DOE/UMTRA--400324-0185R4

DE93 010585

Uranium Mill Tailings Remedial Action Project Office
Albuquerque Field Office
U.S. Department of Energy
Albuquerque, New Mexico 87115

UMTRA PROJECT OFFICE

QUALITY ASSURANCE PROGRAM PLAN

June 1992

RECOMMENDED APPROVAL BY:

UMTRA PROJECT QUALITY ASSURANCE MANAGER DATE

RECOMMENDED APPROVAL BY:

UMTRA PROJECT TECHNICAL SUPPORT GROUP LEADER DATE

APPROVED BY:

UMTRA PROJECT MANAGER DATE

DISCLAIMER

UMTRA DEPARTMENT OF ENERGY
QUALITY ASSURANCE PROGRAM PLAN

RECORD OF REVISION

REVISION No.	SECTION	REVISION PAGE No(s)	DATE REVISED
0	...ORIGINAL		JUNE 1983
1	...TOTAL REVISION...		SEPTEMBER 1986
2	...TOTAL REVISION...		JULY 1989
3	...TOTAL REVISION...		MARCH 1990
4	...TOTAL REVISION...		JUNE 1992

The Quality Assurance Program Plan was revised effective June 1992 in order to incorporate the requirements contained in DOE Order 5700.6C.

ACRONYMS

This list of acronyms is a guide to terms used in this manual in association with the UMTRA Project.

AL	Albuquerque Field Office (DOE)
CAR	Corrective Action Request
CNG	Chem-Nuclear Geotech, Inc.
DOE	U.S. Department of Energy
DOE-AL	U.S. Department of Energy, Albuquerque Field Office
DOE-AL OQD	U.S. Department of Energy, Albuquerque Field Office Operations Quality Division
DOE-HQ	U.S. Department of Energy Headquarters
UMTRA PO	U.S. Department of Energy Uranium Mill Tailings Remedial Action Project Office
DR	Deficiency Report
ES&H	Environment, Safety and Health
EM	Environmental Restoration and Waste Management
EPA	U.S. Environmental Protection Agency
G&M	Geraghty & Miller, Inc.
JEG	Jacobs Engineering Group Inc.
NITS	National Institute of Technical Standards
NEPA	National Environmental Policy Act
NRC	U.S. Nuclear Regulatory Commission
OESP	Office of Energy and Special Programs
OGC	Office of General Counsel
OQD	Operations Quality Division (DOE/AL)
PDCS	Project Document Control System
PO	Project Office
QA	Quality Assurance
QAD	Quality Assurance Department (TAC)
QAM	Quality Assurance Manager (DOE & TAC)
QAPP	Quality Assurance Program Plan
QC	Quality Control
RAC	Remedial Action Contractor
RAIP	Remedial Action Inspection Plan
RAP	Remedial Action Plan
RFW	Roy F. Weston, Inc.
SH&B	Sergent, Hauskins & Beckwith
TAC	Technical Assistance Contractor
TAC-QAD	Technical Assistance Contractor Quality Assurance Department
TSGL	Technical Support Group Leader (DOE)
UMTRA	Uranium Mill Tailings Remedial Action
UMTRCA	Uranium Mill Tailings Radiation Control Act of 1978

TABLE OF CONTENTS

LIST OF FIGURES

FOREWORD

The Uranium Mill Tailings Remedial Action (UMTRA) Project was established to accomplish remedial actions at inactive uranium mill tailings sites in accordance with Public Law 95-604, the Uranium Mill Tailings Radiation Control Act of 1978 (UMTRCA). The UMTRA Project's mission is to stabilize and control the residual radioactive materials at designated sites in a safe and environmentally sound manner so as to minimize or eliminate radiation health hazards to the public.

The U.S. Department of Energy (DOE) UMTRA Project Office (UMTRA PO) directs the overall project. Since these efforts may involve possible risks to public health and safety, a quality assurance (QA) program that conforms to the applicable criteria (set forth in the reference documents) has been established to control the quality of the work. This document, the Quality Assurance Program Plan (QAPP), brings into one document the essential criteria to be applied on a selective basis, depending upon the nature of the activity being conducted, and describes how those criteria shall be applied to the UMTRA Project.

The UMTRA PO shall require each Project contractor to prepare and submit for approval a more detailed QAPP that is based on the applicable criteria of this QAPP and the referenced documents. All QAPPs on the UMTRA Project shall fit within the framework of this plan.

POLICY

The UMTRA Project management considers QA an essential element of all project activities. The UMTRA Project QA program is applicable to all activities that could compromise successful project implementation. It is the policy of the UMTRA Project, as described in this QAPP and implemented by appropriate procedures, to satisfy the applicable QA criteria of all reference documents. The goal is to instill a culture in which there is a commitment to achieving a rising standard of quality. This demands that processes and methods employed to achieve quality be continuously improved.

QA programs for the UMTRA Project are based on applicable portions of the reference documents. These documents shall be used by the UMTRA PO to evaluate the QAPPs of the participating organizations, the project contractors, and task contractors. Not all elements of these documents are applicable in every case, and this is taken into account in the evaluation process.

It is also UMTRA Project policy to apply a graded approach to QA which acknowledges that public health and safety are not always affected, and that an adequate level of quality is also needed for such aspects of the Project as operational reliability and maintainability. Applicable portions of this document shall be implemented to the maximum degree for quality-related functions that are identified as safety-related, and a less stringent but still viable quality level shall be used for other activities on the project.

Since this project also involves research, development, and investigative activities, it is necessary to adapt the criteria to fit the context of the work environment. Such adaptation is the responsibility of each organization preparing a QAPP for the UMTRA Project, with the principal thrust being the assurance that the results of its activities are properly validated, documented, and available for use as a basis for task-related decision making.

1.0 MANAGEMENT

1.1 GENERAL

1.1.1 This section describes the organizational structure, responsibilities, levels of authority, and lines of communication for activities affecting quality for the UMTRA Project and its project contractors. Interfaces between the UMTRA PO and project contractors shall be described in the QAPPs of these respective organizations. From the overall UMTRA Project standpoint, these interfaces are exchanges of technical quality requirements for work to be performed and coordinated until the work is satisfactorily completed.

1.1.2 The UMTRCA authorized the DOE to select and execute a plan of remedial action that satisfies standards set forth by the U.S. Environmental Protection Agency (EPA) and other applicable laws and regulations. Under requirements established by the UMTRCA, the DOE oversees all remedial action activities, from site conceptual design to disposal site selection, determination and mitigation of environmental impacts, remedial action construction, site certification, and initiation of disposal site surveillance and maintenance activities.

1.1.3 Within DOE Headquarters (DOE-HQ), the Assistant Secretary for Environmental Restoration and Waste Management (EM) has been assigned primary responsibilities called forth in the UMTRCA, supported by the Office of General Counsel (OGC) and the Assistant Secretary for Environment, Safety and Health (EH). The program management responsibilities of EM have been assigned to the Office of Environmental Restoration (EM-40), with policy direction and guidance provided by the Off-Site Remediation Division (EM-451) to the UMTRA PO.

1.1.4 The majority of UMTRA Project functions are EM's responsibility. Management of the UMTRA Project is assigned by EM to the DOE Albuquerque Field Office (DOE-AL) in the Project Charter. Authority for field operations has been delegated to DOE-AL and the PO. DOE-AL has been delegated day-to-day authority to manage and execute Project functions within established procurement, real estate, and other approved operational thresholds.

1.1.5 It is the responsibility of the UMTRA PO to ensure that the appropriate QA requirements, procedures, and specifications are reviewed, approved, and implemented to provide confidence that activities or systems will protect public health and safety and ensure successful completion of the Project. Establishment and maintenance of QA controls for the UMTRA Project are instituted in a top-down management approach from the AL Office of the Manager, through the Assistant Manager for the Office of Energy and Special Programs (OESP) and UMTRA Project Manager in coordination with the AL Operations Quality Division (OQD) to the Technical Assistance Contractor (TAC)

and Remedial Action Contractor (RAC). The Project's organizational relationship is illustrated in Figure 1.1.

1.1.6 The objectives of the UMTRA QA program are to ensure the following:

- That management provides planning, organization, direction, control, and support to achieve the UMTRA Program objectives.
- That every employee participates in contributing to improve the quality of products and services.
- That overall performance is reviewed and evaluated using an assessment process.

1.2 UMTRA PROJECT ORGANIZATION

1.2.1 The DOE-AL is the headquarters for the UMTRA Project. The DOE-AL Project responsibility chain includes the Office of the Manager, Assistant Manager for OESP, Assistant Manager for EH, the Director of the DOE-AL OQD, and the Project Manager of the UMTRA Project. The UMTRA Project Manager reports to the Assistant Manager for OESP; the Director for OQD reports to the Assistant Manager for EH; both Assistant Managers report to the Office of the Manager, AL. This organizational relationship is illustrated in Figure 1.2. The QA responsibilities for the UMTRA Project staff are contained in Section 1.3 of this QAPP.

1.2.2 <u>UMTRA PO Manager</u>

a) Responsibility for management of the Project is assigned to the UMTRA Project Manager, who is supported by the Project support group, technical support group, operations group, staff, and selected contractors. Management of the Project is conducted in accordance with overall program policy and guidance provided by DOE-HQ. The Project Office organization is shown in Figure 1.3. Specifically, as listed in the Project Charter (DOE 1986), the Project Manager is responsible for:

1) Implementing DOE-HQ policy and overall program guidance, and recommending changes to DOE-HQ when appropriate.

2) Negotiating, executing, and administering cooperative agreements with State and local governments and Indian tribes.

3) Establishing and executing (in coordination with DOE-HQ) public participation and information programs, acting as liaison with State/local government officials and Indian tribes, and coordinating with DOE regional offices.

