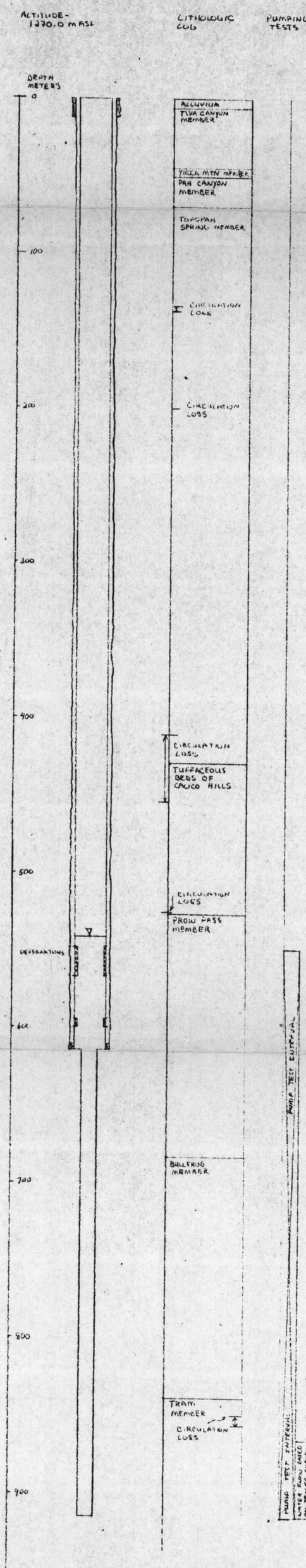
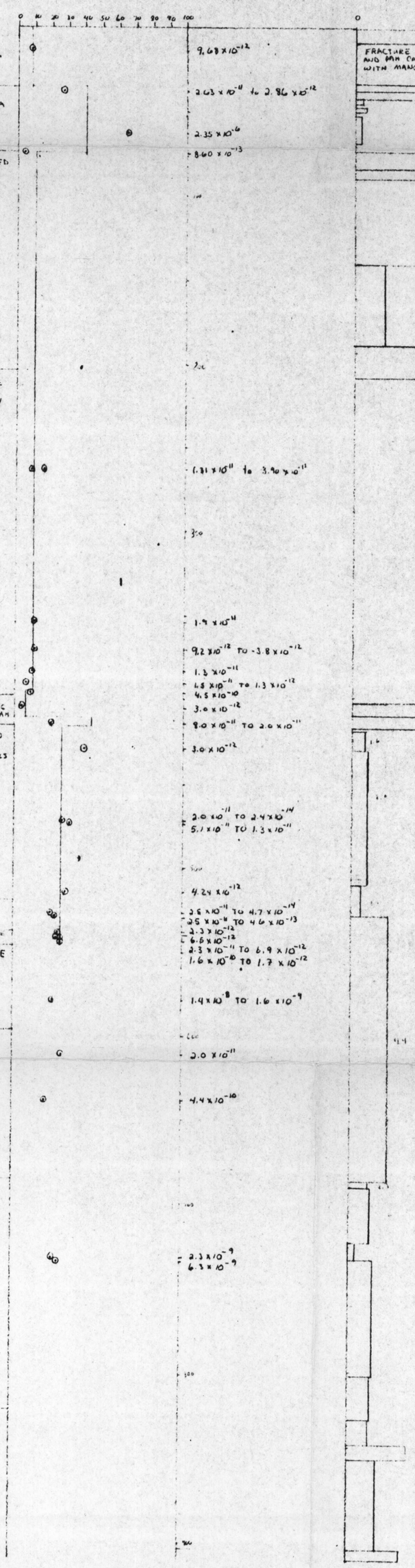
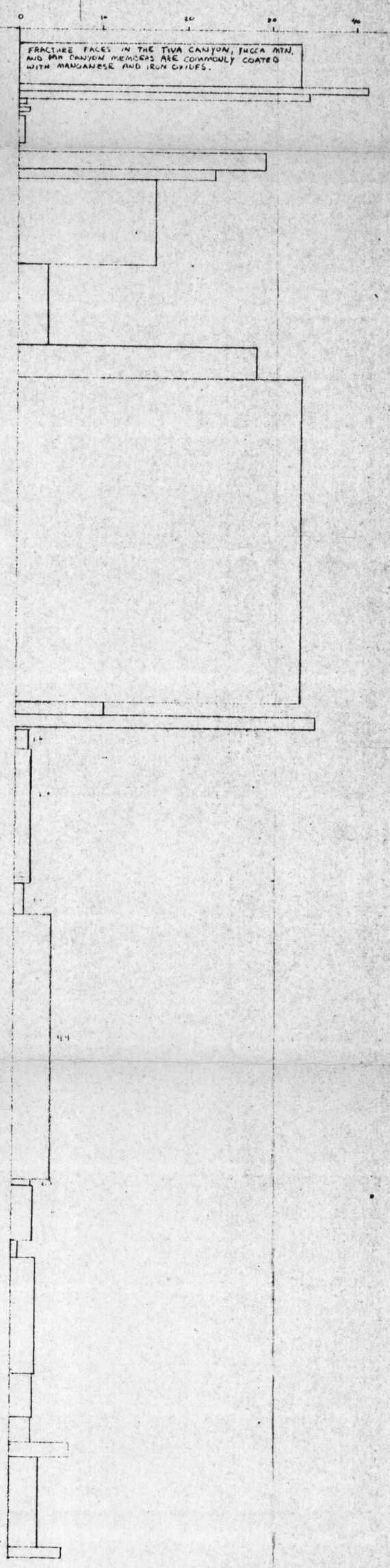
TEST WELL USW G-4



