

**U.S. DEPARTMENT OF ENERGY**  
**OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**  
**OFFICE OF QUALITY ASSURANCE**

**SURVEILLANCE NO. HQ-SR-92-04**

**PREPARATION AND REVIEW OF THE**  
**MONITORED RETRIEVABLE STORAGE CONCEPTUAL DESIGN REPORT**

**MAY 13-15, 1992**

**MANAGEMENT AND OPERATING CONTRACTOR**

**VIENNA, VIRGINIA**

**CHARLOTTE, NORTH CAROLINA**

Prepared by: J. Buchanan for D. Brown  
**R. Dennis Brown**  
**Surveillance Team Leader**  
**Headquarters Quality Assurance Division**

Approved by: R. W. Clayton 7/13/92  
**Donald G. Horton**  
**Director**  
**Office of Quality Assurance**

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## 1.0 EXECUTIVE SUMMARY

The surveillance was conducted to verify that Management and Operating (M&O) contractor personnel had prepared and reviewed the *Monitored Retrievable Storage (MRS) Conceptual Design Report (CDR)* in accordance with applicable QA implementing procedures. The surveillance was conducted at the M&O offices in Vienna, Virginia and in Charlotte, North Carolina from May 13-15, 1992. The surveillance was performed by personnel from the Headquarters Quality Assurance Division (HQAD) of the Office of Quality Assurance. Except for three deficiencies identified during the surveillance, the team found that the M&O had adequately implemented their QA program in the preparation and revision of the MRS CDR. Three Corrective Action Requests (CAR) were issued in the areas of design verification, document approval, and document control. Information copies of the CARs are enclosed as Attachment I.

## 2.0 SCOPE

Surveillance No. HQ-SR-92-04 was conducted to verify that M&O personnel had prepared and reviewed the MRS CDR in accordance with applicable QA Program requirements. The surveillance was performed in accordance with the requirements of Quality Assurance Administrative Procedure (QAAP) 18.3, Revision 3.

The CDR describes the results of activities performed during the conceptual design of the MRS. It presents six storage mode alternatives, shows the feasibility of design concepts, and documents cost and schedule baselines.

The surveillance team used checklists based on the requirements of the following documents: *Technical Document Plan for Preparation of the Conceptual Design Report*, 3/27/92; *Technical Document Review*, QAP-3-1, Rev. 0; *Design Reviews*, QAP-3-2, Rev. 0; *Development of Baseline Technical Documents*, QAP-3-5, Rev. 0; and *Quality Assurance Program Description*, Rev. 2. Results from OCRWM Surveillance No. HQ-SR-92-001 were also reviewed for follow up items prior to the surveillance.

## 3.0 SURVEILLANCE TEAM

The surveillance team consisted of the following personnel:

R. Dennis Brown, Surveillance Team Leader, CER Corporation/HQAD, Washington, DC  
Thomas Swift, Team Member, CER Corporation/HQAD, Washington, DC  
Robert Howard, Team Member, Weston Corporation/HQAD, Washington, DC

## 4.0 PERSONNEL CONTACTED DURING THE SURVEILLANCE

The following M&O personnel were contacted during the course of the surveillance:

R.G. Vawter, Manager, Storage and Transportation  
J.R. Clark, Deputy Manager, Storage and Transportation  
F.E. Nash, Manager, QA Audits  
B. Bradley, QA Manager\*  
M.L. Sanger, QA Engineer\*

O.J. Gilstrap, Project Engineering Supervisor\*  
C.W. Chagnon, Design Engineer\*  
R.J. Smith, Design Engineer\*  
L.M. Baviello, Manager, Human Resources  
K. Green, Training Coordinator  
M. Birch, Manager, Licensing and Regulatory  
J. Tierney, Quality Assurance  
C.B. Aderholdt, Office Assistant II\*

\* Charlotte Office

## 5.0 SURVEILLANCE RESULTS

The M&O had adequately implemented their QA program in the preparation of the CDR and subsequent Technical and Milestone Reviews except for the following Corrective Action Requests:

### 1. CAR HQ-92-009

The M&O Contractor had not ensured that data supporting the preliminary draft CDR was properly verified prior to initiation of the formal QAP 3-1 review.

