



Department of Energy
 Office of Civilian Radioactive Waste Management
 Yucca Mountain Site Characterization Office
 P.O. Box 98608
 Las Vegas, NV 89193-8608

SEP 30 1996

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 Site Characterization Project
 TRW Environmental Safety Systems, Inc.
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ISSUANCE OF SURVEILLANCE RECORD YMP-SR-96-024 RESULTING FROM YUCCA MOUNTAIN QUALITY ASSURANCE (YMQA) SURVEILLANCE OF THE CIVILIAN RADIOACTIVE WASTE MANAGEMENT SYSTEM MANAGEMENT AND OPERATING CONTRACTOR (CRWMS M&O)

Enclosed is the record of Surveillance YMP-SR-96-024 conducted by the YMQA at the CRWMS M&O facilities in Las Vegas, Nevada, August 27, 1996 through September 12, 1996.

The purpose of the surveillance was to verify that repository design and systems engineering deliverables comply with implementing procedures.

This surveillance is considered completed and closed as of the date of this letter. A response to this surveillance record and any documented recommendation is not required.

If you have any questions, please contact either Mario R. Diaz at (702) 794-1489 or Daniel J. Tunney at (702) 794-1353.

Richard E. Spence
 Yucca Mountain Quality Assurance

YMQA:MRD-2691

Enclosure:
 Surveillance Record YMP-SR-96-024

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 PDR WASTE PDR
 WM-11

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 NH 33
 WM-11

Rec'd: NMSS/HLUR

SEP 30 1996

cc w/encl:

D. A. Dreyfus, DOE/HQ (RW-1) FORS

R. W. Clark, DOE/HQ (RW-3.1) FORS

T. A. Wood, DOE/HQ (RW-14) FORS

J. G. Spraul, NRC, Washington, DC

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Jim Regan, Churchill County Commission, Fallon, NV

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Susan Dudley, Esmeralda County, Goldfield, NV

Sandy Green, Eureka County, Eureka, NV

Tammy Manzini, Lander County, Austin, NV

V. E. Poe, Mineral County, Hawthorne, NV

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R. E. Monks, M&O/LLNL, Livermore, CA

R. R. Richards, M&O/SNL, Albuquerque, NM, M/S 1333

R. E. Armstrong, M&O, Las Vegas, NV

R. P. Ruth, M&O, Las Vegas, NV

T. H. Chaney, USGS, Denver, CO

Records Processing Center

080099

BLOCK 9 (continued) BASIS OF EVALUATION/DESCRIPTION OF OBSERVATIONS:

There were no current repository design (Work Breakdown Structure [WBS] Number 1.2.4) deliverables in process which were subject to the requirements of the Quality Assurance Requirements and Description (QARD) document. Therefore, documents which were not deliverables; i.e., five completed drawing revisions and one in-process design analysis, were selected for verification. In the area of Systems Engineering (WBS 1.2.1), two recently-delivered study reports were selected for verification.

REPOSITORY DESIGN ACTIVITIES

The design control process and related procedures were discussed with the Supervisor, Repository Subsurface Design. Activity evaluations identified that the activities were subject to the requirements of the QARD document and the applicable procedures. One minor deficiency pertaining to an activity evaluation was corrected during the conduct of the surveillance. See Block 10 of this report for details.

The processing of five conceptual Exploratory Studies Facility (ESF)/Geologic Repository Operations Area (GROA) interface drawing revisions was verified. These drawings were approved but not yet entered into the baseline. Drawing revisions included the appropriate QA designator, and were prepared, checked, reviewed, and approved in accordance with appropriate procedures. Design verification was not applicable since these drawings are conceptual and are not to be used for procurement, fabrication, or construction. Documentation generated included drawing input lists, drawing review summaries, drawing and inputs list check copies, design review copies, final drawing check copies, drawing checklists, and approved drawings. Record packages, with the exception of the approved drawings, were submitted to the Records Processing Center. The approved drawings were not submitted as part of the records package since this occurs as part of the baseline process.

Processing of a design analysis for waste package transport and emplacement equipment was verified up to the point of checking. Documentation was generated, as required by appropriate procedures, and included an analysis check copy, analysis checklists, and an in-process analysis review summary.

SYSTEMS ENGINEERING ACTIVITIES

The design control process and related procedures were discussed with the Manager, Systems Analysis and Modeling. An activity evaluation identified that the activities were subject to the requirements of the QARD document and prescribed the applicable procedures.