UNIT	HYDROLOGIC UNIT	DESCRIPTION
I-A	TIVA CANYON WELDED UNIT	MODERATELY TO DENSELY WELDED, DEVITRIFIED ASH-FLOW TUFF IN THE TIVA CANYON MEMBER OF THE PAINTBRUSH TUFF.
I-B	PAINTBRUSH NONWELDED UNIT	PARTIALLY WELDED TO NONWELDED, VITRIC AND OCCASIONALLY DEVITRIFIED TUFFS OF THE TIVA CANYON, YUCCA MOUNTAIN, PAH CANYON, AND TOPOPAH SPRING MEMBERS OF THE PAINTBRUSH TUFF
II-L	TOPOPAH SPRING WELDED UNIT	MODERATELY TO DENSELY WELDED, DEVITRIFIED ZONE OF THE TOPOPAH SPRING MEMBER OF THE PAINTBRUSH TUFF THAT CONTAINS MORE THAN APPROX. 10% BY VOLUME OF VUGS
IINL	TOPOPAH SPRING WELDED UNIT	MODERATELY TO DENSELY WELDED, DEVITRIFIED ZONE OF THE TOPOPAH SPRING MEMBER OF THE PAINTBRUSH TUFF THAT CONTAINS LESS THAN APPROX. 10% BY VOLUME OF VUGS. THIS IS THE POTENTIAL REPOSITORY UNIT.
III	TOP SPRING W. BASAL VITROPHYRE	BASAL VITROPHYRE OF THE TOPOPAH SPRING MEMBER
IV-AV	VITRIC CALICO HILLS NW	NONWELDED ASHFLOWS, BEDDED AND REWORKED TUFFS, VITRIC AND PRIMARILY NONZEOLITIZED TOPOPAH SPRING MEMBER AND/OR THE CALICO HILLS
IVAZ	ZEOLITIZED CALICO HILLS NONWELDED UNIT	NONWELDED ASHFLOWS, BEDDED AND REWORKED TUFFS, PRIMARILY ZEOLITIZED, FROM THE TOPOPAH SPRING MEMBER AND/OR THE CALICO HILLS
IVBZ	ZEOLITIZED CALICO HILLS NONWELDED	BASAL, BEDDED AND REWORKED ZONE OF THE ZEOLITIZED TUFFS AND TUFFACEOUS SANDSTONES OF THE CALICO HILLS
IVCZ	" " "	[illegible] ZONE OF THE PROW PASS MEMBER OF THE CRATER FLAT TUFF
V	PROW PASS WELDED UNIT	MODERATELY WELDED, DEVITRIFIED ZONE OF THE PROW PASS MEMBER OF THE CRATER FLAT TUFF
VI	CRATER FLAT NONWELDED UNIT	ZEOLITIZED PORTIONS OF THE LOWER PROW PASS MEMBER AND OF THE UPPER BULLFROG MEMBER OF THE CRATER FLAT TUFF.
VII	BULLFROG WELDED UNIT	WELDED DEVITRIFIED ZONE OF THE BULLFROG MEMBER OF THE CRATER FLAT TUFF





