



Department of Energy  
Office of Civilian Radioactive Waste Management  
Yucca Mountain Site Characterization Office  
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Las Vegas, NV 89193-8608

OCT 28 1994

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VERIFICATION OF CORRECTIVE ACTION AND CLOSURE OF CORRECTIVE ACTION REQUEST (CAR) YM-94-051 RESULTING FROM U.S. DEPARTMENT OF ENERGY/HEADQUARTERS' QUALITY ASSURANCE DIVISION (HQAD) AUDIT HQ-94-02 OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT SYSTEM MANAGEMENT AND OPERATING CONTRACTOR (CRWMS M&O) (SCPB: N/A)

The Yucca Mountain Quality Assurance Division (YMQAD) staff verified the corrective action to CAR YM-94-051 and determined the results to be satisfactory. As a result, the CAR is considered closed.

As part of the verification activities, YMQAD staff found that the following two Quality Assurance Procedure (QAP) 2-0 Work Control Evaluations need revision:

1. "Evaluation of Activities for Waste Package Development Advanced Conceptual Design Tasks"  
DI#BBA000000-01717-2200-00002 states that the identification and documentation of waste package environment, waste forms, and waste package materials data and modeling needed for waste package design and performance analysis as non quality affecting activities. Part of the rationale stated for not applying the Quality Assurance program to these activities is that no quality affecting design inputs are required. These activities appear to be the development of design inputs related to detailed development of 10 CFR 60.135 design requirements for the waste package. The CRWMS M&O should verify that their QAP-2-0 determination for this activity is appropriate and clearly state the rationale for the determination.
2. The QAP-2-0 analysis dated February 22, 1994 for Mined Geologic Disposal System Development Repository Design states that a Controlled Design Concept Document for Advanced Conceptual Design will be prepared in accordance with QAP-3-5 and Nevada Line Procedure 3-15. YMQAD staff verified

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that the Controlled Design Assumptions Document was prepared in accordance with the QAP-2-0 Work Control Evaluation of the Development of the Controlled Design Assumptions Document in Attachment 5 of the Technical Document Preparation Plan for the Controlled Design Assumptions Document. The February 22, 1994, QAP-2-0 analysis is therefore no longer up to date and must be revised.

The corrective action for revising the February 22, 1994, analysis and for clarifying "Evaluation of Activities for Waste Package Development Advanced Conceptual Design Tasks" DI#BBA000000-01717-2200-00002 will be tracked via Corrective Action Request HQ-94-015.

If you have any questions, please contact either Robert B. Constable at 794-7945 or Robert L. Howard at 794-7820.

*Robert B. Constable* for

YMQAD:RBC-489

Richard E. Spence, Acting Director  
Yucca Mountain Quality Assurance Division

Enclosure:  
CAR YM-94-051

cc w/encl:

~~W. G. Sprank~~ NRC, Washington, DC  
S. W. Zimmerman, NWPO, Carson City, NV  
T. A. Wood, HQ (RW-14) FORS  
R. L. Robertson, M&O/TRW, Vienna, VA  
Richard Jiu, M&O/Duke, Las Vegas, NV  
R. P. Ruth, M&O/TRW, Las Vegas, NV

cc w/o encl:

W. L. Belke, NRC, Las Vegas, NV  
D. G. Sult, YMQAD/QATSS, Las Vegas, NV

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**CORRECTIVE ACTION REQUEST**

<sup>1</sup> Controlling Document M&O QARD, Section 3, Rev 0, Design Control		<sup>2</sup> Related Report No. HQ-94-02
<sup>3</sup> Responsible Organization CRWMS M&O	<sup>4</sup> Discussed With A. Segrest	
<sup>5</sup> Requirement:  The OCRWM QARD requires Designs (Conceptual through Final) be controlled.		
<sup>6</sup> Adverse Condition:  There is no objective evidence that the Quality Assurance Program is being adequately applied to Advanced Conceptual Design. Examples include:  <ul style="list-style-type: none"> <li>• Preparation of The Controlled Design Assumptions Document</li> <li>• Preparation of The Waste Package Design Status Report</li> </ul>		
<sup>9</sup> Does a significant condition adverse to quality exist? Yes ___ No <u>x</u> If Yes, Circle One: A B C D E	<sup>10</sup> Does a stop work condition exist? Yes ___ No <u>X</u> ; If Yes - Attach copy of SWO If Yes, Circle One: A B C	<sup>13</sup> Response Due Date: 20 working days from issuance
<sup>11</sup> Required Actions: <input checked="" type="checkbox"/> Remedial <input checked="" type="checkbox"/> Extent of Deficiency <input type="checkbox"/> Preclude Recurrence <input type="checkbox"/> Root Cause Determination		
<sup>12</sup> Recommended Actions:  Review all ACD work performed to date to ensure adequate controls have been applied.		
<sup>7</sup> Initiator Rob Howard Date 6/30/94	<sup>14</sup> Issuance Approved by: QADD [Signature] Date 7.12.94	
<sup>15</sup> Response Accepted QAR [Signature] Date 9/6/94	<sup>16</sup> Response Accepted QADD [Signature] Date 9.8.94	
<sup>17</sup> Amended Response Accepted QAR Date	<sup>18</sup> Amended Response Accepted QADD Date	
<sup>19</sup> Corrective Actions Verified QAR [Signature] Date 10/24/94	<sup>20</sup> Closure Approved by: QADD [Signature] Date 10.27.94	

