

DEPTH	LOSS	GAIN	H ₂ S ppm	CO ₂ ppm	METHANE ppm	ETHANE ppm	TEMPERATURE IN	TEMPERATURE OUT
0								
1	1	-						
2	1	-						
3	2	-						
4	2	-						
5	1	-						
6	1	-						
7	3	-	56/58					
8	1	-						
9	1	-						
10	2	-						
11	1	1						
12	1	2						
13	1	1						
14	-	1						
15	-	2						
16	-	1						
17	-	4						
18	-	4						
19	1	2						
20	-	2						
21	-	3						
22	-	3						
23	-	2						
24	-	2						
25	-	1						
26	-	1						
27	1	-						
28	3	1	50					
29	4	2						
30	3	2						
31	3	1						
32	2	-						

11/10/84
 NB# 1 Sec DSJ
 DRILL RATE
 100 75 50 25
 NB#2 Sec S4TJ
 10/11
 WOB 25,000W
 RPM 70
 SPM 70
 PSI 100
 ROCK DENSITY
 238°/26% hrs 01/12-14
 NB# 3 Smith DSJ
 11/15

LOSS 0 GAIN 0 H₂S ppm 40
 PRESSURE IN 56/58 CO₂ ppm 2000
 PRESSURE OUT 57/71 METHANE ppm 1000
 TEMPERATURE 50 250 ETHANE ppm
 0015' N76E
 0015' N.D.
 0030' N76E

Note: Secondary mineral numbers are direct mass %s w/a "-" less than 1%, and a "+" being greater than 10%. Chlorite %s are based upon strength of coloration, not visible grains.

Note: Begin logging @ 22' on 11/10/84. Drlg ahead w/ 17 1/2" bit & 26" hole opener.

Note: Remove 26" hole opener and change bit @ 62'. Drlg ahead w/ 17 1/2".

Note: Loose circulation @ 69'. Add LCM. Drlg ahead w/ full returns.

Lithic/Crystal Tuff: pred v lt-med prk-wht, com lt-med lime grn f/160', v hd-v sft, com-abnt volc lith frags, com clr qtz grs, com-abnt rel pumice/glass shards occ yel, com loc hvy chloritization.

Lithic/Crystal Tuff: wht-v lt grn, sft-v hd, pred glass shards & volc dust, com-abnd ang-subang volc lith frags, com broken clr qtz, xtls, tr biotite, loc vis welded tex, loc com chlor, loc incr dism pyr @ 280'.

Note: Open hole to 26" to 300'. Set csg @ 288'. Drlg ahead w/ 17 1/2" bit f/300'.

Note: Calcite substituting chlorite in sec mnrls column @ 760'.

Volcanic Sandstone/wacke: wht-lt gry, gry/brn, brn, lt grn, prly indurated, pred fr-med gr, com crs-v crs gr, com slty matrix, prly srted, subround-subang grns, pred volc lith frags & clr qtz, mnrl biotite & calcite grns, loc mnrl calc cement, tr magnetite.

Note: Begin losing partial circulation @ 903'. Add LCM. Regain approx. 90% of circulation. Approx loss of 150 bbls before trip @ 918'.

Volcanic Sandstone/wacke: pred lt grn, wht-lt gry, brn, prly-mod well indur, pred fr-med gr, loc v fn gr prly srted, pred qtz/feldspr /biotite/ & volc lith grns tightly packed in a chloritized argillaceous matrix, loc incr pyr @ 1030', tr brn sandstone w/ loc abnd calc grns @ 1040'.

Note: Drl 17 1/2" hole to 1085'. Set 133/8" csg @ 1055'. Drlg ahead w/ 12 1/4" bit f/ 1085'.

WOB 15-17,000#
RPM 60
SPM 100
PSI 275

DRILL RATE
100 75 50 25

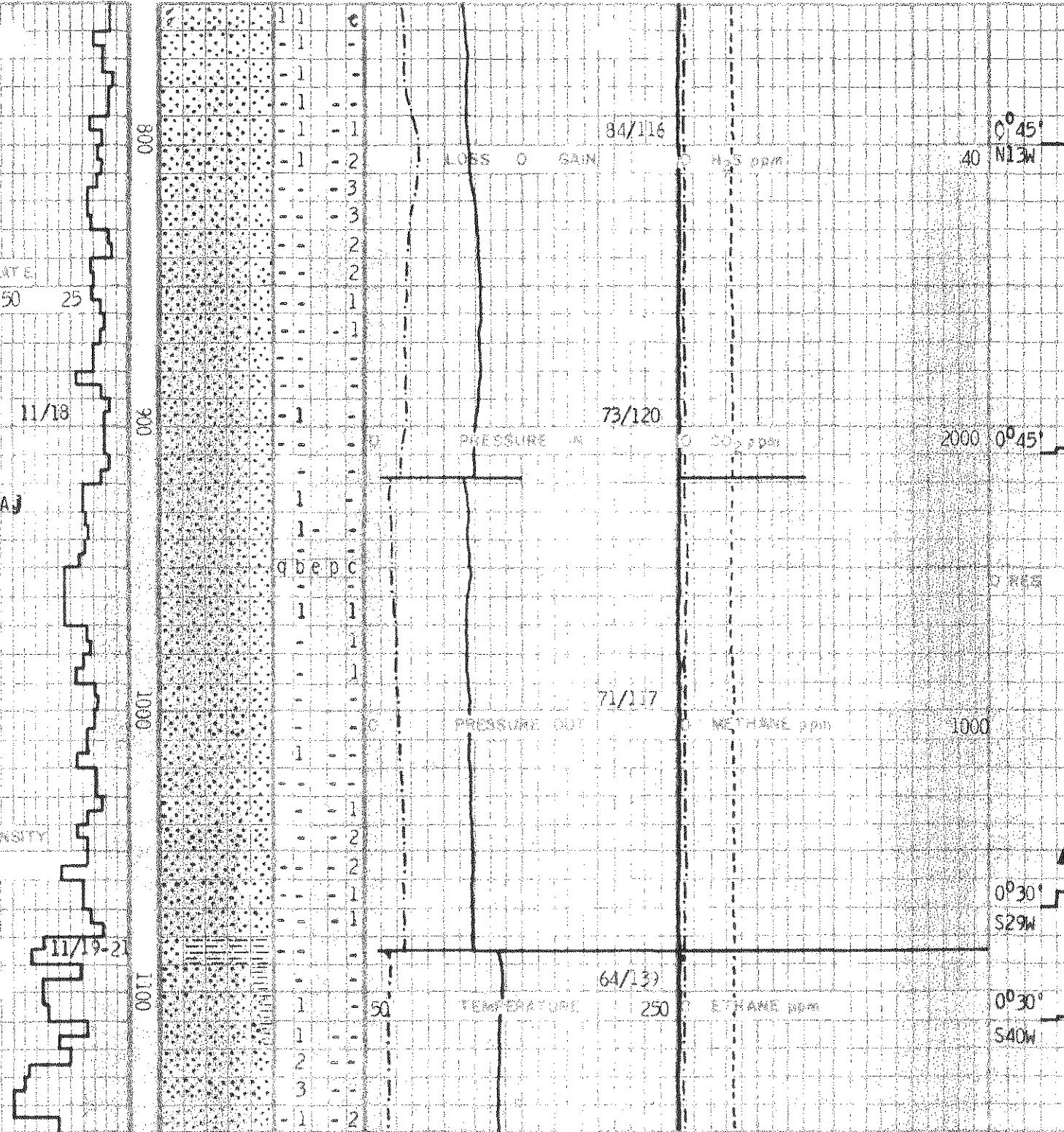
483' / 33 hrs.
NB# SHTC OSC3A

WOB 12-15,000#
RPM 55
SPM 120
PSI 475

ROCK DENSITY

167' / 9 hrs.
NB# HTC J2

Steam Reserve Corp.
Fish Lake #88-11A



40
0°45'
N13W

2000
0°45'

0°30'
S29W

0°30'
S40W

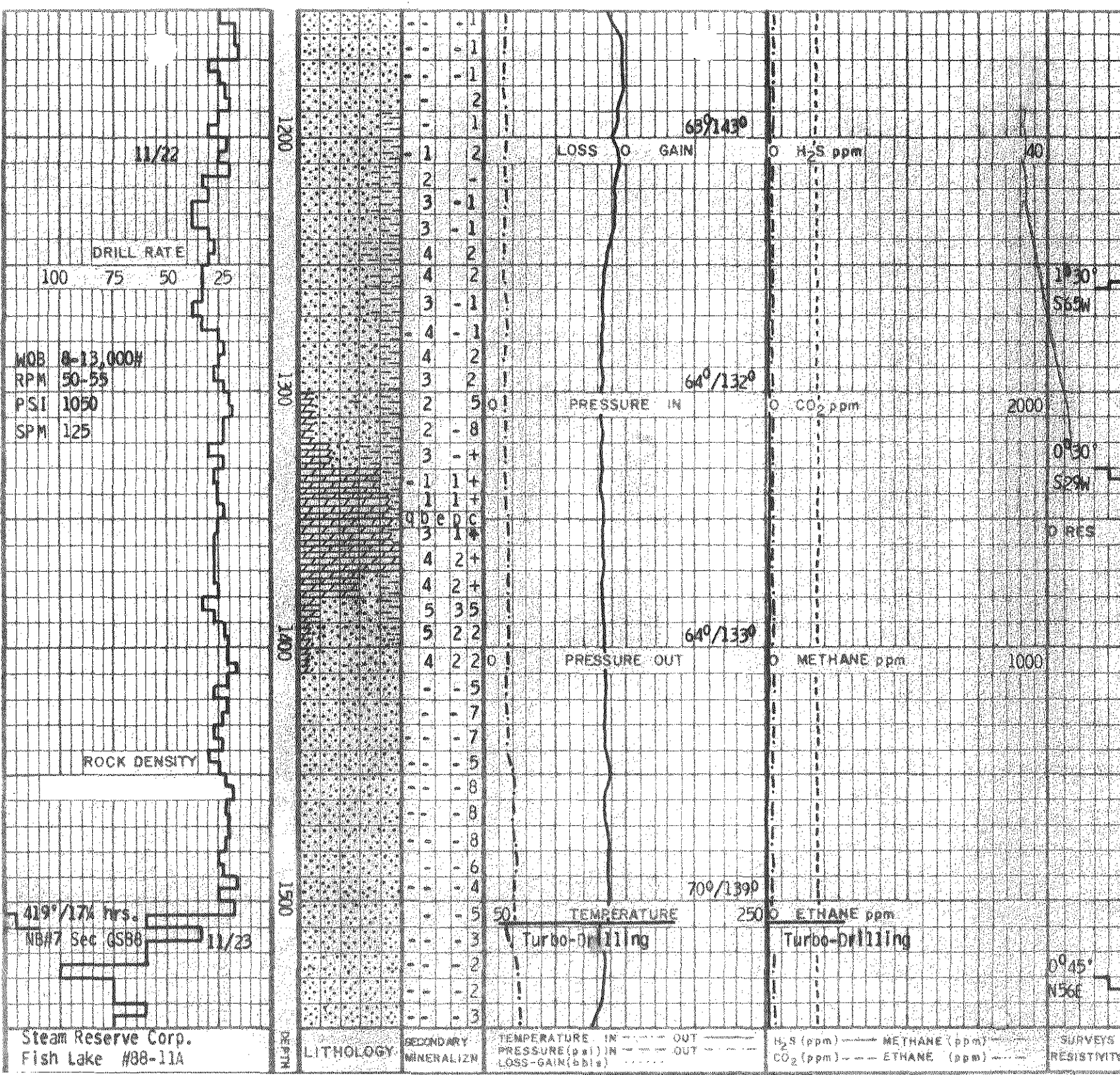
W 9.0 V 47 PV 27 YP 21
 PH 11.0 WL 6 FC 2
 S 1400 SD 1/2 SOL 6

Volcanic Sandstone/Siltstone: pred v lt-lt gryish grn, occ v lt brnsh gry, v w srt'd grs, pred ang grs, mod hd-v sft, v fri, pred grn montmorillonite cly matrix; w/ occ frags of oolitic-like Limestone.

Dolomite: pred mod lt-dk gryish brn-rdsh brn, occ v lt tan, vis xln tx, occ mas appr, pred mod hd, vis com calc vngs; w/ occ intbbd Volcanic Siltstone.

Volcanic Sandstone: lt grn, occ wht/gry, prly-mod well indur, pred fn gr, loc med gr, com crs clr qtz grns, prly-pred mod srt'd, pred qtz/volc lith frags/ & clay, tr magnetite, abnd calc filling fractures & interstices, tr calc rhombs, loc tr mass pyrite.

Note: Begin Turbo-drill run @ 1505'.



11/22

DRILL RATE

100 75 50 25

WOB 8-13,000#

RPM 50-55

PSI 1050

SPM 125

ROCK DENSITY

419°/17% hrs.

