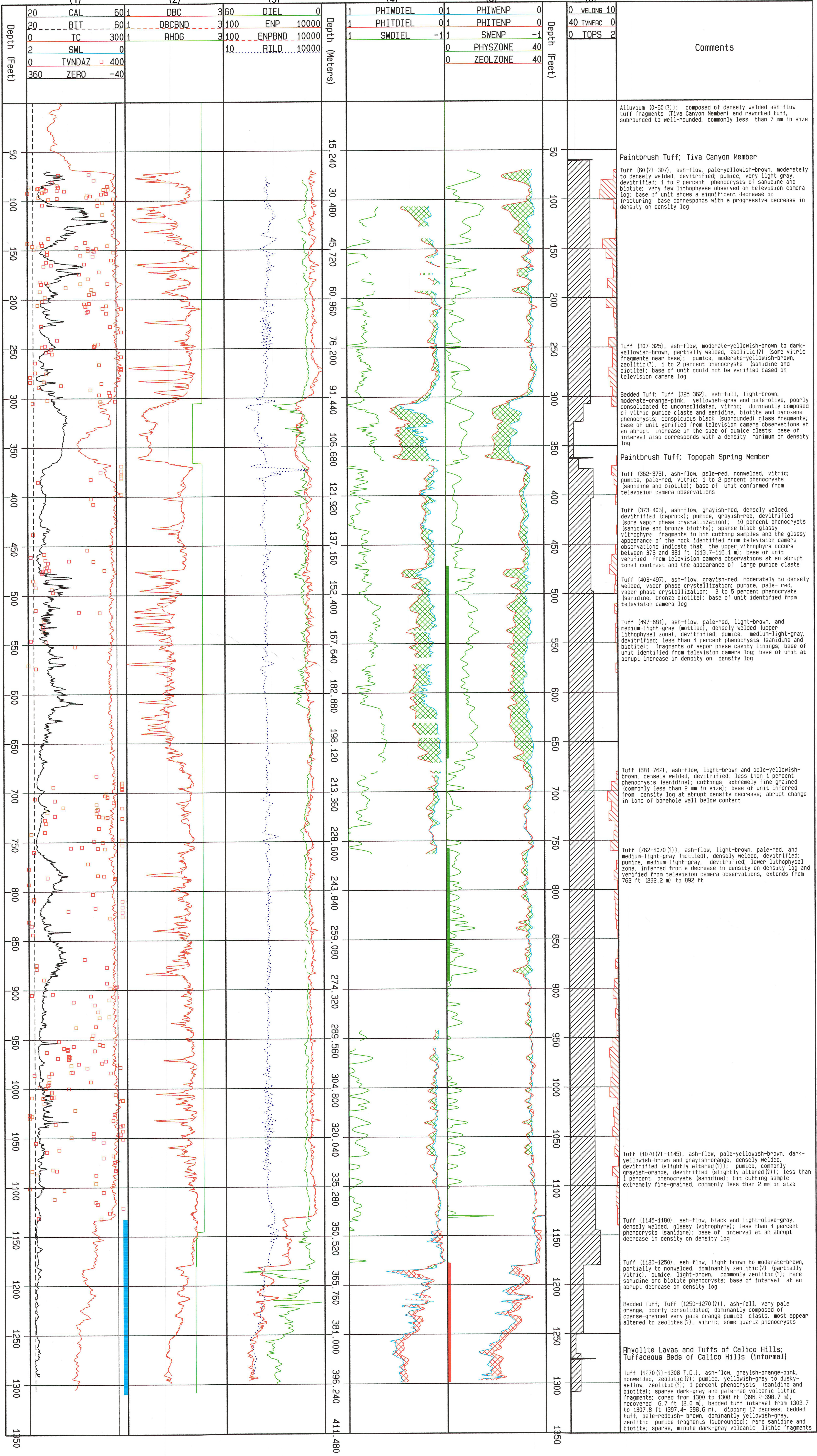


UE-25WT#12

## Original Logs and Fractures

## Porosity and Water Content

# Stratigraphy



BOREHOLE UE-25 WT#12, YUCCA MOUNTAIN, NEVADA

Compiled by Philip H. Nelson and Joyce E. Kibler  
U.S. Geological Survey, Denver, Colorado

Borehole UE-25 HW#12 was completed in August, 1983 to a total depth of 1308 feet. The hole was rotary drilled using air foam consisting of air, detergent, and water (Muller and Kibler, 1985). Depth on the plot is measured along hole, and has not been corrected for deviation. Hole deviation is as great as 4.0 degrees at 1230 feet, (Plate 25 in Nelson and others, 1991): at a measured depth of 1230 feet, the computed true vertical depth is 1229.1 feet, and the computed horizontal offset is 39.6 feet.

