

6000	TRIP 6003'	VVVVVV	MED. GRAY 5980'-6140'	Andesite (?)	
	BIT #11-STC-5JA	VVVVVV		V. Finely Crystalline	
		VVVVVV		To Aphanite, Few	
		VVVVVV		Feldspar Phenocrysts	
		VVVVVV		Massive, Dense	
6100		VVVVVV		Somewhat Altered,	
		VVVVVV		Abundant to	
		VVVVVV		Common Epidote	
		VVVVVV		6140-6200' - Sli.	
6200	TRIP 6204'	VVVVVV		Porphyritic, Fresh basalt	
	BIT #12	VV●●●		6204'-6209' Mixed	
	STC-5JA	VVVVVV	V	Red Beds, shale, Siltstone	DEV 6248
		VVVVVV	LT. GRAY	6209'-6300'	8° N 46° W
		VVVVVV		Mixed Andesite and	
	TRIP 6289	VVVVVV		Intrusive (?) Rock	Flow on Tr
6300	BIT #13-STC-5JA	●●●●●	V	or Coarse Quartz	22" PIH-Air
		VVVVVV	MED. GRAY	Feldspar veins	
		VVVVVV		6300'-6320' Tuffaceous Sand (?)	
		VVVVVV	V	6320'-6378'	

T.D. - 90' 70' 50' 30' 10'

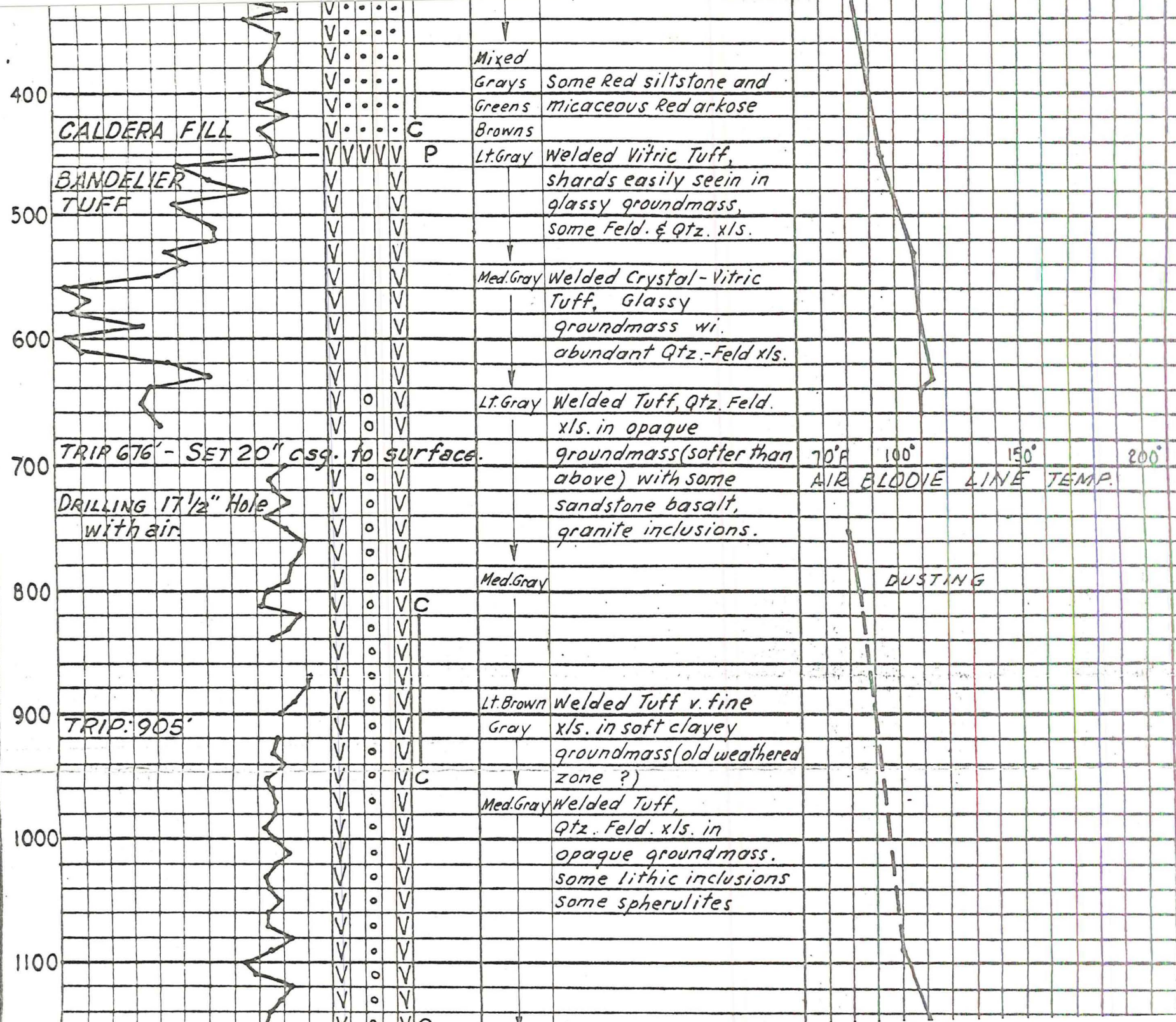
Igneous Rock: Dense  
 Massive, Aphanitic  
 Groundmass possibly  
 Glassy, Sli.  
 Porphyritic with  
 Feldspar. Highly  
 Magnetic.

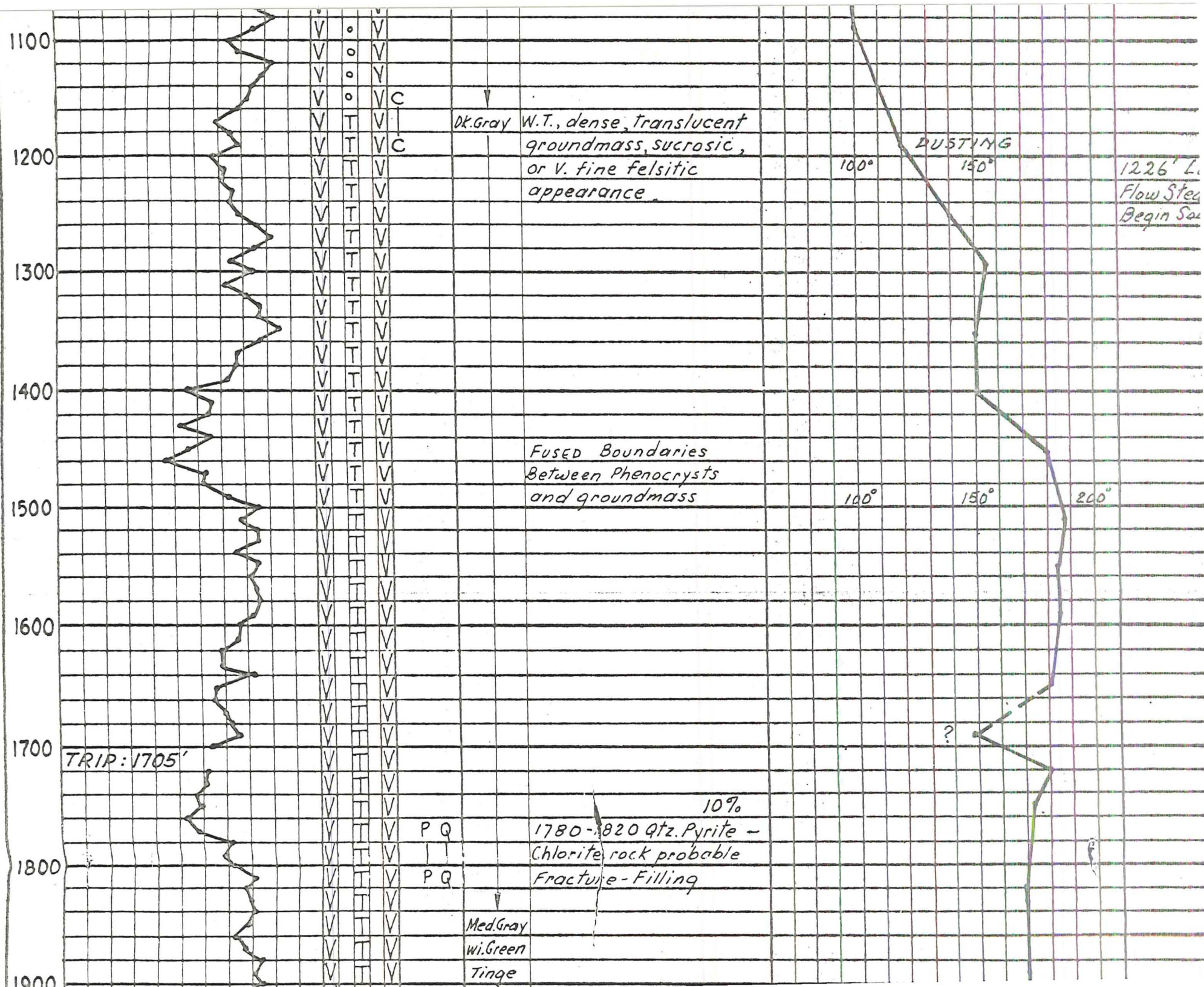
TEST: Open hole,  
 8 1/2" Orifice

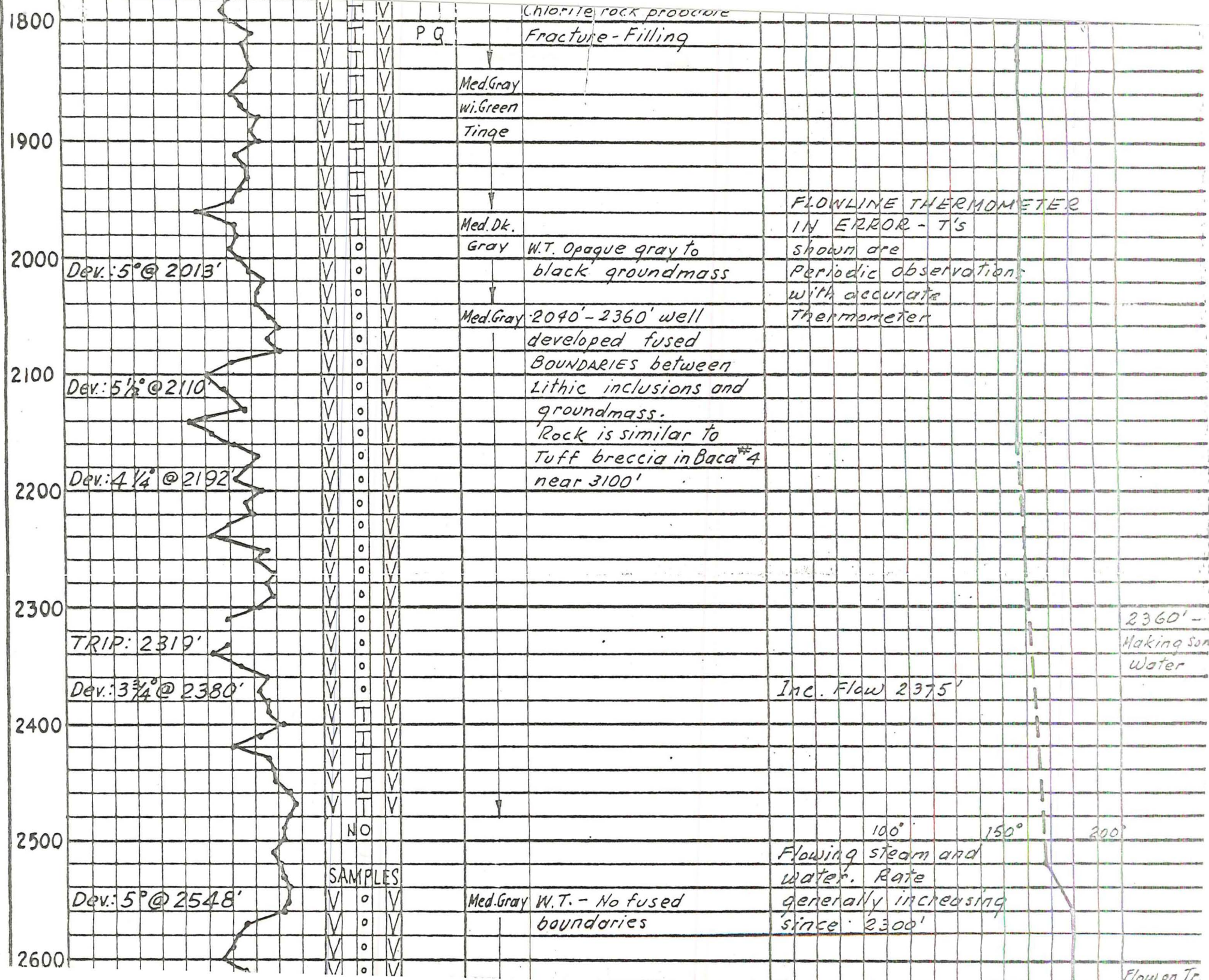
TIME	TEMP.	PRESS.
1 hr	290° F	32 #
2 hr	285°	30 #
3 hr	282°	29 #
4 hr	282°	29 #
5 hr	281°	28 #
6 hr	282°	28 #

Run in Hole, No Bridges, No Fill  
 Run slotted 7" Liner









Chlorite rock procedure

P Q

Fracture-Filling

Med. Gray  
wi. Green  
Tinge

FLOWLINE THERMOMETER  
IN ERROR - T's

Med. Dk.  
Gray

W.T. Opaque gray to  
black groundmass

shown are  
Periodic observations  
with accurate  
Thermometer

Med. Gray

2040' - 2360' well  
developed fused

BOUNDARIES between  
Lithic inclusions and  
groundmass.  
Rock is similar to  
Tuff breccia in Baca #4  
near 3100'

2360' -  
Making son  
Water

Inc. Flow 2375'

NO

100°      150°      200°

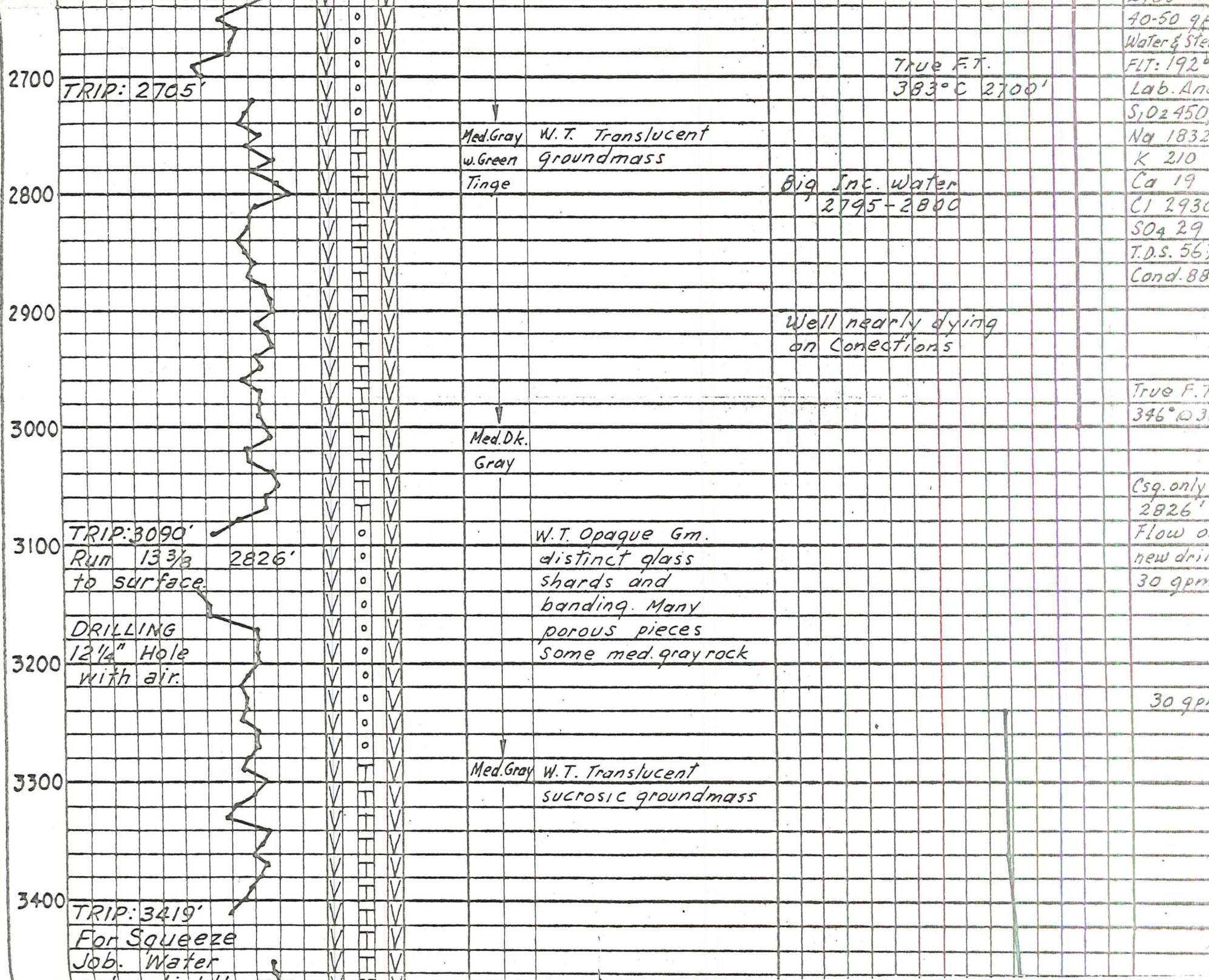
Flowing steam and  
water. Rate  
generally increasing  
since 2300'

SAMPLES

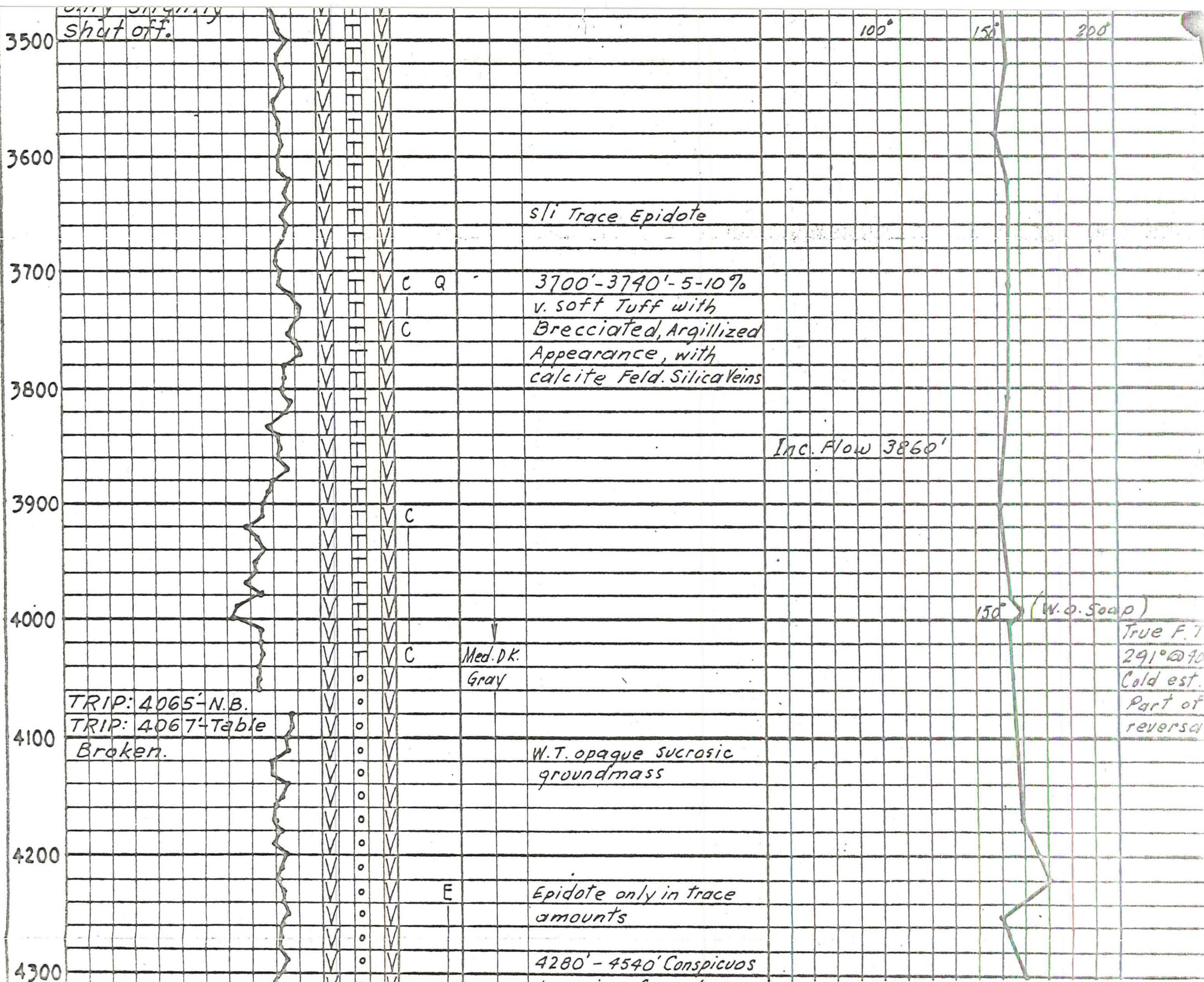
Med. Gray

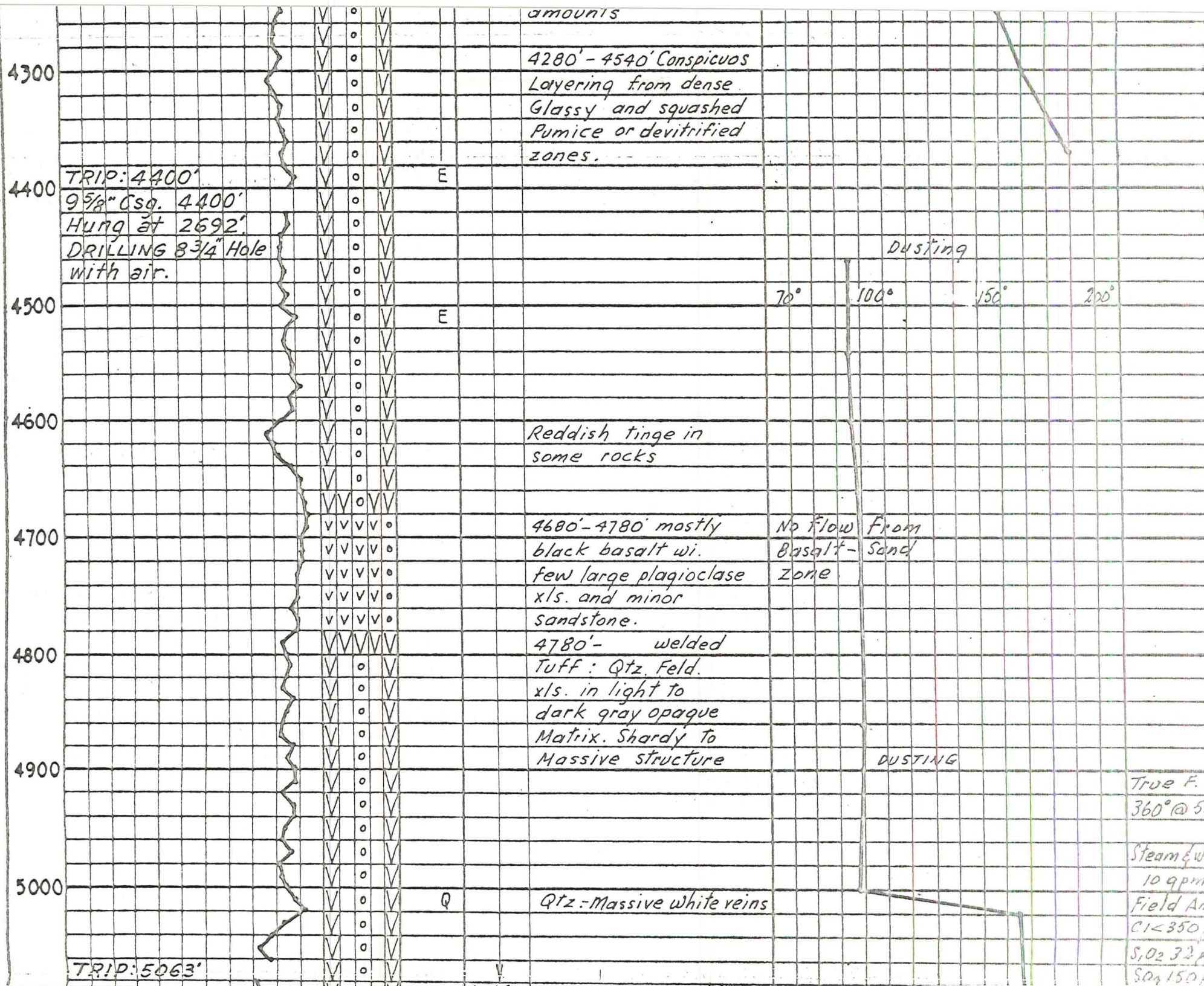
W.T. - No fused  
boundaries

Flow on Tr









amounts

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.



E

E

Q

4280' - 4540' Conspicuous  
Layering from dense  
Glassy and squashed  
Pumice or devitrified  
zones.

Reddish tinge in  
some rocks

4680' - 4780' mostly  
black basalt wi.  
few large plagioclase  
xls. and minor  
sandstone.

4780' - welded  
Tuff: Qtz, Feld.  
xls. in light to  
dark gray opaque  
Matrix. Shardy to  
Massive structure

Qtz - Massive white veins

70° 100° 150° 200°

DUSTING

DUSTING

True F.  
360° @ 5000

Steam & W.  
10 gpm  
Field An.  
C1 < 350  
S<sub>1</sub>O<sub>2</sub> 32 p  
SO<sub>2</sub> 150

TRIP: 5063'

5100  
5200  
5300  
5400  
5500  
5600  
5700  
5800

Med. Gray

Fractures 5295'  
and 5310'

Inc. Water  
From Fracs.

Flow:  
60 BPH

Med. Lt.  
Gray

w. T., Translucent,  
Sucrosic groundmass

100° 150° 200°

True F.T  
371° @ 5

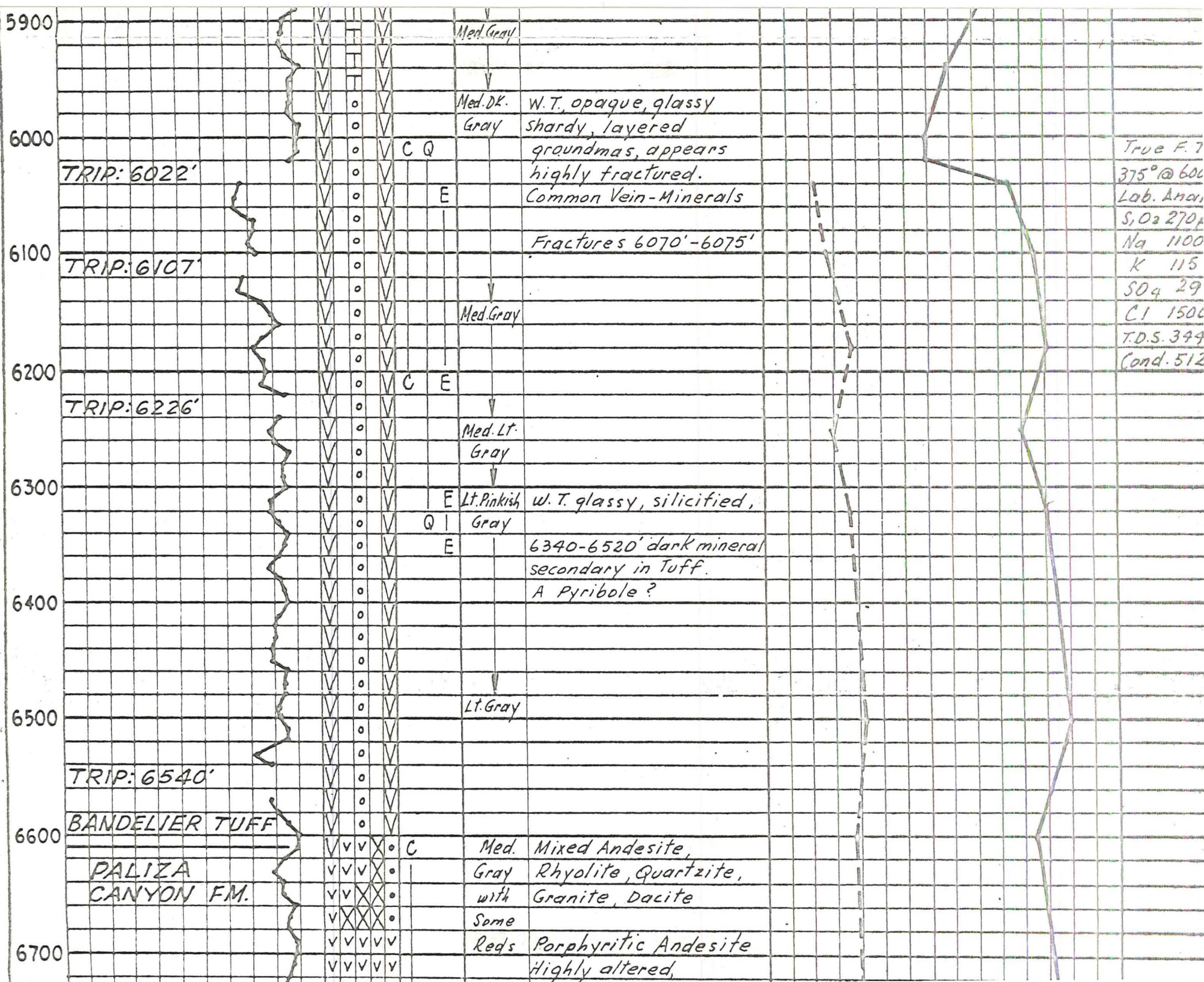
Fractures 5655'

Water Inc.  
SCALE CHANGE  
install orifice 8 3/4"  
in Bloopie Line

Trip 5684  
Lab. And.  
S, O<sub>2</sub> 260  
Na 1020  
K 80  
SO<sub>4</sub> 64  
CI 133  
T.D.S. 316  
Cond. 475

TRIP: 5684'

PRESSURE TEMPERATURE  
0# 15# 30# 200° 250°





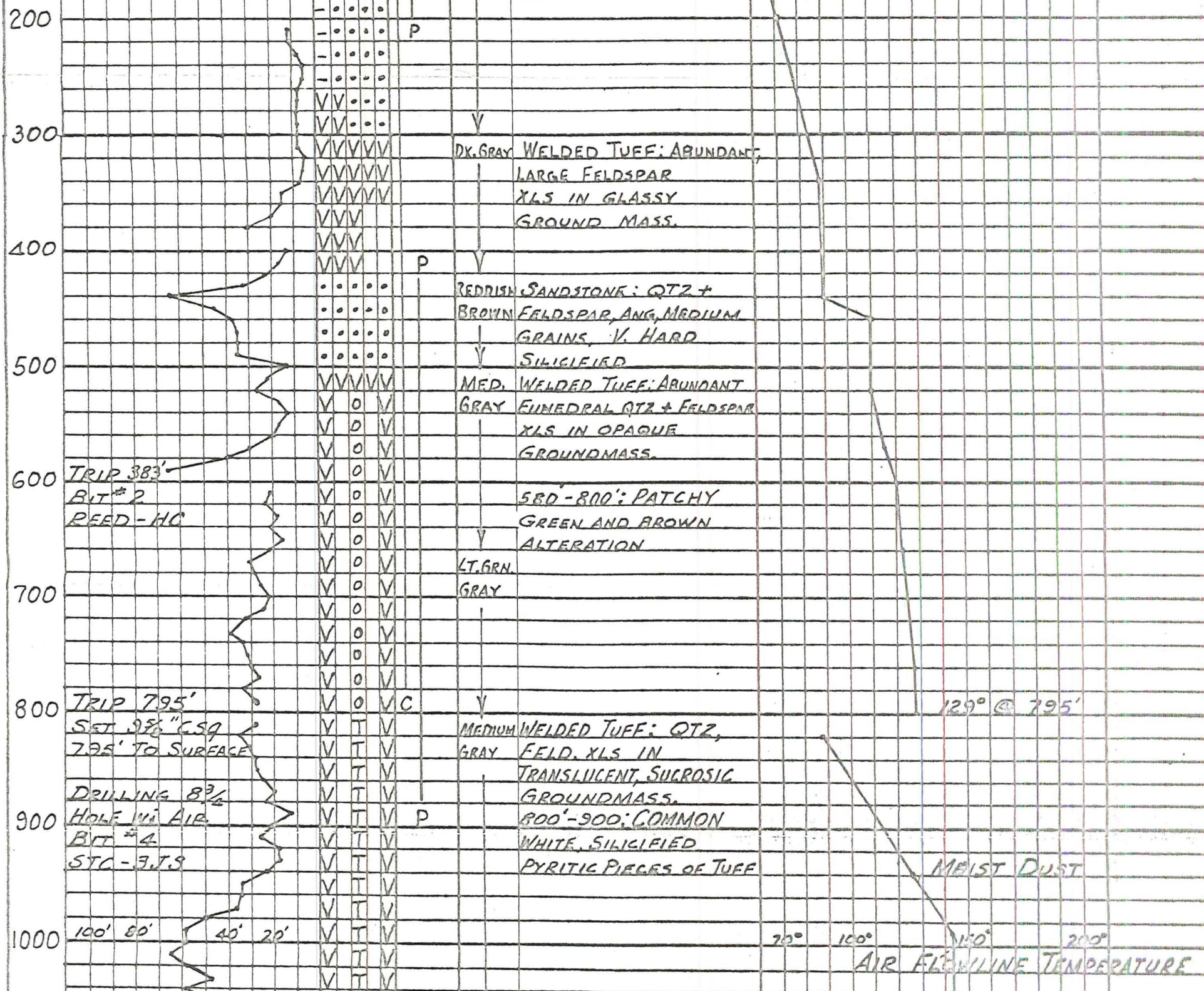
COMPANY UNION OIL OF CAL. TOTAL DEPTH 3715'  
 FIELD BACA SPUD DATE JULY 8 1972  
 WELL # 6 COMPLETION DATE JULY 23, 1972  
 COUNTY SANDOVAL DRILLING CONTRACTOR Coleman-Andes  
 STATE NEW MEXICO ENGINEER Harrell  
 LOCATION REDONDO CREEK GEOLOGIST Dondanville  
 EL. ~ 8700'

CASING RECORD  
9 5/8" : 795' to SURFACE  
7" LINER: HUNG 692' to  
3700'; SLOTTED: 2639'-2710'  
2980'-3170'  
3589'-3695'

DRILLING	ROCK	MINERALS	PHYSICAL - CHEMICAL
NB - NEW BIT	<input type="checkbox"/> SHALE	<input type="checkbox"/> CHERT	C - CALCITE
RRB - RERUN BIT	<input type="checkbox"/> SILTSTONE	<input checked="" type="checkbox"/> VOLCANICS	K - KAOLINITE
CB - CORE BIT	<input type="checkbox"/> SANDSTONE	<input checked="" type="checkbox"/> INTRUSIVE	P - PYRITE
LC - LOST CIRCULATION	<input checked="" type="checkbox"/> CONGLOMERATE	<input checked="" type="checkbox"/> TUFF	Q - QUARTZ
DEV - DEVIATION	<input type="checkbox"/> LIMESTONE	<input checked="" type="checkbox"/> METAMORPHIC	Z - ZEOLITES
DST - DRILL STEM TEST	<input checked="" type="checkbox"/> DOLOMITE	<input type="checkbox"/>	D - DOLOMITE
	<input checked="" type="checkbox"/> GYP, ANHYD.	<input type="checkbox"/>	V - VEINS
			E - EPIDOTE
			DIS. DISSEMINATED
			F - FELDSPAR
			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 MILLION

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

DEPTH	PENETRATION DATA					LITHOLOGY				PHYSICAL-CHEMICAL DATA				MISC.	
	□ FT./HR.		□ MIN/FT. 10'			PRIMARY LITH	SECONDARY MINERALS	BULK COLOR	DESCRIPTION	MUD FLOWLINE TEMPERATURE					
	90	70	50	30	10	100 %	0			70°F	100°	150°	200°		
	DRILLING 12 1/4" HOLE WITH MUD BIT # 1; HTC-RR					-	-	-	-	BRICK	MUDSTONE, MINOR				
						-	-	-	-	RED +	SANDSTONE, SOFT,				
						-	-	-	-	VARIOUS	ARGILLIZED.				
						-	-	-	-	GRAYS					
100						-	-	-	-	LT. GRAY	SANDSTONE, ANG. Volg.				
						-	-	-	-	C	GRAINS, BIPYRAMIDAL				
						-	-	-	-	P	QZ XLS, CLAYEY,				
						-	-	-	-		ALTERED				
200						-	-	-	-	P					
						-	-	-	-						
						-	-	-	-						
						-	-	-	-						
						-	-	-	-						
300						-	-	-	-	V					
						-	-	-	-	VVVVVV	DK. GRAY	WELDED TUFF: ABUNDANT,			
						-	-	-	-	VVVVVV		LARGE FELDSPAR			
						-	-	-	-	VVVVVV		XLS IN GLASSY			
						-	-	-	-	VVV		GROUND MASS.			



