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RJohnson LPDR, B
RWright
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WM-11/KS/84/08/10/0/D

- 1 -

SEP 6 1984

Dr. Donald L. Vieth, Director
Waste Management Project Office
U. S. Department of Energy
Nevada Operations Office
P. O. Box 14100
Las Vegas, NV 89114

Dear Dr. Vieth:

During July 24-27, 1984, members of the NRC technical staff and consultants conducted a hydrogeology data review at the United States Geological Survey in Denver, Colorado. Attached are lists of attendees, of the data reviewed, and of the data requested.

After we receive the remaining data requested of the USGS during the data review, we will analyze that data and provide you with the results of our critical review of that material and the data reviewed during the visit.

Sincerely,

"ORIGINAL SIGNED BY"

Seth M. Coplan, Section Leader
NTS Project Section
Repository Projects Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

Enclosures:
1. List of Attendees at the Hydrogeology Data Review
2. List of Data Reviewed
3. List of Data Requested

WM Record File 102.2
WM Project 11
Docket No.
PDR ✓
LPDR ✓
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8410030171 840906
PDR WASTE
WM-11 PDR

OFC	:WMRP:ejc	:WMRP	:WMRP	:	:	:
NAME	:KStablein	:SMCoplan	:HJMiller	:	:	1022/84/108
DATE	:9/6/84	:9/6/84	:9/6/84	:	:	:

372

NNWSI
HYDROLOGY DATA REVIEW

DATA REVIEWED BY NRC
JULY 24 - 27, 1984

Unsaturated Zone (Primarily Unpublished Data)

1. Test Well UZ-1

   A. Video log from surface to 1198' depth
   B. Moisture content data from cuttings
   C. Neutron Log
   D. Psychrometer Data
   E. Heat Dissipation Probe (HDP) data
   F. Blueprint: Instrumentation set-up

2. Test Well H-1

   A. Moisture content and porosity data (statistical distribution)
   B. Calculated relative permeabilities
   C. Holmes and Narver letter to Parvis Montazer (10/4/84) containing laboratory test procedures and results of helium permeability tests.

3. Test Well G-1

   A. Laboratory gas permeability curves
   B. Laboratory moisture content/matric potential data

4. Test Well G-2

   A. Laboratory gas permeability curves
   B. Laboratory moisture content/matric potential data

5. Test Well VE-25#C1

   A. Laboratory gas permeability data

6. Franklin Lake Playa

   A. Well location map
   B. Water levels
   C. Field Notes: Tensiometer set-up and data

7. Weather Data (UZ-1 Location)

   A. Temperature
   B. Rainfall
   C. Relative humidity
   D. Barometric pressure

8. General

   A. Theoretical plots (computer generated) of gas/liquid permeability/matric potential and gas/liquid permeability/saturation for fractures.

Saturated Zone

1. WT-Series Wells (unpublished data)

   A. Periodic water level measurements
   B. General design
   C. Completion design
   D. Heat flow measurements
   E. WT-2 Geophysical logs

2. Test Well UE-25#P1

   A. Field log books
   B. Working file (unpublished data)
      slug injection tests
      pumping tests
      Van der Kamp analyses

3. Test Well VH-1

   A. Working File (unpublished data)
      hydraulic tests

4. Test Well H-1

   A. Rush, F.E., Thordarson, W.E., Bruckheimer, L., 1983, Geohydrologic and drill hole data for Test Well USW H-1, adjacent to Nevada Test Site, Nye County, Nevada. USGS OFR 83-141.

B. Rush, F.E., Thordarson, W., Pyles, D.G., 1984 Geohydrology of Test Well USW H-1, Yucca Mountain, Nye County, Nevada USGS WRI 83-4032.

C. Working file (includes unpublished data)
Hydraulic tests (slug injection, pumping)

D. Field log book

E. Geophysical logs

5. Test Well H-4

A. Working file (unpublished data)
hydraulic tests

6. Test Well H-5

A. Bentley, C.B., Robison, J.H., Spengler, R.W., 1983 Geohydrologic data for Test Well USW H-5, Yucca Mountain area, Nye County, Nevada, USGS OFR 83-853

B. Working file (includes unpublished data)
hydraulic tests

7. Test Well H-6

A. Craig, R.W., Reed, R.L., and Spengler, R.W., 1983 Geohydrologic data for Test Well USW H-6, Yucca Mountain area, Nye County, Nevada USGS OFR 83-856.

