WELL EACA #E-4
COUNTY SANDOVAL
STATE NEW MEXICO
LOCATION REDONDO CREEK
EL. 9320'

SPUD DATE AUGUST 8 1971
COMPLETION DATE SEPTEMBER 1971
DRILLING CONTRACTOR LOFFLAND
ENGINEER HARRELL
GEOLOGIST DONDANVILLE

CASING RECORD
13 3/8csg: 2530' to surface
9 5/8csg: 4400' to 2692'

EXPLANATION

DRILLING
- NB - NEW BIT
- RRB - RERUN BIT
- CB - CORE BIT
- LC - LOST CIRCULATION
- DEV - DEVIATION
- DST - DRILL STEM TEST

ROCK
- SHALE
- SILTSTONE
- SANDSTONE
- CONGLOMERATE
- LIMESTONE
- DOLOMITE
- GYP, ANHYD.
- CHERT
- VOLCANICS
- INTRUSIVE
- TUFF
- METAMORPHIC

MINERALS
- C - CALCITE
- CHL - CHLORITE
- CEL - CELADONITE
- CL - CLAYS
- D - DOLOMITE
- E - EPIDOTE
- F - FELDSPAR
- K - KAOLINITE
- P - PYRITE
- Q - QUARTZ
- Z - ZEOLITES
- V VEINS
- DIS. DISSEMINATED

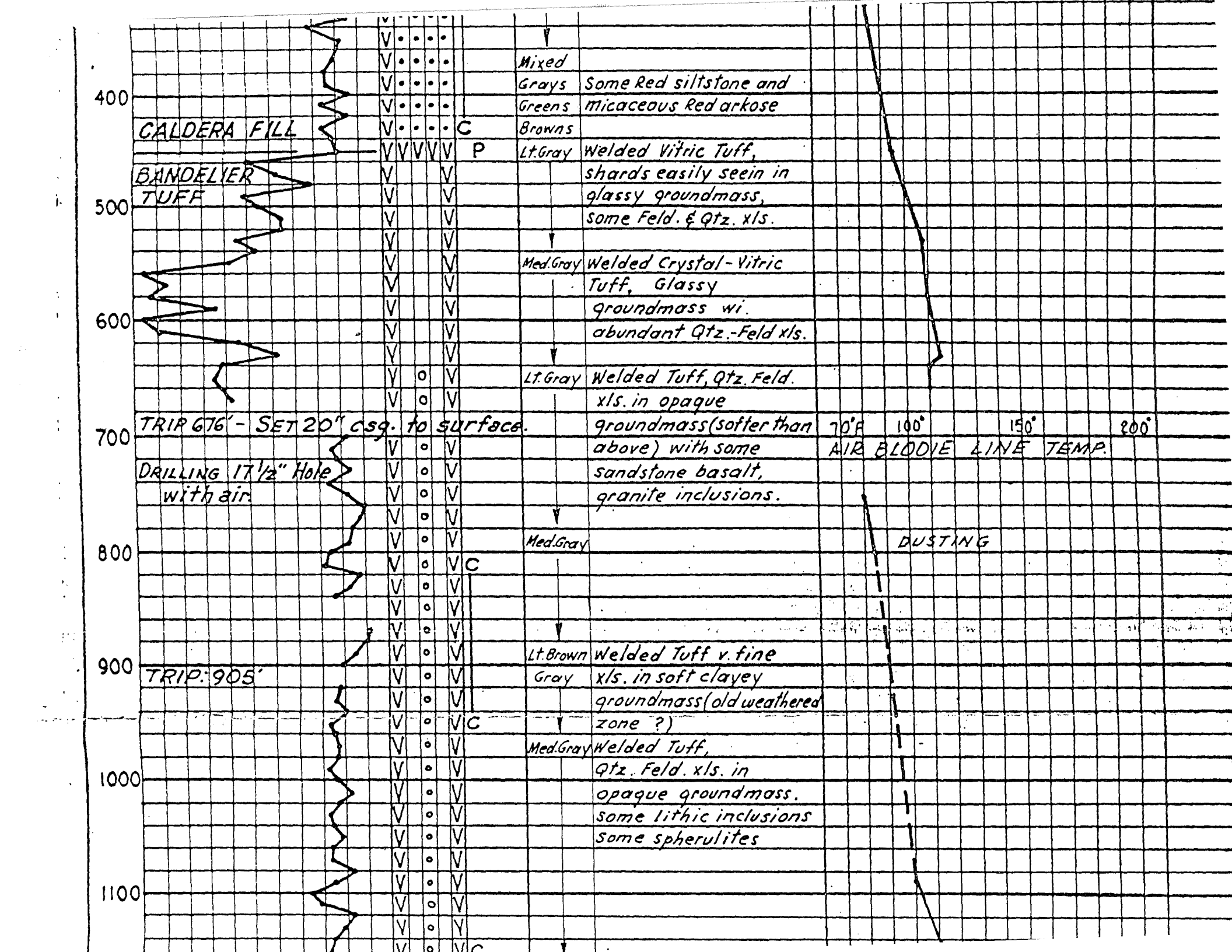
PHYSICAL - CHEMICAL
- D.H. - DOWN HOLE
- B.H. - BOTTOM HOLE
- F.L. FLOW LINE
- T. TEMPERATURE
- P. PRESSURE
- T.C. TIME SINCE CIRCULATION
- W.H. WELL HEAD
- PPM - PARTS PER MILL