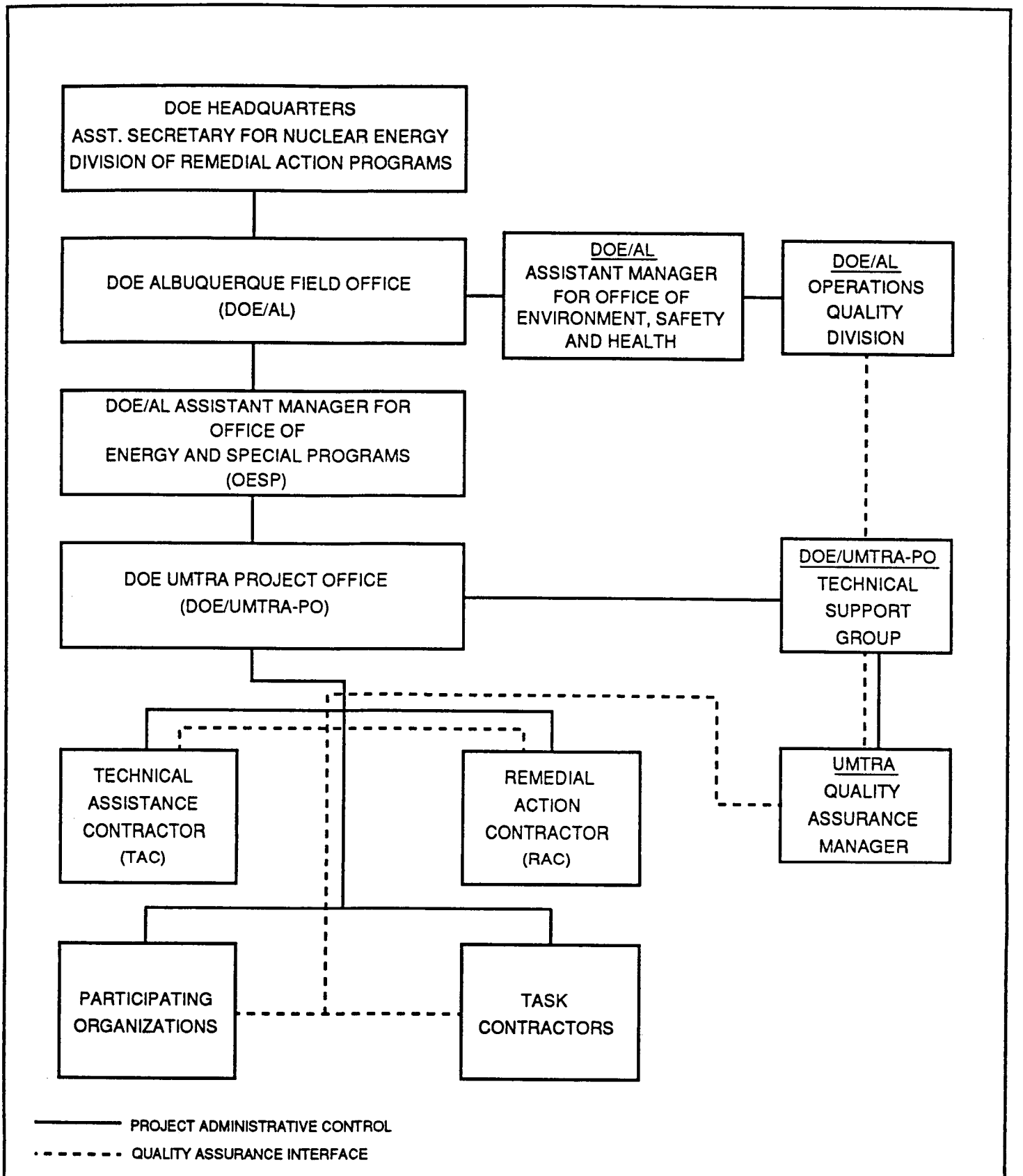

FIGURE 1.1
UMTRA PROJECT
QUALITY ASSURANCE INTERFACE/ADMINISTRATION

PATH I:\FL3.01\QAPP

PQAIA.DRW

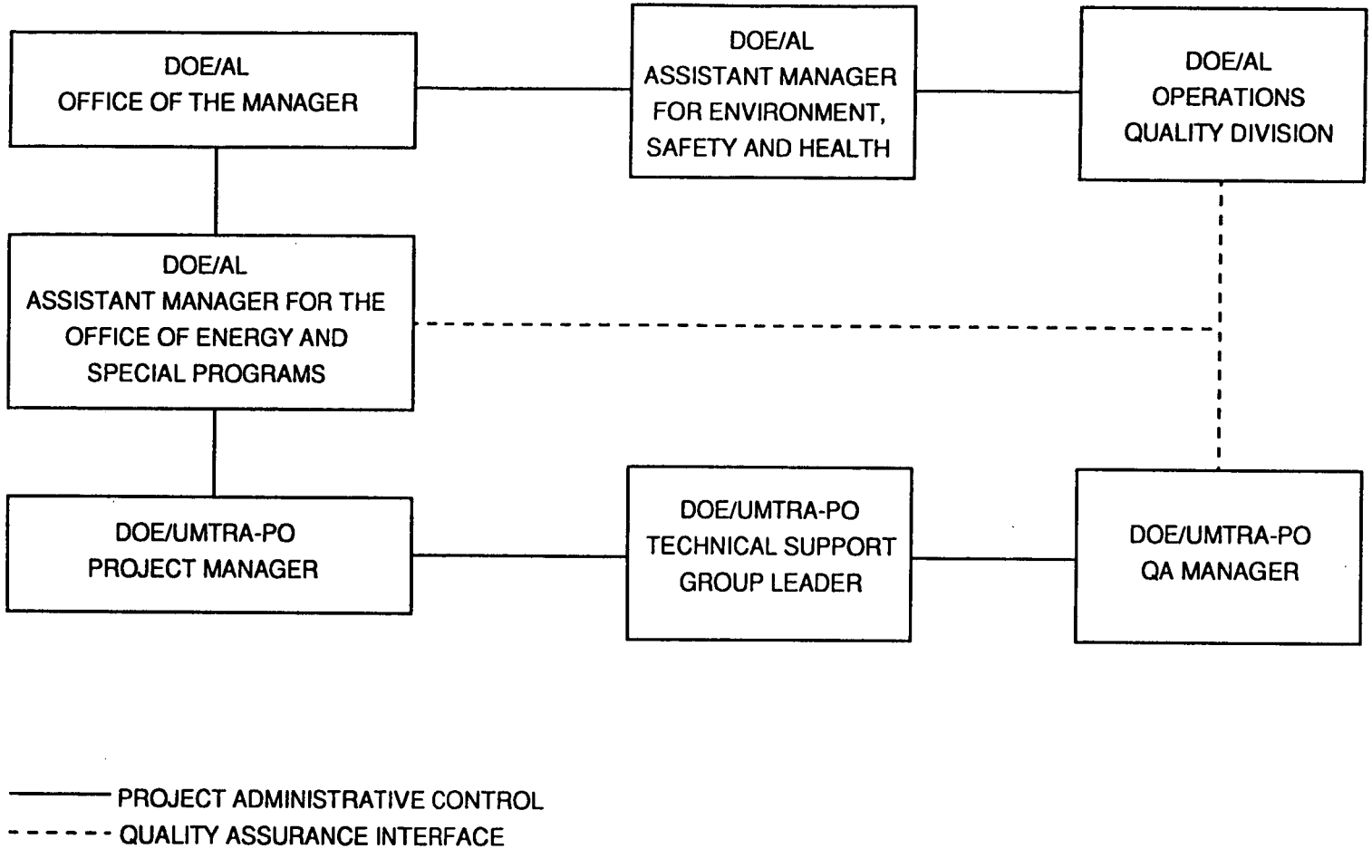

FIGURE 1.2
DOE ALBUQUERQUE FIELD OFFICE
FUNCTIONAL INTERFACE DIAGRAM

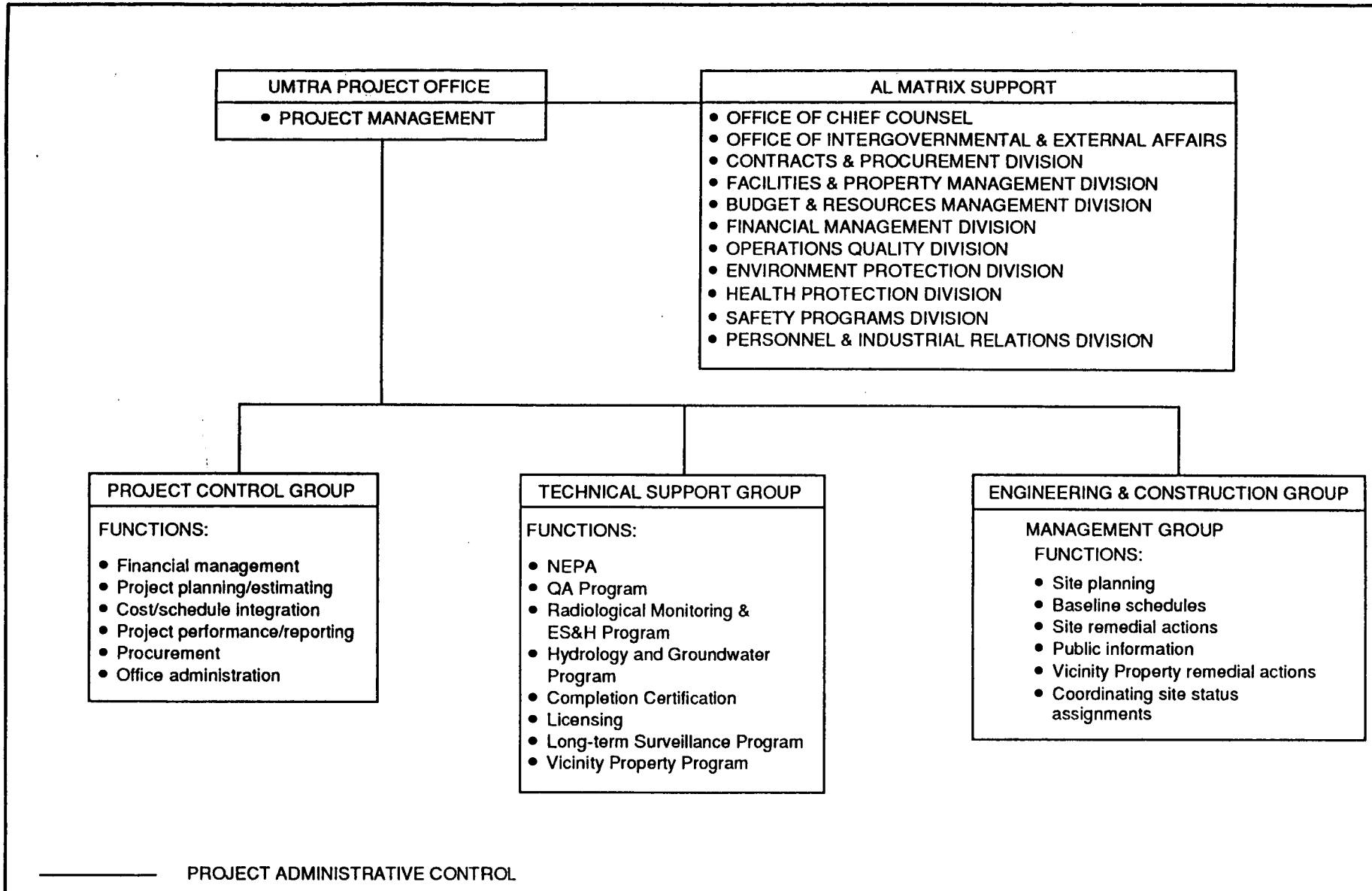

FIGURE 1.3
PROJECT OFFICE ORGANIZATION

4) Establishing a technology development effort in accordance with DOE-HQ guidelines and in coordination with other DOE offices and Federal agencies (NRC and EPA).

5) Managing the survey and inclusion processes for designated vicinity properties, and determining which of those properties require remedial action.

6) Managing mill site characterization, development of site conceptual designs, and remedial action plan (RAP) preparation.

7) Managing the preparation of environmental impact documentation, providing for logistics support of the NEPA process, and supporting DOE-HQ NEPA review and decision-making activities.

8) Managing mill site engineering and design development and vicinity property engineering.

9) Recommending for DOE-HQ approval:

   - Decisions to acquire designated processing sites.
   - Determination that removal of tailings from a processing site is necessary in accordance with DOE policy stated in Project Plan (DOE, 1986).
   - Decisions to acquire lands to be used as disposal sites.

10) Managing radon monitoring programs at each site before, during and after remedial action.

11) Managing mill site and vicinity property remedial actions.

12) Implementing and managing interim and final mill site surveillance and maintenance programs.

13) Preparing and maintaining a Project Plan (DOE, 1986), that describes schedule and resource requirements for the overall Project, and supplemental project documents identifying site-specific schedule and resource requirements for each remedial action site.

14) Preparing and maintaining a Project Management Plan that delineates roles and responsibilities of the UMTRA PO, other supporting field offices, contractors, and the involved states and Indian tribes.

15) Establishing and implementing Project control and management systems in accordance with DOE-HQ guidance to monitor cost, schedule, and technical status to ensure that Project objectives are achieved within budget and on schedule. In accordance with

established change control procedures, recommending for DOE-HQ approval changes in baseline schedules and budgets. Organizing and presenting Project reviews semi-annually and at other times as agreed with DOE-HQ.

16) Monitoring, evaluating and reporting on Project technical, schedule, and cost progress and accomplishments, and the performance of all contractor participants. Instituting or recommending changes in the Project as appropriate to improve progress, efficiency, and public acceptance.

17) Preparing budget planning and execution information in accordance with established procedures and DOE-HQ guidance. Using allotted Project funds within the limitations of the financial plan.

18) Serving as the focal point for contacts with the NRC on Project implementation.

19) Advising and otherwise assisting DOE-HQ in the promulgation of regulations by DOE pursuant to the UMTRCA.

20) Reviewing international activities involving uranium mill tailings remedial action and making recommendations to DOE-HQ concerning possible U.S. participation.

1.2.3 UMTRA PO Engineering and Construction Group Leader

a) The UMTRA PO Engineering and Construction Group Leader reports directly to the UMTRA Project Manager, and is responsible for overall management of the engineering and construction group as follows:

1) Reviewing and approving site planning activities.

2) Coordinating review and approval of baseline schedules.

3) Reviewing and approving site remedial action activities.

4) Coordinating site status assessments.

5) Vicinity property management remedial actions.

6) Coordinating Project activities with the tribes, states, local governments, property owners, and the public.

b) The UMTRA PO Engineering and Construction Group Leader shall review all UMTRA Site Manager correspondence with controversial, policy, or legal implications.

1.2.4 UMTRA PO Technical Support Group Leader

a) The UMTRA PO Technical Support Group Leader (TSGL) reports directly to the UMTRA Project Manager, and is responsible for overall management of the technical support group as follows:

1) Managing the NEPA process and preparing the associated documents.

2) Coordinating QA program activities (specific QA responsibilities are listed in Section 1.3.3 of this QAPP).

3) Coordinating radiological monitoring and environmental health and safety program activities.

4) Supervising hydrology and groundwater program activities.

5) Supervising completion report and site certification activities.

6) Reviewing site licensing criteria.

7) Coordinating and approving surveillance and maintenance plans.

8) Vicinity property certification.

1.2.5 UMTRA PO Project Control Group Leader

a) The UMTRA PO Project Control Group Leader reports directly to the UMTRA Project Manager, and is responsible for overall management of the Project control group as follows:

1) Supervising financial management planning activities.

2) Coordinating Project planning/estimating activities.

3) Controlling and integrating the cost and schedule activities of the Project.

4) Reporting Project performance.

5) Coordinating review and approval of Project procurement activities.

6) Coordinating office administration support.

1.2.6 The DOE-AL Office of the Manager

a) The DOE-AL Office of the Manager has programmatic responsibility under the Assistant Secretary for Defense Programs (DP-1). The Assistant

Secretary for Environmental Restoration and Waste Management (EM-1), Division of Remedial Action Programs, has overall programmatic responsibility for the UMTRA Project. The administration of the UMTRA Project is the responsibility of the DOE-AL Office.

1.2.7 The DOE-AL Assistant Manager for OESP

a) The Assistant Manager for OESP reports to the DOE-AL Office of the Manager, and is responsible for UMTRA QA as follows:

1) Developing UMTRA Project quality program policies and objectives.

2) Ensuring that adequate and effective procedures and practices are established and implemented consistent with the provisions of the UMTRA Project requirements.

3) Providing QA surveillance and policy guidance for the UMTRA PO.

1.3 UMTRA QA RESPONSIBILITIES

1.3.1 The UMTRA Project Manager

a) The UMTRA Project Manager reports directly to the Assistant Manager for OESP, and is responsible for the quality of work and for directing the QA program as follows:

1) Ensuring that the Project QAPP is developed, implemented, and provided to the Director of OQD for review.

2) Determining, with the assistance of the OQD, the quality objectives and ensuring the establishment of appropriate quality requirements under the UMTRCA.

3) Ensuring the inclusion of quality requirements in contractual documents.

4) Ensuring that QAPPs are developed by contractors.

5) Ensuring contractor implementation of QAPPs and continued compliance to the approved plans.

6) Ensuring inclusion of quality requirements in procurement documentation, as applicable.

7) Ensuring that adequate funding for QA activities and labor requirements is included in the UMTRA Project budget.

8) Providing written responses to the Director of OQD regarding actions taken in connection with recommendations contained in reviews conducted by the OQD.

9) Coordinating QA reviews of the UMTRA Project.

10) Issuing stop work orders for deficient quality operations.

11) Approving design criteria, conceptual design, and final design.

12) Assessing the adequacy of the contractor's quality programs.

13) Assessing the quality of work performed by the contractors.

14) Ensuring that readiness reviews are performed prior to major scheduled or planned work.

15) Performing management self-assessments of the UMTRA QA program and ensuring that corrective actions, as applicable, are promptly implemented.

16) Implementing continuous improvement processes.

1.3.2 The UMTRA PO Technical Support Group Leader (TSGL)

a) The UMTRA Project TSGL reports directly to the UMTRA Project Manager and is responsible for QA activities as follows:

1) Assisting the UMTRA Project Manager in implementing the QA Program.

2) Reviewing contractor quality program activities, reporting results to the UMTRA Project Manager, and requesting follow-up and corrective actions as necessary.

3) Reviewing stop work recommendations from the UMTRA QA Manager for noncompliance, investigating the situation, and reporting findings to the UMTRA Project Manager within one business day.

4) Supervising the QA activities for the UMTRA Project Manager.

5) Determining that audit findings are corrected promptly.

6) Assisting the UMTRA Project Manager in implementing the continuous improvement process.

7) Recommending to the UMTRA Project Manager, independent of RAC and TAC recommendations, that stop work orders be issued for deficient quality operations.

1.3.3 The UMTRA Project QA Manager

a) The UMTRA Project QA Manager reports to the UMTRA Project Manager through the TSGL, and is responsible for:

1) Developing the UMTRA Project QAPP and establishing, implementing, and maintaining the QA Program.

2) Reviewing contractor QAPPs and remedial action inspection plans (RAIPs).

3) Reviewing contractor quality program activities, reporting results to the UMTRA Project Manager, and requesting follow-up and corrective actions as necessary.

4) Conducting QA audits and in-process surveillances, approving audit and in-process surveillance reports, and reviewing the status of actions associated therewith.

5) Reviewing stop work recommendations from the TAC and RAC Program Managers for noncompliance, investigating the situation, and reporting findings to the TSGL within one business day.

6) Supervising and directing the QA activities of the TAC and the RAC.

7) Reviewing and approving audit and surveillance schedules associated with RAC site operations.

8) Accessing work areas and records to identify problems associated with quality requirements.

9) Initiating, recommending, or providing solutions in establishing corrective action.

10) Verifying implementation of corrective actions and solutions.

11) Ensuring that processing, delivery, installation, or use of deficient material or workmanship is controlled until corrective action has occurred. Corrective action includes withholding payment for deficient operations on firm fixed contracts and reporting to the UMTRA Project Manager progress payments made for deficient operations under cost reimbursable contracts.

12) Recommending to the UMTRA Project Manager, independent of RAC and TAC recommendations, to issue stop work orders for deficient quality operations.

1.3.4 The Director of OQD

a) The Director of OQD reports directly to the DOE-AL Office of the Manager through the Assistant Manager for Environment, Safety and Health, and is responsible for:

1) Serving as a focal point and providing consultation to the UMTRA Project Manager on matters relative to the DOE-AL QA Program.

