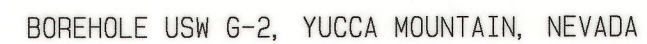
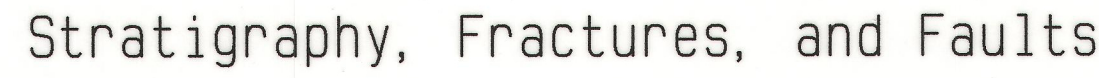
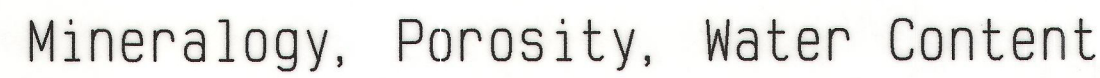


Original Logs and Core Data



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Borehole G-2 was completed to 6006 feet on October 11, 1981. This continuously cored hole was drilled with air foam and polymer mud. Depth on the plot is measured along hole, and has not been corrected for deviation. Deviation from vertical increases with depth to a maximum angle of 4.75° at 5975 feet. At a true vertical depth of 5966.0 feet, the measured depth is 5975 feet and horizontal offset is 252 feet (from Plate 2, Nelson and others, 1991).

Original logs in columns 1-4 were acquired between May and October, 1981, and were described and presented by Nelson and others, 1991. Temperature logs run in November 1982, March 1983, October 1983, and June 1984 from Sass and others (1988) also appear in column 1. Temperature logs in the unsaturated zone were acquired in a water-filled pipe.

Mineralogy in column 5 are derived from x-ray diffraction data by Bish and Chipera, 1989. Their data have been converted to volume percent, combined with the porosity curve phitsp1f, and extrapolated to boundaries inserted in several places where marked changes in log response occur. No density log was recorded below 4700 feet, hence phitsp1f does not exist below that depth. In order to compute mineralogy, a porosity estimate was derived from the pvel log, but it is used only for the display in column 5.

Porosity (phnpsif) and water content (ghniewn, phnbc) are given in columns 6 and 7. Curve phnpsif is a filtered copy of phnpsen, from air-filled hole, and phnbcn, from density-filled hole. Phnpsen and phniewn were computed from the density log, dnc3. There is no density log below 4700 feet, so porosity was both estimated from the sonic log and interpolated in order to present the mineralogy below 4700 feet. This interpolation was done by the program, phnpsif, which was also used to compute the water content, ghniewn, from the density log. From 1500 to 3862 feet, total water content is available from both phniewn and phnbc. Phnbc is based upon the thermal neutron log, nbc, after correction for hole size. Structural water, phnbc, was computed from the structural data, phnbc, and the volume of pore space water, phnpsen. phniewn = phiz and phnbc = phnbc - phiz.

Muller and Spengler (1989) estimated lithophysal pore space, dmvs, from inspection of core. Extent of lithophysal units, lithph, is taken from Maldonado and Koether (1983).

Stratigraphic units, degree of welding, faults, and shear fractures, as given in columns 8, 9 and 12, are taken from Maldonado and Koether (1983), as are the comments in column 13. Disruptions in the sonic waveform log (wavefrm) are often due to fractures or faults. Wellbore breakouts (brkout) were selected from a television log by Stock and others (1984), as were the individual fractures shown on the dip-azimuth plot (tvrdaz) and in bar graph format (tvfrnc). Fractures picked from a television log are likewise shown on the dip-azimuth plot (tvrdaz) and in bar graph format (tvfrnc).