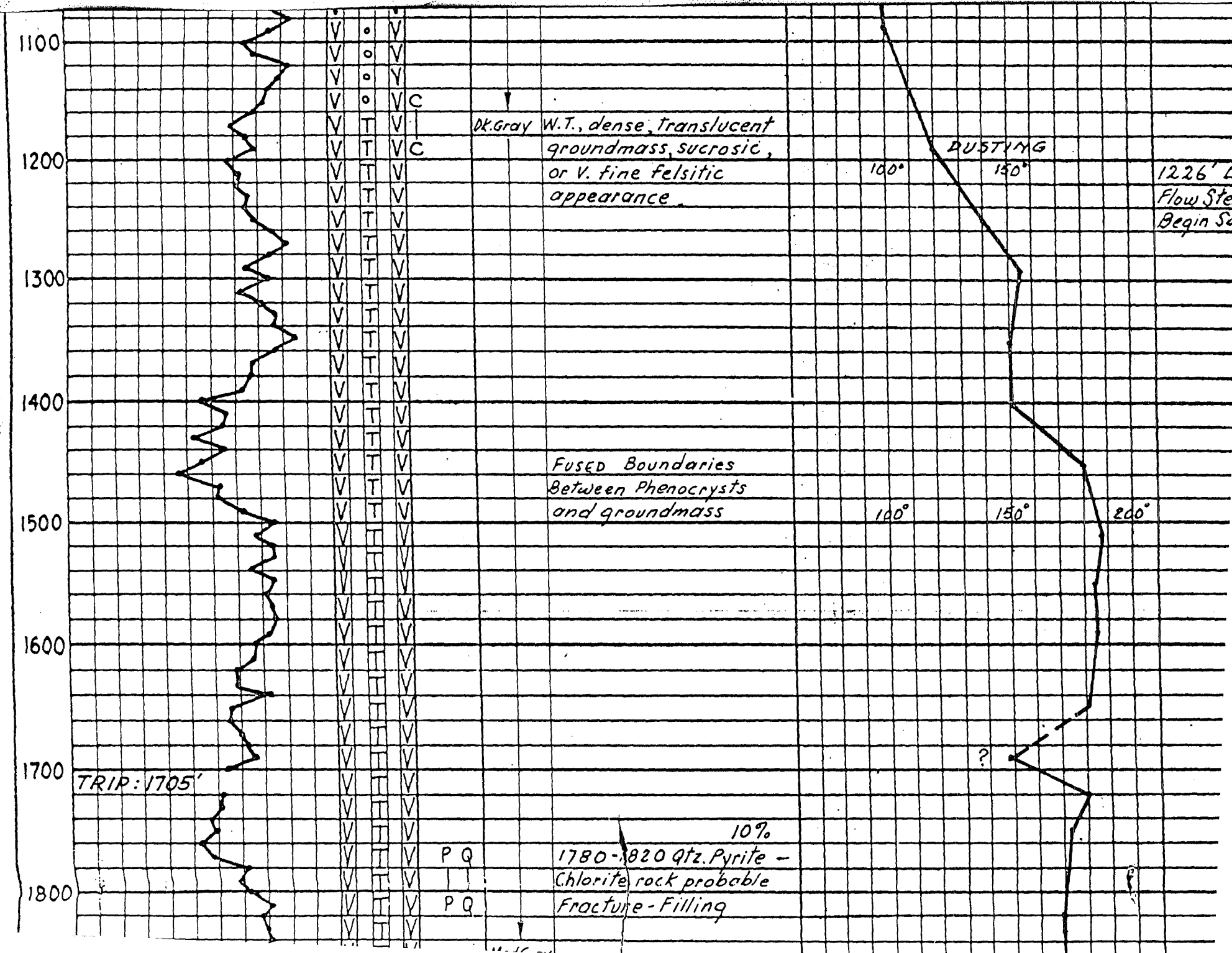
TUFF GROUNDMASS: OPAQUE (O), TRANSLUCENT (T)