NB#7 Sec GS80

11/23

Steam Reserve Corp.
 Fish Lake #88-11A

LITHOLOGY

SECONDARY MINERALIZATION

TEMPERATURE IN --- OUT ---
 PRESSURE (psi) IN --- OUT ---
 LOSS-GAIN (bbbls) ---

H₂S (ppm) --- METHANE (ppm) ---
 CO₂ (ppm) --- ETHANE (ppm) ---

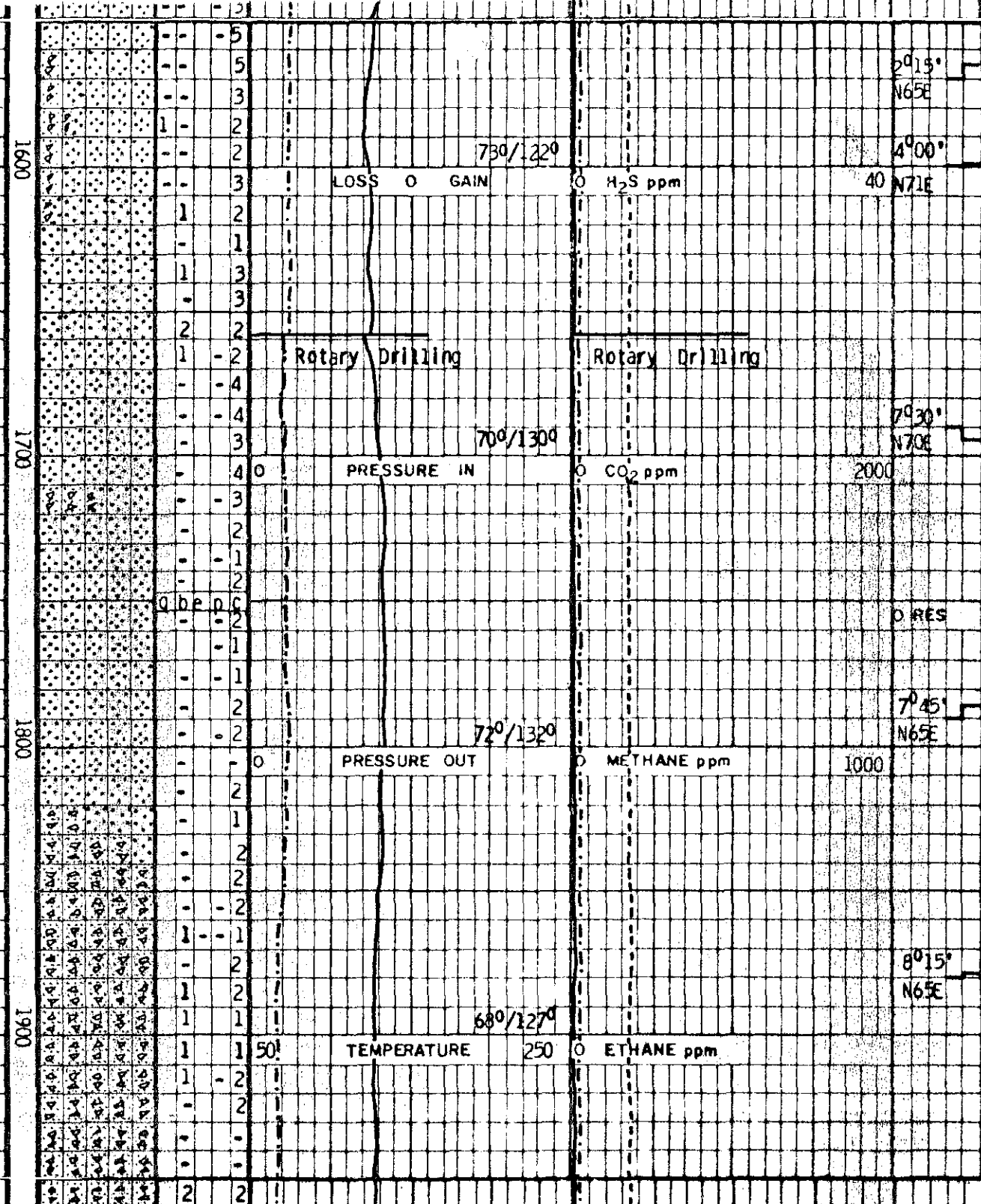
SURVEYS RESISTIVITY

WOB 8,000#
 RPM Turbo-Drill
 PSI 900
 SPM 60+60

DRILL RATE
 100 75 50 25
 154' y
 NB# 8 HTC J2
 w/ Rotary Drilling

WOB 10-20,000#
 RPM 50-60
 SPM 100
 PSI 1050

ROCK DENSITY



W 9.1 V 45 PV 14 YP 7
 PH 11.0 WL 6 FC 2
 S 1400 SD 4 SOL 7

Volcanic Sandstone: pred
 lt-med gryish grn, occ
 brnsh grn, v w srted grs,
 pred ang-subang grs, med
 grn cly matrix, mod hd.

Note: End Turbo-Drill run
 @ 1658'.

Volcanic Sandstone: gen a/a
 Intbbd w/ Vitric/Crystal
Tuff @ 1720': pred wht, lt
 grn, occ sl pnk, sft-mod sft,
 loc mod hd, vitric tex w/
 loc com clr qtz xls, mnr
 wht-lt grn pumice frags, tr
 euhdr1 hex mica books, tr
 blk organic debris.

Volcanic Sandstone: med grn,
 dk red/brn, lt gry/grn, pred
 fn-v fn gr, mod hd, sft, incr
 dk red/brn color f/1760',
 incr gr size & abnd crs-v
 crs pnk feldspar f/1790'-
 1800'.

Lithic/Crystal Tuff: pred
 lt-med grn-med gryish grn,
 com lt-med pkish gry-rdsh
 gry, v abnt lithic frags f/
 v fn up to 2mm in size, lith
 frags pred v dk gryish grn
 -blk-dk gryish rd volc
 frags w/ v fn gr tx, com
 clr qtz xls imbedded, com
 vis deformed pumice frags
 hvly chloritized.

W 9.2 V 4 PV 14 YP 7
 pH 10.0 WL 6 FC 2
 S 780 SD % Sol 6

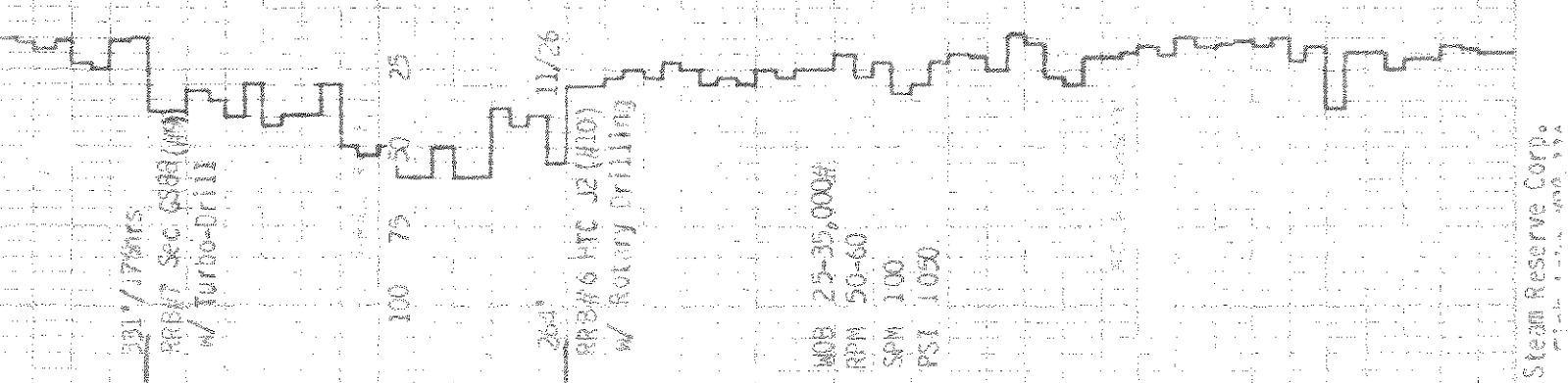
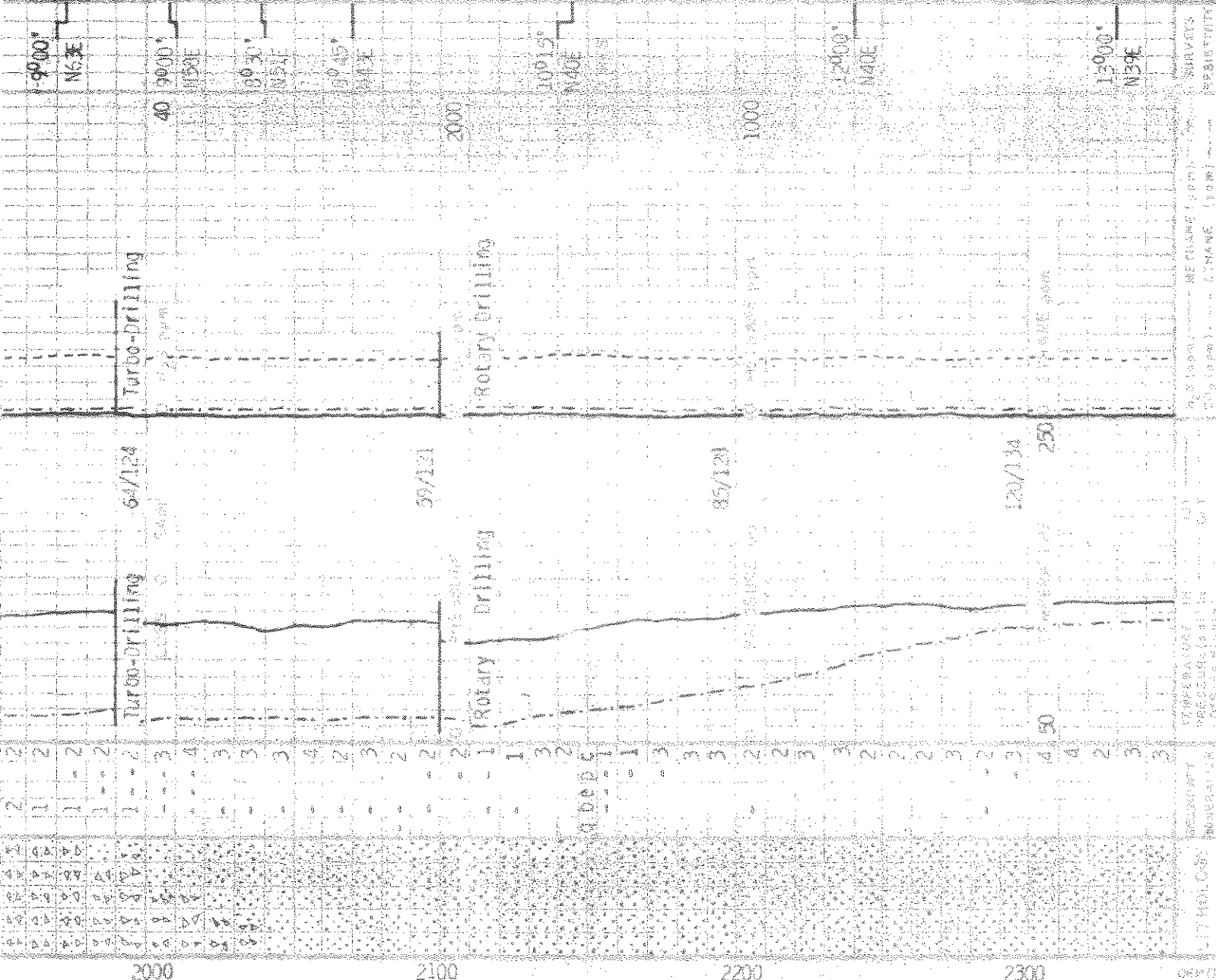
Note: Begin Turbo-drill
 run @ 1989.

Volcanic Sandstone: pr-d
 med-dk redish brn, cor II-
 med grn, mod hd, fri, pred fr
 ar, abnd dk gry & redish
 brn voic lith frags, com
 clt, com chloritic (?)
 grns, mnr clay matrix, r
 may, r-tr calcite (1993)-
 2020.

Note: End Turbo-Drill
 run @ 2100.

Volcanic Sandstone: pred
 med-dk redish brn - med
 brown grn, mod-v w srt
 clt, s grs, pred med-sand
 grs, pred med-v fr sd size
 grs, v com indiv grs sized
 w/ redish brn heralite, com
 lt-dk grn clay matrix, occ
 grading into siltstone, occ
 -com calc in matrix.

Volcanic Sandstone: multi-
 col, lt grn, wht, org, red/brn
 fri-mod hd, pred fr-med gr,
 grly-med srtid, occ w srtid,
 pred subround/tightly
 packed, silz grns & voic
 lith frags, pred matrix
 free, com calc grns, mnr vis
 calc vng, mnr calc cement,
 incr mag @ 2320.



W 9.2 V 4' DV 10 YP 7
 PH 10.5 WL 0 FC 2 S 800
 SD 1/4 Sol 6

3117 15% hrs 11/27
 NBH 11 HTC J22

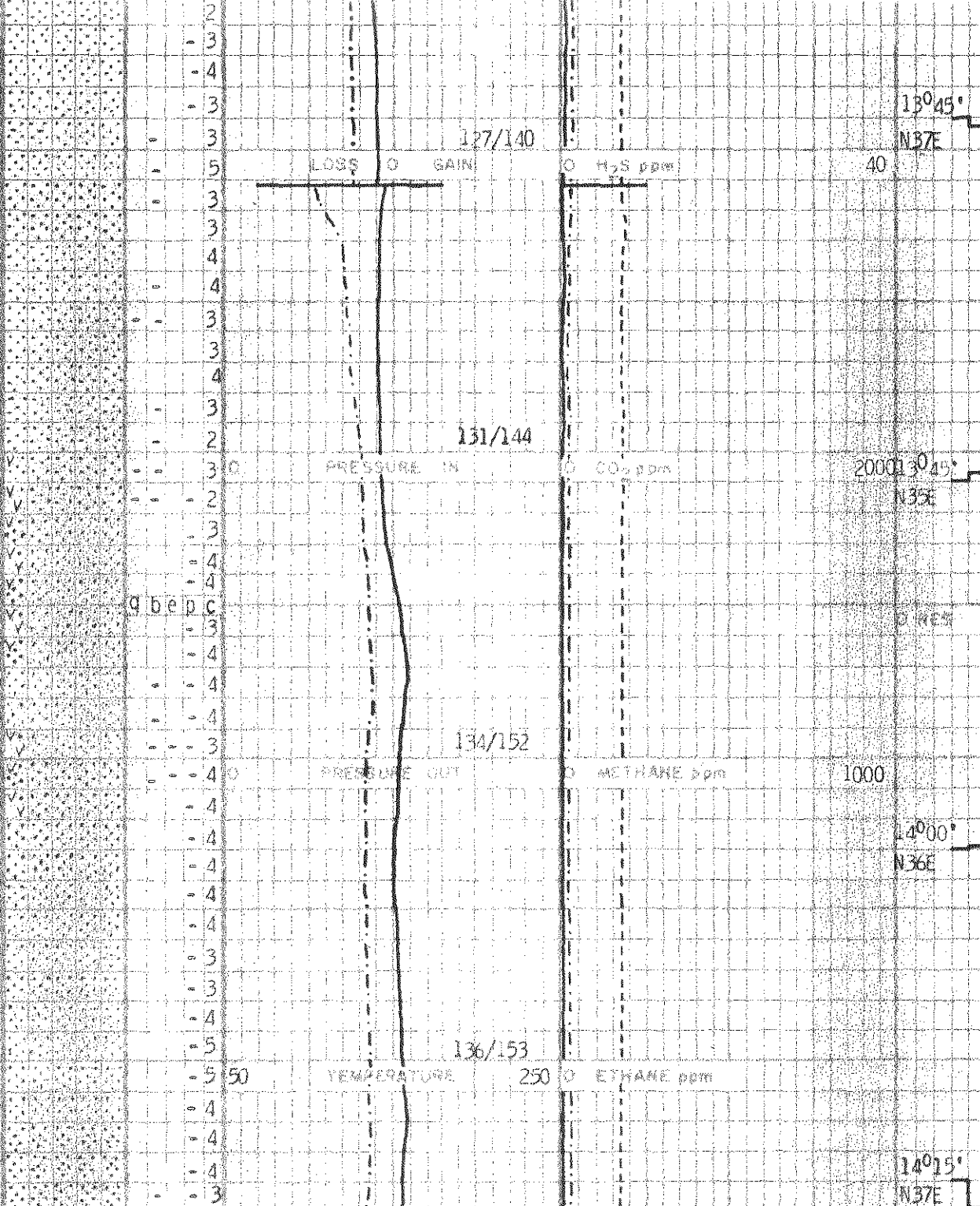
DRILL RATE
 100 75 50 25

WOB 25-30,000#
 RPM 30-60
 PSI 1050
 SPM 100

ROCK DENSITY

WOB 25-30,000#
 RPM 60
 PSI 1000
 SPM 45-50

2400
2500
2600
2700
DEPTH



Volcanic Sandstone: pred lt-dk gryish grn-brnsh grn-raish brn, com mod -w srted grs, pred ang-subang grs w/ fn-med sd sz grs, decr w srted w/ depth, v com med-dk grn clay/chlorite matrix; w/ occ med grn
Silic Volcanics: hly porphyritic tx w/ ang phenoxs of qtz & felds, hd.