B. Working File (includes unpublished data)
hydraulic tests

8. Test Well UE-25#C1

A. Working file (unpublished data)
slug injection tests
pumping tests

B. Log books

C. Geophysical logs

D. Geologic logs

E. Completion design

9. General (unpublished)

A. Water-Level Data

1) Method and frequency of measurement
2) Period of record
3) Piezometer installation (and packer installations)
4) Data points with records

B. General procedures for drilling and testing wells

C. General design of C-Well tests

Hydrochemistry

1. Computer Printout (STORET)

   Chemistry data on wells in and around Yucca Mountain area

2. Log Book (1983)

   Indicates samples taken from C1, C2, H-3, H-6 (includes field pH)

3. Regional Isotope Map

   Areal map of carbon 13, oxygen 18

4. Computer Printout

   Major element chemistries, isotopic data and some minor element chemistries (about 314 analyses). Most analyses published previously.

5. Log Books

   Precipitation data and analyses for about 11 sites. Mainly oxygen 18.

6. Franklin Lake Data

   Data from about nine sample locations, gross chemistry, Li, F and isotopes

7. Chemistry data for individual test wells

   H1, H3, H5, H6, G4, UE-25#P1, UE-25#C1, UE-29#A2, UE-16D, UE-16F, UE-25#B1.

DATA REQUESTED FROM THE U.S.G.S. DURING THE NNWSI HYDROLOGY DATA REVIEW

1. USGS unsaturated-saturated report containing statistical distributions of:
   a. porosity
   b. moisture content (by weight and/or volume)
   c. saturation (%) etc. using laboratory tests on cores

2. Plots of:
   a. moisture characteristic curves--water saturation as a function of moisture tension
   b. relative permeability as a function of moisture tension used to derive relative permeabilities

3. Copy of video (TV) log of USGS hole UZ-1

4. Blue print of unsaturated zone monitoring instruments and locations for USGS hole UZ-1

5. Isotopic map (from R. Waddell)

6. Computer printout of water quality analyses in and around Yucca Mountain (~319 analysis A-K)

7. Details of a typical installation of a continuous water level monitoring station using a pressure transducer

8. Construction records and periodic water level measurements taken in wells and piezometers

9. Details of geologic descriptions and hole construction records for the water table well series

10. Map of Franklin Lake Playa showing well locations

11. Detailed geologic map by Bob Scott

12. G-1 hydro-testing index in Robison's file (request has been filled)

13. Copy of Parvis Montazer's thesis (final)

14. Open-file report 84-xxx on unsaturated parameters at well H-1, by Weeks and Wilson

15. Letter from Holmes and Narver to P. Montazer date 10/4/83 re: NTS-TEC;

MTL/83-99; Lab report no. 83-406

16. Geologic and geophysical logs for all of the H-wells and the water table wells

17. Pictorial summary (like the one for C-1) showing geophysical and geologic logs or geologic descriptions for wells UE-25C 1,2,3; UE 25P-1, UE 25 b-1, and G-3

18. From some of the injection tests H_b in mV was back calculated using a linear extrapolation . The H_b in mV was then converted to feet by some formula. Please provide:
    a. the theoretical basis for the linear extrapolation of H_b in mV
    b. the methodology for converting H_b in mV to H_b in feet
    (Gene Rush should be able to provide this data from Well B-1)

ROOM: CONFERENCE ROOM

WRD MEETING (B. Wilson)

DATE: July 24, 2984

NAME	AGENCY (IF USGS, JUST SHOW DIVISION)
Bill Dudley	USGS/WRD
[illegible]	[illegible]
Roy [illegible] Williams	NRC Consultant
Jeffrey Pohle	USNRC
B. Geoffrey Jones	GeoTrans / NRC CONSULTANT
David R. Buss	GeoTrans / NRC Consultant
James W. Mercer	GeoTrans / NRC Consultant
William E. Wilson	USGS/WRD
Parviz Montazer	" "
Rick Waddell	"
Leonard E. Wolltz	"
Joe Downey	USGS/WRD
[illegible]	USGS/WRD
JOE WILLMON	USGS
Elmer H. Baltz	USGS/GD
SYLVIE OLNEY	NRC
Jim Robison	USGS/WRD
Dick Blankenagel	USGS/WRD
Paul Prestholt	NRC - OLR - NNWSI
BENJAMIN RICE	NRC
[illegible]	Williams + Assoc - NRC Consultant
Mike Glora	SAI - LV
	[illegible]

ROOM: _____

DATE: _____

NAME	AGENCY (IF USGS, JUST SHOW DIVISION)
[illegible]	[illegible]
Tom Nicholson	USNRC/RES/ESB
Newton King Stablein	NRC FTS 427-4611
[illegible] Johnson	State of Nevada (702) 885-37[illegible]
Jack Hess	Williams & Associates, NRC Consultant
Roger Jacobson	DRI (State of Nevada) 673-7373
[illegible]	NRC FTS 427-4371
Scott Tyler	DRI (Nevada) 702-798-8992
LINDA LEHMAN	STATE OF NEVADA (612) 894-9359
Hank Bernhardt	DOE/WESTON (301) 963-6821