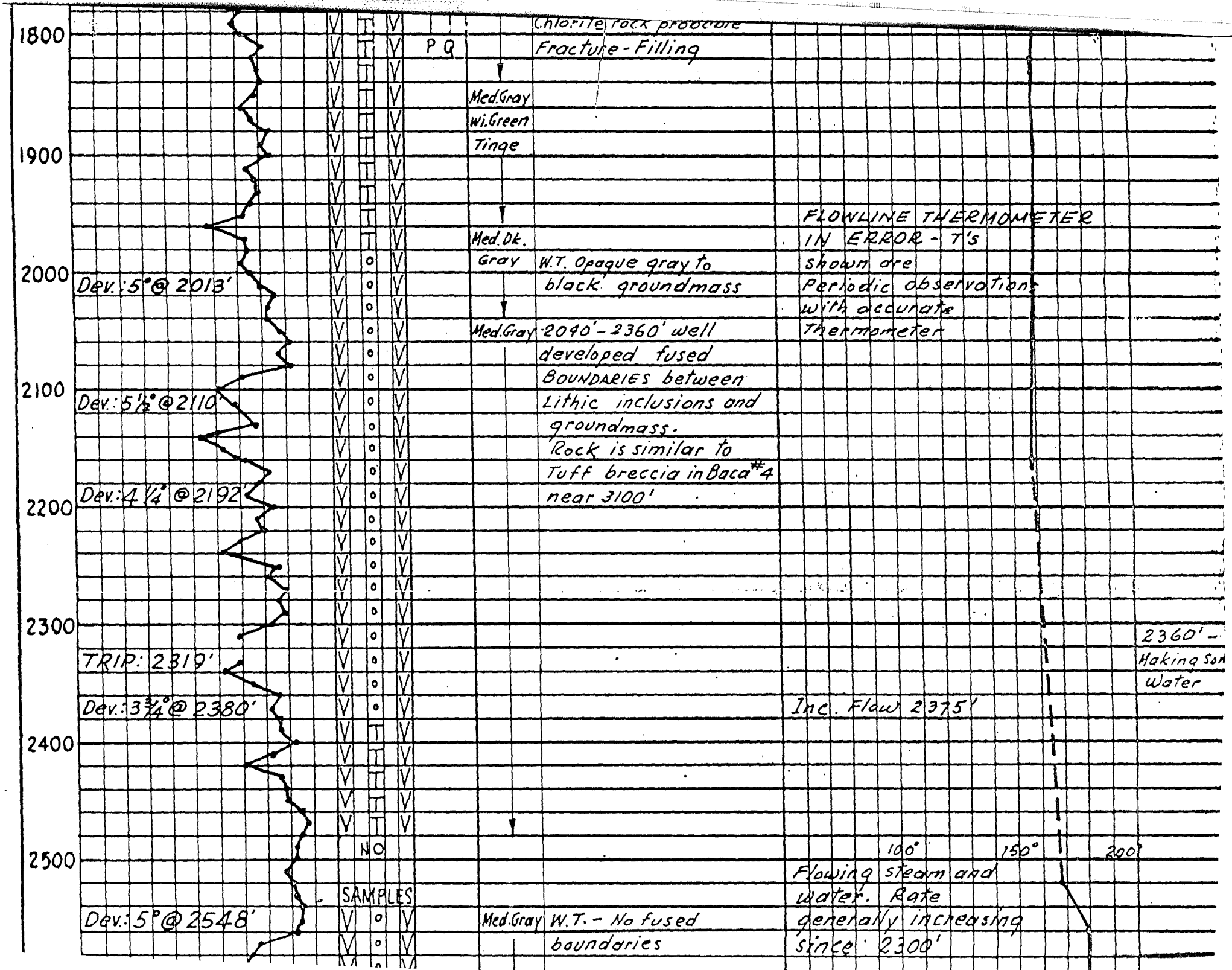
DEPTH	PENETRATION DATA (□ FT./HR. □ MIN/FT. — MIN/10 FEET)	PRIMARY LITH (100 % 0)	SECONDARY MINERALS	BULK COLOR	DESCRIPTION
		V V V V •		BROWN	Welded Tuff,
	DRILLING 26" HOLE	V V V V •	C	&	Weathered, common
	WITH MUD.	V V V V •		ORANGE	loose Bipyramidal
		V V V V •		BROWN	Qtz. xls. Trace
100		V V V V •			Sandstone
		V V V V •			
		V V V V •			
		V V V V •		Lt. Gray	
		V V V V •			
200	100' 80' 60' 40' 20' 10'	V V V V •			
		V V V • •			Mixed welded Tuff,
		V V V • •	P		Tuffaceous Sandstone,
		V V • • •	P	M. Gray	Minor Qtz. sandstone
		V • • • •			Basalt, Andesite, Limestone
		V • • • •			Granite, Common Loose
300		V • • • •			Bipyramidal Qtz. xls.
		V • • • •			
		V • • • •			
		V • • • •		Mixed	

