

COMPANY CAITHNESS POWER INC.  
 WELL 32-5  
 FIELD STEAMBOAT  
 COUNTY WASHOE STATE NEVADA  
 LOCATION NW¼, Sec. 5, T. 17N., R. 20E., M.D.M.  
 ELEVATION 5511.50' KB  DF  GL   
 CONTRACTOR/RIG VECO NO. 10  
 SPUD DATE 10/20/87 TD DATE 11/9/87  
 TD 2944' TRUE VERT DEPTH \_\_\_\_\_  
 BOTTOM HOLE LOCATION \_\_\_\_\_  
 WELL STATUS \_\_\_\_\_  
 COMPANY REPRESENTATIVE R. Hudson, C. Beigle

LOG INTERVAL

DATE LOGGED 10/27/87 to 11/9/87  
 DEPTH LOGGED 1300' to 2944'  
 MU" DRILLING 0' to 2080'  
 AIR-DRILLING 2080' to \_\_\_\_\_  
 TEMPERATURE INSTRUMENT TYPE J-Thermocouple  
 PRESSURE INSTRUMENT TYPE Silicon Chip  
 GAS TRAP-AGITATOR ELEC  AIR   
 LOG SCALE 1:600 UNIT NO. 321  
 LOG PREPARED BY R. DUNLAP, J. FENTON, A. GEIR

HOLE SIZE	CASING RECORD
26" to 446'	30" at _____
17½" to 2080'	20" at 441'
12¼" to 2944'	13 <sup>3</sup> / <sub>8</sub> " at 2046'
_____ to _____	_____ at _____
_____ to _____	_____ at _____
_____ to _____	_____ at _____

ENTRIES-WATER/STEAM

\* 2079'

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\* = TESTED ZONES

LOST CIRCULATION ZONES

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

MISC. REMARKS

KB=30' above ground level

\_\_\_\_\_

\_\_\_\_\_

LITHOLOGY	SYMBOLS	GL04742
Breccia		Tuff and tuff-breccia
Graywacke		Sandstone
Claystone		Limestone
Argillite		Dolomite
Solution Deposit		Mineralized Zone
Intersed Igneous		Basic Igneous
Acidic Volcanic		Intersed. Volcanic
Porphyry		Serpentine
Meta-sediment		
		Conglom.
		Siltstone
		Chert
		Granitic Rock
		Peridotite
		Basic Volcanic
		Schist Gneiss

SECONDARY MINERALS

Q = QUARTZ \_\_\_\_\_

C = CALCITE \_\_\_\_\_

P = PYRITE \_\_\_\_\_

E = EPIDOTE \_\_\_\_\_

NB NEW BIT	W MUD DENSITY <u>ppg</u>
RRB RE-RUN BIT	V FUNNEL VISCOSITY
CB CORE BIT	PV PLASTIC VISCOSITY
WOB WEIGHT ON BIT	YP YIELD POINT
RPM REVS PER MINUTE	F FILTRATE API
SPM STROKES PER MINUTE	FC FILTER CAKE
CFM CUBIC FT PER MINUTE	SOL SOLIDS-%
NR NO RETURNS	SD SAND CONTENT-%
C CARBIDE TEST	S SALINITY-PPM Cl
LAT LOGGED AFTER TRIP	CA CALCIUM-PPM Ca
BHT BOTTOM HOLE TEMPERATURE	RM MUD RESISTIVITY
TC TIME SINCE CIRCULATION	WIRELINE LOG RUN