Deliverable study reports covering the topics of thermal loading and the Engineered Barrier Systems (EBS) performance requirements were verified. These study reports were approved and delivered. With the exception of the generation of portions of review and concurrence documentation, the preparation of these study reports was in compliance with appropriate procedures. Appropriate review and concurrence documentation was generated during the course of the surveillance. See Block 10 of this report for details. Documentation generated included Technical Document Preparation Plans (TDPP), review correspondence, review drafts, reviewer comment documentation, written evidence of reviewer's concurrence of incorporation of comments, and approved study reports. Preparation of records packages for the study reports was in process.

TRAINING

Training was verified for the CRWMS M&O and Yucca Mountain Site Characterization Office (YMSCO) personnel involved in the preparation, checking, review, and approval of the drawings, the design analysis, and the study reports discussed previously. The status of training for personnel working to National Laboratory Quality Assurance programs is not maintained by the CRWMS M&O training organization and was not verified during the surveillance. There was no evidence that two CRWMS M&O and two YMSCO individuals had completed training prior to performing work. These deficiencies were corrected during the surveillance. See Block 10 of this report for details.

OBJECTIVE EVIDENCE REVIEWED

The following objective evidence was reviewed during the surveillance:

CRWMS M&O QA SURVEILLANCE REPORTS:

- 96-NSS-36, dated 5/17/96, "Preparation of Technical Documents and Technical Document Preparation Plans"
- 96-NSS-48, dated 6/14/96, "Development of Mined Geologic Disposal System (MGDS) Advanced Conceptual Design Report"
- 96-NSS-59, dated 7/25/96, "Development of Design Basis Events (DBE) Analyses"
- 96-NSS-61, dated 5/12/96, "Transmittal of Design Input"

CRWMS M&O PROCEDURES:

- Quality Administrative Procedure (QAP)-2-0, Revision 2, "Control of Activities"
- QAP-2-1, Revision 5, "Indoctrination and Training"
- QAP-3-0, Revision 4, "Design Control Process"
- QAP-3-5, Revision 6, "Development of Technical Documents"
- QAP-3-9, Revision 6, "Design Analysis"
- QAP-3-10, Revision 6, "Engineering Drawings"
- QAP-17-1, Revision 4, "Record Source Responsibility for Inclusionary Records"
- Nevada Line Procedure (NLP)-3-18, Revision 4, "Documentation of QA Controls on Drawings, Specifications, Design Analyses, and Technical Documents"
- NLP-3-24, Revision 2, "Processing of Inputs List Changes"
- NLP-3-28, Revision 0, "Checklists for Design Products"

YMSCO PROCEDURE:

- Yucca Mountain Site Characterization Project Line Procedure (YLP)-2.1Q-YMSCO, Revision 1, Interim Change Notice 2, "YMSCO Qualification and Training"

ESF/GROA INTERFACE DRAWINGS:

- Activity Evaluation BC0000000-01717-2200-00015, Revision 00 and Revision 01, "Repository Drawings"
- Drawing B00000000-01717-8100-00001, Revision 01, "ESF/GROA Interface, Subsurface Layout, Plan, Notes, Legend," and associated QA records, including Record Package Table of Contents, drawing checklist (originator), check copy for drawing inputs list, approved drawings inputs list, drawing check copy, engineering drawing checklist (checker), drawing review copy, final drawing check copy, final check drawing checklist, and drawing review summary

- Drawing B00000000-01717-8100-00003, Revision 01, "ESF/GROA Interface, Repository Block North End, Section, Plans," and associated QA records (same as above)
- Drawing B00000000-01717-8100-00004, Revision 01, "ESF/GROA Interface, North Ramp and Extension, Section, Plans," and associated QA records (same as above)
- Drawing B00000000-01717-8100-00005, Revision 01, "ESF/GROA Interface, Main Drift, Section," and associated QA records (same as above)
- Drawing B00000000-01717-8100-00006, Revision 01, "ESF/GROA Interface, South Ramp, Section, Plans," and associated QA records (same as above)

THE WASTE PACKAGE TRANSPORT AND EQUIPMENT ANALYSIS

- Activity Evaluation BC0000000-01717-2200-00011, Revision 01, "Repository Design Analysis"
- Design Analysis BCAF00000-01717-0200-00002, Revision 00A, Check Copy, "Waste Package Transport and Emplacement Equipment," and associated documentation including analysis checklist (originator), analysis checklist (checker), and design analysis review summary (in process)