Volcanic Sandstone: lt-med grn, red/brn, gry/brn, pred mod hd-hd, fri, fn-med gr, mod-v w srted, subang-subrntd grns, mnr chloritized matrix mnr calc cement, pred qtz/feldspar/ & volc lith frags tr mag, com calc vng, loc com red/org mnr lztg; w/tr-10%

Silicic Volcanics: pred wht-pale grn, gry, lt-dk brn, blk, hd-v hd, fn gr aphanitic/porphyritic tex, com chlor alt, pred qtz/feldspar/ & chlorite; & w/tr **Siltstone:** blk, fn silt size particles, mod hd, nonfissile, v com calc vng.

Volcanic Sandstone: pred lt grn, mod hd, texturally & mineralogically similar as above.

W 9.2 V 4' V 10 YP 7
 PH 10.5 WL 6 FC 2 S 800
 SD 1/4 Sol 6

3117 15% hrs 11/27
 NB# 11 HTC J22

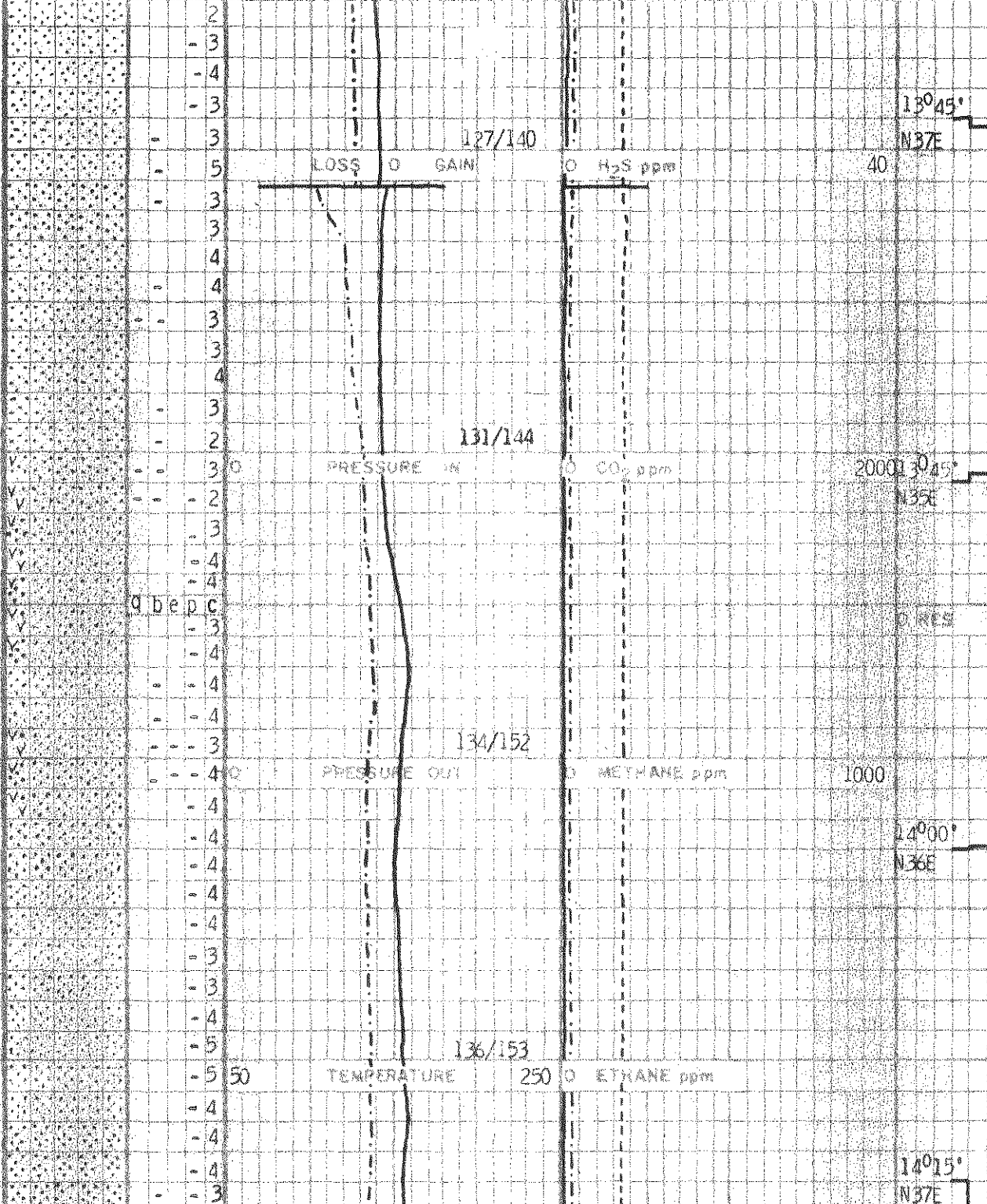
DRILL RATE
 100 75 50 25

WOB: 25-30,000#
 RPM: 50-60
 PSI: 1050
 SPM: 100

ROCK DENSITY

WOB: 25-30,000#
 RPM: 60
 PSI: 1000
 SPM: 45+50

2400
2500
2600
2700
DEPTH



130°45'
NB7E
40
2000
1045'
N35E
1000
14°00'
N36E
14°15'
N37E

Volcanic Sandstone: pred lt-dk gryish grn-brnish grn-rdsh brn, com mod -w srt'd grs, pred ang-subang grs w/ fn-med sd sz grs, decr w srt'd w/ depth, v com med-dk grn clay/chlorite matrix; w/ occ med grn
Silic Volcanics: hly porphyritic tx w/ ang phenoxs of qtz & felds, hd.

Volcanic Sandstone: lt-med grn, red/brn, gry/brn, pred mod hd-hd, fri, fn-med gr, mod-v w srt'd, subang-subbrnd grns, mnr chloritized matrix mnr calc cement, pred qtz/feldspar/ & volc lith frags tr mag, com calc vng, loc com red/org mnr izn; w/tr-10%

Silic Volcanics: pred wht-pale grn, gry, lt-dk brn, blk, hd-v hd, fn gr aphanitic/porphyritic tex, com chlor alt, pred qtz/feldspar/ & chlorite; & w/tr Siltstone: blk, fn silt size particles, mod hd, nonfissile, v com calc vng.

Volcanic Sandstone: pred lt grn, mod hd, texturally & mineralogically similar as above.

11/28

WOB 30-35,000#
RPM 55-60
SPM 95
PSI 1000

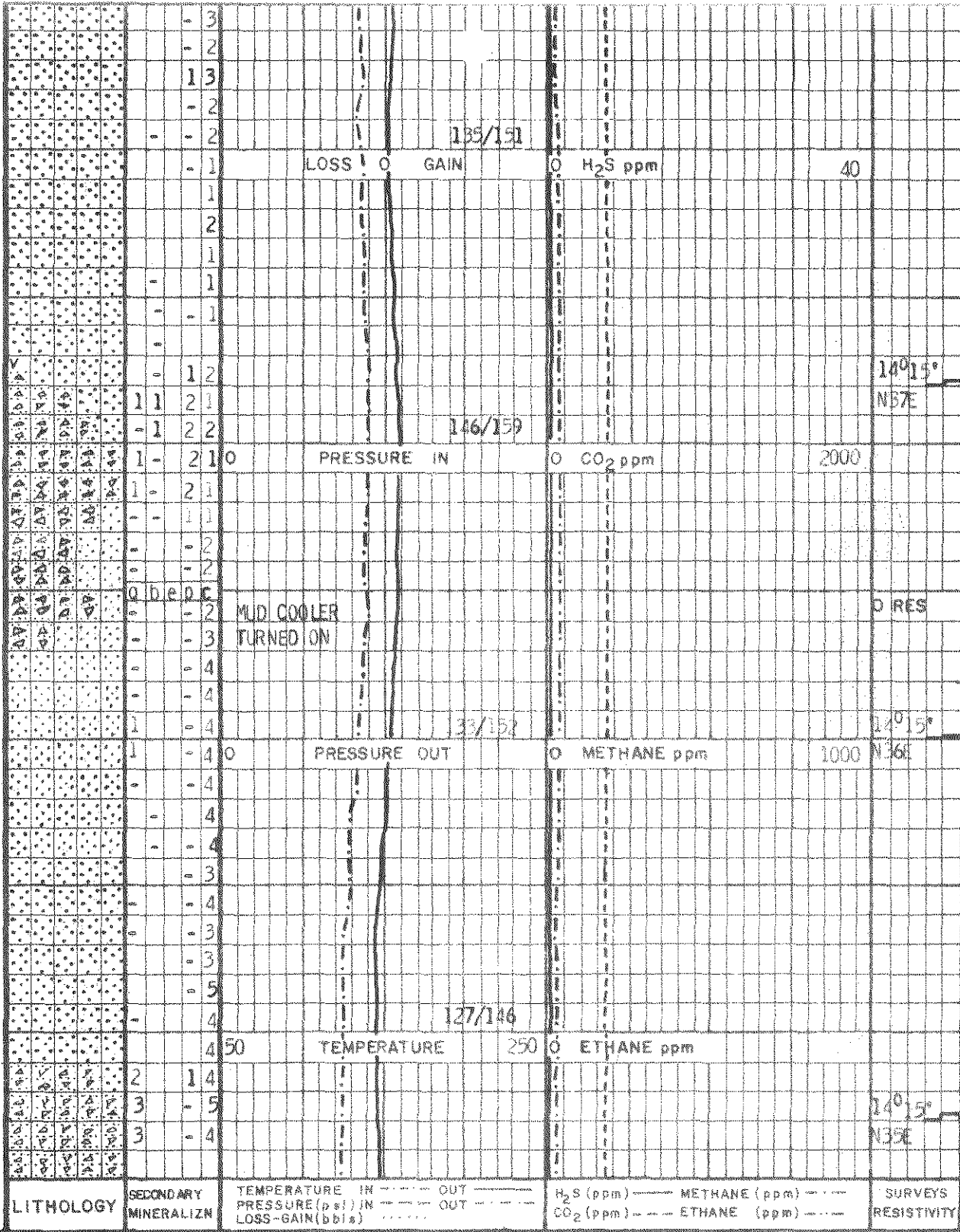
DRILL RATE
100 75 50 25

WOB 20-25,000#
RPM 75-80

ROCK DENSITY

11/29

DEPTH 2800 2900 3000 3100



W 9.4 V 38 PV 10 YP 12
PH 10.0 WL 8.0 FC 2
S 500 SD % Sol 8

Volcanic Sandstone: pred
lt-med-dk grn, g-ply srt'd
grs, com med-fn sd sz grs,
com ang grs, hvly chlorit-
ized matrix, incr cpct appr
w/depth, occ frags w/ v dk
brn-blk matrix-poss volc
clasts.

Lithic Tuff: pred wht-med
grn-lt ornish rd, vis rel
pumice frags, v hd, silic.

Volcanic Sandstone: multi-
col, mod hd, mod-ply srt'd,
fn-med gred, sbrnd-ang grs,
pred qtz, feld, w/ abnt lith-
ic frags, com chloritized
grs, mnr-com brn matrix,
tr calc & silicic vng, tr
dism euhedral pyr.

Volcanic Sandstone: pred
med-dk grnish gry-blk-
occ dk rdish brn, mod w
srt'd, pred ang grs, hly
chloritized cly matrix.

Lithic/Crystal Tuff: pred
wht-lt grn-med gryish grn-
lt-med pnkish gry, hly
silicic, abnt qtz & felds
xls, mod-v hd.

WOB 20-25,000#
 RPM 70-80
 PSI 800
 SPM 90

DRILL RATE
 100 75 50 25

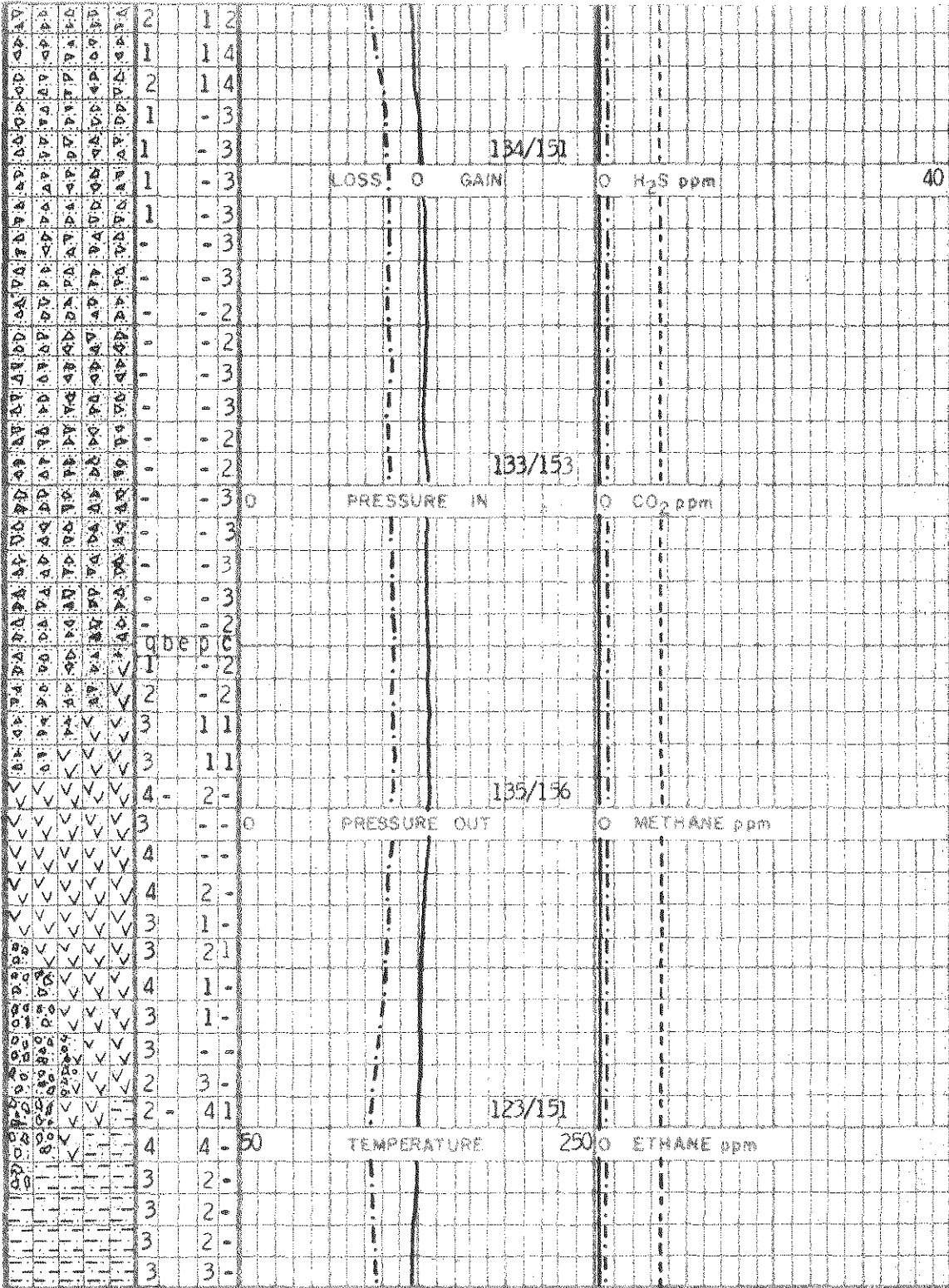
WOB 30-35,000#
 RPM 70-75
 PSI 1000
 SPM 90

ROCK DENSITY

11/30

Steam Reserve Corp.
 Fish Lake #88-11A

3200
3300
3400
3500
DEPTH



W 9.6 V 45 PV 24 YP 10
 pH 9.5 WL 6.0 FC 2
 S 500 SD % Sol 8

Crystal/Lithic Tuff: pred rd-brn & med grn, com lt-med gry, mod hd-hd, abnt frs crs sd sz lithic frags, com abnt clr qtz & felds xls, tr calc vng, tr pyr.

