



DEPARTMENT OF ENERGY
Office of Civilian Radioactive Waste Management
Office of Geologic Disposal
Yucca Mountain Site Characterization Project Office
P.O. Box 98608
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WBS 1.2.11
QA: N/A

APR 01 1994

Larry R. Hayes
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U.S. Geological Survey
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ISSUANCE OF SURVEILLANCE RECORD YMP-SR-94-039 RESULTING FROM YUCCA MOUNTAIN
QUALITY ASSURANCE DIVISION (YMOAD) SURVEILLANCE OF U.S. GEOLOGICAL SURVEY
(USGS) (SCP: N/A)

Enclosed is the record of Surveillance YMP-SR-94-039 conducted by the YMOAD at
the USGS facilities in Denver, Colorado, March 15-17, 1994.

The purpose of the surveillance was to evaluate implementation of the
requirements in YMP-USGS-QMP 3.03, Revision 4, "Software."

One corrective action request (CAR) was issued as a result of this
surveillance. Response to the CAR, which was transmitted via separate letter,
is due by the date indicated in Block 11 of the CAR.

This surveillance is considered completed and closed as of the date of this
letter. A response to this surveillance record and any documented
recommendations is not required. However, any open CARs will continue to be
tracked until the CAR is closed to the satisfaction of the quality assurance
representative and the Director, YMOAD.

If you have any questions, please contact either Robert B. Constable at
794-7945 or Richard L. Maudlin at 794-7290.

Robert B. Constable

YMOAD:RBC-2801

Richard E. Spence, Director
Yucca Mountain Quality Assurance Division

Enclosure:
Surveillance Record YMP-SR-94-039

Add: Ken Hoffman

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PDR WASTE
WM-11 PDR

Larry R. Hayes

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APR 01 1994

cc w/encl:

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R. W. Clark, HQ (RW-3.1) FORS
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D. A. Bechtel, Clark County Comprehensive, Las Vegas, NV
J. D. Hoffman, Esmeralda County, Goldfield, NV
Eureka County Board of Commissioners,
Yucca Mountain Information Office, Eureka, NV
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OFFICE OF
RADIOACTIVE WASTE MANAGEMENT
U.S. DEPARTMENT OF ENERGY
WASHINGTON, D.C.

QUALITY ASSURANCE SURVEILLANCE RECORD

SURVEILLANCE DATA

¹ORGANIZATION/LOCATION:
United States Geological
Survey, Denver, CO

²SUBJECT:
Software Quality Assurance

³DATE: 3/15-17/94

⁴SURVEILLANCE OBJECTIVE:
To verify compliance to YMP-USGS-QMP-3.03, Revision 4, for the Control of Software

⁵SURVEILLANCE SCOPE:
The scope of the surveillance is to select a sample of completed software life cycle documentation and verify that all of the applicable requirement of YMP-USGS-QMP-3.03, Revision 4 have been met.

⁶SURVEILLANCE TEAM:
Team Leader:

R. L. Maudlin
Additional Team Members:

⁷PREPARED BY:

Robert R. Maudlin RM 3.14.94
Surveillance Team Leader Date

⁸CONCURRENCE:

Robert R. Maudlin for 3.14.94
QA Division Director Date

SURVEILLANCE RESULTS

⁹BASIS OF EVALUATION/DESCRIPTION OF OBSERVATIONS:

See page 2

¹⁰SURVEILLANCE CONCLUSIONS:

See page 3

¹¹COMPLETED BY:

Robert R. Maudlin RM 3/31/94
Surveillance Team Leader Date

¹²APPROVED BY:

Robert R. Maudlin for 3.31.94
QA Division Director Date

BASIS OF EVALUATION/DESCRIPTION OF OBSERVATIONS
(Continued from page 1, Block⁹)

A surveillance was performed of the United States Geological Survey (USGS) at their offices in Denver, Colorado on March 15, 1994 through March 17, 1994, to assess the implementation and effectiveness of controls applied to software as described in the YMP-USGS-QMP 3.03, Revision 4, "Software."