Original logs in columns 1-3, acquired on August 15, 1983, were described and presented by Nelson and others, 1991. UE-25 WT#12 was drilled for the purpose of monitoring water levels; the static water level is indicated by a cyan bar in column 1 (Robison, 1984).

Porosity and water content computed from the dielectric and density logs are shown in column 4 as phtidil and phwidil, using a method described by Nelson, 1993. Porosity and water content computed from the epithermal neutron and density logs are shown in column 5 as phipenp and phipenw (Nelson, 1994). Green hatching between the porosity and water content curves denotes air-filled porosity. Red hatching appears where water content exceeds porosity, often indicating the presence of zeolitic minerals.

Saturation (swdiel in column 4, swerp in column 5) is computed as the ratio of water content to porosity. It has been nulled in zones flagged as zeolzone. The flags physzone and zeolzone (green and red bars in column 5) denote the presence of abundant lithophysae and extensive alteration, respectively. Their depth extent is taken from inspection of the green and red hatch areas in columns 4 and 5 and from consideration of other logs, especially resistivity, rild.

Stratigraphic tops and degree of welding, given in column 6, and the geologic description, in the text column, are from R. Spengler, U.S. Geological Survey, written communication, 1995. The degree of welding (weldng) increases to the right, in accordance with the geologic description.

Plots of individual fractures, (tvndaz, column 1), observed on television logs are plotted to show the azimuth of the dip of each fracture. The same data are plotted as fracture density (tvnfrfc) in column 6.

### EXPLANATION OF CURVES AND SYMBOLS

Column 1	
CAL	Caliper in cm, black curve.
BIT	Bit size in cm, black dash line.
SNL	Static water level, vertical cyan bar.
TC	Gamma ray in API units, red curve.
TVNDAZ	Dip azimuth of fractures, from television, red squares. Undetermined azimuth is coded as 380 or 390 degrees.
Column 2	
DBC	Density in g/cc, red curve.
DBCBOUND	Density bound in g/cc, red dash curve.
RHOG	Grain density in g/cc, green curve.
Column 3	
ENP	Epithermal neutron in counts/sec, red curve.
ENPBND	Epithermal bound, red dash curve.
RILD	Induction resistivity in ohm-m, blue dot curve.
DIEL	Dielectric permittivity, ratio, green curve.
Column 4	
PHIWIDIEL	[fractional volume of whole rock, increasing to left] Water content, from DIEL and DBCBOUND logs, cyan curve.
PHITDIEL	Porosity, from DIEL and DBCBOUND logs, red curve. (green hatch where PHITDIEL > PHIWIDIEL, red hatch where PHITDIEL < PHIWIDIEL ).
SWDIEL	Water saturation, ratio of PHIWIDIEL to PHITDIEL, green curve.
Column 5	
PHIWENP	[fractional volume of whole rock, increasing to left] Water content, from ENPBND and DBCBOUND logs, cyan curve.
PHITENP	Porosity, from ENPBND and DBCBOUND logs, red curve. (green hatch where PHITENP > PHIWENP, red hatch where PHITENP < PHIWENP ).
SWENP	Water saturation, ratio of PHITENP to PHITENP, green curve.
PHYSZONE	Lithophysal zone, picked from logs, green bar.
ZEOLZONE	Zeolitic zone, picked from logs, red bar.
Column 6	
TOPS	Stratigraphic boundaries, black ticks.
WELDNG	Degree of welding from core inspection, black slant.
TVNFCR	Number of fractures per 10 feet, from television, red.

## NOTES

Date of last computation: May 1996  
Plot Date: May 1996  
Scientific Notebook: SN-0092

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