▲ CASING SHOE  
 ▬ CORED INTERVAL  
 □ NO RECOVERY

↙ WATER/STEAM ENTRY  
 ▬ ORIFICE/FLOW TEST

DRILL RATE

ft/hr  min/ft   
 m/hr  min/m

ROCK DENSITY (g/cc) \_\_\_\_\_

DEPTH

LITHOLOGY

MINERALIZATION

SECONDARY

TEMPERATURE °C  °F

IN --- OUT \_\_\_\_\_

PRESSURE KSC  PSI

IN --- OUT \_\_\_\_\_

LOSS/GAIN \_\_\_\_\_

M  BBLS

H<sub>2</sub>S ppm \_\_\_\_\_

CO<sub>2</sub> ppm \_\_\_\_\_

METHANE ppm \_\_\_\_\_

ETHANE ppm \_\_\_\_\_

SURVEYS

RESISTIVITY Ω-M

LITHOLOGY DESCRIPTION

AND REMARKS

Spud 10/20/87, set 20" csg @ 441', drlg ahead 17 1/2" hole w/Dyna Drill

DRILL RATE  
40 30 20 10  
1967/9hrs  
NB#5 HTC X22

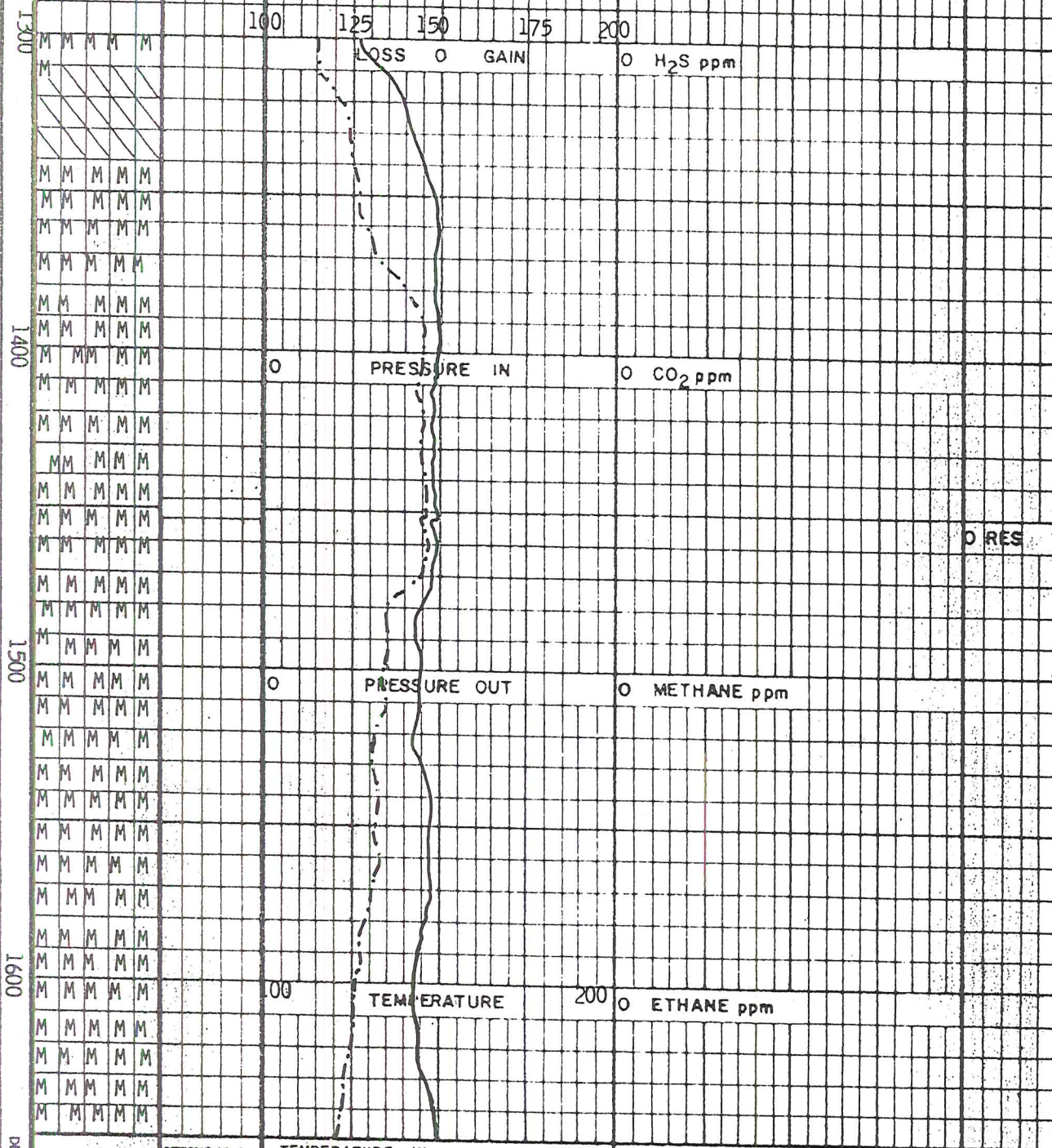
827/4hrs  
NB#6 SEC S53AJ

Wt 15-20K  
RP 1000  
RPM 0/D

ROCK DENSITY

10/28

Caithness Geo 32-5



META-SED/TUFF: lt gy-blk-dk grn, motl, m-fn gr w/occ rel grn bndr, tuff in pt w/rel fl bndg, abun qtz frac fl, mnr chl, epid?, hem w/lim st w/incr amts kaol, serp, grns 1310-1340: 100% kaolinite

NOTE: Lith samples mnr contaminated with cuttings fm strat test rig using Veco Shakers simultaneously

META-SED: gy-blk, m-fn gr, mi of ark ss, meta-arglt, rexln volcs, meta-tuff, meta-gwke w/asst exotics of grntc origin; abun hem & kim, calc & qtz vng, kaol slgh, tr chl epid, pyr; occ slknsds

