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Civilian Radioactive Waste Management System
Management & Operating Contractor

License Application Design Products List

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September 1999

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EXECUTIVE SUMMARY

The focus of the License Application Design Products List is to provide documentation to the U.S. Nuclear Regulatory Commission that substantiates the conclusion that a repository can be constructed, operated, and eventually closed without unreasonable risk to the health and safety of the public and workers. This documentation includes the design, design processes, and programmatic controls of the repository. The types of products necessary to support the License Application based on the safety significance of the structures, systems, or components are identified in *Level of Design Detail Necessary for the License Application for Construction Authorization* (CRWMS M&O 1999a). The safety significance of a system is determined by its Quality Level classification, as described in QAP-2-3, *Classification of Permanent Items*. Systems that are classified with a higher level of safety significance require that a greater level of information must be available to support the conclusion that a repository will not result in unreasonable risk to the health and safety of the public and workers.

The objective of this document is to identify those products that are necessary and sufficient to support the License Application submittal for Construction Authorization. Integrated teams consisting of representatives of the design disciplines, systems, and licensing have systematically reviewed each system/system description document (using *Level of Design Detail Necessary for the License Application for Construction Authorization* (CRWMS M&O 1999a) and the structure, system, and component Quality Level) to determine the set of products that are necessary and sufficient to support the License Application submittal for Construction Authorization. These products are identified in Attachment I, the LA Products Matrix.

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CONTENTS

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ACRONYMS

CA	Construction Authorization
DBE	Design Basis Event
EDA	Enhanced Design Alternative
LA	License Application
MGR	Monitored Geologic Repository
NRC	U.S. Nuclear Regulatory Commission
SDD	System Description Document
SSC	structure, system, or component

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1. INTRODUCTION

This document describes the necessary and sufficient set of engineering and design products required to support the License Application (LA) for the Construction Authorization (CA) of a Monitored Geologic Repository (MGR) at Yucca Mountain, Nevada. This description is provided in the form of a list of Engineering and Design Organization Products for License Application, hereafter referred to as the LA Design Products List. The level of detail to be provided by the LA Design Products List for inclusion in the LA is described in *Level of Design Detail Necessary for the License Application for Construction Authorization* (CRWMS M&O 1999a).

As the design and the preclosure and postclosure safety cases mature, the contents of the LA Design Products List will change; periodically a revised products list will be published to reflect the design maturation. The LA Design Products List may also change based on interchanges with the U.S. Nuclear Regulatory Commission (NRC), development or revision of NRC guidance documents, and the evolution of the *Technical Guidance Document for License Application Preparation* (YMP 1998).

The LA Design Products List contains only those engineering and design products that are considered necessary to support the LA, not the list of all engineering and design products expected to be available at the time of the LA, as discussed in *Level of Design Detail Necessary for the License Application for Construction Authorization* (CRWMS M&O 1999a). The engineering and design products that support LA development will provide the necessary and sufficient information to:

1. Ensure the protection of the public health and safety.
2. Ensure the protection of worker health and safety.
3. Demonstrate compliance with the regulatory requirements.
4. Submit a docketable LA for a repository at Yucca Mountain.

In the LA, engineering products will be used to develop the descriptions of the structures, systems, or components (SSCs) and the respective safety functions that are required to protect the health and safety of the public from the consequences of Design Basis Events (DBEs), meet postclosure performance objectives, process radioactive waste, provide fire protection, and protect the SSCs important to safety from interactions with SSCs that are not important to radiological safety or waste isolation. The level of detail describing the engineering products in the LA will vary based on the safety significance of the SSCs; the precedence established by previously licensed facilities; the uniqueness of the facility to be licensed; and the necessary and sufficient information needed to describe the safety functions to be performed, to provide basic descriptions of the design features that implement the safety functions, and to discuss the performance of the SSCs in support of those functions.

For some of the SSCs for which clear regulatory precedence has been established, the LA may describe the engineering process for controlling the development of engineering products.

2. DESCRIPTION

The LA Design Products List contains the following information: system designation, type of engineering or design product, quality classification, and responsible engineering organization. The products are grouped by major systems at the System Description Document (SDD) level, as identified in the MGR Architecture (CRWMS M&O 1999b). The organizations that support the development of the LA Design Products List are the following:

- Engineered Barrier Systems Operations
- Surface Facility Systems Operations
- Waste Package Operations
- Repository Systems Operation
- Licensing

Results from "Direction to Transition to Enhanced Design Alternative (EDA) II" (Wilkins 1999) have been factored into the Quality Level determination of SSCs and the LA Design Products List for Engineered Barrier Systems Operations and Waste Package Operations. The impact of EDA II on the design of the surface facilities has not yet been determined. Neglecting potential impacts on schedule and costs due to step increases in staffing, the LA Design Products List is generally consistent with outyear budget profiles, assuming a twelve month slip in the LA schedule due to reduced funding in Fiscal Year 2000.

3. QUALITY EVALUATION

On the basis of an evaluation in accordance with QAP-2-0, *Conduct of Activities*, this document was determined to be a non-Q product. However, the quality-affecting aspects of the various Engineering Design Organization products required to support the LA milestone will be determined in accordance with applicable procedures.

4. SELECTION PHILOSOPHY FOR LA DESIGN PRODUCTS

The purpose of the LA is to describe the repository; the plans for its use; and the safety analyses that have been performed to demonstrate that a repository can be constructed, operated, and closed without undue risk to the health and safety of the public and workers. According to the NRC and as described in the LA, the facility is defined by its regulatory design basis and safety analyses; the SSCs; and the requirements for their design, construction, and operation. The repository must be described in sufficient detail such that when a change is needed, a determination can be made as to if, or how, the change affects the design, function, or performance of an SSC. Therefore, the safety

significant SSC description must be provided in the LA either by text, drawing, or other information.

The types of products that are necessary and sufficient to describe the repository in the LA are defined in *Level of Design Detail Necessary for the License Application for Construction Authorization* (CRWMS M&O 1999a). To describe the facility, the LA Design Products must present the safety case for the repository, which must demonstrate that the repository will meet the preclosure and postclosure performance objectives. To demonstrate that a repository can meet the preclosure safety objectives, potential hazards are identified, DBEs are analyzed, and the SSCs required to meet preclosure safety objectives are identified. Therefore, the LA includes a discussion of the following topics and how they relate to the facility:

- The process used to identify potential hazards
  - Perform a hazards analysis.
  - Determine potential DBEs.
- The process used to analyze DBEs
  - Develop event scenarios, including methods of analysis, key assumptions, and design features.
  - Prepare analytical models that include engineered SSC design features and performance characteristics.
  - Perform consequence analysis.
  - Compare results to the design criteria.
- Identification of SSCs required to meet preclosure safety objectives
  - Identify SSCs required to prevent or mitigate DBEs.
  - Develop SSC safety classifications and/or the Q-List (YMP 1998).

To demonstrate that a repository can meet postclosure performance objectives, a Total System Performance Assessment is performed. The LA includes a summary of the Total System Performance Assessment, including a discussion of the models, inputs, and assumptions that are used to demonstrate compliance with the postclosure performance objectives; representative discussions of the features, events, and processes (including disruptive events) that drive postclosure performance; and summaries of the contribution of the engineered barriers to the overall performance.

The results of the preclosure and postclosure safety analyses provide the basis for the safety classification of engineered SSCs. The level of design detail needed in the LA to demonstrate that a repository will not adversely impact the health and safety of the public and workers is commensurate with the resultant safety classification.

5. SAFETY CLASSIFICATION

Classifying the importance of SSCs to radiological safety or waste isolation is accomplished by the use of a graded quality assurance classification; this process is proceduralized in QAP-2-3. Classification is an iterative process that is updated as the design matures; as new information becomes available or the facility design is changed, reassessment of SSC safety importance and quality assurance controls will occur. Results of these classification analyses are captured in the project *Q-List* (YMP 1998). Changes in the *Q-List* may result in a revision of the LA Design Products List.

5.1 QUALITY LEVELS

The appropriate level of detail to include in the LA can be determined through the use of graded quality assurance classification. Since not all SSCs and quality assurance measures impact radiological safety or waste isolation with the same level of risk, the primary objective of a graded quality assurance program is to enhance safety by focusing on the more significant issues and reducing the focus on items of lesser safety significance. The classification of SSCs important to radiological safety and waste isolation is based on four different levels of quality.

- Quality Level 1 - SSCs whose failure could directly result in a condition adversely affecting public health
- Quality Level 2 - SSCs whose failure or malfunction could indirectly (i.e., through multiple failures) result in a condition adversely affecting public health, or whose failure could directly result in consequences in excess of normal operational offsite limits
- Quality Level 3 - SSCs that do not meet the definition of Quality Level 1 or 2, but provide discernible public and worker safety benefits
- Conventional Quality - SSCs that do not meet any of the criteria of Quality Levels 1, 2, or 3.