TRIP 383  
 BIT #2  
 REED-HC

TRIP 795  
 SET 3 3/4" CSA  
 795' TO SURFACE

DRILLING 8 3/4  
 HOLE IN AIR  
 BIT #4  
 STC-3.T.S

100' 80'      40' 20'

Dk. GRAY WELDED TUFF; ABUNDANT  
 LARGE FELDSPAR  
 XLS IN GLASSY  
 GROUND MASS.

REDDISH SANDSTONE: QTZ +  
 BROWN FELDSPAR, ANG, MEDIUM  
 GRAINS, V. HARD  
 SILICIFIED.

MED. WELDED TUFF; ABUNDANT  
 GRAY FUNERAL QTZ + FELDSPAR  
 XLS IN OPAQUE  
 GROUNDMASS.

580-800': PATCHY  
 GREEN AND BROWN  
 ALTERATION

LT. GRN.  
 GRAY

MEDIUM WELDED TUFF; QTZ,  
 GRAY FELD. XLS IN  
 TRANSLUCENT, SUCROSIC  
 GROUNDMASS.

800'-900'; COMMON  
 WHITE, SILICIFIED  
 PYRITIC PIECES OF TUFF

129° @ 795'

MOIST DUST

70°    100°    150°    200°  
 AIR FLOWLINE TEMPERATURE







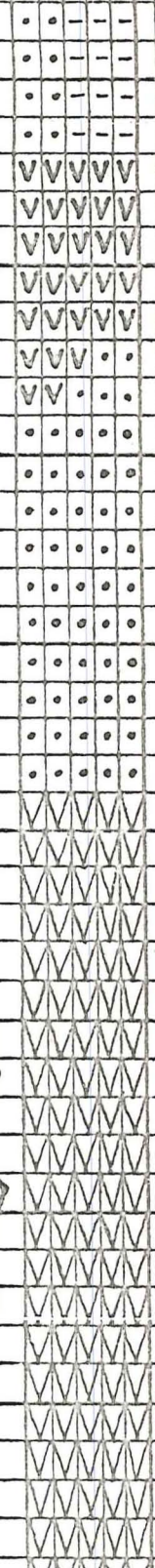






white clay alteration

200  
300  
400  
500  
600  
700  
800  
900



Med. Porphyritic Andesite:  
Gray + brown w: white  
Purple altered Feldspar  
Brown Xts.

TRIP 340'

SET 13 3/8"

340 To SURF

DRILLING 12 1/4"

HOLE #1 MLD

Bit #2

STC-T2-RR

Dev. 6°

Lt. Gry. Sandstone fine to  
+ Lt. Grn. Coarse, Tuffaceous,  
Gry. clayey, some Qtz.  
Pebbles, some siltstone,  
some Bipyramidal  
Qtz. xls. Colors:  
Lt. gray, Green, Gray  
Pink, Tan.

Dev. 5 1/2°

Rhyolitic Tuff.  
Lt Probably welded,  
Gray Large Qtz. Phenocrysts  
in highly altered  
(Clay) Grandmass.  
Some altered Pumice  
Flags. Alternating  
v. Hard and v. soft.

CL

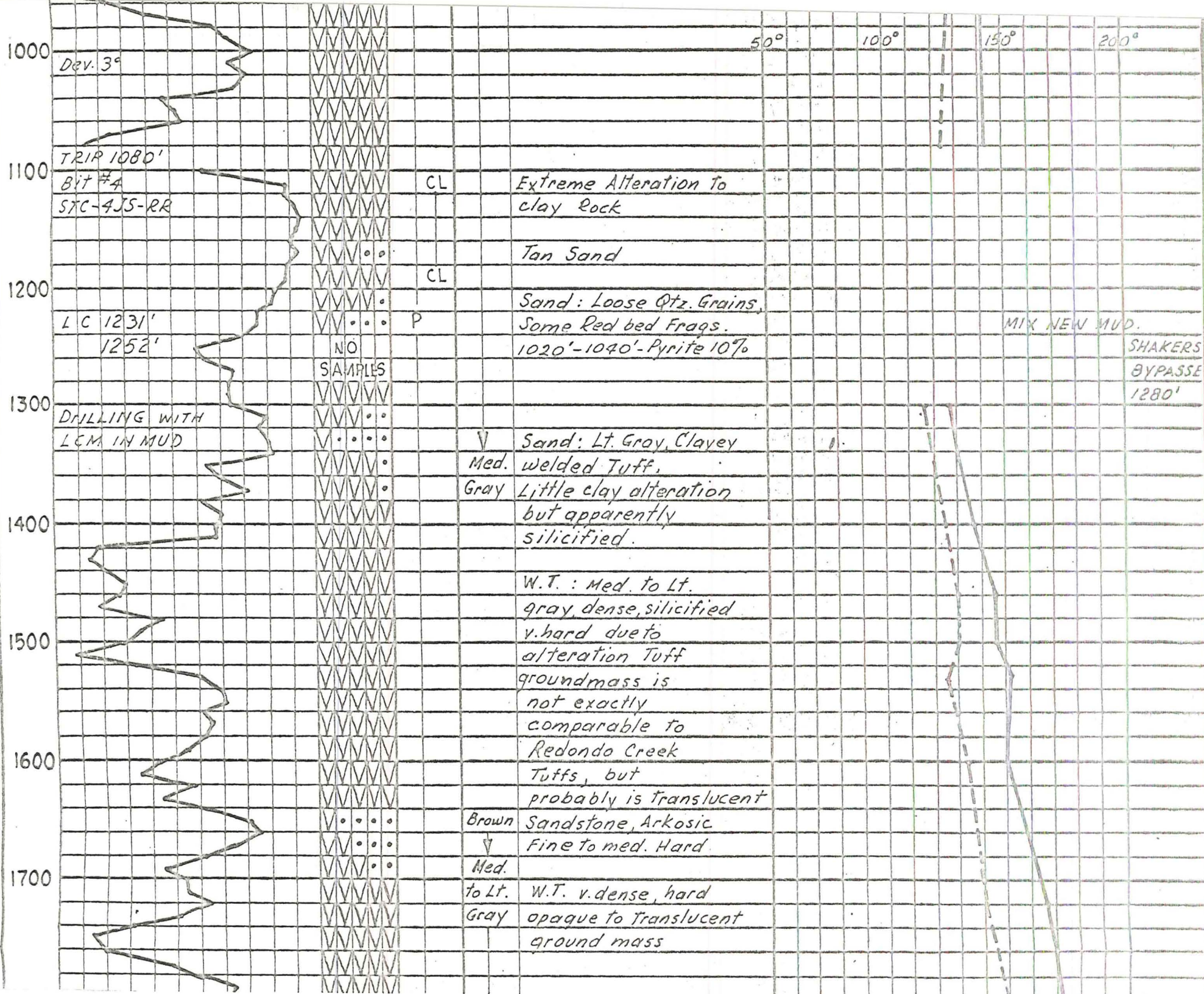
Alteration not as  
complete

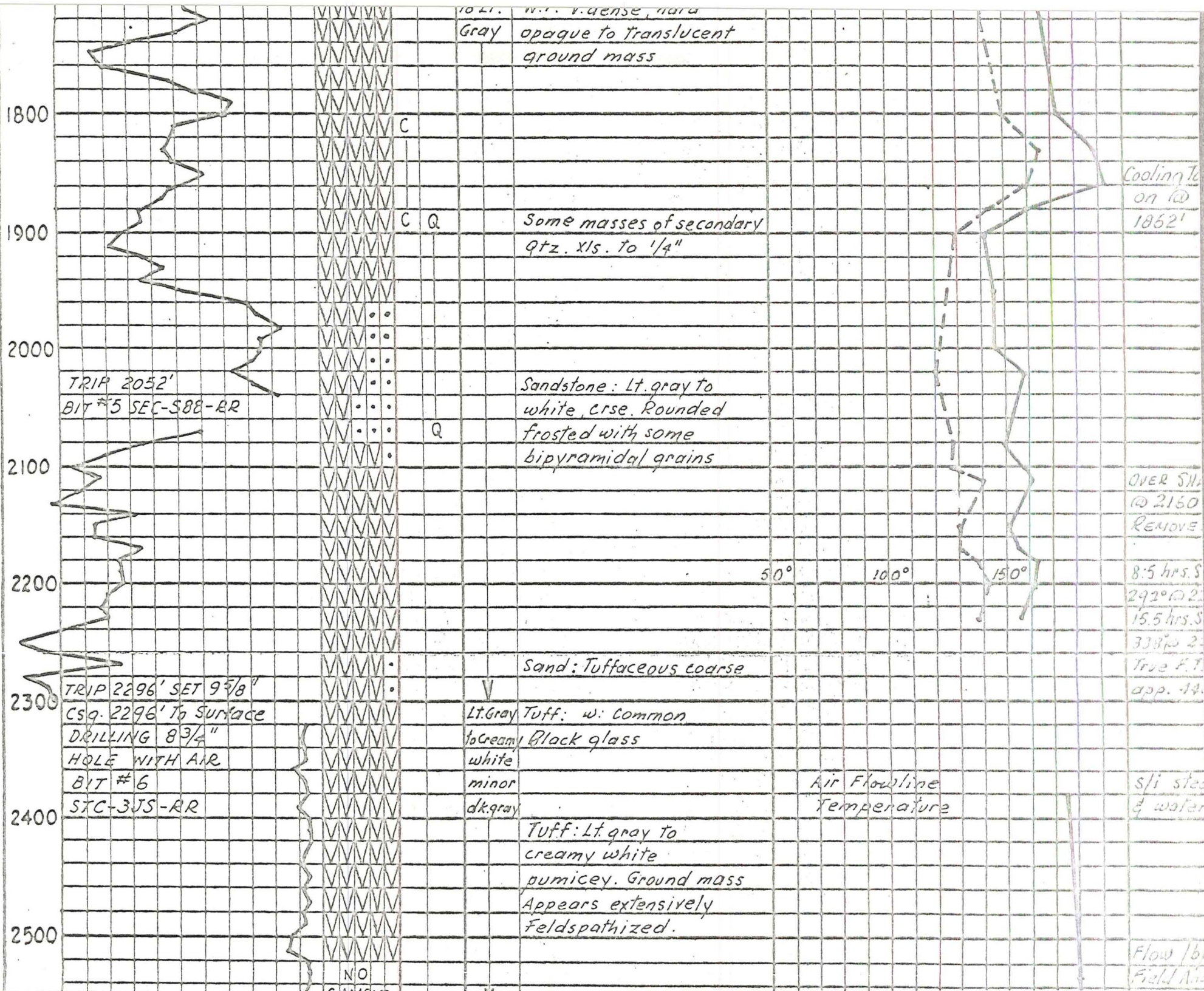
SUCTION LINE

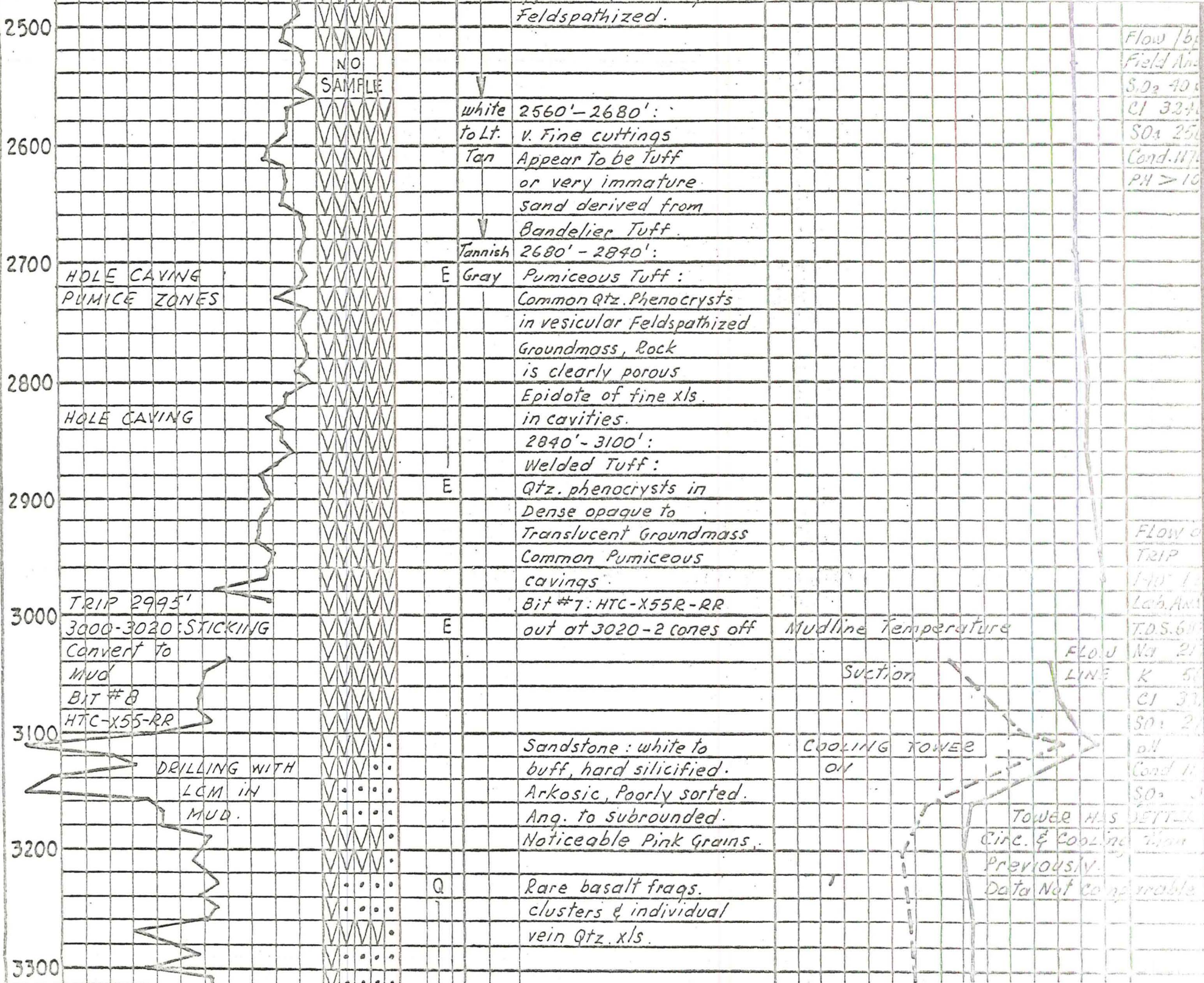
FLOWLINE

TRIP 934'

Bit #3 STC-T2-RR







2500  
2600  
2700  
2800  
2900  
3000  
3100  
3200  
3300

NO SAMPLE

Feldspathized.

white 2560'-2680':  
to Lt. v. Fine cuttings  
Tan Appear to be Tuff  
or very immature  
sand derived from  
Bandelier Tuff.

Tannish 2680'-2840':  
E Gray Pumiceous Tuff:  
Common Qtz. Phenocrysts  
in vesicular Feldspathized  
Groundmass, Rock  
is clearly porous  
Epidote of fine xls.  
in cavities.

2840'-3100':  
Welded Tuff:  
Qtz. phenocrysts in  
Dense opaque to  
Translucent Groundmass  
Common Pumiceous  
cavings.

E Bit #7: HTC-X55R-RR  
out at 3020-2 cones off

Sandstone: white to  
buff, hard silicified.  
Arkosic, Poorly sorted.  
Ang. to subrounded.  
Noticeable Pink Grains.

Q Rare basalt frags.  
clusters & individual  
vein Qtz. xls.

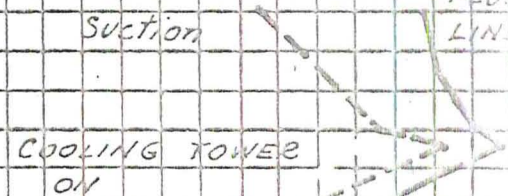
HOLE CAVING  
PUMICE ZONES

HOLE CAVING

TRIP 2995'  
3000-3020 STICKING  
Convert to  
MUD  
BIT #8  
HTC-X55R-RR

DRILLING WITH  
LCM IN  
MUD.

Mudline Temperature



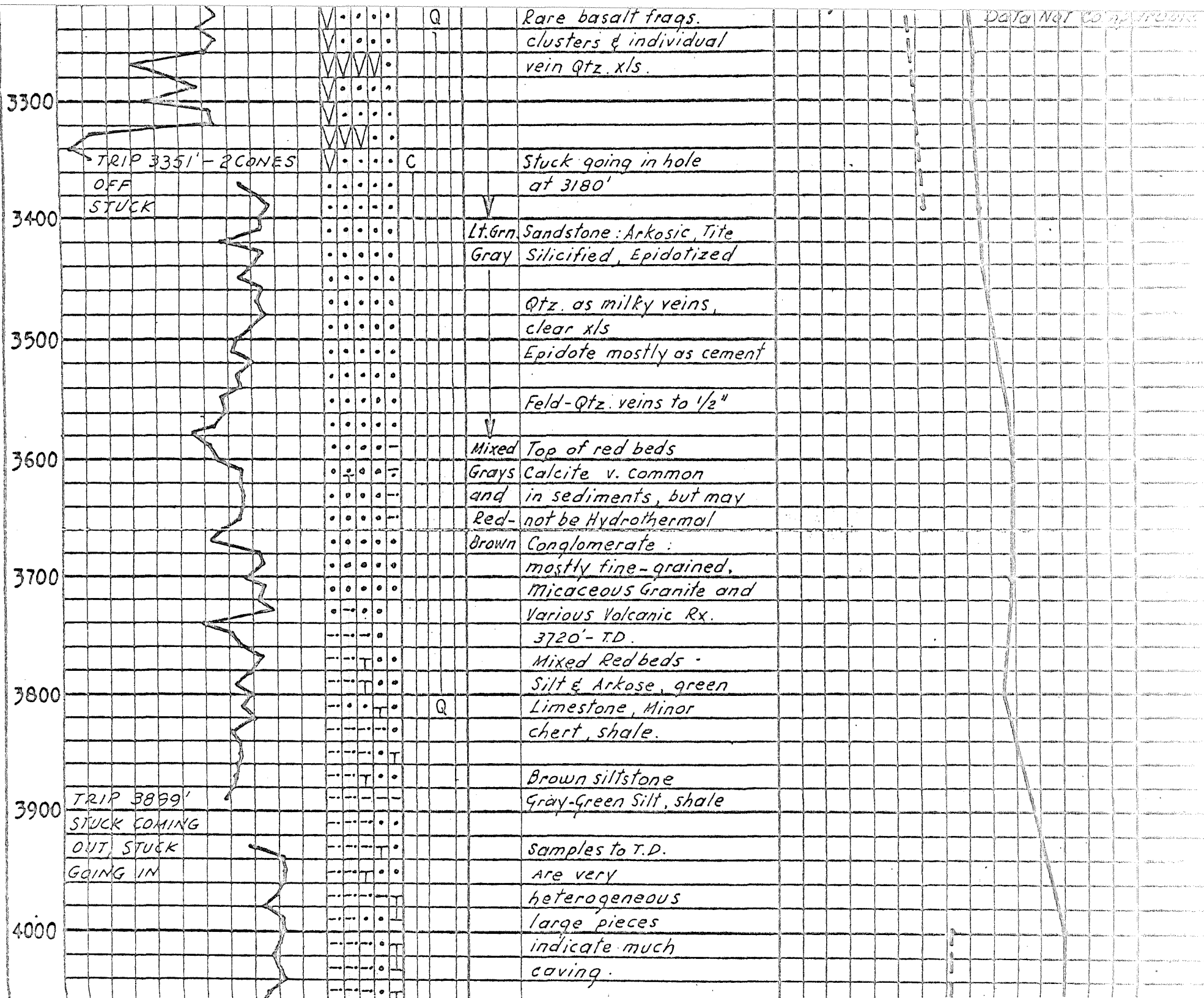
COOLING TOWER  
ON

TOWER HAS  
Circ. & Cooling  
Previously.  
Data Not Comparable

Flow / b  
Field An  
S.O<sub>2</sub> 40  
Cl 32  
SO<sub>4</sub> 25  
Cond. 117  
PH > 10

Flow  
TRIP  
140' L  
Lab. An  
T.D.S. 60  
FLOW  
LINE Na 2  
K 5  
Cl 3  
SO<sub>4</sub> 2  
all  
Cond. 11  
SO<sub>4</sub>  
BETTER  
Data Not Comparable





4100

4200

4300

caving

RUN 2" 4225' TO  
SURFACE FOR  
SURVEY ACCESS.

NOTE.- Hole drilled  
with mud 3020' to  
4384' T.D. with  
slow mud loss  
beginning continuing  
addition of gel and  
lost circulation material-  
Total 300 sacks LCM  
Test Data: At. T.D.  
ran 2" to 1975', circ.  
with air, well kicked  
off, Flowed 6" thru  
6" orifice. Ran Tubing  
To 4225' with continuing  
flow. Circulated air  
for 4 hrs. No flow  
increase.

Temperature Survey

2 Oct. 1972

Static 3 weeks

Depth

Temperature

1000'

206.5

Lab. Anal.  
Water  
At. T.D.  
oil  
T.O.S.  
Mg  
Cl  
SO<sub>4</sub>  
S.O.<sub>2</sub>

Temperature Survey

2 Oct. 1972

Static 3 weeks

Depth                      Temperature

1000'                      295°F

1500'                      366°

2000'                      416°

2500'                      459°

3000'                      493°

3250'                      501°

3500'                      507°

3750'                      516°

4000'                      531°

4200'                      541°

COMPANY UNION OIL CO. OF CAL.  
 FIELD BACA  
 WELL #9 AND #9-Redrill  
 COUNTY SANDOVAL  
 STATE NEW MEXICO  
 LOCATION REDONDO CREEK  
EL 8640' (Approx.)

TOTAL DEPTH #9: 3518' T.D.  
#9-RD: 2440'-5303' T.D.  
 SPUD DATE SEPT. 15, 1972  
 COMPLETION DATE Nov. 21, 1972  
 DRILLING CONTRACTOR COLEMAN & AUDES  
 ENGINEER HARREL  
 GEOLOGIST DONDANVILLE

#9: CASING RECORD  
13 3/8": 805' to Surface Cemented  
#9-RD:  
9 5/8": 3600' to 385'  
Abandoned with bridge plug  
2795' cement to 2590'

### EXPLANATION

<b>DRILLING</b>	<b>ROCK</b>	<b>MINERALS</b>	<b>PHYSICAL - CHEMICAL</b>	
NB - NEW BIT RRB - RERUN BIT CB - CORE BIT LC - LOST CIRCULATION DEV - DEVIATION DST - DRILL STEM TEST	<input checked="" type="checkbox"/> SHALE <input checked="" type="checkbox"/> SILTSTONE <input checked="" type="checkbox"/> SANDSTONE <input checked="" type="checkbox"/> CONGLOMERATE <input checked="" type="checkbox"/> LIMESTONE <input checked="" type="checkbox"/> DOLOMITE <input checked="" type="checkbox"/> GYP, ANHYD.	<input checked="" type="checkbox"/> CHERT <input checked="" type="checkbox"/> VOLCANICS <input checked="" type="checkbox"/> INTRUSIVE <input checked="" type="checkbox"/> TUFF <input checked="" type="checkbox"/> METAMORPHIC	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	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 MILLION

Tuff Groundmass: Opaque (O) Translucent (T)

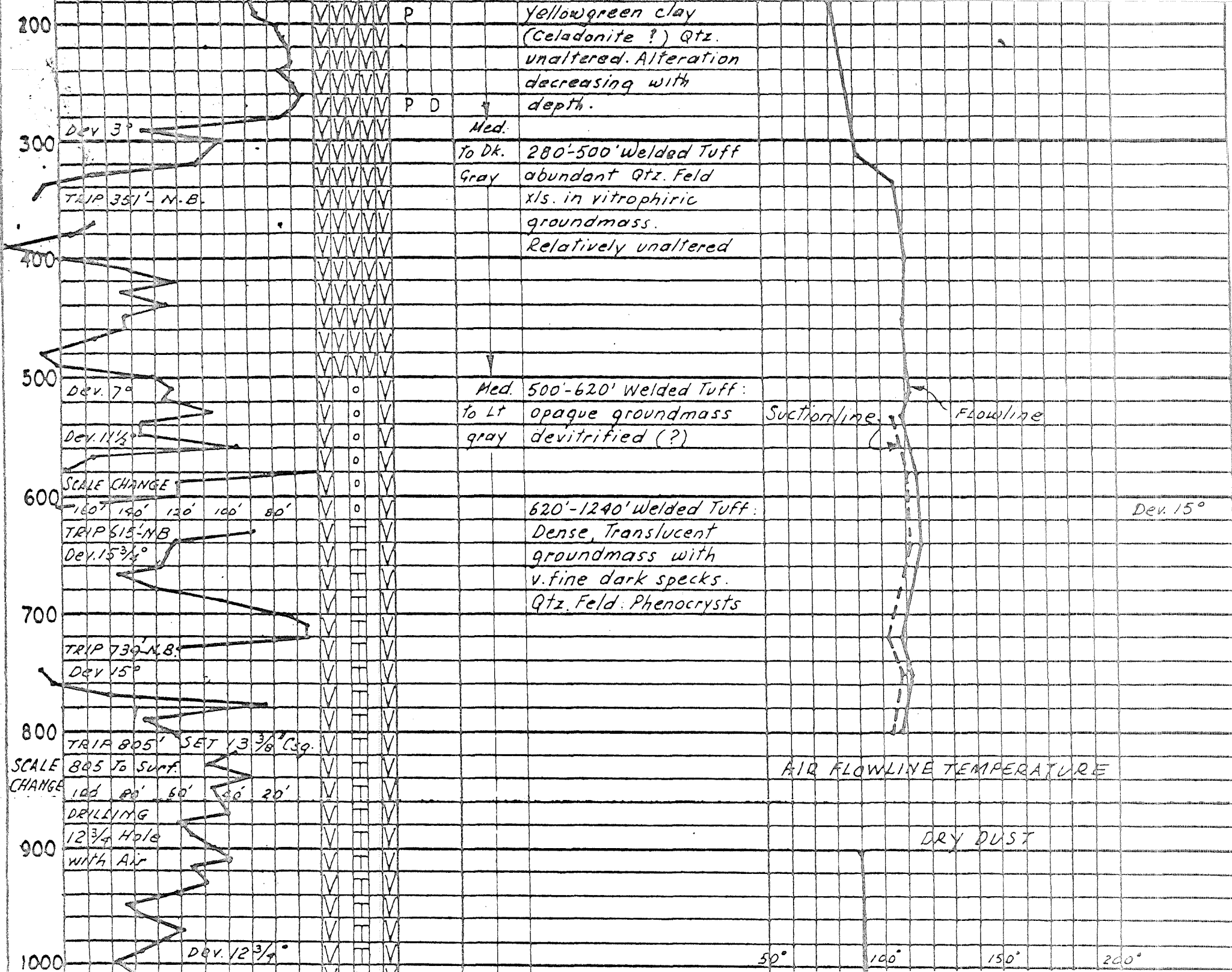
DEPTH	PENETRATION DATA					LITHOLOGY				PHYSICAL - CHEMICAL DATA				MISC.	
	FT./HR.		MIN/10 FEET			PRIMARY LITH	SECONDARY MINERALS	BULK COLOR	DESCRIPTION	MUD	FLOWLINE		TEMPERATURE		
	100	80	60	40	20						100%	0	50°		100°
						•••••		Brown	0'-80': Sand & Gravel mostly weathered						
						•••••			Tuff						
						•••••									
100						VVVVVV		Lt. Gray	80'-280' Welded Tuff						
						VVVVVV		with yellow specks	Qtz, feldspar xls in bleached groundmass.						
						VVVVVV	D		Feldspars altered to yellow green clay						
						VVVVVV	P		(Celadonite?) Qtz. unaltered. Alteration decreasing with depth.						
						VVVVVV	P D								
300						VVVVVV		Med.	280'-500' Welded Tuff						
						VVVVVV		To Dk. Gray	abundant Qtz. Feld xls in vitrochiric						

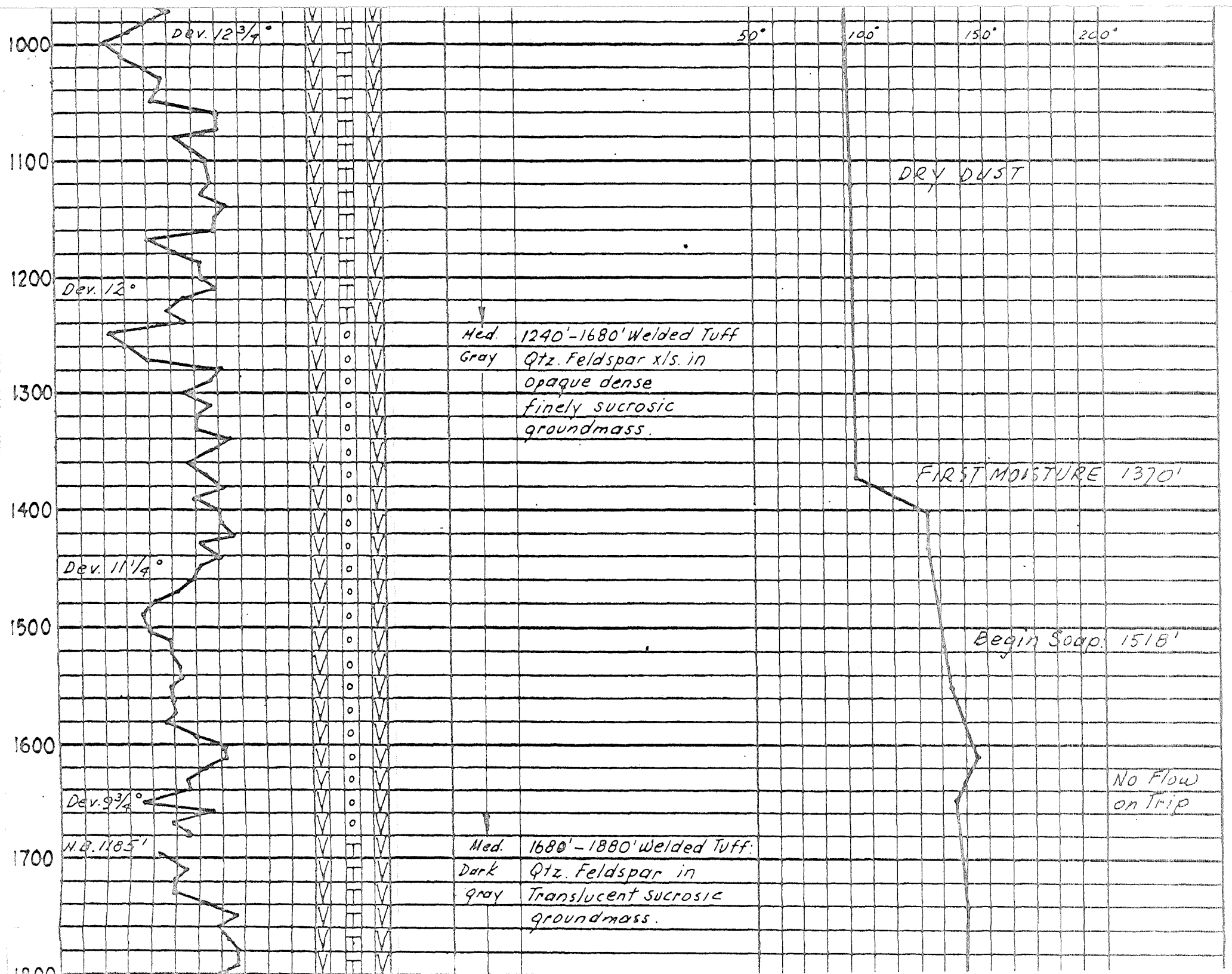
DRILLING 17 1/8"  
 Hole w/ Mud

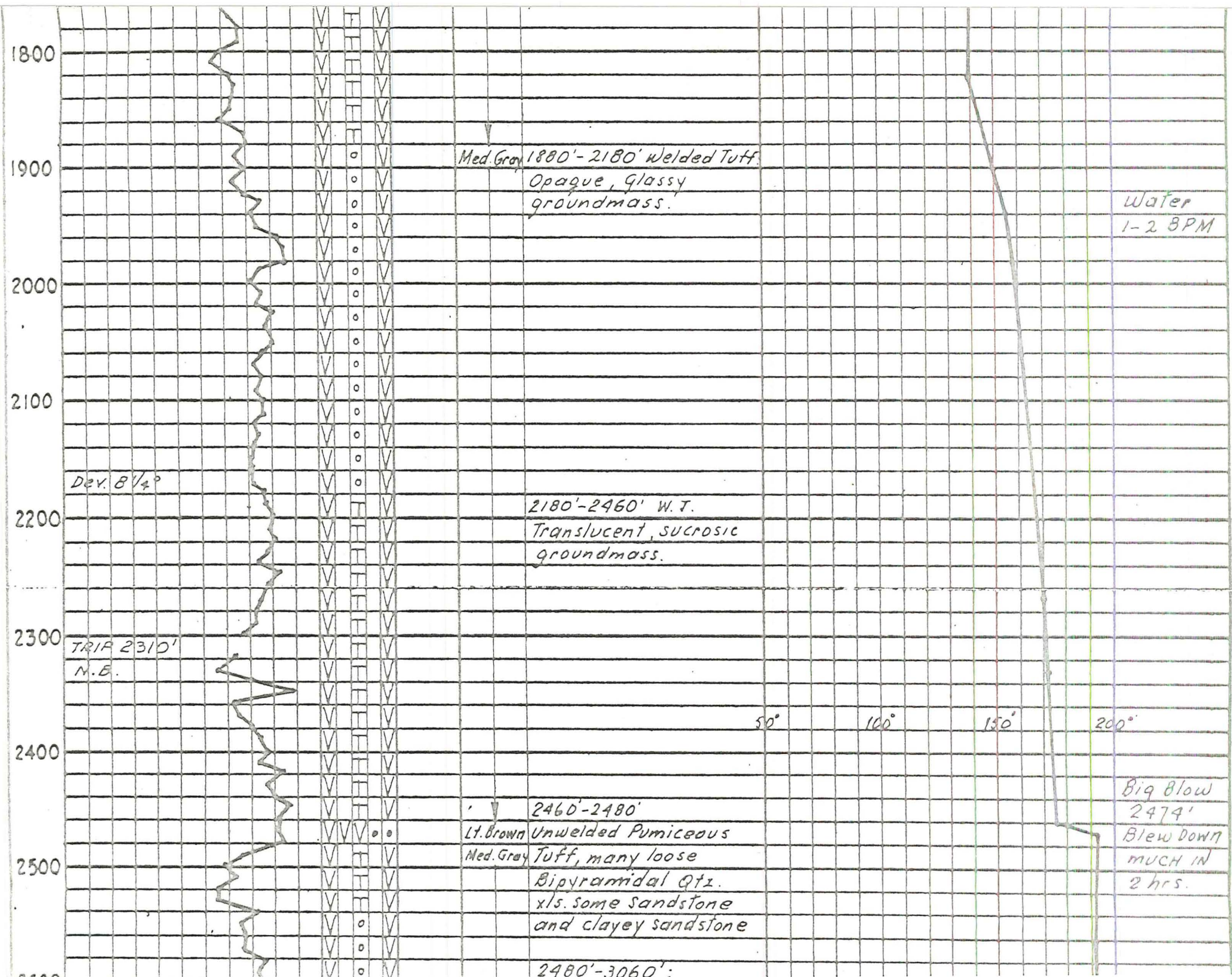
Dev. 1°

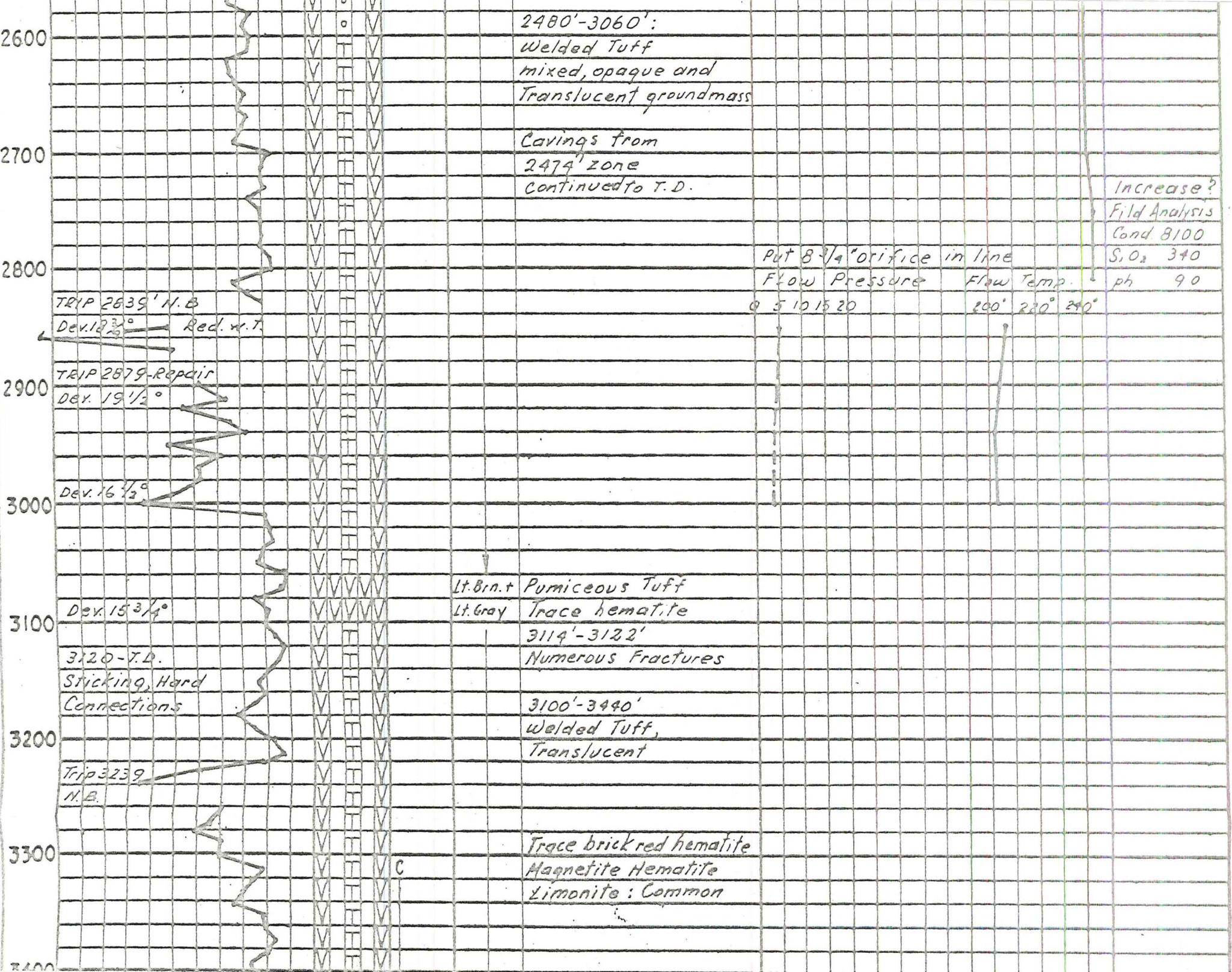
Dev. 3°

TIP 351' N.A.











