

APPROVAL

RAYTHEON SERVICES NEVADA

QUALITY ASSURANCE PROGRAM DESCRIPTION
For
THE YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT

Approved by:  Date: 3/2/92
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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.

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 Project 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.

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