LOG created using LPLOT VH Version 3.0, April 16, 2012, Copyright (C) 1999-2009 Pason Systems Corp.

OPERATOR:	**NOBLE ENERGY**
WELL:	**WASHBURN LE 22-78HN**
LOCATION:	**SEC22, T8N, R61W**
COUNTY:	**WELD**
STATE:	**COLORADO**
SPOT:	**250' FNL 280' FWL**
ELEVATION:	**GE 4985' KB 5014'**
FIELD:	**WATTENBERG**
SPUD DATE:	**APRIL 9, 2012**
TD DATE:	**APRIL 11, 2012**
DATES LOGGED:	**4/10/12 - 4/11/12**
DEPTHS LOGGED:	**1100' - 5811'**
LOGGERS:	**MIKE KERSCHEN / MIKE SULLIVAN**
DRILLING FLUID:	**WATER, MUD, POLY**
DRILLING RIG:	**H&P 326**
API:	**05-123-35060**
LOG TYPE:	**VERTICAL**
SCALE:	**1:240 (5 inches per 100 feet)**
REMARKS:	

LITHOLOGIES

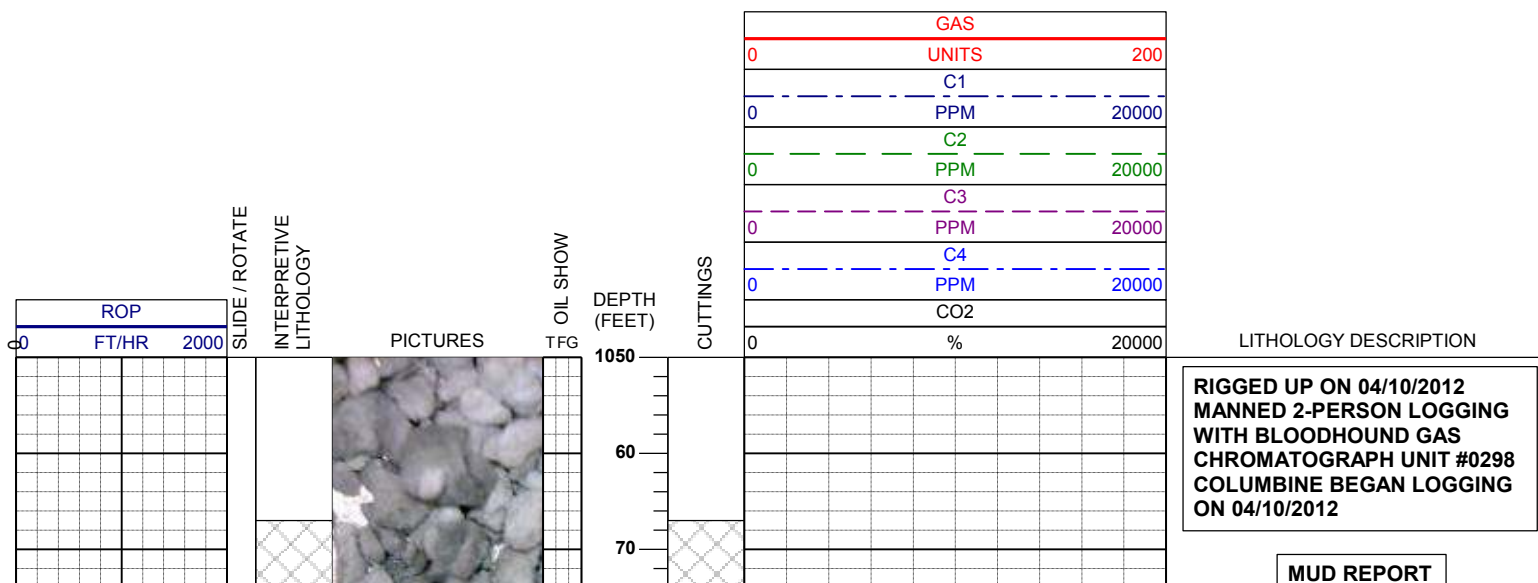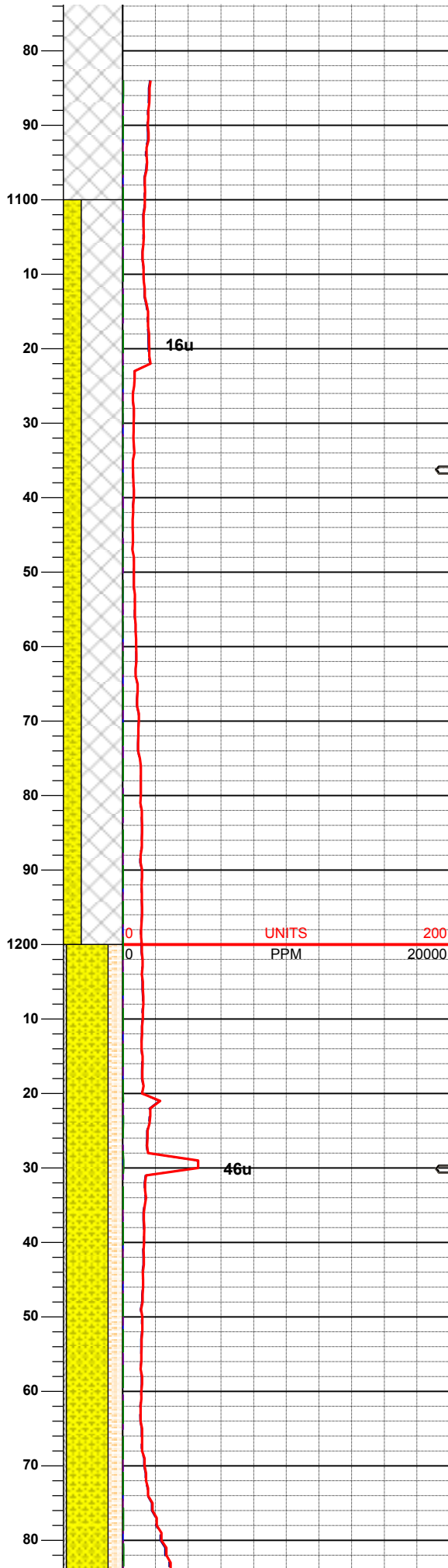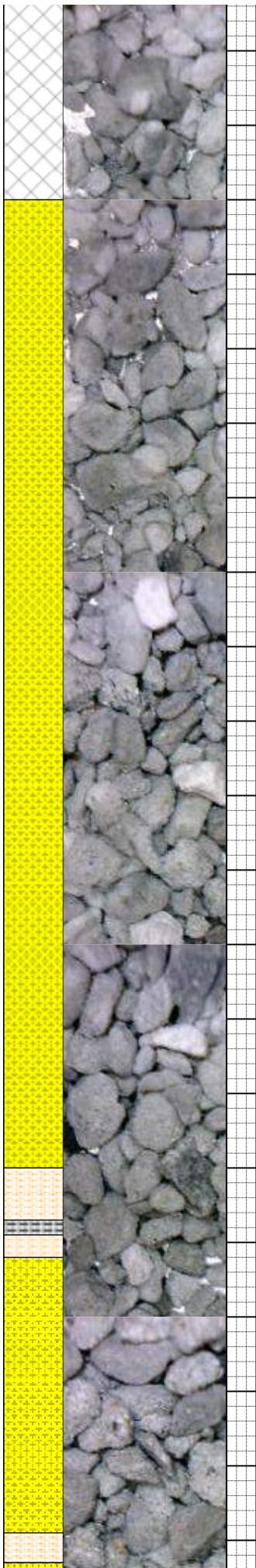|		
No Sample	Sandstone	Shale
Shaly Sandstone	Shaly Siltstone	Silty Shale

ENGINEERING SYMBOLS

⊐ Connection

ROP	SLIDE / ROTATE	INTERPRETIVE LITHOLOGY	PICTURES	OIL SHOW	DEPTH (FEET)	CUTTINGS	GAS	LITHOLOGY DESCRIPTION
0 FT/HR 2000				TFG			UNITS — C1 PPM — C2 PPM — C3 PPM — C4 PPM — CO2 %	

GAS
0 UNITS 200
C1
0 PPM 20000
C2
0 PPM 20000
C3
0 PPM 20000
C4
0 PPM 20000
CO2
0 % 20000

1050
60
70

RIGGED UP ON 04/10/2012 MANNED 2-PERSON LOGGING WITH BLOODHOUND GAS CHROMATOGRAPH UNIT #0298 COLUMBINE BEGAN LOGGING ON 04/10/2012

MUD REPORT

**Drilled cement shoe.
100% cement**

70% CMT: lt-m gy, mod firm -modsft,
sb ang to sb rd, slty-vsdy, vsl calc
30% SHYSS: ltgy-m gy, fgr-mgr, sbrd
-sbplty, m-psrt, mod firm -modsft, arg
cmt, vsl calc

70% SHYSS: ltgy-m gy, fgr-mgr, sbrd
-sbplty, m-psrt, mod firm -modsft, arg
cmt, vsl calc **25% SLTYSH:** m gy,
mod firm -modsft, sbrd-sbpltyy,
noncalc **5% SH:** dk gy, mod firm -
modsft, sbplty

0   FT/HR   2000

0   UNITS   200
0   PPM   20000

16u

46u

1172

1416

0   FT/HR   2000

1534

1464

0   UNITS   200
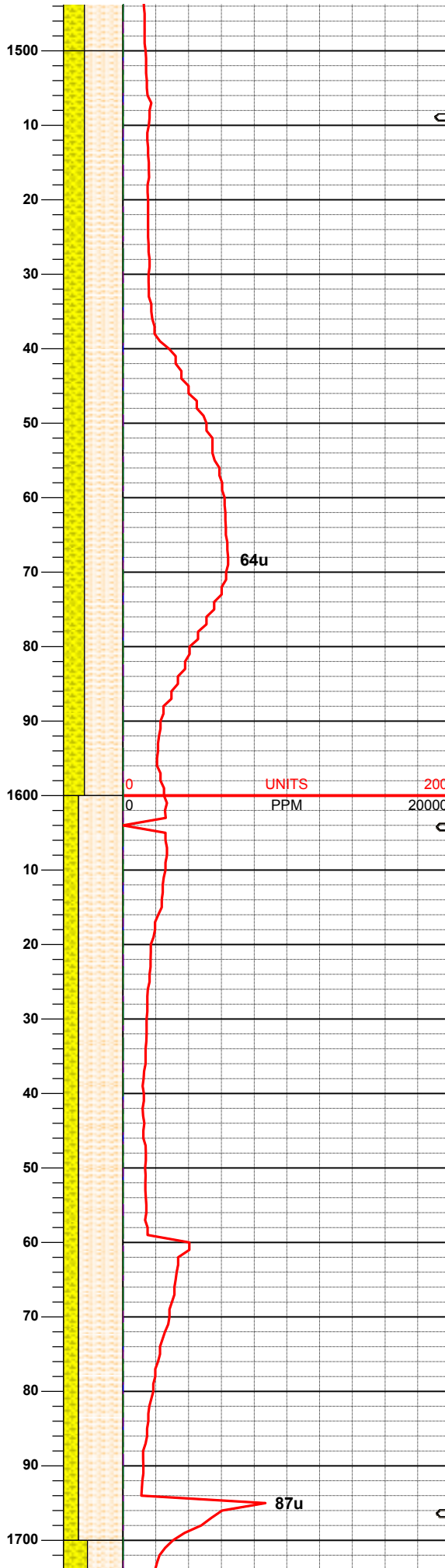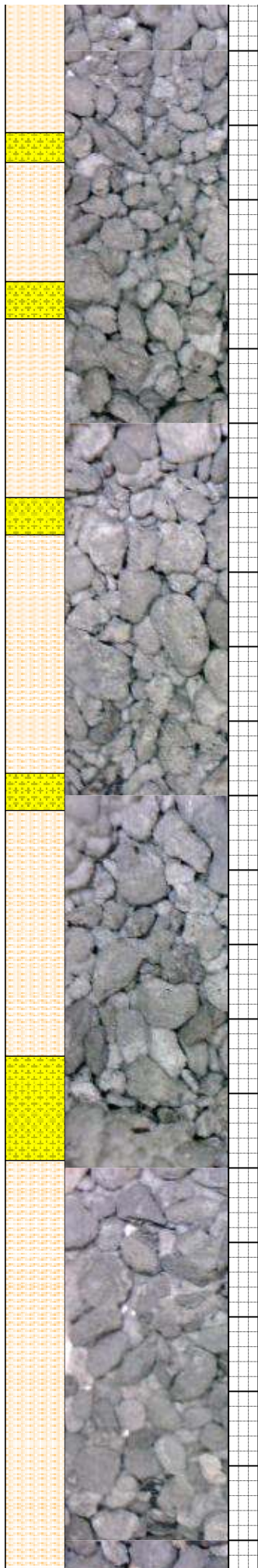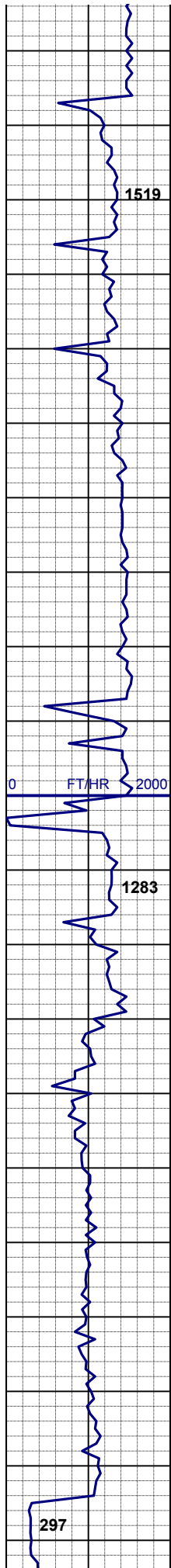0   PPM   20000

74u

89u

55% SLTYSH: lt-m gy, mod firm - modsft, sb blky-sb rd, slty-vsdy, noncalc
45% SHYSS: ltgy-m brngy, fgr, sbrd-sbplty, f-psrt, mod firm -modsft, arg cmt, vsl calc, sme phlog, sme glau, carb flk, tr ss

SURVEY
MD 1369'
TVD 1368.947'
INC 2.0°
AZI 196.2°

65% SLTYSH: lt-m gy, mod firm - modsft, sb blky-sb rd, slty-vsdy, noncalc
35% SHYSS: ltgy-m brngy, fgr, sbrd-sbplty, f-psrt, mod firm -modsft, arg cmt, vsl calc, sme phlog, sme glau, carb flk, tr ss

Depth track (left, FT/HR):
0   FT/HR   2000

1519

1283

297

Depth scale (center):
1500
10
20
30
40
50
60
70
80
90
1600
10
20
30
40
50
60
70
80
90
1700

