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**TECHNICAL AND MANAGEMENT SUPPORT SERVICES  
QUALITY ASSURANCE PROGRAM DESCRIPTION**

N-QA-093  
1/90

**TECHNICAL AND MANAGEMENT SUPPORT SERVICES**

**QUALITY ASSURANCE PROGRAM DESCRIPTION**

**SCIENCE APPLICATIONS INTERNATIONAL CORPORATION (SAIC)**

**LAS VEGAS, NV**

*102.7*

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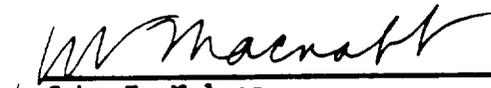
**TECHNICAL & MANAGEMENT SUPPORT SERVICES (T&MSS)**

**QUALITY ASSURANCE PROGRAM DESCRIPTION**

**APPROVAL/SIGNATURE PAGE**

  
\_\_\_\_\_  
James B. Harper, Manager  
T&MSS Quality Assurance

5 / 7 / 91  
\_\_\_\_\_  
Date

  
\_\_\_\_\_  
John H. Nelson  
T&MSS Project Manager

5-7-91  
\_\_\_\_\_  
Date

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1.0 ORGANIZATION

The T&MSS organization consists of Science Applications International Corporation (SAIC), and its subcontractors: Harza Engineering Company and Westinghouse Electric Corporation. T&MSS has a participant role in the Yucca Mountain Site Characterization Project (YMP) as described in this section. T&MSS also has a support contractor role which is not within the scope of this document.

This section describes the T&MSS participant organization that executes the quality requirements in this program description. As work is assigned to T&MSS by the Yucca Mountain Site Characterization Project Office each T&MSS Assistant Project Manager and the T&MSS Quality Assurance (QA) Manager shall ensure that the scope of work assigned to them as delineated by the YMP is executed under the requirements of this QAPD. All T&MSS participant work is directed and controlled by T&MSS management from the T&MSS Las Vegas Office location.

The T&MSS organizational components, consisting of the management positions listed below, are responsible for those functions assigned to T&MSS as a YMP participant as well as those functions associated with support of the YMP Office (YMPO). (The QA responsibilities for Project Office support are defined in the OCRWM QAPD).

- T&MSS Project Manager
- T&MSS Deputy Project Manager
- Assistant Project Manager, Project Management
- Assistant Project Manager, Technical Support
- Assistant Project Manager, Programs and Operations
- Assistant Project Manager, Resource Management
- Assistant Project Manager, Regulatory and Licensing
- T&MSS Quality Assurance Manager

The above managers shall establish and maintain QA program implementing procedures (see Section 2.0). The development and implementation of controlling procedures is based upon an integration of QA and line staff input for the determination of the QA controls applied to participant activities.

In addition, these managers are responsible for the performance of quality-related activities by personnel who are appropriately trained and qualified. They are also responsible for conducting management assessments of the programs under their control.

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The entire T&MSS organization is depicted in Exhibit 1. Exhibits 2 through 7 reflect the reporting relationships, titles, and organizational units that are assigned YMP participants. The description of functional activities by APM and department that follows is limited to participant activities.

**1.1 T&MSS Project Manager**

The T&MSS Project Manager is the Technical Project Officer for T&MSS with overall responsibility for implementation of the T&MSS QA program. This individual reports directly to the YMP Project Manager for technical direction and has authority over all T&MSS personnel assigned to work under the scope of services provided by T&MSS as a participant in support of the YMP. The T&MSS Deputy Project Manager assists the T&MSS Project Manager, as required and acts in the capacity of the T&MSS Project Manager during the absence of, or at the explicit direction of the T&MSS Project Manager. The T&MSS Project Manager's responsibilities include, but are not limited to the following:

- a. Planning and directing work activities;
- b. Complying with quality requirements imposed by quality program documents;
- c. Satisfying staff resource needs, cost, and schedule objectives, and deliverable requirements;
- d. Approving and implementing the T&MSS QAPD and the T&MSS implementing procedures;
- e. Implementing the YMP procedures as they apply to the T&MSS scope of work;
- f. Implementing corrective actions for deficiencies identified within the T&MSS quality program;
- g. Providing periodic assessment to the YMPO regarding the adequacy and effectiveness of the T&MSS quality program;  
and
- h. Approving and implementing Stop Work Orders.

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**1.2 Assistant Project Manager (APM), Project Management**

The APM, Project Management reports directly to the T&MSS Project Manager and is responsible under the participant QA Program for the following:

- a. Reviewing assigned data collection and evaluation activities;
- b. Management, integration and performance of technical and scientific studies in support of the site characterization programs as assigned by DOE, e.g., climatology, and
- c. Preparation and control of technical requirements documents for structures, systems, components and site characterization.

**1.3 Assistant Project Manager (APM), Technical Support**

The APM for Technical Support reports directly to the Project Manager. Reporting to this individual for participant site characterization activities are managers for the following departments:

**1.3.1 Engineering Department**

The Engineering Department is responsible for the following:

- a. Performance of technical evaluations of data and related reports, technical reports, and conclusions relative to site characterization of the Yucca Mountain Mined Geologic Disposal System as assigned by the DOE;
- b. Performance of technical and scientific studies in support of the site characterization programs as assigned by DOE;
- c. Preparation of technical requirements documents for structures, systems, components and site characterization as assigned by the DOE; and

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- d. Development of engineering plans and procedures as assigned by DOE.

1.3.2 Systems Engineering Department

The Systems Engineering Department is responsible for the following:

- a. Performance of technical evaluations of data and related reports, technical reports, and conclusions relative to site characterization of the Yucca Mountain Mined Geologic Disposal System as assigned by the DOE;
- b. Performance of technical and scientific studies in support of the site characterization programs as assigned by DOE;
- c. Preparation of technical requirements documents for structures, systems, components and site characterization as assigned by DOE; and
- d. Development of system engineering plans and procedures as assigned by DOE.

1.3.3 Geotechnical Department

The Geotechnical Department is responsible for the following:

- a. Performance of technical evaluations of data and related reports, technical reports, and conclusions relative to site characterization of the Yucca Mountain Mined Geologic Disposal System as assigned by the DOE;
- b. Performance of technical and scientific studies in support of the site characterization programs as assigned by DOE;
- c. Preparation of technical requirements documents for structures, systems, components and site characterization as assigned by DOE; and
- d. Development of geotechnical plans and procedures as assigned by DOE.

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**1.3.4 Field Operations Support Department**

The Field Operations Support Department is responsible for the following:

- a. Development of field operations management plans and procedures as assigned by DOE; and
- b. Support of field operations activities as assigned by DOE.

**1.3.5 Training Department**

The Training Department is responsible for providing training support to T&MSS as requested.

**1.4 Assistant Project Manager (APM), Programs and Operations**

The APM, Programs and Operations reports directly to the Project manager. Reporting to this individual are managers of the following departments:

**1.4.1 Regional Studies Department**

The Regional Studies Department is responsible for:

- a. Identifying potential repository related socio-economic effects;
- b. Assessment and monitoring of regional socioeconomic structure;
- c. Developing strategies to mitigate adverse socioeconomic impacts; and
- d. Socioeconomic support for financial assistance programs.

**1.4.2 Transportation Studies Department**

The transportation Studies Department's responsibilities include the conduct of studies for the following:

- a. Rail and highway access;
- b. Transportation safety risk; and

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- c. Transportation interface for repository/operation planning.

1.4.3 Records Management Department

The Records Management Department's responsibilities include the following:

- a. Control of YMP documents;
- b. Operation of the T&MSS Local Records Center (LRC); and
- c. Operation of the YMP Central Records Facility (CRF).

1.4.4 Environmental Field Programs Department

The responsibilities of the Environmental Field Programs Department include the following:

- a. Program planning and coordination; and
- b. Site reclamation planning and coordination; and
- c. Operation and maintenance of field equipment for air quality and meteorological monitoring;

1.4.5 Radiological Field Programs Department

The responsibilities of the Radiological Field Programs Department include the following:

- a. Program planning and implementation;
- b. Operation and maintenance of radiological field monitoring equipment;
- c. Site analysis and reporting;
- d. Field analysis and reporting;
- e. Radiological laboratory analysis;
- f. Radiological protection (safety); and

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- g. Radiological engineering requirements, implementation and support.

**1.4.6 Information Systems Department**

The Information Systems Department's responsibilities include the following:

- a. Computer software development and maintenance;
- b. Computer software life cycle planning;
- c. Computer software documentation;
- d. Computer software verification and validation;
- e. Computer software configuration management;
- f. Computer software qualification and acquisition; and
- g. Computer software access and use.

**1.5 Assistant Project Manager (APM), Resource Management**

The APM for Resource Management reports directly to the T&MSS Project Manager. The following Department Managers report to the APM for resource management:

**1.5.1 Contract Services Department**

The Contract Services Department is responsible for the Procurement of items and services in support of T&MSS participant; and

**1.5.2 Administrative Services Department**

The Administrative Services Department is responsible for verifying the education and experience of T&MSS personnel.

**1.6 Assistant Project Manager, Regulatory and Licensing Support**

The APM for Regulatory and Licensing reports directly to the Project Manager. Reporting to this individual are the following departments:

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**1.6.1 The Safety and Health Compliance Department (SHCD)**

The SHCD is responsible for the following:

- a. Identifying the applicability of safety and health requirements and ensuring that appropriate regulations, orders, procedures and policies are uniformly considered and applied by all YMP participants;
- b. Developing programs to ensure compliance with applicable Occupational Safety and Health Administration (OSHA) regulations, Department of Energy (DOE) orders, and Project Office plans and procedures;
- c. Coordinating the activities of a safety committee, reviewing field activities procedures for compliance to health and safety requirements, coordinating inspections and abatement of identified safety and health deficiencies, and T&MSS record keeping and reporting;
- d. Reviewing and documenting, as required, unplanned non-radiological events that have potential for safety or health impact; and
- e. coordinating responses to employee complaints and unsafe conditions.

**1.6.2 Environmental Compliance and Permitting Department**

The Environmental Compliance and Permitting Department has responsibility for supporting the T&MSS organization with regulatory surveillance assistance to ensure compliance with federal, state, and local environmental and land access requirements, as they apply to T&MSS activities.

**1.6.3 Nuclear Regulatory Compliance Department**

The Nuclear Regulatory Compliance Department has responsibility for the following:

- a. Performing evaluations of site data and related reports,
- b. Preparing technical reports; and
- c. Developing conclusions relative to regulatory and licensing requirements of the Yucca Mountain Mined Geologic Disposal System, as assigned by DOE.

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1.7 T&MSS Quality Assurance Manager

The T&MSS quality assurance responsibilities are executed through the T&MSS Quality Assurance (QA) Manager. The T&MSS QA Manager reports directly to the T&MSS Project Manager and has specific interface responsibilities with the YMPO QA organization. This individual shall have unencumbered access to higher levels of management on quality issues. The T&MSS QA Manager is at the same or higher organizational level as the highest line manager responsible for quality-related activities. The individual shall have knowledge and experience in the areas of quality assurance and management. This position has the appropriate organizational position, responsibilities and authority to exercise proper control over the T&MSS QA program. The QA organization is involved in all portions of the T&MSS participant programs that affect safety and waste isolation. Controls include complete responsibility and authority for the following:

- a. Coordinating T&MSS QA activities;
- b. Initiating, reviewing, verifying and approving those documents used to identify QA program deficiencies; and
- c. Indoctrination and training of the QA staff.

1.8 Independence of the QA Organization

The QA organization shall have sufficient authority, organizational freedom, independence from cost and schedule (regarding quality issues) and access to work areas to carry out the duties and responsibilities previously described.

1.9 DOE Contracted Support Organizations

Selected DOE contracted support organizations, at the direction of the DOE, may perform their work scope activities under the provisions of the T&MSS QA program. Under such an arrangement those organizations receive functional direction from T&MSS management and administrative direction from DOE. Organizational relationships are illustrated in Exhibit 8.

1.10 Interfaces

Interfaces between the YMPO other participants, and T&MSS shall be described in procedures, plans, or instructions, as appropriate.

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1.11 Delegation of Work

The T&MSS organization may delegate work under the T&MSS QA program to others as directed by OCRWM, but shall retain the responsibility for that work. If work is delegated, the work and associated QA Program requirements shall be described and documented. T&MSS shall be responsible for evaluating any delegated work by audits and surveillances.

1.12 Resolution of Disputes

T&MSS shall identify in procedures the methodology for elevating disputes regarding differences of opinion involving quality issues at any given organizational level where such disputes cannot be resolved at the working level.

1.13 Quality Concerns

Allegations of inadequate quality shall be resolved in accordance with procedures established by the YMPO.

1.14 Stop Work Orders

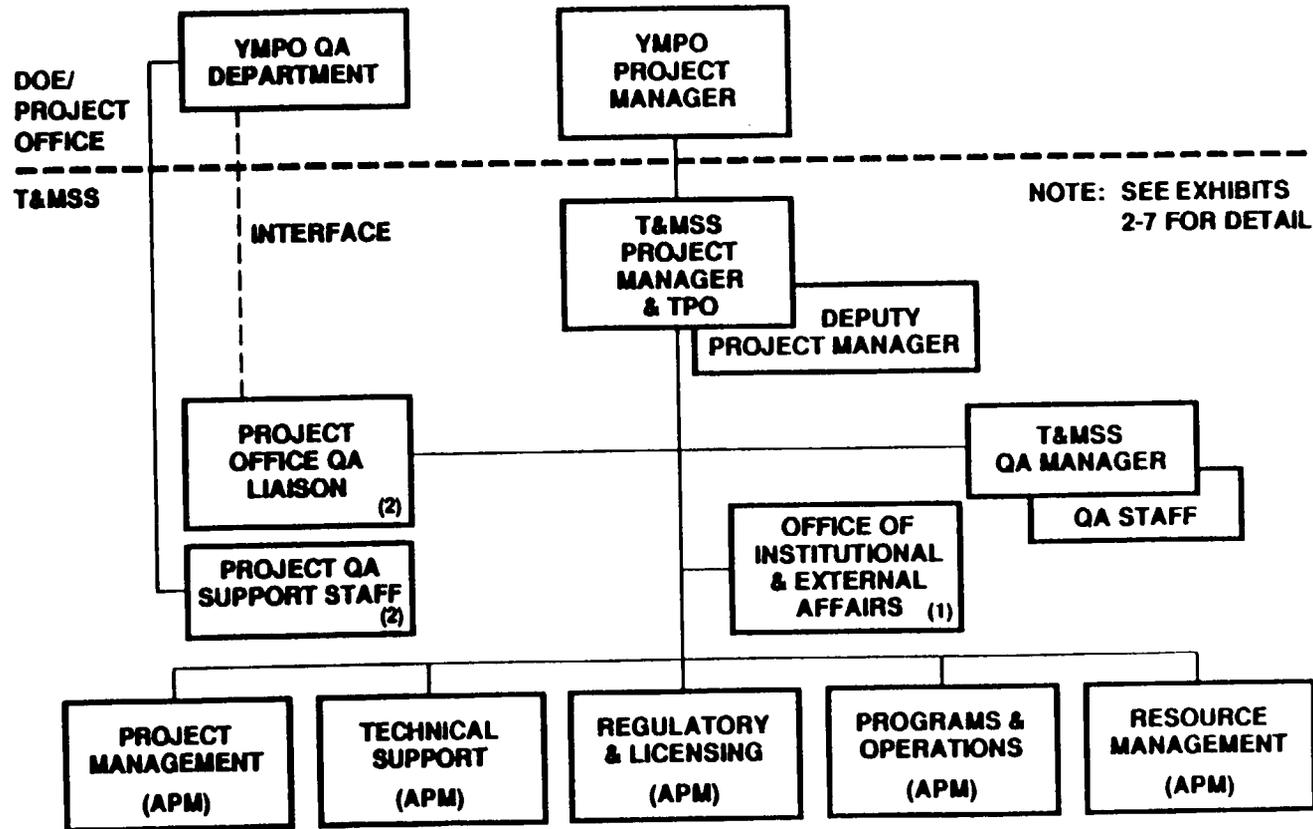
The T&MSS organization shall identify procedures for issuing and lifting Stop Work Orders. Provisions shall include the following:

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

The T&MSS QA organization has the authority to issue a Stop Work Order to line management.

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**EXHIBIT 1  
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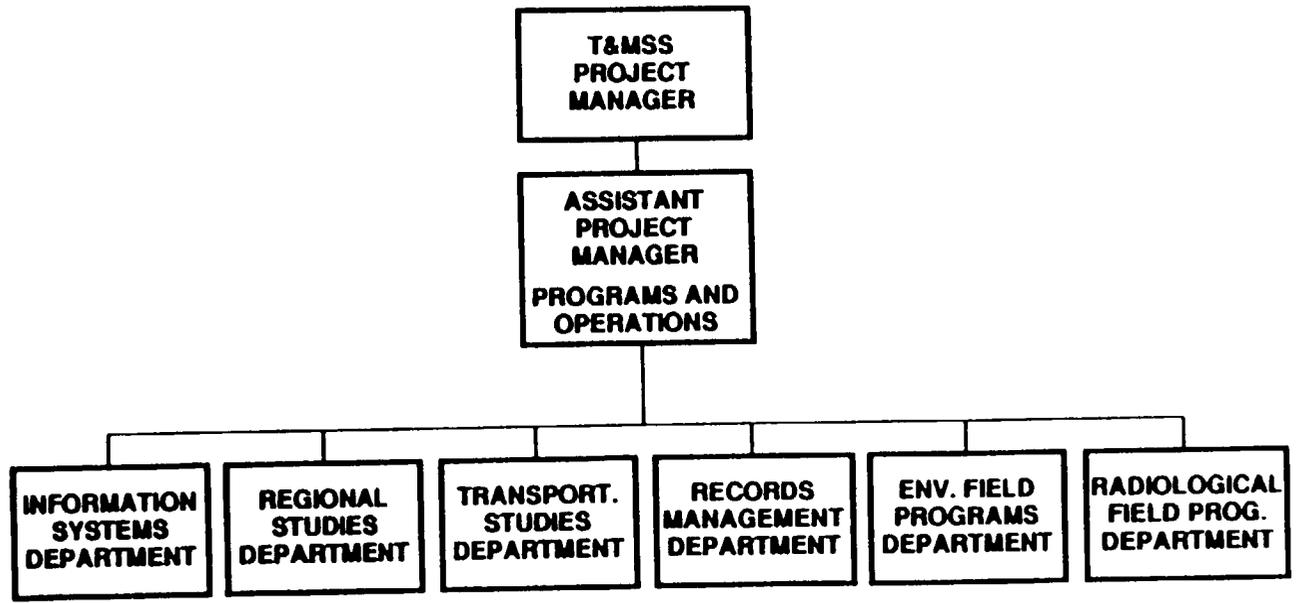


NOTE: SEE EXHIBITS 2-7 FOR DETAIL

- NOTES:**  
 (1) NO QUALITY AFFECTING QA ACTIVITIES PERFORMED BY THIS DEPARTMENT  
 (2) ALL ACTIVITIES PERFORMED UNDER OCRWM QA PROGRAM

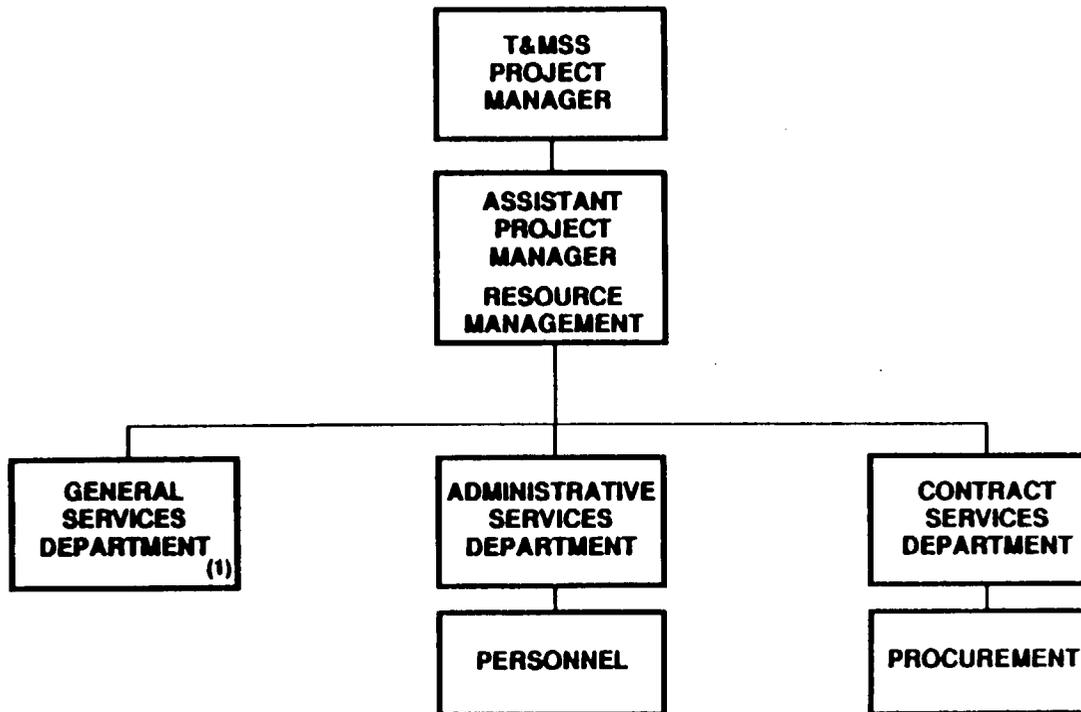
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EXHIBIT 2



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EXHIBIT 3

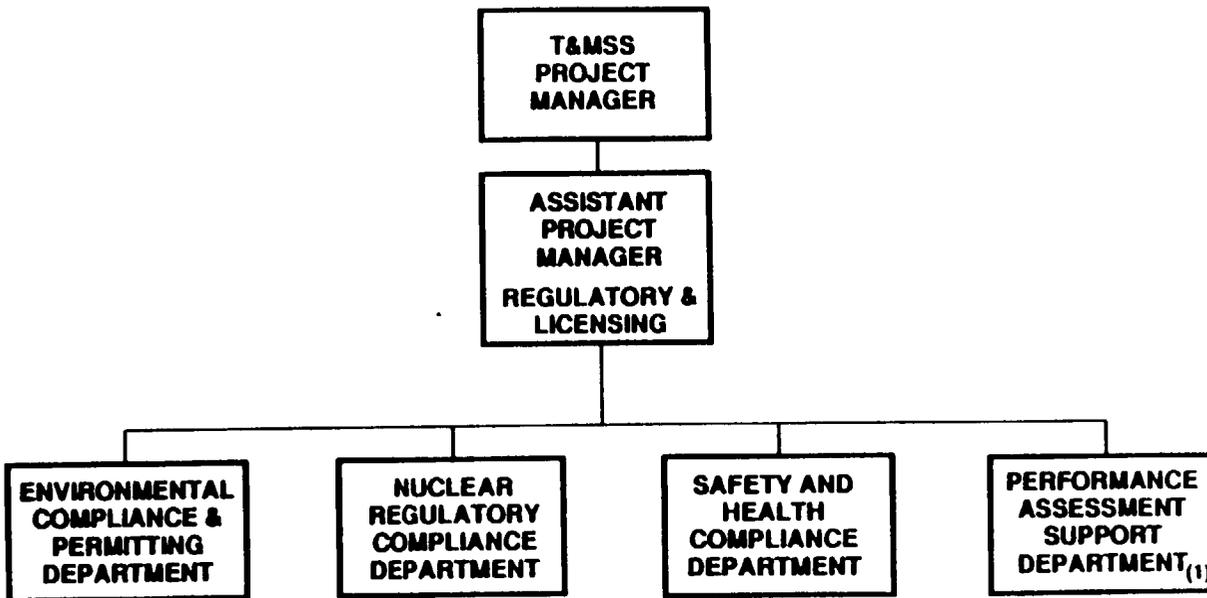


**NOTE:**

(1) NO QUALITY AFFECTING QA ACTIVITIES PERFORMED BY THIS DEPARTMENT

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EXHIBIT 4



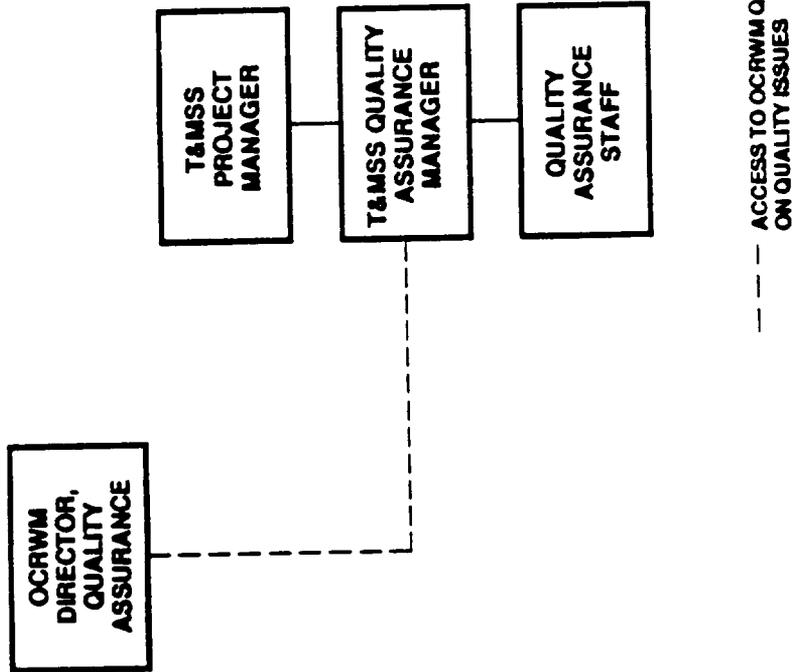
NOTE:  
(1) ALL ACTIVITIES PERFORMED UNDER OCRWM QA PROGRAM

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**EXHIBIT 5**



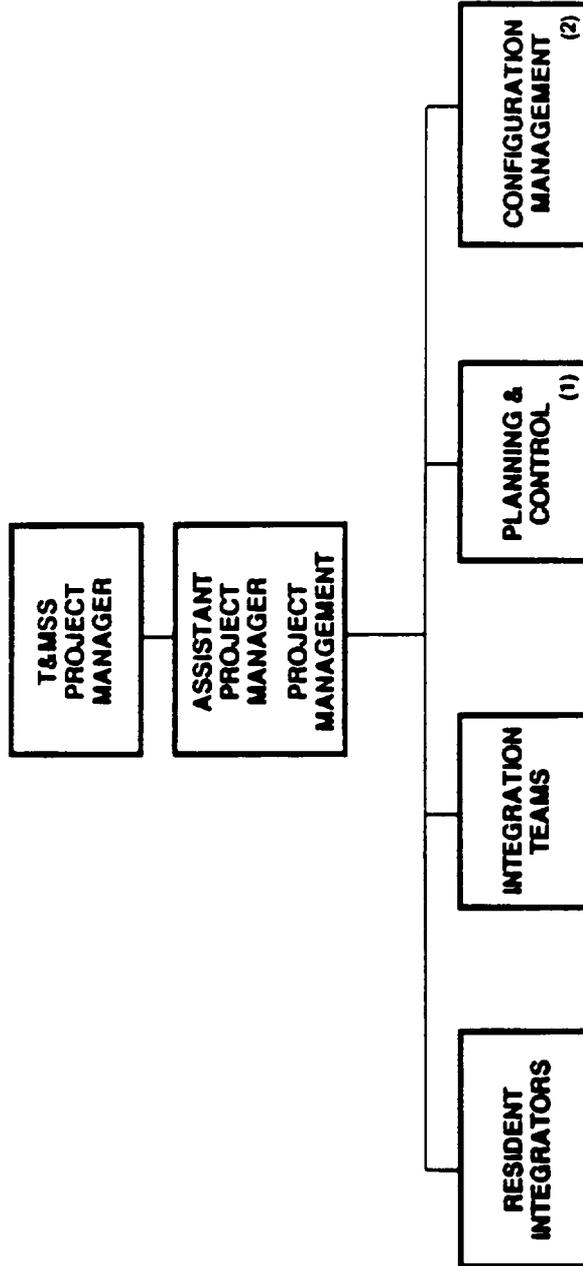
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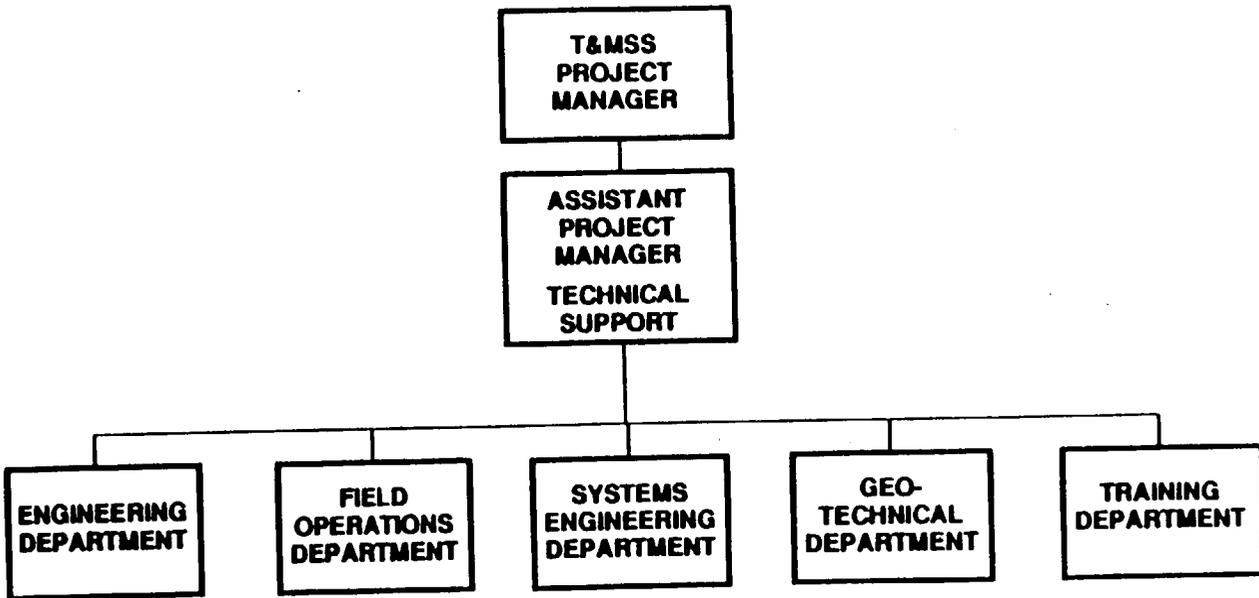
EXHIBIT 6



NOTES:  
 (1) NO QUALITY AFFECTING QA ACTIVITIES PERFORMED BY THIS DEPARTMENT  
 (2) ALL ACTIVITIES PERFORMED UNDER OCRWM QA PROGRAM

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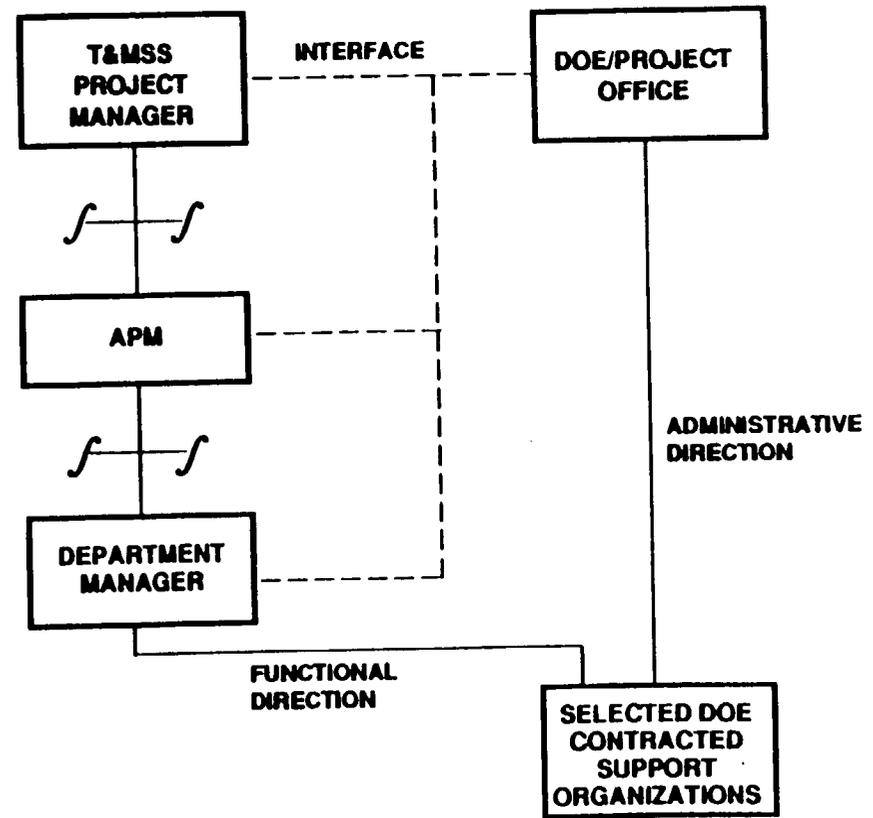
EXHIBIT 7



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EXHIBIT 8

T&MSS INTERFACE WITH SELECTED  
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## 2.0 QUALITY ASSURANCE PROGRAM

The T&MSS organization has developed this document as its description of the quality assurance program that it shall implement. The T&MSS quality assurance program consists of the T&MSS QAPD and related procedures and instructions and complies with the OCRWM QAPD requirements that are applicable to the T&MSS participant activities for the Yucca Mountain Project.

### 2.1 Scope

The scope of activities that constitute the T&MSS QA program includes Regional Studies, Transportation Studies, Information System Programs, Site Characterization Activities as requested by DOE, Procurement, Records Management, Document Control, and Environmental Compliance Management. Exhibit 1 of this section depicts the document hierarchy which sets forth requirements and guidance that the T&MSS QA Program must incorporate, as appropriate, to its scope of work. The T&MSS QA Program is implemented by line organization staff, management, and the quality assurance staff.

### 2.2 T&MSS QA Program

#### 2.2.1 QA Requirements

The quality assurance requirements for the T&MSS QA program are identified in the OCRWM QARD and its Appendix A, Amplifications of Quality Assurance Program Requirements for the Mined Geologic Disposal System (MGDS). Attachment A to this document lists the requirements documents upon which this program is based. When upper tier requirements, identified in the OCRWM QARD, are revised or changed, the T&MSS QAPD shall be revised to incorporate these changes within 20 working days and submitted to the Project Office for approval.

#### 2.2.2 QA Program Planning

Quality Assurance program planning shall consider, as a minimum, the following elements:

- a. Definition of activities.
- b. Selective application of appropriate quality assurance program requirements and procedural controls (that is, a graded approach) to items and activities.

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- c. Assignment of responsibilities for quality assurance program control and verification activities.
- d. Identification of the specific scientific or technical information to be collected, analyzed, or used.
- e. Identification of applicable technical and quality assurance program management control and verification activities.
- f. Identification of required quality assurance records.

**2.2.3 YMP APQs**

The quality-related YMP Administrative Procedures (APQs) provide the implementing interface controls utilized between the Project Office and the T&MSS participant organization activities. T&MSS procedures and instructions shall address the YMP APQs as necessary to implement its QA program. The applicability of APQs to T&MSS participant activities are identified in Attachment B to this document.

**2.2.4 T&MSS QAPD**

The T&MSS QAPD describes the provisions established by T&MSS to implement the applicable requirements of the OCRWM QARD, the T&MSS organizational responsibilities and authorities for achieving and verifying quality, the interfaces between T&MSS and the Project Office, and the overall QA program. Provisions are described in the T&MSS QAPD to meet each section of the OCRWM QARD. The T&MSS QAPD is reviewed by appropriate T&MSS management, reviewed and approved by the T&MSS Project Manager and T&MSS QA Manager, and submitted to the Project Office for approval.

**2.2.5 QA Program Requirements Matrices**

The T&MSS QA Department maintains QA Program Requirements Matrices that describe how T&MSS implements the NRC Review Plan, OCRWM QARD, ASME NQA-1 1989, and this QAPD. The Matrices link the requirement to implementing procedures or instructions.

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**2.2.6 T&MSS Implementing Procedures and Instructions**

The T&MSS implementing procedures and instructions delineate the specific administrative and quality assurance controls used to implement the QA requirements. The three categories of implementing procedures are as follows:

- A. Standard Practice Procedures (SP) - Procedures that assign responsibilities for action to personnel from more than one APM/Department Manager with the purpose being to tie together the activities into one flow relative to an activity or task. SPs are reviewed and approved by the T&MSS Project Manager and QA Manager.
- B. Organizational Procedures (OPs) - Applies to activities and work associated with a requirement or responsibility contained within an organizational entity such as an Assistant Project Manager organization (can be used for Department/Divisions within an APM). OPs are reviewed and approved by the appropriate APM and QA Manager.
- C. Work Instructions (WIs) - Implementing procedures that detail all essential work steps for the worker associated with a task or function. These procedures typically include step-by-step work instructions that may or may not require performer sign-off as each step is completed. WIs are reviewed and approved by the appropriate APM and QA Manager.

As required, T&MSS shall implement YMP Project Office Site Characterization Project Office procedures as part of its QA program. Attachment B identifies the applicability of quality related Project Administrative Procedures (APQs). When directed by DOE its contractors/suppliers may perform their work scope in accordance with T&MSS approved instructions, procedures, plans, or drawings.

**2.2.7 Delegated Work**

The delegation of work activities through consultants, sub-contractors, etc. is controlled by provisions contained in procurement documents. The T&MSS QA organization reviews and approves subcontractor QA program description documents.

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2.2.8 Quality Assurance Program Controls

Quality assurance controls are applied to items and activities affecting quality under suitably controlled conditions that are performed by the T&MSS organization. The T&MSS QA program invokes controls over activities through procedures and instructions, internal audits and surveillances of the QA program by an independent QA staff, external audits and surveys of T&MSS suppliers of items and services, document reviews and management assessments. The extent of QA controls is determined by the line staff in combination with the QA staff and is dependent upon the specific activity, its complexity, and its importance to safety or waste isolation as defined in 10CFR, Part 60.2. Controlled conditions include the use of appropriate equipment; suitable environmental conditions for accomplishing the activity, such as adequate cleanness; and assurance that all prerequisites for the given activity have been satisfied

SHALL, SHOULD, and MAY have unique meanings as used in the QAPD and implementing procedures:

- A. SHALL denotes an action required by a T&MSS commitment, by regulations, orders, or directive of T&MSS management. In playscript format, SHALL is implied when no specific verb (should or may) is used.
- B. SHOULD denotes an action to be completed unless there is (are) good reason(s) not to comply. Treated the same as SHALL by T&MSS personnel, but not subject to compliance auditing by NRC.
- C. MAY denotes an action which is completed at the discretion of the person implementing the procedure.

2.2.9 Readiness Reviews

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

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**2.2.10 Determination of Importance and Graded QA for Items and Activities**

The determination of importance of items and activities and the application of the "graded" approach to QA shall be consistent with the OCRWM QARD and Project Office procedures. T&MSS shall utilize Project Office procedures or develop T&MSS procedures as appropriate to identify items and activities important to radiological safety and waste isolation in accordance with NUREG 1318. These procedures shall enable T&MSS to identify controls for each item and activity; identify provisions for the identification of the required QA records related to these activities; and identify QA program management controls.

It is important to recognize that the implementation of the graded approach covers the totality of the project items and activities as covered by the Project Work Breakdown Structure (PWBS), i.e., the graded approach is not limited to those items and activities which are subject to the regulatory requirements of 10CFR60 Subpart G. In addition, it is a requirement that no work may be initiated on an item or activity until a grading report covering same has been approved in accordance with the NUREG 1318 approach adopted by OCRWM.

**2.2.11 "Qualified" Data**

The T&MSS QA program provides for the acceptance of data or data interpretations for use in licensing activities that were not generated under the controls of the YMP Quality Assurance program. Once accepted, these data are classified as "qualified" for licensing purposes. Specific methods for acceptance of these data shall be described in T&MSS procedures and/or Project Office procedures consistent with the requirements of NUREG 1298.

