

*Received via letter
dtd. 4/22/92*

TSC 0001
Revision 2
June 14, 1991

CONTROLLED COPY

NWMS M&O

Quality Assurance Program Description

Contract No. DE-AC01-91RW00134

Date: June 14, 1991 Doc. No.: TSO.910410.0001

APPROVED BY:

[Signature] 6-14-91
 R. L. Robertson Date
 General Manager, NWMS M&O

[Signature] 6-14-91
 R. J. Brackett Date
 Quality Assurance Manager, NWMS M&O

Rec'd. w/tr. dtd. 920422
 Accession No. 9204270085

102.7

**CIVILIAN RADIOACTIVE WASTE MANAGEMENT SYSTEM M&O CONTRACTOR
QUALITY ADMINISTRATIVE PROCEDURES**

TABLE OF CONTENTS

Revision 8

March 26, 1992

PROCEDURE	TITLE	REV. NO.	ISSUE DATE
QAP-1-1	Resolution of Quality Concerns	0	12/11/91
QAP-2-1	Indoctrination and Training	1	11/21/91
QAP-2-2	Verification of Personnel Qualifications	0	08/16/91
QAP-2-3	Establishing QA Program Controls (Classification and Grading)	1	12/09/91
QAP-2-5	QA Surveillance	0	03/18/92
QAP-2-6	Readiness Review	0	11/18 /91
QAP-3-1	Technical Document Review	0	02/30/92
QAP-3-2	Design Reviews	0	02/03/92
QAP-3-5	Development of Baseline Technical Documents	0	02/30/92
QAP-5-1	Preparation of Procedures	0	07/16/91
QAP-6-1	Document Control	1	01/24/92
QAP-16-1	Corrective Action Report	0	11/08/91
QAP-16-2	Stop Work	0	10/30/91
QAP-17-1	Program Records Management	1	01/17/92
QAP-18-1	Certification of Audit Personnel	0	11/07/91
QAP-18-2	Audits	0	11/07/91
QAP-19-1	Computer Software Verification and Validation	0	02/07/92

QA POLICY STATEMENT

The U.S. Department of Energy (DOE) has been authorized by the Nuclear Waste Policy Act, as amended in 1987, to site, license, construct, and operate a geologic repository and a monitored retrievable storage facility, and to provide for safe transportation of radioactive waste to those locations.

The DOE Office of Civilian Radioactive Waste Management has contracted with TRW Environmental Safety Systems Inc., herein referred to as the Nuclear Waste Management System Management and Operating (M&O) Contractor for systems engineering, development, and management of the Nuclear Waste Management System.

The M&O has committed to implement an effective quality assurance program, which is in compliance with the applicable DOE and federal regulatory requirements. The M&O Quality Assurance Program is based on achievement of quality as a line responsibility where each performer is accountable for the quality of the work assigned. The M&O Quality Assurance Organization, reporting directly to the M&O General Manager, verifies the achievement of quality through audits, surveillances, and reviews.

The M&O conducts its activities in accordance with the highest standards of integrity, openness, technical expertise, and professional excellence, employing technical resources of the highest caliber and integrity. This Quality Assurance Program shall be implemented for the planning and implementation of all M&O quality affecting activities. Compliance with the provisions of this Quality Assurance Program Description Document is mandatory.



R. L. Robertson
General Manager, NWMS M&O

INTRODUCTION

The Nuclear Waste Management System, Management & Operating Quality Assurance Program Description Document (QAPD) is applicable to NWMS M&O quality affecting activities at all organizational levels from the Office of the General Manager to subcontractors. This document and the DOE/RW-0214, Quality Assurance Requirements Document (QARD) for the Civilian Radioactive Waste Management Program, serve as the principal documents defining the NWMS M&O Quality Assurance Program.

This QAPD satisfies the requirements of the following higher level quality assurance requirements documents:

- a. U.S. DOE, OCRWM, "Quality Assurance Requirements Document (QARD)," DOE/RW-0214
- b. ANSI/ASME NQA-1 (1989), "Quality Assurance Program Requirements for Nuclear Facilities" with its supplements and appendices, as identified in the QARD.

Sections 1 through 19 of this document describe the quality management controls established by M&O to meet the requirements of the OCRWM QARD for the scope of work assigned to the M&O. These controls apply to all M&O and subcontractor personnel performing quality affecting activities on the Nuclear Waste Management System elements consisting of the Mined Geologic Disposal System (MGDS), Monitored Retrievable Storage (MRS), and Nuclear Waste Transportation unless specifically stated otherwise. Section 20, Scientific Investigations, in Appendix A to the QARD is not addressed as the present M&O scope of work does not include this activity. Other exceptions due to M&O scope of work are also indicated in the appropriate sections. The Quality Assurance Program elements that follow are sequenced and numbered to be consistent with the QARD for direct correlation with its requirements. This QAPD is implemented through quality administrative and line procedures.

For consistency with the OCRWM QA Program, the terms and definitions of NQA-1 Supplement S-1 and Appendix E of the OCRWM QARD apply to this document. Terms used in this document and in quality administrative and line procedures that are not contained in the referenced documents are defined in the Terms and Definitions List contained in the Quality Administrative Procedures Manual.

Table of Contents

	Page
SECTION 1. ORGANIZATION	1
1.0 GENERAL.....	1
1.1 M&O ORGANIZATION.....	1
1.1.1 General Manager	2
1.1.2 Quality Assurance Manager	2
1.1.3 Human Resources Manager.....	8
1.1.4 Assistant General Manager for Systems.....	8
1.1.5 Nevada Site Manager	9
1.1.6 Assistant General Manager for Operations.....	9
1.2 INDEPENDENCE OF QUALITY ASSURANCE PERSONNEL.....	10
1.3 ORGANIZATIONAL INTERFACES AND DELEGATION OF WORK	10
1.4 RESOLUTION OF DISPUTES.....	10
1.5 RESOLUTION OF ALLEGATIONS.....	11
1.6 STOP WORK AUTHORITY.....	11
SECTION 2. QUALITY ASSURANCE PROGRAM.....	12
2.0 GENERAL.....	12
2.1 QUALITY ASSURANCE PROGRAM.....	12
2.1.1 Quality Assurance Requirements and Hierarchy of Applicable QA Documents	12
2.1.2 Quality Assurance Program Description.....	12
2.1.3 Quality Administrative Procedures.....	12
2.1.4 Line Procedures	13
2.1.5 Subcontractor Implementing Procedures	13
2.2 PROGRAM PLANNING.....	13
2.3 READINESS REVIEWS.....	13
2.4 GRADED QUALITY ASSURANCE.....	13
2.5 PERSONNEL SELECTION, INDOCTRINATION AND TRAINING, AND QUALIFICATION.....	14
2.5.1 Personnel Selection	14
2.5.2 Indoctrination and Training	14

Table of Contents (Continued)

	Page
2.5.3 Certification.....	15
2.5.4 Qualification of M&O Personnel to Perform Work to OCRWM QA Program.....	15
2.6 SURVEILLANCE.....	15
2.7 MANAGEMENT ASSESSMENTS.....	16
2.8 QUALITY ASSURANCE PROGRAM MANAGEMENT INFORMATION REPORTING AND TRACKING.....	16
SECTION 3. DESIGN CONTROL.....	17
3.0 GENERAL.....	17
3.1 M&O CONTROL OF DESIGN ACTIVITIES.....	17
3.2 DESIGN RESPONSIBILITIES.....	17
3.3 DESIGN INPUTS.....	18
3.4 DESIGN PROCESS.....	18
3.4.1 Design Analyses.....	18
3.4.2 Design Verification.....	18
3.4.3 Technical Review.....	20
3.4.4 Peer Review.....	20
3.4.5 Design Changes.....	21
3.4.6 Computer Programs.....	21
3.5 DESIGN DEFICIENCY CONTROL.....	20
3.6 DESIGN DOCUMENTATION.....	20
3.7 DESIGN INTERFACES.....	20
3.8 CONFIGURATION MANAGEMENT.....	21
3.9 READINESS REVIEWS FOR DESIGN ACTIVITIES.....	21

Table of Contents (Continued)

	Page
SECTION 4. PROCUREMENT DOCUMENT CONTROL.....	22
4.0 GENERAL.....	22
4.1 PROCUREMENT DOCUMENT PLANNING, PREPARATION, REVIEW AND REVISION, AND APPROVAL.....	22
4.1.1 Planning.....	22
4.1.2 Document Preparation.....	22
4.1.3 Review and Revision.....	23
4.1.4 Approval.....	23
4.2 DOCUMENT CONTROL.....	23
4.3 DOCUMENTATION.....	23
SECTION 5. PLANS, PROCEDURES, AND DRAWINGS.....	24
5.0 GENERAL.....	24
5.1 M&O PLANS, PROCEDURES, AND DRAWINGS.....	24
5.2 USE OF PROCEDURES BY M&O TEAM MEMBERS AND SUBCONTRACTORS.....	24
5.3 PROCEDURE REVIEW.....	24
SECTION 6. DOCUMENT CONTROL.....	25
6.0 GENERAL.....	25
6.1 CONTROL SYSTEM.....	25
6.1.1 Document Preparation, and Change.....	25
6.1.2 Issuance and Distribution.....	25
SECTION 7. CONTROL OF PURCHASED SERVICES.....	27
7.0 GENERAL.....	27
7.1 CONTRACTOR QUALITY ASSURANCE PROGRAMS.....	27
7.2 M&O CONTROL OF PURCHASED SERVICES.....	27
7.2.1 Procurement Planning.....	27
7.2.2 Contractor Selection.....	27
7.2.3 Contractor Performance Evaluation.....	27
7.2.4 Change Control.....	28
7.2.5 Acceptance of Services.....	28

Table of Contents (Continued)

	Page
SECTION 8. IDENTIFICATION AND CONTROL OF MATERIALS, PARTS, AND COMPONENTS.....	29
8.0 GENERAL.....	29
SECTION 9. CONTROL OF PROCESSES.....	30
9.0 GENERAL.....	30
SECTION 10. INSPECTION.....	31
10.0 GENERAL.....	31
SECTION 11. TEST CONTROL.....	32
11.0 GENERAL.....	32
SECTION 12. CONTROL OF MEASURING AND TEST EQUIPMENT.....	33
12.0 GENERAL.....	33
SECTION 13. HANDLING, STORAGE, AND SHIPPING.....	34
13.0 GENERAL.....	34
SECTION 14. INSPECTION, TEST, AND OPERATING STATUS.....	35
14.0 GENERAL.....	35
SECTION 15. CONTROL OF NONCONFORMING ITEMS.....	36
15.0 GENERAL.....	36
SECTION 16. CORRECTIVE ACTION.....	37
16.0 GENERAL.....	37
16.1 CONDITIONS ADVERSE TO QUALITY.....	37
16.2 SIGNIFICANT CONDITIONS ADVERSE TO QUALITY.....	37
16.3 IDENTIFICATION OF CONDITIONS ADVERSE TO QUALITY.....	37
16.4 EVALUATION.....	37
16.5 CORRECTIVE ACTION.....	37
16.6 VERIFICATION OF COMPLETED CORRECTIVE ACTIONS.....	38