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VERIFICATION OF CAR YM-94-051

Commitment:

"A complete reevaluation of the Waste Package activities being conducted during Advanced Conceptual Design has been documented in revision 1 of the QAP-2-0 analysis which was approved and issued on August 11, 1994. The requirement of the QARD that designs subject to QA be controlled from conceptual design through final design was used as the basis for the analysis. Revision 1 of the QAP-2-0 analysis included an evaluation of the Waste Package Design Status Report Fiscal Year 1993 and found it to be QA:NA. The Waste Package Implementation Plan, YMP 92-11, Rev 0, was determined to contain material that should be controlled and the document has been classified as QA under the YMSCO QA program by the Waste Package Design Group."

YMQAD staff reviewed "Evaluation of Activities for Waste Package Development Advanced Conceptual Design Tasks" DI#BBA000000-01717-2200-00002 dated August 3, 1994 and approved August 12, 1994. The evaluation identifies Waste Package / Engineered Barrier Segment Component and System Requirements identification and documentation as a quality affecting activity. Since the Waste Package Implementation Plan identifies system and design requirements it has been designated as a quality affecting document. The QAP-2-0 evaluation also provides rationale for developing Waste Package Design Status Reports as non quality affecting documents.

YMQAD staff noted that "Evaluation of Activities for Waste Package Development Advanced Conceptual Design Tasks" DI#BBA000000-01717-2200-00002 states that the identification and documentation of waste package environment, waste forms, and waste package materials data and modeling needed for waste package design and performance analysis as non quality affecting activities. Part of the rationale stated for not applying the QA program to these activities is the no quality affecting design inputs are required. These activities appear to be the development of design inputs related to detailed development of 10 CFR 60.135 design requirements for the waste package. The M&O should verify that their QAP-2-0 determination for this activity is appropriate and clearly state the rationale for the determination as part of corrective actions needed for CAR HQ-94-015.

Commitment:

"The ACD Initial Summary Report is being developed in accordance with the QARD which was used in establishing the appropriate QA program controls through applicable Quality Assurance Procedures. Contributions to this Report are consequently controlled in accordance with the QARD."

YMQAD staff reviewed the Initial Summary Report for Repository/Waste Package Advanced Conceptual Design dated August 29, 1994 DI #B00000000-01717-5705-00015-00 and the Technical Document Preparation Plan for the Initial Summary Report. The Initial Summary Report is identified as a quality affecting document and was prepared in accordance with QAP-3-5 and the Technical Document Preparation Plan. YMQAD staff also verified that TBV-208 has been assigned to the report in accordance with NLP-3-15.

Commitment:

"A complete evaluation of the MGDS Development Repository Design activities has been performed and documented in the QAP-2-0 analysis which was approved and issued on February 22, 1994. The requirement of the QARD that designs subject to QA be controlled from conceptual design through final design was used as a basis for the analysis."

YMQAD staff reviewed the QAP-2-0 analysis dated February 22, 1994 for MGDS Development Repository Design. The analysis states that Controlled Design Concept Document for ACD will be prepared in accordance with QAP 3-5 and NLP-3-15.

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**Extent of Deficiency**

**Waste Package Investigative Action:**

There is no objective evidence that the work being performed by Waste Package Development is being adequately controlled. Specifically, the 1993 Waste Package Design Status Report, B00000000-1717-570500007-00 Revision 0 is classified as QA:NA. Revision 0 of the Waste Package Development QAP-2-0 evaluation did not specifically address the 1993 Waste Package Design Status report. Similarly, the Controlled Design Assumptions Document was classified QA:NA.

**Systems Engineering Investigative Action:**

The Systems Engineering Organization's role in conducting Repository/EBS ACD has been to develop/revise the MGDS Design Requirements Documents (Repository Design Requirements Document (RDRD) and Engineered Barrier Design Requirements Document (EBDRD)), to compile design related assumptions into the Controlled Design Assumptions (CDA) document, conduct a functional analysis and Operations Concept development exercise (which will initially be captured in the CDA), to provide input to the Initial Summary Report, to conduct system studies related to Repository/EBS requirements and design, and to participate in reviews of ACD related documents.

The MGDS Design Requirements documents are controlled in accordance with the OCRWM QA program as defined in the OCRWM QARD DOE/RW/0333P. Specifically, the RDRD and EBDRD changes and revisions are performed in accordance with QMP-02-01, AP 1.5Q, AP 1.18Q, QAP 3.5, QAP 6.2, AP 3.3Q and YAP 5.1Q.