5.2 LEVEL OF DESIGN COMPLETION/DETAIL

Determining the appropriate level of detail for any LA is an evolutionary process based on the precedence established by previously licensed facilities and the uniqueness of the facility to be licensed. The focus of the LA submittal for CA is to provide documentation to the NRC that substantiates the conclusion that the repository can be constructed, operated, and eventually closed without unreasonable risk to the health and safety of the

public and workers. This documentation includes the design, design processes, and controls of the repository.

The information in the LA submittal will be based on, and supported by, various design products that will reside in the MGR records center. The design products themselves will not be in the LA, but portions and summaries of these products may be. The design products that provide the basis for the content of the LA must be fully defensible and traceable. This documentation includes the design, design processes, and programmatic controls of the repository.

The level of detail required for the LA for CA is described in *Level of Design Detail Necessary for the License Application for Construction Authorization* (CRWMS M&O 1999a). This information is summarized in the following paragraphs.

The LA Design Products should include summaries of safety analyses, resulting performance requirements, and any constraints on required SSCs. For preclosure safety analyses, the information in the LA Design Products should include the process to identify potential hazards, methods of DBE analysis, key assumptions and design features, and the results and consequences of the analyses. For postclosure safety analyses, the information in the LA Design Products should include models, inputs and assumptions, features, disruptive events and processes, and engineered barrier contributions to overall performance.

For the SSCs required to protect the public from DBEs or to meet postclosure performance objectives (Quality Level 1), the LA Design Products should address the following items, in the detail appropriate to support the regulatory design basis:

- Applicable codes and standards
- Design criteria and regulatory design bases
- General system description
- Piping and instrumentation diagrams
- Electrical one line diagrams
- General arrangement drawings
- Handling drawings.

For Quality Level 2 SSCs, the LA Design Products should address the following, as appropriate to support the regulatory design basis:

- Applicable codes and standards
- Design criteria
- General system description.

For Quality Level 3 SSCs, the LA Design Products should address the following, as appropriate to support the regulatory design basis:

- Design criteria
- General system description.

For Conventional Quality SSCs, the LA Design Products List will provide an adequate level of information that is sufficient to demonstrate the conventional quality classification.

In addition to the previous information needed to support the LA, sufficient information should be available to support the preclosure and postclosure safety analyses, and thus support the Quality Level determination. These LA Design Product include process flows (for systems involved in the handling of radioactive materials), general arrangement diagrams, general system descriptions, and concepts of operations.

6. LA DESIGN PRODUCTS

The type of information required to support the development of the LA for CA and the definitions of the Quality Levels are described in Sections 4 and 5. Using *Level of Design Detail Necessary for the License Application for Construction Authorization* (CRWMS M&O 1999a) and the Quality Level determined for each SSC, each system/SDD was reviewed by the appropriate design organization to determine the design products that are necessary and sufficient to support the LA. This systematic review determined which products support the text in the LA, the products that defend the safety argument, and as appropriate, the products necessary to demonstrate the feasibility of the concept or process presented in the LA. For example, some preliminary representative concepts of the types, sizes, and locations of major equipment that will be located in the Waste Handling Building are necessary to perform a preliminary Waste Handling Building structural analysis that demonstrates the feasibility of the MGR seismic design approach. This information is required even if the equipment itself will not be described in the LA.

The products listed in Attachment I, the LA Products Matrix, represent the necessary and sufficient set of products that provide a defensible and traceable LA. Typically, the text and figures that will be contained in the LA will be supported by these analyses.

A systematic review was performed for each SDD by integrated teams. The teams consisted of representatives from licensing, preclosure safety, and the appropriate design organizations. Using the Quality Level classifications and *Level of Design Detail Necessary for the License Application for Construction Authorization* (CRWMS M&O 1999a) as guidance, the integrated teams reviewed each system to identify the products necessary to directly support the LA and the products necessary to support the preclosure and postclosure safety analyses. In addition, products were identified that either support the products for the LA and/or preclosure or postclosure safety analyses (e.g., maximum equipment envelopes for major components in the Waste Handling Building) or were

necessary to demonstrate the application of a design process (e.g., such as that required for waste package design). As discussed in *Level of Design Detail Necessary for the License Application for Construction Authorization* (CRWMS M&O 1999a), the Quality Level 1 SSCs are described in more detail than other SSCs. The Quality Level 1 SSCs and the major types of products for each design organization are summarized in the following paragraphs.

There are three surface SDDs that have Quality Level 1 SSCs: the Waste Handling Building System (CRWMS M&O 1999w), the Assembly Transfer System (CRWMS M&O 1999ad), and the Canister Transfer System (CRWMS M&O 1999ae). Many of the surface design products identified in Attachment I are required to support a credible preclosure safety analysis, demonstrate the feasibility of the seismic design methodology for the Waste Handling Building, or provide basis documents for the LA. Also, many of the products will demonstrate that the application of the process and requirements described in the LA result in acceptable designs.

Many of the products from the Waste Package and Engineered Barrier Systems are required to support the preclosure and/or postclosure safety analyses, demonstrate the application of design processes, or demonstrate the feasibility of a concept. All of the Waste Package SDDs are classified as Quality Level 1 (CRWMS M&O 1999be, CRWMS M&O 1999bf, CRWMS M&O 1999bg, CRWMS M&O 1999bh, CRWMS M&O 1999bi, and CRWMS M&O 1999bj). Many of the associated Waste Package products are required to demonstrate the application of the processes to be used in the design of the waste packages. Three waste package designs will be used to demonstrate the design processes. In the subsurface facility, the Waste Emplacement System (CRWMS M&O 1999m), Waste Retrieval System (CRWMS M&O 1999q), Ex-Container System (CRWMS M&O 1999d), and Subsurface Facilities System (CRWMS M&O 1999c) all have Quality Level 1 SSCs. The LA design products for the subsurface facility provided by Engineered Barrier System Operations are typically required to demonstrate the feasibility of the implementation of design concepts.

Many of the LA Design Products provided by Repository Systems Operation establish requirements, support preclosure safety, and/or support postclosure safety. Examples of these products include SDDs, Compliance Packages, DBE analyses, Quality Level classifications, and To Be Determined/To Be Verified resolutions.

The system designators for the MGR systems are provided in Attachment II, System Designators. The LA Design Products are identified by system in Attachment I and represent those products required to support the LA. Comments are included where additional information may be useful to understand the role of the product and how it supports the LA. The LA Design Products in Attachment I do not represent the products that may be required for any reason other than to support the LA (e.g., products required to support obtaining permits, products required to support environmental impact statements, products required in order to maintain construction schedules, etc.).

7. REFERENCES

7.1 DOCUMENTS CITED

CRWMS M&O (Civilian Radioactive Waste Management System Management and Operating Contractor) 1999a. *Level of Design Detail Necessary for the License Application for Construction Authorization.* B00000000-01717-01710-00003 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990708.0065.

CRWMS M&O 1999b. *Mined Geologic Disposal System Architecture.* B00000000-01717-5700-00011 REV 02 ICN 01. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990713.0203.

CRWMS M&O 1999c. *Classification of the MGR Subsurface Facility System.* ANL-SFS-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0214.

CRWMS M&O 1999d. *Classification of the MGR Ex-Container System.* ANL-XCS-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0221.

CRWMS M&O 1999e. *Classification of the MGR Ground Control System.* ANL-GCS-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0217.

CRWMS M&O 1999f. *Classification of the MGR Subsurface Ventilation System.* ANL-SVS-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0219.

CRWMS M&O 1999g. *Classification of the MGR Subsurface Electrical Distribution System.* ANL-SED-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0195.

CRWMS M&O 1999h. *Classification of the MGR Subsurface Compressed Air System.* ANL-SCA-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0198.

CRWMS M&O 1999i. *Classification of the MGR Subsurface Water Distribution System.* ANL-SWD-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0220.

CRWMS M&O 1999j. *Classification of the MGR Performance Confirmation Emplacement Drift Monitoring System.* ANL-PCM-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0199.

CRWMS M&O 1999k. *Classification of the MGR Muck Handling System.* ANL-MHS-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0212.

CRWMS M&O 1999l. *Classification of the MGR Subsurface Development Transportation System.* ANL-SDT-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0197.

CRWMS M&O 1999m. *Classification of the MGR Waste Emplacement System.* ANL-WES-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990927.0477.

CRWMS M&O 1999n. *Classification of the MGR Backfill Emplacement System.* ANL-BES-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0144.

CRWMS M&O 1999o. *Classification of the MGR Subsurface Closure and Seal System.* ANL-SCS-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0145.

CRWMS M&O 1999p. *Classification of the MGR Subsurface Water Collection/Removal System.* ANL-SWC-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0127.