Gas track (right):
0   UNITS   200
0   PPM   20000

64u

87u
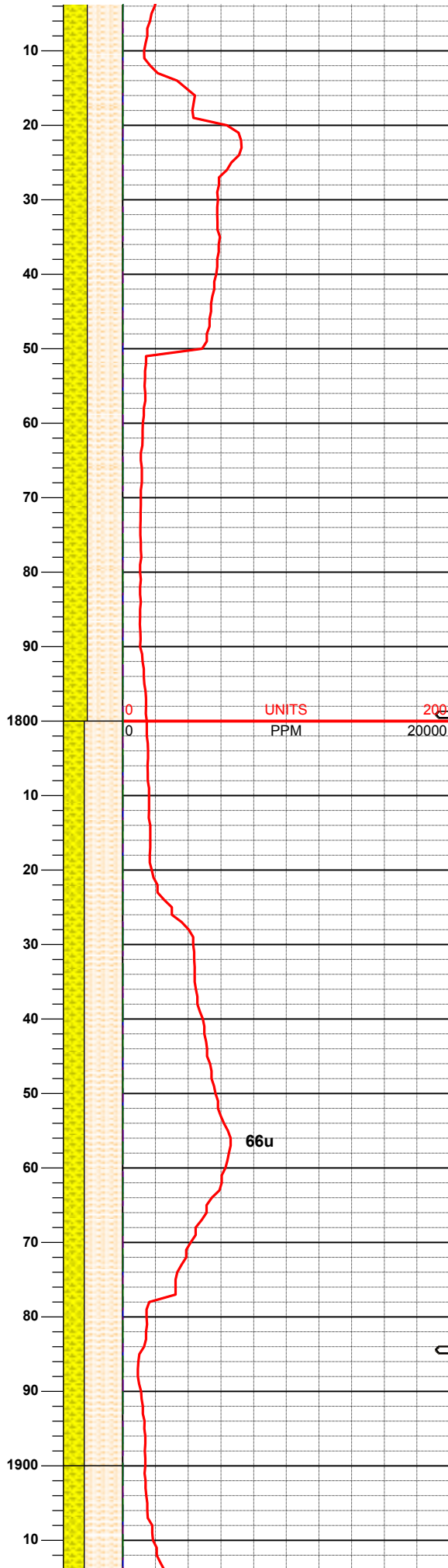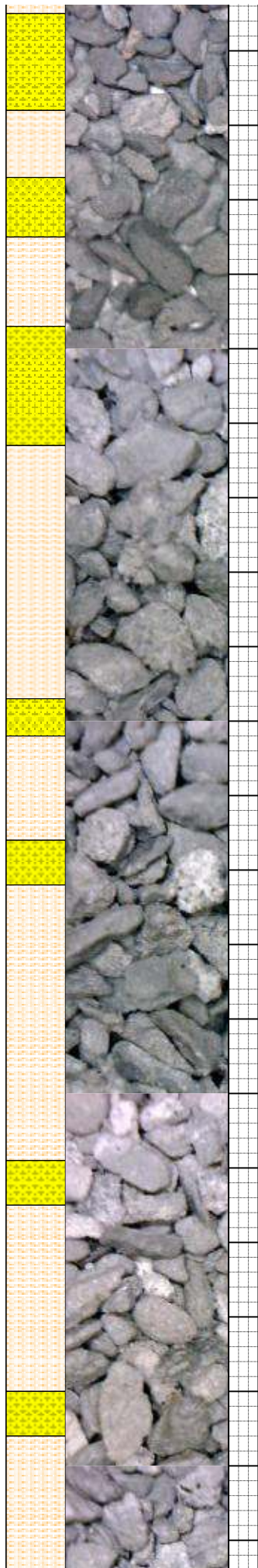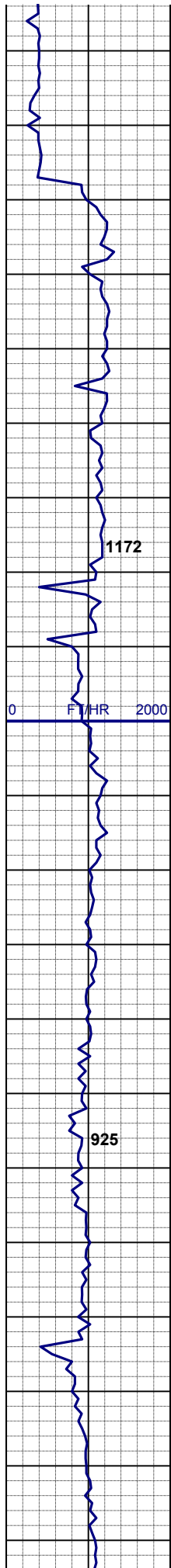
65% SLTYSH: lt-m gy, mod firm -
modsft, sb blky-sb rd, slty-vsdy,
noncalc
35% SHYSS: ltgy-m brngy, fgr, sbrd-
sbplty, f-psrt, mod firm -modsft, arg
cmt, vsl calc, sme phlog, sme glau,
carb flk, tr ss

75% SLTYSH: lt-m gy, mod firm -
modsft, sb blky-sb rd, slty-vsdy,
noncalc
25% SHYSS: ltgy-m brngy, fgr, sbrd-
sbplty, f-psrt, mod firm -modsft, arg
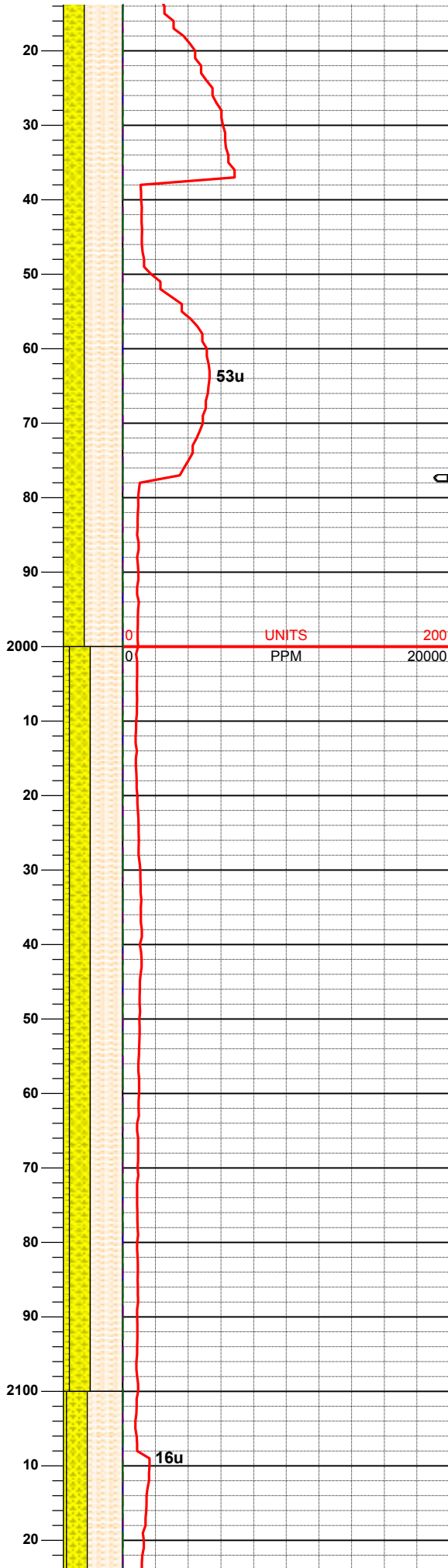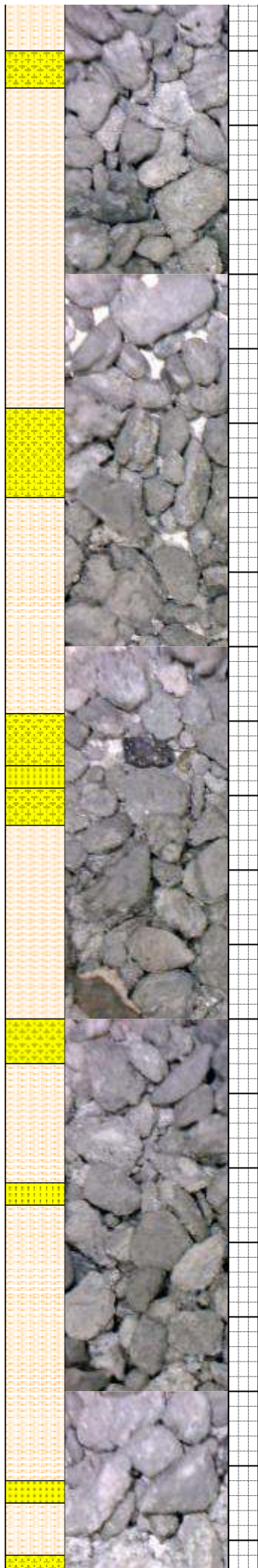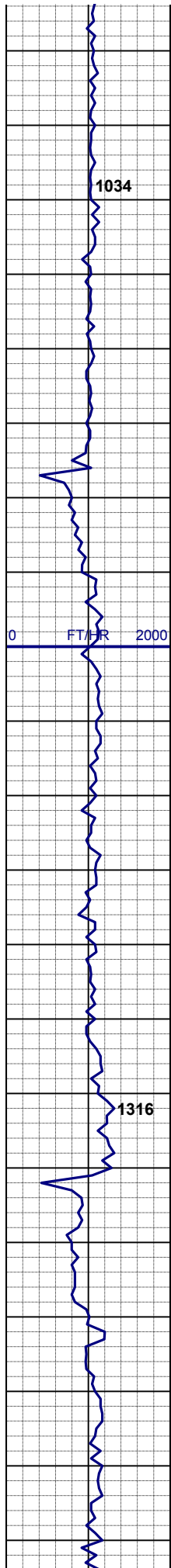cmt, vsl calc, sme phlog, sme glau,
carb flk, sme blk SH:, tr ss

SURVEY
MD 1648'
TVD 1647.77'
INC 2.0°
AZI 186.1°

0 FT/HR 2000

1172

925

0 UNITS 200
0 PPM 20000

66u

60% SLTYSH: lt-m gy, mod firm -modsft, sb blky-sb rd, slty-vsdy, noncalc
40% SHYSS: ltgy-m brngy, fgr, sbrd-sbplty, f-psrt, mod firm -modsft, arg cmt, vsl calc, sme phlog, sme glau, tr ss

65% SLTYSH: lt-m gy, mod firm -modsft, sb blky-sb rd, slty-vsdy, noncalc
35% SHYSS: ltgy-m brngy, fgr, sbrd-sbplty, f-psrt, mod firm -modsft, arg cmt, vsl calc, sme phlog, sme glau, tr ss

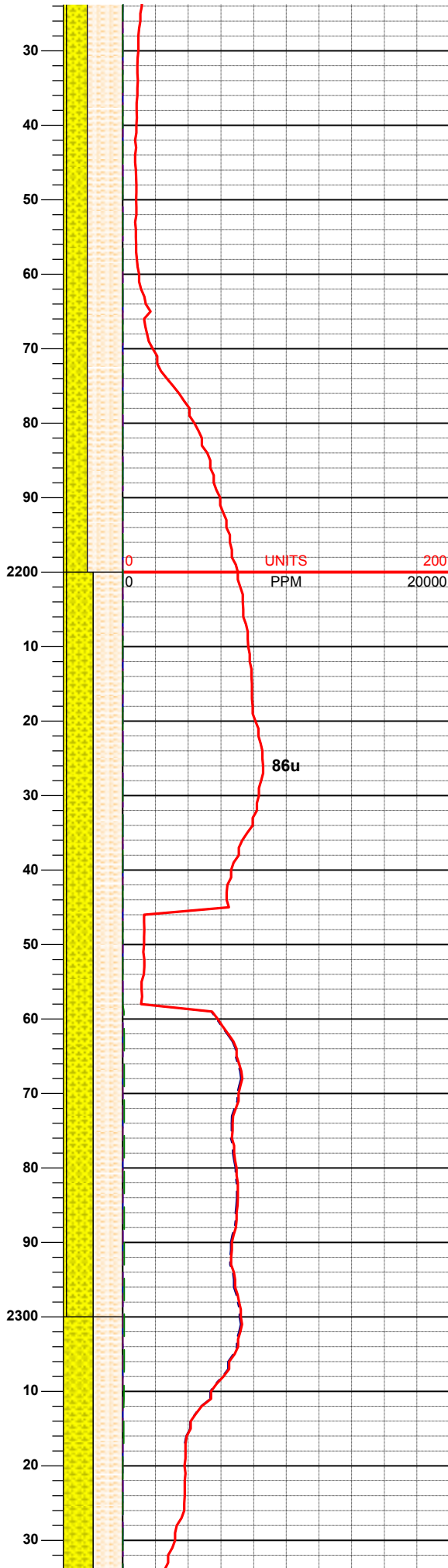0 FT/HR 2000

1034

1316

0 UNITS 200
0 PPM 20000

53u

16u

65% SLTYSH: lt-m gy, mod firm - modsft, sb blky-sb rd, slty-vsdy, noncalc
35% SHYSS: ltgy-m brngy, fgr, sbrd-sbplty, f-psrt, mod firm -modsft, arg cmt, vsl calc, sme phlog, sme glau, tr ss