Note: Mud Cooler currently malfunctioning. Slight effect upon T-IN and T-OUT

Silicic/Acidic Volcanics (prob Rhyolite): pred lt-dk gryish grn-med yelish grn, hd-v hd, v com porphyritic tx w/ v fn phenocrysts of qtz & felds in rdish brn-grn aphanitic grndmass, v com chloritization of groundmass & phenocrysts, occ mod lg biotite & lith frags imbed.

Breccia: pred bri rd-rdsh dk gry-med-dk grnsh gry, abnt mod-fn sd sz lith clasts, ang, mod hd, com mas appr grndmass, occ hvly mnrIALIZED w/nematite.

Siltstone/Sandstone (Harkless Formation): v fn gr, med-dk grn, v similar in appr to Acidic Volc a/a.

130°45' NB7E

140°00' NB7E

130°45' NB7E

W 9.6 V 43 FV 26 YP 10
 pH 10.5 WL 6.0 FC 2
 S 500 SD 1/2 Sol 7

WOB 35,000#
 RPM 75-80
 PSI 900
 SPM 90

DRILL RATE
 100 75 50 25

128B⁷⁴/hrs. 12/1
 NIB#12 Smith F-3L

WOB 30-35,000#
 RPM 75-80
 SPM 90
 PSI 980

ROCK DENSITY

WOB 35-40,000#
 RPM 70-75
 SPM 90
 PSI 1000

3600
3700
3800
3900
DEPTH

LITHOLOGY

3 23
 3 23
 3 23
 2 23
 2 13
 1 13
 1 13
 2 23
 2 13
 1 13
 1 13
 1 13
 1 13
 1 13
 1 13
 1 13
 1 22
 2 2
 2 2
 1 21
 1 2-
 1 1-
 2 -
 1 -
 2 -
 1 -
 11
 11
 11
 11
 21
 11
 11
 11
 11
 13
 12
 12
 12

LOSS G GAIN
 PRESSURE IN
 PRESSURE OUT
 TEMPERATURE

126/152
 128/156
 127/155
 123/145

H₂S ppm
 CO₂ ppm
 METHANE ppm
 ETHANE ppm

40
 1400'
 N37E
 1400'
 N35E
 13045'
 N34E

Sandstone/Siltstone (Harkless Formation): pred lt-med grn-v lt-med grnsh gry, mod hd-v hd, pred glsy tx w/ abnt microxln felds & biotite xls, sl rexln appr, v com chloritization of groundmass, com microfrac filled w/ calc, clr qtz, & pyr, tr dism euhedral pyr.

Sandstone/Siltstone (Harkless Formation): pred lt-med dk gryish grn, mod-v hd, v abnt wht microxln felds xls w/occ microlam appr, com chloritization of groundmass.

Note: Mud Cooler is now repaired and working.

Sandstone/Siltstone (Harkless Formation): pred lt-med grn, incring lt gry w/depth, mod hd-v hd, com sl-mod rexln appr of grndmass, pred v fn-fn sd sz grs, v abnt microxln felds xls w/occ microlam appr, com hvy chloritization of grndmass, occ loc filled microfracs.

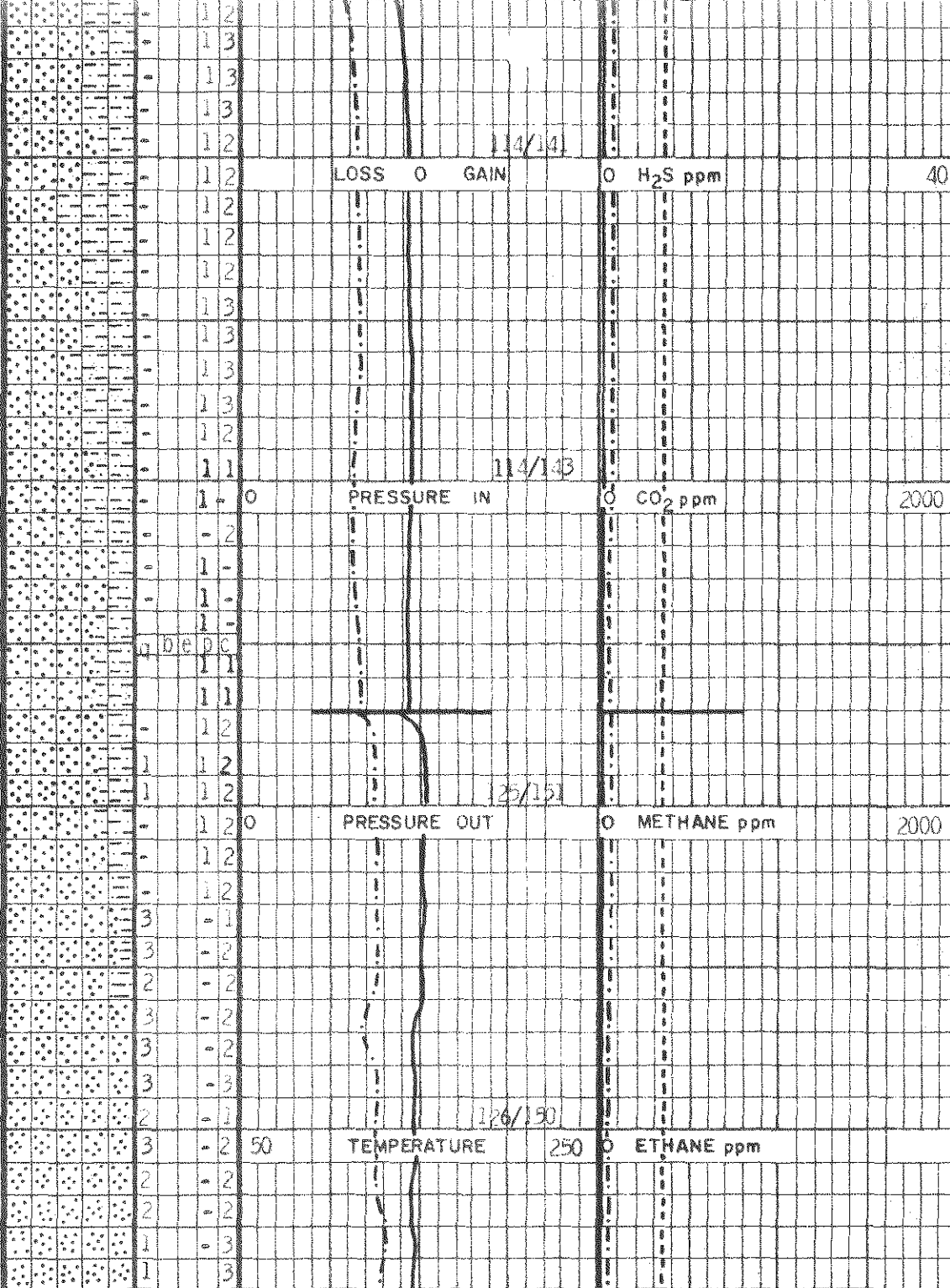
WOB 40-45,000#
 RPM 65-70
 SPM 90
 PSI 1050

DRILL RATE
 100 75 50 25

1272' / 75% hrs. 12/5
 NB#13 Sec N89TF
 WOB 35,000#
 RPM 75
 SPM 50+50
 PSI 1250 12/6

ROCK DENSITY

4400
4500
4600
4700
DEPTH



13000°
N30E
14°30'
N34E
15°15'
N35E
15°15'
N32E

W 9.6 V 39 -V 18 YP 10
 pH 10.5 WL 6.6 FC 2
 S 550 SD 1/4 Sol 7

Sandstone/Siltstone: pred
 lt-med grn, com lt-med gry,
 silt to fn sd sz grs, mod
 srtd, sbrnd-sbang grs, mod
 hd-v hd, com microlams & gr
 lineation, chloritized, sl
 rexin app, tr-mnr calcite
 vng, tr pyr vng.

Note: Ran 6 hr Custer
 time/temp log @ 4550'.
 T = 240°F. Lost shock
 sub while reaming to
 bottom, POH, replace sub,
 RIH, resume drilling.

Sandstone: pred lt-med grn,
 wht, mod hd-v hd, loc sft &
 bleached, v fn-fn gr, mod-w
 srtd, sl rexin, com-abnd
 silicic vns, mnr calc vng,
 loc mnr calc cement, mnr
 chloritic vns, tr euhdr
 qtz xls f/4640'-4650',
 introld w/ Siltstone: lt
 gry, lt grn, lt brn/gry, pred
 sft-mod hd, hd, com vis mica
 grns.

12/7

4800

DRILL RATE

100 75 50 25

WOB 35,000#
RPM 75
SPM 50+50
PSI 1200

12/8

4900

5000

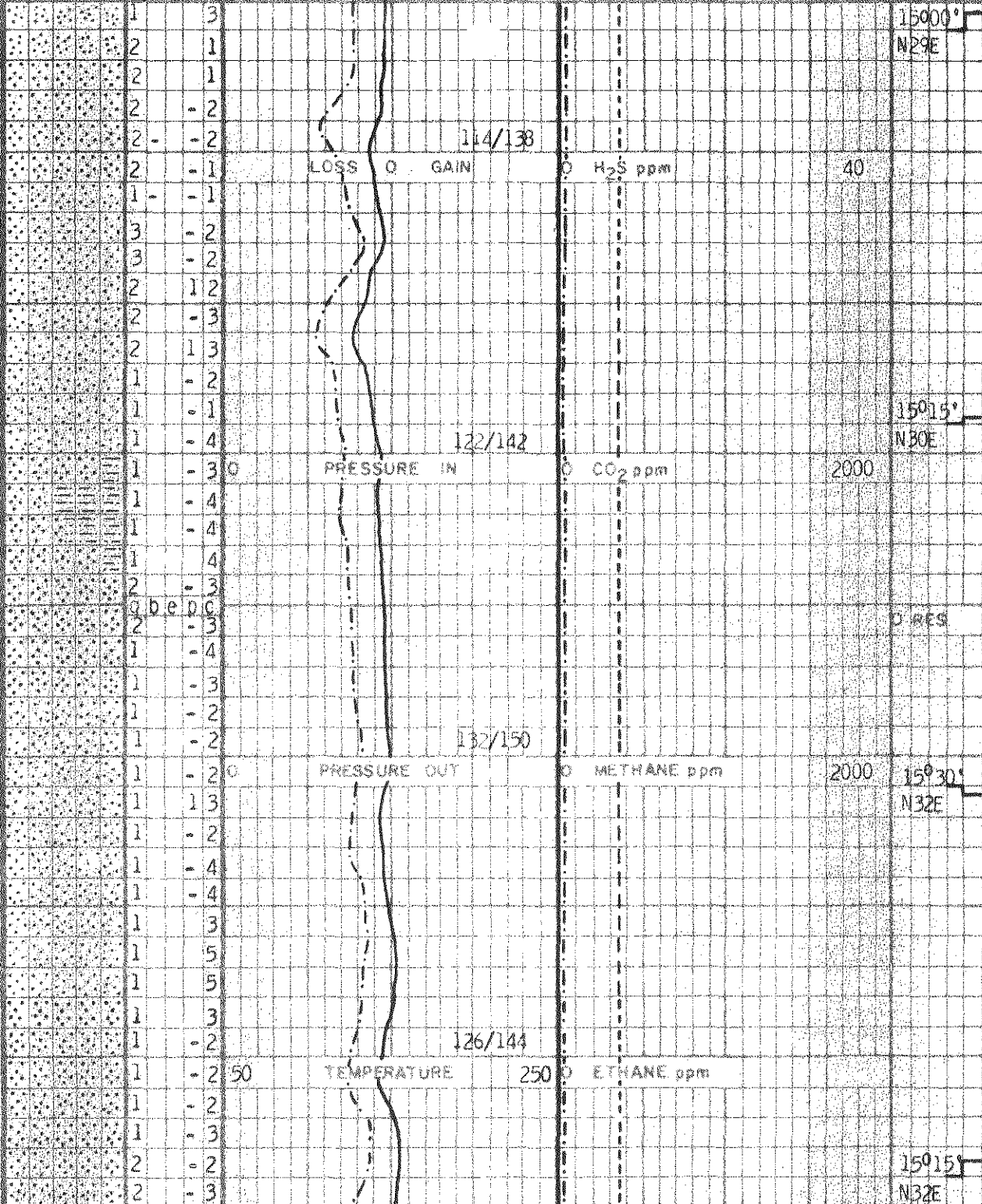
ROCK DENSITY

WOB 35-40,000#
RPM 75
SPM 50+50
PSI 1200

12/9

5100

Steam Reserve Corp
Fish Lake #88-11A



15000'
N29E
W 9.5 V 3rd PV 17 YP 6
PH 10.5 W 1.2 FC 2
S 680 SD 1/4 Sol 6

Sandstone: lt-pred med grn, loc dk grn, mod hd-v hd, v fn gr, loc v silicic, pred qtz & chlor, com qtz & calc vng, occ chlor vns, tr pyr, r biotite.

Note: Temp fluctuation due add H₂O after dumping drilling fluid to clean out mud pits.

15015'
N30E

Sandstone/Siltstone: lt-pred med grn, dk grn, wht-lt gry, mod hd-v hd, sft, crs silt-v fn sand size grns, silicic, loc v silicic, pred qtz & chlor, v com calc vng, mnr-com qtz vng, tr pyr.

RES

Sandstone: pred lt grn, mnr med grn, mod hd-v hd, mnr w/ cataclastic text, pred gd strng, loc abdnt calc vng & cmnt, mnr qtz vng, loc v silicic & grades to wht-trans v well srtd, quartzite.

15030'
N32E

Note: Temp fluctuation due undependable H₂O supply due malfunction of H₂O pump.

Sandstone: gen a/a w/r-tr euhedral qtz f/5120'.