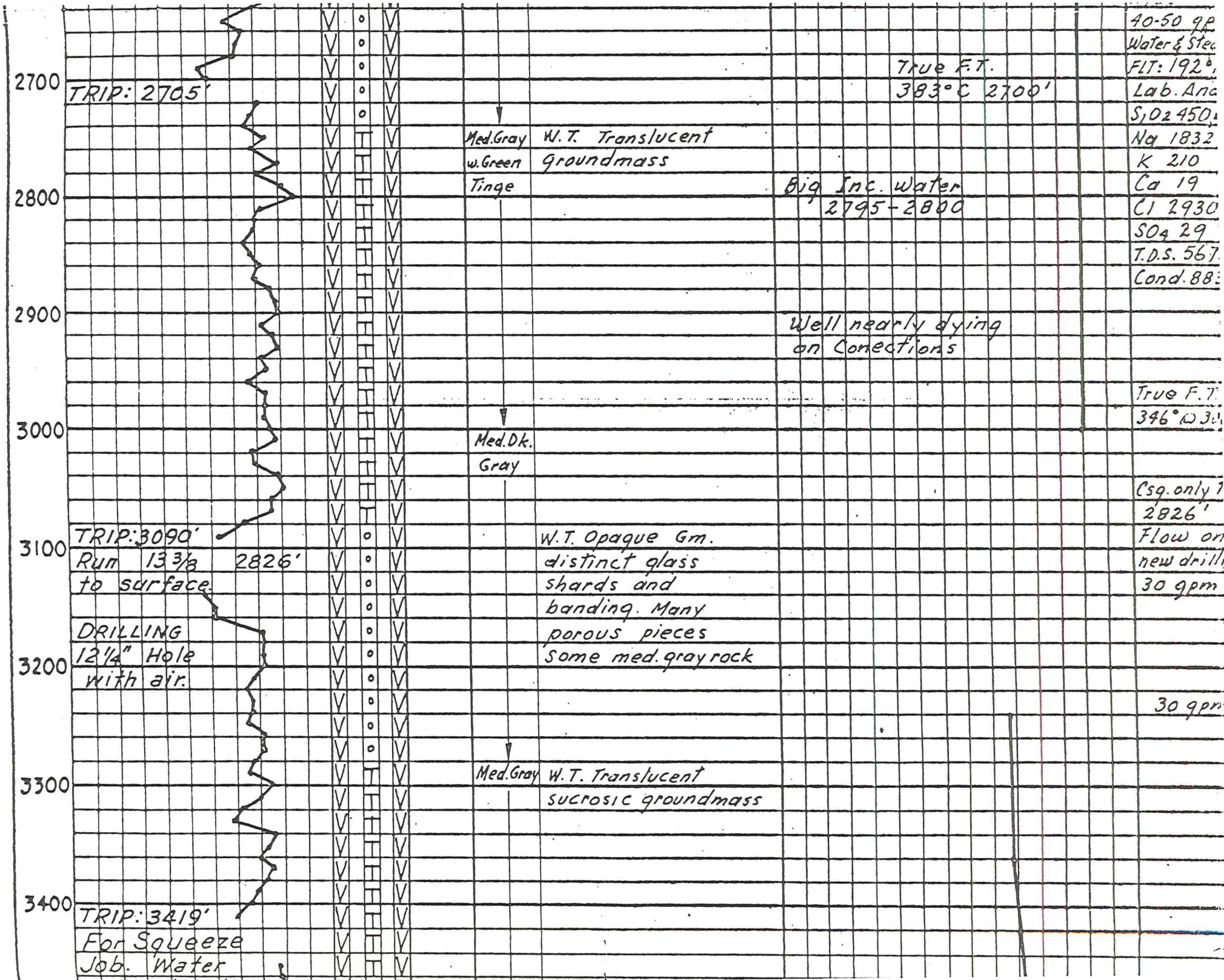
PHYSICAL - CHEMICAL DATA: MUD FLOWLINE TEMPERATURE 70°F 100° 150° 200°

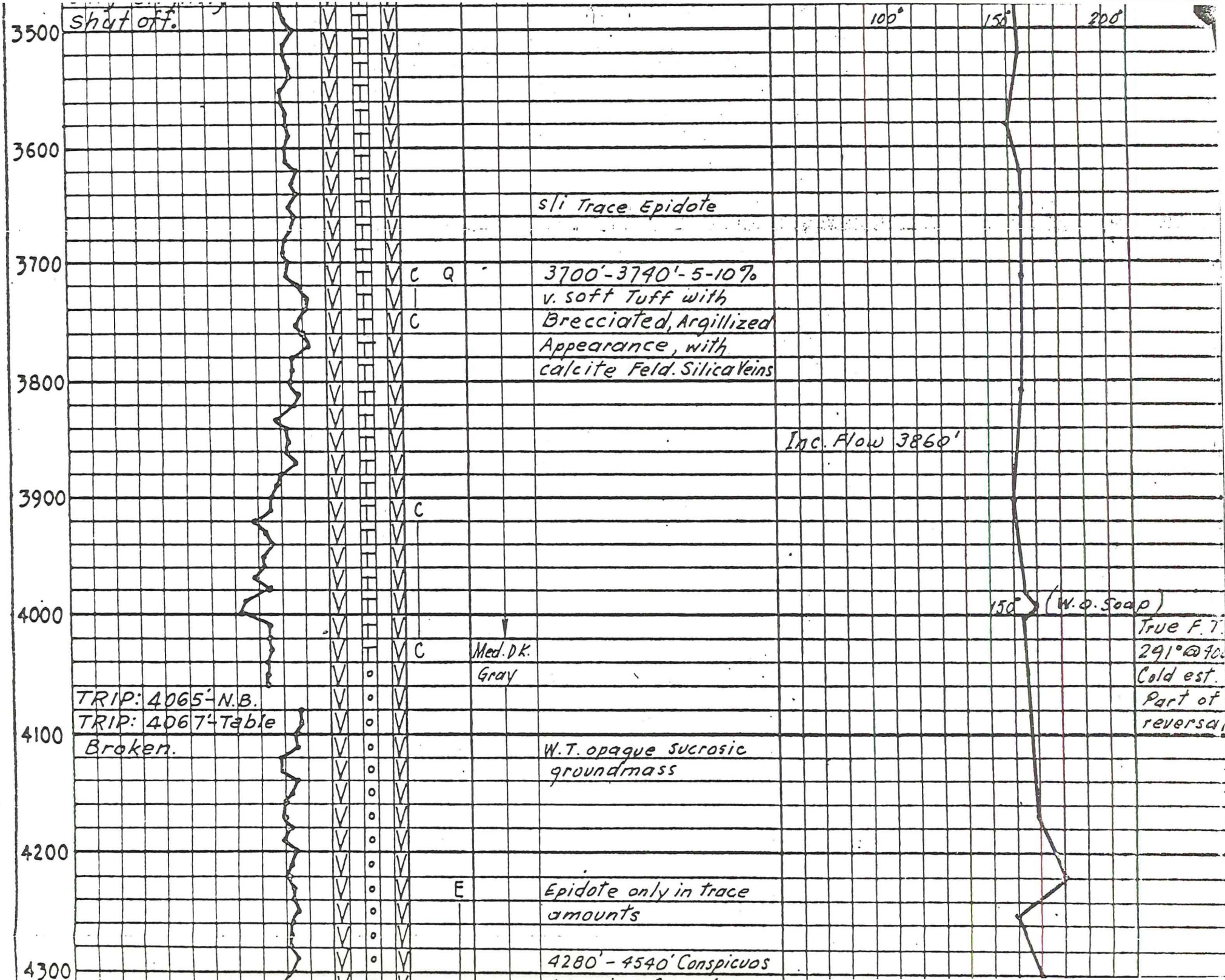
MIS

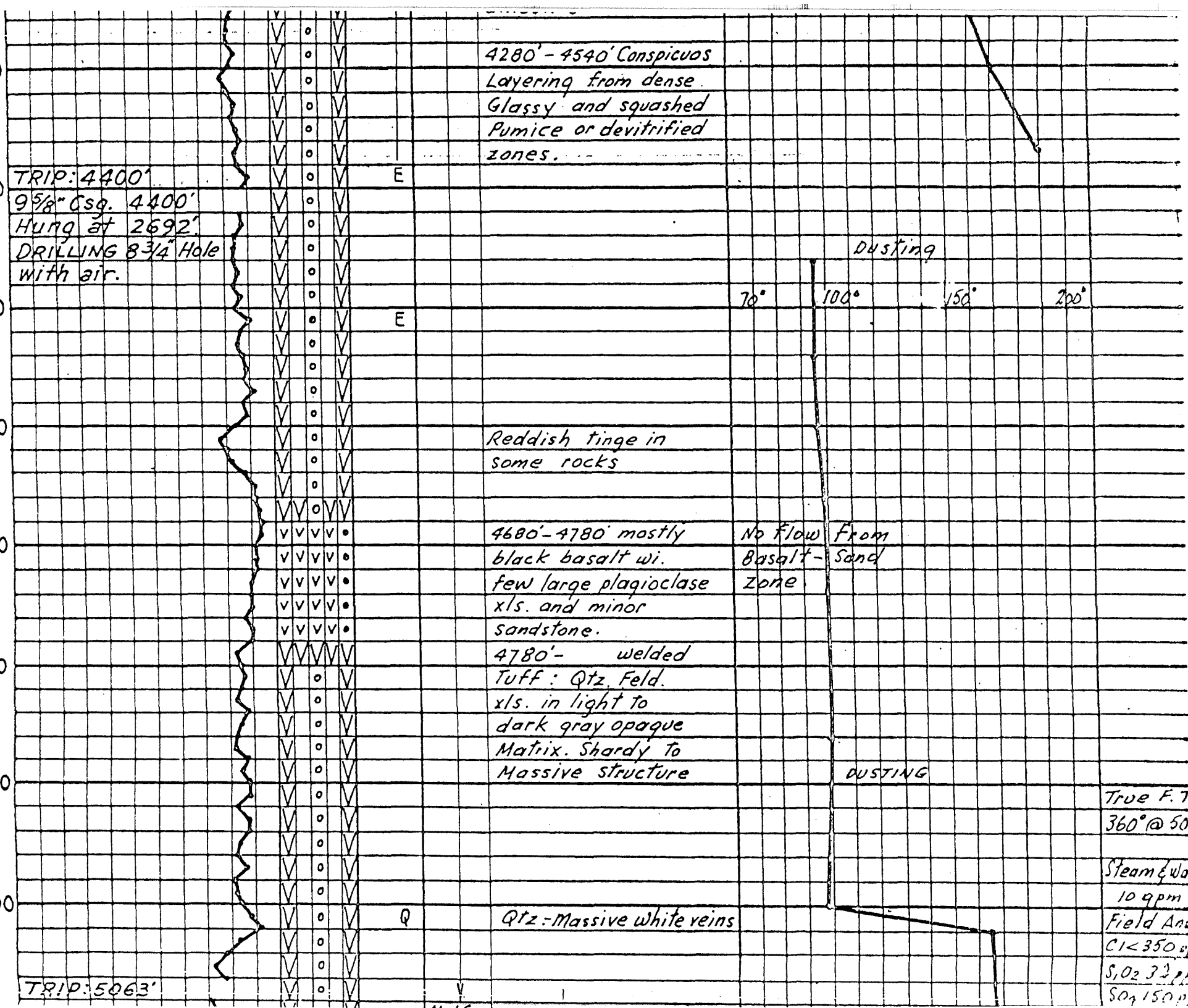

400
500
600
700
800
900
1000
1100
CALDERA FILL
BANDELIER TUFF
TRIP 676' - SET 20" csg. to surface.
DRILLING 17 1/2" Hole with air.
TRIP: 905'
C
P
Mixed Grays Greens Browns
Some Red siltstone and micaceous Red arkose
Lt. Gray