**2.2.12 Personnel Selection, Indoctrination and Training**

T&MSS personnel assigned to perform activities that affect quality shall receive appropriate indoctrination or training prior to performing work. They shall be instructed as to the purpose, scope, and implementation of quality related manuals, instructions and procedures. T&MSS procedures shall address the requirements for personnel selection, performance of indoctrination, training, and qualification activities.

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An individual's manager is responsible for assuring that he (she) is trained and qualified. T&MSS management establishes job descriptions for each job position in the T&MSS scope of work. The extent and need of training for T&MSS personnel is based on an evaluation of the scope, complexity, and nature of the job position and associated activity and on the education, experience and proficiency of the person. The T&MSS Resource Management staff verifies the education and work experience of T&MSS personnel. DOE contracted support organizations working under the T&MSS QA Program shall verify the education and work experience of their personnel. Methodology and documentation shall be consistent with T&MSS QA Program Provisions.

Personnel selected for T&MSS quality affecting positions shall have the education, experience, and training commensurate with the functions associated with the job position description. Initial qualification shall be documented. Proficiency shall be maintained. Responsible managers shall evaluate and assess the need for additional indoctrination and training, as applicable, as assignments, position and procedures change. Retraining needs are determined by an annual evaluation.

Verification personnel such as lead auditors and inspectors shall be certified and qualified in the principles, techniques, and requirements of the verification activity being performed (e.g., Audits, Inspections) in accordance with approved procedures and instructions which reflect the requirements established in the OCRWM QARD and ASME NQA-1. Qualification and certification records for these personnel shall be maintained.

Classroom training shall be performed in accordance with documented and approved lesson plans. Other forms of training include group instructions, on the job training, and procedural reading assignments.

Personnel shall receive annual proficiency evaluations which shall be documented and discussed with the person evaluated. The evaluations shall consider retraining needs.

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Records associated with indoctrination and training shall reflect attendance sheets, objective and content of the program material presented, and date(s) of attendance as applicable.

Indoctrination and training are evaluated through the audit, surveillance, and trend programs.

**2.2.13 Management Assessments**

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

Management of other organizations participating in the T&MSS QA program shall regularly review the status and adequacy of that part of the QA program which they are executing.

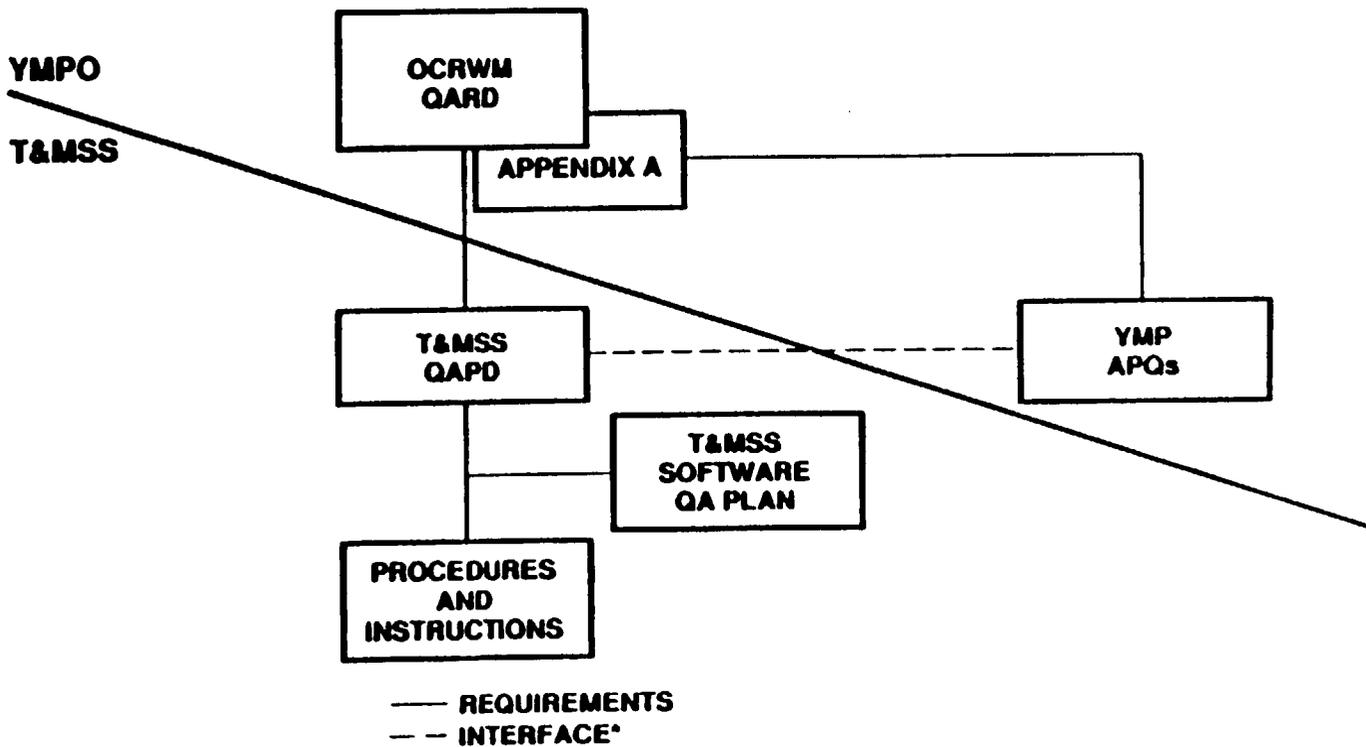
**2.2.14 Management Information Reporting and Tracking**

Communication and information systems shall be established to ensure timely reporting, dissemination, and tracking of quality assurance management information such as the status of QA program implementation, status of resolutions of significant conditions adverse to quality, and summaries of management overview results. This information may be found in meeting minutes, audits and surveillances reports, trending reports, and other documents. It shall be furnished to T&MSS upper management and to the Project Office on at least a quarterly basis.

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EXHIBIT 1  
 SECTION 2

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 T&MSS DOCUMENT HIERARCHY



\* EXCEPT WHERE IDENTIFIED IN ATTACHMENT B OF THIS QAPD

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3.0 DESIGN CONTROL

Design activities shall be accomplished in accordance with written procedures. Those procedures shall describe the process by which the specification of technical requirements are planned, controlled, and implemented. Design inputs, interfaces, outputs, reviews, changes, and deficiencies shall be controlled by approved procedures.

3.1 Engineered Structures, Systems and Components.

3.1.1 Design Input

Applicable design inputs, such as design bases, performance requirements, regulatory requirements, codes, and standards, shall be identified and documented, and their selection reviewed and approved by the responsible design organization. The design input shall be specified and approved on a timely basis and to the level of detail necessary to permit the design activity to be carried out in a correct manner and to provide a consistent basis for making design decisions, accomplishing design verification measures, and evaluating design changes. Changes from approved design inputs, including the reason for the changes, shall be identified, approved, documented, and controlled.

3.1.2 Change Control

Changes to design input documents are subject to the control measures commensurate with those applied to the original design input. Changes shall be approved by the same affected groups or organizations which reviewed and approved the original design documents.

3.1.3 Interface Control

Design interfaces shall be identified and controlled and the design efforts shall be coordinated among the participating organizations. Interface controls shall include the assignment of responsibility and the establishment of procedures among participating design organizations for the design input review, approval, release, distribution, and revision of documents involving design interfaces.

Design input information transmitted across interfaces shall be documented and controlled. Transmittals shall identify the status of the design input information or document provided and, where necessary, identify incomplete items which require further evaluation, review, or approval. Where it is necessary to initially transmit design input information orally or by other informal means, the transmittal shall be confirmed promptly by a controlled document.

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3.1.4 Design Deficiency Control

Deficiencies in approved design input information documents shall be documented and corrective action shall be taken in accordance with Section 16.

3.1.5 Technical Review

Technical reviews shall be used when documents, activities, material, or data require technical evaluation for applicability correctness, adequacy, completeness, and assurance that established requirements are satisfied.

Technical reviews shall be performed when the information or document under review is within the state of the art and is based on accepted standards, criteria, principles, and practices.

Technical reviews shall be performed by individuals with sufficient technical knowledge of the area under review and the results of the review documented.

3.1.6 Peer Review

Peer review shall be employed when necessary to provide adequate confidence in the work under review where the work is a design, a plan, a test procedure, a research report, a material choice, or other item requiring expert judgment to assess the adequacy of work.

Procedures for peer reviews shall address the requirements of NUREG-1297.

3.1.7 Documentation and Records

Design input documentation and records which provide evidence that the design input processes were performed in accordance with QA requirements shall be collected, stored, and maintained in accordance with documented procedures.

3.2 Computer Software

The program description for computer software controls is defined in Section 19 of this document.

3.3 Scientific Investigations

The program description for Scientific Investigations is defined in Section 20.

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5.0 INSTRUCTIONS, PROCEDURES, PLANS, OR DRAWINGS

All quality affecting work performed under the T&MSS quality program shall be implemented through approved procedures, instructions, plans, or drawings that are appropriate to the work or activity. These instructions, procedures, plans, and drawings shall be consistent with the quality requirements of the documents identified in Attachment A and this QAPD. Compliance with approved instructions, procedures, plans, and drawings by T&MSS personnel is required.

Instructions, procedures, plans, or drawings, as applicable, shall include or reference appropriate quantitative or qualitative acceptance criteria as required for determining that described activities have been satisfactorily accomplished, and have been reviewed and approved by T&MSS QA.

5.1 Preparation, Distribution, and Control

5.1.1 Instructions, procedures, plans, or drawings (as applicable) shall be prepared by the department or organization responsible for implementing the activity.

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

5.1.3 When scientific notebooks are used to document scientific investigations, the requirements of Section 20 shall prevail.

5.2 QA Program Compliance

T&MSS shall demonstrate through a matrix system or other means that each of the applicable requirement of the OCRWM QARD, the NRC Review Plan, ASME NQA-1, and this QAPD is properly documented and implemented by procedures and/or instructions.

T&MSS implements the APQs. Attachment B identifies those APQs directly and indirectly implemented by T&MSS and those that do not apply to T&MSS participant activities.

5.3 Change Control

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

5.4 Implementation Verification

T&MSS QA shall verify appropriate implementation of T&MSS instructions, procedures, plans, or drawings through internal audits and surveillances.

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**7.0 CONTROL OF PURCHASED ITEMS AND SERVICES**

Procedures describing the procurement process shall be developed to ensure that delivered items and services and computer software comply with purchasing documents and quality assurance requirements. The T&MS procedures and instructions shall comply with the following provisions:

**7.1 Procurement Planning**

T&MSS shall plan its procurement activities as early as practical to assure interface compatibility and a uniform approach to the procurement process. Procurement of items and services shall not be initiated until these requirements are satisfied. Procurement planning shall provide for the following as applicable:

- A. procurement document preparation, review, and change control;
- B. selection of procurement sources;
- C. bid evaluation and award;
- D. identification of minimum specifications;
- E. T&MSS audits or surveillances of suppliers including the establishment of witness or hold points as necessary;
- F. control of nonconformances;
- G. corrective action;
- H. acceptance of item or service; and
- I. quality assurance records.

**7.2 Supplier Selection**

T&MSS QA is responsible for the evaluation and determination of acceptability of suppliers based on input from the technical personnel procuring items/services and on the capability of the supplier to furnish the required items or service in accordance with procurement document requirements. Acceptable suppliers shall be listed on a Qualified Suppliers List (QSL), maintained and controlled in accordance with T&MSS procedures. Measures for evaluation and selection of suppliers shall include one or more of the following:

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- 7.2.1 Documented evaluation of the supplier's history of providing an identical or similar product that performs satisfactorily in actual use.
- 7.2.2 Review of the supplier's current QA records supported by documented qualitative and quantitative information that can be objectively evaluated.
- 7.2.3 An evaluation by T&MSS QA and technical staff of the supplier's facilities, personnel, implementation of their QA program or the ability of the supplier to use the T&MSS QA program, as applicable, to ensure the adequacy of the supplier's technical and quality capability.

**7.3 Bid/Proposal Evaluations**

The procuring and technical organizations and QA participate in evaluating bids and proposals for conformance to procurement, technical, and quality assurance requirements.

**7.4 Supplier Performance Evaluation**

7.4.1 As required, T&MSS shall establish interface measures with the supplier to ensure that the performance evaluation methods are appropriate, adequate, and understood. These methods include:

- A. requiring the supplier to identify planning techniques and processes,
- B. reviewing supplier generated documents relative to the procurement activity,
- C. providing change control criteria in procurement documents,
- D. documenting information exchange between the supplier and T&MSS, and
- E. establishing the extent of source surveillance and inspection activities necessary.

**7.4.2 Verification of Supplier Performance**

The extent of verification of supplier performance by T&MSS is dependent on the relative importance, complexity, and quantity of the item or services procured. Evaluation of established performance objectives, review of records,

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audits, surveillances, and inspections are methods by which verification of suppliers performance may be accomplished. The purchaser's verification activities shall not relieve the supplier of his responsibilities for verification of quality achievement.

7.4.3 When a supplier has an established QA program, T&MSS QA shall evaluate it to determine program adequacy prior to the supplier being qualified.

7.5 All technical and quality changes to procurement documents for items or services shall be initiated by a purchase requisition change notice and evaluated and processed in the same manner and with the same criteria as the original procurement documents.

7.6 Acceptance of Items

T&MSS procedures shall establish criteria for accepting an item being furnished by a supplier. Supplier certificates of conformance, source verification, receiving inspection, or post installation testing, or combinations of these methods are suitable means of acceptance.

7.6.1 Receiving Inspection

Receiving inspection shall be performed by T&MSS personnel to verify conformance of supplied items to specified requirements per approved procedures. These inspection personnel shall be independent of the organization for which the item was procured, and assure problems are resolved prior to further use, processing, or delivery of an item. If these personnel are not part of the formal QA organization then this inspection activity shall be over-viewed by the T&MSS QA organization. Inspection personnel shall be trained and qualified.

7.6.2 Post Installation Testing

When T&MSS elects to use post installation testing, test requirements, and acceptance criteria shall be established. Verification of the test performance, acceptance criteria, and results shall be documented.

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7.6.3 Certificates of Conformance

Certificates of conformance shall be traceable to items by purchase order number, part number, serial number, or some other approved method. Certificates of conformance for items, services and software shall be periodically evaluated by audits, independent inspections or tests to assure they are valid and the results documented.

7.7 Acceptance of Services

When procuring services only, the services shall be accepted by one or more of the following methods:

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

7.8 Control of Supplier Nonconformances

Nonconformances identified by T&MSS shall be identified and processed in accordance with Section 15 of this QAPD and approved T&MSS procedures. Where suppliers have a QA program, deficiencies identified in-process or at the supplier facility shall be identified per their program. Interfaces shall be established that ensure that supplier generated Nonconformance Reports with a "use-as-is" or "repair" recommendation for disposition are provided to T&MSS for approval.

7.9 Commercial Grade Items

Where T&MSS quality related activities require or provide for the use of commercial-grade items (as defined in this QAPD), then the following provisions are an acceptable alternative to the other requirements of this section. T&MSS procedures and instructions shall provide the detail for implementation of these requirements.

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- 7.9.1 For an item to be considered a commercial-grade item, it must be described in the supplier or manufacturer's catalogue. This published product description shall be referenced in T&MSS procurement documents.
- 7.9.2 Procurement documents shall identify the use of commercial-grade items. The T&MSS department requiring commercial-grade items for its defined work activity shall determine if an alternate commercial-grade item can be used based on its intended function and application.
- 7.9.3 Source evaluation and selection requirements for commercial-grade items are applicable (see para. 7.2) as determined by T&MSS QA and the T&MSS procuring organization based on the complexity of the item and importance to safety or waste isolation.
- 7.9.4 Commercial-grade software used to support quality affecting activities shall be acquired and controlled according to the requirements of the T&MSS Software QA Plan (SQAP).
- 7.9.5 After receipt of a commercial-grade item, it shall be determined that:
- A. the item is not damaged;
  - B. the item received was the item ordered;
  - C. inspection, testing, or both are performed to ensure conformance to the manufacturer's published description; and
  - D. documentation, as applicable to the item, was received and is acceptable.

7.10 Control of Supplier Generated Documents

T&MSS procedures and instructions shall ensure that controls for documents that are provided by the supplier and furnished in accordance with procurement requirements include provisions for receipt, review, and evaluation. These documents include but are not limited to drawings, specifications, designs, and QA program plans.

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7.11 QA Records

All procurement documentation required to demonstrate quality, including supplier generated documents, surveillance reports, receiving inspection reports, purchase orders/requisitions, and change requests associated with procuring items or services, evaluating and approving suppliers, or receiving and evaluating items and services are QA records. They shall be processed and controlled in accordance with Section 17 of this QAPD.

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**8.0 IDENTIFICATION AND CONTROL OF ITEMS, SAMPLES, AND DATA**

T&MSS procedures and instructions shall describe the methods for ensuring that only correct and accepted items, samples, and data are utilized. Identification shall be traceable to the appropriate documentation such as drawings, specifications, purchase orders, technical reports, drilling locations, and logs (including well bore and depth), test records, installation and use records, inspections documents, and nonconformance reports. Control of software is identified in Section 19.

**8.1 Samples**

The T&MSS procedures and instructions for the identification and control of samples shall be generated by the organization responsible for the activity and shall ensure that the following provisions are met.

- A. Samples shall be identified and controlled in a manner consistent with their use.
- B. Interfaces with the Sample Management Facility and other organizations shall be established to define responsibilities for the collection, identification, handling, storage, transportation, traceability, testing, and disposition of samples. Records generated from these activities shall be identified.
- C. T&MSS shall either physically identify samples or identify samples on records traceable to the sample. Traceability of samples from acquisition to final disposition is required, including traceability to appropriate documentation.
- D. Controls shall be established to preclude the mixing of samples or the contamination of samples. Verification of identification of samples shall be performed prior to the transfer or release by T&MSS or the receipt from other organizations. Samples whose identification or integrity cannot be verified shall not be used in quality related or quality affecting activities.

**8.2 Data**

T&MSS procedures shall establish measures ensuring that data resulting from T&MSS activities are properly identified and traceable to the source from which it was generated. This identification and traceability shall be maintained through final disposition. Unacceptable data shall be controlled to prevent inadvertent use; its disposition shall be justified and documented.

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Data gathered under a QA program that does not meet the requirements of the OCRWM QARD shall be qualified per the requirements of Section 2.2.9 of this QAPD and NUREG 1298.

8.3 Items

Items shall be controlled as follows:

- A. Materials, parts, components, and equipment shall be identified either by physical markings or by records traceable to the items at all times during the life of the item.
- B. Marking materials and methods shall be applied using materials and methods which provide a clear and legible identification and do not detrimentally affect the function or service life of the item marked.
- C. Marking or identification requirements shall be identified in procurement documents or specifications as necessary.
- D. Identification of items shall be verified and documented as appropriate prior to use or release.
- E. Items having limited calendar or operating life or cycle shall be identified and controlled to preclude inadvertent use of items whose shelf life or operating life has expired.
- F. The provisions for control of item identification shall be consistent with the planned duration and conditions of storage
- G. Plans, Procedures, or Instructions shall identify items necessary to support scientific investigations.

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9.0 CONTROL OF PROCESSES

This section is not applicable to the T&MSS scope of work.

The OCRM QARD requirements for special processes apply to engineered items and do not apply to scientific investigation activities. The T&MSS scope of work does not include special processes of engineered items.

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10.0 INSPECTION

Inspection criteria apply only to engineered items and not to scientific investigation activities. As such, inspection for T&MSS activities is limited to "receiving and source inspection" as described in Sections 7.6 and 7.6.1 of this QAPD. Procedures describing these activities and which provide criteria for determining where inspections are to be performed shall be developed and implemented.

10.1 Inspection Planning

Inspection planning shall provide for:

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

10.2 Inspection Procedures, Instructions, or Checklists

T&MSS procedures and instructions or checklists developed for receiving or source inspection activities shall incorporate the requirements of ASME NQA-1 Basic Requirement 10 and Supplement 10S-1 as applicable, and shall provide for the following:

- a. Identification of characteristics and activities to be inspected,
- b. A description of the method of inspection.
- c. Identification of the individuals or groups responsible for performing the inspection operation,
- d. Acceptance and rejection criteria,
- e. Identification of required procedures, drawings, and specifications and revisions,
- f. Recording inspector or data recorder and the results of the inspection operation, and

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- g. Specifying necessary measuring and test equipment including accuracy requirements.

Procedures shall identify, if deemed appropriate by QA, mandatory inspection hold points beyond which work may not proceed until inspected by a designated inspector.

Both inspection and process monitoring shall be provided when control is inadequate without both.

10.3 Inspection Personnel

Individuals performing inspections are members of the T&MSS QA organization or are qualified individual independent of the organizational unit responsible for the activity being inspected. In either case, inspectors shall be certified under the provisions of ASME NQA-1, Supplement 2S-1 by the T&MSS QA manager as being qualified to perform specific inspections. Such qualifications/certifications shall be documented and kept current.

10.4 Inspection Results

Inspection results are documented and evaluated, and their acceptance determined by the T&MSS QA organization.

10.5 Inspection Records

In addition to NQA-1 requirements, inspection records generated from controlling procedures and instructions shall contain the following, when applicable.

- a. Identification of the item inspected and the inspection procedure used,
- b. A description of the type of observation (characteristics inspected),
- c. Inspection criteria or reference documents used to determine acceptance, and evidence as to the acceptability of inspection results with signature and organization,
- d. Measuring and test equipment used during the inspection,
- e. Any special expertise used,
- f. The date and results of the inspection,
- g. Inspection identification, and
- h. Action taken to resolve any discrepancies noted.

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**11.0 TEST CONTROL**

Test Control for T&MSS activities shall be limited to equipment and instruments that apply to engineered items only. Scientific investigation activities are controlled under the provisions of Section 20. Instructions and procedures shall be developed to ensure that equipment and instruments procured by T&MSS shall perform satisfactorily in service as determined by testing and that the items conform to specified requirements. These procedures and instructions for tests shall establish controls as described in the OCRM QARD.

11.1 Tests shall include prototype qualification tests as necessary.

11.2 Test procedures shall provide for the following, as appropriate:

- A. test objectives, methods, and characteristics.
- B. criteria for determining when a test is required.
- C. mandatory inspection hold points (witness points, as required).
- D. test requirements and acceptance limits.
- E. trained and qualified personnel.
- F. instructions for performing the test.
- G. test prerequisites shall consider the following as applicable; calibrated instrumentation, appropriate equipment, condition of test equipment, item to be tested, suitable environmental conditions, and provisions for data acquisition and storage.
- H. acceptance and rejection criteria, including required levels of precision and accuracy.
- I. recording of test data and results and evaluation of data to insure that test requirements have been satisfied
- J. test records that include description of item tested, date of test, identification of tester or data recorder, type of observation, results and acceptability, action taken and in connection with any deviations noted, identification of person evaluating test results.
- K. required tests shall be controlled in accordance with approved procedures.

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L. identify potential sources of uncertainty and error and that parameters affected by potential sources of uncertainty shall be identified and controlled.

M. provisions for assuring that test prerequisites have been met.

11.3 In lieu of test procedures, T&MSS may utilize appropriate sections of American Society for Testing and Materials (ASTM) documents, supplier manuals, drawings, and other such documents where adequate instructions exist to assure the required quality of work.

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**12.0 CONTROL OF MEASURING AND TEST EQUIPMENT**

T&MSS procedures shall describe the methods by which tools, gauges, instruments, and other measuring and test equipment (M&TE) used for quality related activities are controlled, calibrated, recalled, and adjusted at specific intervals to maintain accuracy within established limits. Devices such as rulers, tape measures, levels, watches where normal commercial practices provide adequate accuracy do not fall within the scope of this section. T&MSS procedures shall be provided for calibration (techniques and frequency), maintenance, and control of measuring and test equipment. The T&MSS M&TE program shall be consistent with OCRM QARD requirements.

**12.1 M&TE Program**

The T&MSS procedure shall specify and establish a M&TE custodian, and responsibility of implementing personnel, recall system, a master log of M&TE including calibration due dates, methods to identify where M&TE is used, and a history file for each M&TE used by T&MSS.

The T&MSS QA organization shall monitor the implementation of the M&TE program through audits and surveillances.

**12.2 Calibration Systems**

In addition to the requirements described in Para. 12.1 the M&TE program established by T&MSS shall provide for the following:

- A. Use of calibration standards traceable to nationally recognized standards or reviewing and documenting the basis for calibration when no standard exists.
- B. Unless limited by state of the art, calibration standards shall have accuracy greater than the equipment being calibrated. Calibration standards with the same accuracy may be used if they can be shown to be adequate for the requirements, and the basis for acceptance is documented by management. The management authorized to perform this function shall be identified.
- C. Application requirements shall determine selection of M&TE.
- D. Identification of calibration status by tagging or other appropriate means.

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- E. Repairing or replacing damaged equipment or equipment consistently out of calibration.
- F. M&TE shall be calibrated at specified intervals based on the intended use, type of equipment, degree of usage, etc., and when accuracy is suspect.
- G. Devices out of calibration shall be identified and not used. When M&TE is found to be out of calibration, evaluations shall be made and documented to determine the validity and acceptability of measurements performed since the last calibration. Inspections or tests are repeated as necessary on items determined to be suspect.
- H. Calibration records shall identify the procedure and revision used to perform the calibration.
- I. Nonconformances resulting from defective M&TE or re-evaluations resulting in erroneous data shall be processed in accordance with Sections 15 or 16 as appropriate.

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**13.0 HANDLING, STORAGE, AND SHIPPING**

**13.1 ENGINEERED ITEMS**

T&MSS procedures shall describe the methods for handling, storage cleaning, packaging, shipping and preservation of items to prevent loss or damage and to minimize deterioration. Such methods shall be in accordance with design and procurement requirements and Manufacturer's recommendations. T&MSS QA shall monitor implementation of the procedures and instructions through audits and surveillances. QA shall also perform technical document reviews as necessary for special equipment and/or equipment requiring protective environments. These procedures and instructions shall provide for the following criteria:

- 13.1.1 Implementation by suitably trained personnel. Operators of special handling and/or lifting equipment shall be experienced or trained in the use of that equipment. This experience and/or training shall be documented.
- 13.1.2 Special handling tools and equipment shall be inspected and tested, as necessary, to assure that equipment is properly maintained. Any inspection or test shall be documented. Use of this equipment shall be controlled as necessary to assure safe and adequate handling.
- 13.1.3 Procedures shall describe measures (e.g. environmental controls, special packaging) appropriate to the circumstances for sensitive items. Storage provisions for any item shall consider the planned duration and intended use of the item. Its integrity shall be maintained as appropriate.

**13.2 GEOTECHNICAL SAMPLES**

Handling, storing, and shipping requirements are applicable to samples collected for site characterization.

**13.2.1 Geotechnical Sample Handling and Shipping**

Samples shall be controlled during handling, storage, and shipment to preclude damage or loss and minimize deterioration. Controls shall be established for appropriate packaging, handling, and modes of transportation, with consideration being given to type of

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containers, time constraints on perishable materials (that is, shelf life), and any other environmental or safety considerations applicable to the samples. Measures shall be taken to avoid sample contamination during handling and shipment. Where multiple organizations are involved, appropriate procedures shall describe interface and custody responsibilities. Sample identification shall be verified and maintained when samples are handled, transported, or transferred from one organization's responsibility to another.

13.2.2 Geotechnical Sample Storage

Provisions shall be made to maintain sample characteristics, integrity, and identification while in storage. These provisions shall be consistent with the planned duration and conditions of storage and shall describe actions to be taken where samples have a maximum life expectancy while in storage. Storage methodology shall be developed and implemented to assure that samples are maintained in predetermined environmental conditions commensurate with the samples' intended purposes.

Samples shall be controlled to preclude unintentional mixing of like samples or contamination. Provisions shall be made for identification and storage of tested samples in an area physically separated from untested sample materials.

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**14.0 INSPECTION, TEST, AND OPERATING STATUS**

Although the scope of this section does not include scientific investigations, the following activities shall comply with the provisions of this section: receiving inspection activities, post installation testing and use of environmental and radiological monitoring equipment by T&MSS. Procedures and instructions shall provide for identifying the status of inspection and test activities to ensure that required inspections and tests are performed and to ensure that unacceptable items are not inadvertently installed, used, or operated.

14.1 Provisions shall be made for the use of status indicators as appropriate (tags, markings, inspection records, etc.). Authority for application and removal of such status indicators shall be defined. T&MSS shall provide examples of these indicators in the appropriate procedures.

14.2 Procedures shall control altering the sequence of tests, inspections, and other operations important to safety or waste isolation. Such actions shall be subject to the same controls as the original review and approval.

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**17.0 QUALITY ASSURANCE RECORDS**

T&MSS shall process Quality Assurance Records in accordance with approved procedures and instructions. T&MSS generated records shall be processed through the T&MSS Local Records Center (LRC) or the Yucca Mountain Site Office (YMSO) LRC. T&MSS procedures and instructions shall provide interfaces for submittal of these records to the Central Records Facility (CRF). The following provisions apply to T&MSS and shall be reflected in procedures and instructions.

**17.1 Generation of Records**

T&MSS procedures and instructions, scientific investigation plans, procurement documents, and other quality-related documents shall identify the quality records to be generated, supplied, or maintained. QA records include: scientific, engineering, and operational data and logs; Geotechnical data; results of reviews; inspections; tests; audits and material analysis; monitoring of work performance; qualification of personnel, procedures, and equipment; and other documentation such as drawings, specifications; procurement documents, calibration procedures and reports; design review reports; peer review reports; nonconformance reports; and corrective action reports. QA records shall be legible, identifiable, accurate, retrievable, and completed appropriately for the work or activity.

**17.2 Records Validation**

T&MSS documents that furnish documentary evidence of quality become a valid QA record only if stamped, initialed, or signed and dated by authorized personnel, or otherwise authenticated in accordance with approved procedures or instructions. Authentication may take the form of a statement by the responsible individual or organization. Originals or copies may be furnished as records.

**17.3 Index, Identification, Distribution**

T&MSS QA records shall be indexed, identified, and distributed to the CRF in accordance with T&MSS procedures and instructions. The location of indexed records shall be identified. Records and/or indexing shall provide sufficient information to permit identification between the record and the item(s) or activity(ies) to which it applies. Procedures and instructions shall control in-process records and provide for the timely submittal of complete records into the records system.

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17.4 Records Correction

Provisions for correcting records (and documents that will become records) shall ensure that corrected records are reviewed and approved by the originating organization. Such corrections shall include the date and the identification of the person making the correction. Previous information shall not be obliterated by the correction. Provisions shall be established for supplementing or amending records. Controls shall be established for transcribing and authenticating illegible or un-reproducible data or documents.

17.5 Local Records Center

17.5.1 T&MSS QA records shall be submitted to the LRC for processing in accordance with T&MSS procedures and instructions. Records submitted to the LRC shall be stored in dual facilities or in a one-hour fire rated container. One-of-a-kind records shall be stored in a one-hour fire rated safe or vault. Where dual facilities are used, such facilities are located sufficiently remote from each other to eliminate the chance of exposure to a simultaneous hazard.

17.5.2 Procedures and instructions shall identify the LRC receipt control system for identifying the records received, receipt and inspection of incoming records, and temporary storage of the records.

17.6 Central Records Facility

17.6.1 The CRF shall be established and maintained by T&MSS in accordance with the OCRM QARD.

17.6.2 The CRF shall receive and process records in accordance with written procedures.

17.6.3 Indexing of all project records shall be done in accordance with procedures or instructions that are consistent with OCRM direction and instructions. Procedures and instructions shall define a receipt control system which will permit a current and accurate assessment of the status of records during the receiving process.

17.6.4 Records received by the CRF shall be stored in accordance with procedures and instructions. The procedures and instructions shall include the following, as a minimum:

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- a. description of the storage facility;
- b. filing system to be used;
- c. method for verifying records received are in agreement with the transmittal and the records are legible;
- d. a method for verifying the records received are those designated as required records;
- e. rules governing access to and control of the records files;
- f. a method for maintaining control and accountability of records removed from the storage facility;
- g. a method for filing supplemental information and disposing of superseded records.

17.6.5 The CRF storage system shall provide for retrieval of information in accordance with planned retrieval times based upon the record type. A list shall be maintained designating those personnel who shall have access to the files.

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**18.0 AUDITS AND SURVEILLANCES**

The T&MSS Quality Assurance organization shall implement an audit and surveillance program in accordance with this section and CCRWM's QAPD. Both internal audits and surveillances of the T&MSS quality program and external audits and surveillances of T&MSS suppliers and/or contractors that furnish quality related items or services shall be performed by the T&MSS QA organization. This program shall provide independent verification of the status, adequacy, compliance, and implementation of the T&MSS QA program and its elements. T&MSS procedures and instructions for this program shall include the following provisions:

**18.1 Audits**

T&MSS shall implement procedures which define responsibilities and methods for conducting planned and scheduled quality assurance audits by qualified personnel to accomplish the following:

- o verify compliance and determine effectiveness of the program;
- o provide objective evaluation of program implementation;
- o determine effectiveness of achieving quality objectives;
- o involve T&MSS management at all levels in the audit process, and
- o evaluate the technical adequacy of procedures, plans, software, test data, items and activities.

**18.1.1 Audit Scheduling**

The audit schedule shall address all quality-related activities and criteria under T&MSS responsibility and the evaluation shall consider results of previous surveillances and audits, and the impact of significant changes in personnel, organization or quality assurance program. Each area of activity shall be audited at least annually or during the life of the activity whichever is shorter, except for supplier audits. The audit schedule shall be reviewed periodically and updated as necessary. Supplemental audits may be performed as necessary to provide adequate coverage. Audits are regularly scheduled, based upon the status and safety importance of the activities being performed and shall be initiated early enough

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to assure effective QA during design, procurement, site characterization, manufacturing, construction, installation inspection and testing. Copies of the T&MSS audit schedule shall be furnished to APMS and the T&MSS Project Manager for review, assessment, and appropriate action. Information copies are provided to OCRM QA Director.

**18.1.2 Audit Team**

- A. An audit team comprising of one or more auditors (one of whom shall be qualified and certified as a Lead Auditor) shall be identified prior to each audit in an audit notification letter/memo to the organization to be audited. Technical specialists shall be utilized where necessary, e.g. to audit scientific investigations and experiments. The Lead Auditor is responsible for directing and organizing the audit, determining that the audit team is qualified to conduct the audit, preparing and issuing the audit report, and evaluating the responses.
- B. Lead Auditor qualifications and certifications shall comply with requirements established in ASME NQA-1 Supplement 2S-3 and Appendix 2A-3.
- C. Technical members of the audit team shall be indoctrinated in audit techniques. Auditors shall not have had any direct responsibility for the activity being audited.

**18.1.3 Audit Plan and Process**

- A. Planning shall involve the review of previous audits for the activity/area being audited and shall address previous findings (deficiencies, concerns, corrective actions etc.) surveillances, and assessments. Reviews of appropriate documents, procedures, and instructions shall also be performed.
- B. An audit plan shall be developed which identifies the audit scope, requirements, audit personnel, activities to be audited, organizations being audited, applicable documents, schedule, and written procedures or checklists.

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- C. T&MSS shall conduct pre-audit and post-audit conferences with the audited organizations to identify the scope and methodology of the audit, establish interfaces, and identify audit findings, observations, and overall results of the audit.
- D. Requirements from the audit checklist or procedures shall be used to evaluate the elements selected for the audit.

**18.1.4 Audit Report**

The audit report is prepared and signed by the Lead Auditor and issued to the audited organization, the APM of the audited organization, or management of the supplier/contractor being audited, Project Office QA, and the T&MSS QA Manager. An analysis of audit results and audit reports shall be made in accordance with an applicable provisions of Section 16. The Project Manager shall be copied on all T&MSS audit correspondence.

Documentation of identified deficiencies that are not corrected during the course of the audit shall be in accordance with Sections 15 and 16 of this QAPD as shall be the review, verification, and closure of deficiencies.

**18.1.5 Supplier Audits and Evaluations**

- A. Audits of suppliers shall be conducted as necessary based on the scope, complexity, importance to safety or waste isolation, procurement document and/or contractual requirements. When T&MSS determines that an external audit of a supplier is required, the supplier shall be audited on a triennial basis, as a minimum. The controls and responsibilities previously described in this section shall be utilized.
- B. Regardless of audit requirements, all T&MSS suppliers on the Qualified Suppliers List shall be evaluated on an annual basis. The results of previous audits and previously identified deficiencies and nonconformances shall be considered in this evaluation. This evaluation shall be based on some combination of: reviews of supplier documents; results of previous source verifications, audits and receiving inspections; or, demonstrated reliability of an item in service; and results of audits from other sources.

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C. After award of the contract and based on the determination of the quality assurance program applicability of each item or service to be procured, the need for external audits shall be evaluated. A determination may be made that external audits are not necessary for procuring items that are:

1. Relatively simple and standard in design, manufacture, and test;

or

2. Adaptable to standard or automated inspections or tests of the end product to verify quality characteristics after delivery. The rationale for not performing an external audit shall be documented and maintained as part of the QA records.

**18.2 Surveillances**

T&MSS QA shall be responsible for implementing the surveillance program. Surveillance functions by non-QA personnel may be conducted in accordance with approved work instructions for a specific activity (e.g. Radiation Monitoring) as long as the personnel do not directly report to the supervisors responsible for the activity. T&MSS QA shall implement a surveillance program described in T&MSS procedures which assesses in-process work or activities through observation and/or examination. Technical adequacy and quality implementation of the activity shall be evaluated. QA Surveillance personnel shall be knowledgeable in the activity being surveilled, and shall not be directly responsible for the work/activity under surveillance. Surveillances shall be planned and documented and shall identify acceptable and deficient conditions. Surveillances shall be conducted at times commensurate with work schedules and shall be relevant to project milestones. Deficiencies that are not corrected during the course of the surveillance shall be evaluated and handled in accordance with Sections 15 and 16 of this QAPD as appropriate.

Surveillance reports shall be issued to the department or organization being surveilled and to the appropriate APM. The Project Manager shall be copied on all such reports.

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**19.0 SOFTWARE QUALITY ASSURANCE**

For quality related software, T&MSS shall develop a software development and control program to meet the applicable requirements of Section 19 of the OCRWM QARD. The program shall be consistent with guidelines contained in NUREG-0856 and will be designed based on a Software Life Cycle (SLC) model tailored to T&MSS activities.

Application of software QA requirements shall be graded according to software function, nature, and other characteristics of each software type. Criteria shall be established that result in the application of different controls depending upon software relative importance, intended end-use, regulatory significance, degree of complexity, requirement relevance, software origin and the type of software to be employed by T&MSS organizations. Software controls are graded depending on criteria such as:

1. Whether the software is to be used to support Project safety and licensing activities (i.e., does the software support "Activities Affecting Quality" as defined in the OCRWM QARD).
2. Whether the software function is considered scientific or engineering in nature, as defined by NUREG-0856.
3. Whether the software is developed for and by participating organizations (i.e., developed per the OCRWM QARD).
4. Whether the software is procured or otherwise acquired for the T&MSS from sources other than project participating organizations.
5. Whether the software is relatively complex in nature and will require extensive effort to verify and/or validate.
6. Whether the quality of a software product will depend upon SLC controls employed during design, development, and testing.
7. Whether the software will be used to generate primary data.

**19.1 SOFTWARE QUALITY ASSURANCE PLAN (SQAP)**

T&MSS shall implement the software quality assurance requirements contained in OCRWM's QARD, when applicable, in a manner commensurate with the methods, criteria, and controls described in the T&MSS Software QA Plan (SQAP).

The T&MSS SQAP shall establish administrative controls to be used by T&MSS organizations that use quality-related software to perform analysis to support a high-level nuclear waste repository license application. The SQAP shall govern the

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SLC, including the process of software planning, determination of software type, requirements development, structured analysis and design, coding and documentation, testing, verification and validation, installation, certification for release, operational use and change for all quality-related software.

This SQAP shall prescribe controls and a systematic process to reduce the likelihood of software defects entering executable computer software during development. It also ensures that the end-product software implements software quality assurance requirements for the intended application, and reduces the likelihood that software defects will be introduced into executable code during maintenance.

T&MSS Organizations shall control specific software types in accordance with the applicable Standard Practice Procedures (SPs), Organizational Procedures (OPs), or Work Instructions (WIs).

