

Office of Civilian Radioactive Waste Management



***Waste Management System
Requirements Document
Volume IV MGDS
Revision 2***

February 1992

***U.S. Department of Energy
Office of Civilian Radioactive Waste Management
Washington, DC 20585***

MASTER *DA*

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OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
PROGRAM CHANGE CONTROL BOARD
DIRECTIVE

(1) DCP NUMBER: N/A (2) DCP TITLE: N/A

(3) DOCUMENT NUMBER: DOE/RW-0268P (4) COGNIZANT ORGANIZATION: RW-30
REVISION: 1
DOCUMENT TITLE: Waste Management System Requirements (WMSR), Volume IV

(5) DCP DISPOSITION:
 APPROVE DISAPPROVE
 APPROVE WITH CONDITIONS ACTION DEFERRED
 CANCELLED/WITHDRAWN

(6) CONDITIONS/RATIONALE:

None

(7) IMPLEMENTATION DIRECTION:

In accordance with the approved Directive for DCP-56, "Interim Approach for the Technical Baseline," WMSR, Vol. IV (DOE/RW-0268P) and the applicable portions of WMSR, Vol. I (DOE/RW-0264) and the Waste Management System Description (DOE/RW-0270P) will be the top-level requirements for the Mined Geologic Disposal System (including the Exploratory Studies Facility.)

The Executive Secretary of the PCCB shall take appropriate action to print and distribute this approved Directive and the necessary change pages of this WMSR Vol. IV, Revision 2.

(8) CONCURRENCE: R. W. Neal
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DATE: 1/29/92

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PCCB CHAIRMAN

DATE: 2/6/92

(10) IMPLEMENTATION COMPLETE:

VERIFICATION: _____
(IF REQUIRED) DIRECTOR, OQA

DATE: _____

SIGNATURE: _____
PCCB EXECUTIVE SECRETARY

DATE: _____

**OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
PROGRAM CHANGE CONTROL BOARD
REVISION/CHANGE RECORD**

(1) DOCUMENT NUMBER:

(2) DOCUMENT TITLE: DOE/RW-0268P

Waste Management System Requirements (WMSR), Volume IV

(3) REVISION DATE/ NUMBER	(4) DCP NUMBER	(5) REVISION/CHANGE DESCRIPTION	(6) PAGES AFFECTED
Jan. 1991 1	30	<p>This revision was made to WMSR Volume IV for the following reasons:</p> <ul style="list-style-type: none"> (1) To bring into compliance with QAAP 3.6 and the revision to QAAP 3.5. (2) To update information and make the volume consistent with Volume I. (3) To address QA concerns and miscellaneous minor changes. 	ALL
Jan. 1992 2	N/A	<p>Table of Contents Revised Implementation: In accordance with the approved Directive for DCP-56, "Interim Approach for the Technical Baseline," (See Appendix H) WMSR, Vol IV (DOE/RW-0268P) and the applicable portions of WMSR, Vol I (DOE/RW-0264) and the Waste Management System Description (DOE/RW-0270P) will be the top-level requirements for the Mined Geologic Disposal System (including the Exploratory Studies Facility.)</p>	i, ii ALL, Appendix H

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OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
PROGRAM CHANGE CONTROL BOARD
DIRECTIVE

(1) DCP NUMBER: 56 (2) DCP TITLE: Interim Approach for the Technical Baseline

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DOCUMENT TITLE: Interim Approach for the Technical Baseline

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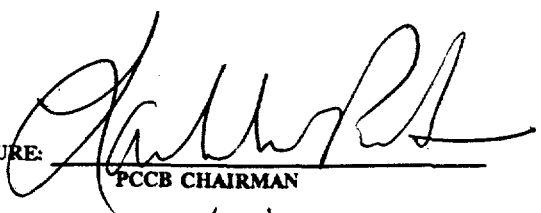
(6) CONDITIONS/RATIONALE:

None

(7) IMPLEMENTATION DIRECTION:

See Attached pages

(8) CONCURRENCE: _____
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DATE: _____

(9) SIGNATURE: 
PCCB CHAIRMAN
DATE: 12/4/91

(10) IMPLEMENTATION COMPLETE:

