

LOG created using L PLOT VH Version 3.0, February 04, 2013, Copyright (C) 1999-2009 Pason Systems Corp.

| | |
|-----------------|---|
| OPERATOR: | NOBLE ENERGY INC |
| WELL: | SEBASTYEN PC 023-63HC |
| LOCATION: | SEC. 23, T4N R67W |
| COUNTY: | WELD |
| STATE: | COLORADO |
| SPOT: | 1,874' FSL, 517' FWL |
| ELEVATION: | GL 4,915'; KB 4,931' |
| FIELD: | WATTENBERG |
| SPUD DATE: | 01/17/2013 |
| TD DATE: | 02/01/2013 |
| DATES LOGGED: | 01/19/2013 - 02/01/2013 |
| DEPTHS LOGGED: | 577' - 11,768' |
| LOGGERS: | PASQUALE DEL VECCHIO, PRESTON NELSON |
| DRILLING FLUID: | WATER, WATER BASED MUD, POLY |
| DRILLING RIG: | PRECISION 829 |
| API: | 05 - 123 - 34684 |
| LOG TYPE: | VERTICAL |
| SCALE: | 1:240 (5 inches per 100 feet) |
| REMARKS: | IN LITHOLOGIC DESCRIPTIONS; nsfoc = NO SHOW, FLUORESCENCE, ODOR, OR CUT |

WELLSITE GEOLOGICAL SERVICES PROVIDED BY COLUMBINE LOGGING INC.

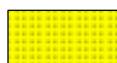
LITHOLOGIES



Chalk



Marl



Sandstone



Shale



Shaly Sandstone



Shaly Siltstone



Silty Shale

ENGINEERING SYMBOLS



Bit Change



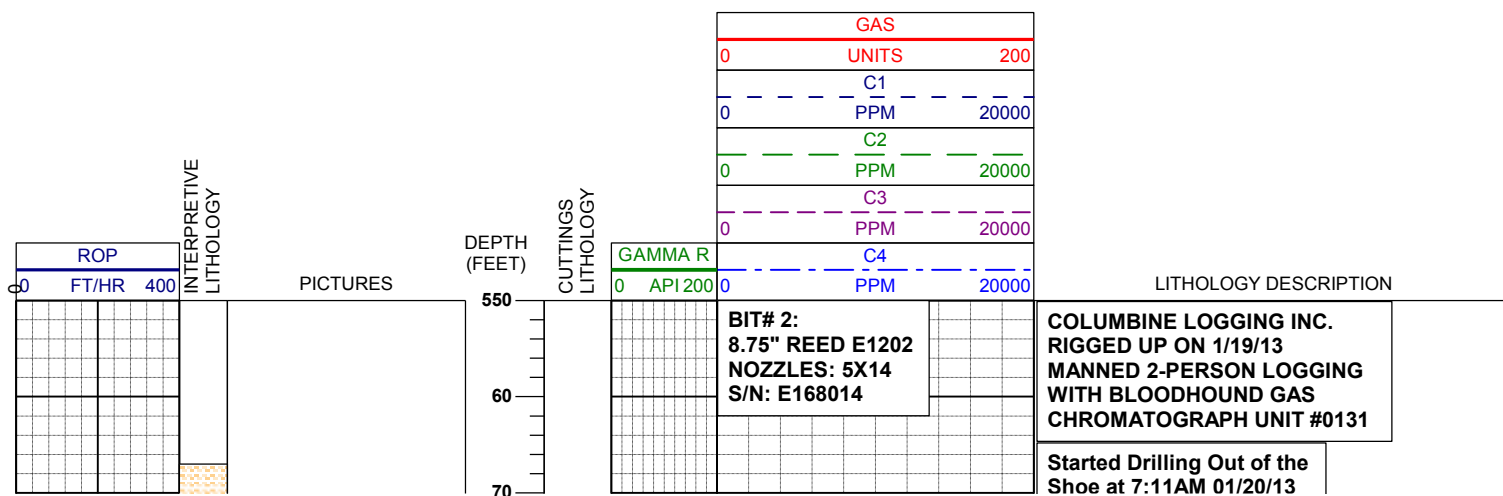
Connection

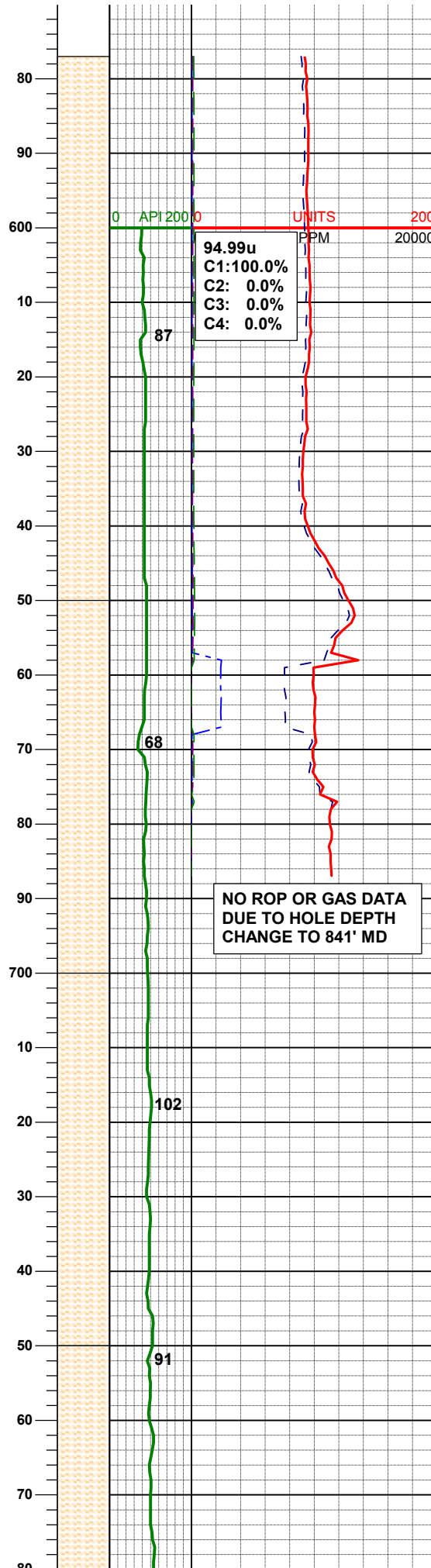


Connection Gas



Midnight Depth





50' Sample Interval

MUD WT: 8.50 IN, 8.7 OUT

SAMPLES HAVE HIGH CEMENT CONTENT TO ~700' MD

100% SHYSLTST: ltgy-mgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, sdy ip, v arg mtx, nsfoc

SURVEY MD 639' INC 0.35° AZI 345.63° TVD 639.00'

100% SHYSLTST: ltgy-mgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, sdy ip, v arg mtx, nsfoc

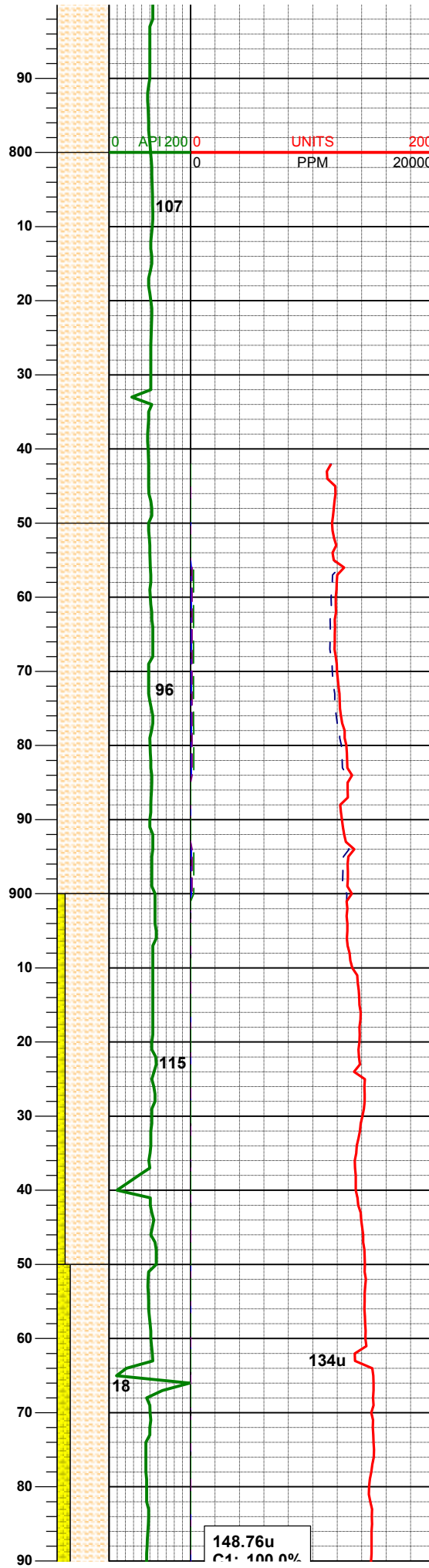
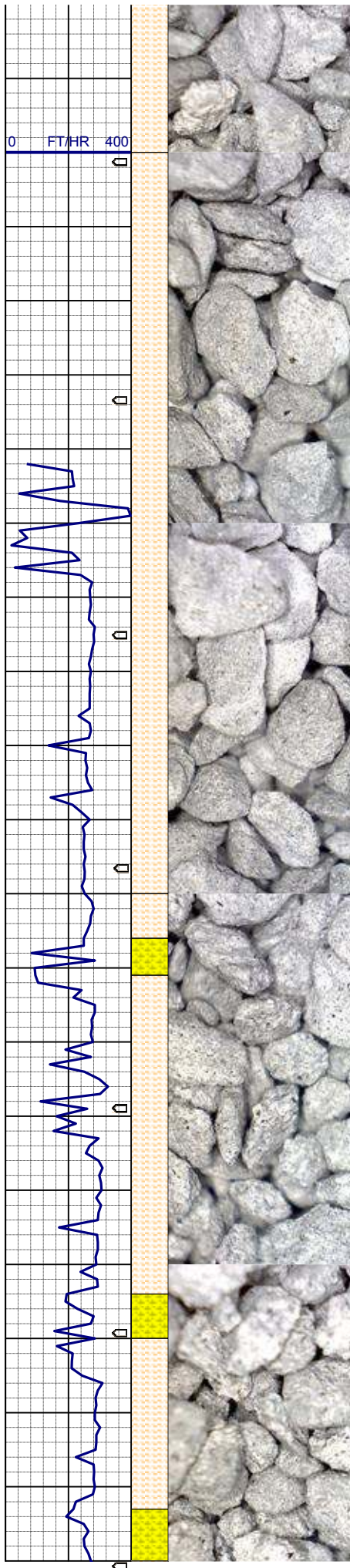
NO ROP OR GAS DATA DUE TO HOLE DEPTH CHANGE TO 841' MD

LAGGED SAMPLE DEPTH IS QUESTIONABLE DUE TO RESET HOLE DEPTH

SURVEY MD 701' INC 0.28° AZI 333.31° TVD 701.00'

100% SHYSLTST: ltgy-mgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, sdy ip, v arg mtx, nsfoc

100% SHYSLTST: ltgy-mgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, sdy ip, v arg mtx, nsfoc



SURVEY
MD 790'
INC 0.20°
AZI 19.36°
TVD 790.00'

100% SHYSLTST: ltgy-mgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, sdy ip, v arg mtx, nsfoc

MUD SYSTEM NOT REPORTING TO PASON EDR; LAG CALCULATED USING LAST KNOWN DEPTH AND LAG TIME; POSSIBLE LAGGED SAMPLE DEPTH ERRORS FROM 841' MD

MUD WT: 8.40 IN, 8.5 OUT

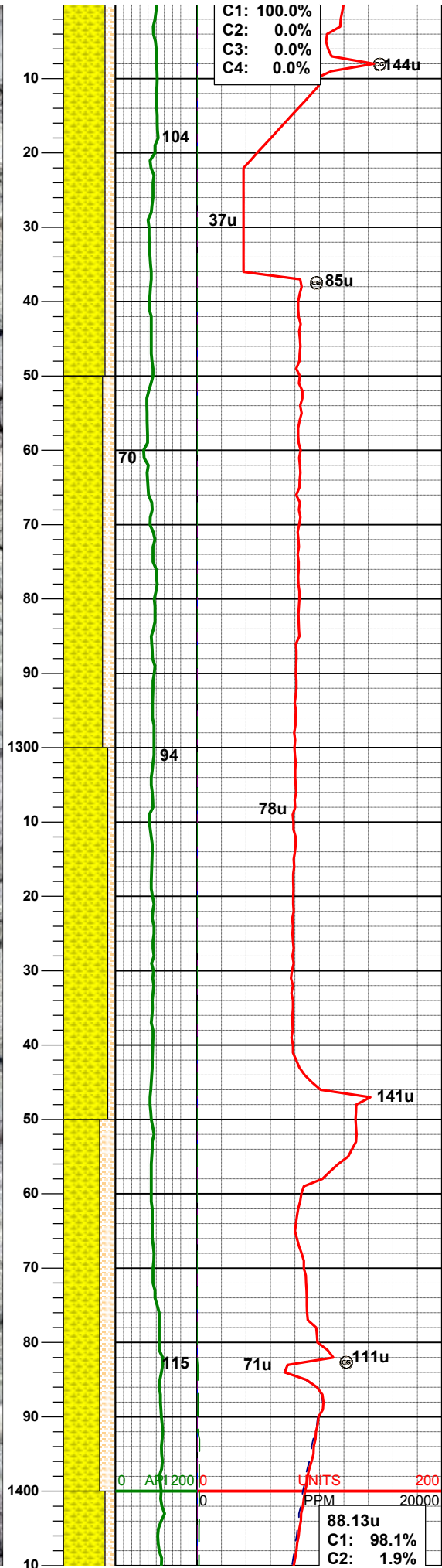
100% SHYSLTST: ltgy-mgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, sdy ip, v arg mtx, nsfoc