### 2. CAR HQ-92-010

The M&O Contractor management was not consistently documenting reviews and approvals of quality affecting documents.

### 3. CAR HQ-92-011

The M&O Contractor was not identifying effectivity dates for QA implementing procedures and issuing controlled copies of the CDR Technical Document Preparation Plan to several lead authors.

## Preparation of the Technical Document Preparation Plan (TDPP) and CDR

Several QA implementing procedures applied to the MRS CDR preparation. These implementing procedures included QAP-3-5, *Development of Baseline Technical Documents*. The surveillance team reviewed the *Technical Document Plan for Preparation of the Conceptual Design Report*, 3/27/92 which was prepared to meet QAP-3-5 requirements.

The Manager, MRS Design documented his review of the *Technical Document Preparation Plan*, (TDPP) on an unapproved form (see CAR HQ-92-010). There was also no evidence that the Operations Quality Engineering Manager had reviewed the TDPP. It was not evident that this individual had been officially assigned (see CAR HQ-92-010). Several other approval signature problems were identified:

- there was no evidence that the Manager, MRS Design had reviewed and approved the draft or the final draft CDR which was issued on May 1, 1992.

there was no evidence that the Manager, MRS Design had reviewed and approved the issuance of the current version of the CDR TDPP via the required Controlled Document Issuance Instruction Form (see CAR HQ-92-010).

The team verified that the CDR TDPP had been revised once. The Project Engineering Supervisor issued the revision on 3/27/92 in accordance with QAP-3-5.

The team verified that all organizations listed in Appendix B of the TDPP performed a documented review of the draft CDR. In addition, five OCRWM individuals were identified in the formal review process as required by the TDPP.

The surveillance team also observed the controls concerning the issuance of the TDPP. Receipt acknowledgements were being tracked adequately; however, the M&O should consider using control numbers on TDPPs or adding revision dates on TDPP pages (see Section 6.0).

There was evidence to indicate that the M&O did prepare the TDPP prior to the preparation of the draft CDR as required by QAP-3-5.

The M&O could not produce any evidence that the data supporting the preliminary draft CDR was verified prior to initiation of the formal QAP-3-1 review (see CAR HQ-092-009).

The team tried to verify that lead authors of the MRS CDR had controlled copies of the Technical Document Preparation Plan. Several lead authors did not have controlled copies (see CAR HQ-092-011).

#### Technical Review and Milestone Design Review of CDR

The surveillance team reviewed M&O QA Procedure QAP-3-1, *Technical Document Review*, reviewed objective evidence, and interviewed personnel to determine if the technical review of the MRS CDR was in compliance with the procedure.

The team examined a memo from A.M. Segrest dated March 18, 1992, which identified eight lead reviewers and the review schedule for the QAP-3-1 technical review of the MRS CDR.

The team examined Qualification Statements (prepared in accordance with QAP-2-2) and resumes for six lead reviewers to assess their qualifications. The resumes of the lead reviewers generally matched their position Qualification Statements. Collectively, the lead reviewers possessed the academic degrees, professional certifications, and experience to adequately perform the QAP-3-1 technical review of the MRS CDR.

The team also examined the training files of the above reviewers to ensure the review team had been trained to perform the QAP-3-1 technical review. The training file of one lead reviewer did not contain evidence of QAP-3-1 training. The M&O located the missing training documentation in Charlotte during the course of the surveillance.

The surveillance team examined organization charts and statements of independence from J.J. Miller, J.R. Clark, R.G. Morgan, J.S. Wills, E.M. Fortsch, and K. Pierro and determined that reviewers were independent from the MRS CDR preparation as required by QAP-3-1. of the CDR.

