

**OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**  
**YUCCA MOUNTAIN QUALITY ASSURANCE DIVISION**  
**QUALITY ASSURANCE SURVEILLANCE REPORT**  
**OF**  
**YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT OFFICE**  
**SURVEILLANCE YMP-SR-93-035**  
**CONDUCTED AT THE NEVADA TEST SITE AND LAS VEGAS, NEVADA**  
**JULY 26 THROUGH AUGUST 18, 1993**

**ACTIVITIES SURVEILLED:**

**FIELD VERIFICATION OF GEOPHYSICAL LOGGING OPERATIONS BY  
THE YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT OFFICE  
SPECIFIC TO THE UNSATURATED ZONE BOREHOLE NO. 16 (UZ-16)**

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Approved By: *Donald G. Horton* Date: 8/2/93  
Donald G. Horton  
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## 1.0 EXECUTIVE SUMMARY

This surveillance was conducted to monitor and evaluate the effectiveness of the verification activities by the Yucca Mountain Site Characterization Project Office (YMPO) during geophysical logging activities specific to Borehole Unsaturated Zone No. 16 (UZ-16). These logging activities, which were conducted between July 26 and August 18, 1993, were initiated under the auspices of Contract No. DE-AC08-87NV10576 and Work Breakdown Structure No. 1.2.3.1. The applicable study plan utilized was SP 8.3.1.4.2.T, "Characterization of Vertical and Lateral Distribution of Stratigraphic Units Within the Site Area." Overall compliance with the requirements of the procedure and Job Package (JP) were determined to be both effective and thorough. However, as a result of some minor oversights which can be corrected easily, one Corrective Action Request (CAR) was generated. A description of CAR YM-93-087 is included in Paragraph 5.1 of this report along with an attached information copy.

## 2.0 SCOPE

Surveillance 93-035 was conducted at the Yucca Mountain Site (YMS) and YMPO to verify compliance to the requirements of Administrative Procedure (AP) S.III.1-Q, Revision 0, "Yucca Mountain Site Characterization Project Field Verification of Geophysical Logging Operations" and JP-92-3, "Drilling of VSP Drill Hole UZ-16," and to evaluate the effectiveness of the YMPO in implementing those requirements as well as verifying compliance by the Drilling Architect and Engineer (Raytheon Services Nevada [RSN]) and their approved Logging Service Organization (Schlumberger Well Services RE: RSN Approved Vendors List, June 15, 1993).

## 3.0 SURVEILLANCE TEAM

Ken M. Wolverton, Surveillance Team Leader, Quality Assurance Technical Support Services

## 4.0 PERSONNEL CONTACTED

L. Thompson, Geophysical Logging Coordinator/Client Representative, Science Applications International Corporation (SAIC)  
D. Olsen, Client Representative, Integrated Resources Group (IRG)/SAIC  
G. Batchellor, Client Representative, IRG/SAIC  
R. Olson, Architect/Engineer Point of Contact, RSN  
E. Monson, Architect/Engineer Point of Contact, RSN  
J. Bond, Logging Engineer, Schlumberger Well Services  
D. Tunney, Quality Assurance Supervisor, RSN  
S. Edwards, Seismic Engineer, Schlumberger Well Services

## 5.0 SURVEILLANCE RESULTS

During this surveillance, activities specific to the on-site validation of the data collection process, verification of log data values, and the traceability of the log data back to the specific borehole were monitored on an on-going basis over a three week period. Records specific to JP-92-3 were reviewed for proper approvals prior to the initiation of the logging operation, proper maintenance during the logging operation, and completion upon each logging operation termination. Field prints were monitored for proper data recording as delineated by AP S.III.1-Q, Revision 0. The establishment of education, experience and training requirements for Client Representatives was reviewed and found to be acceptable. All documentation was evaluated for procedural compliance with emphasis being placed on traceability of the data from Borehole No. UZ-16 to the records and field prints. Logging equipment was monitored for proper calibration checks and found to be within procedural requirements. With the exception of one condition adverse to quality documented on CAR YM-93-087 (see Paragraph 5.1), the results of the surveillance indicate that YMPO is complying with the requirements of AP S.III.1-Q, Revision 0 and effectively implementing those requirements with respect to the Drilling A/E and the Logging Service Organization.

### 5.1 CAR YM-93-087

#### Part 1

YMPO procedure AP S.III.1-Q, Revision 0, Paragraph 6.1 requires traceability of the data taken from the borehole and specific logging job to the paper log prints. Contrary to this requirement, field prints for the (1) Litho Density Log, (2) APS Porosity/Sigma Log, and (3) ECS Elemental Yields/HMGS Yields listed two different borehole numbers.

#### Part 2

YMPO procedure AP S.III.1-Q, Revision 0, Paragraph 5.5.1 requires certain information to be recorded on the field prints. Contrary to this requirement, the "before-survey casing check" was not recorded on the field print for the Litho Density Log from NPLT (LDS.11, Field File 11).

