

OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

YUCCA MOUNTAIN QUALITY ASSURANCE DIVISION

REPORT

OF

QUALITY ASSURANCE SURVEILLANCE

NO. YMP-SR-92-006

OF LOS ALAMOS NATIONAL LABORATORY

CONDUCTED JULY 9 THROUGH 14, 1992

AT LAS VEGAS, NEVADA

ACTIVITY SURVEILLED:

WBS 1.2.3.2:

"CHARACTERIZATION OF VOLCANIC FEATURES"

(STUDY PLAN 8.3.1.8.5.1, REVISION 0)

"PROBABILITY THAT MAGMATIC ERUPTIONS
PENETRATE THE REPOSITORY"

(STUDY PLAN 8.3.1.8.1.1, REVISION 0)

Prepared by:

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Date:

8/07/92

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Yucca Mountain Quality Assurance Division

Approved by:

Donald G. Horton

Date:

8/10/92

Donald G. Horton
Director
Office of Quality Assurance

1.0 EXECUTIVE SUMMARY

The Yucca Mountain Quality Assurance Division (YMQAD) performed a surveillance of scientific activity conducted by the Los Alamos National Laboratory (LANL) under the technical requirements specified in Study Plans:

8.3.1.8.5.1, Revision 0, "Characterization of Volcanic Features"

8.3.1.8.1.1, Revision 0, "Study Plan for Probability of Magmatic Disruption of the Repository"

The surveillance was conducted in LANL's offices in the Valley Bank Building in Las Vegas, Nevada, during the period July 9 through 14, 1992.

The surveillance team examined the implementation of technical and selected programmatic requirements as defined in LANL Quality Assurance (QA) procedures. The team focused on the field and laboratory logs and notebooks that are the primary records of field activity and of the interpretation of samples and data gathered. The team concluded that implementation of these requirements is satisfactory.

One condition adverse to quality was noted and an Office of Civilian Radioactive Waste Management (OCRWM) Corrective Action Request (CAR) was issued. This CAR addressed a lack of procedural compliance in that completed notebooks have not been subjected to a technical review as required. Specific details are provided in Section 5.1 and a copy of CAR YMP-92-058 is provided in Enclosure 1 of this report.

This surveillance was conducted in accordance with OCRWM Quality Assurance Administrative Procedure QAAP 18.3, Revision 3, "Surveillance Program."

2.0 SCOPE

The scope of this surveillance was the geologic activity defined in Work Breakdown Structure WBS 1.2.3.2 in Study Plan 8.3.1.8.5.1, Revision 0, and Study 8.3.1.8.1.1, Revision 0. The focus was on activity related to general field information, structure, petrology, geochemistry, geochronology, and development of probabilities. Under examination were the records of the field work, observations and conclusions, the records of samples collected and their traceability to subsequent storage and laboratory analysis, and the development of models resulting from this information.

3.0 SURVEILLANCE TEAM

Thomas J. Higgins, Surveillance Team Leader, Science Applications International Corporation (SAIC)/YMQAD, Las Vegas, Nevada

Steven R. Mattson, Technical Specialist, SAIC/YMQAD, Las Vegas, Nevada

4.0 PERSONNEL CONTACTED DURING THE SURVEILLANCE

Bruce M. Crowe, Principal Investigator, LANL, Las Vegas, Nevada

Richard A. Morley, Associate Investigator, LANL, Las Vegas, Nevada

Alice L. Thompson, Resident File Custodian, LANL, Las Vegas, Nevada

Andrew G. Burningham, QA Liaison, LANL, Las Vegas, Nevada

Stephen L. Bolivar, QA Manager, LANL, Los Alamos, New Mexico

5.0 SURVEILLANCE RESULTS

The surveillance team reviewed documentation and conducted interviews with responsible individuals in order to determine compliance with requirements. The documentation was primarily the available field and laboratory logs and notebooks that are the primary records in geological activities.

The activities described in the two study plans are directed from the LANL's office in Las Vegas. Field activities and observations are recorded in field notebooks that are maintained in Las Vegas, Nevada. Collected samples are shipped to F. Perry at the University of New Mexico in Albuquerque, New Mexico. Dr. Perry is a petrologist who provides storage and analysis by optical microscopy. In addition, he provides sample preparation (sectioning, polishing and powdering) for the various instrumental analyses that are provided the EES-1 organization at LANL in Los Alamos, New Mexico, by S. Forman at The Ohio State University in Columbus, Ohio; and by P. Zeidler at Lehigh University in Bethlehem, Pennsylvania.

The surveillance team determined that implementation of the reviewed programmatic and technical requirements is satisfactory. All requirements are being met with one exception. This exception is related to the requirement to obtain a technical review of completed log/note books. As a result, CAR No. YMP-92-058 was issued to document this condition adverse to quality.

5.1 Procedural Compliance

Objective evidence was examined in order to evaluate procedural compliance for selected requirements from the following procedures:

TWS-QAS-QP-03.5, Revision 0, "Procedure For Documenting Scientific Investigation"

TWS-EES-13-DP-607, Revision 0, "Procedure For Volcanism Sample Storage and Control"

LANL-YMP-QP-04.4, Revision 1, "Procurement Of Commercial-Grade Items and Services"

LANL-YMP-QP-17.4, Revision 0, "Records Preparation"

The evaluation was positive except for the implementation of section 6.9.1 of TWS-QAS-QP-03.5, Revision 0, which states in part: "At a minimum, all notebooks and logbooks must be independently reviewed when they are completed or when the activity is terminated." Responsible LANL personnel indicated that none of these books have received this review. As a result, CAR No. YMP-92-058 was issued to document this condition adverse to quality. Three specific instances of failure to comply with the procedure were cited. Corrective action was requested that would identify all logs and notebooks related to the volcanism activity that exhibit this condition. The CAR also requests consideration be given to some mechanism to prevent recurrence.

