



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

WBS 9.1.2
 QA: N/A

MAY 19 1994

Larry R. Hayes
 Technical Project Officer
 for Yucca Mountain
 Site Characterization Project
 U.S. Geological Survey
 101 Convention Center Drive
 Suite 860
 Las Vegas, NV 89109

ISSUANCE OF SURVEILLANCE RECORD YMP-SR-94-042 RESULTING FROM
 YUCCA MOUNTAIN QUALITY ASSURANCE DIVISION (YMQAD) SURVEILLANCE OF
 U.S. GEOLOGICAL SURVEY (USGS) (SCP: N/A)

Enclosed is the record of Surveillance YMP-SR-94-042 conducted by
 the YMQAD at the USGS facilities at Yucca Mountain, Nevada, site
 March 8 and 15, 1994, and April 21, 1994.

The purpose of the surveillance was to verify the implementation
 of USGS Technical Procedure NWM-USGS-HP-254 and the consequent
 development of the calibration equation for neutron moisture
 meters.

No Corrective Action Requests were issued 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 and any documented recommendations is not
 required.

If you have any questions, please contact either Robert B.
 Constable at 794-7945 or Raul A. Hinojosa at 794-7991.

Robert B. Constable

YMQAD:RBC-3565

Richard E. Spence, Director
 Yucca Mountain Quality Assurance Division

Enclosure:
 Surveillance Record
 YMP-SR-94-042

Add: Bill Belke Au Cond 1 1

250031

YMP-5

9405250241 940519
 PDR WASTE
 WM-11 PDR

*NH03
 11
 WM-11
 102.7*

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

QUALITY ASSURANCE SURVEILLANCE RECORD

SURVEILLANCE DATA

¹ ORGANIZATION/LOCATION: U.S. Geological Survey (USGS) Yucca Mountain Site Area 25	² SUBJECT: Neutron Moisture Meter Calibration Equation	³ DATE: 3/8/94
---	--	---------------------------

⁴SURVEILLANCE OBJECTIVE:
To determine that USGS develops the calibration equation for neutron moisture meters.

⁵ SURVEILLANCE SCOPE: The test verification of neutron moisture meters and the development of the calibration equations in accordance with USGS procedure HP-254, Revision 0.	⁶ SURVEILLANCE TEAM: Team Leader: <u>Raul A. Hinojosa</u> Additional Team Members: _____ _____
---	--

⁷ PREPARED BY: <u>Raul A. Hinojosa</u> Surveillance Team Leader Date <u>3/4/94</u>	⁸ CONCURRENCE: <u>[Signature]</u> QA Division Director Date <u>3/4/94</u>
--	---

SURVEILLANCE RESULTS

⁹BASIS OF EVALUATION/DESCRIPTION OF OBSERVATIONS:
See Page(s) 2

¹⁰SURVEILLANCE CONCLUSIONS:
See Page(s) 2

¹¹ COMPLETED BY: <u>Raul A. Hinojosa</u> Surveillance Team Leader Date <u>5/17/94</u>	¹² APPROVED BY: <u>[Signature]</u> QA Division Director Date <u>5-18-94</u>
---	---

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

During the dates of March 8, 1994, March 15, 1994, and April 21, 1994, a surveillance was performed to determine that the development of a calibration equation was performed by USGS. The following items were verified during the conduct of the surveillance:

1. Verified that the person performing this procedure had been trained and was proficient in USGS Technical Procedure NWM-USGS-HP-254, Revision 0, "Development and Use of a Calibration Equation for a Hand Held Neutron Moisture Meter."
2. Verified that a field calibration equation was developed through a regression analysis performed in accordance with Paragraph 4.2.1 of the above procedure to relate the core water content (as measured through USGS Technical Procedure NWM-USGS-229, "Determination of Water Content and Physical Properties for Laboratory Rock Samples") and the neutron moisture meter counts (as determined through USGS Technical Procedure NWM-USGS-HP-62, "Method for Measuring Sub-Surface Moisture Content Using a Neutron Moisture Meter") for the following boreholes and neutron moisture meters (at time of completion of drilling and core removal) as indicated:

USW UZ N-27--Meter 3 (2 runs), Meter 6, Meter 7, Meter 8

USW UZ N-55--Meter 3 (4 runs)

USW UZ N-54--Meter 3, Meter 6, Meter 7, Meter 8

3. Verified that the above field calibration equation was then used to determine the effective water content of the transfer standards (Tanks 1 and 3 of the Calibration Tanks referred to in procedure HP-62), in accordance with Paragraph 4.2.2 of procedure HP-254. The counts measured in the tanks were converted to effective water content using the regression equation developed for the individual meters.

Personnel contacted:

Alan Flint, USGS

Dave Hudson, USGS

Kevin Ellett, USGS

Kenneth McFall, Quality Assurance Technical Support Services(QATSS)

Thomas Higgins, QATSS.

(Block 10 Continued) SURVEILLANCE CONCLUSIONS:

The results of the surveillance are considered to be satisfactory and in accordance with procedure HP-254, Revision 0 and meet the intent of Section 12, Paragraph 12.2.1 A of the Quality Assurance Requirements and Description, DOE/RW-0333P of the Office of Civilian Radioactive Waste Management. There were no deficiencies or discrepancies identified and no Corrective Action Requests were issued as a result of this surveillance.

MAY 19 1994

Larry R. Hayes

-2-

cc w/encl:

D. A. Dreyfus, HQ (RW-1) FORS
R. W. Clark, HQ (RW-3.1) FORS
W. L. Belke, NRC, Washington, DC
J. W. Gilray, NRC, Las Vegas, NV
R. R. Loux, NWPO, Carson City, NV
Cyril Schank, Churchill County Commission, Fallon, NV
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
Lander County Board of Commissioners, Battle Mountain, NV
Jason Pitts, Lincoln County, Pioche, NV
V. E. Poe, Mineral County, Hawthorne, NV
P. A. Niedzielski-Eichner, Nye County, Chantilly, VA
L. W. Bradshaw, Nye County, Tonopah, NV
William Offutt, Nye County, Tonopah, NV
Florindo Mariani, White Pine County, Ely, NV
B. R. Mettam, County of Inyo, Independence, CA
Mifflin and Associates, Las Vegas, NV
S. L. Bolivar, LANL, Los Alamos, NM
R. E. Monks, LLNL, Livermore, CA
W. J. Glasser, REECo, Las Vegas, NV
D. J. Tunney, RSN, Las Vegas, NV
R. R. Richards, SNL, Albuquerque, NM, M/S 1333
R. P. Ruth, M&O/Duke, Las Vegas, NV
T. H. Chaney, USGS, Denver, CO
J. B. Harper, SAIC, Las Vegas, NV
C. J. Henkel, NEI, Las Vegas, NV
C. K. Van House, YMQAD/QATSS, Las Vegas, NV
R. L. Maudlin, YMQAD/QATSS, Las Vegas, NV