The main objective of the SQAP is to define a structured, disciplined process that controls the acquisition, design, development, qualification, documentation, usage, and maintenance of quality-related software. Specific software management objectives to be met by the SQAP include the following:

1. Establishment of a SLC approach to development, acquisition, testing, and use of quality-affecting software.
2. Definition of a prescribed set of software products to be generated and maintained as QA records.
3. Establishment of controlled software libraries which form a baseline for a software configuration management system.
4. Creation of a software development library for control of unverified or invalidated software.
5. Creation of a software production library for use of software that is developed, acquired, and modified according to the controls of the SQAP.

The SLC process as described in the SQAP shall contain several phases that apply to specific software types which are distinct and separate. Each phase contains specific tasks, activities, and work that contributes to the control of computer program acquisition, development, use and maintenance. T&MSS organizations will adhere to the following SLC phases, as applicable:

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I	Software Classification
II	Requirements Development
III	Software Acquisition
IV	Software Design
V	Code Development
VI	Installation and Operational Use
VII	Software Verification/Validation
VIII	User Application

The SQAP shall apply to quality-related software used for primary data analysis, data reduction, data acquisition, data generation, or quality-affecting activities that produce or manipulate primary data that is used directly to perform technical calculations in support of site characterization, repository design, design analysis, performance assessment, and operation of repository structures, systems, and components.

This SQAP also applies, in part, to system software (high-level software languages, etc.), acquired software, and proprietary off-the-shelf commercial software packages developed outside the Project.

The SQAP shall contain descriptions of processes employed, requirements established, methodologies used, and criteria to be met for quality-related software in the following areas:

- a. Software Quality Management Program
- b. Organization and Responsibilities
- c. Software Requirements Applicability
- d. Software Life Cycle Management Process
- e. Software Documentation, Control and Review
- f. Software Verification and Validation Process
- g. Software Configuration Management System
- h. Qualification and Acquisition of Existing Software
- i. Software Use and Application.

## 19.2 SOFTWARE VERIFICATION AND VALIDATION

Software may be used extensively in quality related scientific and engineering computations. Since error in such software could have serious impacts on activities affecting safety and waste isolation, it is necessary that computer programs exhibit a high level of reliability.

Verification and validation is a systematic process for improving reliability that includes:

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- o Computer software verification - a process that demonstrates that the computer software performs correctly, that software requirements are implemented in software design, and that the software design is implemented in the computer code.
- o computer model verification - an independent assessment that software performs the operations specified in a numerical model correctly.
- o computer model validation - an independent assessment for a specific computer software application that demonstrates that the mathematical model embodied in the software is an adequate representation of the process or system for which it is intended.

The T&MSS SQAP shall describe the processes used to assure software verification and validation is planned, performed, documented, and justified consistent with NUREG-0856 requirements and the SLC.

**19.3 SOFTWARE CONFIGURATION MANAGEMENT**

In order to satisfy configuration management program requirements of the OCRWM QARD, a Software Configuration Management System (SCMS) shall be established by T&MSS and described in the SQAP. The SCMS shall be controlled and managed by the T&MSS Information Systems Department (ISD) according to implementing procedures or instructions. The purpose and scope of the SCMS is to:

- o Uniquely identify, control, and track T&MSS organization computer software products.
- o Control and record change to software products during development and maintenance of quality-related software.
- o Control the transfer of T&MSS organization computer software between the software production library, the software development library, and outside organizations.
- o Maintain the status of T&MSS organization quality-related software and any changes made to software products.

The SCMS shall provide for six basic functions which shall be described in the T&MSS SQAP. These include:

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1. Identify each software product.
2. Enter software products into the SCMS.
3. Provide change control over the baseline.
4. Facilitate software discrepancy reporting.
5. Assure that software defects are corrected.
6. Identify and maintain status of the baseline.

Two software libraries shall be established and maintained by T&MSS for the purpose of controlling software with different status. The software libraries utilized are:

- A. The Software Production Library. This library contains System Software and software approved for use in Project license application activities. User access to the library is controlled by the ISD Manager. Software in this library must have completed all applicable phases of the SLC.
- B. The Software Development Library. This library contains software approved for use which shall be controlled until verification and/or validation is completed. Access to the library is controlled by the ISD Manager. Once verified and validated, computer programs in this library will be transferred to the Software Production Library. The computer results obtained from use of computer programs in the Software Development Library shall be marked or stamped to identify and control the use of such data in quality-affecting activities.

**19.6 QUALIFICATION OF EXISTING SOFTWARE**

All T&MSS software that is acquired from commercial or non-Project sources is considered existing software and shall be evaluated or qualified prior to use in quality affecting activities. The qualification process for existing software ensures that the software and associated documentation can meet applicable technical and QA requirements.

System software is a special software type that is procured based on proven commercial use without qualification.

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19.7 SOFTWARE DOCUMENTATION

T&MSS quality related software shall be documented in accordance with the SLC control process and procedures. Each SLC phase results in the preparation of one or more software products documenting the tasks, activities, and work conducted during the phase. These software products are prepared, reviewed, and approved according to the criteria provided in the T&MSS SQAP.

Computer programs are documented and controlled during each phase of SLC. The documentation shall meet the minimum acceptable levels established by the SQAP. The documentation of scientific and engineering software shall be consistent with the guidance contained in NUREG-0856, "Final Technical Position on Documentation of Computer Codes for High-Level Waste Management."

19.8 SOFTWARE REVIEWS

Reviews of computer software and associated documentation shall be performed in accordance with a T&MSS software review procedure. Reviews shall be performed for each software product completed during the SLC as specified in the T&MSS SQAP. Reviews shall be performed according to a document review process that includes T&MSS comment resolution prior to entry of documentation into the SCMS.

19.9 DISCREPANCY REPORTING AND CORRECTIVE ACTION

A formal software operational problem and defect reporting system shall be established and integrated with the SCMS. Software problems shall be evaluated to determine their potential impact and whether or not a software defect exists. The evaluation considers the following:

1. Does the software problem involve a condition adverse or potentially adverse to quality?
2. Could the software problem, if not corrected, affect the quality of primary data?
3. Is the software product used to perform scientific and engineering computations in support of the Project license application?

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4. Is the software product in use in the Software Production Library?

Once a software defect is identified and affected users are notified, it is the responsibility of the prime user to take corrective action. This includes documentation of the software defect, determination of its impact on any prior user applications, and correction of the software defect by modification of the software.

A software defect may be cause to withdraw the software from either the Software Production or Development Library.

19.10 MEDIA CONTROL AND PHYSICAL SECURITY

Master copies of physical media containing the images of software shall be physically protected to prevent their inadvertent damage, degradation or loss. Media control and security is ensured by the Yucca Mountain Site Characterization Project (YMP) computer center, the magnetic tape storage system, the software library, and the Project Office computer protection system.

19.11 ACQUIRED COMPUTER SOFTWARE

T&MSS shall establish procedures or instructions to control the following software acquisition activities:

1. Acquisition of system software
2. Acquisition of existing software
3. Conversion of existing software
4. Transfer of existing software
5. Change to acquired software

Existing software and system software are acquired as non-quality affecting items and qualified or evaluated prior to use in quality-related activities.

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19.12 COMPUTER SOFTWARE APPLICATION

Each T&MSS organization using software installed in the Software Production or Development Library to perform technical calculations in support of site characterization, design analysis, performance assessment and operation of repository structures, systems, and components, shall follow approved technical procedures or instructions to:

1. Control the application, documentation, review and verification of scientific and engineering computations.
2. Control electronic calculations as required by the SQAP.
3. Control the use of unverified or unvalidated software.

19.13 T&MSS SOFTWARE QA PROCEDURES AND INSTRUCTIONS

T&MSS shall develop specific implementing procedures or instructions to control the software activities described in the SQAP, as appropriate.

If specific software activities are anticipated, planned, or expected to be conducted, and the initiation date of such activities is uncertain, implementing procedures or instructions may be deferred until the activities are defined and their need is certain.

T&MSS organizations developing software QA procedures or instructions will adhere to the following provisions, as appropriate:

1. A series of procedures or instructions based on any hierarchical relationship that is consistent with the T&MSS SQAP.
2. Issuance of one or more procedures or instructions only when they are needed to perform specific activities.
3. The complete freedom to refer, cite, apply, specify, and utilize information or criteria contained in the SQAP.
4. Avoid, wherever feasible, duplication and redundancy between the SQAP and its implementing procedures and instructions.
5. Preclude, whenever possible, the introduction of new acceptance or rejection criteria not specified, defined, or provided in the SQAP.

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6. Clarifications, explanations, definitions and interpretations of the SQAP will be documented by the T&MSS Information Systems organizations in memoranda and correspondence to primary users and affected parties.
7. The software quality assurance analyst reporting to the T&MSS Information Systems organization will be responsible for concurring with clarifications, explanations, definitions and interpretations of the T&MSS SQAP.
8. If the SQAP does not require the use of standards, conventions, techniques, or methodologies, implementing procedures, or instructions may reference such methods and assure compliance by a memorandum stating those portions of the reference to be followed.

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20.0 SCIENTIFIC INVESTIGATION CONTROL

T&MSS shall develop and implement instructions, procedures, and plans, as appropriate, to control scientific investigations. These instructions, procedures, and plans shall implement the requirements described in the OCRM QAPD and reflect the following provisions.

20.1 Scientific Investigation Planning

- a. Prior to the start of any scientific investigation, a scientific investigation planning document (for example, study plan) shall be developed. Planning documents shall contain:
  1. Description of work to be performed.
  2. Rationale and justification of the information to be obtained.
  3. Proposed methodology.
  4. Rationale and justification for the proposed methodology.
  5. References to applicable documents.
  6. Identification, explanation, and justification for areas where scientific notebooks are to be used.
  7. Description of constraints.
  8. Description of the application of the scientific investigation's results.
  9. Description of schedules and milestones.
- b. These planning measures shall include or reference provisions for assuring that:
  1. Prerequisites for the given scientific investigation have been met.
  2. Adequate instrumentation is available and used.
  3. Necessary monitoring including witness or hold point have been performed.
  4. Suitable laboratory conditions are maintained.

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5. Scientific investigations at each step are compatible with applicable conceptual or mathematical models used at each applicable stage.
6. The evaluation of data quality to assure that generated data is valid, comparable, complete representative, precise, and accurate.
7. Sources of error and uncertainty and input data that is suspect or whose quality is beyond the control of the performing organizations is identified.

c. Prerequisites

The following prerequisites shall be considered:

1. Calibrated instrumentation.
2. Appropriate equipment.
3. Trained personnel.
4. Readiness of facilities, equipment, supplies, and items or samples.
5. Suitable environmental conditions.
6. Provisions for acquisition and recording of data.
7. Disposition of facilities after completion of scientific investigation activities.
8. Environmental compliance and land access approval.

The responsible T&MSS organization shall conduct a technical review or peer review of the scientific investigation planning document prior to data collection or analysis activities. In exceptional cases, the originator's immediate supervisor can perform the technical review if the supervisor is the only technically qualified individual, and if the need is individually documented and approved in advance with the concurrence of the QA manager of the originating organization. The results of this technical or peer review, and the resolution of any comments by the reviewer or reviewers, shall be documented, and shall become a part of the QA records.

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All changes in scientific investigation planning documents shall go through the same review and approval process as the original planning documents.

The intended use of data shall be documented as part of the planning for scientific investigations. Any alternate use of the data shall be evaluated for appropriateness and the justification documented.

The range, accuracy, and precision of equipment used for scientific investigations shall be specified in order to be commensurate with requirements. In developing quality assurance program requirements for equipment, consideration shall be given to whether proper performance of a scientific investigation can be determined during or after the scientific investigation (that is, whether failure or malfunction of equipment can be detected). Where special quality assurance program requirements are found to be necessary, specific performance verification requirement shall be established and described to govern the use of the equipment.

Scientific planning documents, study plans, or other documents, defining and planning the activity, shall identify the use of commercial-grade items. The T&MSS department requiring commercial grade items for its defined work activity shall determine if an alternate commercial-grade item can be used based on its intended function and application.

20.2 Planning Document Review and Approval

T&MSS shall conduct either a technical review or peer review of the scientific planning document with qualified personnel who did not develop the original planning document.

In exceptional cases, the originator's immediate supervisor may perform the technical review if he or she is the only technically qualified individual and if the need is documented and approved. T&MSS QA must concur. The results of the technical or peer review and concurrence with the resolution of any comments shall become QA records in accordance with Section 17.

All changes in scientific investigation planning documents shall go through the same review and approval process as the original planning documents.

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The intended use of data shall be documented as part of the planning for scientific investigations. Any alternate use of the data shall be evaluated for appropriateness and the justification documented.

20.3 Technical Procedures

The use of technical procedures is one method by which scientific investigations are controlled. This method is used to perform repetitive work that does not require a high degree of professional judgment or trial and error methods, or when it is not possible to deviate from a prescribed sequence of actions without endangering the validity of the expected results.

Technical procedures shall provide for the following as appropriate:

- a. Requirements, objectives, methods, and characteristics to be tested or observed;
- b. Prerequisites such as calibrated instrumentation, adequate equipment, readiness of facilities, controlled environments, etc.;
- c. Mandatory verification points, as applicable;
- d. Acceptance and rejection criteria including required levels of accuracy and precision as appropriate;
- e. Methods of documenting or recording data and results including precision and accuracy;
- f. Methods of data reduction if it is part of a test, or reference to procedures containing the information;
- g. Provisions for ensuring that prerequisites have been met, special training or qualification requirements for personnel performing scientific investigations are met, and personnel responsibilities are defined;
- h. Procedures are detailed to the extent that the investigation can be repeated by personnel who are skilled in the state of the art of the field of investigation without recourse to originator(s).

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- i. Potential sources of uncertainty and error in technical procedures are controlled as required; and
- j. Suspect input data are identified and controlled as required.

20.4 Scientific Notebooks

The scientific notebook system is another method for controlling scientific investigations where a high degree of professional judgment or trial and error methods are used or a methodology is required to be developed to accomplish an activity. When this system is used, the scientific investigation planning document or study plan shall control the activities. The notebook shall contain specific detail such that the investigation can be repeated by another qualified individual without recourse to originator(s) and achieve the same results. Logbooks or note books are used to document the activities undertaken and comprise the scientific notebook system. Requirements are established in OCRWM's QAPD for initial and subsequent entries into the scientific notebook regarding title of research, names of persons performing the research, objectives, methodology, etc. The initial entries may be modified as necessary by authorized personnel and subsequent entries shall be detailed step-by-step implementation of the prescribed methodology. The final entries in the record shall have as a minimum the signature of the experimenter and the signature of a technical reviewer.

20.5 Interface Controls

T&MSS shall identify ongoing field investigations to preclude inadvertent interruption and to assure operational compatibility. The location of field investigations shall be clearly identified.

20.6 New Methods, Procedures, or Processes

Activities used to develop new methods or procedures for conducting scientific investigations or critical processes shall be documented. Results of scientific investigations or critical processes shall be documented and reviewed for adequacy and approved by qualified persons prior to use.

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20.7 Data Interpretation and Analysis

T&MSS procedures, instructions, and plans shall ensure that the data interpretation and analysis are documented in sufficient detail as to purpose, method, assumptions, input references and units such that technically qualified personnel are able to review, understand, and verify the analysis without recourse to the originator. Because these verifications may not be examined and used for an extended period of time the documentation of the analysis shall include the following:

- a. Statement of objectives;
- b. Identification of input, input sources, and assumptions;
- c. Listing of applicable references;
- d. Results of literature searches or other background data;
- e. Identification of any computer calculation including computer type, program name and subject, revision, input, output, evidence of program verification, and the bases of application to the specific problem;
- f. Calculations identifiable by subject, originator, reviewer and dates;
- g. Signatures and dates of reviews and approval by appropriate personnel; and
- h. Description of the methods of control of erroneous, rejected, or otherwise unsuitable data.

T&MSS is responsible to assure that equipment and methods used to obtain and analyze data are technically adequate and properly selected. Data transfer and reduction controls shall, as appropriate, be such that errors are held within prescribed limits and not lost in the outputs. Any computer programs utilized are controlled as described in Section 19 of this document.

20.8 Scientific Investigation Results

T&MSS shall document and summarize the results of all scientific investigations in a technical report. The documentation results shall include a discussion as to whether or not the research or experiment objectives were achieved. The following shall be included, as appropriate:

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- a. Unreviewed data and data with unresolved questions shall be clearly identified when used or reported. Uncertainty limits shall be assigned prior to use of such data.
- b. Peer reviews or technical reviews shall be performed on the results of these investigations by T&MSS in accordance with approved procedures; and
- c. Data collection and analysis are to be technically reviewed by qualified T&MSS personnel other than those who performed the investigation. Questions shall be resolved before the results are used as a baseline.

Any procedural deficiencies or nonconformances identified during or subsequent to the scientific investigations shall be handled in accordance with the requirements of Sections 15 and 16 of this QAPD.

**20.9 Records of Scientific Investigations**

The original recorded data, reports, and scientific notebooks are all considered QA records and processed per Section 17 of this document. These records include technical reviews, peer reviews, technical reports, notebooks, logs, deficiency documentation, etc. Documentation resulting from scientific investigations shall be reviewed to assure that QA records for the investigation are adequate and complete. Procedures shall be established describing methods of documenting, recording, reviewing, and confirming accuracy of records. Such records include laboratory and field notebooks and log books, data sheets, data reduction documents and software.

**20.10 Peer and Technical Reviews**

Peer reviews and technical reviews utilized in the activities associated with scientific investigations shall be performed in accordance with T&MSS procedures and instructions.

Technical reviews shall be performed when the information or document under review is within the state of the art and is based on accepted standards, criteria, principles, and practices. Technical reviews shall be used when documents,

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activities, material, or data require technical evaluation for applicability, correctness, adequacy, completeness, and assurance that established requirements are satisfied. Technical reviews shall be performed by individuals with sufficient technical knowledge of the area under review.

A peer review should be used when the adequacy of information (e.g., data, interpretations, test results, design assumptions, etc.) or the suitability of procedures and methods essential to showing that the repository system meets or exceeds its performance requirements with respect to safety and waste isolation cannot otherwise be established through testing, alternate calculations or reference to previously established standards and practices.

The results of technical and peer reviews shall be documented.

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ATTACHMENT B

APPLICABILITY OF YMP APQS

I. APQs Directly Implemented by T&MSS as a Participant

- AP-1.6Q Release of Unpublished Information
- AP-1.10Q Preparation, Review and Approval of SCP Study Plans
- AP-3.5Q Field Change Control Processes
- AP-3.6Q Configuration Management
- AP-5.1Q Control and Transfer of Technical Data on the Yucca Mountain Project
- AP-5.2Q Technical Information Flow to and from the Yucca Mountain Project Technical Data Base
- AP-5.3Q Information Flow into the Project Reference Information Base
- AP-5.9Q Qualification of Data or Data Analyses not Developed Under the Yucca Mountain Project Quality Assurance Plan
- AP-5.19Q Interface Control
- AP-5.20Q Hold Control
- AP-5.21Q Field Work Activation
- AP-5.27Q Control of Nonconformances
- AP-5.28Q Quality Assurance Grading
- AP 5.32Q Test Planning & Implementation Requirements
- AP-6.3Q Interaction of Participants and Outside Interests with Yucca Mountain Project Sample Management

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**II. APQs Implemented by T&MSS through T&MSS Participant Procedures**

- AP-1.5Q Issuance and Maintenance of Controlled Documents
- AP-1.17Q Forms Control
- AP-4.1Q Procurement
- AP-5.13 Readiness Review
- AP-6.1Q Project Office Document Development, Review, Approval, and Revision Control

**III. APQs Not Applicable to T&MSS as a Participant, but may be implemented by T&MSS personnel performing direct support to the Project Office under the OCRPM QA Program.**

- AP-3.3Q Change Control Process
- AP-5.10Q Use of NTS Contractors on the MNWSI Project
- AP-5.16Q Field Technical Compliance
- AP-5.18Q ESF Design Control
- AP-5.24Q Preparation and submittal of As-built Drawings and Specifications
- AP-6.2Q Management and Operation of Sample Handling Activities at Borehole Sites
- AP-6.4Q Procedure for the Submittal, Review, and Approval of Requests for Yucca Mountain Project Geologic Specimens
- AP-6.6Q Field Collection, Documentation, and Specimen Removal of Exploratory Shaft and Drift Rock
- AP-6.17Q Determination of the Importance of Items and Activities

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ATTACHMENT C

T&MSS QA GLOSSARY

This Glossary contains only those terms and definitions that are unique to the T&MSS QA Program. The terms and definitions of NQA-1 Supplement S-1, the Yucca Mountain Glossary, and the OCRWM QARD shall also apply to all T&MSS participant activities. Where differences exist between this document and others, the definitions in this document shall take precedence.

Acceptance - An act performed after methods for verifying that items and services being furnished comply with the procurement requirements have been satisfied.

Computer Program - A sequence of instructions suitable for processing by a computer. Processing may include the use of an assembler, a compiler, an interpreter, or a translator to prepare the program for execution as well as to execute it.

Commercial Grade Item - An item satisfying all of the following:

- a. Not subject to design or specification requirements that are unique to Mined Geologic Disposal System, and
- b. Used in applications other than Mined Geologic Disposal System, and,
- c. Is to be ordered from the manufacturer/supplier on the basis of specifications set forth in the manufacturer's published product description (e.g. a catalog).

Controlled Document Information System (CDIS) - A computerized data base system which stores the controlled document master list of documents, controlled document distribution lists, and controlled document log and performs search and retrieval of controlled document information.

Deficiency - A deviation from established requirements, which, if left uncorrected could have an impact on the quality of item or activity.

Document Control Center (DCC) - A facility dedicated to the distribution, recall, and tracking of documents and their protection from loss, damage, or deterioration.

Facility Survey - A direct evaluation of the supplier's facility, personnel, and implementation of his program to determine the capabilities of the supplier to satisfy the requirements of the purchase order or contract.

Form Custodian - The person who is responsible for creating, revising, or maintaining a form(s) associated with a T&MSS procedure or T&MSS activity.

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**Functional Change** - A change in the title, functions, responsibilities, or lines of reporting authority of an organization.

**Job Position Description** - Documentation of the duties to be performed and the minimum qualifying experience, education, and professional training required for a position.

**Major Revision** - Changes to a document that affect a process within the document, the basic content, or a major change in concept.

**Minor Revision** - Changes such as department name changes; typographical errors; minor wording changes for clarity; and editorial corrections in grammar, punctuation, or spelling where the basic content of the document does not change.

**Mandatory Comment** - Comments that identify significant problems or weaknesses regarding technical content, concept, practice, implementation, or responsibilities that render a document unacceptable for implementation or out of compliance with established requirements. All comments designated as mandatory must be resolved with the reviewer and the resolution documented.

**Management Assessment** - Determination of effectiveness of establishing, planning and implementing quality requirements which conform to applicable regulations, standards, procedures, and related program requirements. It verifies that responsible managers have defined the quality objectives and requirements for their activities; planned and established the organizations resources and means for performing their activities; communicated their objectives, requirements, plans, procedures and assignments to involved organizations and individuals; and monitored the performance of activities to verify that objectives are being achieved.

**Nonmandatory Comment** - Suggestions regarding the organization or content of a document that provide helpful additions or deletions, typographical corrections, punctuation, etc., but do not constitute a significant problem or weakness. Nonmandatory comments may be incorporated at the discretion of the author.

**Non-technical Document** - A document that does not contain technical subject matter. A description of Yucca Mountain Project technical activities and technical documentation are defined in the Systems Engineering Management Plan, NNWSI/88-3.

**Organization Chart** - A graphic representation of the structure of the T&MS organization that illustrates organizational titles, lines of reporting authority, names of individuals assigned to the organization, and remarks about the current status of the organization or individuals within the organization.

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**Organizational Change** - A change in the functional structure or personnel of an organization, which is reflected in the T&MSS organization chart.

**Organization Procedure (OP)** - Applies to activities and work associated with a requirement or responsibility contained within an organizational entity such as an Assistant Project Manager organization (can be used for Department/Divisions within an APM).

**Obsolete Document** - An obsolete document is a document that is no longer required for use, will not be superseded, and is removed from controlled distribution.

**One-over-One Approval** - The approval, by signature, of the originator of a document and originator's immediate manager or higher tier manager.

**Occurrence** - Any deviation from planned or expected behavior or course of events in connection with any Department of Energy or Department of Energy-controlled operation if the deviation has environmental protection, safety, or health protection significance.

**Position Description** - Documentation of the duties to be performed and the minimum qualifying experience, education, and professional training required for a position, synonymous with job position description.

**Provisional Status** - An asterisk on the organization chart that indicates that procedures/controlled documents are being revised to reflect a functional change or that training is still being conducted in response to a personnel change.

**Personnel Change** - The addition, deletion, or transfer of an individual within an organization.

**Procedure Category** - Identification and numbering of procedures and instructions based on groups or categories that best satisfy task requirements. Categories are typically determined by subject, frequency, or criteria.

**Procurement Record** - Consists of those procurement documents (pre-award and post-award) necessary to adequately delineate procurement, requester, and Quality Assurance (QA) requirements for procurement.

**Procurement Package Table of Contents** - An open-ended document initiated upon generation of a PR Package which lists each document as it is added to the PR Package and Procurement Record.

**Qualified Supplier List (QSL)** - A controlled list of qualified suppliers determined to have the capability to supply items or services meeting the requirements of procurement documents.

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Qualified Supplier List Change Notice - The form used to modify the QSL during the period between required revisions of the QSL. (e.g., additions, deletions, or adjustments to the existing list).

Qualified Supplier List Index - The index is a compilation of suppliers which features a matrix which provides a quick reference to vendor capabilities.

Qualified Supplier - A supplier which has been evaluated and determined to be capable of fulfilling the quality and technical requirements applicable to the actual or anticipated scope of work.

Quality-Affecting Items - Those manufactured or engineered structures, system and components which could impact the safety, reliability, or operability of the repository within the context of 10CFR60 Subpart G.

Quality Assurance Program Description (QAPD) - The document that describes T&MSS' Quality Assurance (QA) Program as a participant, the organizational responsibilities for achieving and assuring quality at T&MSS, and defines how compliance with QA criteria will be accomplished for T&MSS' scope of work that is performed as a participant.

Quality Finding/Management Corrective Action Report (QF/MCAR) - A pre-formatted form used to document identified conditions adverse to quality (programmatic or implementation), significant conditions adverse to quality and their associated follow-up.

Receipt - Activities conducted upon receipt of items to check such elements as the quantity received, part number and the general condition of the freight package.

Receiving Inspection Report - The document used to identify items to be received, the inspection method(s) used to accept the item(s), the characteristics to be inspected, and the results of the inspections.

Receiving Office - Any designated receiving function approved to perform receipt inspection.

Off-site - Any designated drop shipment point, other than the standard T&MSS on-site receiving function, that has approved procedures for receipt and control of quality affecting items or services which have been reviewed and accepted by T&MSS Quality Assurance (QA).

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**On-site** - The receiving function located at Office Services, Room 407, 101 Convention Center Drive, Las Vegas, Nevada.

**Resolution** - Agreement between staff member and reviewer that disposition of a mandatory comment is mutually satisfactory or has been reconciled by appropriate management personnel.

**Responsible Manager** - The manager to whom the assigned staff member reports administratively and has one-over-one approval authority.

**Senior Manager** - For the purpose of this procedure, a Senior Manager includes the Project Manager and any manager with direct reporting responsibility to the Project Manager (e.g., Assistant Project Managers, T&MSS Quality Assurance Manager, Manager of the Office of Institutional and External Affairs, and the Project Office QA Liaison).

**Service** - The performance of activities such as design, fabrication, inspection, nondestructive examination, investigation, site characterization, calibration, repair, installation, or other service as defined in the procurement document.

**Software Requirements Specification** - The Software Product resulting from the software requirements phase of the Software Life Cycle. A definition of User needs and Computer Program functions.

**Standard Practice Procedure (SP)** - A procedure that assigns responsibility for action to Personnel from more than one APM Organization with the purpose being to tie together the activities into one system or flow relative to an activity or task.

**Stop Work Action** - An action documented on a Stop Work Order (SWO) and issued as a directive to cease and desist the identified activity when, in the view of the Quality Assurance Manager and T&MSS Project Manager, continuing work could result in:

Failure to adequately control the processing, delivery, installation, modification, or operation of a nonconforming item.

Serious failure or breakdown of the T&MSS Quality Assurance Program.

Significant hazard to those items or activities that are important to safety and/or waste isolation.

**Superseded Document** - A superseded document is a previously released document, which has been replaced in its entirety by another controlled document.

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**Supplemental Audit** - Audits which are conducted in addition to regularly scheduled audits. They cover specific subjects deemed necessary by the T&MSS QA Manager or Lead Auditor.

**Supplier Generated Document** - Those documents generated by a supplier in accordance with procurement document requirements.

**Technical Coordinator (TC)** - The staff member with functional responsibility for a specific DOE Order area (e.g., managers of T&MSS Quality Assurance, Radiological Field Programs, Safety and Health Compliance, Information Systems, etc.). Functional responsibility is generally determined by the current T&MSS Organization Chart.

**Technical Document** - A document of technical subject matter other than institutional materials developed for one-time use for specialized audiences, or financial, property control, management, or contractual information that is administrative in nature. Technical documents may include (but are not limited to) the following:

- o topical reports, final reports, and letter reports;
- o technical data for programmatic decisions;
- o conceptual designs, schematics, block diagrams, drawings, and maps;
- o any nonadministrative documents (e.g., regulatory, socioeconomic, or environmental) required or developed to support project objectives.

**Testing** - an element of verification for the determination of the capability of an item to meet specified requirements by subjecting the item to a set of physical, chemical, environmental, or operating conditions.

**Unplanned Event** - A situation that occurs outside of normal planned activities and occurrences. Examples of unplanned events include serious injury, fire, release to the environment of radioactive materials or hazardous chemical, loss or theft of hazardous or radioactive material, and other significant events which may concern the public.

**Unusual Occurrence (UO)** - The term UO applies only to such occurrences as are reportable to DOE under applicable DOE Orders.

**Work Instruction (WI)** - Implementing procedure that details all essential work steps for the worker associated with a task or function. These procedures typically include step-by-step work instructions that may or may not require performer sign-off as each step is completed.

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 MATRIX REVISION 2

T&MS QA PROGRAM  
 BASIC REQUIREMENTS MATRIX DOCUMENT  
 NRC REVIEW PLAN - REVISION 2

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NRC REVIEW PLAN REQUIREMENTS	WHERE SATISFIED IN THE T&MS QAPD - Rev. 3	WHERE SATISFIED IN THE IMPLEMENTING PROCEDURES
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PREPARED BY: Kim Chynoweth DATE: 5/16/91  
 APPROVED BY: Kent B Johnson for J.B. HARPER DATE: 5/16/91

I. ORGANIZATION

The Organization elements responsible for the QA program are acceptable to the NRC staff if:

- |   |   |  |
|---|---|--|
| 1. The responsibility for the establishment and execution of the overall program is retained and exercised by that organization or individual responsible for submitting the license application.   | N/A                                     | N/A  |
| 2. The authorities and duties of persons and organizations performing activities important to safety or waste isolation, hereafter referred to as "safety functions," are clearly established and delineated in writing.  | 1.0 (all)                               | Adequately addressed in QAPD Exhibits 1-8, SP 1.41 Rev 0, SP 1.2 Rev 4                     |
| 3. The QA program assures that activities affecting safety functions include both the performing functions of attaining quality objectives and the QA functions.  | 1.0, 1.7<br>Policy Statement            | SP 1.2 Rev 4   |
| 4. The QA functions are those of: (a) assuring that an appropriate QA program is established and effectively executed; and (b) verifying, such as by checking, auditing, and inspection, that activities affecting the safety functions have been correctly performed.  | 1.7                                     | SP 1.2, Rev 4, OP 1.1 - 1.8<br>SP 1.22 Rev 0, SP 1.25, Rev 3, SP 1.60 Rev 1, SP 1.61 Rev 1 |
| 5. DOE and prime contractors describe major delegation of work involved in establishing and executing the QA program, or any part thereof, to other organizations.  | 1.0, 1.11                               | Procedure not required<br>QAPD addresses   |
| 6. DOE and prime contractors describe how responsibility is exercised for the overall QA program. The extent of management responsibility and authority from DOE headquarters and from the field office should be addressed.  | 1.0, 1.11, Appendix B                   | SP 1.41 Rev 0, SP 1.63 Rev 1   |
| 7. DOE and prime contractors evaluate the performance of work delegated to other organizations. This shall include audits of the prime contractors' QA programs and audits of subcontractors, consultants, vendors, and laboratories furnishing equipment or services to the prime contractor or DOE. The frequency and method of evaluation should be specified. | 1.11, 2.2.7, 2.2.8, 7.4, 7.6, 7.7, 18.0 | OP 1.1 Rev 2, OP 1.3 Rev 1<br>OP 1.7 Rev 2   |

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8. Qualified individual(s) or organization element(s) are identified within DOE's organization as responsible for the quality of the delegated work before initiation of activities.	N/A	N/A
9. Clear management controls and effective lines of communication exist for QA activities between DOE and its contractors, to assure direction of the QA program.	N/A	N/A
10. Organization charts clearly identify all the "onsite" and "offsite" organizational elements which function under the cognizance of the QA program.	N/A	N/A
11. The QA organization is involved in portions of the high level waste repository program that affect safety and waste isolation. The extent of QA controls is determined by the QA staff in combination with the line staff and depends upon the specific activity, its complexity, and its importance to safety or waste isolation, as defined in 10 CFR Part 60, Section 60.2.	2.2.10	QAPD adequately addresses; no procedure necessary
12. DOE and its prime contractors describe the QA responsibilities of each of the organization elements noted on the organization charts.	1.0 (all) Exhibits 1 - 8	SP 1.41 Rev 0
13. DOE and its prime contractors identify a management position within each respective organization that retains overall authority and responsibility for the QA program. This position, occupied by an individual with appropriate management and QA knowledge and experience, has the following characteristics:	1.7, 2.2.6	QAPD adequately addresses SP 1.41 Rev 0, SP 1.31 Rev. 3
a. Is at the same or higher organization level as the highest line management directly responsible for performing activities affecting quality (such as design, engineering, site investigations, procurement, manufacturing, etc.) and is sufficiently independent from cost and schedule.	1.7, 1.8	QAPD adequately addresses
b. Has effective communication channels with other senior management positions.	1.7	QAPD adequately addresses
c. Has responsibility for approval of QA manuals, changes thereto, and interpretations thereof.	1.7	SP 1.2 Rev 4, Paras. 5.2.2. 5.5.33

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d. Has no other duties or responsibility related to QA that would prevent full attention to QA matters.	1.8	QAPD adequately addresses.
14. Persons and organizations performing QA functions have sufficient authority and organizational freedom to:		
a. Identify quality problems.	1.7 (a)	QAPD adequately addresses
b. Initiate, recommend, or provide solutions through designated channels.	1.7 (b)	QAPD adequately addresses
c. Verify implement of solutions.	1.7 (c)	QAPD adequately addresses
d. Assure that further processing, delivery, installation or operation is controlled until proper disposition of a nonconformance, deficiency, or unsatisfactory condition has occurred.	1.7 (e)	QAPD adequately addresses
The persons and organizations with the above authority are identified and a description of how those actions are carried out is provided.	1.7	QAPD adequately addresses
15. Provisions are established for the resolution of disputes involving quality arising from a difference of opinion between QA personnel and other department personnel.	1.12	SP 1.22 Rev 0, Para. 5.1.10, SP 1.37 Rev 3, Para. 5.2.6
16. Policies regarding the implementation of the QA program are documented and made mandatory.	Policy Statement	N/A
17. Provisions are established for resolving allegations of inadequate quality. These allegations may originate within the responsible organization(s) or from outside the responsible organizations(s).	1.13	SP 1.61 Rev 1

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II. QUALITY ASSURANCE PROGRAM

Activities related to the QA Program are acceptable to the NRC staff if:

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|--|--|--|
| 1. A QA program is established and documented which complies with the QA controls of 10 CFR Part 60, Subpart G; with 10 CFR Part 50, Appendix B; and with this Review Plan.  | Introduction,<br>Attachment A          | N/A  |
| 2. The QA program provides a commitment to comply with NQA-1, "Quality Assurance Program Requirements for Nuclear Facilities" (see Ref. 2) and the following position, relative to the NQA-1 standard: Appendix 2A-1, "No mandatory Guidance on the Qualifications of Inspection and Test Personnel," provides guidance on the qualification of inspection and test personnel. The provisions of Appendix 2A-1 (or acceptable alternatives) should be met as a part of Supplement 2S-1, "Supplementary Requirements for the Qualification of Inspection and Test Personnel." | Introduction<br>Attachment A<br>2.2.12 | OP 1.8 Rev 1   |
| 3. The QA program is documented by written policies, procedures or instructions and carried out by qualified individual(s), in accordance program documents, before initiation of activities.  | 2.0,<br>2.2, 5.0                       | SP 1.1 Rev 4, SP 1.2 Rev 4,<br>SP 1.30 Rev 3, SP 1.7<br>Rev 2, SP 1.60 Rev 1 |
| 4. Criteria are established and documented for determining and identifying structures, systems, components, software and activities which are to be controlled by the QA program. Guidance for determining these items and activities is provided in NUREG-1318, "Technical Position on Items and Activities in the High Level Waste Geologic Repository Program, Subject to Quality Assurance Requirements." (See Ref. 4)   | 2.2.10                                 | AP-5.28Q Rev 2, AP-6.17Q<br>Rev 0  |
| 5. Activities affecting quality are to be accomplished under suitably controlled conditions. Controlled conditions include the use of appropriate equipment; suitable environmental conditions for accomplishing the activity, such as adequate cleanness; and assurance that all prerequisites for the given activity have been satisfied.  | 2.2.8                                  | AP 5.28Q Rev 2   |

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6. The program takes into account the need for special controls, processes, test equipment, tools, and skills to attain the required quality, and the need for verification of quality by inspection and tests.	2.2.8, 10.0, 11.0,	SP 1.1 Rev 4, SP 1.30 Rev 3 OP 1.1 Rev 2, OP 1.2 Rev 0 AP 1.6Q Rev 0
7. Provisions are established which demonstrate through a matrix system or other means that each criterion of Appendix B is properly documented and covered by implementing procedures and/or instructions.	2.2.5, 5.2	N/A
8. A policy statement signed by a senior management official renders the implementation of the QA program mandatory.	Policy Statement	NA
9. The QA program includes a commitment that all development, control and/or use of computer programs will be conducted in accordance with the QA program. Guidance for the content of documentation of computer codes is provided by NUREG-0856, "Final Technical Position on Documentation of Computer Codes for High-Level Waste Management." (See Reference 5.)	19, See Project Office SQAP	SP 2.1 is currently being developed
NUREG/CR-4640, "Handbook of Software Quality Assurance Techniques Applicable to the Nuclear Industry," (see Reference 6) may be used as a reference for development software QA programs.	N/A	N/A
10. Provisions are established to assure that technical and QA procedures required to implement the QA program are consistent with regulatory, licensing and QA program requirements and are properly documented and controlled.	2.2.6, 5.0, 6.0	SP 1.1 Rev 4, SP 1.30 Rev 3
11. The QA organization or other designated organizations knowledgeable in QA controls reviews and documents concurrence with procedure pertaining to safety functions.	1.7, 5.0, 6.1	Forms require QA manager approval for SPs, OPs, WIs
12. A description is provided of how management (above or outside the QA organization) regularly assesses the scope, status, adequacy, and compliance of the QA program to 10 CFR 50, Appendix B. These measures should include:	2.2.13	SP 1.32 Rev 1, Paras 1.0, 2.0
a. Frequent contact with program status through reports, meetings, and/or audits.	2.2.13, 2.2.14, 18.1.4	OP 1.2 Rev 0, SP 1.32 Rev 1

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b. Performance of an annual assessment which is preplanned and documented with corrective action identified and tracked.	2.2.13	SP 1.32 Rev 1, Para. 4.0
13. Management of other organizations participating in the quality assurance program shall regularly review the status and adequacy of that part of the Quality Assurance program which they are executing.	2.2.13	SP 1.32 Rev 1
14. Indoctrination, training, and qualification programs are established for personnel performing activities affecting quality to assure that suitable proficiency is achieved and maintained and that:	2.2.12	SP 1.31 Rev 3
a. Personnel responsible for performing quality-related activities are instructed as to the purpose, scope, and implementation of the quality-related manuals, instructions, and procedures.	2.2.12	SP 1.31 Rev 3
b. Personnel verifying activities affecting quality are qualified in the principles, techniques, and requirements of the activity being performed.	2.2.12	SP 1.31 Rev 3
c. For formal training and qualification programs, documentation includes the objective, content of the program, attendees, and date of attendance.	2.2.12	SP 1.31 Rev 3
d. Appropriate management monitors the performance of individuals involved in activities affecting quality and determines the need for retraining and/or replacement. A system of annual appraisal and evaluation can satisfy this criterion.	2.2.12	SP 1.31 Rev 3
e. Qualified personnel are certified in accordance with applicable codes and standards.	2.2.12, 7.6. 18.1.2 (B)	OP 1.8 Rev 1, Exhibit 1 OP 1.5 Rev 2, Para. 5.2
15. Measures are provided describing the extent a readiness review program will be established and executed at appropriate major milestones to complement the inspection program.	2.2.9	SP 1.60 Rev 1

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III. DESIGN CONTROL

Activities related to Design Control are acceptable to the NRC staff if:

1. The definitions of design, design information, and design activities used in the design control program are defined as provided in this Section. The term design refers to specifications, drawings, criteria, and components performance requirements for the natural and engineered components of the repository system. It includes design inputs and outputs at each stage of design development (i.e., from conceptual design to final design). Design information and design activities refer to data collection and analyses activities and computer codes that are used in supporting design development and verification. This includes general plans and detailed procedures for data collection and analyses and related information such as test results and analyses. Data analyses includes the initial step of data reduction, as well as broad level systems analyses (such as performance assessments) which integrate many other data and analyses of individual parameters. The above is consistent with the definition and usage of these terms in 10 CFR Part 60 and the Atomic Energy Act of 1954.
2. The design control program includes design and design activities as described in III.1. It provides for the correct translation of applicable regulatory requirements and design bases into design, procurement, and procedural documents.
3. Measures are established to assure that those applicable regulatory requirements, design bases and design features developed through the site characterization phase activities for those structures, systems, components, and software to which this appendix applies are correctly translated into specifications, drawings, plans, procedures, and instructions.
4. Design control measures are established and applied to:
  - a. The design of engineered items important to safety or waste isolation.