3400

3500

Med. Gray 3490'-3519' Welded Tuff  
 + Creamy Abundant Qtz. xls. and  
 Tan Lesser Feldspar in  
 Opaque, Glassy,  
 banded groundmass

3519 Sticking bodily  
 Mud-up for casing,  
 stack.  
 REDRILL AT 2490'

NO L.C.M. NEEDED

BACA #9-REDRILL

2400

DRILLING 12/29  
 Hole with Air

BULK  
COLOR

DESCRIPTION

AIR FLOWLINE —  
 PRESSURE TEMPERATURE

Very slow to  
 Make New Hole

↓  
 Pumiceous Tuff  
 Med. Gray Loose, Light gray  
 To Dirty Brown

0 5 10 15 20

200° 230° 240°

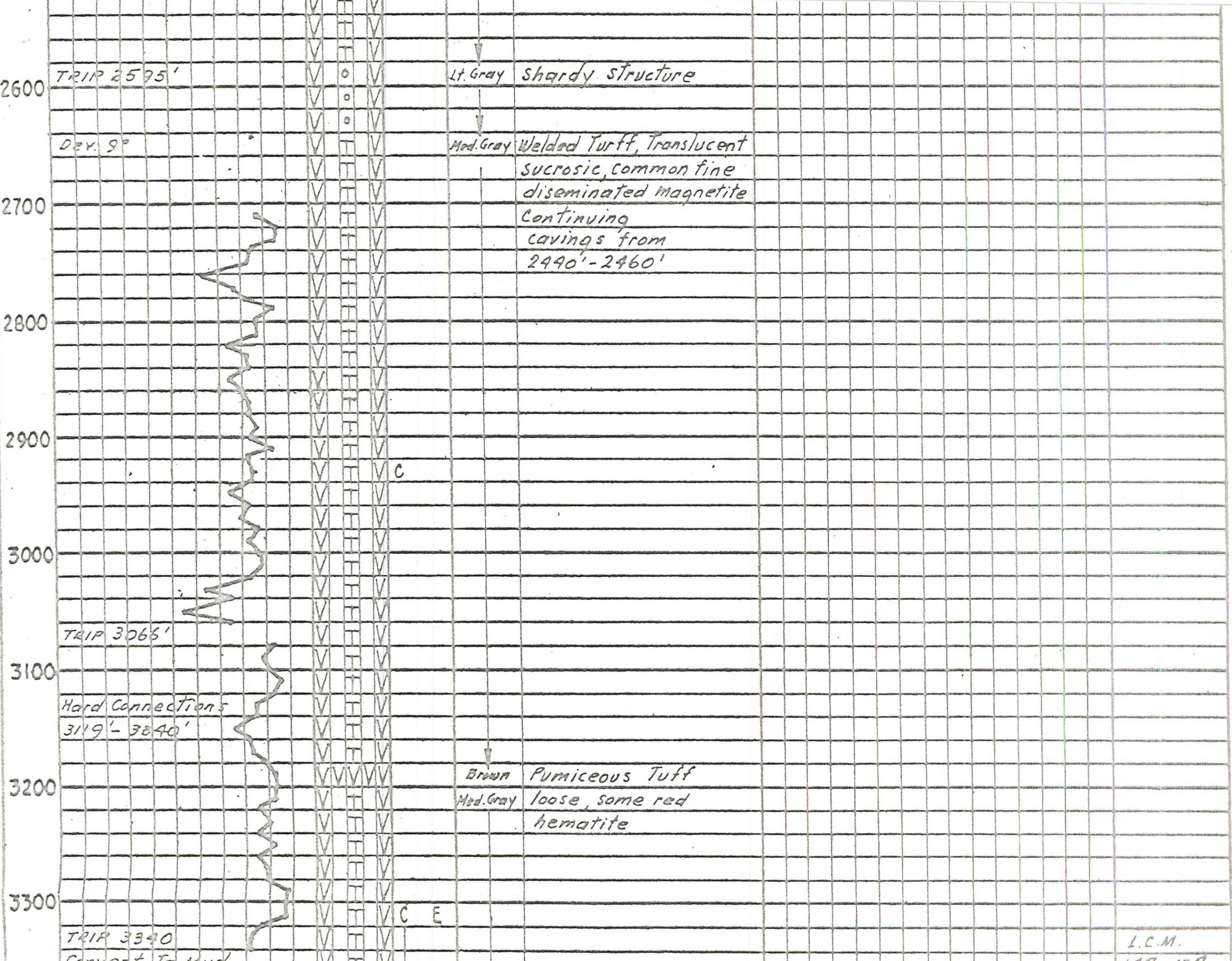
2500

TRIP 2595'

↓  
 Lt. Gray Shardy structure

Dev. 9°

↓  
 Med. Gray Welded Tuff, Translucent  
 Successive common fine



TRIP 2595'

Lt. Gray shardy structure

Dev. 9°

Med. Gray Welded Tuff, Translucent  
 sucrosic, common fine  
 disseminated magnetite  
 Continuing  
 cavings from  
 2490' - 2460'

TRIP 3066'

Hard Connections  
 3119' - 3140'

Brown Pumiceous Tuff  
 Med. Gray loose, some red  
 hematite

TRIP 3340

Convert To Mud

L.C.M.  
 197-179

TRIP 3340  
Convert To Mud

L.C.M.  
14% - 17%

3400

MUD FLOWLINE 158°

3400'-3700'  
Welded Tuff,  
opaque, glassy  
shardy, groundmass.

MUD FLOWLINE 170°

3500

E

3600

TRIP 3600'

Hard 9 3/8"

-3600'

Dev. 7 1/2°

Drilling 9 3/4"

Hole with

Air

AIR FLOWLINE WITH 2 3/4" DRIFTS

PRESSURE TEMPERATURE

0.5 10 15 20

200° 230° 240°

3700'-Approx. T.D.

Abundant Qtz.

Lt Gray Phenocrysts in Tuff

To Tan

Gray

3700

Large pieces of Pumice  
sand, some Andesite,  
plus loose pipyramidal  
Qtz. xls.

Big fractures  
Big steam  
@ 3702'

NO  
SAMPLES

3800

C

3900

TRIP 3910'-

Big Repair

Med. Gray 3800'-4260'

Welded Tuff, opaque

To Translucent

Groundmass, Abundant

Qtz. Phenocrysts,

Abundant finely

disseminated

magnetite some

specular hematite,

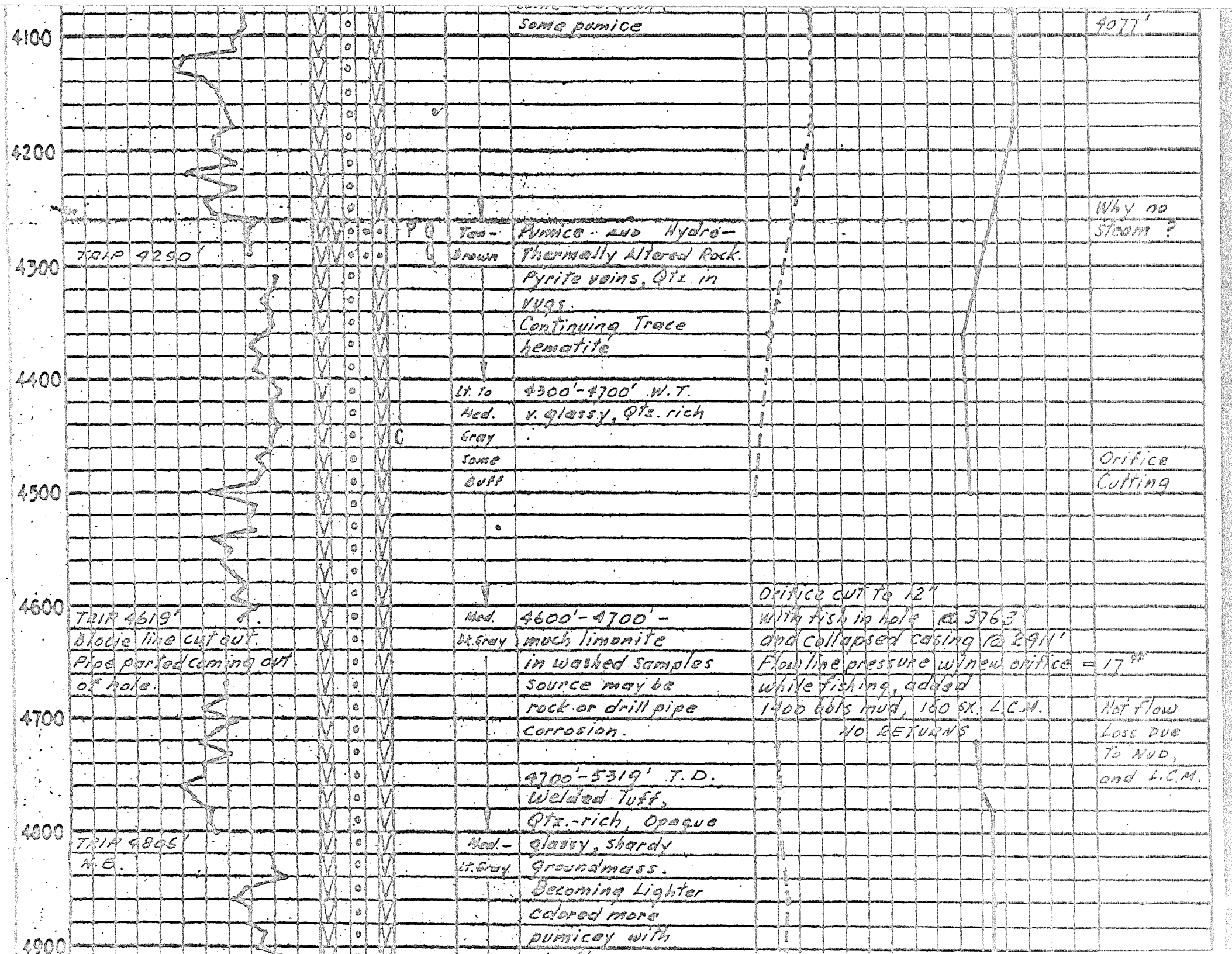
Some obsidian,

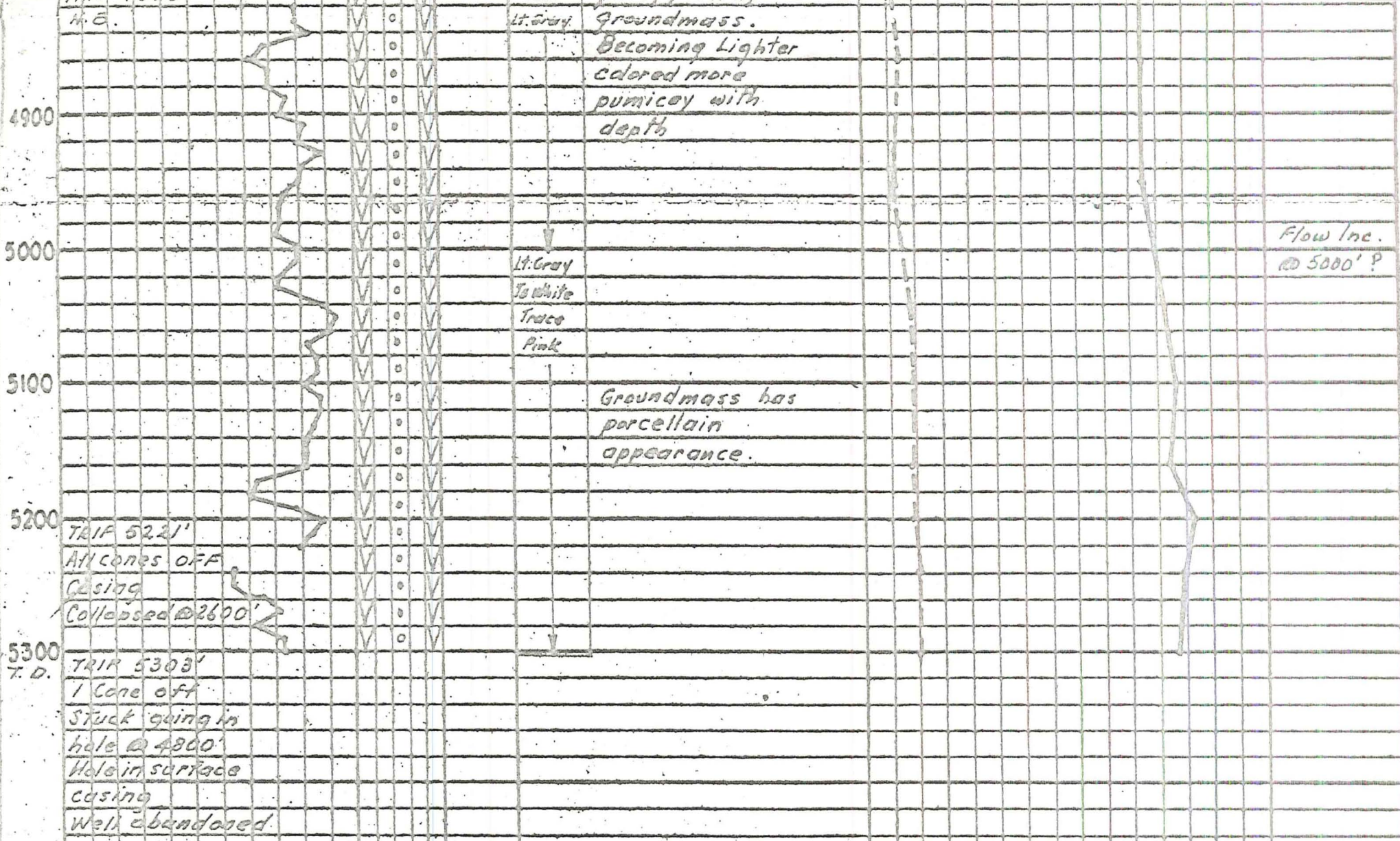
Some pumice

Flow  
Increase  
4077'

4000

4100





COMPANY UNION OIL CO. OF CALIF.  
 FIELD BACA  
 WELL # 10  
 COUNTY SANDOVAL  
 STATE NEW MEXICO  
 LOCATION EL. 8734.5'

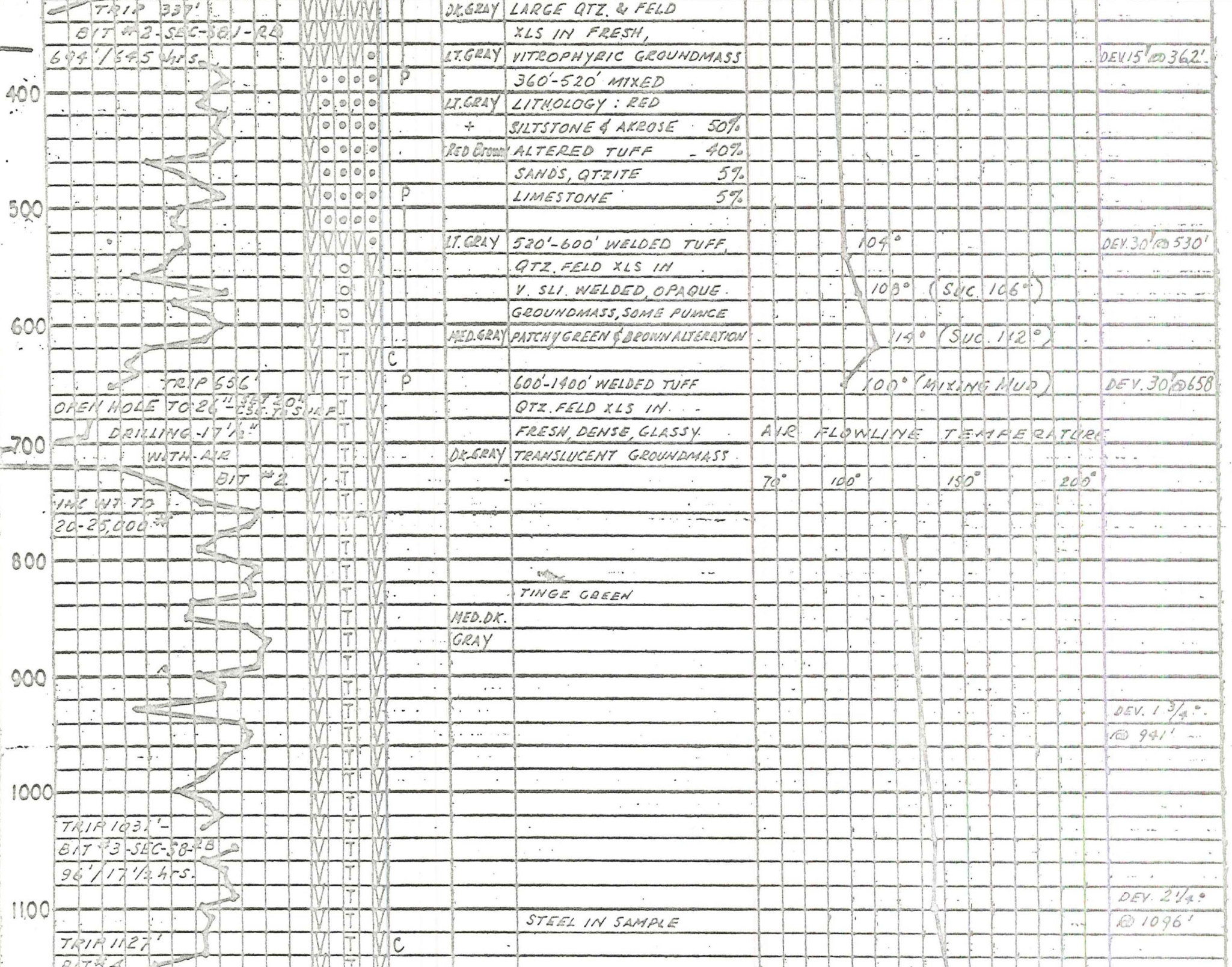
TOTAL DEPTH 6001'  
 SPUD DATE JULY 5<sup>th</sup>, 1973  
 COMPLETION DATE SEPT. 18, 1973  
 DRILLING CONTRACTOR CALVERT #28  
 ENGINEER INMAN  
 GEOLOGIST DONDANVILLE  
 LOT. 35-8863°N, LONG. 106.5853°W

CASING RECORD  
20" 0-653' CEM. TO SURF.  
13 7/8" 0-2794' CEM. TO SURF.  
9 5/8" 2480'-4418'; Free  
(Tied back to surface after well completion)  
7" (slotted): 4478'-6000' hung

EXPLANATION

DRILLING	ROCK	MINERALS	PHYSICAL - CHEMICAL
NB - NEW BIT RRB - RERUN BIT CB - CORE BIT LC - LOST CIRCULATION DEV - DEVIATION DST - DRILL STEM TEST RB - REBUILT BIT	[ ] SHALE [ ] SILTSTONE [ ] SANDSTONE [ ] CONGLOMERATE [ ] LIMESTONE [ ] DOLOMITE [ ] GYP, ANHYD. TUFF GROUNDMASS : OPAQUE (O), TRANSLUCENT (T)	[ ] CHERT [ ] VOLCANICS [ ] INTRUSIVE [ ] TUFF [ ] METAMORPHIC [ ] _____ [ ] _____	D.H.-DOWN HOLE B.H.-BOTTOM HOLE F.L. FLOW LINE T. TEMPERATURE R. PRESSURE T.C. TIME SINCE CIRCULATION W.M. WELL HEAD PPM - PARTS PER MILLION
		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	

DEPTH	PENETRATION DATA					LITHOLOGY				PHYSICAL-CHEMICAL DATA				MISC.	
	MIN. 10 FT.					PRIMARY LITH	SECONDARY MINERALS	BULK COLOR	DESCRIPTION	MUD FLOWLINE TEMPERATURE					
	90'	70'	50'	30'	10'					100%	0%			70°F	100°
	DRILLING 1 7/8" HOLE							LT TAN	WEATHERED TUFF						
	WITH MUD							GRAY	DEBRIS 0-60'						
	BIT #1 SEC.							BROWN							
	587J-NB							SPECKS	60'-140 WELDED TUFF						
100	337' / 19 HRS.							LT. GRAY	ABUNDANT LARGE QTZ.						DEV 15' @ 83'
							C		AND FELD. XLS. IN						
								LT. GRAY	ALTERED GROUNDMASS						
								To White	140'-310" : TUFFACEOUS	78°					
									SANDSTONE VERY						
200									IMMATURE, FELD. QTZ.						
							P		LITH GRAINS IN					DEV 15' @ 210'	
									HIGHLY ALTERED						
									MATRIX.	88°					
300															
									310'-360' WELDED TUFF	96°					
								DK. GRAY	LARGE QTZ. & FELD						
									XLS IN FRESH,						
								LT. GRAY	VITROPHYRIC GROUNDMASS					DEV 15' @ 362'	
							P		360'-520' MIXED						



TRIP 337'  
 BIT #2-SEC-581-RE  
 694'/645 hrs.

DK.GRAY LARGE QTZ. & FELD  
 XLS IN FRESH,  
 LT.GRAY VITROPHYRIC GROUNDMASS  
 P 360'-520' MIXED  
 LT.GRAY LITHOLOGY: RED  
 + SILTSTONE & AKROSE 50%  
 Red Brown ALTERED TUFF 40%  
 SANDS, QTZITE 5%  
 LIMESTONE 5%

DEV. 15' @ 362'

LT.GRAY 520'-600' WELDED TUFF,  
 QTZ. FELD XLS IN  
 V. SLI. WELDED, OPAQUE.  
 GROUNDMASS, SOME PUMICE  
 MED.GRAY PATCHY GREEN & BROWN ALTERATION

104°  
 108° (SUC. 106°)  
 114° (SUC. 112°)

DEV. 30' @ 530'

TRIP 656'  
 OPEN HOLE TO 26" 154' 30"  
 DRILLING - 17 1/2"  
 WITH AIR  
 BIT #2

P 600'-1400' WELDED TUFF  
 QTZ. FELD XLS IN  
 FRESH, DENSE, GLASSY.  
 DR.GRAY TRANSLUCENT GROUNDMASS

100° (MIXING MUD)

DEV. 30' @ 658'

AIR FLOWLINE TEMPERATURE

70° 100° 150° 200°

ING HT TO  
 20-25,000'

TINGE GREEN  
 MED.DK.  
 GRAY

DEV. 1 3/4°  
 @ 941'

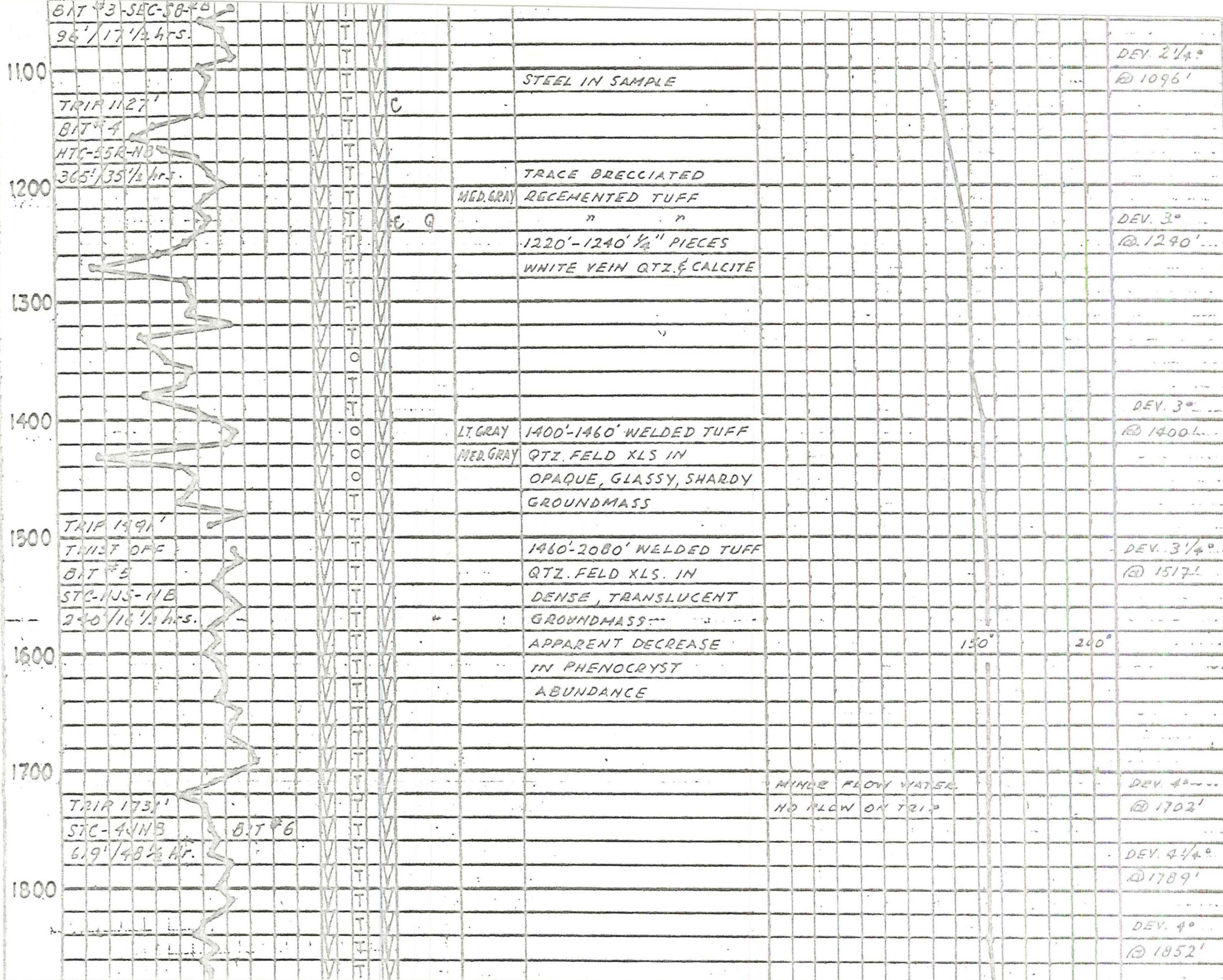
TRIP 1031'-  
 BIT #3-SEC-58-2B  
 96'/17 1/2 hrs.

STEEL IN SAMPLE

DEV. 2 1/4°  
 @ 1096'

TRIP 1127'  
 BIT #4

C





SXC-4VNB BIT #6

619' / 198 1/2 Hr.

DEV. 4 1/4°

@ 1789'

DEV. 4°

@ 1852'

1800

1900

2000

2100

2200

2300

2400

2500

2000'-2180' WELDED TUFF  
-QTZ. FELD PHENOCRYSTS  
IN OPAQUE GLASSY SHARDY  
GROUNDMASS

DEV. 4 1/4°

@ 2100'

DEV. 4°45'

@ 2327'

2300'-2340' - W.T.  
QTZ. FELD PHENOS  
IN OPAQUE, GLASSY  
SHARDY GROUNDMASS

150°

200°

DEV. 6°5'

@ 2398'

2340'-2630' W.T.  
MOSTLY TRANSLUCENT  
GROUNDMASS, SOME  
OPAQUE.

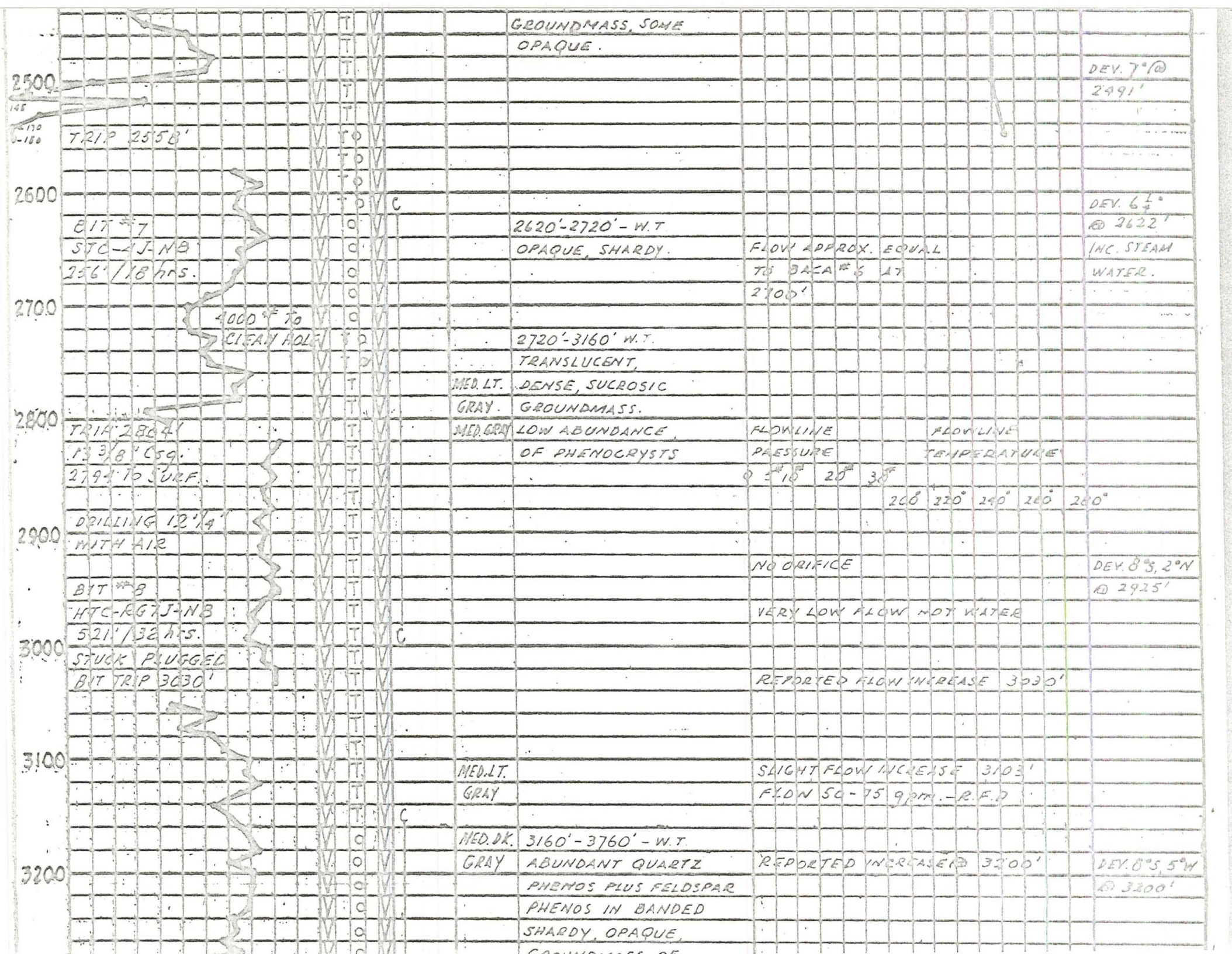
DEV. 7°10'

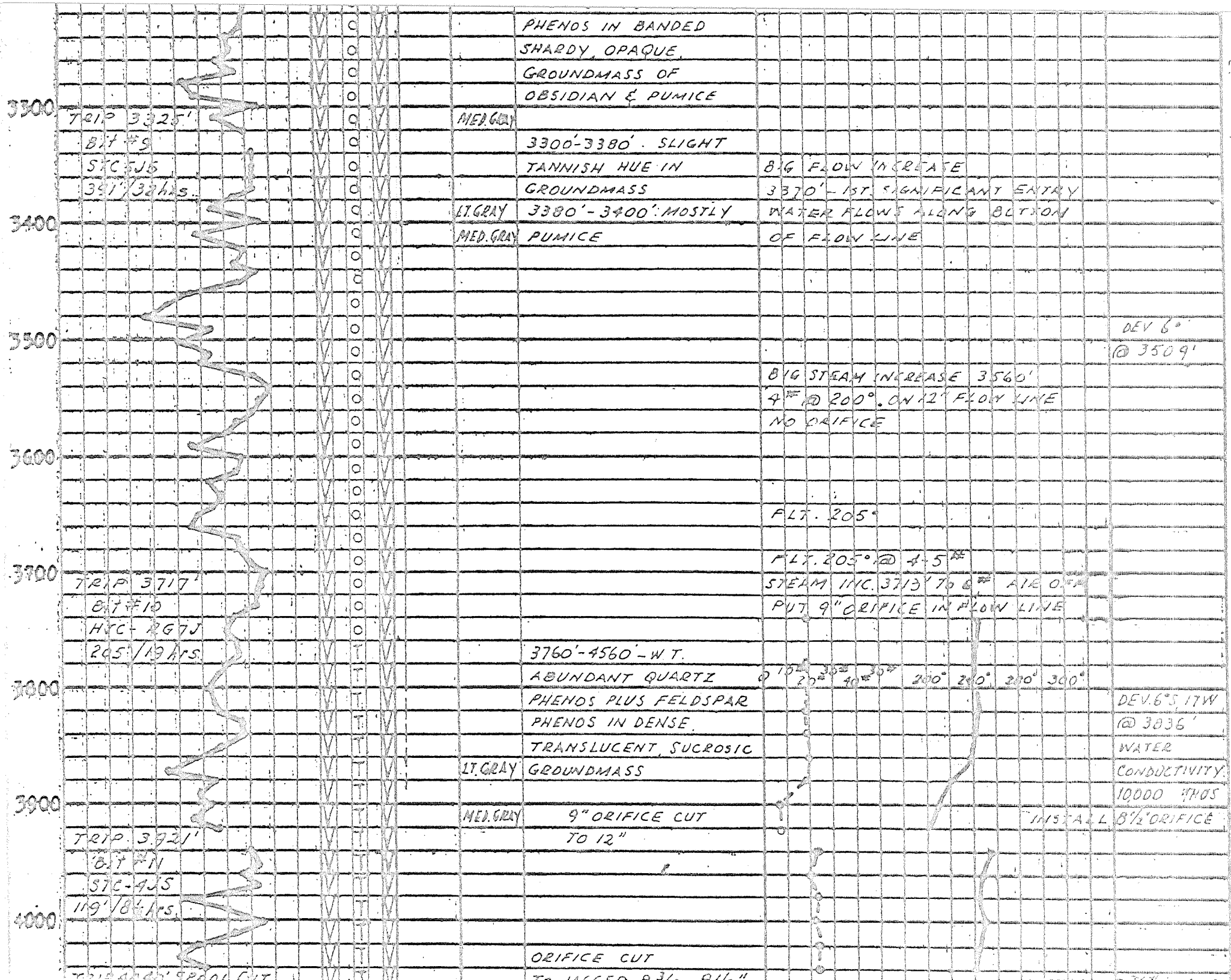
@ 2491'

TRIP 2350'  
RR #5  
TOTAL  
208' / 28 Hr. 15.

