



Department of Energy

Washington, DC 20585

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Mr. Joseph J. Holonich, Director
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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. Holonich:

The Yucca Mountain Site Characterization Project Office (YMPO) recently approved five new documents in their technical document hierarchy. This new hierarchy is explained herein and relates these new documents to prior Yucca Mountain Site Characterization Project (YMP) technical documents that bear different titles or to prior revisions that bear the same name.

These YMPO Design Requirements Documents (DRD) are identified on the Office of Civilian Radioactive Waste Management Document Hierarchy (enclosure). The DRDs are: (1) the Repository Design Requirements Document (RDRD); (2) the Site Design and Test Requirements Document (SDTRD); (3) the Engineered Barrier Design Requirements Document (EBDRD), (4) the Exploratory Studies Facility Design Requirements Document (ESFDRD); and (5) the Surface-Based Testing Facilities Requirements Document (SBTFRD). The RDRD, the SDTRD, and the EBDRD derive their requirements from their parent document, the Mined Geologic Disposal System Requirements Document (MGDSRD), which was approved by the Office of Civilian Radioactive Waste Management Program Office Configuration Control Board in January 1993. The MGDSRD derives its requirements in turn from the Civilian Radioactive Waste Management System Requirements Document (CRWMSRD). The ESFDRD and the SBTFRD derive their requirements from their parent document, the SDTRD. Each DRD serves a specific purpose in site characterization and site characterization planning for the YMP.

The RDRD (YMP/CM-0023)

The purpose of the RDRD is to define the project-level requirements for the design of a repository segment consistent with the MGDSRD. These requirements include design, operation, and decommissioning requirements to the extent that they impact the physical design and development of a repository. The document also presents an overall description of the repository

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segment and its functions (derived using the functional analysis documented by the MGDSRD as a starting point). In addition, the project-level interfaces of the repository segment are identified. As such, the RDRD provides the technical baseline for the design of a repository. Design of the repository segment must be consistent with the requirements in the RDRD. While a repository segment may evolve and change through the design process, changes must occur in a controlled manner that ensures the Civilian Radioactive Waste Management System remains integrated. In doing so, the CRWMSRD, MGDSRD, and RDRD will be revised to capture the changes.

The RDRD captures, as appropriate, all of the requirements from the old hierarchy RDRD. The retention of the old hierarchy repository design requirements is documented in a horizontal trace matrix which makes up a part of the quality assurance (QA) records package for this document.

The SDTRD (YMP/CM-0021)

The SDTRD establishes the functional descriptions and performance requirements for all site characterization activities. The document also presents an overall description of the site segment and its functions, based on the functional analysis documented by the MGDSRD. The site characterization program requirements for investigations, studies, and activities are established and presented in the form of objectives. Design requirements for test support and other facilities are established in this document and are allocated to the Exploratory Studies Facility (ESF) and/or the Surface-Based Testing Facilities (SBTF). The requirements in the SDTRD are allocated to and are captured in the two lower-tier design requirements documents, the ESFDRD, and the SBTFRD. The SDTRD is also the parent document for the Test Requirements Document (TRD). The scope and contents of the TRD are to be determined. In addition, the interface requirements of the site segment to engineered barrier segment, site segment, and repository segment are defined. These interface requirements are identified and allocated to the site segment in the MGDSRD.

The SDTRD captures the testing objectives previously controlled in the Site Characterization Program Baseline (YMP/CM-0011) and revisions thereto. These objectives include the original Site Characterization Plan section references and are included in a traceability matrix in Section 6 of the SDTRD.

The EBDRD (YMP/CM-0024)

The EBDRD describes the functions to be performed and establishes the requirements for the engineered barrier segment. The engineered barrier segment is one of the segments of the Mined Geologic Disposal System for the permanent disposal of spent nuclear fuel, commercial high-level radioactive waste, and defense high-level radioactive waste. The primary function of

the engineered barrier segment is to isolate waste, first by containing waste within the waste package and then, together with the geologic setting, isolating high-level waste from the accessible environment. The requirements for the engineered barrier segment are derived from the requirements contained in the MGDSRD. The major components of the engineered barrier segment consist of the waste packages, the underground facility, any backfill placed in emplacement drifts, and emplacement hardware used to support and protect the emplaced waste packages. The underground facility portion of the engineered barrier segment has been identified as an interface with the repository segment. The EBDRD allocates the requirements from the MGDSRD, expands and interprets those requirements, and defines the segment/component level requirements for the design of the engineered barrier segment. The document also presents a description of the engineered barrier segment, its functions, its components, and the requirements of these components. In addition, the interface requirements of the engineered barrier segment to geologic setting, site segment, repository segment, waste acceptance, and transportation are defined. These interface requirements are identified and contained in the engineered barrier segment in the MGDSRD.

The ESFDRD (YMP/CM-0019)

This document establishes the requirements and constraints imposed on the development of the design for the ESF. The purpose of this requirement document is to establish the design requirements for facilities, underground openings, utilities, and services as part of the ESF required to support the subsurface *in situ* tests specified in the SDTRD. The ESFDRD includes requirements for both surface and underground construction, utilities, and services. This document also contains the existing baseline requirements.

This document captures all of the appropriate requirements from the previous ESFDRD. As with the RDRD, a horizontal traceability matrix was developed and is included in the QA records package.