SURVEY
MD 880'
INC 0.40°
AZI 21.15°
TVD 880.00'

90% SHYSLTST: ltgy-mgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc
10% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod srt, firm- hd, p por, arg cmt, mod glauc, nsfoc

75% SHYSLTST: ltgy-mgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc
25% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod srt, firm- hd, p por, arg cmt, mod glauc, nsfoc

SURVEY
MD 969'
INC 0.53°
AZI 343.25°
TVD 968.99'



C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

80% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod
srt, firm- hd, p por, arg cmt, mod glauc, nsfoc
20% SHYSLTST: ltgy-mgy, sft- firm, sbblky,
aren-slty tex, occ glau incl, sl calc

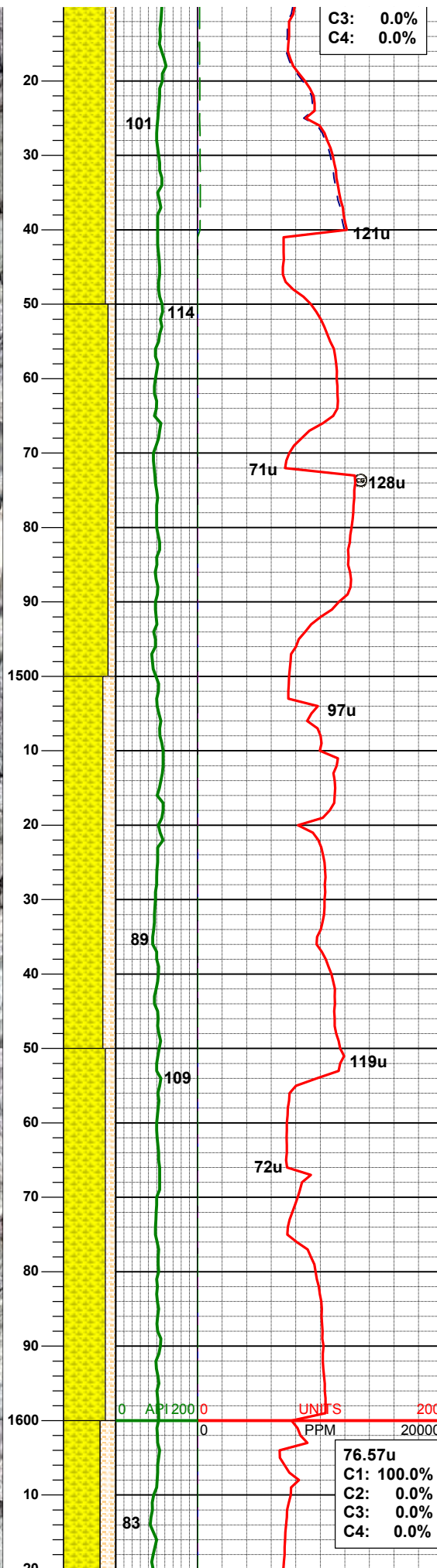
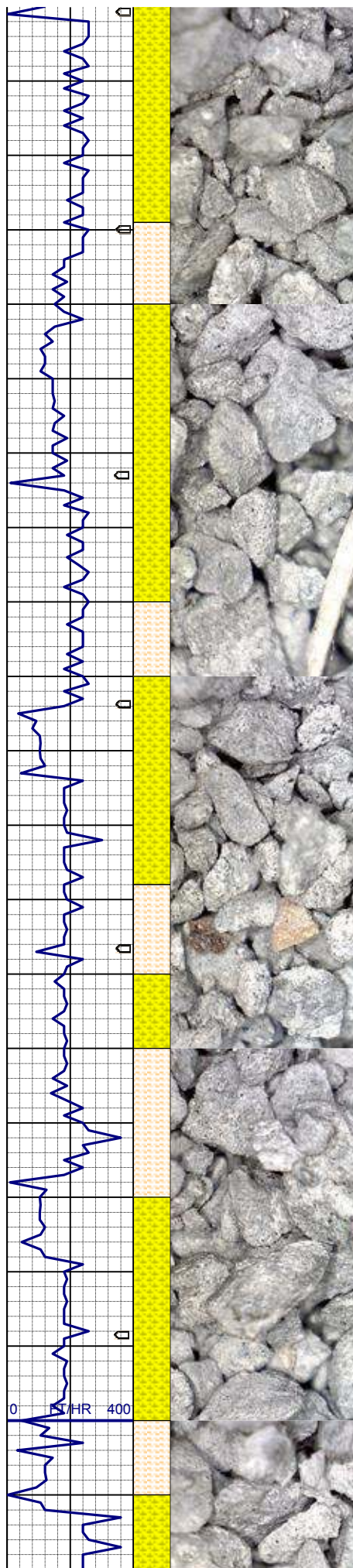
75% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod
srt, firm- hd, p por, arg cmt, mod glauc, nsfoc
25% SHYSLTST: ltgy-mgy, sft- firm, sbblky,
aren-slty tex, occ glau incl, sl calc

85% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod
srt, firm- hd, p por, arg cmt, mod glauc, nsfoc
15% SHYSLTST: ltgy-mgy, sft- firm, sbblky,
aren-slty tex, occ glau incl, sl calc

SURVEY
MD 1327'
INC 0.44°
AZI 322.45°
TVD 1326.99'

70% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod
srt, firm- hd, p por, arg cmt, mod glauc, nsfoc
30% SHYSLTST: ltgy-mgy, sft- firm, sbblky,
aren-slty tex, occ glau incl, sl calc

88.13u
C1: 98.1%
C2: 1.9%



80% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod
srt, firm- hd, p por, arg cmt, mod glauc, nsfoc
20% SHYSLTST: ltgy-mgy, sft- firm, sbbkly,
aren-slty tex, occ glau incl, sl calc

SURVEY
MD 1422'
INC 1.58°
AZI 228.51°
TVD 1421.97'

85% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod
srt, firm- hd, p por, arg cmt, mod glauc, nsfoc
15% SHYSLTST: ltgy-mgy, sft- firm, sbbkly,
aren-slty tex, occ glau incl, sl calc

MUD WT: 8.70, VIS 30

SURVEY
MD 1516'
INC 2.19°
AZI 215.67°
TVD 1515.92'

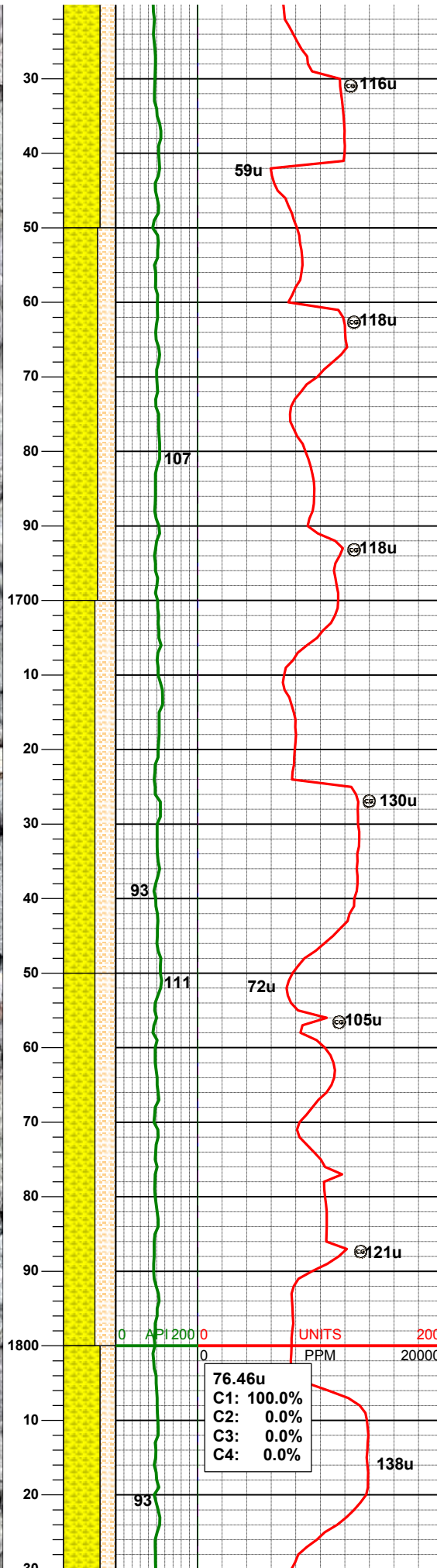
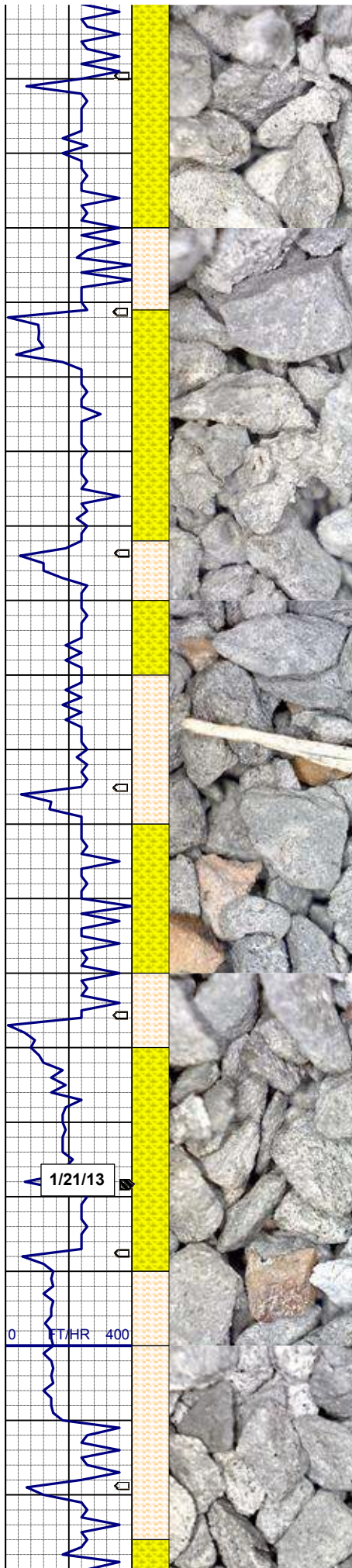
75% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod
srt, firm- hd, p por, arg cmt, mod glauc, nsfoc
25% SHYSLTST: ltgy-mgy, sft- firm, sbbkly,
aren-slty tex, occ glau incl, sl calc

80% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod
srt, firm- hd, p por, arg cmt, mod glauc, nsfoc
20% SHYSLTST: ltgy-mgy, sft- firm, sbbkly,
aren-slty tex, occ glau incl, sl calc

SURVEY
MD 1610'
INC 3.84°
AZI 213.73°
TVD 1609.79'

C3: 0.0%
C4: 0.0%

76.57u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%



70% SHYSS: ltgy-mgy, s&p, vf-fgr, sbrd, mod
srt, firm- hd, p por, arg cmt
30% SHYSLTST: ltgy-mgy, sft- firm, sbblky,
aren-slty tex, occ glau incl, sl calc nsfoc

65% SHYSS: ltgy-mgy, s&p, vf-fgr, sbrd, mod
srt, firm- hd, p por, arg cmt
35% SHYSLTST: ltgy-mgy, sft- firm, sbblky,
aren-slty tex, occ glau incl, sl calc nsfoc