Scope of work is limited to processing of design inputs

3.1, 3.2, 3.3

N/A

N/A

N/A

N/A

N/A

SP 2.1, 2.2, & Software QA Plan under development

N/A

N/A

N/A

N/A

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b. The description of the geologic setting and plans for data collection and analysis activities that will generate information pertinent to the repository design and that will be relied on in licensing.	N/A	N/A
c. Computer codes.  These design control measures apply to the design inputs, outputs and implementation of the Site Characterization Plan into scientific investigation plans and study plans.	3.2, 19.0  N/A	In preparation  N/A
5. Design control measures are established and applied to conceptual designs, or parts thereof, which may at a later time become part of the final design.	N/A	In preparation
6. Organizational responsibilities are described for preparing, reviewing, approving, verifying, and validating design and design information documents.	1.2, 1.3, 3.1.3 3.1.5, 3.1.6	SP 2.3 Rev 2
7. Errors and deficiencies in approved design and design information documents are documented, and action is taken to assure that all errors and deficiencies are corrected.	3.1.4	SP 1.37 Rev 3
8. Design interfaces and interface controls among organizations or groups involved in design development and other design activities such as the review, approval, release, distribution and revisions of documents involving design interface are described and procedurally controlled.	3.1.3, 3.1.4, 3.1.5	In preparation
9. Procedures require that design drawings, specifications, criteria, analyses be reviewed by the QA and/or technical organization to assure that the documents are prepared, reviewed, and approved in accordance with documented procedures and QA requirements and that the appropriate quality standards are specified and included in design documents.	5.0, 6.0, 6.1	In preparation
10. Procedural controls provide for verifying or checking the adequacy of design, such as by the performance of design reviews, by the use of alternate or simplified calculation methods, or by the performance of a suitable testing program.	N/A	In preparation

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11. Procedures are established to assure that plans for data collection and analyses are completed before performing the data collection and analysis activities.	3.3, 20.0	SP 2.2 Rev 1
12. Procedures for a design or technical review require, where applicable, the identification of the reviewers, the area or features reviewed, and the resolution methods for resolving comments.	N/A	N/A
13. Design verification procedures assure the following:	N/A	N/A
a. Criteria for determining the method of verification are established.	N/A	N/A
b. The persons performing verification and validation are qualified and not directly responsible for the design.	N/A	N/A
c. The verification and validation are completed before release for procurement, manufacturing, construction, or use.	N/A	N/A
d. The responsibilities of the persons performing the verification or validation are defined.	N/A	N/A
e. The areas and features to be verified are specified.	N/A	N/A
f. The extent of documentation is defined.	N/A	N/A
14. Procedures are established and described for verification of designs and design activities. Individuals verifying designs should be qualified and not directly responsible for the design (i.e., not the performer or his immediate supervisor). In exceptional cases, the designer's immediate supervisor can, however, perform the verification, provided:	N/A	N/A
a. The supervisor is the only technically qualified individual.	N/A	N/A
b. The need is individually documented and approved in advance, with concurrence of the QA manager.	N/A	N/A

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15. Where a test program is used to verify the adequacy of a specific engineering design feature in lieu of other verifying or checking processes, it shall include suitable qualifications testing of a prototype unit under the most adverse design conditions.	N/A	N/A
16. Peer reviews which comply with the reference commitments in NUREG-1297, "General Technical Position on Peer Review for High-Level Nuclear Waste Repositories," (see Reference 7) are conducted.	3.1.6	SP 1.62 Rev 0
17. Design changes, including field changes, are subject to the same design controls that were applicable to the original design. Such a configuration control system is in place at the earliest practicable time. These changes are analyzed to assure that change is required. Associated changes to procedures and training should be considered and communicated to all affected groups or individuals.	3.1.2 - For design inputs only - T&MSS Does not perform design.	SP 2.2 Rev 1, SP 2.3 Rev 2 SP for software is under development
18. Procedures are established to assure that verified computer codes are certified for use and that their uses are specified.	3.2, 19.0	In preparation
19. Procedures are established describing methods of reviewing and data which was gathered without a fully implemented 10 CFR Part 60 QA Program. For guidance refer to NUREG-1298, "Generic Technical Position on Qualification of Existing Data for High-Level Nuclear Waste Repositories." (See Reference 8).	3.3, 20.0	To be developed
20. The design inputs are specified and approved on a timely basis and to the level of detail necessary to permit the design activity to be carried out in a correct manner and to provide a consistent basis for making design decisions, accomplishing design verification measures, and evaluating design changes.	3.1.1	SP 2.2 Rev 1, SP 2.3 Rev 2

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IV. PROCUREMENT DOCUMENT CONTROL

Activities related to Procurement Document Control are acceptable to the NRC staff if:

1. Procedures are established to assure that applicable regulatory requirements, design bases, and other requirements are referenced or stated in procurement documents; there are adequate acceptance and rejection criteria, where appropriate; and that procurement documents have been prepared, reviewed, and approved are to confirm that these requirements have been correctly carried out. 4.0, 4.2, 4.6, 4.9, 4.10 SP 1.28 Rev 3, Paras. 5.1.2, 5.1.4, 5.3.6
2. Procurement documents specify that contractors, subcontractors and consultants to provide an acceptable QA program commensurate with the scope, complexity and safety of the activity. 4.1, 4.3 SP 1.28 Rev 3, Para. 5.1.2
3. Organizational responsibilities are described for: (1) procurement planning; (2) the preparation, review, approval, and control of procurement documents; (3) supplier selection; (4) bid evaluations; and (5) review and concurrence of supplier QA programs before initiation of activities affected by the program. The involvement of the QA organization is described. 1.0, 4.0, 4.3, 4.6, 4.10 7.1, 7.2, 7.3 SP 1.28 Rev 3, Paras. 5.2, 5.3, 5.4

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V. INSTRUCTIONS, PROCEDURES, AND DRAWINGS

Activities related to Instructions, Procedures, and Drawings are acceptable to the NRC staff if:

- |   |                                    |  |
|---|------------------------------------|--|
| 1. Activities affecting quality are prescribed by documented instructions, procedures, or drawings and accomplished in accordance with these instructions, procedures, or drawings.   | 5.0                                | SP 1.1 Rev 4, Para. 4.0,<br>SP 1.30 Rev 3, Para. 2.0                       |
| 2. Organizational responsibilities are described for assuring that quality-related activities are (1) specified in instructions, procedures, and drawings; and (2) accomplished through implementation of these documents.  | 5.0, 5.1.1, 5.4                    | SP 1.1 Rev 4, Para. 5.1.1  |
| 3. Procedures are established to assure that instructions, procedures, and drawings include or reference quantitative or qualitative acceptance criteria for determining that quality-related activities have been satisfactorily accomplished.   | 5.0                                | SP 1.1 Rev 4, Para. 4.0<br>SP 1.30 Rev 3 - Exhibit 1<br>Per./Acc. criteria |
| 4. Provisions are described for controlling changes to field and laboratory procedures associated with exploratory investigations within the site characterization program to assure that such changes are subsequently documented and verified in a timely manner by authorized personnel. | 5.3, 6.1, 20.1, 20.4<br>20.3, 20.6 | SP 1.30 Rev 3, Para. 5.3   |

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VI. DOCUMENT CONTROL

Activities related to document control are acceptable to the NRC staff if:

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|---|---------------------------|---|
| 1. The scope of the document control program is described, and the types of controlled documents are identified (e.g., instructions, procedures, drawings, as-builts, design and technical supporting documents, QA documents, and nonconformance and corrective actions report including changes thereto). | 6.0, 6.1, 6.2, 6.2.2      | SP 1.34 Rev 3, Para. 4.0                                |
| 2. Procedures for the review, approval, issuance, and revision of documents are established. These procedures assure that the technical and quality requirements are correctly included, before release, through reviews by qualified authorized personnel who did not provide input to the document.       | 6.1                       | SP 1.1 Rev 4, Para. 5.1.2<br>SP 1.30 Rev 3, Para. 5.1.2 |
| 3. Procedures are established to assure that correct and applicable documents are available at the location where the activity will be performed, before commencing the work.   | 6.2, 6.2.1 (A), 6.2.2 (C) | SP 1.34 Rev 3, Para. 4.0                                |
| 4. Changes to documents shall be reviewed and approved by the same organizations that performed the original review and approval, unless the applicant designated another responsible organization.   | 6.3                       | SP 1.1 Rev 4, Para. 5.2<br>SP 1.30 Rev 3, Para. 5.2     |
| 5. Procedures are established and described to assure that obsolete or superseded documents are removed and replaced by applicable revisions at work areas in a timely manner.  | 6.2, 6.2.1 (C)            | SP 1.34 Rev 3, 5.1.1                                    |
| 6. A master list or equivalent document control system is established to identify the current revision of instructions, procedures, specifications, drawings, and procurement documents.  | 6.2.1 (D), 6.2.2 (B)      | SP 1.34 Rev 3, Para. 3.2.6                              |
| 7. When documents which require verification are released prior to verification, they are so identified, controlled and authorized for release through signature approval, with the described bases for release.  | 6.2.1 (A)                 | SP 1.30 Rev 3, Para. 5.3                                |

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VII. CONTROL OF PURCHASED ITEMS AND SERVICES

Activities related to Control of Purchased Materials, Equipment, Items and Services and Software are acceptable to the NRC staff if:

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|--|------------------------------------|--|
| 1. Measures are established and described to assure that purchased items and services, including software, whether purchased directly or through contractors and subcontractors, conform to procurement documents.   | 7.0, 7.9.4                         | SP 1.25 Rev 3, Paras. 1.0, 5.3, OP 1.4 Rev 1                                 |
| 2. Organizational responsibilities are described for the control of purchased items, services and software.  | 1.0, 7.0, 7.2, 7.3<br>7.4.2, 7.9.4 | SP 1.28 Rev 3, Para. 3.2.1,<br>SP 1.45 Rev 2                                 |
| 3. Procedures governing procurement of items and services provide for (a) evaluation and selection of suppliers; (b) objective evidence of quality furnished by suppliers; (c) inspections and audits of supplier's activities, items, services and software; and (d) receiving inspections. | 7.2, 7.4, 7.6, 7.7                 | SP 1.28 Rev 3, Paras. 5.3,<br>5.1.2, OP 1.3 Rev 1                            |
| 4. The organization providing items, materials, equipment, services, or software furnishes the following records to the purchaser:   | 4.5, 4.7                           | SP 1.28 Rev 3, Para. 5.5.2,<br>SP 1.25 Rev 3, OP 1.4,<br>Rev 1, OP 1.3 Rev 1 |
| a. Documentation that identifies the procurement and the specific procurement requirements met (e.g., codes, standards, and specifications).   | 4.5                                | See above  |
| b. Documentation identifying any procurement requirements that have not been met.  | 4.7                                | See above  |
| c. A description of those nonconformances from the procurement requirements dispositioned "accept as is" or "repair."  | 7.8                                | See above  |
| A procedure that assures that the review and acceptance of these documents, before installation or use of the procured item, should be described in the purchaser's QA program.  | 7.6, 7.10                          | See above  |

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5. Documents attesting to the acceptability of procured items shall be sufficient to identify the specific requirements, such as codes, standards or specifications, met by the purchased item, and retained in the records storage facilities for retrievability, as necessary.	4.9, 7.6, 7.9.5, 7.10, 7.11, 10.2	SP 1.25 Rev 3, Paras. 5.1, 5.3, 7.0
6. Provisions are established by DOE or its designee to assess and ensure the control of quality by contractors and subcontractors. These assessments are performed at intervals consistent with the importance, complexity, and quantity of the product or services.	4.3, 7.4.2, 18.1.5	OP 1.1 Rev 2, Para. 4.1.2
7. Suppliers' certificates of conformance for items, services and software are periodically evaluated by audits, independent inspections, or tests to assure they are valid and the results documented.	7.6.3	SP 1.25 Rev 3, Exhibit 1

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VIII. IDENTIFICATION AND CONTROL OF ITEMS

Activities related to Identification and Control of Items (including samples), Services and Software are acceptable to the NRC staff if:

- |  |   |   |
|--|---|---|
| 1. Controls are established and described to identify and control items (including samples) and consumables, services and software to assure that the identity is maintained and traceable to technical and quality-related documents.   | 8.1 (C), 8.2, 8.3 (A),<br>19.3                    | SP 2.1 In preparation,<br>SP 2.2 Rev 1                |
| 2. Procedures are established which assure that identification is maintained either on the item, software and samples or on records and containers traceable thereto.  | 8.1 (C), 8.3 (A),<br>19.3                         | SP 1.25 Rev 3, Paras. 3.4,<br>5.5, 5.6                |
| 3. Identification can be traced to the appropriate documentation such as drawings, specifications, purchase orders, technical reports, drilling locations and logs (including well bore and depth), test records, installation and use records, inspections documents, and nonconformance reports. | 8.0, 8.1 (C), 8.1 (B),<br>8.2, 8.3 (A)            | SP 1.25 Rev 3, Paras. 5.3.1e,<br>5.3.4, 5.4, 5.5, 5.6 |
| 4. Correct identification of samples is verified and documented before release for use or analysis.  | 8.1 (D)   | SP 2.2 Rev 1  |
| 5. Controls are established to preclude the inadvertent use of incorrect or defective items, software and samples.   | 8.1 (D), 8.2, 8.3 (D),<br>14.0, 19.0, 19.10, 15.1 | SP 2.1 under development<br>SP 2.2 Rev 1              |

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**IX. CONTROL OF SPECIAL PROCESSES**

Activities related to Control of Special Processes are acceptable to the NRC staff if:

T&MSS does not perform special processes

- |   |     |     |
|---|-----|-----|
| 1. The criteria for determining those processes that are controlled as special processes are described. As complete a listing as possible of special processes is provided, which generally are those processes where direct inspection is impossible or disadvantageous, such as heat treatment, welding, nondestructive testing, data collection, and other site characterization activities. | N/A | N/A |
| 2. Organizational responsibilities including those for the QA organization are described for qualification of special processes, equipment, and personnel.  | N/A | N/A |
| 3. Procedures, equipment, and personnel associated with special processes are qualified and are in conformance with applicable codes, standards, QA procedures, and specifications. Acceptable methods for qualifying those special processes associated with scientific investigations are:  | N/A | N/A |
| a. The conduct of a prototype test, if possible, that demonstrates the process maintains quality or produces a quality product; or  | N/A | N/A |
| b. A technical review; or   | N/A | N/A |
| c. A peer review.   | N/A | N/A |
| 4. Procedures are established for recording evidence of acceptable accomplishment of special processes using qualified procedures, equipment, and personnel.  | N/A | N/A |
| 5. Qualification records of procedures, equipment, and personnel associated with special processes are established and maintained.  | N/A | N/A |

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**X. INSPECTION**

Activities related to Inspection are acceptable to the NRC staff if:

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|---|---------------------|--|
| 1. The scope of the inspection program is described that indicates an effective inspection program has been established to verify that items and services conform to documented instructions, procedures, drawings and specifications. Program procedures provide criteria for determining when inspections are required or define how and when inspections of each work operation are to be performed. | 7.6, 7.7, 7.9, 10.0 | Limited to Source/Receipt Post Installation Inspection<br>SP 1.25 Rev 3, Para. 5.3<br>SP 1.28 Rev 3, Para. 5.5.2 |
| 2. Organizational responsibilities for inspection are described. Individuals performing inspections are part of the QA organization or are qualified individuals independent of the organizational unit directly responsible for the activity being inspected.  | 7.6.1               | SP 1.25 Rev 3, Para. 4.1   |
| 3. A qualification program for inspectors is established and documented, and the qualifications and certifications of inspectors are kept current.  | 2.2.12              | OP 1.8 Rev 1, Para. 1.0, 5.4.1   |
| 4. Inspection procedures, instructions, or checklists provide for the following:  | 10.0, 10.1          | SP 1.25 Rev 3, Form TMSS/038/3   |
| a. Identification of characteristics and activities to be inspected.  | 10.2 (a)            | See above  |
| b. A description of the method of inspection.   | 10.2 (b)            | See above  |
| c. Identification of the individuals or groups responsible for performing the inspection operation.   | 10.2 (c)            | See above  |
| d. Acceptance and rejection criteria.   | 10.2 (d)            | See above  |
| e. Identification and required procedures, drawings, and specifications and revisions.  | 10.2 (e)            | See above  |
| f. Recording inspector or data recorder and the results of the inspection operation.  | 10.2 (f)            | See above  |

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g. Specifying necessary measuring and test equipment, including accuracy requirements.	10.2 (g)	SP 1.25 Rev 3
5. Procedures include identification of mandatory inspection hold points beyond which work may not proceed until inspected by a designated inspector.	10.2	SP 1.28 Rev 3, Para. 5.7.2, 6th bullet.
6. Provisions are established to assure that when inspection of processed material or products is impossible or disadvantageous, indirect control by monitoring processing methods, equipment, and personnel is provided.	10.1	SP 1.28 Rev 3, Para. 5.5.3
7. Provisions are established to assure that both inspection and process monitoring is provided when control is inadequate without both.	10.2	SP 1.28 Rev 3, Para. 5.5.2, 5.5.3
8. Inspection results are documented and evaluated, and their acceptability is determined by a responsible individual.	10.4	SP 1.25 Rev 3, Para. 5.3

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**XI. TEST CONTROL**

Activities related to Test Control are acceptable to the NRC staff if:

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|--|--------------------------|---|
| 1. A test program is established to assure that all testing associated with items, software, scientific investigations, and acquiring data from samples is identified and performed in accordance with written test procedures incorporating, as appropriate, the requirements and acceptance limits contained in applicable design documents. | 11.2 (D), 11.2 (H), 19.1 | SP 2.1 in preparation,<br>All Work Instructions (WIs).<br>SP 2.2, Rev 1 |
| 2. Procedural controls are established to assure the test program includes, as appropriate, proof tests before installation, preoperational tests, and operational tests during site characterization, construction and operation of the high level waste storage facilities.  | N/A                      | N/A   |
| 3. Program procedures for test control provide for: (a) determining when a test is required and how testing activities are performed; and (b) assurance that the test program is conducted by trained or appropriately qualified personnel.  | 11.2 (B), 11.2 (E), 19.2 | SP 2.1 in preparation<br>All WIs, SP 2.2 Rev 1                          |
| 4. Test plans and procedures are reviewed in accordance with the verification requirements in Section III.15 and III.17.   | N/A                      | N/A   |
| 5. The potential sources of uncertainty and error in test plans, procedures, and parameters, which must be controlled and measured to assure that tests are well-controlled, are identified.   | 11.2 (L), 19.2           | SP 2.1 in preparation<br>All WIs, SP 2.2 Rev 1                          |
| 6. Test procedures or instructions provide for the following:  | 11.0, 11.2               | See above   |
| a. The requirements and acceptance limits, including required levels of precision and accuracy, as appropriate, are contained in applicable documents.   | 11.0, 11.2 (H)           |   |
| b. Instructions for performing the test.   | 11.2 (F)                 |   |

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c. Test prerequisites such as: calibrated instrumentation; adequate test equipment and instruction; completeness of item to be tested; suitable and controlled environmental conditions; and provisions for data collection and storage.	11.2 (G)	SP 2.1 in preparation, all Work Instructions, SP 2.2 Rev 1
d. Mandatory inspection hold points (as required).	11.2 (C)	See above
e. Acceptance and rejection criteria, including required levels of precision and accuracy.	11.2 (H)	See above
f. Methods of documenting or recording test data and results.	11.2 (I)	See above
g. Provisions for assuring test prerequisites have been met.	11.2 (M)	See above
7. Test results are documented, evaluated, and their acceptability determined by a responsible individual or group as described in Section III.	11.2 (J), 19.7	See above
8. Items tested should be identified, controlled, and ultimately dispositioned, and samples should be archived, as required by procedures.	8.1 (B), 8.3, 13.0, 13.2.2	See above

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**XII. CONTROL OF MEASURING AND TEST EQUIPMENT**

Activities related to Control of Measuring and Test Equipment are acceptable to the NRC staff if:

- |   |                  |   |
|---|------------------|---|
| 1. The scope of the program is described for assuring that tools, gages, instrument and other measuring and testing devices, are properly controlled, calibrated, and adjusted, at specified periods, to maintain accuracy within necessary limits.   | 12.0             | SP 2.4 Rev 2, Paras. 1.0, 2.0, 4.0                |
| 2. QA and other organizations' responsibilities are described for establishing, implementing, and assuring effectiveness of the calibration program.  | 12.1             | SP 2.4 Rev 2, Paras. 4.0 & 5.0                    |
| 3. Procedures are established and described for calibration (technique and frequency), maintenance, and control of the measuring and test equipment (instruments, tools, gages, fixtures, reference and transfer standards, and nondestructive test equipment) used for measurement, inspection, and monitoring. The <u>review and documented</u> concurrence of these functions is identified. | 12.0, 12.2, 12.1 | SP 2.4 Rev 2, Paras. 5.1, & 5.1.8                 |
| 4. Measuring and test equipment is labeled, tagged or otherwise documented to indicate due date of the next calibration and to provide traceability to calibration test data.   | 12.1, 12.2       | SP 2.4 Rev 2, Para. 5.1.7                         |
| 5. Measuring and test equipment is calibrated at specified intervals based on required accuracy, precision, purpose, degree of usage, stability, characteristics, and other conditions, which could affect measurement.   | 12.0, 12.2 (F)   | SP 2.4 Rev 2, Paras. 5.1.2, & 5.1.4               |
| 6. Calibration standards are traceable to nationally recognized standards. Where national standards do not exist, provisions are established to document acceptability of the calibration standard used.  | 12.2 (A)         | SP 2.4 Rev 2, Exhibit 1, Para. 5.1.2 in revision) |

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7. When measuring and test equipment is found to be out of calibration, evaluations are made and documented to determine the validity and acceptability of measurements performed since the last calibration. Inspections or tests are repeated on items determined to be suspect.	12.2 (G)	SP 2.4 Rev 2, Para. 5.2.5, & 5.3.6
8. Calibration standards should have greater accuracy than equipment or standards being calibrated. Calibration standards with the same accuracy may be used if they can be shown to be adequate for the requirements and the basis for acceptance is documented and authorized by responsible management. The management authorized to perform this function should be identified.	12.2 (B)	SP 2.4 Rev 2, Para. 5.1.2

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**XIII. HANDLING, STORAGE, AND SHIPPING**

Activities related to Handling, Storage, and Shipping are acceptable to the NRC staff if:

- |  |                                |   |
|--|--------------------------------|---|
| 1. Handling, preservation, storage, packaging, shipping, cleaning and preservation requirements and procedures are established to prevent damage or deterioration of items and samples and accomplished by trained individuals in accordance with predetermined work and inspection instructions.                                  | 13.1, 13.1.1,<br>13.1.3, 13.2  | SP 1.28 Rev 3, Para 5.1.4<br>OP 2.1, Control of Radiological Samples & Data<br>OP 2.2 Control of Meteorological Samples (both in preparation) |
| 2. Procedures are established and described to control cleaning, handling, storage, packaging, and shipping of items and samples in accordance with design and procurement requirements and manufacturer's recommendations to preclude damage, loss, or deterioration by environmental conditions such as temperature or humidity. | 13.1, 13.2                     | See above   |
| 3. The methods of handling, storage and packaging of items and samples take into consideration controls, as appropriate, for limited life expectancy, and special cleanliness.   | 13.1, 13.1.3<br>13.2.1, 13.2.2 | See above   |

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**XIV. INSPECTION, TEST, AND OPERATING STATUS**

Activities related to Inspection, Test, and Operating Status are acceptable to the NRC staff if:

- |   |            |   |
|---|------------|---|
| 1. Procedures are established to indicate by the use of markings the status of inspections and tests, and the operating status of individual items and software.  | 14.0, 14.1 | SP 2.5 Rev 0  |
| 2. Procedures are established for the identification of items which have passed required inspections and tests, where necessary to preclude inadvertent bypassing of such inspections and tests.  | 14.0       | SP 1.25 Rev 3, Paras. 5.4.2, 5.5.2  |
| 3. Measures are established for indicating the test and/or operating status of items; for example, tagging, to prevent inadvertent operation or use.  | 14.0       | SP 2.5 Rev 0  |
| 4. Procedures are established and described to control the application and removal of inspection and welding stamps and status indicators such as tags, markings, labels, and stamps.   | 14.1       | SP 2.4 Rev 2, SP 1.22 Rev 0<br>SP 1.23 Rev 3, SP 1.25 Rev 3<br>All Work Instructions (WIs). |
| 5. Procedures are established and described to control altering the sequence of required tests, inspections, and other operations important to safety. Such actions should be subject to the same controls as the original review and approval. | 14.2       | All Work Instructions (WIs)   |
| 6. The status of nonconforming, inoperative, or malfunctioning structures, systems, and components is documented and identified to prevent inadvertent use. The organization responsible for this function is identified.                       | 14.1, 15.1 | SP 1.23 Rev 3,<br>Paras. 5.1.3, 5.1.4, 5.1.5,<br>& 5.1.6                                    |

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**XV. NONCONFORMANCES**

Activities related to Nonconformances are acceptable to the NRC staff if:

- |   |  |   |
|---|--|---|
| 1. Measures are established to control materials, parts, or components which do not conform to requirements in order to prevent their inadvertent use.  | 15.0   | SP 1.23 Rev 3, Paras. 5.1.3, 5.1.4, 5.1.5                             |
| 2. Procedures are established for identifying, documenting, tracking, segregating, reviewing, dispositioning, and notifying affected organizations of nonconforming or defective items, software, procedures, records and activities. The procedures identify positions authorized to dispose of and close out nonconformances. | 15.1, 15.2, 15.4, 15.5, 16.0, 16.2 (I), 19.9 | SP 1.23 Rev 3, Paras. 1.0, 5.0  |
| 3. QA responsibilities related to nonconformance control are described.   | 15.3, 15.4, 15.6                             | SP 1.23 Rev 3   |
| 4. Documentation identifies and describes the dispositions, nonconformances, and includes authorized signature approval of the disposition.   | 15.4   | SP 1.23 Rev 3, Paras. 5.1.1, 5.2, 5.3                                 |
| 5. Nonconformance reports are periodically analyzed by the QA organization to show quality trends and to help identify root causes of non-conformances, and the significant results are reported to upper management for review and assessment.   | 15.6   | SP 1.23 Rev 3, Para. 5.2.7, OP 1.6 Rev 2, Paras. 5.1.1, 5.1.5, 5.1.11 |

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**XVI. CORRECTIVE ACTION**

Activities related to Corrective Action are acceptable to the NRC staff if:

- |  |                           |   |
|--|---------------------------|---|
| 1. Procedures are established indicating an effective corrective action program has been established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, nonconforming and defective items, samples, procedures, and records are promptly identified and corrected. The QA organization reviews and documents concurrence with the procedures. | 1.14, 16.0, 16.2, 1.7 (B) | SP 1.37 Rev 3, SP 1.23 Rev 3, SP 1.22 Rev 0 |
| 2. Corrective action is documented and initiated following a nonconformance to preclude recurrence. The QA organization concurs with the corrective action to assure that QA requirements are satisfied.   | 16.2 (C), 16.2 (E)        | SP 1.37 Rev 3, Para. 5.2                    |
| 3. Follow-up action is taken by the QA organization to verify proper implementation of corrective action and to close out the corrective action in a timely manner.  | 16.2 (G), 16.2 (F)        | SP 1.37 Rev 3, Para. 5.3                    |
| 4. The cause of significant conditions adverse to quality is determined and the corrective action is taken to preclude repetition. These actions are documented and reported to immediate management and upper levels of management for review and assessment.   | 16.0                      | SP 1.37 Rev 3, Paras. 5.1.4, & 5.1.5        |

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XVII. QUALITY ASSURANCE RECORDS

Activities related to QA Records are acceptable to the NRC staff if:

- |  |                         |  |
|--|-------------------------|--|
| 1. The scope of the records program is described which assures that sufficient records affecting quality are identifiable, retrievable, and maintained. QA records include scientific, engineering, and operational data and logs; geotechnical data; results of reviews; inspections; tests; audits and material analyses; monitoring of work performance; qualification of personnel, procedures, and equipment; and other documentation such as drawings, specifications, procurement documents, calibration procedures and reports, design review reports; peer review reports; nonconformance reports; and corrective action reports. | 17.1                    | WI-REC-003, WI-REC-004 and WI-REC-005 are in preparation |
| 2. QA and other organizations are identified and their responsibilities are described for the definition and implementation of record activities, particularly in the retention, duration and safe storage of records.   | 1.4.3, 17.0, 17.5, 17.6 | WI-REC-001 Rev 1   |
| 3. Inspection and test records contain the following, where applicable:<br>a. Identification of procedure and item inspected or tested.<br>b. A description of the type of observation.<br>c. The date and results of the inspection of test.<br>d. Information related to conditions adverse to quality.<br>e. Inspector or data recorder identification.<br>f. Evidence as to the acceptability of the results with signature and organization.<br>g. Action taken to resolve any discrepancies noted.   | 10.5, 11.2 (J)          | SP 1.25 Rev 3, T&MSS Form TMSS/038/3                     |

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4. Criteria are established and described in procedures for determining when a document becomes a QA record, subject to the controls of this section and the retention periods for such records.	17.1, 17.2	SP 1.36 Rev 3, Para. 5.0
5. Controls are established and described for controlling, protecting, maintaining those records before their being entered and stored in the quality record control storage area.	17.3, 17.5.2	SP 1.36 Rev 3, Para 5.1.2
6. Procedures are established describing methods of documenting/recording, reviewing, and confirming accuracy of records, which include laboratory and field notebooks and log books, data sheets, data reduction documents, and software.	17.2, 19.2, 20.9	SP 1.36 Rev 3, SP 2.2 Rev 1, SP 2.1, in preparation
7. Suitable facilities for the storage and security of records are described and used to preclude deterioration, damage, loss and misuse of records.	17.5, 17.6, 19.10, 17.6.5	SP 1.36 Rev 3, Para. 5.1.2

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XVIII. AUDITS

Activities related to Audits are acceptable to the NRC staff if:

- |  |                          |   |
|--|--------------------------|---|
| 1. Internal and external audits are carried out by DOE and its contractors to verify that procedures and activities comply with all aspects of the overall QA program and to determine the effectiveness of the program. DOE and its contractors should perform audits of the prime contractor and subcontractors, consultants, vendors, and laboratories.   | 18.0, 18.1               | OP 1.1 Rev 2, Paras. 1.0, 4.1.1, 4.1.2        |
| 2. An audit plan is prepared identifying audits to be performed, their frequencies, and schedules, taking into consideration the complexity, safety, importance and degree of previous audits, inspections and surveillance. Audits are regularly scheduled, based on the status and safety importance of the activities being performed and are initiated early enough to assure effective QA during design, procurement, site characterization, manufacturing, construction, installation, inspection and testing. | 18.1.1, 18.1.3<br>18.1.5 | OP 1.1 Rev 2, Paras. 4.1.1, 5.1               |
| 3. Audits include technical evaluations of the applicable procedures, instructions, activities, and/or items. As applicable, they should include the review of documents and records, including software and test data from samples, to ensure they are acceptable.  | 18.1                     | OP 1.1 Rev 2, Paras. 5.2.2, 5.2.3             |
| 4. Audit results are documented and analyzed by the QA organization and technical staff organization and the results are reported to responsible management for review, assessment, and appropriate action.  | 16.3, 18.1.4             | OP 1.1 Rev 2, Para. 5.6                       |
| 5. Audits are performed in accordance with pre-established written approved procedures or checklists and conducted by trained, qualified, competent QA and technical personnel having expertise which encompasses the area being audited and having no direct responsibilities in the areas being audited.   | 18.1.2, 18.1.3           | OP 1.1 Rev 2, Para. 4.1.4, 5.2.4              |
| 6. A tracking system for audit findings is established to help assure that all findings are appropriately addressed, prioritized and trended.  | 18.1.4, 16.2 (I), 16.3   | SP 1.37 Rev 3, Paras. 4.2 5.1.8, OP 1.6 Rev 2 |

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MRC REVIEW PLAN - REVISION 2

TMSS/QA-90-010  
PAGE 31 OF 31

MRC REVIEW PLAN REQUIREMENTS	WHERE SATISFIED IN THE T&MSS QAPD - Rev. 3	WHERE SATISFIED IN THE IMPLEMENTING PROCEDURES
7. The audited organization describes in a formal report the corrective action to be taken to address findings. This report is submitted to the auditing organization and/or responsible management.	16.2 (E)	SP 1.37 Rev 3, Paras. 5.2.1, 5.2.2
8. Provisions are established and described to assure that the cause of finding is also identified and corrective action for it described and follow-up action is accomplished to assure proper close-out of deficiencies.	16.2 (D,E,F), 15.5, 18.1.4	SP 1.37 Rev 3 Form TMSS/057/2



**Department of Energy**  
Washington, DC 20585

November 2, 1990

Received at 11/5/90 Meet.

*Received at 11/10/90*  
*1/10/91*

Mr. John Linehan, Director  
Repository Licensing & Quality  
Assurance Project Directorate  
Division of High-Level  
Waste Management  
Office of Nuclear Material  
Safety and Safeguards  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Mr. Linehan:

As indicated in the enclosed Federal Register Notice (FRN) (55 FR 32288-32290), the U.S. Department of Energy (DOE) proposed to establish a new system of records, DOE-80, Quality Assurance (QA) Training and Qualification Records, to maintain training and qualification records of DOE and contractor employees to satisfy Nuclear Regulatory Commission regulations applicable to the High-Level Waste (HLW) Repository Program. As further indicated in the FRN, the new system of records was to become effective on October 8, 1990, if no comments were received resulting in a "contrary determination" and subsequent publication of a notice to that effect. Since no comments were received prior to or on October 8, 1990, this new system of records will be routinely used at DOE for the HLW Repository Program.

The implementation of DOE-80 should close out QA Open Item 6-90 (NRC item 13). If you have any questions about the FRN, please contact Cori Macaluso at 586-2837.

Sincerely,

Linda J. Desell  
Acting Chief, Licensing Branch  
Office of Systems Integration and  
Regulations  
Office of Civilian Radioactive  
Waste Management

Attachment 2

90110601385 pp.

cc:

- R. Loux, State of Nevada
- C. Gertz, DOE/YMPO/NV
- M. Baughman, Lincoln County, NV
- D. Bechtel, Clark County, NV
- S. Bradhurst, Nye County, NV

25866), June 20, 1990, (55 FR 25154) and July 26, 1990, (55 FR 34499), respectively. The public may review these Recommendations and responses in the Board's Washington office, 600 E Street, NW., Suite 675, Washington, DC 20004 and DOE's Rocky Flats Area Office reading room at the Front Range Community College, 3645 West 112 Avenue, Westminster, CO 80030 and at other DOE depository libraries throughout the country.

This hearing is independently authorized by 42 U.S.C. 2286d (b)(4) and 42 U.S.C. 2286b.

**DATES:** The public hearing will be held on August 30, 1990, beginning at 5:30 p.m. and ending at 10 p.m. unless concluded earlier.

**ADDRESSES:** The public hearing will be held at the Ramada Hotel (Denver/Boulder), 8773 Yates Drive, Westminster, CO. Requests to speak at the hearing are to be submitted to Kenneth M. Pusateri, General Manager, Defense Nuclear Facilities Safety Board, 600 E Street, NW., Suite 675, Washington, DC 20004.

**FOR FURTHER INFORMATION CONTACT:** Kenneth M. Pusateri, General Manager at 202/376-5083 (FTS 376-5083).

**SUPPLEMENTARY INFORMATION:** Any individual who has an interest in these Recommendations or the responses referred to in the Summary section of this notice, or who is a representative of a group which has such interest, is invited to comment. Interested persons may request an opportunity to make an oral presentation at the hearing. The Secretary of Energy is being requested to send a representative(s) and provide information regarding the Secretary's responses to the Board's recommendations.

All requests to speak at the hearing shall be submitted in writing, shall describe the nature and scope of the oral presentation, and shall be transmitted in time to assure receipt by the General Manager by 5 p.m. on August 20, 1990. The length of the oral statement shall be limited to 10 minutes.

Anyone who wishes to comment may do so in writing, either in lieu of, or in addition to, making an oral presentation. Any written submittals must be received by the Board no later than August 20, 1990. The Board members may question witnesses to the extent deemed appropriate. The Board will hold the record open until September 13, 1990, for the receipt of additional materials. A transcript of the hearing will be made available by the Board for inspection by the public at the Defense Nuclear Facilities Safety Board's Washington office and at the DOE's Front Range

Community College, 3645 West 112 Avenue, Westminster, CO 80030.

The Board specifically reserves its right to further schedule and otherwise regulate the course of the hearing, to recess, reconvene, postpone, or adjourn the hearing, and otherwise exercise its powers under the Atomic Energy Act of 1954, as amended.

Dated: August 3, 1990.

Kenneth M. Pusateri,  
General Manager, Defense Nuclear Facilities  
Safety Board.

[FR Doc. 90-18490 Filed 8-7-90; 8:45 am]

BILLING CODE 6820-KD-2

## DEPARTMENT OF ENERGY

### Privacy Act of 1974; Proposed Establishment of a New System of Records

**AGENCY:** Department of Energy (DOE).  
**ACTION:** Notification of intent to create a new system of records.

**SUMMARY:** In accordance with the requirements of the Privacy Act of 1974, 5 U.S.C. 552a, DOE is required to publish a notice in the Federal Register of a proposed system of records. DOE proposes to establish a new system of records, DOE-80, Quality Assurance Training and Qualification Records, to maintain training and qualification records of DOE and contractor employees for purposes of satisfying quality assurance requirements imposed by 10 CFR part 50, Appendix B, 10 CFR part 60, subpart G, and the Nuclear Regulatory Commission (NRC) Review Plan for High-Level Waste (HLW) Repository Quality Assurance Program Descriptions. These records will be used to verify personnel qualifications of individuals involved in all activities associated with the construction and operation of a nuclear waste repository and/or a Monitored Retrievable Storage (MRS) facility. These activities can include research and development, site characterization, transportation, waste packaging, handling, design, maintenance, performance confirmation, inspection, and fabrication conducted prior to submitting an application and obtaining a license from the NRC. Also covered under these records will be activities associated with development and production of repository waste forms. The DOE also proposes to establish routine uses for this new system that will provide access to records maintained in the system to the NRC, other Federal agencies, and state and local governments for surveillance and audits conducted by the DOE and the NRC to verify compliance with all

aspects of the Department's quality assurance program and to determine its effectiveness. In addition, certain records may be used from this system of records for disclosure to members of an advisory committee for purposes of conducting a review of the DOE epidemiological program.