TRIP 2558'

145  
170  
180





PHENOS IN BANDED  
SHARDY, OPAQUE,  
GROUNDMASS OF  
OBSIDIAN & PUMICE

3300  
TRIP 3325'  
BT #9  
SFC 5J5  
391'/38 hrs.

MED. GRAY

3300'-3380' SLIGHT

TANNISH HUE IN

BIG FLOW INCREASE

GROUNDMASS

3370' - 1ST. SIGNIFICANT ENTRY

3400

LT. GRAY

3380'-3400' MOSTLY

WATER FLOWS ALONG BOTTOM

MED. GRAY

PUMICE

OF FLOW LINE

3500

DEV 6°

@ 3509'

BIG STEAM INCREASE 3560'

4" @ 200° ON 12" FLOW LINE

NO ORIFICE

3600

FLT. 205°

3700

FLT. 205° @ 4-5"

STEAM INC. 3713' TO 6" AT 0.5"

PUT 9" ORIFICE IN FLOW LINE

3800

TRIP 3717'

BT #10

HFC- 267J

205/19 hrs.

3760'-4560' - W.T.

ABUNDANT QUARTZ

10° 20° 30° 40° 50° 200° 240° 280° 300°

PHENOS PLUS FELDSPAR

DEV. 6° S 17W

PHENOS IN DENSE

@ 3836'

TRANSLUCENT, SUCROSIC

WATER

GROUNDMASS

CONDUCTIVITY

3900

MED. GRAY

9" ORIFICE CUT

INSTALL 8 1/2" ORIFICE

TO 12"

4000

TRIP 3921'

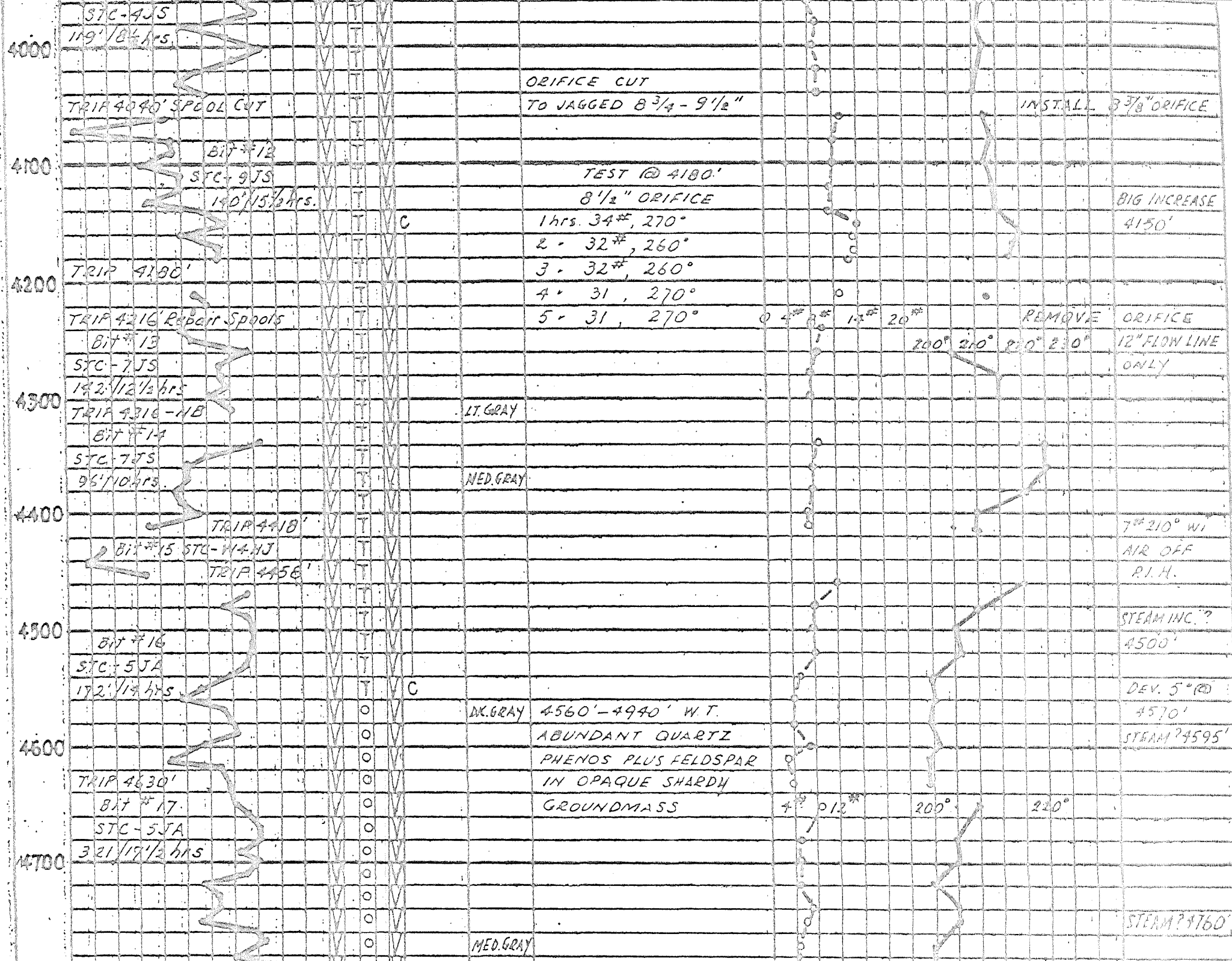
BT #11

SFC- 4J5

119'/8 1/2 hrs.

ORIFICE CUT

TO 12" @ 200° ON 12" FLOW LINE



STC-4JS  
119' / 8 1/2 hrs

TRIP 4040' SPOOL CUT

BIT #12

STC-9JS

140' / 15 1/2 hrs

TRIP 4180'

TRIP 4216' Repair Spools

BIT #13

STC-7JS

152' / 12 1/2 hrs

TRIP 4316'-118'

BIT #14

STC-7JS

96' / 10 hrs

TRIP 4418'

BIT #15 STC-114 HJ

TRIP 4456'

BIT #16

STC-5JA

172' / 19 hrs

TRIP 4630'

BIT #17

STC-5JA

321' / 19 1/2 hrs

ORIFICE CUT  
TO JAGGED 8 3/4 - 9 1/2"

INSTALL 8 3/8" ORIFICE

TEST @ 4180'  
8 1/2" ORIFICE

BIG INCREASE  
4150'

- 1 hrs. 34#, 270°
- 2 - 32#, 260°
- 3 - 32#, 260°
- 4 - 31, 270°
- 5 - 31, 270°

0 4" 1" 20" 200° 210° 220° 230°  
REMOVE ORIFICE  
12" FLOW LINE ONLY

LT. GRAY

MED. GRAY

7" 210° WI  
AIR OFF  
P.H.

STEAM INC. ?  
4500'

DK. GRAY 4560' - 4940' W.T.  
ABUNDANT QUARTZ  
PHENOS PLUS FELDSPAR  
IN OPAQUE SHARDY  
GROUNDMASS

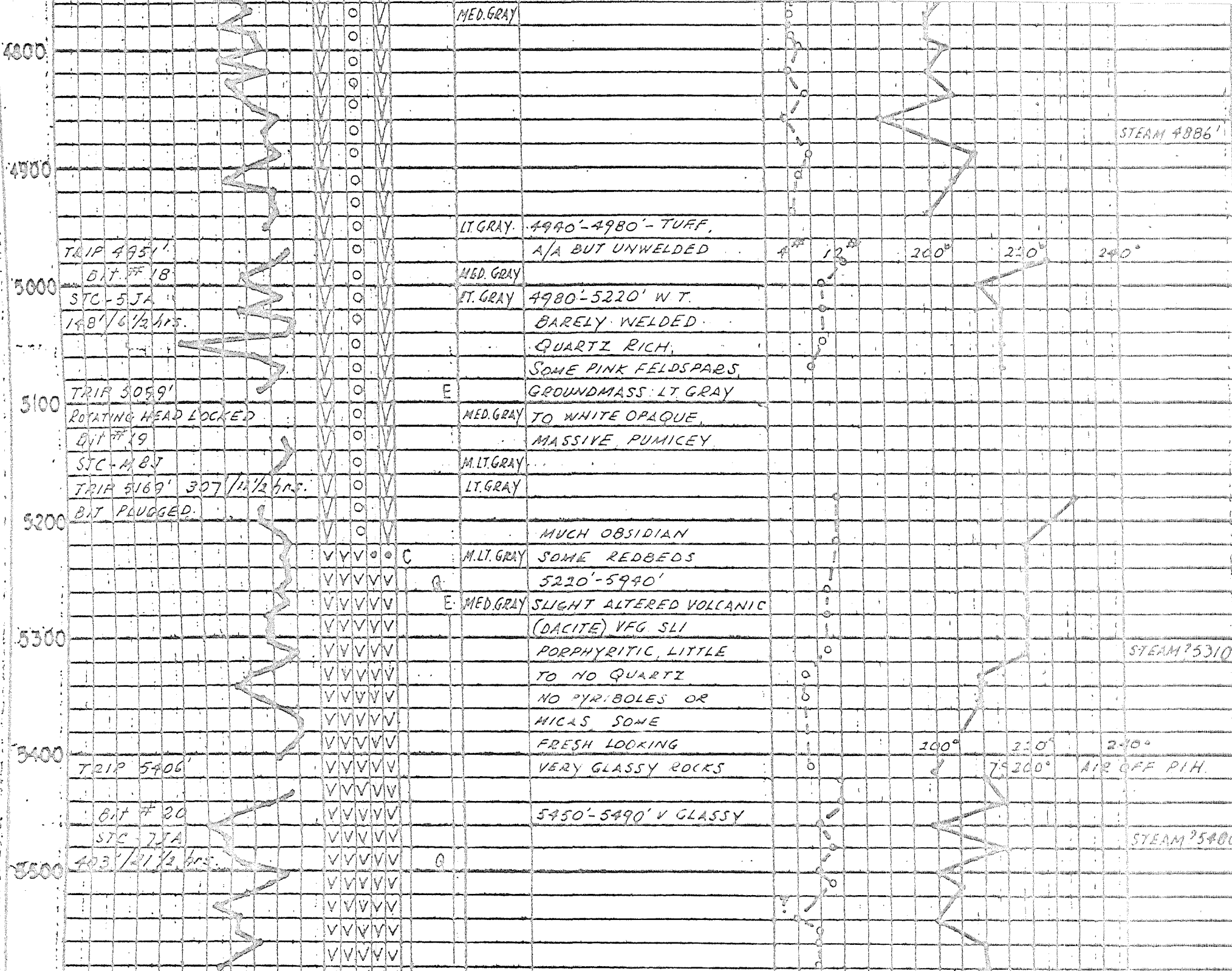
DEV. 5" (20)  
4570'

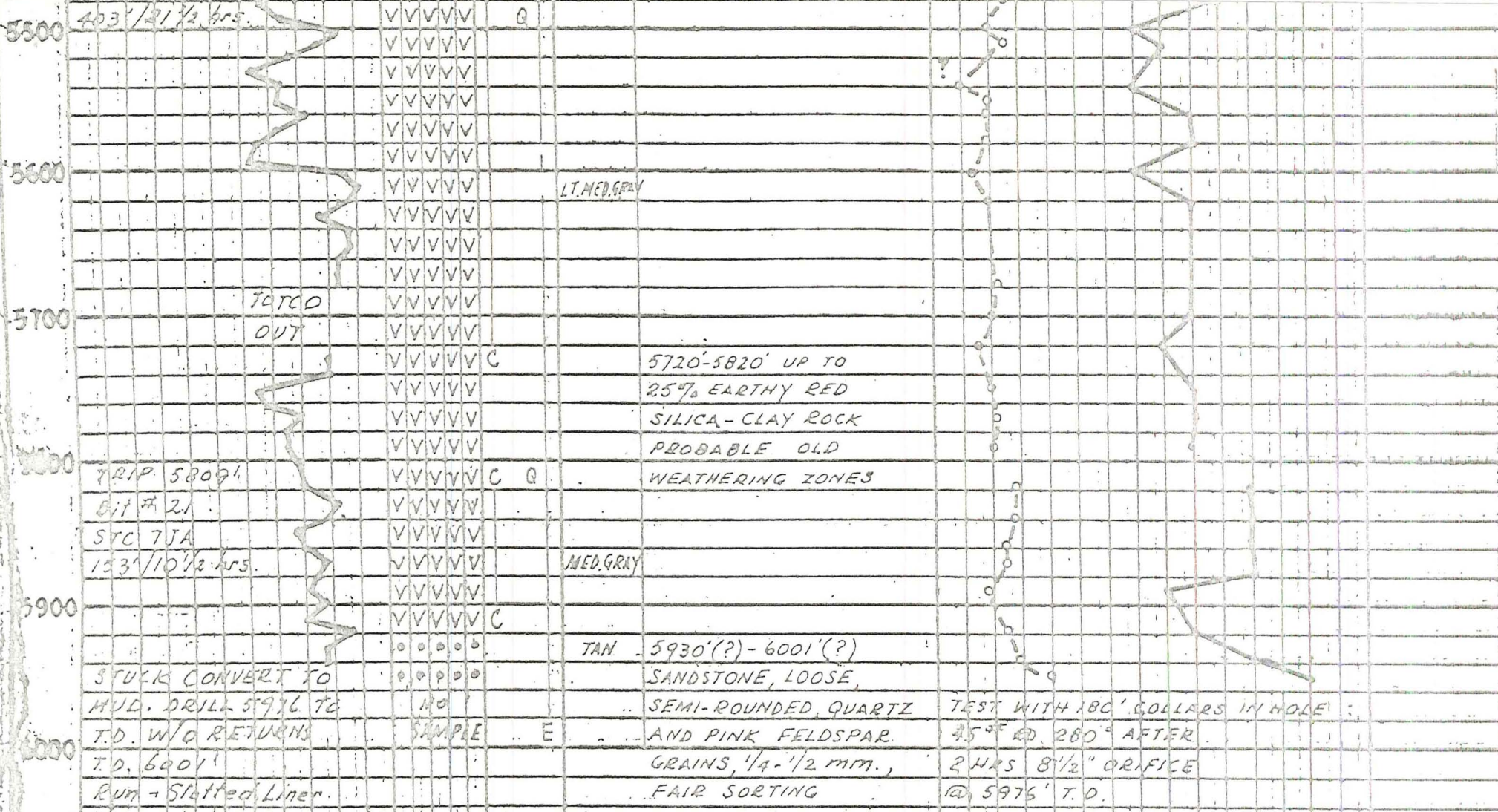
STEAM ? 4595'

4" 012" 200° 220°

STEAM ? 4760'

MED. GRAY





5500 403' / 2 1/2 hrs. VVVVVV Q

5600 VVVVVV LT. MED. GRAY

5700 TATCO OUT VVVVVV

5800 TRIP 5809 VVVVVV C Q

BIT # 21 VVVVVV

STC 7JA VVVVVV

153' / 10 1/2 hrs. VVVVVV MED. GRAY

5900 VVVVVV C

STUCK CONVERT TO HUD. DRILL 5976 TO T.D. W/O RETURNS

T.D. 6001' Run - Slotted Liner

T.D. 6001' SAMPLE E

5720-5820' UP TO  
25% EARTHY RED  
SILICA-CLAY ROCK  
PROBABLE OLD  
WEATHERING ZONES

TAN 5930(?) - 6001(?)  
SANDSTONE, LOOSE,  
SEMI-ROUNDED, QUARTZ  
AND PINK FELDSPAR.  
GRAINS, 1/4 - 1/2 mm.,  
FAIR SORTING

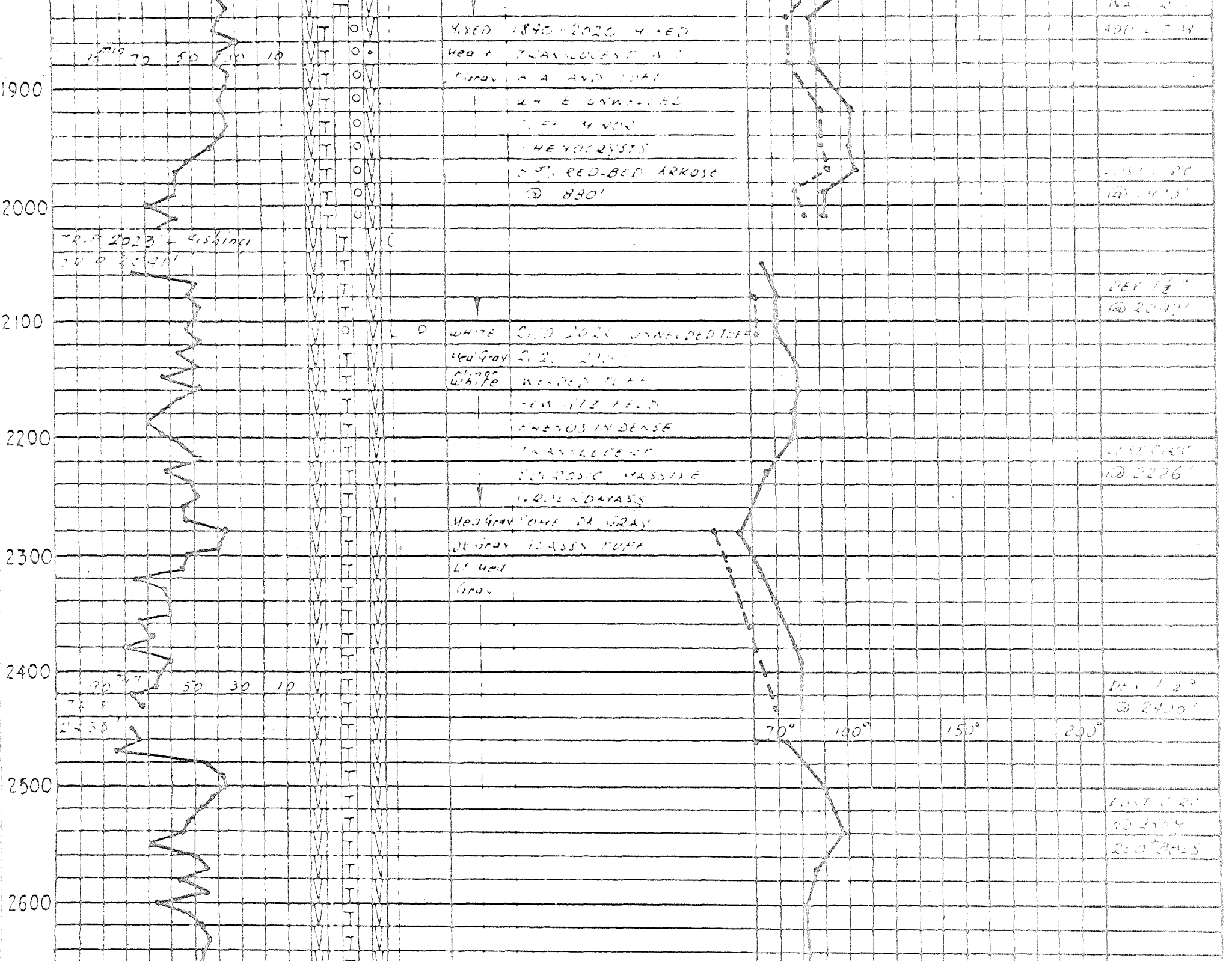
TEST WITH 100' COLLARS IN HOLE  
45° ED. 280° AFTER  
2 HAS 8 1/2" ORIFICE  
@ 5976' T.D.











4 X ED 1890-2020 4 X ED  
 400 F TRANSLUCENT  
 Turb A A AND 1041  
 27 E UNWELDED  
 1.51 4 VOL  
 4 HEYOCRYST  
 5% RED-BED ARKOSC  
 @ 890'

D WHITE 210-2020 UNWELDED TUFF  
 Med Gray 2.2 210  
 White WELDED TUFF  
 1.51 12 FELD  
 PHENUS IN DENSE  
 TRANSLUCENT  
 PORPHYRIC MASSIVE  
 1.21 12 DATASS  
 Med Gray 1.01 12 GRAY  
 DE GRAY 1.21 12 TUFF  
 LT GRAY  
 GRAY

154. 2. 14

195' 20'  
 @ 1973'

DEVI 1 1/2"  
 @ 2077'

1.51 12  
 @ 2226'

DEVI 1.2"  
 @ 2410'

1.51 12  
 @ 2504'  
 200\*2045

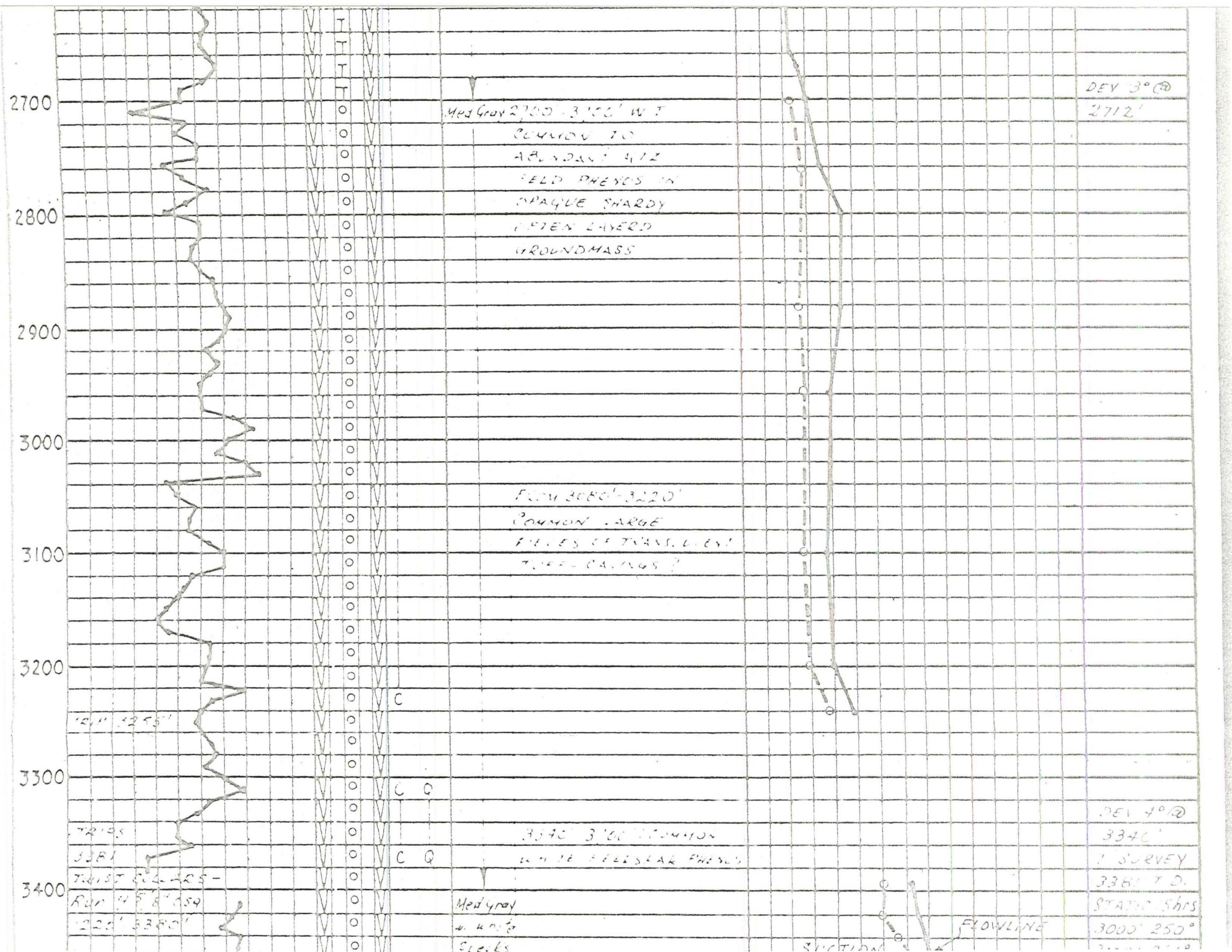
70 50 30 10

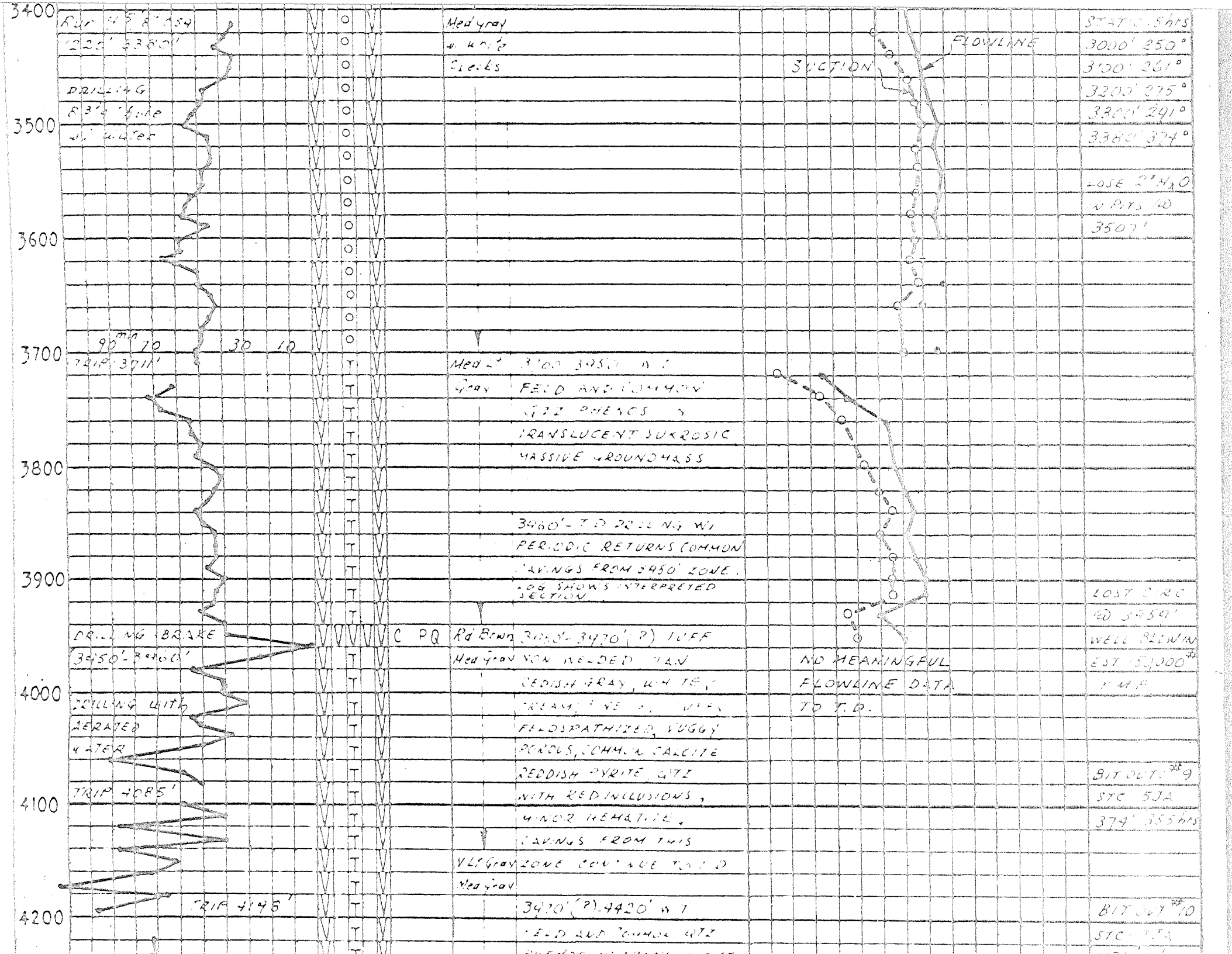
TR. 2023 4.54101  
 10 0 35 41'

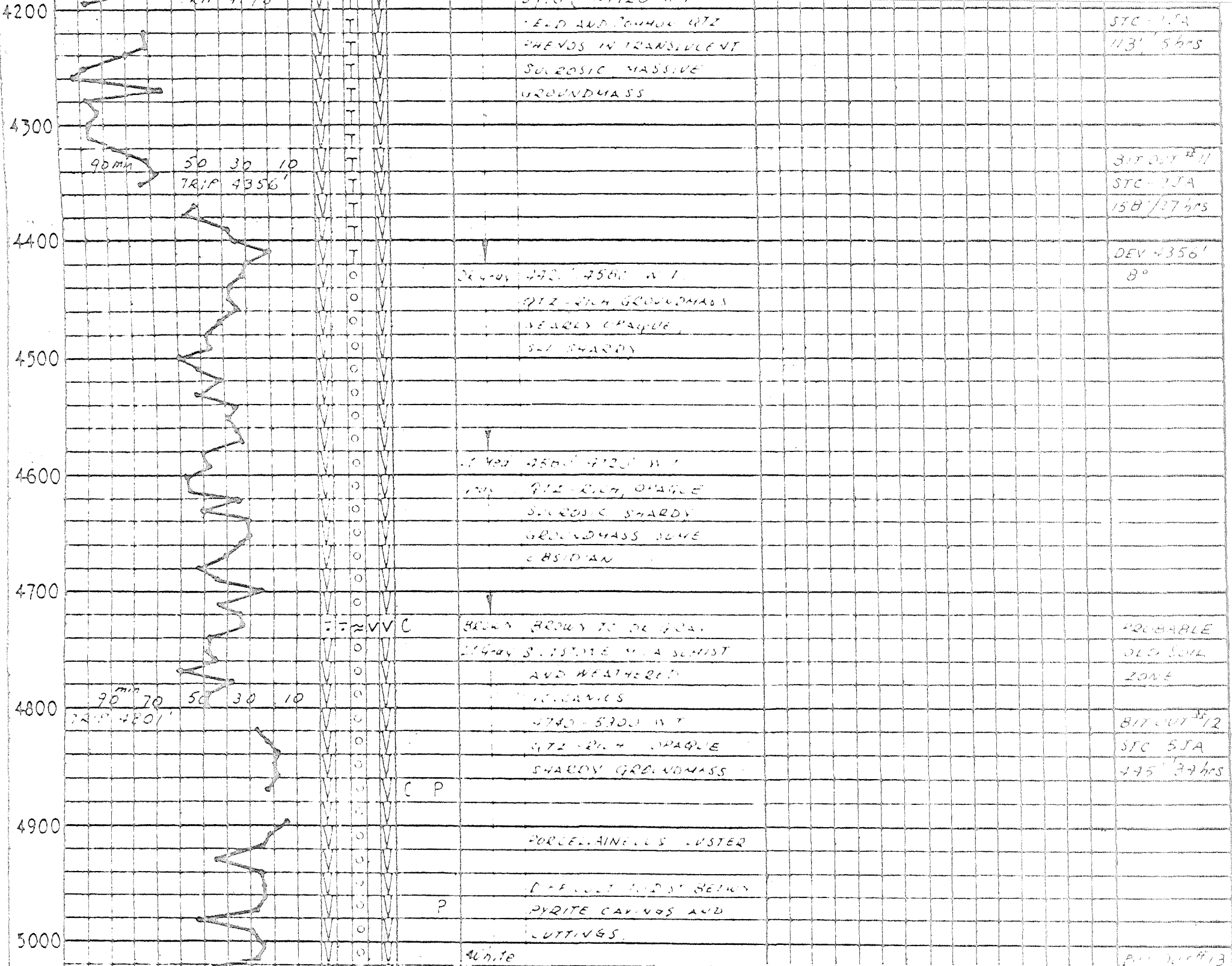
20 30 50 70

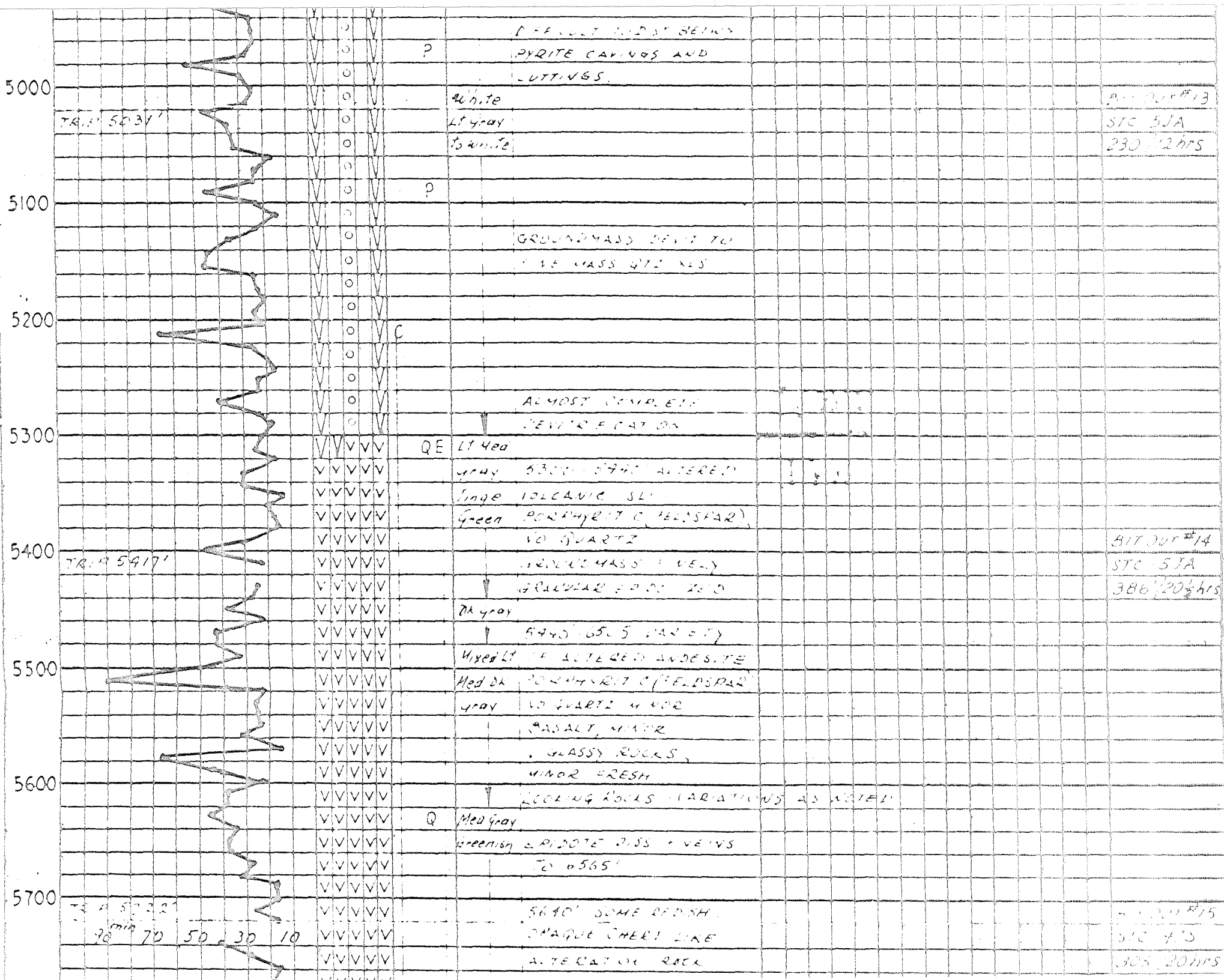
24 35'

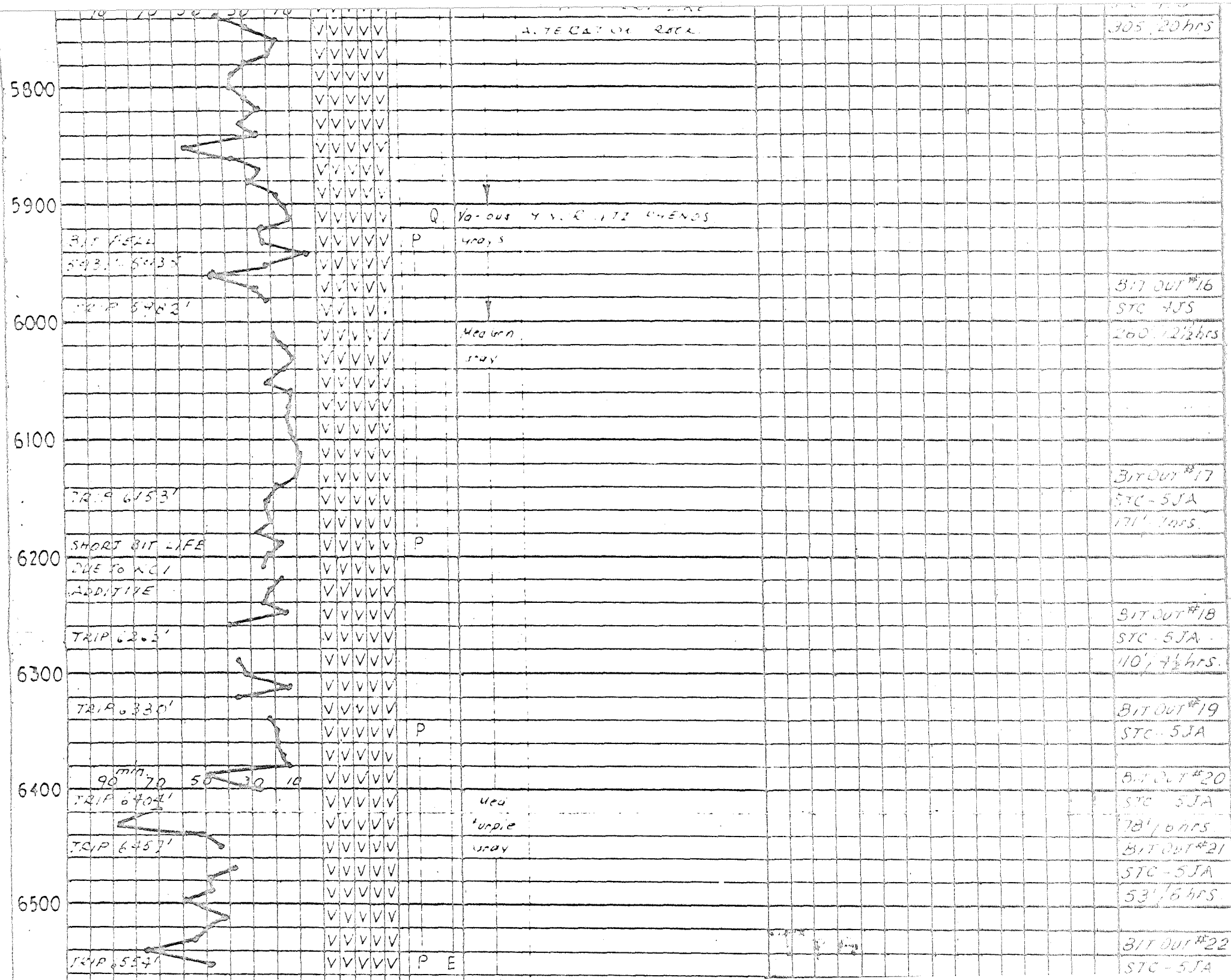
70° 100° 150° 200°















COMPANY UNION  
 FIELD BACA  
 WELL #12  
 COUNTY SANDOVAL  
 STATE NEW MEXICO  
 LOCATION LAT. 35.8303 ; LONG. 106.5372  
K.B. 6449' EL. 8429.76 (GR.)