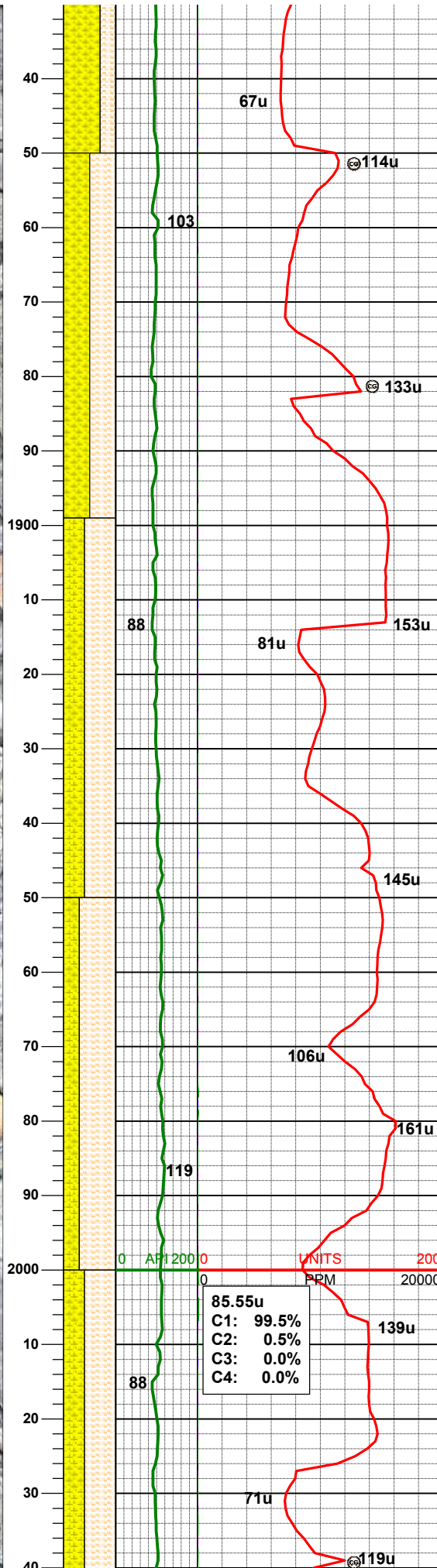
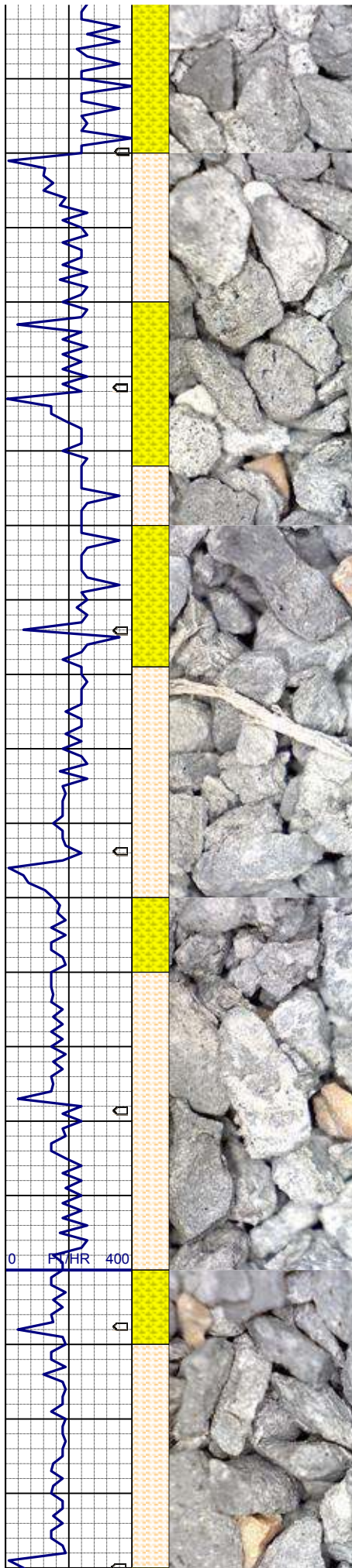
MUD WT: 8.65, VIS 30

SURVEY
MD 1705'
INC 4.19°
AZI 212.86°
TVD 1704.56'

60% SHYSS: ltgy-mgy, s&p, vf-fgr, sbrd, mod
srt, firm- hd, p por, arg cmt
40% SHYSLTST: ltgy-mgy, sft- firm, sbblky,
aren-slty tex, occ glau incl, sl calc nsfoc

60% SHYSS: ltgy-mgy, s&p, vf-fgr, sbrd, mod
srt, firm- hd, p por, arg cmt
40% SHYSLTST: ltgy-mgy, sft- firm, sbblky,
aren-slty tex, occ glau incl, sl calc nsfoc

SURVEY
MD 1799'
INC 6.17°
AZI 226.52°
TVD 1798.17'



70% SHYSS: ltgy-mgy, s&p, vf-fgr, sbrd, mod
srt, firm- hd, p por, arg cmt
30% SHYSLTST: ltgy-mgy, sft- firm, sbblky,
aren-slty tex, occ glau incl, sl calc nsfoc

50% SHYSLTST: ltgy-mgy, sft- firm, sbblky,
aren-slty tex, occ glau incl, sl calc,
50% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod
srt, firm- hd, p por, arg cmt, occ glauc, nsfoc

SURVEY
MD 1893'
INC 7.95°
AZI 221.81°
TVD 1891.45'

MUD WT: 9.75, VIS 31

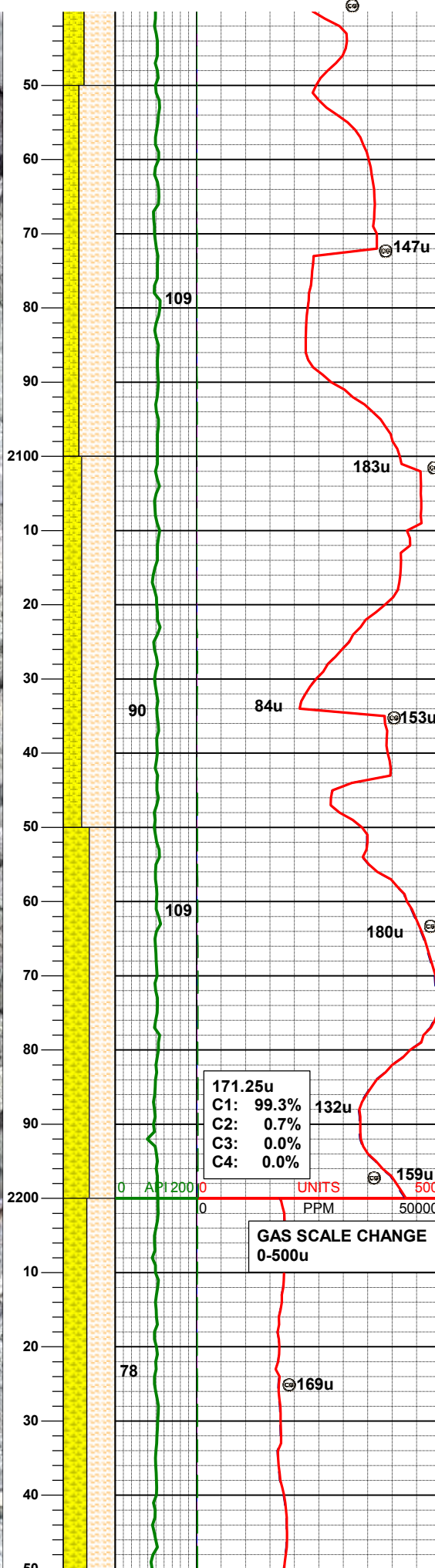
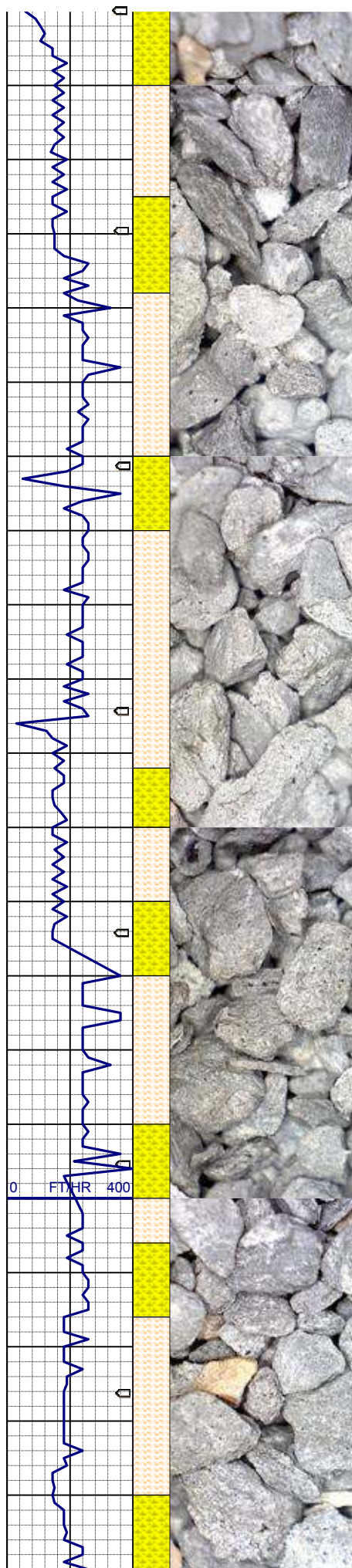
60% SHYSLTST: ltgy-mgy, sft- firm, sbblky,
aren-slty tex, occ glau incl, sl calc,
40% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod
srt, firm- hd, p por, arg cmt, occ glauc, nsfoc

70% SHYSLTST: ltgy-mgy, sft- firm, sbblky,
aren-slty tex, occ glau incl, sl calc,
30% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod
srt, firm- hd, p por, arg cmt, occ glauc, nsfoc

SURVEY
MD 1987'
INC 10.01°
AZI 224.69°
TVD 1984.30'

60% SHYSLTST: ltgy-mgy, sft- firm, sbblky,
aren-slty tex, occ glau incl, sl calc,
40% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod
srt, firm- hd, p por, arg cmt, occ glauc, nsfoc

85.55u
C1: 99.5%
C2: 0.5%
C3: 0.0%
C4: 0.0%



70% SHYSLTST: ltgy-mgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, 30% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod srt, firm- hd, p por, arg cmt, occ glauc, nsfoc

SURVEY
MD 2081'
INC 12.36°
AZI 222.68°
TVD 2076.51'

65% SHYSLTST: ltgy-mgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, 35% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod srt, firm- hd, p por, arg cmt, occ glauc, nsfoc

50% SHYSLTST: ltgy-mgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, 50% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod srt, firm- hd, p por, arg cmt, occ glauc, nsfoc

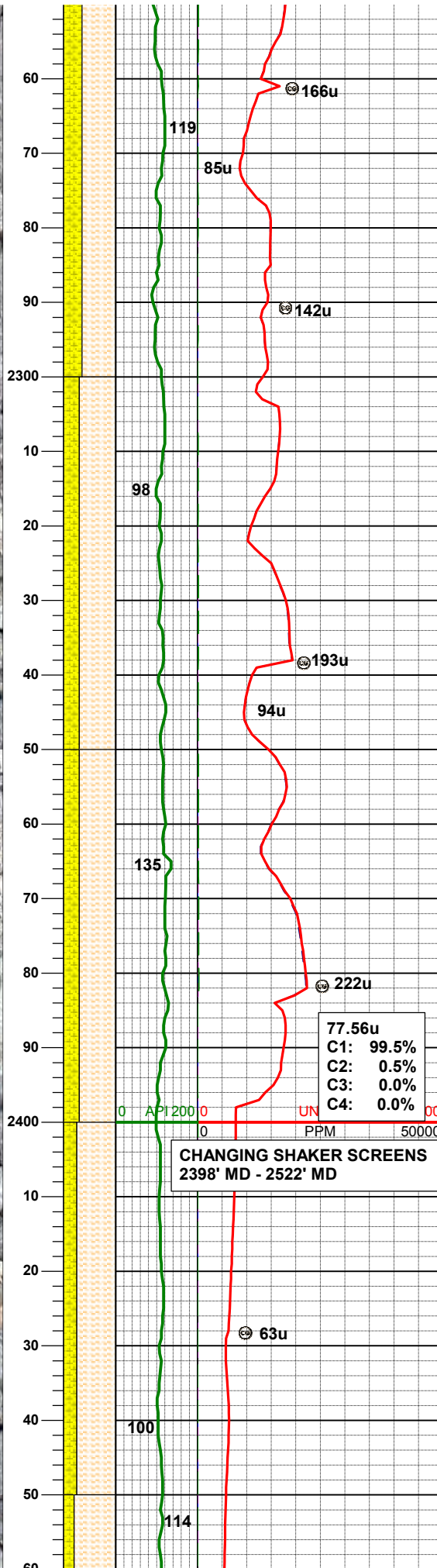
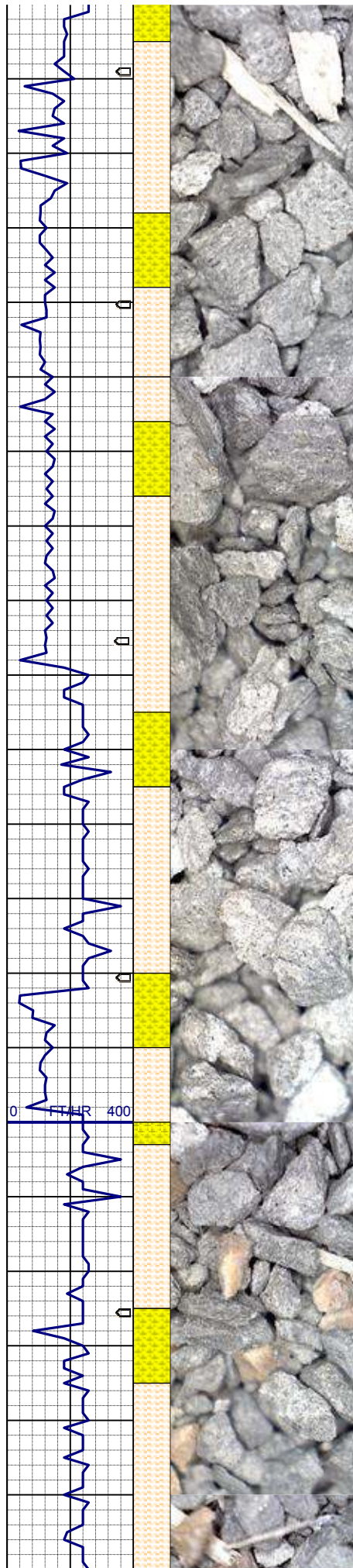
SURVEY
MD 2176'
INC 13.70°
AZI 218.89°
TVD 2169.06'

171.25u
C1: 99.3%
C2: 0.7%
C3: 0.0%
C4: 0.0%

GAS SCALE CHANGE
0-500u

55% SHYSLTST: ltgy-mgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, 45% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod srt, firm- hd, p por, arg cmt, occ glauc, nsfoc

SURVEY
MD 2239'
INC 12.55°
AZI 217.45°



TVD 2230.41'
MUD WT: 9.80, VIS 31

65% SHYSLTST: ltgy-mgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, 35% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod srt, firm- hd, p por, arg cmt, occ glauc, nsfoc

SURVEY
MD 2328'
INC 15.20°
AZI 212.48°
TVD 2316.81'

