment to prevent damage, loss or deterioration. Handling, storage and shipping of items will be conducted in accordance with established work and inspection instructions, drawings, specifications, shipment instructions, or other pertinent documents or procedures specified for use in conducting the activity. Specific requirements are listed below.

13.1.1 General Equipment and Protective Environments

When required for particular items, special equipment (e.g., containers, shock absorbers, and accelerometers) and special protective environments (e.g., an inert gas atmosphere, specific moisture content levels, and temperature levels) shall be specified and provided, and their existence shall be verified.

13.1.2 Specific Procedures

When they are required for critical, sensitive, perishable, or exceptionally expensive articles, specific procedures for handling, storage, packaging, shipping, and preservation shall be used.

13.1.3 Inspection and Testing of Special Tools and Equipment

Special handling tools and equipment shall be utilized and controlled as necessary to ensure safe and adequate handling. Special handling tools and equipment shall be inspected and tested in accordance with procedures and at specified time intervals to verify that the tools and equipment are maintained adequately.

13.1.4 Operators of Special Equipment

Operators of special handling and lifting equipment shall be experienced or trained to use the equipment.

13.1.5 Marking and Labeling

Instructions for marking and labeling for packaging, shipment, handling, and storage of items shall be established as necessary to adequately identify, maintain, and preserve the item, including indication of the presence of special environments or the need for special controls.

13.2 GEOTECHNICAL SAMPLES

RSN is responsible for handling and shipping samples submitted to the materials testing laboratory for testing. RSN does not have responsibility for long-term storage of geotechnical samples.

13.2.1 Geotechnical Sample Handling and Shipping

Samples shall be controlled during handling and shipment to preclude damage or loss and minimize deterioration. Controls shall be established for appropriate packaging, handling, and modes of transportation, with consideration being given to type of containers, time constraints on perishable materials (that is, shelf life), and any other environmental or safety considerations applicable to the samples. Measures shall be taken to avoid sample contamination during handling and shipment. Where multiple organizations are involved, appropriate procedures shall describe interface and custody responsibilities. Sample identification shall be verified and maintained when samples are handled, transported, or transferred to RSN or from RSN to another organization.

SECTION 14

INSPECTION, TEST AND OPERATING STATUS

14.0 GENERAL

RSN is responsible for indicating the status of inspections and tests for which it has responsibility.

14.1 INDICATION OF STATUS

The requirements of this section apply to engineered items and do not apply to scientific investigations. The status of inspection and test activities will be identified either on the items or in documents traceable to the items where it is necessary to assure that required inspections and tests are performed and to assure that items which have not passed the required inspections and tests are not inadvertently installed, used, or operated.

14.2 METHODS OF INDICATING STATUS

Status will be maintained through indicators, such as physical location and tags, markings, travelers, stamps, inspection records, or the other suitable means in accordance with the applicable requirements of the documents specified in Appendix A of this QAPD. Procedures describing status indicators and their use will contain actual examples of each type indicator.

14.3 APPLICATION AND REMOVAL OF STATUS INDICATORS

The authority for application and removal of status indicating tags, markings, labels, and stamps will be specified in procedures.

SECTION 15

CONTROL OF NONCONFORMING ITEMS

15.0 GENERAL

Control of nonconforming items is in accordance with written procedures which are prepared and approved by the QA organization. These procedures describe the methods used to identify, document, track, segregate, review, disposition, and notify affected organizations of nonconforming or defective items.

Nonconforming items are those items (i.e., material, equipment, system, structure, or component) that do not comply with established requirements, such as in drawings, specifications, and procurement documents. The description of a nonconforming item is documented on a nonconformance report.

Personnel assigned approval authority for dispositions of nonconforming items are identified and the quality assurance organization responsibilities are described in these procedures.

Nonconforming items are evaluated to determine the degree of significance. If conditions are determined to be significant, by the criteria provided in Section 16, these conditions will be processed as significant conditions adverse to quality and documented in corrective action reports in accordance with Section 16.

15.1 IDENTIFICATION OF NONCONFORMING REPORTS

Nonconforming items are identified by marking, tagging, or other methods that do not adversely affect the end use of the item. Identification is legible, recognizable, and includes the nonconformance report number. When identification of each nonconforming item is not practical, the receptacle or segregated storage area is identified. The authority for application and removal of the nonconformance status indicator is specified in approved procedures.

NOTE: When items of nonconformances are identified by RSN personnel at subcontractors' facilities, these conditions are documented in accordance with QA program requirements and brought to the attention of that subcontractor.

Typically, use or installation of nonconforming items may not proceed until the nonconforming condition is dispositioned and the specified actions are completed. If only a specific part of the item is in

nonconformance, that specific part is identified and work may proceed on the remaining non-affected parts. In certain cases, it is anticipated that use or installation of nonconforming items will need to continue prior to implementation of the disposition. In such cases, the approval and justification for use or continuance of installation as delineated in approved procedures, are obtained.

15.2 SEGREGATION

Nonconforming items are segregated by placement in designated hold areas until dispositioned. When segregation is impractical, due to physical configuration, other precautions are employed to preclude inadvertent use.

15.3 DISPOSITION OF NONCONFORMING ITEMS

15.3.1 Control

Nonconformance characteristics are reviewed and subsequent dispositions of nonconforming items are proposed and approved in accordance with documented procedures. The processing, delivery, installation, or use of nonconforming items are controlled, pending evaluation and approved disposition, by authorized personnel. Nonconformance documentation is distributed to affected organizations.

15.3.2 Responsibility and Authority

The responsibility and authority for the evaluation and disposition of nonconforming items are procedurally defined.

15.3.3 Personnel

Individuals performing evaluations to determine a disposition have competence in the specific area being evaluated, a sufficient understanding of requirements, and access to pertinent background information to make a proper evaluation. The person or organization assigned the responsibility of Dispositioning the Nonconformance shall ensure the following:

- o Nonconformance documentation adequately identifies and describes the Nonconformance.
- o If a change to reflect the as-built condition is appropriate, then the Disposition addresses action to change the existing design documents, test plans or procedures, reports, etc. Any document change shall reference the NCR and shall also be cross-referenced on the Nonconformance Report.

- o The signature of personnel or organizations authorized to approve the Disposition is documented.

15.4 DISPOSITION

The organization responsible for dispositioning the nonconforming item ensures that the disposition identifies and documents the correction as repair, rework, use-as-is, or reject. In the case of use-as-is or repair dispositions, technical justification is required. Nonconformances affecting design requirements are subject to the same design controls as those applied to the original design. The design documentation (i.e., as-built records), if required, are revised to reflect the accepted deviation.

15.5 REPAIRED OR REWORKED ITEMS

Repaired or reworked items are reexamined in accordance with the original acceptance criteria unless the disposition has established other acceptance criteria.

15.6 CORRECTIVE ACTION

The action to correct the nonconforming condition is verified and documented in a timely manner. The QA organization concurs with the corrective action to ensure applicable QA requirements are satisfied and verifies proper implementation and closeout of the corrective action by signatory concurrence on the nonconformance report.

SECTION 16

CORRECTIVE ACTION

16.0 GENERAL

Conditions adverse to quality are identified promptly, documented and corrected as soon as practical. Approved procedures which are reviewed and concurred with by the QA organization describe the methods used to identify, document, track, review, disposition, and notify affected organizations of conditions adverse to quality.

Examples of conditions adverse to quality are those programmatic deficiencies such as defective software, procedures, records, activities, or such actions which result in failure to comply with procedures, plans, and other established requirements. Items identified as nonconforming are identified and processed in accordance with Section 15.

16.1 IDENTIFICATION OF CONDITIONS ADVERSE TO QUALITY

Conditions adverse to quality are documented and the documented deficiency receives a unique report number.

16.2 EVALUATION

Conditions adverse to quality are evaluated to determine the degree of significance. If the condition is determined to be significant, it is identified and processed in accordance with the requirements of Corrective Action Report described in this Section.

16.3 CORRECTIVE ACTION

The QA organization concurs with the corrective action to assure QA requirements are satisfied.

16.4 CORRECTIVE ACTION COMPLETION

The QA organization follows up on the corrective action to verify proper implementation and to closeout the corrective action.

16.5 CORRECTIVE ACTION REPORT

A Corrective Action Report (CAR) is required for significant conditions, i.e., those determined to be repetitive in nature, or any condition adverse to quality that, were it to remain uncorrected, could adversely

affect safety or waste isolation. CARs will be promptly identified and corrected in accordance with written procedures. These procedures which are developed by the QA organization, describe the process by which CARs are identified and evaluated to determine cause, generic implications to the Program, corrective action, and action to preclude recurrence. Provisions for reporting CARs to the Project Office QA organization are also prescribed.

16.5.1 Corrective Action

CARs cited within RSN are reported to cognizant management and the Project Office QA organization. A corrective action report is issued for significant conditions adverse to quality. Deficiencies or Nonconformance Reports will be evaluated to determine whether these are significant conditions adverse to quality. If so, a CAR will be issued.

Cognizant managers are responsible for determining the cause of the condition, the generic implications to the Program, and the corrective action including the action to be taken to preclude repetition. The determinations made and corrective actions taken are documented and reported to the Project Office Director QA. The RSN QA organization is responsible for concurrence with the proposed corrective action, verification of the implementation, and closeout of the corrective action by signatory concurrence on the corrective action request.

16.6 CONTROL OF DEFICIENCIES

Methods and responsibilities for the analysis for trends; processing, control, and resolution of deficiencies (both items and conditions adverse to quality); and handling of significant conditions adverse to quality are established.

16.7 TREND ANALYSIS

Quality information, such as audit reports, surveillance reports, nonconformance reports, corrective action reports, and other deficiency documents, shall be analyzed to identify adverse quality trends and help identify root causes. Trend analysis shall be performed in a manner and at a frequency that shall provide for prompt identification of adverse quality trends. Quality trends shall be evaluated and the significant results reported to the organization responsible for corrective action and upper-management for review and assessment. Trend analysis shall be performed by the quality assurance organization.

SECTION 17

QUALITY ASSURANCE RECORDS

17.0 GENERAL

The Quality Assurance (QA) Records Program for RSN is accomplished in accordance with written procedures which comply with the requirements of the documents specified in Appendix A of this QAPD. These documents describe the integrated set of activities for creating, identifying, collecting, controlling, processing, organizing, distributing, temporary storing, preserving, retrieving, and disposing of RSN QA records. These documents identify responsibilities of the Quality Assurance organization and other organizations.

This section describes provisions established by RSN to implement QA Records program activities.

17.1 RSN QA RECORDS SYSTEM

RSN generates and submits documents to the Las Vegas Local Records Center (LRC) operated by the CRWMS M&O in accordance with the applicable portions of YMP/CC-0016, Records Management Plan. RSN is responsible for microfilming and submitting microfilm to OCRWM for archiving (until this responsibility is assumed by the M&O CRWMS).

Controlled documents and technical baseline documents specify records to be generated, supplied, or maintained.

17.2 RECORD DEFINITION

RSN Quality Assurance procedures and procedures define minimum QA records to be generated as a result of implementation. In general, the following documents are considered QA records:

- a. Individual documents that have been executed, completed, and approved that furnish evidence of the quality and completeness of data (including raw data) and activities affecting quality.
- b. Documents prepared and maintained to demonstrate implementation of quality assurance program requirements.
- c. Procurement documents subject to quality assurance controls.
- d. Other documents, such as procedures, plans, drawings,

- d. Other documents, such as procedures, plans, drawings, correspondence, specifications, technical data, books, maps, papers, photographs, and data sheets subject to quality assurance controls.
- e. Other materials that provide data and document quality, regardless of physical form or characteristic including magnetic media.

A complete record is a document that will either receive no more entries or whose revision would normally consist of reissue of the document; and when applicable is signed and dated by the originator and by personnel authorized to approve the document, except as noted in 17.3 below.

17.3 RECORD GENERATION

Design specifications, procurement documents and other documents specify the QA records to be generated, supplied or maintained by suppliers, subcontractors and the construction contractor.

Documents designated to become records are to be legible, identifiable, accurate, complete, reproducible, microfilmable, and appropriate to the work accomplished. Documents are considered valid records only if stamped, initialed, or signed and dated by authorized personnel, or otherwise authenticated in accordance with approved procedures. These records may be originals or reproduced copies. Authentication may take the form of a statement by the responsible individual or organization. Handwritten signatures are not required if the document is clearly identified as a statement by the reporting individual or organization.

Completed records are protected from deterioration, loss, or damage by the record initiator prior to turnover to the Las Vegas LRC.

17.4 RECORDS CONTROL

Records are controlled by RSN from time of completion until the time of submittal to the Las Vegas LRC. Records are controlled from when they are initiated to protect their integrity.

17.5 RECORDS CLASSIFICATION

All RSN quality assurance records, including superseded records, are classified as lifetime records.

17.6 CORRECTED RECORDS

Records are corrected in accordance with approved procedures. These procedures provide for review or approval by the record-originating organization. Corrections to records include dates and identifications of the persons authorized to make such corrections.

SECTION 18

AUDITS

18.0 GENERAL

This section describes provisions for implementing the quality assurance audit program.

18.1 AUDIT PROGRAM IMPLEMENTATION

Procedures describe the methods and responsibilities applicable to audit activities to determine compliance with requirements and to assess programmatic compliance and implementation effectiveness of the RSN Quality Assurance Program. The audit program includes technical and programmatic verifications.

The MQA/YMP is responsible for the development, implementation, and maintenance of the RSN audit program in accordance with the requirements of the documents specified in Appendix A. The RSN QA organization plans and conducts audits of the RSN activities as well as activities performed by subcontractors.

18.1.1 Audit Process

Procedures for audit activities address accomplishment of the planning and scheduling of audit activities to ensure that Program-deliverable products and processes are evaluated commensurate with importance in achieving defined objectives and schedule completion dates assigned to the products or processes. Internal audits are scheduled to ensure that all applicable elements of the QA program are audited at least once a year.

18.2 AUDIT SCHEDULING

Quality Assurance develops, maintains, and implements an audit schedule for RSN that covers applicable quality assurance program elements.

After award of a subcontract by RSN, a determination of whether an external audit is required is made based on the criteria of the QARD. External audits are scheduled as appropriate.

Suppliers' quality assurance programs are evaluated on at least an annual basis. Supplier audits are performed on a triennial basis, unless the annual evaluation indicates the need for an audit prior to the end of a triennial period. The need for audit of a supplier is also evaluated when major changes to contract scope or work methodology occurs. Pre-award surveys may serve as the first audit, if the scope and conduct of the pre-award survey addresses contract requirements.

18.3 AUDIT TEAMS

Audit team leaders are required to be certified lead auditors in accordance with the requirements of procedures which meet the QARD.

Members of the audit team are independent with respect to activities they will audit (i.e., no audit team member audits an activity for which they have direct responsibility). Management personnel of audited activities are prohibited from participating in the selection of audit team members who will audit their activities.

Audit team members, collectively, have the necessary programmatic and technical expertise in the work being audited, by virtue of prior experience and/or specific, documented orientation or training.

Audit teams normally include members from appropriate technical disciplines, who will verify adequacy of technical processes employed to ensure the validity and correctness of technical work.

The Auditor and Lead Auditor training and qualification program is administered by the QA organization. Lead Auditors are certified in accordance with this program.

18.4 AUDIT PREPARATION

As a minimum, preparation for individual audits includes: preparation of an audit plan and an audit checklist or procedure; study of auditee procedures applicable to the activities to be audited; evaluation of relevant surveillance results; results of previous audits of the same activities; relevant corrective action history; review of trend data; and review of the current status of the work.

The scope of each audit is based on an evaluation of the activities to be audited. The evaluation considers:

- a. Results of previous audits.
- b. Impact of significant changes in personnel, organization, or quality assurance program.

The scope of an audit may include verification of product quality and technical adequacy of work being done, as well as programmatic compliance and implementation effectiveness. Attributes are selected for verification from the governing procedures and technical requirements documents and are included in audit checklists.

18.5 AUDIT PERFORMANCE

Audits shall be performed in accordance with written procedures or checklists. Audit team members regularly communicate the status of assigned activities, as well as problems and potential problems to the audit team leader. The audit team leader ensures problems that require immediate attention are relayed to the audited organization's representatives in a timely manner. Regular discussions with the audited organization's representatives are held to provide the status of audit activities and promote effective communications between auditor and auditee. Audit performance includes documentation of the evidence examined and conditions observed, so that a sound basis exists for reported conclusions.

Results of the audit are presented to the audited organization's representatives by the audit team leader (and team members) in a post audit conference.

18.6 AUDIT REPORTING

The audit report includes the following information, as appropriate:

- a. A description of the audit scope.
- b. Identification of audit team members.
- c. Identification of personnel contacted during audit.
- d. A summary of audit results, including a statement describing the effectiveness of the quality elements audited.
- e. A clear description of each audit finding that will allow the audited organization to understand the finding and take corrective action.

The audit report is signed by the audit team leader prior to transmittal and distribution. The audit report is issued to the audited organization for appropriate action. Copies of the audit report are also distributed to other affected organizations as well as the management of the auditing organization. Deficiencies require responses from the designated representative(s) of the affected organization, with specified action dates.

18.7 FOLLOW UP ACTION

Management of the audited organization investigates audit findings, schedules corrective action, and notifies the auditing organization in writing of actions planned or taken.

Management of the cognizant organizational elements of the auditing organization, including QA and the audit team leader, review the audit response to determine:

- a. Adequacy of cause determinations.
- b. Acceptability of commitments for correcting the deficient (and similar) conditions (past and present).
- c. Acceptability of committed actions to preclude recurrence of the deficient conditions, and of the schedule for completing such actions.
- d. Adequacy of the evaluation of impact of the deficient work performed and the generic implications on the Program.
- e. Appropriateness of corrective action responsibility assignments.

Follow-up is performed by the auditing organization to evaluate and track the responses; to verify satisfactory implementation of corrective and preventive actions taken to resolve audit findings; and to assure that any adverse trends are identified and reported to management for review, assessment and appropriate action. Verification of corrective and preventive action implementation is documented to support close-out of findings.

SECTION 19

COMPUTER SOFTWARE

19.0 GENERAL

RSN will comply with the requirements of Section 19 of DOE/RW-0214.

19.1 RSN USE OF EXISTING SOFTWARE IN THE DESIGN OF THE SCF FOR YMP

A software quality assurance plan will be developed to describe the use of existing software in the design of SCF based on the requirements of Section 19 of the QARD. Procedures will be developed to describe how this will be accomplished. This software quality assurance plan will be submitted to DOE for approval prior to the initiation of any quality-affecting software activities.

19.2 ADDITIONAL SOFTWARE APPLICATIONS

If additional software which falls outside the scope of Section 19.1 is developed or used by RSN, software quality assurance plans will be developed and submitted to DOE or the cognizant organization for review and approval prior to the initiation of any quality-affecting software activities.

SECTION 20

SCIENTIFIC INVESTIGATIONS

20.0 GENERAL

RSN participation in Scientific Investigations is limited. RSN performs a support function for the Principal Investigators (PIs). RSN prepares plans for specific investigations from criteria supplied by the PI with the approval of the Project Office. These plans are known as drilling programs or mining programs. These programs contain a description of the work to be performed, and the equipment required to perform the work. RSN also supplies personnel to work under the direction of PI personnel. RSN may also provide the services of support subcontractors when directed by the PI.

APPENDIX A

RSN QA PROGRAM BASIS

This document contains the program requirements for the RSN Quality Assurance Program. The regulations, NUREGs, and NRC and OCRWM QA related documents and the leading industry standard NQA-1 as listed below represent the basis for the RSN QA Program. These basis documents are implemented by this QAPD and related procedures.

	Document	Rev/Issue Date
1.	10 CFR 60, "Disposal of High-Level Nuclear Waste in Geologic Repositories" Subpart G, "Quality Assurance."	Current
2.	10 CFR 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plant and Fuel Reprocessing Plants."	Current
3.	"NRC Review Plan for High-Level Waste Repository Quality Assurance Program Descriptions".	Rev. 2
4.	NUREG - 1318, Technical Position on Items and Activities in the High-Level Waste Geologic Repository Program Subject to Quality Assurance Requirements.	April 1988
5.	NUREG - 1297, "Peer Review for High-Level Nuclear Waste Repositories."	February 1988
6.	NUREG - 1298, "Qualification of Existing Data for High-Level Nuclear Waste Repositories."	February 1988
7.	ASME NQA-1, "Quality Assurance Program Requirements for Nuclear Facilities" including the amplifications identified in Sections 1 through 19 and Appendix A of the QARD.	1989 Edition

Document	Rev/Issue Date
8. "OCRWM Quality Assurance Requirements Document" (QARD) Appendix A - Amplifications of Quality Assurance Program Requirements for the Mined Geologic Disposal Systems (MGDS) and Appendix E, "Glossary" (DOE/RW-0214).	Current
9. YMP Administrative Procedures Manual (YMP/APM-1). See implementing procedures for specific applicability.	Current
10. YMP/CC-0016, Yucca Mountain Site Characterization Project Records Management Plan.	Current
11. SNT-TC-1A, American Society of Non-destructive Testing Recommend Practice.	June, 1980

CAR NO.	CYC	SEV LEV	ISSUE DATE	RESPONSE DUE DATE	RESPONSE RECEIVED	*RESP. STAT.	EVAL. DATE	EVAL. LETTER	CORR. ACT. COMPLETION	VERIF. SCHED.	VERIF. STAT.*	CAR CLOSED
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YM-91-067 1 2 08-14-91 09-12-91 09-12-91 A 09-26-91 10-16-91 10-31-91 S 11-14-91

RESP. ENGR./DEPT: JSM/Verification Branch YMP DIV. DIRECTOR: PARTICIPANT: RSN

STATUS: Project Office QA issued CAR closure letter on 15-nov-1991.

SUBJECT: RSN ORGANIZATIONAL STRUCTURE, LEVELS OF AUTHORITY, AND LINES OF COMMUNICATION ARE NOT CLEARLY DOCUMENTED.

KEYWORDS: AUDIT YMP-91-04, QAPD-002.

YM-91-068 1 2 08-14-91 09-12-91 09-12-91 AR 10-03-91 10-03-91
 2 10-03-91 10-17-91 10-17-91 A 10-24-91 10-25-91 01-24-92 U
 3 02-03-92 02-10-92 02-07-92 A 02-18-92 02-18-92 03-06-92 U
 4 03-17-92 03-31-92 04-01-92 A 04-09-92 04-09-92 04-17-92 04-24-92

RESP. ENGR./DEPT: JSM/Verification Branch YMP DIV. DIRECTOR: PARTICIPANT: RSN

STATUS: YMQAD issued CAR closure letter on 05-may-1992.

SUBJECT: TRAINING FILE DEFICIENCIES

KEYWORDS: AUDIT YMP-91-04, QAPD-002.

YM-91-069 1 2 08-14-91 09-12-91 09-12-91 AR 10-03-91 10-03-91
 2 10-03-91 10-17-91 10-17-91 A 10-25-91 10-25-91 11-30-91 S 12-09-91

RESP. ENGR./DEPT: JSM/Verification Branch YMP DIV. DIRECTOR: PARTICIPANT: RSN

STATUS: Project Office QA issued CAR closure letter on 10-dec-1991.

SUBJECT: THE PROCEDURE PP-02-01 DOES NOT AGREE WITH QAPD-002 FOR DETERMINATION OF TRAINING ASSIGNMENTS.

KEYWORDS: AUDIT YMP-91-04, PP-02-01, QAPD-002.

* Abbreviations Used *

A = Accepted
 AR = Amended Response Required
 E = Evaluating
 R = Rejected

S = Satisfactory
 U = Unsatisfactory

CAR NO.	CYC	SEV LEV	ISSUE DATE	RESPONSE DUE DATE	RESPONSE RECEIVED	*RESP. STAT.	EVAL. DATE	EVAL. LETTER	CORR. ACT. COMPLETION	VERIF. SCHED.	VERIF. STAT.*	CAR CLOSED
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YM-91-070 1 3 08-14-91 09-12-91 09-12-91 A 09-18-91 09-27-91 09-18-91 S 10-15-91

RESP. ENGR./DEPT: REP/Verification Branch YMP DIV. DIRECTOR: PARTICIPANT: RSN

STATUS: Project Office QA issued CAR closure letter on 16-oct-1991.

SUBJECT: OBSOLETE PROCEDURE PP-05-04 WAS FOUND IN CONTROLLED RSN PROCEDURES MANUALS AND THE PROCEDURE WAS NOT IDENTIFIED AS OBSOLETE.

KEYWORDS: AUDIT YMP-91-04, QAPD-002.