Table of Contents (Continued)

	Page
16.7 TRENDING	38
16.8 STOP WORK.....	38
SECTION 17. QUALITY ASSURANCE RECORDS.....	39
17.0 GENERAL.....	39
17.1 M&O QA RECORDS SYSTEM.....	39
17.2 RECORD DEFINITION	39
17.3 RECORD GENERATION	40
17.4 RECEIPT OF RECORDS.....	40
17.5 RECORDS IDENTIFICATION.....	40
17.6 RECORDS STORAGE.....	40
17.7 PRESERVATION AND SAFEKEEPING.....	41
17.8 CORRECTED INFORMATION	41
17.9 RETRIEVAL.....	41
17.10 ACCESS CONTROL.....	41
17.11 RECORDS CLASSIFICATION	41
SECTION 18. AUDITS.....	42
18.0 GENERAL.....	42
18.1 AUDIT PROGRAM IMPLEMENTATION.....	42
18.2 AUDIT SCHEDULING.....	42
18.3 AUDIT TEAMS	42
18.4 AUDIT PREPARATION.....	43
18.5 AUDIT PERFORMANCE	43
18.6 AUDIT REPORTING	43
18.7 AUDIT RECORDS	44

Table of Contents (Continued)

	Page
SECTION 19. COMPUTER SOFTWARE DESIGN AND CONTROL.....	45
19.0 GENERAL.....	45
Appendix A. LIST OF ABBREVIATIONS.....	A-1

List of Illustrations

Figure 1-1 Nuclear Waste Management System M&O.....	3
Figure 1-2 Quality Assurance.....	4

SECTION 1 ORGANIZATION

1.0 GENERAL

This section describes the M&O organizational structure, functional responsibilities, authorities, and interfaces for quality affecting activities. Within the M&O, the line organizations achieve quality while the quality assurance organization performs overview activities through audits, surveillances, and reviews to verify the achievement of quality.

The M&O Quality Assurance Program described in this section and associated procedures implement the committed requirements of QARD Section 1.

1.1 M&O ORGANIZATION

The M&O consists of the following major team members and their respective primary roles in the organization:

TRW - Program Management, Systems Engineering

Duke Engineering and Services, Inc. - Licensing, Outreach, MRS Design, Quality Assurance

Fluor Daniel, Inc. - MGDS Surface Facility Design and Development

Morrison Knudsen - MGDS Underground Facility Design and Development

Babcock & Wilcox - Waste Package Design and Development

Woodward-Clyde - Site Characterization

INTERA Technologies - Performance Assessment

The M&O is further supported by J.K. Research Associates, Inc., in providing senior staff personnel, E.R. Johnson Associates, Inc., in providing personnel in Transportation and Storage, and R & D Associates in providing personnel in Systems.

All of the major team members provide Quality Assurance personnel to the M&O QA organization with Duke Engineering and Services, Inc. having the lead.

A single M&O Quality Assurance Program Description addresses the entire M&O scope of responsibility. The organizational structure for carrying out the QA Program extends from M&O Headquarters to the subcontractors and sites to ensure communication and interface control in the implementation of this standard, and effective quality assurance program.

Figure 1-1 details the M&O organizational structure. This organizational structure is based on a bicameral management concept where the systems organization is the "concept manager" and the operations organization is the "concept executor." The M&O Quality Assurance organization is detailed in Figure 1-2. The M&O line organizations are responsible for performing quality affecting activities. The functional and quality assurance responsibilities for key positions within the M&O organization are described in the following sections.

1.1.1 General Manager

The General Manager reports to the TRW Systems Integration Group Vice President and General Manager and has the overall management responsibility and authority as Chief Executive Officer for the M&O organization. The key management positions reporting to the General Manager having quality affecting responsibilities are the Quality Assurance Manager, the Human Resources Manager, the Assistant General Manager for Systems, the Nevada Site Manager, and the Assistant General Manager for Operations.

The quality assurance responsibilities of the General Manager are to:

- a. Establish M&O quality assurance policy direction and controls that are commensurate with NWMS program requirements, and M&O goals and objectives
- b. Establish and execute a quality assurance program that ensures compliance with the QARD
- c. Approve the M&O Quality Assurance Program Description
- d. Approve all M&O Quality Administrative Procedures
- e. Provide adequate funding and resources to effectively support the quality assurance objectives of the program
- f. Interface with OCRWM and through OCRWM with: NRC; Federal regulatory agencies; the nuclear industry; and affected states, local governments, Indian tribes, and the general public on quality assurance matters related to their areas of interest
- g. Maintain awareness of quality assurance issues and problems, and ensure their resolution
- h. Provide for annual independent management assessment of the scope, adequacy, and requirements compliance of the M&O Quality Assurance Program.

1.1.2 Quality Assurance Manager

The Quality Assurance Manager reports to the General Manager, thereby providing direct access to the highest management level and assuring appropriate independent control over the Quality Assurance Program. The key management positions reporting to the Quality Assurance Manager are the Systems Quality Assurance Manager, the Audits Manager, the Nevada Site Quality Assurance Manager, and the Operations Quality Assurance Manager

The responsibilities of the Quality Assurance Manager are to:

- a. Incorporate the policy direction and controls established by the General Manager and the requirements of the QARD into the Quality Assurance Program
- b. Develop, issue, and maintain this QAPD
- c. Assist in the development, review, and approval of subordinate implementing procedures
- d. Ensure that an adequate quality assurance program, responsive to governing DOE and regulatory requirements, is established and implemented