70% SHYSLTST: ltgy-mgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, 30% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod srt, firm- hd, p por, arg cmt, occ glauc, nsfoc

MUD WT: 8.80, VIS 31

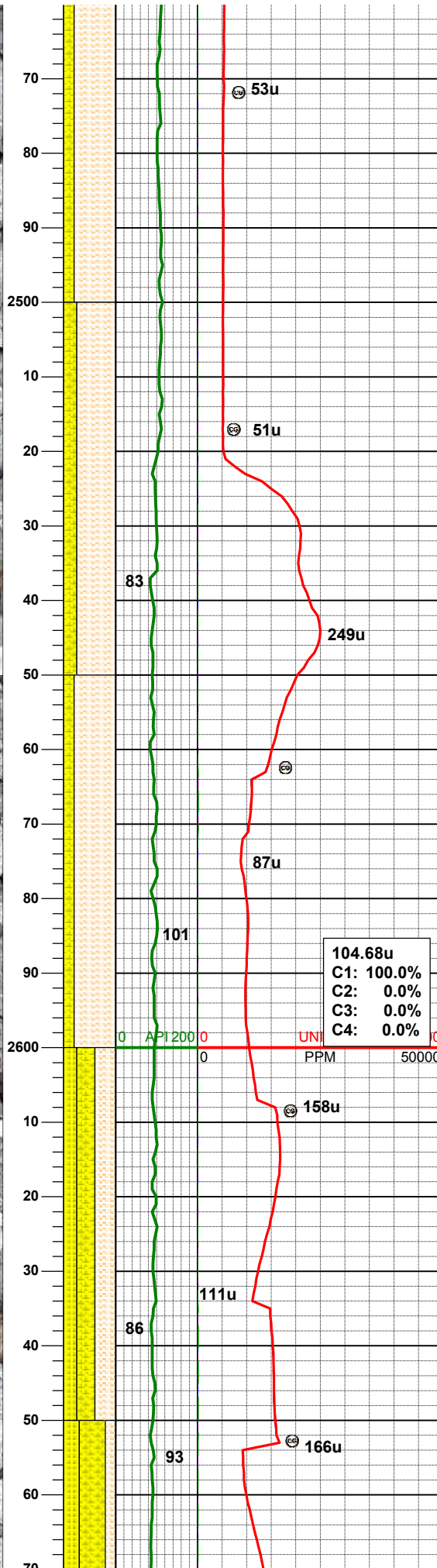
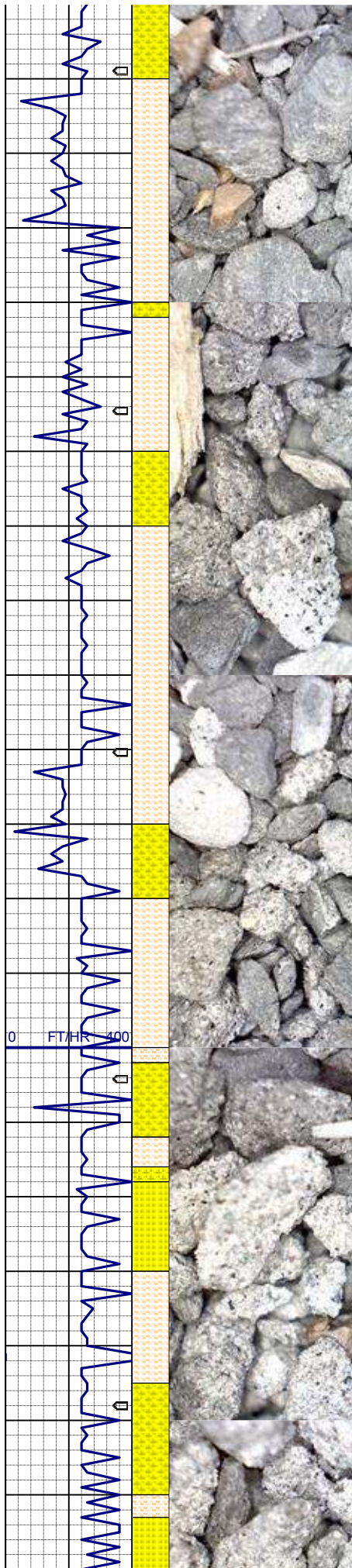
70% SHYSLTST: ltgy-mgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, 30% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod srt, firm- hd, p por, arg cmt, occ glauc, nsfoc

77.56u
C1: 99.5%
C2: 0.5%
C3: 0.0%
C4: 0.0%

CHANGING SHAKER SCREENS
2398' MD - 2522' MD

SURVEY
MD 2418'
INC 15.50°
AZI 213.97°
TVD 2403.60'

75% SHYSLTST: ltgy-mgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, 25% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod srt, firm- hd, p por, arg cmt, occ glauc, nsfoc



80% SHYSLTST: ltgy-mgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, 20% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod srt, firm- hd, p por, arg cmt, occ glauc, nsfoc

MUD WT: 8.70, VIS 29

SURVEY
MD 2507'
INC 15.71°
AZI 214.53°
TVD 2489.32'

75% SHYSLTST: ltgy-mgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, 25% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod srt, firm- hd, p por, arg cmt, occ glauc, nsfoc

80% SHYSLTST: ltgy-mgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, 20% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod srt, firm- hd, p por, arg cmt, occ glauc, nsfoc

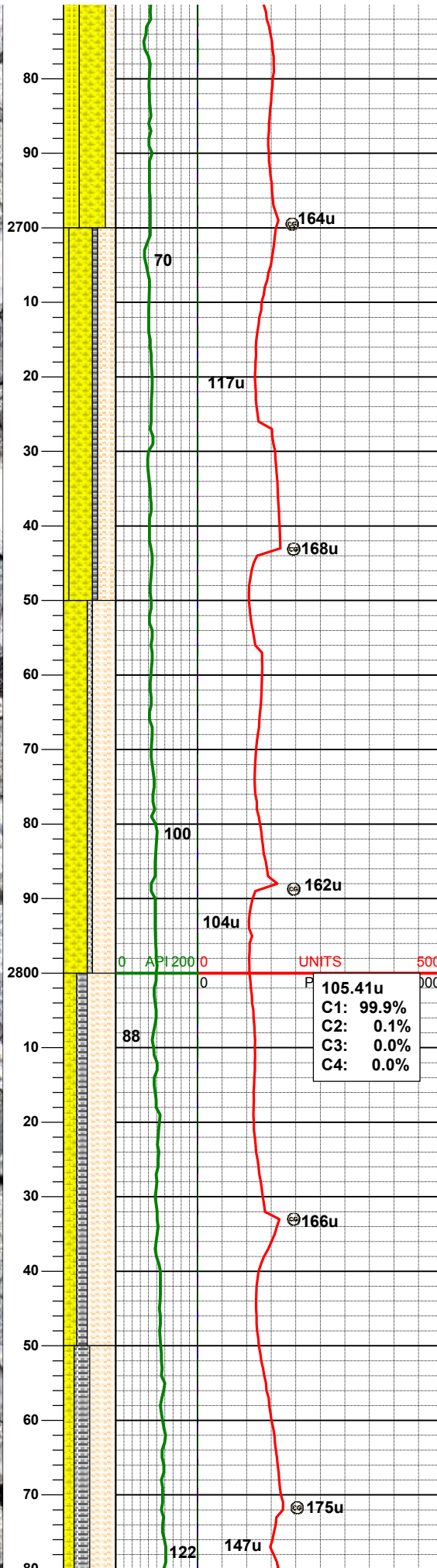
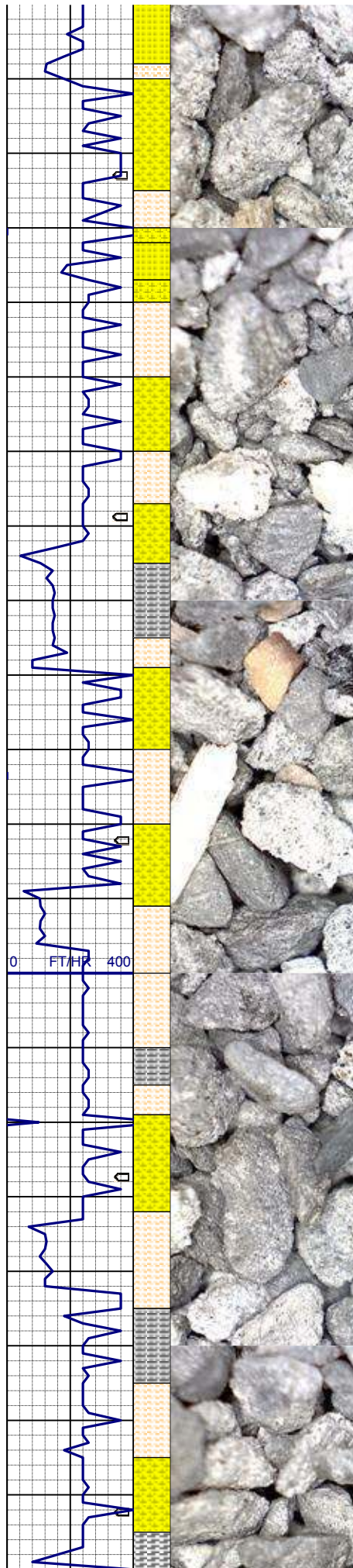
104.68u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

SURVEY
MD 2597'
INC 15.87°
AZI 217.25°
TVD 2575.93'

MUD WT: 8.50, VIS 29

60% SHYSLTST: ltgy-mgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, 35% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod srt, firm- hd, p por, arg cmt, occ glauc, nsfoc 25% SS: wh - clr occ lt gy occ o brn - blk, firm - hd- brit, f gr, sbang - sbrnodd, mod por, sl calc, nsfoc

50% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod srt, firm- hd, p por, arg cmt, occ glauc, nsfoc



srt, firm- hd, p por, arg cmt, occ glauc, nsfoc
30% SS: wh - clr occ lt gy occ o brn - blk, firm -
hd- brit, f gr, sbang - sbrnrd, mod por, sl calc,
nsfoc
20% SHYSLTST: ltgy-mgy, sft- firm, sbblky,
aren-slty tex, occ glau incl, sl calc,

SURVEY
MD 2687'
INC 17.07°
AZI 220.05°
TVD 2662.00'

45% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod
srt, firm- hd, p por, arg cmt, occ glauc, nsfoc
35% SHYSLTST: ltgy-mgy, sft- firm, sbblky,
aren-slty tex, occ glau incl, sl calc,
10% SS: wh - clr occ lt gy occ o brn - blk, firm -
hd- brit, f gr, sbang - sbrnrd, mod por, sl calc,
nsfoc
10% SLTY SH: ltgy dk gy, sft-mod sft, p-mod
ind, fri-brit, fis, sme sl bnd, sbply-pty, nsfoc

45% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod
srt, firm- hd, p por, arg cmt, occ glauc, nsfoc
45% SHYSLTST: ltgy-mgy, sft- firm, sbblky,
aren-slty tex, occ glau incl, sl calc,
10% SLTY SH: ltgy dk gy, sft-mod sft, p-mod
ind, fri-brit, fis, sme sl bnd, sbply-pty, nsfoc

SURVEY
MD 2776'
INC 16.92°
AZI 215.02°
TVD 2747.35'

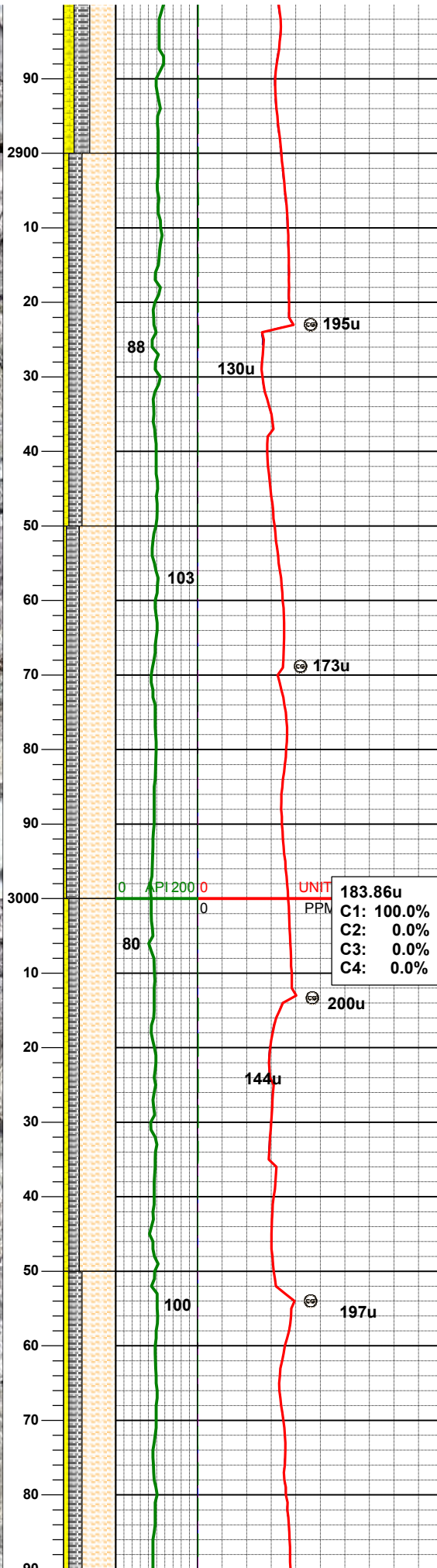
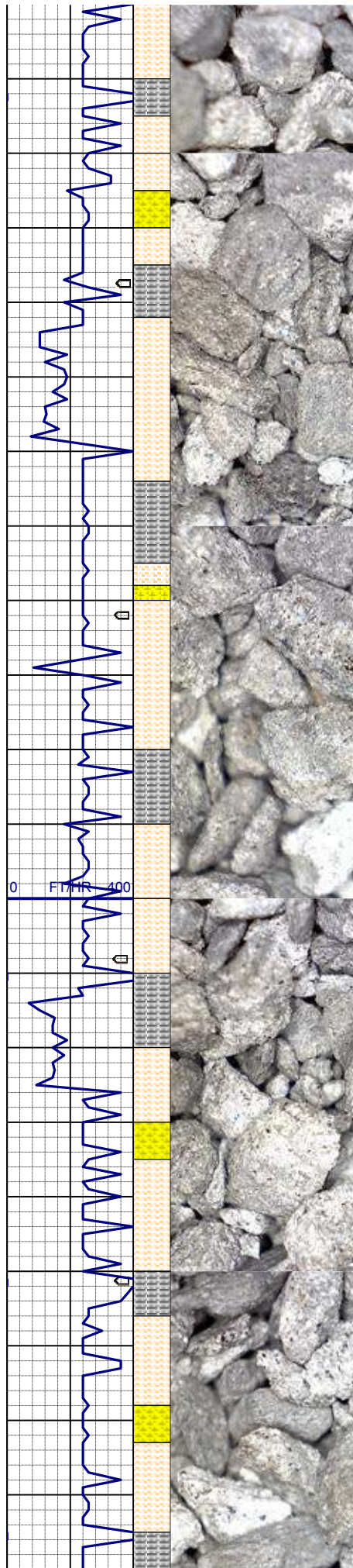
MUD WT: 8.65, VIS 29