5.2 Technical Requirements

The surveillance team examined the scientific notebooks stored in Las Vegas, including both laboratory and field notebooks. The information recorded in these notebooks was thoroughly reviewed and found to be very good records of the activity under this task.

The use of satellite and aerial photographs was also examined. Aerial photography is only being used at present; typically for mapping purposes and location information.

The use of, and documentation for, the geochronology, petrology, geochemistry, structural information, and general field information were all examined from the records that are stored in Las Vegas. No problems or concerns were found with the quality of this information or the practices being employed in their storage.

The compilation of information and the task of calculating probabilities, as required in the Nuclear Regulatory Commission regulations, were also investigated. These tasks have begun, but the compilation of information has much more work that will be done in the future.

All of the technical checklist questions were answered satisfactorily and no findings are to be reported.

It is the opinion of the Technical Specialist that the technical requirements of the study plans are being met and that the work is being carried out in competent manner that will meet the intended goal of these plans.

6.0 RECOMMENDATIONS

The surveillance team was impressed with condition of the logs and notebooks. The investigators had them either at hand or stored in a one hour fire safe. The books condition was excellent including one that is ten years old.

However, as has been stated several times, logs and notebooks are the primary record of the volcanism activity. These books travel to the field with the investigators and often take one or more years to fill. They are principally in the control of the individual to whom they were issued. They often contain one-of-a-kind information or observations for uncontrolled periods of time. There are also a number of logs and notebooks at the University of New Mexico and at subcontractor locations.

A log or notebook is not subject to the protection of the controls for Quality Assurance Records until after the book is completed (or the activity is finished/terminated) and it has also received the technical review required in TWS-QAS-QP-03.5, Revision 0, Section 6.9.1. There is no requirement for photocopying to protect against loss of information. In view of the length of time that these books are unprotected and the potential for loss of one-of-a-kind information, some mandatory protection by photocopying should be instituted.

ENCLOSURE 1

ORIGINAL
 THIS IS A RED STAMP

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|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT U.S. DEPARTMENT OF ENERGY WASHINGTON, D.C. | | 8 CAR NO.: <u>YM-92-058</u> DATE: <u>07/14/92</u> SHEET: <u>1</u> OF <u>1</u> <p style="text-align: center;">QA</p> |
| CORRECTIVE ACTION REQUEST | | |
| 1 Controlling Document LANL QAPP / TWS-QAS-QP-03.5, Rev. 0 | | 2 Related Report No. YMP-SR-92-006 |
| 3 Responsible Organization LANL | 4 Discussed With B. M. Crowe, A. Burningham | |
| 5 Requirement: TWS-QAS-QP-03.5, Rev. 0, "Procedure for Documenting Scientific Investigations", requires in section 6.9.1 ("Technical Review of Laboratory and Field Notebooks and Logbooks") that: "At a minimum, all notebooks and logbooks must be independently reviewed when they are completed or when the activity is terminated." | | |
| 6 Adverse Condition: Contrary to the requirement, the following completed books were not subjected to review as specified in Section 6.9.1: | | |
| Date of Final Entry that Filled Book | Unique Book Identifier | Title |
| 5/13/83 | TWS-EES-13-LV-11-89-05 | Volcanism Field Notebook No. 4 |
| 3/22/89 | TWS-G-6-5/79-16 | Lab Sample Log Book: Activity 2.5.1 Volcanic Hazards |
| 8/29/91 | TWS-EES-13-LV-89-07 | Volcanism Field Notebook No. 6 |
| 9 Does a significant condition adverse to quality exist? Yes ___ No <u>X</u> If Yes, Circle One: A B C | 10 Does a stop work condition exist? Yes ___ No <u>X</u> ; if Yes - Attach copy of SWO If Yes, Circle One: A B C D | 11 Response Due Date: 20 days from issuance |
| 12 Required Actions: <input checked="" type="checkbox"/> Remedial <input checked="" type="checkbox"/> Extent of Deficiency <input checked="" type="checkbox"/> Preclude Recurrence <input type="checkbox"/> Root Cause Determination | | |
| 13 Recommended Actions: a) Identify all notebooks and logbooks pertaining to the volcanism activity that exhibit this deficiency. b) Secure the required technical and QA reviews as required by section 6.9.1 of the cited procedure c) Meet the requirements for a Project record that will apply once the review is completed as also required in section 6.9.1 of the procedure. | | |
| 7 Initiator T. J. Higgins Date <u>7-14-92</u> | 14 Issuance Approved by: QAADD Date <u>7-14-92</u> | |
| 15 Response Accepted QAR Date | 16 Response Accepted QAADD Date | |
| 17 Amended Response Accepted QAR Date | 18 Amended Response Accepted QAADD Date | |
| 19 Corrective Actions Verified QAR Date | 20 Closure Approved by: QAADD Date | |