2) Assisting the UMTRA Project Manager in determining the quality objectives and requirements.

3) Reviewing the implementation of both DOE and contractor quality program activities for the UMTRA Project, reporting quality review results to the UMTRA Project Manager, and requesting follow-up reports and corrective actions as necessary.

4) Reporting to the DOE-AL Office of the Manager the results of QA audits and the status of actions associated therewith. Has direct access to the Office of the Manager concerning QA matters if these are not satisfactorily resolved at the Assistant Manager level.

5) Providing quality policy guidance, document review, and audit/surveillance assistance.

1.4 PROJECT CONTRACTORS

1.4.1 General

a) The UMTRA PO interfaces between Project contractors and other participating organizations by providing technical and quality requirements for work to be developed, performed, and coordinated until work is completed. Programmatic QA requirements are imposed by the UMTRA PO on all Project contractor and participating organizations. The UMTRA PO conducts quality audits of each of these organizations with the assistance of the DOE-AL OQD or the TAC QA department with the cognizance and participation of Project contractors and participating organizations. Interorganizational interfaces are further described in their project contractors' respective QAPPs.

b) QA personnel for the UMTRA PO, Project contractors, and participating organizations shall report to a management level such that the required authority and organizational freedom is provided and the following functions can be conducted:

1) Have access to work areas to identify problems associated with quality requirements.

2) Initiate, recommend, or provide solutions in establishing corrective action.

3) Verify implementation of corrective actions and solutions.

4) Ensure that processing, delivery, installation, or use of deficient material or workmanship is controlled until corrective action has occurred. Corrective action includes withholding payment for deficient progress on firm fixed contracts and reporting to the UMTRA Project Manager progress payments made for deficient progress under cost reimbursable contracts.

c) The UMTRA PO shall direct and control the UMTRA Project QA Program. Verification of project activities associated with quality is performed by means of QAPP reviews, in-process surveillance and monitoring activities, and QA audits.

1.4.2 TAC Organization

a) The TAC organization is currently made up of the contract team: Jacobs Engineering Group Inc. (JEG); Geraghty & Miller, Inc. (G&M); Roy F. Weston, Inc. (RFW); and Sergent, Hauskins & Beckwith (SH&B). The TAC's organizational structure provides adequate organizational autonomy for the QA function by having the program TAC QAM report to the JEG Albuquerque Operations Manager and to the JEG Corporate QA organization and providing support to the UMTRA QAM. The program organization includes the TAC Project Manager, TAC QAM, and QA specialists, in addition to various disciplinary department managers. This TAC organizational relationship is illustrated in Figure 1.4. The functional relationships and QA program responsibilities are described in the following paragraphs.

1.4.3 TAC Project Manager

a) The TAC Project Manager is responsible for overseeing the overall effort of all TAC technical and administrative activities and interfaces with the UMTRA Project Manager and the TAC QAM. The TAC Project Manager is responsible for organizing, administering, planning, budgeting, and coordinating the program. Also, the TAC Project Manager is responsible

for ensuring that the TAC staff implement and comply with the applicable requirements of the TAC QAPP. All site, department, and task managers report to the TAC Project Manager.

1.4.4 TAC QA Manager

a) The TAC QA Manager is responsible for overseeing and controlling all TAC QA activities in support of the UMTRA Project. The TAC QA Manager interfaces directly with the UMTRA PO QA Manager, the TSGL, and the TAC Project Manager, and reports to the JEG Albuquerque Operations Manager and the JEG Corporate QA organization.

b) The TAC QA Manager has the following authority and responsibilities:

1) Supporting the UMTRA PO QA Manager.

2) Developing and implementing the TAC QA program.

3) Developing and organizing the QA department and administrative staff.

4) Establishing and implementing an indoctrination and training program.

5) Establishing and implementing the audit and surveillance programs and respective schedules.

6) Reviewing all TAC Standard Operating Procedures.

7) Evaluating the effectiveness of the QA program, reporting to managements, and establishing and maintaining interfaces with the TAC and UMTRA PO.

8) Recommending to the TAC Project Manager that work be stopped when activities are not in compliance with contract documents or when unsatisfactory work is being performed. Oral recommendations are to be followed by written recommendations.

9) Establishing plans, schedules, and methods to ensure that QA procedures are followed.

10) Representing the TAC on Project QA matters and in the resolution of QA problems.

11) Reviewing deficiency reports, nonconformance reports, and corrective action reports.

12) Monitoring QA personnel activities, schedules, assignments, and administrative details.

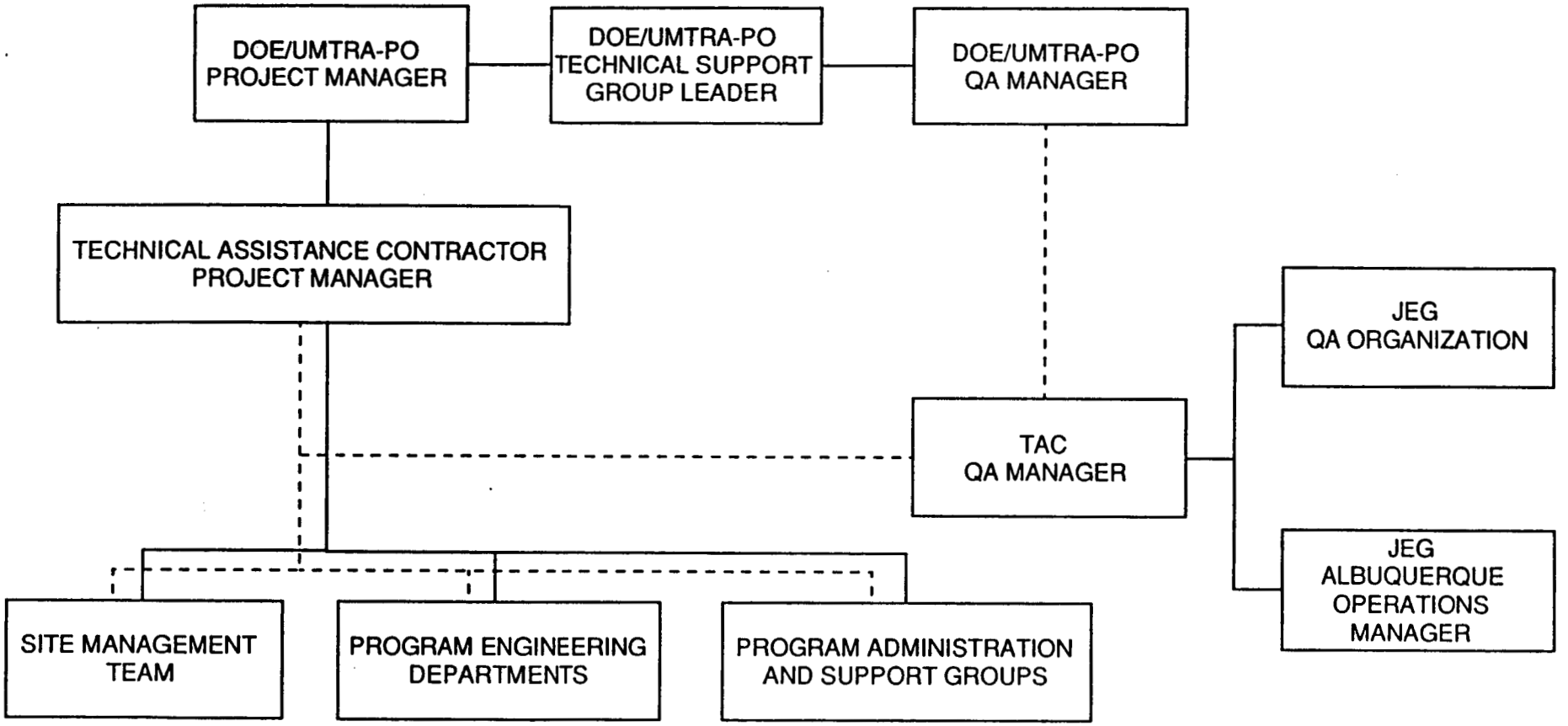

FIGURE 1.4
UMTRA PROJECT
TECHNICAL ASSISTANCE CONTRACTOR FUNCTIONAL DIAGRAM

1.4.5 TAC Quality Assurance Specialist

a) The TAC QA Specialist reports directly to the TAC QA Manager and is responsible for the following:

1) Supporting the UMTRA PO QA Manager in performing Project audits.

2) Establishing audit techniques and procedures.

3) Developing audit schedules, selecting audit team members, and conducting audits under direction from the UMTRA PO QA Manager.

4) Developing audit checklists and preparing audit reports.

5) Performing audit follow-up activities.

6) Maintaining records of audit activities.

7) Preparing and maintaining records of audits and an audit/surveillance tracking system.

8) Providing assistance in developing TAC QAPP and associated SOPs.

9) Participating in trend analysis.

b) Refer to Section 10.0 of this QAPP, Independent Assessments, for methods to accomplish audits and in-process surveillances.

1.4.6 RAC Organization

a) The RAC contractors consist of MK-Ferguson and the State of Utah. The remedial action work at the Salt Lake City site has been completed. Accordingly, the State of Utah's functions and responsibilities are not included in the UMTRA QAPP. The RAC organizational structure provides the RAC QA department adequate organizational freedom to perform QA activities as required by the UMTRA PO. The RAC organization consists of a Project Director, Site Managers, Project Quality Manager, Site Quality Supervisors, and Quality Inspectors. This organizational relationship is illustrated in Figures 1.5 and 1.6. The RAC's functional relationships and QA Program responsibilities are described in the following paragraphs.

1.4.7 RAC Project Director/Contracting Officer

a) The RAC Project Director has the overall responsibility for the successful completion of remedial action construction activities at all assigned UMTRA Project sites as directed by the UMTRA PO. The Project Director's responsibilities include organizing, administering, planning, budgeting, and coordinating the project. All RAC Site Managers, Department Managers,

and Task Managers report to the RAC Project Director. The Contracting Officer has the authority to issue stop work orders for deficient quality operations.

1.4.8 RAC Quality Manager

a) The RAC Quality Manager is responsible for establishing and implementing the RAC QA program, under the direction of the UMTRA PO. The Quality Manager reports directly to the corporate QA Manager; while site quality supervisors report to the Project Quality Manager. The Quality Manager has the following authority and responsibilities:

1) Responding to and supporting the UMTRA PO.

2) Developing and implementing the RAC QA Program and supporting procedures.

3) Developing and organizing the QA department and administrative staff.

4) Establishing and implementing an indoctrination and training program.

5) Developing and implementing an audit program and respective schedules.

6) Stopping work and initiating corrective action when activities are not performed in accordance with project requirements.

7) Identifying the need for corrective action.

8) Initiating, recommending, and/or providing solutions to issues requiring corrective action.

9) Verifying implementation of solutions and corrective action.

10) Evaluating the effectiveness of the QA program, reporting to management, and establishing and maintaining interfaces with the RAC and UMTRA PO.

11) Representing the RAC on Project QA matters, in meetings, and in the resolution of QA problems.

12) Monitoring QA personnel activities, schedules, assignments, and administrative details.

13) Signing-off certificates of compliance/conformance when required and ensuring the quality of site activities.