UNITS
105.41u
C1: 99.9%
C2: 0.1%
C3: 0.0%
C4: 0.0%

55% SHYSLTST: ltgy-mgy, sft- firm, sbblky,
aren-slty tex, occ glau incl, sl calc,
25% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod
srt, firm- hd, p por, arg cmt, occ glauc, nsfoc
20% SLTY SH: ltgy dk gy, sft-mod sft, p-mod
ind, fri-brit, fis, sme sl bnd, sbply-pty, nsfoc

50% SHYSLTST: ltgy-mgy, sft- firm, sbblky,
aren-slty tex, occ glau incl, sl calc,
30% SLTY SH: ltgy dk gy, sft-mod sft, p-mod
ind, fri-brit, fis, sme sl bnd, sbply-pty, nsfoc
20% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod
srt, firm- hd, p por, arg cmt, occ glauc, nsfoc

SURVEY
MD 2866'
INC 14.94°
AZI 214.96°
TVD 2833.89'



MUD WT: 8.70, VIS 29

65% SHYSLTST: ltgy-mgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, 25% SLTY SH: ltgy dk gy, sft-mod sft, p-mod ind, fri-brit, fis, sme sl bnd, sbplty-plty, nsfoc 10% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod srt, firm- hd, p por, arg cmt, occ glauc, nsfoc

SURVEY
MD 2955'
INC 14.62°
AZI 219.34°
TVD 2919.00'

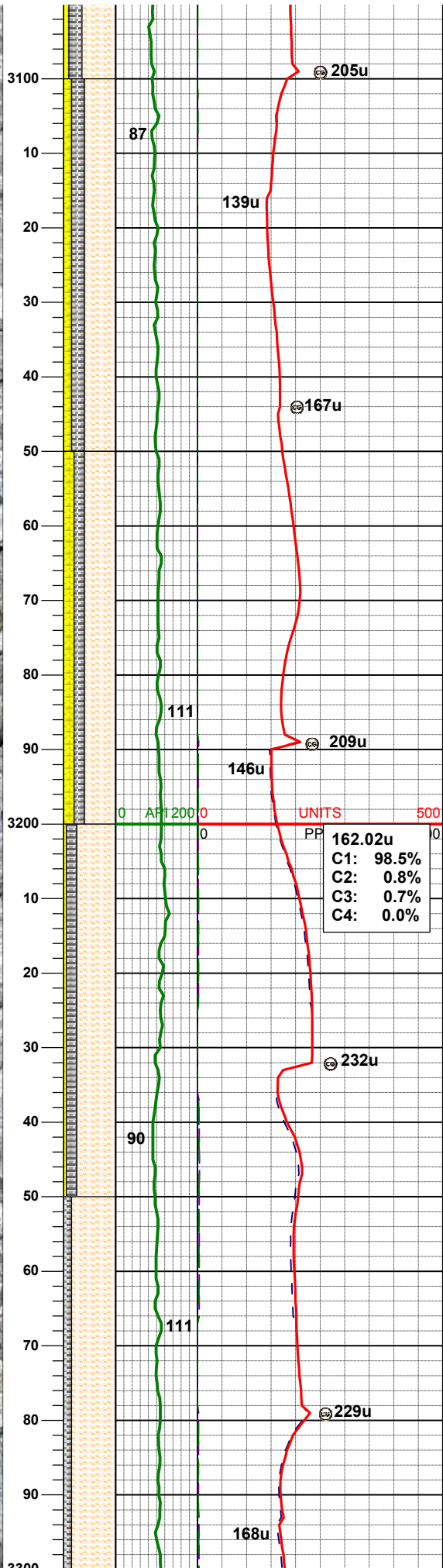
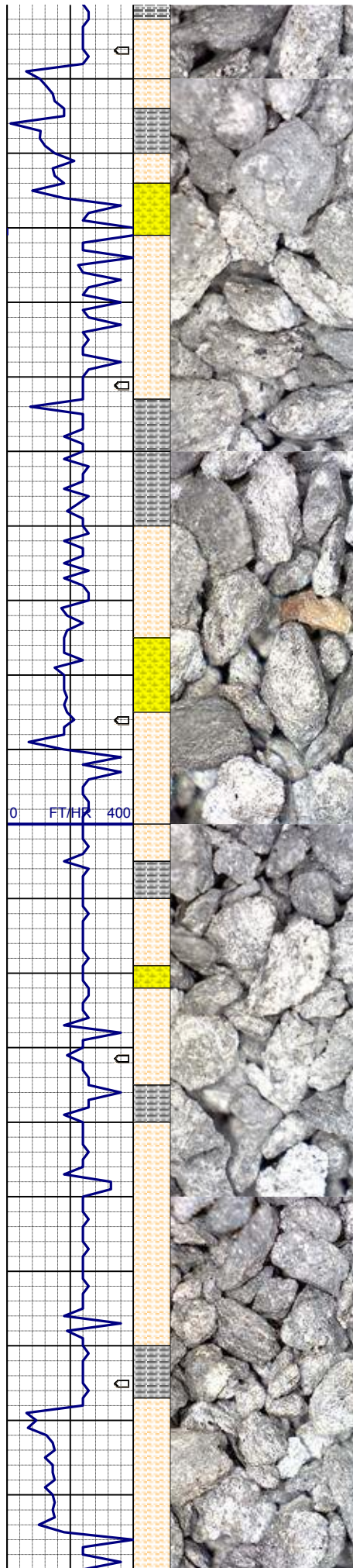
70% SHYSLTST: ltgy-mgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, 25% SLTY SH: ltgy dk gy, sft-mod sft, p-mod ind, fri-brit, fis, sme sl bnd, sbplty-plty, nsfoc 5% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod srt, firm- hd, p por, arg cmt, occ glauc, nsfoc

UNIT 183.86u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

70% SHYSLTST: ltgy-mgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, 20% SLTY SH: ltgy dk gy, sft-mod sft, p-mod ind, fri-brit, fis, sme sl bnd, sbplty-plty, nsfoc 10% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod srt, firm- hd, p por, arg cmt, occ glauc, nsfoc

SURVEY
MD 3045'
INC 14.86°
AZI 220.95°
TVD 3006.00'

65% SHYSLTST: ltgy-mgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, 25% SLTY SH: ltgy dk gy, sft-mod sft, p-mod ind, fri-brit, fis, sme sl bnd, sbplty-plty, nsfoc 10% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod srt, firm- hd, p por, arg cmt, occ glauc, nsfoc



MUD WT: 8.70, VIS 29

60% SHYSLTST: ltgy-mgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, 25% SLTY SH: ltgy dk gy, sft-mod sft, p-mod ind, fri-brit, fis, sme sl bnd, sbply-pty, nsfoc 15% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod srt, firm- hd, p por, arg cmt, occ glauc, nsfoc

SURVEY
MD 3135'
INC 15.70°
AZI 218.02°
TVD 3093.00'

60% SHYSLTST: ltgy-mgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, 20% SLTY SH: ltgy dk gy, sft-mod sft, p-mod ind, fri-brit, fis, sme sl bnd, sbply-pty, nsfoc 20% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod srt, firm- hd, p por, arg cmt, occ glauc, nsfoc

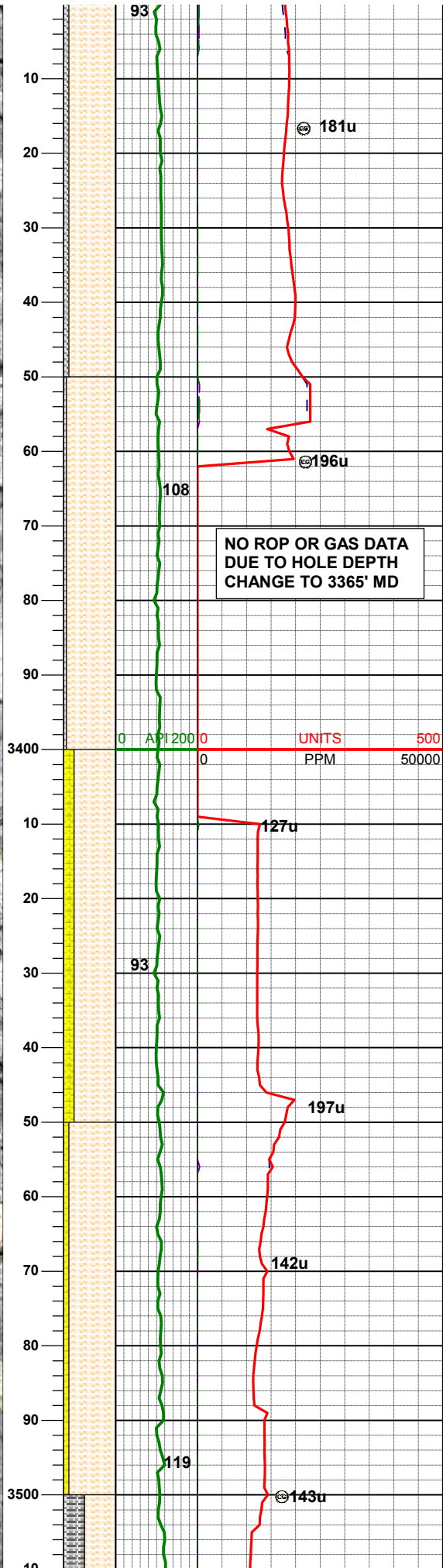
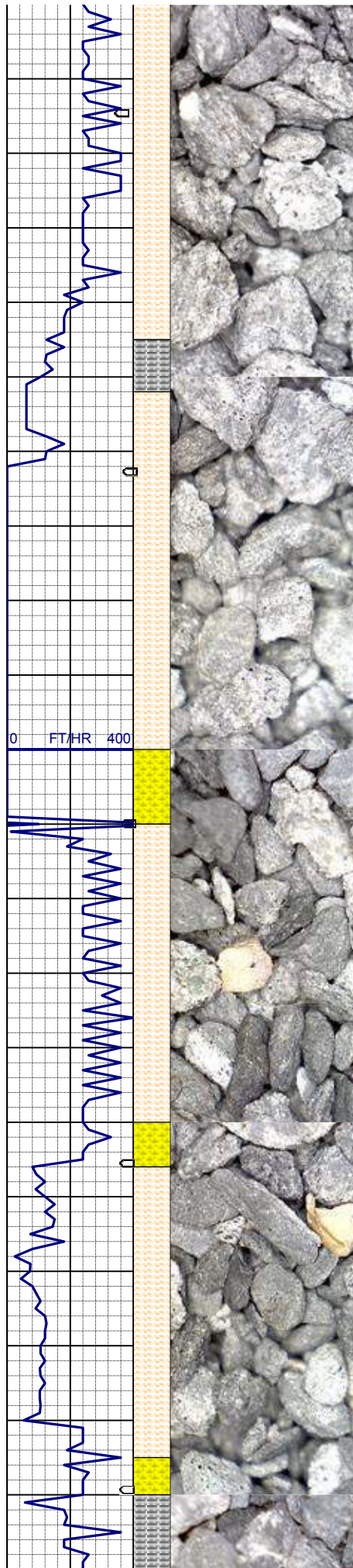
162.02u
C1: 98.5%
C2: 0.8%
C3: 0.7%
C4: 0.0%

75% SHYSLTST: ltgy-mgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, 20% SLTY SH: ltgy dk gy, sft-mod sft, p-mod ind, fri-brit, fis, sme sl bnd, sbply-pty, nsfoc 5% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod srt, firm- hd, p por, arg cmt, occ glauc, nsfoc

SURVEY
MD 3224'
INC 14.33°
AZI 214.72°
TVD 3179.00'

85% SHYSLTST: ltgy-mgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, 15% SLTY SH: ltgy dk gy, sft-mod sft, p-mod ind, fri-brit, fis, sme sl bnd, sbply-pty, nsfoc

MUD WT: 8.75, VIS 29



SURVEY
MD 3314'
INC 13.64°
AZI 223.06°
TVD 3267.00'