Welded Vitric Tuff, shards easily seein in glassy groundmass, some Feld. & Qtz. xls.
Med. Gray
Welded Crystal-Vitric Tuff, Glassy groundmass wi. abundant Qtz.-Feld xls.
Lt. Gray
Welded Tuff, Qtz. Feld. xls. in opaque groundmass (softer than above) with some sandstone basalt, granite inclusions.
Med. Gray
Lt. Brown Gray
Welded Tuff v. fine xls. in soft clayey groundmass (old weathered zone ?)
Med. Gray
Welded Tuff, Qtz. Feld. xls. in opaque groundmass. some lithic inclusions some spherulites
70°F
100°
150°
200°
AIR BLOOIE LINE TEMP.
DUSTING

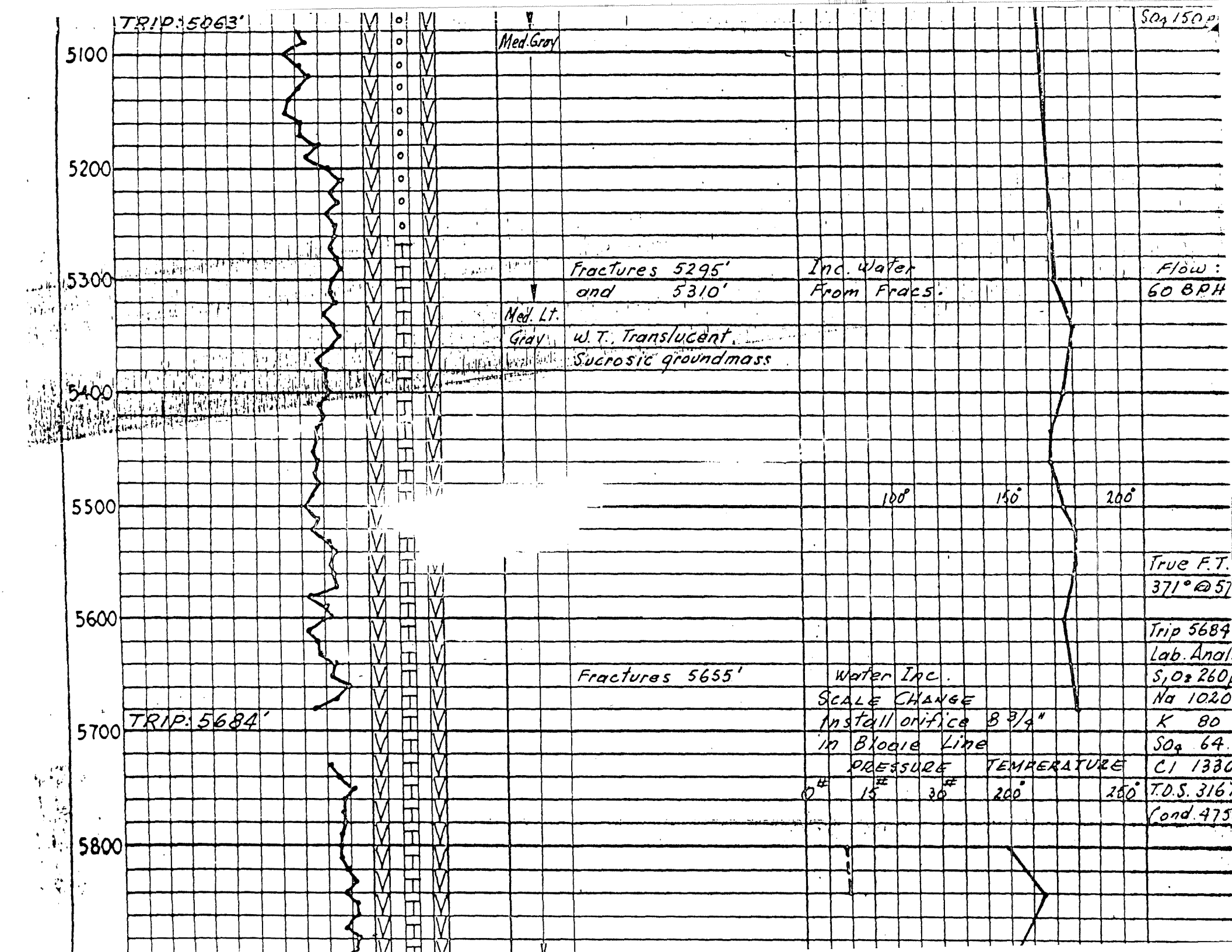

1100
1200
1300
1400
1500
1600
1700
1800
Dk. Gray W.T., dense, translucent groundmass, sucrosic, or V. fine felsitic appearance.
DUSTING
100°
150°
1226' L
Flow Ste
Begin Sa
Fused Boundaries Between Phenocrysts and groundmass
100°
150°
200°
?
TRIP: 1705'
10%
1780 - 1820 Qtz. Pyrite - Chlorite rock probable Fracture-Filling
P Q
P Q