YM-91-071 1 3 08-14-91 09-12-91 09-12-91 A 09-18-91 09-27-91 09-30-91 S 10-15-91

RESP. ENGR./DEPT: RHK/Verification Branch YMP DIV. DIRECTOR: PARTICIPANT: RSN

STATUS: Project Office QA issued CAR closure letter on 16-oct-1991.

SUBJECT: THE MATERIALS TEST LAB HAS NOT ESTABLISHED AND THEREFORE HAS NOT MAINTAINED A CALIBRATION HISTORY LOG.

KEYWORDS: AUDIT YMP-91-004, PP-12-01.

YM-91-072 1 2 08-14-91 09-12-91 09-12-91 A 09-18-91 09-27-91 08-30-91 S 10-15-91

RESP. ENGR./DEPT: REP/Verification Branch YMP DIV. DIRECTOR: PARTICIPANT: RSN

STATUS: Project Office QA issued CAR closure letter on 16-oct-1991.

SUBJECT: RSN HAS PROCESSED QA RECORDS TO THE CENTRAL RECORDS FACILITY THAT WERE NOT PACKAGED APPROPRIATE TO THE WORK ACCOMPLISHED.

KEYWORDS: AUDIT YMP-91-004, PP-17-03.

* Abbreviations Used *

A = Accepted
 AR = Amended Response Required
 E = Evaluating
 R = Rejected

S = Satisfactory
 U = Unsatisfactory

CAR NO.	CYC	SEV LEV	ISSUE DATE	RESPONSE DUE DATE	RESPONSE RECEIVED	*RESP. STAT.	EVAL. DATE	EVAL. LETTER	CORR. ACT. COMPLETION	VERIF. SCHED.	VERIF. STAT.*	CAR CLOSED
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YM-91-073 1 2 08-14-91 09-12-91 09-12-91 A 10-25-91 10-25-91 S 10-25-91
 RESP. ENGR./DEPT: REP/Verification Branch YMP DIV. DIRECTOR: PARTICIPANT: RSN
 STATUS: Project Office QA issued CAR closure letter on 25-oct-1991.
 SUBJECT: RSN DEPARTMENT MANAGERS ARE NOT INSURING THAT IMPLEMENTING PROCEDURES SPECIFY THE RECORDS PACKAGE TO BE GENERATED.
 KEYWORDS: AUDIT 91-004, PP-17-03.

YM-92-025 1 03-20-92 04-17-92 04-13-92 A 05-04-92 05-05-92 06-12-92
 RESP. ENGR./DEPT: MRD/ YMP DIV. DIRECTOR: PARTICIPANT: RSN
 STATUS: RSN notified of acceptance of response by letter dated 05-may-1992 issued by YMQAD. RSN needs to complete corrective action by 12-jun-1992.
 SUBJECT: DOCUMENTED EVIDENCE OF SOME ELEMENTS OF INDOCTRINATION AND TRAINING MISSIONG FROM FILES
 KEYWORDS: AUDIT YMP-92-11,, PP-02-01,, PP-02-02,, PP-02-08.

YM-92-026 1 03-20-92 04-17-92 04-13-92 A 04-24-92 05-05-92 06-12-92
 RESP. ENGR./DEPT: MRD/ YMP DIV. DIRECTOR: PARTICIPANT: RSN
 STATUS: RSN notified of acceptance of response by letter dated 05-may-1992 issued by YMQAD. RSN needs to complete corrective action by 12-jun-1992.
 SUBJECT: READINESS REVIEW FOR ESF TITLE II DESIGN ACTIVITIES WAS PERFORMED AND DOCUMENTED WITHOUT BEING IN COMPLIANCE WITH SOME OF THE PROCEDURAL REQUIREMENTS.
 KEYWORDS: AUDIT YMP-92-11,, PP-02-04.

* Abbreviations Used *

- A = Accepted
- AR = Amended Response Required
- E = Evaluating
- R = Rejected
- S = Satisfactory
- U = Unsatisfactory



Department of Energy
Washington, DC 20585

QA RECEIVED

WBS 1 SEP 03 1991
QA

AUG 29 1991

Richard L. Bullock
Technical Project Officer
for Yucca Mountain
Site Characterization Project
Raytheon Services Nevada
101 Convention Center Drive
Phase II, Suite P-250
Las Vegas, NV 89109

OFFICE OF QUALITY ASSURANCE (OQA) AUDIT YMP-91-04 OF RAYTHEON SERVICES NEVADA
(RSN) SUPPORT OF THE YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT

Enclosed is the report for Quality Assurance (QA) Audit YMP-91-04. The audit was conducted by the Yucca Mountain Quality Assurance Division at the RSN facilities in Las Vegas, Nevada, from July 29-August 1, 1991.

During the course of this audit, the audit team generated seven Corrective Action Requests (CARs) and seven recommendations whereby the RSN QA Program could be improved.

Responses to the CARs (which were transmitted via separate letter) are due by the date indicated in Block 10 of the CARs. A response to this audit report is not necessary. The subject audit is considered completed as of the date of this letter; however, any open CARs will continue to be tracked until they have been closed to the satisfaction of the Audit Team Leader and the OQA Director.

If you have any questions, please contact either James Blaylock at 794-7913 or Stephen R. Dana at 794-7176.

James Blaylock for
Donald G. Horton, Director
Office of Quality Assurance

OQA:JB-5450

Enclosure:
Audit Report YMP-91-04

AUG 29 1991

cc w/encl:

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EXECUTIVE SUMMARY

As a result of Quality Assurance Audit YMP-91-04, it was determined that Raytheon Services Nevada (RSN) is satisfactorily implementing an effective Quality Assurance Program in accordance with the RSN Quality Assurance Program Description and implementing procedures. No program elements or procedures were found to be ineffective; however, some areas were considered indeterminate due to lack of activity.

The Yucca Mountain Quality Assurance Division Audit Team identified 12 deficiencies during the audit; all but 7 of which were resolved prior to the post-audit conference. Unresolved deficiencies were documented on Corrective Action Requests as detailed in Section 6.1 and Enclosure 5 of this report.

U.S. DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
OFFICE OF QUALITY ASSURANCE

AUDIT REPORT

OF

RAYTHEON SERVICES NEVADA

AUDIT NO. YMP-91-04

July 29 THROUGH AUGUST 1, 1991

Prepared by:


Stephen R. Dana
Audit Team Leader
Yucca Mountain Quality Assurance Division

Date:

8/27/91

Approved by:


Donald G. Horton
Director
Office of Quality Assurance

Date:

8/28/91

1.0 INTRODUCTION

This report contains the results of the Office of Civilian Radioactive Waste Management (OCRWM) Quality Assurance (QA) Audit No. YMP-91-04 of Raytheon Services Nevada (RSN), conducted at Las Vegas, Nevada, on July 29 through August 1, 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: Letter OQA:JB-4480, Horton to Bullock, dated July 1, 1991).

2.0 AUDIT SCOPE

This audit evaluated the RSN QA Program to determine whether it met the requirements and commitments imposed by the OCRWM, as reflected in the RSN Quality Assurance Program Description (QAPD). This was done by verifying implementation and effectiveness of the system in place, as well as by verifying adequate compliance with requirements.

The programmatic elements audited, as well as those programmatic elements that were not included in the audit, 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
- 12.0 Control of Measuring and Test Equipment
- 15.0 Control of Nonconforming Items
- 16.0 Corrective Action
- 17.0 Quality Assurance Records
- 18.0 Audits
- 19.0 Computer Software

The following programmatic elements were not audited because RSN currently has no activities to which these elements apply:

- 8.0 Identification and Control of Materials, Parts, and Components
- 9.0 Control of Processes
- 10.0 Inspection
- 11.0 Test Control
- 13.0 Handling, Storage and Shipping
- 14.0 Inspection, Test, and Operating Status
- 20.0 Scientific Investigations

3.0 AUDIT TEAM AND OBSERVERS

Audit Team members and observers are listed in Enclosure 1.

4.0 SUMMARY OF RESULTS

4.1 Program Effectiveness

Overall, RSN is satisfactorily implementing an effective QA Program in accordance with the RSN QAPD and implementing procedures. No program elements or procedures were found to be ineffective; however, some areas were considered indeterminate due to lack of activity. An effectivity statement for each element audited is provided below.

Criterion 1 - Overall programmatic implementation of this element was found to be effective. However, a Corrective Action Request (CAR) was issued dealing with organizational structure, functional responsibilities, levels of authority, and lines of communication not being documented.

Criterion 2 - In the area of indoctrination and training, RSN is effectively implementing this element of their QA Program. However, two CARs were issued addressing (1) responsibility for identifying individual training needs and (2) lack of documented evidence of training to Administrative Procedures, Quality (APQs) and lack of documented evidence of training for an RSN individual was not available.

Due to lack of procedural implementation, quality control certification, readiness reviews, and management assessments are considered to be indeterminate.

Criterion 3 - It appears that RSN design activities are adequately documented and implemented to the extent necessary for the level of detail currently required for RSN to continue with site characterization activities. However, specific Criterion 3 design controls are not yet fully implemented at this time (i.e., control of design input, traceability of design input to design output, and design verification) due to the preliminary nature of the Exploratory Studies Facility (ESF) design. Therefore, overall, this element of the RSN QA Program is indeterminate.

- Criterion 4 - This element of the RSN QA Program is being effectively implemented.
- Criterion 5 - This element of the RSN QA Program is being effectively implemented.
- Criterion 6 - This element of the RSN QA Program is being effectively implemented. However, a CAR was issued dealing with recall of an obsolete procedure.
- Criterion 7 - This element of the RSN QA Program is being effectively implemented.
- Criterion 12 - This element of the RSN QA Program is indeterminate due to the lack of quality-affecting activities involving Measuring and Test Equipment (M&TE) utilized by RSN for Yucca Mountain Site Characterization Project (YMP) use.
- Criterion 15 - Because no nonconformance reports have been issued by RSN, this element of the RSN QA Program is indeterminate.
- Criterion 16 - The deficiency reporting portion of Criterion 16 was evaluated and found to be effectively implemented. There was no implementation of procedures for CARs or trend analysis. Therefore, this element of the RSN QA Program is indeterminate.
- Criterion 17 - This element of the RSN QA Program is being effectively implemented. However, two CARs were issued addressing (1) the fact that implementing procedures do not specify record packages to be generated and (2) processing of QA Records to the Central Records Facility (CRF) that were not appropriate to the work accomplished.
- Criterion 18 - The surveillance portion of Criterion 18 was evaluated and found to be effectively implemented, but there was limited implementation of the procedure for performance of audits. Therefore, this element of the RSN QA Program is indeterminate.
- Criterion 19 - RSN is effectively implementing the portion of their software program that controls the verification of software packages. RSN is not using any validated models in quality-affecting activities; therefore, the portion of their program that controls the use of verified software and validated models in quality-affecting activities is indeterminate.

4.2 Programmatic Audit Activities

Details of programmatic audit activities are documented in Enclosure 2.

4.3 Summary of Deficiencies

The YMQAD Audit Team identified 12 deficiencies during the audit, all but 7 of which were resolved prior to the post-audit conference. A synopsis of the CARs and the five deficiencies corrected during the audit is 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 the RSN facilities in Las Vegas, Nevada, on July 29, 1991. Daily management meetings were held with RSN management and staff to discuss audit results from the previous day. Daily caucus meetings were also held with the Audit Team and observers to discuss audit activities and potential deficiencies. The audit concluded with a post-audit conference held at RSN on August 1, 1991. Enclosure 3 identifies personnel contacted during the audit and those who attended the pre- and post-audit conferences.

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

6.1 Corrective Action Requests

YM-91-067 Contrary to RSN QAPD and procedural requirements, a review of QAPD-002, Revision 0; the RSN Organization Chart (issued April 29, 1991); Project Procedures (PPs); and position descriptions provided evidence that organizational structure, levels of authority, and lines of communication are not clearly documented.

YM-91-068 Contrary to RSN QAPD requirements, a review of training files provided evidence that an RSN individual had not been trained to RSN PPs; RSN personnel had performed required procedural reading after the procedure effective date; and there was no documented evidence of RSN personnel having been trained to Yucca Mountain Site Characterization Project Office (YMPO) APQs.

- YM-91-069 Contrary to RSN QAPD requirements, training assignments are established by the training coordinator and not management/supervisory personnel.
- YM-91-070 Contrary to RSN QAPD requirements, obsolete procedure PP-05-04, Revision 0, was found in controlled RSN Yucca Mountain Operations Project Procedure Manuals, and the procedure was not identified as "obsolete."
- YM-91-071 Contrary to procedural requirements, the Materials Test Lab has not established and, therefore, has not maintained a Calibration History Log.
- YM-91-072 Contrary to procedural requirements, RSN has processed QA Records to the CRF that were not packaged appropriate to the work accomplished.
- YM-91-073 Contrary to procedural requirements, RSN Department Managers are not ensuring that implementing procedures specify the records package to be generated.

6.2 Deficiencies Corrected During the Audit

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

1. Contrary to the requirements of RSN Quality Assurance Procedure QAP-5.1(Y), Revision 0, Paragraph 6.5, forms were found in issued procedures without the term "TYPICAL" on them. Form LV-405 from procedure QAP-15.1(Y), Revision 0, and Form LV-2038 from procedure QAP-19.1(Y), Revision 0, were corrected during the audit, and controlled distribution of the revised forms was made.
2. Contrary to the requirements of RSN QAP-7.1(Y), Revision 0, Paragraph 6.5, current position descriptions were not available for three individuals on loan from Parsons-Brinckerhoff. New position descriptions were obtained prior to the audit exit.
3. Contrary to the requirements of RSN PP-17-04, Revision 0, Paragraph 6.7.3.c, five out of six "Certificate of Findings" for the methylene blue test of the microfilm had not been signed and dated by an RSN representative to indicate acceptance of the test results. This was corrected immediately by RSN personnel.
4. The RSN audit schedule did not indicate the Audit Team Leader (ATL) for each audit, as is required by RSN QAP-18.1(Y), Revision 0, Paragraph 6.2. During the audit, RSN issued Revision 2 to the audit schedule identifying ATLs.

5. The RSN Manager, Audits did not issue a letter or memorandum of closure to the affected organization for closed surveillance SR(Y)-007, as is required by RSN Procedure QAP-18.2(Y), Revision 0, Paragraph 6.5. During the audit, a memorandum of closure was issued to correct this condition.

7.0 REQUIRED ACTIONS

A response to the CARs (delineated in Section 6.0) are due within the time frame 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 RSN will be notified in writing of closure.

8.0 RECOMMENDATIONS

During the audit, several areas were identified within the RSN QA Program where there were opportunities for improvement. The following recommendations are offered for RSN management consideration:

1. Although PP-17-04, Revision 0, "Project Microfilm Center," contains or references acceptance criteria, the procedure could be strengthened by providing examples of accept/reject criteria directly within the procedure. For example, where the procedure calls for inspection of film quality (paragraph 6.6.d), a reference could be made to an attachment that contains a description of defects taken from Paragraph 6.3.3 of ANSI/AIIM MS-23-1983.
2. Procedure PP-03-07, Revision 0, "Development of Specifications," was reviewed, approved and issued effective July 29, 1991. The Review Comment Records indicate comments were resolved prior to issuance of the procedure; however, some of the comments reflected an OPEN status and indicated further action was needed to totally resolve the comment. These OPEN issues were being tracked by a letter. It was unclear whether or not this was a closed-loop tracking system. Consideration should be given to establishing a closed-loop, Project Action Item List to ensure actions such as "OPEN" procedure issues are tracked to completion.
3. The RSN QAPD-002, Revision 0, Section 6, "Document Control," requires that procedures for preparation and revision of plans, manuals, procedures, instructions, and other documents address access by the reviewing organizations to pertinent background data or information to assure a complete review.

QAP-5.1(Y), Revision 0, and PP-03-17, Revision 0, address this requirement by providing space on a form for documenting the reason/justification for a change. These forms become a QA Record. PP-05-01, Revision 0, however, addresses this requirement by having

originators document their justification for a change in a letter that does not become a QA Record. For consistency, RSN should consider revising PP-05-01 to adopt a system similar to QAP-5.1(Y) to document the reason for change.

4. Although objective evidence was found during the audit that Document Control is monitoring the return of receipt acknowledgment forms in compliance with the requirements of PP-05-01, Revision 0, it was noted that status was not readily obtainable. The RSN QA Document Control system uses a log to maintain status of returned receipts. RSN Systems Engineering Document Control should use the RSN QA Document Control system as a benchmark for improving their document control status.
5. During the audit, compliance to procedure PP-17-03, Revision 0, "Record Source Requirements" was verified by reviewing 22 records/records packages that had been submitted to the RSN Records Management Center (RMC), but which had not yet been reviewed by the RMC. Two of the 22 records/records packages had minor errors, Work Request Nos. 91001 and 91002 were had incomplete (i.e., "NA" had not been entered, as required, in certain fields) and letter RSN-YMP-157, (dated July 26, 1991) had an attachment that was not properly identified and paginated. These minor errors were brought to the attention of the RMC to ensure that they were corrected when processed per PP-17-01, Revision 0.

No attempt was made to analyze the number of attributes checked per record to determine if these two minor errors constituted enough data to warrant issuance of a CAR. However, since PP-17-01, Revision 0, provides a form (LV-390 Record Rejection Form) for documenting problems encountered by the RMC when receiving records provided by the records source, an attempt was made to determine if this form would provide evidence of the magnitude of records/record packages with errors provided to the RMC by record sources. Investigation revealed that this form is not always completed when a record does not meet requirements, nor is it being retained as a record; therefore, it was not possible to use this form to determine if the record sources were doing their job.

Although a CAR is not being issued, it is recommended that RSN management review this process to make certain that record resources are in compliance with PP-17-03, Revision 0.

6. During review of Procedure PP-17-04, Revision 0, "Project Microfilm Center," and discussion with Project Microfilm Center (PMC) personnel it was noted that there is no provision within the procedure whereby the PMC has recourse when it receives records that are not acceptable for microfilming. Provisions should be made within the procedure for the PMC to resolve concerns regarding microfilmability with the CRF.

7. The RSN QAPD-002, Revision 0, Section 6, Paragraph 6.1.1, and Section 5, Paragraph 5.3, requires that a procedure be developed for preparation and revision of plans, and that changes to plans be conducted in accordance with approved procedures. During the audit it was noted that RSN had issued several plans: an Engineering Plan, a Health and Safety Plan, and a Management Review Plan. A procedure for preparation and revision of the Engineering Plan and the Management Review Plan was found, however, currently there is no general procedure for preparation and revision of other types of quality affecting plans. Since the Health and Safety Plan is not considered to be a plan that directly affects quality, a CAR is not being issued. RSN should consider issuing a procedure for preparation and revision of plans.

9.0 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

ENCLOSURE 1

AUDIT TEAM MEMBERS AND OBSERVERS

<u>Responsibility</u>	<u>Individual</u>
Audit Team Leader	Stephen R. Dana
Auditors	Stephen Hans
	Robert H. Klemens
	John S. Martin
	John R. Matras
	Richard E. Powe
	Charles C. Warren
Auditor-in-Training	Cynthia H. Prater
Observers	James Conway (NRC)
	Bruce Mabrito (SRI/NRC)
	George Vaslos (NWMS M&O)

ENCLOSURE 2

AUDIT DETAILS

The following is a summary of programmatic activities evaluated during the audit. A list of objective evidence reviewed is indicated in Enclosure 4. This list includes the full document identification number, revision number, and title for the procedures referenced below.

1.0 Organization

The evaluation of Organization was conducted to determine compliance to Section I of the Raytheon Services Nevada (RSN) Quality Assurance Position Description QAPD-002, Rev. 0, and Quality Assurance Procedures QAP-1.1(Y), Rev. 0; QAP-2.4(Y), Rev. 0; Project Procedures PP-01-00, Rev. 0; and PP-01-01, Rev. 0. The evaluation included questioning of key RSN personnel assigned to the Yucca Mountain Project (YMP) to determine their degree of awareness and understanding of the organizational structure, lines of communication, authority, duties, and responsibilities. It was found that personnel had a clear understanding of the requirements for the RSN YMP organization.

One area was found to be deficient and deals with organizational structure, functional responsibilities, levels of authority, and lines of communication not being clearly documented.

The following RSN personnel were interviewed:

R. L. Bullock, Technical Project Officer
R.L. Schreiner, Systems Engineering Manager
B.R. Chytrowski, Site Characterization Design Department Manager
M.J. Regenda, Quality Assurance Manager
A. Ali, Audits and Surveillance Manager
D.J. Tunney, Quality Assurance Engineering Manager
N. Dierson, Senior Personnel Specialist
J.L. Rue, Quality Engineering Chief
K.D. Kirwan, Clerk II
H.R. Tuthill, Quality Control Manager

2.0 Quality Assurance Program

The following aspects of the RSN Quality Assurance (QA) Program were evaluated during the audit:

- o Development of the QA Program in accordance with QAP-2.1(Y), Rev. 0.
- o Training and Indoctrination of QA personnel in accordance with QAP-2.2(Y), Rev. 0.
- o Qualification of audit personnel in accordance with QAP-2.3(Y), Rev. 0.

- o Indoctrination/Training in accordance with PP-02-01, Rev. 0.
- o Personnel selection in accordance with PP-02-02, Rev. 0.
- o QA grading in accordance with PP-02-05, Rev. 0.

During the course of the audit, it was found that no implementation of the following procedures had been performed by RSN; therefore, an evaluation of Revision 0 of these procedures could not be determined: QAP-2.6(Y), PP-02-03, PP-02-04, PP-02-06, and PP-02-07.

Evaluation of indoctrination and training, and qualification of personnel was performed by review of personnel records to verify compliance with procedural requirements. A total of 15 files were reviewed. The results of this evaluation identified two deficiencies dealing with: (1) lack of documented evidence of training to Yucca Mountain Site Characterization Project Office (YMP0) Administrative Procedures-Quality (APQs) and the lack of documented evidence of training for one individual; and (2) training assignments are established by the training coordinator, not management/supervisory personnel, as required by the QAPD.

3.0 Design Control

Evaluation of design control activities included an examination of design drawings YMP-025-1-STRU--GA06, Rev. B, and YMP-025-1-STRU-GA01, Rev. B, in accordance with QAP-3.1(Y); PP-03-01, PP-03-02, and PP-03-09; and design analysis packages ST-SA-001, Rev. 0, and ST-MN-007, Rev. 0, in accordance with QAP-3.1(Y) and PP-03-03. Grading Reports RSN-GR-013, Rev. 0, RSN-GR-016, Rev. 0, and RSN-GR-017, Rev. 1, were examined in accordance with PP-05-02. The following procedures associated with design control had not been implemented: PP-03-06, PP-03-12, PP-03-13, and PP-03-18.

4.0 Procurement Document Control

Evaluation of procurement document control activities was performed to determine compliance with QAP-4.1(Y), Rev. 0. A total of two procurement document packages were reviewed and found to be reviewed, approved, and issued in accordance with QAP requirements.

5.0 Instructions, Procedures, Plans, and Drawings

At the time of the audit RSN had issued 43 Project Procedures (PPs) and 22 Quality Assurance Procedures (QAPs). All procedures were at revision level 0 and there were a total of 13 Procedure Interim Changes (PICs) issued against PPs and 8 PICs issued against QAPs. A representative sample of 36 PPs, 13 QAPs, and 8 PICs were reviewed to ensure compliance with various aspects of PP-05-01, Rev. 0, and QAP-5.1(Y), Rev. 0. In addition, review comment records associated with 3 PPs and Review of

Documents forms associated with 3 QAPs were reviewed for appropriate resolution of comments. One minor deficiency concerning identification of forms as "TYPICAL" was identified and corrected during the audit. See Paragraph 6.2 of this report for details.

6.0 Document Control

RSN had a total of 97 controlled sets of PPs and 43 controlled sets of QAPs at the time of the audit. A representative sample of 9 sets of PPs and 6 sets of QAPs were reviewed for compliance with PP-06-01, Rev. 0 and QAP-6.1(Y), Rev. 0. In addition, proper distribution of the Engineering Plan and proper follow-up regarding return of receipt acknowledgments was verified. One deficiency was identified during the audit. See Paragraph 6.1 of this report for details.

7.0 Control of Purchased Items and Services

Establishment and maintenance of the Supplier Evaluation Package, approved Suppliers List, and related documentation for qualification of suppliers was reviewed for compliance to QAP-7.1(Y), Rev. 0. Procedural requirements were found to be fully implemented for controls of purchased services. At the time of the audit, RSN had not purchased any items.

12.0 Control of Measuring and Test Equipment

Evaluation of control of measuring and test equipment was performed by review of the Materials Test Lab (MTL) Calibrated Equipment Use Log, and identification of calibrated equipment to determine compliance with PP-12-01, Rev. 0. The Calibration History Log had not been established and a CAR was written to document the deficiency. At the time of the audit, no measuring and test equipment was being utilized by RSN for YMP related quality-affecting activities.