15015'
N32E

LITHOLOGY SECONDARY MINERALIZN TEMPERATURE IN OUT PRESSURE (psia) IN OUT LOSS-GAIN (psi) H₂S (ppm) METHANE (ppm) CO₂ (ppm) ETHANE (ppm) SURVEYS RESISTIVITY

REMARKS - LITHOLOGY EXLOG / SMITH PAGE 13

W 9.4 V 41 PV 28 YP 16
 PH 10.5 FC 4
 S 1000 SD % Sol 4

Sandstone/Siltstone: lt-v
 lt grn due decr chlor, mod
 hd-loc pred v hd due incr
 silicic cmnt, pred v well
 srted, comm-abdnt calc vng,
 mnr qtz vng, mnr dissem
 euhdr1 pyr.

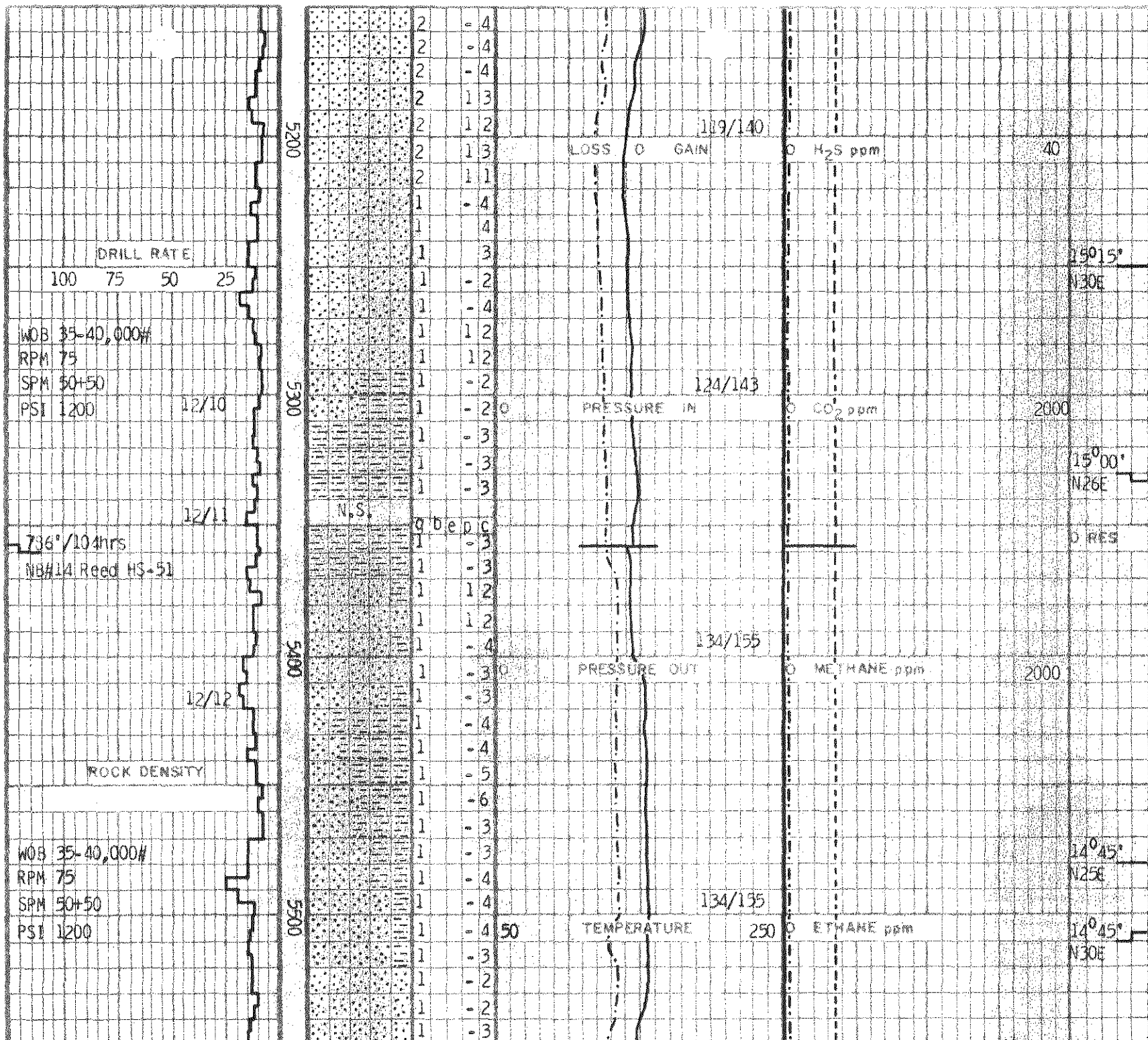
Sandstone/Siltstone: lt grn
 -lt gry grn, mod hd-hd, well
 srted, loc mnr pyr vng assoc
 w/ mnr-comm calc vng.

Siltstone: pred lt gry-
 lt gry/grn, lt grn, occ med gry,
 frm-mod hd, loc hd, pred crs
 silt, loc v fn sand, w srted,
 occ sl phyllitic sheen, com
 calc vng, r-tr qtz vng.

Note: POH, chng bit & mag
 BHA, R1H unable to drl
 due damaged shock sub,
 chng shock sub & drl
 ahead; poor samples f/
 5350-5370 due abdnt
 slough. BUT 1740F.

Sandstone/Siltstone: lt-med
 gry, lt grn, lt gry/grn, occ
 wht, frm-mod hd, hd, crs silt-
 v fn sand, pred qtz & chlor
 abdnt silicic cement, tr-mnr
 qtz vng, com-abnd calc vng,
 tr dism & vn pyr.

Note: Temp drop due
 cooling tower more
 efficient due cold
 north wind



DRILL RATE
 100 75 50 25

WOB 35-40,000#
 RPM 75
 SPM 50+50
 PSI 1200

736"/104hrs
 NB#14, Reed HS-51

ROCK DENSITY

WOB 35-40,000#
 RPM 75
 SPM 50+50
 PSI 1200

Steam Reserve Corp.
 Fish Lake #88-11A

5200

5300

5400

5500

DEPTH

LITHOLOGY SECONDARY MINERALIZN TEMPERATURE IN OUT PRESSURE (psi) IN OUT LOSS-GAIN (bbl) H2S (ppm) METHANE (ppm) CO2 (ppm) ETHANE (ppm) SURVEYS RESISTIVITY

REMARKS - LITHOLOGY EXLOG / SMITH PAGE 14

WOB 35-40,000#
 RPM 75
 PSI 1200
 SPM 100

DRILL RATE
 100 75 50 25

WOB 40-55,000#
 RPM 75
 PSI 1200
 SPM 100

ROCK DENSITY
 WOB 25-40,000#
 RPM 75
 PSI 1300
 SPM 50+50

5600

5700

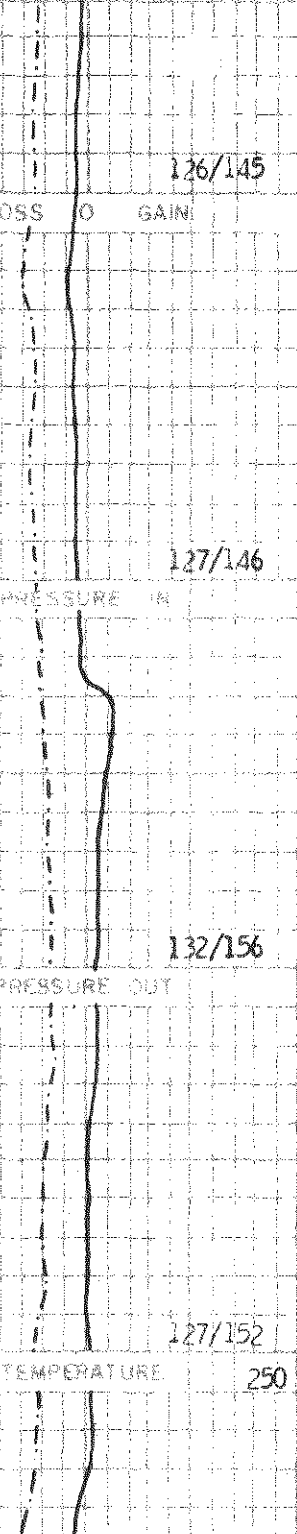
5800

5900



1	-3
1	12
1	-2
1	-3
1	-3
1	-2
1	-2
1	-2
1	-1
1	13
1	13
1	12
1	13
1	11
1	11
1	11
1	-1
1	-2
1	-1
1	11
1	12
1	-1
1	11
1	11
1	11
1	12
1	13
1	-1
1	-1
1	11

LOSS O GAIN
 PRESSURE IN
 PRESSURE OUT
 TEMPERATURE



H₂S ppm
 CO₂ ppm
 METHANE ppm
 ETHANE ppm

126/145
 127/146
 132/156
 127/152

40
 2000
 2000
 250

Sandstone: lt gry grn-lt gry-v lt, pred hd w/ mnr v hd, pred v fn gr, well srted, mnr-comm calc vng, tr pyr vng.

Sandstone: pred lt gry grn, hd, fair srtng, r-tr drusy qtz, grades & intbds w/ Siltstone: lt gry, mod hd, sl phyll sheen, v well srted.

Siltstone: pred lt gry, mnr med gry, mod hd-hd, gd srtng, sl argillaceous, mnr pyr vng assoc w/ calc & silic vng.

Note: Increase in T-OUT due to mud cooler being off for a few hours after loss of power.

W 9.3 V 42 PV 14 YP 5
 pH 11.0 F 7.2 FC 3
 S 1100 SD % SOL 4

Siltstone: pred med gry-mnr lt gry, pred mod hd w/ mnr sft-mnr hd, loc sl sandy, pr-fair phyll sheen, pred fair srtng, mnr calc & pyr vng.

Siltstone: lt-med gry, loc dk gry, pr-gd srtng, pr-gd phyll sheen, mod hd, mnr calc vng, tr-mnr pyr vng, tr-mnr silic & chlor vng.

615/47 hrs.
NBH/15 HTC J33

DRILL RATE
100 75 50 25

WOB 40,000#
RPM 75
SPM 100
PSI 1300 12/15

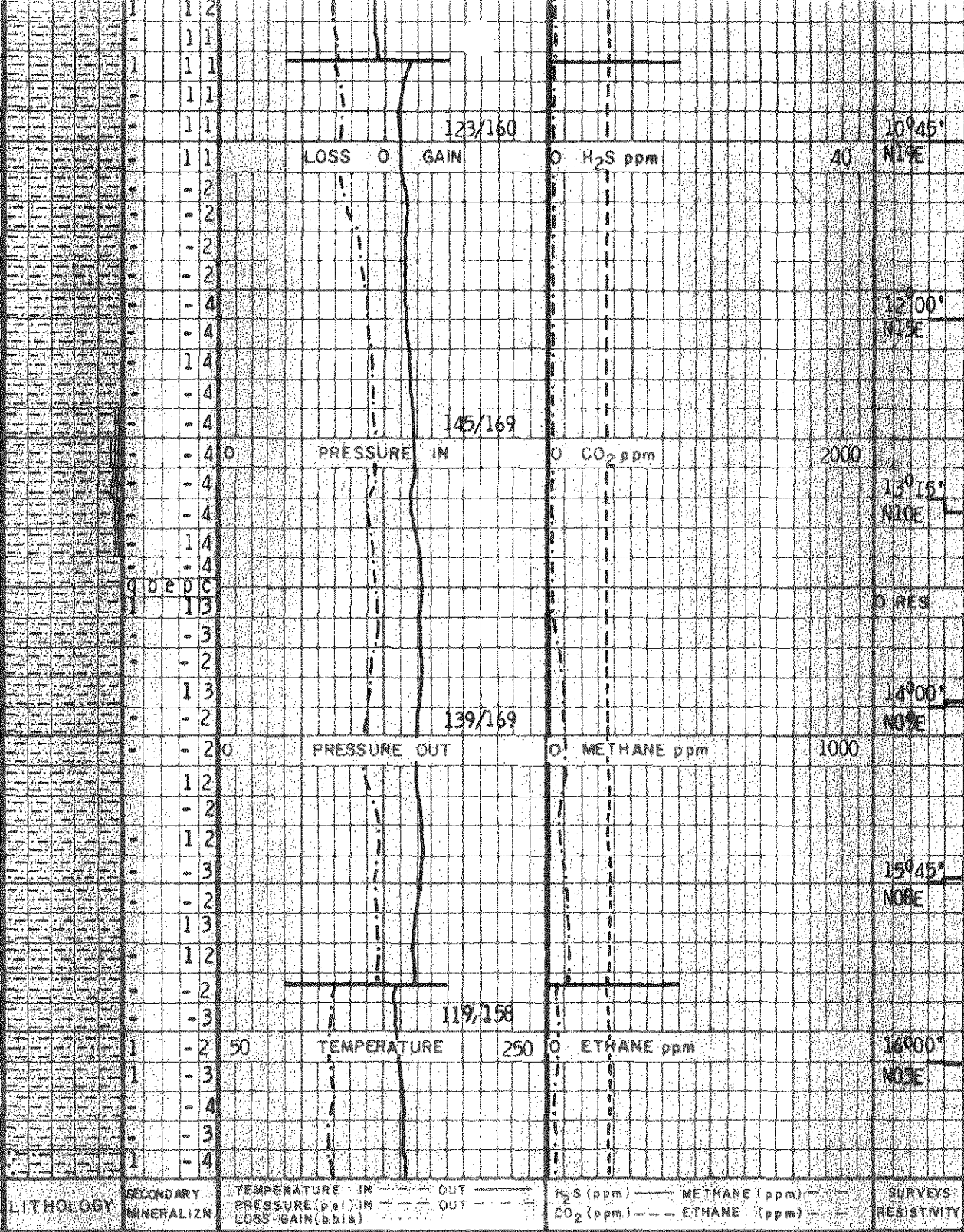
WOB 30,000#
ROCK DENSITY

RRBit #15 HTC J33
12/16

WOB 30-35,000#
RPM 75
PSI 1300
SPM 100

Steam Reserve Corp.
Fish Lake #88-11A

DEPTH 6000 6100 6200 6300



Note: POH & chng BHA to build ang 2IH & dri ahead. BUT 176°F.