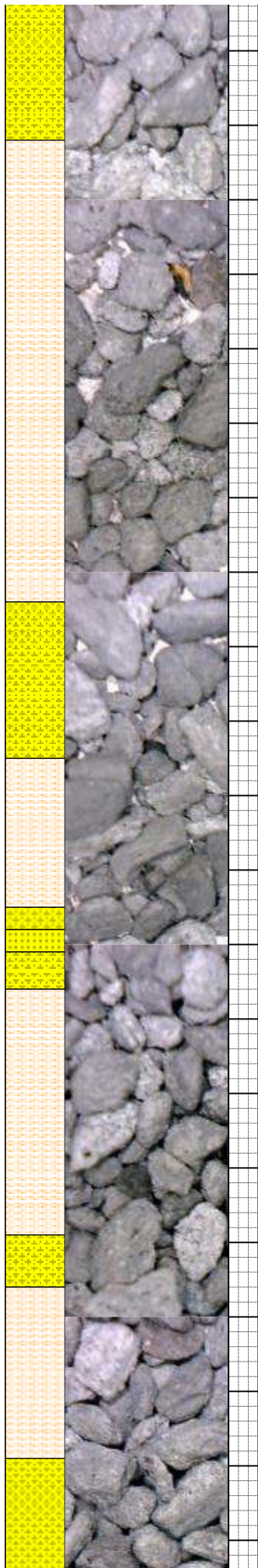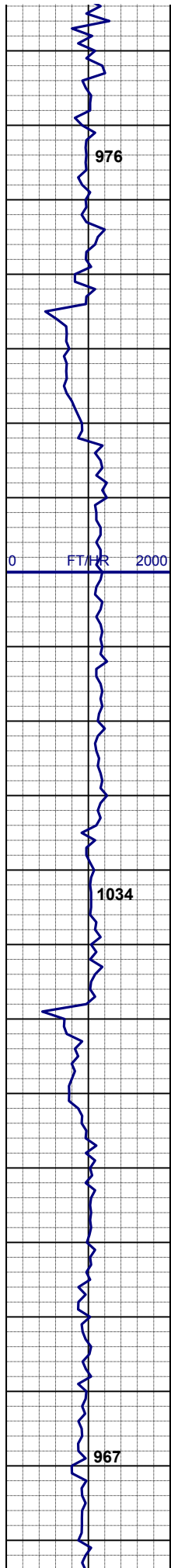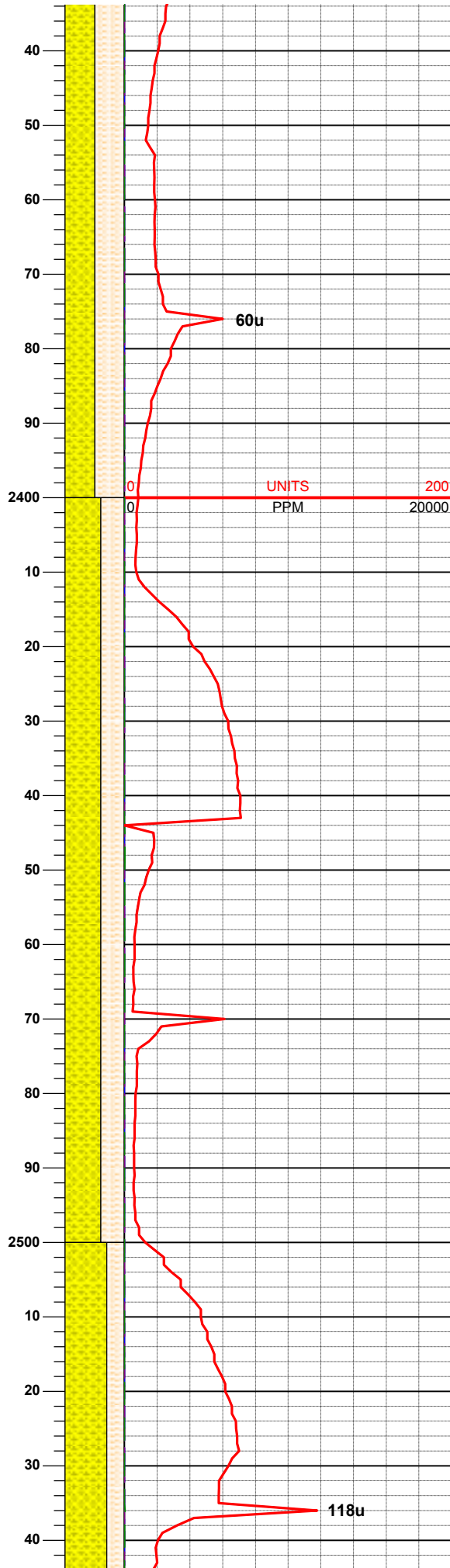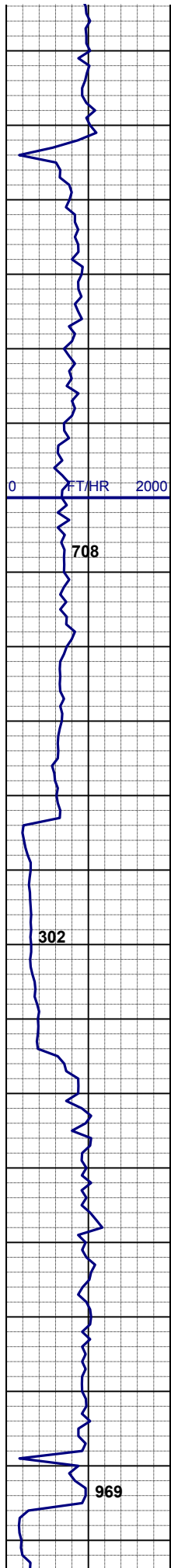55% SLTYSH: lt-m gy, mod firm - modsft, sb blky-sb rd, slty-vsdy, noncalc
35% SHYSS: ltgy-m brngy, fgr, sbrd-sbplty, f-psrt, mod firm -modsft, arg cmt, 10% SS: lt-med gy, s&p, m-cgr, vsl calc, sme phlog, sme glau

Track 1 (ROP): 0 — FT/HR — 2000

Labeled values: 976, 1034, 967

Track 3 (Gas): 0 — UNITS — 200 / 0 — PPM — 20000

Labeled value: 86u

Depth scale: 30, 40, 50, 60, 70, 80, 90, 2200, 10, 20, 30, 40, 50, 60, 70, 80, 90, 2300, 10, 20, 30

60% SLTYSH: lt-m gy, mod firm -
modsft, sb blky-sb rd, slty-vsdy,
noncalc
35% SHYSS: ltgy-m brngy, fgr, sbrd-
sbplty, f-psrt, mod firm -modsft, arg
cmt, 5% SS: lt-med gy, s&p, m-cgr,
vsl calc, sme phlog, sme glau

50% SLTYSH: lt-m gy, mod firm -
modsft, sb blky-sb rd, slty-vsdy,
noncalc
45% SHYSS: ltgy-m gy, s&p, fgr,
sbrd-sbplty, f-psrt, mod firm -modsft,
arg cmt, 5% SS: lt-med gy, s&p, m-
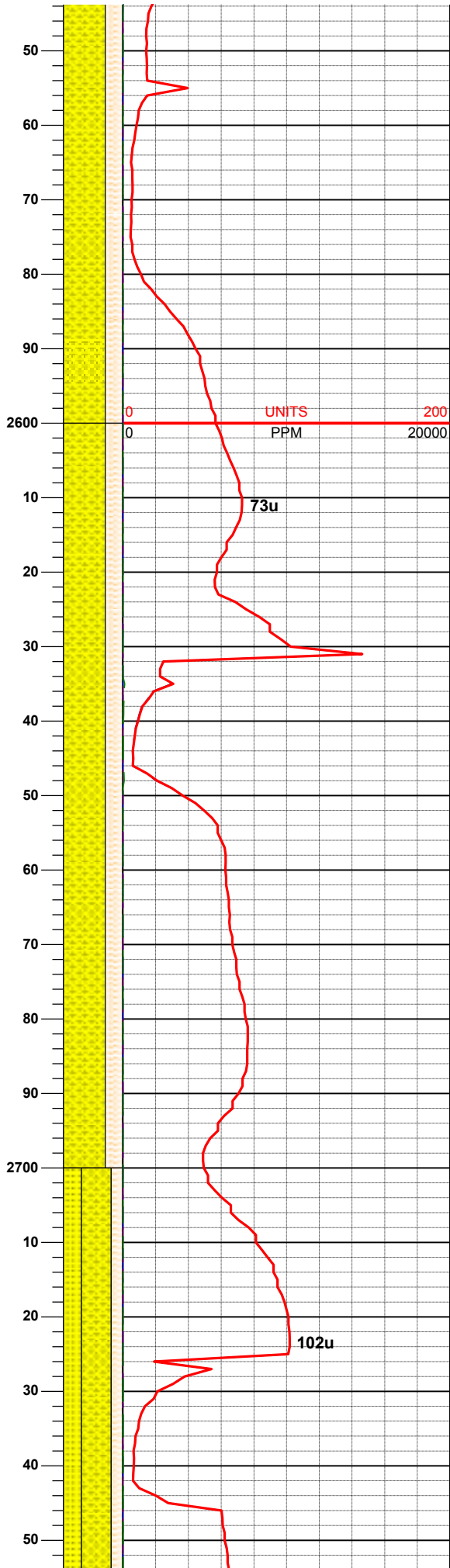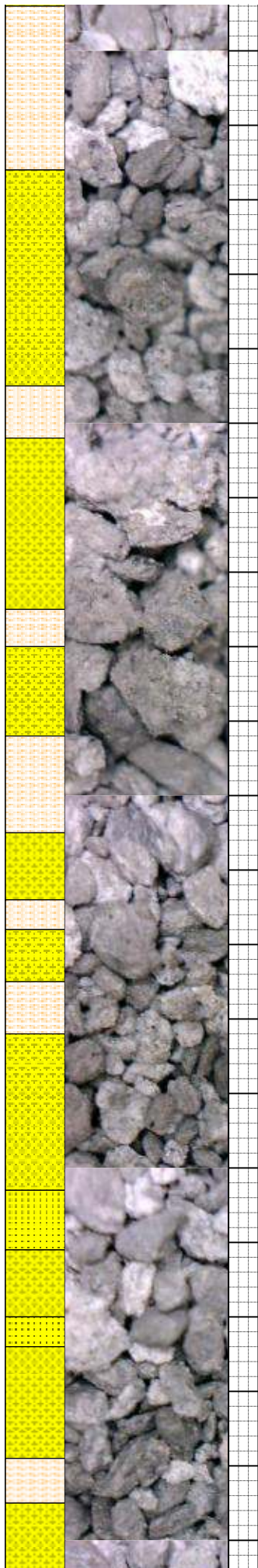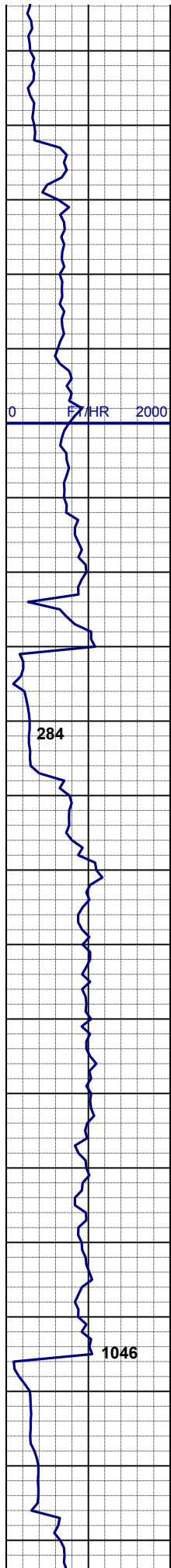cgr, vsl calc, sme phlog, sme glau

50% SLTYSH: lt-m gy, mod firm - modsft, sb blky-sb rd, slty-vsdy, noncalc
50% SHYSS: ltgy-m gy, s&p, fgr, sbrd-sbplty, f-psrt, mod firm -modsft, arg cmt, sme phlog, sme glau, sme carb flk

60% SHYSS: ltgy-m gy, s&p, fgr, sbrd-sbplty, f-psrt, mod firm -modsft, arg cmt, sme phlog, sme glau, sme carb flk 40% SLTYSH: lt-m gy, mod firm -modsft, sb blky-sb rd, slty-vsdy, noncalc

SURVEY
MD 2489'
TVD 2488.68'
INC 2.7°
AZI 32.4°

60u

118u

708

302

969

0   FT/HR   2000

0   UNITS   200
0   PPM   20000

40
50
60
70
80
90
2400
10
20
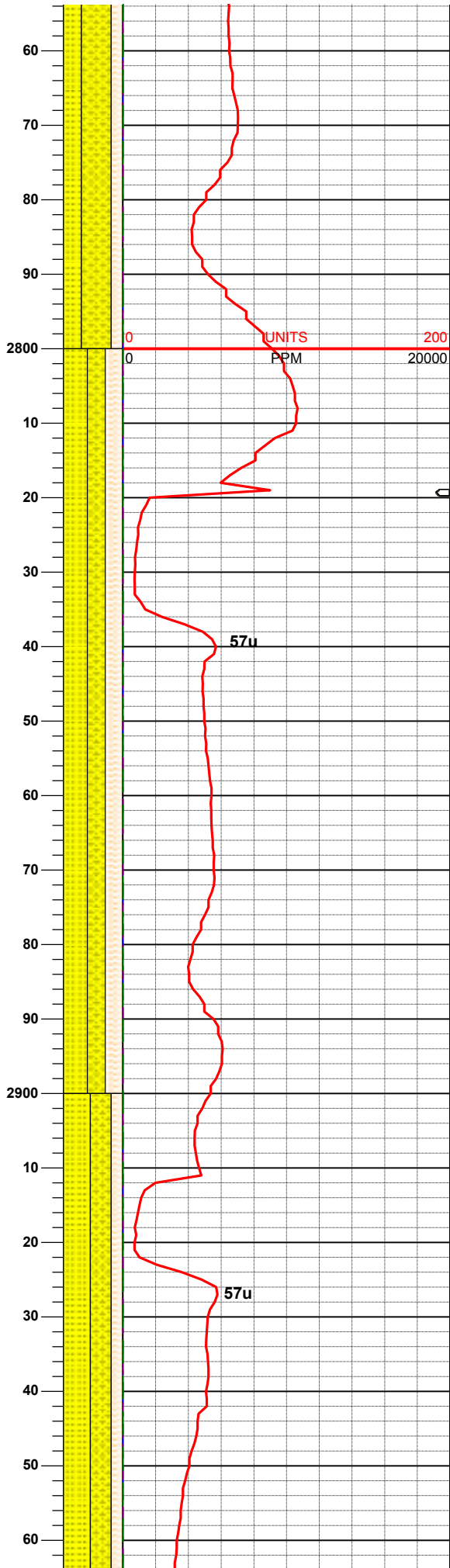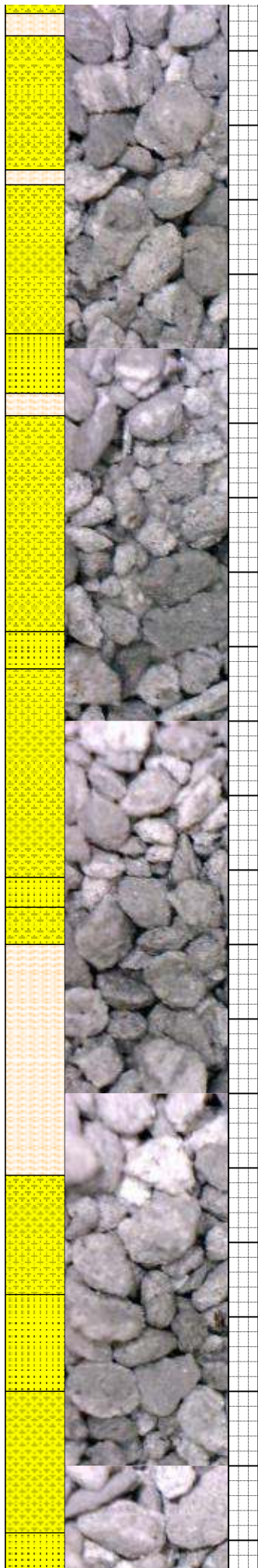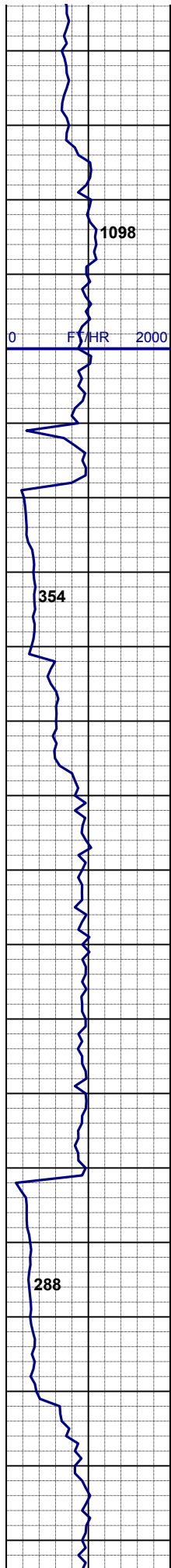30
40
50
60
70
80
90
2500
10
20
30
40

70% SHYSS: ltgy-m gy, s&p, fgr, sbrd-sbplty, f-psrt, mod firm -modsft, arg cmt, sme phlog, sme glau, sme carb flk 30% SLTYSH: lt-m gy, mod firm -modsft, sb blky-sb rd, slty-vsdy, wk calc