15.0 Control of Nonconforming Items

QAP-15-1(Y), Rev. 0, was reviewed and found to reflect the requirements of the QAPD-002, Rev. 0, Section 15. However, no additional evaluation could be performed for this criterion because RSN has not yet issued any nonconformance reports.

16.0 Corrective Action

An evaluation of compliance to QAP-16.1(Y), Rev. 0 was performed. The evaluation included review of a sample of 10 deficiency reports for initiation, response, response evaluation, verification, and closure. All activities evaluated were found to be in compliance with QAP-16.1(Y),

Rev. 0. Evaluation of implementation of procedure QAP-16.2(Y), Rev. 0 and QAP-16.3(Y), Rev. 0, could not be performed because RSN has not yet issued any Corrective Action Reports (CARs) or Trend Reports. Evaluation in these areas was limited to review of the identified procedures for compliance to the requirements of QAPD-002, Rev. 0.

17.0 Quality Assurance Records

Compliance with PP-17-01, Rev. 0, was verified by checking various aspects of procedural implementation, i.e., record receipt control, use of Special Instruction Sheets during preparation of records for microfilming, completion of Record Rejection forms, and review of 12 records sent to the Central Records facility (CRF) to ensure attributes such as legibility, completeness, pagination and identification, WBS number and QA designator present, and proper authentication. Some records that had been sent to the CRF were found to be illegible; however, no car was issued since the deficiency is being handled under CAR YM-91-065.

Compliance with PP-17-02, Rev. 0, was verified by checking on various aspects of procedural compliance such as posting of approved access lists, appropriate fire rating on storage containers, and retrieval of records.

Compliance with PP-17-03, Rev. 0, was verified by checking incoming records at the Records Management Center (RMC) for various attributes such as legibility, completeness, pagination and identification, WBS number and QA designator present, and proper authentication. Protection of records during processing and proper use of record packaging was also checked.

Compliance with PP-17-04, Rev. 0, was verified by checking on the following: availability of reference standards and procedures; document preparation; general filming in accordance with 10CFR36, Part 1230; errors found during 16mm microfilming; visual inspection after microfilming; calibration of densitometer; and methylene blue testing.

Three deficiencies were identified in the area of QA Records (see Paragraph 6.0 of this report for details).

18.0 Audits

Compliance to QAP-18.1(Y), Rev. 0, and QAP-18.2(Y), Rev. 0, was evaluated. The evaluation included review of audit and surveillance schedules, logs, planning documents, the one audit report that has been issued, a sample of five surveillance reports, and deficiency reports associated with the reviewed audit and surveillance reports. With the exception of two minor deficiencies that were corrected during the audit, all activities performed under Criterion 18 were found to be in compliance with procedural requirements.

19.0 Software Quality Assurance

RSN is not using any software in quality-affecting activities. However, RSN has qualified three software packages to perform non-quality affecting calculations. One of these three packages was selected to be audited for compliance to RSN procedures. The name of this package is FLAC, Version 2.2TC, Fast Lagrangian Analysis of Continua. Revision 0 of the following procedures audited were: PP-19-01, PP-19-02, PP-19-03, PP-19-04, and PP-19-05.

Twenty different documents and one set of floppy discs were examined during the audit. In addition, the Software Configuration Log, Hardware Configuration Log, and Certified Run Log were examined for compliance with documentation and media as described in the procedures.

Compliance of the documentation to the procedures was verified. This included the traceability of requirements from the Software Requirements Specification, to the Software Design Document to the Test Document, to the Used Document, and finally the Verification Document and report. The final step in qualifying software is verification. Because Model Validation, the final step in qualifying an analysis, had not been completed, it was not audited.

During the course of audit, no deficiencies were identified in this criterion; however, one minor deficiency was corrected with the labeling of the User Document and Software design document. The remainder of the documentation and media were clearly labeled and design waivers and validation waivers were clearly identified as described in the procedures.

ENCLOSURE 3

PERSONNEL CONTACTED DURING THE AUDIT

NAME	ORGANIZATION/ LOCATION	PRE-AUDIT MEETING	DURING AUDIT	POST-AUDIT MEETING
A. Ali	RSN	X	X	X
A. Bessent	RSN	X		
J. Blaylock	DOE/YMQAD			X
R. Bullock	RSN	X	X	X
J. Calovini	RSN	X	X	X
B. Chytrowski	RSN		X	
R. Coppage	RSN		X	
P. Dalberg	RSN	X		
R. DeKlever	RSN	X	X	X
N. Diersen	RSN	X	X	
J. Douglass	RSN	X	X	X
J. Ferguson	RSN	X	X	X
J. Grenia	RSN	X	X	
P. Hale	RSN		X	
R. Hilsinger	RSN	X	X	X
M. Ishii	RSN		X	
H. Jacocks	RSN	X		X
J. Jacoby	RSN		X	
A. Kalia	RSN		X	
K. Kirwan	RSN		X	
B. Kopatich	RSN			X
M. Madison	RSN		X	
J. McNeely	RSN	X	X	
S. Moore	RSN		X	
M. Regenda	RSN	X	X	X
J. Rue	RSN	X	X	X
R. Sabol	RSN	X	X	
R. Schreiner	RSN	X	X	X
R. Singal	RSN		X	
H. Straight	RSN	X	X	
N. Tamondong	RSN		X	
D. Thomas	RSN		X	
D. Tunney	RSN	X	X	X
H. Tuthill	RSN	X	X	
M. Wilson	RSN	X		X

ENCLOSURE 4

OBJECTIVE EVIDENCE REVIEWED DURING THE AUDIT

Criterion 1

Quality Assurance Procedures:

QAP-1.1(Y), Rev. 0 Organization
QAP-1.1(Y), Rev. 0, PIC 1
QAP-2.4(Y), Rev. 0 Stop Work Order

Project Procedures:

PP-01-00, Rev. 0 Transition of Quality assurance Programs
PP-01-01, Rev. 0 Geology/Hydrology Organizational Interface

Miscellaneous Records:

Organization chart issued 4/19/91

Criterion 2

Quality Assurance Procedures:

QAP-2.1(Y), Rev. 0 Development of Quality Assurance Program
Description
QAP-2.1(Y), Rev. 0, PIC 1
QAP-2.2(Y); Rev. 0 Training and Indoctrination of Quality Assurance
Personnel
QAP-2.2(Y), Rev. 0, PIC 1
QAP-2.3(Y), Rev. 0 Qualification of Audit Personnel

Project Procedures:

PP-02-01, Rev. 0 Indoctrination and Training
PP-02-02, Rev. 0 Personnel Selection
PP-02-03, Rev. 0 Management Assessment
PP-02-04, Rev. 0 Readiness Review
PP-02-05, Rev. 0 Quality Assurance Grading

Grading Reports:

RSN-GR-013, Rev. 0

RSN-GR-016, Rev. 0

RSN-GR-017, Rev. 0

Miscellaneous Records:

Quality Assurance Program Quarterly Report, issued 5/9/91

Proposed PWBS 1.2.6 Correlation, Existing ESF Configuration vs. Reference Design Concept

RSN QA Requirements Matrices

Qualification files for 10 RSN Personnel

Auditor Qualification Files for 4 RSN Personnel

Technical Specialist Training File for 1 RSN individual

Criterion 3

Quality Assurance Procedure:

QAP-3.1(Y), Rev. 0 QA Review of Design Output Documents

Project Procedures:

PP-03-01, Rev. 0 Design Inputs and Informational Data to Outside organizations

PP-03-02, Rev. 0 Design Methodology

PP-03-02, Rev. 0, PIC 1

PP-03-03, Rev. 0 Analysis and Studies

PP-03-03, Rev. 0, PIC 1

PP-03-09, Rev. 0 Interdiscipline Review

PP-03-09, Rev. 0, PICs 1 & 2

Criterion 5

Quality Assurance Procedures:

QAP-1.1(Y), Rev. 0	Organization
QAP-2.3(Y), Rev. 0	Qualification of Audit Personnel
QAP-4.1(Y), Rev. 0	QA Review of Procurement Documents
QAP-5.1(Y), Rev. 0	Development of Quality Assurance Procedures
QAP-6.1(Y), Rev. 0	QA Controlled Document Distribution
QAP-6.2(Y), Rev. 0	Review of Documents
QAP-15.1(Y), Rev. 0	Control of Nonconforming Items
QAP-16.2(Y), Rev. 0	Corrective Action
PIC 1 to QAP-2.1(Y), Rev. 0	
PIC 1 to QAP-3.1(Y), Rev. 0	
PIC 1 to QAP-7.1(Y), Rev. 0	
PIC 2 to QAP-7.1(Y), Rev. 0	

Project Procedures:

PP-01-00, Rev. 0	Transition of Quality Assurance Programs
PIC 1 to PP-01-00, Rev. 0	
PP-01-01, Rev. 0	Geology/Hydrology Organizational Interface
PP-01-03, Rev. 0	Survey Department Work Functions
PP-01-04, Rev. 0	Survey Department Document Control and Distribution
PP-02-01, Rev. 0	Indoctrination and Training
PIC 1 to PP-02-01, Rev. 0	
PP-02-02, Rev. 0	Personnel Selection

PP-02-03, Rev. 0	Management Assessment
PP-02-04, Rev. 0	Readiness Review
PP-02-05, Rev. 0	Quality Assurance Grading
PP-02-06, Rev. 0	Determination of Importance of Items and Activities
PP-02-07, Rev. 0	Qualification of Data or Data Analyses Not Developed Under the YMP QA Program
PP-03-01, Rev. 0	Design Inputs and Informational Data to Outside Organizations
PP-03-02, Rev. 0	Design Methodology
PIC 1 to PP-03-02, Rev. 0	
PP-03-03, Rev. 0	Analysis and Studies
PP-03-04, Rev. 0	Design Verification
PP-03-05, Rev. 0	Interface Control
PP-03-06, Rev. 0	Hold Control
PP-03-07, Rev. 0	Preparation and Control of Specifications
PP-03-09, Rev. 0	Interdiscipline Review
PIC 1 & 2 to PP-03-08, Rev. 0	
PP-03-10, Rev. 0	Engineering Plan
PP-03-12, Rev. 0	Preparation and Control of Drawings
PIC 1 & 2 to PP-03-12, Rev. 0	
PP-03-13, Rev. 0	Basis for Design
PIC 1 to PP-03-12, Rev 0	
PP-03-15, Rev. 0	Configuration Identification and Documentation
PIC 1 to PP-03-15, Rev 0	

PP-03-16, Rev. 0 Configuration Status Reporting
PP-03-17, Rev. 0 Configuration Change Control
PP-03-18, Rev. 0 Technical Information Flow To and From The YMP
Technical Data Base
PP-03-19, Rev. 0 Information Flow Into The Project Reference
Information Base
PP-03-21, Rev. 0 Management and Independent Technical Reviews
PIC 1 to PP-03-21, Rev. 0
PP-04-01, Rev. 0 Purchasing (Services)
PIC 1 to PP-04-01, Rev. 0
PP-05-01, Rev. 0 Preparation and Control of Procedures
PIC 1 to PP-05-01, Rev. 0
PP-05-02, Rev. 0 Desk Instructions
PP-06-01, Rev. 0 Controlled Document Distribution
PIC 1 to PP-06-01, Rev. 0
PP-12-01, Rev. 0 Control of Measuring and Test Equipment
PP-17-01, Rev. 0 Records Management
PIC 1 to PP-17-01, Rev. 0
PP-17-02, Rev. 0 Records Storage
PIC 1 to PP-17-02, Rev. 0
PP-17-03, Rev. 0 Records Source Requirements
PP-17-04, Rev. 0 Project Microfilm Center

Miscellaneous Records:

Review Comment Records

Review of Documents forms

Criterion 6

Quality Assurance Procedures:

QAP-1.1(Y), Rev. 0	Organization
PIC 1 to QAP-1.1(Y), Rev. 0	
QAP-2.1(Y), Rev. 0	Development of the Quality Assurance Program Description
PIC 1 to QAP-2.1(Y), Rev. 0	
QAP-2.2(Y), Rev. 0	Training and Indoctrination of Quality Assurance Personnel
PIC 1 to QAP-2.2(Y), Rev. 0	
QAP-2.3(Y), Rev. 0	Qualification of Audit Personnel
QAP-2.4(Y), Rev. 0	Stop Work Order
QAP-2.6(Y), Rev. 0	Training, Qualification and Certification of QC Inspection Personnel
QAP-3.1(Y), Rev. 0	QA Review of Design Output Documents
PIC 1 to QAP-3.1(Y), Rev. 0	
QAP-4.1(Y), Rev. 0	QA Review of Procurement Documents
QAP-5.1(Y), Rev. 0	Development of Quality Assurance Procedures
QAP-6.1(Y), Rev. 0	QA Controlled Document Distribution
QAP-6.2(Y), Rev. 0	Review of Documents
QAP-7.1(Y), Rev. 0	Supplier Selection
PIC 1 & 2 to QAP-7.1(Y), Rev 0	
QAP-7.2(Y), Rev. 0	Source Verification
QAP-7.4(Y), Rev. 0	Supplier Deviation Report
QAP-10.1(Y), Rev. 0	Field Inspection
QAP-15.1(Y), Rev. 0	Control of Nonconforming Items

QAP-16.1(Y), Rev. 0 Deficiency Reporting
PIC 1 to QAP-16.1(Y), Rev 0
QAP-16.2(Y), Rev. 0 Corrective Action
PIC 1 to QAP-16.2(Y), Rev. 0
QAP-16.3(Y), Rev. 0 Trend Analysis
QAP-18.1(Y), Rev. 0 Audits
QAP-18.2(Y), Rev. 0 Surveillance
QAP-19.1(Y), Rev. 0 Computer Software

Project Procedures (same PPs as shown in Criterion 5 plus the following):

PP-19-01, Rev. 0 Design Engineering Computer Hardware and
 Software Configuration Management
PP-19-02, Rev. 0 Design Engineering Software Authorization and
 Classification
PP-19-03, Rev. 0 Design Engineering Computer Hardware and
 Software Procurement
PP-19-04, Rev. 0 Design Engineering Computer Hardware and
 Software Certification
PIC 1 to PP-19-04, Rev. 0
PP-19-05, Rev. 0 Design Engineering Certified Run Operation
PIC 1 & 2 to PP-19-05, Rev. 0
PP-19-06, Rev. 0 Design Engineering Documentation Review and
 Software Maintenance

Miscellaneous Records:

Distribution Lists for PPs, QAPs, Engineering Plan, and Health & Safety Plan
Engineering Plan for the Design Study Needed for the Revision of Title I Design
Summary Report, Revision 2, May, 1991

Criterion 7

Quality Assurance Procedures:

QAP-7.1(Y), Rev. 0 Supplier Selection

QAP-7.1(Y), Rev. 0, PIC 1 & 2

Miscellaneous Records:

QA Manual Review Checklist (LV-2026)

QA Review Log

Supplier Survey Checklist (LV-415)

Transmittal Letter, dated 5/3/91

Approval Letter, dated 5/13/91

Supplier Evaluation Summary (LV-219)

RSN Approved Suppliers List for YMP, Rev. 1

Criterion 12

Project Procedure:

PP-12-01, Rev. 0 Control of Measuring and Test Equipment

Miscellaneous Records:

MTL Calibrated Equipment List, dated 4/30/91

MTL calibrated Equipment use Log, dated 3/7/91

Calibration Service Requests

Criterion 15

Quality Assurance Procedure:

QAP-15.1(Y), Rev. 0 Control of Nonconforming Items

Criterion 16

Quality Assurance Procedure:

QAP-16.1(Y), Rev. 0 Deficiency Reporting

QAP-16.1(Y), Rev. 0, PIC 1

QAP-16.2(Y), Rev. 0 Corrective Action

QAP-16.2(Y), Rev. 0, PIC 1

QAP-16.3(Y), Rev. 0 Trend Analysis

Deficiency Reports:

91-S-001

91-S-002

91-S-003

91-S-007

91-S-008

91-S-009

91-S-010

91-S-011

91-S-017

91-S-018

Criterion 17

Project Procedures:

PP-17-01, Rev. 0 Records Management

PP-17-02, Rev. 0 Records Storage

PP-17-03, Rev. 0 Records Source Requirements

PP-17-04, Rev. 0 Project Microfilm Center

Miscellaneous Records:

Letter RSN-YMP-157, 1990 Management Assessment of Fenix & Scisson of Nevada (FSN)

FE:W1:91-011, Field Survey Study for construction at Trench 14

FE:WI:91-015, Midway Valley Trench A-2 Soils Testing

FS:YMP-5207, Pre Siting Analysis

Work Request No. 91001, Midway Valley Trench, Trench A-1, North Wall

Work Request No. 91002, Midway Valley Trench, Trench A-1, South Wall .

ANSI/AIIM MS-23-1983, Practice for Operational Procedures/Inspection and Quality Control of First Generation, Silver-Gelatin Microfilm of Documents

Certificate of Findings (Reference: PP-17-04)

Procurement Document Review Checklists

Services of S-Cubed

Services of RSN MSD IDS Personnel

Criterion 18

Quality Assurance Procedures:

QAP-18.1(Y), Rev. 0 Audits

QAP-18.1(Y), Rev. 0, PIC 1

QAP-18.2(Y), Rev. 0 Surveillance

QAP-18.2(Y), Rev. 0, PIC 1

Audit Report:

QA(Y) 91-01

Surveillance Reports:

SR(Y)-001

SR(Y)-002

SR(Y)-004

SR(Y)-007

SR(Y)-009

Miscellaneous Records:

RSN Audit Schedule

RSN Surveillance Schedule

Audit Log

Surveillance Log

Criterion 19

Project Procedures:

PP-19-01, Rev. 0	Design Engineering Computer Hardware and Software Configuration Management
PP-19-02, Rev. 0	Design Engineering Software Authorization and Classification
PP-19-03, Rev. 0	Design Engineering Computer Hardware and Software Procurement
PP-19-04, Rev. 0	Design Engineering Computer hardware and Software Certification
PP-19-05, Rev. 0	Design Engineering Certified Run Operation

Software Package:

FLAC, Version 2.27TC, Fast Lagrangian Analysis of Continua

Software Documents:

SVW-001

SVVR-01

SDD-01

TDRR-01

SRRRR-01

SRS-01

SPF-01

UDRR-01

SRRP-01

SDDW-01

SDTFRC-01

SICR-01

SVVP-01

SVVPRR-01

SVVRRR-01

SCF-01

UDRCR

SDDRCR

TDRCR

Procurement Document:

Fenix & Scisson, SCML-01-00, WBS 1.2.6.1.1

Miscellaneous Records:

Configuration Management Log

Certification Log

Software Environmental Management Log, HCR-01-00

Configuration Status Report

ENCLOSURE 5

OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT U.S. DEPARTMENT OF ENERGY WASHINGTON, D.C.			14 CAR NO <u>YM-91-067</u> DATE <u>08/08/91</u> SHEET <u>2</u> OF <u>2</u> <div style="text-align: center;">QA</div> WBS No. <u>1.2 3 3</u>
CORRECTIVE ACTION REQUEST			
1 Controlling Document RSN QAPD-002, Rev. 0		2 Related Report No. Audit YMP-91-04	
3 Responsible Organization RSN		4 Discussed With R.L. Bullock & A. Ali	
10 Response Due 20 days from issue	11 Responsibility for Corrective Action R.L. Bullock		12 Stop Work Order Y or N Nc
5 Requirement: RSN QAPD-002, Rev. 0, Para. 1.1, states in part, "...The overall organizational structure, lines of communication, authority and duties of persons and organizations affecting quality is established in this document."			
6 Adverse Condition: Review of RSN QAPD-002, Rev. 0, the RSN Organizational Chart, issued 4/29/91; Project Procedures (PPs); and position descriptions, provide evidence that organizational structure, levels of authority, and lines of communication are not clearly documented. Examples include the following: 1. PP-02-01, Rev. 0, identifies that the Training Coordinator is responsible for, "...identifying training needs; provides assistance in the development, scheduling, and presentation of training assignments; and maintains the project training records." However, the title of the Training Coordinator does not appear in the QAPD nor the Organizational Chart. 2. QAPD-002, Rev. 0, Figure 1-1, shows the "Site Characterization Facility Design Manager," who is responsible for: analyses, drawings and specifications as appropriate to the assigned project. Review of PPs shows that the functional title responsible for these activities is the "Site Characterization Design Manager."			
7 Recommended Action(s): Correct the deficiency identified. Investigate to determine if there are other similar deficiencies. Take action to prevent recurrence.			
8 Initiator J.S Martin	Date: 08/08/91	9 Severity Level - 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/>	13 Approved By: Date: OQA <i>Catherine [Signature]</i> 8-12-91
15 Verification of Corrective Action:			
16 Corrective Action Completed and Accepted: OAR _____ Date _____		17 Closure Approved By: OQA _____	

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U.S. DEPARTMENT OF ENERGY
WASHINGTON, D.C.

CAR NO YM-91-067
DATE 08 08 91
SHEET 2 OF 2

CORRECTIVE ACTION REQUEST
(continuation sheet)

6 Adverse Condition (continued)

3. RSN Organizational Chart shows the titles for the following personnel:

S.J. Loftfield - Sr. Engineering Technician
P.R. Dahlberg - Sr. Quality Assurance Engineer

However, the position descriptions read that S.J. Loftfield is a Computer Analyst and that P.R. Dahlberg is a Sr. QA Specialist.

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OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT U.S. DEPARTMENT OF ENERGY WASHINGTON, D.C.			14 CAR NO. <u>YM-91-069</u> DATE <u>08 08 91</u> SHEET <u>1</u> OF <u>1</u> <div style="text-align: center;">QA</div> WBS No: <u>1.2.9.3</u>	
CORRECTIVE ACTION REQUEST				
1 Controlling Document QAPD-002, Rev. 0			2 Related Report No. Audit YMP-91-04	
3 Responsible Organization RSN		4 Discussed With R.L. Bullock & J.L. Rue		
10 Response Due 20 days from issue	11 Responsibility for Corrective Action R.L. Bullock		12 Stop Work Order Y or N No	
5 Requirement: QAPD-002, Rev. 0, Para. 2.2.12, "Personnel Selection, Indoctrination and Training," states in part, "Personnel assigned to perform activities that affect quality will receive appropriate indoctrination and training prior to performing work...Proficiency shall be maintained."				
6 Adverse Condition: Review of training files provided the following deficiencies: 1. Nickie Diersen - no training to project procedures for activities performed. 2. No documented evidence of personnel being trained to Administrative Procedures, Quality, (eg. AP-5.28Q). 3. Personnel not performing required reading prior to effective date of procedure or Procedure Interim Change notice. Examples included: a. Scott Nordick - PP-03-21 effective date 6/3/91 date read 6/14/91 b. John McNeely - PP-02-07 effective date 4/29/91 date read 5/3/91				
7 Recommended Action(s): Correct the deficiency identified. Investigate to determine if there are other similar deficiencies. Take action to prevent recurrence.				
8 Initiator J.S. Martin	Date: 08/08/91	9 Severity Level - 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/>	13 Approved By: OQA <u>Catherine Longstaffe</u>	Date: 8-12-91
15 Verification of Corrective Action:				
16 Corrective Action Completed and Accepted: OAR _____ Date _____			17 Closure Approved By: OQA _____	

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14 CAR NO: YM-91-069
DATE 08 08 91
SHEET 1 OF 1
QA
WBS No: 1.2.9.3

CORRECTIVE ACTION REQUEST

1 Controlling Document RSN QAPD-002, Rev. 0	2 Related Report No. Audit: YMF-91-04
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3 Responsible Organization RSN	4 Discussed With R.L. Bullock & J.L. Rue
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10 Response Due 20 days from issue	11 Responsibility for Corrective Action R.L. Bullock	12 Stop Work Order Y or N No
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5 Requirement:
QAPD-002, Rev. 0, Para. 2.2.12, "Personnel Selection, Indoctrination and Training," states in part, "Management and Supervisory personnel determine the extent and need of training for personnel based on the scope, competency and nature of the activity and on education, experience and proficiency of the person."

6 Adverse Condition:
Contrary to the above Project Procedure PP-02-01, Rev. 0, "Indoctrination and Training," Para. 6.1.1. states in part, "... Assignments may be identified by Managers/Line Supervisors."

DISCUSSION
During the course of this audit it was found that training requirements were established by the Training Coordinator for personnel involved in activities affecting quality without input from Managers/Supervisors. As was stated in interviews, the methodology employed in establishing the training requirements was accomplished by a review of old H&N and FSN procedures against the procedures issued by RSN. As a result, Managers/Supervisors have had no direct input into training requirements for those individuals assigned to them as required by the RSN QAPD. In review of PP-02-01, Rev. 0, it was found that the procedure indicated that Managers/Supervisors may provide input to personnel for which they are responsible. To comply with the RSN QAPD, the word "may" should read "shall."