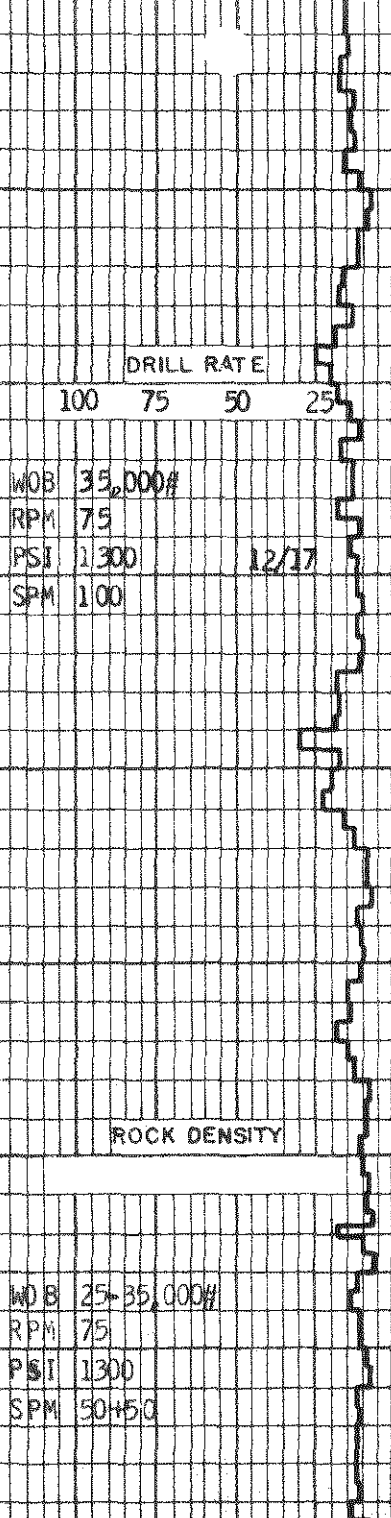
Note: Temp incr due H2O pump down causing poor circ & icing up of mud cooler.

Siltstone: pred lt-med gry, loc dk gry & lt grn, pred fair-pr srting w/ loc sndy intbds, pred mod hd, mnr-com calc vng, tr-loc mnr pyr vng, tr loc silic & chlor vng.
Diabase: pred lt grn cast, mod hd-hd, remn porh text, plag alt to kaol? & calc, mafics alt to chlor, sl orientation of phenos, tr dissem pyr.

W 9.4 V 41 PV 14 YP 7
PH 11.0 F 7.4 FC 3
S 1200 SD % Sol 5

Siltstone: pred med-dk gry, occ sl dk grn cast, mod hd -v hd, fair-mod w srtd, occ-com ply appr, v com vis wnt microxln felds grs, occ vis microfrac fill

Siltstone: pred med-dk gry-blk, Incr amnt med-dk gryish grn, mod hd-hd, mod-occ w srtd, occ schistose tx vis, Incr microfrac fill vis w/depth.



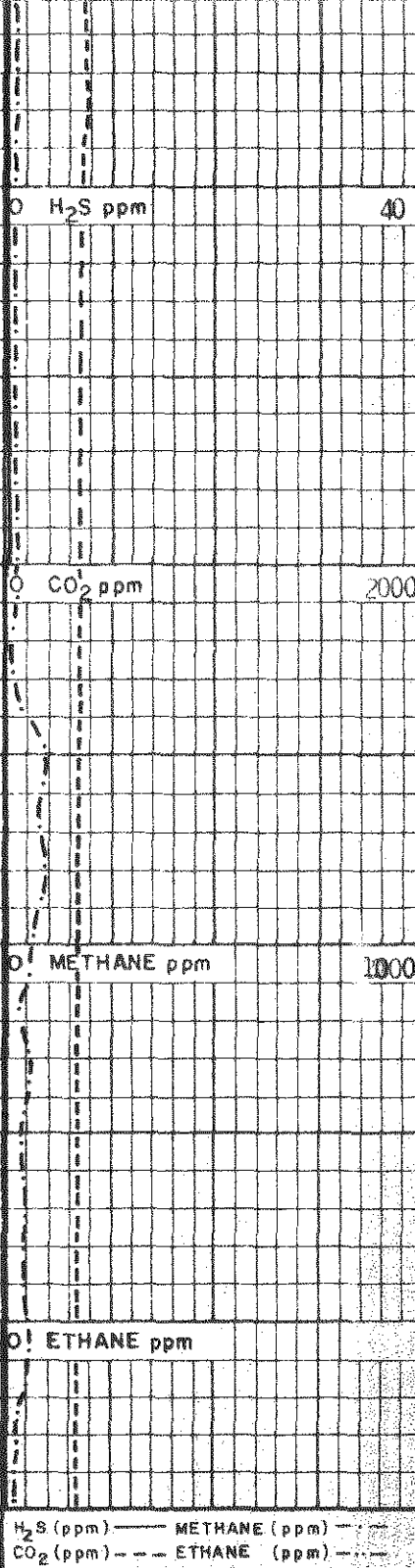
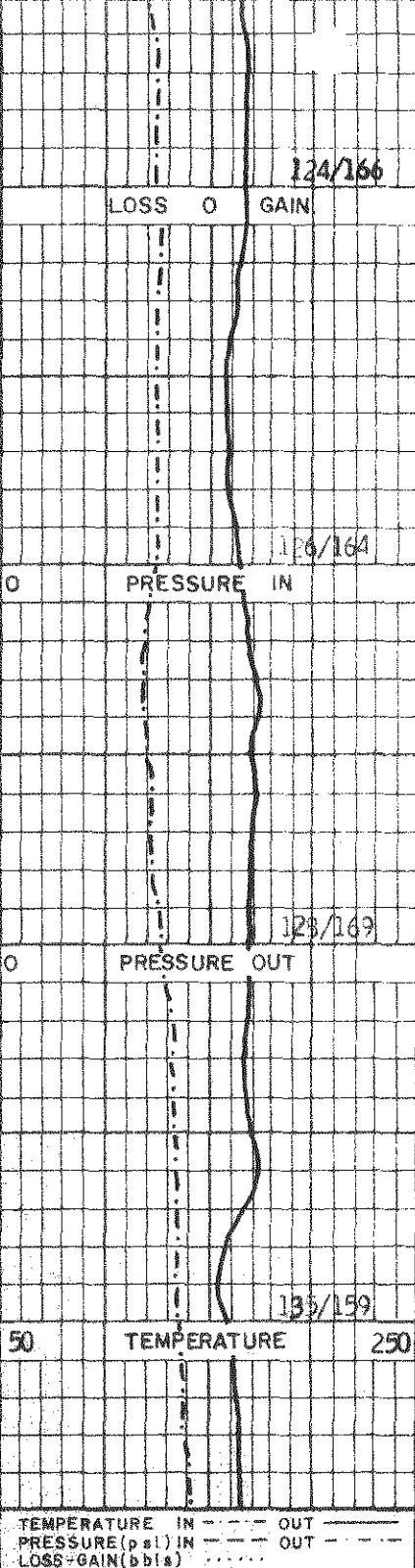
WOB 35,000#
 RPM 75
 PSI 1300
 SPM 100

WOB 25-35,000#
 RPM 75
 PSI 1300
 SPM 50+50

DEPTH
 6400
 6500
 6600
 6700



1 -4
 -4
 -3
 1 -3
 1
 12
 -1
 -2
 -2
 -1
 -1
 -1
 -1
 -1
 -2
 -2
 12
 13
 -4
 1 18
 2 9
 -8
 1 26
 -
 14
 24
 13
 14
 15
 -2
 -4
 -5
 -3
 13
 18
 18
 1+
 1+
 1+
 16
 14



16°15'
 N1E
 40
 2000
 16°30'
 North
 0 RES
 1000
 16°30'
 N07W
 250
 16°30'
 N10W

Siltstone, dstone: pred a/a, Incr med-dk grn, vis occ schistose frags, mod srted.
 Sandstone: lt grn-lt gry-med gry, mod hd-hd, pr srting pred silty, tr-mnr calc vng, tr pyr vng.
 Siltstone: pred lt-med gry, mnr lt grn, mod hd, pr srting comm sandy-argillic w/ gd phyl sheen.
 Phyllitic Siltstone: pred lt-dk gry-med grnsh gry, pred phyl shn, occ vis microlam, mod hd, sl rexln appr.
 Dolomitic Limestone: pred v lt-med gry, sl mott, sl sue tx appr, mod sft-mod hd, occ xln appr, sl mas. appr, occ v fn sd intbbd, occ high torque.
 Phyllitic Quartzite/Siltstone: pred lt-dk gryish grn-med grnsh gry, mod hd-v hd, sl-mod rexln appr, com v fn schistose appr w/ blk v microxln inclusions.
 Phyllite: pred lt grn, mnr med gry, mod hd, gd phyll sheen-sl schistose, pred prly srted w/ abndnt silt.
 Limestone: pred wht w/ mnr lt-dk gry, hd, v rexln, sucrosic text, v abndnt calc vng pred wht w/ r clr euh xls, tr dissem euh pyr.

Note: Temp decr due add H2O to build volume.

12/18

WOB 10-20,000#
RPM 75
PSI 1300
SPM 100

DRILL RATE
100 75 50 25

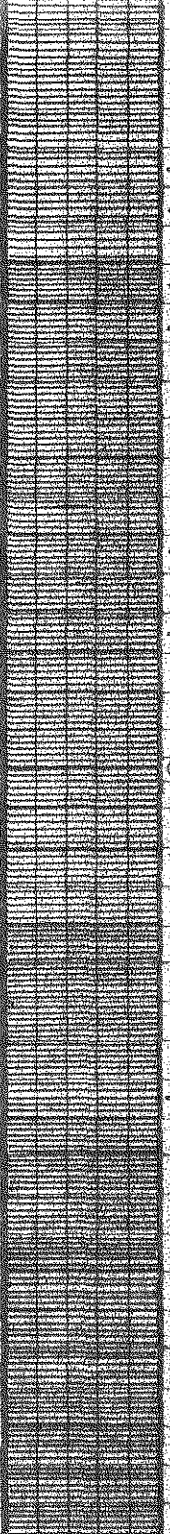
921^h/82^h hrs. 12/19
NB#16 HTC J33

WOB 45-50,000#
RPM 50
PSI 1300
SPM 50+50

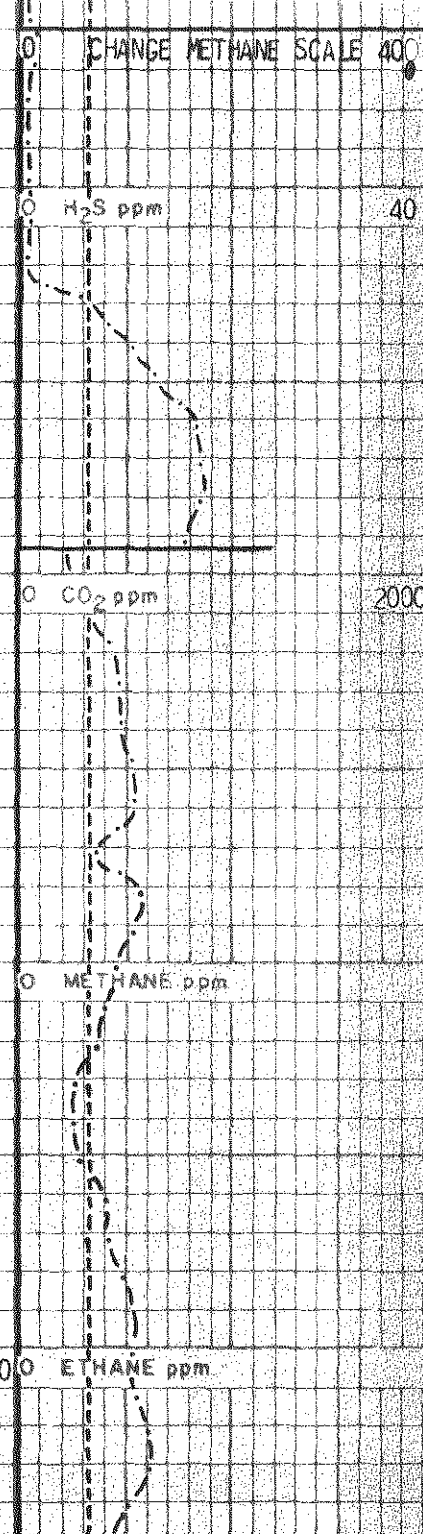
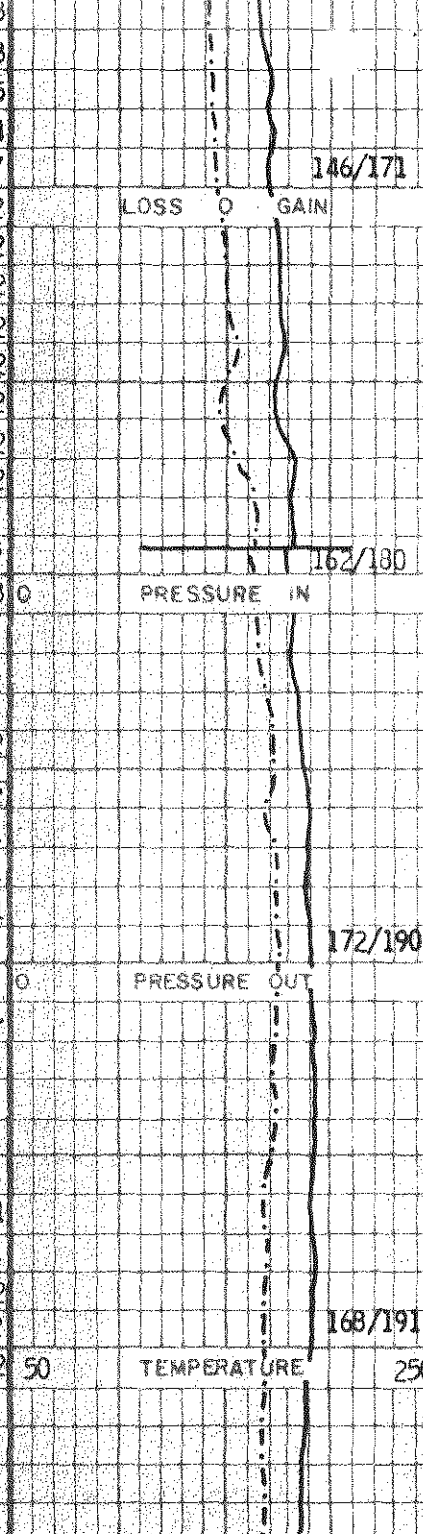
12/20

ROCK DENSITY

6800
6900
7000
7100
DEPTH



13
-3
-5
14
-7
-2
12
-2
-2
-2
-2
-2
-2
-2
-3
-3
-1
-1
11
-2
-2
11
11
11
-1
-1
-1
-1
-1
-1
12
-2
-1
-1
-1
-1
-1



14045°
N15W
2000
RES
14900°
N20W
13015°
N22W

Note: At 6760', change methane (scale 0 - 400 ppm.

Phyllitic/Quartzitic Siltstone: pred mod lt-v dk grn-grnish gry, mod hd-v hd, w-v w srted, pred v fn sd-silt sz grs, v com lam appr, sl rexln appr, pred qtz xls/grs.

Note: Variable temp due poor cooling by mud cooler due icing up.

Note: Bottoms up 198°F. Mud cooler not in operation due pipes broken by ice.

Phyllite: pred lt grn, mnr dk grn, hd, gd-v gd phyll sheen, pred well srted w/ loc mnr intbds dolomitic lmstn, mnr-comm poss lams, tr-mnr pyr vng, mnr calc vng.

W 9.5 V 43 PV 22 YP 10
pH 11.0 F 7.4 FC 2
S 1200 SD ¼ Sol 4

Phyllite (Phyllitic/Quartzitic Siltstone): pred med-v lt grn-lt gryish grn, mod hd-occ v hd, fri, pred mod-v w srted grs, pred v fn sd-silt sz grs, com sl rexln appr, hly silic, com calc cmnt.