VERIFICATION: _____
(IF REQUIRED) DIRECTOR, OQA
DATE: _____

SIGNATURE: _____
PCCB EXECUTIVE SECRETARY
DATE: _____

**OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
PROGRAM CHANGE CONTROL BOARD
DIRECTIVE - DCP 56**

(7) Implementation Direction

This DCP establishes an interim plan for the OCRWM technical baseline until the results of the OCRWM Document Hierarchy Task Force can be implemented. This plan is needed to maintain continuity in the Program for ongoing work in the areas of Waste Acceptance, Transportation, Monitored Retrievable Storage (MRS) and Yucca Mountain Site Characterization. Figure 1, included as part of the attached DCP 56 - Interim Approach for the Technical Document Hierarchy, will serve as the interim technical baseline in place of Figure 3-1 of the OCRWM Program Management System Manual, Revision 4, and in place of Figure 4-1 of the Systems Engineering Management Plan, Revision 1, until approval and issuance of the final document hierarchy. Implementation of this DCP requires the following:

- (1) The Waste Management System Requirements (WMSR) document, Volume IV, and the applicable portions of WMSR, Volume I and the Waste Management System Description (WMSD) document remain as the top-level requirements for the Mined Geologic Disposal System (MGDS) and the Exploratory Studies Facility (ESF) only.

Prior to the completion of ESF Title II Design, WMSRs, Volumes I and IV, and the WMSD document, and the lower-level project documents in Figure 1 will be transitioned to the new technical baseline, based on the results of the Document Hierarchy Task Force. A Hold Point is required prior to the transition to the new documents, to evaluate work already completed on ESF against the new baselined documents.

- (2) The Physical System Requirements - Overall System document, Revision 0, replaces the applicable portions of WMSR, Volume I and the WMSD documents as the highest level technical baseline requirements for the Waste Acceptance, MRS and Transportation Systems. This requires resolution (or withdrawal) of outstanding comments, and subsequent PCCB approval of DCP 44, Issuance of Physical System Requirements - Overall System.

The applicable portion of the Physical System Requirements - Overall System document that applies to the MGDS and ESF functions are non-binding requirements, and are to be used for input to lower-level M&O development documents only.

**OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
PROGRAM CHANGE CONTROL BOARD
DIRECTIVE - DCP 56**

(7) Implementation Direction (continued)

- (3) The Physical System Requirements - Store Waste document, Revision 0, replaces WMSR, Volume III and the applicable portions of the WMSD document as the technical baseline requirements for the MRS system.
- (4) The Physical System Requirements - Accept Waste document, when approved and issued, replaces the applicable portions of WMSR, Volume I and the WMSD as the technical baseline requirements for the Waste Acceptance function.
- (5) The Physical System Requirements - Transport Waste document, when approved and issued, replaces the applicable portions of WMSR, Volume I, and the WMSD document as the technical baseline requirements for the Transportation System.
- (6) Place DCPs 45 and 48 (Issuance of Physical System Requirements - Dispose of Waste and ESF) on hold. These documents have been through QAAP 3.1 technical review and are to be used as inputs for lower-level requirements documents to be developed by the M&O, in accordance with the results of the OCRWM Document Hierarchy Task Force. These M&O documents will be integrated into the technical baseline before the completion of Title II Design.

Other details of this process, including schedule for completion, are contained in the attached DCP 56 - Interim Approach for the Technical Baseline.

**OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
PROGRAM CHANGE CONTROL BOARD
DOCUMENT CHANGE PROPOSAL**

(1) DATE CHANGE NEEDED: 12/20/91 OR ROUTINE PROCESSING PAGE 2 OF

(2) DCP NUMBER: 56 (3) DCP TITLE: Interim Approach for the Technical Document Hierarchy

(4) DOCUMENT NUMBER: (5) COGNIZANT ORGANIZATION:
REVISION: Office of Systems and Compliance
DOCUMENT TITLE: Interim Approach for the Technical Document Hierarchy

(6) CHECK ONE
 NEW DOCUMENT
 CHANGE DOCUMENT

(7) CONFORMANCE WITH QA PROCEDURES. (ENTER N/A IF NOT APPLICABLE)
- DOCUMENT/REVISION WAS PREPARED IN ACCORDANCE WITH: N/A
- APPLICABLE REVIEWS WERE CONDUCTED IN ACCORDANCE WITH: N/A

(8) CHANGE DESCRIPTION AND JUSTIFICATION:

See Attachment A, "Interim Approach for the Technical Document Hierarchy".