7 Recommended Action(s):
Correct the deficiency identified. Investigate to determine if there are other similar deficiencies. Take action to prevent recurrence.

8 Initiator J.S. Martin	Date: 08/08/91	9 Severity Level - 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/>	13 Approved By: OQA <u>Catherine Thompson</u>	Date: 8 12 91
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15 Verification of Corrective Action:

16 Corrective Action Completed and Accepted: OAR _____ Date _____	17 Closure Approved By: OQA _____
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OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT U.S. DEPARTMENT OF ENERGY WASHINGTON, D.C.			14 CAR NO: <u>YM-91-07C</u> DATE <u>08/08/91</u> SHEET <u>1</u> OF <u>1</u> <div style="text-align: center;">QA</div> WBS No <u>1.2.9.3</u>
CORRECTIVE ACTION REQUEST			
1 Controlling Document RSN QAPD-002, Rev. 0		2 Related Report No. Audit: YMP-91-04	
3 Responsible Organization RSN		4 Discussed With J.L. Rue	
10 Response Due 20 days from issue	11 Responsibility for Corrective Action R.L. Bullock		12 Stop Work Order Y or N No
5 Requirement: RSN QAPD-002, Rev. 0, Sect. 6. Para. 6.1.3, states in part, "Controlled document recipients are responsible for acknowledging document receipt; ensuring that latest authorized documents are available at the workplace; and that obsolete or superseded documents are so identified, destroyed, or returned."			
6 Adverse Condition: Obsolete Project Procedure PP-05-04, Rev. 0 was found in controlled Yucca Mountain Operations Project Procedure Manuals and the procedure was not identified as "obsolete." DISCUSSION Six out of nine controlled manuals checked contained obsolete procedure PP-05-04. In each case the document holder had acknowledged receipt of instructions to remove procedure PP-05-04. The document holders were informed and the controlled manuals were corrected. The following controlled manuals were checked: 2, 12, 16, 23, 25, 57, 72, 78, and 87. NOTE: Document Transmittal dated 7/22/91 provided instructions to delete PP-05-04 and provided a Table of Contents dated 7/26/91 that indicated PP-05-04 was deleted. The current Table of Contents dated 7/29/91 does not show PP-05-04 as an issued procedure. As of 7/22/91 there were 97 individual controlled sets of PPs.			
7 Recommended Action(s): Take action to assure obsolete Project Procedure PP-05-04 is identified as obsolete, destroyed, or returned to Document Control			
8 Initiator R.E. Powe	Date: 08/08/91	9 Severity Level - 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/>	13 Approved By: OQA <i>Robert J. [Signature]</i> 8-12-91
15 Verification of Corrective Action:			
16 Corrective Action Completed and Accepted: QAR _____ Date _____		17 Closure Approved By: OQA _____	

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14 CAR NO. YM-91-071
DATE 08 18 91
SHEET 1 OF 1
QA
WBS No. 1193

CORRECTIVE ACTION REQUEST

1 Controlling Document RSN PP-12-01, Rev. 0		2 Related Report No. Audit YMP-91-04	
3 Responsible Organization RSN Materials Test Lab		4 Discussed With Raj Singal	
10 Response Due 20 days from issue	11 Responsibility for Corrective Action R.L. Bullock	12 Stop Work Order Y or N No	
5 Requirement: PP-12-01, Rev. 0, Para. 6.2.1 states in part, "a Calibration History Log (Attachment 1) shall be established and maintained."			
6 Adverse Condition: Contrary to the above requirement, the Materials Test Lab has not established and therefore has not maintained a Calibration History Log.			
7 Recommended Action(s): Identify the remedial action(s) to be taken to correct the deficiency noted in Block 6.			
8 Initiator R.H. Klemens	Date: 08/08/91	9 Severity Level - 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/>	13 Approved By: OQA <i>[Signature]</i> for 8-12-91
15 Verification of Corrective Action:			
16 Corrective Action Completed and Accepted: OAR _____ Date _____		17 Closure Approved By: OQA _____	

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14 CAR NO	YM-91-072
DATE	08-08-91
SHEET	1 OF 1
	QA
WBS No	1.2.9.3

CORRECTIVE ACTION REQUEST

1 Controlling Document RSN PF-17-03, Rev. 0	2 Related Report No. Audit YMP-91-04
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3 Responsible Organization RSN	4 Discussed With J.E. Ferguson
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10 Response Due 20 days from issue	11 Responsibility for Corrective Action R.L. Bullock	12 Stop Work Order Y or N No
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5 Requirement:

RSN PF-17-03, Rev. 0, Para. 6.3.13, "Authentication," states in part, "...QA records and record packages must be authenticated by authorized personnel by stamping, signing, or initialing and dating the record or record package."

OCRWM QARD, Appendix E, "Glossary," states in part, "...Authentication (QA Records): Authentication is the act of attesting that the information contained within a document is accurate, complete, and appropriate to the work accomplished."

6 Adverse Condition:

RSN has processed QA Records to the Central Records Facility that were not packaged appropriate to the work accomplished.

DISCUSSION
For example: The record package titled "Training File for Carolyn Aiello" contained records that had nothing to do with the training of Carolyn Aiello.

7 Recommended Action(s):

Correct the deficiency identified. Investigate to determine if there are other similar deficiencies. Take action to prevent recurrence.

8 Initiator R.E. Powe	Date: 08/08/91	9 Severity Level - 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/>	13 Approved By: OQA <i>Arthur J. Hampel</i>	Date: 8-12-91
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15 Verification of Corrective Action:

16 Corrective Action Completed and Accepted: OAR _____ Date _____	17 Closure Approved By: OQA _____
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14 CAR NO YM-91-073
DATE 08/08 91
SHEET 2 OF 2
QA
WBS No 1.2.9.3

CORRECTIVE ACTION REQUEST

1 Controlling Document
RSN PP-17-03, Rev. 0

2 Related Report No.
Audit YMP-91-04

3 Responsible Organization
RSN

4 Discussed With
J.L. Rue

10 Response Due
20 days from issue

11 Responsibility for Corrective Action
R.L. Bullock

12 Stop Work Order Y or N
No

5 Requirement:
RSN PP-17-03, Rev. 0, Para. 5.1 states in part, "RSN Department managers are responsible for:
A. Ensuring that all design specifications, procurement documents, task plans, study plans, test procedures, implementing procedures, instructions, statements of work, or other documents specify the QA records and records package to be generated, supplied, or maintained as a result of that process, and that personnel who generate, receive or approve these records submit them to the RMC.

6 Adverse Condition:
RSN Department Managers are not ensuring that implementing procedures specify the records package to be generated.

DISCUSSION
Objective evidence was found that implementing procedures are identifying QA records to be generated; however, no procedures were found that addressed records packages.

7 Recommended Action(s):
Correct the deficiency identified. Investigate to determine if there are other similar deficiencies. Take action to prevent recurrence.

8 Initiator
R.E. Powe

Date: 08/08/91

9 Severity Level -
1 2 3

13 Approved By:
OQA Catherine Hampton 8-12-91

Date:

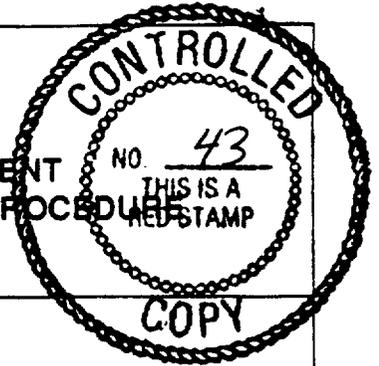
15 Verification of Corrective Action:

16 Corrective Action Completed and Accepted:
QAR _____ Date _____

17 Closure Approved By:
OQA _____



**OFFICE OF CIVILIAN
RADIOACTIVE WASTE MANAGEMENT
QUALITY ASSURANCE ADMINISTRATIVE PROCEDURES**



Title: CORRECTIVE ACTION			
Procedure No.: QAAP 16.1	Revision: 4	Date: 11/12/91	Page 1 of 20
Concurrence <i>[Signature]</i> 10/25/91		Approval <i>[Signature]</i> Date: 10/29/91	

1.0 PURPOSE

This procedure establishes the responsibilities and methods to ensure that conditions adverse to quality are promptly identified and corrected.

2.0 SCOPE

This procedure applies to conditions adverse to quality identified in activities subject to quality assurance (QA) program controls. Item related conditions adverse to quality are identified and controlled in accordance with QMP-15-01, *Control of Nonconformances*. However, repetitive or significant item related conditions adverse to quality shall also be processed in accordance with this procedure.

This procedure shall be used by the Office of Civilian Radioactive Waste Management (OCRWM) and direct-support contractor personnel for identifying, evaluating and correcting conditions adverse to quality.

3.0 REFERENCES AND DEFINITIONS

3.1 REFERENCES

- 3.1.1 *Quality Assurance Requirements Document (QARD), DOE/RW-0214*
- 3.1.2 *Quality Assurance Program Description Document (QAPD), DOE/RW-0215*
- 3.1.3 *QAAP 16.2, Stop Work*
- 3.1.4 *QAAP 2.9, Quality Assurance Program Trend Evaluation and Reporting*

3.2 DEFINITIONS

- 3.2.1 Conditions Adverse to Quality - An all-inclusive term used in reference to any of the following: failures, malfunctions, deficiencies, defective items and nonconformances.



3.2.2 Quality Assurance Representative - An individual representing the OCRWM Office of Quality Assurance.

3.2.3 Responsible Manager - The OCRWM Division, Associate, or Office Director, or the Civilian Radioactive Waste Management (CRWM) Technical Project Officer or Project Manager having functional responsibility for the item or activity that is the subject of a Corrective Action Request.

3.2.4 Root Cause - The basic cause for a specific condition adverse to quality which, if corrected, will preclude recurrence of the same or similar significant condition adverse to quality.

3.2.5 The definitions of standard terms may be found in the Glossary contained in reference 3.1.1.

1.0 RESPONSIBILITIES

4.1 DIRECTOR, OFFICE OF QUALITY ASSURANCE (OQA)

The Director, OQA is responsible for preparing and maintaining this procedure.

4.2 RESPONSIBLE MANAGER

The Responsible Manager is responsible for:

4.2.1 Controlling activities and/or the use of items identified as having conditions adverse to quality until resolution is reached;

4.2.2 Taking immediate action to correct conditions adverse to quality where threat of degradation or irretrievable loss to the PROGRAM exists;

4.2.3 Taking remedial action to correct identified conditions adverse to quality;

4.2.4 Investigating significant conditions adverse to quality to determine the overall extent of the problem and root cause; and

4.2.5 Implementing measures to preclude recurrence of significant conditions adverse to quality.

4.3 OCRWM PERSONNEL

OCRWM personnel (including direct-support contractor personnel) are responsible for:



- 4.3.1 Identifying and reporting conditions adverse to quality observed in the conduct of PROGRAM activities or in the characteristics of PROGRAM products;
- 4.3.2 Initiating a Corrective Action Request (CAR) as necessary; and
- 4.3.3 Providing support in resolving conditions adverse to quality.

4.4 DIVISION DIRECTORS, OFFICE OF QUALITY ASSURANCE

The Headquarters Quality Assurance Division Director (HQ QADD) and the Yucca Mountain Quality Assurance Division Director (YM QADD) are responsible for:

- 4.4.1 The overall implementation of this procedure;
- 4.4.2 Reviewing and approving the issuance and closure of CARs; and
- 4.4.3 Ensuring that the Director, OQA is copied on the issuance and closure of all CARs pertaining to OQA and any CARs identifying significant conditions adverse to quality.

4.5 QUALITY ASSURANCE REPRESENTATIVE (QAR)

The QAR is responsible for:

- 4.5.1 Reviewing CARs to determine if the condition is a significant condition adverse to quality;
- 4.5.2 Reviewing CARs to determine if the CAR identifies a stop work condition;
- 4.5.3 Establishing response due dates and recommending the CAR for issuance;
- 4.5.4 Reviewing and accepting the response and verifying and documenting implementation of corrective actions; and
- 4.5.5 Forwarding copies of correspondence related to CARs to the CAR Coordinator.

4.6 CAR COORDINATOR

The CAR Coordinator is responsible for:

- 4.6.1 Assigning unique CAR numbers;
- 4.6.2 Maintaining working files for open CARs;
- 4.6.3 Maintaining and logging correspondence on the CAR Summary Sheet;



4.6.4 Tracking the status of CARs;

4.6.5 Entering closed CARs into the QA Records System; and

4.6.6 Issuing periodic status reports of open CARs.

5.0 GENERAL

5.1 VALIDITY OF CARs

CARs shall be evaluated to determine validity. A CAR is considered valid if it identifies a condition adverse to quality based upon the following criteria:

- a) Activities affecting quality are being performed without appropriate QA Program controls.
- b) Activities affecting quality are not in compliance with an existing QA program-implementing document requirement.
- c) A nonconforming condition exists that has the potential to impact multiple items or related activities.

5.2 LOGGING AND NUMBERING OF CARs

A CAR log (which may be a computerized data base) is maintained by the CAR Coordinator for tracking the progress and status of CARs. The CAR log shall identify, as a minimum, the unique CAR number, the assigned QAR, the organization responsible for responding to the CAR, the dates of issuance, response and closure, whether the CAR identifies a significant condition adverse to quality, and whether a stop work condition was identified. CAR numbers will be assigned as follows:

XX-YY-NNN, where:

- XX = Acronym for the QA Division issuing the CAR (i.e., HQ-Headquarters, YM-Yucca Mountain).
- YY = the last two digits of the fiscal year that the CAR is initiated.
- NNN = the next sequential number, beginning with "001" for each fiscal year.

5.3 SIGNIFICANT CONDITIONS ADVERSE TO QUALITY

CARs shall be evaluated in accordance with the following criteria to determine if the identified condition is a significant condition adverse to quality:



- a) A condition determined to be repetitive in nature relative to the condition being evaluated.
- b) A condition indicating a QA Program breakdown, for example:
 - o A deficiency in the production of the waste form or damage to the waste form that degrades the waste form's ability to perform its intended function.
 - o A deficiency in the high-level nuclear waste transportation process or transport casks that would seriously impact its intended function of assuring public health and safety.
 - o A deficiency in design as approved for fabrication or construction such that the design deviates extensively from design criteria and basis.
 - o A deficiency in the fabrication or construction of or significant damage to barriers, structures, systems or components that requires extensive evaluation, redesign, or repair in order to establish the adequacy of the barrier, structure, system, or component to perform its intended function of assuring public health and safety.
 - o A deviation from performance specifications that will require extensive evaluation, redesign or repair to establish the adequacy of a structure, system, or component to perform its intended function.
 - o An error in a computer program used to support activities affecting quality after it has been released for use.
 - o Loss of essential data required for activities affecting quality.
- c) A condition that, were it to remain uncorrected, could have an adverse impact on waste form production, high-level nuclear waste transport, safety or waste isolation.

5.4 DETERMINATION OF STOP WORK CONDITIONS

CARs that identify significant conditions adverse to quality shall be evaluated to determine whether a stop work condition exists in accordance with the following criteria:

- a) Repetitive deficiencies affecting items or activities important to radiological safety, storage, transport, or disposal of high-level nuclear waste when previous corrective actions have not precluded recurrences.



- b) Significant deficiencies that could affect activities important to radiological safety aspects of storage, transport, or disposal of high-level nuclear waste.
- c) Activities affecting quality are being performed without approved procedures or by unqualified personnel.
- d) Other significant conditions determined by the Director, OQA to have major impacts on the overall QA Program or quality of items and related activities.

5.5 TREND EVALUATION AND REPORTING

Conditions reported by CARs are subject to trend evaluation in accordance with QAAP 2.9, *Quality Assurance Program Trend Evaluation and Reporting*.

5.6 DISPUTE RESOLUTION

Disputes that arise during the implementation of this procedure shall be directed to the attention of appropriate management for resolution and, if not resolved, elevated to progressively higher levels of management including, if necessary, the Director, OCRWM.

6.0 PROCEDURE

6.1 INITIATION AND ISSUANCE

6.1.1 Upon discovering a potential condition adverse to quality, OCRWM personnel shall initiate a CAR by completing the initiator actions in accordance with Attachment I.

6.1.2 The initiator shall forward the CAR to the YM QADD or HQ QADD, as applicable. The QADD shall evaluate the CAR for the validity of the identified condition, based upon the criteria in Subsection 5.1.

6.1.2.1 If the CAR is determined to be valid, the QADD shall assign a QAR and forward the CAR to the CAR Coordinator for processing in accordance with Paragraph 6.1.3.

6.1.2.2 If the CAR is determined to be invalid, then the QADD shall document the justification and return the CAR to the initiator for concurrence. If the initiator does not agree that the CAR is invalid, the matter shall be elevated to the Director, OQA for resolution. No further action is required if all parties agree that the CAR is not valid.



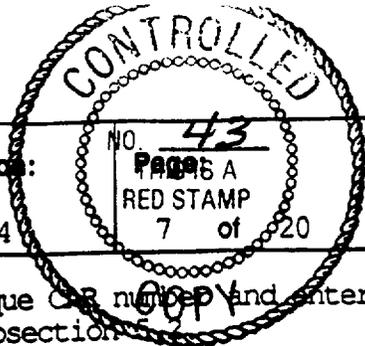
**OCRWM QA
ADMINISTRATIVE
PROCEDURE**

Procedure No.:

QAAP 16.1

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4



- 6.1.3 The CAR Coordinator shall assign a unique CAR number and enter the CAR in a log in accordance with Subsection 5.2.
- 6.1.4 After the CAR number is assigned and logged, the CAR Coordinator shall forward the original CAR to the assigned QAR for processing. The QAR completes the required actions as identified in Attachment I and as detailed below.
- 6.1.5 The QAR shall determine if the condition is a significant condition adverse to quality, based upon the criteria in Subsection 5.3.
- 6.1.5.1 If it is determined that the CAR does not represent a significant condition adverse to quality, the QAR continues processing the CAR in accordance with Paragraph 6.1.7.
- 6.1.5.2 If it is determined that the CAR does represent a significant condition adverse to quality, the QAR continues processing the CAR in accordance with Paragraph 6.1.6.
- 6.1.6 The QAR shall determine whether a stop work condition exists based on the criteria in Subsection 5.4 for a CAR that identifies a significant condition adverse to quality.
- 6.1.6.1 If it is determined that a stop work condition does exist, then the QAR shall:
- a) immediately provide verbal notification to the Director, OQA that a stop work condition has been identified;
 - b) initiate a Stop Work Order in accordance with QAAP 16.2, *Stop Work*; and
 - c) continue processing the CAR in accordance with Paragraph 6.1.7.
- 6.1.6.2 If it is determined that a stop work condition does not exist, the QAR then continues processing the CAR in accordance with Paragraph 6.1.7.
- 6.1.7 The QAR shall determine the types of corrective action required for resolution of the condition adverse to quality and indicate these actions on the CAR. For all CARs, action required shall include, as a minimum, remedial action to correct the identified condition. In addition, for significant conditions adverse to quality, required actions shall include investigative action to determine extent, investigative action to determine root cause,



and corrective action to preclude recurrence. The QAR may also indicate any additional recommended actions on the CAR.

- 6.1.8 The QAR shall identify the response due date and forward the CAR to the QADD for approval.
- 6.1.9 When the CAR is ready for approval, the QADD shall sign and date the CAR, then forward a copy of the CAR to the Responsible Manager by memorandum or letter.
- 6.1.10 The original of the CAR form and a copy of the transmittal letter or memo are forwarded to the CAR Coordinator. Throughout the remaining processing of the CAR, the QADD and the QAR shall ensure that the CAR Coordinator is notified of all CAR status changes and is provided copies of all correspondence relative to the CAR.
- 6.1.11 The CAR Coordinator shall maintain the original CAR and copies of transmittal memorandums or letters. The CAR Coordinator shall update the log as changes occur and record all relevant correspondence on the CAR Summary Sheet (Attachment II).
- 6.1.12 The QADD shall ensure that copies of the CAR and the transmittal letter or memo are forwarded to the Director, OQA for all CARs issued to a Responsible Manager within the areas of responsibility of OQA.
- 6.1.13 If the CAR identifies a significant condition adverse to quality, the QADD shall ensure that copies of the CAR and the transmittal letter or memo are forwarded to the Director, OQA. In addition, if the Responsible Manager to whom the CAR is issued is not an OCRWM Associate or Office Director, copies of the CAR and the transmittal letter or memo shall be forwarded to the OCRWM Associate or Office Director having line responsibility for the activities of the Responsible Manager.

6.2 CORRECTIVE ACTION RESPONSE

- 6.2.1 The Responsible Manager shall determine the corrective actions required and develop a corrective action response. The format for documenting CAR responses is shown in Attachment III. The Responsible Manager shall sign and date the response to indicate approval. The response shall be submitted to the applicable QADD. Guidelines for root cause determination are presented in Attachment IV.
- 6.2.2 If the requested response due date cannot be met, the Responsible Manager shall submit a written request for extension to the applicable QADD prior to the due date. The request for extension shall include appropriate justification for the delay.



6.2.3 Upon receipt of a request for extension of the response due date, the QADD shall evaluate the extension request and issue a letter or memorandum notifying the Responsible Manager of the approval or disapproval of the request.

6.3 RESPONSE EVALUATION

6.3.1 Upon receipt of a CAR response, the QAR shall evaluate the response to ensure that it addresses the required elements and that the proposed actions will sufficiently resolve the adverse condition.

6.3.1.1 If the response is acceptable, then the QAR indicates acceptance by signing and dating the original CAR form. The CAR is then forwarded to the applicable QADD for approval and subsequent issuance of a letter or memorandum notifying the Responsible Manager of response acceptance.

6.3.1.2 If the response is unacceptable, the QADD shall issue a letter or memorandum requesting an amended response to the Responsible Manager. This request shall include specific identification of portions of the response determined unacceptable and reasons or justification for the determination.

6.3.2 The Responsible Manager shall notify OQA if a previously submitted CAR response needs to be changed and submit an amended response in accordance with Paragraph 6.2.1.

6.3.3 Amended responses to CARs shall be reviewed and processed in accordance with this subsection.

6.4 VERIFICATION OF CORRECTIVE ACTION

6.4.1 Upon completion of the required corrective actions, the QAR shall verify that the accepted actions identified in the response have been satisfactorily implemented. The QAR shall document the verification on a CAR Continuation Sheet (Attachment I) identifying the objective evidence reviewed.

6.4.1.1 If the implementation is found to be complete and acceptable, the QAR shall sign the CAR indicating satisfactory verification and forward the CAR to the QADD for closure in accordance with Subsection 6.5.

6.4.1.2 If the implementation is found incomplete, unacceptable, or cannot be verified, then the QAR shall initiate a letter or memorandum delineating specific details of the corrective actions found to be satisfactory and unsatisfactory, providing



recommendations for corrections for those portions found unsatisfactory, and requesting an amended response. The letter or memorandum shall be signed by the QADD and issued to the Responsible Manager.

6.4.2 Amended responses submitted as a result of unsatisfactory verification shall be processed in accordance with Subsection 6.3.

6.5 CAR CLOSURE

6.5.1 When the CAR is ready for closure, the QADD shall sign and date the CAR and issue a letter or memorandum notifying the Responsible Manager that the CAR is closed.

6.5.2 The CAR Coordinator shall update the CAR log and process the completed CAR package for submittal to the QRC or LRC, as described in Section 7.0.

6.6 CHANGING CARs

6.6.1 The QAR shall document changes required to a previously issued CAR on a CAR Continuation Sheet providing justification for the changes.

6.6.2 Changes that indicate an increase in the scope of the previously reported condition shall be reevaluated in accordance with Subsection 6.1.

6.6.3 If extensive changes warrant superseding a previously issued CAR with a new CAR, the superseded CAR shall be voided in accordance with Subsection 6.7.

6.7 VOIDING CARs

6.7.1 When it is determined that an issued CAR is potentially invalid, the QADD shall discuss the condition with the initiator and the assigned QAR.

6.7.2 If it is agreed that the CAR is invalid, the QADD shall ensure that the complete justification is documented with signatures and dates of those involved in the decision and close the CAR in accordance with Subsection 6.5.

6.7.3 If all individuals involved do not agree that the CAR is invalid, the matter shall be elevated to the Director, OQA for resolution.



6.8 **STATUS**

- 6.8.1 The CAR Coordinator shall provide periodic status reports to the Director, OQA and the applicable QA Division Director. The reports shall provide a status of open CARs issued by the Division.
- 6.8.2 The CAR Coordinator shall periodically review the CAR Log and identify those CARs that have not been responded to by the response due date. The QAR shall be notified for resolution.
- 6.8.3 Should violation of established due dates persist or if unsatisfactory responses continue, the QADD shall direct the matter to the attention of appropriate management as described in Subsection 5.6.