Nuclear Waste Management System M&O

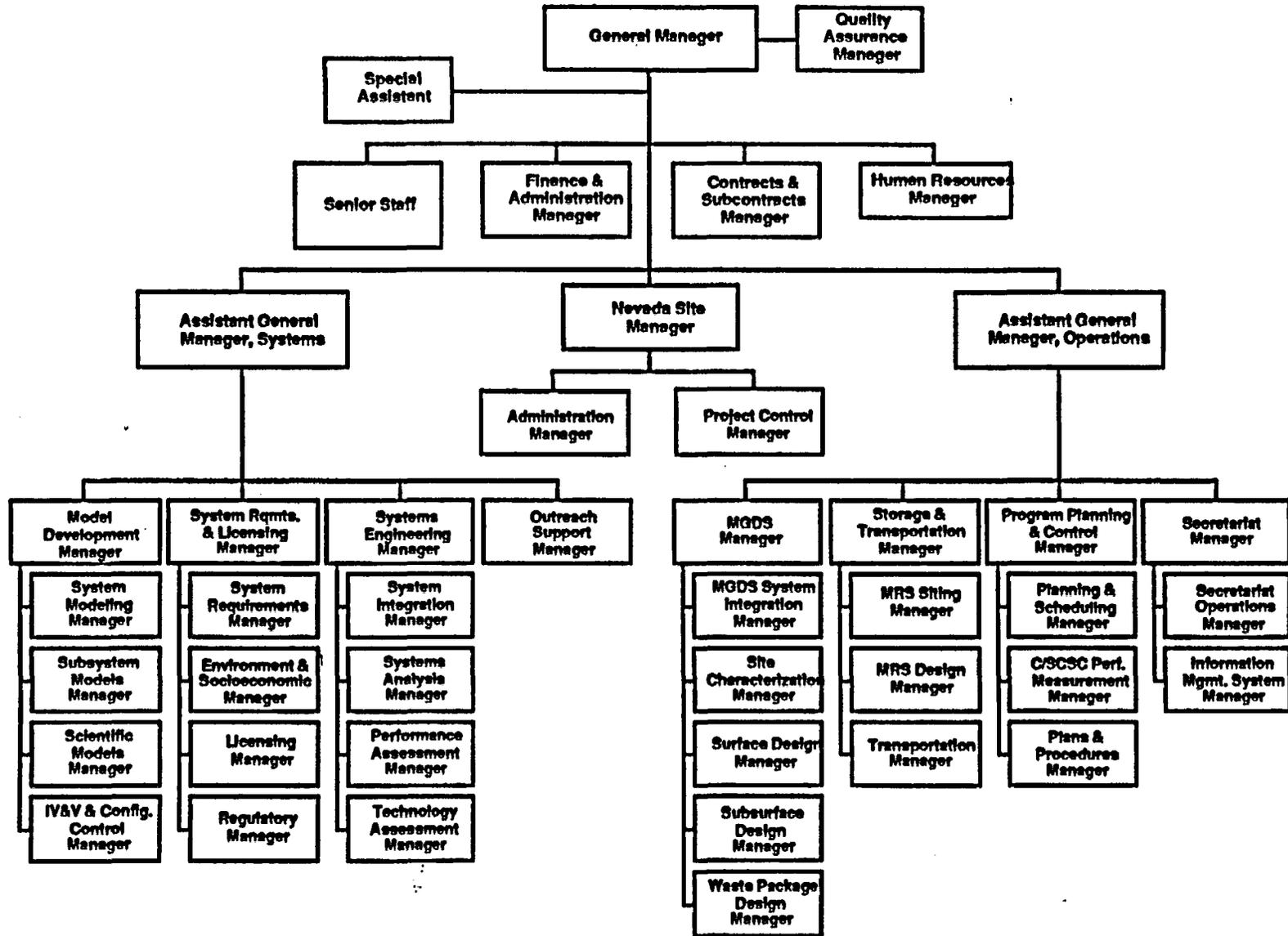


Figure 1-1

Quality Assurance

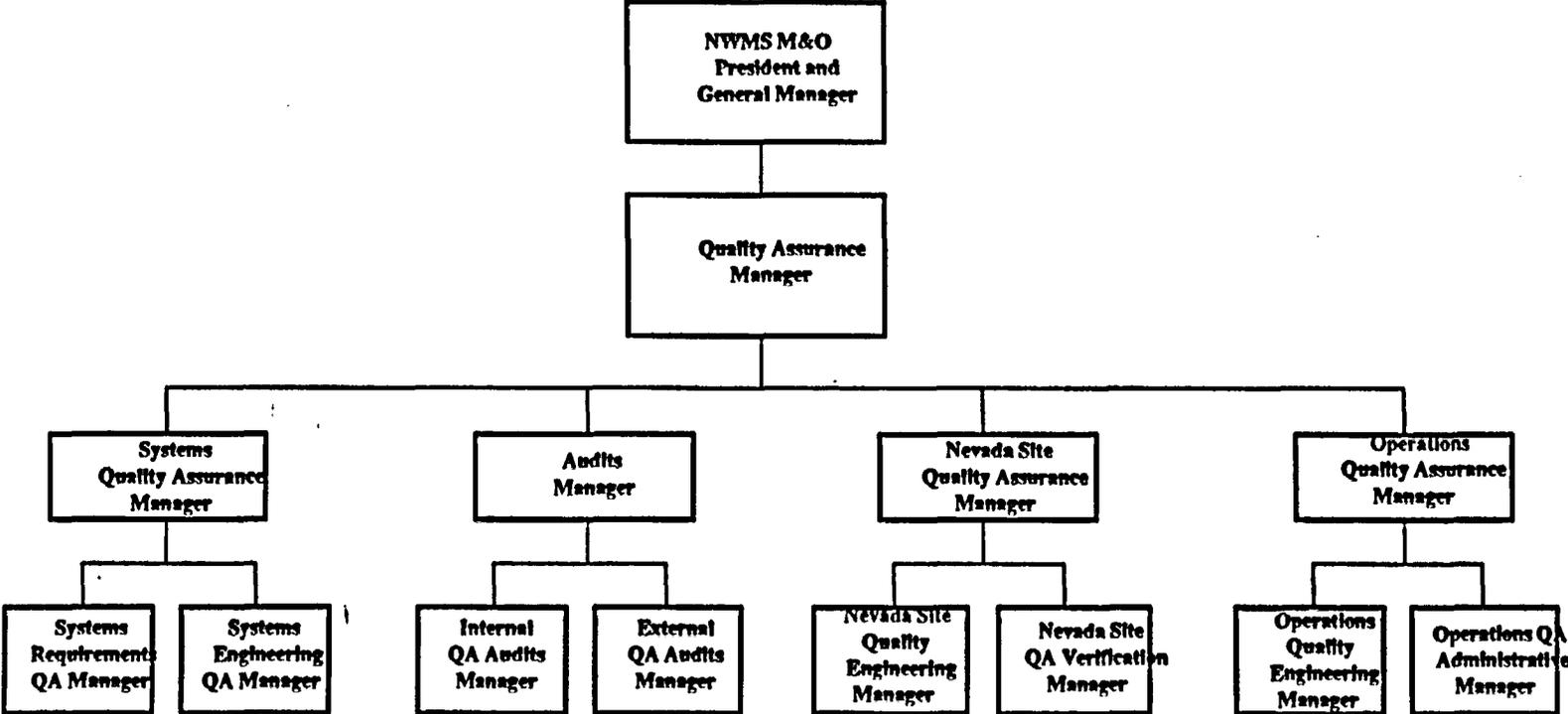


Figure 1-2

- c. Verify through audits, surveillances, and reviews that quality affecting activities are performed effectively and in accordance with the established program
- f. Provide interpretations of quality assurance program requirements
- g. Obtain DOE acceptance of this QAPD
- h. Assist DOE in obtaining NRC approval of this QAPD
- i. Identify quality-related problems; initiate, recommend, provide solutions; verify implementation of effective corrective action; and, when necessary, stop unsatisfactory work
- j. Develop and conduct quality assurance indoctrination, training, and certification programs
- k. Review procurement documents to ensure compliance with quality assurance requirements
- l. Interface with OCRWM and through OCRWM with: NRC; federal regulatory agencies; the quality assurance matters related to their areas of interest.

1.1.2.1 Systems Quality Assurance Manager. The Systems Quality Assurance Manager reports to the M&O Quality Assurance Manager. Reporting to this position are the Systems Requirements QA Manager and the Systems Engineering QA Manager.

The Systems Quality Assurance Manager is responsible for providing systems integration within the QA organization as well as supporting the Assistant General Manager for Systems by providing QA program compliance verification and assessment of systems activities.

1.1.2.1.1 Systems Requirements QA Manager. The Systems Requirements QA Manager is responsible for the following:

- a. Reviewing M&O Systems quality affecting generated plans, procedures, and reports; performing technical document reviews; and for placement of QA requirements
- b. Providing QA support of modeling, licensing, systems, and outreach (as requested) activities
- c. Supporting the Assistant General Manager, Systems by providing QA program compliance verification and assessment of system analyses, study reviews, and technology assessments and applications
- d. Providing Systems Requirements QA personnel to serve on change review boards or special task forces as requested.

1.1.2.1.2 Systems Engineering QA Manager. The Systems Engineering QA Manager is responsible for the following:

- a. Maintaining the M&O Quality Assurance Program Description (QAPD)

- b. Coordinating the generation and maintenance of M&O Quality Administrative Procedures (QAPs)
- c. Maintaining the Quality Information System data base and providing periodic reports to management
- d. Performing systems integrated trend analysis
- e. Maintaining and supporting QA data bases
- f. Providing support to QA Audits for audits and surveillances of Systems activities
- g. Providing QA systems support to DOE OCRWM as requested.
- h. Coordinating QA training activities.

1.1.2.2 Audits Manager. The Audits Manager reports to the M&O Quality Assurance Manager. Reporting to this position are the Internal QA Audits Manager and the External QA Audits Manager.

The Audits Manager has quality assurance program compliance verification and assessment responsibility spanning the entire scope of M&O quality affecting activities, including observers for all DOE audits of associate contractors and national laboratories performing quality affecting activities for the NWMS Program and DOE support as requested. This position also provides for training, qualification, and certification of lead auditors and auditors.

1.1.2.2.1 Internal QA Audits Manager. The Internal QA Audits Manager implements the QA Audit Program to verify program compliance for the internal quality affecting activities performed by the M&O. The details of this program are described in Section 18 of this QAPD.

1.1.2.2.2 External QA Audits Manager. The External QA Audits Manager implements the M&O Audit Program to verify compliance of the M&O MGDS design activities performed by Fluor Daniel, Inc. in Las Vegas, Nevada, and of the M&O MRS design activities performed by Duke Engineering and Services, Inc. in Charlotte, North Carolina. The same program and Quality Administrative Procedures used for the internal M&O Audit Program are used for external audits. This group also provides observers for all DOE audits of associate contractors and national laboratories performing quality affecting activities for the NWMS Program as well as providing DOE audit support as requested.

1.1.2.3 Nevada Site Quality Assurance Manager. The Nevada Site Quality Assurance Manager reports to the M&O Quality Assurance Manager. Reporting to this position are the Nevada Site Quality Engineering Manager and the Nevada Site QA Verification Manager.

The Nevada Site Quality Assurance Manager is responsible for supporting the M&O Nevada Site Manager in implementing the M&O QA Program on M&O site activities.

1.1.2.3.1 Nevada Site Quality Engineering Manager. The Nevada Site Quality Engineering Manager is responsible for the following:

- a. Performing technical reviews of M&O site-generated documents for verification of QA requirements

- b. Providing Quality Engineering personnel to serve on site program control boards and task forces as requested
- c. Performing Quality Engineering reviews of DOE-generated documents as requested
- d. Performing Quality Engineering reviews of associate contractor trade studies or reports as requested
- e. Providing M&O QA support of YMSCPO activities as requested
- f. Providing data to Systems QA for the Quality Management Information System.

1.1.2.3.2 Nevada Site QA Verification Manager. The Nevada Site QA Verification Manager is responsible for the following:

- a. Providing program compliance verification of M&O Nevada site quality affecting activities through surveillances
- b. Providing assistance to QA audits in auditing M&O activities
- c. Providing data to Systems QA for the Quality Management Information System.

1.1.2.4 Operations Quality Assurance Manager. The Operations Quality Assurance Manager reports to the M&O Quality Assurance Manager. Reporting to this position are the Operations Quality Engineering Manager and the Operations QA Administrative Manager.

The Operations Quality Assurance Manager is responsible for supporting the Assistant General Manager for Operations by providing quality engineering and QA administrative interface.

1.1.2.4.1 Operations Quality Engineering Manager. The Operations Quality Engineering Manager is responsible for the following:

- a. Performing document reviews of MGDS, waste package, storage and transportation designs, and associated documentation to verify compliance with M&O QA Program requirements
- b. Providing quality engineering review of procurement documents
- c. Generating and maintaining Quality Administrative Procedures assigned to Operations QA
- d. Providing support to QA audits as requested
- e. Providing Operations QA support to OCRWM as requested
- f. Performing surveillances on Operations activities
- g. Providing data to Systems QA for the Quality Management Information System.

1.1.2.4.2 Operations QA Administrative Manager. The Operations QA Administrative Manager is responsible for the following:

- a. Providing Document control and records management interface between QA and the M&O Secretariat
- b. Reviewing all M&O QA records for compliance to the M&O QA Program prior to turnover to the Secretariat
- c. Performing trend analysis for all review, surveillance, and audit findings against Operations organization
- d. Providing data to Systems QA for the Quality Management Information System
- e. Administering the internal M&O Quality Concerns Program (see 1.5).

1.1.3 Human Resources Manager

The Human Resources Manager reports to the General Manager. The key individual reporting to the Human Resources Manager having quality affecting responsibilities is the Training Manager. The Training Manager is responsible for developing and implementing a training program that meets the quality assurance requirements of Section 2 of this QAPD.

1.1.4 Assistant General Manager for Systems

The Assistant General Manager, Systems reports to the General Manager. The key positions reporting to the Assistant General Manager having quality affecting responsibilities are the Model Development Manager, the System Requirements and Licensing Manager, and the System Engineering Manager.

The responsibilities of the Assistant General Manager for Systems involving quality affecting activities are to:

- a. Develop and implement NWMS quality assurance control requirements through engineering specifications and procedures
- b. Approve quality affecting procedures where the Assistant General Manager for Systems is designated as the development implementing manager
- c. Manage the preparation and implementation of the System Engineering and Management Plan (SEMP) and the Configuration Management Plan (CMP)
- d. Develop, maintain, and control NWMS technical baselines
- e. Control NWMS system level interfaces
- f. Manage the review of existing and proposed system designs for technical adequacy and compliance with baseline and quality assurance requirements
- g. Chair the M&O NWMS Change Control Board (CCB)
- h. Ensure systems integration and optimization
- i. Acquire and review procedures for the development and implementation of system engineering and scientific models

- j. Interface with OCRWM and through OCRWM with: NRC; Federal regulatory agencies; the nuclear industry; and affected States, local governments, Indian tribes, and the general public on quality assurance matters related to their areas of interest.