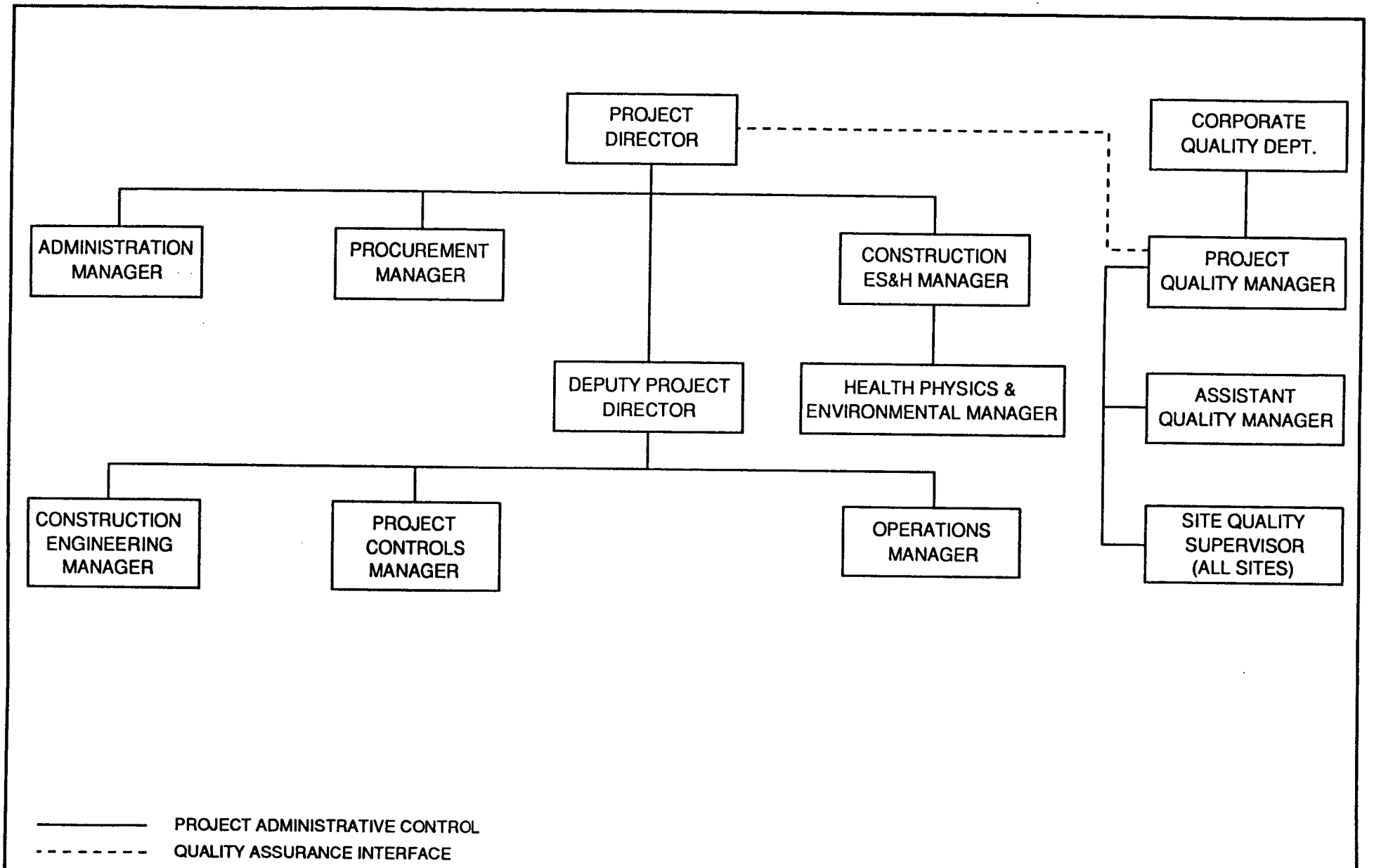

FIGURE 1.5
UMTRA PROJECT
REMEDIAL ACTION CONTRACTOR
PROJECT FUNCTIONAL DIAGRAM

PATH I:\FL3.01\QAPP

RACDIAG1.DRW

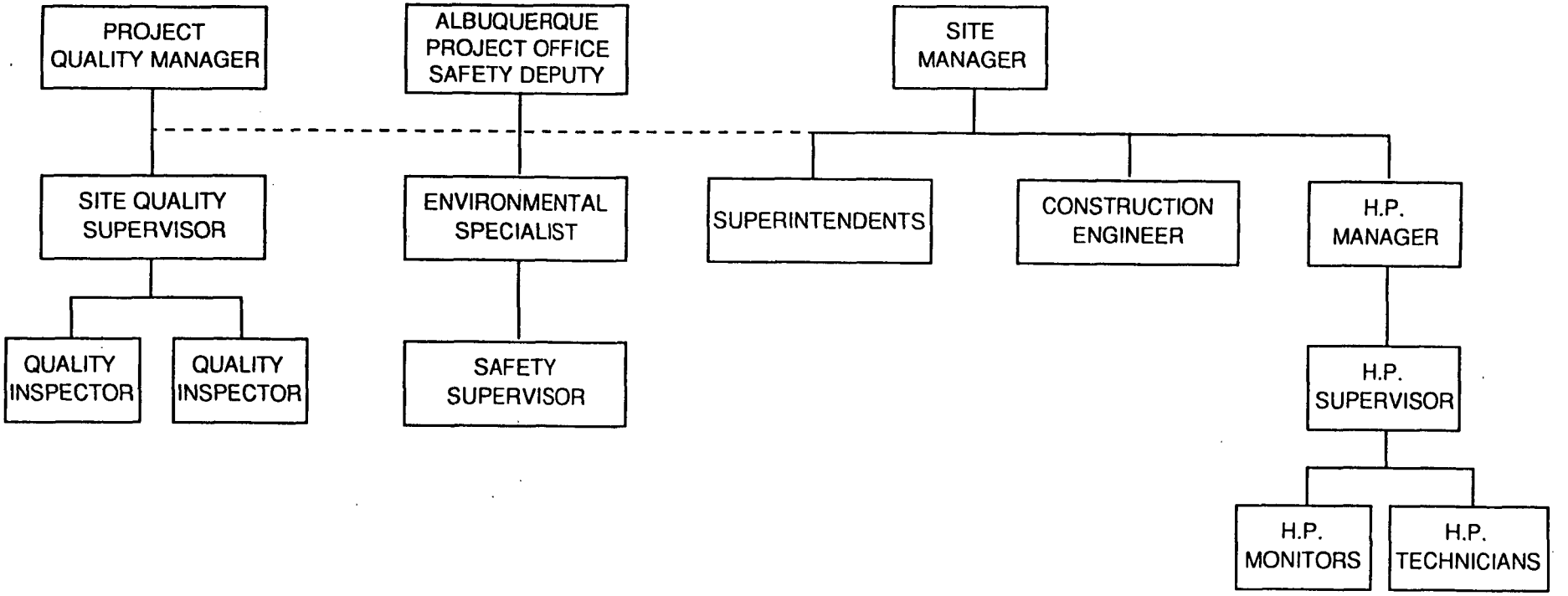

FIGURE 1.6
UMTRA PROJECT
REMEDIAL ACTION CONTRACTOR
SITE FUNCTIONAL DIAGRAM

1.4.9 RAC Site Quality Supervisor

a) The RAC Site Quality Supervisor reports directly to the RAC Quality Manager and supervises the site quality inspection staff. Responsibilities of the Site Quality Supervisor also include the following:

1) Implementing the site RAIP.

2) Controlling remedial action quality control testing and processing, and controlling nonconforming items and materials to preclude delivery and installation.

3) Ensuring the quality of all site activities.

1.4.10 Site Quality Inspectors

a) Site Quality Inspectors report directly to the Site Quality Supervisor. All inspectors are trained and qualified to perform QC activities and tests in accordance with approved requirements, plans, and procedures.

1.5 ORGANIZATIONAL INTERACTIONS

1.5.1 Interactions between the UMTRA PO and other organizations are conducted in accordance with the following paragraphs. Interactions between organizations other than the UMTRA PO shall be described in Project participants' QA program descriptions.

a) U.S. Nuclear Regulatory Commission (NRC)

1) The UMTRA PO QA Manager, with the assistance of the TAC QA Manager, advises the UMTRA Project Manager on matters affecting Project quality prior to communication or meetings with the NRC. The UMTRA Project Manager shall provide direction regarding the course of appropriate action, type of communication, and/or meetings necessary to comply with and respond to NRC project quality issues.

b) State, Local, and Tribal Governments

1) The UMTRA PO directs, as necessary and with the active support of the TAC, all scheduling of meetings and other communications, including community awareness programs, between the UMTRA Project Office and participating state, local, and tribal governments.

c) Other Participating Organizations

1) The UMTRA PO's interactions with other organizations concerning activities affecting Project QA are coordinated by the UMTRA Project

Manager with the assistance of the UMTRA PO QA Manager and the TAC QA Manager when required.

1.6 UMTRA PROJECT WORK DELEGATION

1.6.1 The responsibility for the overall UMTRA Project is retained by DOE-AL. The responsibility for establishing and implementing tasks and selected portions of the QA program has been delegated to the UMTRA PO. Further work has been delegated to the Project contractors and Project participants under the approval and direction of the UMTRA PO. These responsibilities and tasks are documented using action memos and approved plans and procedures.

1.7 DISPUTE RESOLUTION

1.7.1 All Project concerns and differences of opinion involving technical and quality issues presented at any management level are brought to the attention of the managers at that level. If the issue or concern cannot be resolved, it will be presented to the next level of management and progressively up to the DOE-AL Office of the Manager.

1.8 STOP WORK AUTHORITY

1.8.1 The overall authority to stop work on all levels of the UMTRA Project rests solely with the DOE Contracting Officer, who shall be fully informed by the UMTRA Project Manager, the Contracting Officer's representative. Direction to stop work can be issued by any DOE representative whenever imminent danger to personnel health and/or safety is involved.

1.8.2 The personnel responsible for issuing the stop work order shall, in all cases, notify the responsible supervisor or task manager, who in turn shall notify the next level of management, QA, and health and safety personnel as necessary, and the UMTRA PO. The UMTRA PO shall, with the assistance of the TAC QA Manager, investigate all stop work orders to identify causes for the order and to adequately resolve the problems. The UMTRA Project Manager shall be responsible for issuing orders for resumption of work.

1.9 QUALITY ASSURANCE PROGRAM PLANS AND PROCEDURES

1.9.1 QAPPs, site-specific RAIPs, and associated operating procedures shall be developed, reviewed, and approved by the Project contractors. The Project contractors' QAPPs shall be submitted to the UMTRA PO for review and approval prior to implementation. Each site specific RAIP shall be provided to the NRC by the UMTRA PO for concurrence prior to implementation. All updates to the plans shall go through the same review and approval process as new documents.

1.10 UMTRA PROJECT QUALITY ASSURANCE PROGRAM

1.10.1 QA Requirements

a) The QA requirements for the UMTRA Project are identified in DOE Order 5700.6C, August 1991 (DOE, 1991). QA requirements contained in this QAPP shall be applicable to all personnel, processes, and activities, including planning, scheduling, and cost control performed by the UMTRA PO and its contractors. It is also UMTRA Project policy to apply a graded approach to QA which acknowledges that public health and safety are not always affected, and that an adequate level of quality is also needed for such aspects of the Project as operationally reliability and maintainability. Applicable portions of this document shall be implemented to the maximum degree for quality-related functions that are identified as safety-related, and a less stringent but still viable quality level shall be used for other activities on the project. This QAPP incorporates the ten criteria contained in DOE Order 5700.6C.

b) The QAPP describes 1) the provisions established by the UMTRA PO to implement the applicable requirements of the documents listed in the references, 2) the UMTRA PO organizational responsibilities for achieving and verifying quality, and 3) the interface between the UMTRA PO, the TAC and the RAC. Organizational charts are provided and the provisions that are implemented to meet each section of the applicable requirements of the references documents are described. This QAPP is reviewed by the UMTRA PO Technical Support Group and approved by the UMTRA Project Manager. The approved QAPP is issued as a controlled document.

c) A review of this QAPP shall be accomplished once each calendar year. The review will be targeted to be accomplished not sooner than six months and not later than 18 months following the last review.

d) The UMTRA Project QA program shall be implemented by management, QA staff, and all personnel at each organizational level of the UMTRA Project contractors. Organizational personnel are responsible for achieving, at a minimum, the specified level of quality. Performance objectives shall be established to ensure that quality is achieved. Initial estimates, used in planning, shall be based on verified data and assumptions relating to personnel, material/service, costs, availabilities, and productivity.

e) Readiness reviews should be performed prior to major scheduled or planned work. The TAC and RAC will be invited to participate. The readiness reviews shall be performed to verify the following:

1) Work prerequisites have been satisfied.

2) Detailed technical and QA procedures have been reviewed for adequacy and appropriateness.

3) Personnel have been suitably trained and qualified.

4) The proper equipment, material, and resources are available.

f) The UMTRA PO QA staff shall evaluate the adequacy of the Project contractor's QA program and technical products through verification techniques such as reviews, audits, and surveillances. The QA staff may use the expertise of the TAC in making these evaluations. The UMTRA PO QA Manager shall assist in developing and implementing the QA Program, overseeing activities to verify achievement of quality, and evaluating and reporting on QA program compliance and implementation effectiveness. Organizational managers supervising the work shall ensure that the specified quality is achieved by using appropriate means of verification such as review, inspection, or observation.

g) Verification of the achievement of quality for each organization's internal activities shall be performed by QA personnel who are independent of the item or activity being verified. Verification personnel shall have sufficient authority, access to work areas, and organizational freedom to 1) identify quality problems; 2) initiate, recommend, or provide solutions to quality problems through designated channels; 3) verify implementation of the solutions; and 4) ensure that further processing, delivery, installation, or use of nonconforming items are controlled until proper disposition of a nonconformance, deficiency, or unsatisfactory condition has occurred. QA personnel shall oversee and monitor activities by conducting independent QA reviews, audits, and surveillances. A detailed description of QA audits and surveillances controls are identified in Section 10 of this QAPP.

h) Direction and oversight of the UMTRA Project contractor's QA activities shall be performed by UMTRA PO QA personnel. Adequate direction and oversight shall be achieved by establishing UMTRA Project QA requirements in the DOE UMTRA QAPP and by performing quality verification through QA reviews, audits, and surveillances.

1.10.2 Environmental Data Operations

a) All activities involving the generation, acquisition, and use of environmental data shall be planned and documented. The type and quality of environmental data needed for their intended use shall be defined and documented using the Data Quality Objectives (DQO) process and shall involve key users of the data as well as those responsible for activities affecting data quality.

b) The data collection process for characterizing environmental processes and conditions shall be defined, controlled, verified, and documented. The

data collection design process includes the design of field sampling events, sample handling and custody, analytical operations, data validation and verification methods, techniques for assessing limitations on data use, and data reporting requirements. The design process also applies to data compilation for modeling or additional studies.

c) The extent of quantification of sampling and analysis shall reflect the intended use of the data. Any variables that determine or affect the quality of results shall be identified and controlled.

d) The data collection process shall ensure that data are traceable to the sampling and analytical procedures, performance standards, analysts, and measuring and test equipment. Data transfer, reduction, and validation and verification requirements shall be determined and specified. Data interpretation and analysis needs shall also be determined and specified.

e) Procedures shall be established and implemented to ensure that only qualified and accepted services or items are used in the environmental data operations and to maintain identification of the accepted items or in documents traceable to the items.

1.10.3 Management Information Reporting and Tracking

a) Communication and information systems will be established to ensure timely reporting, dissemination, and tracking of QA management information, such as the status of the implementation of QA programs, status of the resolutions of conditions adverse to quality, and status of QA overview results. Applicable reports shall be provided to management promptly.

1.11 UMTRA PO PROJECT CONTRACTORS

1.11.1 The UMTRA PO Project contractors shall develop a QA program that complies with the requirements contained in this QAPP applicable to the work delegated to them. The QA program requirements shall be reviewed and approved by the Project contractor manager. Contractor QA organizations will review lower-tier QA program descriptions and recommend approval or disapproval to the management.

2.0 PERSONNEL TRAINING AND QUALIFICATIONS

2.1 GENERAL

2.1.1 Personnel shall be qualified to perform their assigned work according to Project-specific requirements. Management shall identify those work functions requiring special skills. Management shall establish procedures to ensure that personnel demonstrate and maintain proficiency in performing their assigned work, and the results shall be documented. Required training shall be accomplished and documented as required to ensure satisfactory job proficiency.

2.1.2 The UMTRA PO shall develop and implement the necessary indoctrination and training activities to ensure that its personnel are properly qualified and trained. The UMTRA PO has also delegated the responsibility to each Project contractor to develop and implement indoctrination and training activities for their personnel.

2.1.3 The Project contractors shall establish and implement a system to ensure that their employees are properly qualified and trained. The requirements for this system, including methods and responsibilities, shall be specified in their individual QAPPs.

2.2 REQUIREMENTS

2.2.1 All personnel shall be capable of performing their assigned tasks and shall receive, as applicable, the appropriate indoctrination and training prior to performing their assigned tasks. Personnel shall have the appropriate education, experience, and training commensurate with the functions associated with their work.

2.2.2 Training should ensure that personnel understand the fundamentals of the process or activity that they are performing and the requirements associated with that process or activity. In addition, training should focus on the process or activity quality requirements, the individual's responsibilities for quality, and the importance of doing it right the first time.

2.2.3 Training shall cover the purpose, scope, objectives, and applicable requirements associated with the UMTRA Project QAPP.

2.3 TRAINING PLANS

2.3.1 Supervisors shall review job functions or tasks involved in performing activities for personnel under their supervision and determine the extent of indoctrination and training required.

2.3.2 Training plans should address and stimulate professional development. Training plans shall provide for maintenance of proficiency and progressive improvement, and shall not be limited to attainment of initial qualification.

2.3.3 Training plans for management personnel shall include professional, managerial, communication, and interpersonal skills.

2.3.4 Persons verifying activities, such as lead auditors, auditors, or personnel conducting surveillances, shall be qualified in the principles, techniques, and requirements of the activity being performed. Specific qualification requirements shall be documented.

2.4 CONDUCT OF TRAINING

2.4.1 Training may involve on-the-job training, self-reading assignments, and courses given by qualified instructors.

2.5 PROFICIENCY EVALUATION

2.5.1 Training shall be subject to ongoing review to determine program and instructional effectiveness. Training should be upgraded whenever improvement or additional requirements are identified.

2.5.2 Supervisors shall evaluate at least annually the proficiency of their personnel in the performance of their assigned duties. Additional training will be provided, as appropriate, to maintain or improve proficiency.

2.6 DOCUMENTATION/RECORDS

2.6.1 Documentation of qualification and training requirements and records of required indoctrination and training accomplished shall be maintained.

2.7 UMTRA PO EVALUATION

2.7.1 The UMTRA PO shall evaluate the adequacy of the indoctrination and training systems through verification techniques such as audits, in-process surveillances, and reviews conducted in compliance with Section 1.0, para. 1.10.1(f).