⊙ POROSITY BASED ON GRAIN AND BULK DENSITY

SUMMARY OF GEOPHYSICAL WELL LOGS

WELL LOGS	DEPTH (METERS)
ACOUSTIC FRACTURE	12 - 138
CALIPER	0 - 603
	556 - 914
DENSITY, BOREHOLE COMPENSATED	12 - 138
	142 - 541
	533 - 912
ELECTRIC	12 - 138
	143 - 541
	457 - 603
	600 - 911
GAMMA RAY	3 - 138
	143 - 541
GEOPHONE SURVEY	30 - 136
	143 - 546
GYROSCOPIC	564 - 907
NEUTRON, COMP	0 - 907
	12 - 138
	51 - 541
	457 - 604
	600 - 912
SPECTRALOG	0 - 913
TELEVISION, OPTICAL	0 - 137
	261 - 412
	411 - 472
	471 - 579
TEMPERATURE (STATIC)	0 - 914
(PUMPING)	162 - 913
3-D VELOCITY	506 - 603
	588 - 912

WWLNUM 169

PUMPING TESTS

TYPE OF TEST	RATE (L/S)	PERIOD (MIN)
DRAWDOWN	16	5740
RECOVERY	16	120
DRAWDOWN	13	1660
RECOVERY	13	120

(DATA NOT ANALYZED)

BOREHOLE FLOW SURVEY
- WAS MADE DURING THE DRAWDOWN PHASE OF PUMPING TEST 2

PACKER INJECTION TESTS
- 13 TESTS WERE MADE IN WELL BETWEEN 615 M AND 915 M. DECLINE OF HYDRAULIC HEAD WITH TIME WAS MONITORED (DATA NOT ANALYZED)

PROPERTIES FOR REPRESENTATIVE SAMPLES TAKEN FROM THE UNSATURATED ZONE HYDROLOGIC UNITS.

UNIT	SAMPLE CODE	GRAIN DENSITY g/cm³	POROSITY	K m/s	Sr	α 1/m	B
I-A	64-1	2.49	0.08	9.7E-12	0.0020	0.821E-2	1.558
I-B	643-7	2.35	0.40	3.9E-07	0.1001	0.150E-1	6.872
II	64-6	2.58	0.11	1.9E-11	0.0801	0.567E-2	1.789
III	643-11	2.38	0.07	1.5E-12	0.0804	0.441E-2	2.058
IV-V	643-14	2.37	0.46	2.7E-09	0.0405	0.160E-1	3.872
IV-Z	64-11	2.23	0.28	2.0E-11	0.1095	0.308E-2	1.602

EQUATION FOR SATURATION

$$S = (S_s - S_r)\left[\frac{1}{1+|\alpha h|^B}\right]^{\lambda} + S_r$$

EQUATION FOR UNSAT. HYDRAULIC CONDUCTIVITY

$$k(h) = k_s \frac{\left[1 - |\alpha h|^{B-1} \cdot (1+|\alpha h|^B)^{-\lambda}\right]^2}{(1+|\alpha h|^B)^{\lambda/2}}$$

where
h = SUCTION HEAD
S = SATURATION
S_s = MAX. SATURATION
S_r = RESIDUAL SATURATION
$\lambda = 1 - 1/B$
α, B } CURVE FIT PARAMETERS

WWLNUM 56

SUMMARY DATA FOR FRACTURED TUFF SAMPLES

SAMPLE CODE	COMPUTED FRACTURE CONDUCTIVITY m/s	COMPUTED APERTURE
64-1F	378 x 10^-5	67 MICRONS
64-2F	3.5 x 10^-5	6 MICRONS
64-3F	43 x 10^-5	22 "
64-4F	79 x 10^-5	31 "
64-5F	31 x 10^-5	6 "

D-1

TI APERTURE CARD

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