SURVEY
MD 2583'
TVD 2582.47'
INC 4.9°
AZI 55.8°

70% SHYSS: ltgy-m gy, s&p, fgr, sbrd-sbplty, f-psrt, mod firm -modsft, arg cmt, wk calc, sme phlog, sme glau, sme carb flk 30% SLTYSH: lt-m gy, mod firm -modsft, sb blky-sb rd, slty-vsdy, wk calc

SURVEY
MD 2677'
TVD 2676.05'
INC 5.9°
AZI 55.4°

50% SHYSS: lt-m gy, f-mgr, sbplty, f-psrt, mod firm -modsft, arg cmt, vsl calc
30% SS: wh, s&p, fgr, sbrd-sbplty, mod-fr srt, firm, fri-brit, arg cmt, calc, mod por, glau; sme phlog 20%

0   FT/HR   2000

0   UNITS   200
0   PPM   20000

284

1046

73u

102u

Depth Track (left log - FT/HR):
0   FT/HR   2000

1098

354

288

Gas track (red - right log):
0   UNITS   200
0   PPM   20000

57u

57u

Depth scale:
60, 70, 80, 90, 2800, 10, 20, 30, 40, 50, 60, 70, 80, 90, 2900, 10, 20, 30, 40, 50, 60

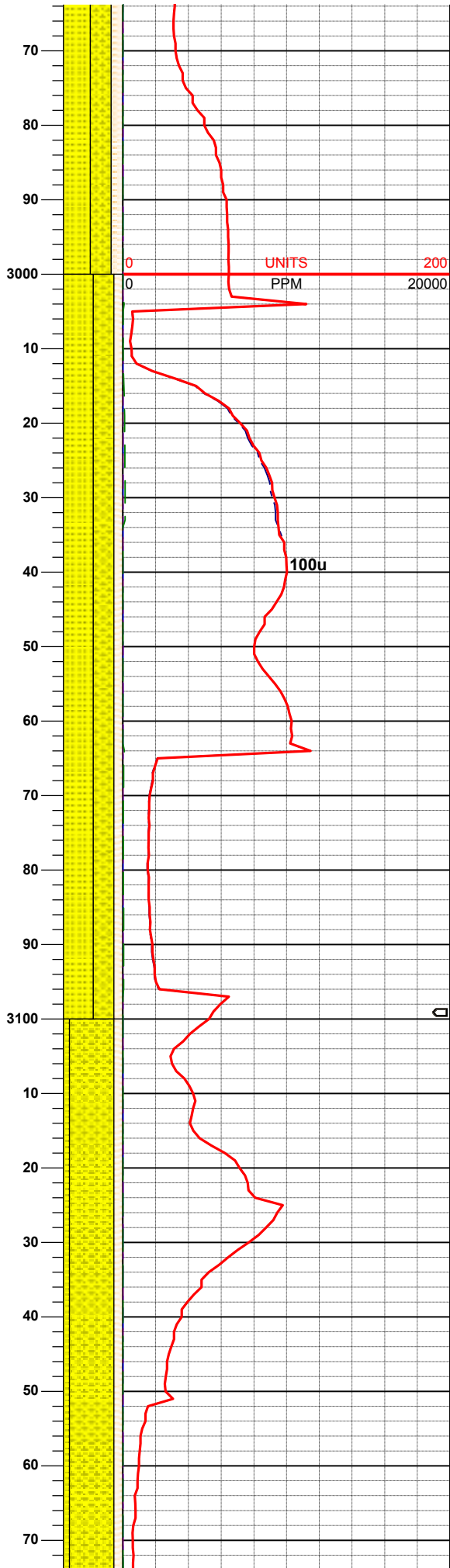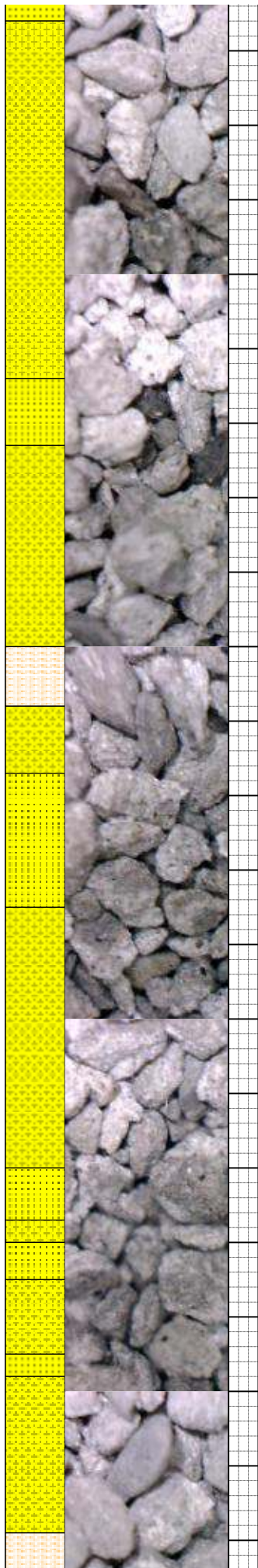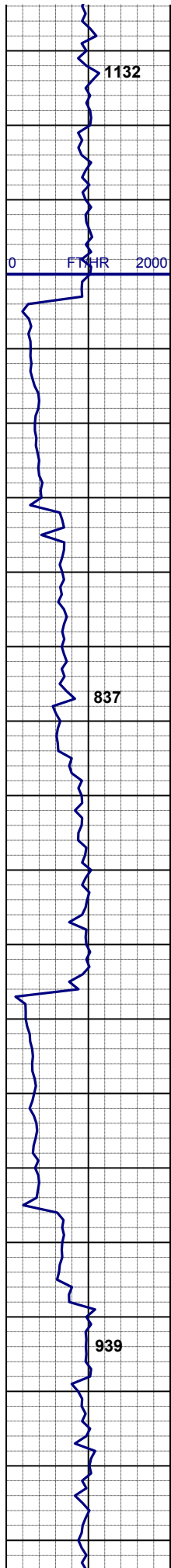**Descriptions (right margin):**

mod por, glau, sme phlog 20%
SHYSLTST: mgy, sl firm -modsft, sbplty-sbblky, slty-vsdy, sme intbd ss, vsl calc

SURVEY
MD 2771'
TVD 2769.41'
INC 7.5°
AZI 59.1°

40% SS: wh, s&p, m-cgr, sb rd-sb plty, mod-fr srt, firm, fri-brit, arg cmt, calc, mod por, glau; sme phlog 30%
SHYSS: lt-m gy, f-mgr, sbplty, f-psrt, mod firm -modsft, arg cmt, vsl calc
30% SHYSLTST: mgy, sl firm -modsft, sbplty-sbblky, slty-vsdy, vsl calc

45% SS: wh, s&p, m-cgr, sb rd-sb plty, mod-fr srt, firm, fri-brit, arg cmt, m-vsl calc, mod por, glau; sme phlog
35% SHYSS: lt-m gy, f-mgr, sbplty, f-psrt, mod firm -modsft, arg cmt, vsl calc

1132

0   FT/HR   2000

837

939

70
80
90
3000
10
20
30
40
50
60
70
80
90
3100
10
20
30
40
50
60
70

0   UNITS   200
0   PPM   20000

100u

20% SHYSLTST: mgy, sl firm -
modsft, sbplty-sbblky, slty-vsdy, vsl
calc

**SURVEY
MD 3050'
TVD 3043.93'
INC 13.2°
AZI 68.3°**

50% SS: wh, s&p, m-cgr, sb rd-sb
plty, mod-fr srt, firm, fri-brit, arg cmt,
m-vsl calc, mod por, glau; sme phlog
35% SHYSS: lt-m gy, f-mgr, sbplty, f-
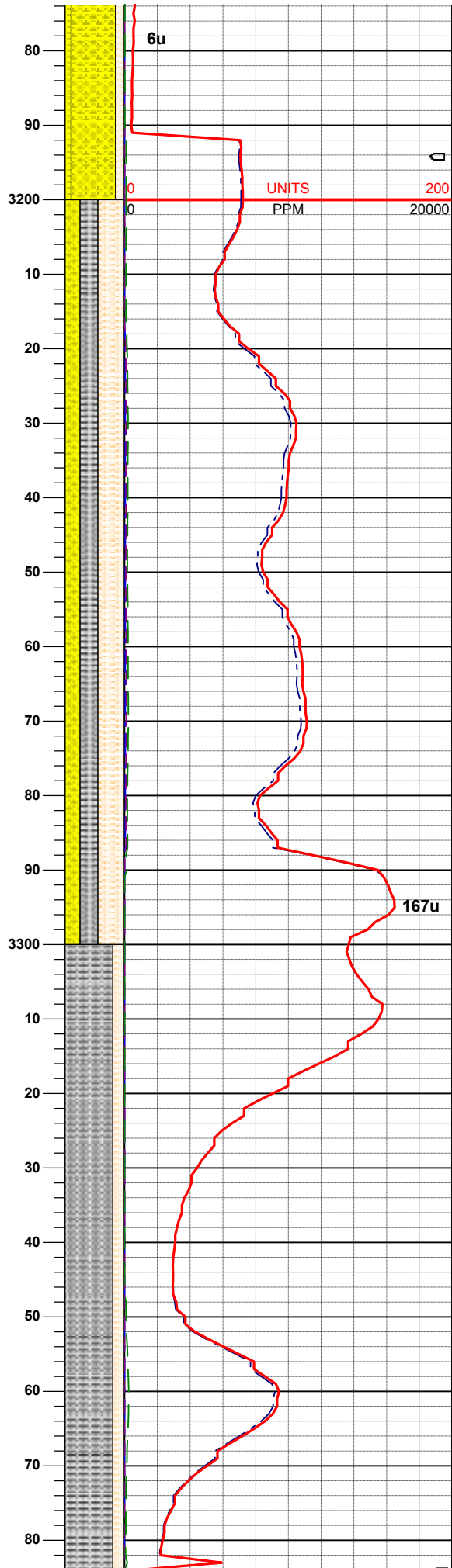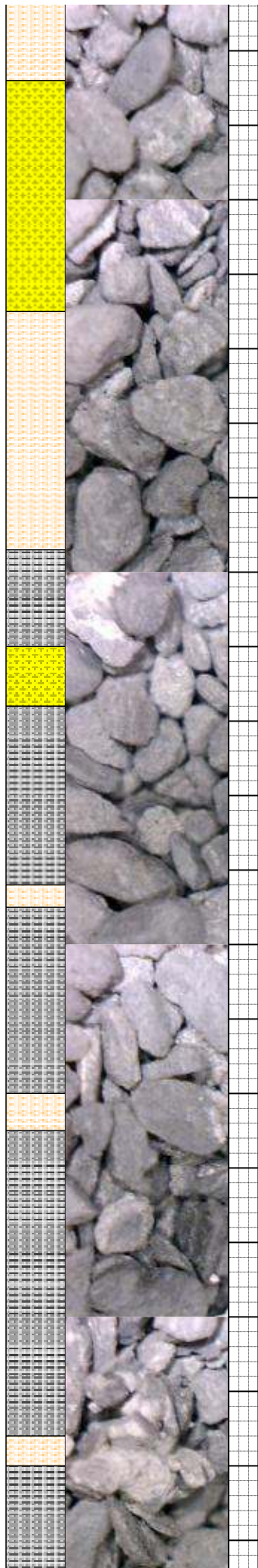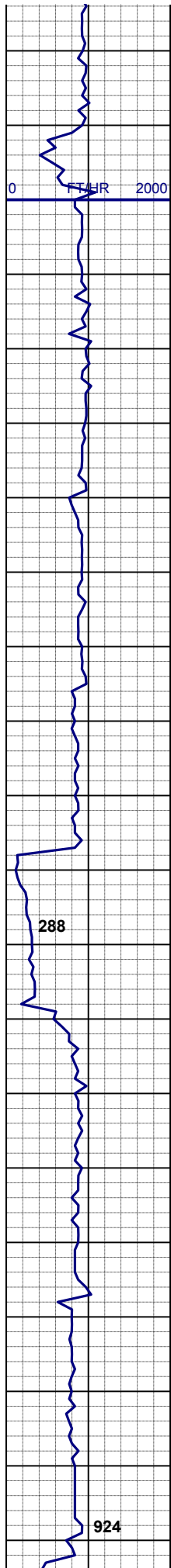psrt, mod firm -modsft, arg cmt, vsl
calc
15% SHYSLTST: mgy, sl firm -
modsft, sbplty-sbblky, slty-vsdy, vsl
calc