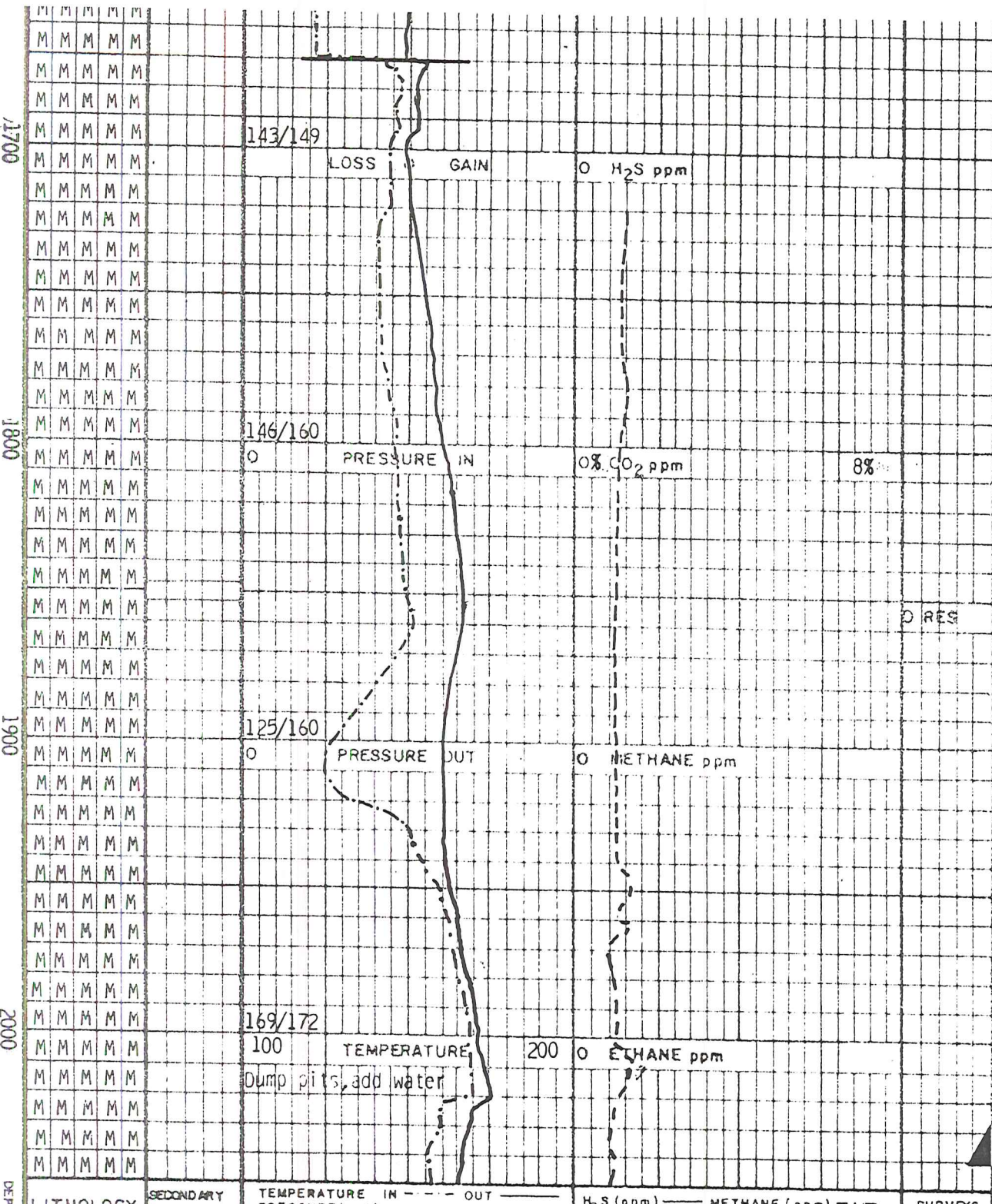
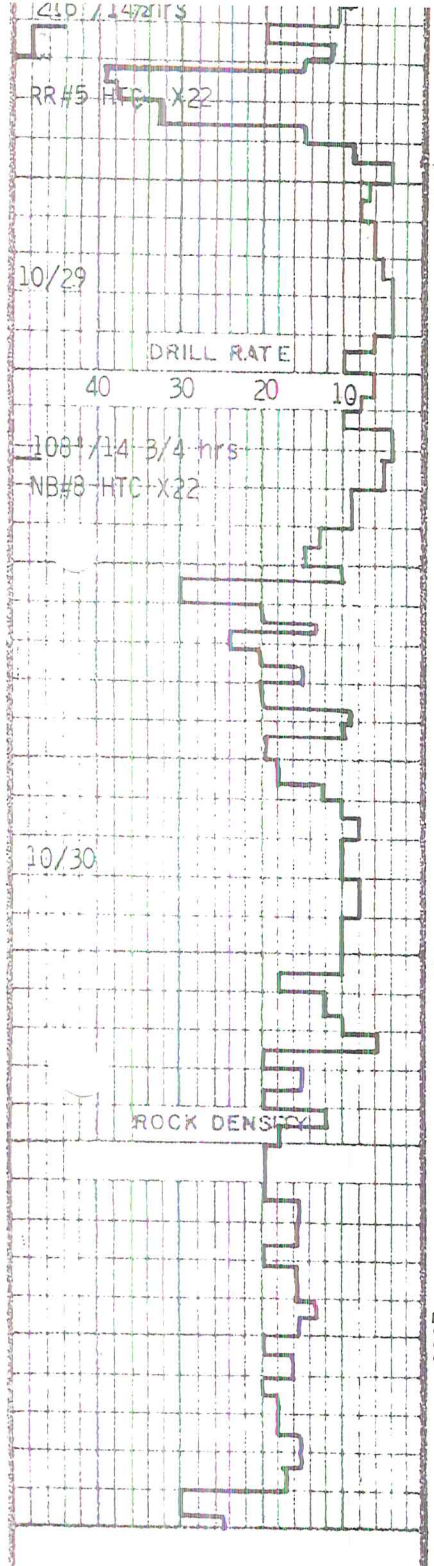
META-SED: cont as abv, var amts dk gry metagwke, sl inc silic nature, wht/lt gry qtz vng, mnr calc/kaol frags

META-SED: lt-dk gy-blk, fn-vf gr, sl meta, var of tuff/gwke volc frags, incr amt lg (lcm) frags, tr lim/hem/chlr, mnr qtz vng

META-SED: gy-gy grn, dk gy, vf fn gr, lg frgs (3mm-1cm), w/ relt tuff tex, rexln in pt w mnr ornt gr bndr, occ serpz jt surf, tr chl, pyr, hem, jspr abun silcarb, metasom zoning