The team examined a letter from R. G. Vawter to J.R. Williams dated March 27, 1992, specifying the review criteria for the QAP-3-1 technical review of the CDR. The letter was copied to the lead reviewers. The auditors interviewed M.L. Sanger, J.R. Clark, and R.G. Morgan to verify lead reviewers used the specified review criteria to perform the QAP-3-1 review. J.R. Clark and R.G. Morgan produced copies of the review criteria specified in R.G. Vawter's letter indicating they had used the appropriate review criteria. M.L. Sanger indicated that he used the review criteria found in Attachment B, *Design Review Topics* of the *Plan for the Milestone Design Review*, dated March 20, 1992. This criteria is inconsistent with the criteria specified for the technical review (see Section 6.0).

Mr. O.J. Gilstrap was interviewed to verify that the Document Coordinator consolidated QAP-3-1 review team comments. He indicated that he was the Document Coordinator for the MRS CDR. Mr. Gilstrap assembled comments from all reviewers and then assigned comments to appropriate members of the design team for resolution. The team also examined the MRS CDR master comments file and verified that files had been updated in accordance with the procedure.

The surveillance team examined the files containing document review records submitted by the following lead reviewers:

John J. Miller	James S. Willis	M.L. Sanger
James R. Clark	William Bailey	K. Pierro
Robert G. Morgan	J.J. Miller	M. Fortsch

All reviewers had initialed the document review records to indicate they had accepted the design team's responses to the comments. All comments submitted on the document review records for the QAP-3-1 technical review were resolved before the M&O approved and released the MRS CDR. A comment resolution meeting was not required.

The team reviewed comments from Bailey, Fortsch, Morgan, and Willis that were accepted by the design team for incorporation into the final draft of the CDR. The team verified approximately 25 comments were properly incorporated into the final draft. The team found that the technical review was effectively performed in accordance with QAP-3-1.

M&O Design Review activities were reviewed to determine their effectiveness and compliance to the M&O's QAP-3-2. R.W. Godman (Assistant General Manager) directed that a Milestone Review be performed and designated J.R. Clark as the Design Review Leader. *The Milestone Design Review* (QAP-3-2) purpose is to ascertain the status of the technical process, cost, schedule, and attainment of project objectives.

The plan for the review (J.R. Clark) limited the scope to the Dry Transfer/Dry Vertical Concrete and Dry Transfer/Dry Vault MRS concepts since they represented preferred methods and from a technical viewpoint and merited a review. The eight reviewers were selected for their experience, expertise, and independence and this was properly documented and approved.

The CDR was transmitted to review team members on April 1, and the Design Review was performed April 7&8 at Charlotte. Both attendance lists were reviewed, and one reviewer did not sign the April 8, 1992 list. R.J. Smith (Review Team Secretary) attested that J. J. Miller was present and has obtained his signature. One overhead transparency used during the review referenced the November 1991 versus the

approved January 1992 Revision 0 version of the *Physical System Requirements-Store Waste* document. R.J. Smith stated this question was also discussed at the meeting and the two dated versions are technically the same. A cursory review of both indicates Revision 0 documents revealed no differences. Formal Design Verification was not done and no peer review was required. The recording of comments including resolution was done using the Document Review Record (DRR) form (QAP-3-1). Draft resolution was discussed in the meeting and formal revised responses were finally accepted by J.R. Clark (4-28-92).

The final draft CDR was reviewed for incorporation of the DRRs in the report. DRR Comment #8 was not completely incorporated in Table 2.2.2.4-3 (Pg. 2-20) for the 900 MTU Rail Case (see Section 6.0). Additional missing items have been noted by M&O personnel (C.W. Chagnon) and other verifiers. A "Master Copy CDR" contains the corrections for future incorporation. The Milestone Design Review process was effectively implemented and complied with QAP-3-2 requirements.

The team also noted that several of the M&O contractor Quality Assurance procedures did not contain effectivity dates. Personnel performing quality affecting work to these procedures were confused as to when the procedures were in effect (see CAR HQ-92-011).