THERMAL LOADING AND THE ENGINEERED BARRIER SYSTEM PERFORMANCE REQUIREMENTS STUDY REPORTS

- YMP Project Planning and Control System Participant Planning Sheet for WBS 1.2.1.5, approved 2/22/96, "Special Studies," Deliverable Identification Numbers TR150075 and TR150120
- Activity Evaluation B00000000-01717-2200-00086, Revision 02, "QAP-2-0 Evaluation for Perform System Studies"
- TDPP B00000000-01717-4600-00058, Revision 02, "TDPP for the Fiscal Year (FY) 1996 Thermal Loading Study Report"
- TDPP BB0000000-01717-4600-00023, Revision 02, "TDPP for the EBS Performance Requirements System Study Report"
- Study Report B00000000-01717-5705-00044, Revision 0, "Thermal Loading Study Report," and associated documentation including Review Draft A, review and concurrence documentation from reviewing organizations (Performance Assessment, Waste Package Development, MGDS/Repository, Lawrence Livermore National Laboratory [LLNL], Lawrence Berkeley National Laboratory [LBNL], Los Alamos National Laboratory [LANL], Sandia National Laboratories [SNL], Scientific Programs, QA, Licensing, Waste Package Materials, Systems Engineering Requirements, and MGDS Project Engineering), and Letter LV.SES.RDM.9/96-040, dated 9/6/96, removing the U. S. Geological Survey (USGS) as reviewer.
- Study Report BB0000000-01717-5705-00001, Revision 0, "EBS Performance Requirements System Study Report," and associated documentation including Review Draft A, review and concurrence documentation from reviewing organizations (Scientific Programs, MGDS/Repository, LLNL, Advanced Conceptual Design Project Engineering, Performance Assessment, Waste Package Development, Science and Engineering, Waste Package Materials, Systems Engineering Requirements, QA, SNL (unsolicited), and Licensing (unsolicited)), documentation from LANL dated 9/9/96 indicating that the LANL review is covered by the Scientific Programs review, and documentation from LLNL dated 9/5/96 indicating that the R. D. McCright review was adequately represented by the W. L. Clarke review.

TRAINING OF PERSONNEL

(Completion date shown in parentheses)

- Training for QAP-3-10, Rev. 6, "Engineering Drawings" included:

-Reading/Self-Study Records for

M. DeLeon	(1/02/96)
G. D. Milligan	(1/22/96)
W. R. Kennedy	(1/02/96)
S. J. Meyers	(2/09/96)
C. F. Buckey	(5/09/96)
R. A. Mele	(5/10/96)
J. L. Robertson	(6/11/96)

-Yucca Mountain Site Characterization Project Training Assignments for

P. V. Auer	(1/10/96)
R. B. Baumeister	(9/12/96)

-Check of the CRWMS M&O Training Information Database (TRID) for

J. F. Beesley	(1/03/96)
R. L. Schreiner	(5/15/96)
R. F. Wemheuer	(1/03/96)
F. N. Zinkevich	(1/03/96)
A. M. Haghi	(6/20/96)
R. R. Dresel	(1/03/96)
R. M. Nolting	(1/03/96)
N. D. Sudan	(5/16/96)
D. G. McKenzie	(1/04/96)
O. J. Gilstrap	(1/04/96)

- Training for QAP-3-9, Revision 6, "Design Analysis," included:

-Reading/Self-Study Records for

J. W. Peters	(1/02/96)
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- -Check of the CRWMS M&O TRID for

D. F. Vanica	(1/02/96)
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- Training for QAP-3-5, Revision 6, "Development of Technical Documents," included:

-Reading/Self-Study Records for

S. F. Saterlie	(8/05/96)
R. D. Memory	(7/10/96)
H. A. Benton	(2/23/96)
W. F. Van Der Laan	(7/01/96)
M. Balady	(7/29/96)
L. D. Rickertsen	(7/22/96)
M. T. Peters	(8/14/96)
R. W. Andrews	(3/15/96)

- -Check of the CRWMS M&O TRID for

J. W. Willis	(2/23/96)
T. C. Geer	(4/29/96)
D. H. Tang	(4/30/96)
D. M. Jenkins	(2/15/96)
M. L. Scott	(6/26/96)
D. Stahl	(2/26/96)
M. D. Sellers	(2/20/96)
S. T. Nelson	(8/14/96)
E. M. Cikanek	(2/19/96)
C. R. Hastings	(7/08/96)
J. E. Houseworth	(8/29/96)
D. A. Nitti	(8/07/96)
F. C. Arth	(2/19/96)
J. A. Blink	(2/27/96)

PERSONNEL CONTACTED

The following personnel were contacted during the surveillance:

R. W. Andrews, Manager, Performance Assessment, CRWMS M&O
M. Balady, System Analysis and Modeling, CRWMS M&O
R. B. Baumeister, YMSCO, U.S. Department of Energy (DOE)
E. M. Cikanek, Repository Subsurface Design, CRWMS M&O
J. J. Clark, MGDS Development, CRWMS M&O
S. R. Dana, Yucca Mountain Quality Assurance Division (YMQAD), Quality Assurance Technical Support Services (QATSS)
E. F. Dembowski, Configuration Management, CRWMS M&O
E. T. Ferguson, Engineering Services, CRWMS M&O
C. A. Humphries-Alder, YMQAD, QATSS
K. M. Jerome, Technical Information Center, CRWMS M&O
J. B. Justice, Supervisor, Training Records, CRWMS M&O
G. L. Keener, QA, CRWMS M&O
D. G. McKenzie, Supervisor, Repository Subsurface Design, CRWMS M&O
R. D. Memory, Manager, System Analysis and Modeling, CRWMS M&O
J. W. Peters, Product Checking, CRWMS M&O
M. Prater, Engineering Services, CRWMS M&O
S. F. Saterlie, System Analysis and Modeling, CRWMS M&O
E. L. Spangler, Training Records, CRWMS M&O
D. F. Vanica, Repository Subsurface Design, CRWMS M&O

BLOCK 10 (continued) SURVEILLANCE CONCLUSIONS:

DEFICIENCIES CORRECTED DURING THE SURVEILLANCE

The following deficiencies were identified and corrected during the surveillance:

1. To correct a typographical error, Revision 01 to Activity Evaluation BC0000000-01717-2200-00015, was issued. This changed "NLP-3-21" to "NLP-3-24" (Revision 2, "Processing of Inputs List Changes").

2. The following deficiencies related to review and concurrence of study reports were noted:

- Performance Assessment, Scientific Programs, LLNL, LBNL, and USGS were assigned reviewers for B00000000-01717-5705-00044, Revision 0, "Thermal Loading Study Report." There was no evidence that they reviewed or concurred with the final version of this document prior to its approval. It was determined and documented that USGS was not a required reviewer. Evidence of review and concurrence by the other reviewers was produced.
 - LANL and LLNL (R. D. McCright) were assigned reviewers for BB0000000-01717-5705-00001, Revision 0, "EBS Performance Requirements System Study Report." There was no evidence that they reviewed or concurred with the final version of this document prior to its approval. Evidence that LANL's review was provided by the Scientific Programs organization was produced. Evidence that the LLNL review was adequately represented by another LLNL reviewer (W. L. Clarke) was produced.
 - There was no written evidence that Scientific Programs comments against BB0000000-01717-5705-00001, Revision 0, "EBS Performance Requirements System Study Report," were adequately addressed or that this review organization concurred with the final version prior to its approval. Evidence of Scientific Program's comment resolution and concurrence with the final version was produced.
 - There was no written evidence of SNL concurrence with BB0000000-01717-5705-00001, Revision 0, "EBS Performance Requirements System Study Report," prior to its approval. Evidence of SNL concurrence was produced.
 - Evidence of the Waste Management and Integration organization concurrence with the final version of BB0000000-01717-5705-00001, Revision 0, "EBS Performance Requirements System Study Report," is not written (i.e., provided in form of unsigned electronic mail). This was signed during the course of the surveillance.
3. There was no evidence that two CRWMS M&O individuals (S. F. Saterlie and R. W. Andrews) had completed training prior to performing work in accordance with QAP-3-5, Revision 6. Evidence that they were trained was produced.
4. There was no evidence that a YMQAD reviewer (P. V. Auer) and a DOE Assistant Manager for Environment, Safety, and Health reviewer (R. B. Baumeister) had completed training prior to performing work in accordance with QAP-3-10, Revision 6. Evidence that they were trained was produced.

RECOMMENDATION

The CRWMS M&O design control procedures include provisions for checking of drawings, specifications, and design analyses. It is recommended that other types of technical documents, such as study reports, be formally checked (e.g., verify that review and concurrence documentation is complete) prior to approval.

EFFECTIVENESS OF AREAS EVALUATED

In evaluating the effectiveness of areas, consideration was given to the observation of activities in progress, objective evidence examined, interviews with personnel, and the extent of deficiencies.

Within the repository design organization, processing of ESF/GROA interface drawing revisions and design analysis for waste package transport and emplacement equipment (up to the point of checking) was found to be highly effective. A noteworthy practice was the use of detailed checklists to evaluate design products.

The review of deliverable study reports within the systems analysis and modeling organization was found to be marginally effective. Overall, the processing of the two deliverables evaluated (i.e., Thermal Loading Study Report and the EBS Performance Requirements System Study Report) was found to be effective.

The area of training, as it applies to the drawings, analysis, and study reports evaluated, was found to be marginally effective. It should be noted that the CRWMS M&O is the responsible organization for Corrective Action Request (YM-96-C-008) which pertains to training.

The surveillance team thanks the individuals contacted for their cooperation during the surveillance.