DEPTH LITHOLOGY SECONDARY MINERALIZN TEMPERATURE (psl) IN --- OUT --- PRESSURE (psl) IN --- OUT --- LOSS-GAIN (bbls) H<sub>2</sub>S (ppm) --- METHANE (ppm) --- CO<sub>2</sub> (ppm) --- ETHANE (ppm) --- SURVEYS RESISTIVITY

REMARKS - LITHOLOGY EXLOG / SMITH PAGE



Lost appx 150 bbl mud fm 1672-1685'; build mud vol b  
 META-SED: cont as abc, w/abu  
 frac fill, pred dk gry, rexl

Lost 15 bbl mud @ 1710'

TUFF: wh lt gy bf lt grn mo  
 vf gr pred bleached rexl  
 in pt w/ microfrac calc f  
 tr pyr w/ 10% METASED  
 META-SED: dk gy-blk vf gr  
 vhd rare tuf tx microfrac  
 of serp, calc, mlk qtz tr  
 hem, pyr

NOTE: lost 50bbl mud over  
 shaker. Adding volume.

META-SEDS: lt-dk gy, blk, bf,  
 vf gr-aphan, loc v hd, rell  
 schis/bndg, clr/opaq qtz fr  
 fill, tr pyr, cinn, hem

REMARKS - LITHOLOGY  
 EXLOG/SMITH PAGE

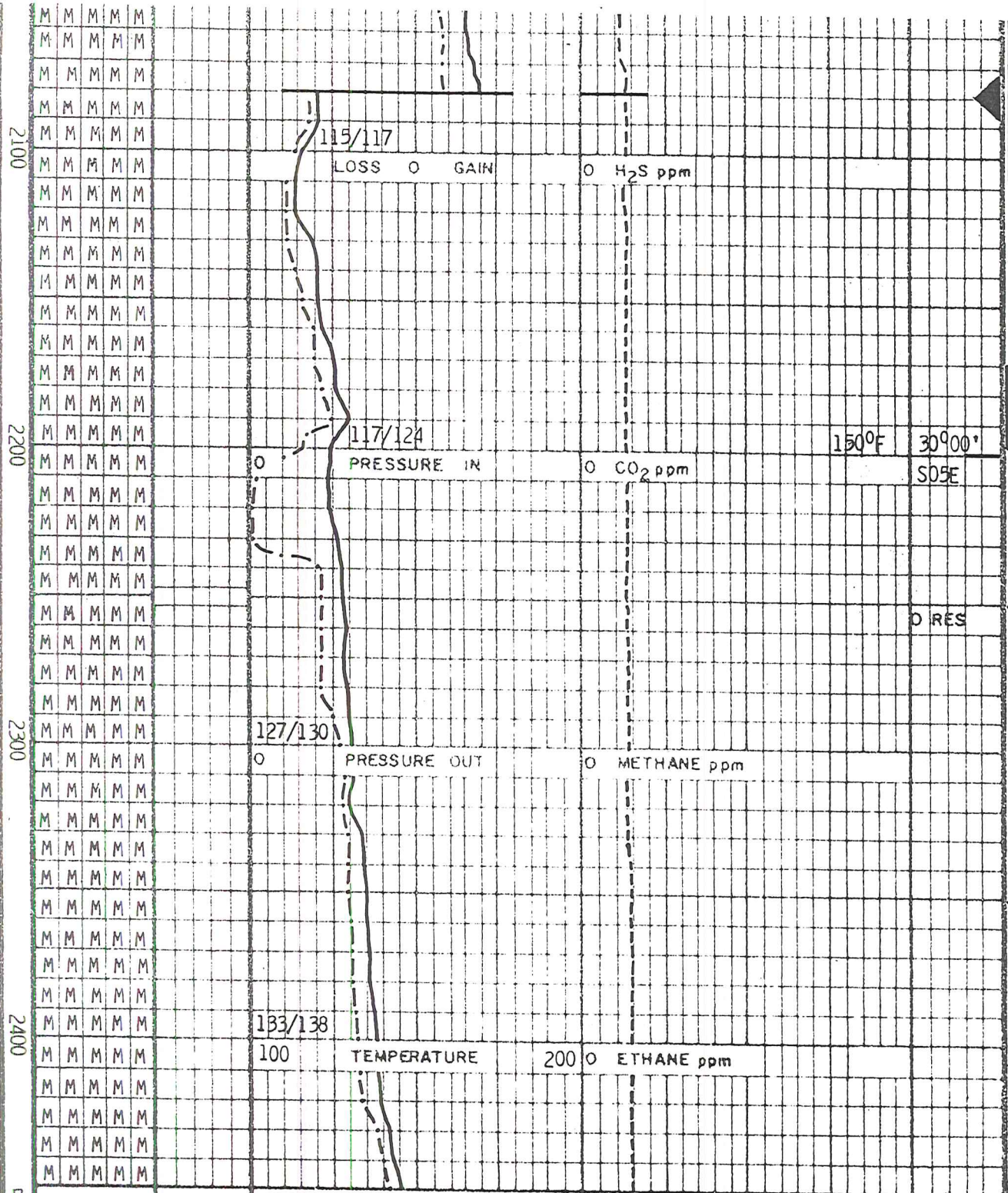
304' / 26hrs 10/31-11/5

NB#9  
Sec S88

DRILL RATE  
40 30 20 10

ROCK DENSITY

11/6



Note: Lost 150 bbls @ 2079'. Set 13<sup>3</sup>/<sub>8</sub>" casing w/shoe @2046'. Test LCZ, 150 gpm @189°F. Set 3 cement plugs and drill ahead w/12<sup>1</sup>/<sub>4</sub>" bit.

META-SED: med gry-black, fgr, silicic, v hd, unalt, occ ehed qtz & pyrite, rare hematite.

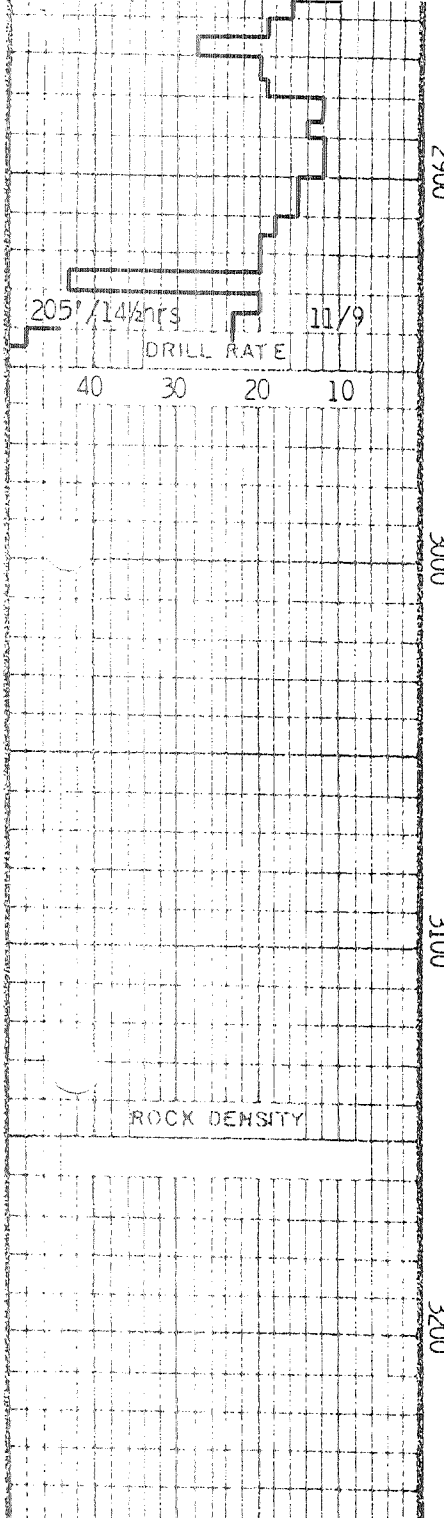
Note: Begin drilling with water only.

META-SED: med -dk gray, mott in pt, v silicic, v hd fgr w/occ tuffaceous frags, overall mod felsic w/relic gr bndrs, occ mica books, rare clr calc, com pyrite.