WOB 50,000#
 RPM 50
 PSI 1300
 SPM 50+50

DRILL RATE
 100 75 50 25

466' / 26hrs 12/21
 RR BIT #16 HTC J33

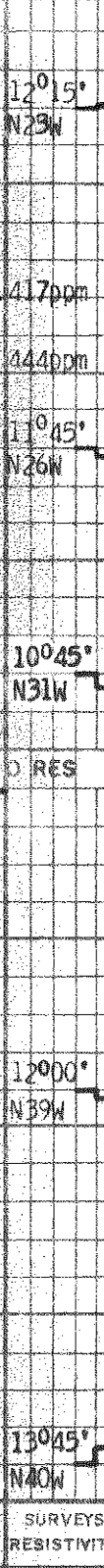
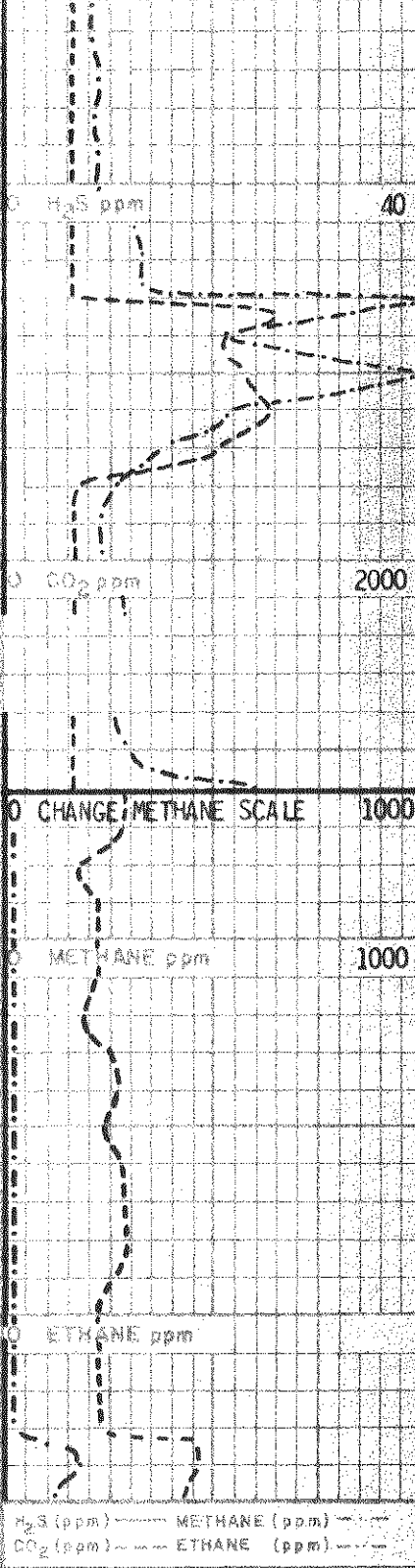
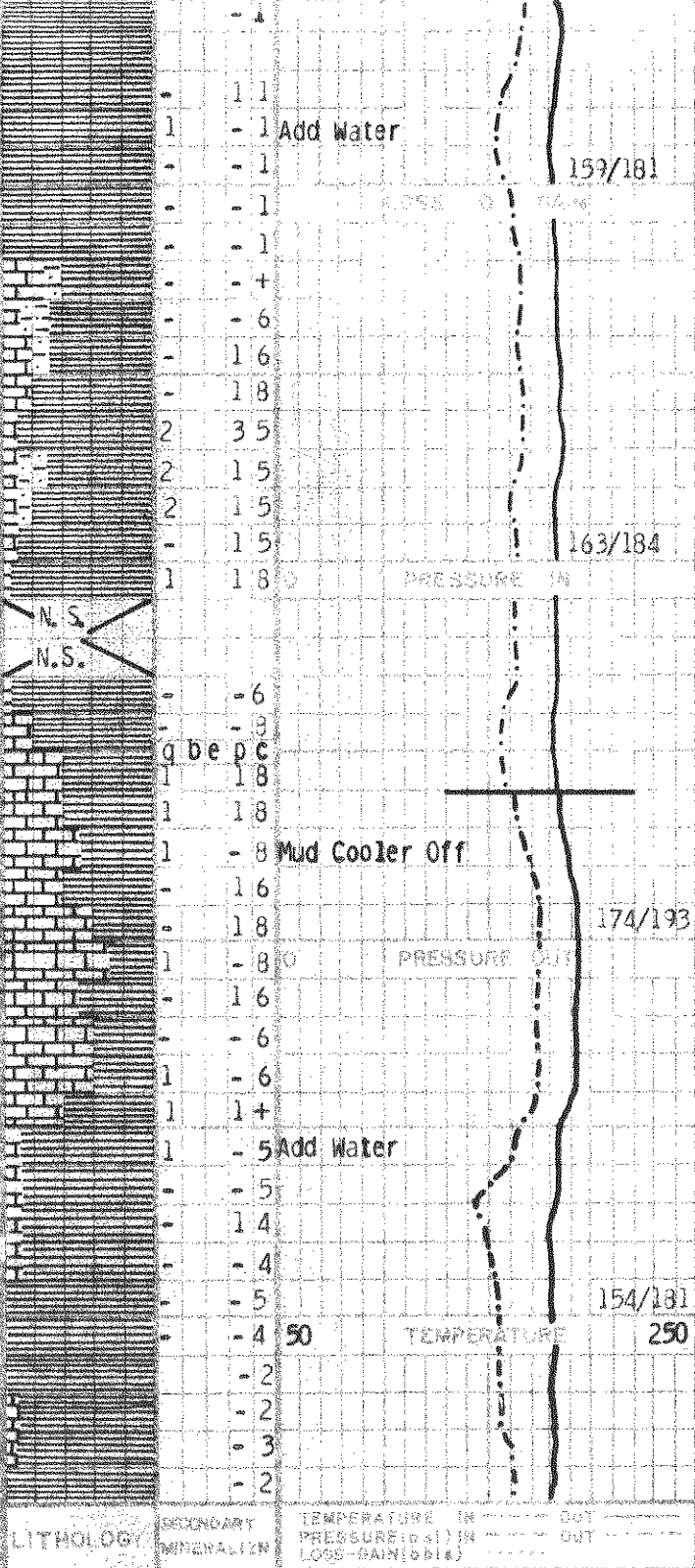
WOB 50,000#
 RPM 50
 PSI 1300
 SPM 50+50

ROCK DENSITY

12/22

Steam Reserve Corp.
 Fish Lake #88-11A

7200
7300
7400
7500
7600
7700
7800
7900
8000
8100
8200
8300
8400
8500
8600
8700
8800
8900
9000
9100
9200
9300
9400
9500
9600
9700
9800
9900
10000



12°15' N23W
 40
 417ppm
 444ppm
 11°45' N26W
 2000
 10°45' N31W
 RES
 1000
 1000
 12°00' N39W
 13°45' N40W

Phyllite: lt- med grn, pred hd, rexln te w/ pred v gd phyll sheen, loc mnr schistose text, pred v well srt'd, tr silic vng, mnr calc vng, tr pyr vng.

Phyllite: pred as above w/ incr amnts lt-med gry, loc sft, pred hd w/ gd phyll sheen, intbdd w/ Siltstone: lt gry, mod hd, gd srtng, sl-mod calcic, intbdd w/ Limestone: lt-dk gry, hd, rexln sacrosic text, loc v abdnt calc vng throughout.

Note: Mud cooler back on line. No sample f/ 7310'-7330' due bypass shakers to chng screens.

Note: At 7361', change methane (C₁) scale to 0-1000 ppm. POH to put on angle-building assembly. BHTO=198°.

Limestone: lt-dk gry, wht, loc purple, frm-mod hd, hd, pred v fn gr-aphan, com fn gr, mod-v well srt'd, com vis mosaic tex, abnd calc vng, mnr pyr vng, tr silicic vns intrcltd w/ Phyllite: pred lt-med gry, dk gry, occ whitish, pred lt grn f/7460' mod hd-hd, loc mnr pyr, mnr calc vng, tr sltstn w/com sl phyllitic tex.

Note: Gas Sample line damaged, repaired @ 7530' Lost approx 150 bbls mud 7500'-7570'. Regain 130 bbls by 7620'.

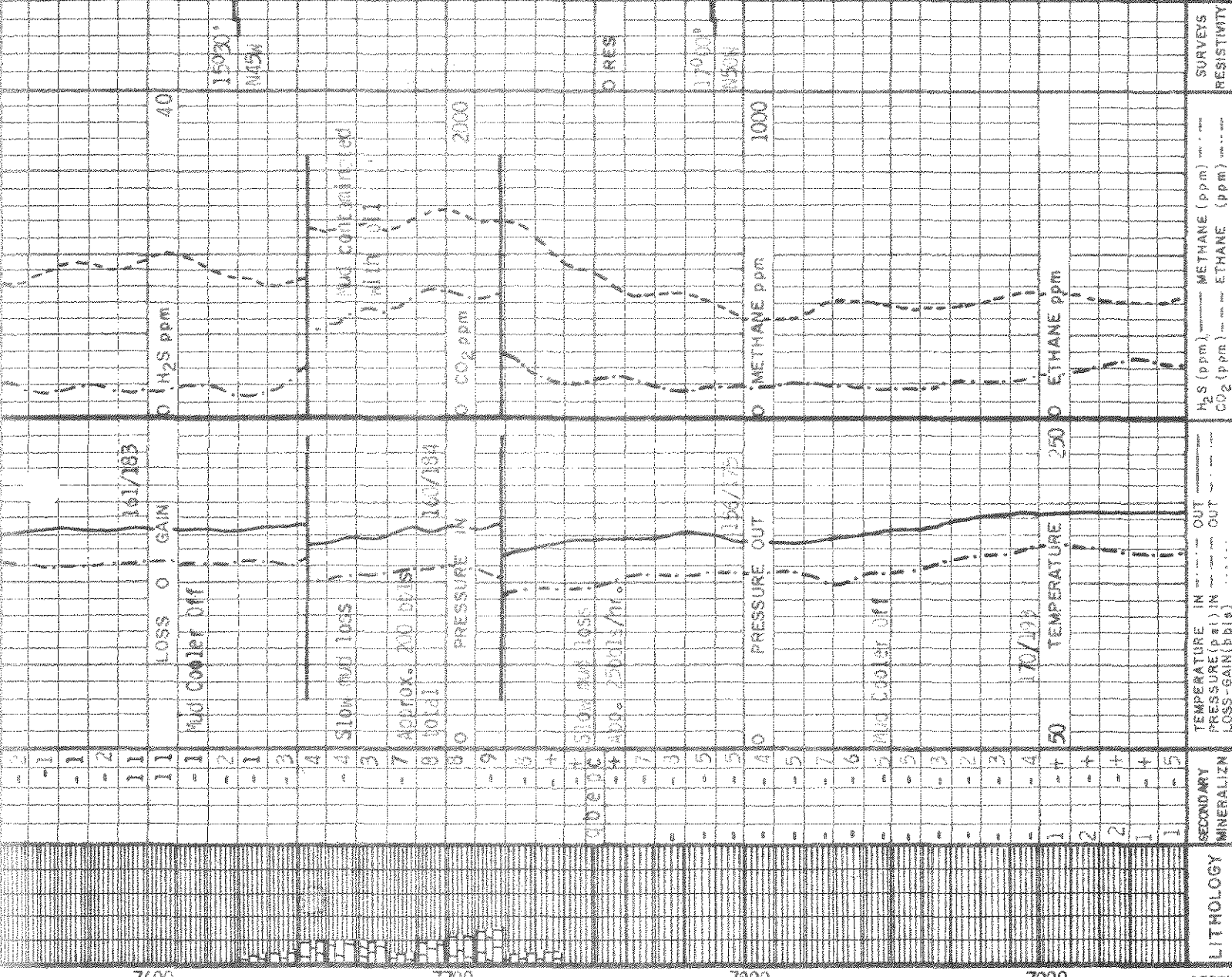
REMARKS - LITHOLOGY
 EXLOG / SMITH PAGE 19

Pavillic Siltstone - v lit 30'
 grn-med gr 20' wht, pred
 w srt'd, v com v fn sd-silt
 sz grs, sl rexin appr, v com
 phyl sm, v com v thin bed/
 laminated appr vis.

Note: While R/H on trip @
 7:53, get stuck @ 7564' on
 12/22. Circ & work pipe for
 12 hrs. Mix oil/gel pill &
 pump/spot & work pipe for
 12 hrs. Rig Dia-Log & free-
 point tools, leaving 10'
 fish in hole. R/H w/ fishing
 tools & Capt get past
 Turco-Gun @ 1595' R/H w/
 bit & find no resistance.
 R/H w/ fishing tools &
 screw onto fish on 1st try
 for fish loose after 2 hrs
 & pull on 12/25.

Note: While Circ. @ 7713',
 screw off of O.P. @ 7/3
 stop down hole. O.P. &
 tools drop 20' to bottom.
 Screw back onto O.P. &
 pull. Strap out of hole &
 correct depth. Lay down
 bent O.P. & inspect
 tools. Strap in hole w/
 new O.P. & drill ahead
 12/29. Max down hole temp
 189°F.

Pavillic Siltstone: pred
 lt-med grn, occ med gry,
 pred med hd-md, fair-good
 phyl tex, pred chlor &
 mica, inc silicic, 2000
 calc mg & mtr qtz mg
 f/790'-7950', tr-mtr fish
 & vni filling pyr.



