

# WILLIAMS & ASSOCIATES, INC.

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LPDR WM-10(2)  
WM-11(2)  
WM-16(2)

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Hydrogeology • Mineral Resources Waste Management • Geological Engineering • Mine Hydrology

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June 30, 1987

Contract No. NRC-02-85-008

Fin No. D-1020

Communication No. 135

Mr. Jeff Pohle  
Division of Waste Management  
Mail Stop 623-SS  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

WM-PES  
WM Record File  
D1020  
W+A

WM Project 10, 11, 16  
Docket No.

PDR ✓  
XPDR ✓ (B, N, S)

Signature: Pohle

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RE: NTS Trip Report

Dear Jeff:

This letter constitutes the trip report for Williams and Associates, Inc. for the June 22-24, 1987, meeting with Dan Evans and Todd Rasmussen at the University of Arizona. The purpose of the meeting was to discuss the current research on unsaturated flow in welded tuff being conducted at the University of Arizona. Williams and Associates, Inc. was represented by Roy E. Williams, George Bloomsburg and James Osiensky.

A field trip to the Apache Leap test site was conducted during the afternoon of June 22, 1987. The purpose of this trip was to observe the University of Arizona test facilities in fractured, welded tuff.

The meeting with Dan Evans and Todd Rasmussen began on June 23, 1987, with a brief discussion of the NRC management scheme. This introduction was followed by a discussion of plans for the forthcoming SCP review. These discussions were followed by a synopsis by Dan Evans of the generic research (examination processes and techniques used to study flow in fractured tuff) being conducted at the University of Arizona. In addition, there was a group discussion of the proposed NUREG by Dan Evans and Tom Nickolson entitled "Hydrogeologic Considerations for Characterizing a High-Level Radioactive Waste Repository in Unsaturated Fractured Rock." A tour was conducted in the afternoon to observe the laboratory testing facilities being used to study the hydraulic characteristics of tuff (mercury porosimeter, parallel plate model, psychrometer, thermal conductivity apparatus, etc.).

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The tour of the laboratory facilities was followed by a group discussion of methods to measure unsaturated hydraulic head. This discussion keyed on potentially useful techniques (such as thermocouple psychrometers and osmotic tensiometers) to measure hydraulic head under the high tensions that exist in Yucca Mountain.

The meeting with Dan Evans and Todd Rasmussen continued on June 24, 1987, with a brief discussion of the potential problems with the unsaturated flow model UNSAT2. This discussion was followed by a group discussion of potential testing methodologies to characterize Yucca Mountain, and a discussion by Lyle Davis and Dave McWhorter of conceptual models for Yucca Mountain. The meeting closed with a group discussion of the latest Draft Ground Water Travel Time Position Paper.

Sincerely,



James L. Osiensky

JLO:sl