

**OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

**QUALITY ASSURANCE AUDIT PLAN**

**FOR AUDIT YM-ARP-96-04**

**OF THE**

**CIVILIAN RADIOACTIVE WASTE MANAGEMENT SYSTEM  
MANAGEMENT AND OPERATING CONTRACTOR**

**AT**

**LAWRENCE BERKELEY NATIONAL LABORATORY**

**BERKELEY, CALIFORNIA  
FEBRUARY 5 THROUGH 9, 1996**

Prepared by: Donald J. Harris Date: 12-21-95  
Donald J. Harris  
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Yucca Mountain Quality Assurance Division

Approved by: D.G. Horton For Date: 1/2/96  
Donald G. Horton  
Director  
Office of Quality Assurance

## 1.0 SCOPE

This performance-based audit to be performed by a team of auditors and technical specialists from the Yucca Mountain Quality Assurance Division (YMQAD) will evaluate selected deliverables produced by Lawrence Berkeley National Laboratory (LBNL). The products to be samples are part of Work Breakdown Structure (WBS) 1.2.3.3.1.2.8, "Fluid Flow in Unsaturated Zone (UZ) Fractured Rock," and WBS 1.2.3.3.1.2.9, "Site Unsaturated Zone Modeling and Synthesis." The specific products to be audited are deliverables 3GLM105M, titled, "Analysis Paper: Performance of 3D Site Scale Model," and 3GLM107M, titled, "Analysis Paper: Sensitivity Studies Using 3D Model." It is also planned that deliverable 3GLF101M, titled, "Analysis Paper: Coupling Dual-Porosity/Site Scale," will be examined contingent upon LBNL providing a draft copy prior to the audit.

## 2.0 AUDIT SCHEDULE

Pre-audit Team/Observer Meeting	8:30 a.m., February 5, 1996 Berkeley, California
Pre-audit Conference	9:00 a.m., February 5, 1996 Berkeley, California
Audit Activities	10:00 a.m. - 4:00 p.m. February 5, 1996
	8:00 a.m. - 4:00 p.m. February 6-8, 1996
	8:00 a.m. to 11:00 a.m. February 9, 1996
Post-audit conference	1:00 p.m. February 9, 1996 Berkeley, California

An Audit Team/Observer meeting will be held at 4:00 p.m. daily to review audit progress. Beginning Tuesday February 6, 1996, there will also be a daily Audit Team Leader (ATL)/Observer/LBNL management meeting at 8:15 a.m. to communicate audit progress, to discuss potential deficiencies, and establish needed liaison. Both daily meetings will be held at locations provided by LBNL.

### **3.0 REQUIREMENTS TO BE AUDITED AND APPLICABLE REFERENCES**

The requirements to be audited will be contained in a performance-based checklist. This checklists will be developed from the latest available revision of approved and issued LBNL QA program procedures, study plans, and technical procedures applicable to the selected activities and performance objective established. The checklist will also consider the applicable requirements of the Quality Assurance Requirements and Description document as it relates to the deliverables being audited.

The conduct of the audit will be guided by the OCRWM documents (latest revision) listed below:

- Quality Assurance Procedure QAP 18.2, "Audit Program"
- Administrative Procedure (AP) 16.1Q, "Performance/Deficiency Reporting"
- AP 16.2Q, "Corrective Action and Stop Work"

### **4.0 ACTIVITIES TO BE AUDITED**

A performance-based audit evaluates products and activity to determine the degree to which they meet program requirements and management commitments and expectations. The evaluation of process effectiveness and product acceptability will be based upon:

- 1) Satisfactory completion of the critical process steps
- 2) Acceptable results and quality of the end products
- 3) Documentation that substantiates quality of products
- 4) Performance of trained and qualified personnel
- 5) Implementation of applicable QA Program Elements

The specific products to be audited are:

- "Analysis Paper: Performance of 3D Site Scale Model;"
- "Analysis Paper: Sensitivity Studies Using 3D Model;" and
- "Analysis Paper: Coupling Dual Porosity/Site-Scale." (contingent upon a draft being available for review prior to the audit)

### **5.0 AUDIT TEAM MEMBERS**

Donald J. Harris, YMQAD, Las Vegas, Nevada, ATL  
Sam H. Horton, YMQAD, Las Vegas, Nevada, ATL in Training  
Dr. Ronald M. Linden, Civilian Radioactive Waste Management System Management and Operating Contractor (CRWMS M&O), Las Vegas, Nevada, Technical Specialist  
Additional Technical Specialist, to be determined

## **6.0 AUDIT CHECKLIST**

The following checklist will be used during the audit:

**YM-ARP-96-04, Performance Based Checklist**