1.1.5 Nevada Site Manager

The Nevada Site Manager reports to the General Manager. The positions reporting to the Nevada Site Manager having quality affecting responsibilities are the Administration Manager and the Operations Support Manager.

The quality assurance responsibilities of the Nevada Site Manager are to:

- a. Approve quality affecting procedures where the Nevada Site Manager is designated as the development/implementing manager
- b. Serve as the principal interface between the M&O and the Yucca Mountain Site Characterization Project Office
- c. Serve as the M&O Technical Project Officer to the Yucca Mountain Site Characterization Project Office
- d. Integrate all M&O activities in support of the Yucca Mountain Site Characterization Project Office
- e. Function as the M&O Site Secretariat
- f. Provide administrative and support services for all M&O personnel on permanent or temporary assignment in Nevada
- g. Coordinate with the Nevada Site QA Manager on quality assurance activities in support of the M&O Site Office and the Yucca Mountain Site Characterization Project Office
- h. Interface with OCRWM and through OCRWM with: NRC; Federal regulatory agencies; the nuclear industry; and affected States, local governments, Indian tribes, and the general public on quality assurance matters related to their areas of interest.

1.1.6 Assistant General Manager for Operations

The Assistant General Manager for Operations reports to the General Manager. The positions reporting to the Assistant General Manager for Operations having quality affecting responsibilities are the Mined Geological Disposal System Manager, the Storage and Transportation Manager, and the Secretariat.

The responsibilities of the Assistant General Manager for Operations involving quality affecting activities are:

- a. Approve quality affecting procedures where the Assistant General Manager for Operations is designated as the development/implementing manager
- b. Manage the overall direction, integration, and coordination of the MGDS, Storage and Transportation, and Secretariat activities

- c. Develop the detailed design requirements for the MGDS, Storage, Transportation, and Waste Acceptance in response to the performance requirements provided by DOE and the M&O Systems organization
- d. Manage site characterization activities
- e. Manage M&O assigned detailed designs
- f. Manage M&O document control and record management activities
- g. Serve as Deputy Chairman for the M&O NWMS Change Control Board (CCB)
- h. Control the program baselines
- i. Serve as Chairman for the M&O MGDS & Storage and Transportation CCB
- j. Manage the Information Management and ADP activities
- k. Establish and monitor development standards for design and operations software.

1.2 INDEPENDENCE OF QUALITY ASSURANCE PERSONNEL

The Quality Assurance Manager is charged with no other duties than to manage the Quality Assurance Organization described in this QAPD. The Quality Assurance Organization has been charged with sufficient authority, access to work areas, sufficient freedom from cost and schedule considerations, and organizational independence to:

- a. Identify quality problems
- b. Initiate the process to correct problems
- c. Recommend or provide solutions
- d. Obtain resolutions through the proper quality administrative procedure
- e. Verify the completion of corrective actions to correct problems.

It is stressed that the identification of quality problems in a timely manner is the responsibility of all M&O personnel.

1.3 ORGANIZATIONAL INTERFACES AND DELEGATION OF WORK

The organizational interfaces and delegation of work between the OCRWM, M&O sites, and subcontractors are identified in this document, plans, and applicable implementing procedures. In all cases of delegation, M&O retains the overall responsibility for all work performed under the direction of M&O. All M&O quality affecting work shall meet requirements as described in the Quality Assurance Requirements Document and directed by this QAPD.

1.4 RESOLUTION OF DISPUTES

Disputes involving quality assurance matters or concerns are brought to the attention of management, and if not resolved, are elevated progressively to the Quality Assurance Manager. If

satisfactory resolution cannot be obtained at that level, the matter is then elevated to the General Manager.

1.5 RESOLUTION OF ALLEGATIONS

Resolution of allegations registered within the M&O organization shall be investigated, resolved, documented, and reported in accordance with the DOE OCRWM Quality Concerns Program.

1.6 STOP WORK AUTHORITY

Stop work authority within M&O is vested in management whenever the health and safety of workers and/or the public is involved, or when continued work will produce results that are not in compliance with the M&O QA Program. This process is controlled by a Quality Administrative Procedure that details the authorities and responsibilities for stopping work, the criteria and documentation required to process the stop work order, and actions required before work may resume. This process ensures that quality affecting activities are controlled until the deficiency, or unsatisfactory condition, has been resolved. Stop work is further discussed in Section 16.8 of this QAPD.

SECTION 2 QUALITY ASSURANCE PROGRAM

2.0 GENERAL

The M&O QA Program complies with applicable requirements of the OCRWM QARD and applies to all levels of the organization, including subcontractors.

The M&O Quality Assurance Program is applied in a manner that emphasizes precluding conditions adverse to quality and ensures prompt detection, identification, and corrective action if such conditions occur.

The M&O Quality Assurance Program described in this section and associated procedures implements the committed requirements of QARD Section 2 with the exception of NQA-1 Supplements 2S-1 and 2S-2. The scope of work at this time does not require the M&O to have inspection and nondestructive examination personnel. If the M&O scope of work changes to require such personnel, then the QA Program shall be revised accordingly.

2.1 QUALITY ASSURANCE PROGRAM

2.1.1 Quality Assurance Requirements and Hierarchy of Applicable QA Documents

The quality assurance requirements for the M&O QA Program are derived from the OCRWM QARD. The hierarchy of QA documents that govern and control the quality affecting activities of the M&O and its subcontractors are:

- DOE OCRWM Quality Assurance Requirements Document (QARD)
- M&O Quality Assurance Program Description (QAPD)
- M&O Quality Administrative Procedures (QAPs)
- M&O Line Procedures
- Subcontractor Implementing Procedures.

2.1.2 Quality Assurance Program Description

This QAPD details the M&O organizational structure, quality affecting responsibilities, interfaces, and management controls necessary to meet the requirements of the QARD for the scope of work assigned by OCRWM to the M&O. This QAPD is approved by the M&O General Manager and is required to be submitted to DOE OCRWM and the Nuclear Regulatory Commission for review and acceptance.

2.1.3 Quality Administrative Procedures

M&O Quality Administrative Procedures (QAPs) are used to control quality affecting activities performed across the entire M&O organization. These procedures are written to implement specific administrative and quality assurance management controls as required by the QARD. Preparation of QAPs is assigned to the functional discipline or group with lead responsibility for the activity or area. All affected M&O groups are to review and concur with the initial (Revision 0) issue of the

QAPs and subsequent revisions prior to submittal for approval by the Quality Assurance Manager and the General Manager. QA review and approval of the QAPs ensures that QARD requirements have been included and enables QA to update the QA Requirements Matrix in a timely manner. Once approved, these procedures are contained in the Quality Administrative Procedures Manual, which is issued and controlled by the M&O Secretariat as a controlled document in accordance with the requirements of Section 6 of the QARD.

2.1.4 Line Procedures

M&O Line Procedures provide the detailed implementing instructions for performance of quality affecting work within the line organizations. These procedures include the technical, management, and operating instructions necessary to ensure implementation of the requirements for the individual functional disciplines or groups within the line organization. Procedures are prepared, reviewed, and approved by the management of the line organization responsible for performing the quality affecting work. Interfacing groups provide review and concurrence. QA review and approval of the line procedures ensures that QARD requirements have been included and enables QA to update the QA Requirements Matrix in a timely manner. These procedures are contained in line procedure manuals, which are distributed and controlled by the M&O Secretariat or his designee as in the case for remote locations (i.e., MGDS Nevada Site and MRS Charlotte, N.C. design activities).

2.1.5 Subcontractor Implementing Procedures

Subcontractors implement this program with implementing procedures "tailored" to their specific scope of work. These implementing procedures are submitted to the M&O Quality Assurance Manager for approval prior to implementation. M&O QA ensures that these implementing procedures contain the QARD requirements for the particular scope of work.

2.2 PROGRAM PLANNING

M&O program planning is to incorporate the elements of Section 2 of the QARD into the development of M&O plans and procedures. Planning efforts are to allow sufficient time for plans and procedures preparation, review, resolution of comments, approval, distribution, training, and if applicable, the performance of readiness reviews prior to the start of quality affecting work.

2.3 READINESS REVIEWS

Readiness reviews are to be performed prior to the start of critical milestones of M&O quality affecting activities. As a minimum, readiness reviews are to be performed prior to the start of Title I, II and III design activities for each program element (MGDS, MRS, Transportation, Waste Acceptance) for which the M&O has design responsibilities. Additional readiness reviews are performed as directed by the General Manager. These reviews are performed to the applicable Quality Administrative Procedure, which incorporates the requirements of Section 2 of the QARD for readiness reviews.

2.4 GRADED QUALITY ASSURANCE

M&O has adopted the DOE OCRWM graded approach to applying quality assurance program requirements for M&O activities. This approach selectively applies controls based on the relative importance of the structure, item, or activity to safety, waste isolation, and program objectives.

The following Quality Assurance Conditions describe the graded program:

QA Condition 1. Applies uniquely to structures, systems, and components that are important to safety. These structures, systems, and components provide reasonable assurance that the facility can be operated without undue risk to the health and safety of the public.

QA Condition 2. Applies uniquely to radwaste structures, systems, and components that contain or may contain solid, liquid, or gaseous radioactive material.

QA Condition 3. Applies uniquely to fire protection structures, systems, and components that promptly detect, control, and extinguish fires.

QA Condition 4. Applies uniquely to structures, systems, and components whose continued function is not required, but whose failure or interaction could reduce the functioning of a system, which is important to safety to an unacceptable safety level.

QA Condition 5. A quality designation for a structure, system, or component, which as a result of a failure, could produce an unacceptable impact to performance, schedule, or cost.

Structures, systems, and components that are not included in one of the five QA Conditions are considered Conventional Quality. Controls are applied to ensure a level of quality commensurate with industry standards, local codes, and good engineering practices.

Application of the quality assurance program requirements considers the factors addressed in Section 2 of the QARD. Detailed checklists are prepared and utilized to assist in the implementation of the grading process. The establishment of the applicable QA controls under this program is a joint line and QA responsibility.

2.5 PERSONNEL SELECTION, INDOCTRINATION AND TRAINING, AND QUALIFICATION

2.5.1 Personnel Selection

The M&O employs personnel thoroughly trained and experienced in the functional disciplines to which they are assigned. Generally, these individuals only need indoctrination and training in M&O Program requirements, specific methods, procedures, organizational relationships, personnel, and equipment applicable to M&O activities. For entry level positions, considerable training is provided.