3.0 QUALITY IMPROVEMENT

3.1 GENERAL

3.1.1 Organizations shall establish and implement procedures to prevent or detect problems that adversely affect quality during planning, implementation, and assessment of technical and management activities. Deficiency and corrective action data shall be evaluated for systemic impact and application. Processes shall also be established and implemented to promote and conduct continuous quality improvement in technical and management processes, including the identification of performance measures of success and standards of excellence.

3.1.2 The UMTRA PO shall cultivate and implement a system that promotes quality improvement objectives. Also the UMTRA PO has delegated the responsibility to each Project contractor to develop and implement a system that promotes quality improvement objectives within their operations. The Project contractors shall establish and implement their own quality improvement systems. Their quality improvement activities shall be specified, including methods and responsibilities, in their individual QAPPs.

3.2 REQUIREMENTS

3.2.1 The objectives of a quality improvement system are to prevent problems and improve quality, expected performance standards, and associated performance measures. The focus of quality improvement should be to reduce the variability that influences quality. Examples of planning and problem prevention approaches include, but are not limited to, peer reviews, design reviews, probabilistic risk assessments, safety analysis reports, and reliability/availability/maintainability analyses.

3.2.2 Performance data, prevention and failure costs, nonconformance reports, and other quality-related information should be used to identify trends that adversely impact quality and to identify opportunities to improve items, processes, and services. Managers of the Project contractors shall be apprized of the aforementioned Quality Improvement results.

3.3 NONCONFORMANCES

3.3.1 The reporting of a nonconformance should not be considered in a negative manner, but rather should be considered as an important tool that allows for and results in improved quality. Procedures shall be established that provide for reporting, controlling, and dispositioning of conditions which are not, or are suspected of not being, in conformance with approved requirements.

3.3.2 Nonconforming material shall be promptly identified, marked or tagged, and segregated, where practicable, to prevent inadvertent installation or use, further processing, or delivery. Nonconforming services and processes shall be curtailed until approved disposition is provided.

3.3.3 Nonconformances shall be documented and the documentation provided to the organization responsible for disposition. The justification for disposition shall be documented.

3.3.4 Modifications, repairs, rework, and replacements shall be inspected or tested to verify acceptability in accordance with the original requirements and specifications.

3.3.5 The UMTRA PO shall approve corrective actions on nonconforming items, processes, and services that may affect the licensing of a site.

3.4 CORRECTIVE ACTION

3.4.1 All conditions adverse to quality shall be promptly identified, documented, and corrected as soon as practicable.

3.4.2 An evaluation of the adverse conditions shall be conducted and shall include trend analysis, identification of the root cause, extent, and effects on the UMTRA program.

3.4.3 Upon completion of the evaluation, the applicable corrective action shall be identified. This corrective action shall address the root cause, identify the actions necessary to preclude recurrence, and define a schedule for the actions. The corrective action shall be reviewed by the appropriate manager to ensure that proper focus is given, adequate resources are allocated, and difficult issues are resolved.

3.4.4 A follow-up investigation shall be conducted to verify implementation of the corrective action. Additional reviews may be performed to verify that corrective action has been effective in preventing a recurrence of the adverse condition.

3.5 ADVERSE CONDITIONS IDENTIFIED BY THE UMTRA PO

3.5.1 All adverse conditions identified by the UMTRA PO that are applicable to the Project contractors shall be immediately brought to the attention of the Project Manager of the affected Project contractor. The contractor Project Manager shall take immediate corrective action and report corrective action progress within the time period designated by the UMTRA PO.

3.6 DOCUMENTATION

3.6.1 Reporting of nonconformances, disposition activities, evaluations of adverse quality activities, corrective actions, and verification of corrective actions shall be documented.

3.7 UMTRA PO EVALUATION

3.7.1 The UMTRA PO shall evaluate the adequacy of the Project contractor's quality improvement system, including the nonconformance and corrective activities. The evaluation process is intended to verify quality achievement and to evaluate and report on compliance and effectiveness of implementation. The UMTRA PO evaluation of the adequacy of the quality improvement systems shall be conducted through verification techniques such as audits, in-process surveillances, and reviews which will be conducted in compliance with Section 1.0, para. 1.10.1(f).

4.0 DOCUMENTS AND RECORDS

Section 4.0 has been divided into the following two sections:

4.1 DOCUMENTS
4.2 RECORDS

4.1 DOCUMENTS

4.1.1 General

a) The preparation, issue, and revision of documents that specify quality requirements or prescribe activities affecting quality shall be controlled to ensure that correct documents are being employed. Such documents, including changes thereto, shall be reviewed for adequacy and approved for release by authorized personnel.

b) The UMTRA PO shall establish a system for the control of its documents. Additionally, the UMTRA PO has delegated the responsibility to the Project contractors for the development of a system to control their prepared documents.

c) Each UMTRA Project contractor shall develop and implement procedures to ensure that UMTRA Project documents are prepared, revised, reviewed, approved and issued in a prescribed and controlled manner, as specified in their individual QAPPs.

4.1.2 Document Preparation, Revision, Review, and Approval

a) Procedures for the preparation and revision of plans, manuals, procedures, instructions, reports, and other documents shall address, as a minimum, the following requirements:

1) Identification of the individuals or organizations responsible for the preparation, revision, review, approval, and release of the document.

2) Review of the document by individuals or organizational elements responsible for its implementation.

3) Review of the document by individuals other than the preparer of the document.

4) Access by reviewing organizations to pertinent background data or information to ensure adequacy, completeness, and correctness prior to approval and issuance.

5) Resolution of review comments for which resolutions shall be considered mandatory by the reviewing organization prior to approval and issuance of the document. Review comments and resolutions shall be documented and maintained in accordance with approved procedures.

4.1.3 Issuance and Distribution

a) Document issuance and distribution shall be controlled to ensure that correct, applicable, and current documents are available to the personnel at the location where the work is performed prior to beginning work. Document control procedures include the following provisions:

1) Identification and marking of documents, including documents released prior to completion of the approval process.

2) Maintenance of document distribution lists.

3) Marking or removal of obsolete or superseded documents.

4) Maintenance of an index giving revision status for documents.

4.1.4 Controlled Documents

a) In addition to meeting all of the requirements associated with controlling document preparation, approval, and issuance, there may be documents considered of significant importance such as to warrant specific controls to ensure that only the latest issues of the documents are being used. These documents are designated as controlled documents.

b) Provisions for controlled documents include:

1) Identification of documents to be controlled and their specified distribution, including documents released prior to completion of the approval process.

2) Use of receipt acknowledgment document transmittal forms.

3) Maintenance of controlled document distribution lists.

4) Control of superseded and canceled documents. This should include measures to ensure that only correct documents are in use. Record copies should be marked "Superseded" or Canceled" and kept for a specified retention period.

5) Maintenance of an index giving revision status for controlled documents.

4.1.5 Document Changes

a) Minor Changes

1) Minor changes to UMTRA Project documents, such as typographical or editing errors of no consequence, do not require that the revised documents receive the same review and approval process as the original documents. Each Project contractor shall document in its procedures the types of minor changes that do not require a review and approval process, as well as the person(s) authorized to make such a decision.

b) Major Changes

1) Changes to documents other than those classified as minor changes are considered major changes and require the same review and approval process as the original document. These documents should be reviewed and approved by the organization that originally reviewed and approved the documents. An alternative organization may be designated based on technical competence and capability. Timeliness guidelines should be implemented for distribution of new or revised controlled documents. The organization performing the review and approval process shall have access to pertinent background data or information upon which to base its approval.

4.2 RECORDS

4.2.1 General

a) Records that furnish documentary evidence of quality shall be specified, prepared,and maintained. Records shall be legible, identifiable, and retrievable. Records shall be protected against damage, deterioration, or loss. Requirements and responsibilities for record transmittal, distribution, retention, maintenance, and disposition shall be established and documented.

b) The UMTRA PO record requirements are contained in the UMTRA Project Document Control System (PDCS) Manual (DOE,1991). The UMTRA PO has also delegated the responsibility to the Project contractors to develop a system for establishing and maintaining their UMTRA related-records

c) Each UMTRA Project contractor shall establish and maintain a records management system in accordance with the procedures, including methods and responsibilities, as specified in their individual QAPPs. These systems shall be developed so the records can be integrated into the format of the PDCS Manual (DOE,1991).

4.2.2 Requirements

a) The records program activities for the UMTRA Project shall be defined, implemented, and enforced in accordance with written procedures. These procedures shall adequately describe methods employed for creating, identifying, controlling, processing, organizing, and distributing records.

b) The record program shall ensure that sufficient records (for example, records of design, environmental conditions, applied research and development, procurement, construction, data acquisition, assessments, inspection, testing, maintenance, and modification) are specified, prepared, reviewed, approved, and maintained to accurately reflect completed work. The maintenance of records shall include provisions for retention, protection, preservation, traceability, accountability, retrievability, and disposal of UMTRA Project records.

4.2.3 UMTRA PO Project Document Control System (PDCS)

a) UMTRA Project Office

1) Records control for the UMTRA Project shall be specified in the PDCS Manual, (DOE 1991). The UMTRA Project Manager shall approve the UMTRA PDCS Manual and ensure that the necessary document control interface among Project participants is established and maintained. The UMTRA Project Manager shall delegate the authority for administering the UMTRA PDCS and the responsibility for providing guidance to the Project Document Control Centers (PDCC) to the TAC.

2) The UMTRA PO has specified record types that shall be developed, maintained, and submitted to the PDCS by Project contractors and other participants by means of a record listing. This listing shall be used by the PDCS for the development and maintenance of the overall records index. The UMTRA PO shall approve Project contractor and other participating organizations' records listings to ensure that adequate records are maintained.

b) Technical Assistance Contractor

1) The TAC shall provide support and guidance to the UMTRA PO to ensure the efficient operation of the UMTRA PDCS by recommending changes, improvements, policies, and procedures.

2) Also, the TAC shall be responsible for:

- Developing and implementing standard operating procedures.
- Reporting on the operation of the UMTRA PDCS.

- Recommending improvements or changes to the PDCS.
- Reviewing and updating the PDCS Manual annually, or as significant changes warrant.

c) Project Participants

1) Project participants shall be responsible for routinely transferring UMTRA Project documents to the UMTRA PDCS according to the provisions described in the UMTRA PDCS Manual. Project participants involved in the administration of documents shall meet prior to the annual issuance of the UMTRA PDCS Manual to resolve any problems with and recommend any changes or enhancements to the UMTRA PDCS.

2) Project contractors and other participating organizations may forward all pertinent records to the PDCS at the completion of each major work package, but shall forward records no later than the conclusion of their involvement in the UMTRA Project. Records transfer shall be made as mutually agreed upon between the UMTRA PO and the sender, including the transfer of records that are in addition to records initially planned for transfer.

4.2.4 Records System

a) The UMTRA PO shall maintain sufficient records to support conclusions reached from investigations, tests, or other bases for remedial actions accomplished under the auspices of the UMTRA Project. The PDCS shall be established and controlled at a location specified by UMTRA PO. While the record keeping tasks shall be assigned to the TAC, the UMTRA PO shall retain the responsibility for all record keeping requirements.

b) For records that require special processing and control, such as computer codes or information on high density media or optical disks, hardware and software required to maintain and access records should be controlled to ensure that records are usable.

c) Documented procedures shall define requirements for the submittal of records to the PDCS, review of incoming records, methods of filing records, access control, and reproduction of records upon request. Once accepted into PDCS storage, a system shall be established and implemented for the control of document removal, tracking, and retrieval.

d) The PDCS facilities shall provide necessary precautions against destruction of records due to fire or natural causes. The UMTRA PO shall assign the TAC with fire and security protection responsibility and the responsibility to provide access control measures for records storage areas.

e) A record index shall be developed and implemented to include a record index numbering system, storage location, and retention time. Index requirements shall be defined in the PDCS Manual.

f) Temporary records holding facilities are reserved for storage of inactive records and may not meet the physical requirements or have appropriate staff to maintain active records. Active records requiring special handling, storage, and processing should not be sent to records holding facilities. Users should refer to the General Records Schedule (GRS) or DOE 1324.2A for retention and disposition of records.

g) The National Archives and Records Administration (NARA) exercises final authority for approving the disposition of Government records. Use of the GRS, which is published by the NARA, and the DOE unique schedules approved by the NARA are mandatory.

h) Some standards which provide interpretive quality assurance guidance may differ in records management terminology from the NARA requirements. In those instances, care should be taken to ensure that the requirements of both the NARA and standards are followed.

4.3 UMTRA PO EVALUATION

4.3.1 The UMTRA PO shall evaluate the adequacy of the Project contractors' document control and record system specified in Sections 4.1 and 4.2 of this QAPP through verification techniques such as reviews, audits, and surveillances which will be conducted in compliance with Section 1.0 para. 1.10.1(f).

5.0 WORK PROCESSES

Section 5.0, WORK PROCESSES, has been divided into four separate sections as follows:

5.1 WORK
5.2 IDENTIFICATION AND CONTROL OF ITEMS
5.3 HANDLING, STORING, AND SHIPPING
5.4 CALIBRATION AND MAINTENANCE OF MONITORING AND DATA COLLECTION EQUIPMENT

5.1 WORK

5.1.1 General

a) Activities affecting quality shall be prescribed by and performed in accordance with documented instructions, procedures, or drawings of a type appropriate to the circumstances. These documents shall include or reference appropriate quantitative or qualitative acceptance criteria for determining that prescribed activities have been satisfactorily accomplished.

b) The UMTRA PO has delegated the responsibility of work activities to the Project contractors.

c) Work activities of each UMTRA Project contractor shall be accomplished in accordance with procedures specified in their individual contractors' QAPPs.

5.1.2 Requirements

a) Activities on the UMTRA Project are prescribed by and controlled in accordance with DOE Orders. The DOE Orders are established by DOE-HQ, passed down to DOE-AL, and implemented by the UMTRA PO. Work controls, which include instructions, procedures, and drawings, shall be applied to processes and activities that are performed by the UMTRA PO and its Project contractors. The work controls shall be implemented by the UMTRA Project contractors.

5.1.3 Work Processes, Instructions, Procedures, and Drawings

a) All activities affecting quality on the UMTRA Project shall be defined by instructions, procedures, and drawings that are prepared, reviewed, and approved in accordance with the QAPP of the originating organization. These documents shall include appropriate quantitative or qualitative acceptance criteria for determining that prescribed activities have been satisfactorily accomplished. The work-related instructions, procedures,

drawings, and other forms of direction shall be developed, verified, validated, and approved by authorized technically competent personnel.

b) All work should be planned, authorized, and accomplished under controlled conditions using technical standards, instructions, written procedures, drawings, or other appropriate means of a detail commensurate with the complexity and risk of the work.

c) Organizational personnel performing the work are responsible for the quality of their work. Performance objectives shall be established to ensure that quality work is achieved. Supervisors shall ensure that personnel working under their supervision are provided the necessary training, resources, and administrative controls to accomplish their assigned tasks. Criteria describing acceptable work performance shall be defined for the worker. Supervisors shall review work and related information to ensure that the desired quality is being achieved and to identify areas needing improvement.

d) Personnel assigned to perform activities that affect the quality of an item or activity shall receive appropriate indoctrination and training prior to performing work. Personnel shall be knowledgeable of requirements for work they perform and the capability of the tools and processes they use.