**SURVEY
MD 3145'
TVD 3135.96'
INC 15.1°
AZI 67.6°**

0   FT/HR   2000

288

924

6u

167u

0   UNITS   200

0   PPM   20000

SURVEY
MD 3240'
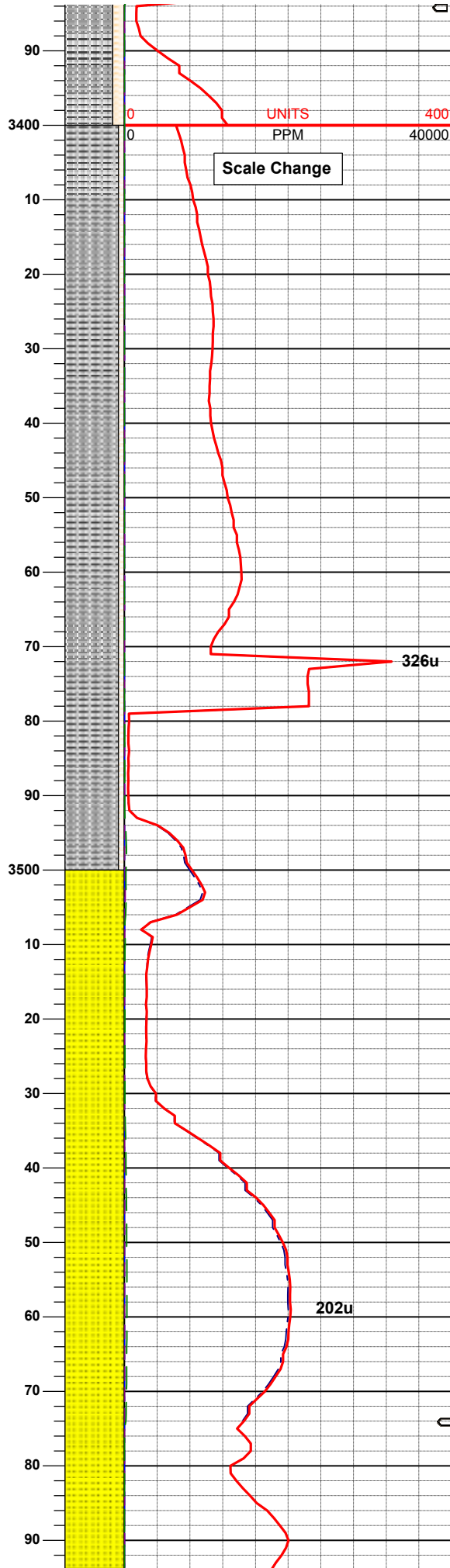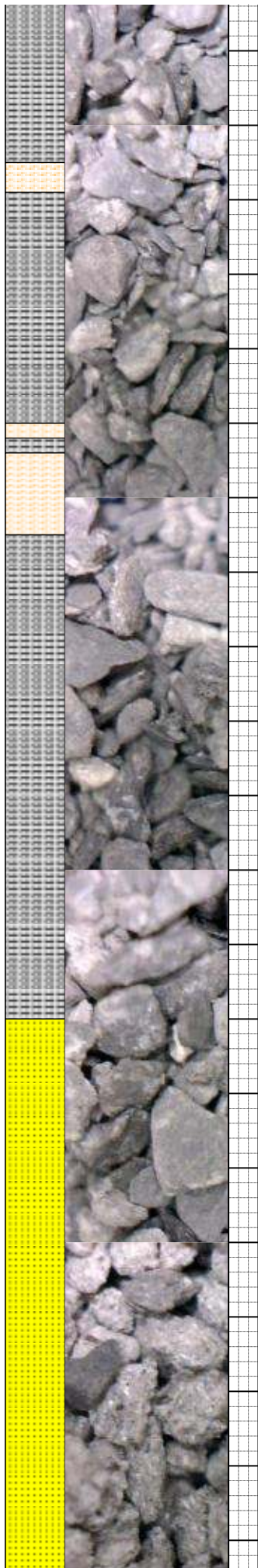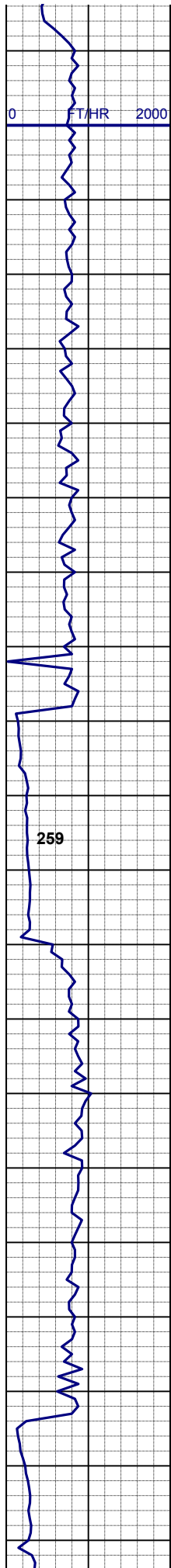**TVD 3227.7'**
INC 14.6°
AZI 67.4°

80%SLTYSH: mgy to vdkgy, sl firm - modsft, sbplty-sbblky, vsl calc, grdg to 20% SLTST: mgy to dk gy, fgr, sbblky to sbplty, mod firm-modsft, vsl calc

MUD REPORT
3382' MD
Wt - 8.75
Vis - 27

pH - 11.3
YP - 4
API flt -59.0
Ck - 6/0

Scale Change

SURVEY
MD 3430'
TVD 3411.89'
INC 12.1°
AZI 64.2°

90%SLTYSH: mgy to vdkgy, sl firm -
modsft, sbplty-sbblky, vsl calc, grdg to
10% SLTST: mgy to dk gy, fgr, sbblky
to sbplty, mod firm-modsft, vsl calc

326u

259

SURVEY
MD 3525'
TVD 3504.55'
INC 13.4°
AZI 65.1°

100% SS: wh, s&p, m-cgr, sb rd-sb
plty, mod-fr srt, firm, fri-brit, arg cmt,
calc, mod por, glau; sme phlog

202u

0   FT/HR   2000

0   UNITS   400
0   PPM   40000

3400
90
10
20
30
40
50
60
70
80
90
3500
10
20
30
40
50
60
70
80
90

FT/HR 0 — 2000

1083

1013

Depth track (center): 3600, 10, 20, 30, 40, 50, 60, 70, 80, 90, 3700, 10, 20, 30, 40, 50, 60, 70, 80, 90, 3800

UNITS 0 — 400
PPM 0 — 40000

123u

SURVEY
MD 3620'
TVD 3596.48'
INC 15.8°
AZI 68.6°

100% SS: wh, s&p, m-cgr, sb rd-sb plty, mod-fr srt, firm, fri-brit, arg cmt, calc, mod por, glau; sme phlog, tr sltysh
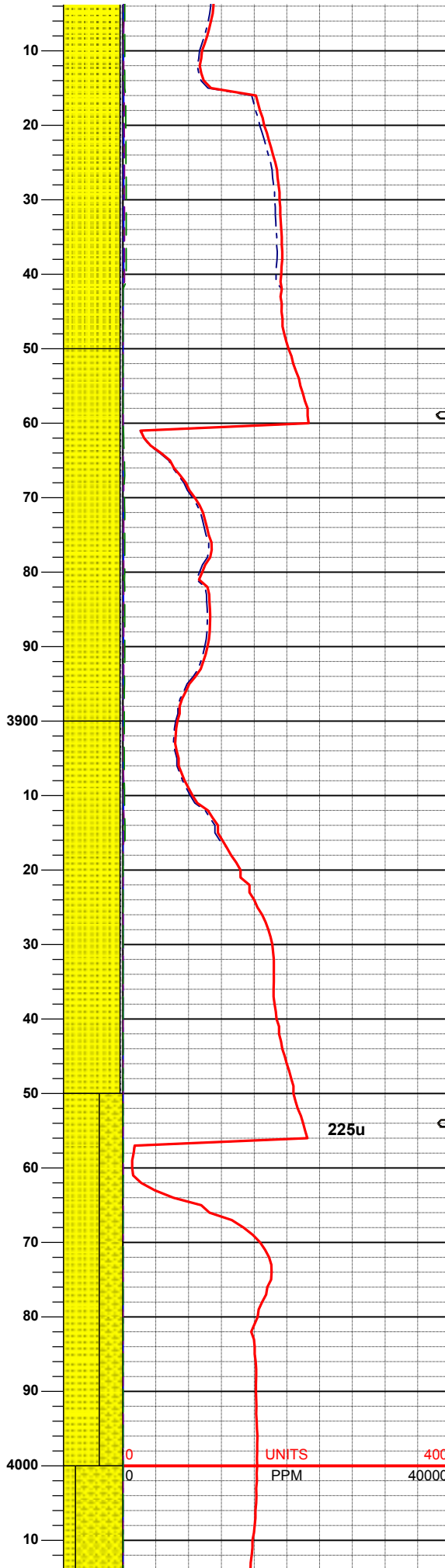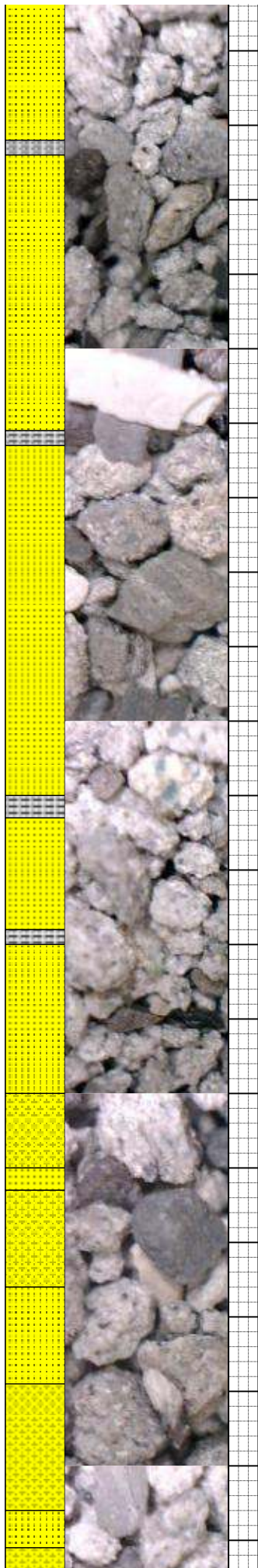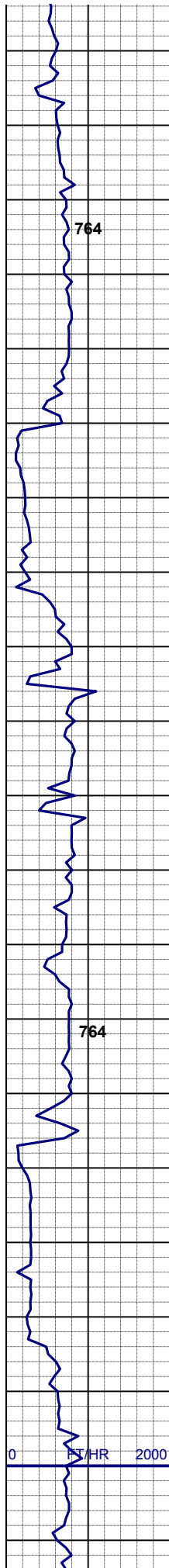
SURVEY
MD 3715'
TVD 3687.61'
INC 17.0°
AZI 68.3°

90% SS: wh, s&p, m-cgr, sb rd-sb plty, mod-fr srt, firm, fri-brit, arg cmt, calc, mod por, glau; sme phlog
5% SLTYSH: mgy, sl firm -modsft, sbplty-sbblky, slty-vsdy, vsl calc

Depth track (center):

10, 20, 30, 40, 50, 60, 70, 80, 90, 3900, 10, 20, 30, 40, 50, 60, 70, 80, 90, 4000, 10

ROP track (left):

0   FT/HR   2000

764

764

Gas track (right):

225u

0   UNITS   400

0   PPM   40000

Right column (survey and descriptions):

SURVEY
MD 3810'
TVD 3778.36'
INC 17.4°
AZI 67.2°

95% SS: wh, s&p, m-cgr, sb rd-sb
plty, mod-fr srt, firm, fri-brit, arg cmt,
calc, mod por, glau; sme phlog, sltyss
5% SLTYSH: mgy, sl firm -modsft,
sbplty-sbblky, slty-vsdy, vsl calc, tr
bent

95% SS: wh, s&p, m-cgr, sb rd-sb
plty, mod-fr srt, firm, fri-brit, arg cmt,
calc, mod por, glau; sme phlog, sltyss
5% SLTYSH: mgy, sl firm -modsft,
sbplty-sbblky, slty-vsdy, vsl calc, tr
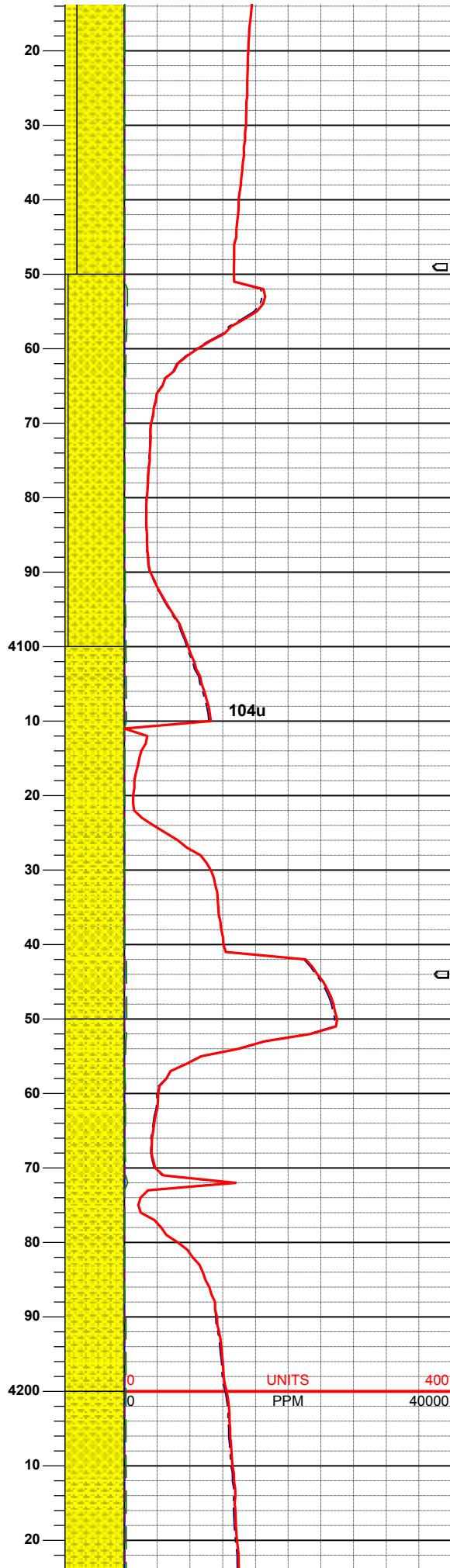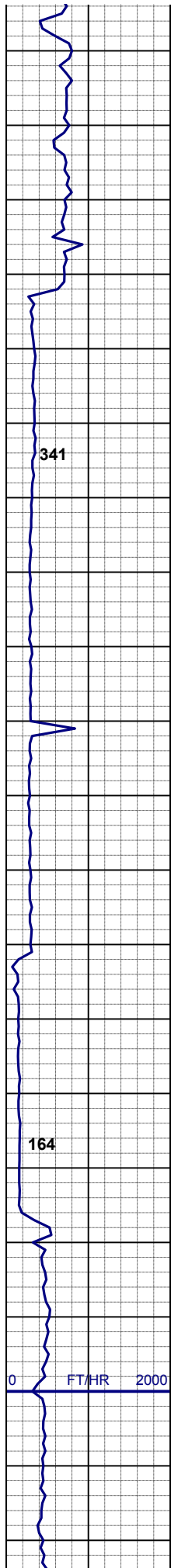bent

SURVEY
MD 3905'
TVD 3868.97'
INC 17.6°
AZI 62.0°

95% SS: wh, s&p, m-cgr, sb rd-sb
plty, mod-fr srt, firm, fri-brit, arg cmt,
calc, mod por, glau; sme phlog, sltyss
5% SLTYSH: mgy, sl firm -modsft,
sbplty-sbblky, slty-vsdy, vsl calc, tr
bent

60% SS: wh, s&p, m-cgr, sb rd-sb
plty, mod-fr srt, firm, fri-brit, arg cmt,
calc, mod por, glau; sme phlog 40%
SHYSS: lt-m gy, f-mgr, sbplty, f-psrt,
mod firm -modsft, arg cmt, sl calc

SURVEY
MD 4000'
TVD 3959.82'
INC 16.4°
AZI 60.5°

80% SHYSS: lt-m gy, f-mgr, sbplty, f-psrt, mod firm -modsft, arg cmt, sl calc 20% SS: wh, s&p, m-cgr, sb rd-sb plty, mod-fr srt, firm, fri-brit, arg cmt, calc, mod por, glau; sme phlog

95% SHYSS: lt-m gy, f-mgr, sbplty, f-psrt, mod firm -modsft, arg cmt, calc 5% SS: wh, s&p, m-cgr, sb rd-sb plty, mod-fr srt, firm, fri-brit, arg cmt, calc, mod por, glau; sme phlog