The activities involved in the system studies being conducted by the Systems Engineering organization were evaluated in accordance to QAP-2-0, Work Control. This evaluation determined that since the activities associated with systems studies are generally very broad scoping activities, they are not subject to QARD controls. However, at some point the type of data produced by the system studies will be used as design input. At that time the design input data will be reproduced following the applicable QARD controls.

Finally, Systems Engineering's participation in reviews of ACD related activities and documents is performed in accordance to the QARD as is appropriate for the particular document/activity being reviewed.

**MGDS Development Repository Design Investigative Action:**

The adverse conditions identified in this CAR do not address any findings relative to the Repository ACD activity. All work performed by the MGDS Development Repository Design groups (surface and subsurface) is controlled in accordance with all applicable procedures. The products produced to date have been developed, reviewed and audited for QARD and program procedure compliance, and found to be satisfactory. Complete record packages of deliverables are available in either the document control center and/or the Local Records Center as appropriate. Work for this activity is scoped, planned and controlled in accordance with a properly prepared and submitted engineering plan and technical implementation plan.

**MPC Design Investigative Action:**

All design work was performed in accordance with QAP-2-0 and QAP-2-3 to identify QA activities.

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**Remedial Action**

**Waste Package Remedial Action:**

A complete reevaluation of the Waste Package activities being conducted during Advanced Conceptual Design has been performed and documented in Revision 1 of the QAP-2-0 analysis which was approved and issued on August 11, 1994. The requirement of the QARD that designs subject to QA be controlled from conceptual design through final design was used as the basis for the analysis. Revision 1 of the QAP 2-0 included an evaluation of the Waste Package Design Status Report Fiscal Year 1993 and found it to be QA:NA. The Waste Package Implementation Plan, YMP 92-11, Rev. 0, was determined to contain material that should be controlled and the document has been classified QA under the YMSCO QA program by the Waste Package Design Group. The document is in review by YMSCO.

Responsible individual: H.A. Benton

Completion date: August 11, 1994 (Complete)

**Systems Engineering Remedial Action:**

A complete evaluation of the Systems Engineering activities being conducted during Advanced Conceptual Design has been performed and documented in QAP- 2-0 analysis which were approved and issued on June 13, 1994. The requirement of the QARD that designs subject to QA be controlled from conceptual design through final design was used as the basis for the analysis.

Responsible individual: R.D. Memory

Completion date: June 13, 1994 (Complete)

The CDA document Rev 00, which is due August 29, 1994, will be produced in accordance with the appropriate controls as defined by the OCRWM QARD. Specifically, the M&O contractor QA procedures QAP-2-1, QAP-3-5, QAP-3-13, QAP-6-1, and QAP-17-1 will be applied to the development of Rev 00. The CDA is merely a compendium of unverified assumptions to be used during the development of Waste Package and Repository ACDs. Therefore, all data items in the document will be clearly identified as unverified. The functional analysis and operations concept development activity is not being conducted under QA controls and therefore will be so identified in the CDA.

Responsible individual: R.D. Memory

Completion date: August 29, 1994 (Complete)

**MGDS Development Repository Design Remedial Action:**

A complete evaluation of the MGDS Development Repository Design activities being conducted during Advanced Conceptual Design has been performed and documented in the QAP-2-0 analysis which was approved and issued on February 22, 1994. The requirement of the QARD that designs subject to QA be controlled from conceptual design through final design was used as the basis for the analysis.

Responsible individual: A.M. Segrest

Completion date: February 22, 1994 (Complete)

The ACD Initial Summary Report is being developed in accordance with the QARD which was used in establishing the appropriate QA program controls through applicable Quality Assurance procedures. Contributions to this report are consequently controlled in accordance with the QARD.

Responsible individual: B. T. Stanley

Completion date: August 29, 1994 (Complete)

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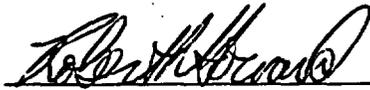
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YMQAD staff could not verify the Controlled Design Assumptions Document was prepared in accordance with NLP-3-15. However, YMQAD staff did verify that the Controlled Design Assumptions Document was prepared in accordance with the QAP 2-0 Work Control Evaluation of the Development of the Controlled Design Assumptions Document in Attachment 5 of the TDPP for the Controlled Design Assumptions Document. The February 22, 1995 QAP-2-0 analysis is therefore no longer up to date and must be revised. The corrective action for revising the February 22, 1994 analysis will be tracked via Corrective Action Request HQ-94-015.

Commitment:

"A complete evaluation of Systems Engineering Activities being conducted during Advanced Conceptual Design has been performed and documented in a QAP-2-0 analysis approved and issued on June 13, 1994."

YMQAD staff verified that a QAP-2-0 analysis for System Engineering Activities was prepared and approved on June 13, 1994.



Robert L. Howard, QAR

10/24/94  
Date