DEPTH	LITHOLOGY	SECONDARY MINERALIZN	TEMPERATURE IN (°F)	TEMPERATURE OUT (°F)	LOSS-GAIN (ft)	PRESSURE IN (psi)	PRESSURE OUT (psi)	H ₂ S (ppm)	CO ₂ (ppm)	METHANE (ppm)	ETHANE (ppm)	SURVEYS RESISTIVITY
7600			170			1500		0				
7700			170			2000		2000				
7800			180			1800		100				
7900			189			2000		100				

LOG 45-50,000M
 RPM 50
 IPS 11300
 SPM 1100

DRILL RATE
 100 75 50 25

789/244 hrs. 12/12-26
 MBH17 HTC J33
 66/24hrs. 4/17-29
 NUBLES Smith F-31

LOG 40-44,000M
 RPM 55/60
 PSI 1350
 SPM 50+50 12/30

ROCK DENSITY

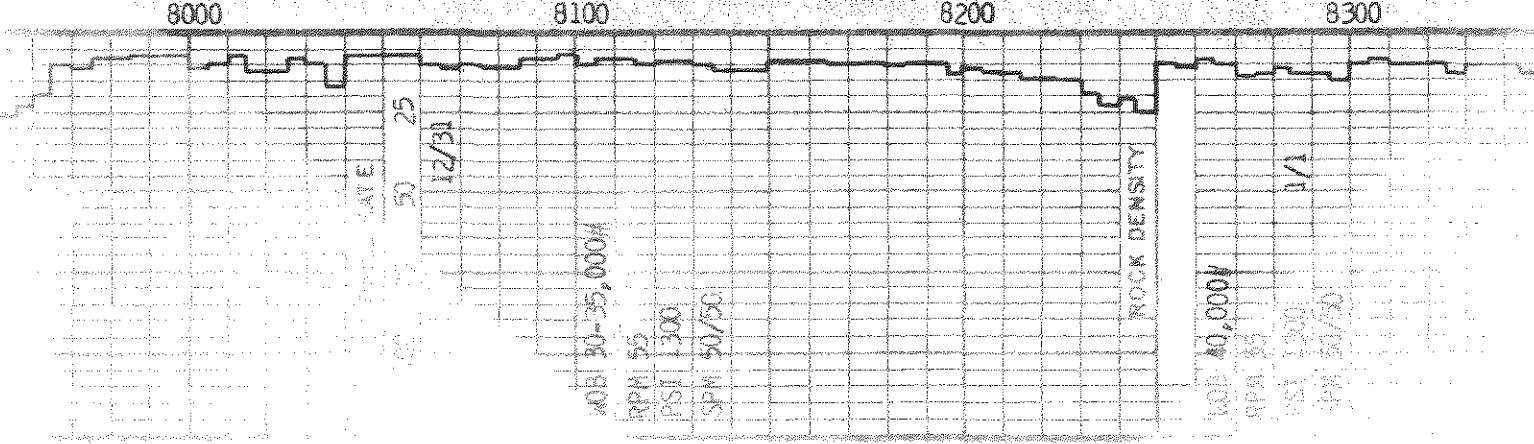
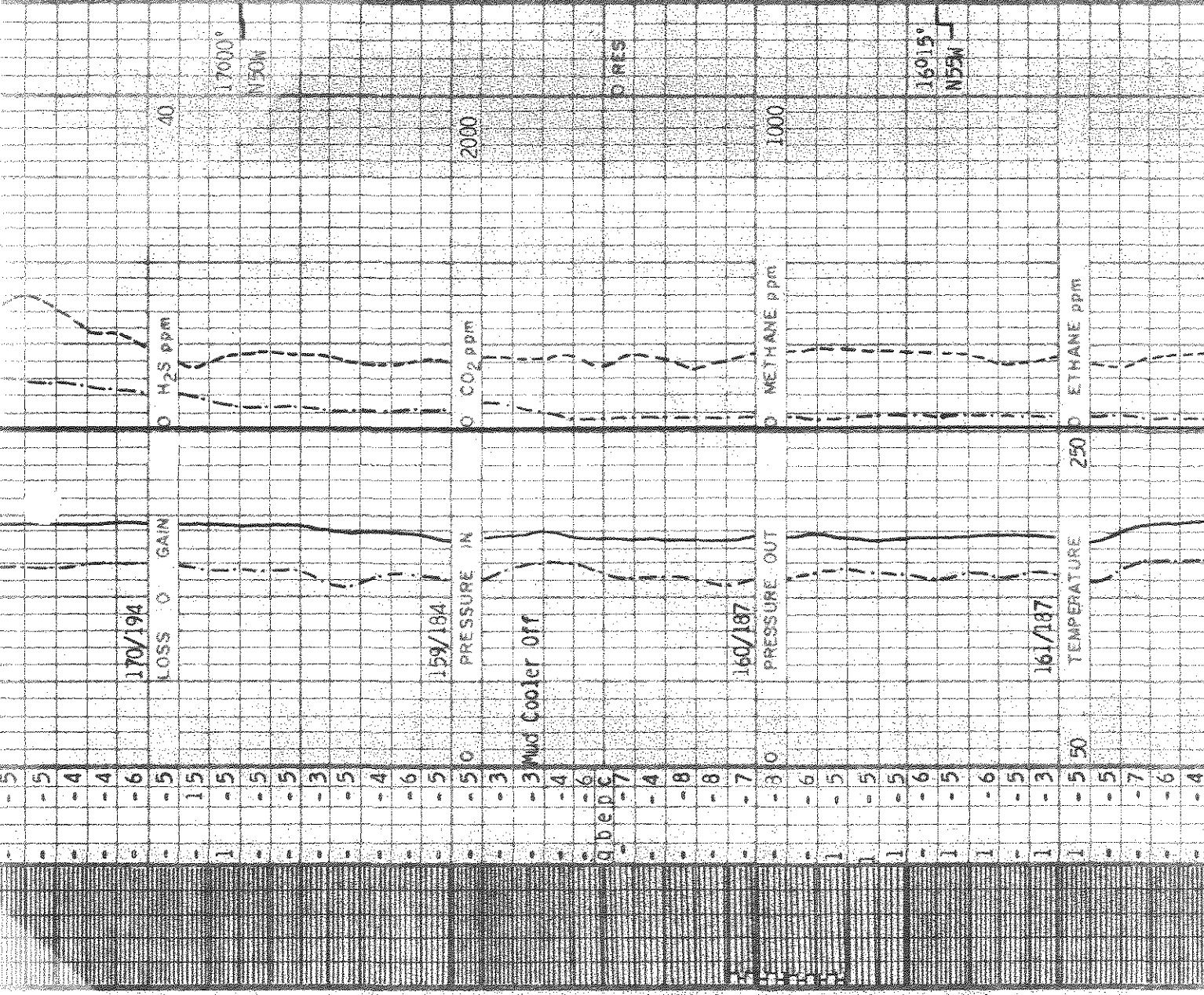
Phyllite: pred lt-med grn,
 occ gry-gry grn, mod hd,
 com phyll sheen, pred fn
 gr, occ grn/r, w std, com
 calc, mnr qtz & pyr.

W 9 V 39 PV 13 YP 4
 PM 11.0 F 7.8 FC 2
 S 1000 SO tr Sol 9

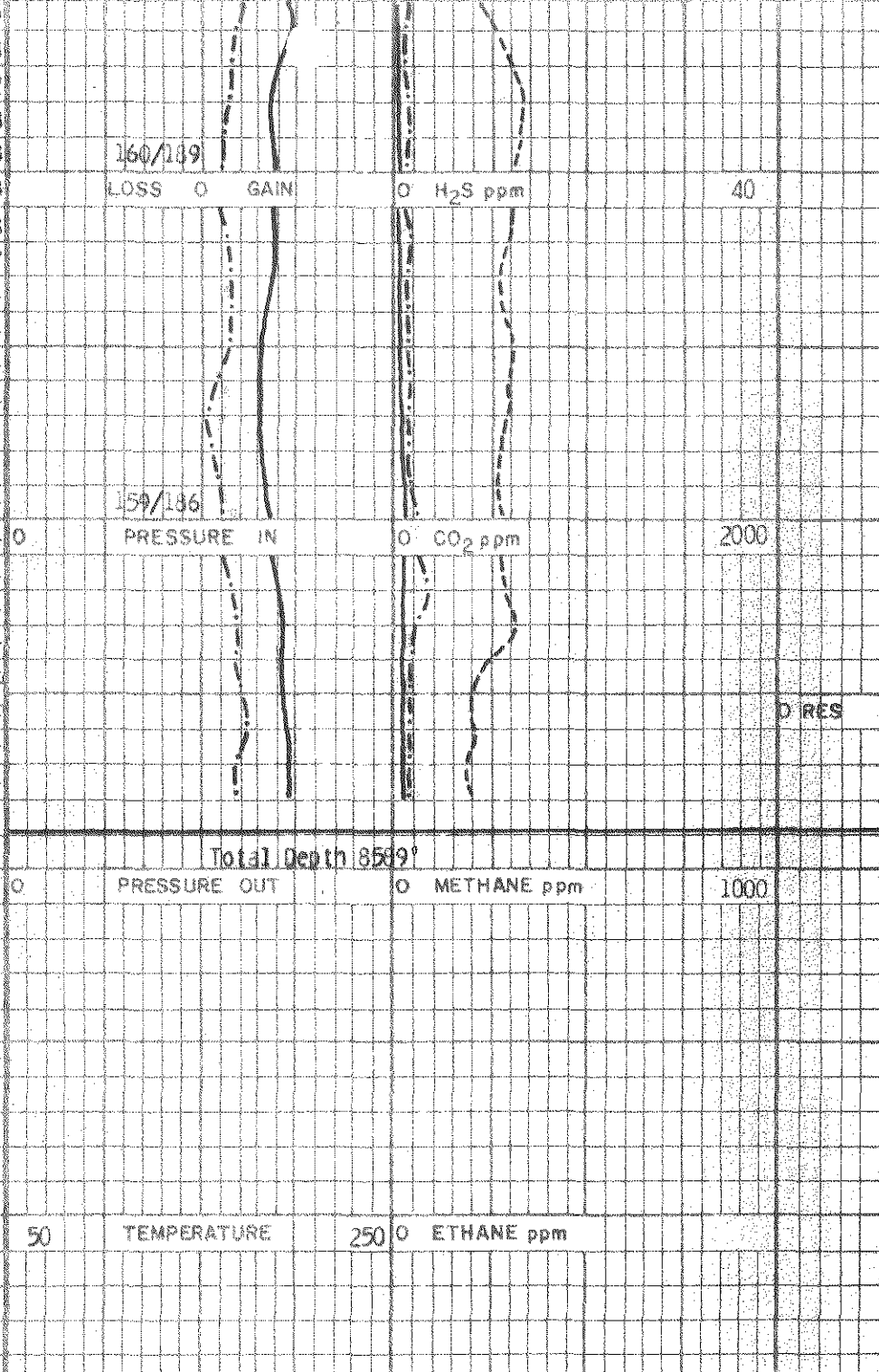
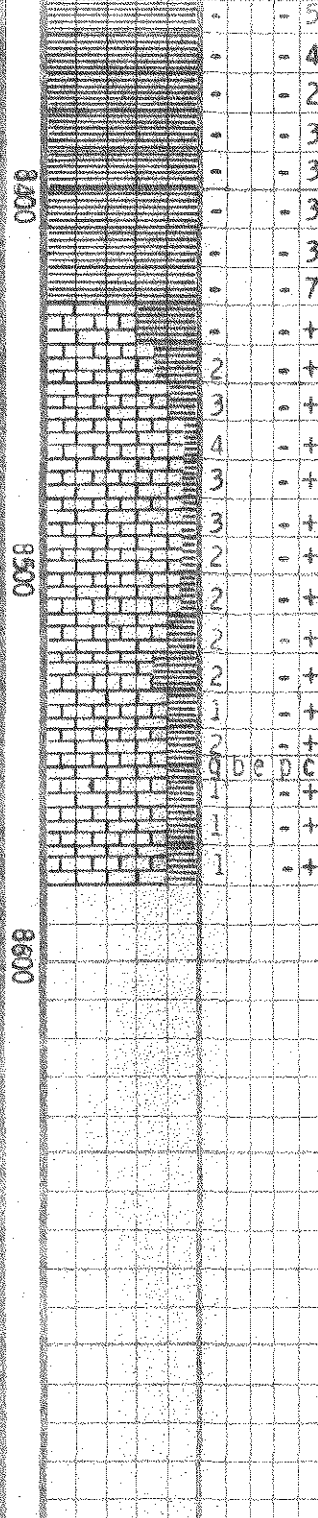
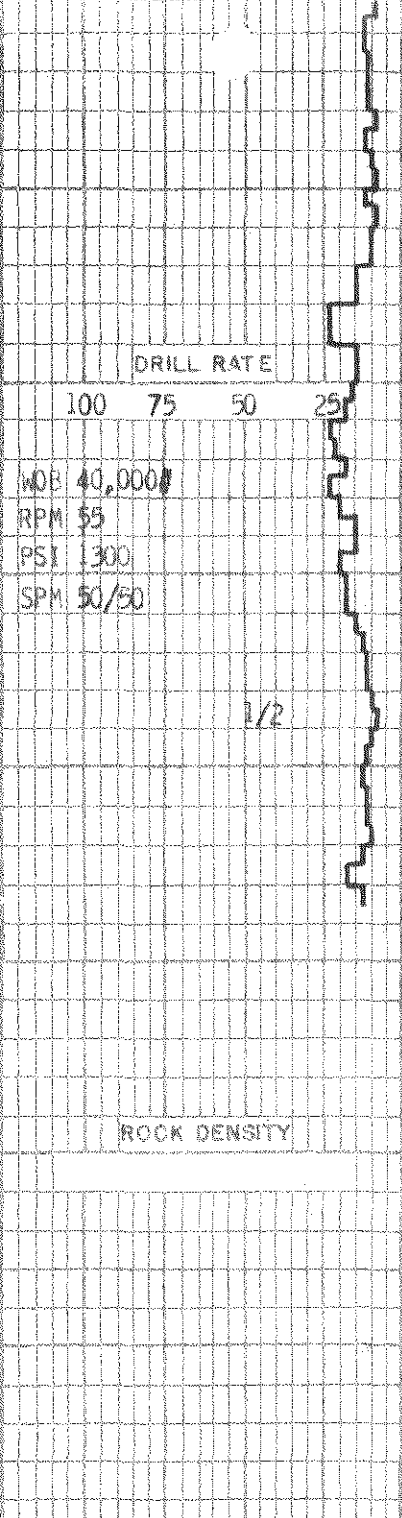
Phyllitic Siltstone: pred
 lt-med grn, occ med-dk gry,
 mod hd-hd, sl-fair phyll
 tex, pred chlor & other
 micas, loc silic, ubiquitous
 tiny wht speckles, v com
 calc vng, tr-mnr silic vng,
 tr-mnr dism & vn pyr.

Phyllitic Siltstone: gen
 a/a, incr silicic vns
 f/8240'-8250', intrcltd w/
 tr-10% Limestone: wht-v lt
 grn/gry, friable-fm, fn-v
 fn gr, occ sl rexln tex, tr
 dism pyr.

Phyllitic Siltstone: gen
 a/a, pred lt-med grn, loc
 incr in blue color to 40%
 @ 8340-8350', r tr clr
 qtz.



THOLOGY
 MINERALIZ
 TEMPERATURE IN
 PRESSURE (psi) IN
 LOSS-GAIN (BB%)
 TEMPERATURE OUT
 PRESSURE (psi) OUT
 METHANE (ppm)
 CO2 (ppm)
 ETHANE (ppm)
 SURVEYS
 RESISTIVITY
 REMARKS - LITHOLOGY
 EXLOG/SMITH # 21



Note: tr H₂S less than 1 ppm f/8350'.

Phyllitic Siltstone: pred med-dk gry, mnr lt-med grn, mod hd-hd, sl-mod phyll tex, occ gd phyll tex, com abnd calc vng, tr qtz vns, tr dism pyr, r pyr vns.

Recrystallized Limestone: pred wht, occ sl lt gry, mod sft, fri, crs gr, mass rexin tex, mnr frly dism pyr throughout, r pyr vns, tr qtz.

Note: H₂S incr to .3-.6 ppm max.

Note: total loss of circulation @ 8589'. 150 bbls lost w/no returns. POM @ 8589'. RIH, spot sand & cement plugs.