7.0 **RECORDS**

Record files for open CARs shall be maintained by the CAR Coordinator. Closed CARs shall be assembled by the CAR Coordinator and processed in accordance with QAAP 17.1, *QA Records Management* or QMP-17-01, *Records Management: Record Source Implementation*. Completed CARs and CAR continuation sheets (including CARs voided after issuance), CAR Responses, CAR Summary Sheets, and relevant correspondence listed on CAR Summary Sheets are considered QA Records. QA Records required as a result of implementing QAAP 16.2, *Stop Work*, shall be filed in the Quality Records Package for the associated CAR.

8.0 **ATTACHMENTS**

- 8.1 Attachment I - Corrective Action Request
- 8.2 Attachment II - CAR Summary Sheet
- 8.3 Attachment III - Format for Corrective Action Response
- 8.4 Attachment IV - Guidelines for Root Cause Determination
- 8.5 Attachment V - QAAP 16.1 Flowchart



ATTACHMENT I (Example)

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

CAR NO. _____
DATE: _____
PAGE: _____ OF _____
QA

CORRECTIVE ACTION REQUEST

1 Controlling Document		2 Related Report No.	
3 Responsible Organization		4 Discussed With	
5 Requirement:			
6 Adverse Condition:			
7 Does a significant condition adverse to quality exist? Yes ___ No ___ If Yes, Circle One: A B C		8 Does a stop work condition exist? Yes ___ No ___; if Yes - Attach copy of SWO If Yes, Circle One: A B C D	
9 Response Due Date:			
10 Required Actions: <input type="checkbox"/> Remedial <input type="checkbox"/> Extent of Deficiency <input type="checkbox"/> Preclude Recurrence <input type="checkbox"/> Root Cause Determination			
11 Recommended Actions:			
12 Initiator		14 Issuance Approved by:	
Date		QADD Date	
13 Response Accepted		15 Response Accepted	
QAR Date		QADD Date	
16 Amended Response Accepted		17 Amended Response Accepted	
QAR Date		QADD Date	
18 Corrective Actions verified		19 Closure Approved by:	
QAR Date		QADD Date	

REV. 06/01



ATTACHMENT I (Continued)

Instructions for Completing Corrective Action Requests

Initiator

1. Enter the document and revision which has been violated.
2. Enter the number of the report that resulted in identifying the adverse condition (e.g., Audit Report Number, Surveillance Report Number, Nonconformance Report Number, Quality Concerns Identification Number). Enter N/A if there is not a related report.
3. Enter the organization responsible for the adverse condition (e.g., RW-40).
4. Enter the name of the individual(s) with whom the adverse condition was discussed.
5. State the requirement in narrative, concise form including specific reference (paragraph/section number) to the controlling document.
6. Describe the adverse condition found, in concise narrative form including references to examples discovered. (Use and refer to continuation sheet, if needed).
7. Sign and date the CAR.

CAR Coordinator

8. Enter the CAR number and the date the number is assigned.

QAR

9. Check "Yes" or "No" as applicable indicating whether the condition is a significant condition adverse to quality. Circle A, B, or C identifying the applicable criterion of Subsection 5.3.
10. Check "Yes" or "No" as applicable indicating whether a stop work condition exists. Circle A, B, C, or D identifying the applicable criterion of Subsection 5.4. Attach a copy of any Stop Work Order issued.
11. Enter the response due date.
12. Check the applicable blocks based upon the following:
Condition Adverse to Quality - at a minimum, remedial action is required
Significant Condition Adverse to Quality - all four actions are required
13. (Optional) Provide a recommended action that would be acceptable.
- 15, 17, and 19 Sign and date the CAR when and if applicable.

QADD

- 14, 16, 18, and 20 Sign and date the CAR when and if applicable



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ATTACHMENT I (continued)

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

CAR NO. _____
DATE _____
PAGE _____ OF _____
QA

CORRECTIVE ACTION REQUEST (Continuation Page)

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ATTACHMENT II (Example)

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

CAR NO. _____
DATE: _____
PAGE: _____ OF _____
QA

CAR SUMMARY SHEET

	<u>Date</u>	<u>Letter Reference</u>
<u>Issuance Letter/Memo</u>	_____	_____
<u>Response Extension Request</u>	_____	_____
Acceptance	_____	_____
<u>Response Received</u>	_____	_____
Acceptance	_____	_____
<u>Request Amended Response</u>	_____	_____
Response	_____	_____
Acceptance	_____	_____
<u>Request Amended Response</u>	_____	_____
Response	_____	_____
Acceptance	_____	_____
<u>C/A Extension Request</u>	_____	_____
Acceptance	_____	_____
<u>C/A Extension Request</u>	_____	_____
Acceptance	_____	_____
<u>Unsatisfactory Verification</u>	_____	_____
Response	_____	_____
Acceptance	_____	_____
<u>Closure Letter</u>	_____	_____
Other _____	_____	_____
_____	_____	_____
_____	_____	_____

REV. 08/91



ATTACHMENT III

Format for Corrective Action Response

The CAR response shall include the following information:

1. Corrective Action Response for CAR # _____
 - A. Remedial Action - Actions taken to correct specific deficiencies noted.
(Required for all CARs)
 - B. Investigative Action - Actions taken to determine the extent of the condition.
(Required for all significant conditions adverse to quality or any Condition Adverse to Quality if requested by OQA)
 - C. Root Cause Determination - Identification of the root cause of the condition.
(Required for all significant conditions adverse to quality or any Condition Adverse to Quality if requested by OQA)
 - D. Corrective Action to Preclude Recurrence - Actions taken to address the root cause and preclude recurrence of the condition.
(Required for all significant conditions adverse to quality or any Condition Adverse to Quality if requested by OQA)
2. For each action above, identify the name of the individual assigned responsibility for completion and the anticipated (or actual, if complete) completion date.
3. Response Approved: _____ Date: _____
Responsible Manager



ATTACHMENT IV

Guidelines for Root Cause Determination

GUIDELINES

When it is established that an investigation to determine root cause is required, the guidelines consist of the following steps:

- 1) Define the specific condition. Pertinent questions must be asked and answered as accurately as possible.
 - a) What happened?
 - b) Where did the condition occur?
 - c) When did the condition occur?
 - d) What was the extent of the condition?
 - e) Who was involved?
 - f) How did it happen?
 - g) Why did it happen?
- 2) Obtain information which is related to the identified condition using the listed methods.
 - a) Investigation of the specific condition adverse to quality.
 - b) Personnel interviews
 - c) Review of pertinent documents
 - d) Use of quality tools (cause & effect diagrams, comparative analysis, etc.)
 - e) Collection of data

There are ten apparent cause categories; each of these apparent causes require questions to be answered in arriving at cause determination. The following is a checklist of the ten categories:

- a) Procedures
 - b) Personnel
 - c) Management system
 - d) Immediate supervision
 - e) Training
 - f) Communications
 - g) Scientific investigation/design
 - h) Human factors
 - i) Unexpected failure
 - j) Reliability system
- 3) Develop a list of potential causes using the above methods.
 - 4) Continue to keep asking the "Why" question. When there is confidence that the answer to "Why" will preclude recurrence, the root cause has been determined.
 - 5) Confirm the accuracy of your conclusions:
 - a) Review the cause against facts, opinions, and time sequence.
 - b) Ask "How would this apply to similar conditions?".
 - c) Obtain more information to test the root cause, if necessary.



ATTACHMENT IV
(continued)

EXAMPLE QUESTIONS

The following is a checklist of the ten categories and related questions:

1. Procedures

- a) Was the procedure not used?
- b) Was there an error in following procedure?
- c) Was the procedure wrong or inadequate?

2. Personnel

- a) Was there lack of attention given to a task?
- b) Was there lack of personnel qualification?

3. Management System

- a) Were there standards, policies, and administrative controls in place?
- b) Were audits and evaluations inadequate?
- c) Was there lack of corrective action?

4. Immediate Supervision

- a) Was preparation/planning by supervisor adequate?
- b) Was there no supervision or inadequate supervision?

5. Training

- a) Was there no training?
- b) Were there inadequate training methods?

6. Communications

- a) Was there a verbal misunderstanding?
- b) Was there no communication or was the communication not timely?

7. Scientific Investigation/Design

- a) Do scientific investigation or design documents exist?
- b) Were there no design or technical reviews performed?
- c) Were there no computer software controls in place?

8. Human Factors

- a) Was there proper man-machine interface?
- b) Was the work environment inadequate?
- c) Was the system too complex?
- d) Was there a no fault tolerant system?



ATTACHMENT IV
(continued)

9. Unexpected Failure

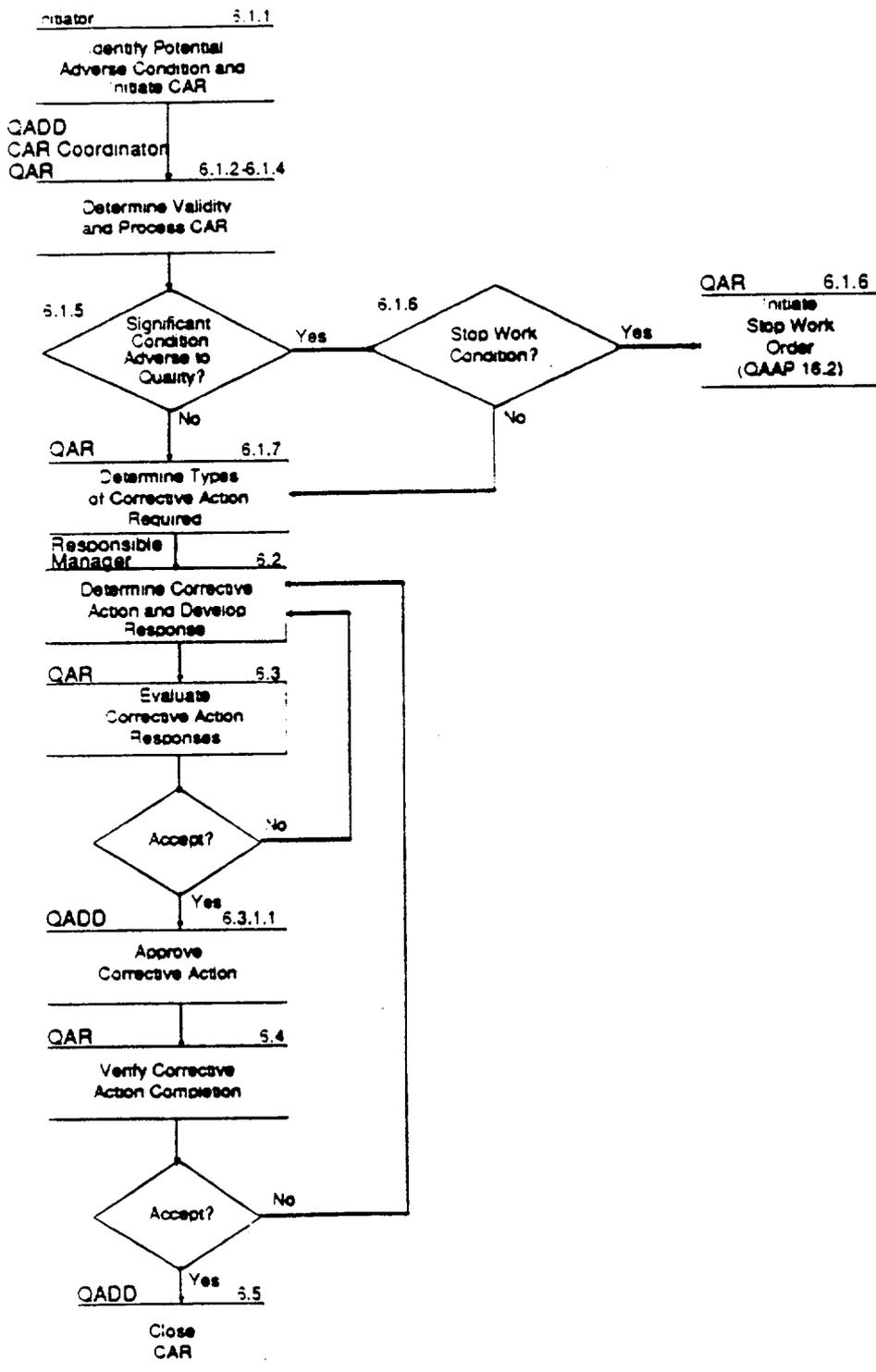
- a) Was the failure unforeseen?
- b) Was the risk known and assumed?
- c) Was material or equipment inadequate?
- d) Was the calibration program inadequate?

10. Reliability System

- a) Was there inadequate preventive maintenance?
- b) Was the equipment unreliable?
- c) Was there an error in fabrication?
- d) Was there installation error?



ATTACHMENT V
QAAP 16.1 FLOWCHART



QUALITY ASSURANCE ADMINISTRATIVE PROCEDURE

16.1, REV. 4

The following number is for OCRWM records management purposes only and should not be used when ordering this publication.

Accession No.: HQ0.911030.0003

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

REVISION RECORD

TITLE: Corrective Action	PROCEDURE NO. QAAP 16.1	REV. NO. (current) 3
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DESCRIPTION OF PROPOSED REVISION AND RATIONALE:

QAAP 16.1 has been extensively revised and completely rewritten as part of the procedure consolidation effort. Major changes have been incorporated to ensure proper flow between QAAPs 16.1 and 16.2.

Severity levels have been eliminated for Corrective Action Requests (CARs). Criteria have been added for determining the validity of CARs, determining whether a condition adverse to quality is significant, and determining whether a stop work condition exists. Guidelines for root cause determination have also been added to the procedure.

PREPARER OF PROPOSED REVISION <u>M.J. Donovan</u> <i>Michael J. Donovan</i>	DATE <u>10/22/91</u>
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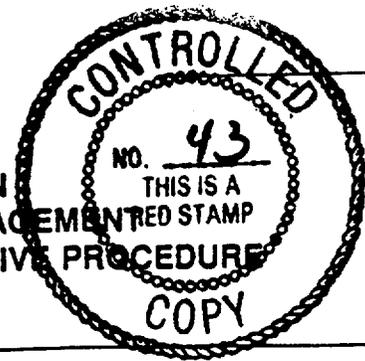
TYPE OF REVISION (Check One):	MAJOR <input checked="" type="checkbox"/>	MINOR <input type="checkbox"/>
SIGNATURE TO AUTHORIZE REVISION <i>[Signature]</i>	DATE <u>10/25/91</u>	
Responsible Associate or Office Director		

TYPE OF REVISION (Check One):	MAJOR <input checked="" type="checkbox"/>	MINOR <input type="checkbox"/>
CONCURRENCE SIGNATURE <i>[Signature]</i>	DATE <u>10/25/91</u>	
Director, OQA		

RECOMMENDED TRAINING:	READ <input checked="" type="checkbox"/>	CLASSROOM <input checked="" type="checkbox"/>	OTHER <input type="checkbox"/>
*Individuals whose I&T Matrices required classroom training for QAAP 16.1 should attend classroom training for this revision.			
<i>[Signature]</i>	DATE <u>10/25/91</u>		
RESPONSIBLE ASSOCIATE OR OFFICE DIRECTOR OR QA TRAINING OFFICER			



OFFICE OF CIVILIAN
 RADIOACTIVE WASTE MANAGEMENT
 QUALITY ASSURANCE ADMINISTRATIVE PROCEDURE



Title: AUDIT PROGRAM

Procedure No.: QAAP 18.2

Revision: 5

Date: 01/03/92

Page 1 of 14

Concurrence

R.W. Clay

Date: 12/17/91

Er DH

Approval

R.W. Clay

Date: 12/17/91

Er DH

1.0 PURPOSE

This procedure establishes the responsibilities and methods for planning, conducting, and documenting quality assurance (QA) audits.

2.0 SCOPE

This procedure applies to internal and external QA audits conducted by or for the Office of Civilian Radioactive Waste Management (OCRWM).

3.0 REFERENCES AND DEFINITIONS

3.1 REFERENCES

3.1.1 Quality Assurance Requirements Document (QARD), DOE/RW-0214

3.1.2 Quality Assurance Program Description Document (QAPD), DOE/RW-0215

3.2 DEFINITIONS

3.2.1 Audit Team Leader (ATL) - A Lead Auditor who is designated to direct the activities of an audit team.

3.2.2 External Audit - An OCRWM audit of another affected organization or supplier to determine the status, adequacy, compliance to and effectiveness of the audited organization's QA program.

3.2.3 Internal Audit - An audit conducted by or for the OCRWM QA organization to determine the status, adequacy, compliance to, or effectiveness of the OCRWM QA program.

3.2.4 Lead Auditor - An individual who is certified to organize, perform, and direct a QA audit; report observed conditions adverse to quality; and evaluate related corrective actions.



3.2.5 The definitions of other quality assurance related terms are found in the Glossary contained in Reference 3.1.1.

4.0 RESPONSIBILITIES

4.1 ASSOCIATE AND OFFICE DIRECTORS, OCRWM

The Associate and Office Directors, OCRWM are responsible for providing staff to participate as technical specialists in selected audits.

4.2 DIRECTOR, OFFICE OF QUALITY ASSURANCE (OQA)

The Director, OQA is responsible for the development, implementation, and maintenance of the QA audit program including:

4.2.1 Preparing and maintaining this procedure;

4.2.2 Scheduling of audits;

4.2.3 Approving audit plans and issuing notification letters;

4.2.4 Appointing Audit Team Leaders;

4.2.5 Ensuring that Audit Team Leaders are properly certified; and

4.2.6 Approving and issuing audit reports.

4.3 AUDIT TEAM LEADER (ATL)

The ATL is responsible for:

4.3.1 Planning and preparing for the audit activities;

4.3.2 Identifying the audit team;

4.3.3 Developing the audit plan and audit notification letter;

4.3.4 Signing the audit plan;

4.3.5 Ensuring that the audit team is properly oriented, trained, and qualified;

4.3.6 Ensuring that audit team members are independent of direct responsibility for the activities that they audit;

4.3.7 Coordinating audit planning sessions, itineraries, and logistics;

4.3.8 Directing the performance of the audit;



- 4.3.9 Notifying auditees of problems requiring immediate attention;
- 4.3.10 Coordinating the preparation and issuance of the audit report;
- 4.3.11 Coordinating the preparation and issuance of Corrective Action Requests (CARs) for conditions adverse to quality identified during an audit;
- 4.3.12 Signing the audit report; and
- 4.3.13 Ensuring that audit record packages are prepared and submitted to the appropriate records center.

4.4 ADDIT TEAM MEMBERS

Audit team members are responsible for:

- 4.4.1 Preparing audit checklists or marked-up procedures as assigned;
- 4.4.2 Attending meetings scheduled by the audit team leader;
- 4.4.3 Conducting portions of the audit as assigned;
- 4.4.4 Completing assigned portions of the audit checklist or marked-up procedures;
- 4.4.5 Preparing drafts of CARs; and
- 4.4.6 Writing portions of the audit report.

5.0 GENERAL

- 5.1 A system of planned and scheduled audits are conducted to verify compliance with all aspects of the OCRWM QA program and to determine the effectiveness of the QA program.
- 5.2 Audits shall be scheduled to provide coverage and coordination with ongoing QA program requirements and at a frequency commensurate with the status and importance of the activity. Audits shall be initiated as early in the life of the activity as practical to ensure effective controls are implemented and shall be conducted at intervals consistent with the schedule for completing the specific activity. Audits of the QA program are conducted, as a minimum, once each year or at the least once during the life of an activity affecting quality, whichever is shorter.

The audit schedule shall identify the following, as a minimum:

- a) Organizations to be audited;



- b) Location and date; and
- c) QA program elements to be audited.

6.0 PROCEDURES

6.1 SCHEDULING

- 6.1.1 The Director, OQA shall develop an audit schedule in accordance with Subsection 5.2 that identifies internal and external audits planned for the fiscal year.
- 6.1.2 The Director, OQA shall review the audit schedule at least quarterly and revise as necessary to assure adequate coverage. The transmittal of updated schedules shall identify major changes in the previously scheduled audits with appropriate justification.
- 6.1.3 Following Director, OQA approval, the audit schedule and updates shall be transmitted to the Associate and Office Directors, Participant Technical Project Officers and Quality Assurance Managers.
- 6.1.4 Regularly scheduled audits may be supplemented by additional audits of specific subjects when necessary to provide adequate coverage.

6.2 AUDIT TEAM SELECTION

- 6.2.1 The Director, OQA shall appoint an ATL for each audit and shall verify that the ATL is certified as a Lead Auditor in accordance with QAAP 18.1, *Qualification of Audit Personnel*.
- 6.2.2 The ATL shall identify the scope of the audit for inclusion in the audit plan. The scope of an audit may include evaluation of product quality and technical adequacy of work being done or completed, as appropriate, as well as programmatic compliance and implementation effectiveness. Technical requirements may be selected for audit evaluation from the governing technical requirements documents and be included in audit checklists or marked-up procedures prepared by the technical specialists.
- 6.2.3 A visit to the site of the planned audit and meetings with the organization to be audited may be considered to further define the scope and conduct of the audit.



6.2.4 The ATL shall request that Associate and Office Directors assign individuals having technical expertise to participate as technical specialists. The ATL shall select additional audit team members as needed. Prior to the audit, the qualification records of each audit team member shall be reviewed by the ATL or a DOE QA staff member to verify that the individual is qualified to conduct audits in accordance with QAAP 18.1.

6.2.5 The ATL shall ensure that audit team members are independent of direct responsibility for the activities that they audit.

6.3 PREPARATION

6.3.1 The ATL shall develop an audit plan using the format shown in Attachment I, "Audit Plan Format and Content."

6.3.2 The ATL shall sign and date the audit plan signifying that the audit team is qualified and the plan reflects the required information.

6.3.3 The ATL shall prepare an audit notification letter and forward it with the audit plan to the Director, OQA.

6.3.4 The Director, OQA shall approve and issue the audit plan and notification letter to the appropriate organization.

6.3.5 The ATL shall ensure that the audit team is prepared for the audit. Preparation shall include the following:

- a) Studying procedures that apply to the activities being audited;
- b) Evaluating previous surveillance and audit results;
- c) Evaluating relevant corrective action history;
- d) Reviewing current status of the work; and
- e) Reviewing trend data.

6.3.6 The audit team shall develop a checklist using Attachment II, "Quality Assurance Checklist" or marked-up procedures to guide their audit activities and to ensure coverage of all elements of the audit plan. Checklist questions shall be based on a review of requirements, procedures, previous audit and surveillance reports, technical documents, and other related activity reports, as applicable.



6.3.7 The ATL shall conduct a preaudit meeting with the audit team and appropriate management and staff members of the audited organization to review the audit scope, determine the status of activities to be audited, and meet counterparts. Attendance shall be documented using Attachment III, "Attendance Record."

6.4 PERFORMANCE

6.4.1 During the audit, the audit team shall:

- a) Perform reviews of documents and records to assess their adequacy and acceptability;
- b) Conduct activities in the audit checklist or marked-up procedures under the direction of the ATL;
- c) Examine objective evidence to the depth necessary to determine if the elements are being implemented effectively;
- d) Maintain a list of personnel contacted;
- e) Complete the checklist or marked-up procedures;
- f) Notify the ATL of any identified condition adverse to quality that may warrant the issuance of a CAR; and
- g) Notify the audited organization of any items identified as nonconforming.

6.4.2 The ATL shall conduct daily team meetings during the conduct of the audit to discuss conditions adverse to quality that were found during the audit. The audited organization shall be notified immediately of conditions requiring prompt corrective action.

6.4.3 The ATL shall conduct daily meetings with management of the audited organization to report the progress and status of the audit and to ensure that appropriate individuals continue to be involved in the audit.

6.4.4 The audit team shall draft CARs to document activity related conditions adverse to quality and ensure that any nonconforming items are documented as such on the audited organization's nonconformance reports. Adequacy and effectiveness statements (including technical aspects, as appropriate) shall be prepared by audit team members for the activities that they audited.

6.4.5 Prior to the postaudit meeting, or as deemed appropriate by the ATL, team members shall submit draft CARs, completed checklists, marked-up procedures, and adequacy and effectiveness statements to the ATL.



6.5 POSTAUDIT

- 6.5.1 The ATL shall conduct a postaudit meeting with the audit team and appropriate management and staff members of the audited organization to present the results of the audit. Attendance shall be documented using Attachment III.
- 6.5.2 The ATL shall process CARs in accordance with QAAP 16.1, *Corrective Action*.