90% SHYSLTST: ltgy-mgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, 10% SLTY SH: ltgy dk gy, sft-mod sft, p-mod ind, fri-brit, fis, sme sl bnd, sbplty-plty, nsfoc

MUD WT: 8.55, VIS 29

95% SHYSLTST: ltgy-mgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, 5% SLTY SH: ltgy dk gy, sft-mod sft, p-mod ind, fri-brit, fis, sme sl bnd, sbplty-plty, nsfoc

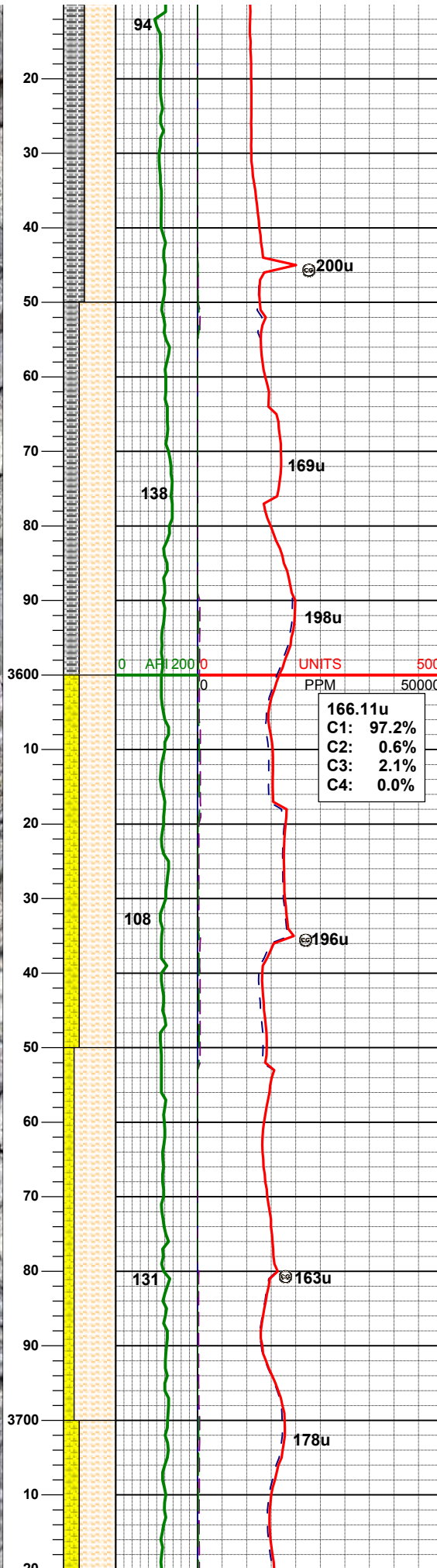
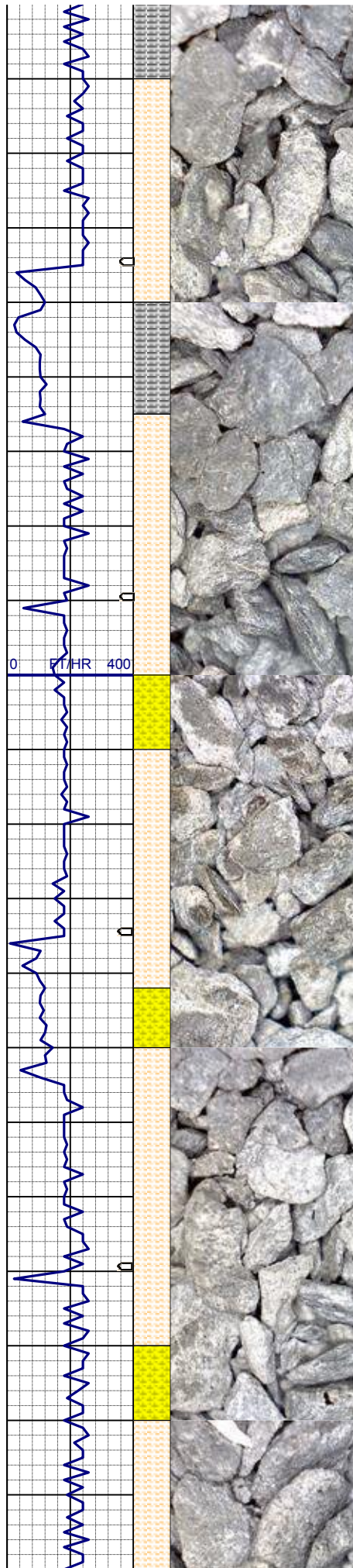
SURVEY
MD 3404'
INC 13.73°
AZI 220.30°
TVD 3354.00'

MUD WT: 8.50, VIS 29

80% SHYSLTST: ltgy-mgy-dkgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, 20% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod srt, firm- hd, p por, arg cmt ; v sl cly, nsfoc

90% SHYSLTST: ltgy-mgy-dkgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, 10% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod srt, firm- hd, p por, arg cmt ; v sl cly, nsfoc

SURVEY
MD 3493'
INC 14.35°
AZI 220.61°
TVD 3440.90'



60% SHYSLTST: ltgy-mgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, 40% SLTY SH: ltgy dk gy, sft-mod sft, p-mod ind, fri-brit, fis, sme sl bnd, sbply-pty, nsfoc

70% SHYSLTST: ltgy-mgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, 30% SLTY SH: ltgy dk gy, sft-mod sft, p-mod ind, fri-brit, fis, sme sl bnd, sbply-pty, nsfoc

SURVEY
MD 3583'
INC 15.80°
AZI 218.42°
TVD 3527.80'

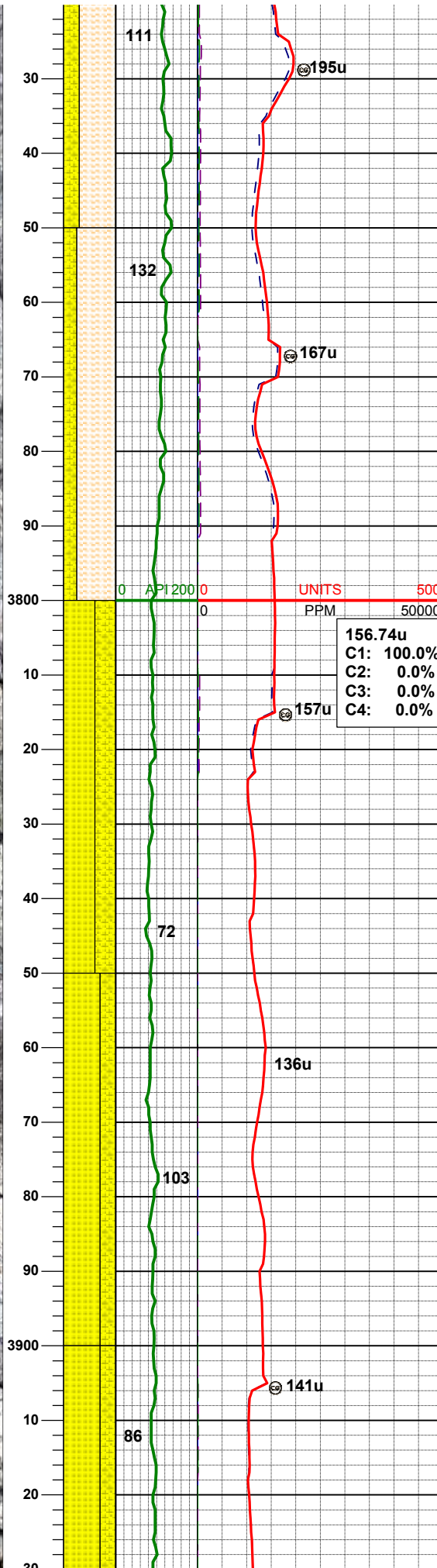
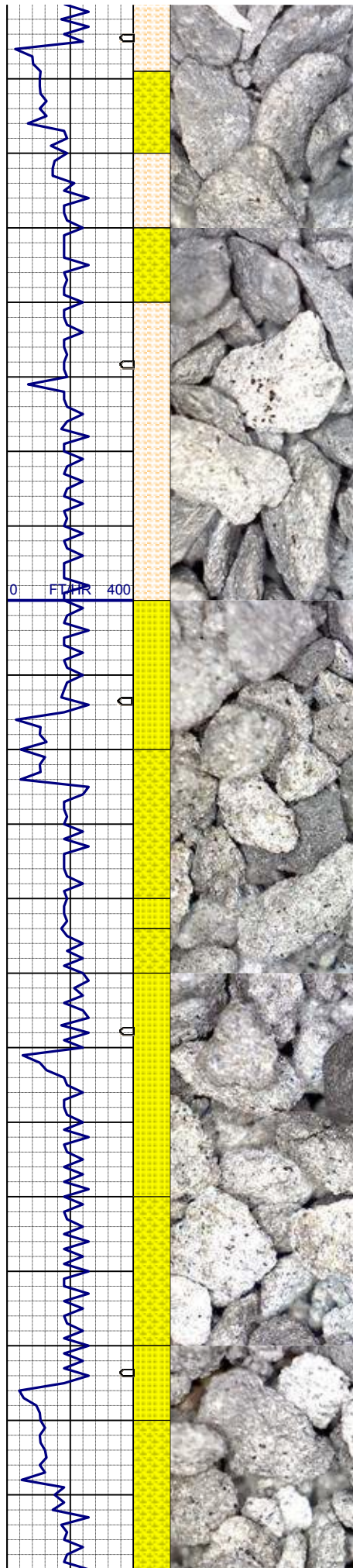
MUD WT: 8.50, VIS 27

166.11u
C1: 97.2%
C2: 0.6%
C3: 2.1%
C4: 0.0%

70% SHYSLTST: ltgy-mgy-dkgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, 30% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod srt, firm- hd, p por, arg cmt ; v sl cly, nsfoc

SURVEY
MD 3672'
INC 16.62°
AZI 217.80°
TVD 3613.27'

80% SHYSLTST: ltgy-mgy-dkgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, 20% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod srt, firm- hd, p por, arg cmt ; v sl cly, nsfoc



70% SHYSLTST: ltgy-mgy-dkgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, 30% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod srt, firm- hd, p por, arg cmt ; v sl cly, nsfoc

SURVEY
MD 3762'
INC 16.88°
AZI 217.24°
TVD 3699.45'

75% SHYSLTST: ltgy-mgy-dkgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, 25% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod srt, firm- hd, p por, arg cmt ; v sl cly, nsfoc

MUD WT: 8.60, VIS 28

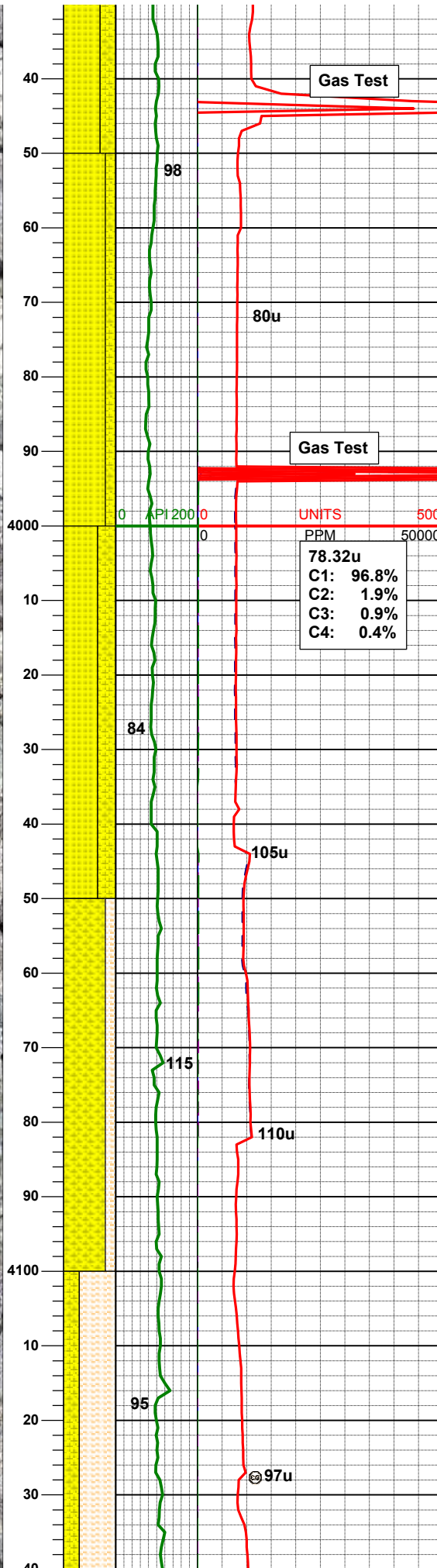
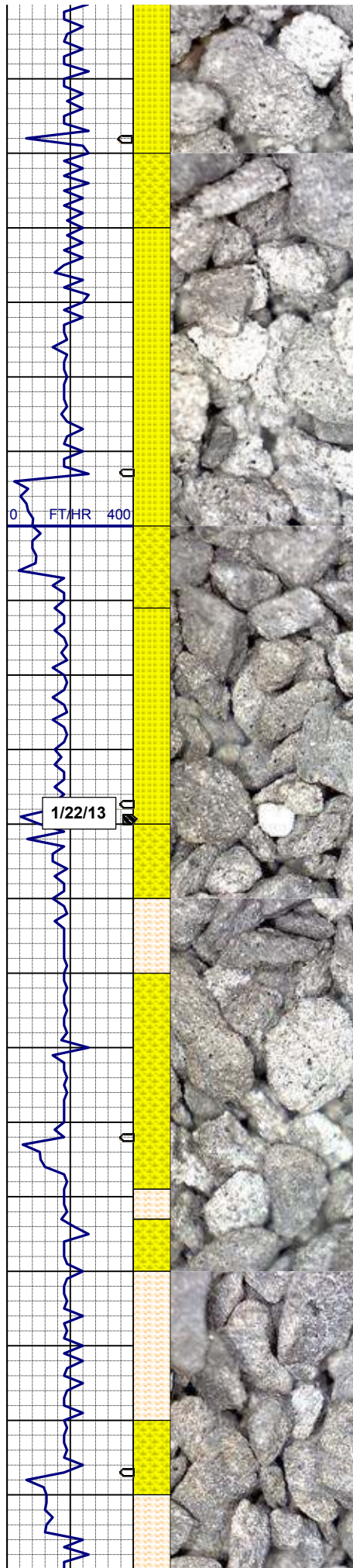
Parkman@3800'MD, 3733'TVD