EXPLANATION OF CURVES AND SYMBOLS

Column 1	
CAL	Caliper in cm, black curve.
BIT	Bit size in cm, black line.
SHL	Shot hole level, vertical cyan bar.
TEMP	Temperature in deg C, four curves (month, year).
GR	Gamma ray in API units, red curve.
Column 2	
DBC	Density in g/cm ³ , red curve.
DBC3	Density bound in g/cm ³ , red dash curve.
ADOC	Grain density in g/cm ³ , green curve.
RH	Grain density from cores, green open squares.
GDGM	Grain density from mineralog, green diamonds.
PVEL	P-wave velocity, m/s, blue curve.
SVEL	P-wave velocity, m/s, blue dash.
Column 3	
ENP	Epithelial neutron in counts/sec, red curve.
ENPBDI	Epithelial bound, red dash curve.
NBC	Thermal neutron log in porosity, magenta curve.
SN	Normal resistivity in ohm-m, blue curve.
LN	Long normal resistivity in ohm-m, blue dot curve.
RLD	Induction resistivity in ohm-m, blue dash curve.

Column 4	
MRC	Magnetic remanence in amp/m, red diamonds.
MSC	Magnetic susceptibility in milliSI, blue diamonds.
TOPS	Stratigraphic boundaries, black ticks.

Column 5	[shaded areas represent volume fractions]
EFSPAR	Feldspar, blue dotted area to left-hand edge.
EQTZ	Quartz, dark yellow area.
ETRYCR	Tridymite + cristobalite + opal, light yellow.
EGLASS	Glass, blue gridded area.
ESMECT	Smectite + kaolinite, green slanted area.
EZEOL	Clinoptilolite + mordenite + analcime, red slant.
ECALC	Calcite + hornblende + hematite + chlorite, magenta.
Porosity	Unshaded area to the right-hand edge.
MINDEP	Depth of xrd samples, ticks.

Column P	[fractional] volumes of whole rock, increasing to the left
PHINBZ	Water content from ENPBND and OBCB3 logs, cyan curve (above 1746 feet)
PHINBC	Water content from corrected NBC, dotted blue curve. (1505 - 4120 feet)
PHIZ	Structural water from mineralogy, black curve.
PHINBZP	Water content with structural water removed, cyan solid.
PHINBZC	Water content with structural water removed, blue solid.
Column 7	[fractional] volumes of whole rock, increasing to the left
PHITSPFL	Porosity, computed in two segments using different methods, filtered, red curve.
PHINBZP	Water-filled porosity, from ENPBND and OBCB3 logs, structural water removed, cyan curve.
PHINBZC	Water content with structural water removed, blue solid.
PORCN	Porosity from core measurements, red squares.
PHW	Void space, black curve.
LTPH	Lithophsa zone, flag, vertical black slant bar.

Column 8	
WELDNG	Degree of welding from core inspection, black slant.
FLOWBX	Flow breccia, magenta fill with granite symbol.
LAVA	Dacite lava, magenta fill with dotted symbol.
TOPS	Lithologic tops, black ticks.

Column 9	
WAVEFM	Disruptions in sonic waveform log, blue ticks and bars.
FRACNO	Joints, number per 10-foot interval, red bars.
Column 10	
TVIFRC	Number of fractures per 10 feet, from televiewer, blue.
TVNIFRC	Number of fractures per 10 feet, from television, red.

Column 11
TVRDAZ Dip azimuth of fracture, from televiewer, blue diamond.
TVNDAZ Dip azimuth of fracture, from television, red square.
Undetermined azimuth is coded as 380 or 390 degrees.

Column 12
SHEARFCT Shear fractures, number per 10-ft interval, red line
FAULT Fault occurrences, green bars.
BKOUT Wellbore breakouts from televiewer, blue curve.

Column 14
DTMP Temperature gradient, deg C/km, four curves (month, year)

Stratigraphic Names

Paintbrush Group-	
Tpc	Tiva Canyon Tuff
Tpy	Yucca Mountain Tuff
Tpb	Bedded Tuff (ash flow)
Tpp	Pah Canyon Tuff
Tpt	Topopah Spring Tuff
Tac	Calico Hills Formation
-Crater Flat Group-	
Tcp	Prow Pass Tuff
Tcb	Bullfrog Tuff
Tct	Tram Tuff
Tll	Flow breccia and lava
Tlr	Lithic-rich tuff
Tt	Older ash flow and bedded tuff

NOTES

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Scientific Notebook: SN-0092

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