6.6 AUDIT REPORT

- 6.6.1 The ATL shall coordinate the preparation of the audit report using the format shown in Attachment IV, "Audit Report Format and Content."
- 6.6.2 The ATL shall ensure that all relevant information from the checklist or marked-up procedures used by the audit team has been addressed in the audit report or associated CARs.
- 6.6.3 The ATL shall prepare the audit report transmittal letter.
- 6.6.4 The ATL shall sign the audit report and forward it with the transmittal letter to the Director, OQA.
- 6.6.5 The audit report and transmittal letter shall be approved by the Director, OQA and distributed to the audited organization. Copies of the audit report shall also be distributed to other affected organizations. The audit is considered closed upon issuance of the audit report.
- 6.6.6 The ATL shall assemble the completed audit record package and submit the package to the appropriate records center in accordance with Section 7.0.

7.0 RECORDS

The audit plan, notification letter, audit report, and audit schedules generated as a result of this procedure are considered QA Records and shall be collected and maintained in accordance with requirements specified in QAAP 17.1, *QA Records Management* or QMP-17-01, *Records Management: Record Source Implementation*.

Note: CAR record packages shall be maintained as QA records separately from the audit record package.



8.0 ATTACHMENTS

- 8.1 Attachment I - Audit Plan Format and Content
- 8.2 Attachment II - Quality Assurance Checklist
- 8.3 Attachment III - Attendance Record
- 8.4 Attachment IV - Audit Report Format and Content
- 8.5 Attachment V - QAAP 18.2 Flowchart



**ATTACHMENT I (Example)
AUDIT PLAN FORMAT AND CONTENT**

Audit Number: _____

Organization: _____

Location of Audit: _____

Dates of Audit: _____

Audit Team Members: _____

AUDIT SCOPE

Activities/Contracts/Tasks to be Audited: _____

Requirements/Criteria to be Audited: _____

Governing Documents: _____

Marked-up Procedures/Checklists: _____

PRELIMINARY AUDIT SCHEDULE

Preaudit Meeting: _____

Conduct of Audit: _____

Daily Team Debriefing Time and Location: _____

Postaudit Meeting Date, Time and Location: _____

Prepared by: _____ Date: _____

ATL

Approved by: _____ Date: _____

Director, OQA



OCRWM QA
ADMINISTRATIVE
PROCEDURE

Procedure No.:

QAP 18.2

Revision:

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ATTACHMENT II (Example)
QUALITY ASSURANCE CHECKLIST

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

PAGE _____ OF _____
AUDIT/SURVEILLANCE
NO. _____

QUALITY ASSURANCE CHECKLIST

ORGANIZATION EVALUATED		<input type="checkbox"/> EXTERNAL	<input type="checkbox"/> AUDIT	PREPARED BY _____ DATE _____
DATES OF EVALUATION		<input type="checkbox"/> INTERNAL	<input type="checkbox"/> SURVEILLANCE	
CONTROLLING DOCUMENT (Title, Number, Revision)				ACTIVITY EVALUATED
ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted		RESULTS

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

U.S. DEPARTMENT OF ENERGY
WASHINGTON, D.C.

REV. 6/90

FORM A



ATTACHMENT II (continued)
QUALITY ASSURANCE CHECKLIST

<p>PAGE _____ OF _____ AUDIT/SURVEILANCE NO. _____</p> <p>OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT U.S. DEPARTMENT OF ENERGY WASHINGTON, D.C.</p> <p>QUALITY ASSURANCE CHECKLIST (continuation sheet)</p>	<p>CHARACTERISTIC TO BE EVALUATED</p>	<p>REMARKS Record objective evidence reviewed, method of verification, personnel contacted</p>	<p>RESULTS</p>
<p>ITEM NO.</p>			

REV. 8/90

QUALITY ASSURANCE ADMINISTRATIVE PROCEDURE

18.2, REV. 5

The following number is for OCRWM records management purposes only and should not be used when ordering this publication.

Accession No.: HQ0.911223.0002



**ATTACHMENT IV (Example)
AUDIT REPORT FORMAT AND CONTENT**

COVER SHEET

Identify audit number, primary activities evaluated, organization evaluated, and location and dates of the audit. The cover sheet should also bear the dated preparer and approval signatures of the ATL and the Director, OQA.

MAIN BODY

SECTION 1.0 EXECUTIVE SUMMARY

Describe the results of the audit in brief, concise statements addressing any corrective action required.

SECTION 2.0 SCOPE

Repeat the scope as stated in the audit plan. Identify any additions or deletions to the audit scope that occurred during the course of the audit.

SECTION 3.0 AUDIT TEAM

List the name and assigned area of responsibility of each audit team member.

SECTION 4.0 PERSONNEL CONTACTED

Identify personnel attending the preaudit and postaudit meetings and contacted during the audit. Refer to attached Attendance Records, as applicable.

SECTION 5.0 AUDIT RESULTS

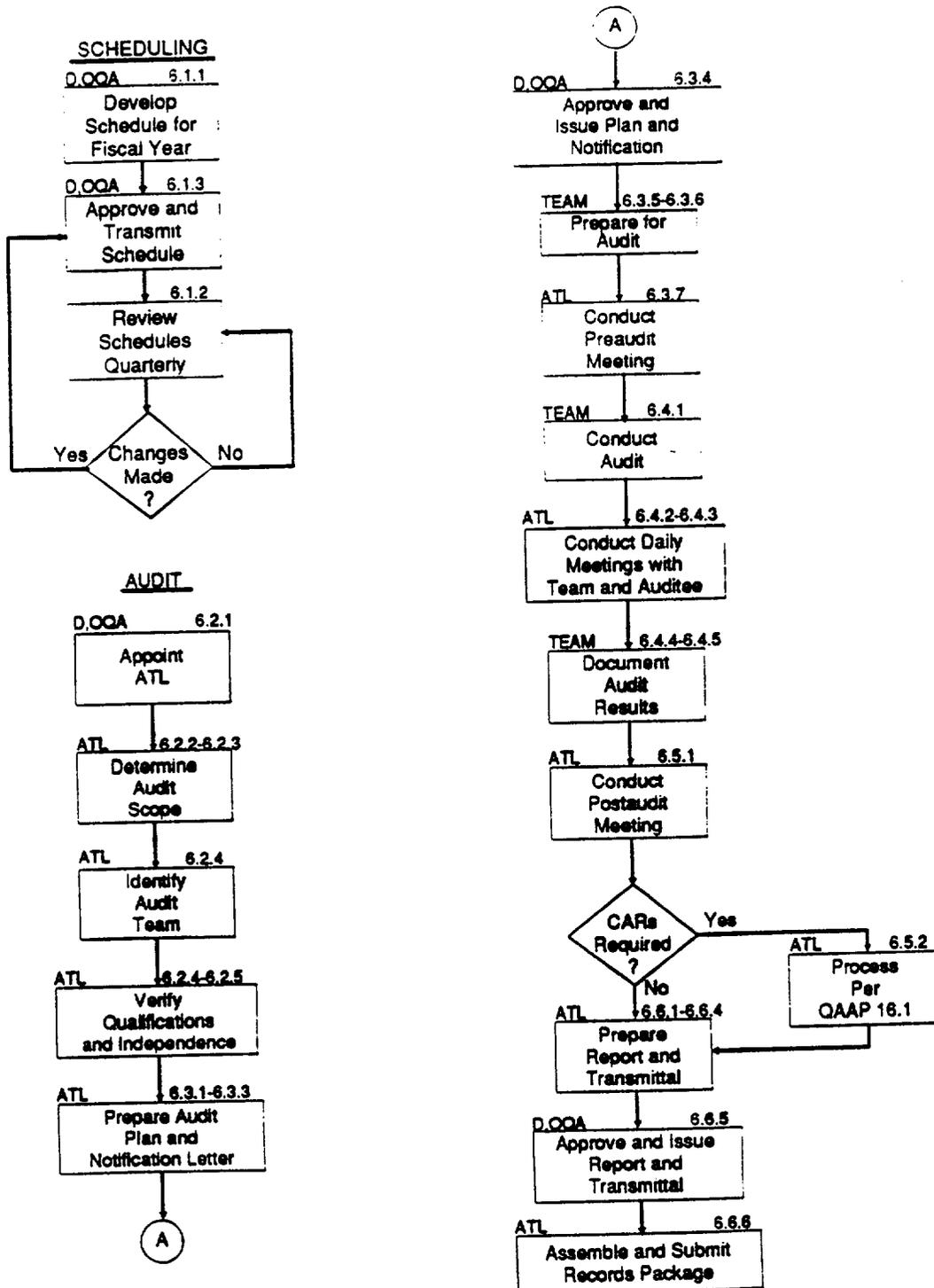
Briefly discuss and reference any Corrective Action Requests, and summarize any immediate corrective actions taken. Provide the detailed description of the items and activities examined during the audit, including all relevant information from the checklist or marked-up procedures. Include a statement as to the adequacy and effectiveness of the quality assurance program elements audited.

SECTION 6.0 RECOMMENDATIONS

Identify any recommendations the audit team considers appropriate to the audit.



ATTACHMENT V
QAAP 18.2 FLOWCHART



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

REVISION RECORD

TITLE: Audit Program	PROCEDURE NO. QAAP 18.2	REV. NO. (current) 4
-------------------------	----------------------------	-------------------------

DESCRIPTION OF PROPOSED REVISION AND RATIONALE:

Revise QAAP 18.2, Revision 4 per Approval copy, Revision 5. The contents of the Audit Schedule and Audit Plan have been revised for correctness.

PREPARER OF PROPOSED REVISION Thomas E. Rodgers DATE 12/13/91

TYPE OF REVISION (Check One): MAJOR MINOR

SIGNATURE TO AUTHORIZE REVISION R.W. Cleaf DATE 12/17/91
Responsible Associate or Office Director

TYPE OF REVISION (Check One): MAJOR MINOR

CONCURRENCE SIGNATURE R.W. Cleaf DATE 12/17/91
for Director, OQA

RECOMMENDED TRAINING: READ CLASSROOM OTHER

Self-study recommended for all OCRWM personnel who will be performing internal or external QA audits.

R.W. Cleaf DATE 12/17/91
RESPONSIBLE ASSOCIATE OR OFFICE DIRECTOR OR QA TRAINING OFFICER

RAYTHEON SERVICES NEVADA
 QUALITY ASSURANCE PROCEDURES
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Date: 04-08-92

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		<u>SECTION 1 - ORGANIZATION</u>		
QAP-1.1(Y)		Organization	1	03-06-92
		<u>SECTION 2 - QUALITY ASSURANCE PROGRAM</u>		
QAP-2.1(Y)		Development of the Quality Assurance Program Description	0	02-22-91
QAP-2.1(Y)	1	Development of the Quality Assurance Program Description		05-10-91
QAP-2.1(Y)	2	Development of the Quality Assurance Program Description		04-08-92
QAP-2.2(Y)		Training and Indoctrination of Quality Assurance Personnel	0	02-22-91
QAP-2.2(Y)	1	Training and Indoctrination of Quality Assurance Personnel		06-25-91
QAP-2.3(Y)		Qualification of Audit Personnel	0	02-22-91
QAP-2.4(Y)		Stop Work Order	1	04-08-92
QAP-2.6(Y)		Training, Qualification and Certification of QC Inspection Personnel	0	04-05-91
		<u>SECTION 3 - DESIGN CONTROL</u>		
QAP-3.1(Y)		QA Review of Design Output Documents	1	10-02-91
		<u>SECTION 4 - PROCUREMENT DOCUMENT CONTROL</u>		
QAP-4.1(Y)		QA Review of Procurement Documents	0	02-22-91
	1	QA Review of Procurement Documents		08-22-91
		<u>SECTION 5 - INSTRUCTIONS, PROCEDURES, PLANS AND DRAWINGS</u>		
QAP-5.1(Y)		Development of Quality Assurance Procedures	0	02-22-91

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QAP-5.1(Y)	1	Development of Quality Assurance Procedures		10-02-91
		<u>SECTION 6 - DOCUMENT CONTROL</u>		
QAP-6.1(Y)		QA Controlled Document Distribution	0	02-22-91
QAP-6.2(Y)		Review of Documents	0	02-22-91
		<u>SECTION 7 - CONTROL OF PURCHASED ITEMS AND SERVICES</u>		
QAP-7.1(Y)		Supplier Selection	1	04-08-92
QAP-7.2(Y)		Source Verification	0	07-23-91
QAP-7.4(Y)		Supplier Deviation Report	0	07-23-91
QAP-7.4(Y)	1	Supplier Deviation Report		03-26-92
		<u>SECTION 8 - IDENTIFICATION AND CONTROL OF MATERIALS, PARTS AND COMPONENTS</u>		
		Not a responsibility of RSN QA		
		<u>SECTION 9 - CONTROL OF PROCESSES</u>		
		<u>SECTION 10 - INSPECTION</u>		
QAP-10.1(Y)		Field Verification	1	09-04-91
QAP-10.1(Y)	1	Field Verification		01-27-92
QAP-10.1(Y)	2	Field Verification		03-26-92
QAP-10.2(Y)		Quality Control Verification of As-Built Drawings and Specifications	0	12-10-91

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		<u>SECTION 11 - TEST CONTROL</u> Not a responsibility of RSN QA		
		<u>SECTION 12 - CONTROL OF MEASURING AND TEST EQUIPMENT</u> See Project Procedure PP-12-01		
		<u>SECTION 13 - HANDLING, STORAGE AND SHIPPING</u> Not a responsibility of RSN QA		
		<u>SECTION 14 - INSPECTION, TEST, AND OPERATING STATUS</u> Not a responsibility of RSN QA		
		<u>SECTION 15 - CONTROL OF NONCONFORMING ITEMS</u>		
QAP-15.1(Y)		Control of Nonconforming Items	0	04-05-91
	1	Control of Nonconforming Items		12-10-91
		<u>SECTION 16 - CORRECTIVE ACTION</u>		
QAP-16.1(Y)		Deficiency Reporting	0	02-22-91
	1	Deficiency Reporting		08-02-91
QAP-16.2(Y)		Corrective Action	0	02-22-91
	1	Corrective Action		08-02-91
QAP-16.3(Y)		Trend Analysis	0	02-22-91
		<u>SECTION 17 - QUALITY ASSURANCE RECORDS</u> See RSN Project Procedure PP-17-01		

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		<u>SECTION 18 - AUDITS</u>		
QAP-18.1(Y)		Audits	0	02-22-91
	1	Audits		08-22-91
QAP-18.2(Y)		Surveillance	0	02-22-91
QAP-18.2(Y)	1	Surveillance		08-22-91
		<u>SECTION 19 - COMPUTER SOFTWARE</u>		
QAP-19.1(Y)		Computer Software	0	04-05-91

YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT

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PP-01-02	1			2-7-92
PP-01-02		Work Initiation	0	9-6-91
PP-01-03		Survey Department Work Functions	0	7-12-91
PP-01-04	1			12-20-91
PP-01-04		Survey Department Document Control and Distribution	0	7-12-91
PP-01-05	1			12-20-91
PP-01-05		YMP Organization	0	10-7-91
SECTION 2 QUALITY ASSURANCE PROGRAM				
PP-02-01	3			3-5-92
PP-02-01	2			12-10-91
PP-02-01	1			7-26-91
PP-02-01		Indoctrination and Training	0	2-15-91
PP-02-02		Personnel Selection	0	2-15-91
PP-02-03	1			2-21-91
PP-02-03		Management Assessment	0	2-15-91
PP-02-04	1			2-21-92
PP-02-04		Readiness Review	0	4-29-91
PP-02-05		Quality Assurance Grading	0	2-15-91
PP-02-06		Determination of the Importance of Items and Activities	0	4-29-91

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PP-02-07		Qualification of Data or Data Analyses Not Developed Under the YMP QA Program	0	4-29-91
PP-02-08		Training, Qualification, and Certification of Materials Testing Laboratory Personnel	0	10-18-91
SECTION 3 DESIGN CONTROL				
PP-03-01		Design Inputs and Informational Data to Outside Organizations	1	10-18-91
PP-03-02	2			10-18-91
PP-03-02	1			7-26-91
PP-03-02		Design Methodology	0	4-15-91
PP-03-03	3			2-7-92
PP-03-03	2			10-7-91
PP-03-03	1			8-16-91
PP-03-03		Analyses and Studies	0	4-15-91
PP-03-04		Design Verification	0	12-20-91
PP-03-05		Interface Control	0	7-19-91
PP-03-06		Hold Control	0	4-29-91
PP-03-07		Preparation and Control of Specifications	1	3-17-92
PP-03-09	3			2-21-92
PP-03-09	2			7-26-91
PP-03-09	1			4-15-91
PP-03-09		Interdiscipline Review	0	2-15-91
PP-03-10	1			2-7-92

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PP-03-12	2			7-19-91
PP-03-12	1			6-14-91
PP-03-12		Preparation and Control of Drawings	0	2-15-91
PP-03-13	1			7-26-91
PP-03-13		Basis for Design	0	5-3-91
PP-03-15	2			12-23-91
PP-03-15	1			7-26-91
PP-03-15		Configuration Identification and Documentation	0	7-19-91
PP-03-16		Configuration Status Reporting	0	7-19-91
PP-03-17	1			2-7-92
PP-03-17		Configuration Change Control	0	7-19-91
PP-03-18		Technical Information Flow To and From The YMP Technical Data Base	0	4-29-91
PP-03-19		Information Flow Into The Project Reference Information Base	0	4-29-91
PP-03-20	1			5-8-92
PP-03-20		Surface Based Borehole Programs	0	8-23-91
PP-03-21		Management and Independent Technical Reviews	1	2-14-92
PP-03-22	1			2-7-92

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PP-03-22		Preparation of As-Built Drawings and Specifications	0	12-17-91
PP-03-23		Field Change Control Process	0	1-6-92
SECTION 4 PROCUREMENT DOCUMENT CONTROL				
PP-04-01	2			3-6-92
PP-04-01	1			7-26-91
PP-04-01		Purchasing (Services)	0	2-15-91
SECTION 5 INSTRUCTIONS, PLANS, PROCEDURES, AND DRAWINGS				
PP-05-01	2			3-6-92
PP-05-01	1			7-26-91
PP-05-01		Preparation and Control of Procedures	0	2-15-91
PP-05-02		Desk Instructions	0	2-15-91
SECTION 6 DOCUMENT CONTROL				
PP-06-01	1			7-26-91
PP-06-01		Controlled Document Distribution	0	2-15-91
PP-06-02	1			12-20-91
PP-06-02		Publications Review and Approval	0	10-7-91
PP-06-05		Submittals Control and Review	0	5-1-92
SECTION 7 CONTROL OF PURCHASED ITEMS AND SERVICES				
SECTION 8 IDENTIFICATION AND CONTROL OF MATERIALS, PARTS AND COMPONENTS				
SECTION 9 CONTROL OF PROCESSES				

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PP-10-01	2			2-7-92
PP-10-01	1			1-6-92
PP-10-01		Field Drilling Engineer Support Activities	0	11-15-91
PP-10-02		Field Logging Operations	0	9-6-91
PP-10-03	0	Construction Management Reporting	0	4-1-92
SECTION 11 TEST CONTROL				
PP-11-01	1			3-6-92
PP-11-01		General Testing Procedure For The Materials Testing Laboratory	0	10-18-91
SECTION 12 CONTROL OF MEASURING AND TEST EQUIPMENT				
PP-12-01	1			11-22-91
PP-12-01		Control of Measuring and Test Equipment	0	7-12-91
SECTION 13 HANDLING, STORAGE, AND SHIPPING				
SECTION 14 INSPECTION, TEST, AND OPERATING STATUS				
SECTION 15 CONTROL OF NONCONFORMING ITEMS				
SECTION 16 CORRECTIVE ACTION				
SECTION 17 QUALITY ASSURANCE RECORDS				
PP-17-01		Records Management	2	3-20-92
PP-17-04	1			1-21-92
PP-17-04		Project Microfilm Center	0	6-14-91
PP-17-07	1			9-6-91

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SECTION 19 COMPUTER SOFTWARE				
PP-19-01	1			12-23-91
PP-19-01		Design Engineering Computer Hardware and Software Configuration Management	0	6-14-91
PP-19-02	1			10-10-91
PP-19-02		Design Engineering Software Authorization and Classification	0	6-14-91
PP-19-03	1			5-8-92
PP-19-03		Design Engineering Computer Hardware and Software Procurement	0	6-14-91
PP-19-04	2			10-10-91
PP-19-04	1			7-26-91
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PP-19-05		Design Engineering Certified Run Operation	0	6-14-91
PP-19-06		Design Engineering Documentation Review and Software Maintenance	0	6-14-91

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ORGANIZATION EVALUATED	<input checked="" type="checkbox"/> EXTERNAL	<input checked="" type="checkbox"/> AUDIT	PREPARED BY <u>YMQAD Staff</u> DATE <u>6/15/92</u>		
RSN	<input type="checkbox"/> INTERNAL	<input type="checkbox"/> SURVEILLANCE			
DATES OF EVALUATION					
6/22-26/92					
CONTROLLING DOCUMENT (Title, Number, Revision)			ACTIVITY EVALUATED		
ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS		
3-1	<p>QAP-3.1(y), PIC No. 1, REVISION 0, QUALITY ASSURANCE REVIEW OF DESIGN OUTPUT DOCUMENTS</p> <p>1. Verify a record of all design output documents reviewed and the status of that review is maintained in a log by QA. (Para. 6.2)</p>				
3-2	<p>2. Verify QA utilized review checklist Specifications Review (form LV-326) or QA Study/Analysis review checklist (form LV-325) or Drawing review checklist (form LV-305).</p>				
* INDICATE RESULTS: SATISFACTORY (SAT), UNSATISFACTORY (UNSAT), NOT APPLICABLE (N/A)					

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3-3	3. Verify any checklist item marked with a "NO" has an explanation in the comments section recorded, and the document is disapproved. (Para. 6.3.1)		
3-4	4. Verify the disapproval is logged and a copy of the checklist is retained in the working file. (Para. 6.3.2)		

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3-5	5. Verify the comment resolution is based on the correction of the output document and the previous QA comments have been resolved and/or incorporated. (Para. 6.3.3)		
3-6	6. Verify on satisfactory review, the QAR signs and dates the checklist and files the completed copy in the QA working files. (Para. 6.3.4)		
3-7	7. Verify the QAR signs and dates the design output document, attaches review checklist to the document, and enters the approval into the log. (Para. 6.3.5)		

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3-8	<p>PP-03-02, REVISION 0, PIC NO. 2, DESIGN METHODOLOGY</p> <p>1. Verify design inputs to RSN design output document were identified, documented, and their selection reviewed by RSN design organization to ensure technical adequacy, to mitigate or minimize interferences, and coordinate the designs between the involved disciplines. (Para. 6.1.2)</p>		
3-9	<p>2. Verify design inputs are supplied to RSN from three primary sources. (1) In the form of upper-tier design input (e.g., the design requirements documents and the Referenced Information Base (RIB) that is combined in the RSN Bases for Design (BFD), (2) other input generated as the design proceeds, and (3) interface control documents.</p>		

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3-10	3. Verify all verbal inputs received by RSN personnel were documented on a YMP Record of Verbal Communication (form LV-186), and signed off by the communicant for concurrence in the sign-off and date block. (Para. 6.2.6)		
3-11	4. Verify all design output documents prepared by outside organizations were reviewed and approved by RSN in accordance with the applicable governing procedures. (Para. 6.1.10.2)		

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3-12	5. Verify the Title II design output documents were reviewed and accepted by YMP0. (Para. 6.2)		
3-13	6. Verify the verbal input documents on form LV-186 are handled and processed as a QA record. (Para. 7.0)		

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3-14	PP-03-03, REVISION 0, PIC'S 1, 2, AND 3, ANALYSIS AND STUDIES 1. Verify design analyses are documented on form LV-308. (Para. 6.3)		
3-15	2. Verify the Lead Design Engineer assigned the number for the design analysis and informed the design records administrator section of the number issuance. (Para. 6.4)		

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3-16	3. Verify graphic illustrations (not design sketches or drawings) were used to support the analyses and were documented on an attachment using standard-size paper. (Para. 6.4)		
3-17	4. Verify the design analyses content format for the elements is addressed as follows: PURPOSE - Clearly stated and the objective of the analysis. METHOD - Used to perform the analyses. DESIGN INPUTS - Identified, and their source. CODES AND STANDARDS - Identified, including revision level, all headings not warranted. The heading shall be indicated as "Not Applicable." (Para. 6.5)		

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3-18	5. Verify assumptions, along with the bases for the assumptions, are clearly stated within the analyses. The assumptions require verification as the design proceeds, therefore, they are listed on the pages or paragraphs where the assumptions are located in the sections. (Para. 6.5.5)		
3-19	6. Verify reference material used in the analysis includes published reports, technical papers, manufacturing specifications, studies, laboratory test reports, literature searches or other background information. (Para. 6.5.6)		

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3-20	7. Verify computer programs are identified in this section and the access control log number of any computer runs. (Para. 6.5.7)		
3-21	8. Verify Computer Programs section includes the identification of computer type, program name, revision identification, input, output, evidence or reference to computer program and the bases to support the application of the computer program to the specific physical problem. (Para. 6.5.7)		

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3-22	9. Verify if a Computer Software Design Description Waiver or a Software Validation Waiver was issued, that the identification numbers listed. (Para. 6.5.7)		
3-23	10. Verify the units used in the analyses are stated (metric, standard, etc.). (Para. 6.5.8)		

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3-24	11. Verify each calculation sheet was annotated with the calculation number, originator's initials, design analysis number, design for Work Breakdown Structure (WBS) number, pagination, and "checked by" and "date." (Para. 6.5.9)		
3-25	12. Verify the originator identified any conclusions as outcomes/results or decisions/recommendations based on the analysis process that will aid further engineering design decisions. (Para. 6.5.10)		

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3-26	13. Verify the design analysis was checked by a person the lead design engineer determined was qualified in the purpose or subject of the analysis, and who has not exercised control over the design inputs or methodology employed by the originator.		
3-27	14. Verify the lead design engineer determined the technique to be used for checking the design analysis and indicated the methodology on the document review notice, form LV-316. (Para. 6.6.1) Examples are: <ul style="list-style-type: none"> o Extrinsic Method o Substitution Method o Sampling Method o Empirical Method o Parallel Method 		

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3-28	15. Verify errors or discrepancies found by the checker are documented on a copy of the design analyses supplied to the checker. (Para. 6.6.2)		
3-29	16. Verify the originator corrected the checkers comments and obtained resolution with the checker, when all comment resolutions are satisfactory, the checker initials and dates each calculation sheet and signs and dates the Design Analysis cover sheet in the "Checker's" space. (Para. 6.6.3)		

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3-30	17. Verify the design analysis is approved by the lead design engineer after the interdiscipline review, then submitted to the QAR and Site Characterization Design Manager (SCDM) for approval. (Para. 6.8)		
3-31	18. Verify the originator provides a copy of the Design Analysis cover sheet (form LV-308) and a listing of the design inputs used in the analysis to the Configuration Management section, and a copy to the Design Records Administrators (DRAs) for processing into the document control system.		

