Department of Energy
Office of Civilian Radioactive Waste Management
Yucca Mountain Site Characterization Office
P.O. Box 98608
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JUN 17 1996

L. Dale Foust
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ISSUANCE OF SURVEILLANCE RECORD YMP-SR-96-014 RESULTING FROM YUCCA MOUNTAIN QUALITY ASSURANCE DIVISION'S (YMQAD) SURVEILLANCE OF THE CIVILIAN RADIOACTIVE WASTE MANAGEMENT SYSTEM MANAGEMENT AND OPERATING CONTRACTOR (CRWMS M&O) AT LOS ALAMOS NATIONAL LABORATORY (LANL) (SCPB: N/A)

Enclosed is the record of Surveillance YMP-SR-96-014 conducted by the YMQAD at the CRWMS M&O/LANL facilities at the Yucca Mountain Site, Nevada, May 29, 1996.

The purpose of the surveillance was to examine the monitoring, identification of break-through, and the reduction in concentration of the tracer at the C-Hole complex.

There were no deficiency documents generated as a result of this surveillance. This surveillance is considered completed and closed as of the date of this letter. A response to this surveillance record is not required.

If you have any questions, please contact either Mario R. Diaz at (702) 794-1489 or Kenneth T. McFall at (702) 794-5470.

R.E. Spence

Richard E. Spence, Director
Yucca Mountain Quality Assurance Division

YMQAD:MRD-1963

Enclosure:
Surveillance Record
YMP-SR-96-014

240020

YMP-5

102.7
WM-11
NH03

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OFFICE OF
RADIOACTIVE WASTE MANAGEMENT
U.S. DEPARTMENT OF ENERGY
WASHINGTON, D.C.

QUALITY ASSURANCE SURVEILLANCE RECORD

SURVEILLANCE DATA

[1]ORGANIZATION/LOCATION:	[2]SUBJECT:	[3]DATE: 5/29/96
Los Alamos National Laboratory (LANL), Yucca Mountain Site, Nevada.	Tracer testing at the C-Hole complex.	

[4]SURVEILLANCE OBJECTIVE: Injection of a conservative tracer.

[5]SURVEILLANCE SCOPE:	[6]SURVEILLANCE TEAM:
Examine the monitoring to identify break-through and reduction in concentration of the tracer.	Team Leader: Kenneth T. McFall Additional Team Members: N/A

[7]PREPARED BY:		[8]CONCURRENCE:	
Kenneth T. McFall	5/28/96	N/A	
Surveillance Team Leader	Date	QA Division Director	Date

SURVEILLANCE RESULTS

[9]BASIS OF EVALUATION/DESCRIPTION OF OBSERVATIONS:

See Page(s) 2-4

[10]SURVEILLANCE CONCLUSIONS:

See Page(s) 4

[11]COMPLETED BY:		[12]APPROVED BY:	
Kenneth T. McFall	6-17-96		6/17/96
Surveillance Team Leader	Date	QA Division Director	Date

Enclosure

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

Surveillance YMP-SR-96-014 was conducted May 29, 1996 at the C-Hole complex at the Yucca Mountain Site, Nevada. The intent of the surveillance was to verify that LANL is following the requirements set forth in Job Package (JP) 95-08, Revision 0, "C-Hole Complex Period 2 Tracer Testing," Test Planning Package (TPP) T-92-09, Revision 2, "Characterization of the Saturated-Zone Groundwater Flow System, C-Hole Complex," and Paragraph 5.6a of Yucca Mountain Site Characterization Project Administrative Procedure (YAP) 6.2Q, Revision 1, "Distribution, Maintenance, and Use of Controlled and Managed Documents."

Injection of the conservative tracer pentafluorobenzoic acid commenced on May 15, 1996 in the C-2 borehole at the C-Hole complex. The tracer is classified as conservative in nature, meaning that it is anticipated to have no physical or chemical reaction with the saturated zone in which it is injected. Additionally, the tracer needed to be of such a nature that it would not be occurring naturally in the groundwater or be masked by naturally occurring groundwater constituents. The tracer was mixed and injected as a slug, meaning that it was put into the groundwater as rapidly as possible while staying within the injection pressure and rate parameters. At 12:20 p.m., approximately 225 gallons of tracer solution at a concentration of 8,000 to 10,000 parts per million, pentafluorobenzoic acid was injected into the borehole at a rate of approximately 5.5 gallons per minute (gpm). Borehole C-3 at a distance of 99.8 feet from C-2 had been previously pumped until a steady state had been achieved and then maintained at that rate which was approximately 154 gpm. The purpose of the test is to see how long the groundwater travel time is between the two boreholes under known and controlled conditions. The water being pumped out from C-3 was monitored for break-through of the tracer with instrumentation capable of detection of the tracer in the parts per billion range. On Saturday afternoon May 18, 1996, the tracer was identified in the water being pumped from C-3. The tracer content of the water continues to be monitored to determine the tracer retention time in the saturated zone.