SURVEY
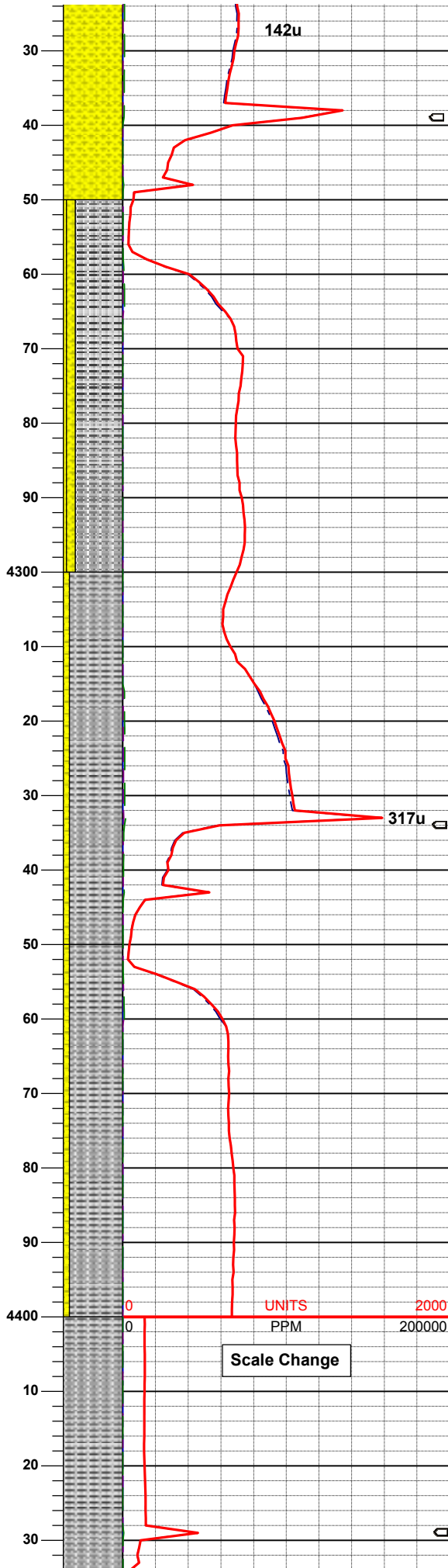**MD 4095'**
TVD 4050.86'
INC 16.8°
AZI 60.9°

100% SHYSS: lt-m gy, f-mgr, sbplty, f-psrt, mod firm -modsft, arg cmt, calc, tr ss, tr sltysh

100% SHYSS: lt-m gy, f-mgr, sbplty, f-psrt, mod firm -modsft, arg cmt, calc, tr sltysh

SURVEY
MD 4190'
TVD 4142.34'
INC 14.5°
AZI 66.3°

100% SHYSS: lt-m gy, f-mgr, sbplty, f-psrt, mod firm -modsft, arg cmt, calc, tr sltysh

341

164

104u

0   FT/HR   2000

0   UNITS   400
0   PPM   40000

142u

713

317u

Scale Change

0   FT/HR   2000

0   UNITS   2000
0   PPM   200000

Depth markings (center track): 30, 40, 50, 60, 70, 80, 90, 4300, 10, 20, 30, 40, 50, 60, 70, 80, 90, 4400, 10, 20, 30

80% SLTYSH: gy to mgy, sl firm - modsft, sbplty-sbblky, sdy, vsl calc,15% SHY:SS: ltgy, tan, pk brn to m gy, f-gr, sbplty, f-psrt, mod firm - modsft, arg cmt, calc 5% SS: wh to lt gy, s&p, fgr, sbrd-sbplty, mod-fr srt, firm, fri-brit, arg cmt, calc, mod por, glau; sme phlog

SURVEY
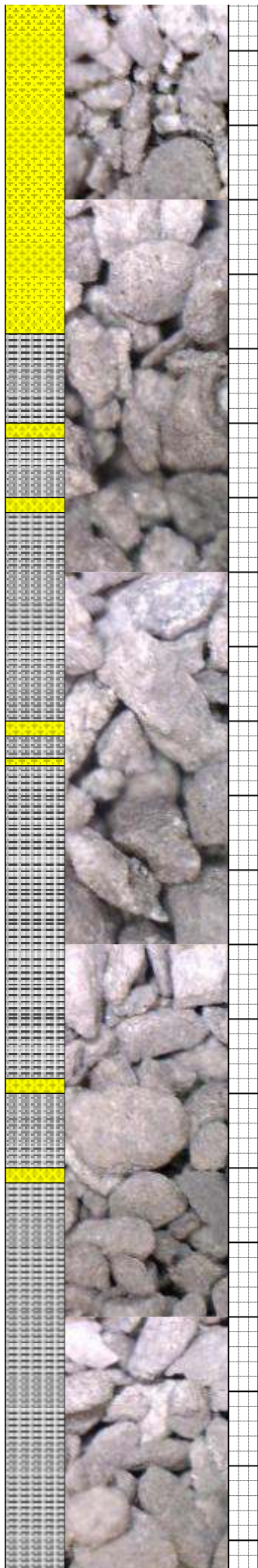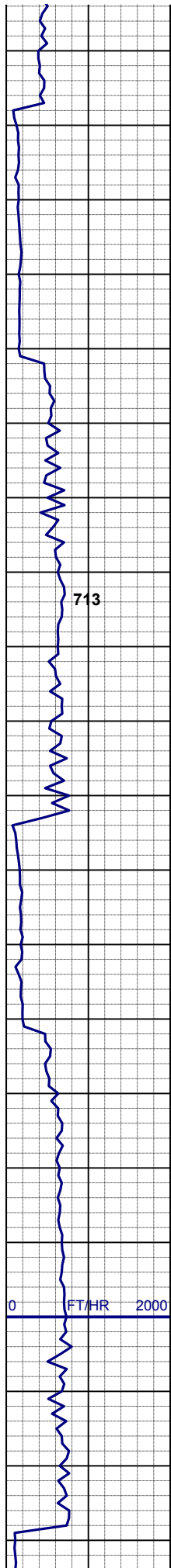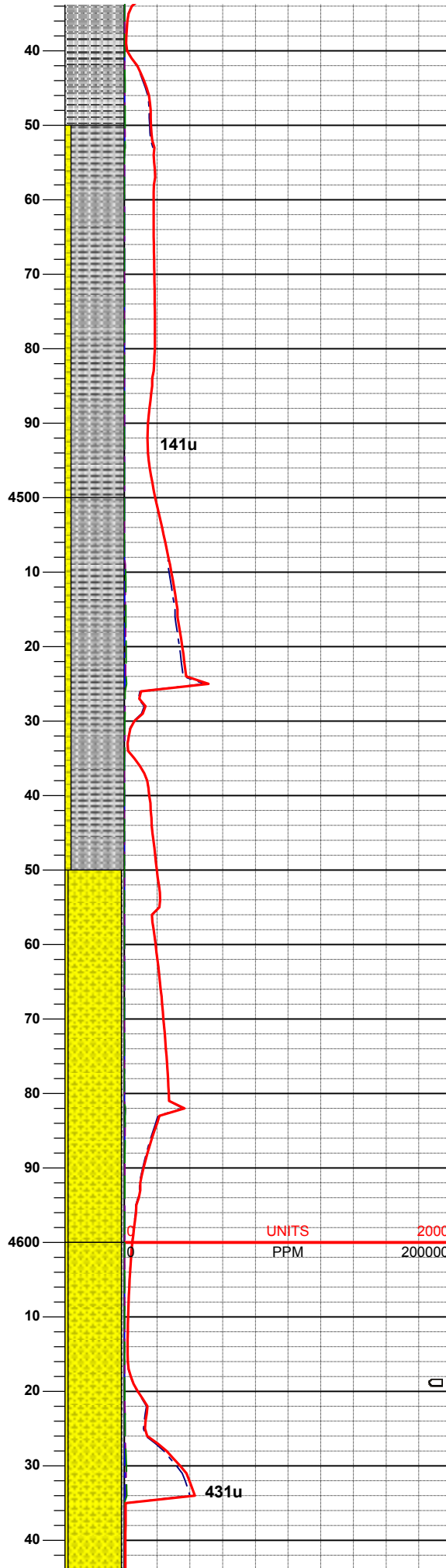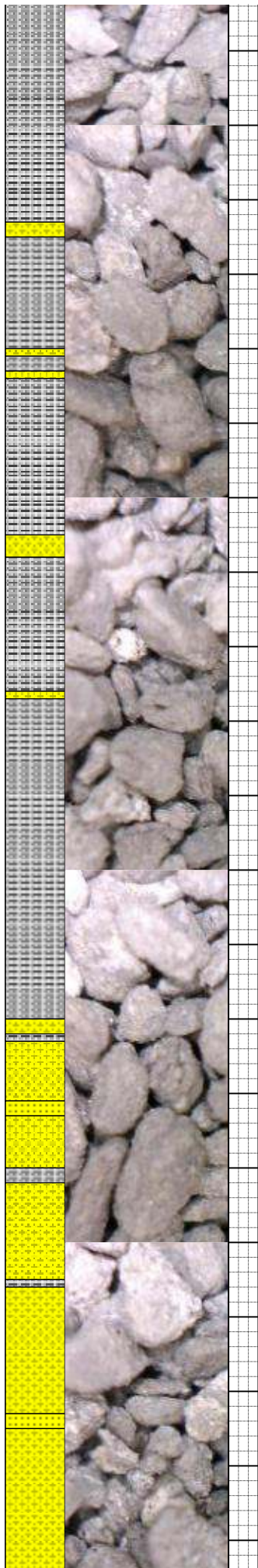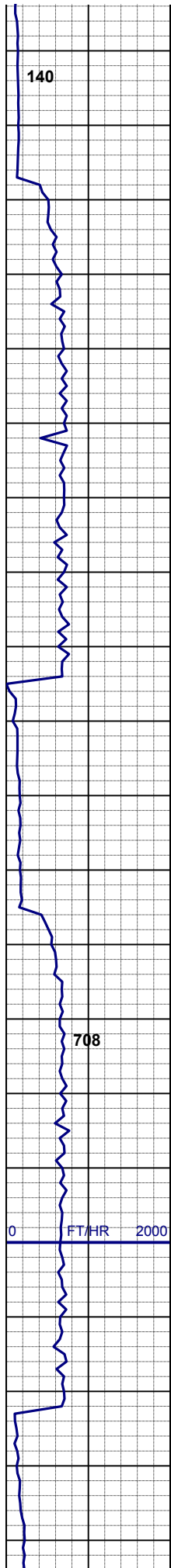**MD 4284'**
TVD 4234.04'
INC 10.8°
AZI 62.5°

90% SLTYSH: gy to mgy, sl firm - modsft, sbplty-sbblky, sdy, vsl calc,10% SHY:SS: ltgy, tan, pk brn to m gy, f-gr, sbplty, f-psrt, mod firm - modsft, arg cmt, calc

90% SLTYSH: gy to mgy, sl firm - modsft, sbplty-sbblky, sdy, vsl calc,10% SHY:SS: ltgy, tan, pk brn to m gy, f-gr, sbplty, f-psrt, mod firm - modsft, arg cmt, calc

SURVEY
MD 4380'
TVD 4328.80'
INC 7.6°
AZI 72.7°

90% SLTYSH: gy to mgy, sl firm - modsft, sbplty-sbblky, sdy, vsl calc,

140

708

0   FT/HR   2000

40
50
60
70
80
90
4500
10
20
30
40
50
60
70
80
90
4600
10
20
30
40

141u

431u

0   UNITS   2000
0   PPM   200000

SURVEY
MD 4457'
TVD 4423.23'
INC 4.9°
AZI 58.4°

90% SLTYSH: gy to mgy, sl firm - modsft, sbplty-sbblky, sdy, vsl calc, 10% SHY:SS: ltgy, tan, pk brn to m gy, f-gr, sbplty, f-psrt, mod firm - modsft, arg cmt, calc
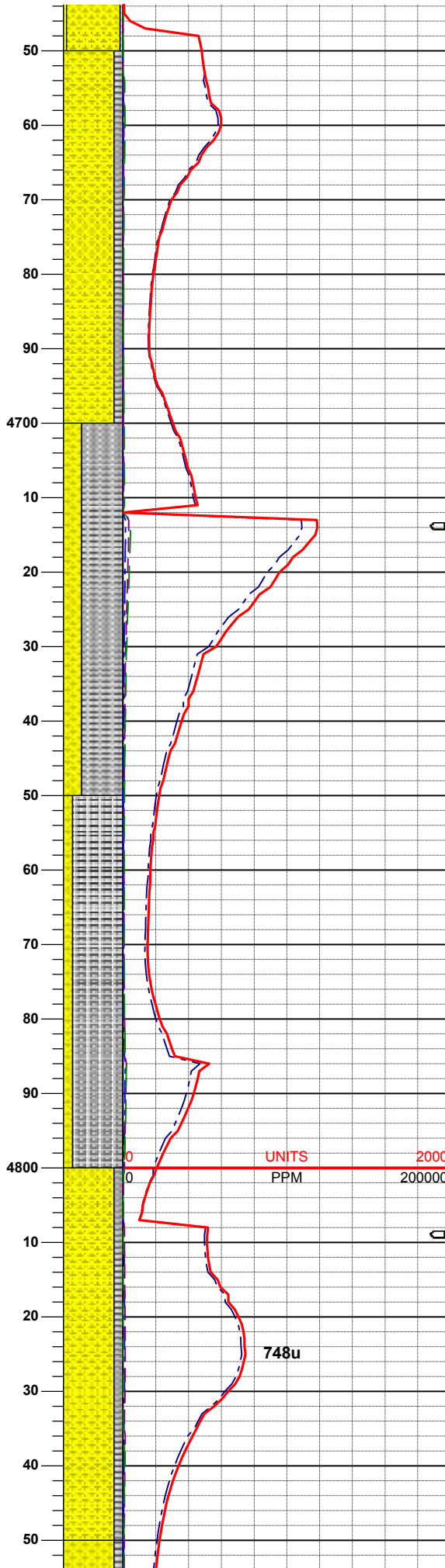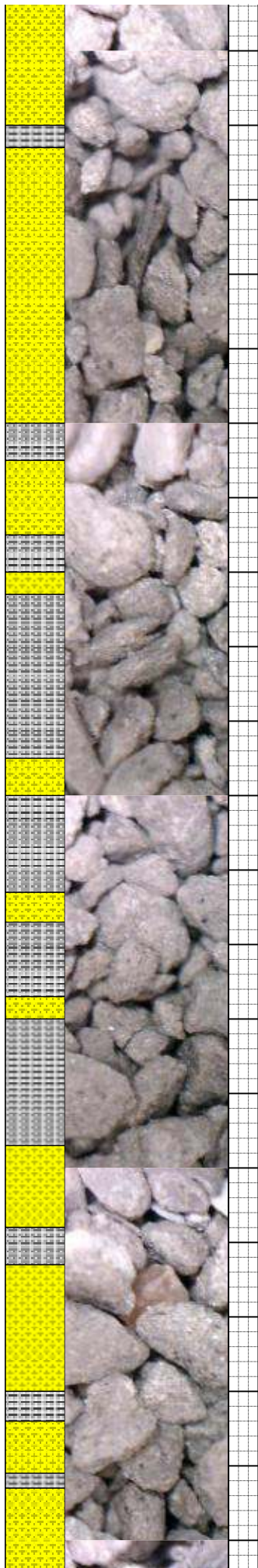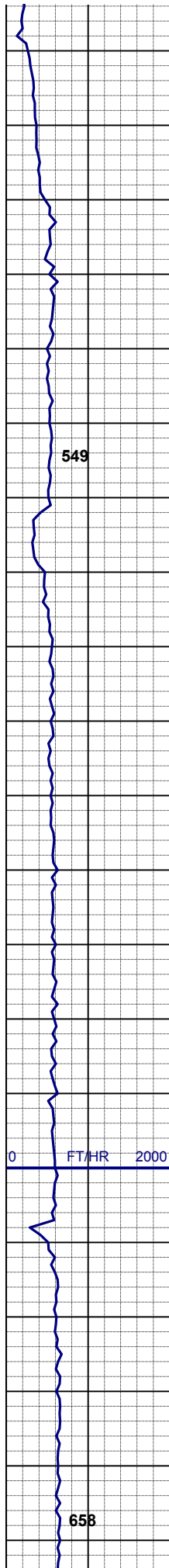
90% SLTYSH: gy to mgy, sl firm - modsft, sbplty-sbblky, sdy, vsl calc, 10% SHY:SS: ltgy, tan, pk brn to m gy, f-gr, sbplty, f-psrt, mod firm - modsft, arg cmt, calc