60% SS: wh - clr, s&p, occ lt gy, clr - trnsl, firm - hd- brit, f-m gr, sbang - sbrnnd, mod por 40% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod srt, firm- hd, p por, arg cmt ; v sl cly, nsfoc

SURVEY
MD 3852'
INC 18.20°
AZI 216.43°
TVD 3785.26'

70% SS: wh - clr, s&p, occ lt gy, clr - trnsl, firm - hd- brit, f-m gr, sbang - sbrnnd, mod por 30% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod srt, firm- hd, p por, arg cmt ; v sl cly, nsfoc

70% SS: wh - clr, s&p, occ lt gy, clr - trnsl, firm - hd- brit, f-m gr, sbang - sbrnnd, mod por 30% SHYSS: ltgy-mgy, tr s&p, vf-fgr, sbrd, mod srt, firm- hd, p por, arg cmt ; v sl cly, nsfoc



50% SHYSS: ltgy-mgy, tr s&p, vf-gr, sbrd, mod
srt, firm- hd, p por, arg cmt ; v sl cly, nsfoc

SURVEY
MD 3941'
INC 16.79°
AZI 217.17°
TVD 3870.14'

80% SS: wh - clr, s&p, occ lt gy, clr - trns, firm -
hd- brit, f-m gr, sbang - sbrdd, mod por
20% SHYSS: ltgy-mgy, tr s&p, vf-gr, sbrd, mod
srt, firm- hd, p por, arg cmt ; v sl cly, nsfoc

MUD WT: 8.50, VIS 28

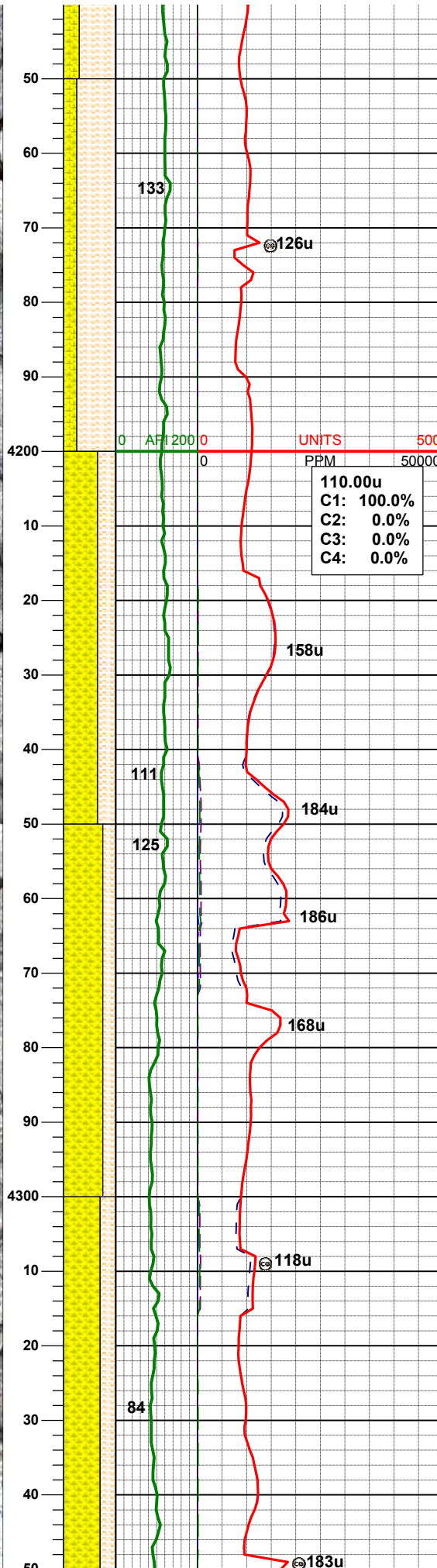
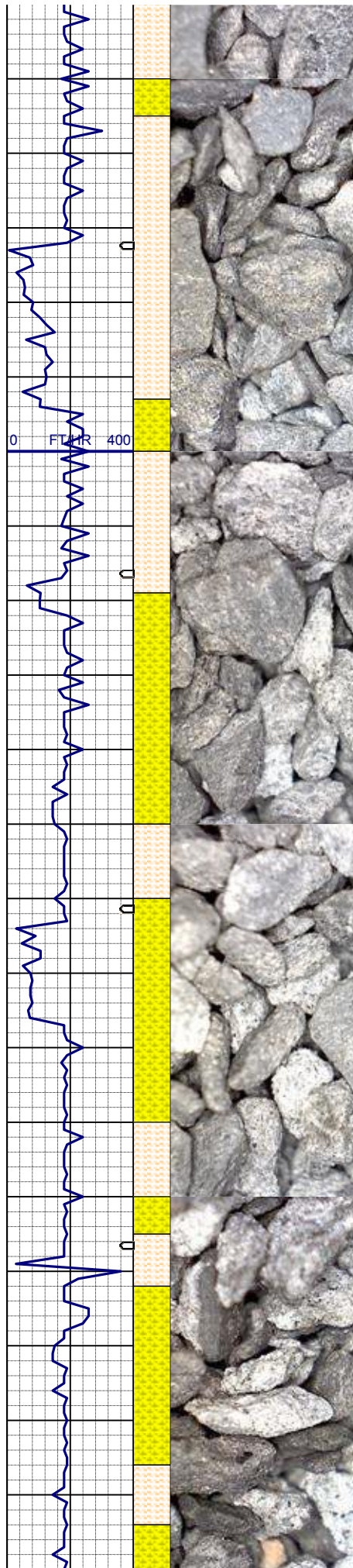
SURVEY
MD 4031'
INC 15.55°
AZI 218.18°
TVD 3956.58'

65% SS: wh - clr, s&p, occ lt gy, clr - trns, firm -
hd- brit, f-m gr, sbang - sbrdd, mod por
35% SHYSS: ltgy-mgy, tr s&p, vf-gr, sbrd, mod
srt, firm- hd, p por, arg cmt ; v sl cly, nsfoc

80% SHLYSS: lt gy, occ wh- op, firm- brit occ
sft, v f gr, rndd - sb ang, slty ; sme glau, sme
biot,
20% SHYSLTST: ltgy-mgy-dkgy, sft- firm,
sbbiky, aren-sly tex, occ glau incl, sl calc,

SURVEY
MD 4121'
INC 15.75°
AZI 217.79°
TVD 4043.24'

70% SHYSLTST: ltgy-mgy-dkgy, sft- firm,
sbbiky, aren-sly tex, occ glau incl, sl calc,
30% SHLYSS: lt av. occ wh- op. firm- brit occ



sft, v f gr, rndd - sb ang, slty ; sme glau, sme biot, nsfoc

75% SHYSLTST: ltgy-mgy-dkgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, 25% SHLYSS: lt gy, occ wh- op, firm- brit occ sft, v f gr, rndd - sb ang, slty ; sme glau, sme biot, nsfoc

MUD WT: 8.60, VIS 28

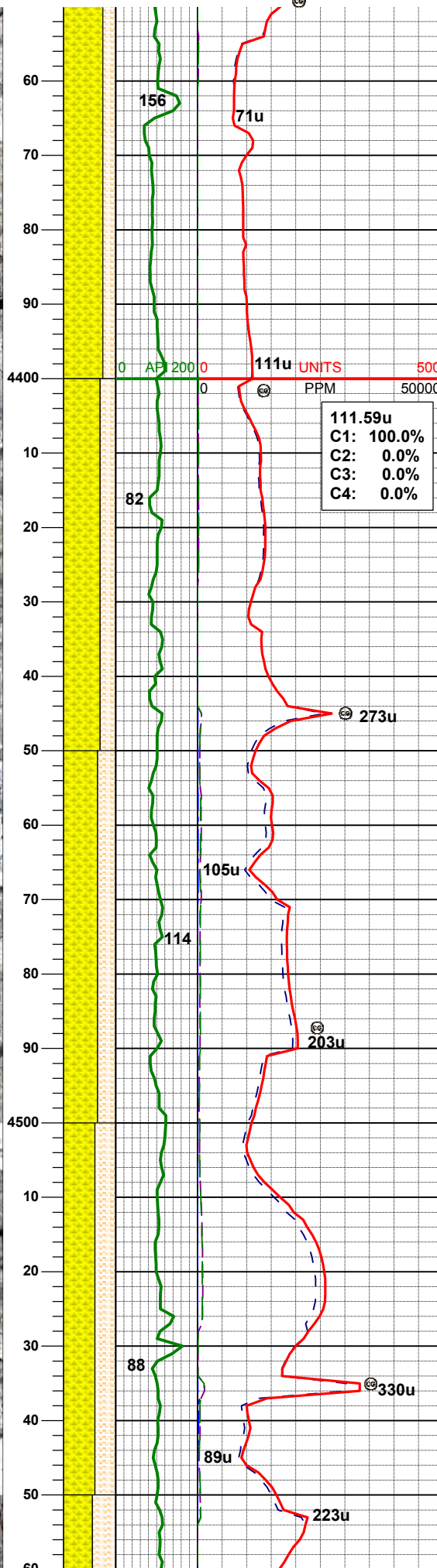
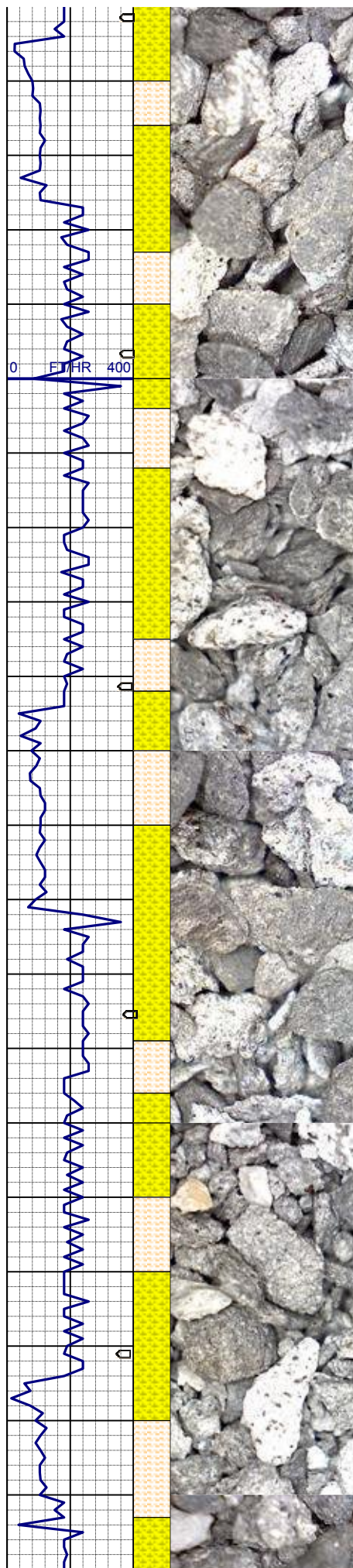
SURVEY
MD 4210'
INC 13.40°
AZI 217.37°
TVD 4129.37'

65% SHLYSS: lt gy, occ wh- op, firm- brit occ sft, v f gr, rndd - sb ang, slty ; sme glau, sme biot, 35% SHYSLTST: ltgy-mgy-dkgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc,

75% SHLYSS: lt gy, occ wh- op, firm- brit occ sft, v f gr, rndd - sb ang, slty ; sme glau, sme biot, 25% SHYSLTST: ltgy-mgy-dkgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc,

SURVEY
MD 4300'
INC 11.81°
AZI 212.90°
TVD 4217.20'

70% SHLYSS: lt gy, occ wh- op, firm- brit occ sft, v f gr, rndd - sb ang, slty ; sme glau, sme biot, 30% SHYSLTST: ltgy-mgy-dkgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc,



Sussex@4365'MD, 4280'TVD

75% SHLYSS: lt gy, occ wh- op, firm- brit occ
sft, v f gr, rndd - sb ang, slty ; sme glau, sme
biot,
25% SHYSLTST: ltgy-mgy-dkgy, sft- firm,
sbbkly, aren-slty tex, occ glau incl, sl calc,

SURVEY
MD 4390'
INC 9.75°
AZI 214.90°
TVD 4305.61'

MUD WT: 8.60, VIS 28

70% SHLYSS: lt gy, occ wh- op, firm- brit occ
sft, v f gr, rndd - sb ang, slty ; sme glau, sme
biot,
30% SHYSLTST: ltgy-mgy-dkgy, sft- firm,
sbbkly, aren-slty tex, occ glau incl, sl calc,