System reports have been submitted to the Speaker of the House, the President of the Senate, and the Director of the Office of Management and Budget (OMB), in accordance with subsection 552a(r) of the Privacy Act and paragraph 2a(2) of the Transmittal Memorandum No. 1 to OMB Circular A-108.

The OMB requires that a systems report be distributed no later than 60 days prior to the implementation of the announcement of a new system of records.

**DATES:** The new system of records and its routine use will become effective without further notice, 30 days after publication (September 7, 1990), unless comments are received on or before that date which would result in a contrary determination and a notice is published to that effect.

**ADDRESSES:** Written comments should be directed to the following address: John H. Carter, Chief, Freedom of Information and Privacy Acts, U.S. Department of Energy, AD-234.1, 1000 Independence Avenue SW., Washington, DC 20585.

**FOR FURTHER INFORMATION CONTACT:** Department of Energy, John H. Carter, Chief, Freedom of Information and Privacy Acts, AD-234.1, 1000 Independence Avenue, SW., Washington, DC (202) 586-5855  
Department of Energy, Abel Lopez, Office of General Counsel, GC-43, 1000 Independence Avenue, SW., Washington, DC (202) 586-8618  
Department of Energy, Dwight Shelor, Office of Quality Assurance, RW-3, 1000 Independence Avenue, SW., Washington, DC (202) 586-8858

**SUPPLEMENTARY INFORMATION:** The DOE proposes to establish a new system of records, DOE-80, "Quality Assurance Training and Qualification Records." Records maintained in the system will be used to verify that individuals involved in all activities in the construction and operation of a nuclear waste repository and/or a MRS facility, which can include research and development, site characterization, transportation, waste packaging, design, handling, maintenance, performance confirmation, inspection, fabrication, and activities associated with development and production of repository waste forms, have the

appropriate experience and education to perform the work that they have been assigned. The records will also be used to verify that individuals have received appropriate training on quality assurance requirements and procedures.

The DOE also proposes to make records maintained in this system of records available to state and local governments, the NRC, and other Federal agencies for purposes of audits conducted to satisfy the requirements of the Nuclear Waste Policy Act of 1982, title 10, Code of Federal Regulations, part 50, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants", Appendix B; and the NRC Review Plan for High-Level Waste Repository Quality Assurance Program Descriptions.

The text of the system notice is set forth below. Issued in Washington, D.C. on August 2, 1990.

Jim E. Tarro,

*Director of Administration and Human Resource Management*

DOE-80

**SYSTEM NAME:**

Quality Assurance Training and Qualification Records.

**SECURITY CLASSIFICATION:**

Unclassified.

**SYSTEM LOCATION:**

Those offices listed in Appendix A, as well as the West Valley Demonstration Project, U.S. Department of Energy, PO Box 919, West Valley, New York 14171.

**CATEGORIES OF INDIVIDUALS COVERED BY THE SYSTEM:**

DOE and contractor personnel involved in all activities leading up to and including the construction and operation of a nuclear waste repository and/or a Monitored Retrievable Storage (MRS) facility which are subject to quality assurance audits by the Nuclear Regulatory Commission in relationship to its quality assurance program. Also covered under these records will be activities associated with development and production of repository waste forms.

**CATEGORIES OF RECORDS IN THE SYSTEM:**

Name, resume, assigned number, grade level, occupational series, training requests and authorizations, training evaluations, training examination, training attendance records, indoctrination and training matrix, reading assignment sheet, qualifications statement, verification records of employment and education, statement of

performance, position description, or equivalent documents that encompass the above information.

**AUTHORITY FOR MAINTENANCE OF THE SYSTEM:**

5 U.S.C. 301; Department of Energy Organization Act, including authorities incorporated by reference in Title III of the Department of Energy Organization Act, Executive Order 12009, Nuclear Waste Policy Act of 1982 (Pub. L. 97-425), and the Nuclear Waste Policy Amendments Act of 1987 (Pub. L. 100-203).

**ROUTINE USES OF RECORDS MAINTAINED IN THE SYSTEM, INCLUDING CATEGORIES OF USERS AND THE PURPOSES OF SUCH USES:**

Records are used by state and local governments, the NRC, and other Federal agencies that conduct audits to determine whether DOE and contractor personnel satisfy quality assurance requirements for activities necessary to obtain a license from the NRC for the construction and operation of a nuclear waste repository and/or a Monitored Retrievable Storage (MRS) facility. These activities will also include research and development, site characterization, transportation, waste packaging, handling, design, maintenance, performance confirmation, inspection, fabrication, and development and production of repository waste forms.

A record from this system of records may be disclosed to researchers for the purpose of conducting an epidemiologic study of workers at a DOE facility if their proposed studies have been reviewed by the National Academy of Sciences or another independent organization, and deemed appropriate for such access. A researcher granted access to this record shall be required to sign an agreement to protect the confidentiality of the data and be subject to the same restrictions applicable to DOE officers and employees under the Privacy Act.

A record from this system of records may be disclosed to members of an advisory committee for purposes of conducting a review of the DOE epidemiological program. Members of an advisory committee who obtain access to the records shall be subject to the same restrictions applicable to DOE officers and employees under the Privacy Act. Additional routine uses are 1, 4, 7, 8, and 9 listed under Appendix B, 47 FR 14284, dated April 2, 1982.

**POLICIES AND PRACTICES FOR STORING, RETRIEVING, ACCESSING, RETAINING, AND DISPOSING OF RECORDS IN THE SYSTEM:**

**STORAGE:**

Paper records, computer disks, and microform.

**RETRIEVABILITY:**

Name and/or assigned number.

**SAFEGUARDS:**

Records are maintained in locked cabinets. Access to computer records is by password only.

**RETENTION AND DISPOSAL:**

Records will be maintained and disposed in accordance with DOE Order 1324.2A, "Records Disposition" and in accordance with DOE Records Inventory Disposition Schedule.

**SYSTEM MANAGER(S) AND ADDRESS:**

Headquarters: Director, Office of Quality Assurance, Office of Civilian Radioactive Waste Management, U.S. Department of Energy, 1000 Independence Avenue SW., Washington, DC 20585 and Director, Project Operations and Control Division, Yucca Mountain Project Office, Nevada Operations Office, Phase 2, Suite 200, 101 Convention Center Drive, Las Vegas, Nevada 89109.

**NOTIFICATION PROCEDURE:**

a. Requests by an individual to determine if a system of records contains information about him/her should be directed to the Chief, Freedom of Information and Privacy Acts, Department of Energy, Washington, DC or the Privacy Act Officer at the appropriate field office identified in Appendix A; in accordance with DOE's Privacy Act regulations (10 CFR part 1008, 45 FR 61578, September 16, 1980).

b. Required identifying information: Requestor's complete name, and, if appropriate, the geographic location(s) and organization(s) where requestor believes such record may be located, date of birth, and time period related to activity.

**RECORD ACCESS PROCEDURE:**

Same as Notification procedures above.

**CONTESTING RECORD PROCEDURE:**

Same as Notification procedures above.

**RECORD SOURCE CATEGORIES:**

The subject individuals, supervisors, former employers, colleagues and universities, references provided by subject individuals, and portions of data from copies of personnel action

documents and training attendance and examination files.

**SYSTEMS EXEMPTED FROM CERTAIN PROVISIONS OF THE ACT:**

None.

[FR Doc. 90-18560 Filed 8-7-90; 8:45 am]

BILLING CODE 6450-01-M

**Federal Energy Regulatory Commission**

[Docket No. TM90-12-21-000]

**Columbia Gas Transmission Corp.; Proposed Changes in FERC Gas Tariff**

August 2, 1990.

Take notice that Columbia Gas Transmission Corporation (Columbia) on July 31, 1990, tendered for filing the following proposed changes to its FERC Gas Tariff, First Revised Volume No. 1, to be effective August 1, 1990:

Third Revised Sheet Nos. 30B1 through 30B5  
Third Revised Sheet Nos. 30C1 through 30C5  
Third Revised Sheet Nos. 30D1 through 30D5  
Third Revised Sheet Nos. 30E1 through 30E5  
Third Revised Sheet Nos. 30F1 through 30F5  
Third Revised Sheet Nos. 30G1 through 30G5

Columbia states that the foregoing tariff sheets modify and supplement Columbia's previous filings in Docket Nos. RP88-187, *et al.*, in which Columbia established procedures pursuant to Order No. 500 to recover from its customers the take-or-pay and contract reformation costs billed to Columbia by its pipeline suppliers. Specifically, Columbia proposes to supplement and modify its earlier filings in Docket Nos. RP88-187, *et al.*, to permit it to flow through revised take-or-pay and contract reformation costs from:

(1) Texas Eastern Transmission Corporation (Texas Eastern) pursuant to a filing made on June 1, 1990, which was accepted by Commission order issued on June 18, 1990 in Docket No. TM90-9-17. Also, Columbia proposes to remove from its tariff certain take or pay costs attributable to Texas Eastern's filings at Docket Nos. TM89-8-17, TM89-12-17 and TM90-5-17, as these costs have now been fully recovered;

(2) Tennessee Gas Pipeline Company (Tennessee) pursuant to a filing made on May 31, 1990, which was accepted by Commission order dated June 29, 1990 in Docket Nos. RP88-191 (re-docketed by the Commission as RP90-122); and

(3) Transcontinental Gas Pipe Line Company (Transco) pursuant to a filing made on March 30, 1990, which was accepted by Commission order issued on April 27, 1990 in Docket No. RP90-98. Also, Columbia proposes to remove from its tariff certain take or pay costs attributable to Transco's filing at Docket

No. RP89-163, as these costs have now been fully recovered.

Copies of the filing were served upon Columbia's jurisdictional customers, interested state commissions, and upon each person designated on the official service list compiled by the Commission's Secretary in Docket Nos. RP88-187, RP89-181, RP89-214, RP89-229, TM89-3-21, TM89-4-21, TM89-5-21, TM89-7-21, RP90-28, TM90-2-21, TM90-5-21, TM90-6-21, TM90-7-21, TM90-8-21, and TM90-10-21.

Any person desiring to be heard or to protest said filing should file a motion to intervene or protest with the Federal Energy Regulatory Commission, Union Center Plaza Building, 825 North Capitol Street NE., Washington, DC 20426, in accordance with Rules 211 and 214 of the Commission's Rules of Practice and Procedure. All such motions or protests should be filed on or before August 10, 1990. Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceedings. Any person wishing to become a party must file a motion to intervene. Copies of Columbia's filing are on file with the Commission and are available for public inspection.

Lois D. Casbell,

Secretary.

[FR Doc. 90-18520 Filed 8-7-90; 8:45 am]

BILLING CODE 6717-01-M

[Docket No. RP90-86-000]

**MIGC, Inc.; Informal Settlement Conference**

August 2, 1990.

Take notice that an informal settlement conference will be convened in the above-docketed proceeding on September 5, 1990, at 10:00 a.m. in Room 3400-D at the offices of the Federal Energy Regulatory Commission, 825 North Capitol Street NE., Washington, DC 20426.

The Presiding Administrative Law Judge issued an order confirming procedural schedule on July 11, 1990 that provided for an informal settlement conference to convene on August 22, 1990. However, the order also provided that the parties could reschedule this conference if they wished to do so. The attending parties have subsequently agreed to reschedule the settlement conference to September 5, 1990.

Any party, as defined by 18 CFR 385.102(c) (1989), or any participant as defined by 18 CFR 385.102(b) (1989), is invited to attend. Persons wishing to become a party must move to intervene and receive intervenor status pursuant

to the Commission's regulations (18 CFR 385.214 (1989)).

If there are any questions, call Staff Counsel Robert L. Woods at (202) 708-0583 or Anja M. Clark at (202) 208-2034. Lois D. Casbell,

Secretary.

[FR Doc. 90-18527 Filed 8-7-90; 8:45 am]

BILLING CODE 6717-01-M

[Docket No. TQ90-3-26-000]

**Natural Gas Pipeline Co. of America; Changes in Rates**

August 2, 1990.

Take notice that on July 31, 1990, Natural Gas Pipeline Company of America (Natural) tendered for filing as part of its FERC Gas Tariff, Third Revised Volume No. 1 (Tariff) the below listed tariff sheets to be effective September 1, 1990:

Ninetieth Revised Sheet No. 5  
Fifty-Fifth Revised Sheet No. 5A  
Thirty-Third Revised Sheet No. 5B  
Thirty-Eighth Revised Sheet No. 5C  
Eighth Revised Sheet No. 5C.1  
Eighth Revised Sheet No. 5C.2

Natural states the purpose of the instant filing is to implement Natural's quarterly PGA unit rate adjustment calculated pursuant to section 18 of the General Terms and Conditions of Natural's Tariff. The tariff sheets contain both peak and off-peak rates.

The overall effect of the quarterly adjustment when compared to the gas cost component in Natural's PGA filing in Docket No. TA90-2-28, effective June 1, 1990, is an increase in the DMQ-1 demand and commodity charges of \$.03 and \$.2634, respectively, and a decrease in the DMQ-1 entitlement charge of \$.0029. Appropriate adjustments have been made with respect to Natural's other rate schedules. No changes are required to the surcharge adjustments that were approved in Docket No. TA90-1-28, effective March 1, 1990.

Natural states that a copy of the filing is being mailed to Natural's jurisdictional sales customers and interested state regulatory agencies.

Any person desiring to be heard or to protest said filing should file a motion to intervene or protest with the Federal Energy Regulatory Commission, 825 North Capitol Street NE., Washington, DC 20426, in accordance with §§ 385.214 and 385.211 of the Commission's Rules and Regulations. All such motions or protests must be filed on or before August 9, 1990. Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make

NOV 06 1990

Mr. Dwight Shelor, Acting Associate Director  
for Systems Integration and Regulations  
Office of Civilian Radioactive Waste Management  
U. S. Department of Energy, RW 30  
Washington, D.C. 20585

Dear Mr. Shelor:

SUBJECT: SURVEILLANCE OBSERVATION OF THE U.S. GEOLOGICAL SURVEY QUALITY  
ASSURANCE PROGRAM

I am transmitting the U.S. Nuclear Regulatory Commission (NRC) Surveillance Observation Report for the U.S. Department of Energy (DOE)/Yucca Mountain Project Office (YMPO) Quality Assurance (QA) Surveillance No. YMP-SR-90-038 of the U.S. Geological Survey (USGS) conducted at Denver, Colorado, and the Nevada Test Site (NTS), on September 10-14, 1990. The NRC staff participated as an observer on the DOE/YMPO surveillance of the USGS QA program.

The NRC staff observed and evaluated the DOE/YMPO QA surveillance to gain confidence that DOE and USGS are effectively implementing the requirements of their QA program pertaining to corrective actions taken with regard to previously identified deficiencies, and to verify the implementation of their QA and technical procedures under Criteria 4, 12, 15, and 16. The staff's evaluation is based on direct observations of the surveillance team members, discussions with the surveillance team and USGS staff, and reviews of pertinent QA and technical records relating to corrective actions and implementation of the USGS QA and technical procedures.

The scope of their surveillance was limited to procedural implementation. No assessment of technical adequacy and qualification of any of the technical documents (study plans and field data) was made during the surveillance. The NRC observer found the DOE/YMPO surveillance of the USGS QA program useful and effective. The surveillance team was familiar with the USGS QA Plan and the relevant QA procedures being implemented. Their checklist for this surveillance was well prepared and utilized in determining the status and adequacy of the QA program under 10 CFR Part 50, Appendix B, Criteria 4, 12, 15, and 16. The team seemed to have a good knowledge of the requirements of the Nevada Nuclear Waste Storage Investigations Quality Assurance Plan (NNWSI/88-9) and applicable QA procedures.

The NRC staff agrees with DOE/YMPO surveillance team's conclusion that the procedural implementation of the USGS QA program under Criteria 4, 12, 15, and

Attachment 3

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16 is adequate. In addition, the staff was satisfied that USGS is closing out deficiencies identified during previous audits and surveillances in a satisfactory manner.

If you have any questions concerning this report, please contact Tilak Verma of my staff at (301) 492-3465 or FTS 492-3465.

Sincerely,

*15/ by Joe Halovich*  
*Joe* John J. Linehan, Director  
Repository Licensing and Quality  
Assurance Project Directorate  
Division of High-Level Waste Management  
Office of Nuclear Material Safety  
and Safeguards

Enclosure: As Stated

cc: R. Loux, State of Nevada  
C. Gertz, DOE/NV  
S. Bradhurst, Nye County, NV  
M. Baughman, Lincoln County, NV  
D. Bechtel, Clark County, NV  
D. Weigel, GAO  
P. Niedzielski-Eichner, Nye County, NV

## SURVEILLANCE OBSERVATION REPORT

### 1.0 INTRODUCTION

The United States Geological Survey (USGS) is responsible for conducting geologic, geophysical, hydrologic, and seismologic investigations in support of the U.S. Department of Energy's (DOE) waste management and site characterization activities for the Yucca Mountain Project (YMP). The investigations are ongoing at the Nevada Test Site and the USGS offices in Denver, Colorado; Menlo Park, California; and Las Vegas, Nevada.

From September 10-14, 1990, the DOE/Yucca Mountain Project Office (YMPO) conducted surveillance No. YMP-SR-90-038 of the USGS QA program at Denver, Colorado, and at the Nevada Test Site, in accordance with the YMPO Quality Management Procedure, QMP-18-02, Revision 1 "Surveillances." The U.S. Nuclear Regulatory Commission (NRC) staff participated in the surveillance as an observer. This report documents the staff's assessment of the effectiveness of the DOE/YMPO surveillance and the adequacy of the USGS QA program in the areas of corrective actions (CA) taken with regard to previously identified deficiencies and the development and procedural implementation under Criteria 4, 12, 15, and 16.

### 2.0 PURPOSE

This DOE/YMPO surveillance evaluated the adequacy and status of procedural implementation of the USGS QA program in selected program elements and verified corrective actions taken by the USGS to close out previously identified deficiencies. The NRC staff's purpose in observing this surveillance was to gain confidence that the DOE and its contractors are properly implementing the requirements of QA program by assessing the effectiveness of the DOE/YMPO surveillance and determining the adequacy of the USGS QA program.

### 3.0 SCOPE

The DOE/YMPO surveillance team selected Criteria 4, 12, 15, and 16 requirements from the NNWSI/88-9 QA Plan and the USGS QAPP for review and assessment of QA program adequacy and status of procedural implementation. The scope of this surveillance did not include any review of the technical adequacy and qualification of the technical products such as study plans, technical procedures, or field data.

#### 4.0 SURVEILLANCE PARTICIPANTS

##### DOE/YMPO

Donald Harris, HARZA, Team Lead  
Frank Kratzinger, SAIC, Team Member  
Robert B. Constable, DOE, Team Member

##### NRC

Tilak R. Verma, Observer

#### 5.0 SURVEILLANCE SUMMARY RESULTS

The DOE/YMPO surveillance team conducted a detailed examination and review of the USGS records, logs and documents to assess compliance with the procedural requirements. The team interviewed several USGS and contractor personnel to assess their knowledge of applicable procedures under each criterion. Adequacy of controls and status of implementation for selected procedures was assessed and documented on the checklist for each of the selected criteria. The surveillance team identified one weakness in the portions of the USGS QA program covered by the surveillance. This weakness was identified as an observation under Criterion 15 (Control of Nonconforming Items) for a lack of a designated hold area for nonconforming items with "Hold Tags." This weakness, if corrected in a timely manner, is not serious enough to affect the adequacy of QA controls or their procedural implementation. The surveillance team concluded that the QA program controls under Criteria 4, 12, 15, and 16 are adequate and their implementation is satisfactory. The surveillance team did not assess the effectiveness of implementation for these criteria of the USGS QA program.

#### 6.0 USGS AND CONTRACTOR PERSONNEL CONTACTED

L. R. Hayes, Technical Project Officer, USGS  
T. Chaney, Associate QA Manager, USGS  
A. Handy, QA Specialist, USGS  
A. Whiteside, QA Advisor, SAIC-Golden  
P. Warner, Records Coordinator, USGS  
M. Mustard, QA Specialist, USGS  
D. Porter, Manager, QA Records Support, SAIC-Golden  
R. Luckey, NHP, USGS  
J. Woolverton, NHP, USGS  
J. Stuckless, NHP, USGS  
D. Baldwin, NHP, USGS  
J. Ziemba, QA Audit Specialist, SAIC-Golden  
J. LaMonica, Records Specialist, USGS  
T. Mendez-Vigo, NHP QA, USGS  
K. Causseaux, SP Coordinator/NHP, USGS  
M. Brooks, QA Specialist, SAIC-Golden

## 7.0 NRC CONCLUSIONS

The NRC observer found the DOE/YMPO surveillance of the USGS QA program useful and effective. The surveillance team was familiar with the requirements of the NNWSI/88-9 QA Plan and the USGS QAPP. Their checklist for this surveillance was well prepared and utilized in determining the adequacy of QA controls under Criteria 4, 12, 15, and 16 and for assessing the status of completeness and implementation of all the applicable procedures under these criteria. The team was thorough and professional in interviewing the USGS and contractor personnel and in conducting the surveillance.

The scope of this surveillance was limited to procedural implementation. No assessment of technical adequacy and qualifications of any of the technical documents (such as study plans and field data) was made during the surveillance. The surveillance identified one weakness in the USGS QA program under Criterion 15 (Control of Nonconforming Item) and resulted in an Observation for a lack of designated hold area for items with "Hold Tags." This weakness, if corrected in a timely manner, is not serious enough to affect the adequacy of QA controls or their procedural implementation. The NRC staff agrees with the DOE/YMPO surveillance team's conclusion that the USGS QA program provides adequate controls and that the procedural implementation of the procedures under the above criteria is also adequate. In addition, the staff was satisfied that USGS is closing out deficiencies identified during previous audits and surveillance in a satisfactory manner.

## QA ACCEPTANCE PROGRAMS

- 1 -

OCT 24 1990

Mr. Dwight Shelor, Acting Associate Director  
for Systems Integration and Regulations  
Office of Civilian Radioactive Waste Management  
U.S. Department of Energy, RW 30  
Washington, D.C. 20585

Dear Mr. Shelor:

SUBJECT: ACCEPTANCE OF PARTICIPANT QUALITY ASSURANCE (QA) PROGRAMS FOR THE  
HIGH-LEVEL WASTE GEOLOGIC REPOSITORY

This letter responds to the Stein to Browning letter dated September 12, 1990, requesting the U.S. Nuclear Regulatory Commission (NRC) to accept six of the U.S. Department of Energy, Office of Civilian Radioactive Waste Management (DOE/OCRWM) participant quality assurance (QA) programs for the Yucca Mountain Project (YMP). NRC acceptance has been requested for the following DOE/OCRWM participant QA programs accepted by DOE:

- (1) Lawrence Livermore National Laboratory (LLNL)
- (2) Sandia National Laboratories (SNL)
- (3) Fenix and Scisson of Nevada (FSN)
- (4) Holmes and Narver (H&N)
- (5) Reynolds Electrical and Engineering Co. (REECO)
- (6) U.S. Geological Survey (USGS)

One of the concerns (Objection 2) resulting from the NRC review of DOE's Site Characterization Plan for the YMP, pertained to having a QA program which meets the NRC requirements of Subpart G of 10 CFR Part 60 in place prior to the start of the new site characterization activities. Consistent with previous NRC/DOE agreements, the NRC staff recommended that DOE complete its development and acceptance of DOE and the participant QA programs and then obtain NRC acceptance prior to the start of new site characterization activities. NRC also noted that this objection could be lifted incrementally for individual QA programs and program areas as DOE demonstrated and NRC agreed on their acceptability.

DOE submitted QA Program Plans (QAPPs) for the above program participants for NRC staff review and acceptance in early 1989. DOE concluded that these QAPPs were in compliance with the DOE/YMP 88-9 QA Plan, and consequently, in compliance with the NRC requirements of Subpart G of 10 CFR Part 60 and Appendix B of 10 CFR Part 50. The NRC staff performed its own independent review and concluded in six NRC Safety Evaluations (SEs) issued in October 1989, that these QAPPs addressed the applicable criteria of Subpart G of 10 CFR Part 60 and Appendix B of 10 CFR Part 50. The SEs stated that the participant QAPPs could serve as an adequate framework for developing specific policies, plans, and procedures to implement the QA Program for the YMP.

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WM-11 FDC

Attachment 4

9010260188 Sep.

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102.7  
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A.H.16

Before the DOE/OCRWM program participant QA programs could be determined to be acceptable for start of new site characterization activities, it was necessary for DOE to verify and NRC to concur that the participant QAPPs were being effectively implemented. After an initial round of audits on participant program implementation, NRC and DOE agreed at the April 27, 1990, QA Meeting on the criteria to demonstrate that the QAPPs were being effectively implemented. The criteria included the following:

- (1) Review and resolve open QA program deficiencies identified by the DOE auditors that could have a quality or technical impact on output products;
- (2) Identify the extent of the program implementation since the last DOE audit, including the areas of activity audited or surveilled and the end products produced;
- (3) Determine whether the program can be effectively implemented;
- (4) Identify what areas of the program are on hold; and
- (5) State the DOE position of whether the program is adequate for further implementation to conduct new site characterization activities.

The NRC staff has reviewed the information in DOE's September 12, 1990, letter and finds that DOE has provided sufficient information to address the five criteria. The enclosures to the letter for each participant QA program indicate that DOE has reviewed the open QA program deficiencies, and, based on follow-up audits and/or surveillances, determined that, with the exception of open QA issues on procurement, software QA, and access to personnel qualifications for some participants, there were no items that could have a technical or quality impact on output products. The DOE review verified that: a) significant deficiencies previously identified by DOE audits and surveillances have been resolved; b) there are no areas of the QA programs presently affected by a stop work order; and c) open QA issues for procurement, software QA, and access to personnel qualifications are in the process of being resolved. DOE has determined that the QA programs for SNL and LLNL are being effectively implemented and are in compliance with the DOE/YMP 88-9 QA Plan and the applicable NRC QA requirements, and they are acceptable to initiate new site characterization activities. The QA programs for FSN, H&N, REECo, and USGS were also found by DOE to be effectively implemented and to be acceptable to initiate new site characterization activities, pending resolution of the open QA issues for procurement, software QA, and personnel qualifications.

Based on the NRC staff observations of DOE audits and surveillances of the participant QA programs and review of the information provided in DOE's September 12, 1990 letter, the NRC staff agrees with the DOE conclusion that the participant QA programs for SNL and LLNL are acceptable for implementation of new site characterization activities for the YMP. NRC acceptance of the participant QA programs for FSN, H&N, REECo, and USGS is conditional upon satisfactory resolution of the exceptions noted in DOE's September 12, 1990, letter. The open QA issues pertaining to procurement procedures, software QA, and personnel qualifications for the FSN, H&N, REECo, and USGS QA programs should be resolved in the near future. DOE should notify the NRC staff of the

QA ACCEPTANCE PROGRAMS

resolution of these exceptions, and receive NRC acceptance of the appropriate resolution prior to the start of any new site characterization work that might be adversely affected by these exceptions.

The NRC staff will continue to monitor the participant QA programs by participating on a selective basis as observers in the DOE/OCRWM surveillance and audit process, or by performing its own independent audits to verify the adequacy and effectiveness of implementation of the DOE/OCRWM and participant QA programs.

Should you have any questions concerning our review, please contact Mr. Kenneth Hooks on (301)/FTS-492-0447.

Sincerely,

151

John J. Linehan, Director  
Repository Licensing and Quality  
Assurance Project Directorate  
Division of High-Level Waste Management  
Office of Nuclear Material Safety  
and Safeguards

- cc. R. Loux, State of Nevada
- C. Gertz, DOE/NV
- S. Bradhurst, Nye County, NV
- M. Baughman, Lincoln County, NV
- D. Bechtel, Clark County, NV
- P. Niedzielski-Eichner, Nye County, NV
- .D. Weigel, GAO

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\*\*\* BRACKETED PORTIONS INDICATE CHANGES RESULTING FROM  
9/18/90 QA MEETING OR ADDED AS A RESULT OF NRC REVIEW  
ACTIONS.

SUBJECT: STATUS OF NRC/DOE OPEN ITEMS - NOVEMBER 8, 1990

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>STATUS</u>	<u>RECOMMENDATION FOR CLOSURE/REMARKS</u>
1-90 (i) QA-F-1 (ii) QA-F-2 (iii) QA-F-3	DOE Waste Glass QA Program	Open	NRC staff has received Rev. 3 of the QARD which addresses the staff's comments on OGR B-14. The DOE responses have been evaluated and found acceptable by the NRC staff. DOE will be developing a draft position on OCRWM/NRC overview/verification activities. Development of a Memorandum of Understanding (MOU) among DOE-RW, NE, and NE is in question as the idea of an MOU has not been settled among the 3 DOE offices. At the 5/23/90 QA meeting, DOE stated that they intended to meet (Duffy/Shelor) to determine if an MOU is required. At the 9/18/90 QA meeting DOE agreed to look into the status of the MOU and provide a response at the next QA meeting.
2-90 NRC Items 9 & 11	<b>YMP</b> Q-List and QA Measures	Open	DOE should meet with NRC to discuss and resolve concerns related to Q-List for the <b>YMP</b> and ESF conceptual design. At the 9/18/90 QA meeting, DOE stated they will submit the Q-List and related material for NRC review prior to the next QA meeting.
3-90 NRC Item 7	NNWSI Core Handling Procedures	Open	DOE submitted the Core Handling procedures to the NRC staff in a 8/11/89 transmittal (Gertz to

Stein). The issues raised in the YMP Surveillance Report (YMP-SR-89-134) will need to be resolved before this item can be closed. NRC will determine acceptability of implementation and adequacy of procedures when they are issued in final form and subsequently implemented.

At the 9/18/90 QA meeting, DOE indicated that based on the prototype drilling at Apache Leap, the procedures have been revised. When finalized, the procedures will be submitted for NRC review and comment.

4-90 QA-A-1 QA-B-1d (1) QA-G-3 QA-G-4 QA-G-5	Qualified QA Program before start of new site characterization activities.	Open	DOE has made a commitment to having a qualified QA program before the start of new site characterization activities. However, this item remains open up until the the NRC staff accepts the DOE QA program as qualified for the start of new site characterization activities. At the 9/18/90 QA meeting, DOE stated that a letter dated 9/12/90 has been submitted to NRC addressing acceptance of the participants QA programs with the exception of LANL. NRC will need to review this acceptance letter and provide a response to DOE.
5-90	Definitions for Conceptual, Title I, II, & III Design.	Closed	(2/15/90 QA Mtg.)
6-90	Access to Project Participant's personnel files.	Open	At the 9/18/90 QA meeting, DOE stated that a Federal Register notice was published 8/8/90 concerning the Privacy Act of 1974 with the intent of creating a new system of maintaining training and qualification records of DOE and contractor personnel. If no adverse comments are received on this notice, this system would become effective 10/7/90.
7-90 QA-E-1	Qualification of Existing Data	Open	At the 9/18/90 QA meeting, DOE stated they will provide NRC with the finalized procedure.

8-90	SCA comments	Open	DOE should provide a response to the 7/31/89 NRC SCA QA comments on the DOE SCP.
9-90	DOE response (Stein to Youngblood dated 12/28/88) to 7 NRC concerns for DOE Audit 88-01 of PNL	Closed	DOE letter (Appel to Linehan dated 8/10/89) provided responses.
10-90 QA-G-1; a & d	Responses to NRC Observation Audits		DOE should respond within 30 days after NRC Observation Audit Report transmittal. The DOE responses are to be reviewed and considered by NRC staff in accepting DOE QA programs. DOE should respond to the following NRC staff Observation Audit Reports:
10.a	Holmes & Narver S89-1, 11/1-4/89	Closed	DOE letter (Appel to Linehan dated 6/13/89) provided responses.
10.b	Holmes & Narver 89-2, 4/24-28/89	Closed	(2/15/90 QA Mtg.)
10.c	Sandia Ntl. Lab. 89-3, 9/11-15/89	Closed	(2/15/90 QA Mtg.)
11-90	DOE QA Participants Acceptance Letter Dated 10/24/90	Open	DOE should provide a response to the open items for the following DOE participants' QA programs: FSN - Procurement - Software H&N - Procurement - Software REECo - Privacy Act USGS - Privacy Act

United States Government

Department of Energy

# memorandum

DATE: OCT 29 1990

REPLY TO  
ATTN OF: RW-3

SUBJECT: Qualification of Office of Environmental Restoration and Waste Management (EM) Quality Assurance Program to Support High-Level Waste Form Production

TO: Acting Director, Office of Environmental Restoration and Waste Management, EM-1

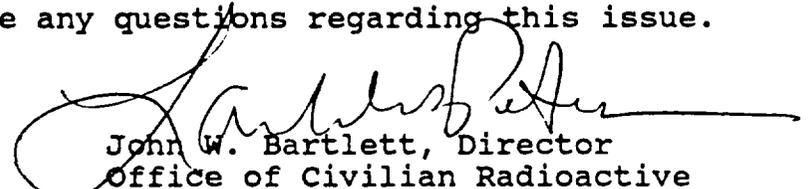
The Office of Civilian Radioactive Waste Management (OCRWM) has evaluated your request for assistance in the qualification of quality assurance programs for the Waste Form Producer Organizations. This memorandum provides OCRWM's position on qualification of EM's quality assurance program, as well as quality assurance programs for Waste Form Producer Organizations that are involved in the startup and operation of waste processing facilities. This includes Operations Offices, Project Offices and Operating Contractors (i.e., West Valley Nuclear Services and Westinghouse Savannah River Corporation). The position stated herein is based on discussions with and endorsement by the OCRWM Office of Quality Assurance and the Nuclear Regulatory Commission (NRC).

OCRWM is not on the critical path for EM's Quality Assurance Program. OCRWM's only role is the review and acceptance of the EM High-Level Waste Quality Assurance Program Description (QAPD) document, DOE/EM/WO/02. Submittal of that QAPD for OCRWM review should be after EM approval. The review of the EM QAPD will be conducted in accordance with the requirements contained in the OCRWM Quality Assurance Requirements Document (DOE/RW-0214) in effect when the Quality Assurance Program Description is submitted. Quality Assurance Program Descriptions from Operations Offices, Project Offices and Operating Contractors are not subject to review and acceptance by OCRWM. OCRWM does, however, request that these QAPDs be submitted for information subsequent to their approval. EM's and other QAPDs will be provided by OCRWM to the NRC for information only. Should the NRC or OCRWM have questions on QAPD content, OCRWM will address those questions to your attention.

In addition to the review for acceptance of the EM Quality Assurance Program Description, OCRWM will conduct audits and surveillances of activities performed by EM. On occasion, OCRWM will observe EM verification activities as well as activities performed by Operation Offices, Project Offices and Operating Contractors. The latter will be performed in concert

with EM's overview of such activities. In either case, the NRC, the State of Nevada, and other affected organizations are extended the opportunity to observe OCRWM verification of High-Level Waste Form Production Activities. Notification will be provided to EM by OCRWM in advance of such activities.

We believe the position stated herein fully supports EM's qualification effort and provides OCRWM with an appropriate level of assurance regarding waste form production. There have been staff level discussions between EM, NRC, and OCRWM on this issue. Please contact me or Mr. Donald G. Horton at 586-8858 if you or your staff have any questions regarding this issue.



John W. Bartlett, Director  
Office of Civilian Radioactive  
Waste Management





**Department of Energy**

Washington, DC 20585

October 31, 1990

Mr. John Linehan, Director  
Repository Licensing & Quality  
Assurance Project Directorate  
Division of High-Level  
Waste Management  
Office of Nuclear Material  
Safety and Safeguards  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Mr. Linehan:

As discussed in the September 18, 1990 Quality Assurance (QA) meeting, enclosed is an uncontrolled copy of each of the U.S. Department of Energy (DOE) Yucca Mountain Project (YMP) Q-List, Quality Activities List, and Project Requirements List and the DOE YMP Administrative Procedure AP-5.9Q for the Qualification of Data or Data Analyses Not Developed Under the YMP QA Plan. As agreed to in the above referenced QA meeting, the transmittal of these documents should close out the QA Open Items 2-90 (NRC items 9 & 11) and 7-90, QA-E-1, respectively.

If you have any questions about these enclosures, please contact Cori Macaluso at 586-2837.

Sincerely,

A handwritten signature in cursive script, appearing to read "Linda J. Desell".

Linda J. Desell  
Acting Chief for the Licensing  
Branch  
Office of Systems Integration and  
Regulations  
Office of Civilian Radioactive  
Waste Management

Enclosures:

- 1) U.S. Department of Energy Yucca Mountain Project Q-List, Quality Activities List, and Project Requirements List
- 2) U.S. Department of Energy Yucca Mountain Project Administrative Procedure AP-5.9Q for the Qualification of Data or Data Analyses Not Developed Under the YMP QA Plan

cc:

- R. Loux, State of Nevada
- C. Gertz, DOE/YMPO/NV
- M. Baughman, Lincoln County, NV
- D. Bechtel, Clark County, NV
- S. Bradhurst, Nye County, NV

**OC  
RW  
WM**



**YUCCA  
MOUNTAIN  
PROJECT**

**Q-LIST**

**QUALITY ACTIVITIES LIST  
(QAL)**

**PROJECT REQUIREMENTS LIST  
(PRL)**

**UNCONTROLLED**



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# **YUCCA MOUNTAIN PROJECT**

## **Q-LIST**

### **QUALITY ACTIVITIES LIST (QAL)**

### **PROJECT REQUIREMENTS LIST (PRL)**

**UNCONTROLLED**



**UNITED STATES DEPARTMENT OF ENERGY**

YUCCA  
MOUNTAIN  
PROJECT

YMP/90-55  
YMP/90-56  
YMP/90-57

YUCCA MOUNTAIN PROJECT

Q-LIST

QUALITY ACTIVITIES LIST (QAL)

PROJECT REQUIREMENTS LIST (PRL)

**UNCONTROLLED**

UNITED STATES DEPARTMENT OF ENERGY  
YUCCA MOUNTAIN PROJECT OFFICE

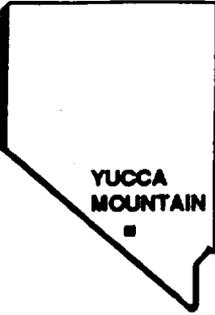
TABLE OF CONTENTS

		<u>Revision</u>	<u>Date</u>
YMP/90-55	QUALITY LIST (Q-LIST)	0	7/24/90
	o Section 1 - Items (Engineered) Important to Safety (IITS)		
	o Section 2 - Items (Engineered Barriers) Important to Waste Isolation (IITWI)		
	o Appendix A - Natural Barriers Important to Waste Isolation		
YMP/90-56	Quality Activities List (QAL)	0	7/24/90
YMP/90-57	Project Requirements List (PRL)	0	7/24/90
	o Section 1 - Items <u>Not</u> Selected As Important To Safety Or As Important To Waste Isolation		
	o Section 2 - All Activities <u>Not</u> Selected As Quality Activities (May contain activities associated with IITS or IITWI)		
	o Appendix A - Exempt Items and Activities		

**UNCONTROLLED**

U.S. DEPARTMENT OF ENERGY

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# YUCCA MOUNTAIN PROJECT

## Q-LIST

# UNCONTROLLED

**JULY 1990**

UNITED STATES DEPARTMENT OF ENERGY



YUCCA  
MOUNTAIN  
PROJECT

YMP/90-55  
Rev. 0  
7/24/90

YUCCA MOUNTAIN PROJECT

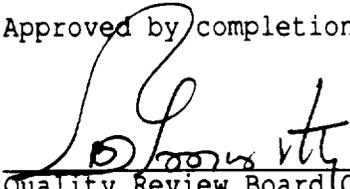
Q-LIST

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UNITED STATES DEPARTMENT OF ENERGY  
YUCCA MOUNTAIN PROJECT OFFICE

Q-LIST: QUALITY LIST  
REVISION 0

Approved by completion of review and acceptance by the Quality Review Board:

  
\_\_\_\_\_  
Quality Review Board Chairman

7/24/90  
\_\_\_\_\_  
Date

Revision History

<u>Revision</u>	<u>Date</u>	<u>Change</u>
Rev. 0	7/24/90	Initial issue of approved list.