(9) OTHER DOCUMENTS AFFECTED:

Waste Management System Requirements (WMSR) documents, Volumes I and III.
Waste Management System Description (WMSD) document
Physical System Requirements - Accept Waste, Store Waste, Transport Waste, Dispose
of Waste, Exploratory Studies Facility, Overall System
Systems Engineering Management Plan (SEMP)

(10) IMPACT ANALYSIS	IMPACT	ATTACHMENT
TECHNICAL	See Attachment B.	B
REGULATORY	No impacts.	
COST	See Attachment B.	B.
SCHEDULE	See Attachment B.	B
INSTITUTIONAL	No impacts.	
SAFETY	No impacts.	
TRAINING	See Attachment B.	B
PROCEDURES	See Attachment B.	B

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11/21/91
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Attachment A - DCP 56
INTERIM APPROACH FOR THE TECHNICAL DOCUMENT HIERARCHY

(8) Change Description and Justification

At the conclusion of the meeting on September 27, 1991, concerning the status of OCRWM Program documents, a task force was directed to be formed to address the issue of the OCRWM Document Hierarchy. Until the results of this Task Force can be fully implemented, an interim plan for the OCRWM technical baseline is needed to maintain continuity in the Program for the ongoing work in the areas of Waste Acceptance, Transportation, Monitored Retrievable Storage (MRS), and MGDS, including Yucca Mountain Site Characterization. This Document Change Proposal (DCP) outlines such a plan by creating an Interim Technical Document Hierarchy, which will permit the following:

- a. Establishment of a Waste Acceptance technical baseline.
- b. Establishment of a Transportation system technical baseline. Completion of the Physical System Requirements - Transport Waste document is part of the corrective action for Corrective Action Request (CAR) #HQ-92-003, issued during Audit HQ-92-001.
- c. Continuation of MRS Conceptual Design and development of Specification documents by the Management and Operations contractor (M&O) based on the Physical System Requirements - Store Waste document.
- d. Start of Exploratory Studies Facility (ESF) Title II Design, utilizing the present Waste Management System Requirements (WMSR) -based documents.
- e. Implementation of the results of the Document Hierarchy Task Force.

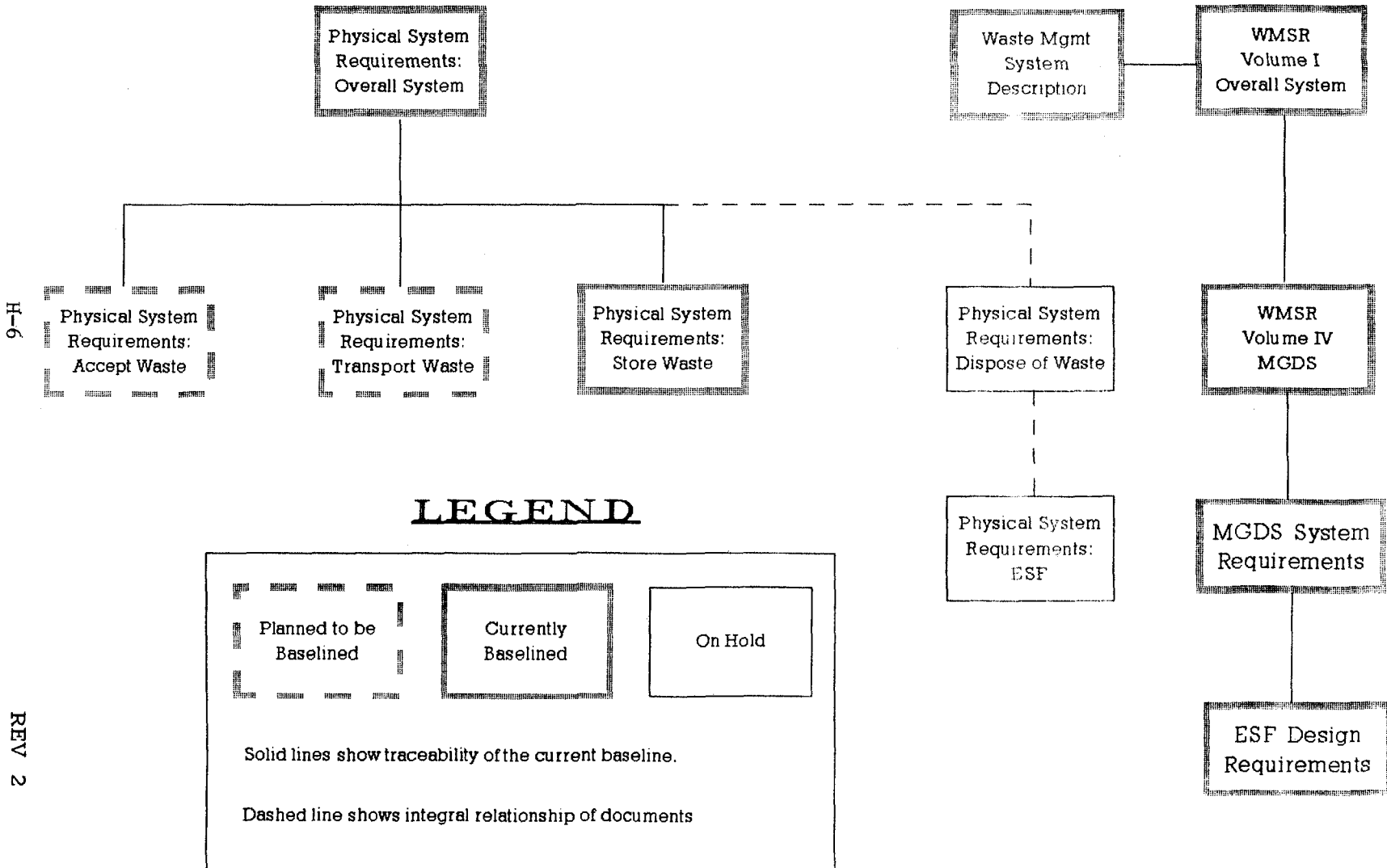
The proposed approach, illustrated in Figure 1, involves a two-part technical baseline, consisting of WMSR, Volume IV, and the applicable portions of WMSR, Volume I and the WMSD, which support the Mined Geologic Disposal System (MGDS), including Yucca Mountain Site Characterization Project, and the Physical System Requirements documents, which support the MRS Project. This approach will allow work to continue for Initiative I cask development and MRS conceptual design, and at the same time will not delay the start of ESF Title II design. Implementation of this DCP will, as applicable, be carried out in accordance with the OCRWM QA Program requirements.

OCRWM Interim Technical Baseline

WMSR VOL IV

MRS/Transportation Systems

Yucca Mountain Site Characterization Project



H-6

REV 2

Attachment A-DCP 56

Attachment A - DCP 56
INTERIM APPROACH FOR THE TECHNICAL DOCUMENT HIERARCHY

This DCP shall act as a directive for the technical documents under the OCRWM Program on an interim basis, until the final technical document hierarchy can be implemented, in accordance with recommendations incorporated from the Document Hierarchy Task Force. Establishment of the Interim Technical Document Hierarchy requires the following activities:

1. WMSR, Volume IV, and the applicable portions of WMSR, Volume I and the Waste Management System Description (WMSD) document will remain as the top-level requirements for the MGDS (including the ESF) only. Those sections of the Physical System Requirements - Overall System document that apply to the MGDS (including ESF) functions are nonbinding requirements for Yucca Mountain Site Characterization activities and ESF design, however, are to be used as input to lower-level M&O prepared documents to assure proper flowdown in the future baseline.

Prior to the completion of ESF Title II Design, WMSRs, Volumes I and IV, and the lower-level project documents in Figure 1, will be transitioned to the new technical baseline based on the results of the Document Hierarchy Task Force. A Hold Point is required to be established to conduct an impact analysis on completed Yucca Mountain Site Characterization activities and the ESF Title II Design Report against the new baseline documents.

2. WMSR, Volume III, and the applicable portions of WMSR, Volume I, and the WMSD that apply to the Accept Waste function, and MRS and Transportation systems will be nonbinding, and superseded by the Physical System Requirements - Overall System, Accept Waste, Store Waste and Transport Waste upon issuance.

As a part of the Corrective Action for CAR #HQ-92-003, Hold Points for the Initiative I Cask and the Phase I Cask Programs have been established. These Hold Points require that work already completed be evaluated against the new baselined Transport Waste document.

Attachment A - DCP 56
INTERIM APPROACH FOR THE TECHNICAL DOCUMENT HIERARCHY

3. Revise DCP 44, Issuance of Physical System Requirements - Overall System to recognize the interim, two-part technical baseline. The Overall System document is to be approved and issued by the Program Change Control Board (PCCB), as the top-level, baseline technical requirements document governing the Physical System Requirements - Accept Waste, Store Waste and Transport Waste documents.