META-SED: pred dk brwn, loc com med bewn & lt gray, v hd, fine grained, loc schisose apr, cont'd loc mott tex, mod silicic, tr chlor biotite books, rare ehed qtz.

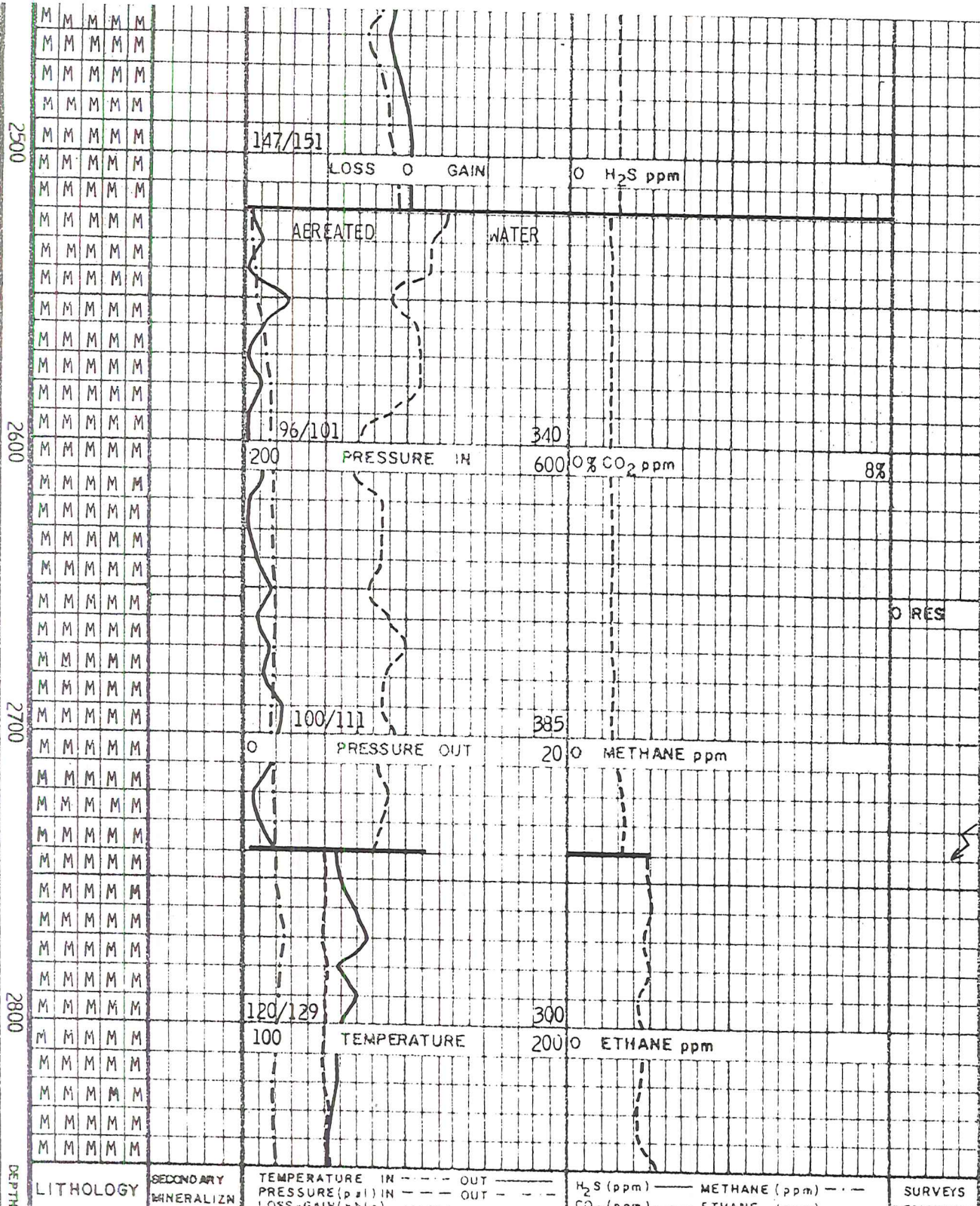
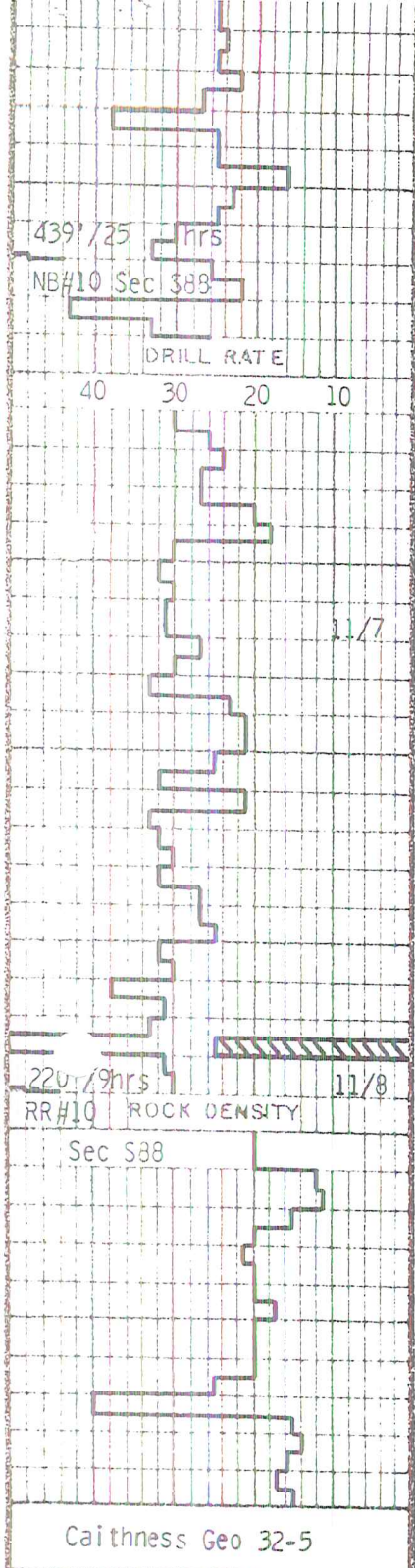
LITHOLOGY	SECONDARY MINERALIZN	TEMPERATURE IN - - - - - OUT - - - - - PRESSURE (psi) IN - - - - - OUT - - - - - LOSS-GAIN (bbls) . . . . .	H <sub>2</sub> S (ppm) ——— METHANE (ppm) - - - CO <sub>2</sub> (ppm) - - - - - ETHANE (ppm) - - - - -	SURVEYS RESISTIVITY
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REMARKS - LITHOLOGY  
EXLOG / SMITH PAGE