**UNCONTROLLED**

## INTRODUCTION

The Assessment Team (AT) groups adopted the Physical Subsystems List from the Systems Requirement (SR) document as the principal basis for definition of engineered items important to waste isolation and important to safety. The list was modified, however, to eliminate natural barriers, which are not engineered items, and temporary Exploratory Shaft Facility (ESF) equipment that is used only for site characterization activities and not for repository construction and operation.

The identification of items in the SR Physical Subsystem List is not limited to "items" as defined in NUREG-1318 or the QARD and QAPD. Specifically, the list includes entries under Site that are not engineered items and entries under ESF that are not permanent repository items. With the exception of ESF items intended to be incorporated into a future repository (i.e., permanent items), engineered items in the ESF design shall be treated as tools used carry out the activities of site characterization. Control of tools will be covered under the QA controls imposed as a result of QA grading of the activities on the Quality Activities List and the Project Requirements List. Section 1.2.6.0 of the ESF Subsystem Design Requirements Document (SDRD) names four ESF permanent items for consideration for repository design:

- o ESF Shaft Liners
- o Underground Openings
- o Ground Control
- o Operational Seals

These items may be incorporated into the repository design, and if so, will be covered by the QA program as part of the repository.

The identification of natural barriers is based upon information in the Site Characterization Plan (SCP). The choice of hydrogeologic units for describing the natural barriers at the site parallels the usage in the SCP discussion of groundwater travel time and total system performance (see Tables 8.3.5.12-2 and 8.3.5.13-5). An important mechanism affecting water-borne radionuclide transport is advection. Under nominal conditions, advection considered independently of other transport and retardation process will likely result in natural barrier performance that ensures compliance with the applicable postclosure performance objectives (10 CFR 60.112, and 60.113[a][2]). Hydrogeologic units are specifically intended to describe properties that control liquid groundwater flow, which controls advective transport. Other stratigraphic definitions, such as thermal/mechanical and geochemical stratigraphy, are important for considering the effects of the repository on the geologic setting, and for assessing retardation and other transport mechanisms. The AT group chose to identify natural barriers in terms of hydrogeologic units.

The initial determination of Items Important to Safety does not utilize the detailed evaluations specified in Section 5.5 and Appendix 4 of AP-6.17Q. Instead, all initial assignments are made through the Direct Inclusion and Exemption provisions of AP-6.17Q (Sections 5.3 and 5.4). The procedure prescribes Direct Inclusion as a conservative course for determination of importance until more detailed evaluations are completed.

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AP-6.17Q Section 5.6.3 states "Items that are recommended by the AT Group as IITWI shall be limited to the engineered and natural barrier components of the postclosure repository system." Temporary structures, systems, and components that are not part of the postclosure repository configuration are by this definition not IITWI."

Section 5.6 of AP-6.17Q prescribes the use of SCP Section 8.3.3, 8.3.4, and 8.3.5 for initial determination of IITWI. The AT also included SCP Section 8.3.2 for this evaluation.

**UNCONTROLLED**

Q-LIST SECTION 1  
ITEMS (ENGINEERED) IMPORTANT TO SAFETY (IITS)  
REVISION 0

**UNCONTROLLED**

Q-List Section 1 - Items (Engineered) Important to Safety (IITS)

---

Item : Waste Package

WBS : 1.2.2

Description : SR 2.0 Includes the following subsystems:

Spent Fuel	2.1
Waste Form	2.1.1
Canister	2.1.2
Container	2.1.3
Packing	2.1.4
Other	2.1.9
Defense High-Level Waste	2.2
Waste Form	2.2.1
Canister	2.2.2
Container	2.2.3
Packing	2.2.4
Other	2.2.9
West Valley High-Level Waste	2.3
Waste Form	2.3.1
Canister	2.3.2
Container	2.3.3
Packing	2.3.4
Other	2.3.9

Assignment : IITS-DI  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1  
Revision History : Rev. 0, 7/24/90

---

Item : Surface Service and Utility Systems

WBS : 1.2.4.3

Description : SR 3.1, including the following subsystems:

Onsite Service and Utility Systems	3.1.1
Transportation System	3.1.1.1
roads	3.1.1.1.1
railroads	3.1.1.1.2
Utilities	3.1.1.3
power distribution system	3.1.1.3.1
communication system	3.1.1.3.2
lighting	3.1.1.3.3
potable-water distribution system	3.1.1.3.5
storm drainage system	3.1.1.3.7
sanitary sewage collection system	3.1.1.3.10
fire protection system	3.1.1.3.11
fuel supply	3.1.1.3.12
sanitary landfill	3.1.1.3.13

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Q-List Section 1 - Items (Engineered) Important to Safety (Continued)

Offsite Service and Utility Systems	3.1.2
Transportation System	3.1.2.1
roads	3.1.2.1.1
railroads	3.1.2.1.2
bridges	3.1.2.1.3
Utilities	3.1.2.2
power supply	3.1.2.2.1
communication system	3.1.2.2.2
water supply	3.1.2.2.3
drainage system	3.1.2.2.5

Assignment : IITS-DI  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1  
Revision History : Rev. 0, 7/24/90

---

Item	: Surface Facilities
WBS	: 1.2.4.3
Description	: SR 3.2, including the following subsystems:
Waste-Handling Facilities	3.2.1
Waste Handling Building	3.2.1.1
building and structures	3.2.1.1.1
cask-handling facilities	3.2.1.1.2
hot cells	3.2.1.1.3
utilities	3.2.1.1.4
HVAC equipment	3.2.1.1.5
waste-handling and packaging equipment	3.2.1.1.6
support facilities	3.2.1.1.7
site generated waste collection facilities	3.2.1.1.8
nuclear material control and accountability system	3.2.1.1.9
lag storage	3.2.1.1.10
vehicle wash facility	3.2.1.3.1
performance confirmation building	3.2.1.3.3
waste treatment building	3.2.1.3.4
Support Facilities for Underground Operations	3.2.2
Ventilation Exhaust Shaft Filtration System	3.2.2.1
Primary Fan Installations for Underground Ventilation Systems	3.2.2.5
Explosive Storage	3.2.2.8

Assignment : IITS-DI  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1  
Revision History : Rev. 0, 7/24/90

**UNCONTROLLED**

Q-List Section 1 - Items (Engineered) Important to Safety (Continued)

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Item : Balance of Plant  
WBS : 1.2.4.3  
Description : SR 3.2.3 , including the following subsystems:  
Fire Alarm and Control System 3.2.3.2  
Emergency and Backup Power Generation System 3.2.3.3  
Medical and Mine Rescue Facilities 3.2.3.9  
Monitoring and Operations Control Facilities 3.2.3.11  
Health Physics Stations 3.2.3.12  
Security Facilities 3.2.3.15  
Institutional Barriers 3.2.3.19  
Assignment : IITS-DI  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1  
Revision History : Rev. 0, 7/24/90

---

Item : Waste Ramp  
WBS : 1.2.4.3  
Description : SR 3.3.1, including the following subsystems:  
communication systems 3.3.1.1.1.60  
portal 3.3.1.1.2.10  
stations 3.3.1.1.2.20  
sump 3.3.1.1.2.30  
lining (includes operational seals) 3.3.1.1.2.40  
roadway 3.3.1.1.2.50  
utility lines 3.3.1.1.2.60  
excavation 3.3.1.1.2.80  
Assignment : IITS-DI  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1  
Revision History : Rev. 0, 7/24/90

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Item : Men-And-Materials Shaft  
WBS : 1.2.4.3  
Description : SR 3.3.2.0.0.0 , including the following subsystems:  
headframe 3.3.2.1.1.10  
communication system 3.3.2.1.1.50  
collar 3.3.2.1.2.10  
stations 3.3.2.1.2.20  
sump 3.3.2.1.2.30  
lining (includes operational seals) 3.3.2.1.2.40  
utility lines 3.3.2.1.2.60  
excavation 3.3.2.1.2.80  
Assignment : IITS-DI  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1  
Revision History : Rev. 0, 7/24/90

**UNCONTROLLED**

Q-List Section 1 - Items (Engineered) Important to Safety (Continued)

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Item : Tuff Ramp  
WBS : 1.2.4.3  
Description : SR 3.3.3, including the following subsystems:  
communication systems 3.3.3.1.1.40  
portal 3.3.3.1.2.10  
stations 3.3.3.1.2.20  
lining (includes operational seals) 3.3.3.1.2.40  
utility lines 3.3.3.1.2.60  
excavation 3.3.3.1.2.80

Assignment : IITS-DI  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1  
Revision History : Rev. 0, 7/24/90

---

Item : Emplacement Area Exhaust Shaft  
WBS : 1.2.4.3  
Description : SR 3.3.7, including the following subsystems:  
hoisthouse 3.3.7.1.1.20  
communication system 3.3.7.1.1.40  
collar 3.3.7.1.2.10  
station 3.3.7.1.2.20  
sump 3.3.7.1.2.30  
lining (includes operational seals) 3.3.7.1.2.40  
fixtures 3.3.7.1.2.50  
pump discharge pipe columns 3.3.7.1.2.60  
excavation 3.3.7.1.2.80

Assignment : IITS-DI  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1  
Revision History : Rev. 0, 7/24/90

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Item : ES Modifications for Waste Emplacement Area Air Intake  
WBS : 1.2.4.3  
Description : SR 3.3.8, including the following subsystems:  
headframe 3.3.8.1.1.10  
hoist shelter 3.3.8.1.1.20  
communication system 3.3.8.1.1.50  
collar 3.3.8.1.2.10  
station 3.3.8.1.2.20  
sump 3.3.8.1.2.30  
lining (includes operational seals) 3.3.8.1.2.40

Assignment : IITS-DI  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1  
Revision History : Rev. 0, 7/24/90

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Q-List Section 1 - Items (Engineered) Important to Safety (Continued)

Item	: Underground Excavations (includes operational seals)	
WBS	: 1.2.4.3	
Description	: SR 3.4, including the following subsystems:	
	Main Drift and Entry System	3.4.1
	Tuff Main	3.4.1.1
	Service Main	3.4.1.2
	Ventilation Drifts	3.4.1.3
	Waste Main	3.4.1.4
	Emplacement Panel Openings	3.4.2
	Waste Emplacement Boreholes	3.4.3
	Borehole Shielding Closure and Closure Installer	3.4.3.2
	Borehole Shield Plug and Shield Plug Installer (Shield Plug only)	3.4.3.3
	Borehole Shield Plug and Shield Plug Installer (Installer only)	3.4.3.3
Assignment	: IITS-DI	
Bases Info. Ref	: SR	
Evaluation Pkg Ref	: IITS-1	
Revision History	: Rev. 0, 7/24/90	

Item	: Underground Service and Utility Systems	
WBS	: 1.2.4.3	
Description	: SR 3.5, including the following subsystems:	
	Transportation System	3.5.1
	Power Distribution System	3.5.2
	Communication System	3.5.3
	Lighting System	3.5.4
	Ventilation System	3.5.5
	Development Area Ventilation	3.5.5.1
	Emplacement Area Ventilation	3.5.5.2
	Water Distribution System	3.5.6
	Chilled Water	3.5.6.1
	Potable Water	3.5.6.2
	Industrial Water	3.5.6.3
	Water Collection and Disposal System	3.5.7
	Compressed Air Distribution System	3.5.8
	Fire Protection and Control System	3.5.9
	Fuel Handling, Storage, and Distribution System	3.5.10
	Waste Emplacement and Retrieval System	3.5.12
	Waste Transporter	3.5.12.1
	Positioning System for Standoff and Retrieval	3.5.12.2
	positioning system for standoff and retrieval in short horizontal boreholes	3.5.12.2.1
	positioning system for standoff and retrieval in long horizontal boreholes	3.5.12.2.2
	Operations Control and Administration Facility	3.5.15
	Performance Confirmation Facilities	3.5.16

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Q-List Section 1 - Items (Engineered) Important to Safety (Continued)

Monitoring Systems	3.5.17
Radiological Monitoring	3.5.17.1
Nonradiological Monitoring	3.5.17.2
Emergency Services	3.5.18
Decontamination facility	3.5.20

Assignment : IITS-DI  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1  
Revision History : Rev. 0, 7/24/90

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Item : Seals  
WBS : 1.2.4.3  
Description : SR 3.6, including the following subsystems:  
    Shaft and Ramp Seals 3.6.1.1  
    Underground Excavation Seals 3.6.1.2  
    Exploratory Borehole Seals 3.6.1.3

Assignment : IITS-DI  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1  
Revision History : Rev. 0, 7/24/90

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Item : Exploratory Shaft Facility  
WBS : 1.2.4.3  
Description : SR 4.0, including the following subsystems:  
    Exploratory Shafts 4.4  
    First Shaft 4.4.1  
    Lining(includes operational seals) 4.4.1.2  
    Second Shaft 4.4.2  
    Lining(includes operational seals) 4.4.2.2  
    Underground Excavations(includes operational  
    seals and ground control) 4.5

Assignment : IITS-DI  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1  
Revision History : Rev. 0, 7/24/90

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Q-LIST SECTION 2

ITEMS (ENGINEERED BARRIERS) IMPORTANT  
TO WASTE ISOLATION (IITWI)

REVISION 0

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Q-List Section 2 - Items (Engineered Barriers) Important to Waste Isolation

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Item : Waste Package  
WBS : 1.2.2  
Description : SR 2.0, including the following subsystems:

Spent Fuel	2.1
Waste Form	2.1.1
Canister	2.1.2
Container	2.1.3
Packing	2.1.4
Other	2.1.9
Defense High-Level Waste	2.2
Waste Form	2.2.1
Canister	2.2.2
Container	2.2.3
Packing	2.2.4
Other	2.2.9
West Valley High-Level Waste	2.3
Waste Form	2.3.1
Canister	2.3.2
Container	2.3.3
Packing	2.3.4
Other	2.3.9

Assignment : IITWI-DI  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITWI-1  
Revision History : Rev. 0, 7/24/90

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Item : Institutional Barriers  
WBS : 1.2.4.3  
Description : SR 3.2.3.19, (part of Repository (Balance of Plant ))  
Assignment : IITWI-DI  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITWI-1  
Revision History : Rev. 0, 7/24/90

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Item : Waste Ramp  
WBS : 1.2.4.3  
Description : SR 3.3.1, including the following subsystems:

portal	3.3.1.1.2.10
stations	3.3.1.1.2.20
sump	3.3.1.1.2.30
lining	3.3.1.1.2.40
excavation	3.3.1.1.2.80

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Q-List Section 2 - Items (Engineered Barriers) Important to Waste Isolation  
(Continued)

Assignment : IITWI-DI  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITWI-1  
Revision History : Rev. 0, 7/24/90

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Item : Men-And-Materials Shaft  
WBS : 1.2.4.3  
Description : SR 3.3.2.0.0.0 , including the following subsystems:  
collar 3.3.2.1.2.10  
stations 3.3.2.1.2.20  
sump 3.3.2.1.2.30  
lining 3.3.2.1.2.40  
excavation 3.3.2.1.2.80

Assignment : IITWI-DI  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITWI-1  
Revision History : Rev. 0, 7/24/90

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Item : Tuff Ramp  
WBS : 1.2.4.3  
Description : SR 3.3.3, including the following subsystems:  
portal 3.3.3.1.2.10  
stations 3.3.3.1.2.20  
lining 3.3.3.1.2.40  
excavation 3.3.3.1.2.80

Assignment : IITWI-DI  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITWI-1  
Revision History : Rev. 0, 7/24/90

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Item : Emplacement Area Exhaust Shaft  
WBS : 1.2.4.3  
Description : SR 3.3.7 , including the following subsystems:  
collar 3.3.7.1.2.10  
station 3.3.7.1.2.20  
sump 3.3.7.1.2.30  
lining 3.3.7.1.2.40  
excavation 3.3.7.1.2.80

Assignment : IITWI-DI  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITWI-1  
Revision History : Rev. 0, 7/24/90

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Q-List Section 2 - Items (Engineered Barriers) Important to Waste Isolation  
(Continued)

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Item : ES Modifications for Waste Emplacement Area Air Intake  
WBS : 1.2.4.3  
Description : SR 3.3.8, including the following subsystems:  
collar  
station 3.3.8.1.2.10  
sump 3.3.8.1.2.20  
lining 3.3.8.1.2.30  
3.3.8.1.2.40

Assignment : IITWI-DI  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITWI-1  
Revision History : Rev. 0, 7/24/90

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Item : Underground Excavations  
WBS : 1.2.4.3  
Description : SR 3.4, including the following subsystems:  
Main Drift and Entry System 3.4.1  
Tuff Main 3.4.1.1  
Service Main 3.4.1.2  
Ventilation Drifts 3.4.1.3  
Waste Main 3.4.1.4  
Emplacement Panel Openings 3.4.2  
Waste Emplacement Boreholes 3.4.3  
Borehole Shield Plug and Shield Plug Installer  
(Shield Plug only) 3.4.3.3

Assignment : IITWI-DI  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITWI-1  
Revision History : Rev. 0, 7/24/90

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Item : Seals  
WBS : 1.2.4.3  
Description : SR 3.6, including the following subsystems:  
Shaft and Ramp Seals 3.6.1.1  
Underground Excavation Seals 3.6.1.2  
Exploratory Borehole Seals 3.6.1.3

Assignment : IITWI-DI  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITWI-1  
Revision History : Rev. 0, 7/24/90

**UNCONTROLLED**

Q-List Section 2 - Items (Engineered Barriers) Important to Waste Isolation  
(Continued)

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Item	: Exploratory Shafts	
WBS	: 1.2.4.3	
Description	: SR 4.4, including the following subsystems:	
	First Shaft	4.4.1
	Lining(includes operational seals)	4.4.1.2
	Second Shaft	4.4.2
	Lining(includes operational seals)	4.4.2.2
	Underground Excavations(includes operational seals and ground control)	4.5
Assignment	: IITWI-DI	
Bases Info. Ref	: SR	
Evaluation Pkg Ref	: IITWI-1	
Revision History	: Rev. 0, 7/24/90	

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Q-LIST APPENDIX A  
NATURAL BARRIERS  
IMPORTANT TO WASTE ISOLATION  
REVISION 0

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Q-List Appendix A - Natural Barriers Important to Waste Isolation

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Barrier : Alluvium  
WBS : 1.2  
Description : Distributed alluvial and colluvial deposits, including those in stream channels and on hill slopes. Lateral boundaries are TBD.  
Assignment : IITWI - Direct Inclusion  
Bases Info. Ref : SCP Table 3-22  
Evaluation Pkg Ref : IITWI-1  
Revision History : Rev. 0, 7/24/90

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Barrier : Tiva Canyon welded hydrogeologic unit  
WBS : 1.2  
Description : Ash-flow tuff exposed at the surface of Yucca Crest overlying the Paintbrush nonwelded hydrogeologic unit. Lateral boundaries are TBD.  
Assignment : IITWI - Direct Inclusion  
Bases Info. Ref : SCP Table 3-22  
Evaluation Pkg Ref : IITWI-1  
Revision History : Rev. 0, 7/24/90

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Barrier : Paintbrush nonwelded hydrogeologic unit  
WBS : 1.2  
Description : Nonwelded tuff underlying the Tiva Canyon welded hydrogeologic unit and overlying the Topopah Springs welded hydrogeologic unit. Lateral boundaries are TBD.  
Assignment : IITWI - Direct Inclusion  
Bases Info. Ref : SCP Table 3-22  
Evaluation Pkg Ref : IITWI-1  
Revision History : Rev. 0, 7/24/90

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Barrier : Topopah Spring welded hydrogeologic unit  
WBS : 1.2  
Description : Densely to moderately welded devitrified ash-flow tuff; proposed repository host rock. Lateral boundaries are TBD.  
Assignment : IITWI - Direct Inclusion  
Bases Info. Ref : SCP Table 8.3.5.12-2  
Evaluation Pkg Ref : IITWI-1  
Revision History : Rev. 0, 7/24/90

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Q-List Appendix A - Natural Barriers Important to Waste Isolation  
(Continued)

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Barrier	: Calico Hills nonwelded vitric hydrogeologic unit
WBS	: 1.2
Description	: Nonwelded vitric tuff. Lateral boundaries are TBD.
Assignment	: IITWI - Direct Inclusion
Bases Info. Ref	: SCP Table 8.3.5.12-2
Evaluation Pkg Ref	: IITWI-1
Revision History	: Rev. 0, 7/24/90

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Barrier	: Calico Hills nonwelded zeolitic hydrogeologic unit
WBS	: 1.2
Description	: Bedded zeolitic tuff. Lateral boundaries are TBD.
Assignment	: IITWI - Direct Inclusion
Bases Info. Ref	: SCP Table 8.3.5.12-2
Evaluation Pkg Ref	: IITWI-1
Revision History	: Rev. 0, 7/24/90

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Barrier	: Crater Flat Tuff (undifferentiated)
WBS	: 1.2
Description	: Sequence of Prow Pass and Bullfrog welded and nonwelded units. Lateral boundaries are TBD.
Assignment	: IITWI - Direct Inclusion
Bases Info. Ref	: SCP Table 8.3.5.12-2
Evaluation Pkg Ref	: IITWI-1
Revision History	: Rev. 0, 7/24/90

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Barrier	: Saturated Zone
WBS	: 1.2
Description	: Site geosphere system situated below the water table. Lateral boundaries are TBD.
Assignment	: IITWI - Direct Inclusion
Bases Info. Ref	: SCP Table 8.3.5.12-2
Evaluation Pkg Ref	: IITWI-1
Revision History	: Rev. 0, 7/24/90

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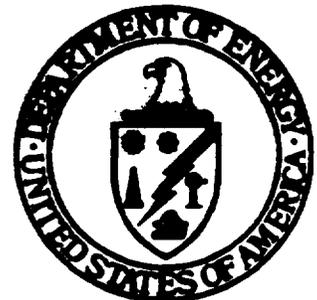
# **YUCCA MOUNTAIN PROJECT**

## **QUALITY ACTIVITIES LIST (QAL)**

### **UNCONTROLLED**

**JULY 1990**

**UNITED STATES DEPARTMENT OF ENERGY**



YUCCA  
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YMP/90-56  
Rev. 0  
7/24/90

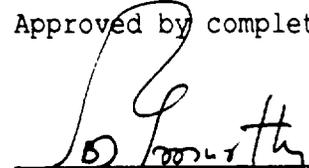
YUCCA MOUNTAIN PROJECT  
QUALITY ACTIVITIES LIST (QAL)

**UNCONTROLLED**

UNITED STATES DEPARTMENT OF ENERGY  
YUCCA MOUNTAIN PROJECT OFFICE

QUALITY ACTIVITIES LIST  
REVISION 0

Approved by completion of review and acceptance by the Quality Review Board:

  
\_\_\_\_\_  
Quality Review Board Chairman

7/24/90  
\_\_\_\_\_  
Date

Revision History

<u>Revision</u>	<u>Date</u>	<u>Change</u>
Rev. 0	7/24/90	Initial issue of approved list.

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## INTRODUCTION

The evaluations in this report are based upon documentation in the Assessment Team (AT) Controlled List Rev. 2. The procedure prescribes Direct Inclusion as a conservative course for determination of importance until more detailed evaluations are completed.

Sections 5.2 and 5.6 of AP-6.17Q prescribe the use of the YMP WBS Dictionary as a checklist that provides broad coverage of Project activities. Further breakdowns to this listing were made where deemed appropriate by the AT group to address detailed plans submitted by participants for evaluation under AP-6.17Q. The format of the information in the current WBS Dictionary is oriented towards definition of activities rather than items. With a few exceptions in WBS 1.2.6, ESF, and WBS 1.2.4, Repository, there is no specific correlation between Q-List Items and WBS entries. To promote adequate consideration of the importance of items in a WBS based on activities, it is necessary to relate activities to items. For example, activities are assigned to the QAL on the basis of their association with a natural barrier important to waste isolation.

An activity that meets any one of the following criteria shall become a recommended quality activity and be placed on the Quality Activities List:

- a. The activity is a site characterization activity that potentially will provide data to be relied on in performance assessments of the waste isolation and containment capabilities of natural and engineered barriers.
  1. The activities related to this criterion provide data that will be used to characterize the natural barriers and that may be used for licensing performance assessments.
  2. The SCP and the semiannual progress reports document which data generated in an activity will be used in performance assessments. Only activities that provide primary information for licensing performance assessments must be included in the Quality Activities List. Scoping, prototypical, or preliminary activities that produce data that will not directly support the licensing performance assessments do not meet this criterion. When a site characterization activity is designated to be scoping, prototypical, or preliminary, it must be shown that there will be other follow-on activities that will be used to support the licensing performance assessment.
- b. The activity could have an adverse impact on the ability of a natural or engineered barrier to isolate waste.
  1. The activities addressed by this criterion include construction, operation, and site characterization activities that may adversely impact the ability of the natural barriers to isolate waste. Evaluations may indicate that many of these activities would not significantly affect the performance of natural barriers; however, they are to be included if the activities must be performed in a closely controlled fashion to preclude failures that would cause adverse impacts on the natural barrier.

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2. In determining possible adverse impacts, the addition of water or materials, the alteration of properties (hydrologic, mechanical, thermal, or chemical), and the creation of pathways for water or radionuclide transport shall be considered. Any determination that an activity will not adversely impact natural barriers must be clearly conclusive and well documented. (Refer to the postclosure performance objectives in 10 CFR 60.112 and 10 CFR 60.113.)
- c. The activity is related to actual performance assessments.
1. The activities addressed by this criterion relate to the postclosure performance assessments that will be performed to demonstrate that the numerical criteria of 10 CFR 60 will be met. Scoping, prototypical, or preliminary assessments that will not be presented or referenced in the above demonstration do not meet this criterion.

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QUALITY ACTIVITIES LIST (QAL)

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Quality Activities List (QAL)

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Activity : Management and Integration (AP-6.17Q Support and non-administrative QA)  
WBS : 1.2.1.1  
SCP Reference : N/A  
Description : Assessment Team activities under AP-6.17Q, QRB support activities, non-administrative QA.  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : AP-6.17Q, Rev. 0  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : All - IITS, IITWI  
Revision History : Rev. 0, 7/24/90

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Activity : Systems Engineering  
WBS : 1.2.1.2  
SCP Reference : N/A  
Description : all subordinate activities  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : Technical Data Base Management (except part of 1.2.1.3.3)  
WBS : 1.2.1.3  
SCP Reference : N/A  
Description : Includes all subordinate activities except those specifically exempted or analyzed as indicated in Project Requirements List Section 2 or Appendix A  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : Performance Assessment (except part of 1.2.1.4.7)  
WBS : 1.2.1.4  
SCP Reference : N/A  
Description : all subordinate activities except those specifically exempted or analyzed as indicated in Project Requirements List Section 2 or Appendix A  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : IITWI, IITS  
Revision History : Rev. 0, 7/24/90

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Quality Activities List (QAL) (Continued)

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Activity : Management & Integration (Non-administrative QA)  
WBS : 1.2.2.1  
SCP Reference : N/A  
Description : Non-administrative QA activities.  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : IITWI, IITS - Waste Package 2.0  
Revision History : Rev. 0, 7/24/90

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Activity : Waste Package Environment  
WBS : 1.2.2.2  
SCP Reference : 8.3.4.2.4  
Description : Includes all subordinate activities  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : IITWI - Waste Package 2.0  
Revision History : Rev. 0, 7/24/90

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Activity : Waste Form and Materials Testing  
WBS : 1.2.2.3  
SCP Reference : N/A  
Description : Includes all subordinate activities  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : IITWI - Waste Package 2.0  
Revision History : Rev. 0, 7/24/90

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Activity : Design, Fabrication, and Prototype Testing  
WBS : 1.2.2.4  
SCP Reference : N/A  
Description : Includes all subordinate activities  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : IITWI - Waste Package 2.0  
Revision History : Rev. 0, 7/24/90

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Activity : Management & Integration (non-administrative QA)  
WBS : 1.2.3.1  
SCP Reference : N/A  
Description : Non-Administrative QA activities.  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Quality Activities List (QAL) (Continued)

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Activity : Geology (except part of 1.2.3.2.2.2.1, 1.2.3.2.6, and  
1.2.3.2.8)  
WBS : 1.2.3.2  
SCP Reference : N/A  
Description : Includes all subordinate activities except those  
specifically identified in PRL Section 2 - Activities Not  
Quality Related and PRL Appendix A - Exempt Items and  
Activities  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : Surface Characteristics  
WBS : 1.2.3.2.6  
SCP Reference : 8.3.1.14  
Description : Topography and near surface geotechnical evaluations  
related to surface facility design  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : IITS - (Waste Handling Building(s))  
Revision History : Rev. 0, 7/24/90

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Activity : Preclosure Tectonics  
WBS : 1.2.3.2.8  
SCP Reference : 8.3.1.17  
Description : Includes all subordinate activities  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : SCP Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : IITS  
Revision History : Rev. 0, 7/24/90

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Activity : Geohydrology  
WBS : 1.2.3.3.1  
SCP Reference : 8.3.1.2  
Description : Includes all subordinate activities except those  
specifically identified in PRL Section 2 - Activities Not  
Quality Related and PRL Appendix A - Exempt Items and  
Activities  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Quality Activities List (QAL) (Continued)

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Activity : Preclosure Hydrology (except 1.2.3.3.2.2)  
WBS : 1.2.3.3.2  
SCP Reference : 8.3.1.16  
Description : Includes subordinate activities except WBS 1.2.3.3.2.2,  
Location of Adequate Water Supplies  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : IITS  
Revision History : Rev. 0, 7/24/90

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Activity : Location of Adequate Water Supplies  
WBS : 1.2.3.3.2.2  
SCP Reference : 8.3.1.16.2  
Description : Site activities dealing with identification of water  
supplies  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : Geochemistry  
WBS : 1.2.3.4  
SCP Reference : N/A  
Description : Includes all subordinate activities  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : Drilling (except 1.2.3.5.2.1, 1.2.3.5.3.20, and 1.2.3.5.4)  
WBS : 1.2.3.5  
SCP Reference : N/A  
Description : Includes all subordinate activities except those  
specifically identified in PRL Section 2 - Activities Not  
Quality Related and PRL Appendix A - Exempt Items and  
Activities  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Quality Activities List (QAL) (Continued)

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Activity : Surface Facilities Drillholes  
WBS : 1.2.3.5.3.20  
SCP Reference : 8.3.1.14.2.1  
Description : Includes all subordinate activities.  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : IITS (Surface Facilities)  
Revision History : Rev. 0, 7/24/90

---

Activity : Environmental Meteorological Studies  
WBS : 1.2.3.6.1  
SCP Reference : 8.3.1.12  
Description : Includes all subordinate activities.  
Assignment : QAL- Direct Inclusion  
Bases Info. Ref : WBS Dictionary; YMP/CC-0005, Rev. 0 , 6/21/89; SCP  
Sections 8.3.1.5, 8.3.1.2  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : IITS  
Revision History : Rev. 0, 7/24/90

---

Activity : Climatology  
WBS : 1.2.3.6.2  
SCP Reference : 8.3.1.5  
Description : Includes all subordinate activities  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

---

Activity : Resource Potential  
WBS : 1.2.3.7  
SCP Reference : N/A  
Description : Includes all subordinate activities  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

**UNCONTROLLED**

Quality Activities List (QAL) (Continued)

---

Activity : Management and Integration (Technical)  
WBS : 1.2.4.1  
SCP Reference : N/A  
Description : Portion of WBS 1.2.4.1 scope dealing with the integrated design report, development of baselined requirements, selection of design basis data, and evaluation of design options and non-administrative QA.  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : IITS; IITWI - MGDS  
Revision History : Rev. 0, 7/24/90

---

Activity : Design Basis  
WBS : 1.2.4.1.1  
SCP Reference : N/A  
Description : Assemble and review design basis information.  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : IITS, IITWI - Repository 3.1  
Revision History : Rev. 0, 7/24/90

---

Activity : Development and Testing (except 1.2.4.2.1.3)  
WBS : 1.2.4.2  
SCP Reference : N/A  
Description : Includes all subordinate activities except those specifically exempted or analyzed as indicated in Project Requirements List Section 2 or Appendix A  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : IITWI, IITS - MGDS  
Revision History : Rev. 0, 7/24/90

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Activity : Facilities  
WBS : 1.2.4.3  
SCP Reference : N/A  
Description : Design and R&D activities related to repository items. Includes all subordinate activities  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : IITS; IITWI - MGDS  
Revision History : Rev. 0, 7/24/90

**UNCONTROLLED**

Quality Activities List (QAL) (Continued)

---

Activity : Operations/Maintenance  
WBS : 1.2.4.4  
SCP Reference : N/A  
Description : Includes all subordinate activities.  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : IITS; IITWI - MGDS  
Revision History : Rev. 0, 7/24/90

---

Activity : Decommissioning  
WBS : 1.2.4.5  
SCP Reference : N/A  
Description : Design related activities. Includes subordinate activities  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : IITS - Repository  
Revision History : Rev. 0, 7/24/90

---

Activity : Sealing  
WBS : 1.2.4.6  
SCP Reference : 8.3.3.2.2.1  
Description : Includes all subordinate activities  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : IITWI - Seals 3.6  
Revision History : Rev. 0, 7/24/90

---

Activity : Licensing (except 1.2.5.2.2, 1.2.5.2.6, and 1.2.5.2.7)  
WBS : 1.2.5.2  
SCP Reference : N/A  
Description : Includes all subordinate activities except those specifically exempted or analyzed as indicated in Project Requirements List Section 2 or Appendix A  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : IITWI, IITS - MGDS  
Revision History : Rev. 0, 7/24/90

**UNCONTROLLED**

Quality Activities List (QAL) (Continued)

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Activity : Air Quality/Meteorology  
WBS : 1.2.5.4.2  
SCP Reference : 8.3.1.12.2  
Description : Includes all subordinate activities.  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary; YMP/CC-0005, Rev. 0, 8.3.1.12.2.1  
Meteorological Data Collection at the Yucca Mountain site;  
SCP Sections 8.3.1.5 and 8.3.1.2  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : IITS  
Revision History : Rev. 0, 7/24/90

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Activity : Archaeological Resources  
WBS : 1.2.5.4.3  
SCP Reference : N/A  
Description : Site surveys and impact mitigation activities  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

---

Activity : Radiological Studies (except Radiological Monitoring Plan  
activities)  
WBS : 1.2.5.4.5  
SCP Reference : N/A  
Description : All radiological monitoring activities except those  
controlled by the Radiological Monitoring Plan.  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary; YMP/88-14, Rev. 0  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : Radiological Studies (Radiological Monitoring Plan -  
Airborne Radionuclide, Surface Water, and Groundwater  
Monitoring)  
WBS : 1.2.5.4.5  
SCP Reference : N/A  
Description : Water monitoring (Sec. 4.3.5) and airborne radionuclide  
monitoring (Section 4.3.4) activities in Radiological  
Monitoring Plan.  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary; YMP/88-14, Rev. 0  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

**UNCONTROLLED**

Quality Activities List (QAL) (Continued)

---

Activity : Soils  
WBS : 1.2.5.4.6  
SCP Reference : N/A  
Description : Field surveys and monitoring, support reclamation development.  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : Terrestrial Ecosystems  
WBS : 1.2.5.4.7  
SCP Reference : N/A  
Description : Field surveys and monitoring, support reclamation program development.  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : Water Resources  
WBS : 1.2.5.4.8  
SCP Reference : N/A  
Description : Field surveys and monitoring  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

---

Activity : Transportation Studies  
WBS : 1.2.5.5.1  
SCP Reference : N/A  
Description : Includes all subordinate activities  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Quality Activities List (QAL) (Continued)

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Activity : Exploratory Shaft Management, Planning, and Technical Assessment (Technical Assessment Activities)  
WBS : 1.2.6.1.1  
SCP Reference : N/A  
Description : Portion of WBS 1.2.6.1.1 scope dealing with technical assessment activities.  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : IITWI - ESF permanent items  
Revision History : Rev. 0, 7/24/90

---

Activity : Quality Assurance (Non-administrative QA)  
WBS : 1.2.6.1.2  
SCP Reference : N/A  
Description : Includes all non-administrative QA activities.  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : IITS, IITWI - ESF permanent items  
Revision History : Rev. 0, 7/24/90

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Activity : Site Preparation  
WBS : 1.2.6.2  
SCP Reference : N/A  
Description : Includes all subordinate activities  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : Surface Facilities  
WBS : 1.2.6.3  
SCP Reference : N/A  
Description : Includes all subordinate activities  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : IITWI, IITS - Exploratory Shafts 4.4  
Revision History : Rev. 0, 7/24/90

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Quality Activities List (QAL) (Continued)

---

Activity : First Shaft (except 1.2.6.4.2)  
WBS : 1.2.6.4  
SCP Reference : N/A  
Description : Includes all subordinate activities except ES-1 Hoist and Headframe (1.2.6.4.2)  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : IITWI, IITS - First Shaft 4.4.1  
Revision History : Rev. 0, 7/24/90

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Activity : Second Shaft (except 1.2.6.5.2)  
WBS : 1.2.6.5  
SCP Reference : N/A  
Description : Includes all subordinate activities except ES-2 Hoist and Headframe (1.2.6.5.2)  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : IITWI, IITS - Second Shaft 4.4.2  
Revision History : Rev. 0, 7/24/90

---

Activity : Subsurface Excavations  
WBS : 1.2.6.6  
SCP Reference : N/A  
Description : Includes all subordinate activities  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : IITWI - Underground Excavations 4.5  
Revision History : Rev. 0, 7/24/90

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Activity : Underground Service Systems (except 1.2.6.7.2 and 1.2.6.7.3)  
WBS : 1.2.6.7  
SCP Reference : N/A  
Description : Includes all subordinate activities except ES-1 and ES-2 Shaft Internals and Conveyances (1.2.6.7.2 and 1.2.6.7.3)  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Quality Activities List (QAL) (Continued)

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Activity : Integrated Data Systems  
WBS : 1.2.6.8.4  
SCP Reference : 8.3.1  
Description : Includes all subordinate activities  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : IITWI  
Revision History : Rev. 0, 7/24/90

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Activity : Decommissioning  
WBS : 1.2.6.9  
SCP Reference : N/A  
Description : Includes all subordinate activities.  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

---

Activity : Management & Integration (non-administrative QA)  
WBS : 1.2.7.1  
SCP Reference : N/A  
Description : Non-administrative QA activities.  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : New Facility Acquisition  
WBS : 1.2.7.3  
SCP Reference : N/A  
Description : Includes all subordinate activities.  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Quality Activities List (QAL) (Continued)

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Activity : Project Peer Review  
WBS : 1.2.9.1.3  
SCP Reference : N/A  
Description : Includes all subordinate activities.  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : QAPD, DOE/RW-0215, Rev. 2, Appendix A, Section 20.4.2,  
Peer Review; WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : IITWI, IITS  
Revision History : Rev. 0, 7/24/90

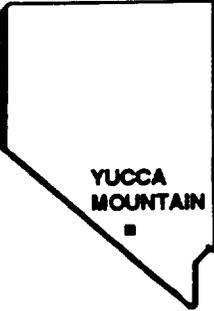
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Activity : Quality Assurance (non-administrative QA)  
WBS : 1.2.9.3  
SCP Reference : N/A  
Description : Non-Administrative QA activities.  
Assignment : QAL - Direct Inclusion  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : IITS, IITWI - MGDS  
Revision History : Rev. 0, 7/24/90

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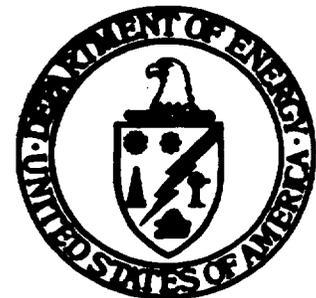
# YUCCA MOUNTAIN PROJECT

## PROJECT REQUIREMENTS LIST (PRL)

### UNCONTROLLED

**JULY 1990**

UNITED STATES DEPARTMENT OF ENERGY



YUCCA  
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YMP/90-57  
Rev. 0  
7/24/90

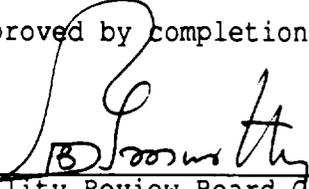
YUCCA MOUNTAIN PROJECT  
PROJECT REQUIREMENTS LIST (PRL)

UNITED STATES DEPARTMENT OF ENERGY  
YUCCA MOUNTAIN PROJECT OFFICE

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PROJECT REQUIREMENTS LIST  
REVISION 0

Approved by completion of review and acceptance by the Quality Review Board:

  
\_\_\_\_\_  
Quality Review Board Chairman

7/24/90  
\_\_\_\_\_  
Date

Revision History

<u>Revision</u>	<u>Date</u>	<u>Change</u>
Rev. 0	7/24/90	Initial issue of approved list.