#### Objective Evidence

- IOC/M&O, *Milestone Design Review for MRS Conceptual Design*, R.W. Godman (Assistant General Manager-Operations), March 17, 1992.
- Training Records Files at M&O office:  
W. Bailey, J.J. Miller, J.R. Clark, R.G. Morgan, M.L. Sanger, J.S. Willis
- Indoctrination and Training Assignments: J.R. Clark, M.L. Sanger (at Charlotte)
- Plan for *Milestone Design Review, MRS Conceptual Design Report* (CDR) by J.R. Clark, March 20, 1992.
- Milestone Design Review Checklist Comments: K. Pierro, M. Fortsch, J.S. Willis
- Reviewer Qualification Forms (Att. III-QAP-3-2):  
W. Bailey, J.J. Miller, J.R. Clark, R.G. Morgan, M.L. Sanger, E.M. Fortsch, K. Pierro, J.S. Willis
- Milestone Design Review Attendance List 4-7-92, 4-8-92
- Document Review Record (DRR) - Milestone Design Review - Revision Reviewed by J.R. Clark and accepted 4-28-92.
- Final Draft MRS-CDR, May 1, 1992.
- M&O Contractor, Corrective Action Report-Training, - 92-HR-C-007, J.V. Watson, originated 4-12-92

- MRS, DRR Verification/Checking Guidelines, C.W. Chagnon May 12, 1992
- Final Draft MRS-CDP, "Marked-Up Revision", C.W. Chagnon
- M&O Quality Assurance Program Description, Revision 2
- M&O QAP-3-5 Development of Baseline Technical Documents, Revision 0
- M&O QAP-3-1, *Technical Document Review*, Revision 0
- M&O QAP-3-2, Design Reviews, Revision 0
- Document Review Records for the QAP-3-1 technical review of the MRS CDR submitted by the following people:

John J. Miller	James S. Willis	M.L. Sanger
James R. Clark	William Bailey	K. Pierro
Robert G. Morgan	J.J. Miller	M. Fortsch
- Statements of independence from preparation of the CDR from the following personnel:

John J. Miller	Robert G. Morgan	E.M. Fortsch
James R. Clark	James S. Willis	K. Pierro
- Letter from R.G. Vawter of Jeff R. Williams, dated March 27, 1992, indicating QAP-3-1 review criteria.
- Memo from A.M. Segrest dated March 18, 1992 indicating QAP-3-1 review team selection.
- Draft of the MRS CDR.
- Final Draft of the MRS CDR.
- Memo from A.M. Segrest dated March 18, 1992.
- M&O Organization Charts.
- Plan for the *Milestone Design Review* dated March 20, 1992.

## 6.0 RECOMMENDATIONS

The following recommendations do not require a response; however, the M&O management is expected to take appropriate action. These areas will be evaluated during subsequent verification activities.

1. The team recommends that QAP-2-1 be revised to provide a clear and organized method to prepare, approve, and revise Indoctrination and Training (I&T) forms; The M&O should provide additional training as necessary. M&O CAR 92-HR-C-007, dated 4-14-92, identified I&T problems similar problems to those listed below. The M&O identified root cause included filing of in process copies that contained inaccurate information and Managers/Supervisors had become lax in their implementation of QAP-2-1.

Examples of training problems are as follows:

- A. Training Files (M&O Vienna) for Mark Sanger were missing Indoctrination and Training (I&T) Matrix, *Verification of Education and Experience* form and attached evidence. Information was provided in the Charlotte, N.C. office which, if properly reviewed and filed, would satisfy record requirements.
  - B. Training File for J.R. Clark was missing his I&T Matrix, which was found at the Charlotte Office.
2. DRR Comment No. 8, average cask capacity, for the Milestone Design Review was not completely incorporated into the CDR document (Table 2.2.2 4-3, pg. 2-20 for the 900 MTU Rail case). Carl Chagnon verified this discrepancy and showed a *Master Book CDR MRS* listing other problems (DRR item 12) for later incorporation. The M&O should ensure this discrepancy is resolved in the next amendment to the CDR.
  3. R.D. Brown interviewed M.L. Sanger on 5/14/92. M.L. Sanger indicated that he performed his QAP-3-1 review according to the criteria provided in Attachment B *Design Review Topics* of the *Plan for the Milestone Design Review of the MRS Conceptual Design Report*. These review instructions are inconsistent with the documentation which lead reviewer J. Clark provided to the team as the review instructions he received from O.J. Gilstrap. An interview between R.L. Howard and O.J. Gilstrap on 5/14/92 confirmed that J. Clark used the proper review criteria; M.L. Sanger did not use the proper review criteria. The team recommends that the M&O Contractor ensure all future QAP-3-1 reviewers completely understand and/or document the acceptance criteria for their reviews.
  4. The surveillance team recommends that the M&O contractor consider placing control numbers or revision dates on individual pages of future *Technical Document Preparation Plans*.



