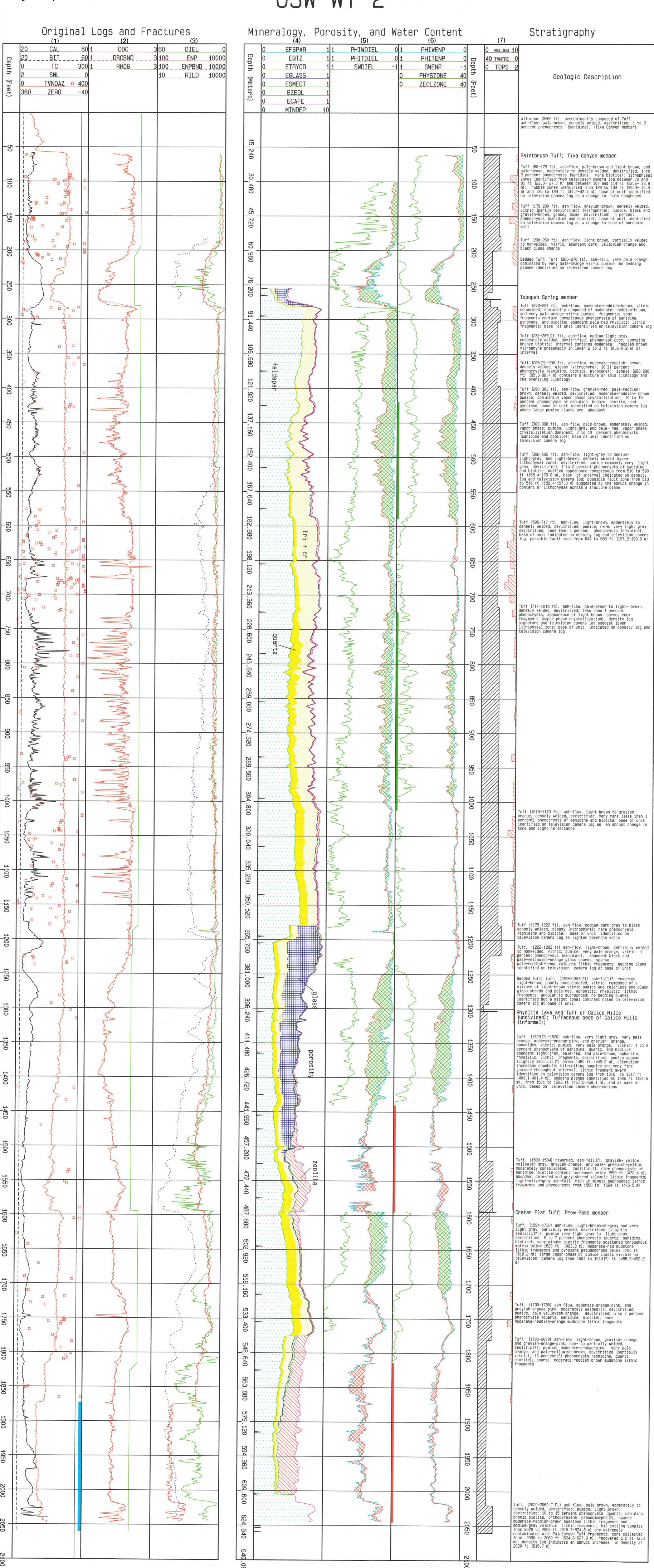


USW WT-2



BOREHOLE USW WT-2, YUCCA MOUNTAIN, NEVADA

U.S. Geological Survey, Denver, Colorado

Compiled by Philip H. Nelson and Joyce E. Kibler

Borehole USW WT-2 was completed in July, 1983 to a total depth of 2060 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 2 to 3.5 degrees, (Plate 18 in Nelson and others, 1991): at a measured depth of 2000 feet, the computed true vertical depth is 1998.17 feet, and the horizontal offset is 79.6 feet.

Original logs in columns 1-3, acquired on July 13 and 14, 1983, were described and presented by Nelson and others, 1991. USW WT-2 was drilled for the purpose of monitoring water levels; the static water level is indicated by a cyan bar in column 1 (Robison, 1984).

Mineralogy in column 4 is derived from X-ray diffraction data by Bish and Chipera (1989). Their data have been converted to volume percent, combined with porosity, and in several places extrapolated to boundaries inserted where marked changes in log response occur.

Porosity and water content computed from the dielectric and density logs are shown in column 5 as phitdiel and phiwdiel, using a method described by Nelson, 1993. Porosity and water content computed from the the epithermal neutron and density logs are shown in column 6 as phitenp and phiwenp (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 5, swenp in column 6) 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 6) 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 5 and 6 and from consideration of other logs, especially resistivity, rild.

Stratigraphic tops and degree of welding, given in column 7, and the geologic description, in the text column, are from R. Spengler, U.S. Geological Survey, written communication, 1995. The degree of welding (welding) increases to the right, in accordance with the geologic

Plots of individual fractures, column 1, observed on television (tyndaz) logs are plotted to show the azimuth of the dip of each fracture. The same data are plotted as fracture density (tvnfrc) in column 7.

EXPLANATION OF CURVES AND SYMBOLS

Column 1 CAL Caliper in cm, black curve. BIT Bit size in cm, black dash line. SWL Static water level, vertical cyan bar. TC Gamma ray in API units, red curve.

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. Density bound in g/cc, red dash curve. Grain density in g/cc, green curve.

DIEL

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.

Dielectric permittivity, ratio, green curve.

[shaded areas represent volume fractions] Feldspar, blue dotted area to left-hand edge. EQTZ Quartz, dark yellow area. ETRYCR Tridymite + cristobalite + opal, light yellow. **EGLASS** Glass, blue gridded area.

Smectite + kaolinite, green slanted area. EZEOL Clinoptilolite + mordenite, red slant. **ECAFE** Calcite + hematite, magenta hatch. Unshaded area to the right-hand edge. Depth of x-ray diffraction samples, ticks.

[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 > PHIWDIEL. red where PHITDIEL < PHIWDIEL). Saturation, ratio of PHIWDIEL to PHITDIEL.

[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 where PHITENP < PHIWENP).

Water saturation, ratio of PHIWENP to PHITENP, green curve. Lithophysal zone, picked from logs, green bar. ZEOLZONE Zeolitic zone, picked from logs, red bar.

Degree of welding from core inspection, black slant.

Stratigraphic boundaries, black ticks.

Number of fractures per 10 feet, from television, red. NOTES

Date of last computation: May 1996

Scientific Notebook: SN-0092

Plot Date: May 1996

Column 7 TOPS

WELDNG

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