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3-32	19. Verify the approved design analysis is revised by an Engineering Change Request and the reason for the change is documented in the "Purpose" section of the revised analysis. (Paras. 6.10.2 and 6.10.3)		
3-33	20. Verify the proposed changes are marked with a black, vertical line in the margin or if the change constitutes a major rewrite of the document, then "Rewrite" is entered in the "Purpose" section. (Para. 6.10.3)		

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3-34	PP-03-04, REVISION 0, DESIGN VERIFICATION 1. Verify Title II design outputs were verified by one or more of the following: o Performance of design reviews o Alternate calculations o Performance of Peer (Para. 6.1.1)		

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3-35	2. Verify RSN did not proceed with verification of any design package, until notified by YMPOs acceptance of the portions of the Basis for Design (BFD) for that package is received (Para. 6.1.2)		
3-36	3. Verify the Site Characterization Design Manager (SCDM) compiled the drawings, specifications and other supporting documentation, then evaluate the package and recommended the extent of verification based on the following factors: <ul style="list-style-type: none"> o Importance of safety o Inspection other systems o Degree of Standardization o State of the art o Similarity with previously proven designs 		

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3-37	<p>4. Verify a peer review was performed when any of the following circumstances occurred (Para. 6.2.3)</p> <ul style="list-style-type: none"> o The adequacy of information (e.g., data, interpretations, test results, and design assumptions) or the suitability of procedures and methods essential to showing that the repository system meets or exceeds its performance requirements with respect to safety waste isolation cannot otherwise be established through testing, alternate calculations, or reference to previously established standards and practices. o Documents, material, or data require interpretation or judgment to verify or validate assumptions, plans, results, or conclusions. o Documents, material, or data contain conclusions, material, or data that go beyond the existing state-of-the-art or are first-of-a-kind activities. 		

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3-38	5. Verify RSN documented its method of verify design input related to waste isolation and safety, the design verification includes a determination that associated design inputs have been verified (Para. 6.3.1/6.3.2)		
3-39	6. Verify the TPO or designee assigned the verifiers for the chosen method of design verification and entered this information on the Design Verification Record (DVR) (Para. 6.5).		

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3-40	7. Verify a regulatory Reviewer was designated to participate on the design (or Peer) review Team for every design package (Para. 6.5).		
3-41	8. Verify as a minimum, the design verification record package includes the following documentation (Para. 6.6.1). <ul style="list-style-type: none"> o Design Verification Record (DVR), Form LV-311, Attachment 1 o Document Review Notices (DRN), Form LV-316, (See PP-03-09); and associated Comment Review and Response Forms, Form LV-353, (See PP-03-09) o An index identifying all documents in the design verification package o Design package o Documentation supporting verifier qualifications 		

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3-42	9. Verify changes to previously verified designs have been made, design verification per this procedure shall be required for the changes, including evaluation of the effects of those changes on the overall design and on any design analysis which the design is based, that was affected by the change to the previously verified design (Para. 6.9.1)		
3-43	10. Verify the Design Verification Record package consist of the following (as appropriate) (Para. 7.0) <ul style="list-style-type: none"> o Design Verification Record o Document Review Notice (includes associated Comment Review and Response Forms) o Design Review Notice o Design Review Team Selection Record o Alternate Calculations and Analyses o Qualification Test Records o Peer Review Report and supporting documentation o Review Record Memorandum o Design Verification Checklist o PP-03-04 Appendix A 		

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3-44	<p>11. Verify the Design Review Team Chairperson performed the following:</p> <ul style="list-style-type: none"> o Designating the Secretary for the design review. o Determining the technical disciplines necessary to accomplish the scope and purpose of the review. o Establishing minimum qualifications (e.g., education, experience and independence) needed by review team members to provide the technical disciplines to accomplish the scope and purpose of the review. o Obtaining documentation of review team members' qualifications. o Ensuring that the documentation of the review team members' meets the needs of the review. o Determining the number of reviewers for the design review team. o Obtaining information for the review from the TPO and others, as appropriate. 		

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3-45	<ul style="list-style-type: none"> o Completing, signing, and dating the Design Review Team Selection Record. o Coordinating the design review team, the meeting, and the review process. o Issuing the Review Record Memorandum to the TPO for distribution. <p>12. Verify the design Review Secretary documented the design review team activities, specifically the Summary Report of the meetings, collects comments and resolutions and prepares Review Record Memorandum (Appendix A, Para. 4.5)</p>		

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3-46	13. Verify the TPO or designee planned, scopes, and schedules design review and selects the Design Review Chairperson and issues the Design Review Notice to Systems Engineering, Quality Assurance and others as appropriate (Attachment A, Para. 5.1.1/5.1.2)		
3-47	14. Verify the Design Review Chairperson performed the following: <ul style="list-style-type: none"> o Designates the Secretary for the design review o Determines the technical disciplines to be used to accomplish the scope and purpose of the review 		

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	<ul style="list-style-type: none"> o Establishes minimum qualifications (e.g., education, and independence) needed by review team members to provide the technical disciplines to accomplish the scope and purpose of the review. A supervisor from the originating organization may be on the design review team, provided this person meets the requirements of procedure section 6.4.1.1. o Determines the number of reviewers for the design review team o Obtains suitable documentation of review team members' qualifications for the various technical disciplines, as described in section 5.2.2 of this appendix o Ensures that assigned Review Team members are trained to this procedure and other applicable documents <p>(Appendix A, Para. 5.2.1)</p>		

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3-48	<p>15. If a Review Board member's employer is an agency outside the Yucca Mountain Project, see the Chairperson is responsible for notifying the agency that the documentation verifying the education, experience and independence of the Review Board member must be obtained and retained by that agency. This documentation shall be made available for surveillance and audit by the U.S. Nuclear Regulatory Commission or the U.S. Department of Energy (DOE) or an authorized DOE Representative. In addition, the agency shall be required to notify RSN/YMPO TPO prior to destruction of this verification documentation (Appendix A, Para. 5.2.3)</p>		
3-49	<p>16. Verify the Review Team members reviewed the material and document their comments on Comment Review and Response Form LV-353. As a minimum, the items on the Design Verification Checklist Form LV-2071, shall be addressed.</p>		

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3-50	17. Verify the Design Review Secretary recorded a summary report of the meeting, collects comments and resolutions, and prepares the Record Memorandum. (Appendix A, Para. 5.4.3)		
3-51	18. Verify the SCDM prepared responses to the comments in the Review Record Memorandum. The Design Review Chairperson coordinated the evaluation by the Team to the responses in Review Record Memorandum and obtains concurrence. (Appendix A, Para. 5.5.2/5.5.3)		

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3-52	19. Verify after resolution of commitments the DVR forwards the design verification to the QA Department for concurrence and to the TPO or designee for final approval (Appendix A, Para. 5.8)		
3-53	20. Verify the Design Review Team Chairperson compiled a design verification record package on the design review, consisting of the following: <ul style="list-style-type: none"> o Design Review Notice o Design Review Team Selection Record o Design Review Package (e.g., drawings, specifications, calculations, supporting documentation, etc.) o Review Record Memorandum, including any supplements as described in section 5.5.7 of this appendix o Correspondence relating to the Design Review o Complete verification listing containing the information identified in section 3.5, list item 7 of this appendix (Appendix A, Para. 5.9.1) 		

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3-54	PP-03-04, APPENDIX B 21. Verify the TPO or designee provided the name of the verifier and a statement that the individual meets the established minimum qualifications via written directive to the SCDM initiating the verification process. The SCDM has obtained a number for the proposed calculation from the DRA and supply this number to the verifier. The DRA will log and track the alternate calculation (Appendix 13, Para. 5.2/5.3).		

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3-55	<p>22. Verify the Alternate Calculation will be produced on RSN Design Sheets attached to a Design Verification Record. The Verifier will compile the necessary support documentation and perform the alternate calculation using the following format: (Appendix B, Para. 5.4)</p> <p>CONTENT - The following is a mandatory listing and format for the elements that shall be addressed in the alternate calculation. If one or more of the categories is not warranted or cannot be utilized in the analysis, the heading shall be shown followed by "NOT APPLICABLE" or "NA."</p> <p>PURPOSE - The verifier shall state clearly the purpose and objective of the analysis.</p> <p>METHOD - The verifier shall identify what method is to be used to perform the analysis.</p> <p>DESIGN INPUT - The verifier shall identify the design inputs used in the analysis and the source of the inputs. EXAMPLE: Criteria source, date (edition, issue date, etc.), subject, and source organization.</p> <p>CODES & STANDARDS - The verifier will identify all codes and standards (including the edition or revision status) applicable to the design for which the analysis is being performed.</p>		

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	<p>ASSUMPTIONS - In order to complete the analysis, the verifier may have to make assumptions which are not clearly identified or controlled by the design inputs or other sources of information. These assumptions, along with the basis for the assumptions, must be clearly stated within the analysis. Those assumptions which will require verification as the design proceeds must be identified. The assumptions used must be listed in this section and the pages where the assumptions are located will be annotated in this section.</p> <p>REFERENCE MATERIAL - The verifier will identify reference material used in the analysis including the edition, date, revision number, etc. This includes published reports, technical papers, manufacturer's specifications, studies, lab test reports, literature searches or other background data or information.</p> <p>COMPUTER PROGRAMS - The verifier will identify in this section any computer calculation used to support the alternate calculation and enter the Access Control Log number (see PP-10-9-05) of any computer runs. This identification will include computer type, program name, revision identification, input, output, evidence or reference to computer program verification and the bases (or reference thereto) that support the application of the computer program to the specific physical problem.</p>		

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	<p>If a computer calculation is used to support the calculation, the originator will also indicate whether or not a Software Design Description Waiver or a Software Validation Waiver was issued. If either of these were issued, list the identification numbers.</p> <p>UNITS - The verifier will clearly state the units used in the calculation (metric, standard, etc.).</p> <p>CALCULATIONS - Calculations which support alternate calculation are documented on RSN Design Sheets.</p> <p>Each design sheet will be annotated with the alternate calculation number (in the "Calc No." block), verifier's initials (in the "Designed By" block), original calculation number (in the "Design For" block), Work Breakdown Structure (WBS) number, pagination, and checked by and date.</p> <p>CONCLUSION STATEMENT - The verifier will clearly state the conclusion(s) drawn from the analysis.</p>		

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3-56	<p>23. Verify all alternate calculations were checked by the person whom the SCDM determines is qualified in the purpose or subject of the analysis. (Appendix B, Para. 5.5).</p> <p>Verified the SCDM determined whether line-by-line checking of the design inputs, assumptions, and mathematical manipulations was required or whether an alternative simplified calculational technique can be used to check the results. The required type of checking is indicated on the DRN. Examples of checking methods include, but are not limited to, the following:</p> <ul style="list-style-type: none"> o EXTRINSIC METHOD - Without having checked the calculation under review, and based exclusively on the validated input data and assumptions, the checker selects a method or model and performs the calculation. The checker's results and conclusions are compared with the calculation being reviewed. o SUBSTITUTION METHOD - The checker checks the calculation and selects methods or models that, when substituted for the approach used in the original calculation or any part thereof, should yield the same results. 		

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	<ul style="list-style-type: none"> o SAMPLING METHOD - Repetitive calculations, such as found in sizing sets of hardware, are reviewed by carefully checking representative cases and verifying the consistency of the remaining results. o EMPIRICAL METHOD - The checker compares the results of the calculation being reviewed with test data and/or operational records of similar or identical equipment or systems. The statistical confidence of these empirical data is defined. o PARALLEL METHOD - The checker checks the calculation logic and, as a minimum, the key computations and arithmetic. When a computer code has been used, the applicability and adequacy of the math model, input data and assumptions are verified. In addition, the computer output is checked for the accuracy and correctness of the method used to load the input data and assumptions. 		

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3-57	24. Verify if the verification process was deemed successful, the SCDM documented the results via a Review Record Memorandum to the TPO, compile the design verification record package, and submitted it to the Records Management Center (Appendix B, Para. 5.8.1).		
3-58	25. Verify the results of the design verification process was summarized in a Review Record Memorandum prepared by the SCDM or designee. The Review Record Memorandum may be completed with a documented unresolved comment; however, supplements must be provided to the memorandum as the appeals process is pursued, such that a complete record of the comment is retained as a Quality Assurance record. (Appendix B, Para. 5.9)		

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3-59	<p>PP-03-05, REVISION 0, INTERFACE CONTROL AP-5.19Q, REVISION 2, ICN #1, INTERFACE CONTROL</p> <p>1. Verify System Engineering completed the following:</p> <ul style="list-style-type: none"> o Engineer data on interface document (S.D. and/or C.D) o Initiated a PIRN o Attached engineering data to the PIRN o Obtained a PIRN identifier number and ICD drawing numbers from the Processor (Para. 5.0, Step 5) 		
3-60	<p>2. Verify concurrence signatures from affected Participants and integration. Submit the PIRN to the ICWG Chairperson for concurrence (AP-Q Para. 5.0, Step 21)</p>		
3-61	<p>3. Verify the change control board approved, a IRN number was assigned and the IRN was sent to distribution and to the LRC (AP-Q Para. 5.0, Step 25 & 26)</p>		

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3-62	<p>PP-03-06, REVISION 0, HOLD CONTROL/AP-5.20Q, REVISION 0, ICN NO. 1, HOLD CONTROL</p> <p>1. Verify the RSN TPO established holds on design documents (when appropriate) and contacts the T&MSS hold status coordinator to obtain a unique (1) Hold Indicator, (2) Document number, (3) Location in the document, (4) release authority, (5) scheduled completion, (6) subject to the hold, (7) work to be held and, (8) activities to be completed for release (APQ 5.0 stops 5.1.1 & 5.1.2)</p>		
3-63	<p>2. Verify RSNs TPO identified the Hold, approvals required to release the Hold, which as a minimum included a representative from the Participants QA Organization (AP-Q, Para. 5.1.3)</p>		

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3-64	3. Verify the first of each month the RSN TPO identified to the T&MSS Hold Coordinator any changes in forecasted completion date and status of overdue Holds (AP-Q, Para. 5.2.4)		
3-65	4. Verify the approval release on the Hold description form that verification of the completion has been performed and is referenced or attached to the records. (AP-Q, Para. 5.3)		

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3-66	<p>PP-03-07, REVISION 1, PREPARATION AND CONTROL OF SPECIFICATIONS</p> <p>1. Verify each specification is comprised of a Cover Sheet, Table of Contents and the Specification Technical Content Requirements (Para. 6.2).</p>		
3-67	<p>2. Verify the Technical Content in each specification shall be arranged according to, 1(1) Part I. General, (2) Products, (3) Execution, (4) Submittals and Notification (Para. 6.2.3).</p>		

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3-68	<p>3. Verify the Technical Specifications Section Content is as follows. (Para. 6.6)</p> <ul style="list-style-type: none"> o Work Included (Mandatory) o Related Work (As required) o References (As required) o System Description (Optional) o Functional Requirements (Mandatory for performance spec's only) o Submittals o Quality Assurance (Mandatory) o Other Content of Part I General (Optional) 		

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3-69	<p>4. Verify, Part 2, Products, describes the Technical material requirements for equipment, construction materials fixtures, mixes, fabrication and other types of manufacturing, as required (Para. 6.6.2).</p> <ul style="list-style-type: none"> o Acceptable manufacturers o Material and equipment o Mixes o Fabrication o Identification, Marking and Traceability o Spare Parts List o Supplier Quality Control 		

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3-70	<p>5. Verify, Part 3 - Execution covers the portion of work to be accomplished including field assembly, installation, application, execution, modifications, field quality control, adjusting, cleaning and protection (normally in same sequence as the work is expected to progress) (Para. 6.6.3)</p> <ul style="list-style-type: none">o Preparationo Installation/Application/Executiono Adjusting and cleaningo Protectiono Identification, marking and traceabilityo Field Quality Controlo Manufacturers Field Serviceo Additional required data		

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3-71	<p>6. Verify, Part 4 - Submittals and Notifications Articles (Para 6.6.5)</p> <ul style="list-style-type: none"> o Submittals and Notification Requirements provides instructions for providing submittals, requirements are marked with an "X" and the timing (number of days) are specified. 		
3-72	<p>7. Verify the resolution of the Checkers comments are resolved by the Checker and Design Engineer (Para. 6.9.5.1).</p>		

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3-73	8. Verify the interdiscipline review of the final specifications was performed in accordance with PP-03-21 Management and Independent Technical Reviews. (Para. 6.11.1)		
3-74	9. Verify a review was conducted by Environmental and S&H personnel following resolution of the PP-03-21 comments (Para. 6.11.2)		

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3-75	10. Verify a Design verification of the final specification was performed in accordance with PP-03-04 Design Verification (Para. 6.12)		
3-76	11. Verify Quality Assurance performed a review of the final specification and QA comments was resolved as indicated by the QARs initials and date on the Specification Cover Sheet (Para. 6.13)		

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3-77	12. Verify, following YMP0 acceptance the specification package is designated as Revision 0, any revisions are numbered sequentially and all changes are noted with a vertical solid line in the margin or extensive revision or rewrite was indicated (Para. 6.13.3)		
3-78	13. Verify the Specification Cover Sheet. Remarks block is stamped to indicate its status, e.g., released for construction, released for procurement. (Para. 6.16.2)		

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3-79	14. Verify obsoleted or superseded specification revision notification to all recipients of the original specification are made. (Para. 6.18.2)		
3-80	15. Verify the System Engineer maintains a current Master Specification Log with revision status. (Para. 6.2.0)		

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3-81	<p>PP-03-09, REVISION 0, PCI § 1, 2, & 3 INTERDISCIPLINE REVIEW</p> <p>1. Verify technical work products were complete and checked in accordance with the controlling procedure prior to commencing the interdiscipline review cycle. (Para. 6.1.2)</p>		
3-82	<p>2. Verify the originating Design Engineer prepared and assembled the interdiscipline review package for each technical work product, (e.g., analysis, specification, calculation, study or drawing) package consisting of:</p> <ul style="list-style-type: none"> o The Document Review Notice shall identify the technical work product by title and number o Blank copy of Comment Review and Response form o Copies of check prints of the technical product to be reviewed (Para. 6.2.1) 		

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3-83	3. Verify the Design Engineering Section Chief (DESC) determined if an interdiscipline review was necessary. (Para. 6.2.2)		
3-84	4. Verify the DESC assigned the review to specific engineers with the affected discipline and interfacing organizations (e.g., Field Engineering, Quality Control, Quality Assurance, Purchasing, etc.) and indicate the due date and stamped an ICP stamp on the check prints (Para. 6.2.2-3)		

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3-85	5. Verify all comments were signed off by both the originating Design Engineer and the reviewers and the corrections were incorporated. (Para. 6.2.3.-C)		
3-86	6. Verify the reviewers review the incorporation of the comments and signed off the back check column on the Design Review Notice (DRN) (Para. 6.2.3-f)		
3-87	7. Verify the SCF Design Manager approved the DRN, the completed Interdiscipline Review Package and DRN were transmitted to the Design Records Administration for logging and filing. (Para. 6.2.4)		

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3-88	<p>PP-03-10, REVISION 0, PIC #1, ENGINEERING PLAN</p> <p>1. Verify the Engineering Plan address the following (Para. 6.3)</p> <ul style="list-style-type: none"> o Purpose, scope and understanding of work required o Description of work to be performed o Methods and procedures to be used o Responsibilities of personnel assigned by activity or task o Integration and interface requirements o Reviews planned o Deliverables o Quality Assurance o Task Schedule o Task Budget o Acceptance Criteria 		

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3-89	2. Verify the Engineer Plan was reviewed and approved by the SCDM and TPO prior to submittal to the YMPO for acceptance (Para. 6.4)		

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3-90	PROGRAM ELEMENT 3 - RAYTHEON SERVICES NEVADA PP-03-12 "PREPARATION AND CONTROL OF DRAWINGS" REVISION 0 Verify latest design inputs are reflected on drawings. Paras. 6.1, 6.4.2.2		
3-91	Verify design verifications have been performed for drawings supporting Surface-Based Testing. Para. 6.6		

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3-92	Verify ES&H and QA review drawings. Para. 6.7.1 What criteria does QA use for drawing review? General		
3-93	Verify SBT drawings are included in RSN Configuration Management. Para. 6.10		
3-94	Verify drawings issued prior to verification are stamped "unverified". Para. 6.13.1		

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3-95	PP-03-13 "BASIS FOR DESIGN" REVISION 1 Verify design inputs are included in the BFD. Para. 6.0, 6.1 Specifically, ensure inputs from Sandia for SBT are included.		
3-96	Verify reference sources are identified. Para. 6.1.B		
3-97	Verify ECRs are used to revise the BFD. Para. 6.5.1		

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3-98	PP-03-15 "CONFIGURATION IDENTIFICATION AND DOCUMENTATION" REVISION 0, PIC NOS. 1 & 2 Verify items on SBT drawings are included within the CM system. Para. 6.2.1		
3-99	Verify SBT items included within CM address items A-H. Para. 6.3		
3-100	Verify specifications are included in CM. Para. 6.6		

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3-101	PP-03-17 "CONFIGURATION CHANGE CONTROL" REVISION 0, PIC NO. 1 Verify ECRs describe reasons for changes. Para. 6.2.1.H		
3-102	Verify Technical Impact statements have been generated for a selected no. of ECRs. Para. 6.3.2		
3-103	Verify training is accomplished if an ECR requires it. Para. 6.4.3		

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3-104	PP-03-20 "SURFACE BASED BOREHOLE PROGRAMS" REVISION 0 Verify Neutron-Access, NRG-1, and UZ-16 borehole drilling programs meet the YMP approved criteria letters. Paras. 6.1 & 6.3.2		
3-105	Verify drilling and work activity programs contain requirements of para. 6.2.1 A-M. Para. 6.2.1		

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3-106	Verify Site Preparation Programs contain requirements of para. 6.2.2		
3-107	Verify Drilling Programs contain requirements of para. 6.2.3.		

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3-108	PP-03-21 "MANAGEMENT AND INDEPENDENT TECHNICAL REVIEWS" REVISION 1 Verify field related drawings and specs. have not been through rev. 1 of this procedure process. Conversations with RSN indicated no activity for field work since 2/14/92.		