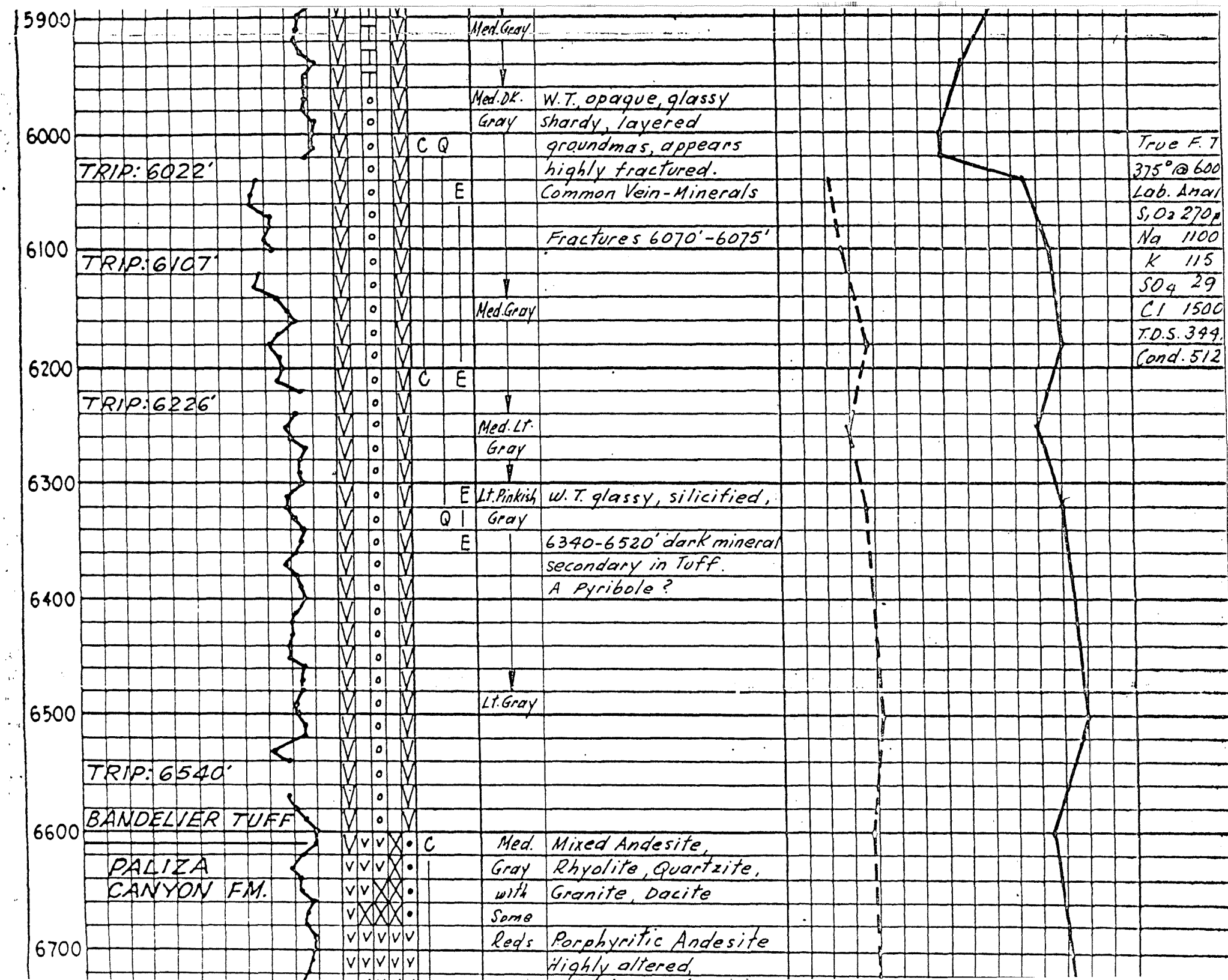

1800
1900
2000
2100
2200
2300
2400
2500
PQ
Chlorite rock proclore
Fracture-Filling
Med. Gray
wi. Green
Tinge
Med. Dk.
Gray
W.T. Opaque gray to
black groundmass
Med. Gray
2040' - 2360' well
developed fused
BOUNDARIES between
Lithic inclusions and
groundmass.
Rock is similar to
Tuff breccia in Baca #4
near 3100'
Med. Gray
W.T. - No fused
boundaries
Dev.: 5° @ 2013'
Dev.: 5½° @ 2110'
Dev.: 4¼° @ 2192'
TRIP: 2319'
Dev.: 3¾° @ 2380'
Dev.: 5° @ 2548'
NO
SAMPLES
FLOWLINE THERMOMETER
IN ERROR - T's
shown are
Periodic observations
with accurate
Thermometer
Inc. Flow 2375'
2360' -
Making Sam
Water
100°
150°
200
Flowing steam and
water. Rate
generally increasing
since 2300'


2700
2800
2900
3000
3100
3200
3300
3400
TRIP: 2705'
Med. Gray w. Green Tinge
W.T. Translucent groundmass
True F.T. 383°C 2700'
Big Inc. water 2795-2800
Well nearly dying on Conections
Med. Dk. Gray
TRIP: 3090'
Run 13 3/8 2826' to surface.
W.T. Opaque Gm. distinct glass shards and banding. Many porous pieces some med. gray rock
DRILLING 12 1/4" Hole with air.
Med. Gray
W.T. Translucent sucrosic groundmass
TRIP: 3419'
For Squeeze Job. Water
40-50 gp
Water & Stea
FLT: 192°,
Lab. Ana
S,O2 450
Na 1832
K 210
Ca 19
Cl 2930
SO4 29
T.D.S. 567
Cond. 88
True F.T
346° @ 3
Csg. only
2826'
Flow on
new drill
30 gpm
30 gpm


Shut off.
3500
3600
3700
3800
3900
4000
4100
4200
4300
C Q
C
C
C
E
s/i Trace Epidote
3700'-3740'-5-10%
v. soft Tuff with
Brecciated, Argillized
Appearance, with
calcite Feld. Silica Veins
Inc. Flow 3860'
Med. D.K.
Gray
TRIP: 4065'-N.B.
TRIP: 4067'-Table
Broken.
W.T. opaque sucrosic
groundmass
Epidote only in trace
amounts
4280'-4540' Conspicuos
100°
150°
200°
150°
(W.o. Soap)
True F.T.
291°@ 40
Cold est.
Part of
reversa


4300
4400
4500
4600
4700
4800
4900
5000
TRIP: 4400'
9 5/8" Csg. 4400'
Hung at 2692'
DRILLING 8 3/4" Hole
with air.
TRIP: 5063'
E
E
Q
4280' - 4540' Conspicuos
Layering from dense
Glassy and squashed
Pumice or devitrified
zones. --
Reddish tinge in
some rocks
4680' - 4780' mostly
black basalt wi.
few large plagioclase
x/s. and minor
sandstone.
4780' - welded
Tuff: Qtz. Feld.
x/s. in light to
dark gray opaque
Matrix. Shardy to
Massive structure
Qtz - Massive white veins
Dusting
70°
100°
150°
200°
No Flow From
Basalt - Sand
Zone
DUSTING
True F.T
360° @ 50
Steam & Wa
10 gpm
Field An
Cl < 350
SiO2 32
SO4 150


TRIP: 5063'
Med. Gray
5100
5200
5300
Fractures 5295'
and 5310'
Inc. Water
From Fracs.
Flow:
60 BPH
Med. Lt.
Gray
W.T. Translucent.
Sucrosic groundmass
5400
5500
100°
150°
200°
True F.T.
371° @ 57
5600
Trip 5684
Lab. Anal
Fractures 5655'
Water Inc.
SCALE CHANGE
Install orifice 8 3/4"
in Blooie Line
PRESSURE
TEMPERATURE
0#
15#
30#
200°
250°
T.D.S. 316
Cond. 475
5700
TRIP: 5684'
5800


5900
6000
6100
6200
6300
6400
6500
6600
6700
TRIP: 6022'
TRIP: 6107'
TRIP: 6226'
TRIP: 6540'
BANDELIER TUFF
PALIZA CANYON FM.
C Q
E
C E
E
Q I
E
C
Med. Gray
Med. Dk. Gray
Med. Gray
Med. Lt. Gray
Lt. Pinkish Gray
Lt. Gray
Med. Gray
with Some Reds
W.T. opaque, glassy shardy, layered groundmas, appears highly fractured. Common Vein-Minerals
Fractures 6070'-6075'
W.T. glassy, silicified,
6340-6520' dark mineral secondary in Tuff. A Pyribole ?
Mixed Andesite, Rhyolite, Quartzite, Granite, Dacite
Porphyritic Andesite highly altered
True F. T
375° @ 600
Lab. Anal
SiO2 270 p
Na 1100
K 115
SO4 29
Cl 1500
T.D.S. 344
Cond. 512

highly altered,
epidote may be old.
Non magnetic,
Magnetite leached,
some Tuff, some
Finely xln igneous,
Lt. Gray Red color is
w: Reds Hematite.

6800
TRIP: 6793'

TOTCO OUT

6900
RATE
As ABOVE

6973'
T.D.

E
E

Lab. An
@ 6793
S,O₂ 400p
Na 1080
K 120
SO₄ 82
Cl 1490
T.D.S. 351
Cond. 512

True F.T
486° @ 69

TEMPERATURE SURVEY
10-6-72 Static: 1 year

DEPTH	TEMPERATURE
1000'	238° F
2000'	260°
2692'	383°
3000'	346°
4000'	291°
4500'	325°
5000'	360°
5500'	367°
6000'	375°
6500'	440°
9000'	486°