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### INTRODUCTION

The basis for not selecting and for exempting items and activities is described in the evaluations sections of the supporting materials. Many of the activities are related to engineered items important to safety, engineered items important to waste isolation, or activities on the quality activities list. They should be graded and controlled accordingly.

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PROJECT REQUIREMENTS LIST  
SECTION 1

ITEMS NOT SELECTED AS  
ITEMS IMPORTANT TO SAFETY (IITS)  
OR AS  
ITEMS IMPORTANT TO WASTE ISOLATION (IITWI)

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Project Requirements List Section 1 - Items NOT Selected as Items  
Important to Safety (IITS) or as Items Important to Waste Isolation (IITWI)

To Be Determined - (A design configuration suitable for the analyses process  
in Exhibit 4 of AP-6.17Q has not been selected.)

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PROJECT REQUIREMENTS LIST

SECTION 2

ALL ACTIVITIES NOT SELECTED

AS QUALITY ACTIVITIES FOR THE QAL

(MAY CONTAIN ACTIVITIES ASSOCIATED WITH IITS OR IITWI)

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Project Requirements List Section 2 -  
All Activities NOT Selected as Quality Activities for the QAL  
(May Contain Activities Associated With IITS or IITWI)

---

Activity : Reference Information Base (Administrative Tasks)  
WBS : 1.2.1.3.3  
SCP Reference : N/A  
Description : Administrative tasks related to RIB development (PCA 1.0,  
Task 1.2)  
Assignment : PRL Sec. 2  
Bases Info. Ref : WBS Dictionary; SNL WP90 12133, Rev. 0, 4/19/90  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : Supporting Calculations for Postclosure Performance  
Analyses (Scoping studies)  
WBS : 1.2.1.4.7  
SCP Reference : N/A  
Description : Preliminary (scoping) analyses to support design  
activities (PCA 1.0, Task 1.1), support of other PA WBS  
elements (PCA 2.0, Task 2.1), and support resolution of  
Issue 1.3 (PCA 3.0, Task 3.1)  
Assignment : PRL Sec. 2  
Bases Info. Ref : WBS Dictionary; SNL WP90 12147, Rev. 0, 4/19/90  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : Systematic Acquisition of Site-Specific Subsurface  
Information (Preliminary scoping only)  
WBS : 1.2.3.2.2.2.1  
SCP Reference : 8.3.1.4.2.3  
Description : Scoping and planning activities preparatory to systematic  
drilling program (PCA 1.0)  
Assignment : PRL Sec. 2  
Bases Info. Ref : WBS Dictionary; SNL WP90 1232221, Rev.0, 4/19/90  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Project Requirements List Section 2 -  
All Activities NOT Selected as Quality Activities for the QAL (Continued)  
(May Contain Activities Associated With IITS or IITWI)

---

Activity : Radiological Studies (Radiological Monitoring Plan activities except Airborne Radionuclide, Surface Water, and Groundwater Monitoring)  
WBS : 1.2.5.4.5  
SCP Reference : N/A  
Description : All specified activities in Radiological Monitoring Plan except for water monitoring (Sec. 4.3.5) and airborne radionuclide monitoring (4.3.4)  
Assignment : PRL Sec. 2  
Bases Info. Ref : WBS Dictionary; YMP/88-14, Rev. 0  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : Impacts of Offsite Installation Evaluation  
WBS : 1.2.5.5.2  
SCP Reference : 8.3.1.13  
Description : Includes all subordinate activities.  
Assignment : PRL Sec. 2  
Bases Info. Ref : WBS Dictionary; SCP 8.3.1.13  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : Radiological Monitoring Program Support  
WBS : 1.2.5.6.2  
SCP Reference : 8.3.1.10  
Description : Includes all subordinate activities.  
Assignment : PRL Sec. 2  
Bases Info. Ref : WBS Dictionary; SCP Sec. 8.3.1.10  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : IITS  
Revision History : Rev. 0, 7/24/90

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PROJECT REQUIREMENTS LIST  
APPENDIX A  
EXEMPT ITEMS AND ACTIVITIES

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Project Requirements List Appendix A - Exempt Items and Activities (Continued)

I. ITEMS

---

Item : Heliport  
WBS : 1.2.4.3  
Description : SR 3.1.1.1.3 (part of Surface Service and Utility Systems)  
Assignment : PRL Appendix A  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1, IITWI-1  
Revision History : Rev. 0, 7/24/90

---

Item : Site Preparation (resulting structures)  
WBS : 1.2.4.3  
Description : SR 3.1.1.2 (part of Surface Service and Utility Systems), includes following subsystems:  
clearing 3.1.1.2.1  
grading 3.1.1.2.2  
landscaping 3.1.1.2.3  
fencing 3.1.1.2.4  
  
Assignment : PRL Appendix A  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1, IITWI-1  
Revision History : Rev. 0, 7/24/90

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Item : Mining Support Facilities  
WBS : 1.2.4.3  
Description : SR 3.2.2.2 (part of Surface Facilities)  
Assignment : PRL Appendix A  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1, IITWI-1  
Revision History : Rev. 0, 7/24/90

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Item : Backfill Facility  
WBS : 1.2.4.3  
Description : SR 3.2.2.3 (part of Surface Facilities)  
Assignment : PRL Appendix A  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1, IITWI-1  
Revision History : Rev. 0, 7/24/90

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Item : Handling and Storage Facility for Excavated Tuff  
WBS : 1.2.4.3  
Description : SR 3.2.2.4 (part of Surface Facilities)  
Assignment : PRL Appendix A  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1, IITWI-1  
Revision History : Rev. 0, 7/24/90

**UNCONTROLLED**

Project Requirements List Appendix A - Exempt Items and Activities (Continued)

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Item : Cooled Water System  
WBS : 1.2.4.3  
Description : SR 3.2.2.6(part of Surface Facilities)  
Assignment : PRL Appendix A  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1, IITWI-1  
Revision History : Rev. 0, 7/24/90

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Item : Receiving and Warehousing Facilities  
WBS : 1.2.4.3  
Description : SR 3.2.3.5(part of Balance of Plant)  
Assignment : PRL Appendix A  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1, IITWI-1  
Revision History : Rev. 0, 7/24/90

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Item : Maintenance Facilities  
WBS : 1.2.4.3  
Description : SR 3.2.3.6(part of Balance of Plant)  
Assignment : PRL Appendix A  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1, IITWI-1  
Revision History : Rev. 0, 7/24/90

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Item : Administration and Personnel Facilities  
WBS : 1.2.4.3  
Description : SR 3.2.3.8(part of Balance of Plant)  
Assignment : PRL Appendix A  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1, IITWI-1  
Revision History : Rev. 0, 7/24/90

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Item : Sewage Treatment Plant  
WBS : 1.2.4.3  
Description : SR 3.2.3.14(part of Balance of Plant)  
Assignment : PRL Appendix A  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1, IITWI-1  
Revision History : Rev. 0, 7/24/90

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Item : Training Facilities  
WBS : 1.2.4.3  
Description : SR 3.2.3.16(part of Balance of Plant)  
Assignment : PRL Appendix A  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1, IITWI-1  
Revision History : Rev. 0, 7/24/90

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Project Requirements List Appendix A - Exempt Items and Activities (Continued)

---

Item : Visitors Center  
WBS : 1.2.4.3  
Description : SR 3.2.3.17(part of Balance of Plant)  
Assignment : PRL Appendix A  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1, IITWI-1  
Revision History : Rev. 0, 7/24/90

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Item : Standard Equipment  
WBS : 1.2.4.3  
Description : SR 3.2.3.20(part of Balance of Plant)  
Assignment : PRL Appendix A  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1, IITWI-1  
Revision History : Rev. 0, 7/24/90

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Item : Concrete Batch Plant  
WBS : 1.2.4.3  
Description : SR 3.2.3.22(part of Balance of Plant)  
Assignment : PRL Appendix A  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1, IITWI-1  
Revision History : Rev. 0, 7/24/90

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Item : Hoisthouse  
WBS : 1.2.4.3  
Description : SR 3.3.2.1.1.20(part of Men-And-Materials Shaft)  
Assignment : PRL Appendix A  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1, IITWI-1  
Revision History : Rev. 0, 7/24/90

---

Item : Hoists  
WBS : 1.2.4.3  
Description : SR 3.3.2.1.1.30(part of Men-And-Materials Shaft)  
Assignment : PRL Appendix A  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1, IITWI-1  
Revision History : Rev. 0, 7/24/90

---

Item : Conveyances  
WBS : 1.2.4.3  
Description : SR 3.3.2.1.1.60(part of Men-And-Materials Shaft)  
Assignment : PRL Appendix A  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1, IITWI-1  
Revision History : Rev. 0, 7/24/90

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Project Requirements List Appendix A - Exempt Items and Activities (Continued)

---

Item : Hoist ropes  
WBS : 1.2.4.3  
Description : SR 3.3.2.1.1.70 (part of Men-And-Materials Shaft)  
Assignment : PRL Appendix A  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1, IITWI-1  
Revision History : Rev. 0, 7/24/90

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Item : Fixtures  
WBS : 1.2.4.3  
Description : SR 3.3.2.1.2.50 (part of Men-And-Materials Shaft)  
Assignment : PRL Appendix A  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1, IITWI-1  
Revision History : Rev. 0, 7/24/90

---

Item : Ramp surface structure  
WBS : 1.2.4.3  
Description : SR 3.3.3.1.1.10 (part of Tuff Ramp)  
Assignment : PRL Appendix A  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1, IITWI-1  
Revision History : Rev. 0, 7/24/90

---

Item : Roadway  
WBS : 1.2.4.3  
Description : SR 3.3.3.1.2.50 (part of Tuff Ramp)  
Assignment : PRL Appendix A  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1, IITWI-1  
Revision History : Rev. 0, 7/24/90

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Item : Inspection and repair hoist  
WBS : 1.2.4.3  
Description : SR 3.3.7.1.1.30 (part of Emplacement Area Exhaust Shaft)  
Assignment : PRL Appendix A  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1, IITWI-1  
Revision History : Rev. 0, 7/24/90

---

Item : Conveyance  
WBS : 1.2.4.3  
Description : SR 3.3.7.1.1.50 (part of Emplacement Area Exhaust Shaft)  
Assignment : PRL Appendix A  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1, IITWI-1  
Revision History : Rev. 0, 7/24/90

**UNCONTROLLED**

Project Requirements List Appendix A - Exempt Items and Activities (Continued)

---

Item : Hoist ropes  
WBS : 1.2.4.3  
Description : SR 3.3.7.1.1.60(part of Emplacement Area Exhaust Shaft)  
Assignment : PRL Appendix A  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1, IITWI-1  
Revision History : Rev. 0, 7/24/90

---

Item : Inspection and repair hoist  
WBS : 1.2.4.3  
Description : SR 3.3.8.1.1.30(part of ES Modifications for Waste  
Emplacement Area Air Intake)  
Assignment : PRL Appendix A  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1, IITWI-1  
Revision History : Rev. 0, 7/24/90

---

Item : Hoist ropes  
WBS : 1.2.4.3  
Description : SR 3.3.8.1.1.40(part of ES Modifications for Waste  
Emplacement Area Air Intake)  
Assignment : PRL Appendix A  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1, IITWI-1  
Revision History : Rev. 0, 7/24/90

---

Item : Conveyance  
WBS : 1.2.4.3  
Description : SR 3.3.8.1.1.60(part of ES Modifications for Waste  
Emplacement Area Air Intake)  
Assignment : PRL Appendix A  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1, IITWI-1  
Revision History : Rev. 0, 7/24/90

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Item : Borehole Drilling and Lining Equipment  
WBS : 1.2.4.3  
Description : SR 3.4.3.1(part of Underground Excavations)  
Assignment : PRL Appendix A  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1, IITWI-1  
Revision History : Rev. 0, 7/24/90

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Project Requirements List Appendix A - Exempt Items and Activities (Continued)

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Item : Shops, Warehouses, and Service Facilities  
WBS : 1.2.4.3  
Description : SR 3.4.4(part of Underground Excavations)  
Assignment : PRL Appendix A  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1, IITWI-1  
Revision History : Rev. 0, 7/24/90

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Item : Excavated Tuff Handling System  
WBS : 1.2.4.3  
Description : SR 3.5.11(part of Underground Service and Utility Systems)  
Assignment : PRL Appendix A  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1, IITWI-1  
Revision History : Rev. 0, 7/24/90

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Item : Backfill Handling and Placement System  
WBS : 1.2.4.3  
Description : SR 3.5.13(part of Underground Service and Utility Systems)  
Assignment : PRL Appendix A  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1, IITWI-1  
Revision History : Rev. 0, 7/24/90

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Item : Materials and Supplies Handling System  
WBS : 1.2.4.3  
Description : SR 3.5.14(part of Underground Service and Utility Systems)  
Assignment : PRL Appendix A  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1, IITWI-1  
Revision History : Rev. 0, 7/24/90

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Item : Maintenance Shops  
WBS : 1.2.4.3  
Description : SR 3.5.19(part of Underground Service and Utility Systems)  
Assignment : PRL Appendix A  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1, IITWI-1  
Revision History : Rev. 0, 7/24/90

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Item : Training Facility  
WBS : 1.2.4.3  
Description : SR 3.5.30(part of Underground Service and Utility Systems)  
Assignment : PRL Appendix A  
Bases Info. Ref : SR  
Evaluation Pkg Ref : IITS-1, IITWI-1  
Revision History : Rev. 0, 7/24/90

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Project Requirements List Appendix A - Exempt Items and Activities (Continued)

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Item	: Checkpoint
WBS	: 1.2.4.3
Description	: SR 3.5.40 (part of Underground Service and Utility Systems)
Assignment	: PRL Appendix A
Bases Info. Ref	: SR
Evaluation Pkg Ref	: IITS-1, IITWI-1
Revision History	: Rev. 0, 7/24/90

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Project Requirements List Appendix A - Exempt Items and Activities (Continued)

II. ACTIVITIES

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Activity : Management and Integration(except AP-6.17Q Support and non-administrative QA)  
WBS : 1.2.1.1  
SCP Reference : N/A  
Description : All subordinate activities except AP-6.17Q, QRB Support, and non-administrative QA activities.  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

---

Activity : Management and Integration (except non-administrative QA)  
WBS : 1.2.2.1  
SCP Reference : N/A  
Description : Waste Package M&I  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

---

Activity : Management and Integration (except non-administrative QA)  
WBS : 1.2.3.1  
SCP Reference : N/A  
Description : Site M&I  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : Common-to-Drilling Support  
WBS : 1.2.3.5.2.1  
SCP Reference : 8.3.1  
Description : Includes all subordinate activities.  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Project Requirements List Appendix A - Exempt Items and Activities (Continued)

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Activity : Prototype Air Coring  
WBS : 1.2.3.5.4  
SCP Reference : N/A  
Description : Prototype work.  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : Deferred Site Closeout  
WBS : 1.2.3.8  
SCP Reference : N/A  
Description : Site closeout  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

---

Activity : Management and Integration (Administrative)  
WBS : 1.2.4.1  
SCP Reference : N/A  
Description : Portion of WBS 1.2.4.1 scope dealing with project management, administration, and interaction support  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : Rock Mechanics Field Testing  
WBS : 1.2.4.2.1.3  
SCP Reference : N/A  
Description : Includes all subordinate activities  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Project Requirements List Appendix A - Exempt Items and Activities (Continued)

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Activity : Management and Integration  
WBS : 1.2.5.1  
SCP Reference : N/A  
Description : Includes all subordinate activities  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : Site Characterization Program  
WBS : 1.2.5.2.2  
SCP Reference : N/A  
Description : Includes all subordinate activities  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : Semi-Annual Progress Reports  
WBS : 1.2.5.2.6  
SCP Reference : N/A  
Description : Includes all subordinate activities  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : Site Recommendation Report  
WBS : 1.2.5.2.7  
SCP Reference : N/A  
Description : Includes all subordinate activities  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : Environmental Compliance  
WBS : 1.2.5.3  
SCP Reference : N/A  
Description : Includes all subordinate activities  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Project Requirements List Appendix A - Exempt Items and Activities (Continued)

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Activity : Aesthetics  
WBS : 1.2.5.4.1  
SCP Reference : N/A  
Description : Includes all subordinate activities  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : Noise  
WBS : 1.2.5.4.4  
SCP Reference : N/A  
Description : Includes all subordinate activities  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : Land Use/Resource Lands  
WBS : 1.2.5.4.9  
SCP Reference : N/A  
Description : Includes all subordinate activities  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : Native American Interactions  
WBS : 1.2.5.4.10  
SCP Reference : N/A  
Description : Includes all subordinate activities  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : Environmental Field Work Coordination  
WBS : 1.2.5.4.11  
SCP Reference : N/A  
Description : Includes all subordinate activities  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Project Requirements List Appendix A - Exempt Items and Activities (Continued)

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Activity : Socioeconomic Studies  
WBS : 1.2.5.6.1  
SCP Reference : N/A  
Description : Includes all subordinate activities  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : Communication and Liaison  
WBS : 1.2.5.7  
SCP Reference : N/A  
Description : Includes all subordinate activities  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : Exploratory Shaft Management, Planning, and Technical  
Assessment (Management and Planning Activities)  
WBS : 1.2.6.1.1  
SCP Reference : N/A  
Description : Portion of WBS 1.2.6.1.1 scope dealing with management and  
planning activities.  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : Quality Assurance (Administrative QA)  
WBS : 1.2.6.1.2  
SCP Reference : N/A  
Description : Includes all administrative QA activities  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Project Requirements List Appendix A - Exempt Items and Activities (Continued)

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Activity : Safety Analysis  
WBS : 1.2.6.1.3  
SCP Reference : N/A  
Description : Develop safety procedures for ESF construction.  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : ES-1 Hoist and Headframe  
WBS : 1.2.6.4.2  
SCP Reference : N/A  
Description : Includes all subordinate activities.  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : ES-2 Hoist and Headframe  
WBS : 1.2.6.5.2  
SCP Reference : N/A  
Description : Includes all subordinate activities.  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : ES-1 Shaft Internals and Conveyances  
WBS : 1.2.6.7.2  
SCP Reference : N/A  
Description : Includes all subordinate activities.  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

---

Activity : ES-2 Shaft Internals and Conveyances  
WBS : 1.2.6.7.3  
SCP Reference : N/A  
Description : Includes all subordinate activities.  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Project Requirements List Appendix A - Exempt Items and Activities (Continued)

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Activity : Operations (except 1.2.6.8.4)  
WBS : 1.2.6.8  
SCP Reference : N/A  
Description : Includes all subordinate activities except WBS 1.2.6.8.4  
Integrated Data Systems  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

---

Activity : Management and Integration (except non-administrative QA)  
WBS : 1.2.7.1  
SCP Reference : N/A  
Description : Includes all subordinate activities except  
non-administrative QA.  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : Climax  
WBS : 1.2.7.2.1  
SCP Reference : N/A  
Description : Includes all subordinate activities  
Assignment : PRL App. A  
Bases Info. Ref : WBS dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : G-Tunnel  
WBS : 1.2.7.2.2  
SCP Reference : N/A  
Description : Includes all subordinate activities  
Assignment : PRL App. A  
Bases Info. Ref : WBS dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Project Requirements List Appendix A - Exempt Items and Activities (Continued)

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Activity : Field Operations Center  
WBS : 1.2.7.4.1  
SCP Reference : N/A  
Description : Includes all subordinate activities  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : Maintenance and Operations  
WBS : 1.2.7.4.2  
SCP Reference : N/A  
Description : Includes all subordinate activities  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : Administrative and Support Services  
WBS : 1.2.7.4.3  
SCP Reference : N/A  
Description : Includes all subordinate activities  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : NTS Allocation  
WBS : 1.2.7.5  
SCP Reference : N/A  
Description : Includes all subordinate activities  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : Management and Integration  
WBS : 1.2.8.1  
SCP Reference : N/A  
Description : Includes all subordinate activities  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Project Requirements List Appendix A - Exempt Items and Activities (Continued)

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Activity : Site Characterization  
WBS : 1.2.8.2  
SCP Reference : N/A  
Description : Includes all subordinate activities  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : Repository Site  
WBS : 1.2.8.3.1  
SCP Reference : N/A  
Description : Includes all subordinate activities  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : Transportation Routes  
WBS : 1.2.8.3.2  
SCP Reference : N/A  
Description : Includes all subordinate activities  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : Management  
WBS : 1.2.9.1.1  
SCP Reference : N/A  
Description : Includes all subordinate activities  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : Administrative Services  
WBS : 1.2.9.1.2  
SCP Reference : N/A  
Description : Includes all subordinate activities  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Project Requirements List Appendix A - Exempt Items and Activities (Continued)

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Activity : Records Management  
WBS : 1.2.9.1.4  
SCP Reference : N/A  
Description : Includes all subordinate activities  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : Project Control  
WBS : 1.2.9.2  
SCP Reference : N/A  
Description : Includes all subordinate activities  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : Quality Assurance (Administrative activities)  
WBS : 1.2.9.3  
SCP Reference : N/A  
Description : Includes all subordinate administrative activities  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : State and Local Governments  
WBS : 1.2.10.1  
SCP Reference : N/A  
Description : Includes all subordinate activities  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Activity : Payments-Equal-to-Taxes  
WBS : 1.2.10.2  
SCP Reference : N/A  
Description : Includes all subordinate activities  
Assignment : PRL App. A  
Bases Info. Ref : WBS Dictionary  
Evaluation Pkg Ref : QAL-1  
Related Q-List Item : N/A  
Revision History : Rev. 0, 7/24/90

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Project Requirements List Appendix A - Exempt Items and Activities (Continued)

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Activity	: University Funding
WBS	: 1.2.10.3
SCP Reference	: N/A
Description	: Includes all subordinate activities
Assignment	: PRL App. A
Bases Info. Ref	: WBS Dictionary
Evaluation Pkg Ref	: QAL-1
Related Q-List Item	: N/A
Revision History	: Rev. 0, 7/24/90

**UNCONTROLLED**

# YUCCA MOUNTAIN PROJECT PROCEDURE

Y-AD-001  
4/90

## Title

ADMINISTRATIVE PROCEDURE AP-5.9Q QUALIFICATION OF DATA OR DATA ANALYSES NOT DEVELOPED UNDER THE YUCCA MOUNTAIN PROJECT QUALITY ASSURANCE PLAN

## 1.0 PURPOSE AND SCOPE

1.1 This procedure describes the methods to be used by the Yucca Mountain Project (Project) for the qualification of data or data analyses that will be used in support of licensing, and that were not generated under the controls of a Quality Assurance (QA) program, as required by 10 CFR 60, Subpart G.

1.2 "Data analyses," as used here, refers to the various means of processing or mathematically converting raw data into other data sets (e.g., piezometer and/or pump test data utilized to calculate hydraulic conductivities). This procedure provides methods by which data not collected under a 10 CFR 60, Subpart G, QA program (including data available from commercial and scientific sources external to the Project) may be qualified to support the license application. The purpose of the methods described in this procedure is to provide a level of confidence that the data are suitable in the context of their intended use in licensing.

1.3 The determination of which existing data or data analyses may need to be qualified, as well as the specific methods for this qualification, must be made on a case-by-case basis. Consequently, this procedure provides generic guidance regarding acceptable qualification methods, and specific guidance regarding minimum requirements for documentation and concurrence. Details of the qualification process, in any specific case, will be developed and documented by the responsible organizational entity, based upon the requirements in this procedure.

1.4 This procedure implements the guidance of NUREG 1298 as specified in the OCRWM Quality Assurance Requirements Document (QARD) (DOE/RW-0214), Section 20.10, Qualification of Data of Indeterminate Quality.

## 2.0 APPLICABILITY

### 2.1 DATA COVERED BY AP-5.9Q

2.1.1 This procedure applies to the qualification of existing data that are, or may be, included as primary data in support of licensing. Such data relate (1) to systems, structures, and components important to safety; and (2) to the characterization of natural barriers and the design and development of engineered barriers important to waste isolation and related activities. Existing data may be in the form of samples or logs, or in the form of data sets in reports or publications generated on behalf of the Project prior to the approval date of the participating organization's Quality Assurance Program.

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2.1.2 Data or analyses generated under an approved QA program, but which were not graded at a level sufficient to support use in licensing may be qualified in accordance with this procedure. Additionally, such information may be used as corroborative data.

2.1.3 In general, the kind of data that this procedure is designed to address is in the form of input to a report or publication. Such input is exemplified by physical samples (e.g., core, cuttings, or water); raw or converted data (e.g., thin section point counts, water levels converted from transducer millivolt data, hydraulic conductivities and the data from which they were derived, and bulk density from density logs); graphs defining relationships between variables; and lithologic or geophysical logs. This is not an inclusive list of data, and the participating organizations may identify other forms of data that may require qualification.

## 2.2 DATA NOT COVERED UNDER AP-5.9Q

2.2.1 Data that are generated by the Project after the approval date for the relevant participating organization's Quality Assurance Program are considered qualified for use in licensing provided they are adequately graded. If there are deficiencies in the collection and analysis of data, these shall generally be treated under the appropriate corrective action procedures.

2.2.2 Data in standard tables, or compilations provided by recognized national or international organizations (e.g., American Society of Testing Materials (ASTM) codes, American Society of Mechanical Engineers (ASME) codes, Handbook of Physics and Chemistry, Bureau of Standards Table of Chemical Thermodynamic Data, International Union of Pure and Applied Chemistry (IUPAC) Solubility Tables, and other information accepted by the scientific and engineering community as established facts such as U.S. Bureau of Census data and U.S. Bureau of Mines mineral production information), are considered qualified for use in publications or reports supporting licensing. Such tables shall be referenced in reports that utilize standard table data, when the reports are transmitted to the Yucca Mountain Project Office (Project). Established facts and laws commonly accepted within the scientific community are not subject to the provisions of this procedure.

2.2.3 Conceptual models, hypotheses, or theories regarding phenomena such as volcanism, tectonics, or the hydrodynamics of the unsaturated zone are reviewed in accordance with other Project or Peer Review procedures, and are not covered by this procedure.

2.2.4 This Administrative Procedure (AP) is not designed to cover the qualification of software, which is addressed in Section 19 of the Quality Assurance Requirements Document (QARD) (DOE/RW-0214) and the Quality Assurance Program Description (QAPD) (DOE/RW-0215). Data used as input to software, however, may be qualified under this procedure.

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2.3 This procedure applies to all Yucca Mountain Project Office staff and all Project participating organizations engaged in qualifying data or data analyses that will be used in the support of a license application for a geologic repository for high-level radioactive waste.

### 3.0 DEFINITIONS

The definitions used in this procedure are derived from Attachment 1 of DOE/RW-0214 and from Nuclear Regulatory Commission guidance found in NUREG 1298, "Technical Position on Qualification of Existing Data for High-Level Nuclear Waste Repositories" (2/88).

#### 3.1 CONFIRMATORY TESTING

3.1.1 Confirmatory testing refers to the performance of an analysis to ensure validity of a data set. The analysis is conducted under the same environmental conditions, and with the same or similar procedures, test material, and equipment, as the original analysis. Confirmatory testing also refers to testing conducted using different test methods and equipment, but which still investigates the parameter of interest on the same or similar material.

3.1.2 Confirmatory testing shall be conducted in accordance with a 10 CFR 60, Subpart G, QA program as defined in DOE/RW-0214.

#### 3.2 CORROBORATIVE DATA

Corroborative data are data that may or may not have been acquired and controlled in a manner consistent with 10 CFR 60, Subpart G requirements, but which may be used to support or substantiate other data.

#### 3.3 EQUIVALENT QA PROGRAM

An equivalent QA program is a QA program that is similar in scope and implementation to a 10 CFR 60, Subpart G, QA program.

#### 3.4 EXISTING DATA

Existing data refer to (1) data developed prior to the implementation of a 10 CFR 60, Subpart G, QA program by the U.S. Department of Energy (DOE) and its contractors; (2) data developed outside the DOE repository program (e.g., by oil companies, national laboratories, and universities); or (3) data published in technical or scientific publications. Existing data do not include data that are accepted by the scientific and engineering community as established facts.

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## 3.5 PEER REVIEW

3.5.1 A Peer Review is a documented, critical examination of work. The Peer Review is performed by qualified individuals who were not involved in the original work. The peer's independence from the work being reviewed means that the peer (1) was not involved as a Participant, supervisor, technical reviewer, or advisor in the work being performed; and (2) to the extent practical, has sufficient freedom from funding considerations to ensure that the work is impartially reviewed.

3.5.2 Specifically, Peer Review is an in-depth critique of (1) the assumptions, calculations, extrapolations, alternate interpretations, methodology, and acceptance criteria employed in the original work; and (2) the conclusions drawn in the original work. Peer Reviews confirm the adequacy of work.

## 3.6 QUALIFICATION OF DATA

Qualification of data is a formal process intended to provide a desired level of confidence that data are appropriate for their intended use.

## 3.7 QUALIFIED DATA

Qualified data are data initially collected under a 10 CFR 60, Subpart G, QA program, or data qualified in accordance with this procedure. The terms qualified data and primary data are synonymous for the purposes of this procedure.

## 3.8 TECHNICAL REVIEW

A Technical Review is a documented, traceable review performed by qualified personnel who are independent of those who performed the work, but who have expertise in the work described. Specifically, Technical Reviews are in-depth critical reviews, analyses, and evaluations of documents, material, or data that require technical verification and/or validation for applicability, correctness, adequacy, and completeness.

## 4.0 RESPONSIBILITIES

### 4.1 PARTICIPANT STAFF

Participant Technical and Management Staff are responsible for (1) identifying data requiring qualification, (2) justifying the need for qualification, and (3) supporting qualification activities undertaken in accordance with this procedure.

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#### 4.2 YUCCA MOUNTAIN PROJECT DIRECTOR, REGULATORY AND SITE EVALUATION DIVISION (RSED DIRECTOR)

The RSED Director or designee is responsible for initiating and coordinating qualification actions undertaken in accordance with this procedure, utilizing participant technical support as necessary. The RSED Director is also responsible for (1) supplying the Local Records Center with copies of all documentation from the qualification review, and (2) ensuring that results of qualification reviews conducted under this AP are distributed to the managers of Project data bases (e.g., the Site and Engineering Properties Data Base (SEPDB), Reference Information Base (RIB), etc.).

#### 4.3 DIRECTOR, QUALITY ASSURANCE (DIRECTOR, QA)

The YMP Director, QA is responsible for review and approval of requests for deviations from this procedure. If an equivalent QA program is one of the alternative conditions to be used for qualification, the Director, QA shall be responsible for review of relevant documents for the purpose of evaluating similarities between the controls on the data generating activity and comparable 10 CFR 50, Appendix B criteria.

#### 4.4 TECHNICAL PROJECT OFFICERS (TPOs)

The TPOs or designees are responsible for supporting qualification activities conducted under this procedure as directed by the RSED Director or designee.

#### 4.5 TECHNICAL REVIEWER

The Technical Reviewer is responsible for reviewing and evaluating the data or data analyses, including the supporting and/or rebutting evidence supplied by the originating RSED Director or designee. The Technical Reviewer shall use any additional appropriate data along with his/her professional knowledge in evaluating the existing data for qualification. The Technical Reviewer's recommendations may include the need for later confirmatory testing, or Peer Review. The Technical Reviewer shall forward a copy of his/her evaluation and recommendations to the RSED Director or designee.

#### 4.6 YUCCA MOUNTAIN PROJECT OFFICE (PROJECT OFFICE)

The Project Office, through its Division Directors (DD) or designees and/or through the Director, QA or designee, has the responsibility for reviewing and evaluating all reports or publications submitted in support of licensing and for recognizing the need for the qualification of data or data analyses where appropriate. The appropriate DD and/or the Director, QA may request, through the RSED Director or designee, that a formal qualification process as defined in this AP, be instituted.

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## 5.0 PROCEDURE

### 5.1 DISCUSSION

5.1.1 In general, the methods applied to qualifying data follow good scientific practice in identifying and justifying the use of data in an investigation. Methods acceptable for use in the qualification of data include (1) use of corroborative data, (2) conducting confirmatory tests, (3) Peer Review, and (4) verification that work was performed in whole or part under a QA program equivalent to 10 CFR 60, Subpart G, requirements. Additional confidence/credibility can be achieved when a combination of the above methods is used. Documentation of the qualification review process is necessary to provide an auditable record of the decision process, including (1) how the need for the data was determined, (2) how the methods for qualification were determined, and (3) how these methods led to the qualification decision. When a combination of qualification methods is to be used, the qualification documentation shall include an assessment and justification that addresses the utility and extent of application for each qualification method to be used. Such documentation shall specify how the combination of methods is to be applied to result in a qualification recommendation.

5.1.2 There are a number of attributes that are appropriate for consideration in the qualification process; however, not all of these attributes will need to be examined for each data set under review. The following attribute-related questions are formulated to (1) assist in determining if qualification is possible or cost effective, and (2) provide guidance in conducting the qualification review itself:

1. Are the qualifications of the personnel or organizations who generated the data comparable to the qualification requirements of personnel generating similar data under the approved 10 CFR 60, Subpart G, program?
2. Were the equipment and procedures used to collect and analyze the existing data technically adequate? Were industry recognized practices or standards used?
3. Do the existing data sufficiently address the properties of interest (e.g., physical, chemical, geologic, and mechanical)?
4. Were the environmental conditions under which the data were obtained relevant to the quality of the data? Could the environmental conditions negatively influence confidence in the results or applicability of the results?
5. To what extent do the controls under which the data were generated meet, in whole or part, 10 CFR 60, Subpart G, requirements?

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6. What were the prior uses of the data and what is the level of acceptance of the data within the technical community?
7. Are there other existing professional, technical, or Peer Reviews of the data that would lend confidence? Were the data published in a refereed journal?
8. What is the extent and reliability of the documentation associated with the data?
9. What, if any, corroborative data or confirmatory testing results are available?
10. What, if any, independent audits or surveillances of the process that generated the data were conducted?
11. To what extent are the data fundamentally important to demonstrating compliance with regulatory requirements?

## 5.2 DETERMINATION OF THE NEED FOR QUALIFICATION

5.2.1 A request for qualification of existing data may be initiated within any participating organization based upon the responsible technical or management staff member's assessment of the need for qualification and the anticipated end use of the data in the licensing process.

5.2.2 The guidance provided in Sections 1 and 2 of this procedure shall be considered when evaluating the need for qualification. In addition, participating organizations, Project Office reviews of reports or publications, and Peer Reviews external to the Project may recommend that existing data be qualified. The initiation of a qualification action following the guidance in this AP is the responsibility of the RSED Director or designee, following review and concurrence with a written request for qualification from the identifying party.

## 5.3 QUALIFICATION REVIEW PROCESS

### 5.3.1 Qualification Request

The individual recommending data qualification shall prepare and forward a request for qualification to the RSED Director or designee. This document shall describe the basis for the request, including (to the extent practicable) the information set forth in Section 5.3.1.1.

5.3.1.1 The Documentation Package shall contain the following information:

1. The reason why the existing data or data analyses need to be qualified.

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2. The reason why it is not practicable to repeat the collection and analysis of the existing data, including cost/scheduling factors.
3. An assessment of the existing data with respect to the qualification methods and attributes listed in Section 5.1.
4. Known information, supporting and/or rebutting the intended use of the data, and a summary of the arguments. Copies of available referenced documentation shall also be included.
5. A recommendation for the application of one or more of the methods listed as alternative conditions for qualification described in Section 5.1, if appropriate.

5.3.1.2 The RSED Director or designee will review the submitted Qualification Request and determine whether a qualification effort is required. This determination will be based on an assessment of regulatory or licensing needs and will, at a minimum, include the following considerations:

1. Will the data be part of a component of a License Application product?
2. Will a repeated attempt to collect the data jeopardize the ability of the site to isolate radioactive waste?
3. Will a repeated attempt to collect the data jeopardize the ability to characterize the site?
4. Using the criteria established in Section 2.2.2 of this procedure, does the data proposed for qualification constitute an established fact?

5.3.1.2.1 Should the RSED Director or designee determine that a qualification effort is not required, he/she will document the basis for his/her decision in a written response to the individual who submitted the Qualification Request.

5.3.1.2.2 Should the RSED Director or designee determine that a qualification effort is required, he/she shall, following consultation with the appropriate Project Participant Staff and Management, assemble a Documentation Package in accordance with Section 5.3.1.1, and proceed with the qualification process as described below.

## 5.3.2 Conducting the Qualification Review

Upon receipt of a request for a Qualification Review, and upon concurrence that qualification of data or analyses is appropriate, the RSED Director or designee shall plan and initiate the qualification process. The

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scope and content of the qualification plan shall reflect the characteristics and intended end use of the existing data or data analyses, and shall implement additional assessments using the qualification methods in Section 5.1, as appropriate. In developing the qualification plan, the RSED Director or designee shall consult, as appropriate, with the author of the Qualification Request, and any affected Project and Participant Management.

### 5.3.2.1 Identification of an Equivalent QA Program

If part of the qualification methodology involves evaluation of the QA program under which the existing data were generated, the Director, QA (utilizing participating organization QA functions as appropriate) shall review the quality program that was applied. The QA review shall include an assessment of the extent to which available procedures/records document how the work was accomplished (e.g., availability of detailed technical procedures, calibration or sample handling records, surveillance, etc.). A copy of the QA review shall be returned to the RSED Director or designee for inclusion in the qualification report.

### 5.3.2.2 Selection of Technical Reviewers

The RSED Director or designee shall, with the concurrence of the involved TPOs, designate two qualified, independent Technical Reviewers to evaluate the evidence for or against qualification.

### 5.3.2.3 Technical Review

The Technical Reviewers shall review the evidence in the Documentation Package using the qualification methods and attributes in Section 5.1 as guidelines. The Technical Reviewers shall supply any known additional evidence supporting or rebutting the use of the existing data. Upon completion of their reviews, the Technical Reviewers shall forward their qualification reports to the RSED Director or designee. The reports shall document the Reviewers' evaluation of the supporting evidence for or against qualification, and shall include the Reviewers' recommendation that (1) the existing data or analyses be considered qualified in whole or in part based on the existing record and assessments, or (2) further actions (Peer Review, confirmatory testing, etc.) be undertaken prior to making a qualification determination, or (3) the existing data should not be considered qualifiable.

### 5.3.2.4 Resolution

5.3.2.4.1 If, in the course of the qualification process, the Technical Reviewers or other involved parties are unable to reach a final disposition on differing opinions relative to the qualification of the existing data, the RSED Director or designee shall initiate a process to achieve resolution. The resolution process shall be determined on a case-by-case basis

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appropriate to the existing data under consideration. Where the Peer Review qualification method was utilized, the resolution process in the applicable Peer Review procedure will apply.

5.3.2.4.2 Technical Reviewers and other involved parties will verify, in writing, that their concerns have been resolved.

5.3.2.4.3 The RSED Director or designee shall make a determination with respect to the qualification status of the data in those cases where resolution cannot be obtained. The following considerations shall apply:

1. Is the differing opinion of such significance that it could jeopardize acceptance of the data in the licensing process?
2. Does the preponderance of evidence in the qualification package support qualification?
3. Have all reasonable avenues to resolve the conflict been explored?

5.3.2.4.4 Resolution of differences concerning the qualification of existing data for their intended use shall be documented in writing (e.g., verbal communication reports, letters, etc.), which supplies a traceable record of the resolution.