5.2 IDENTIFICATION AND CONTROL OF ITEMS

5.2.1 General

a) Controls shall be established to ensure that only correct and accepted items are used or installed. Identification shall be maintained on the items or in documents traceable to the items, or in a manner which ensures that identification is established.

b) The UMTRA PO has delegated the work associated with the identification and control of materials, parts, and components to the Project contractors.

c) Identification and control of items by each Project contractor shall be accomplished in accordance with procedures, including methods and responsibilities, specified in the Project contractors' individual QAPPs.

5.2.2 Requirements

a) Processes shall be established and implemented to identify, control, and maintain items purchased for use on the UMTRA Project. Materials, parts and components shall be identified and controlled by the contractor that will use such items.

b) Procedures shall describe the methods for assuring that only correct and accepted materials, parts, and components are used. Identification and methods of control shall be maintained on, or in documents traceable to, the materials, parts, and components.

c) Identification of the materials, parts, and components shall be maintained to ensure appropriate traceability. Physical identification shall be used to the maximum extent possible. Where physical identification on the items is either impractical or insufficient, physical separation, procedural control, or other appropriate means shall be employed. Procedures shall be established and implemented to control consumables and items with limited shelf or operating life, prevent the use of incorrect or defective items, and control samples (including chain-of-custody). Identification markings shall provide a clear and legible identification and not detrimentally affect the function or life of the items.

5.3 HANDLING, STORAGE, AND SHIPPING

5.3.1 General

a) Handling, storage, cleaning, packaging, shipping and preservation of items shall be controlled to prevent damage or loss and to minimize deterioration.

b) The UMTRA PO has delegated the responsibility of handling, storage, and shipping activities to the Project contractors.

c) These activities shall be accomplished by Project contractors in accordance with procedures, including methods and responsibilities, specified in their individual QAPPs.

5.3.2 Requirements

a) Procedures shall be established that delineate the identification, packaging, handling, shipping, storage, cleaning, and preservation of items to prevent damage, loss, or contamination; to minimize deterioration; and to protect personnel. Handling, storage, cleaning, packaging, shipping, and preservation of field and laboratory environmental samples must meet the chain of custody requirements and shall be performed in accordance with written procedures prescribed in the Project contractors' individual QAPPs.

b) Furthermore, the procedures shall address maintenance of marking and labeling throughout packaging, shipping, handling, and storage activities. The information provided by marking and labeling shall identify items and provide instructions or special controls to preserve the items' integrity. Off-site transportation requirements shall be established and implemented

through written procedures. Special protective measures (such as containers, shock absorbers, accelerometers, inert gas atmospheres, and specific temperature and moisture levels) should be specified and provided when required to maintain acceptable quality.

5.4 CALIBRATION AND MAINTENANCE OF MONITORING AND DATA COLLECTION EQUIPMENT

5.4.1 General

a) A system shall be established and implemented to control the calibration, maintenance, and use of measuring and test equipment used for monitoring and data collection.

b) No calibration or maintenance of monitoring and data collection equipment is directly performed by the UMTRA PO. The activities requiring the use of this equipment have been delegated by the UMTRA PO to the Project contractors.

c) These activities shall be accomplished by the Project contractors in accordance with procedures, including methods and responsibilities, specified in their individual QAPPs.

5.4.2 Requirements

a) Monitoring and data collection equipment shall be of the accuracy and type suitable for the intended use. The types of equipment included shall be specified. Equipment shall have calibration certification traceable to national standards.

b) Monitoring and data collection equipment that is of special design for a particular activity shall be designed, developed, and manufactured or procured under the control of the Project contractor involved. Before any equipment is used, a complete functional check shall be conducted according to written procedures to ensure conformance to specifications and to ensure that the equipment is properly calibrated.

c) Written procedures for calibrating specific monitoring and data collection equipment shall be provided to ensure that calibration requirements are identified and followed. The monitoring and data collection equipment shall be calibrated at specified intervals on the basis of the item's required accuracy, intended use, frequency of use, stability characteristics, and other conditions affecting its performance. The equipment shall be calibrated against standards having an accuracy that will ensure that equipment being calibrated will be within required tolerances. Monitoring and data collection equipment shall be labeled, tagged, or otherwise

controlled to indicate its calibration status and ensure traceability to calibration test data.

d) Monitoring and data collection equipment found out of calibration or out of tolerance shall be tagged and/or segregated and not used until it is successfully recalibrated.

e) Maintenance shall be accomplished at specified intervals and in accordance with approved procedures.

5.5 UMTRA PO EVALUATION

5.5.1 The UMTRA PO will evaluate the work activities, identification and control of items, handling, storage, and shipping, and calibration and maintenance of monitoring and data collection equipment of the Project contractors to verify their implementation and effectiveness. The evaluation will include audits, in-process surveillances, and reviews which will be conducted in compliance with Section 1.0, para. 1.10.1(f).

6.0 DESIGN

6.1 GENERAL

6.1.1 The designs used on the UMTRA Project shall be defined, controlled, and verified. Applicable design inputs shall be appropriately specified on a timely basis and correctly translated into design documents. Design interfaces shall be identified and controlled.

6.1.2 Design control is the responsibility of the UMTRA PO, which has delegated the responsibility of design to the TAC and the RAC.

6.1.3 Design activities of each UMTRA Project contractor shall be accomplished in accordance with procedures specified in their individual QAPPs. These procedures shall specify the following:

- Describe the process by which design activities from conceptual design through final design are planned, controlled, and implemented.
- Describe the control of design inputs, organizational interfaces, processes, outputs, records review, changes, and deficiencies.
- Address the control of scientific investigation.

6.2 UMTRA PO CONTROL OF DESIGN ACTIVITIES

6.2.1 Design activities of each UMTRA Project contractor shall be accomplished using sound engineering/scientific principles and appropriate standards in accordance with procedures described in their individual QAPPs.

6.2.2 The UMTRA Project Manager is responsible for approval of the design criteria, conceptual design, and final design for each Remedial Action (RA) Disposal Site. The UMTRA PO, with assistance from the TAC, shall review documentation generated by Project contractors for programmatic, policy, design, and quality content. The TAC is responsible for the development of the conceptual design for each RA site. The conceptual designs are approved by the UMTRA Project Manager, and submitted to the RAC for final design. The final design for each RA site is subject to a review by the TAC and subsequent approval by the UMTRA Project Manager.

6.3 SCIENTIFIC INVESTIGATION

6.3.1 The adequacy of a disposal cell is heavily dependent upon the results of the scientific investigations conducted to characterize the disposal site. Therefore, the performance of these scientific investigations shall be controlled in accordance with written procedures.

6.3.2 Scientific investigations shall be conducted by the TAC at the direction of the UMTRA PO. The TAC shall perform special technical studies to investigate general areas of programmatic impact that result in establishment of criteria or project direction or confirm results or conclusions of participating organizations. Scopes of work prepared by the TAC for subcontract applications shall define these special study activities. Approved procedures contained in the TAC QAPP shall specify the controls for the review, approval, and changes to these scopes of work.

6.4 PROCESSING DATA

6.4.1 Data collection, qualification, analysis, identification, and recording activities related to the design of the disposal sites shall be controlled. Data collection and processing shall be conducted by the TAC and the RAC at the direction of the UMTRA PO in accordance with written procedures.

6.5 DESIGN PROCESS

6.5.1 Design activities shall be conducted primarily by UMTRA Project contractors. The UMTRA PO shall be responsible for the preparation and control of requirement documents for the system elements.

6.5.2 Applicable design input, such as design bases, performance and reliability requirements, codes, and standards, shall be correctly translated into design output, such as specifications, drawings, procedures, and instructions. The design input for the requirement documents shall be controlled by the UMTRA PO. Design interfaces should be identified and controlled, and design efforts should be coordinated among and within participating organizations. Interface controls should include the assignment of responsibility and establishment of procedures among participating design organizations.

6.5.3 The UMTRA PO shall ensure that design interface responsibility between Project contractors are properly specified and documented. Project contractors shall address the control of design interfaces by 1) identifying who is responsible for each element of the design, 2) establishing interface controls among participating design organizations, 3) describing the process for developing an integrated design, and 4) establishing requirements for documenting, maintaining, and controlling a technical baseline to be used. Calculations developed as part of the design process shall be reviewed and approved.

6.6 COMPUTER SOFTWARE

6.6.1 The UMTRA PO is not directly involved in performing design activities that require the use of computer software. Activities necessitating the use of computer software shall be conducted by UMTRA Project contractors. Computer programs

shall be proven through previous use, or validated through testing or simulation prior to use. Provisions for controlling computer software shall be reflected in Project contractors' QAPPs.

6.7 READINESS/ON-BOARD REVIEWS FOR DESIGN ACTIVITIES

6.7.1 Readiness/on-board reviews shall be conducted prior to the start of a design activity or various design phases for each site, such as collection of site characterization data or model development. The RAC shall host the readiness/on-board review. Representatives attending the review shall be the TAC Site Manager, TAC Site Engineer, and the DOE Site Engineer. The DOE Site Engineer shall provide input and recommend approval. Readiness/on-board reviews shall ensure conformance to the following minimum elements:

a) The required engineering approach to design development has been factored into design schedules and related planning documents.

b) Applicable regulatory requirements, codes, standards, and quality levels have been identified. Standard operating procedures reflect these required design inputs.

c) Design responsibilities and interfaces are defined in written procedures.

d) Procedures discuss requirements for in-process and design reviews. Design schedules identify milestone design reviews.

e) Procedures exist for baselining design documents and controlling subsequent changes.

6.7.2 The results of the readiness/on-board reviews shall be documented and approved by the DOE Site Engineer.

6.8 DESIGN VERIFICATION

6.8.1 The adequacy of technical documents shall be verified prior to approval and issuance for use in accordance with written procedures described in the Project contractors' individual QAPPs. The acceptability of design work and documents, including design inputs, processes, outputs, and changes,shall be verified. Design verification shall be performed by qualified individual(s) or groups other than those who performed the original design, but who may be from the same organization. The extent of verification should be based on the complexity, risk, and uniqueness of the design. Verification methods include, but are not limited to, design reviews, alternate calculations, and qualification testing. Separate verification may not be needed for multiple uses of identical or previously proven designs, unless they are intended for different applications or different performance criteria.

6.8.2 The RAC shall host the design verification. The TAC Site Manager, TAC Site Engineer, and the DOE Site Engineer shall attend. The DOE Site Engineer shall provide input and recommend approval. Reviews shall be conducted in accordance with written procedures as described in the Project contractors' approved procedures.

6.8.3 Testing to verify or validate acceptability of a specific design feature should demonstrate acceptable performance under conditions that simulate the most adverse design conditions. Operating or test modes and environmental conditions in which items must perform satisfactorily should be considered in determining the most adverse conditions.

6.8.4 For the RA disposal sites, it may be necessary to conduct the design verification through the use of a design review. Design reviews will be used when the adequacy of information or the suitability of procedures and methods cannot be otherwise established through tests, alternate calculations, or reference to established standards. Design reviews will be conducted at appropriate times and as necessary by all applicable design groups involved in the UMTRA Project. These reviews will be conducted to verify the design, to ensure that quality requirements are specified, and to verify documentation.

6.8.5 Design verification should be completed before design output is used by other organizations or to support other work, such as procurement, manufacture, construction, or experiment. When this timing cannot be achieved, the unverified portion of the design should be identified and controlled. In all cases, design verifications should be completed before relying on the item to perform its function and before installation becomes irreversible (requiring extensive demolition or rework).

6.9 DESIGN CHANGE CONTROL

6.9.1 Changes to design documents shall be justified and processed using the same methods applied to the preparation of the original document. Changes shall be controlled, reviewed, and approved by the organizations that reviewed and approved the original design documents. Changes shall incorporate all applicable regulations and standards. The impact of design changes on procedures and training shall be evaluated. The changes shall be communicated to all affected groups or individuals. The RAC is responsible for the design change control.

6.10 DESIGN ERROR AND DESIGN DEFICIENCY CONTROL

6.10.1 Errors and deficiencies identified in approved design documents and design information used by the UMTRA PO will be controlled and resolved in accordance with Section 3.4 of this QAPP. The impact of such design document

deficiencies on work previously performed using the affected document will be evaluated, and corrective measures will be applied.

6.10.2 Design deficiency reports shall be sent to the management of the cognizant UMTRA Project organizations for information or action in accordance with the design deficiency system of the UMTRA Project organizations. Design deficiencies shall be tracked by the organizations until disposition has been assigned, approved, and implemented. Deficiencies that represent conditions adverse to quality will be documented and controlled in accordance with Section 3.4 of this QAPP.

6.11 RECORDS

6.11.1 Design records shall be maintained to provide evidence that the design was properly accomplished. Design records shall include not only the final design output and its revision, but also important design steps (calculations, analyses, and computer programs), and sources of input that support final output.

6.12 UMTRA PO EVALUATION

6.12.1 The UMTRA PO shall evaluate the design control measures of the Project contractors through the use of audits, in-process surveillances, and reviews which will be conducted in compliance with Section 1.0, para 1.10.1(f).

7.0 PROCUREMENT

7.1 GENERAL

7.1.1 The procurement of items and services shall be controlled to ensure conformance with specified requirements. Such control shall provide for the following, as appropriate:

- Incorporation of applicable requirements in procurement documents.
- Source evaluation and selection.
- Evaluation of objective evidence of quality furnished by the supplier.
- Source inspection, audit, and examination of items or services upon delivery or completion.

7.1.2 All materials, equipment, and services purchased on behalf of the UMTRA Project become the property of DOE-AL. However, the UMTRA PO has delegated the procurement of these items and services to the Project contractors as needed to properly conduct their activities.

7.1.3 The Project contractors' procurement requirements, including methods and responsibilities, shall be contained in their respective QAPPs.

7.2 REQUIREMENTS

7.2.1 The QAPPs shall contain procedures describing the Project contractors' purchasing process, including procurement planning, documentation review and approval, and change control. Additionally, the QAPPs shall include the requirements necessary to ensure that purchased materials, equipment, and services are controlled; meet established requirements; and perform as expected. The QAPPs shall also define or reference methods of supplier evaluation, verification of suppliers' conformance to specifications, and periodic surveillance of contractors.

7.3 PROCUREMENT DOCUMENTS

7.3.1 Procurement documents issued shall include provisions for the following, as deemed necessary by the purchaser:

- They shall contain a statement of the scope of the work to be performed by the supplier.
- They shall either reference or incorporate applicable technical and administrative requirements, such as specifications, codes, standards, tests, inspections, and include acceptance criteria.

- Requirements shall be included that the supplier have a documented QA program that implements applicable requirements of the Project contractors' QAPPs.
- Provisions should be provided for access to the supplier's plant facilities and records for inspection or audit by the purchaser or other parties authorized by the purchaser.
- Procurement documents shall identify the documentation required to be submitted for information, review, time of submittal, evaluation against acceptance criteria, or approval by the purchaser.