CRWMS M&O 1999q. *Classification of the MGR Waste Retrieval System.* ANL-WRS-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0213.

CRWMS M&O 1999r. *Classification of the MGR Subsurface Emplacement Transportation System.* ANL-SET-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0126.

CRWMS M&O 1999s. *Classification of the MGR Subsurface Excavation System.* ANL-SES-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0194.

CRWMS M&O 1999t. *Classification of the MGR Subsurface Fire Protection System.* ANL-SFR-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0192.

CRWMS M&O 1999u. *Classification of the MGR Performance Confirmation Waste Isolation Verification/Validation System.* ANL-PCV-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0193.

CRWMS M&O 1999v. *Classification of the MGR Site Layout System.* ANL-MSL-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0156.

CRWMS M&O 1999w. *Classification of the MGR Waste Handling Building System* ANL-HBS-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0184.

CRWMS M&O 1999x. *Classification of the MGR Waste Treatment Building System.* ANL-TBS-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0211.

CRWMS M&O 1999y. *Classification of the MGR Site Fire Protection System.* ANL-SFP-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0131.

CRWMS M&O 1999z. *Classification of the MGR Operations Monitoring and Control System.* ANL-OMC-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990927.0474.

CRWMS M&O 1999aa. *Classification of the MGR Carrier Preparation Building System.* ANL-CBS-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0188.

CRWMS M&O 1999ab. *Classification of the MGR Carrier Preparation Building Materials Handling System.* ANL-CMH-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0186.

CRWMS M&O 1999ac. *Classification of the MGR Carrier/Cask Handling System.* ANL-CCH-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0187.

CRWMS M&O 1999ad. *Classification of the MGR Assembly Transfer System.* ANL-ATS-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0215.

CRWMS M&O 1999ae. *Classification of the MGR Canister Transfer System.* ANL-CTS-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0185.

CRWMS M&O 1999af. *Classification of the MGR Waste Package Remediation System.* ANL-WPR-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0130.

CRWMS M&O 1999ag. *Classification of the MGR Disposal Container Handling System.* ANL-DCH-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0147.

CRWMS M&O 1999ah. *Classification of the MGR Carrier/Cask Transport System.* ANL-CCT-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0146.

CRWMS M&O 1999ai. *Classification of the MGR Waste Handling Building Electrical System.* ANL-HBE-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990927.0476.

CRWMS M&O 1999aj. *Classification of the MGR Waste Handling Building Ventilation System.* ANL-HBV-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990927.0475.

CRWMS M&O 1999ak. *Classification of the MGR Waste Treatment Building Ventilation System.* ANL-TVS-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0150.

CRWMS M&O 1999al. *Classification of the MGR Site Radiological Monitoring System.* ANL-SRM-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0128.

CRWMS M&O 1999am. *Classification of the MGR Waste Handling Building Fire Protection System.* ANL-HBF-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990927.0479.

CRWMS M&O 1999an. *Classification of the MGR Site-Generated Radiological Waste Handling System.* ANL-SRW-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0149.

CRWMS M&O 1999ao. *Classification of the MGR Emergency Response System.* ANL-ERS-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0222.

CRWMS M&O 1999ap. *Classification of the MGR Health Safety System.* ANL-HSS-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990927.0478.

CRWMS M&O 1999aq. *Classification of the MGR Site Communications System.* ANL-TCS-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0148.

CRWMS M&O 1999ar. *Classification of the MGR Site Water System.* ANL-SWS-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0179.

CRWMS M&O 1999as. *Classification of the MGR Site Electrical Power System.* ANL-SEP-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0196.

CRWMS M&O 1999at. *Classification of the MGR Site Compressed Air System.* ANL-TCA-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0151.

CRWMS M&O 1999au. *Classification of the MGR Site-Generated Hazardous, Nonhazardous & Sanitary Waste Disposal System.* ANL-SHZ-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0180.

CRWMS M&O 1999av. *Classification of the MGR Safeguards and Security System.* ANL-SSG-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0181.

CRWMS M&O 1999aw. *Classification of the MGR Surface Environmental Monitoring System.* ANL-SEM-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0182.

CRWMS M&O 1999ax. *Classification of the MGR Administration System.* ANL-ADS-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0153.

CRWMS M&O 1999ay. *Classification of the MGR Maintenance and Supply System.* ANL-MSS-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0152.

CRWMS M&O 1999az. *Classification of the MGR Site Operations System.* ANL-SOS-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0183.

CRWMS M&O 1999ba. *Classification of the MGR Off-Site Utilities System.* ANL-OUS-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0155.

CRWMS M&O 1999bb. *Classification of the MGR General Site Transportation System.* ANL-GST-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0129.

CRWMS M&O 1999bc. *Classification of the MGR Performance Confirmation Data Acquisition/Monitoring System.* ANL-PCA-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0154.

CRWMS M&O 1999bd. *Classification of the MGR Pool Water Treatment and Cooling System.* ANL-PLS-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0191.

CRWMS M&O 1999be. *Classification of the MGR Uncanistered SNF Disposal Container.* ANL-UDC-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0216.

CRWMS M&O 1999bf. *Classification of the MGR Canistered SNF Disposal Container.* ANL-CDC-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0143.

CRWMS M&O 1999bg. *Classification of the MGR Defense High Level Waste Disposal Container.* ANL-DDC-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0142.

CRWMS M&O 1999bh. *Classification of the MGR DOE Spent Nuclear Fuel Disposal Container.* ANL-EDC-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0141.

CRWMS M&O 1999bi. *Classification of the MGR Non-Fuel Components Disposal Container.* ANL-NDC-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0140.

CRWMS M&O 1999bj. *Classification of the MGR Naval Spent Nuclear Fuel Disposal Container.* ANL-VDC-SE-000001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990928.0218.

Wilkins, D.R. 1999. "Direction to Transition to Enhanced Design Alternative II." Memorandum from D.R. Wilkins (Yucca Mountain Site Characterization Project) to Distribution, June 15, 1999, LV.NS.JLY.06/99-026, with enclosures. ACC: MOL.199990622.0126 and MOL.199990622.0127.

YMP (Yucca Mountain Site Characterization Project) 1998. *Technical Guidance Document for License Application Preparation.* YMP/97-03, REV 0. Las Vegas, Nevada: Yucca Mountain Site Characterization Office. ACC: MOL.19990104.0465.

YMP 1998. *Q-List.* YMP/90-55Q, REV 05. Las Vegas, Nevada: Yucca Mountain Site Characterization Office. ACC: MOL.19980513.0132.

7.2 PROCEDURES

QAP-2-0, Rev. 05. *Conduct of Activities.* ACC: MOL.19980826.0209.

QAP-2-3, Rev. 10. *Classification of Permanent Items.* ACC: MOL.19990316.0006.

8. ATTACHMENTS

Attachment I	LA Products Matrix
Attachment II	System Designators

ATTACHMENT I

LA Products Matrix

Engineering & Design Products for LA

Product Description	Org	Description/Comments
ADS - Administration System	**QL: CQ**	
Quality Level Classification	RSO	
SDD Section 1	RSO	Summary description & functions
ATS - Assembly Transfer System	**QL: 1, 2, 3, CQ**	
Quality Level Classification	RSO	
SDD Section 1	RSO	
SDD Section 2 Executive Summary	RSD	
SDD Section 2 System Description & Compliance	RSD	
Engineering Compliance Package	RSO	
Cask Preparation System Maximum Equipment Envelopes (MEEs)	RSD	MEEs of major equipment
Cask Preparation Mechanical System Analysis	RSD	General description to describe operation
Cask Material Handling Flow Diagrams	RSD	Material Flow Diagrams (MFDs)
Cask Equipment Arrangements	RSD	Equipment GAs - sketches for major equipment
Cask/DPC Unloading/Staging Mechanical System Analysis	RSD	General description to describe operation
Cask/DPC Unloading/Staging Material Handling Flow Diagrams	RSD	MFDs
Cask/DPC Unloading/Staging SNF Baskets Analysis	RSD	Description of baskets - size, configuration, material
Cask/DPC Unloading /Staging SNF Basket Racks in Pools Analysis	RSD	Description of basket racks - size configuration, material, operational movements
Dry ATS Preliminary Prototype Specifications	RSD	Outline specification
Dry ATS Mechanical System Analysis	RSD	General description to define operation and major equipment; needed to size building and design structure
Dry ATS Material Handling Flow Diagrams	RSD	MFDs
Dry ATS Equipment Arrangements	RSD	Equipment GAs - sketches for major equipment
DC Loading Preliminary Prototype Specifications	RSD	Outline specification
DC Loading Mechanical System Analysis	RSD	General description to define operation and major equipment; needed to size building and design structure
DC Loading Material Handling Flow Diagrams	RSD	MFDs
DC Loading Equipment Arrangements	RSD	Equipment GAs - sketches for major equipment
DC Inerting/Decon Preliminary Prototype Specifications	RSD	Outline specification
DC Inerting/Decon Mechanical System Analysis	RSD	General description to define operation and major equipment; needed to size building and design structure
DC Inerting/Decon Material Handling Flow Diagrams	RSD	General description of flow among major pieces of equipment
DC Inerting/Decon Equipment Arrangements	RSD	Equipment GAs - sketches for major equipment
Cask Prep/Cooldown Support Maximum Equipment Envelopes	RSD	MEEs for major equipment
Cask Prep/Cooldown Support Equipment Arrangements	RSD	Equipment GAs - sketches for major equipment
Cask Prep/Cooldown Process Equipment Selection Analysis	RSD	General description to define operation and major equipment; needed to size building and design structure
Assembly Drying Maximum Equipment Envelopes	RSD	MEEs for major equipment
Assembly Drying Equipment Arrangements	RSD	Equipment GAs - sketches for major equipment
Assembly Drying Process Equipment Selection Analysis	RSD	General description to define operation and major equipment; needed to size building and design structure
Assembly Drying Utility/Waste Summaries	RSD	Preliminary waste descriptions