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3-109	PP-03-22 "PREPARATION OF AS-BUILT DRAWINGS AND SPECIFICATIONS" REVISION 0 PIC NO. 1 Verify as-builts are verified by QC for completeness and accuracy against the field verification plan and dispositioned NCRs for the JP. (What does the FVP have to do with as-builts?) Para. 6.1		
3-110	Verify as-builts are incorporated into the CCB. Para. 6.3		
3-111	Verify RSN CCB and Project Office CCB do not conflict as-built rev. nos. General		

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3-112	PP-03-23 "FIELD CHANGE CONTROL PROCESS" REVISION 0 Verify that the internal participant evaluation checklist meets the requirements of AP3.5Q. Para. 6.4		
3-113	Verify the evaluation checklist is generated when required. Para. 6.2		
3-114	AP-3.5Q, para. 5.0, step 7 requires that evaluations, sketches, or other documentation be attached to the FCR. The FCR is then transmitted to the FCCB. PP-03-23 does not address that the evaluations are attached. Project Office FCR packages currently do not contain this document.		

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5-1	<p>DEVELOPMENT OF QUALITY ASSURANCE PROCEDURES, QAP-5.1, REV. 0</p> <p>6.1.3 Revised portions of procedures shall be indicated by a vertical solid line adjacent to the area/text changed.</p>		
5-2	<p>6.2.2 Coordination - The QAR will coordinate the procedure for acceptance as-is or to resolve comments.</p>		

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5-3	<p>a. As a minimum, one QAR, other than the preparer shall be assigned to conduct an independent technical and quality adequacy review of the procedure on the Form LV-234.</p> <p>b. The draft procedure shall be submitted to the TOP and any other interfacing organizations for review.</p> <p>6.2.3 Resolution of Comments - Comments by reviewers shall be documented on form LV-234, Review of Documents Sheet.</p>		

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	PREPARATION AND CONTROL OF PROCEDURES, PP-05-01		
5-4	6.1.3 Procedure numbers are obtained from the QA Procedures Section which maintains a procedure log to prevent issuance of duplicate procedures or procedure numbers.		
5-5	6.2.4 The draft procedure will be circulated for review/comment to the reviewers in accordance with the Master Review Matrix.		
5-6	6.2.5 Comments generated by the reviewers shall be documented on the latest revision of Form LV-495, Attachments 3, 4, and 5.		

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5-7	6.3.1 Comments shall be designated as either "Major" or "Minor."		
5-8	6.3.4 Comments received without a "Major/Minor" designation shall be considered as "Minor."		
5-9	6.3.5 Unadopted major comments will be supplied with a justification for non-adoption.		

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5-10	6.5.1 A procedure shall be revised in accordance with Section 6.2 following issuance of the fifth PIC against it.		
5-11	6.6.1 Approved new or revised procedures and PICs shall be distributed in accordance with PP-06-01 to individuals or organizations listed on the Master Distribution Lists.		

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5-12	<p>DESK INSTRUCTIONS, PP-05-02, REV. 0</p> <p>6.1 General Requirements - It is the responsibility of each organization preparing and issuing DIs to assure that:</p> <p>b. DIs are utilized only for internal division, department or group instructions. They do not cross division lines.</p> <p>c. DIs are not utilized as the sole document to satisfy a program requirement.</p>		
5-13	<p>6.4 Approval - The signature of the Manager or Supervisor and date signed, indicates the DI is in compliance with applicable program requirements as of that date and may be utilized by affected personnel.</p>		

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	QA CONTROLLED DOCUMENT DISTRIBUTION, QAP-6.1, REV. 0		
6.1	6.1 Master List or Equivalent - QA shall maintain a master list or equivalent to identify the correct and updated revisions of documents. Table of Contents may serve as Master Lists.		
6-2	6.2 Logs - Logs will be maintained to assign document numbers or each type of controlled document to be maintained by the QA Division.		
6-3	6.3 Controlled Distribution - QA shall maintain distribution lists for the controlled documents which are controlled by the QA Division.		

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6-4	6.4 Transmittal and Tracking - QA Documents shall be distributed to each controlled document holder by a Document Transmittal (See Attachment 1) form which requires a sign-off and return to acknowledge receipt and handling of obsolete documents within fifteen (15) days. Quality Assurance will maintain a log to track return of transmittals.		

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	CONTROLLED DOCUMENT DISTRIBUTION, PP-06-01, REV. 0		
6-5	6.3.1 All distribution of controlled documents shall be via a Document Transmittal (Attachment 1).		
6-6	6.3.3.1 If the Document Transmittal is not returned within the prescribed time frame identified below, a follow-up notification (verbal or written) shall be made and documented. <div style="margin-left: 40px;"> Design documents 15 days All other documents 30 days </div>		

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6-7	6.3.4 Uncontrolled copies of controlled documents may be issued, but they must be stamped "Uncontrolled" or "For Information Only".		
6-8	6.4 Master List of Controlled Documents Systems Engineering shall maintain an up-to-date listing of all controlled documents issued (e.g., drawings, procedures, and manuals).		

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6-9	SUBMITTALS CONTROL AND REVIEW, PP-06-05, REV. 0 6.2.1 Logging in Submittals - All submittal packages shall be logged into the submittal tracking system by the RSN Systems Engineering Department.		

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17-1	<p>AP-1.180, REVISION 0, RECORDS MANAGEMENT: LAS VEGAS RECORD SOURCE IMPLEMENTATION</p> <p>APPENDIX A - RECORDS PREPARATION, PARA. 3,</p> <p>Verify that no portions of a page are missing due to tearing or folding of record edges, and that no information is obliterated.</p> <p>Examine records ready for submittal and verify that the above requirements are implemented</p>		

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	<p>PARA. 8</p> <p>Fill in all applicable blanks on the documents or enter N/A unless the record clearly states that given a certain response, only a portion of the record must be completed.</p> <p>The Record Source responsible for the record or record package may state that, having reviewed the record, it is determined that all blanks are intentional. This statement must be signed and dated by the Record Source.</p> <p>Verify that all blanks are filled in as appropriate.</p>		

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17-2	<p>PARAS. 13 AND 14</p> <p>Place a designation of QA: N/A in the upper right-hand corner of the first page of individual non-QA records and on the first page of the Table of Contents on non-QA record packages. (Record package segments do not require a separate designation.)</p> <p>Place a designation of QA: QA placed in the upper right-hand corner of the first page of individual QA records and on the first page of the Table of Contents of QA record packages. (Record package segments do not require a separate designation.)</p> <p>Verify that the QA designations is entered as required.</p>		

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17-3	<p>APPENDIX B - STORAGE AND PROTECTION OF RECORDS, TEMPORARY STORAGE OR QA RECORDS</p> <p>QA records that are not transmitted to the LRC within 10 working days shall be provided temporary storage in a locked one-hour UL fire-rated container or put into dual storage.</p> <p>For one-of-a-kind records that are completed but still in use, temporary storage shall be provided in a locked one-hour UL fire rated container or facility.</p> <p>Verify temporary storage requirements are implemented.</p>		
17-4	<p>PROTECTION OF RECORDS</p> <p>Ensure that documents and other materials that will become records are protected from deterioration, loss, or damage.</p> <p>Verify that documents are protected as required.</p>		

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17-5	<p>APPENDIX C</p> <p>Make corrections to errors by drawing a single line of black ink through the incorrect information, placing the correct information in close proximity, and initialing (or signing) and dating the correction.</p> <p>Verify that connections are made as required.</p>		
17-6	<p>PARA 6.1.A</p> <p>The Records Source Coordinator will track all records being submitted to the LRC.</p> <p>Verify that the Records Source Coordinator tracks all records being submitted.</p>		

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17-7	<p>PARA 6.1.C</p> <p>All RSN YMP personnel shall use Record Transmittal Form LV-391, Attachment 1, Pages 3 and 4 of this procedure to submit documents/records to the RSN Records Source Coordinator at the RSN Records Management Center (RMC).</p> <p>Verify that Attachment 1 is used to submit records.</p>		

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19-1	<p>PROGRAM ELEMENT 19 - RAYTHEON SERVICES NEVADA</p> <p>PP-19-01, REVISION 0, PARA. 6.10</p> <p>CCRS and CCTO make initial log entries or update existing log entries in the Software Environment Configuration Management Log (SECML). Note: the information required in this log is provided in Attachment 2 (that is pages 4 and 5 of the procedure).</p> <p>1. Examine several SECMLs, selected randomly, to determine if the required information is complete.</p>		

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19-2	<p>PP-19-01, REVISION 0, PARA. 6.15</p> <p>A status report of certified hardware and software shall be prepared by the configuration management on a monthly basis and provided to the users.</p> <p>2. Examine all available status reports to determine the history of software items and the number of software items currently in the inventory. (Be prepared to select one or more items for subsequent review of the documentation.)</p>		

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19-3	<p>PP-19-01, REVISION 0, PARA. 5.2</p> <p>The Computer Certification Technical Officer (CCTO) is responsible for installation of the Controlled Computer and System and preparing the Hardware Certification Report (HCR) in accordance with this procedure. (The CCTO is responsible for insuring that any and all problems with activating the hardware are resolved, including Nonconformance Reports and hold status, if necessary.</p> <p>3. Determine that descriptions of the controlled computer system (HCRs) are baselined in the SECML.</p>		

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19-4	<p>PP-19-01, REVISION 0, PARA. 6.1</p> <p>Computer Certification Records Specialist (CCRS) receives document and makes initial log entries in the Software Configuration Management Log (SCML) in accordance with Attachment 1 (pages 5 and 6 of the procedure) as required by applicable controlling procedures. CCRS updates the file index for the new documentation and files the folder for retention in the designated controlled area.</p> <p>4. Verify that the SCML exists and contains all pertinent software documentation.</p>		

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19-5	<p>PP-19-01, REVISION 0, PARA. 6.3</p> <p>CCRS or CCTP places software products on "HOLD" status as required by controlling procedures or as directed by management using a "HOLD" tag or label, and records this action or removal in the SCML.</p> <p>5. Verify that any software product deficiency has been handled as stated above.</p>		

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19-6	<p>PP-19-01, REVISION 0, PARA. 6.5</p> <p>SCML numbers are issued in accordance with Attachment 1 (pages 5 and 6 of the procedure). The CCRS shall assign a unique number and revision to each document as required by the controlling procedure. The CCRS shall maintain logs or computerized tracking systems for assigning document identification numbers.</p> <p>6. Examine the identification number log and obtain an explanation of the numbering system.</p>		

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19-7	<p>PP-19-01, REVISION 0, PARA. 6.6</p> <p>CCRS or CCTP performs Limited-Use-Software activities as initiated by Software Design Description Waivers and Software Validation Waivers as follows: (Labels software as limited use, labels documentation the same, and retains a copy of the applicable waiver(s) with the software or user documentation).</p> <p>7. Verify that this procedure is followed in such cases.</p>		

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19-8	<p>PP-19-01, REVISION 0, PARA. 6.7</p> <p>The CCRS retains the software as follows:</p> <ul style="list-style-type: none">A. Master Software (supplier provided copy) - Placed in a vault (1-hour fire rated). B. Working Copies - Maintained and stored in the software library (secure area) to be available to users on request in accordance with controlling procedures. <p>8. Verify media control and security in the above manner.</p>		

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19-9	<p>PP-19-01, REVISION 0, PARA. 6.8</p> <p>CCRS or CCTO performs the following activities to release software to operations:</p> <p>A. Enter "Release to Operations" status in the SCML.</p> <p>B. Initiate a Design Baseline Memorandum (DBM) to enter the baselined software in the Configuration Status Reporting System.</p> <p>C. Enter the assigned DBM number in the SCML.</p> <p>9. Evaluate the Configuration Status Reporting System.</p>		

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19-10	PP-19-01, REVISION 0, PARA. 6.8 10. Verify that the release of any software for operations conforms to the above procedure.		

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19-11	<p>PP-19-04, REVISION 0, PARAS. 6.4 AND 6.5.2</p> <p>Software Requirements Review Report (SRRR, form LV-2003) is the document which summarizes the results of activities performed in order to prepare the software procurement authorization package including all documents generated (SAR, SRS, SRRR, Software Summary) in accordance with this procedure. The Software Producer Form shall be prepared to accommodate specific information requested from the software producer.</p> <p>11. Verify that any software procurement is tied to a QAR-approved software authorization package.</p>		

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19-12	<p>PP-19-03, REVISION 0, PARAS. 6.1.2 AND 6.3.5</p> <p>(For existing software, the Computer Services Representative) sends the Software Producer Form (SPF) to the software supplier to be completed. For software purchase, the Requester shall attach to the PR the SPF, Form LV-2004.</p> <p>12. Verify each software file contains a completed SPF unless the CSR indicates (in writing) that an existing software supplier failed to respond with one, or software is non-calculational.</p>		

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19-13	PP-19-04, REVISION 0, PARA. 6.8 The User Documentation Review Report (UDRR) is a document (Attachment 2) that summarizes the completeness and adequacy of the acquired software documentation. (Prepared by RDE.) 13. Evaluate the UDRR in each software file.		

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19-14	<p>PP-19-04, REVISION 0, PARA. 6.9</p> <p>The Software Design Description Review Report (SDDRR) is a document (Attachment 4) that summarizes the completeness and adequacy of the acquired Software Design Description (SDD) documentation.</p> <p>14. Evaluate the SDDRR in each software file.</p>		

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19-15	<p>PP-19-04, REVISION 0, PARA. 6.10</p> <p>The Software Test Documentation Review Report (TDRR) is a document (Attachment 6) that summarizes the completeness and adequacy of the software test documentation.</p> <p>15. Evaluate the TDRR in each software file.</p>		

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19-16	<p>PP-19-04, REVISION 0, PARA. 6.13</p> <p>The Software Verification and Validation Plan Review Report (SVVPRR) is the document (Attachment 9) which summarizes the results of activities performed to prepare and approve the Software Verification and Validation Plan.</p> <p>16. Evaluate the SVVPRR in each software file.</p>		

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19-17	<p>PP-19-04, REVISION 0, PARA. 6.14.1</p> <p>The CCRS submits a package which includes SPF, UDRR, TDRR, SDDRR, and SVVPRR to CCTP, SCDM, QAR, and TPO for their approval. The approval is accomplished by obtaining the required signatures on the respective cover sheets.</p> <p>17. Verify that all approval signatures are present in each software file.</p>		

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19-18	<p>PP-19-04, REVISION 0, PARA. 6.15</p> <p>The RDE prepared the Software Design and Testing Final Review Checklist (SDTFR) (Attachment 10) and submits to the CCRS.</p> <p>18. Verify that an approved SDTFRS is in each software file.</p>		

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19-19	<p>PP-19-04, REVISION 0, PARA. 6.20</p> <p>The CCTP shall document the results of the installation and checkout in Section E (and Section D if an explanation is required) of Attachment 1, Software Installation and Checkout Report (SICR).</p> <p>19. Verify that a SICR is in each software file if required.</p>		

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19-20	<p>PP-19-04, REVISION 0, PARA. 6.24</p> <p>CCTP compiles the results of the software verification and validation (V&V) performed previously under sections of this procedure and prepares a Software Verification and Validation Report (SVVRR) in accordance with Attachment 12, Sections 1 through 9. CCTO submits the SVVRR to the SCDM and QAR for review.</p> <p>The CCRS assures that all required approvals have been obtained on the SICR and SVVR.</p> <p>20. Verify that the V&V activities are successfully completed for each SES-classified software item. (Entry into the SCML certifies the software for use in Operations.)</p>		

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19-21	<p>PP-19-06, REVISION 0, PARAS. 6.1 THROUGH 6.5</p> <p>If any problems, including the need for corrective, perfective, or adaptive maintenance, during installation or execution of the software, the CCTO initiates a Software Discrepancy Report (SDR). The RDE determines if any previous calculations have been impacted; and, if so, prepares an Engineering Change Request (ECR) in accordance with PP-03-17 to address the impacted calculations.</p> <p>21. Determine if there has been any problems arising with software; and, if so, verify that an SDR was issued and also an ECR if needed. Also, verify that a Software Discrepancy Report Log entry was made.</p>		

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19-22	PP-19-06, REVISION 0, PARAS. 6.1 THROUGH 6.5 22. Determine that a "HOLD" status was placed on the software product in accordance with PP-19-01.		
19-23	PP-19-06, REVISION 0, PARAS. 6.1 THROUGH 6.5 23. Verify that a Software Maintenance Request number was entered into the Software Maintenance Request Log.		

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19-24	<p>PP-19-04, REVISION 0, PARA. 6.25</p> <p>Upon completion of the activities associated with software V&V, CCTP prepares the Software Certification Form (SCF) for approval by the QAR and TPO. Upon approval, a single number is assigned to all documents in the final certified software package, and the package is filed.</p> <p>24. Verify that each verified and validated software product has an SCRF in its file and that a single SCML number is assigned to the file.</p>		

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19-25	<p>PP-19-05, REVISION 0, PARAS. 6.0 AND 6.1</p> <p>After completion of Software Certification, the RDE prepares an Access Authorization Request (AAR), based on a need to produce a certified run. The AAR is submitted to the LDE for approval; then the certified run may proceed.</p> <p>25. Verify that an approved AAR corresponds to each certified run.</p>		

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19-26	<p>PP-19-05, REVISION 0, PARAS. 6.2 AND 6.3</p> <p>The RDE prepares a certified run package (Para. 6.2). CCRS receives package and makes applicable entries in the Access Control Log (ACL), recording the ACL number on the AAR. CCRS attaches hardware certification and software certification forms with ACL numbers entered. CCRS submits this package to the CCTO who performs the certified run.</p> <p>26. Verify that certified runs are carried out using the above procedure.</p>		

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19-27	<p>PP-19-05, REVISION 0, PARAS. 6.4, 6.5, 6.6, AND 6.7</p> <p>CCTO performs the certified run using CERTIFIED INPUT DATA. The output is in hardcopy and floppy disk upon which is recorded the ACL number. Output is compared with output provided by the RDE (non-certified duplicate). Outputs must be identical. A software deficiency report may be required in case of disagreement. The CCTP prepares a Certified Run Operation Report for review and approval by the SCDM and QAR. Upon approval, CCRS labels the package "COMPLETED" and distributes to SCDM, RDE, and Record Center.</p> <p>27. Verify that certified runs are handled using the above procedure.</p>		

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19-28	<p>PP-19-06, REVISION 0, PARAS. 6.8 AND 6.12</p> <p>Reviewers perform a review of the software document included in the review package, using the criteria included in the controlling procedure for each document. Comments, if any, are documented on the Review Comment Record Form, evaluated, and resolved with commenters. The software document is updated accordingly.</p> <p>28. Verify that all document reviews are carried out in accordance with the above.</p>		

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ORGANIZATION EVALUATED		<input checked="" type="checkbox"/> EXTERNAL <input type="checkbox"/> INTERNAL	<input checked="" type="checkbox"/> AUDIT <input type="checkbox"/> SURVEILLANCE	PREPARED BY <u>YMQAD Staff</u> DATE <u>6/15/92</u>	
RSN	DATES OF EVALUATION				
6/22-26/92					
CONTROLLING DOCUMENT (Title, Number, Revision)			ACTIVITY EVALUATED		
ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted		* RESULTS	
T-1	What are the Project documents that provide design inputs (SDRD, RIB).				
T-2	What is the BFD and how does it relate to the SDRD.				
* INDICATE RESULTS: SATISFACTORY (SAT), UNSATISFACTORY (UNSAT), NOT APPLICABLE (N/A)					

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ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	* RESULTS
T-3	What is the general sequence of events that occurs between RSN receipt of design input and completion of Title II design?		
T-4	What procedure governs the performance of design calculations, and how are these calculations documented.		
T-5	What is design verification and when is it performed.		

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T-6	How are design interfaces controlled.		
T-7	How are specifications to be documented for Title II.		

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T-8	<p>DESIGN INPUTS AND INFORMATIONAL DATA TO OUTSIDE ORGANIZATIONS</p> <ul style="list-style-type: none"> - Verify that design inputs and/or informational data for use by subcontractors and other organizations. 		
T-9	<p>What is configuration management?</p>		
T-10	<p>Describe in general the configuration change control process?</p>		

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ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
T-11	Do the procedures, taken as a whole, provide a clear "big picture" of design control?		
T-12	Does the design process require adequate checking review and verification process.		
T-13	Does the design control process require the identification and documentation of any assumptions made during the design process?		

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ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
T-14	Are the drawings presented in such a manner so as to convey correctly the technical information clearly and unmistakably.		
T-15	Are the cross references between inter-discipline drawings adequate.		
T-16	Are the revisions/changes made to the drawings and specifications clearly marked so revisions/changes can be tracked easily?		

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T-17	Are the specifications done in typical format (e.g. CSI)?		
T-18	Are all engineered/packages items specified adequately?		
T-19	Verify that design inputs and/or informational data for use by subcontractors, and other organizations determined by the discipline engineers, have been verified internally.		

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ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
T-20	PP-03-01, PAGE 2 Does adequate technical documentation exist showing that the Discipline Engineer identified what design inputs and/or informational data is necessary to perform the work?		
T-21	GENERAL - TECHNICAL Is the design input traceable to its source and is its quality adequate for its application?		

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ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
T-22	PP-03-02, PAGE 3 What technical documentation exists showing that RSN reviewed and accepted the design input?		
T-23	PP-03-02, PP-03-03 Does adequate technical documentation exist describing the design and/or analysis methodology and assumptions, and the justification for their selection?		

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ITEM NO.	CHARACTERISTICS TO BE EVALUATED	REMARKS Record objective evidence reviewed, method of verification, personnel contacted	RESULTS
T-24	PP-03-02, PAGE 3 Does PP-03-02 or PP-03-03 clearly require the descriptions and justification of the selected design and/or analysis methodologies and assumptions?		
T-25	PP-03-03, APPENDIX A - PP-03-02 Are the requirements, codes, standards, and other design inputs that apply to design and described in PP-03-13, "Bases for Design (BFD)," Appendix A, adequately documented.		

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T-26	PP-03-02, PP-03-15 Does adequate technical documentation exist showing that design input received from other project participants or design input generated or identified through the course of the design, has been reviewed, evaluated, approved, and controlled in accordance with PP-03-15?		
T-27	PP-03-03, PP. 3-4, ATTACHMENT 1, LV-308 Does adequate technical documentation exist for "Design Analysis Content" as described in PP-03-03, Section 6.5, and Attachment 1, Form LV-308.		

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T-28	PP-03-03, PP. 4-5, ATTACHMENT 2, LV-316 Does adequate technical documentation exist for "Checking the Design Analysis" as described in PP-03-03, Section 6.6, and Attachment 2, Form LV-316.		
T-29	PP-03-03, P. 5, LINE 5 The text of the procedure PP-03-03 refers to Form LV-316 being in Attachment 3, however, Form LV-316 is actually in Attachment 2.		

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T-30	PP-03-09, PP. 2 of 3 Does adequate technical documentation exist for "Interdiscipline Review," procedure PP-03-09, Sections 6.2.2 and 6.2.3?		
T-31	PP-03-03 Does adequate technical documentation exist for "Revising the Approved Design Analysis" as described in PP-03-03, Section 6.10, PP-03-17, Section 6.2.1, and Form LV-2042, Attachment 1?		

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T-32	<p>PP-03-03, PAGE 6, APPENDIX A</p> <p>Does adequate technical documentation exist for the design verification process as described in PP-03-04, Appendix A, Sections 5.4 and 5.5, or Appendix B, Section 5.0? Appendix A is "Design Verification by Design Review" and Appendix B is "Design Verification by Use of Alternate Calculations."</p>		
T-33	<p>PP-03-07</p> <p>Is there adequate traceability from the specifications developed from PP-03-07 (Preparation and Control of Specifications) to the source documentation which identifies the need for the specifications and what information will be used to develop the specifications?</p>		

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T-34	PP-03-09, PP. 2 of 3 Does adequate technical documentation exist for "Interdiscipline Review," procedure PP-03-09, Sections 6.2.2 and 6.2.3?		
T-35	PP-03-03 Does adequate technical documentation exist for "Revising the Approved Design Analysis" as described in PP-03-03, Section 6.10, PP-01-17, Section 6.2.1, and Form LV-2042, Attachment 1?		

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T-36	<p>PP-03-03, PAGE 6, APPENDIX A</p> <p>Does adequate technical documentation exist for the design verification process as described in PP-03-04, Appendix A, Sections 5.4 and 5.5, or Appendix B, Section 5.0? Appendix A is "Design Verification by Design Review" and Appendix B is "Design Verification by Use of Alternate Calculations."</p>		
T-37	<p>PP-03-07</p> <p>Is there adequate traceability from the specifications developed from PP-03-07 (Preparation and Control of Specifications) to the source documentation which identifies the need for the specifications and what information will be used to develop the specifications?</p>		

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T-38	PP-03-12, SECTION 6.0 Are the appropriate design inputs traceable from PP-03-01 (Design Inputs) and PP-03-13 (Basic for Design) to the engineered drawings?		
T-39	PP-03-12, SECTION 6.0 Are the applicable design analysis results or conclusions traceable from PP-03-03 (Analysis and Studies) to the engineered drawings? Does PP-03-12 adequately require this information from PP-03-03?		