Qualifications of personnel to be employed by M&O are detailed in applications or resumes. These qualifications are matched against position descriptions that detail the minimum education and experience requirements for the position as well as quality affecting responsibilities. Relevant education and experience are verified.

2.5.2 Indoctrination and Training

Indoctrination and training needs for individual personnel are identified based on the job assignment, education, experience, and proficiency. Position analyses are developed to establish the minimum requirements for each position. The determination of required indoctrination and training for each individual is documented by the individual's supervisor, except for the General Manager who establishes his own training list with concurrence of the M&O Training Manager and QA Manager.

Applicable procedures control indoctrination and training as well as training preparation, lesson plan approvals, content of training, training objectives, conduct of training, and documentation of completed training. Indoctrination and training is conducted to keep pace with new requirements or changes in methods, procedures, and job responsibilities.

Indoctrination training on the QAPD is required of all personnel. Personnel shall receive indoctrination and training on the general criteria, applicable codes, standards, DOE documents, and procedures for their particular job assignments. Proficiency of personnel performing quality affecting activities shall be maintained through indoctrination and training.

Indoctrination and training of M&O personnel are planned, conducted, and coordinated by the M&O Training Organization. Records of indoctrination and training are maintained in the M&O Quality Assurance Records System. The implementation of indoctrination and training is verified by M&O QA through audits, surveillances, and reviews.

2.5.3 Certification

M&O Personnel qualified to perform certain quality affecting activities shall be certified. Certification involves initial certification and periodic recertification, as specified in applicable certification procedures. The only assignments presently requiring certification within the M&O QA Program are Quality Assurance Lead Auditors and Auditors. The Quality Assurance Manager certifies Lead Auditors and Auditors in accordance with the requirements of NQA-1, Supplement 2S-3, and Appendix 2A-3. Other personnel shall be certified when required by specifications governing activities that they are performing.

2.5.4 Qualification of M&O Personnel to Perform Work to OCRWM QA Program

M&O personnel assigned by DOE to perform quality affecting work under the DOE OCRWM QA Program receive QA Orientation and procedure training as required by OCRWM procedure QAAP 2.1, Indoctrination and Training. These M&O personnel are also required to be qualified to the requirements of QAAP 2.2, Verification of Personnel Qualifications, prior to the start of quality affecting work.

2.6 SURVEILLANCE

The M&O QA Program utilizes surveillances to evaluate effective implementation of quality affecting work activities performed by M&O personnel.

Surveillances are relatively narrow-scoped observations of activities or documentation to evaluate compliance with approved procedures. Surveillances are conducted by M&O Quality Assurance personnel, certified as Lead Auditors or Auditors, who are independent of the work activity. Technical experts, when used, must not be directly responsible for the activities under surveillance, and will be accompanied by a Certified Lead Auditor or Auditor.

Surveillances are controlled by the appropriate Quality Administrative Procedure. This administrative procedure details the planning, preparation, performance, documentation, reporting, and tracking of surveillance results. The results of surveillances are formally documented and reported in a timely manner to the M&O management. The timely notification of findings allows for prompt initiation of necessary corrective actions. The procedure also allows for immediate correction of findings during performance of the surveillance. Deficiencies identified during

surveillances are documented and processed in accordance with Section 16 of this QAPD. All surveillance findings are tracked to ensure completion of corrective actions and are trended to evaluate the need for further corrective action to prevent recurrence. Records of surveillances are maintained in the M&O Records Management System.

2.7 MANAGEMENT ASSESSMENTS

An independent management assessment of the implementation and effectiveness of the M&O QA Program is conducted annually at the direction of the General Manager. Management Assessments are performed to the applicable Quality Administrative Procedure, which incorporates the requirements of Section 2 of the QARD for these assessments. Findings are reported to management and tracked to completion of all corrective actions.

2.8 QUALITY ASSURANCE PROGRAM MANAGEMENT INFORMATION REPORTING AND TRACKING

Quality information is documented by responsible organizations for reporting, tracking, and disseminating purposes. The following types of quality assurance program management information are reported quarterly to the General Manager, his staff having responsibility for implementing the M&O QA Program, and DOE:

- a. Status of development of the M&O QA Program
- b. Status of resolution of significant conditions adverse to quality, QA issues, and quality trends
- c. Summary of required management and QA overview results.

The administration of reporting, tracking, and disseminating this information is documented in the appropriate Quality Administrative Procedure. The resulting information is used to inform senior management of program progress and provide a management tool for program evaluation and improvement.

SECTION 3 DESIGN CONTROL

3.0 GENERAL

The quality assurance controls described in this section are applicable to Conceptual, Title I, Title II, and Title III Design activities at all levels throughout the M&O organization. Major activities include preparation of design inputs and outputs, design analyses, design verifications, design change control, interface control, and design documentation including conceptual and final design reports, drawings, specifications, engineering study reports, and major interdisciplinary engineering reports.

The M&O Quality Assurance Program described in this section and associated procedures implements the committed requirements of QARD Section 3.

3.1 M&O CONTROL OF DESIGN ACTIVITIES

M&O implements a systems engineering approach to control and manage the development of the technical baseline. The Systems Engineering and Management Plan (SEMP) controls the definition and inclusion of functional requirements into hardware and construction specifications during the total design process. All M&O technical procedures for design activities are written to meet the requirements and restrictions imposed by the SEMF and controls of the M&O Configuration Management Plan (CMP). These procedures include measures for documenting, reviewing, and approving applicable design inputs, design criteria, performance requirements, regulatory requirements, codes and standards identification, and appropriate quality assurance standards.

Changes from approved design inputs, including the reason for the change, are identified, approved, documented, and controlled in the same manner as the original design. The configuration management process controls the iterative process of developing an integrated design, and documenting, maintaining, and controlling the technical baseline through a Change Control Board. The M&O Assistant General Manager for Systems is responsible for development of the M&O SEMF and CMP, and for control of the system technical baselines.

3.2 DESIGN RESPONSIBILITIES

The M&O Assistant General Manager for Operations is responsible for control of design activities performed by the M&O organization. Each Design Manager, under the Assistant General Manager for Operations, has the authority and responsibility to prescribe, accomplish, and document design control activities within their area of concern. Procedures, in accordance with the SEMF, CMP, and appropriate line procedures, are established and approved by the implementing design organization and are also reviewed and approved by the M&O QA Manager.

Procedures specify how the originators of design documents are responsible for including, either directly or by reference, the applicable quality assurance requirements. Quality assurance requirements are applied throughout the design process according to potential impacts on safety to the public, waste isolation, and program objectives as determined by the cognizant engineering document originators with the concurrence of QA.

The M&O Assistant General Manager for Systems is responsible for the conduct of review and verification of design packages to ensure that they are in compliance with system and regulatory requirements.

3.3 DESIGN INPUTS

Design inputs for each NWMS Program element (MGDS, MRS, Storage and Transportation) are provided in a design basis document. The design basis document identifies all applicable federal, state, and local regulations. Regulatory requirements affecting design, such as 10CFR60, 10CFR70, 10CFR71, environmental regulations, applicable consensus standards, etc., have been identified by OCRWM Headquarters. State and local requirements are identified by the project office or OCRWM Headquarters. These requirements are baselined and maintained in the DOE approved design requirement documents. Other information included in the design basis documents are:

1. Design codes and standards
2. Design data
3. Design assumptions
4. Results of studies specifying configuration.

The design basis documents are controlled design requirements documents and are generated under the M&O QA Program controls contained in this document. The design basis documents are to be approved by DOE OCRWM Headquarters.

3.4 DESIGN PROCESS

Overall planning of M&O design activities are accomplished by the SEMP and CMP, and controlled by the appropriate implementing line procedures. The priority for procedure development and implementation supports the program element schedule. Implementing procedures are generated, approved, and implemented to allow sufficient time for design analysis and verification that the design meets requirements. Final approved design documents are completed as appropriate to accommodate Title I, Title II, and Title III Design activities for each NWMS program element.

3.4.1 Design Analyses

Design analysis documents address the purpose, method, assumptions, design units, and references such that a person technically qualified in the subject can review and understand the analyses and verify the adequacy of the results without recourse to the originator. Calculations are identifiable by subject (including structure, system, or component to which the calculation applies), originator, reviewer, and date. Design analysis documents are legible, reproducible, and retrievable.

The design is traceable by reference to the pertinent documents in sufficient detail to permit design verification.

3.4.2 Design Verification

Procedures used for design verification ensure the following:

- a. The method of verification is documented
- b. The reviewers and their qualifications are identified

- c. The specific item being verified is clearly identified and traceable
- d. The method to identify, track, and resolve the resolution of comments is delineated in the procedures
- e. The criteria for determining the method of verification is established
- f. Responsibilities of persons performing the verification are defined
- g. The procedure clearly defines the documents required for completion of the verification process.

The extent of required design verification is a function of the importance to safety of the item under consideration, the critical nature of the item's performance in relation to system performance and mission objectives, the complexity of the design, the degree of standardization, the state of the art, and similarity with previously proven designs. Design verification is accomplished by one or more of the following methods:

1. Design reviews, which verify the following, as a minimum:
 - Design inputs are correctly selected
 - Assumptions necessary to perform the design activity are clearly documented and identified for subsequent verification when the detailed design activities are completed
 - An appropriate design method was used
 - Design output is reasonable compared to design inputs and meets system functional and performance requirements
 - The necessary design input and verification requirements for interfacing organizations are specified in the design documents or in supporting procedures.
2. Calculations or analyses are performed using alternate methods to verify the results of the original calculation or analysis. The appropriateness of assumptions, input data used, and the computer program or other calculation method used is reviewed.
3. Qualification Tests. When design adequacy is verified by qualification testing, the tests and test configuration are clearly identified, defined, and documented. Qualification testing demonstrates the adequacy of performance under conditions that simulate the most adverse design conditions.

3.4.3. Technical Reviews

Technical reviews are performed for designs that are within the state of the art. These reviews shall be performed by an individual, or individuals, other than those who performed the original design. Technical reviews may be performed by the originator's supervisor, provided the supervisor did not specify a single design approach or rule out certain inputs used in the design. If the original supervisor does not meet this test, and is the only individual in the organization competent to perform the verification, the originating supervisor may be selected to verify the

design if the Assistant General Manager for Operations approves and documents the selection, with QA concurrence, in advance.