RSO-Repository System Operation
RSD-Repository Surface Design
EBS-Engineered Barrier System
WP-Waste Package

QL1 - Quality Level 1
QL2 - Quality Level 2
QL3 - Quality Level 3
CQ - Conventional Quality

Engineering & Design Products for LA

Product Description	Org.	Description/Comments
BES - Backfill Emplacement System	**QL: 2**	
Quality Level Classification	RSO	
SDD Section 1	RSO	
SDD Section 2 Executive Summary	EBS	
SDD Section 2 System Description & Compliance	EBS	
Engineering Compliance Package	RSO	
Backfill Emplacement Methodology	EBS	Demonstrate feasibility of concept
Backfill Operations I&C System Concepts	EBS	
CBS - Carrier Preparation Building System	**QL: CQ**	
Quality Level Classification	RSO	
SDD Section 1	RSO	
CPB GA Building Floor Plans	RSD	GAs - sketches
CPB Space Program Analysis	RSD	Custom analysis
CPB Schematic Building - Floor Plans	RSD	GAs - sketches
CPB Schematic Building - Sections	RSD	GAs - sketches
CPB Schematic Building - Elevations	RSD	GAs - sketches
CPB Fire Hazards Analysis	RSD	Narrative w/sketches to show fire protection zones and fire barriers
HVAC Systems Analysis	RSD	General description and load definition
CPB ALARA Studies	RSD	Custom analysis
CPB Radiological Zone Plan	RSD	Plan drawings - sketches
CCH - Carrier/Cask Handling System	**QL: 1,2,3, CQ**	
Quality Level Classification	RSO	
SDD Section 1	RSO	
SDD Section 2 Executive Summary	RSD	
SDD Section 2 System Description & Compliance	RSD	
Engineering Compliance Package	RSO	
Mechanical System Analysis	RSD	Update general description w/sketches to show material flow and major equipment location in Carrier Bay; minimum detail for safety
CCT - Carrier/Cask Transport System	**QL: CQ**	
Quality Level Classification	RSO	
SDD Section 1	RSO	

RSO-Repository System Operation
RSD-Repository Surface Design
EBS-Engineered Barrier System
WP-Waste Package

QL1 - Quality Level 1
QL2 - Quality Level 2
QL3 - Quality Level 3
CQ - Conventional Quality

Engineering & Design Products for LA

Product Description	Org	Description/Comments
CDC - Canistered SNF Disposal Container	**QL: 1**	
Quality Level Classification	RSO	
SDD Section 1	RSO	
SDD Section 2 Executive Summary	WP	
SDD Section 2 System Description & Compliance	WP	
Engineering Compliance Package	RSO	
GMHC - CPB Material Handling System	**QL: 2**	
Quality Level Classification	RSO	
SDD Section 1	RSO	
SDD Section 2 Executive Summary	RSD	
SDD Section 2 System Description & Compliance	RSD	
Engineering Compliance Package	RSO	
Mechanical System Analysis	RSD	General description w/sketches to show process flow and major equipment location; minimum detail to show safety risk
CTS - Canister Transfer System	**QL: 1, 2, 3, CQ**	
Quality Level Classification	RSO	
SDD Section 1	RSO	
SDD Section 2 Executive Summary	RSD	
SDD Section 2 System Description & Compliance	RSD	
Engineering Compliance Package	RSO	
Cask Prep Mechanical System Analysis	RSD	General description to define operation and major equipment; needed to size building and design structure
Cask Prep Material Handling Flow Diagrams	RSD	MFDs
Cask Prep Equipment Arrangements	RSD	Equipment GAs - sketches for major equipment
Canister Transfer/Staging Mechanical System Analysis	RSD	General description to define operation and major equipment; needed to size building and design structure
Cask Prep/Purge Support Maximum Equipment Envelopes	RSD	MEEs for major equipment
Cask Prep/Purge Support Equipment Arrangements	RSD	Equipment GAs - sketches for major equipment
Cask Prep/Purge Support Process System Analysis	RSD	General description to define operation and major equipment; needed to size building and design structure

RSO-Repository System Operation
RSD-Repository Surface Design
EBS-Engineered Barrier System
WP-Waste Package

QL1 - Quality Level 1
QL2 - Quality Level 2
QL3 - Quality Level 3
CQ - Conventional Quality

Product Description	Org	Description/Comments
DCH - Disposal Container Handling System	**QL-2, CQ**	
Quality Level Classification	RSO	
SDD Section 1	RSO	
SDD Section 2 Executive Summary	RSD	
SDD Section 2 System Description & Compliance	RSD	
Engineering Compliance Package	RSO	
DC Handling/Staging Mechanical System Analysis	RSD	General description to define operation and major equipment; needed to size building and design structure
DC Handling/Staging Material Handling Flow Diagrams	RSD	MFDs
DC Handling/Staging Equipment Arrangements	RSD	Equipment GAs - sketches for major equipment
DC Welding/Inspection Equipment Selection Analysis	WP	Select analysis
DC Welding/Inspection Prototype Specifications	WP	Outline specifications.
DC Welding/Inspection Mechanical System Analysis	WP	Select analysis
DC Welding/Inspection Material Handling Flow Diagrams	WP	MFDs
DC Welding/Inspection Equipment Arrangements	WP	Equipment GAs
DC Welding maintenance/Service Mechanical System Analysis	WP	General description of weld maintenance/service/DC preparation
DC Welding Maintenance/Service Material Handling Flow Diagrams	WP	MFDs
Welding Equipment Drawings	WP	Welding and non-destructive examination equipment
DC Transporter Loading Mechanical System Analysis	RSD	General description to define operation and major equipment; needed to size building and design structure
DC Transporter Loading Material Handling Flow Diagrams	RSD	MFDs
DC Inerting Support Maximum Equipment Envelopes	RSD	MEEs for major equipment
DC Inerting Support Equipment Arrangements	RSD	Equipment GAs - sketches for major equipment
DC Inerting System Process Equipment Selection Analysis	RSD	General description to define operation and major equipment; needed to size building and design structure
DC Decon Support Process Equipment Selection Analysis	RSD	General description to define operation and major equipment; needed to size building and design structure
DDC - Defense High Level Waste Disposal Container	**QL-1**	
Quality Level Classification	RSO	
SDD Section 1	RSO	
SDD Section 2 Executive Summary	WP	
SDD Section 2 System Description & Compliance	WP	
Engineering Compliance Package	RSO	
Defense High level Waste Disposal Drawings	WP	Basic view, barriers, fuel basket, internals, supported by waste package material, structural, criticality, thermal and risk analyses
EDC - DOE SNF Disposal Container	**QL-1**	
Quality Level Classification	RSO	
SDD Section 1	RSO	
SDD Section 2 Executive Summary	WP	

RSO-Repository System Operation
RSD-Repository Surface Design
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QL1 - Quality Level 1
QL2 - Quality Level 2
QL3 - Quality Level 3
CQ - Conventional Quality