The following personnel were contacted during the surveillance:

Daniel J. Gockel, Quality Assurance (QA) Software Specialist/USGS
Mark A. Wallendorf, Software Configuration Management/SAIC/USGS
Martha H. Mustard, QA Specialist/USGS
Jeffery A. Coe, Hydrologist (Water Resources)/USGS
Mark Kurzmack, Systems Analyst 3/USGS

During the course of the surveillance, selected individuals were interviewed and a review of objective evidence such as: the Software Configuration Status Accounting Log, Software Configuration Status Accounting Log Updates, Software Configuration Management Forms for software withdrawals, and other life cycle documentation, were performed to establish compliance with Quality Management Procedures (QMP) 3.03, Revision 4 and determine if the controls placed on the software were effective. As of the date of this surveillance, activities related to implementation of QMP 3.03, Revision 4 have been extremely limited. For the most part, objective evidence sampled contained documentation that was generated under previous revisions of QMP 3.03. Many of the software products are in various stages of the life cycle process and have not progressed to stages which would require documentation generated as a result of QMP 3.03, Revision 4. However, software packages were reviewed which had documentation (i.e.; Comment/Resolution Forms) prepared for subsequent reviews in accordance with QMP 3.07, Revision 5, "YMP-USGS Review Procedure", but the reviews had not been processed.

Based on the interviews and review of the objective evidence available, it was noted that two conditions were found where compliance to QMP 3.03, Revision 4 was not met. The first condition related to the lack of documentation which supported an independent review for applicability of software, DIPS/2.2, that had been transferred to another YMP-USGS user. The second condition related to software, GSP 0028.01 (MAIN130/1), which had been reviewed by QA and released on/or after the effective date of QMP 3.03, Revision 4 which did not have all the required documentation necessary to comply with QMP 3.03. It should be noted that the first condition may have occurred due to the lack of QMP 3.03 picking up

on requirements in the U.S. Department of Energy, Quality Assurance Requirements Description (QARD), DOE/RW-0333P, which establish that software uses shall be approved and independently reviewed to insure that selected software is applicable to the problem being solved. QMP 3.03 addresses this issue upon the initial release of the software, but does not address this independent review when the software is transferred to another user for other activities not identified in the original review.

SURVEILLANCE CONCLUSIONS

(Continued from page 1, Block¹⁰)

The results of the surveillance disclosed, as noted previously, that not much activity has occurred under QMP 3.03, Revision 4. A limited sampling was selected, where applicable to QMP 3.03, Revision 4. Based on the conditions identified in Block 9 of this surveillance report, two conditions adverse to quality were identified. The condition related to the software GSP 0028.01 (MAIN130/1) was resolved by the preparation of a memo to file, dated 03/17/94, which documented a review performed by USGS personnel indicating that equivalent compliance to QMP 3.03, Revision 4 was satisfactory, even though the proper forms had not been completed for the independent review. The condition related to software DIPS/2.2 was documented on Corrective Action Requests YM-94-027.

In addition to the above, two recommendations are being made. The first recommendation relates to the strengthening of controls on released software. Through interviews it was disclosed that the Technical Contacts are maintaining the software after it has been withdrawn and/or its status changes from released to another status which prohibits its use (i.e.; revision). As of this date, QMP 3.03, Revision 4 does not address how the physical software, which is still in the hands of the users, is identified so that it will not be used until it has been approved and released. USGS should institute procedural measures which will clearly identify all physical software that remains in the possession of the user or retrieve all copies of the released software and control under a locked condition.

The second recommendation relates to communication of the status of software to the Technical Contacts. Two different Technical Contacts were interviewed to determine if they were aware of the status of the software in their possession (i.e.; GEOPROGRAM/V01.0, ORIPROGRAM/V01.0, and PTCAL/1.007). Both Technical Contacts indicated that the software in their possession was RELEASED and could be used. However, the Configuration Management Coordinator indicated that the software was under revision and was not in a released for use status. It should be noted that in neither case could it be established that the software in the possession of the users was used in any quality affecting activities. This situation closely ties into the first recommendation which deals with physical control of the software. As noted in the first recommendation, USGS needs to strengthen procedural controls on the physical software.

Effectiveness of the controls applied to software under the requirements of QMP 3.03, Revision 4 could not be determined due to: (1) the lack of sufficient implementation and (2) based on the conditions identified during the course of this surveillance.