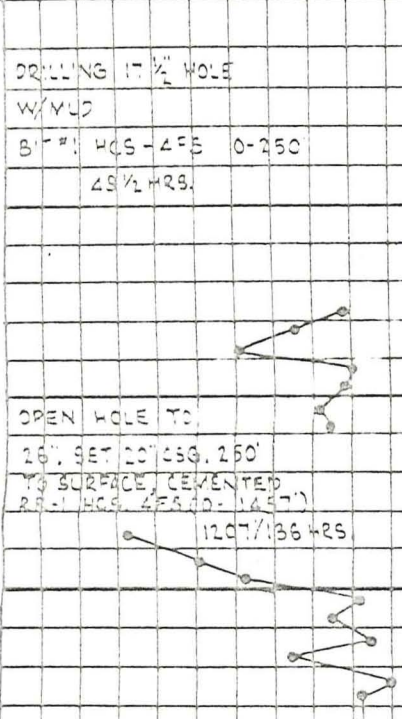
TOTAL DEPTH 9212'  
 SPUD DATE JUNE 19, 1974  
 COMPLETION DATE AUGUST 19, 1974  
 DRILLING CONTRACTOR LOFFLAND  
 ENGINEER V. STINNETT  
 GEOLOGIST T.R. SLODANSKI

CASING RECORD  
20" : 250' TO SURFACE, CEMENTED  
13 3/4" : 1457' TO SURFACE, CEMENTED  
9 5/8" : 3511' - SURFACE, CEMENTED  
7" : 9211' - 3343' HUNG, SLOTTED  
9170' - 3557'

EXPLANATION

- |                                                                                                                                                                  |                                                                                                                                                  |                                                                                                                                                                                           |                                                                                                                                                               |                                                                                                                                         |                                                                                                                                                                                                                |                                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| <p>DRILLING</p> <p>NB - NEW BIT</p> <p>RRB - RERUN BIT</p> <p>CB - CORE BIT</p> <p>LC - LOST CIRCULATION</p> <p>DEV - DEVIATION</p> <p>DST - DRILL STEM TEST</p> | <p>ROCK</p> <p>☐ SHALE</p> <p>☐ SILTSTONE</p> <p>☐ SANDSTONE</p> <p>☐ CONGLOMERATE</p> <p>☐ LIMESTONE</p> <p>☒ DOLOMITE</p> <p>☐ GYP, ANHYD.</p> | <p>MINERALS</p> <p>☐ CHERT</p> <p>☒ VOLCANICS</p> <p>☒ INTRUSIVE</p> <p>☒ TUFF</p> <p>☒ METAMORPHIC</p> <p>☐ _____</p> <p>☐ _____</p> <p>TUFF GROUNDMASS: OPAQUE (O); TRANSLUCENT (T)</p> | <p>MINERALS</p> <p>C - CALCITE</p> <p>CHL - CHLORITE</p> <p>CEL - CELADONITE</p> <p>CL - CLAYS</p> <p>D - DOLOMITE</p> <p>E - EPIDOTE</p> <p>F - FELDSPAR</p> | <p>MINERALS</p> <p>K - KAOLINITE</p> <p>P - PYRITE</p> <p>Q - QUARTZ</p> <p>Z - ZEOLITES</p> <p>V - VEINS</p> <p>DIS - DISSEMINATED</p> | <p>PHYSICAL - CHEMICAL</p> <p>D.H. - DOWN HOLE</p> <p>B.H. - BOTTOM HOLE</p> <p>F.L. - FLOW LINE</p> <p>T. - TEMPERATURE</p> <p>P. - PRESSURE</p> <p>T.C. - TIME SINCE CIRCULATION</p> <p>W.H. - WELL HEAD</p> | <p>PPM - PARTS PER MILLION</p> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|

DEPTH	PENETRATION DATA					LITHOLOGY				PHYSICAL - CHEMICAL DATA			MISC.	
	□ FT./HR.	□ MIN./10 FT.				PRIMARY LITH	SECONDARY MINERALS	BULK COLOR	DESCRIPTION	MUD TEMP.:	○ --- ○ SUCTION	○ --- ○ FLOWLINE		
	90	70	50	30	10	100	%	0		100°F	150°F	200°F		
						1	0	0	0					
						0	0	0	0					
						0	0	0	0					
100						0	0	0	0					
						0	0	0	0					
						0	0	0	0					
200						0	0	0	0					
						0	0	0	0					
						0	0	0	0					
300						0	0	0	0					
						0	0	0	0					
						0	0	0	0					
						0	0	0	0					
						0	0	0	0					
						0	0	0	0					
						0	0	0	0					



DRILLING 17 1/2" HOLE  
 W/MUD  
 BIT #1 HCS-4FB 0-250  
 29 1/2 HRS.

0-165' SAND, GRAVEL &  
 BOULDERS - TUFF DEBRIS

CENTERED BEDROCK -  
 BANDED TUFF -  
 @ ABOUT 165'

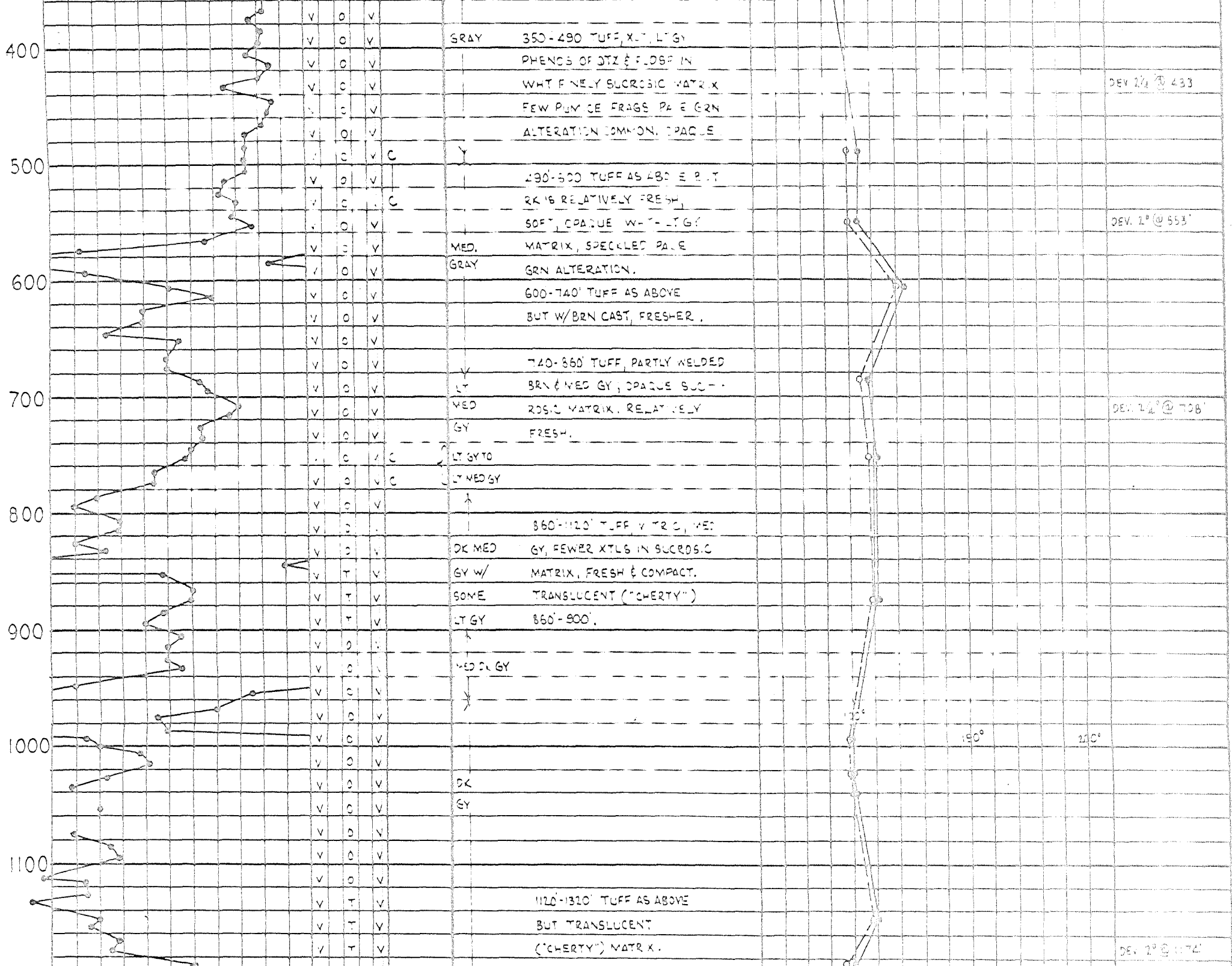
LT GR, 165'-240' TUFF, WELDED TO  
 UNWELDED, SALMON & GY.

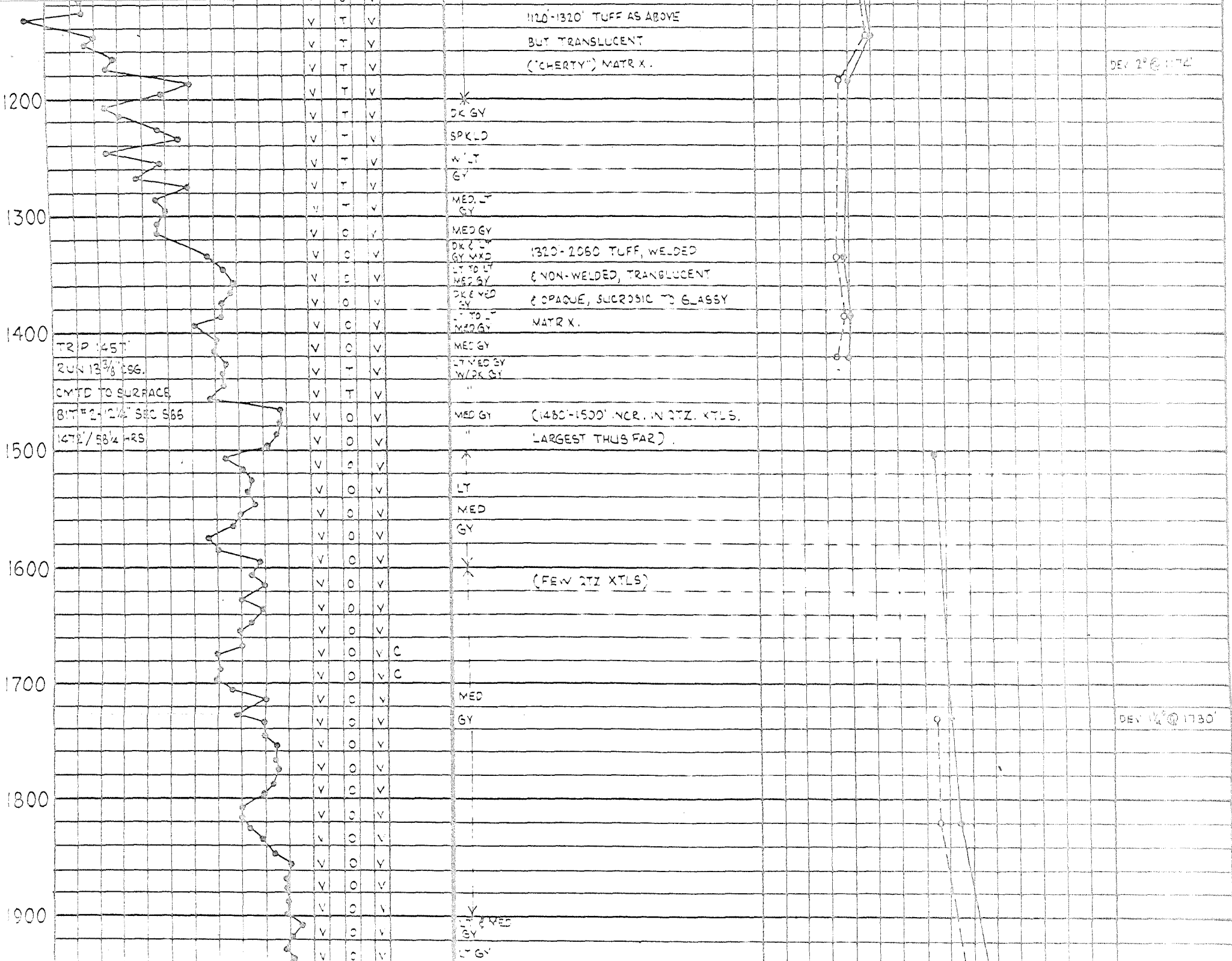
SALMON QTZ & SANDINE PHENOS  
 IN OPAQUE ASH & FUMBLE  
 MATRIX. WAD TO UNW.D.

240'-350' TUFF, ALTERED, V. W  
 YELLOWISH TO YELLOWISH RED-BRN STNS, SAND VE  
 BRN ALT'D TO CLAY, FRESH QTZ PHENOS.

RARE MAG. & BICHITE. SOME  
 GY PLUMICE.

OPEN HOLE TO:  
 26" SET 20' CSG. 250'  
 TO SURFACE, CEMENTED  
 25" HCS 4FB 10-1457'  
 1207/136 HRS





1120-1320' TUFF AS ABOVE  
 BUT TRANSLUCENT  
 ("CHERTY") MATR X.

DEV 2<sup>nd</sup> @ 1174'

1200

DK GY

SPKLD

W LT  
 GY

1300

MED LT  
 GY

MED GY

DK LT  
 GY MKD

1320-2060 TUFF, WELDED

LT TO LT

(NON-WELDED, TRANSLUCENT

MED GY

DK MED  
 GY

(OPAQUE, SUCCROSSIC TO GLASSY

LT TO LT  
 MED GY

MATR X.

1400

TRIP 145T

MED GY

RUN 13 3/8 S66.

LT MED GY

CMTD TO SURFACE

W/ DK GY

BIT #2 - 1 1/4 SEC S66

MED GY

(1480'-1500' NCR. IN QTZ. XTLS.

1471/58 1/2 HRS

"

LARGEST THUS FAR)

1500

↑

LT

MED

GY

1600

X

(FEW QTZ XTLS)

1700

MED

GY

DEV 1<sup>st</sup> @ 1730'

1800

Y

LT MED

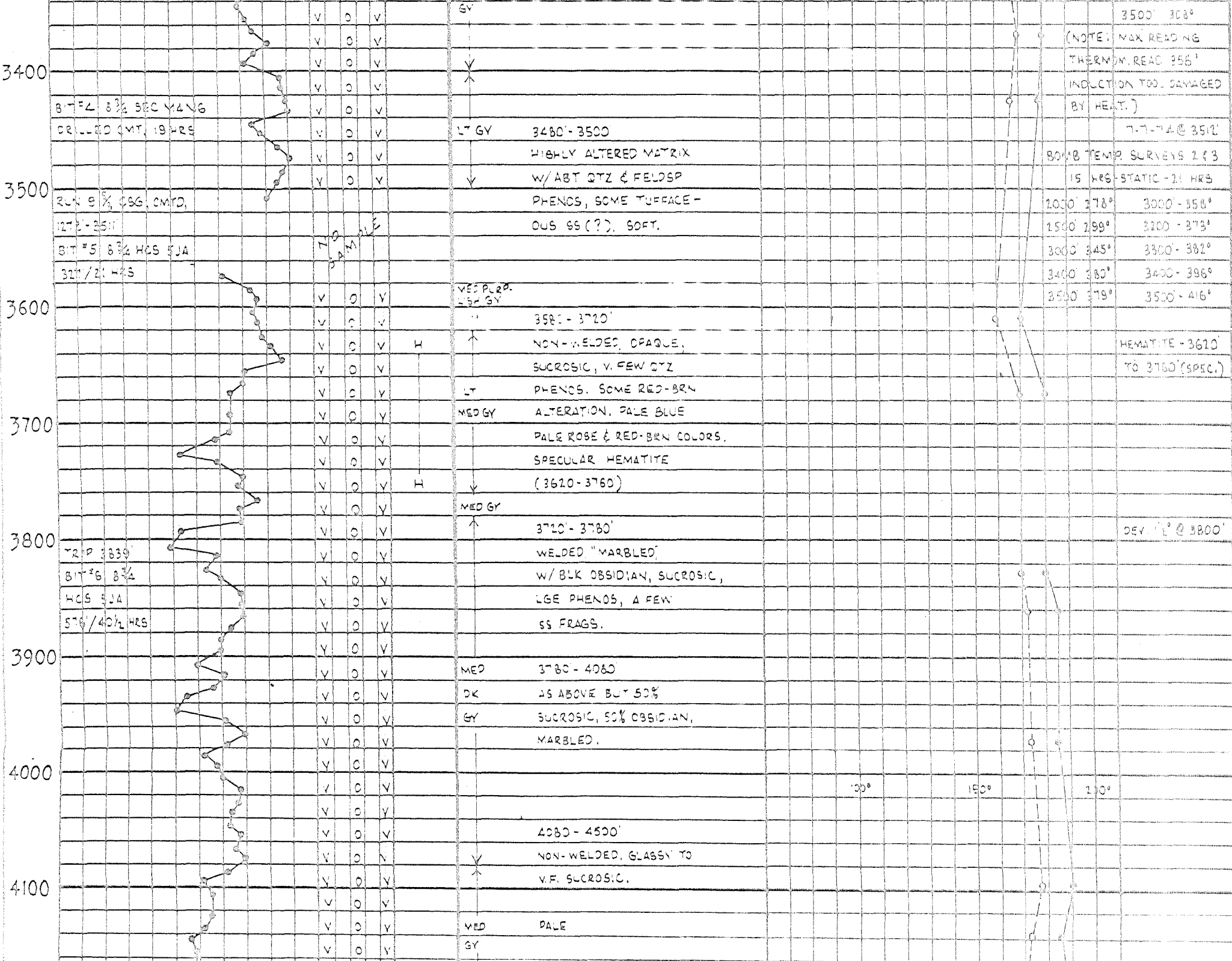
GY

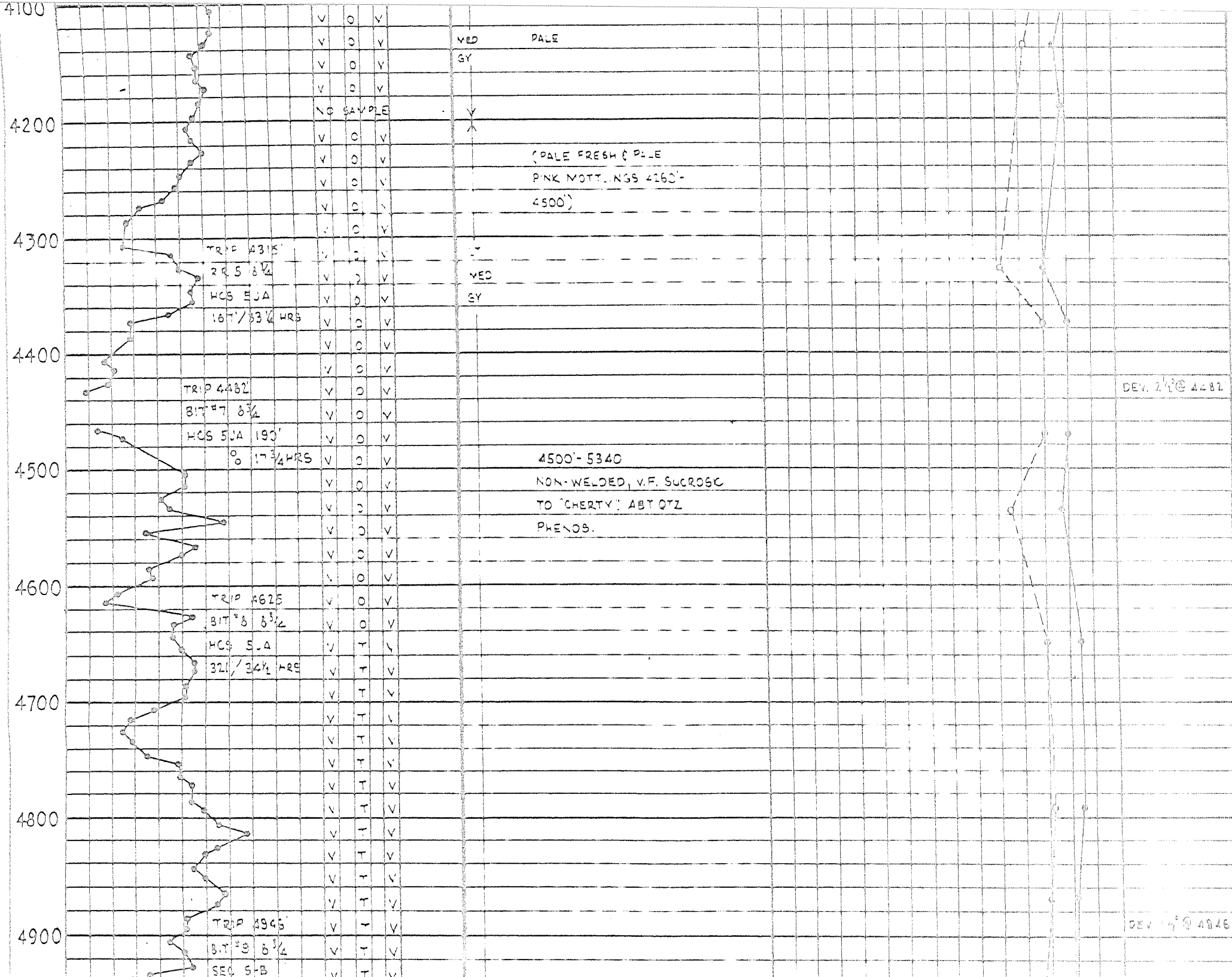
LT GY

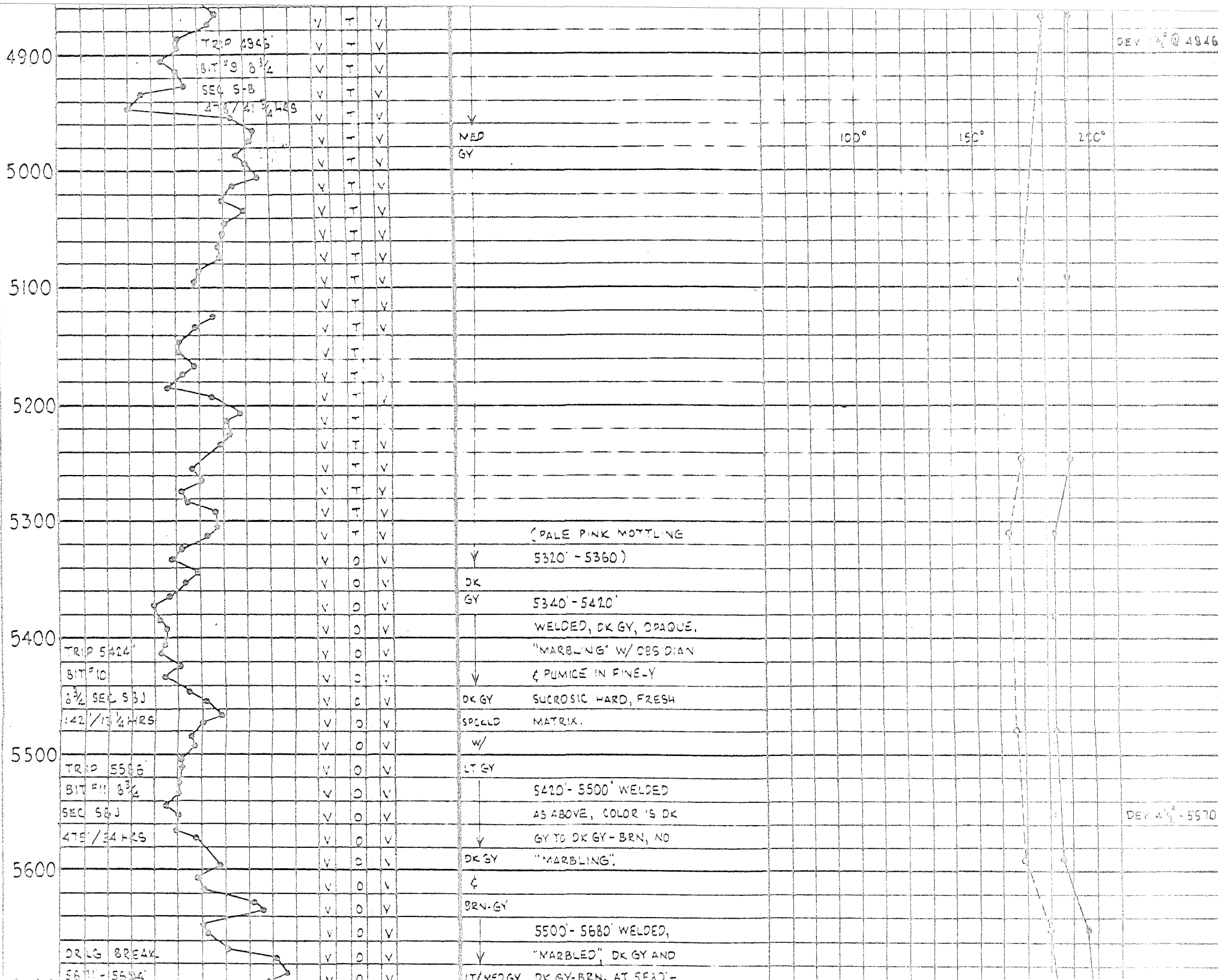
1900





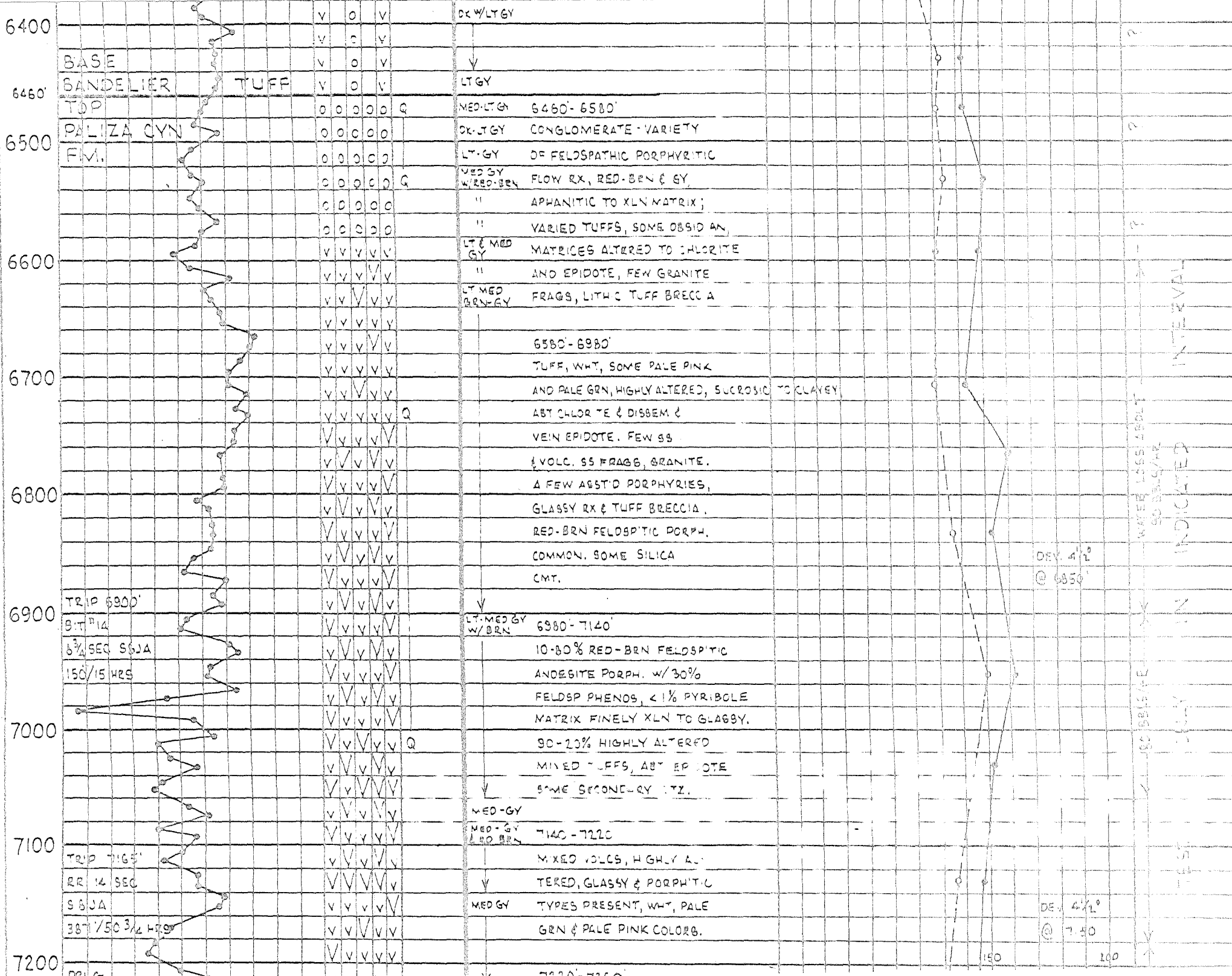








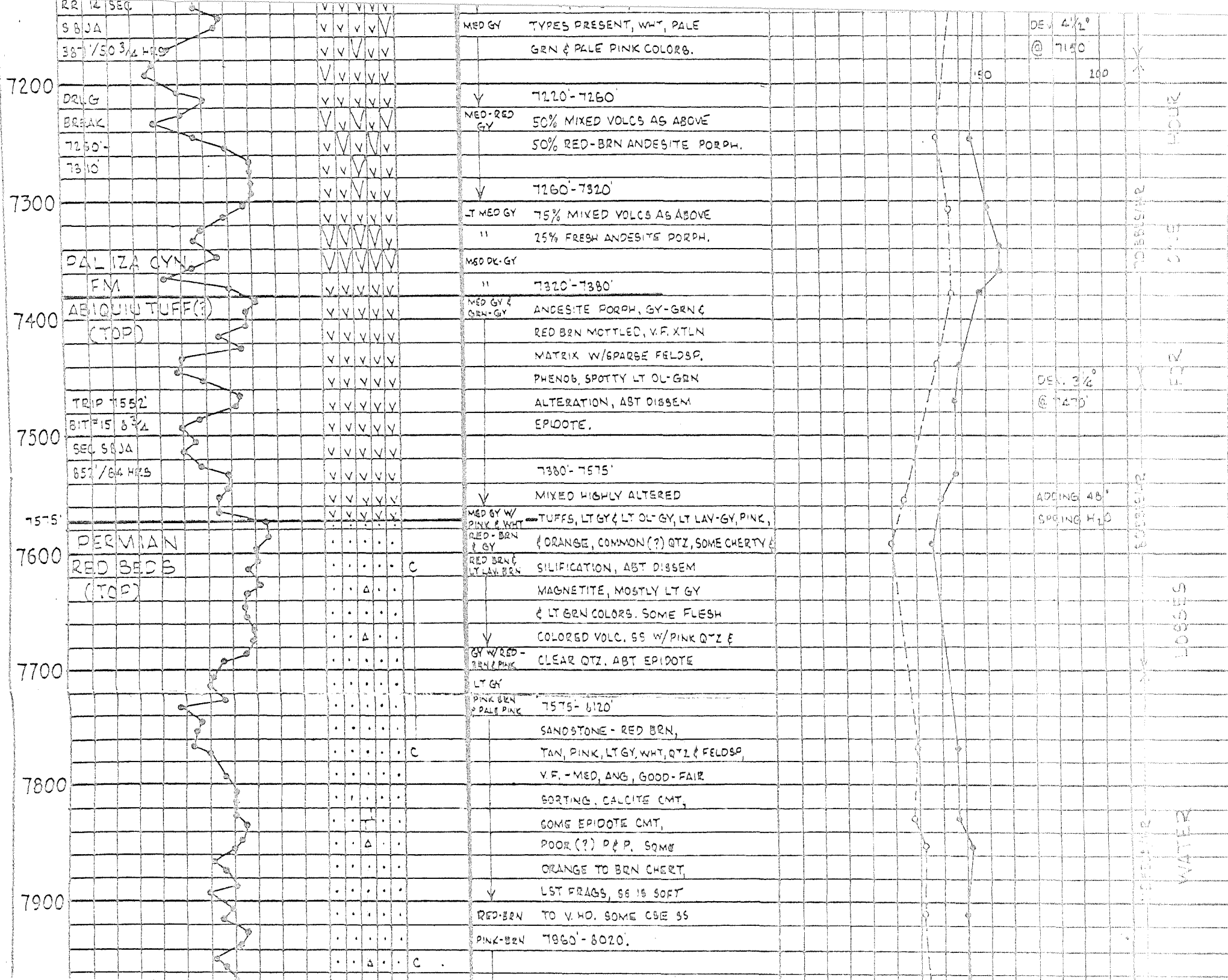




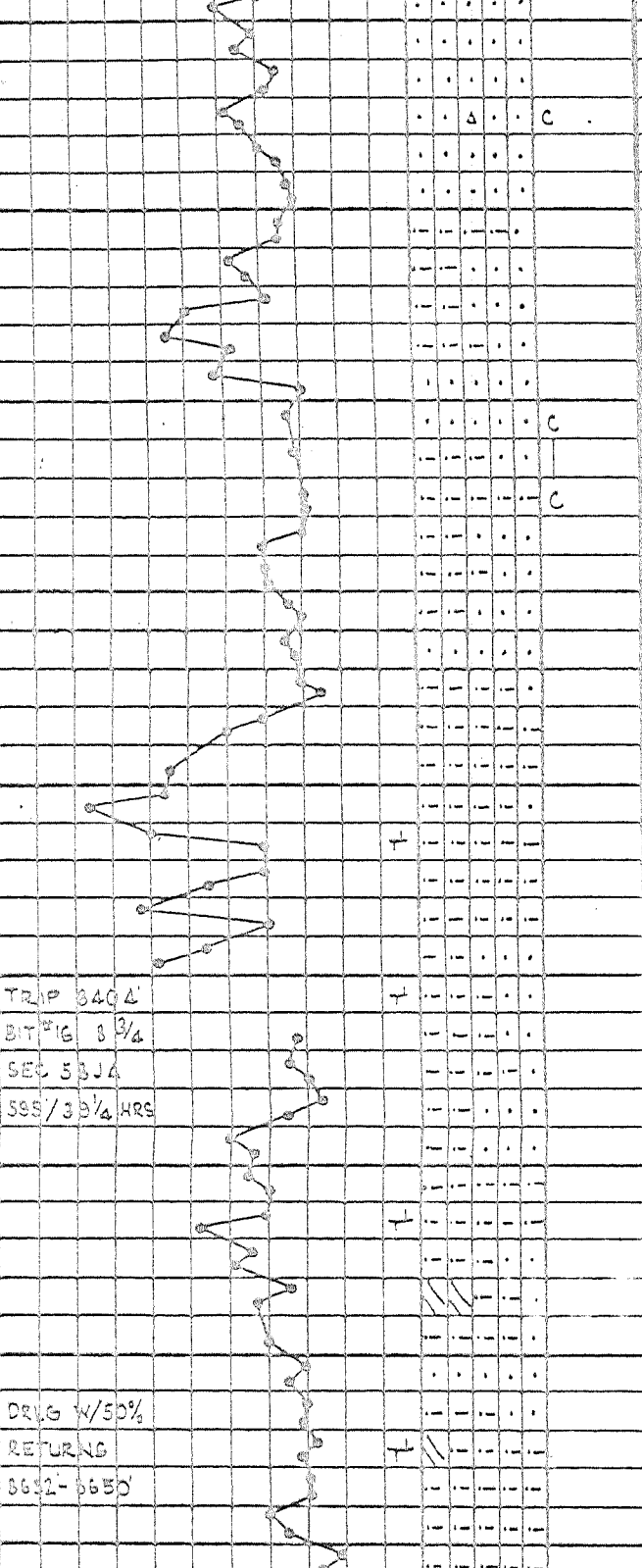
DEV. 4 1/2 @ 6850'