DCP 46, Issuance of Physical System Requirements - Store Waste, was approved by the PCCB Chairman on November 1, 1991, and is to become effective upon approval and issuance of the Overall System document (DCP 44).

Technical requirements that are programmatic in nature, and originally intended to be packaged as companion Programmatic Requirements Documents will be incorporated as necessary in the first revision of the Overall and Store Waste documents. Therefore, these documents will cover physical and programmatic requirements, and all phases of the Waste Management System, including siting, design and construction.

The applicable portions of WMSR, Volume I, and all of WMSR, Volume IV, are to remain in effect as the top-level requirements document for MGDS (including the ESF) only.

4. Place DCPs 45 and 48 (Issuance of Physical System Requirements - Dispose of Waste and Exploratory Studies Facility) on hold. The Dispose of Waste and ESF documents have been through QAAP 3.1 technical reviews, and are to be used as inputs for lower-level requirements documents to be developed by the M&O, in accordance with the final Document Hierarchy, developed as a result of the Document Hierarchy Task Force. The M&O will use these documents as sources for developing MGDS and ESF Specification documents, which will be incorporated into the technical baseline before the completion of Title II Design.

Attachment A - DCP 56
INTERIM APPROACH FOR THE TECHNICAL DOCUMENT HIERARCHY

5. Complete development, review and approval of the Physical System Requirements - Accept Waste and Transport Waste documents. These documents will undergo QAAP 3.1 technical document review and will be proposed as separate DCPs to the PCCB. The Physical System Requirements - Accept Waste document, when approved and issued, replaces the applicable portions of WMSR, Volume I, and the WMSD document as the technical baseline requirements for the Waste Acceptance function. The Physical System Requirements - Transport Waste document, when approved and issued, replaces the applicable portions of WMSR, Volume I, and the WMSD document as the technical baseline requirements for the Transportation System.

The Accept Waste document is needed to establish baseline requirements for the OCRWM Waste Acceptance System. The Physical System Requirements - Overall System document contains adequate requirements for the Accept Waste function at the present time; these requirements will be validated and expanded, as necessary, in the Physical System Requirements - Accept Waste document, to be issued in February, 1992.

The Transport Waste document is required to establish Transportation System baseline requirements, and as part of the corrective action for CAR #HQ-92-003. A Hold Point is required, such that upon approval of the Transport Waste document, work already completed can be evaluated against the new baselined document.

6. Technical requirements that are required to support programmatic-type functions of the Overall, MRS and transportation systems, such as siting, design and construction, are to be incorporated into Revision 1 of the Overall System, Store Waste and Transport Waste documents. Revision 1 of these documents will also incorporate the spent fuel acceptance rate from the Annual Capacity Report and 10 CFR 20 requirements.
7. To satisfy interface requirements of Quality Assurance Administrative Procedure (QAAP) 3.7, and the interim technical document hierarchy, the Interface Identification Forms submitted with the Overall System document will be revised to support both the Physical System Requirements documents, and the MGDS and ESF as addressed in WMSR, Volume I and the WMSD documents.

Attachment A - DCP 56
INTERIM APPROACH FOR THE TECHNICAL DOCUMENT HIERARCHY

8. Revise QAAP 3.5 Technical Document Management Plans, as required.
9. The Interim Technical Document Hierarchy described in this DCP will supersede the technical document hierarchies given in Figure 3-1 of the PMS manual, Revision 4, and Figure 4-1 of the SEMP, Revision 1, until approval and issuance of the final OCRWM Document Hierarchy. At that time the PMS and SEMP will be revised to reflect the new approved document hierarchy.

BENEFITS:

Implementation of this document will permit the following:

- a. Establishment of a more comprehensive Waste Acceptance technical baseline.

The acceptance of spent nuclear fuel and high-level waste is vitally important to the OCRWM Program, and warrants a separate requirements document. The performance of a Functional Analysis on the Waste Acceptance system will ensure all aspects of waste acceptance are examined.

- b. Establishment of a Transportation System technical baseline.

The OCRWM Program is required by the QARD (Section 3) and the OCRWM Systems Engineering Management Plan (SEMP) to develop and maintain a technical baseline. Presently, work is proceeding in the area of Transportation, such as Title II design of the Initiative I casks, without applicable baseline requirements being approved and issued. This condition is identified in CAR HQ-92-003, which was issued as a result of QA Audit HQ-92-001. Completion of the Physical System Requirements - Transport Waste document will establish the necessary requirements to control the Transportation System design and is part of the corrective action to clear the CAR.

Attachment A - DCP 56
INTERIM APPROACH FOR THE TECHNICAL DOCUMENT HIERARCHY

c. Continuation of MRS Conceptual Design.

The Interim Approach to the MRS Design (DCP 51) is based on issuance of the Physical System Requirements - Overall and Store Waste documents. Presently, these documents are being used as inputs to MRS Conceptual Design.

d. Start of ESF Title II Design.

In order to minimize the impact on Title II Design of the ESF, it has decided that design should be based on the present WMSR-based documents.

e. Implementation of the results of the Document Hierarchy Task Force.

This Interim Technical Document Hierarchy is to be replaced by the results of the Document Hierarchy Task Force, when approved.

Attachment B - DCP 56
INTERIM APPROACH FOR THE TECHNICAL DOCUMENT HIERARCHY

(10) Impact Analysis

Technical: The technical impact of the subject document will affect ongoing activities to varying degrees.

There are presently no system-level requirements for the Accept Waste or Transport Waste functions in the OCRWM technical baseline, other than very high-level requirements in the Waste Management System Requirements (WMSR) document, Volume I. Issuance of the Physical System Requirements - Accept Waste and Transport Waste documents will establish a structured, traceable set of requirements based on the systems engineering functional analysis approach.

The MRS Conceptual Design is proceeding using preliminary requirements contained in a draft version of the Physical System Requirements - Store Waste document. These activities must be reevaluated when the Store Waste document is approved. A QA Hold Point must be established during the MRS Conceptual Design process to ensure that the design meets all requirements established in the baselined Store Waste requirements document. This is consistent with the "Interim Approach to the MRS Design" (DCP 51).

There is no impact on the Yucca Mountain Site Characterization activities. As stated in the DCP, WMSR, Volume IV, and the applicable portion of WMSR, Volume I, will remain in effect to support the ongoing ESF activities. Prior to the completion of Title II Design, WMSRs, Volumes I and IV, and the lower-level project documents will be transitioned to the new technical baseline based on the results of the Document Hierarchy Task Force. A Hold Point is required prior to the transition to the new documents, to conduct an impact analysis on the use of existing documents.

Attachment B - DCP 56
INTERIM APPROACH FOR THE TECHNICAL DOCUMENT HIERARCHY

Cost: Cost impacts are difficult to quantify. No revised or additional requirements are being imposed on the MRS Project by this interim approach for the technical baseline. Therefore, the program cost baseline is not affected.

Development of the Physical System Requirements documents has cost approximately \$3 million to date. Completion and revision efforts discussed herein are not expected to exceed one quarter of this amount.

Schedule: No revised or additional requirements are being imposed on the MRS Project by this interim approach for the technical baseline. Therefore, the program schedule baseline is not affected.

The schedule for implementation of this DCP is given in Figure 2.

Training: All applicable OCRWM personnel who use requirements documents must be cognizant of this Interim Technical Document Hierarchy.

Procedures: No impact.

Document Schedule for Interim Approach for the Technical Document Hierarchy							
Document	Start Document	To RW-32	To 3.1	To PCCB	PCCB Approval	Document Effective	
System Requirements-Transport Waste, Rev. 0	Started	Completed	11/27/91	1/3/92	1/24/92	1/31/92	
System Requirements-Accept Waste, Rev. 0	Started	1/10/92	1/17/92	2/21/92	3/20/92	3/27/92	
System Requirements-Overall System, Rev.0	Started	Completed	Completed	Completed	12/20/91	1/3/92	
System Requirements-Store Waste Rev. 0	Started	Completed	Completed	Completed	Completed	1/3/92	
System Requirements - Overall System, Rev.1	1/13/92	1/31/92	2/7/92	3/6/92	3/27/92	4/3/92	
System Requirements - Store Waste, Rev. 1	1/13/92	1/31/92	2/7/92	3/6/92	3/27/92	4/3/92	
System Requirements - Transport Waste, Rev. 1	2/3/92	2/14/92	2/21/92	3/13/92	3/31/92	4/10/92	