Design verification is performed prior to release or use in other design activities. Any unverified portions of the design are appropriately identified and controlled. The results of design verification are clearly documented, with the identity of the verifier clearly indicated. Activities are performed and outputs are used for formal reference, procurement, or other M&O uses only to completed "released" documents.

3.4.4. Peer Review

Peer reviews are conducted for studies and designs outside the state of the art. Because of the investigative nature of studies that are beyond state of the art, it is required that a review of designs, procedures, tests, data acquisition and reductions, analysis, and interpretation of data for each investigation activity be conducted by a technically qualified peer group other than those who performed the original study or design. Based on input from his design project managers, the Assistant General Manager for Operations shall specify items to be reviewed and, when requested by DOE, will designate peer review candidates for consideration and endorsement by DOE.

3.4.5 Design Changes

Verification of design is performed for all changes to previously verified designs including field changes. Design verification for changes including an evaluation of the effects of those changes on procedures, training, and the overall design are conducted. Where a significant design change is necessary because of an incorrect design, the design process and verification procedure are reviewed and modified as necessary. Design changes are reviewed and approved using the same methods applied to the preparation of the original design.

3.4.6 Computer Programs

Computer programs used for design are controlled by the M&O Software Quality Assurance Plan. Software configuration, verification, and validation processes are described in the CMP. Section 19 of this QAPD addresses this plan.

3.5 DESIGN DEFICIENCY CONTROL

Errors and deficiencies in approved design and design input documentation are documented and resolved in accordance with Section 16 of this QAPD. The impact of such design deficiencies on work previously performed using the affected documents are evaluated and corrective measures applied.

3.6 DESIGN DOCUMENTATION

Design drawings, specifications, criteria, and analyses are reviewed by the line organization responsible for the design to ensure that the documents are prepared, reviewed, approved, and released in accordance with procedural requirements. The M&O QA Organization verifies compliance with the QA Program through, audits, surveillances, and reviews.

3.7 DESIGN INTERFACES

Internal and external design interfaces are identified by an interface control document and

controlled in accordance with the M&O Configuration Management Plan and approved procedures.

3.8 CONFIGURATION MANAGEMENT

Configuration control is accomplished in accordance with the M&O Configuration Management Plan and implementing procedures. This system ensures there is a consistent and current M&O-wide understanding of configuration control.

3.9 READINESS REVIEWS FOR DESIGN ACTIVITIES

Readiness reviews of design activities are performed to confirm the following:

- a. Design schedules and related planning documents have incorporated the applicable SEMP factors
- b. Applicable regulatory requirements, codes, standards, and controls have been identified. Implementing administrative and line procedures as well as procurement documents reflect required design inputs
- c. Design and interface responsibilities are clearly defined in applicable procedures and procurement documents
- d. Design schedules identify milestone design reviews, and technical performance measurement points and parameters
- e. Configuration management procedures for baselining design documents and controlling subsequent changes are generated, approved, and personnel trained in their use prior to start of design activities
- f. The activity is mature enough to proceed to the next implementation phase.

SECTION 4 PROCUREMENT DOCUMENT CONTROL

4.0 GENERAL

Quality assurance controls specified in this section are applicable to procurement document control activities at all levels throughout the M&O organization where quality affecting services are procured. This section addresses the requirements for the preparation, review, and approval of procurement documents and subsequent changes.

The M&O Quality Assurance Program described in this section and associated procedures implements the committed requirements of QARD Section 4.

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

4.1.1 Planning

The applicable Quality Administrative Procedure details the generation, review, and approval of procurement documents. Planning includes the detailing of the identification of the need for the specific service, determining the specific work and deliverables to be accomplished, identify the appropriate technical and quality assurance requirements, and evaluating the potential sources of the service. Planning preparation also allows for sufficient time for training of personnel on the applicable implementing procedures prior to the time quality effecting work is to be performed.

4.1.2 Document Preparation

In preparing the M&O issued procurement documents for services, the following is included in the procurement document package, as appropriate:

- a. A statement of the scope of work to be performed by the contractor
- b. Technical requirements to meet Design Criteria
- c. Quality assurance program requirements:
 - Reference to, and/or inclusion of, quality assurance program requirements of the QARD commensurate with the scope, complexity, and safety implications of the work, as determined by the procurement requestor
 - A statement allowing the contractor to work to the M&O QA Program or instructions to incorporate QARD requirements into contractor implementation procedures.
 - Verification by QA that the contractor has incorporated appropriate provisions of the QARD in subtier procurement documents and contractor procedures
 - The right of access by the M&O to contractor and subtier facilities and records for QA verification purposes
 - Documentation and submittal of reports and records be included in the procurement document

- Identification of M&O requirements for reporting and approving the disposition of corrective actions documentation
- Verification that the contractor has received applicable indoctrination and training on the M&O QA Program and M&O procedures to perform the work if M&O QA Program is to be used.

4.1.3 Review and Revision

Procurement documents are reviewed by the M&O technical discipline requiring the service and the quality assurance organization prior to contract award to ensure that the applicable technical and quality assurance program requirements are included. If the procurement document requires revision, it shall undergo the same level of review as the original procurement document. Personnel performing the review receive training in the applicable Quality Administrative Procedure and have access to pertinent information and an adequate understanding of the technical and quality assurance requirements imposed on the contractor.

4.1.4 Approval

Once the procurement document is approved by the technical and quality assurance representatives, it is submitted to the M&O Contracts and Subcontracts Manager for final approval.

4.2 DOCUMENT CONTROL

Procurement documents that are quality affecting are controlled by the document control provisions described in Section 6 of this QAPD.

4.3 DOCUMENTATION

Records of procurement of quality affecting services are retained in the Quality Assurance records system as specified in Section 17 of this QAPD.

SECTION 5 PLANS, PROCEDURES, AND DRAWINGS

5.0 GENERAL

M&O quality affecting activities are prescribed by plans, procedures, and drawings. These documents include or reference the appropriate quantitative and qualitative acceptance criteria for determining the acceptance of prescribed activities. The planning, preparation, review, approval, issuance, and training of personnel to these documents is accomplished prior to the start of quality affecting work.

The M&O Quality Assurance Program described in this section and associated procedures implements the committed requirements of QARD Section 5

5.1 M&O PLANS, PROCEDURES, AND DRAWINGS

Plans are developed, reviewed, and approved in accordance with applicable DOE Orders and the QARD. The M&O quality and line procedures incorporate the committed requirements from the applicable sections of the QARD. QA ensures that all applicable requirements are addressed prior to approval. Quality Administrative and Line Procedures are developed using the applicable M&O Quality Administrative Procedure. These implementing procedures are reviewed by those groups that have actions in the procedures; comments are resolved; and documentation of the resolutions are retained in the QA Records Management System. Generation, review, and approval of drawings are also controlled by M&O line procedures. Any changes to these documents undergo the same approval process as the original.

5.2 USE OF PROCEDURES BY M&O TEAM MEMBERS AND SUBCONTRACTORS

Any procedures used by M&O team members and subcontractors shall meet the requirements of the OCRWM QARD for their particular scope of work. The cognizant M&O manager responsible for the scope of work and the Quality Assurance Manager review and approve the procedures to be used prior to any quality affecting work being performed to these procedures. All subsequent changes to these procedures repeat this approval process.

5.3 PROCEDURE REVIEW

Quality Administrative Procedures and Line Procedures are reviewed by an individual knowledgeable in the area affected by the procedure at a frequency not to exceed 2 years. The M&O Manager responsible for the development of the procedure has the responsibility for performing this review. This review verifies the procedure remains consistent with current requirements. The results of these reviews are documented and retained in the QA Records Management System.

SECTION 6 DOCUMENT CONTROL

6.0 GENERAL

M&O develops documents that provide direction for M&O quality affecting activities. This QAPD section addresses the preparation, issue, and change controls for such documents. The M&O Secretariat has overall responsibility for M&O document control.

The M&O Quality Assurance Program described in this section and associated procedures implement the committed requirements of QARD Section 6.

6.1 CONTROL SYSTEM

6.1.1 Document Preparation and Change

Preparation, issue, and changes to plans, procedures, drawings, and other documents specifying activities affecting quality are controlled by the applicable Quality Administrative Procedure to ensure that correct documents are being used. The documents to be controlled are identified, distribution established, and responsibilities identified, for the preparation, review, approval, and issuance. Documents, including changes, are reviewed for adequacy, completeness, and correctness by authorized personnel prior to approval and issuance.

Major changes to documents are reviewed and approved by the same organization that performed the original review and approval unless other organizations are specifically designated. The reviewing organization has access to pertinent background data or information upon which to base their approval.

Major changes are those changes that constitute a modification to a QA program document changing previously established M&O policy, Quality Assurance program requirements, technical requirements, or a previously established level of control.

Minor changes, such as inconsequential editorial corrections, do not require the same review and approval. Persons authorized to implement a minor change are clearly delineated.

6.1.2 Issuance and Distribution

Document issuance and distribution is controlled to ensure that correct, applicable, and current documents are available to M&O personnel performing quality affecting activities. Relevant documents are issued prior to commencing quality affecting work. Documents are issued and distributed in accordance with the applicable Quality Administrative Procedure.

The Quality Administrative Procedure for document control addresses the following provisions:

- a. Identification and marking of documents are described.
- b. A receipt acknowledgement is maintained documenting receipt of issued documents.
- c. Distribution lists are maintained for controlled documents.
- d. For documents that require verification, but need to be released prior to verification, the unverified portions are clearly identified "as verification pending." In such instances, these

documents are restrictively controlled and authorized for release only by appropriate signature authority, and the basis for their release is documented.

- e. Procedures detail the marking, removal, or destruction of obsolete or superseded controlled documents.
- f. A controlled document list is maintained that provides the current revision status for all controlled documents.
- g. Resolution of review comments is accomplished for comments considered mandatory prior to approval and issuance of the document.

SECTION 7 CONTROL OF PURCHASED SERVICES

7.0 GENERAL

The M&O procurement program is limited to the purchase of services. The M&O Quality Assurance Program described in this section and associated procedures implement the committed requirements of QARD Section 7.

7.1 CONTRACTOR QUALITY ASSURANCE PROGRAMS

As part of the selection process, the contractor's QA program, or the contractor's ability to work to the M&O QAPD, is reviewed by M&O QA and accepted prior to contracting for services. The acceptance of the contractor's QA program along with their experience is considered heavily in the selection process. However, all quality affecting work shall be in compliance with the requirements of the QARD and the responsibilities described in this QAPD.