DEV. 4 1/2 @ 7.50

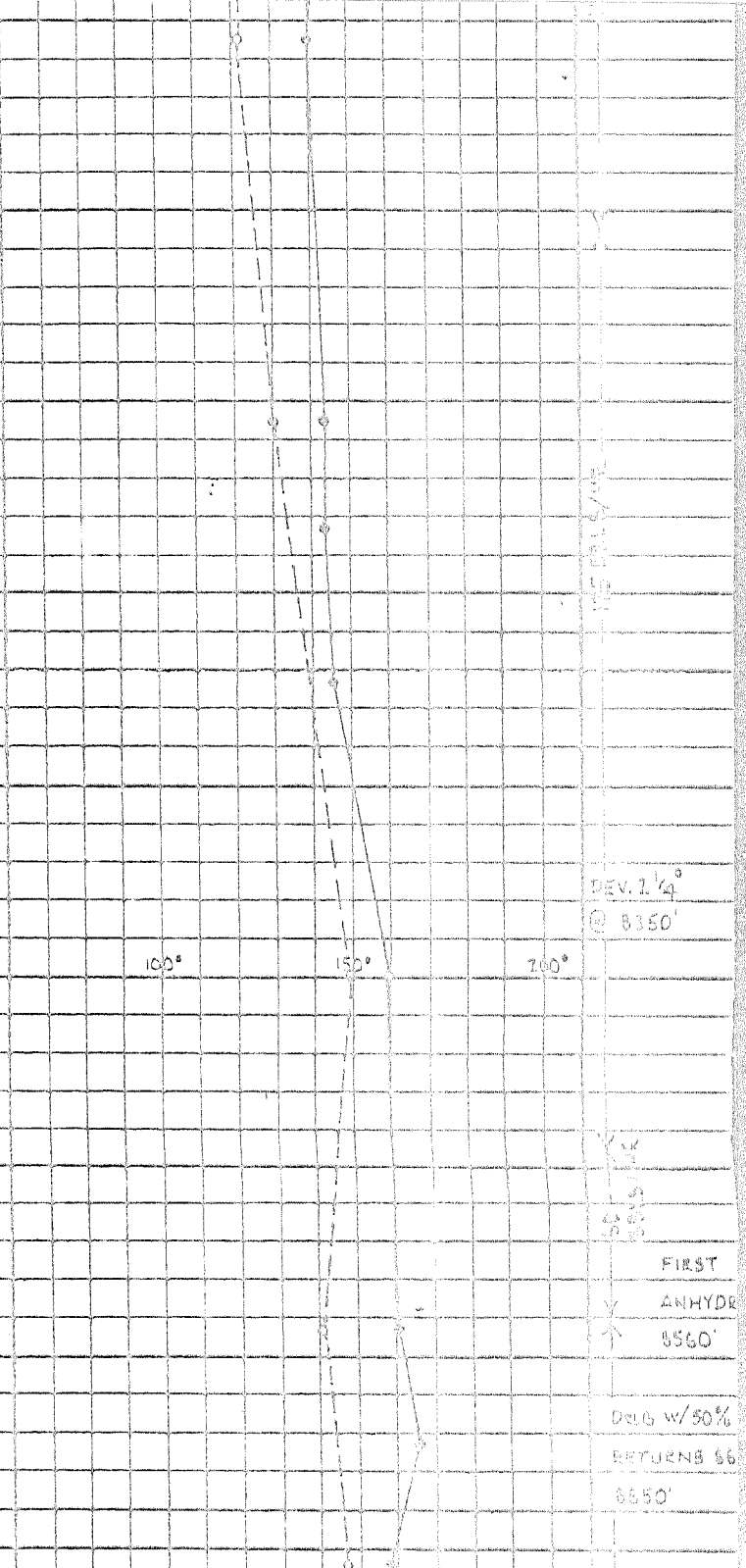
WATER LOSS LOG  
 50 BBL/GAL  
 INDICATED  
 INTERVAL  
 150  
 100

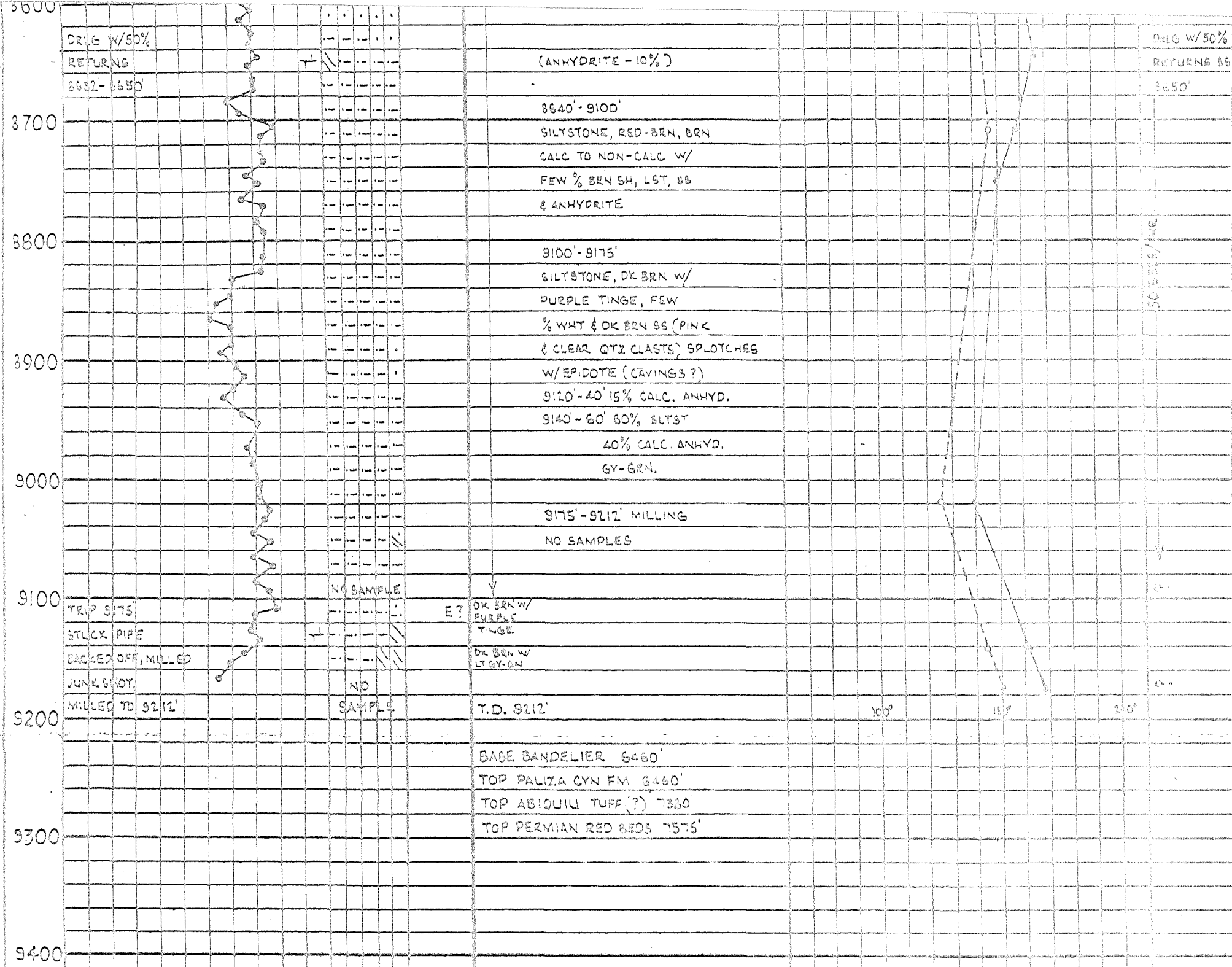


7900  
8000  
8100  
8200  
8300  
8400  
8500  
8600  
8700



LST FRAGS, 68 16 SOFT  
 RED-BRN TO V. HD. SOME CSE SS  
 PINK-BRN 7860'-8020.  
 Δ C  
 8120'-8640'  
 RED-BRN & PALE PINK-BRN SILTSTONE & SS  
 RED-BRN & WHT SILTSTONE (65%) IS  
 RED-BRN RED-BRN, CALC, SS (35%)  
 " AS ABOVE, ANHYDRITE,  
 RED-BRN & WHT LT GY-GRN AS INDICATED  
 " BELOW.  
 RED-BRN W/ PINK-BRN  
 C  
 C  
 RED-BRN  
 TRAP 3404  
 BIT #16 8 3/4  
 SEC 5314  
 585/3 3/4 HRS  
 DK BRN  
 (FIRST ANHYDRITE, V.F. XTLN,  
 30% OF 8560-8580)  
 DRUG W/50%  
 RETURN 8632-8650  
 (ANHYDRITE - 10%)  
 8640'-9100'  
 SILTSTONE, RED-BRN, BRN





COMPANY UNION OIL of CAL  
 FIELD BACA  
 WELL 13  
 COUNTY SANDOVAL  
 STATE NEW MEXICO  
 LOCATION EL. 9292 Gr.

TOTAL DEPTH \_\_\_\_\_  
 SPUD DATE AUG 23, 1974  
 COMPLETION DATE NOV 5, 1974  
 DRILLING CONTRACTOR LOEFLAND BROS  
 ENGINEER PL. Stinnett/INMAN  
 GEOLOGIST T.R. SLODOWSKI

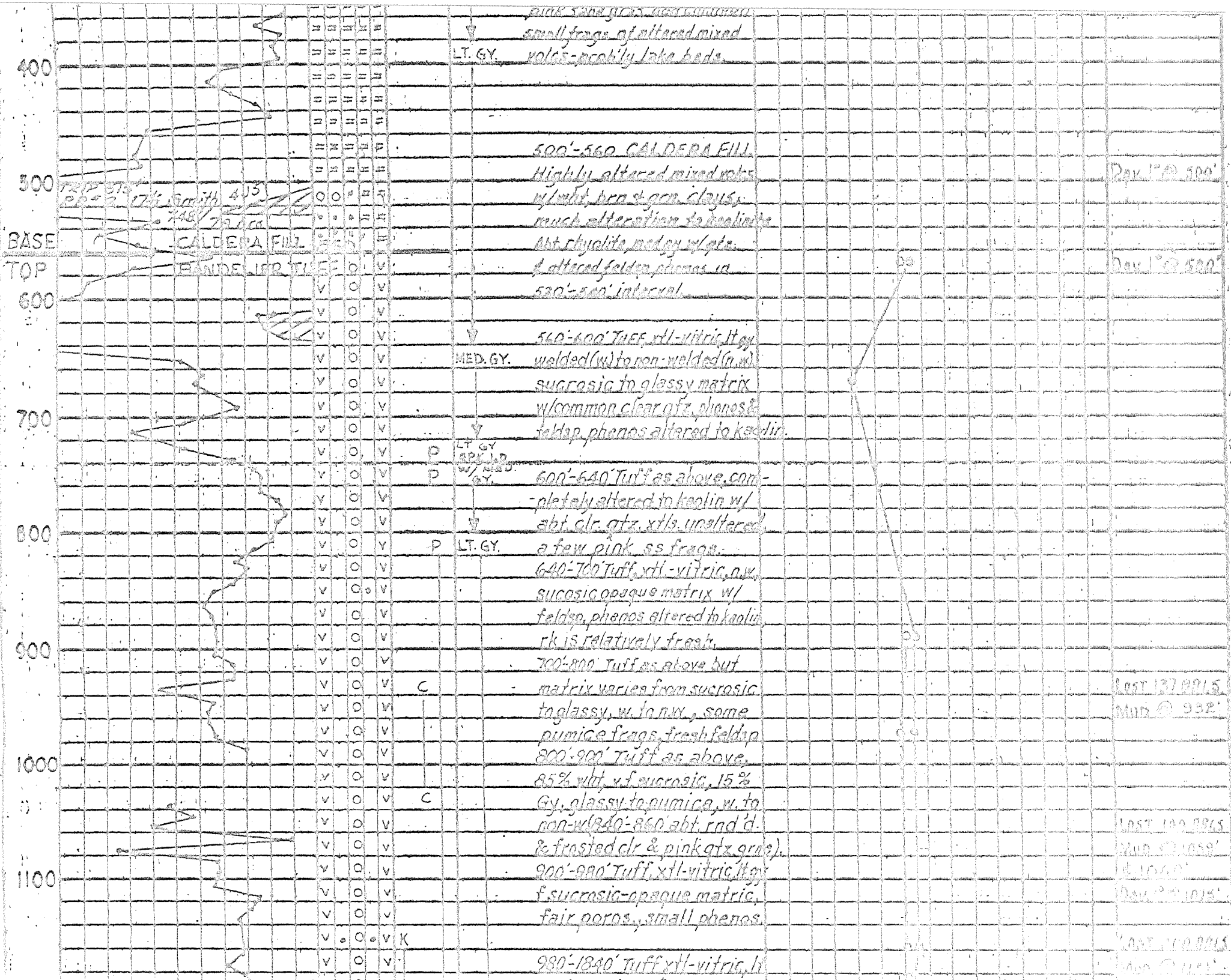
CASING RECORD  
20": 215' to SURFACE QUITD.  
13 1/2": 1449' to " "  
9 1/2": 1270' to " "  
7": 8200', hung at 9300'

EXPLANATION

- |                                                                                                                        |                                                                                                                                                                                                                                                                        |                                                                                                                                                                                     |                                                                                                                                                                                                                                 |                                                                                                                                                             |
|------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DRILLING</b>                                                                                                        | <b>ROCK</b>                                                                                                                                                                                                                                                            | <b>MINERALS</b>                                                                                                                                                                     | <b>PHYSICAL - CHEMICAL</b>                                                                                                                                                                                                      |                                                                                                                                                             |
| NB - NEW BIT<br>RRB - RERUN BIT<br>COB - CORE BIT<br>LC - LOST CIRCULATION<br>DEV - DEVIATION<br>DST - DRILL STEM TEST | <input type="checkbox"/> SHALE<br><input type="checkbox"/> SILTSTONE<br><input type="checkbox"/> SANDSTONE<br><input type="checkbox"/> CONGLOMERATE<br><input type="checkbox"/> LIMESTONE<br><input type="checkbox"/> GOLSHITE<br><input type="checkbox"/> GYP, ANHYD. | <input type="checkbox"/> CHERT<br><input type="checkbox"/> VOLCANICS<br><input type="checkbox"/> INTRUSIVE<br><input type="checkbox"/> TUFF<br><input type="checkbox"/> METAMORPHIC | C - CALCITE<br>CHL - CHLORITE<br>CEL - CELADONITE<br>CL - CLAYS<br>D - DOLOMITE<br>E - EPIDOTE<br>F - FELDSPAR<br>K - KAOLINITE<br>P - PYRITE<br>Q - QUARTZ<br>Z - ZEOLITES<br>V - VEINS<br>DIS. DISSEMINATED<br>W.M. WELL HEAD | D.M. - DOWN HOLE<br>B.M. - BOTTOM HOLE<br>F.L. - FLOW LINE<br>T. - TEMPERATURE<br>P. - PRESSURE<br>T.C. - TIME SINCE CIRCULATION<br>PPM - PARTS PER MILLION |

TUFF MATRIX: OPAQUE (O) - TRANSLUCENT (T)

DEPTH	PENETRATION DATA		LITHOLOGY				PHYSICAL - CHEMICAL DATA			MISC.
	FT./HR.	MIN./10 FT.	PRIMARY LITH	SECONDARY MINERALS	BULK COLOR	DESCRIPTION	100°	150°	200°	
0-100	100	50 min.	0	0	LT. MED.	0-100' CALDERA FILL				
100-150			0	0	BRN.	Brn. Orange-brn, reddish-brn w/xd boulders of mixed rocks (largely Bandelier tuff) Abt. gtz. xtls. clay & calc. sd				Dev. 10 70'
150-200			0	0	LT. GY.	common				
200-250			0	0	GRN.	100-200' CALDERA FILL clayey sand & sandy clay, lt. gy-grc. calc. to 400-calc.				Dev. 10 140'
250-300			0	0	LT. GY.	sandy, Translucent, Abt. gtz. xtls. Sand grains cl. to pink gtz.				Dev. 10 200'
300-350			0	0	LT. PINK	200-500' CALDERA FILL clay, tuffac. to sandy, lt. gy to wht. kaolinitic, abt. doubly tennid' gtz. xtls. some pink sand grains and common				



LT. GY.

small frags of altered mixed  
volcs - possibly lake beds

500'-560' CALDERA FILL

Highly altered mixed volcs  
w/ wht. horn & glassy clasts,  
much alteration to kaolinite  
Abt. rhyolite, nodgy w/ gls.  
& altered feldsp. phenos. id.  
530'-560' interval.

Dist. 100 500'

BASE

TOP

CALDERA FILL

FRANDELER TUFF

Dist. 100 500'

MED. GY.

560'-600' Tuff, xtl-vitric, lt. gy  
welded (w) to non-welded (nw)  
sugrosic to glassy matrix  
w/ common clear qtz. phenos &  
feldsp. phenos altered to kaolin.

LT. GY.

600'-640' Tuff as above, com-  
pletely altered to kaolin w/  
abt. clr. qtz. xtls. unaltered.  
a few pink ss frags.

LT. GY.

640'-700' Tuff, xtl-vitric, nw,  
sugrosic opaque matrix w/  
feldsp. phenos altered to kaolin.  
rk is relatively fresh.

C

700'-800' Tuff as above but  
matrix varies from sugrosic  
to glassy, w. to nw., some  
pumice frags, fresh feldsp.

Dist. 100 200 300'

C

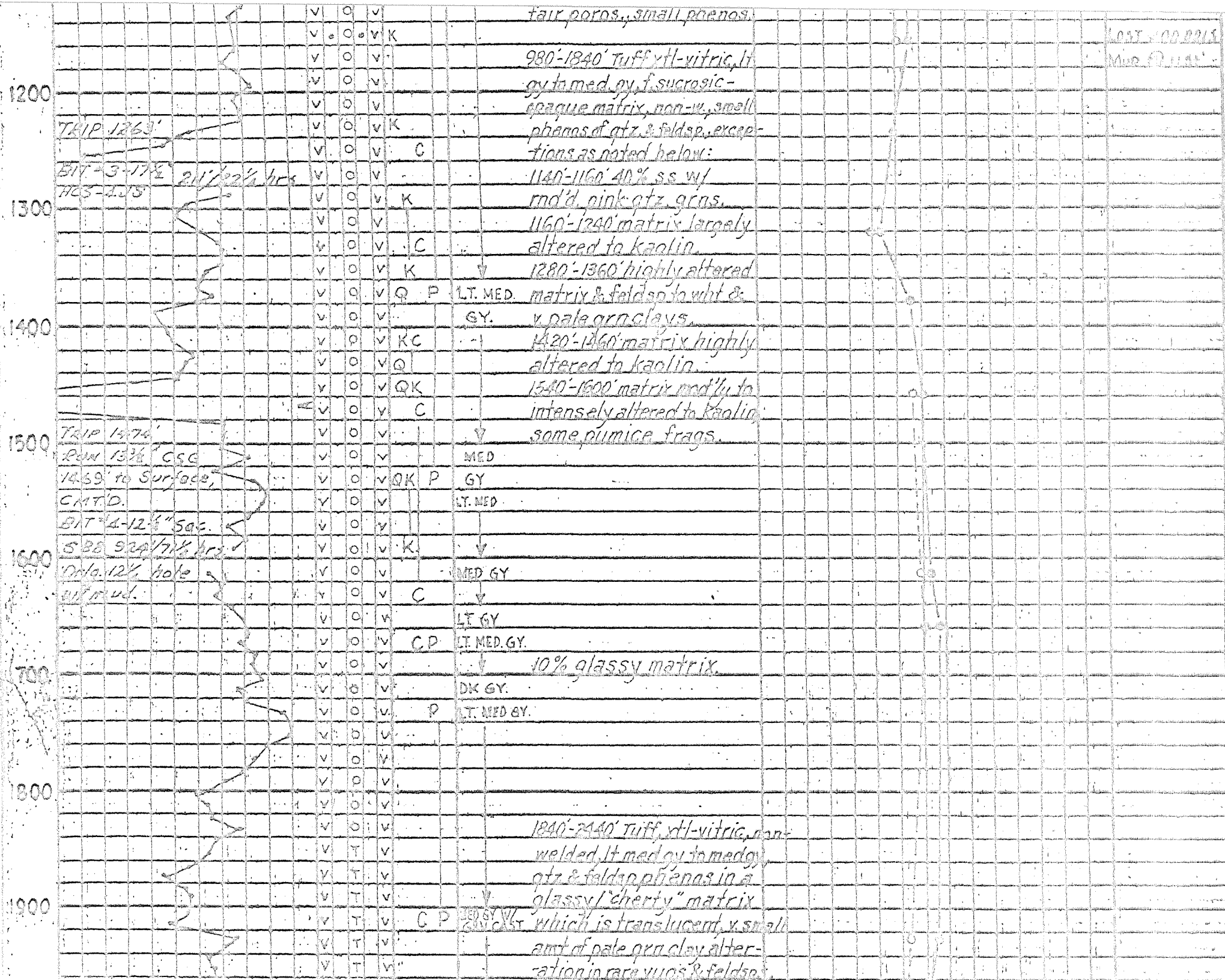
800'-900' Tuff as above,  
85% wht. & sugrosic, 15%  
Gy, glassy to pumice, w. to  
non-w (840'-860' abt. rnd d.  
& frosted clr & pink qtz. frags).

Dist. 100 200 300'

K

900'-980' Tuff, xtl-vitric, lt. gy  
& sugrosic-opaque matrix,  
fair poros., small phenos.  
980'-1840' tuff xtl-vitric, lt.

Dist. 100 200 300'



fair poros., small poros.

LOST 100 PLS  
Mile from

980-1840 Tuff xtl-vitric, lt  
gy to med gy, f. sugrosic-  
opaque matrix, non-w, small  
phenos of qtz & feldsp. excep-  
tions as noted below:

1140-1160 40% ss w/  
rnd'd pink qtz, gns.

1160-1240 matrix largely  
altered to kaolin.

1280-1360 highly altered  
matrix & feldsp to wht &  
GY. v pale grn clays.

1420-1460 matrix highly  
altered to kaolin.

1540-1600 matrix mod'ly to  
intensely altered to kaolin;  
some pumice frags.

1640-1660 MED  
GY

1660-1680 LT. MED  
GY

1680-1700 MED GY

1700-1720 LT GY

1720-1740 LT. MED. GY.

1740-1760 10% glassy matrix.  
DK GY.

1760-1780 LT. MED GY.

1780-1800

1840-2440 Tuff, xtl-vitric, non-  
welded, lt med gy to medgy,  
qtz & feldsp phenos in a  
glassy "cherty" matrix

which is translucent, v small  
amt of pale grn clay alter-  
ation in rare vugs & feldsp.

TRIP 1263

BIT 3-17 2 1/2 hrs  
HCS-1.13

TRIP 1474

Run 13 1/2 CSC  
1469' to Surface,  
CMT.D.

BIT 4-12 5/8

528 920/7 1/2 hrs

Data 12" hole

BIT mud.

700

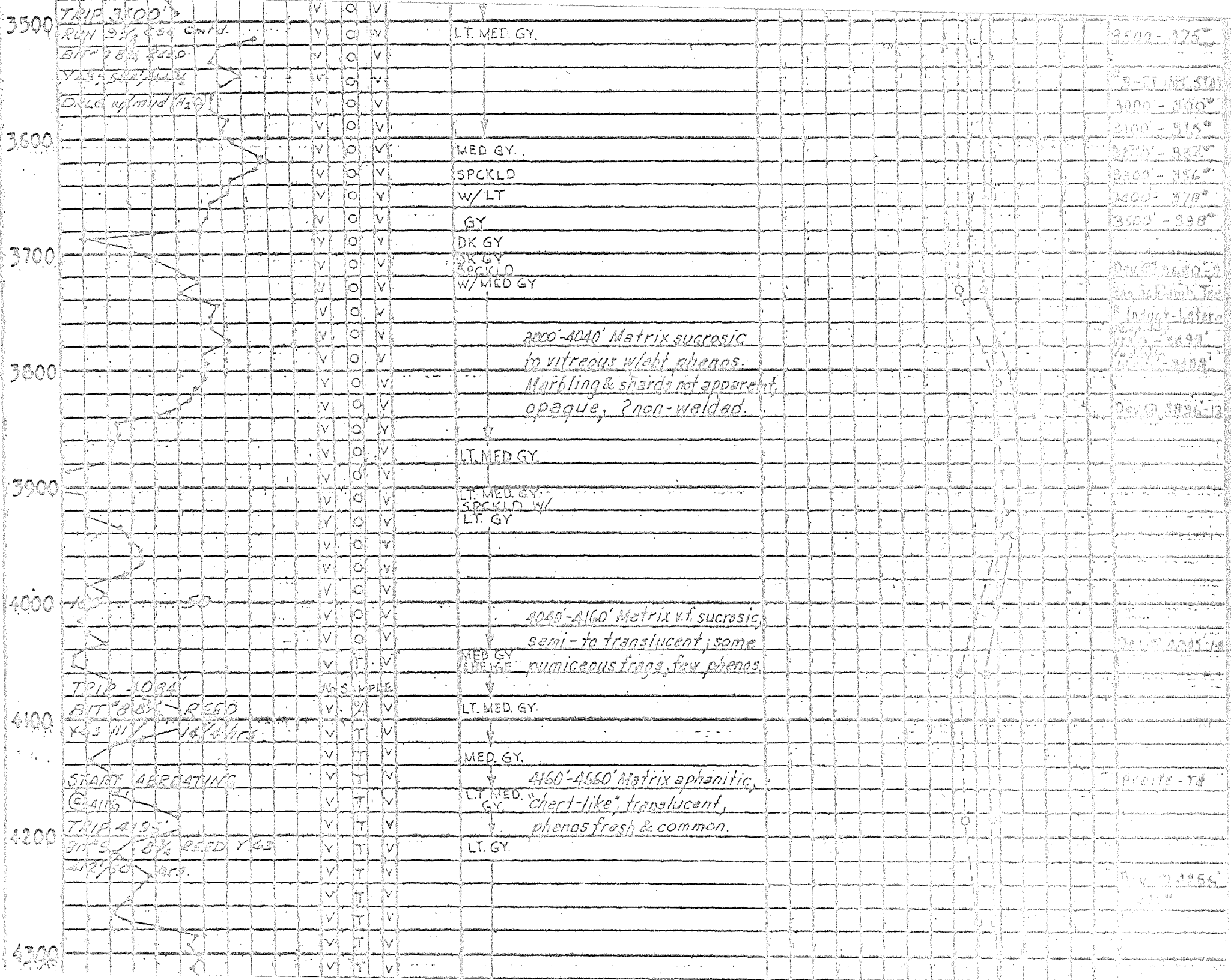
800

900









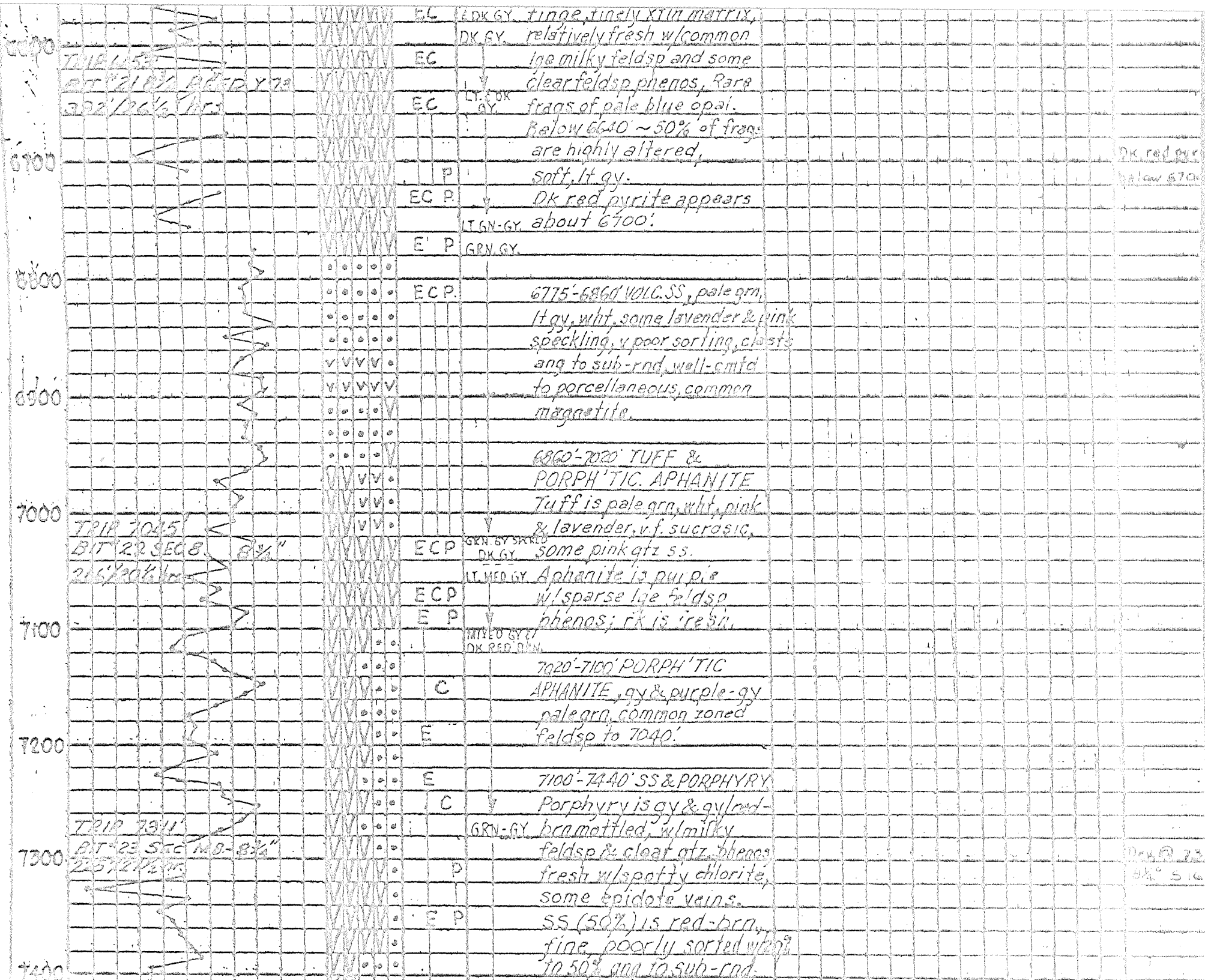


Depth (ft)	Interval / Sample	V	O	V	E	Notes	Other
5100	1st CORING INTERVAL CORE #1 5071-5074 TRIP 5074 CORE #2 REELS 21, 22, 23, 24 NO RECOVERY TRIP 5097 BIT #13 8 1/2" SEC 313 10/12/72	V	O	V	E	LT BRN & LT. GY	
		V	O	V		LT MED GY SPKLED W/ WHT.	
		V	O	V	E		
		V	O	V			
5200		V	O	V	E		Div # 5215-141
	CORE #3-3034-3100 (No Recovery)	V	O	V	Q	GD	
		V	O	V		P	
	TRIP 3200 BIT #16 10 1/2" C. 5115/195	V	O	V		ECP	Div # 5215-141
5300	CORE #4	V	O	V		ECP	
	TRIP 3300 BIT #17 13 1/2" 325/400 hrs.	V	O	V		LT GY & BRN GY	
		V	O	V		P	
5400		V	O	V		LT MED GY	
		V	O	V		MED GY SPKLD WHT	Div # 5470
		V	O	V		LT GY	14"
5500		V	O	V		P	
		V	O	V		LT BRN GY SPKLD	
		V	O	V			5600'-5860' Tuff and volc.
		V	O	V	P	LT GY	sltst, some sandy, wht & pale grn, finely sucrosic, opaque, w/ wht frags of feldsp & Qtz, angular, poorly sorted prob'ly fair-good p.p. Soft, well altered.
5600	TRIP 5625 BIT #18 REED 10" 343/200 hrs.	V	O	V			Div # 5616
		V	O	V			Div # 5616
		V	O	V			124" @ 71W
	BASE SANDELED	V	O	V			
5700	TOP FILTER C. 111-111	V	O	V	E	P	LT GY
		V	O	V		P	WHT TINGED GRN.
		V	O	V			
		V	O	V			
5800		V	O	V	E	P	
		V	O	V			
		V	O	V			
		V	O	V			
		V	O	V			
		V	O	V			
		V	O	V			

Note: Below 5740', samples obtained at various intervals when unloading hole. Sample taken is assumed to be a composite of the interval drilled since previous unloading.

5860'-5080' Tuff, lt grn, wht,





Depth (ft)	Stratigraphic Unit	Description	Notes
7100-7440	E	SS & PORPHYRY	
7300	C	Porphyry is gy & gy/red-GRN-GY	TRIP 7311 BIT 23 SEC MD-8 1/2" 255' 2 1/2" DR
7400	P	feldsp & clear Qtz phenos fresh w/ spotty chlorite, some epidote veins.	
7500	EP	SS (50%) is red-brn, fine, poorly sorted w/ 20% to 50% ang to sub-rnd. Qtz clasts, sparse feldsp altered to chlorite & volc. rk frags, in a siliceous, red clay matrix (pudding-stone appearance).	
7600	E	Pastel colors prevail below 7260 & SS matrix becomes buffaceous.	
7700	EC	7530-8090 Aphanitic flowrk, lt med gy, translucent w/ abt needles of pyrite (chabole?), & sparse lge feldsp, & thick books chloritized mica phenos. Rare Qtz phenos. Some in bit volc.	TRIP 7556 BIT 23 8 1/2" SEC MD 255' 2 1/2" DR
7800	C	SS. Some magnetite w/ red-brn coronas. Rk is relatively fresh-5-15% altered frags.	
7900	EC	SS. Some magnetite w/ red-brn coronas. Rk is relatively fresh-5-15% altered frags.	Test Open hole - 8 1/2" Orifice
8000	EC	SS. Some magnetite w/ red-brn coronas. Rk is relatively fresh-5-15% altered frags.	TIME TEMP PRESS 1/2 hr 285° 66" 1 hr 275° 68" 1 1/2 hr 280° 68" 5/8 in to pump H <sub>2</sub> O from pit 1 1/2 hr 3 1/2 hr 275° 68" 3 3/4 hr 310° 75" Short-in 5 1/2 hrs to pump H <sub>2</sub> O from pit 8 hr 200° 31"
8090-8228	EC	SS, pink, wht, red pale grn. lt gy, fine, subang to sub-rnd, clear	TRIP 8007 BIT 26 8 1/2" SEC MD 255' 2 1/2" DR



7700  
7800  
7900  
8000  
8100  
8200  
8300

TRIP 7756  
BIT # 25  
8' 3" 16 hrs

TRIP 8007  
BIT # 26  
8' 3" 16 hrs

TOP PERMIAN  
RED BEDS

TD 8228

ECP  
EIP

C  
E  
C  
EC

DK PURPLISH  
GY  
MED DK GY

IT GY  
MED GY  
MED DK GY  
MED GRN GY  
DK RED-BRN  
LT GRN GY

7530'-8090' Anphanitic  
flow rck. Lt med gr, trans-  
lucent w/ abt needles  
of pyrox (hoblade?),  
& Y sparsa (see feldsp.)  
& thick bands chloritized  
mica phenos. Rare glz.  
phenos. Some in h'd volc.  
SS. Some magnetite w/  
red-brn coronas. Rk is  
relatively fresh - 5-15%  
altered frags.