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## CORRECTIVE ACTION REQUEST

<sup>1</sup> Controlling Document  
QA Procedure 3-5, Rev. 0, 2/3/92<sup>2</sup> Related Report No.  
HQ-SR-92-04<sup>3</sup> Responsible Organization  
TRW (M&O Contractor)<sup>4</sup> Discussed With  
O.J. Gilstrap<sup>5</sup> Requirement:

Paragraph 5.2.2 states, "Functional area managers shall ensure that the preliminary draft document (Conceptual Design Report (CDR)) is technically correct, and that the data, including illustrations and formulae, have been verified by qualified M&O personnel prior to initiation of the formal QAP-3-1 review."

<sup>6</sup> Adverse Condition:

Contrary to the above, the functional area managers have not ensured that the data supporting the preliminary draft CDR was verified prior to initiation of the formal QAP-3-1 review.

<sup>8</sup> Does a significant condition  
adverse to quality exist? Yes      No X  
If Yes, Circle One: A B C<sup>10</sup> Does a stop work condition exist?  
Yes      No X ; If Yes - Attach copy of SWO  
If Yes, Circle One: A B C D<sup>11</sup> Response Due Date:  
July 2, 1992<sup>12</sup> Required Actions: ☒ Remedial ☐ Extent of Deficiency ☐ Preclude Recurrence ☐ Root Cause Determination<sup>13</sup> Recommended Actions:

Establish the date when the M&O will begin formal verification activities for the MRS design. Retrain personnel on the importance of following procedures while performing quality affecting work.

<sup>7</sup> Initiator *R. D. Brown*  
R. D. Brown Date 5/22/92<sup>14</sup> Issuance Approved by:  
QADD *R.W. C.* Date 6/4/92<sup>15</sup> Response Accepted  
QAR Date<sup>16</sup> Response Accepted  
QADD Date<sup>17</sup> Amended Response Accepted  
QAR Date<sup>18</sup> Amended Response Accepted  
QADD Date<sup>19</sup> Corrective Actions Verified  
QAR Date<sup>20</sup> Closure Approved by:  
QADD Date

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## CORRECTIVE ACTION REQUEST

<sup>1</sup> Controlling Document  
Quality Assurance Program Description (QAPD), Rev. 2, 6/14/91<sup>2</sup> Related Report No.  
HQ-SR-92-04<sup>3</sup> Responsible Organization  
TRW (M&O Contractor)<sup>4</sup> Discussed With  
O.J. Gilstrap<sup>5</sup> Requirement:

Section 5, Paragraph 5.0 states, "These documents include or reference the appropriate quantitative and qualitative acceptance criteria for determining the acceptance of prescribed activities. The planning, preparation, review, approval, issuance, and training of personnel to these documents is accomplished prior to the start of quality affecting work."

<sup>6</sup> Adverse Condition:

- A. There was no evidence that the Operations Quality Engineering Manager had reviewed and approved the TDPD for the draft Conceptual Design Report (CDR).
- B. There was no evidence that the Manager, MRS Design had reviewed or approved the "final draft" CDR which was issued by TRW on May 1, 1992.
- C. There was no evidence that the Manager, MRS Design had reviewed and approved the "draft" CDR.