7.3.2 Procurement documents and changes thereto shall be prepared, reviewed, approved, issued, and controlled by the purchasing and/or contracting departments of the Project contractors on behalf of the UMTRA PO. Personnel responsible for initiating the procurement requirement shall participate in the review and approval process to ensure that the applicable requirements are incorporated in the procurement documents. Procurement documentation procedures shall include methods for review of original documents, document revisions, and changes to ensure that documents transmitted to prospective suppliers include appropriate provisions ensuring that items or services meet specified Project requirements.

7.3.3 Reviews will verify that procurement documents:

a) Have been prepared in accordance with applicable procedural requirements.

b) Reflect adequate and appropriate quality requirements.

c) Include applicable regulatory design basis and related technical information, and that requirements are properly stated.

7.4 PROCUREMENT CONTROL

7.4.1 Activities to control purchased materials, equipment, and services shall be established and implemented by written procedures. These procedures shall also describe the methods used to evaluate the contractors' performance in meeting the UMTRA Project objectives. The system for control of purchased materials, equipment, and services includes 1) procurement planning, 2) supplier selection, 3) supplier performance evaluation, 4) supplier generated document control, 5) acceptance of materials, equipment and services, and 6) nonconformances.

7.5 PROCUREMENT PLANNING

7.5.1 Procurement planning shall determine what is to be accomplished, who is to accomplish it, and how and when it is to be accomplished. Planning shall take

into consideration the appropriate controls for the selection, determination of suitability, source evaluation and selection where determined necessary, and receipt of all purchased items. Planning shall be accomplished and documented as early as practicable to provide appropriate interface compatibility and to ensure a systematic approach to the procurement process.

7.5.2 Planning shall provide for the integration of the following:

a) Procurement document preparation, review and change control.

b) Selection of procurement sources.

c) Bid evaluation and award.

d) Purchaser evaluation of supplier performance.

e) Verification (surveillance, inspection, or audit) activities by purchaser, including notification for hold and witness points.

f) Control of nonconformances.

g) Corrective action.

h) Acceptance of materials, equipment, or services.

i) QA Records.

7.6 SUPPLIER SELECTION

7.6.1 The UMTRA Project contractors shall be responsible for soliciting bid offers or proposals, and evaluating prospective suppliers to ensure that only qualified suppliers are selected. Measures for evaluation and selection of supplier sources, and the results obtained from these evaluations and selections, shall be documented, and signed by the individuals performing the review. These measures include one or more of the following:

a) Evaluation of the supplier's history of providing an identical or similar product or service that performs satisfactorily in actual use. The supplier's history shall reflect their current capabilities.

b) Supplier's current quality records, supported by documented qualitative or quantitative information that can be objectively evaluated.

c) Supplier's technical and quality capabilities as determined by a direct evaluation of the facilities and personnel and the implementation of the supplier's QA program.

7.7 SUPPLIER PERFORMANCE EVALUATION

7.7.1 Qualified suppliers and, as necessary, subtier suppliers shall be monitored periodically to ensure that acceptable items or services continue to be supplied. The methods used shall include one or more of the following 1) establishment and evaluation of performance objectives, 2) review of suppliers records and nonconformance controls, or 3) the performance of management reviews, audits, inspections, and surveillances.

7.8 SUPPLIER-GENERATED DOCUMENT CONTROL

7.8.1 The requirements for submittal of documents generated by the suppliers for use, review, approval, or concurrence shall be controlled, handled, approved, and submitted in accordance with written procedures and referenced or included in the procurement documentation.

7.9 ACCEPTANCE OF MATERIALS, EQUIPMENT, AND SERVICES

7.9.1 Acceptance of purchased materials, equipment, and services includes one or more of the following techniques:

a) Technical evaluation of the purchased item, data, or report produced.

b) Surveillance and/or audit of the supplier.

c) Review of objective evidence of conformance with procurement requirements.

d) Periodic evaluations of each supplier's certifications of conformance by audits, independent tests, peer reviews, or other appropriate verification methods to ensure that the certifications are valid and that the proper results are documented.

e) Source and/or receiving instructions.

f) Pre-installation and/or post-installation testing.

7.9.2 Before a procured item is used or placed in service, procurement specifications, inspection, and test requirements are to be satisfied and nonconformances properly dispositioned.

7.9.3 The quality of purchased items and services should be verified to a degree consistent with the item's or service's complexity, risk, quantity, and frequency of procurement.

7.10 NONCONFORMANCES

7.10.1 The procurement documents shall include the purchaser's requirement for reporting and approving disposition of nonconformances. The Project contractors shall establish, through written procedures, methods for disposition of items and services that do not meet procurement documentation requirements. These written procedures shall contain provisions for the evaluation of nonconforming items and submittal of nonconformance notice to purchaser by supplier as directed by the purchaser. These submittals shall include supplier-recommended disposition (e.g., use-as-is or repair) and technical justification; purchaser disposition of supplier recommendation; verification of the implementation of the disposition; and maintenance of records of supplier-submitted nonconformances.

7.11 FRAUDULENT ACTIVITIES

7.11.1 In cases where there are indications that suppliers knowingly supplied items and services of substandard quality, this information should be forwarded to the UMTRA PO.

7.12 UMTRA PO EVALUATION

7.12.1 The UMTRA PO shall evaluate the adequacy of the Project contractors' procurement control systems through verification techniques such as audits, in-process surveillances, and reviews which will be conducted in compliance with Section 1.0 para. 1.10.1(f).

8.0 INSPECTION AND ACCEPTANCE TESTING

Section 8.0, Inspection and Acceptance Testing, has been divided into the following sections:

8.1 INSPECTION
8.2 ACCEPTANCE TESTING
8.3 MEASURING AND TEST EQUIPMENT

8.1 INSPECTION

8.1.1 General

a) Inspections required to verify conformance of an item or activity to specified requirements shall be planned and executed. Characteristics to be inspected and inspection methods to be employed shall be specified.

b) The UMTRA PO has delegated the responsibility for inspection to the Project contractors.

c) The Project contractors' systems for controlling and conducting inspection activities, including methods and responsibilities, shall be specified in their respective QAPPs.

8.1.2 Requirements

a) The contractor's written procedures shall address the requirements for 1) inspection planning, 2) acceptance of data, 3) identification of item characteristics and processes to be inspected, 4) inspection techniques to be used, 5) establishment of inspection hold points, 6) acceptance criteria, 7) responsibilities for performing inspections, 8) acceptance, and 9) documentation of inspection results. The procedures shall require that inspections be performed by qualified personnel. Qualification requirements for inspection personnel shall be defined in the Project contractors' QAPPs. Inspection personnel shall not report directly to the immediate supervisors who are responsible for performing the work being inspected.

8.1.3 Inspection

a) The work associated with inspections of the remedial action sites shall be accomplished in accordance with site-specific RAIPs and site specifications which are the responsibility of the RAC to prepare. The TAC will review the site-specific RAIPs at the request of the UMTRA PO.

b) Both "one-of-a-kind" and commercial items of hardware, and equipment purchased to support the Project, shall be subject to the inspection controls previously described. The inspection procedures shall specify when and what type of inspections; the extent of the inspections (source, in-process, receiving, final, in-service, and the like); acceptance and rejection criteria; the designation of inspection personnel or organizations; and the requirement for recording the inspection results and acceptance action. Provisions for indirect monitoring shall be considered and applied as necessary to establish the adequacy of the item. Personnel may not inspect their own work for acceptance. The level of inspection and degree of independence of inspection personnel should be based on risk and complexity.

c) Administrative controls and status indicators shall be used to preclude inadvertent bypassing of required inspections and to prevent inadvertent operations of the item or process. The acceptance of items, materials, and processes shall be documented and approved by authorized personnel. When acceptance criteria are not met, deficiencies should be resolved and reinspection shall occur as required.

8.2 ACCEPTANCE TESTING

8.2.1 General

a) Tests required to verify conformance of an item to specified requirements and to demonstrate satisfactory performance for service shall be planned and executed. Characteristics to be tested, environmental sampling criteria, and test methods to be employed shall be specified.

b) Testing activities are not performed by the UMTRA PO. The work associated with test control has been delegated by the UMTRA PO to its Project contractors.

c) The Project contractors' systems for controlling and conducting acceptance testing activities, including methods and responsibilities, shall be contained in their respective QAPPs.

8.2.2 Requirements

a) The acceptance testing procedures, including field and laboratory environmental sampling, shall describe the methods for ensuring that tests are properly planned, executed, documented, and evaluated. Required tests are performed to verify conformance of an item to specified requirements, to demonstrate that items will perform satisfactorily in service, and to collect data (such as siting or design input). Testing should include, as appropriate, field and laboratory environmental

sampling, bench tests and proof tests before installation, pre-operational test, post-maintenance tests, post-modification tests, and operational tests.

8.2.3 Acceptance Testing

a) The work associated with acceptance testing of the remedial action sites shall be accomplished in accordance with site-specific RAIPs and site specifications which are the responsibility of the RAC to prepare. The TAC will review the site-specific RAIPs at the request of the UMTRA PO.

b) Testing may be implemented by or for the organization performing the work to be tested; however, personnel within the organization shall not test their own work for acceptance. Qualification requirements for testing personnel shall be defined.

c) Test procedures shall define the administrative controls and status indicators which shall be used to preclude inadvertent bypassing of required tests or operation of the item or process. Test procedures shall include sampling; test article configuration; instructions and prerequisites to perform the test; completeness and accuracy of data; acceptance criteria; specific test equipment, including calibration requirements; suitable environmental conditions; testing hold points as required; and documentation of test results. Acceptance of items, materials, processes, and environmental sampling results shall be documented and approved by authorized personnel.

d) All activities involving the generation, acquisition, and use of environmental data shall be planned and documented. Procedures shall be established and implemented to perform inspections and acceptance testing, including the use of QC samples, of environmental sampling and measurement systems and their components according to the intended use of the items as specified by the design. The type and quality of environmental data needed for their intended use shall be defined and documented using the Data Quality Objectives (DQO) process and shall involve key users of the data as well as those responsible for activities affecting data quality.

e) The data collection process for characterizing environmental processes and conditions shall be defined, controlled, verified, and documented. The data collection design process includes the design of field sampling events, sample handling and custody, analytical operations, data validation and verification methods, techniques for assessing limitations on data use, and data reporting requirements. The design process also applies to data compilation for modeling or additional studies.

f) Retesting of items or processes to determine that they meet acceptance criteria is required after deficiencies have been corrected.

8.3 MEASURING AND TEST EQUIPMENT

8.3.1 General

a) A process shall be established and implemented to control calibration, maintenance, and accountability of tools, gages, instruments, and other measuring and test equipment used for activities affecting quality. The measuring and test equipment shall be controlled, and at specified periods calibrated and adjusted, to maintain accuracy within necessary limits.

b) No activities requiring measuring and test equipment are directly performed by the UMTRA PO. The UMTRA PO will maintain the control of measuring and test equipment, but the activities requiring the use of equipment have been delegated by the UMTRA PO to the Project contractors.

c) The Project contractors shall establish a system to ensure that all measuring and test equipment is of the proper type, properly calibrated within a recall system, identified, and traceable to their calibration test data. The requirements for this system shall be contained in their respective QAPPs.

8.3.2 Requirements

a) The types of equipment to be used should be defined. Measuring and test equipment that is of special design for a particular activity shall be designed, developed, and manufactured or procured under the control of the Project contractor involved. Before such equipment is used, a complete functional check shall be conducted according to written procedures to ensure conformance to specifications and to ensure that the equipment is properly calibrated.

b) Written procedures for calibrating specific measuring and test equipment shall be provided to ensure that calibration requirements are identified and followed.

c) Measuring and test equipment should be calibrated at specified intervals on the basis of the item's required accuracy, intended use, frequency of use, stability characteristics, and other conditions affecting its performance. The equipment shall be calibrated against standards having an accuracy that will ensure that equipment being calibrated will be within required tolerances. The calibration standards should be traceable to nationally recognized calibration standards. Calibration shall be performed only by laboratories or personnel who are properly qualified.

d) Measuring and test equipment shall be labeled, tagged, or otherwise controlled to indicate its calibration status and ensure traceability to calibration test data.

e) Measuring and test equipment found out of calibration or out of tolerance shall be tagged and/or segregated and not used until it is successfully recalibrated. The acceptability of items or processes measured, inspected, or tested with an out-of-tolerance device shall be evaluated.

f) Maintenance shall be accomplished at specified intervals and in accordance with approved procedures.

8.4 UMTRA PO EVALUATION

8.4.1 The UMTRA PO will evaluate the Project contractors' systems for inspection, acceptance testing, and control of measuring and test equipment through verification techniques such as audits, in-process surveillances, and reviews which will be conducted in compliance with Section 1.0, para 1.10.1(f).

9.0 MANAGEMENT ASSESSMENTS

9.1 GENERAL

9.1.1 Management assessments shall focus on how well the integrated QA program is working and shall identify management problems that hinder the organization from achieving its objectives in accordance with quality, safety, and environmental requirements. These assessments conducted on an annual basis shall be established and implemented as a way to improve quality.

9.1.2 The UMTRA PO shall implement a system for management assessments of its integrated QA program. Furthermore, the UMTRA PO has assigned Project contractors the responsibility for conducting management assessments of their respective integrated QA programs.

9.1.3 The Project contractors' requirements for management assessments, including methods and responsibilities, shall be specified in their respective QAPPs.

9.2 REQUIREMENTS

9.2.1 Annual management assessments shall provide a means for determining and taking necessary response actions regarding the following:

a) Effectiveness of the system of management controls that are established to achieve and ensure quality.

b) Adequacy of resources and personnel provided to achieve and ensure quality in all activities.

9.2.2 Senior management shall retain the overall responsibility for these management assessments. Direct participation by senior management (the manager or managers responsible for mission accomplishment and overall operations) is essential. This process shall include the direct participation of all appropriate levels of management. As deemed appropriate, assessments of designated organizations and programs may include the participation of qualified internal staff or independent reviewers. These assessments shall be conducted in accordance with written procedures.

9.3 ASSESSMENT PURPOSE/RESULTS

9.3.1 The results of the assessment shall be documented. Senior management shall take prompt action and document decisions in response to recommendations resulting from the management assessment process. Follow-up reviews for recommendations shall include an evaluation of the effectiveness of management's actions.

9.4 UMTRA PO EVALUATION

9.4.1 The UMTRA PO shall evaluate the Project contractors' management assessment programs through verification techniques such as audits, in-process surveillance, and reviews which will be conducted in compliance with Section 1.0, para. 1.10.1(f).

10.0 INDEPENDENT ASSESSMENT

10.1 GENERAL

10.1.1 A process of planned independent assessments shall be established and implemented by the UMTRA PO and its Project contractors. The purpose of the independent assessments is to evaluate all quality, Environment, Safety and Health (ES&H), and Radiological operations to assure compliance to Project requirements, which include Federal, State, Tribal, and Local Laws, and improve Project activities and processes. Independent assessments shall consist of reviewing, inspecting, testing, checking, conducting surveillances, auditing, or otherwise determining and documenting whether items, processes, or services meet specified requirements.

10.1.2 The UMTRA PO shall establish and implement a system for conducting and documenting independent assessments to determine the degree of compliance to the specified requirements. The UMTRA PO has delegated to the Project contractors the responsibility of establishing, implementing, and documenting independent assessments of their QA, ES&H, and Radiological programs.