The instrumentation used to determine the break-through of the tracer is considered to be non-quality affecting since it was used only to give a rough indication of break-through to allow the Principal Investigator (PI) to better regulate water sample intervals. The samples were collected, split with University of Nevada Las Vegas (UNLV) personnel, and submitted to the Sample Management Facility for curation. The samples require no special handling requirements other than normal care taken with glass bottles and will be analyzed by UNLV personnel at UNLV's facilities in Las Vegas along with check samples, blanks, and blind samples. Sample splits will periodically be analyzed by LANL at their facilities as a check on the UNLV performance.

Scientific Notebook (SN) LA-EES-4-NBK-96-001, "QA Notebook for C-Wells Tracer Testing," is being used to record data and results from the tracer test. The SN is present at the C-Hole complex, is in good condition, and complies with procedure LANL-YMP-QP-03.5, Revision 5, "Documenting Scientific Investigations," which controls the use of SNs and is also on site. Paul Reimus of LANL is the PI for the testing and he maintains the SN and oversees the gathering of data and scientific information.

The following attributes were reviewed for compliance:

TPP T-92-09, Revision 2, "Characterization of the Saturated-Zone Groundwater Flow System, C-Hole Complex."

- A calibrated flowmeter was in place on the tracer injection line capable of measuring both instantaneous flow rates and volume pumped. (A.1.e)

  LANL was using only one flowmeter in a quality affecting application for this activity; manufactured by Endress and Hauser, serial number 8193, last calibration 4/10/96, next calibration due 4/10/97, calibrated at the Stennis Space Center. The flowmeter is vortex/digital and has a range of 0 to 308 gpm.

- Water pumped from the boreholes at the C-Hole complex is discharged into Forty Mile Wash via the C-Hole discharge pipeline and spreading basin. (A.5)

- Ponding of water on the C-Hole complex shall be minimized to the extent practical (no standing water was observed during LANL's activities at the C-Hole complex). (B.1)

- All computer software is either off the shelf, word processing, software that is bundled with equipment, or QA approved standard data analysis software. (D.2)

- The following Work Program (WP) has been developed in conjunction with the C-Hole activities. (D.9.b)

  Yucca Mountain Site Characterization Project YMP/WP/95-22, Revision 0, "UE-25 C-Hole Complex Multiple-Well Hydraulic Interference Testing-Work Period 2."

JP 95-08, Revision 0, "C-Hole Complex Period 2 Tracer Testing."

- The pumping rate does not exceed 400 gpm. (AMESH:MER-3178[2.b])

- The spreading basin is not overflowing. (AMESH:MER-3178[2.c])

- Calibrated flow instrumentation is being used. (Determination of Importance Evaluation DIE#BAAAD0000-01717-2200-00008, Revision 2 [2.0])

YAP 6.2Q, Revision 1, "Distribution, Maintenance, and Use of Controlled and Managed Documents." (5.6a)

- Controlled documents relating to the scope of work being conducted by LANL at the C-Hole complex were present. The following documents were verified as being on site:

  - YAP-3.6Q, Revision 0, "Physical Interface Control."

- YAP-SII.4Q, Revision 0, "The Collection, Submission, and Documentation of Non-Core and Non-Cuttings Samples to the Sample Management Facility for Site Characterization."
- LANL-YMP-QP-03.5, Revision 5, "Documenting Scientific Investigations."
- LANL-YMP-QP-08.1, Revision 4, "Identification and Control of Samples."
- LANL-YMP-QP-12.3, Revision 2, "Control of Measuring and Test Equipment Standards."
- LANL-EES-4-DP-801, Revision 1, "Single and Multiple-Well Tracer Transport Experiments in the Field."
- LANL-EES-4-DP-802, Revision 1, "Preparation of Standards for Tracer Concentration Measurement."
- LANL-EES-4-DP-804, Revision 0, "Use of an Ion-Selective Electrode to Determine Ion Concentration in Solutions."
- LANL-EES-4-DP-805, Revision 0, "Use of a Spectrophotometer of Fluorometer to Determine Constituent Concentrations in Solutions."

Personnel contacted during the surveillance:

Paul Reimus, LANL, PI
William Distel, Civilian Radioactive Waste Management System Management and Operating Contractor, Surface Based Testing Coordination Office, JP Coordinator.

Block 10 (continued) SURVEILLANCE CONCLUSIONS:

Based on the examination of objective evidence and discussion with the LANL PI, it is determined that LANL is adequately implementing their Quality Assurance program as it applies to their activities at the C-Hole complex. The selected requirements from JP 95-08, Revision 0, TPP T-92-09, Revision 2, and Paragraph 5.6a of YAP-6.2Q, Revision 1, were found to be properly implemented. No deficiency documents were issued as a result of this surveillance. The cooperation extended to the surveillance team is appreciated.