Engineering & Design Products for LA

Product Description	Org	Description/Comments
SDD Section 2 System Description & Compliance	WP	
Engineering Compliance Package	RSO	
ERS - Emergency Response System	**QL: 3; CQ**	
Quality Level Classification	RSO	
SDD Section 1	RSO	
SDD Section 2 Executive Summary	RSD	
Engineering Compliance Package	RSO	
Fire Protection System Analysis	RSD	Simple scoping analysis
GCS - Ground Control Systems	**QL: 2; CQ**	Management decision to provide level of detail commensurate to QL1 systems
Quality Level Classification	RSO	
SDD Section 1	RSO	
SDD Section 2 Executive Summary	EBS	
SDD Section 2 System Description & Compliance	EBS	
Engineering Compliance Package	RSO	
Ground Control for Emplacement & Non-emplacement Drifts	EBS	Demonstrate methodology
Longevity of Emplacement Drift Materials	EBS	Demonstrate methodology
Earthquake Design Analysis	EBS	Demonstrate methodology
Design Parameters for Ground Control	EBS	Demonstrate methodology
Rock Bolt Analysis	EBS	Demonstrate methodology
Steel Set Analysis	EBS	Demonstrate methodology
Rock Mass Classification Analysis	EBS	Demonstrate methodology
Drift Design Guide	EBS	Demonstrate methodology
Maintenance Analysis	EBS	Demonstrate methodology
In-Situ Test Analysis	EBS	
GST - General Site Transportation System	**QL: CQ**	
Quality Level Classification	RSO	
SDD Section 1	RSO	Summary description & functions
HBE - WHB Electrical System	**QL: 2; CQ**	
Quality Level Classification	RSO	
SDD Section 1	RSO	
SDD Section 2 Executive Summary	RSD	
SDD Section 2 System Description & Compliance	RSD	
Engineering Compliance Package	RSO	
Electrical Load Analysis	RSD	Select analyses
Electrical Design Analysis	RSD	General description to define operation, grounding, cable size & space, & major equipment; needed to size building & design structure
Electrical Equipment Arrangements	RSD	Equipment GAs - sketches for major equipment

RSO-Repository System Operation
RSD-Repository Surface Design
EBS-Engineered Barrier System
WP-Waste Package

QL1 - Quality Level 1
QL2 - Quality Level 2
QL3 - Quality Level 3
CQ - Conventional Quality

Engineering & Design Products for LA

Product Description	Org	Description/Comments
HBF - WHB Fire Protection System	**QL: 1,2**	
Quality Level Classification	RSO	
SDD Section 1	RSO	
SDD Section 2 Executive Summary	RSD	
SDD Section 2 System Description & Compliance	RSD	
Engineering Compliance Package	RSO	
Fire Hazards Analysis	RSD	Narrative description of fire & explosion detection & suppression w/sketches to show fire protection zones and fire barriers
HBS - Waste Handling Building System	**QL: 1,2,CQ**	
Quality Level Classification	RSO	
SDD Section 1	RSO	
SDD Section 2 Executive Summary	RSD	
SDD Section 2 System Description & Compliance	RSD	
Engineering Compliance Package	RSO	
WHB GA Building Floor Plans	RSD	GAs - sketches
WHB Space Program Analysis	RSD	Custom analysis
WHB Architectural Analysis	RSD	Select analysis; detail based on design tornado/earthquake
WHB Schematic Building - Floor Plans	RSD	GAs - sketches
WHB Schematic Building - Sections	RSD	GAs - sketches
WHB Schematic Building - Elevations	RSD	GAs - sketches
WHB Schematic Building - Roof Plans	RSD	GAs - sketches
WHB Control Station Arrangement	RSD	Supports building sizing; sketches
Cask Drop Structural Analysis	RSD	Determine maximum cask drop height based on known casks
WHB Earthquake Analysis	RSD	Custom Analysis
WHB Structural Analysis	RSD	Select Analysis
WHB Foundation Analysis	RSD	Custom Analysis
WHB Structural Report	RSD	Custom Analysis
WHB Preliminary Foundation Plan	RSD	Plan Drawings - sketches
WHB Preliminary Roof and Floor Framing	RSD	Plan Drawings - sketches
WHB Preliminary Typical Cross Sections	RSD	GAs - sketches
Shield Doors, Windows, and Hatches Equipment Selection Analysis	RSD	Support building sizing/structural design; define design criteria; define window location to support concept of operations
WHB Maintenance Support Equipment Mechanical System Analysis	RSD	Basis for facility design & space allocation; maintenance philosophy; for ATS/CTS; equipment location; space requirements.
WHB Radiation Shielding Analysis	RSD	Select analysis
Criticality Safety Analysis	RSD	Custom analysis - SNF baskets and basket racks in the ATS
WHB ALARA Studies	RSD	Custom analysis
WHB Radiation Dose Assessment	RSD	Custom analysis
WHB Radiological Zone Plan	RSD	Plan drawings - sketches

RSO-Repository System Operation
RSD-Repository Surface Design
EBS-Engineered Barrier System
WP-Waste Package

QL1 - Quality Level 1
QL2 - Quality Level 2
QL3 - Quality Level 3
CQ - Conventional Quality

Engineering & Design Products for LA

Product Description	Org	Description/Comments
LLW Collection/Transfer Maximum Equipment Envelopes	RSD	MEEs for major equipment
LLW Collection/Transfer Equipment Arrangements	RSD	Equipment GAs - sketches for major equipment
LLW Collection Transfer Process Equipment Selection Analysis	RSD	Narrative-minimum detail to show safety risk & description of operations; sketches of process flow; waste summaries; hydraulic analyses
Cask Decon Support Equipment Arrangements	RSD	Equipment GAs - sketches for major equipment
Cask Decon Support Process System Analysis	RSD	Narrative-minimum detail to show safety risk & description of operations; sketches of process flow; waste summaries; hydraulic analyses
Cask Decon Support Maximum Equipment Envelopes	RSD	MEEs for major equipment
HBV-WHB Ventilation System	**QL-2; CQ**	
Quality Level Classification	RSO	
SDD Section 1	RSO	
SDD Section 2 Executive Summary	RSD	
SDD Section 2 System Description & Compliance	RSD	
Engineering Compliance Package	RSO	
HVAC System Analysis	RSD	General description and load definition; include exhaust stack monitoring; basis for building description and structure design
HVAC Duct Sizing/ Layout Analysis	RSD	Engineering select analysis and sketches
HVAC Flow and Control Diagrams	RSD	Process Flow Diagrams (PFDs)
HVAC Confinement Zone Plans	RSD	Engineering and plan drawings. - sketches
HVAC Equipment Drawings	RSD	MEEs for major equipment
HVAC Equipment arrangements	RSD	Sketches for major equipment rooms
HSS-Health Safety System	**QL; CQ**	
Quality Level Classification	RSO	
SDD Section 1	RSO	Summary description & functions
MHS-Muck Handling System	**QL; CQ**	
Quality Level Classification	RSO	
SDD Section 1	RSO	
Subsurface Muck Handling & Disposal Concept	EBS	Scoping analysis
MSL-MGR Site Layout	**QL; CQ**	
Quality Level Classification	RSO	
SDD Section 1	RSO	
Site Layout Analysis	RSD	Includes sketches
Flooding Analysis	RSD	Design criteria
Engineering Files to Support LA (EFLA)	RSD	

RSO-Repository System Operation
RSD-Repository Surface Design
EBS-Engineered Barrier System
WP-Waste Package

QL1 - Quality Level 1
QL2 - Quality Level 2
QL3 - Quality Level 3
CQ - Conventional Quality

Engineering & Design Products for LA

Product Description	Org	Description/Comments
MSS - Maintenance & Supply System	**QL: CQ**	
Quality Level Classification	RSO	
SDD Section 1	RSO	Summary description & functions
NDC - Non-Fuel Components Disposal Container	**QL: 1**	
Quality Level Classification	RSO	
SDD Section 1	RSO	
SDD Section 2 Executive Summary	WP	
SDD Section 2 System Description & Compliance	WP	
Engineering Compliance Package	RSO	
OMC - MGR Operations Monitoring and Control System	**QL: 2**	
Quality Classification	RSO	
SDD Section 1	RSO	
SDD Section 2 Executive Summary		
SDD Section 2 System Description & Compliance		
Engineering Compliance Package	RSO	
Subsurface Integrated Control System Design	EBS	Demonstrate feasibility of concepts
Subsurface Repository Data Communication Standards	EBS	
Subsurface Safety and Monitoring Design Concepts	EBS	Includes block diagrams
OUS - Offsite Utilities System	**QL: CQ**	
Quality Level Classification	RSO	
SDD Section 1	RSO	Summary description & functions
PCA - Performance Confirmation Data Acquisition/Monitoring System	**QL: 2 QL: 3**	
Quality Level Classification	RSO	
SDD Section 1	RSO	
SDD Section 2 Executive Summary	EBS	
Engineering Compliance Package	RSO	
Performance Confirmation Data Acquisition System Analysis	EBS	
PCM - Performance Confirmation Emplacement Drift Monitoring System	**QL: 2 QL: 3**	
Quality Classification	RSO	
SDD Section 1	RSO	
SDD Section 2 Executive Summary	EBS	
Engineering Compliance Package	RSO	
PC Emplacement Drift Monitoring System Design Concepts	EBS	

RSO-Repository System Operation
RSD-Repository Surface Design
EBS-Engineered Barrier System
WP-Waste Package