#### 5.3.2.5 Peer Review Recommendation

Peer Reviews, if required, shall follow the applicable participating organization or Project Office Peer Review procedures. The specific procedure under which the Peer Review will be performed shall be specified. Peer Review procedures shall be written in accordance with the NRC guidance noted in NUREG 1297.

5.3.2.5.1 If a Peer Review is undertaken, a determination of whether the existing data are qualified shall not be made until the Peer Review is completed.

#### 5.3.2.6 Confirmatory Testing Recommendation

Confirmatory testing, if needed to qualify existing data, shall be performed under a QA program meeting 10 CFR 60, Subpart G, requirements. The Principal Investigator responsible for any confirmatory testing shall forward the results of the confirmatory testing to the Technical Reviewers and the RSED Director or designee. After a review of these results, the Technical Reviewers shall inform the RSED Director or designee, in writing, of their evaluation of the results and acceptability of the existing data. For resolution of differences, see Section 5.3.2.4.

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5.3.2.6.1 If confirmatory testing is undertaken, a determination of whether existing data are qualified shall not be made until the testing program is complete.

#### 5.3.2.7 Corroborative Data Recommendation

Technical reviews that result in qualification recommendations based on the existence of corroborative data as provided for in Section 5.1.2 shall be documented to demonstrate a clear relationship between the corroborative data and the existing data. Such documentation shall provide an assessment of the acceptability of the corroborative data including evidence that the corroborative data has been used in an application that is consistent with the intended use of the existing data.

#### 5.4 QUALIFICATION CONCURRENCE

Upon completion of the process defined in this procedure, the RSED Director or designee shall review the qualification package for completeness. The qualification package shall include the following documentation as a minimum:

1. The documentation package (Section 5.3.1.1).
2. All technical review documentation (Section 5.3.2.3).
3. Documented disposition of differing opinions (Section 5.3.2.4).
4. All documentation of related Peer Reviews or confirmatory tests (Section 5.3.2.5 and 5.3.2.6).

5.4.1 The RSED Director or designee shall certify, in writing, that the data or data analyses are considered qualified for licensing purposes. The RSED Director or designee shall provide copies of the certification to affected participant and Project management.

5.4.1.1 Should it be determined that the data are not qualifiable, the RSED Director or designee shall document that determination and provide copies to affected participant and Project management.

#### 5.5 IDENTIFICATION OF QUALIFIED DATA

##### 5.5.1 Project Data Bases

Notification or changes in the qualification status or data or analyses shall be provided for inclusion in Project data bases in accordance with AP-5.2Q (Technical Information Flow to and from the Site and Engineering Properties Data Base) and AP-5.3Q (Information Flow to the Reference Information Base), as appropriate.

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## 5.5.2 Use of Qualified Data in Reports or Publications

Where data, qualified in accordance with this procedure, are used in a report or publication satisfying a milestone, that fact will be specifically noted by the author in the report as transmitted for Project Office review.

## 5.6 DEVIATIONS FROM AP-5.9Q

Situations may arise in which, because of the nature of the existing data or the way in which the data were generated, some deviations in responsibilities and/or procedure from those described herein may be necessary. Requests for deviation, including the reason(s) why it is necessary, shall be documented and approved by the appropriate DD and forwarded to the Director, QA for review and approval. The Director, QA shall return the signed approval document to the DD and submit a copy to Records Control.

## 6.0 REFERENCES

AP-5.2Q, Technical Information Flow to and from the Site and Engineering Properties Data Base

AP-1.7Q, Records Management

AP-5.3Q, Information Flow Into the Reference Information Base

DOE/RW-0214, Quality Assurance Requirements Document, Office of Civilian Radioactive Waste Management

DOE/RW-0215, Quality Assurance Program Description Document, Office of Civilian Radioactive Waste Management

NRC Generic Technical Position, Peer Review for High-Level Nuclear Waste Repositories, NUREG 1297

NRC Generic Technical Position, Qualification of Existing Data for High-Level Nuclear Waste Repositories, NUREG 1298

10 CFR 60, Disposal of High-Level Radioactive Wastes in Geologic Repositories; Licensing Procedures

10 CFR 50, Appendix B, Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants

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## 7.0 EXHIBITS AND ATTACHMENTS

Figure 1, Data or Data Analysis Qualification Flowchart

## 8.0 RECORDS

### 8.1 QA RECORDS

Upon completion of the qualification process, the RSED Director or designee shall prepare and forward to the appropriate Local Records Center a complete package of all documentation, including correspondence, confirmatory or corroborating data, and review results. The transmittal shall be in accord with applicable procedures and shall clearly indicate whether the data or analyses are considered qualified.

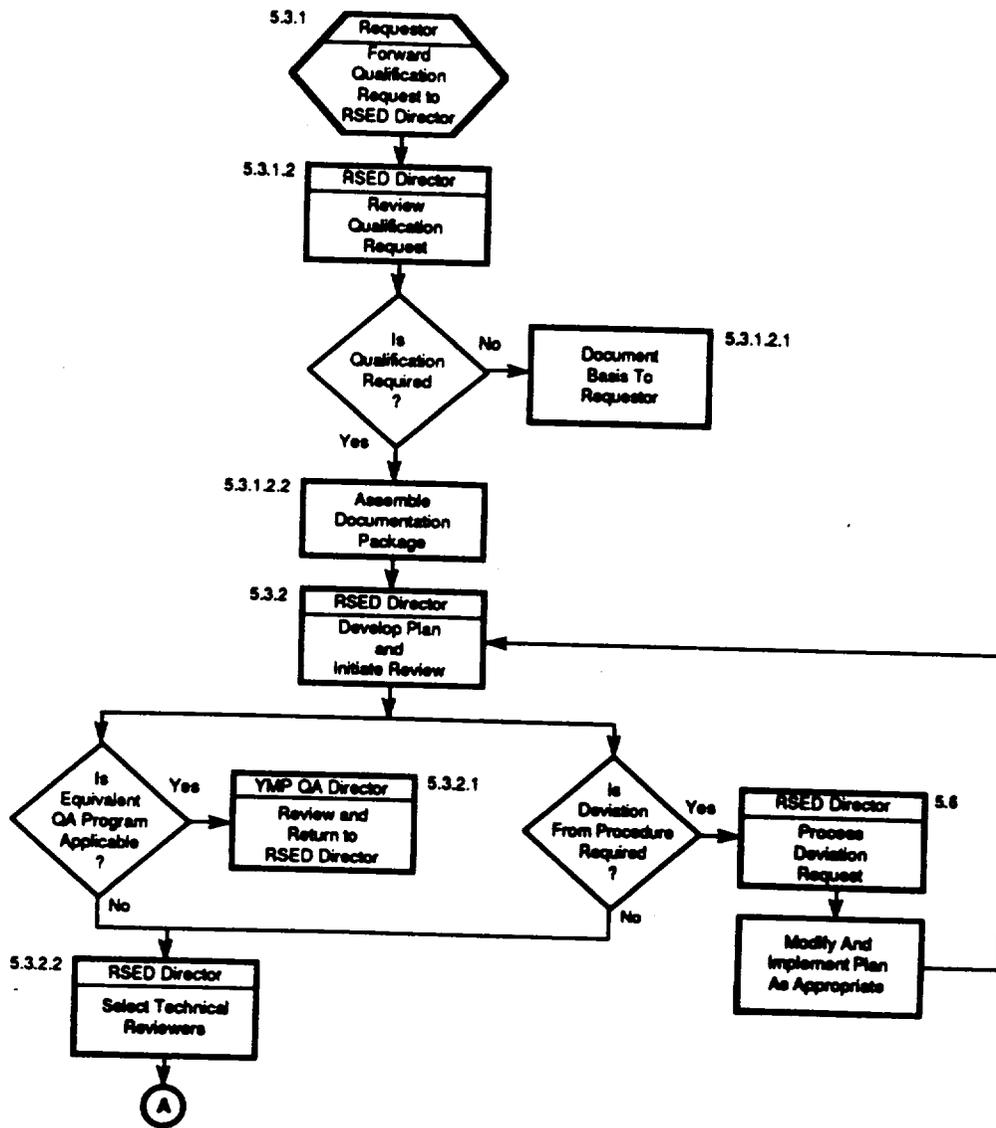
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Figure 1 - Data or Data Analysis Qualification Flowchart

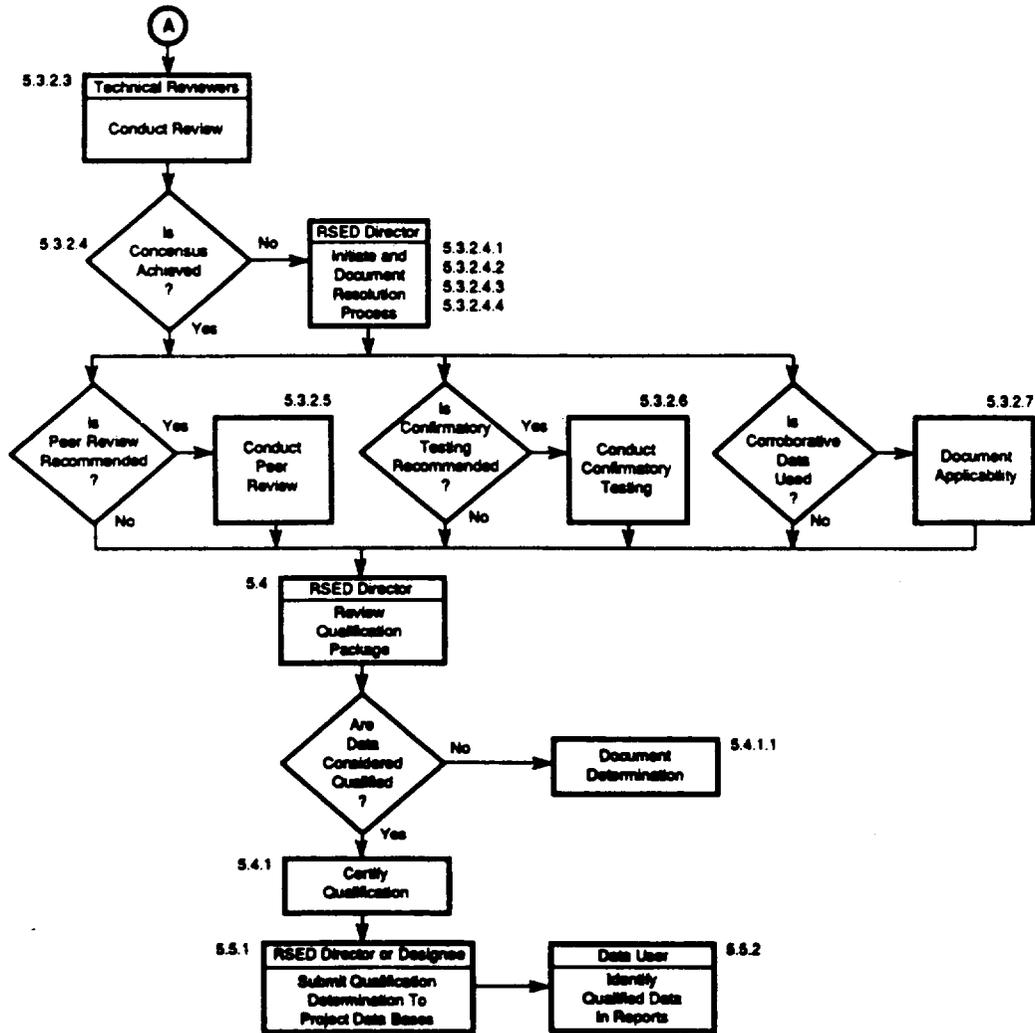
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Figure 1 - Data or Data Analysis Qualification Flowchart (continued)

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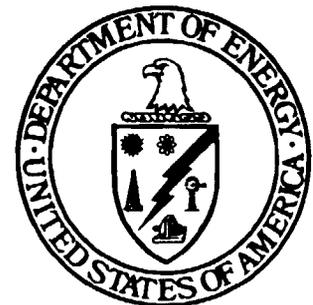
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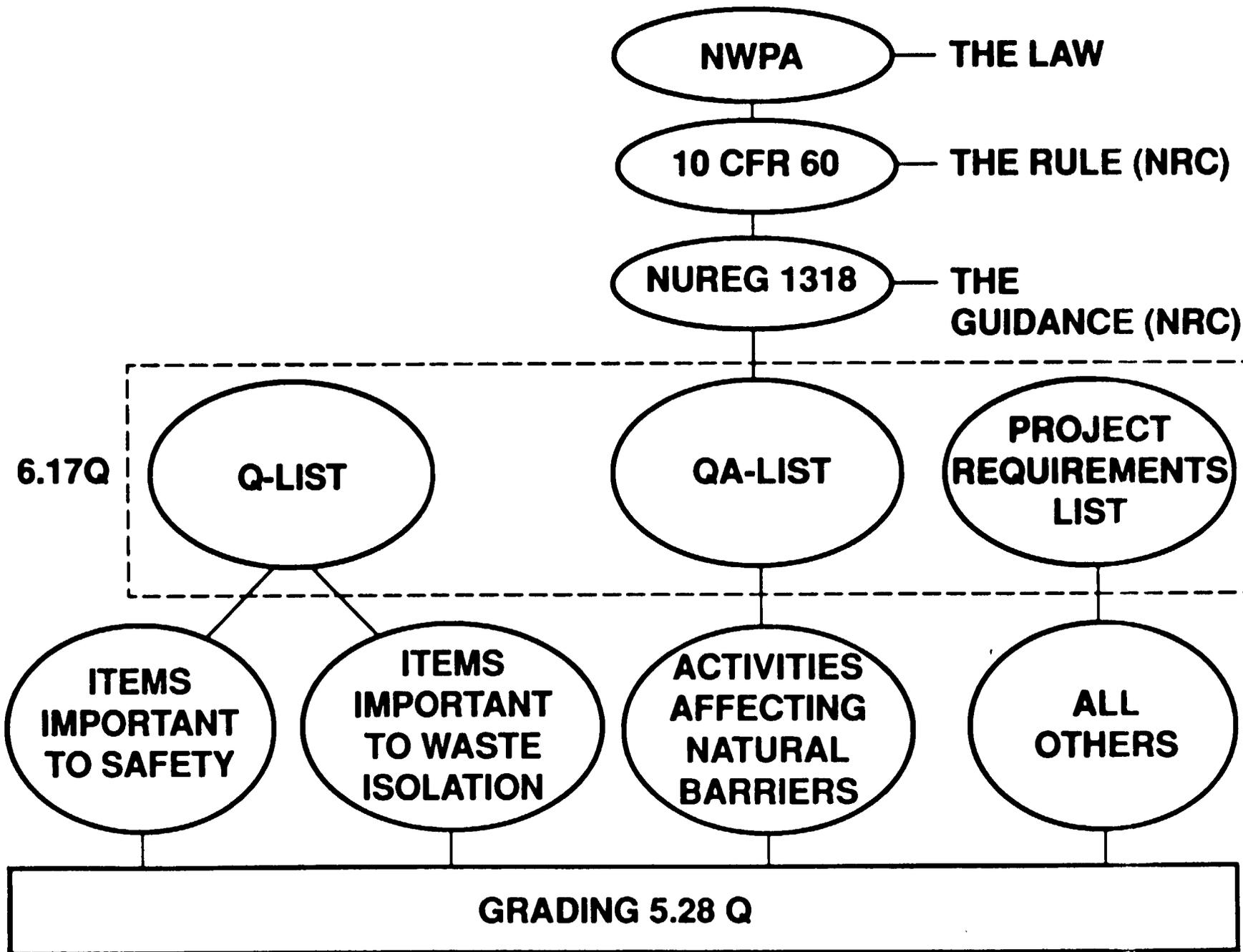
## YUCCA MOUNTAIN PROJECT Q-LIST, QUALITY ACTIVITIES LIST, AND QA GRADING

*PRESENTED TO*  
**BI-MONTHLY NRC QA MEETING**

*PRESENTED BY*  
**RAM B. MURTHY**

**NOVEMBER 8, 1990**  
UNITED STATES DEPARTMENT OF ENERGY





# **Quality Assurance Grading Program**

**NUREG -1318 Guidance implemented through  
Administrative Procedures:**

**AP-6.17Q - Determination of Importance of  
Items and Activities**

**AP-5.28Q - Quality Assurance Grading**

# **Procedure Implementing Groups**

## **Assessment Team (AT)**

**Performs technical evaluation of items and activities under AP-6.17Q to recommend for Q-List , QAL, and PRL**

## **Quality Review Board (QRB)**

**Reviews and Approves AT evaluations, Q-List, QAL, and PRL (AP-6.17Q)**

**Reviews and Approves QA Grading Reports (AP-5.28)**

# **Quality List (Q-List)**

**Items Important to Safety (IITS) - Engineered Items that prevent or mitigate a pre-closure accident that could result in a dose of 0.5 rem.**

**Items Important to Waste Isolation (IITWI) - Natural and Engineered Barriers that are relied upon for achieving the postclosure objectives of 10CFR60, subpart E.**

**Engineered Items that are IITS or IITWI must be covered under 10CFR60 Subpart G QA Program.**

# **Quality Activities List (QAL)**

**Activities conducted during site characterization, construction, startup testing, operation, or closure that relate to natural barriers important to waste isolation. These activities may include:**

- Site Characterization**
- Performance Assessments**
- Activities that may affect waste isolation capability of a natural barrier**

**Must be covered by 10CFR60 Subpart G QA program.**

# **Project Requirements List (PRL)**

**A tabulation of items and activities that were evaluated for possible inclusion of the Q-List or the Quality Activities List and not determined to be any of the following:**

- 1. Important to Safety**
- 2. Important to Waste Isolation**
- 3. Quality Activities**

# **List Preparation**

## **Basis:**

**AT Manager maintains the AT Controlled List of documents to be used in evaluation**

## **Evaluation Packages:**

**Prepared by AT Groups following AP-6.17Q.  
Separate packages generated for**

**Items Important to Safety (IITS-1)**

**Items Important to Waste Isolation (IITWI-1)**

**Evaluation of Activities for the QAL (QAL)**

# **Criteria for Exemption**

**The QRB may approve exemption for activities or items that meet the following criteria:**

- 1. Activities whose purpose is to demonstrate feasibility of equipment, tools, or techniques. When performed within the controlled area, such activities shall not involve the disturbance or characterization of natural elements or phenomena.**
- 2. Activities that support general administration of project and whose purpose is proven to be unrelated to public radiological health, safety, and/or waste isolation by simple logic (e.g., budget exercises)**

# Criteria for Exemption

**The QRB may approve exemption for activities or items that meet the following criteria (continued):**

- 3. Items whose function is proven to be unrelated to public radiological health and safety and waste isolation by simple logic(e.g., office trailers, temporary office facilities).**

# **Direct Inclusion**

**Method for conservative selection of items and activities for the Q-List or QAL without completion of detailed evaluation**

**After assignment by Direct Inclusion, an item or activity may be reassigned to the PRL through completion of detailed evaluation**

# **Detailed Evaluation**

**Pre-closure items evaluated for importance to safety by Probabilistic Risk Assessment (PRA) techniques in process defined by the procedure**

**Post-closure items and natural barriers important to waste isolation initially assigned by direct inclusion. Procedure for detailed evaluation is under development**

**Activities are evaluated against criteria defined by the procedure**

# **Selection Methods Applied to Initial Q-List, QAL, and PRL**

**Q-List IITS: Direct Inclusion for all selections**

**Q-List IITWI: Direct Inclusion for all selections**

**Quality Activities List : Direct inclusion for all  
selections**

**PRL Items: Exemption (not IITS nor IITWI)**

**PRL Activities: Exemptions and limited Detailed  
Evaluations**

# **Approval of Lists**

**QRB performs technical review and approves evaluation packages.**

**AT Manager combines QRB approved evaluation packages using the logic in AP-6.17Q to prepare Q-List, QAL, and PRL.**

**QRB approves and distributes Q-List, QAL, and PRL.**

# **Maintenance of Lists**

**Changes to documents on AT Controlled List will trigger review and re-evaluation of Q-List, QAL, and PRL.**

**Initial evaluations were comprehensive but limited in detail. Detailed evaluations to be performed as Project information matures**

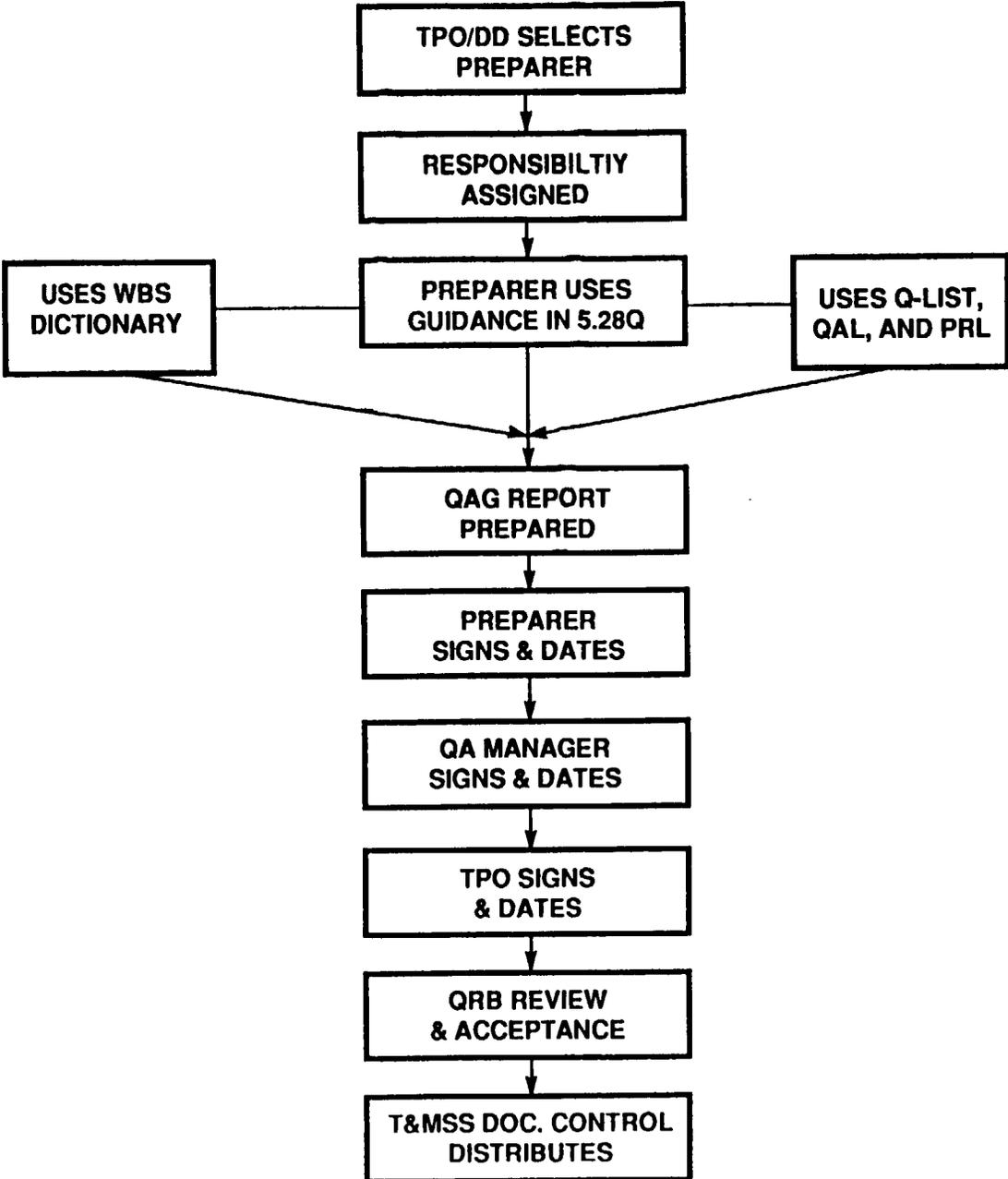
## **GRADING**

**DETERMINING THE QA MEASURE(S) (BASED  
ON THE 20 CRITERIA OF THE QARD)  
WHOSE APPLICATION IS NECESSARY TO  
DEVELOP AND MAINTAIN CONFIDENCE IN  
THE QUALITY OF AN ITEM OR ACTIVITY**

## **APPLICABILITY**

- o ALL YUCCA MOUNTAIN PROJECT PARTICIPANTS AND PERSONNEL INVOLVED IN PREPARATION, REVIEW, APPROVAL, AND ACCEPTANCE OF QUALITY ASSURANCE GRADING (QAG) REPORTS**
- o PREREQUISITE TO PERFORMANCE OF WORK RELATED TO AN ITEM OR ACTIVITY LISTED ON THE Q-LIST, QUALITY ACTIVITIES LIST, OR PROJECT REQUIREMENTS LIST**
- o AP-6.17Q, DETERMINATION OF THE IMPORTANCE OF ITEMS AND ACTIVITIES, IS A PREREQUISITE TO THE IMPLEMENTATION OF AP-5.28Q**

# YMP GRADING PROCESS



# QUALITY ASSURANCE GRADING REPORT

N-QA-095  
7/90

**PART I. IDENTIFICATION AND DEFINITION:**  ITEM  ACTIVITY Page \_\_\_\_ of \_\_\_\_  
 TITLE/DESCRIPTION \_\_\_\_\_ REPORT NO. \_\_\_\_\_ REV. NO. \_\_\_\_\_

RESPONSIBLE ORGANIZATION \_\_\_\_\_  
 REVISION(S) OF Q-LIST, QUALITY ACTIVITIES LIST, PROJECT REQUIREMENTS LIST, AND SUPPORTING DOCUMENTATION USED:

(Attach additional definitive information as necessary to fully define the subject item or activity and support the position expressed in this QAG report)

**PART II. STATEMENT OF IMPORTANCE:**

**Section A: (Check the appropriate areas)**  Public Radiological Safety (Q-List)  Waste Isolation (Q-List)  
 Performance Assessment (QAL)  Site Characterization (QAL)  Potential Adverse Impact on Natural Barrier(s)(QAL)  N/A (Complete Section B)

**Section B: (Check the appropriate areas)**  Worker Radiological Safety (Att: )  Operational Reliability (Att: )  
 Other (Provide explanation)(Att: ) \_\_\_\_\_  N/A (Provide explanation)(Att: )

PART III. GRADING:	APPLICABLE (YES OR NO)	JUSTIFICATION IF NOT APPLICABLE (REFERENCE)	EXCEPTION(S) TO CRITERIA SUBPARTS (REFERENCE)
1. ORGANIZATION	_____	_____	_____
2. QA PROGRAM	_____	_____	_____
3. DESIGN CONTROL	_____	_____	_____
4. PROCUREMENT DOCUMENT CONTROL	_____	_____	_____
5. PLANS, PROCEDURES, INSTRUCTIONS, AND DRAWINGS	_____	_____	_____
6. DOCUMENT CONTROL	_____	_____	_____
7. CONTROL OF PURCHASED ITEMS AND SERVICES	_____	_____	_____
8. IDENT. & CONTROL OF MTRLS, PARTS, CMPNTS, AND SMPLS	_____	_____	_____
9. CONTROL OF PROCESSES	_____	_____	_____
10. INSPECTION	_____	_____	_____
11. TEST CONTROL	_____	_____	_____
12. CONTROL OF MEASURING AND TESTING EQUIPMENT	_____	_____	_____
13. HANDLING, STORAGE, AND SHIPPING	_____	_____	_____
14. INSPECTION, TEST, AND OPERATING STATUS	_____	_____	_____
15. CONTROL OF NONCONFORMING CONDITIONS	_____	_____	_____
16. CORRECTIVE ACTION	_____	_____	_____
17. QA RECORDS	_____	_____	_____
18. AUDITS	_____	_____	_____
19. COMPUTER SOFTWARE	_____	_____	_____
20. SCIENTIFIC INVESTIGATION CONTROL	_____	_____	_____

\* Reference attached justification or explanations

**PART IV. APPROVALS:**

\_\_\_\_\_  
Preparer's Signature                      Date

\_\_\_\_\_  
QA Manager's Signature                  Date                  TPO's Signature                  Date

**QRB ACCEPTANCE:**

\_\_\_\_\_  
QRB Chairman's Signature                  Date



**Department of Energy**

Washington, DC 20585

November 6, 1990

Mr. John Linehan, Director  
Repository Licensing & Quality  
Assurance Project Directorate  
Division of High-Level  
Waste Management  
Office of Nuclear Material  
Safety and Safeguards  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Mr. Linehan:

As requested during the September 18, 1990, QA Monthly meeting, enclosed is documentation of the rationale for the U.S. Department of Energy (DOE) Yucca Mountain Project Office's decision to cancel the annual audit of REECo's Quality Assurance (QA) Program for fiscal year 1990. As indicated in the enclosure, the Yucca Mountain Project QA Office recommended cancellation of the audit because there were no Quality Level I or II activities and limited Quality Level III activities performed at REECo since the date of the last Project Office audit of REECo.

If you have any questions, please contact Cori Macaluso of my staff at 586-2837.

Sincerely,

A handwritten signature in cursive script that reads "Linda J. Desell".

Linda J. Desell, Acting Chief  
Regulatory Integration Branch  
Office of Civilian Radioactive  
Waste Management

Enclosure: DOE Yucca Mountain Project Office Memorandum  
Recommending Cancellation of Fiscal Year 1990 Audit of REECO QA  
Program

CC:

R. Loux, State of Nevada  
C. Gertz, DOE/YMPO/NV  
M. Baughman, Lincoln County, NV  
D. Bechtel, Clark County, NV  
S. Bradhurst, Nye County, NV



Department of Energy  
Yucca Mountain Project Office  
P. O. Box 98808  
Las Vegas, NV 89193-8608

NBS 1.2.9.3  
QA

JUN 25 1990

Donald G. Horton, Director, Quality Assurance, YMP, NV

PROPOSED YUCCA MOUNTAIN PROJECT OFFICE (PROJECT OFFICE) QUALITY ASSURANCE (QA)  
AUDIT 90-5 OF REYNOLDS ELECTRICAL & ENGINEERING CO., INC. (REECo)

Reference: Letter, Stewart to Dixon, dtd. 10/18/89

A scoping meeting between Project Office QA (Robert Klemens) and REECo QA (Mono Fox) was held on June 6, 1990, to obtain pertinent information needed for planning Audit 90-5, which is scheduled to begin on July 16, 1990.

All REECo activities since the date of the last Project Office audit of REECo (September 29, 1989) were reviewed against the requirements of the REECo Quality Assurance Program Plan. There were no QA Level I and II activities performed by REECo during this period. The performance of "quality-affecting" work by REECo was further impeded by the letter from John Stewart to Wendy Dixon dated October 18, 1989 (see reference). This letter cited the agreement between Nevada Test Site Operations (NTSO) and the Project Office that NTSO and Nevada Test Site (NTS) weapons program contractors, equipment and facilities will not be required to perform quality-affecting work for the Project Office. Directly affected were the REECo Calibration Facility and Weld Shop at NTS. Calibration at the Calibration Lab is now limited to equipment designated as QA Level III, or equipment having no level specified, and only NTS calibration procedures are used.

A review was also conducted of recent audits and surveillances of REECo. Surveillance YMP-SR-90-020 was conducted at REECo by the Project Office on February 12, 1990, and covered Criteria 1, 2, 16, 17, and 18. REECo procedures pertaining to these criteria were the source of the questions used to conduct the surveillance. Standard Deficiency Report (SDR) 494 was generated under Criterion 2, and identified as a problem with distribution of the Management Assessment Report. Many of the checklist characteristics for Criteria 16, 17, and 18 were determined to be not applicable due to lack of activities in these areas.

In addition to SDR 494 referenced above, there are two more open SDRs. These were generated during the previous Project Office audit of REECo (audit 89-05). SDRs 453 and 454 amended effective dates (June 30, 1990) were approved on June 5, 1990. These SDRs are expected to be closed upon completion of verification by Project Office QA after June 30, 1990.

JUN 25 1990

There has been no activity at REECO, since the last Project Office audit, pertaining to the following criteria:

- 3 Design Control
- 4 Procurement
- 5 Plans and Drawings
- 7 Procurement
- 8 Identification and Control of Items
- 9 Process Control
- 10 Inspection
- 11 Test Control
- 12 Calibration
- 13 Shipping and Storage
- 14 Inspection and Test
- 16 Corrective Action

As previously indicated, there were no Quality Level I or II activities and only limited Quality Level III activities performed. Based on the above, Project Office QA recommends that Audit 90-5 be cancelled.

*James Blaylock*  
James Blaylock  
Quality Assurance  
Yucca Mountain Project Office

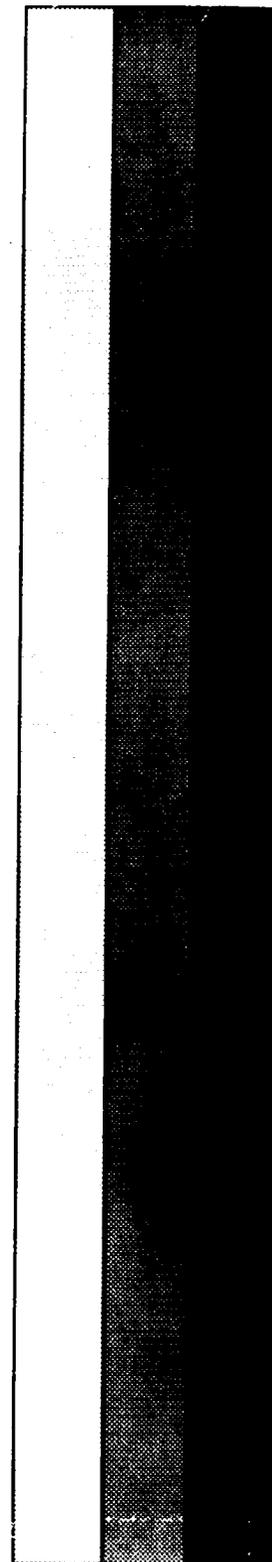
YMP:JB-3843

CC:  
R. F. Pritchett, REECO, Las Vegas, NV  
M. A. Fox, REECO, Las Vegas, NV  
J. W. Gilray, NRC, Las Vegas, NV  
R. H. Klemens, SAIC, Las Vegas, NV 517/T-06

APPROVED:

*Charles R. Pritchett*  
DIRECTOR, QA

*Technical Information Department* - Lawrence Livermore National Laboratory  
University of California - Livermore, California 94551



IMP DOC	.. I DOC LOC.....	IREV.	REQ DOCUMENT.	REQ DOC LOC.....	RREV.	CSDP
QAP16-01	04.01.04.02	B	QARD	16.03.01	4	Y
QAP16-01	04.02.01	B	NQA-1	II.16..1	89	Y
QAP16-01	04.02.01	B	NQA-1	II.16..2	89	Y
QAP16-01	04.02.01	B	NQA-1	II.16..3	89	Y
QAP16-01	04.02.01	B	QARD	16.02.02	4	Y
QAP16-01	04.02.02	B	NQA-1	II.16..1	89	Y
QAP16-01	04.02.02	B	QARD	16.03.01	4	Y
QAP16-01	04.02.03	B	NQA-1	II.16..3	89	Y
QAP16-01	04.02.03	B	QARD	16.02.02	4	Y
QAP16-01	04.02.04	B	NQA-1	II.16..1	89	Y
QAP16-01	04.02.04	B	NQA-1	II.16..2	89	Y
QAP16-01	04.03.01	B	NQA-1	II.16..3	89	Y
QAP16-01	04.03.01	B	QARD	16.02.02	4	Y
QAP16-01	04.03.03	B	QARD	16.03.01	4	Y
QAP16-01	ALL	B	QARD	03.01.01	4	Y
QAP16-03	04.02	A	QARD	16.01.01	4	Y
QAP16-03	04.02	A	QARD	16.01.03	4	Y
QAP16-03	04.02	A	QARD	16.01.04	4	Y
QAP16-03	04.03	A	QARD	02.11.A.1	4	Y
QAP16-03	05.00	A	QARD	02.11.A.2	4	Y
QAP16-03	05.00	A	QARD	02.11.B	4	Y
QAP16-03	05.00	A	QARD	16.01.01	4	Y
QAP16-03	05.00	A	QARD	16.01.02	4	Y
QAP16-03	05.00	A	QARD	16.01.03	4	Y
QAP16-03	05.00	A	QARD	16.01.04	4	Y
QAP18-01	01.00	C/3	NQA-1	II.18..1	89	Y
QAP18-01	01.00	C/3	QARD	02.08.11	4	Y
QAP18-01	02.00	C/3	NQA-1	II.18..1	89	Y
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QAP18-01	04.01.01.01	C/3	NQA-1	III.18S-1.2.1	89	Y
QAP18-01	04.01.01.01	C/3	NQA-1	III.18S-1.2.2	89	Y
QAP18-01	04.01.01.01	C/3	NQA-1	III.18S-1.4.2	89	Y
QAP18-01	04.01.01.01	C/3	QARD	18.03.01	4	Y
QAP18-01	04.01.01.01	C/3	QARD	18.03.02	4	Y
QAP18-01	04.01.01.03	C/3	NQA-1	III.18S-1.2.3	89	Y
QAP18-01	04.01.01.03	C/3	QARD	18.03.02	4	Y
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QAP18-01	04.01.01.03	C/3	QARD	18.03.03.B	4	Y
QAP18-01	04.01.01.05	C/3	NQA-1	III.18S-1.2.4	89	Y
QAP18-01	04.01.02.01	C/3	NQA-1	III.18S-1.3.1.1	89	Y
QAP18-01	04.01.02.01	C/3	NQA-1	III.18S-1.3.1.2	89	Y
QAP18-01	04.02.01	C/3	NQA-1	II.18..2	89	Y
QAP18-01	04.02.01	C/3	NQA-1	III.18S-1.3.2.2	89	Y
QAP18-01	04.02.01	C/3	NQA-1	III.18S-1.3.2.3	89	Y
QAP18-01	04.02.01	C/3	NQA-1	III.18S-1.3.3.2	89	Y
QAP18-01	04.02.01	C/3	QARD	18.01.02	4	Y
QAP18-01	04.02.02	C/3	NQA-1	II.18..2	89	Y
QAP18-01	04.02.02	C/3	NQA-1	III.02S-3.5.1.2	89	Y
QAP18-01	04.02.02	C/3	NQA-1	III.02S-3.5.1.3	89	Y
QAP18-01	04.02.02	C/3	NQA-1	III.18S-1.3.2.1	89	Y
QAP18-01	04.02.02	C/3	NQA-1	III.18S-1.3.3.1	89	Y
QAP18-01	04.02.02	C/3	NQA-1	III.18S-1.3.3.2	89	Y

IMP DOC	.. I DOC LOC.....	IREV.	REQ DOCUMENT.	REQ DOC LOC.....	RREV.	CSDP
QAP18-01	04.02.02	C/3	NQA-1	III.18S-1.3.3.3	89	Y
QAP18-01	04.02.02	C/3	QARD	18.01.02	4	Y
QAP18-01	04.02.02	C/3	QARD	18.01.03	4	Y
QAP18-01	04.02.03	C/3	NQA-1	II.18..2	89	Y
QAP18-01	04.02.03	C/3	NQA-1	III.18S-1.4.1	89	Y
QAP18-01	04.02.03	C/3	QARD	18.03.03.A	4	Y
QAP18-01	04.03.02	C/3	NQA-1	III.18S-1.4.3	89	Y
QAP18-01	04.03.02	C/3	NQA-1	III.18S-1.4.4	89	Y
QAP18-01	04.03.03	C/3	NQA-1	III.18S-1.4.6	89	Y
QAP18-01	04.04	C/3	NQA-1	II.18..3	89	Y
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QAP18-01	04.04	C/3	NQA-1	III.18S-1.5.1	89	Y
QAP18-01	04.04	C/3	NQA-1	III.18S-1.6.1	89	Y
QAP18-01	04.04	C/3	QARD	18.02.01	4	Y
QAP18-01	04.05.01	C/3	NQA-1	III.18S-1.3.3.2	89	Y
QAP18-01	04.05.01	C/3	NQA-1	III.18S-1.6.2	89	Y
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QAP18-01	05.00	C/3	NQA-1	III.18S-1.8.1	89	Y
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QAPD	02.02	00	NQA-1	II.02..4	89	Y
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QAPD	02.02	00	QARD	02.01.03	4	Y
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QAPD	ALL	00	QARD	02.01.02	4	Y
QAPD	POLICY	00	QARD	02.06.01	4	Y
REFER	PROC	-	QARD	01.02.02	4	Y