The SBTFRD (YMP/CM-0022)

The DRD establishes the requirements and basic constraints imposed on the development of the SBTF in support of site characterization at Yucca Mountain. The surface-based testing activities will include sampling and testing to be carried out from activities on the ground surface. This document identifies requirements for facilities needed to support these activities, as well as any other surface-based activity that may affect the geologic or waste isolation characteristics of the site. The purpose of this document is to capture the requirements from the SDTRD and define the subsystem-level requirements for the design of the SBTF. This document also presents a description of the SBTF, its functions, its subsystems/components, and the

requirements contained in the subsystems. In addition, the interface requirements of the SBTF are defined.

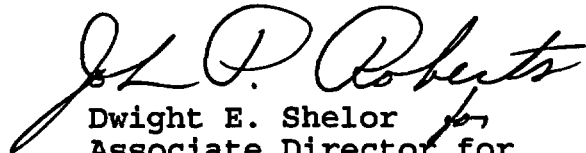
This document contains the appropriate requirements from the old hierarchy SBTFRD and documents horizontal traceability in a matrix included in the QA records package.

Uncontrolled or controlled copies of all of these new requirements documents can be furnished to the U.S. Nuclear Regulatory Commission (NRC) on-site representatives upon their request. If the NRC staff wishes to receive uncontrolled copies of all of these documents, please make a specific written request. Note that the ESFDRD is now in the process of being sent to the NRC because a subsequent letter will propose resolution of three Site Characterization Analysis open items based on its contents.

We believe it would be beneficial for the NRC staff to hold copies of these documents for reference purposes, but we do not presume to make this decision for the staff.

If you have any questions, contact Chris Einberg of my staff at (202) 586-8869.

Sincerely,



Dwight E. Shelor
Associate Director for
Systems and Compliance
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Enclosure:
OCRWM Document Hierarchy

cc: w/ enclosure

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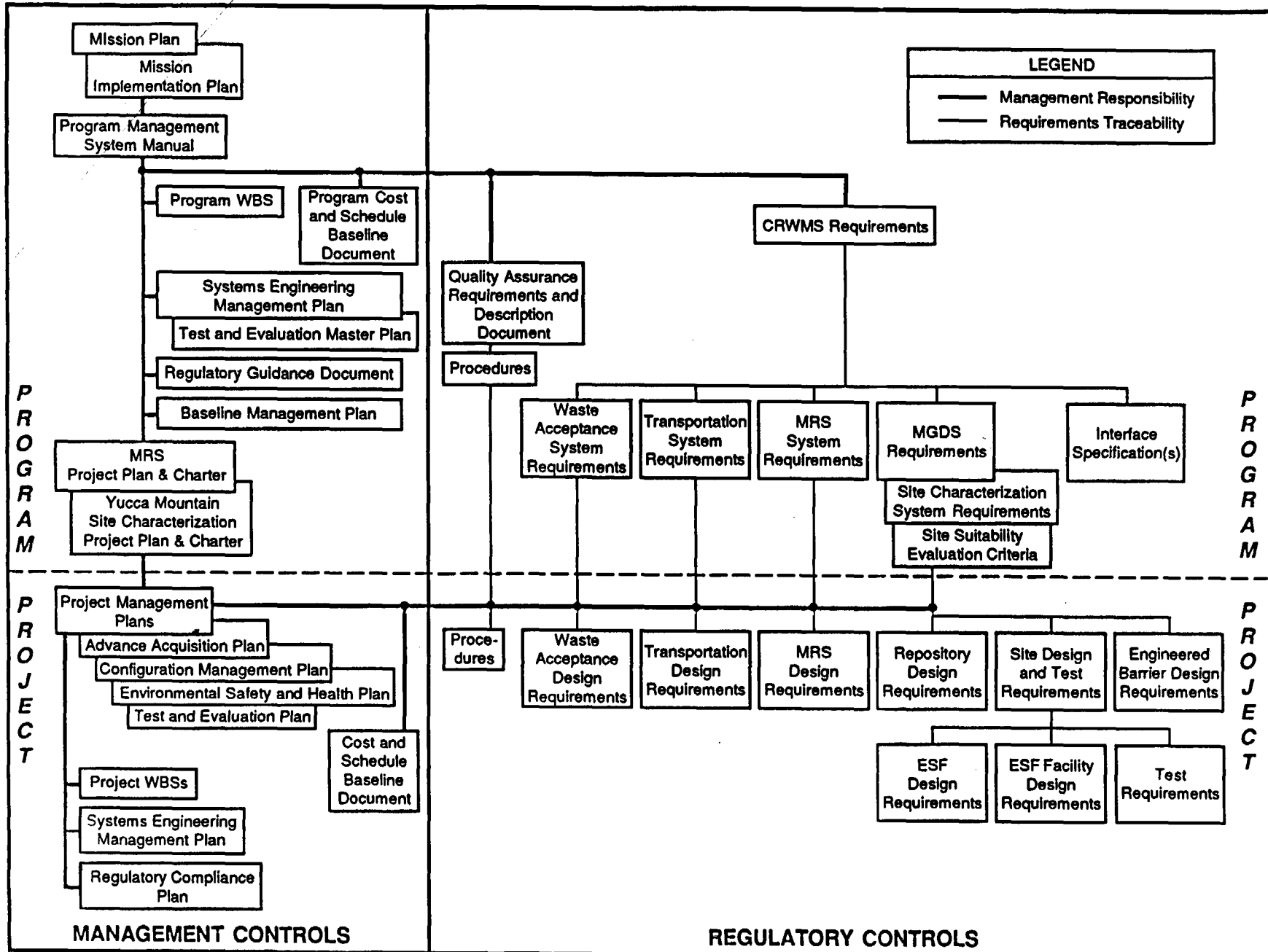
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