(Continued)

<sup>9</sup> Does a significant condition  
adverse to quality exist? Yes \_\_\_ No X  
If Yes, Circle One: A B C<sup>10</sup> Does a stop work condition exist?  
Yes \_\_\_ No X ; If Yes - Attach copy of SWO  
If Yes, Circle One: A B C D<sup>11</sup> Response Due Date:  
July 2, 1992<sup>12</sup> Required Actions: ☒ Remedial ☐ Extent of Deficiency ☐ Preclude Recurrence ☐ Root Cause Determination<sup>13</sup> Recommended Actions:

Obtain required approvals. Retrain personnel on the importance of following requirements while performing activities affecting quality.

<sup>7</sup> Initiator  
R. D. Brown *R. Donnie Brown* Date 5/22/92<sup>14</sup> Issuance Approved by:  
QADD *R.W. C. D.* Date 6/4/92<sup>15</sup> Response Accepted  
QAR Date<sup>16</sup> Response Accepted  
QADD Date<sup>17</sup> Amended Response Accepted  
QAR Date<sup>18</sup> Amended Response Accepted  
QADD Date<sup>19</sup> Corrective Actions Verified  
QAR Date<sup>20</sup> Closure Approved by:  
QADD Date

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**CORRECTIVE ACTION REQUEST (Continuation Page)**

- D. There was no evidence that the Manager, MRS Design reviewed and approved the issuance of the current version of the CDR TDPP (Controlled Document Issuance Instruction Form).
- E. The Manager, MRS Design documented his review and approval of the CDR TDPP on a form which was not part of the QA Program for controlling Technical Document Preparation Plans.

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## CORRECTIVE ACTION REQUEST

<sup>1</sup> Controlling Document Quality Assurance Program Description (QAPD), Rev. 2, 6/14/91		<sup>2</sup> Related Report No. HQ-SR-92-04
<sup>3</sup> Responsible Organization TRW (M&O Contractor)		<sup>4</sup> Discussed With O.J. Gilstrap/R.G. Vawter
<sup>5</sup> Requirement:  Section 6, Paragraph 6.1.2 states, "Document issuance and distribution is controlled to ensure that correct, applicable, and current documents are available to M&O personnel performing quality affecting activities."		
<sup>6</sup> Adverse Condition:  A. Contrary to the above, several Quality Assurance Procedures (3-3, 3-4, 3-9, 5-1, 6-1, 17-1, and others) do not contain effectivity dates. Personnel performing quality affecting work to these procedures were confused as to when the procedures were in effect.  B. Contrary to the above and the Conceptual Design Report (CDR) Technical Document Preparation Plan (Para. 7.4), several lead authors did not have controlled copies of the Plan. This only applies to the Task Forces which authored various sections of the draft CDR.		
<sup>9</sup> Does a significant condition adverse to quality exist? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If Yes, Circle One: A B C	<sup>10</sup> Does a stop work condition exist? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> ; If Yes - Attach copy of SWO If Yes, Circle One: A B C D	<sup>11</sup> Response Due Date: July 2, 1992
<sup>12</sup> Required Actions: <input checked="" type="checkbox"/> Remedial <input type="checkbox"/> Extent of Deficiency <input type="checkbox"/> Preclude Recurrence <input type="checkbox"/> Root Cause Determination		
<sup>13</sup> Recommended Actions:  Issue a memo to state when QAPs are effective. Revise QAP-5-1 to address effectivity dates. Issue controlled copies of the TDP to the lead authors of the draft CDR.		
<sup>7</sup> Initiator R.D. Brown <i>R.D. Brown</i> Date 5/22/92		<sup>14</sup> Issuance Approved by: QADD <i>R.D. Brown</i> Date 6/4/92
<sup>15</sup> Response Accepted QAR _____ Date _____		<sup>16</sup> Response Accepted QADD _____ Date _____
<sup>17</sup> Amended Response Accepted QAR _____ Date _____		<sup>18</sup> Amended Response Accepted QADD _____ Date _____
<sup>19</sup> Corrective Actions Verified QAR _____ Date _____		<sup>20</sup> Closure Approved by: QADD _____ Date _____