90% SHY:SS: ltgy, tan, brn to m gy, fgr, sbplty, f-psrt, mod firm -modsft, arg cmt, calc
5% SLTYSH: gy to mgy, sl firm - modsft, sbplty-sbblky, sdy, vsl calc, 5% SS: wh, s&p, m-cgr, sb rd-sb plty, mod-fr srt, firm, fri-brit, arg cmt, calc, mod por, glau; sme phlog

SURVEY
MD 4569'
TVD 4517.04'
INC 2.2°
AZI 63.0°

90% SHY:SS: ltgy, tan, brn to m gy, fgr, sbplty, f-psrt, mod firm -modsft, arg cmt, calc
5% SLTYSH: gy to mgy, sl firm - modsft, sbplty-sbblky, sdy, vsl calc, 5% SS: wh, s&p, m-cgr, sb rd-sb plty, mod-fr srt, firm, fri-brit, arg cmt, calc, mod por, glau; sme phlog

Track 1 (ROP):

549

0   FT/HR   2000

658

Depth track (MD, ft): 50, 60, 70, 80, 90, 4700, 10, 20, 30, 40, 50, 60, 70, 80, 90, 4800, 10, 20, 30, 40, 50

Gas track:

0   UNITS   2000

0   PPM   200000

748u

Right column:

SURVEY

SURVEY
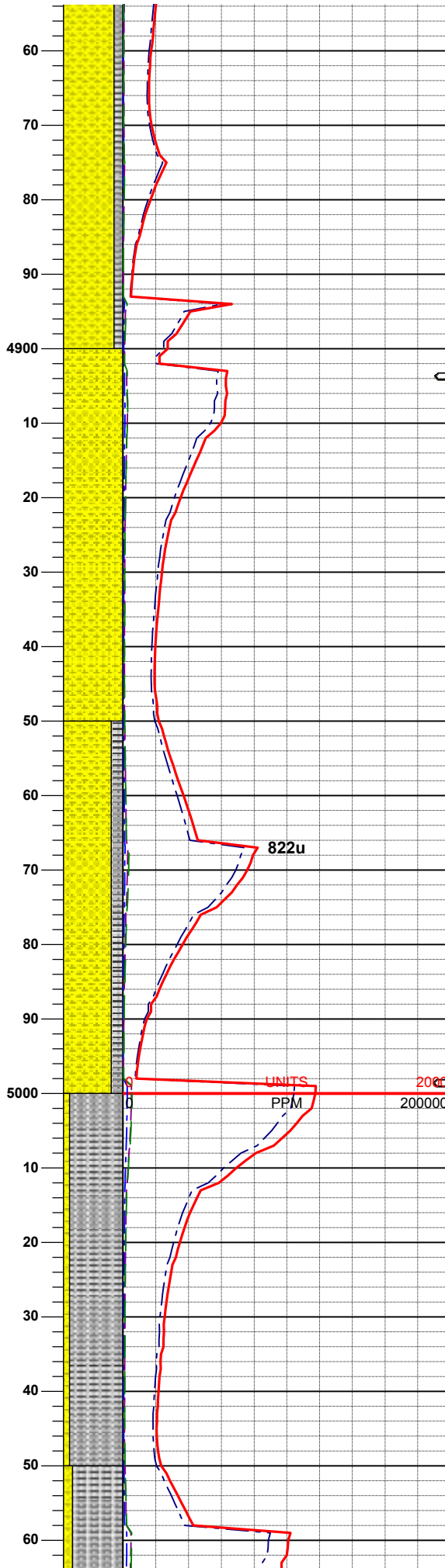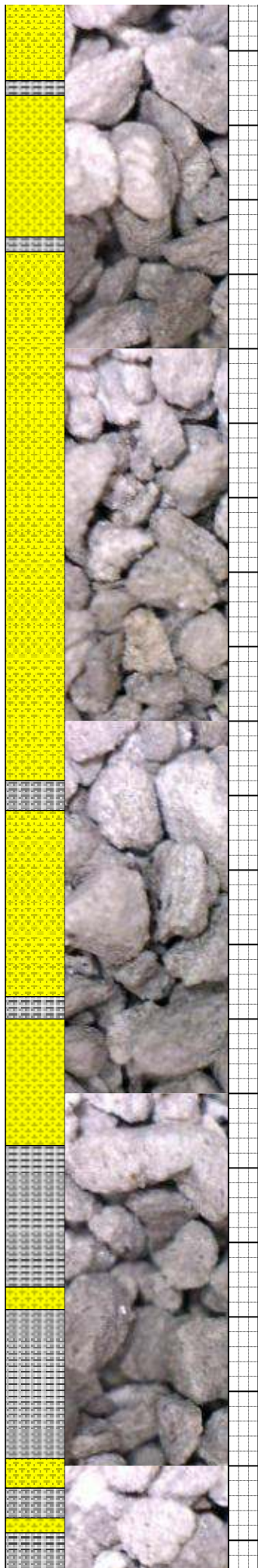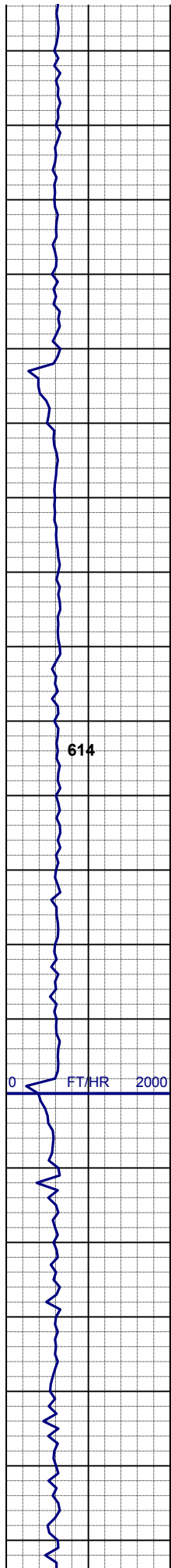MD 4664'
TVD 4612.01'
INC 0.4°
AZI 65.5°

85% SHY:SS: ltgy, tan, brn to m gy, fgr, sbplty, f-psrt, mod firm -modsft, arg cmt, calc
15% SLTYSH: gy to mgy, sl firm - modsft, sbplty-sbblky, sdy, vsl calc,

70% SLTYSH: gy to mgy, sl firm - modsft, sbplty-sbblky, sdy ip, vsl calc,
30% SHY:SS: ltgy, to m gy, fgr, sbplty, f-psrt, mod firm -modsft, arg cmt, calc

85% SLTYSH: gy to mgy, sl firm - modsft, sbplty-sbblky, sdy ip, vsl calc,
15% SHY:SS: ltgy, to m gy, fgr, sbplty, f-psrt, mod firm -modsft, arg cmt, calc

85% SHY:SS: ltgy, to m gy, fgr, sbplty, f-psrt, mod firm -modsft, arg cmt, calc
15% SLTYSH: gy to mgy, sl firm - modsft, sbplty-sbblky, sdy ip, vsl calc,

SURVEY
MD 4854'
TVD 4802.01'
INC 0.5°

INC 0.5
AZI 213.8°

85% SHY:SS: ltgy, to m gy, fgr, sbplty, f-psrt, mod firm -modsft, arg cmt, calc
15% SLTYSH: gy to mgy, sl firm -modsft, sbplty-sbblky, sdy ip, vsl calc,

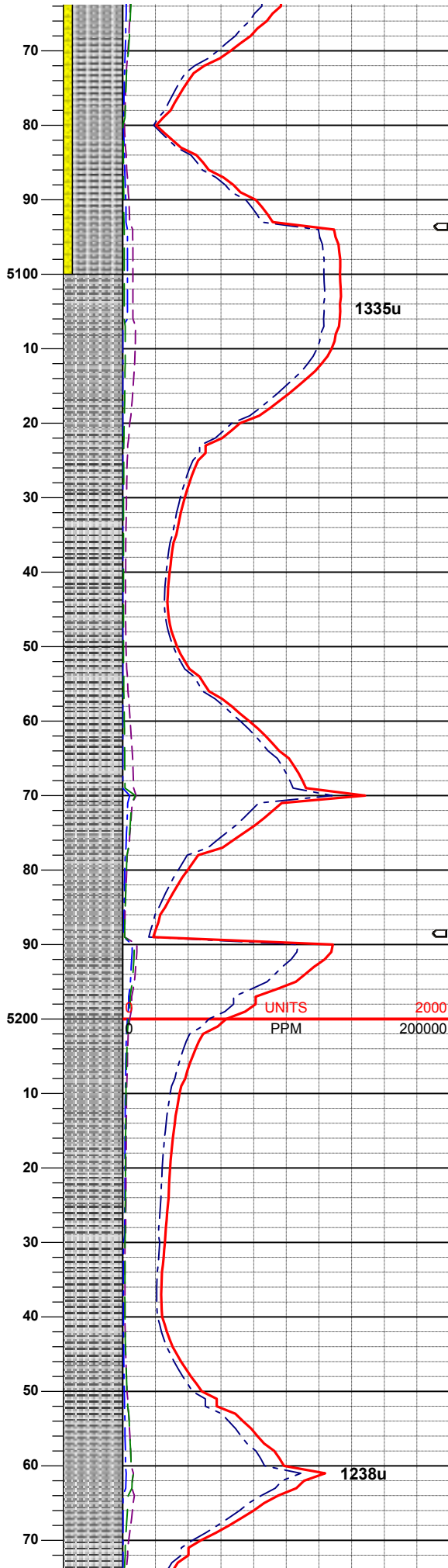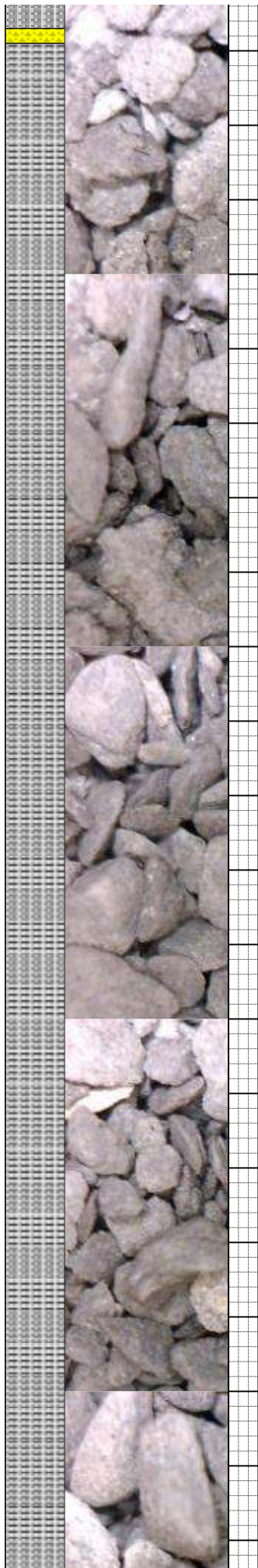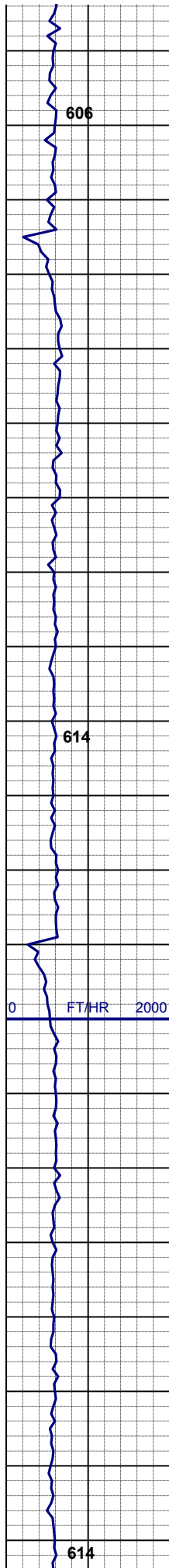100% SHY:SS: ltgy, to m gy, fgr, sbplty, f-psrt, mod firm -modsft, arg cmt, calc

SURVEY
MD 4949'
TVD 4897.0'
INC 0.8°
AZI 238.3°

822u

80% SHY:SS: ltgy, to m gy, fgr, sbplty, f-psrt, mod firm -modsft, arg cmt, calc
20% SLTYSH: gy to mgy, sl firm -modsft, sbplty-sbblky, sdy ip, vsl calc, tr bent

90% SLTYSH: gy to mgy, sl firm -modsft, sbplty-sbblky, sdy ip, vsl calc, tr bent
10% SHY:SS: ltgy, to m gy, fgr, sbplty, f-psrt, mod firm -modsft, arg cmt, calc

SURVEY
MD 5044'
TVD 4992.0'
INC 0.8°
AZI 278.3°

614

0   FT/HR   2000

0   UNITS   200
0   PPM   200000

606

614

614

0   FT/HR   2000

1335u

1238u

0   UNITS   2000
0   PPM   200000

85% SLTYSH: gy to mgy, sl firm - modsft, sbplty-sbblky, sdy ip, vsl calc, tr bent