8090'-8228' SS, pink wht,  
red pale grn. Lt du, fine,  
subang to subang, clear  
frosted glz sparse  
feldsp & pink glz 5-  
25% red clay matrix,  
slight to abt calcite  
cement. Poor porosity.

TEST Open hole - 8 1/2" Orifice

TIME	TEMP	PRESS
1/2 hr	285°	66"
1 hr	275°	68"
1 1/2 hr	280°	68"
3 1/2 hr	275°	68"
3 1/2 hr	310°	75"
8 hr	220°	71"
9-11 hrs	195°-180°	71"

Shot-in to open H<sub>2</sub>O from pit 1 1/2 hr  
Shot-in 3 1/2 hrs to pump H<sub>2</sub>O from pit.  
KILL WELL. BHT top bridges:  
fill to 8200' Run in 7"  
liner to 8200'

RAN Temp. Log 2640'-8228' (pumping H<sub>2</sub>O into hole during logging.)  
" NEUTRON-DENSITY LOG 3494'-6809'  
" DUAL INDUCTION-LL 3494'-6810'  
" SONIC LOG 3494'-7240'

Dev @ A  
9°-S52

COMPANY UNION OIL CO. OF CAL. TOTAL DEPTH 6824'  
 FIELD BACA SPUD DATE NOV 16, 1974  
 WELL #14 COMPLETION DATE \_\_\_\_\_  
 COUNTY SANDOVAL DRILLING CONTRACTOR LOFFLAND  
 STATE NEW MEXICO ENGINEER STINNETT  
 LOCATION REDONDO CREEK GEOLOGIST SLODOWSKI  
EL 8605'

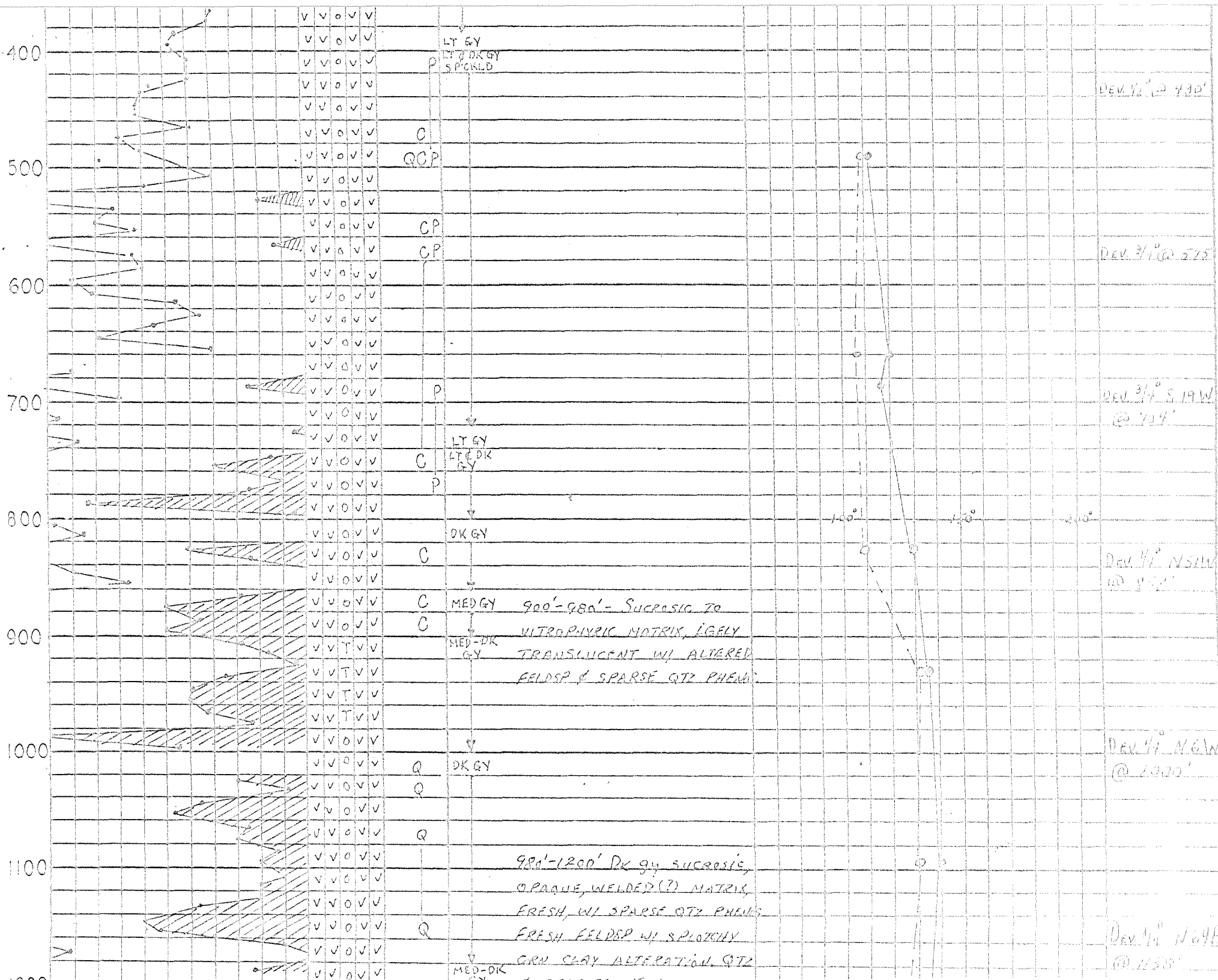
CASING RECORD  
 20": 193' TO SURFACE, CMTR.  
 13 3/8": 1452' " " " "  
 9 5/8": 3074' TO 1871', CMTR.

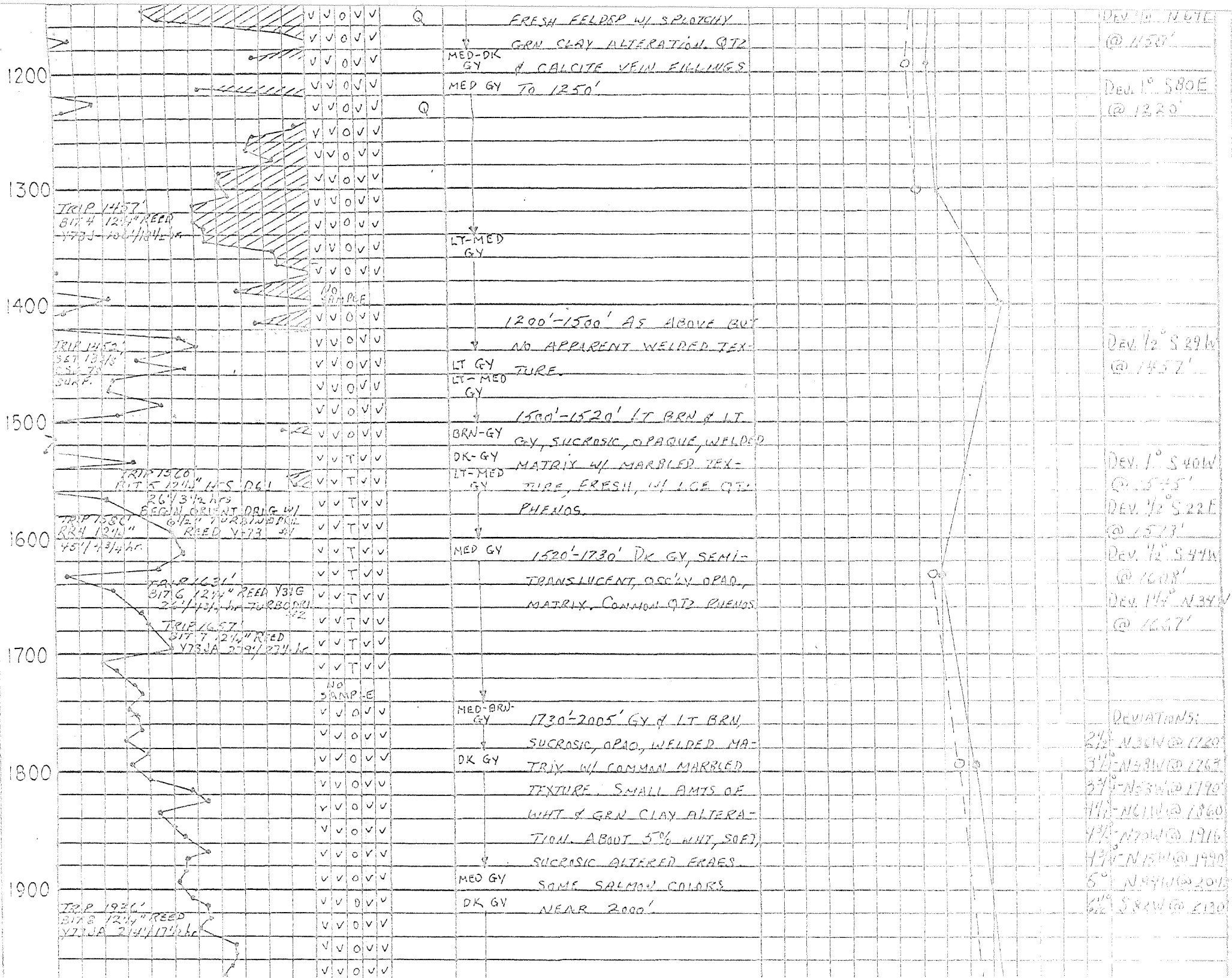
EXPLANATION

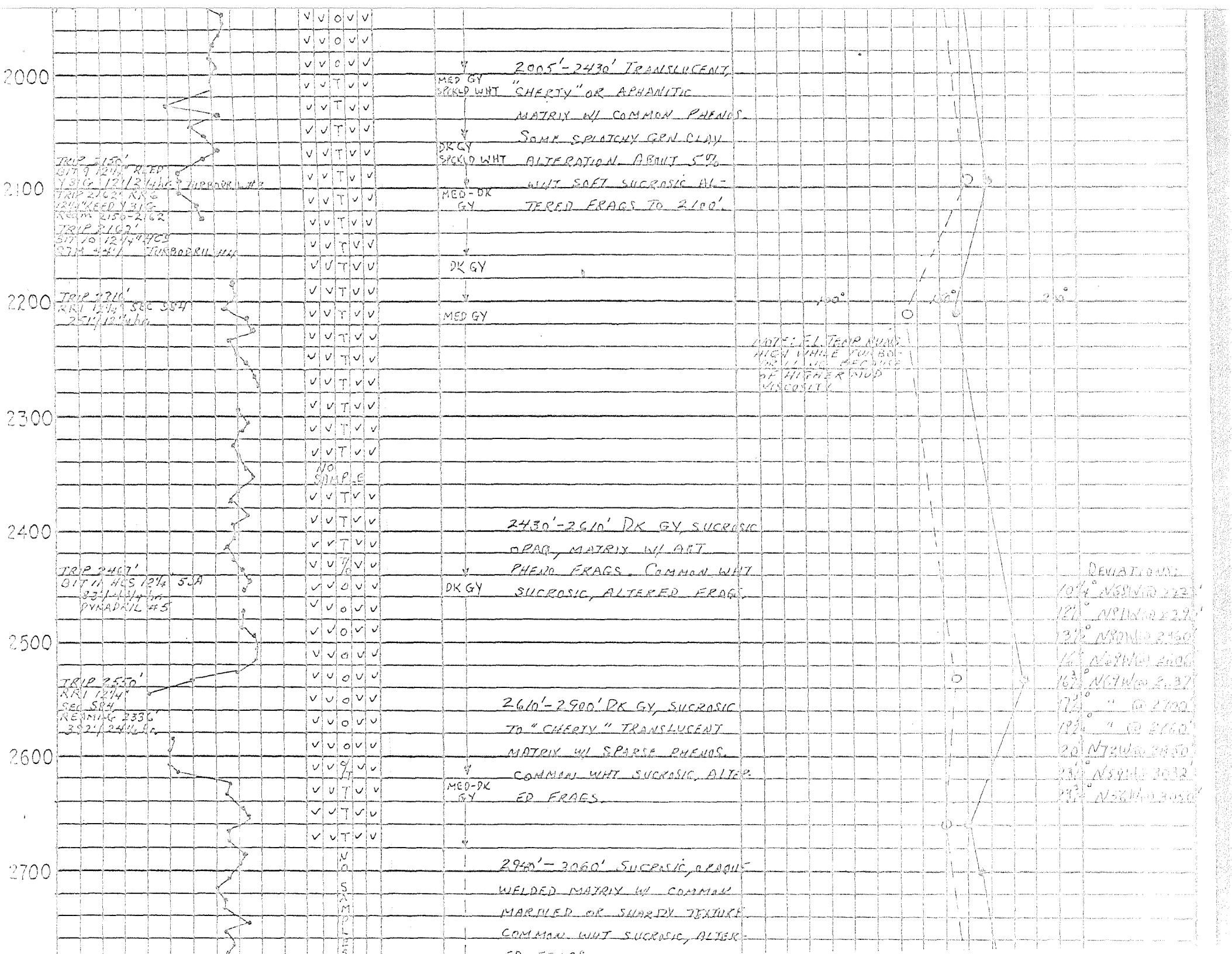
DRILLING	ROCK	MINERALS	PHYSICAL - CHEMICAL
NB - NEW BIT RRB - RERUN BIT CB - CORE BIT LC - LOST CIRCULATION DEV - DEVIATION DST - DRILL STEM TEST	<input type="checkbox"/> SHALE <input type="checkbox"/> SILTSTONE <input type="checkbox"/> SANDSTONE <input checked="" type="checkbox"/> CONGLOMERATE <input type="checkbox"/> LIMESTONE <input checked="" type="checkbox"/> DOLOMITE <input checked="" type="checkbox"/> GYP, ANHYD.	<input checked="" type="checkbox"/> CHERT <input checked="" type="checkbox"/> VOLCANICS <input checked="" type="checkbox"/> INTRUSIVE <input checked="" type="checkbox"/> TUFF <input checked="" type="checkbox"/> METAMORPHIC <input type="checkbox"/> _____ <input type="checkbox"/> _____	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 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 MILLION

TUFF MATRIX: (O) OPAQUE (T) TRANSLUCENT

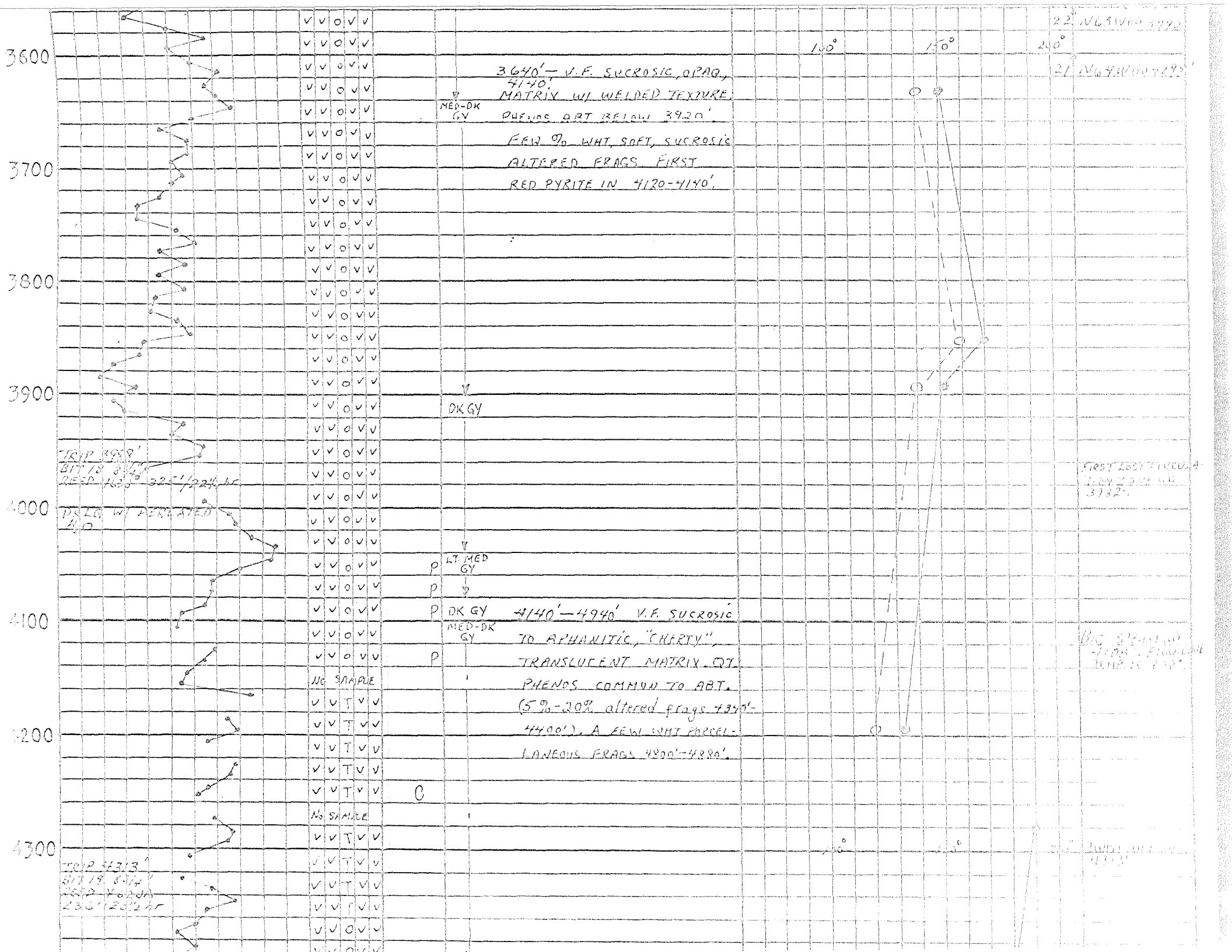
DEPTH	PENETRATION DATA		LITHOLOGY				PHYSICAL - CHEMICAL DATA			MISC.		
	<input type="checkbox"/> FT./HR.	<input checked="" type="checkbox"/> MIN/FT.-10'	PRIMARY LITH	SECONDARY MINERALS	DESCRIPTION	FLOWLINE TEMP.	SUCTION					
	100 mins.	50	100 %	0		100°	150°	200°				
	Drg 17 1/2" hole w/ mud BIT #2 RR 17 1/2" HCS 14 200' / 22 1/2 hrs.		0	0	0	0	BRN, WHT, GY	0-260' GRAVEL - WX'D VOLCS, MOSTLY TUFF, SOME AMYLITE. MUCH KAOLIN- ITIC ALTERATION. PYRITIC			Dev. 1/2" @ 70'	
100			0	0	0	0					Dev. 1/2" @ 130'	
200			0	0	0	0						
	TRIP 200' At 200' open hole to 26" set 26" CSG 193' to succ.		0	0	0	0		260'-900' TUFF - WELDED,				Dev. 1/2" @ 200'
260'	Drill 17 1/2" hole w/ mud, BANDELIER		0	0	0	0		OPAQ, SUCROSIC MATRIX W/ ALTERED FELDSP PHENOS. DK GY MATRIX IS SPLOTCHY -				
300	HO 26" HCS 30' BIT #3 RR 17 1/2" HCS 30' 125' / 23 hrs		V	V	0	V	LT GY	BLEACHED TO LT GY IN 15% TO 95% OF SAMPLES PYRITIC			Dev. 1/2" @ 310'	
400			V	V	0	V	LT GY					

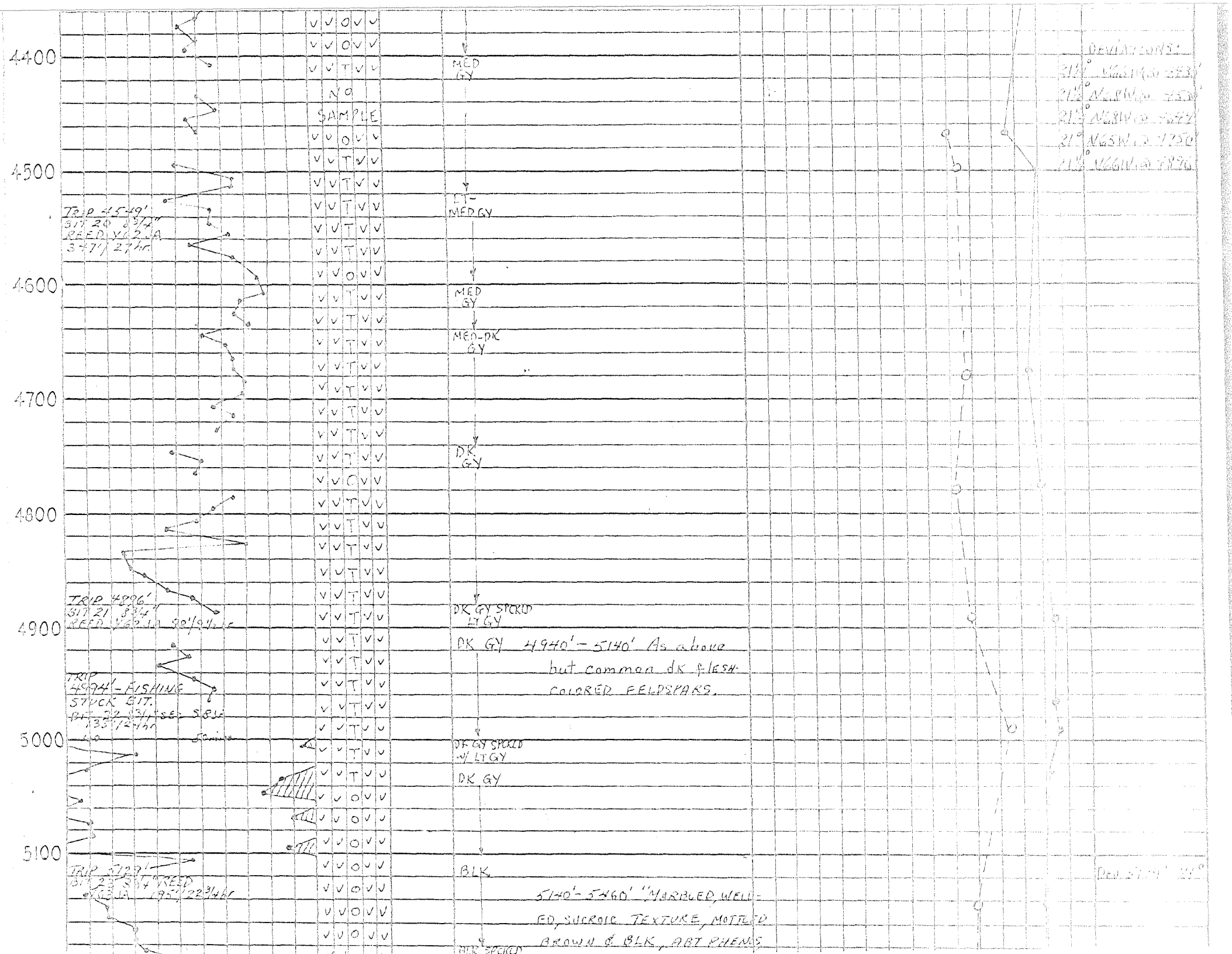




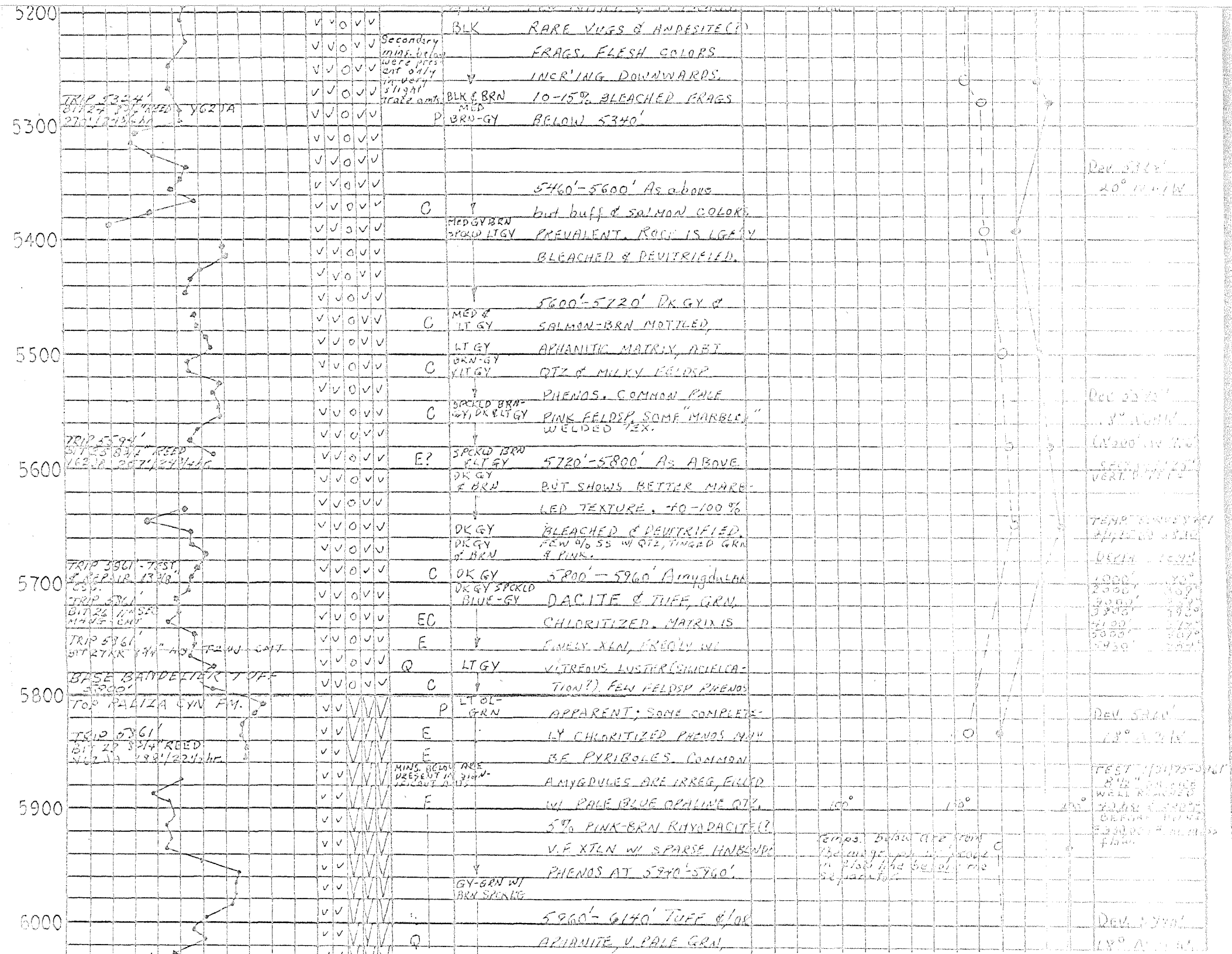














6800  
6900  
7000  
7100  
7200  
7300  
7400  
7500

• • • •  
• • • •  
• • • •

C

T.D. 6824'

o

TEMP. SURVEY #3  
2/7/56 2837

DEPTH	TEMP
3000'	33.0
4000'	33.0
5000'	30.0
6000'	28.0
6837'	25.0

7600

7700

7800

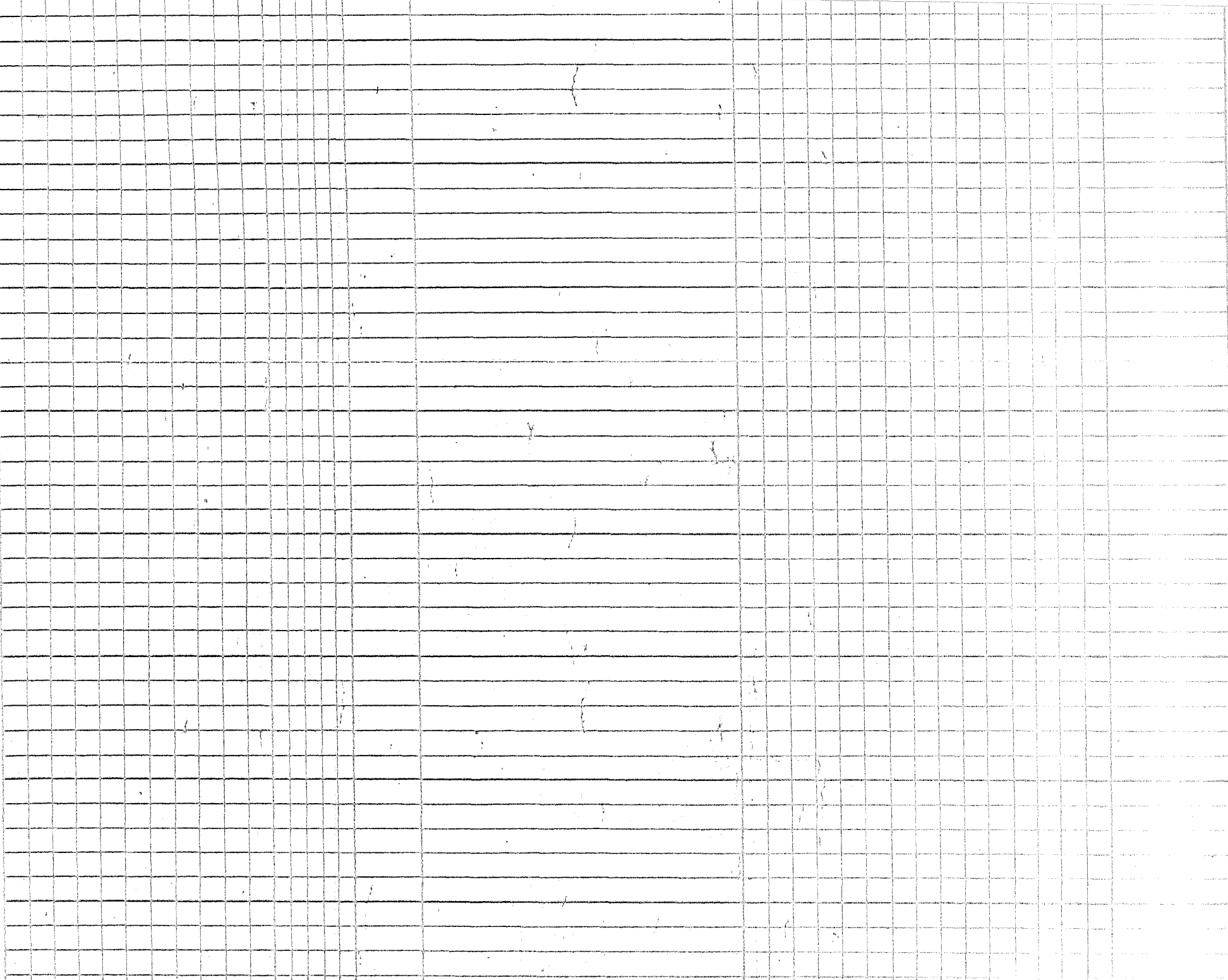
7900

8000

8100

8200

8300



COMPANY UNION OIL CO. OF CALIF. TOTAL DEPTH 2509'  
 FIELD BACA SPUD DATE 4-29-75  
 WELL #15 COMPLETION DATE \_\_\_\_\_  
 COUNTY SANDOVAL DRILLING CONTRACTOR LOFFLAND  
 STATE NEW MEXICO ENGINEER H. MOSS  
 LOCATION LAT. 35.8946 GEOLOGIST T.R. SLODOWSKI  
LONG. 106.5803 EL. 9117'

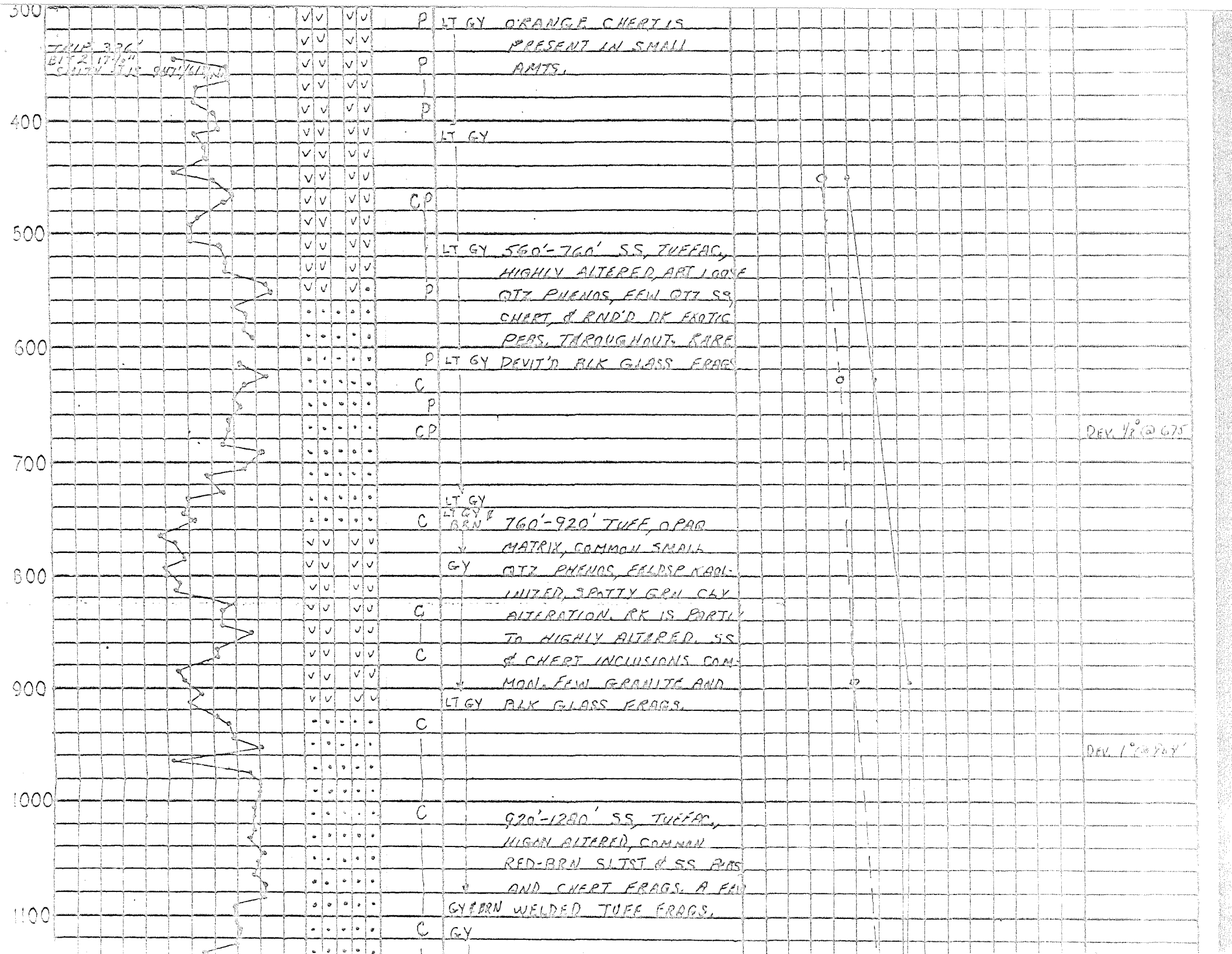
20": 210' TO SURFACE, CEMENTED  
13 3/8": 1273' " " "  
9 5/8": 2509' " " "

EXPLANATION

- |                                                                                                                       |                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                               |                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DRILLING                                                                                                              | ROCK                                                                                                                                                                                                                                                                                         | MINERALS                                                                                                                                                                                                                                                                                            | PHYSICAL - CHEMICAL                                                                                                                                                                                                                                           |                                                                                                                                                                                 |
| NB - NEW BIT<br>RRB - RERUN BIT<br>CB - CORE BIT<br>LC - LOST CIRCULATION<br>DEV - DEVIATION<br>DST - DRILL STEM TEST | <input type="checkbox"/> SHALE<br><input type="checkbox"/> SILTSTONE<br><input type="checkbox"/> SANDSTONE<br><input type="checkbox"/> CONGLOMERATE<br><input type="checkbox"/> LIMESTONE<br><input checked="" type="checkbox"/> DOLOMITE<br><input checked="" type="checkbox"/> GYP, ANHYD. | <input checked="" type="checkbox"/> CHERT<br><input type="checkbox"/> VOLCANICS<br><input checked="" type="checkbox"/> INTRUSIVE<br><input checked="" type="checkbox"/> TUFF<br><input checked="" type="checkbox"/> METAMORPHIC<br><input type="checkbox"/> _____<br><input type="checkbox"/> _____ | C - CALCITE<br>K - KAOLINITE<br>CHL - CHLORITE<br>P - PYRITE<br>CEL - CELADONITE<br>Q - QUARTZ<br>CL - CLAYS<br>Z - ZEOLITES<br>D - DOLOMITE<br>V - VEINS<br>E - EPIDOTE<br>DIS. DISSEMINATED<br>F - FELDSPAR<br>TUFF GROUNDMASS: (O) OPAQUE, (T) TRANSLUCENT | D.H. - DOWN HOLE<br>B.H. - BOTTOM HOLE<br>F.L. - FLOW LINE<br>T. - TEMPERATURE<br>P. - PRESSURE<br>T.C. - TIME SINCE CIRCULATION<br>W.H. - WELL HEAD<br>PPM - PARTS PER MILLION |