QL1 - Quality Level 1
QL2 - Quality Level 2
QL3 - Quality Level 3
CQ - Conventional Quality

Product Description	Org	Description/Comments
PCV - Performance Confirmation Waste Isolation Verification/Validation System	QL: 3	
Quality Level Classification	RSO	
SDD Section 1	RSO	
Engineering Compliance Package	RSO	
SDD Section 2 Executive Summary	RSO	
PLS - Pool Water Treatment & Cooling System	QL: 2,3; CQ	
Quality Level Classification	RSO	
SDD Section 1	RSO	
SDD Section 2 Executive Summary	RSD	
SDD Section 2 System Description & Compliance	RSD	
Engineering Compliance Package	RSO	
Pool Water Treatment/Cooling Maximum Equipment Envelopes	RSD	MEEs for major equipment
Pool Water Treat/Cooling Equipment Arrangements	RSD	Equipment GAs - sketches for major equipment
Pool Water Treat/Cooling Process Equipment Selection Analysis	RSD	General description to define operation and major equipment; needed to size building and design structure
Pool Water Treat/Cooling Utility/ Waste Summaries	RSD	Treatment only
Pool Water Treat/Cooling Hydraulic Analysis (Line & Flow)	RSD	Treatment only
Pool Water Treat/Cooling Process System Analysis	RSD	Treatment only
Pool Water Treat/Cooling Process Flow Diagrams (PFDs)	RSD	Treatment and cooling
Pool Water Treat/Cooling Piping & Instrument Diagrams (P&IDs)	RSD	Treatment only
SCA - Subsurface Compressed Air Systems	QL: CQ	
Quality Level Classification	RSO	
SDD Section 1	RSO	
Subsurface Compressed Air System	EBS	Scoping analysis for SDD support
SCS - Subsurface Closure & Sealing System	QL: CQ	
Quality Level Classification	RSO	
SDD Section 1	RSO	
Closure Sealing Approach	EBS	Concept demonstration
SDT - Subsurface Development Transportation System	QL: CQ	
Quality Level Classification	RSO	
SDD Section 1	RSO	
Subsurface Development Transportation System Analysis	EBS	Sufficient to support SDD
SED - Subsurface Electrical Distribution Systems	QL: CQ	
Quality Level Classification	RSO	
SDD Section 1	RSO	
Electrical Load Study	EBS	Includes general arrangements & process illustrations, as appropriate

RSO-Repository System Operation
RSD-Repository Surface Design
EBS-Engineered Barrier System
WP-Waste Package

QL1 - Quality Level 1
QL2 - Quality Level 2
QL3 - Quality Level 3
CQ - Conventional Quality

Engineering & Design Products for LA

Product Description	Org	Description/Comments
SEM - Surface Environmental Monitoring System	**QL: 3**	
Quality Level Classification	RSO	
SDD Section 1	RSO	
SDD Section 2 Executive Summary	RSD	
Engineering Compliance Package	RSO	
SEP - Site Electrical Power System	**QL: CQ**	
Quality Level Classification	RSO	
SDD Section 1	RSO	Summary description & functions
General Description	RSD	Simple scoping analysis
SES - Subsurface Excavation System	**QL: CQ**	
Quality Level Classification	RSO	
SDD Section 1	RSO	
Subsurface Excavation Methodology	EBS	Supports general description
SET - Subsurface Emplacement Transportation System	**QL: CQ**	
Quality Level Classification	RSO	
SDD Section 1	RSO	Update SDDs & define interfaces
SS Emplacement Transportation System (Rails, etc.)	EBS	General arrangements & process illustrations (3D) included in analysis
SFP - Site Fire Protection System	**QL: 2**	
Quality Level Classification	RSO	
SDD Section 1	RSO	Summary description & functions
SDD Section 2 Executive Summary		
SDD Section 2 System Description & Compliance		
Engineering Compliance Package		
SFR - Subsurface Fire Suppression System	**QL: CQ**	
Quality Level Classification	RSO	
SDD Section 1	RSO	
Fire Hazards Scoping Report	EBS	
Emplacement Fire Protection System	EBS	

RSO-Repository System Operation
RSD-Repository Surface Design
EBS-Engineered Barrier System
WP-Waste Package

QL1 - Quality Level 1
QL2 - Quality Level 2
QL3 - Quality Level 3
CQ - Conventional Quality

Engineering & Design Products for LA

Product Description	Org	Description/Comments
SFS - Subsurface Facility System	**QL-1, CQ**	
Quality Level Classification	RSO	
SDD Section 1	RSO	
SDD Section 2 Executive Summary	EBS	
SDD Section 2 System Description & Compliance	EBS	
Engineering Compliance Package	RSO	
Site Geology & Emplacement Volume Analysis	EBS	Supports postclosure safety analysis
Overall Subsurface Layout (EDA II Concept) Analysis	EBS	Demonstrate feasibility of concept
Thermal Calculations - ANSYS	EBS	
Thermal Calculations - Multiflux	EBS	
Thermal Management - Optimization EDA II	EBS	
SDD Criteria - Repository Horizon Definition	EBS	Supports SDD Section 1
SDD Criteria - Ground Water Standoff	EBS	Supports SDD Section 1
SDD Criteria - Major Fault Standoff	EBS	Supports SDD Section 1
SDD Criteria - Identification of Type One Faults	EBS	Supports SDD Section 1
Emplacement Drift Configuration	EBS	Supports post closure safety analysis
Emplacement Access Ramps & Mains	EBS	
Ventilation Raises & Airways	EBS	
Ventilation Shafts Configuration	EBS	
Subsurface Operations Approach	EBS	Demonstrate feasibility of approach
SHZ - Site Generated Hazardous, Nonhazardous & Sanitary Waste Disposal System	**QL, CQ**	
Quality Level Classification	RSO	
SDD Section 1	RSO	Summary description & functions
SOS - Site Operations System	**QL, CQ**	
Quality Level Classification	RSO	
SDD Section 1	RSO	Summary description & functions
SRM - Site Radiological Monitoring System	**QL, CQ**	
Quality Level Classification	RSO	
SDD Section 1	RSO	
SDD Section 2 Executive Summary	RSD	
Engineering Compliance Package	RSO	
Radiological Protection System Analysis	RSD	General descriptions of requirements and criteria

RSO-Repository System Operation
RSD-Repository Surface Design
EBS-Engineered Barrier System
WP-Waste Package

QL1 - Quality Level 1
QL2 - Quality Level 2
QL3 - Quality Level 3
CQ - Conventional Quality

Product Description	Org	Description/Comments
SRW - Site-Generated Radioactive Waste Handling System	**QL: 2**	
Quality Level Classification	RSO	
SDD Section 1	RSO	
SDD Section 2 Executive Summary	RSD	
SDD Section 2 System Description & Compliance	RSD	
Engineering Compliance Package	RSO	
Solid LLW Maximum Equipment Envelopes	RSD	MEEs for major equipment
Solid Equipment Arrangements	RSD	Equipment GAs - sketches for major equipment
Solid Process Equipment Selection Analysis	RSD	General description and load definition; include exhaust stack monitoring; basis for building description and structure design
Liquid LLW Maximum Equipment Envelopes	RSD	MEEs for major equipment
Liquid LLW Equipment Arrangements	RSD	Equipment GAs - sketches for major equipment
Liquid LLW Process Equipment Selection Analysis	RSD	General description and load definition; include exhaust stack monitoring; basis for building description and structure design
Chemical LLW Maximum Equipment Envelopes	RSD	MEEs for major equipment
Chemical LLW Equipment Arrangements	RSD	Equipment GAs - sketches for major equipment
Chemical LLW Process Equipment Selection Analysis	RSD	General description and load definition; include exhaust stack monitoring; basis for building description and structure design
SSG - Security and Safeguards System	**QL: CQ**	
Quality Level Classification	RSO	
SDD Section 1	RSO	
Security Barrier System Site Plans	RSD	Site drawings - sketches superimposed on site layout
SVS - Subsurface Ventilation Systems	**QL: CQ**	Management decision to provide level of detail commensurate to QL1 systems
Quality Level Classification	RSO	
SDD Section 1	RSO	
SDD Section 2 Executive Summary	EBS	
SDD Section 2 System Description & Compliance	EBS	
Emplacement Drift Isolation Door Control System	EBS	
Subsurface Ventilation Monitoring and Control	EBS	
Drift Isolation Doors	EBS	General arrangements & process illustrations (3D) included in analysis
Emplacement Ventilation Network Simulations	EBS	Demonstrate feasibility of concept
Emplacement Ventilation System	EBS	Demonstrate feasibility of concept
Airflow to Meet Emplacement Temperature Goals	EBS	Demonstrate feasibility of concept
Airflow for Retrieval Blast Cooling	EBS	Demonstrate feasibility of concept
Airflow for Remote & Human Access	EBS	Demonstrate feasibility of concept
Airflows required for Accessible Areas	EBS	Demonstrate feasibility of concept
Ventilation Shaft Siting	EBS	Demonstrate feasibility of concept