7.2 M&O CONTROL OF PURCHASED SERVICES

The applicable Quality Administrative Procedure describes the methods used to evaluate and document a Contractor's ability to meet M&O's expectations for performing quality affecting work.

7.2.1 Procurement Planning

Procurement planning is accomplished and documented as early as practicable to provide the appropriate interface compatibility and ensure a systematic approach to the procurement process. Procurement planning addresses the following:

- a. The quality affecting services to be performed
- b. Who is to perform the work and for whom
- c. How the work is to be accomplished
- d. When the work is to be accomplished.

7.2.2 Contractor Selection

Methods and criteria for evaluating contractor capabilities and selecting contractors is in accordance with the applicable Quality Administrative Procedure. The cognizant M&O requisitioning manager, the Subcontracts Manager, and the Quality Assurance Manager participates in the contractor selection process.

7.2.3 Contractor Performance Evaluation

Contractor performance evaluations, including reviews, audits, and surveillances, as appropriate, will be commensurate with the relative importance, and complexity of the procured services and the Contractor's past quality performance. For subcontracted work, the primary contractor is required to impose all applicable QARD requirements to lower tier contractors. Subtier

evaluation, if appropriate, is performed by M&O QA. Evaluation schedules are established in advance and implemented to ensure conformance with procurement document requirements prior to the start of quality affecting work.

7.2.4 Change Control

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

7.2.5 Acceptance of Services

Acceptance of purchased services is based on one or more of the following techniques:

- a. Technical review of the purchased data or report
- b. Surveillances or audits of the contractor
- c. Review of objective evidence for conformance to the procurement document requirements
- d. Evaluation of contractor certificates of conformance for services to ensure validity and documentation of results.

SECTION 8
**IDENTIFICATION AND CONTROL OF MATERIALS,
PARTS, AND COMPONENTS**

8.0 GENERAL

Under the present scope of work, the M&O QA Program does not necessitate the establishment of management controls for Section 8 of the QARD. If the M&O scope of work changes to require this, then the QA Program shall be revised accordingly. This would require a revision to the QAPD, the generation, approval, and controlled issuance of implementing procedures and personnel trained to the QAPD revision and implementing procedures prior to any quality affecting work being performed in this area.

SECTION 9 CONTROL OF PROCESSES

9.0 GENERAL

Under the present scope of work, the M&O QA Program does not necessitate the establishment of management controls for Section 9 of the QARD. If the M&O scope of work changes to require this, then the QA Program shall be revised accordingly. This would require a revision to the QAPD, the generation, approval, and controlled issuance of implementing procedures and personnel trained to the QAPD revision and implementing procedures prior to any quality affecting work being performed in this area.

SECTION 10 INSPECTION

10.0 GENERAL

Under the present scope of work, the M&O QA Program does not necessitate the establishment of management controls for Section 10 of the QARD. If the M&O scope of work changes to require this, then the QA Program shall be revised accordingly. This would require a revision to the QAPD, the generation, approval, and controlled issuance of implementing procedures and personnel trained to the QAPD revision and implementing procedures prior to any quality affecting work being performed in this area.

SECTION 11 TEST CONTROL

11.0 GENERAL

Under the present scope of work, the M&O QA Program does not necessitate the establishment of management controls for Section 11 of the QARD. If the M&O scope of work changes to require this, then the QA Program shall be revised accordingly. This would require a revision to the QAPD, the generation, approval, and controlled issuance of implementing procedures and personnel trained to the QAPD revision and implementing procedures prior to any quality affecting work being performed in this area.

SECTION 12
CONTROL OF MEASURING AND TEST EQUIPMENT

12.0 GENERAL

Under the present scope of work, the M&O QA Program does not necessitate the establishment of management controls for Section 12 of the QARD. If the M&O scope of work changes to require this, then the QA Program shall be revised accordingly. This would require a revision to the QAPD, the generation, approval, and controlled issuance of implementing procedures and personnel trained to the QAPD revision and implementing procedures prior to any quality affecting work being performed in this area.

SECTION 13
HANDLING, STORAGE, AND SHIPPING

13.0 GENERAL

Under the present scope of work, the M&O QA Program does not necessitate the establishment of management controls for Section 13 of the QARD. If the M&O scope of work changes to require this, then the QA Program shall be revised accordingly. This would require a revision to the QAPD, the generation, approval, and controlled issuance of implementing procedures and personnel trained to the QAPD revision and implementing procedures prior to any quality affecting work being performed in this area.

SECTION 14
INSPECTION, TEST, AND OPERATING STATUS

14.0 GENERAL

Under the present scope of work, the M&O QA Program does not necessitate the establishment of management controls for Section 14 of the QARD. If the M&O scope of work changes to require this, then the QA Program shall be revised accordingly. This would require a revision to the QAPD, the generation, approval, and controlled issuance of implementing procedures and personnel trained to the QAPD revision and implementing procedures prior to any quality affecting work being performed in this area.

SECTION 15
CONTROL OF NONCONFORMING ITEMS

15.0 GENERAL

The requirements addressed in QARD Section 15 are not addressed. The identification of nonconformances with the requirements and commitments of the M&O QA Program shall be identified, evaluated, corrected, and documented as described in Section 16 of this document. If the scope of work for the M&O changes and requires the M&O to write nonconformance reports, then this section of the QAPD shall be revised, an implementing procedure shall be generated, approved and issued, and training of personnel shall be completed prior to the implementation of the revised program.

SECTION 16 CORRECTIVE ACTION

16.0 GENERAL

Conditions adverse to quality are promptly identified, documented, evaluated to determine the degree of significance, and corrected in a timely manner. Such conditions are reported on Corrective Action Reports. These Corrective Action Reports are routinely reported to keep management apprised of status and closely tracked to closure. M&O personnel are required to identify such conditions in accordance with the applicable Quality Administrative Procedure. Identification of such deficiencies is not limited to the QA organization, but is the responsibility of all M&O personnel.

The M&O Quality Assurance Program described in this section and associated procedures implements the committed requirements of QARD Section 16.

16.1 CONDITIONS ADVERSE TO QUALITY

Conditions adverse to quality exist wherever program requirements are not met and are reported on Corrective Action Reports. Examples of conditions adverse to quality are programmatic deficiencies such as defective software, procedures, records, unverified computer codes, activities, or actions that result in failure to comply with established procedures, plans, and other requirements.

16.2 SIGNIFICANT CONDITIONS ADVERSE TO QUALITY

Significant conditions adverse to quality are those conditions 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, or the validity or credibility of site characterization conclusions. These conditions are evaluated to determine root cause, generic implications to the program, immediate remedial corrective action, and action to be taken to preclude recurrence. When a condition is determined to be a significant condition adverse to quality, appropriate management is immediately notified.

16.3 IDENTIFICATION OF CONDITIONS ADVERSE TO QUALITY

Conditions adverse to quality are identified as a result of audits, surveillances, and reviews or the performance of normal work activities of line personnel and suppliers working to the M&O QA Program. Conditions adverse to quality are documented on Corrective Action Reports in accordance with the applicable Quality Administrative Procedure and, as such, are uniquely identified with a report number, used to track the deficiency to completion of corrective actions.

16.4 EVALUATION

Conditions adverse to quality are evaluated to determine the degree of significance, root cause, and actions required to correct deficiencies and preclude recurrence.

16.5 CORRECTIVE ACTION

After conditions adverse to quality are evaluated, planned corrective action is documented by the responsible organization for resolving the deficiency. QA then reviews the planned corrective action to ensure that QA requirements are satisfied. This is required for the remedial actions and

corrective actions to preclude recurrence. Upon satisfactory review of the plan, corrective actions are implemented.

16.6 VERIFICATION OF COMPLETED CORRECTIVE ACTIONS

QA verifies the satisfactory completion of all corrective actions and, if the condition was significant, also verifies the actions taken to preclude recurrence. This verification document is part of the close-out process.

16.7 TRENDING

Audit reports, surveillance reports, corrective action reports, and management assessments are analyzed for possible trends and identification of root causes for repetitive deficiencies. Adverse trends are evaluated to determine program impact and subsequent corrective actions. Any significant adverse trends are promptly reported to senior M&O management.

The applicable Quality Administrative Procedure for trending includes the following considerations:

- a. The quality indicators trended
- b. The methods of data handling such as gathering, collecting, sorting, grouping, and coding
- c. The statistical processes used to analyze and report the data
- d. The actions taken when an adverse trend is identified
- e. The type, distribution, and frequency of issue of trend reporting.

16.8 STOP WORK

If it is determined that a condition adverse to quality presents a serious negative impact on the M&O Program, a Stop Work order will be issued by M&O management. This order will remain in effect until the conditions causing the Stop Work have been alleviated. The implementation of the Stop Work process is governed by the appropriate Quality Administrative Procedure. Stop Work authority is also discussed in Section 1.6 of this QAPD.

SECTION 17 QUALITY ASSURANCE RECORDS

17.0 GENERAL

The QA Records Program for the M&O is accomplished in accordance with written plans and procedures. These documents describe the integrated set of activities for creating, identifying, collecting, controlling, processing, organizing, distributing, storing, preserving, retrieving, and disposing of Program QA records. These documents identify responsibilities of the Quality Assurance organization and other organizations.

This section describes provisions established by M&O to implement QA records program activities.

The M&O Quality Assurance Program described in this section and associated procedures implements the committed requirements of QARD Section 17.

17.1 M&O QA RECORDS SYSTEM

The M&O Records Management System is decentralized in that Records Centers (RCs) are established at the M&O Headquarters, the Las Vegas, Nevada, Office, and the MRS office in Charlotte, North Carolina, which serve as record collection points. The RCs are established in accordance with NWMS M&O "Records Management Policies and Requirements (RMPR)."

The QA records system is a subset of the overall records management system. The M&O Secretariat prepares and issues the RMPR and retains responsibility for the total QA records system, while delegating records collection for work performed by the Las Vegas office and the MRS office to the two offices.

Control and maintenance of QA records are delegated to the M&O Secretariat by M&O Headquarters. Control and maintenance of QA records generated or received by Las Vegas or Charlotte are retained by them. M&O Record Centers submit completed records to the OCRWM Headquarters CRF, as directed by OCRWM. Controlled documents and technical baseline documents, as appropriate, specify records to be generated, supplied, or maintained.

17.2 RECORD DEFINITION

M&O Line and Quality Administrative Procedures and program plans define minimum QA records generated as a result of QA Program implementation. In general, the following documents are considered QA records:

- a. Individual documents that are executed, completed, and authenticated 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 the Quality Assurance Program
- c. Procurement documents subject to quality assurance controls
- d. Other documents, such as plans, drawings, correspondence, specifications, technical data, books, maps, papers, photographs, and data sheets that are part of the technical baseline

- c. Other materials that provide data and document quality, regardless of physical form or characteristic including magnetic media.

A complete record is a document that has been completed or whose revision would normally consist of the reissue of the document, and is signed and dated by the originator and by the person authorized to approve the record.

17.3 RECORD GENERATION

The applicable design specifications, procurement documents, procedures, and other controlled documents specify the records to be generated, supplied, or maintained by M&O.

Documents designated to become records shall 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 legible reproductions. M&O RCS maintain lists that contain the signatures and initials of personnel authorized to authenticate records.

Completed records are suitably protected by the record initiator prior to turnover to the appropriate RC.

17.4 RECEIPT OF RECORDS

The M&O Records Center is responsible for organizing and implementing a system of control for records for permanent and temporary storage in accordance with the M&O Quality Assurance Records Management Plan. The receipt control system is structured to permit a current and accurate assessment of the status of records during the receiving process. The receipt control system includes:

- a. The method for designating the required records to be maintained
- b. The method for identifying the records received
- c. Procedures for receipt and inspection of incoming records.

M&O Records Center personnel receiving QA records provide protection from damage, deterioration, or loss during the time that the records are in their possession.

17.5 RECORDS IDENTIFICATION

The Records Indexing System provides sufficient information to permit timely retrieval. It identifies the relationship between records and the items and activities to which they apply. Records are directly traceable to programmatic information, such as project, contract number, WBS number, preparing organization, author, date, title, subject, etc. The indexing system provides for location identification of the record within the system.

17.6 RECORDS STORAGE

Records are controlled from the time they are completed until they are stored in predetermined locations that meet the requirements of the OCRWM QARD. The storage procedure includes:

- a. The description of the storage facility
- b. The filing system to be used
- c. The method for verifying that the records received are in agreement with the transmittal documents and the records are legible
- d. The method for verifying that the records are those designated
- e. Rules governing access to and control of the files
- f. The method for maintaining control of and accountability for records removed from the storage area
- g. The method for filing supplemental information.

17.7 PRESERVATION AND SAFEKEEPING

Provisions have been made to prevent damage from moisture, temperature, and pressure. Document records are firmly attached in binders or placed in folders or envelopes for storage in steel filing cabinets or on shelving in containers. If used, special processed records (e.g., radiographs, photographs, negatives, microfilm, magnetic material, etc.) are protected to prevent damage from excessive light, stacking, electromagnetic fields, temperature, and humidity. Measures to provide for replacement, restoration, or substitution of lost or damaged records are detailed in the applicable Quality Administrative Procedure.

17.8 CORRECTED INFORMATION

Records are corrected as specified in the applicable Quality Administrative Procedure. All corrections include the date and the identification of the person authorized to issue such corrections and do not obliterate the corrected data.

17.9 RETRIEVAL

The storage system provides for retrieval of information in a timely manner.

17.10 ACCESS CONTROL

Lists are maintained of designated personnel who may access the files in the M&O Records Center. These lists are maintained and dated with the current authenticated issue of the list posted in the entrance to the Records Centers or on the top drawer of any appropriately approved fireproof filing devices that are used for temporary storage.

17.11 RECORDS CLASSIFICATION

For records retention purposes, all M&O records are classified as lifetime and retained until turnover to DOE OCRWM.

SECTION 18 AUDITS

18.0 GENERAL

The M&O audit program provides an independent verification of the status, adequacy, compliance, and implementation effectiveness of the M&O QA Program. Audits are performed to verify conformance with QA Program requirements, procedures, and technical adequacy of procedures and techniques used to perform quality affecting activities.

The M&O Quality Assurance Program described in this section and associated procedures implements the committed requirements of QARD Section 18.

18.1 AUDIT PROGRAM IMPLEMENTATION

The applicable Quality Administrative Procedure establishes the system for planned audits to verify compliance with quality and technical requirements. Audits include objective evaluation of work areas, quality affecting activities, processes, and items; reviews of documents and records, quality related practices, procedures, and instructions to determine the effectiveness of implementation of the QA program and the technical adequacy of the work being performed.

The M&O QA Manager is responsible for development, implementation, and maintenance of the M&O audit program. The M&O QA organization plans and conducts audits of M&O quality affecting activities, observes DOE audits of selected contractors and national laboratories, and performs audits as requested by DOE OCRWM.

18.2 AUDIT SCHEDULING

Quality assurance audits are scheduled to provide maximum coverage of ongoing quality assurance program activities for which M&O is responsible. Audit schedules are established, based on the status, safety, and mission importance of the work being performed by M&O. Audits of M&O quality affecting activities are scheduled to ensure that applicable elements of the M&O QA Program are audited at least once a year. The frequency of the audits of a given area is also governed by previous findings, procedure changes, requirements, work scope, or management direction. The annual audit schedule includes audits to be performed, activities to be audited, frequency, and scheduled dates. The schedule is periodically reviewed and revised as necessary to ensure that coverage is maintained.

Suppliers' quality assurance programs are audited on a triennial basis. These programs are evaluated for audit at least annually and when major changes to contract scope or work methodology occur.

18.3 AUDIT TEAMS

Each M&O audit is led by a certified lead auditor. Lead auditors and auditors are certified in accordance with the applicable Quality Administrative Procedure. The M&O QA Audits Manager selects and assigns each audit team.

The assigned audit team members are independent of the activities being audited. Technical experts assigned to the audit teams will not have management or technical responsibilities for the activities being audited. The audit team members are assigned by QA management based on programmatic and technical expertise in the work area being audited, by virtue of prior experience, education,

and/or specific documented training. Technical experts will receive training and indoctrination in the applicable Quality Administrative Procedure for audits.

18.4 AUDIT PREPARATION

The lead auditor develops and documents the audit plan for each audit. This plan identifies the audit scope, requirements, audit team, activities to be audited, organizations to be notified, applicable documents, schedule, and written procedures or checklists. The development of the audit checklist considers the results of previous audits as well as the impact of significant changes in scope of work, personnel, organization, or requirements. The audit plan shall be approved by the appropriate quality manager prior to performance of the audit. The team shall consist of one or more auditors. The lead auditor organizes and directs the audit, coordinates preparation and issuance of the audit report, and evaluates responses. The lead auditor will ensure that the audit team is prepared prior to initiation of the audit.

18.5 AUDIT PERFORMANCE

Audits are performed in accordance with the applicable Quality Administrative Procedure and approved checklists as early in the life of the activity as practical and shall continue at intervals consistent with the schedule for accomplishing the activity. Elements that have been selected for audit are evaluated against specified requirements that include an objective evaluation of the quality related practices, procedures, instructions, activities, and items. Objective evidence such as documents and records are examined to the depth necessary to determine if the quality assurance program is effective and properly implemented. Appropriate documents reviews, personnel interviews, and in-progress activities shall be conducted under the direction of the audit team leader. Audit results are reported to management having responsibility for the area audited for review, assessment, and appropriate action. Conditions requiring prompt corrective action will be reported immediately to management of the audited organization.

18.6 AUDIT REPORTING

Audit reports, signed by the lead auditor and his Audit Manager, are issued to the management of the audited organization and will include the following information:

- a. Executive Summary
- b. Description of the audit scope
- c. Identification of the auditors
- d. Identification of persons contacted during audit activities with designation of persons who attended the pre-audit and post-audit conferences
- e. Summary of audit results, including a statement regarding the effectiveness of the quality assurance program elements audited
- f. Description of each audit finding in sufficient detail to enable corrective action to be taken by the audited organization. If the findings meet the criteria for issuing a corrective action report, the applicable Quality Administrative Procedure is used to report the findings, and copies of the corrective action reports are attached.

- g. A date by which the response is due back to QA for evaluation.

Management of the audited organization or activity will investigate the audit findings; determine the root cause of the condition identified in the finding; define and schedule corrective action focused on the cause and measures to prevent recurrence; evaluate the impact of the finding on completed work; and notify Quality Assurance in writing of action taken or planned. The adequacy of audit responses are evaluated by the M&O Quality Assurance Audits Group. A tracking system for audit findings is established to ensure that all findings are appropriately addressed and to maintain a trend analysis of conditions adverse to quality. Follow-up action, including re-audit of deficient areas, are undertaken to verify that effective corrective actions are implemented.

18.7 AUDIT RECORDS

Audit records include, as a minimum, audit plans, audit notifications, audit reports, written responses to audit reports, applicable corrective action reports, and records of completion of corrective action. These records are submitted to the M&O Records Center for processing and storage.

SECTION 19 COMPUTER SOFTWARE DESIGN AND CONTROL

19.0 GENERAL

The design and control of computer software developed by M&O, as well as the control and qualification of acquired software, to be used for quality affecting activities shall be controlled in accordance with the M&O Computer Software Quality Assurance Plan (CSQAP) and the M&O Configuration Management Plan (CMP). The CSQAP implements the requirements of Section 19 of the QARD and the applicable management controls from Sections 1, 2, 3, 4, 5, 6, 7, 16, 17, and 18 of this document. The M&O Computer Software Quality Assurance Plan is consistent with the guidance specified in NUREG-0856, "Final Technical Position on Documentation of Computer Codes for High-Level Waste Management," dated June 1983. The CSQAP shall be reviewed and approved by DOE OCRWM prior to any quality affecting work being performed under the plan.

Appendix A. LIST OF ABBREVIATIONS

ADP	Automated Data Processing
ASME	American Society of Mechanical Engineers
ANSI	American National Standards Institute
CCB	Change Control Board
CFR	Code of Federal Regulations
CMP	Configuration Management Plan
CRF	Central Records Facility
DOE	Department of Energy
M&O	Management and Operating
MGDS	Mined Geologic Disposal System
MRS	Monitored Retrieval Storage
NQA-1	ANSI/ASME Standard NQA-1-1989 "Quality Assurance Program Requirements for Nuclear Facilities"
NWMS	Nuclear Waste Management System
NRC	Nuclear Regulatory Commission
NUREG	Nuclear Regulation
OCRWM	Office of Civilian Radioactive Waste Management
QA	Quality Assurance
QAPD	Quality Assurance Program Description
QARD	Quality Assurance Requirements Document
SEMP	Systems Engineering and Management Plan
RCs	Records Centers
RMPR	Records Management Policies and Requirements
TESS	TRW Environmental Safety Systems Inc.
WBS	Work Breakdown Structure
YMSCPO	Yucca Mountain Site Characterization Project Office