DEPTH	PENETRATION DATA		LITHOLOGY				PHYSICAL-CHEMICAL DATA				MISC
	<input type="checkbox"/> FT./HR. 100 NINS.	<input type="checkbox"/> MIN/FT. 50 <input type="checkbox"/> MIN/10'	PRIMARY LITH 100 %	SECONDARY MINERALS	DESCRIPTION	MUD FLOWLINE TEMPERATURE					
						70°F	100°	150°	200°		
					BUFF LT GY & PINK						
					0-140' WX'D RHYOLITE & ANDESITE PORPHY IN VARICOLORED CLAYS					Dev 1/2" @ 100'	
100					GY SILT & SS.						
					BUFF LT GY & PINK						
					CALDERA FILL					Dev 1/2" @ 100'	
140'			VV	VV	P LT BANDELIER TUFF						
			VV	VV							
200			VV	VV	140'-560' TUFF LGELY HYDROTHERMALLY ALTER- ED TO WHIT CLAY. A FEW QZ PHENOS; FELDSP COMPLETELY ALTERED.						
			VV	VU							
			VV	VV							
			VV	VV							
300			VV	VV	BELOW 320' APN & LT GY ORANGE CHERT IS PRESENT IN SMALL AMTS.						
			VU	VV							
			VV	VV							
			VV	VV							
400			VV	VV							
			VV	VV							
			VV	VV							













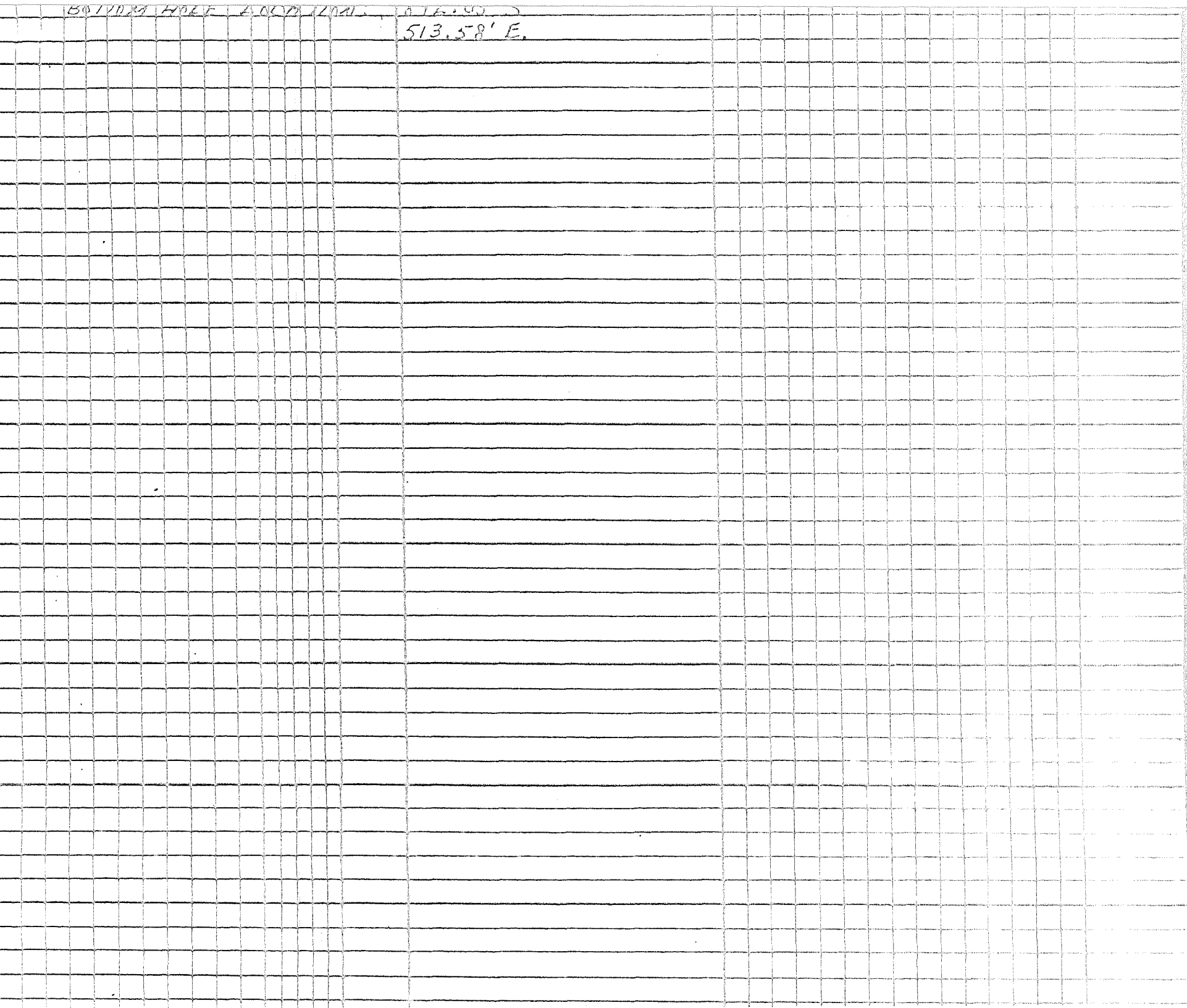






5017029 HOLE 2.000' TOTAL 513.58' E.

5600  
5700  
5800  
5900  
6000  
6100  
6200  
6300



6300

6400

6500

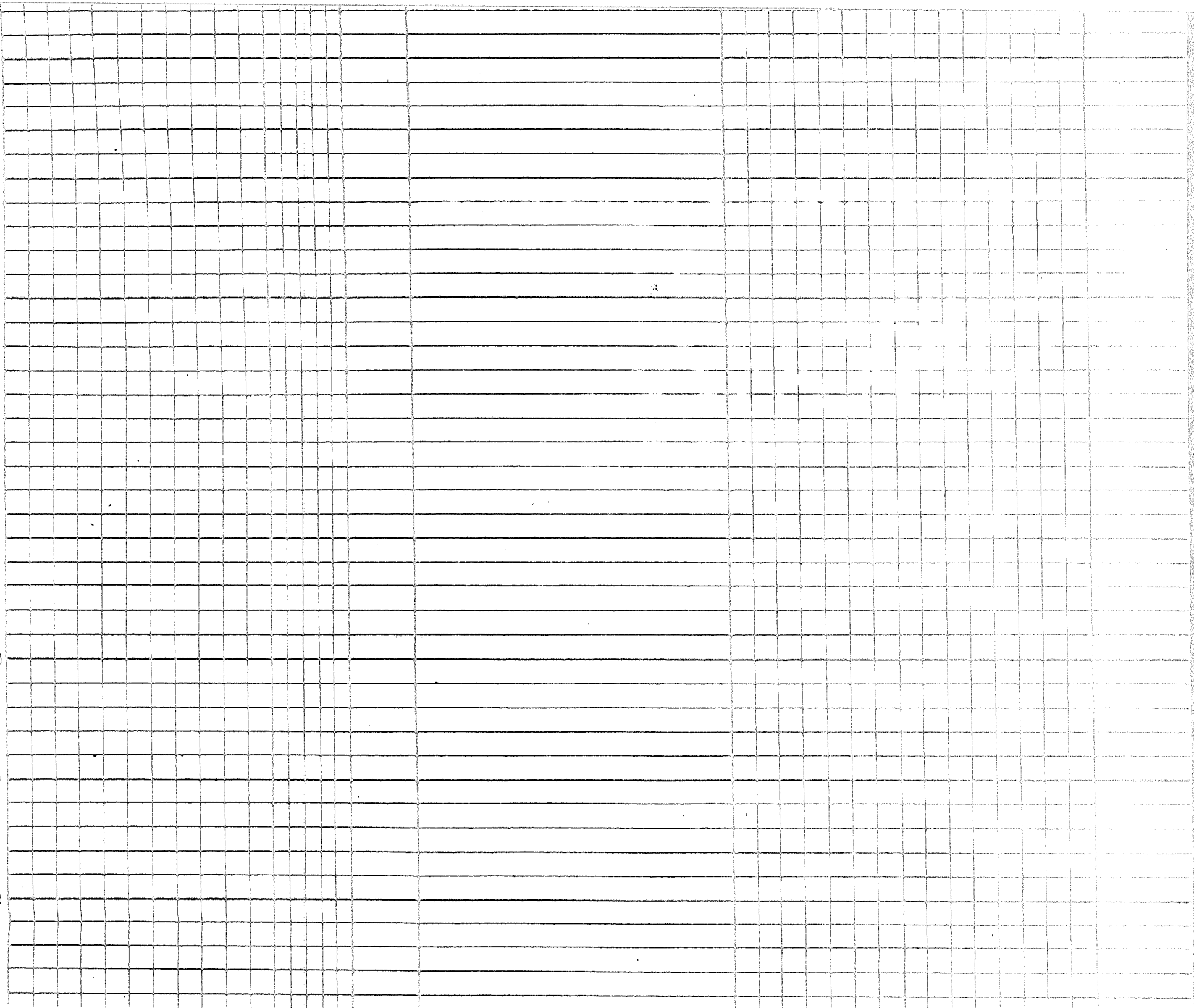
6600

6700

6800

6900

7000



COMPANY UNION OIL CO. OF CALIF.  
 FIELD BACA  
 WELL #16  
 COUNTY SANDOVAL  
 STATE NEW MEXICO  
 LOCATION LAT. 35.9037  
LONG. 106.5688 EL. 9622'

TOTAL DEPTH 1002  
 SPUD DATE JUNE 19, 1975  
 COMPLETION DATE AUG. 21, 1975  
 DRILLING CONTRACTOR LOFFLAND  
 ENGINEER H. MOSS  
 GEOLOGIST J.R. SLODOWSKI

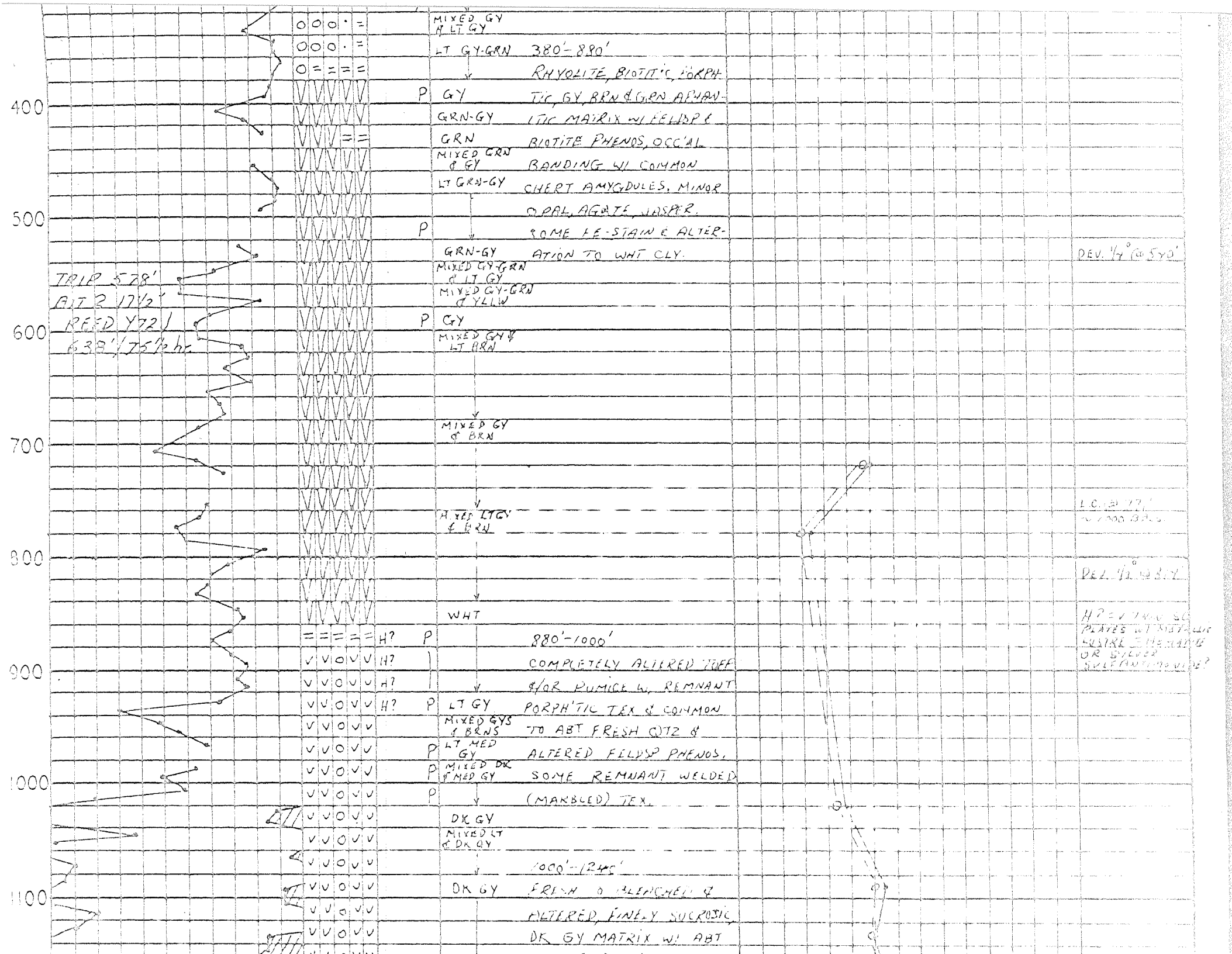
CASING RECORD  
20" : 193' TO SURF, CMTD  
13 3/8" : 1215' " " " "  
9 3/8" : 2905' TO 1000' " "

EXPLANATION

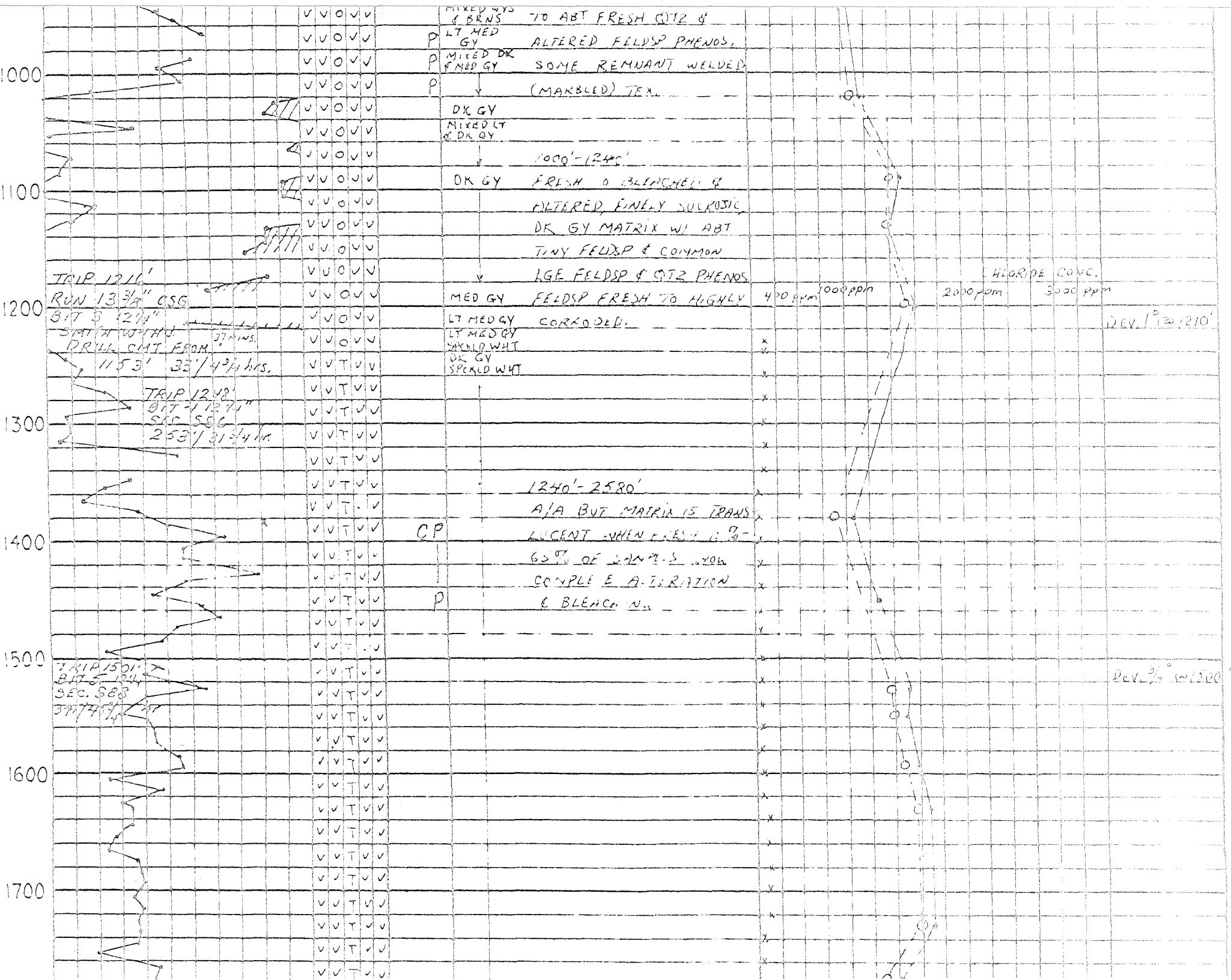
DRILLING	ROCK	MINERALS	PHYSICAL - CHEMICAL
NB - NEW BIT	☐ SHALE	☐ CHERT	CH - DOWN HOLE
RRB - RERUN BIT	☐ SILTSTONE	☐ VOLCANICS	HH - BOTTOM HOLE
CB - CORE BIT	☐ SANDSTONE	☐ INTRUSIVE	FL - FLOW LINE
LC - LOST CIRCULATION	☐ CONGLOMERATE	☐ TUFF	T - TEMPERATURE
DEV - DEVIATION	☐ LIMESTONE	☐ METAMORPHIC	P - PRESSURE
DST - DRILL STEM TEST	☐ DOLOMITE	☐ E - EPIDOTE	YC - TIME SINCE CIRCULATION
	☐ GYP, ANHYD	☐ F - FELDSPAR	WH - WELL HEAD

TUFF MATRIX: (O) OPAQUE (T) TRANSLUCENT

DEPTH	PENETRATION DATA		LITHOLOGY		PHYSICAL - CHEMICAL DATA	MISC.
	☐ FT./HR. 100 MINS	☑ MIN/FT. 50 10 FT.	PRIMARY LITH 100 %	SECONDARY MINERALS		
			NO SAMPLE			
			0000		MIXED BUFF LT GY	
			0000		0-380'	
			0000		MIXED RED- BRN & GY	
			0000		CALDERA FILL-VAR.	
			0000		MIXED RED GY	
			0000		COLORED SS, SLTST & CLYST	
			0000		LT GY SPGRD W/ RED	
			0000		W/ ART BIOTIC PARTIC	
			0000		MIXED LT GY & RED-BRN	
			0000		AMYGDALAR RHYOLITE	
			0000		MIXED GY RED-BRN	
			0000		CLASTS & SANDS, OCC'LY	
			0000		LT TO MED GY	
			0000		ALTERED TO WHT CLY. MINOR	
			NO		OPAL, AGATE & JASPER	
			NO		COMMON RED & YLLW FELDSPAR	
			NO SAMPLE			
			0000			
			0000	P		
			0000			
			0000		LT GY	
			0000	P		
			0000		MIXED GY & LT GY	
			0000		LT GY-GRN	
			0000		380'-880'	
			0000		RHYOLITE, BIOTIC PORPH	
			0000	P	GY	
			0000		TIC, GY, BRN & GRN ALMAN	
			0000		GRN-GY	
			0000		TIC MATRIX W/ FELDSP &	
			0000		GRN	
			0000		BIOTITE PHENOS. OCC'AL	







MIXED GYS & BRNS TO ABT FRESH QTZ &  
 P LT MED GY ALTERED FELDSP PHENOS.  
 P MIXED DK & MED GY SOME REMNANT WELDED  
 P (MARBLED) TEX.

DK GY  
 MIXED LT & DK GY  
 1000'-1240'  
 DK GY FRESH & BLEACHED &  
 ALTERED, FINELY SULFURIC  
 DK GY MATRIX W/ ABT  
 TINY FELDSP & COMMON

LGE FELDSP & QTZ PHENOS  
 MED GY FELDSP FRESH TO HIGHLY  
 LT MED GY CORRODED.  
 LT MED GY  
 SPOKED WHT  
 DK GY  
 SPOKED WHT

1240'-2580'  
 A/A BUT MATRIX IS TRANS  
 LUCENT WHEN FRESH 1:1-  
 65% OF SAMPLES SHOW  
 COMPLETE A-TIZATION  
 & BLEACHING

FLUORIDE CONC.  
 400 ppm 1000 ppm 2000 ppm 3000 ppm

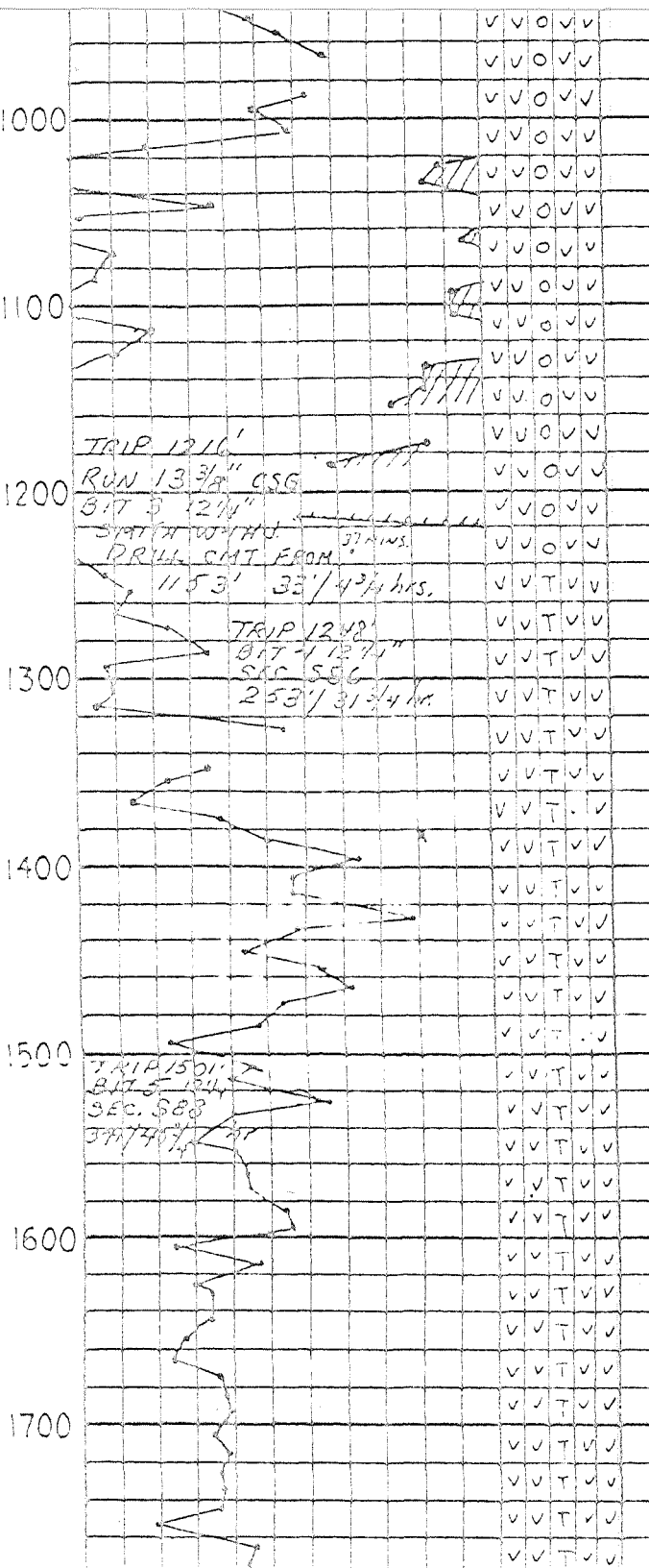
DEV. 1° W 1210'

DEV. 2° W 1520'

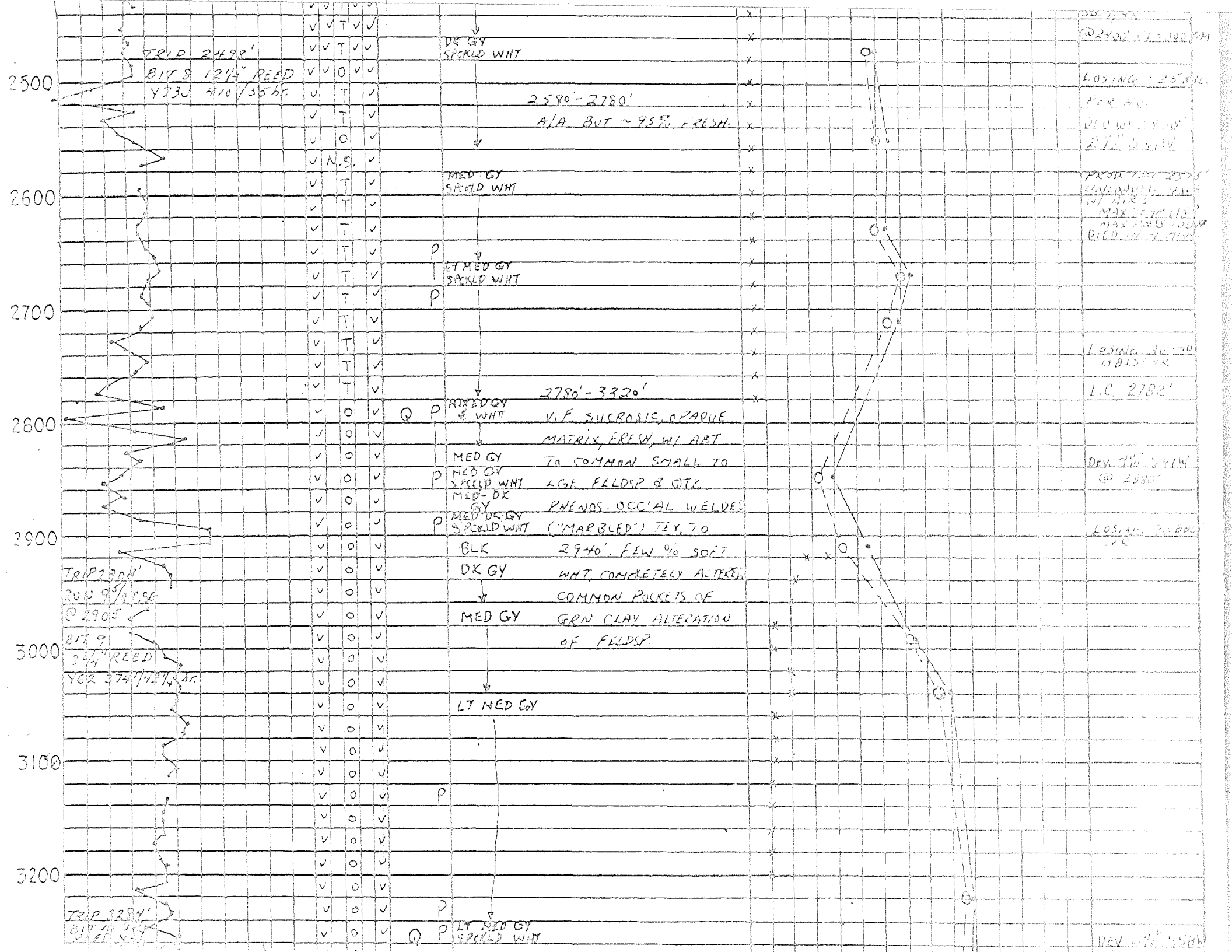
TRIP 1216'  
 RUN 13 3/8" CSG  
 BIT 5 12 1/4"  
 START W/ HD. 37 MINS.  
 DRILL CMT FROM  
 1153' 35 1/4 hrs.

TRIP 1248'  
 BIT 11 12 7/8"  
 SEC. 586  
 253' 31 3/4 hrs.

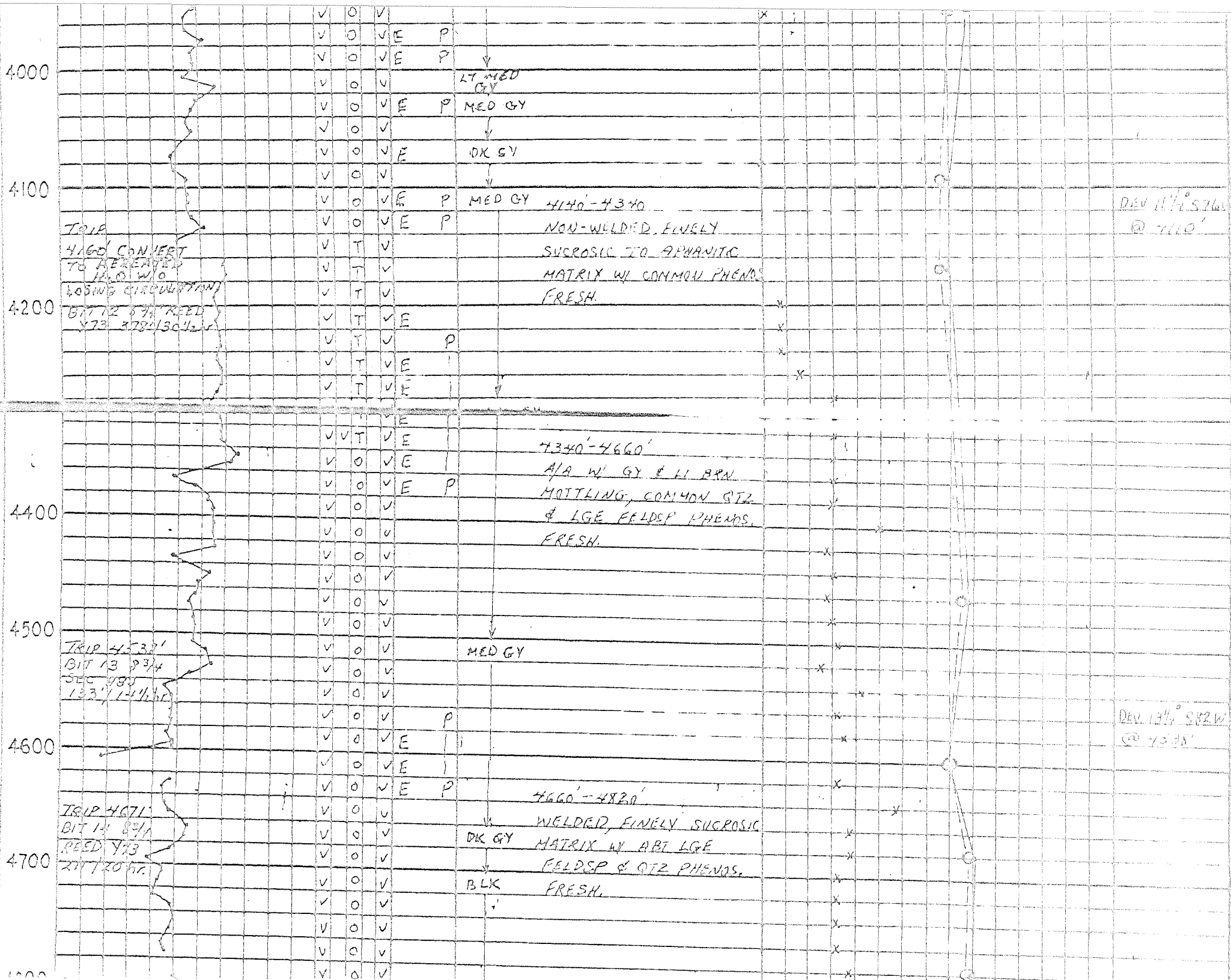
TRIP 1501'  
 BIT 5 12 1/4"  
 SEC. 588  
 347 1/4 hrs.





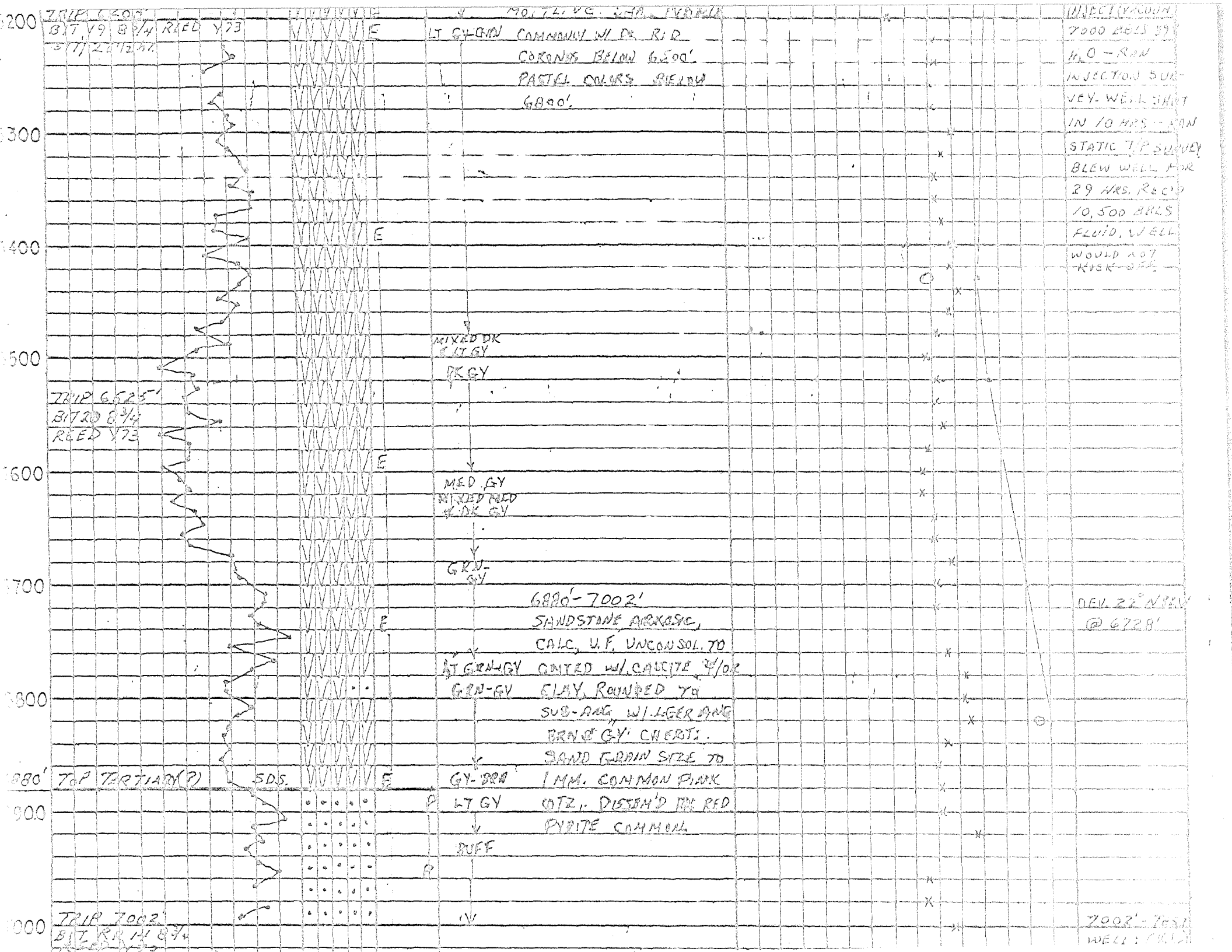














7000  
7100  
7200  
7300  
7400  
7500  
7600  
7700  
7800

TRIP 7002  
BIT RR H 84  
CLEAN HOLE  
R BRIDGAS

✓ . . . . .  
V  
T.D. 7002'  
V.D. 6827'  
BOTTOM HOLE COORDS:  
46.62'S  
130.19'W

7002 - TEST  
WELL: (LHR)  
MAX. PRESS. 0.5  
UP 7.37 PM  
TEMP 92.0  
CORE 200 RC  
FSD, PLUGGED  
WELL CMT  
FLOWLINE RIN  
WJ BIT TO  
WASH TO  
BOTTOM  
FINAL TEST:  
LHC 530 2325 200  
V.D. 13" 7" 210"  
CALORIDES 3200 ppm

7700

7800

7900

8000

8100

8200

8300