2900	M M M M M	115/127	310		
	M M M M M	LOSS O GAIN	0	H <sub>2</sub> S ppm	
	M M M M M				
	M M M M M				
	M M M M M				
	M M M M M				
	M M M M M				
	M M M M M				
		T.D. @ 2944'			
3000		200	PRESSURE IN	600	% CO <sub>2</sub> ppm
					8%
					0 RES
3100		0	PRESSURE OUT	20	METHANE ppm
3200		100	TEMPERATURE	200	ETHANE ppm

NOTE: T.D. well @ 2944', stage in to 2860' & blow well dry. Run Temp Logs



Note: Lost 500 bbls H<sub>2</sub>O F/2320'-2519'. Staged into hole to 2380' and tested, 40 gpm @152°F. Drill ahead with aerated water.

META-SED: med-dk gry-blk, mott in pt, f-vf gr, v silicic, hd, brit, com relic gr bndr, com meta tuff, com clear qtz, abund euhd pyr, occ biot/musc/chlor books rare cmt.

META-SED: med-dk gry-blk, mott in pt, f-vf gr, v silicic, hd, brit, com relic gr bndr, com meta tuff, com clear qtz, abund euhd pyr, rare biot/musc/chlor book, no cmt.

Note: Test @2739', 150 gpm @195°F. Run temperature log, 3820F @ 2654'.

Note: Cuttings are very fine in size.

Caithness Geo 32-5