10.1.3 The Project contractors shall establish and implement a system to ensure that independent assessments are conducted. The independent assessment requirements, including methods and responsibilities, shall be specified in their individual QAPPs.

10.2 REQUIREMENTS

10.2.1 The independent assessments shall be conducted to determine the degree of compliance to UMTRA Project requirements and approved procedures. The documented assessment results shall provide the respective managers, for their information and action as appropriate, an independent technical and or programmatic evaluation of their activities.

10.2.2 The UMTRA PO and Project contractors shall establish and implement a schedule for independent assessments.

10.2.3 Independent assessments, audits, or in-process surveillances of QA, ES&H, or Radiological activities shall be conducted by personnel who meet the qualifications outlined in Section 10.4, Audit Personnel. Independent assessments which address various disciplines (i.e., administration, planning, scheduling, procurement contracts, cost/scheduling, accounting, and the like), shall be conducted by personnel whose qualifications shall be specified in the Project contractors' individual QAPPs.

10.2.4 Personnel performing these independent assessments shall act in a management advisory function. Their responsibilities are to 1) monitor work performance using

criteria that describe acceptable performance, 2) identify satisfactory and abnormal performance and precursors of potential problems, 3) identify opportunities for improvement, 4) report results to a level of management having the authority to effect corrective action, and 5) verify satisfactory resolution of the corrective action. The personnel performing these independent assessments shall be qualified and knowledgeable of the activity being assessed, shall focus on improving the quality of the processes that lead to the end product, and shall not have direct responsibilities in the area they are assessing.

10.3 SCHEDULING

10.3.1 The scheduling of these assessments and allocation of resources shall be based on the status, risk, and complexity of the activity or process being assessed. Scheduling shall be flexible, and additional attention shall be given to areas of questionable performance. Organizational activities may be assessed several times in a year or at longer intervals, depending on the activity or the quality, ES&H, and Radiological aspects of the activity.

10.3.2 The UMTRA PO will perform independent audits/surveillances of the Project activities. The UMTRA PO will develop a schedule that covers the audit and surveillance activities for the RAC and active RA sites. This schedule is developed as a result of monthly scheduling meetings with representatives of DOE's, RAC's, and TAC's QA, ES&H, and Radiological services. The TAC QA department has the responsibility for preparing and tracking the audit/surveillance schedules for the RAC and active RA sites planned for each fiscal year. The audit/surveillance schedules are submitted to the respective UMTRA PO, RAC, and TAC organizations. The audit/surveillance schedule will be reviewed monthly or at the discretion of the UMTRA PO, depending on Project activity, and revised accordingly to ensure that schedules are kept current.

10.3.3 Additional audits/surveillances shall be scheduled on an unannounced basis as directed by the UMTRA PO.

10.3.4 Project contractors will schedule and perform their internal organizational assessments, including audits and surveillances, as determined necessary by the Project contractors' Quality Assurance Managers or at the request of the UMTRA PO.

10.4 AUDIT PERSONNEL

10.4.1 A lead auditor for quality-related, ES&H, and Radiology audits will be selected and assigned for each activity. Prior approval of lead auditors shall be obtained from the UMTRA PO QA Manager or Technical Support Group Leader (TSGL). Qualification as a lead auditor on the UMTRA Project requires that an individual has participated in a minimum of five hands-on audits under the supervision of

a qualified lead auditor. However two of the five audits shall have been UMTRA site related.

10.4.2 The UMTRA PO QA Manager or TSGL may grant an exception to the above requirements based on the individuals education, special training, and experience, including audit experience. Such information shall be documented and provided for UMTRA PO approval.

10.4.3 The lead auditor may select, as appropriate, additional team members to participate in the audit. When required, Project contractors may use a specialist in specific areas for their expertise to assist in performing audits. Approval shall be obtained from the UMTRA PO QA Manager or TSGL prior to the specialist assisting in any audit.

10.5 AUDIT PREPARATIONS

10.5.1 An audit notification letter for announced audits shall be provided by the UMTRA PO QA Manager or TSGL to the organization being audited two weeks prior to the start of the audit.

10.5.2 At least three days prior to performing an audit for the UMTRA PO, the TAC shall furnish to the UMTRA PO a list of the auditors by name; designating the lead auditor for each team; a checklist for each audit team; and any items that will receive special attention.

10.6 AUDIT PERFORMANCE

10.6.1 For the UMTRA PO audits, a DOE representative shall be in attendance at the audit opening meeting and the audit exit meeting. However, the attendance of the DOE at the audit opening meeting may be waived by the UMTRA PO TSGL.

10.6.2 Audits will be performed in accordance with checklists. The audits will consist of a pre-audit meeting, audit activity, and a post-audit meeting, followed by a report documenting evaluation of the activity compliance, including recommended corrective actions required. For UMTRA PO audits, the DOE representative and the audit team shall, at the conclusion of each day's audit activities, meet and brief the Project contractor's staff of the findings and observations of the audit team for that day. All findings and observations regardless of their magnitude will be presented during these debriefings.

10.6.3 Elements that have been selected for the audit will be evaluated against specified approved requirements. Documented and physical objective evidence will be examined to a depth necessary to determine if activities are being conducted in accordance with prescribed and approved requirements and procedures. Findings and observations from previous audits shall be inspected by auditors to ensure that all corrective actions have been implemented. If corrective actions

have not been implemented for all of the findings and observations, the audit team shall promptly notify the appropriate field management and UMTRA PO. These findings shall be documented in the audit report as well as any new findings.

10.6.4 Any condition found during the audit requiring immediate corrective action shall be documented and reported promptly to the management of the organization being audited.

10.7 AUDIT REPORTING

10.7.1 An audit report shall be prepared and signed by the lead auditor and audit team members. The audit report shall contain all of the findings and observations regardless of the magnitude or whether they were corrected immediately or not. The report will then be transmitted to the manager of the organization audited. The report will include, but not be limited to, the following information:

a) Audited organization.

b) Date of audit.

c) Team members.

d) Organization's personnel contacted.

e) Summary of results.

f) Criteria references.

g) Observations.

h) Recommendations (if applicable).

10.7.2 Audit reports shall be issued within 10 working days from conclusion of audit.

10.8 AUDIT RESULTS/RESPONSE

10.8.1 The audit results shall be tracked and resolved by management having responsibility in the area audited. Follow-up reviews of deficient areas shall be initiated as deemed necessary. The responses to the results of the audits shall include, as applicable 1) action to correct the deficiency, 2) cause identification, and 3) actions to prevent recurrence.

10.8.2 For UMTRA PO audits conducted on RA Sites, the Project Contractor shall furnish a schedule and the recommended corrective actions for all findings and observations to the UMTRA PO within fifteen working days from the date of the

letter that transmitted the audit report. All corrective actions shall be completed within forty days of the date of transmittal. An extension may be granted by the UMTRA PO TSGL if circumstances dictate the need.

10.8.3 For QA, ES&H, and Radiological audits performed for the UMTRA PO, the appropriate TAC department shall, at the request of the UMTRA-PO, review proposed corrective actions to ensure that unacceptable conditions have been adequately addressed and corrected. A follow-up audit may also be required by the UMTRA PO if significant corrective action is necessary or to verify implementation of proposed corrective action.

10.8.4 Project contractors shall initiate follow up audits as necessary to verify whether corrective action is accomplished and is effective to preclude recurrence of adverse conditions.

10.9 AUDIT SCHEDULES

10.9.1 UMTRA PO audit activities shall be accomplished in accordance with the schedule as shown in Figure 10.1. Each Project contractor shall specify in written procedures the schedules associated for their respective audit activities.

10.10 FOLLOW-UP AUDITS

10.10.1 Follow-up audits may be performed to verify whether corrective action is accomplished and is effective to preclude recurrence of unacceptable conditions.

10.11 UMTRA PO EVALUATION

10.11.1 The UMTRA PO shall evaluate the Project contractors' independent assessment systems through verification techniques such as audits, in-process surveillances, and reviews which shall be conducted in compliance with Section 1.0, para. 1.10.1(f).

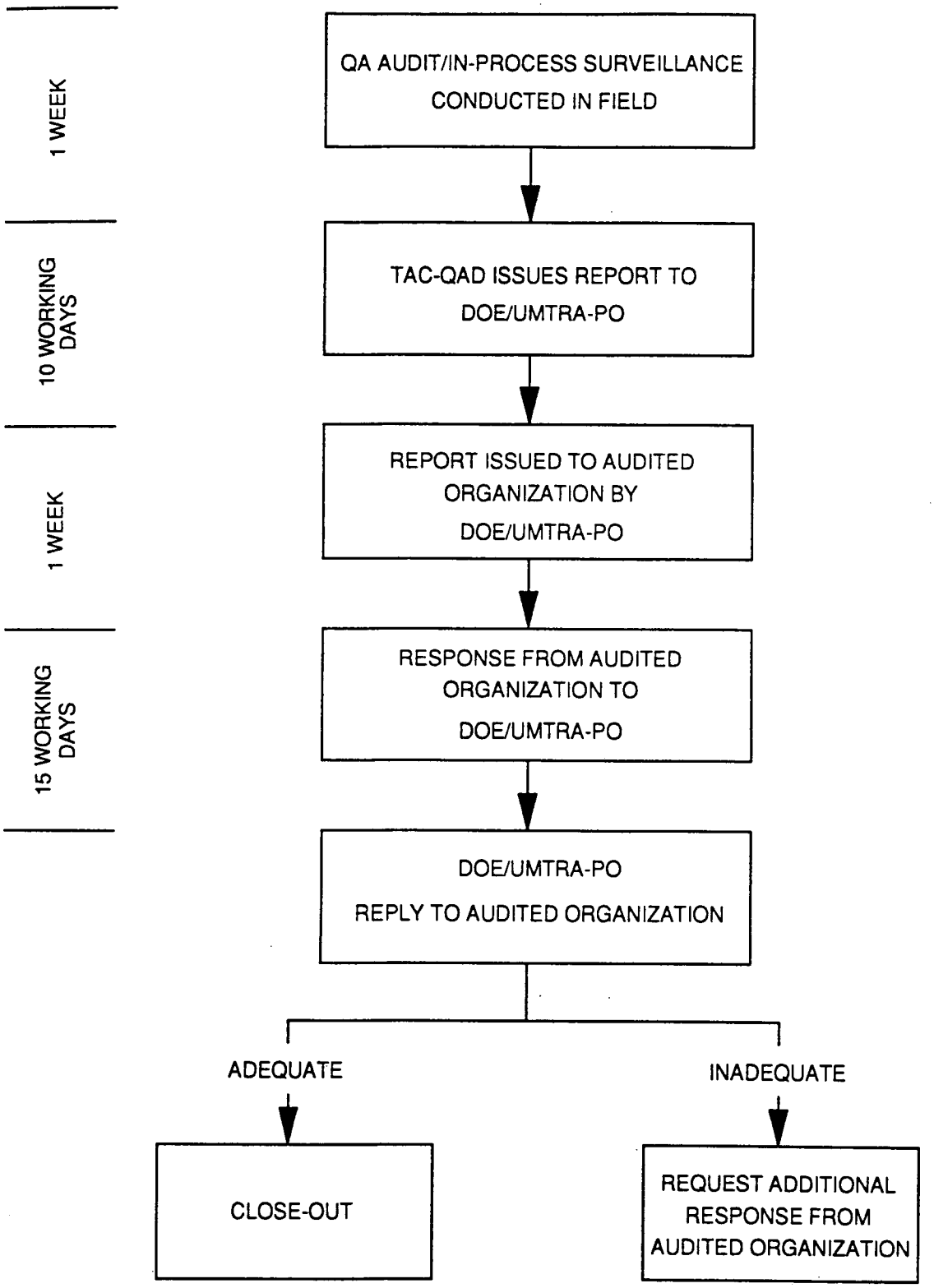

FIGURE 10.1
QA AUDIT REPORT TIME SCHEDULE

PATH I:\FL3.01\QAPP

QAADTTME.DRW

MATRIX OF DOE ORDER 5700.6C QUALITY ASSURANCE CRITERION

vs.

ASME NQA-1 (89) QUALITY ASSURANCE PROGRAM FOR NUCLEAR FACILITIES

UMTRA-PO QUALITY ASSURANCE PROGRAM PLAN

	DOE Order 5700.6C Criterion		NQA-1 BRs
(1)	**Management**		
*	1.0	Program	1. Organization & 2. QA Program
*	2.0	Personnel Trg. & Qual.	2. QA Program
*	3.0	Quality Improvement	15. Control of Nonconforming Items 16. Corrective Action
	4.0	Documents & Records	6. Document Control 17. QA Records
(2)	**Performance**		
	5.0	Work Processes	
		a. Work	2. QA Program 5. Instructions, Procedures, & Drawings 9. Control of Processes 14. Inspection, Test, and Operating Status
		b. Identification & Control of Items	8. Identification & Control of Items
		c. Handling, Storing, & Shipping	13. Handling, Storage, & Shipping
*		d. Calibration and Maintenance Monitoring and Data Collection Equipment	12. Control of Measuring and Test Equipment
	6.0	Design	3. Design Control
	7.0	Procurement	4. Procurement Document Control 7. Control of Purchased Items & Services

	8.0	Inspection & Acceptance Testing		
		a. Inspection	10.	Inspection
		b. Acceptance Testing	11.	Test Control
		c. Measuring & Test Equipment	12.	Control of Measuring & Test Equipment

(3) Assessment

*	9.0	Management Assessment	2.	QA Program
*	10.0	Independent Assessment	18.	Audit

*5700.6C Criterion contains requirements that are either new or more specific than shown in the corresponding NQA-1 Basic Requirement.

REFERENCES

ANSI/ASME (American National Standards Institutes/American Society of Mechanical Engineers), 1989. Quality Assurance Program Requirements for Nuclear Facilities., NQA-1-1989, 1991 Addendum, ASME, New York, NY.

DOE (U.S. Department of Energy), 1991. "DOE Order 5700.6C: Quality Assurance", Department of Energy, Washington, D.C.

DOE (U.S. Department of Energy), 1990. UMTRA Project Site Management Manual, Revision 1, UMTRA-DOE/AL-40005.0000, prepared by the U.S. Department of Energy, UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico.

DOE (U.S. Department of Energy), 1989a. UMTRA Project Plan, MSA-143,UMTRA-DOE/AL-400124.0167, prepared by the U.S. Department of Energy, UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico.

DOE (U.S. Department of Energy), 1989b. UMTRA Project Environmental, Health and Safety Plan, UMTRA-DOE/AL-150224-0006, prepared by the U.S. Department of Energy, UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico.

DOE (U.S. Department of Energy), 1988. Project Management Plan, UMTRA-DOE/AL-400125, prepared by the U.S. Department of Energy, UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico.

DOE (U.S. Department of Energy), 1986. UMTRA Project Charter, UMTRA-DOE/AL-400124-0167, prepared by the U.S. Department of Energy, UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico.

DOE (U.S. Department of Energy), 1991. UMTRA Project Document Control System Manual, UMTRA-DOE/AL-400424.0000, prepared by the U.S. Department of Energy, UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico.