

SANDIA NATIONAL LABORATORIES
NUCLEAR WASTE REPOSITORY TECHNOLOGY DEPARTMENT
QUALITY ASSURANCE PROGRAM DESCRIPTION

REPLACEMENT COPY.
Int. ~~22~~ Date: 4/10/91

PREPARED: *R. R. Richards*
R. R. RICHARDS, SUPERVISOR
QUALITY ASSURANCE DIVISION SUPERVISOR

DATE: 7-15-91

APPROVED: *Thomas W. Blejwas*
tn THOMAS E. BLEJWAS, ACTING DEPARTMENT MANAGER
SNL TECHNICAL PROJECT OFFICER (TPO)

DATE: 7/15/91

EFFECTIVE DATE: 7/29/91

SNL DEPARTMENT 6310
CONTROLLED DOCUMENT
(If Numbered in Red Ink)

Copy Number: 00040

POLICY

The U.S. Department of Energy is authorized by the Nuclear Waste Policy Act, as amended in 1987, to site, obtain a license for, construct, and operate a geologic repository. It is the policy of Sandia National Laboratories (SNL) that the SNL obligations, as a program participant under the Yucca Mountain Site Characterization Project (YMP) office, will be met through the implementation of a Quality Assurance Program that complements management actions to achieve the level of quality needed for the safe disposal of high-level radioactive waste.

This Quality Assurance Program meets the applicable requirements of DOE/RW-0214, Quality Assurance Requirements Document (QARD) for the Civilian Radioactive Waste Management Program. Implementation of the quality assurance controls necessary to achieve the high level of quality demanded by the QARD, specified in this Quality Assurance Program Description and its implementing procedures, is mandatory for the SNL Nuclear Waste Repository Technology Department and its supporting organizations.

Thomas E. Blejwas
for Thomas E. Blejwas, Acting Department Manager
SNL Technical Project Officer (TPO)

7/15/91
Date

RI

04000

INTRODUCTION

This document serves as the Quality Assurance Program Description (QAPD) document for the Yucca Mountain Site Characterization Project (YMP) activities performed by the Sandia National Laboratories (SNL) Nuclear Waste Repository Technology (NWRT) Department. The U.S. Department of Energy (DOE) Quality Assurance Requirements Document (QARD), DOE/RW-0214 issued by the DOE Office of Civilian Radioactive Waste Management (OCRWM), defines the Quality Assurance requirements governing activities affecting quality for the YMP.

Sections 1.0 through 20.0 of this QAPD describe and state the commitment by SNL to meet QARD requirements applicable to SNL's YMP activities. Section 1.0 describes the SNL NWRT Department organization. Section 2.0 describes the SNL Quality Assurance Program, identifies applicable QARD requirements, and explains exceptions or clarifications thereto. Sections 3.0 through 20.0 identify applicable QARD requirements and explain exceptions or clarifications thereto for each section. Appendix A contains a flow chart of Quality Assurance documents.

All of the SNL NWRT Department work is a set of processes;

(design-related activities, analysis, data-collection, etc.)

which require some input:

(performance objectives, design bases, data, samples, personnel, measurement equipment, etc.)

and produce outputs or products

(design requirements report, performance assessment predictions, parameter values, etc.).

The SNL approach to achieving and assuring quality calls for exercising appropriate controls on the process and its inputs and outputs. The effectiveness of these controls is monitored and feedback occurs in order that input and process controls have optimum effect.

As stated in each section of this QAPD, SNL will follow the requirements of the OCRWM QARD and implement those requirements through our implementing procedures. To help ensure that, SNL uses a computer product (matrix) to link each QARD requirement to the actual procedure text which satisfies that requirement. The Quality Assurance implementing procedures that prescribe the implementation of this QAPD are listed in the SNL Master List of Controlled Documents.

This QAPD supersedes the SNL NWRT Quality Assurance Program Plan (QAPP), Rev E.

SCOPE

The Quality Assurance Program described in this document applies to items on the YMP Q-List and all activities affecting the quality of such items, such as designing, purchasing, fabricating, handling, installing, operating, modifying, etc. The Quality Assurance Program also applies to activities listed on the YMP Quality Activities List, such as site characterization studies and experimentation, performance assessment analyses for licensing, and activities which may adversely affect the waste isolation capability of a natural barrier. Details of applicability of individual requirements are specified in Quality Assurance grading documents that are prepared for specific activities or items.

TABLE OF CONTENTS

Policy	2
Introduction	3
Scope	4
Table of Contents	5
1.0 Organization	6
1.1 General	6
1.2 Sandia National Laboratories Responsibilities	7
1.3 SNL NWRT Department Organization	7
1.4 Application	7
2.0 Quality Assurance Program	7
2.1 General	7
2.2 Quality Assurance Program Controls	7
2.3 Quality Assurance Procedures	8
3.0 Design Control	8
4.0 Procurement Document Control	8
5.0 Instructions, Procedures, Plans And Drawings	8
6.0 Document Control	9
7.0 Control Of Purchased Items And Services	9
8.0 Identification & Control Of Materials, Parts, Components & Samples	9
9.0 Control Of Processes	10
10.0 Inspection	10
11.0 Test Control	10
12.0 Control Of Measuring And Test Equipment	10
13.0 Handling, Storage, And Shipping	10
14.0 Inspection, Test, And Operating Status	10
15.0 Control Of Nonconforming Items	10
16.0 Corrective Action	10
17.0 Quality Assurance Records	11
18.0 Audits	11
19.0 Computer Software	11
20.0 Scientific Investigations	11
Appendix A: Flow Chart of Quality Assurance Documents	12

1.0

ORGANIZATION

1.1 General

This section describes organizational responsibilities of Sandia National Laboratories Nuclear Waste Repository Technology Department and identifies organizational interfaces for SNL work consistent with the provisions of the Quality Assurance Requirements Document, Section 1, paragraph 1.0 and the amplifications of the QARD, paragraphs 1.1 through 1.5. The assignment of responsibilities reflects the philosophy that the line organization achieves and verifies quality and the Quality Assurance organization overviews to assure the achievement of quality.

An important quality principle on which this Quality Assurance Program is based is that each person is responsible for the achievement of quality in the work the person performs. The Quality Assurance Program provides for such achievement of quality as well as verification of that achievement. The line organization has total responsibility for the achievement of quality, as well as for detailed verifications of that achievement. The Quality Assurance organization has the responsibility to provide assurance to senior line management of the line organization's achievement and verification of quality. This is accomplished through the conduct of overview activities such as audits, surveillances, and assessments.

It is the responsibility of the Manager, SNL NWRT Department, to ensure that appropriate Quality Assurance requirements and procedural controls are implemented for SNL's scope of work in order to provide confidence that the Project will not cause undue risk to either the health and safety of the public or of the workers associated with the geologic repository facilities.

The Quality Assurance organization maintains a strong overview presence in the Quality Assurance Program by performing audits, surveillances, and assessments on activities affecting quality. Overview activities are planned and scheduled to address the concerns of management and complement the actual performance of activities affecting quality.

1.2 Sandia National Laboratories Responsibilities

SNL, as part of its contract to the DOE, is a participating organization in the Yucca Mountain Site Characterization Project. The NWRT Department provides administrative, technical, quality, and budget management for all YMP activities within SNL's scope of work. Specific activities performed by SNL are derived from the YMP Work Breakdown Structure (WBS). Among the activities for which SNL is at least partially responsible for are the following:

- Repository systems development,
- Data management and analysis,
- Systems performance assessment of the repository,
- Determination of thermal and mechanical properties of the host rock,
- Determination of repository sealing performance requirements,
- Characterization of global climatology and regional climatology, and
- Assistance to other YMP program participants in areas of specialized expertise.

1.3 SNL NWRT Department Organization

The NWRT Department consists of line divisions and a Quality Assurance Division. The organizational structure, lines of communication, authority and duties of persons and organizations performing activities affecting quality are established and delineated in SNL Quality Assurance implementing procedures. These activities include both the performing functions of achieving quality objectives as well as the verification functions. Each person in the Department is responsible for the achievement of quality in the work the person performs.

1.4 Application

The provisions of the QARD Section 1 are applied in the SNL Quality Assurance Program. The list of the SNL implementing procedures is the SNL Master List of Controlled Documents.

2.0 QUALITY ASSURANCE PROGRAM

2.1 General

The provisions of QARD Section 2 are applied with the following exception.

SNL's scope of work does not include engineered items. Therefore the QARD requirements for inspections and test activities to verify conformance of such items to specified requirements for the purpose of acceptance and to demonstrate that such items will perform satisfactorily in service are not applicable. For the same reason, NQA-1, Supplement 2S-1 and Appendix 2A-1 are not applicable in any situation, including receipt inspection. Similarly, since the SNL scope of work does not include engineered items, NQA-1 Supplement 2S-2 does not apply.

2.2 Quality Assurance Program Controls

Quality Assurance controls are applied to items and activities affecting quality. The Quality Assurance Program is implemented by management, line, and Quality Assurance personnel within SNL and by each supporting organization. Line personnel are responsible for achieving the specified level of quality. The Department Manager and Division Supervisors review Quality Assurance Program status and line performance to determine acceptability of product quality, programmatic compliance and implementation effectiveness, and to resolve quality problems. Division Supervisors ensure that specified quality is achieved by using appropriate management controls.

Quality Assurance controls over items and activities affecting quality are established jointly by line and Quality Assurance personnel and described in appropriate documents. The controls are executed by line and Quality Assurance personnel.

Direction and overview of the quality affecting activities of supporting organizations is achieved by establishing Quality Assurance Program requirements; specifying these requirements through controlled documents, including procurement documents; and performing overview activities, such as reviews, audits, and surveillances.

2.3 Quality Assurance Procedures

SNL NWRT Department Quality Assurance implementing procedures are used to ensure compliance and effective implementation of each section of this Quality Assurance Program Description. YMP Administrative Procedures are used as interface guidance for interacting with the YMP Office and other participating organizations. The YMP Administrative Procedures (AP)s are either used directly or incorporated into SNL procedures when the entire AP or a portion of it applies. The SNL dynamic matrix system demonstrates that each applicable requirement of the QARD is properly documented and covered by the SNL implementing procedures.

Instructions, at the Sandia Laboratories corporate level and SNL Division level, provide supplementary detailed instructions and/or guidance on performing activities affecting quality. Applicable Sandia Laboratories Instructions are invoked in Quality Assurance implementing procedures. Division instructions are controlled by the Division Supervisor with the assistance of the Quality Assurance Division and Department document control function, as necessary.

3.0 DESIGN CONTROL

The provisions of QARD Section 3 and Appendix A, paragraph 3.0, are applied by SNL to those portions of the design process for which they are appropriate and intended. SNL design-related work to which design control applies include the conduct of design analyses and participation in design verification activities.

4.0 PROCUREMENT DOCUMENT CONTROL

SNL procurement activities include the procurement of items and services for scientific investigations, for services related to design, and for services related to other assigned technology support functions. The provisions of QARD Section 4 paragraph 4.0 are applied by SNL to procurement documents with the exception stated below.

- Concerning NQA-1, Supplement 4S-1, paragraph 3: The SNL corporate procurement system does not provide for a final review of procurement documents to assure that documents transmitted to prospective contractors include appropriate provisions prior to contract award. Therefore, reviews of such documents are conducted upon receipt from the SNL Purchasing Organization by the NWRT Department (concurrent with receipt by the contractor) and any necessary changes transmitted through the SNL Purchasing Organization to the contractor in a timely manner.

5.0 INSTRUCTIONS, PROCEDURES, PLANS AND DRAWINGS

The provisions of QARD Section 5 and Appendix A, paragraph 5.0 are applied by SNL for instructions, procedures, plans, and drawings.

6.0

DOCUMENT CONTROL

The provisions of QARD Section 6 paragraph 6.0 and Appendix A, paragraph 6.0 are applied by SNL for the control of documents. Controlled documents generated by SNL are issued by SNL. Controlled documents generated by the YMP office (e.g., Administrative Procedures) are issued by the YMP office.

7.0

CONTROL OF PURCHASED ITEMS AND SERVICES

The provisions of QARD Section 7 paragraph 7.0 and the amplifications of QARD paragraphs 7.1 through 7.3 are applied by SNL for the control of purchased items and services with the following exceptions.

- 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 the establishment of Quality Assurance requirements appropriate to the services, including the performance of verifications and overview activities by SNL Quality Assurance personnel.
- Concerning NQA-1, Supplement 7S-1, paragraph 3.1: Although requesters of purchased items and services at SNL influence source selection by suggesting sources, the evaluation of and final selection of the set of sources to be solicited for a particular procurement is the function of the SNL Purchasing Organization. SNL NWRT Quality Assurance personnel are involved in the evaluation and selection of suppliers relative to their quality capability. While SNL Purchasing utilizes selection measures as described in the subject paragraph (as well as other measures) for the more minor purchases, the documentation of all evaluations and selections is maintained by and available from the SNL Purchasing Organization.
- Concerning NQA-1, Supplement 7S-1, paragraph 10: These provisions apply to all commercial grade items within the scope of this QAPD, not only those "utilized by the design". Therefore subparagraph (a) is not applicable.

8.0 IDENTIFICATION & CONTROL OF MATERIALS, PARTS, COMPONENTS & SAMPLES

The provisions of QARD Section 8, concerning the control of materials, parts, and components, are associated with engineered items, which are not in the SNL scope of work, so are not applicable. However, provisions of QARD, Appendix A, paragraph 8.0 are applied for identification and control of samples used in scientific investigations.

9.0 CONTROL OF PROCESSES

Process that affect the quality of items and activities for which SNL is responsible are controlled by application of Sections 3, 5, and 20 of the QARD. The SNL scope of work does not include engineered items, so control of special process is not applicable.

10.0 INSPECTION

SNL's scope of work does not include engineered items, so this section of the QARD is not applicable.

11.0 TEST CONTROL

SNL's scope of work does not include engineered items, so this section of the QARD is not applicable.

12.0 CONTROL OF MEASURING AND TEST EQUIPMENT

The provisions of QARD Section 12 are applied with the following clarification.

- Control of M&TE applies to items used to calibrate, measure, gage, test, or inspect for the purpose of either controlling or acquiring data to verify conformance to a specified requirement or establishing characteristics or values not previously known.

13.0 HANDLING, STORAGE, AND SHIPPING

The provisions of QARD Section 13 and Appendix A, paragraph 13.0, are applied to items and samples for scientific investigations.

14.0 INSPECTION, TEST, AND OPERATING STATUS

SNL's scope of work does not include engineered items, so this section of the QARD is not applicable.

15.0 CONTROL OF NONCONFORMING ITEMS

The provisions of QARD Section 15 are applied for the control of nonconforming items.

16.0 CORRECTIVE ACTION

The provisions of QARD Section 16 are applied to conditions adverse to quality.

17.0

QUALITY ASSURANCE RECORDS

The provisions of QARD Section 17 are applied with the following clarification.

- Concerning NQA-1, Supplement 17S-1, SNL Quality Assurance records are classified as Lifetime only at the direction of OCRWM. Storage of records by SNL is temporary (as this term is used in NQA-1, supplement 17S-1), pending turnover to the YMP Office Central Records Facility.

18.0

AUDITS

The provisions of QARD Section 18 are applied with the following clarification.

- SNL will not perform audits of other YMP participating organizations when those organizations provide items or services to SNL as specified in interface documents or job packages, as that audit function will be retained by the YMP Office. Participating organizations are:
 - Government agencies external to DOE (e.g., USGS),
 - National Laboratories (e.g., LANL), and
 - Contractor organizations participating directly under the YMP Office (e.g., Raytheon Services Nevada).

19.0

COMPUTER SOFTWARE

The provisions of QARD Section 19 and Appendix A, paragraph 19.0, are applicable.

20.0

SCIENTIFIC INVESTIGATIONS

The provisions of QARD Appendix A, paragraph 20 are applied for control of scientific investigation activities.

APPENDIX A

FLOW CHART OF QUALITY ASSURANCE DOCUMENTS

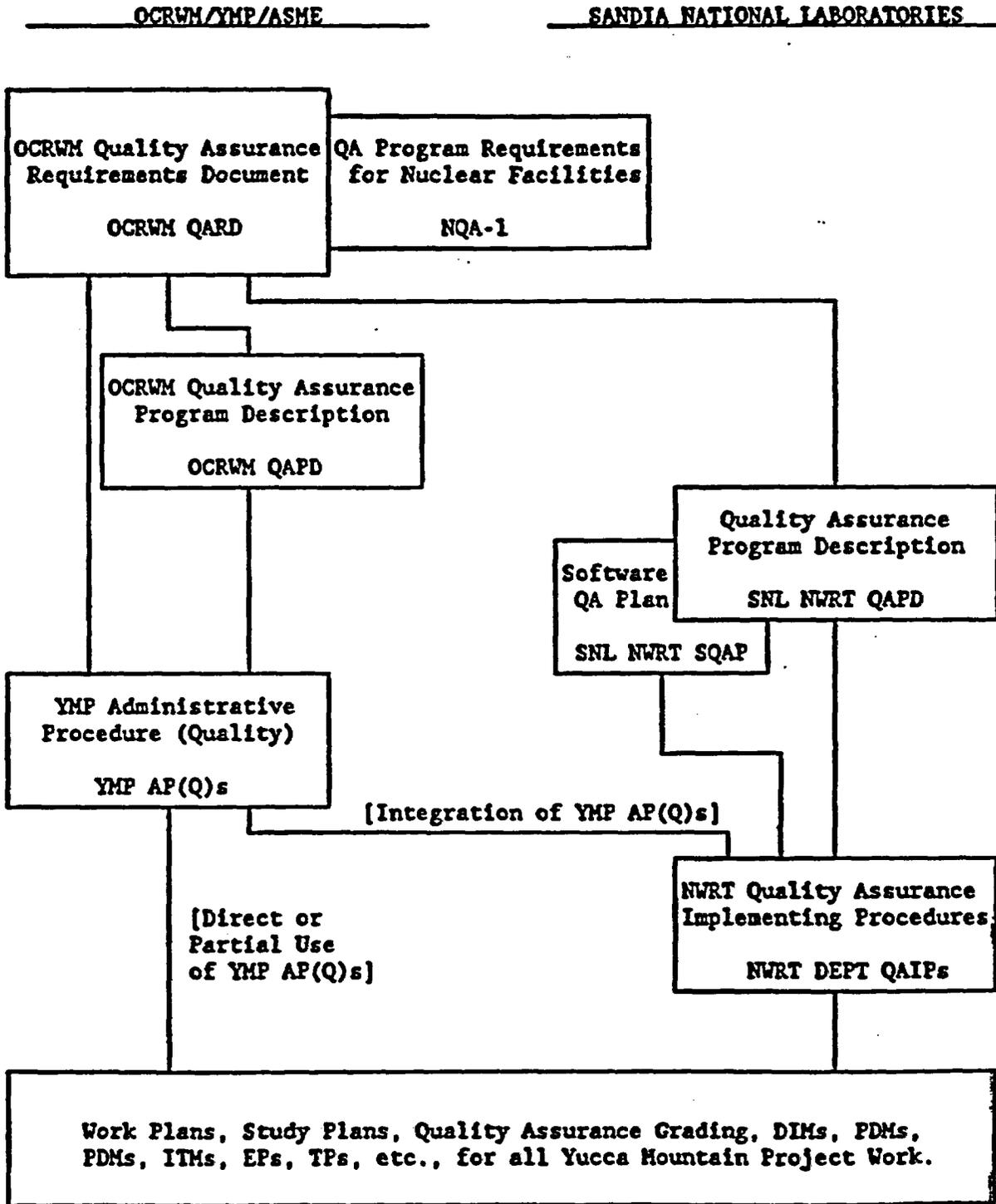


FIGURE A