### 5.2 DOCUMENTATION REVIEWED (Logging Job 93-UZ16-01)

1. "Borehole Access Request" (YMP-FOI-1401) authorized July 22, 1993 by K. Skipper, Regulatory and Site Evaluation Division Field Test Coordinator
2. "Authorization for the YMP Borehole Geophysical Logging Activity"

(Form No. YMP-149-R0)

3. "Client Representative's Pre-Field Work Checklist" (Form No. YMP-150-R0)
4. Logger's Log (RE. AP S.III.1-Q, Revision 0, Paragraph 6.1)
5. Field Print for "Dual Induction Log (DIL)" specific to Well UE-25 UZ-16 (VSP-2)
6. Field Print for "Litho-Density Tool (LDT) with Gamma Ray" specific to Well UE-25 UZ-16 (VSP-2)
7. Field Print for "Litho-Density Log from Nuclear Porosity Lithology Tool" specific to Well UE-25 UZ-16 (VSP-2)
8. Field Print for "Accelerator Porosity Sonde (APS) Porosity Log/Sigma Log" specific to Well UE-25 UZ-16 (VSP-2)
9. Field Print for "ECS Elemental Yields/HMGS Yields" specific to Well UE-25 UZ-16 (VSP-2)
10. Letter to file from L. Thompson, dated June 21, 1993 establishing education, experience and training requirements for K. Herrin, D. Olsen and G. Batchellor.

### 5.3 EQUIPMENT MONITORED

1. Neutron Meter, Serial No. 3093, REECo ID. USAEC 168226; Visually verified calibration status shown on tag as of August 3, 1993:  
Calibration due: January 7, 1994 Routine maintenance due: August 19, 1993
2. Monitored YMPO verification activities associated with downhole instruments' shop calibrations, before survey calibrations and after survey calibrations specific to:
  - (1) Spectral Gamma Ray (NGT) - SWS File 1, July 24, 1993
  - (2) Dual Induction Log (DITE) - SWS File 11, July 26, 1993 and File 13, July 26, 1993
  - (3) Litho-Density Tool with Gamma Ray (LDT) - SWS File 5, July 13, 1993, File 19, July 27, 1993 and File 31, July 27, 1993

(4) Deep Propagation Tool (DPT) with Gamma Ray - SWS File 12,  
July 27, 1993

**6.0 RECOMMENDATION**

None

**7.0 ATTACHMENTS**

**Attachment 1: Information Copy of CAR YM-93-087**

**ATTACHMENT 1**

**INFORMATION COPY**

**OF**

**CORRECTIVE ACTION REQUEST**

<b>OFFICE OF CIVILIAN          RADIOACTIVE WASTE MANAGEMENT          U.S. DEPARTMENT OF ENERGY          WASHINGTON, D.C.</b>		CAR NO. <u>YM-93-087</u> DATE: <u>8/18/93</u> SHEET: <u>1</u> OF <u>2</u> GA
<b>CORRECTIVE ACTION REQUEST</b>		
<b>1 Controlling Document</b> AP S. III. 1-Q, Revision 0		<b>2 Related Report No.</b> YMP-SR-93-035
<b>3 Responsible Organization</b> Project Office/SAIC		<b>4 Discussed With</b> Loren E. Thompson, SAIC
<b>5 Requirement:</b> <b>Part 1 Paragraph 6.1 (1)</b> <p style="margin-left: 40px;">The above referenced procedure states, "Provide a positive tie for traceability of computer data files, films, paper log prints, and other data to the borehole and to the specific logging job."</p> <b>Part 2 Paragraph 5.5 (note)</b> <p style="margin-left: 40px;">States, "Where applicable, the following must be done prior to releasing the Logging Service Organization (LSO), from field operations"</p> <b>Paragraph 5.5.1 (9)</b>		
<b>6 Adverse Condition:</b> <b>Part 1</b> Contrary to the above, Field Prints for (1)Litho Density Log from MPLT, (2)EPS porosity log/sigma log, and (3)ECS Elemental Yields/HMGS Yields taken from Borehole UZ-16 are labeled UZ-6 in one section and UZ-16 in another section of the same prints. <b>Part 2</b> Contrary to the above, the "before-survey casing check" for the Litho Density Log from MPLT, (LDS.11 Field File 11) was performed, is applicable, but was not recorded on the Field Print.		
<b>9 Does a significant condition adverse to quality exist? Yes ___ No <u>X</u></b> If Yes, Circle One: A B C		<b>10 Does a stop work condition exist? Yes ___ No <u>X</u>; If Yes - Attach copy of SWO</b> If Yes, Circle One: A B C D
<b>11 Response Due Date:</b> 20 working days from issuance		
<b>12 Required Actions:</b> <input checked="" type="checkbox"/> Remedial <input checked="" type="checkbox"/> Extent of Deficiency <input type="checkbox"/> Preclude Recurrence <input type="checkbox"/> Root Cause Determination		
<b>13 Recommended Actions:</b> 1. Have the Logging Service Organization correct those Field Prints delineated above and re-submit to the Geophysical Logging Coordinator (GLC). 2. Examine all Field Prints from this logging job and assure their traceability to borehole UZ-16. Correct Field Prints as necessary.		
<b>7 Initiator</b> <i>E. K. Wolverson</i> X. K. Wolverson Date <u>8-18-93</u>		<b>14 Issuance Approved by:</b> QADD <i>[Signature]</i> Date <u>8/24/93</u>
<b>15 Response Accepted</b> QAR Date _____		<b>16 Response Accepted</b> QADD Date _____
<b>17 Amended Response Accepted</b> QAR Date _____		<b>18 Amended Response Accepted</b> QADD Date _____
<b>19 Corrective Actions Verified</b> QAR Date _____		<b>20 Closure Approved by:</b> QADD Date _____

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

6 CAR NO.: YM-93-087  
DATE: 8/18/93  
SHEET: 2 OF 2  
GA

**CORRECTIVE ACTION REQUEST (Continuation Page)**

5 Requirements (continued)

States, "The LSO composes the section of the field print master, where applicable, in the following order:....(9)before-survey casing check."