15% SHY:SS: ltgy, to m gy, fgr, sbplty, f-psrt, mod firm -modsft, arg cmt, calc

100% SLTYSH: gy to mgy, sl firm - modsft, sbplty-sbblky, sdy ip, vsl calc, tr bent, tr sltyss
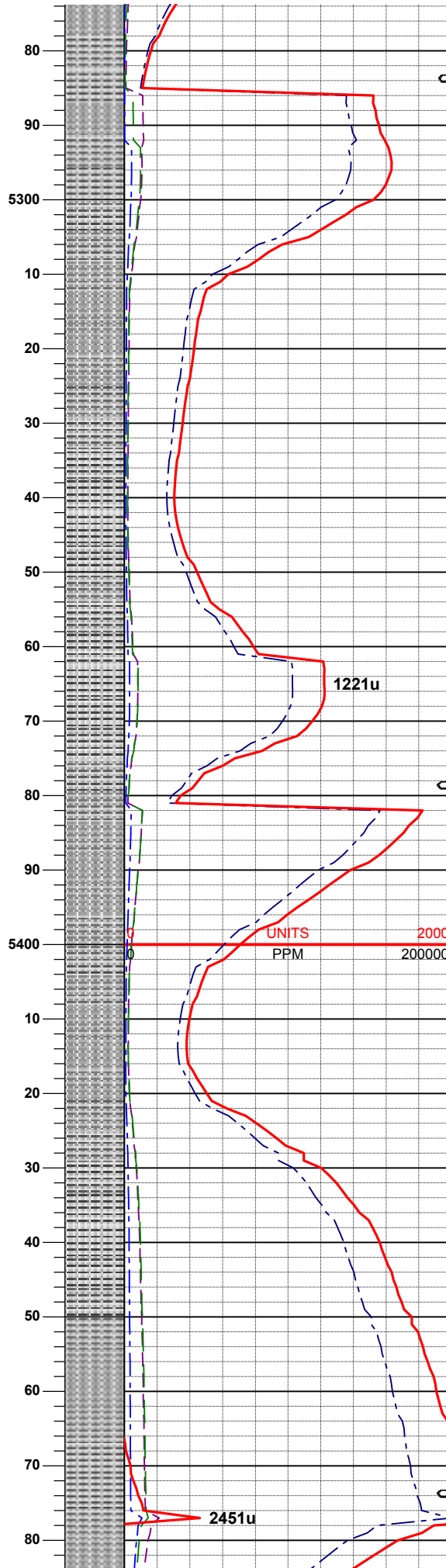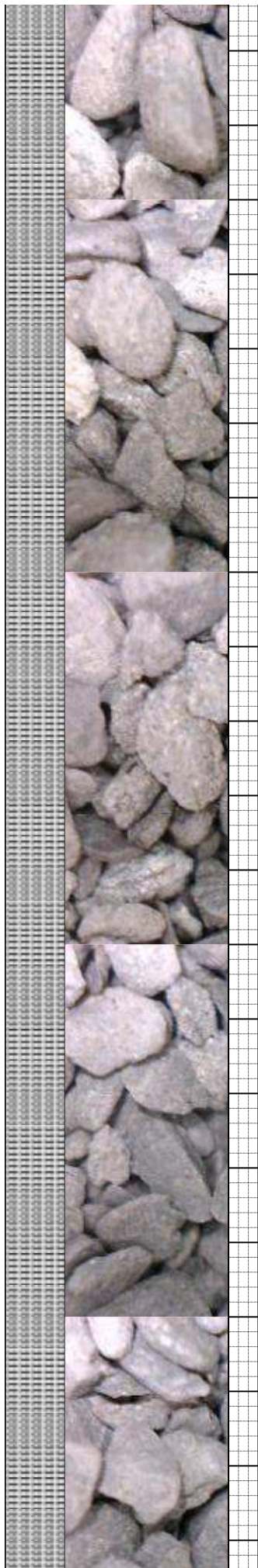
SURVEY
MD 5139'
TVD 5086.98'
INC 1.0°
AZI 286.6°

100% SLTYSH: gy to mgy, sl firm - modsft, sbplty-sbblky, sdy ip, vsl calc, tr bent, tr sltyss

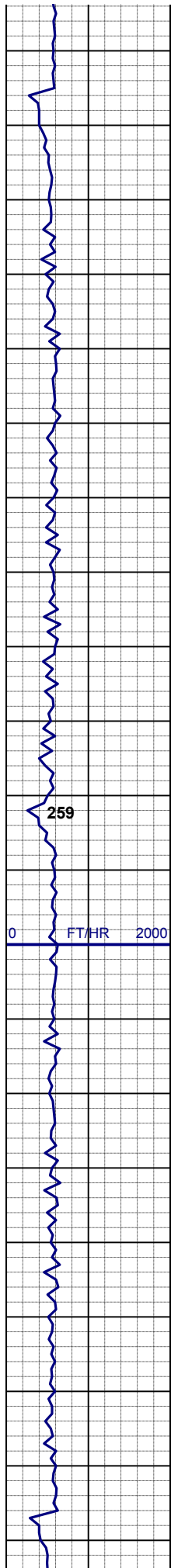100% SLTYSH: gy to mgy, sl firm - modsft, sbplty-sbblky, sdy ip, vsl calc, tr bent, tr sltyss

SURVEY
MD 5234'
TVD 5181.97'
INC 1.2°
AZI 289.4°

100% SLTYSH: gy to mgy, sl firm - modsft, sbplty-sbblky, sdy ip, vsl calc, tr bent, tr sltyss

tr bent, tr sltyss

100% SLTYSH: gy to mgy, sl firm - modsft, sbplty-sbblky, sdy ip, vsl calc, tr bent, tr sltyss

SURVEY
MD 5329'
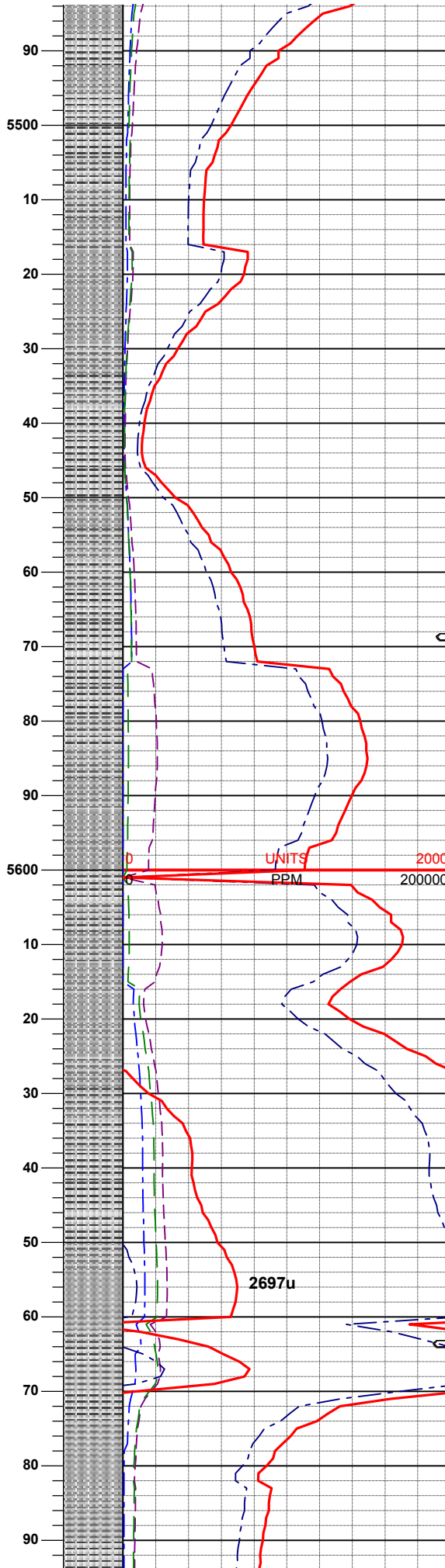**TVD 5276.95'**
INC 1.1°
AZI 310.5°

1221u

100% SLTYSH: gy to mgy, sl firm - modsft, sbplty-sbblky, vsl calc, tr bent

100% SLTYSH: gy to mgy, sl firm - modsft, sbplty-sbblky, vsl calc, tr bent

SURVEY
MD 5424'
TVD 5371.93'
INC 1.2°
AZI 311.6°

100% SLTYSH: gy to dkgy, sl firm - modsft, sbplty-sbblky, slky, vsl calc, tr bent

2451u

259

0   FT/HR   2000

0   UNITS   2000
0   PPM   200000

80
90
5300
10
20
30
40
50
60
70
80
90
5400
10
20
30
40
50
60
70
80

628

0   FT/HR   2000

83

90
5500
10
20
30
40
50
60
70
80
90
5600
10
20
30
40
50
60
70
80
90

0   UNITS   2000
PPM   200000

2697u

SURVEY
MD 5519'
TVD 5466.91'
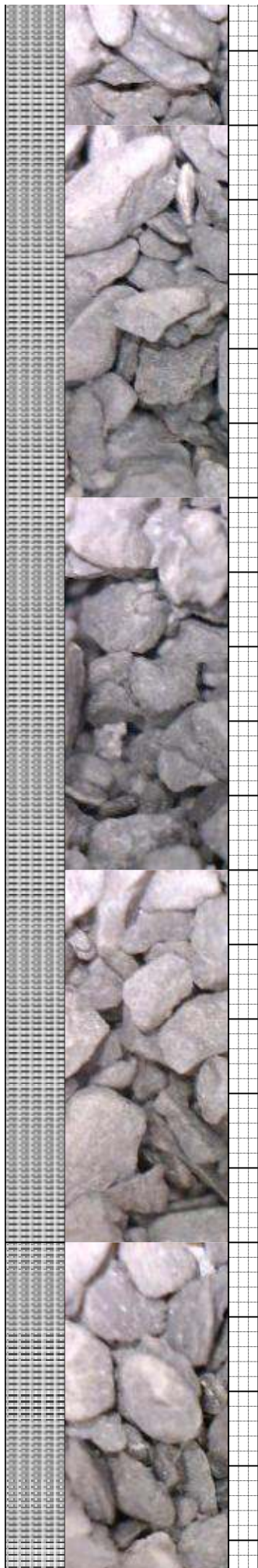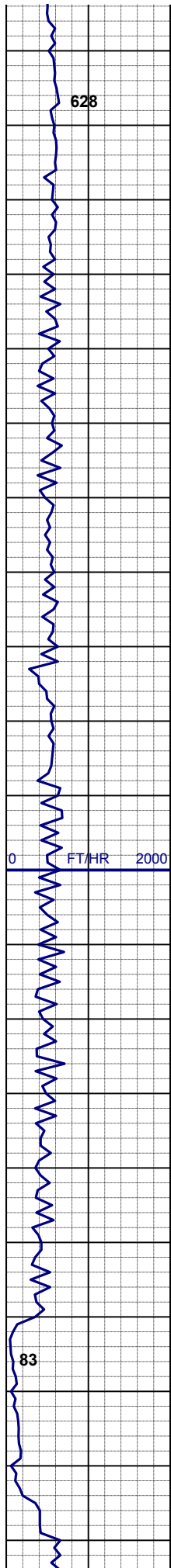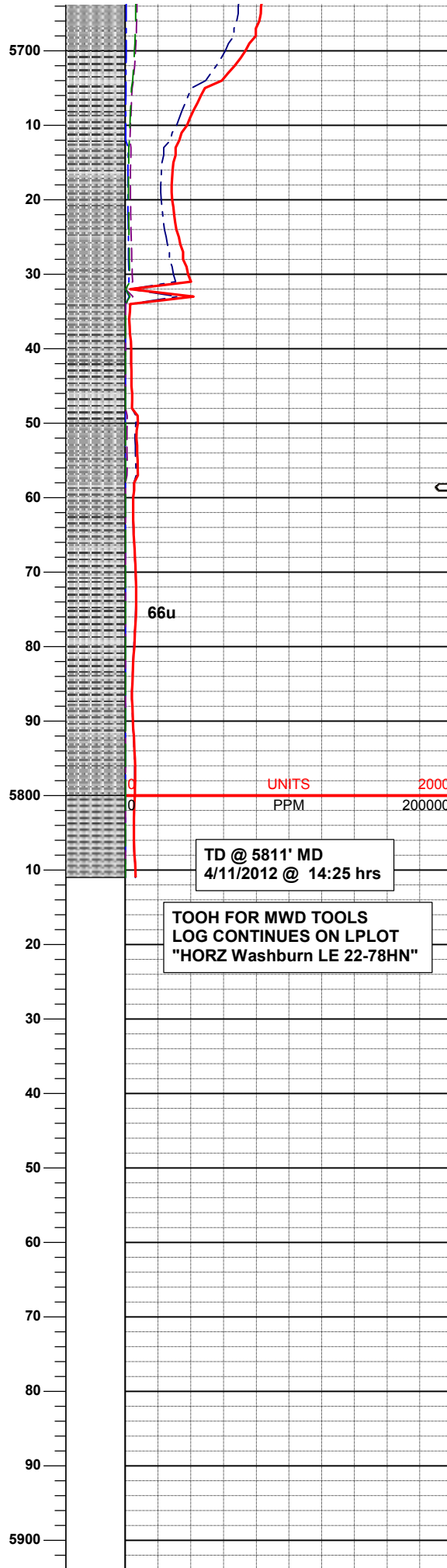**INC 1.2°**
AZI 313.5°
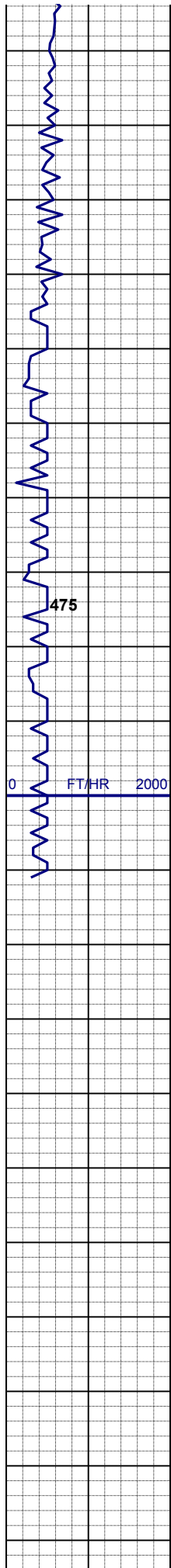
100% SLTYSH: gy to dkgy, sl firm - modsft, sbplty-sbblky, slky, vsl calc, tr bent, ls, ss

100% SLTYSH: gy to dkgy, sl firm - modsft, sbplty-sbblky, slky, vsl calc

SURVEY
MD 5614'
TVD 5561.89'
INC 1.2°
AZI 334.6°

100% SLTYSH: gy to dkgy, sl firm - modsft, sbplty-sbblky, slky, vsl calc

100% SLTYSH: gy to dkgy, sl firm - modsft, sbplty-sbblky, slky, vsl calc, tr bent, ls

SURVEY
MD 5709'
TVD 5656.88'
INC 0.2°
AZI 207.0°

100% SLTYSH: gy to dkgy, sl firm - modsft, sbplty-sbblky, slky, sme sdy, vsl calc

SURVEY
MD 5763'
TVD 5710.88'
INC 0.2°
AZI 296.6°

100% SLTYSH: gy to dkgy, sl firm - modsft, sbplty-sbblky, slky, sme sdy, vsl calc

MUD REPORT
5811' MD
Wt - 9.10
Vis - 33
pH - 9.9
YP - 4
API flt -22.5
Ck - 2/0

Thank You for Using Columbine Logging Inc.

475

66u

0   FT/HR   2000

0   UNITS   2000
0   PPM   200000

TD @ 5811' MD
4/11/2012 @ 14:25 hrs

TOOH FOR MWD TOOLS
LOG CONTINUES ON LPLOT
"HORZ Washburn LE 22-78HN"

10
20
30
40
50
60
70
80
90
6000
10
20
30
40
50
60
70
80
90
6100
10

20
30
40
50
60
70
80
90
6200
10
20
30
40
50
60
70
80
90
6300
10
20

30
40
50
60
70
80
90
6400
10
20
30
40
50
60
70
80
90
6500

New Comment

10
20