RSO-Repository System Operation
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QL1 - Quality Level 1
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Engineering & Design Products for LA

Product Description	Org	Description/Comments
Overall Ventilation System	EBS	Demonstrate feasibility of concept
SWC - Subsurface Water Collection/Removal System	QL: CQ	
Quality Level Classification	RSO	
SDD Section 1	RSO	
Subsurface Water Collection /Removal System Analysis	EBS	Supports general description
SWD - Subsurface Water Distribution System	QL: CQ	
Quality Level Classification	RSO	
SDD Section 1	RSO	
Emplacement Operations Water Usage	EBS	
Fire Suppression Water System	EBS	
SWS - Site Water System	QL: CQ	
Quality Level Classification	RSO	
SDD Section 1	RSO	Summary description & functions
TBS - Waste Treatment Building System	QL: 2*3 CQ	
Quality Level Classification	RSO	
SDD Section 1	RSO	
SDD Section 2 Executive Summary	RSD	
SDD Section 2 System Description & Compliance	RSD	
Engineering Compliance Package	RSO	
WTB GA Building Floor Plans	RSD	GAs - sketches to support building description and structural design
WTB Space Program Analysis	RSD	Custom analysis
WTB Schematic Building. Floor Plans	RSD	GAs - sketches
WTB Schematic Building. Sections	RSD	GAs - sketches
WTB Schematic Building. Elevations	RSD	GAs - sketches
WTB Fire Hazards Analysis	RSD	Custom analysis - narrative w/sketches to show detection and suppression systems, fire protection zones, and fire barriers
WTB ALARA Studies	RSD	Custom analysis
WTB Radiological Zone Plan	RSD	Plan drawings - sketches
TCA - Site Compressed Air System	QL: CQ	
Quality Level Classification	RSO	
SDD Section 1	RSO	Summary description & functions

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Product Description	Org	Description/Comments
TCS - Site Communications System	**QL: CQ**	
Quality Level Classification	RSO	
SDD Section 1	RSO	
Communications Design Analysis	RSD	Simple scoping analysis
TVS - WTB Ventilation System	**QL: 2, CQ**	
Quality Level Classification	RSO	
SDD Section 1	RSO	
SDD Section 2 Executive Summary	RSD	
SDD Section 2 System Description & Compliance	RSD	
Engineering Compliance Package	RSO	
HVAC System Analysis	RSD	General description and load definition; include exhaust stack monitoring; basis for building description and structure design
HVAC Flow and Control Diagrams	RSD	PFDs
HVAC Confinement Zone Plans	RSD	Plan drawings - sketches
HVAC Equipment Drawings	RSD	MEEs for major equipment
HVAC Equipment Arrangements	RSD	Sketches for major equipment/duct analyses
UDC - Uncanistered SNF Disposal Container	**QL: 1, Q**	
Quality Level Classification	RSO	
SDD Section 1	RSO	
SDD Section 2 Executive Summary	WP	
SDD Section 2 System Description & Compliance	WP	
Engineering Compliance Package	RSO	
Uncanistered SNF Disposal Container Drawings	WP	Basic view, barriers, fuel basket, internals, supported by waste package material, structural, criticality, thermal and risk analyses
VDC - Naval SNF Disposal Container	**QL: 1**	
Quality Level Classification	RSO	
SDD Section 1	RSO	
SDD Section 2 Executive Summary	WP	
SDD Section 2 System Description & Compliance	WP	
Engineering Compliance Package	RSO	
Naval SNF Disposal Container Drawings	WP	Basic view, barriers, fuel basket, internals, supported by waste package material, structural, criticality, thermal and risk analyses

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Engineering & Design Products for LA

Product Description	Org	Description/Comments
WES - Waste Emplacement System	**QL: 1, 2, CQ**	
Quality Level Classification	RSO	
SDD Section 1	RSO	
SDD Section 2 Executive Summary	RSO/EBS	
SDD Section 2 System Description & Compliance	RSO/EBS	
Engineering Compliance Package	RSO	
Waste Transportation and Emplacement Monitoring and Control	EBS	Demonstrate concept
Emplacement System Control and Communication Analysis	EBS	
Emplacement Gantry Analysis	EBS	General arrangements & process illustrations (3D) included in analysis, demonstrate feasibility
Emplacement Drift Transfer Dock Analysis	EBS	General arrangements & process illustrations (3D) included in analysis, demonstrate feasibility
Instrumentation & Controls for Waste Emplacement Analysis	EBS	General arrangements & process illustrations (3D) included in analysis, demonstrate feasibility
Emplacement Gantry and Carrier Analysis	EBS	General arrangements & process illustrations (3D) included in analysis, demonstrate feasibility
Transporter Safety System Analysis	EBS	General arrangements & process illustrations (3D) included in analysis, demonstrate feasibility
Transport Locomotives w/ Shielding and Brakes Analysis	EBS	General arrangements & process illustrations (3D) included in analysis, demonstrate feasibility
Shielded WP Transporter and Transfer System Analysis	EBS	General arrangements & process illustrations (3D) included in analysis, demonstrate feasibility
Transporter Equipment Shielding Calculations	EBS	
Reliability Analysis Support for Transporter Design	EBS	Supports preclosure safety analysis
WPR - Waste Package Remediation System	**QL: 2, CQ**	
Quality Level Classification	RSO	
SDD Section 1	RSO	
SDD Section 2 Executive Summary	RSD	
SDD Section 2 System Description & Compliance	RSD	
Engineering Compliance Package	RSO	
WP Remediation Mechanical System Analysis	RSD	General description to define operation and major equipment; needed to size building and design structure
WP Remediation Material Handling Flow Diagrams	RSD	MFD's
WRS - Waste Retrieval System	**QL: 1**	
Quality Level Classification	RSO	
SDD Section 1	RSO	
SDD Section 2 Executive Summary	RSO/EBS	
SDD Section 2 System Description & Compliance	RSO/EBS	
Engineering Compliance Package	RSO	
Retrieval Equipment & Strategy	EBS	General arrangements & process illustrations (3D) included in analysis
Concept Operations Summary	EBS	General arrangements & process illustrations (3D) included in analysis

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Engineering & Design Products for LA

Product Description	Org	Description/Comments
XCS - Ex-Container Systems	QL: 1?	
Quality Level Classification	RSO	
SDD Section 1	RSO	
SDD Section 2 Executive Summary	EBS	
SDD Section 2 System Description & Compliance	EBS	
Engineering Compliance Package	RSO	
Function of Backfill in Emplacement Drifts	EBS	Support postclosure safety analysis
Backfill Material Properties	EBS	Support postclosure safety analysis
Emplacement Drift Invert Concept	EBS	Support postclosure safety analysis
Invert Configuration & Dripshield Interface	EBS	Support postclosure safety analysis
Invert Construction Methodology	EBS	Demonstrate feasibility of concept
Invert Material Properties	EBS	Supports postclosure
Backfill Handling & Placement System	EBS	Demonstrate feasibility of concept
Support Assembly Drawings	WP	
Drip Shield Drawings	WP	
Product Applicable to Multiple Systems		
BOP HVAC System Analysis	RSD	Load Assessment - buildings, cooling towers, pumps
Radiation Dose Assessment	RSD	Summary of various building dose assessments and the radiological control area review
ALARA Design Guide	ALL	
Preliminary Equipment List	ALL	Data base for major equipment
Concept of Operations for Surface Facilities	RSD	General description of concept of operations for the WHB and the overall North Portal Site - shifts, staffing, human factors
Project Description Document	RSO	
MGR Requirements Document	RSO	
Internal Hazards Analysis	RSO	Supports preclosure safety analysis
External Hazards Analysis	RSO	Supports preclosure safety analysis
Release Fractions for Commercial SNF	RSO	Supports preclosure safety analysis
Aircraft Hazards Assessment	RSO	Supports preclosure safety analysis
Industrial/Military DBE Assessment	RSO	Supports preclosure safety analysis
Preliminary DBE Calculation	RSO	Supports preclosure safety analysis
Rainstorm/Flooding DBE Analysis	RSO	Supports preclosure safety analysis
Wind/Tornado DBE Analysis	RSO	Supports preclosure safety analysis
Loss of Offsite Power Assessment	RSO	Supports preclosure safety analysis
Seismic Design Criteria Assessment	RSO	Supports preclosure safety analysis
MGR Event Tree Analysis and Dose Assessment	RSO	Supports preclosure safety analysis
Preclosure DBE Safety Analysis	RSO	Supports preclosure safety analysis
Nuclear Safety Criteria Report	RSO	Supports preclosure safety analysis
MGR Integrated Safety Assessment	RSO	Supports preclosure safety analysis

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Product Description	Org	Description/Comments
Postclosure Performance Allocation Study	RSO	Supports postclosure safety analysis
TBX Resolution for 350 °C Cladding Temperature	RSO	Supports postclosure safety analysis
TBX Resolution for Ground Control Rock Properties	RSO	Supports postclosure safety analysis
TBX Resolution for 200 °C Rock Wall Temperature	RSO	Supports postclosure safety analysis
Waste Quantity, Mix, and Throughput Evaluation	RSO	Supports postclosure safety analysis
TBX Resolution for Drift Orientation	RSO	Supports postclosure safety analysis
Waste Handling Requirements Allocation Evaluation	RSO	Supports postclosure safety analysis
TBX Resolution for Waste Package Environments	RSO	Supports postclosure safety analysis
Other Critical Postclosure TBX Resolution	RSO	Supports postclosure safety analysis
Non-Critical Postclosure TBX Resolution	RSO	Supports postclosure safety analysis
QL-1 Preclosure TBX Resolution	RSO	Supports preclosure safety analysis
QL-2 Preclosure TBX Resolution	RSO	Supports preclosure safety analysis
Test & Evaluation Plan	RSO	
YMSCO/OATI Interface Control Document	RSO	Volume I - Interface Control Document for DOE SNF to MGR Mechanical and Envelope Interfaces, Volume II - Programmatic Interfaces between YMSCO and OATI
ESF to MGR Interface Control Document	RSO	Physical Interfaces
Waste Package to Surface Repository Interface Control Document	RSO	Physical Interfaces
Surface to Subsurface Interface Control Document	RSO	Physical Interfaces
Waste Package to Subsurface Interface Control Document	RSO	Physical Interfaces
Waste Acceptance System Requirement Document	RSO	
Performance Confirmation Program Plan	RSO	
Radiological Consequences of a Subsurface Fire	EBS	Supports preclosure safety
Damaged Waste Package Retrieval Analysis	EBS	Supports preclosure safety
Occupational ALARA Analysis	EBS	Supports preclosure safety
Shielding Calculations for Abnormal Emplacement & Retrieval	EBS	Supports preclosure safety
Radiation Limits for Repository Materials	EBS	Supports preclosure safety
Waste Package Surface Contamination Limits	EBS	Supports preclosure safety
Subsurface Shielding Source Term Analysis	EBS	Supports preclosure safety
Contamination & Airborne Source Terms	EBS	Supports preclosure safety
Emplacement Drift Manned Access	EBS	Supports preclosure safety
Leak Detection System Design	EBS	Supports preclosure safety
Radiological Exposure To Subsurface Workers from Radon	EBS	Supports preclosure safety
Subsurface Decontamination & Waste Generation	EBS	Supports preclosure safety
Normal Occupational Radiation Exposures	EBS	Supports preclosure safety
Emplacement Drift Shielding Calculations	EBS	Supports preclosure safety
Waste Package Material Selection Analysis	WP	
Waste Package Degradation Process Models	WP	
EBS Transport Process Models	WP	
Waste Form Degradation Process Models	WP	

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Product Description	Org	Description/Comments
Classing Degradation Process Models	WP	
Waste Forms Characteristics Report	WP	
Near Field Environmental Impacts Report	WP	
MGR Waste Acceptance Criteria	WP	
Waste Package Fabrication Methods Report	WP	
Waste Package Closure Weld Report	WP	
Waste Package Design Description Report	WP	
Methodology Technical Report	WP	
Waste Package Design Summary AMR	WP	
Waste Stream Receipt Report	WP	

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ATTACHMENT II

System Designators

System Designators

System Title	System Abbreviation	QA Classification	Reference
Administration	ADS	CQ	CRWMS M&O 1999ax
Assembly Transfer	ATS	1, 2, 3, CQ	CRWMS M&O 1999ad
Backfill Emplacement	BES	2	CRWMS M&O 1999n
Canister Transfer	CTS	1, 2, 3, CQ	CRWMS M&O 1999ae
Canistered Spent Nuclear Fuel Disposal Container	CDC	1	CRWMS M&O 1999bf
Carrier Preparation Building	CBS	CQ	CRWMS M&O 1999aa
Carrier Preparation Building Materials Handling	CMH	2	CRWMS M&O 1999ab
Carrier/Cask Handling	CCH	2, 3, CQ	CRWMS M&O 1999ac
Carrier/Cask Transport	CCT	CQ	CRWMS M&O 1999ah
Defense High Level Waste Disposal Container	DDC	1	CRWMS M&O 1999bg
Disposal Container Handling	DCH	2, CQ	CRWMS M&O 1999ag
DOE Spent Nuclear Fuel Disposal Container	EDC	1	CRWMS M&O 1999bi
Emergency Response	ERS	3, CQ	CRWMS M&O 1999ao
Ex-Container	XCS	1	CRWMS M&O 1999d
General Site Transportation	GST	CQ	CRWMS M&O 1999bb
Ground Control	GCS	2, CQ	CRWMS M&O 1999e
Health Safety	HSS	CQ	CRWMS M&O 1999ap
Maintenance and Supply	MSS	CQ	CRWMS M&O 1999ay
MGR Operations Monitoring and Control	OMC	2	CRWMS M&O 1999z
Monitored Geologic Repository Site Layout	MSL	CQ	CRWMS M&O 1999v
Muck Handling	MHS	CQ	CRWMS M&O 1999k
Naval Spent Nuclear Fuel Disposal Container	VDC	1	CRWMS M&O 1999bj
Non-Fuel Components Disposal Container	NDC	1	CRWMS M&O 1999bi
Off-Site Utilities	OUS	CQ	CRWMS M&O 1999ba
Performance Confirmation Data Acquisition/Monitoring	PCA	3	CRWMS M&O 1999bc
Performance Confirmation Emplacement Drift Monitoring	PCM	3	CRWMS M&O 1999j
Performance Confirmation Waste Isolation Verification/Validation	PCV	3	CRWMS M&O 1999u
Pool Water Treatment and Cooling	PLS	2, 3, CQ	CRWMS M&O 1999bd
Security and Safeguards	SSG	CQ	CRWMS M&O 1999av
Site Communications	TCS	CQ	CRWMS M&O 1999aq
Site Compressed Air	TCA	CQ	CRWMS M&O 1999at
Site Electrical Power	SEP	CQ	CRWMS M&O 1999as
Site Fire Protection	SFP	2	CRWMS M&O 1999y
Site Generated Hazardous, Nonhazardous, and Sanitary Waste Disposal	SHZ	CQ	CRWMS M&O 1999au
Site Generated Radiological Waste Handling	SRW	2	CRWMS M&O 1999an
Site Operations	SOS	CQ	CRWMS M&O 1999ba
Site Radiological Monitoring	SRM	3	CRWMS M&O 1999al
Site Water	SWS	CQ	CRWMS M&O 1999ar
Subsurface Closure & Seal	SCS	CQ	CRWMS M&O 1999o
Subsurface Compressed Air	SCA	CQ	CRWMS M&O 1999h
Subsurface Development Transportation	SDT	CQ	CRWMS M&O 1999l
Subsurface Electrical Distribution	SED	CQ	CRWMS M&O 1999g
Subsurface Emplacement Transportation	SET	CQ	CRWMS M&O 1999r
Subsurface Excavation	SES	CQ	CRWMS M&O 1999s
Subsurface Facility	SFS	1, CQ	CRWMS M&O 1999c
Subsurface Fire Protection	SFR	CQ	CRWMS M&O 1999t
Subsurface Ventilation	SVS	CQ	CRWMS M&O 1999f
Subsurface Water Collection/Removal	SWC	CQ	CRWMS M&O 1999p
Subsurface Water Distribution	SWD	CQ	CRWMS M&O 1999i
Surface Environmental Monitoring	SEM	3	CRWMS M&O 1999aw
Uncanistered Spent Nuclear Fuel Disposal Container	UDC	1	CRWMS M&O 1999be
Waste Emplacement	WES	1, 2, CQ	CRWMS M&O 1999m
Waste Handling Building	HBS	1, 2, CQ	CRWMS M&O 1999w
Waste Handling Building Electrical	HBE	2, CQ	CRWMS M&O 1999ai
Waste Handling Building Fire Protection	HBF	2	CRWMS M&O 1999am
Waste Handling Building Ventilation	HBV	2, CQ	CRWMS M&O 1999aj
Waste Package Remediation	WPR	2, CQ	CRWMS M&O 1999af
Waste Retrieval	WRS	1	CRWMS M&O 1999q
Waste Treatment Building	TBS	2, 3, CQ	CRWMS M&O 1999x
Waste Treatment Building Ventilation	TVS	2, CQ	CRWMS M&O 1999ak