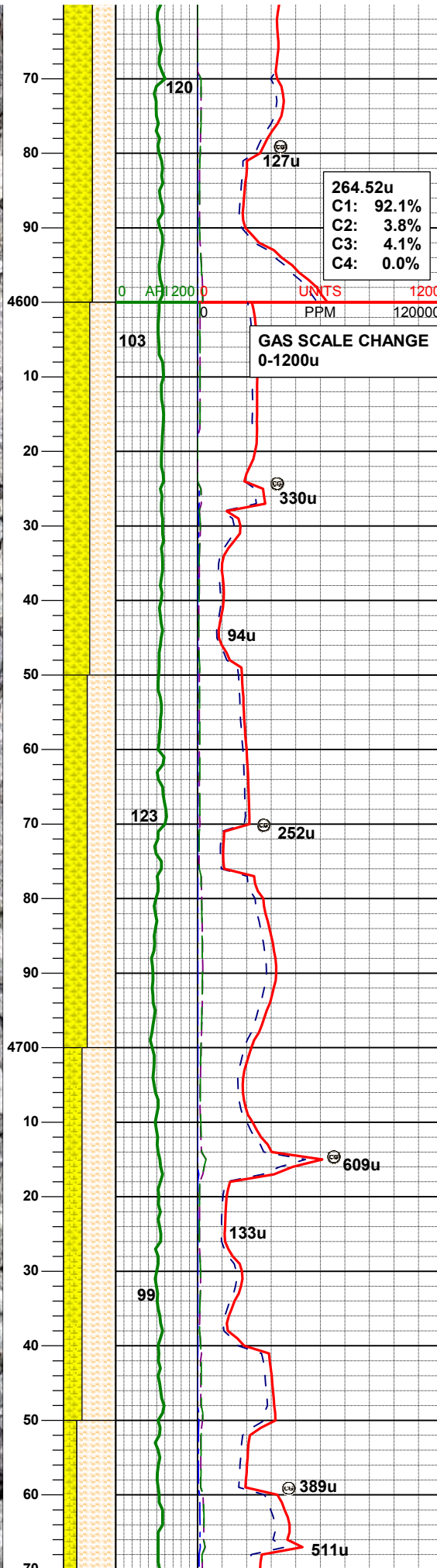
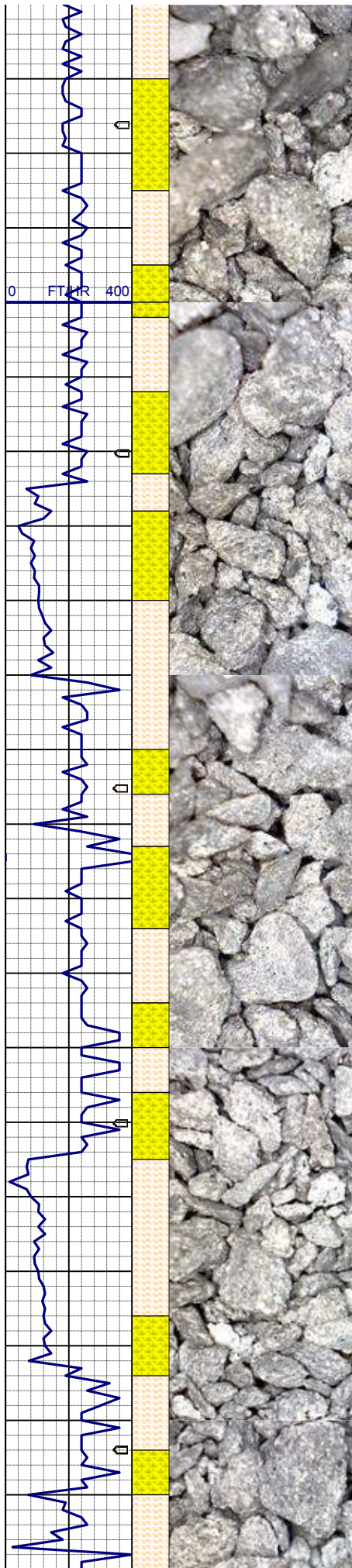
65% SHLYSS: lt gy, occ wh- op, firm- brit occ
sft, v f gr, rndd - sb ang, slty ; sme glau, sme
biot,
35% SHYSLTST: ltgy-mgy-dkgy, sft- firm,
sbbkly, aren-slty tex, occ glau incl, sl calc,

SURVEY
MD 4479'
INC 7.43°
AZI 224.41°
TVD 4393.00'

60% SHLYSS: lt gy, occ wh- op, firm- brit occ
sft, v f gr, rndd - sb ang, slty ; sme glau, sme
biot,
40% SHYSLTST: ltgy-mgy-dkgy, sft- firm,
sbbkly, aren-slty tex, occ glau incl, sl calc,

MUD WT: 8.60, VIS 28

55% SHLYSS: lt gy, occ wh- op, firm- brit occ
sft, v f gr, rndd - sb ang, slty ; sme glau, sme



biot,
45% SHYSLTST: ltgy-mgy-dkgy, sft- firm,
sbbiky, aren-sity tex, occ glau incl, sl calc,

SURVEY
MD 4569'
INC 5.89°
AZI 219.48°
TVD 4483.00'

264.52u
C1: 92.1%
C2: 3.8%
C3: 4.1%
C4: 0.0%

0 1200 0 1200
PPM

GAS SCALE CHANGE
0-1200u

50% SHLYSS: lt gy, occ wh- op, firm- brit occ
sft, v f gr, rndd - sb ang, slty ; sme glau, sme
biot,
50% SHYSLTST: ltgy-mgy-dkgy, sft- firm,
sbbiky, aren-sity tex, occ glau incl, sl calc,

SURVEY
MD 4658'
INC 3.43°
AZI 204.71°
TVD 4571.00'

MUD WT: 8.60, VIS 29

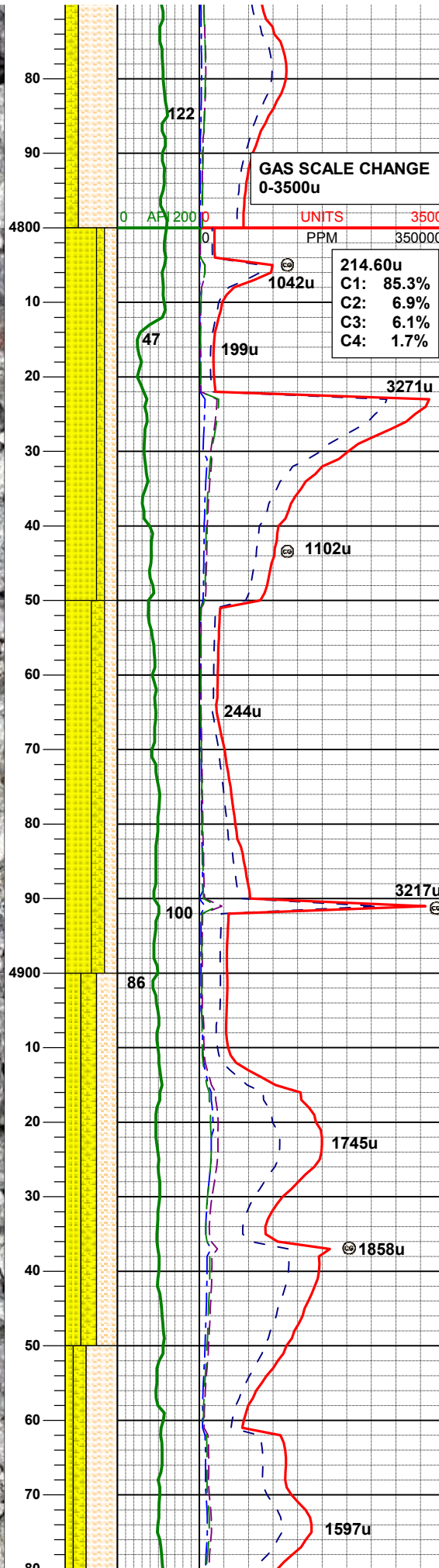
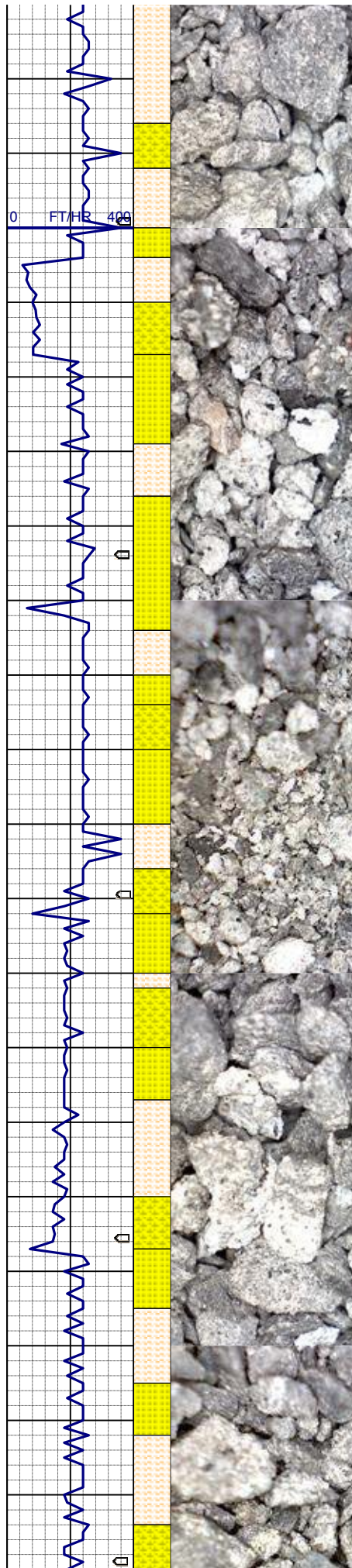
55% SHYSLTST: ltgy-mgy-dkgy, sft- firm,
sbbiky, aren-sity tex, occ glau incl, sl calc,
45% SHLYSS: lt gy, occ wh- op, firm- brit occ
sft, v f gr, rndd - sb ang, slty ; sme glau, sme
biot,

65% SHYSLTST: ltgy-mgy-dkgy, sft- firm,
sbbiky, aren-sity tex, occ glau incl, sl calc,
35% SHLYSS: lt gy, occ wh- op, firm- brit occ
sft, v f gr, rndd - sb ang, slty ; sme glau, sme
biot,

SURVEY
MD 4748'
INC 1.81°
AZI 164.27°
TVD 4661.00'

MUD WT: 8.55, VIS 28

75% SHYSLTST: ltgy-mgy-dkgy, sft- firm,



75% SHLYSS: ltgy-mgy-dkgy, sft-firm, sbblky, aren-silty tex, occ glau incl, sl calc, 25% SHLYSS: ltgy, occ wh-op, firm-brit occ sft, v f gr, rndd - sb ang, silty; sme glau, sme biot,

GAS SCALE CHANGE
0-3500u

UNITS 3500
PPM 350000

214.60u
C1: 85.3%
C2: 6.9%
C3: 6.1%
C4: 1.7%

Shannon@4812'MD, 4725'TVD

60% SS: wh - clr, s&p, occ ltgy, clr - trnsl, firm - hd-brit, f-m gr, sbang - sbrndd, mod por
25% SHYSLTST: ltgy-mgy-dkgy, sft-firm, sbblky, aren-silty tex, occ glau incl, sl calc, 15% SHLYSS: ltgy, occ wh-op, firm-brit occ sft, v f gr, rndd - sb ang, silty; sme glau, sme biot,

SURVEY
MD 4838'
INC 0.58°
AZI 99.07°
TVD 4751.00'

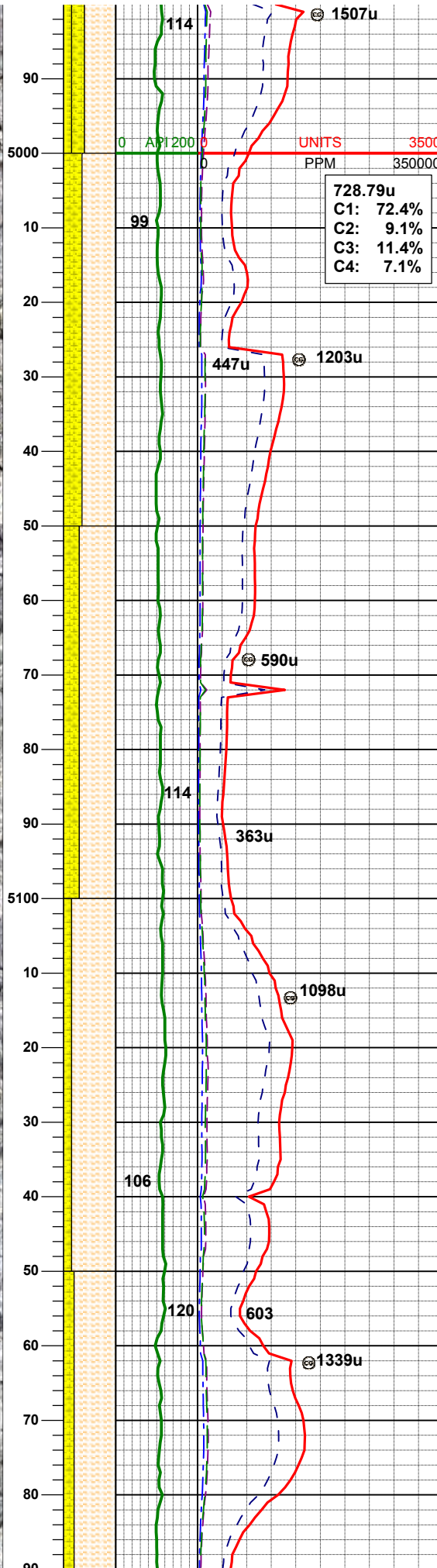
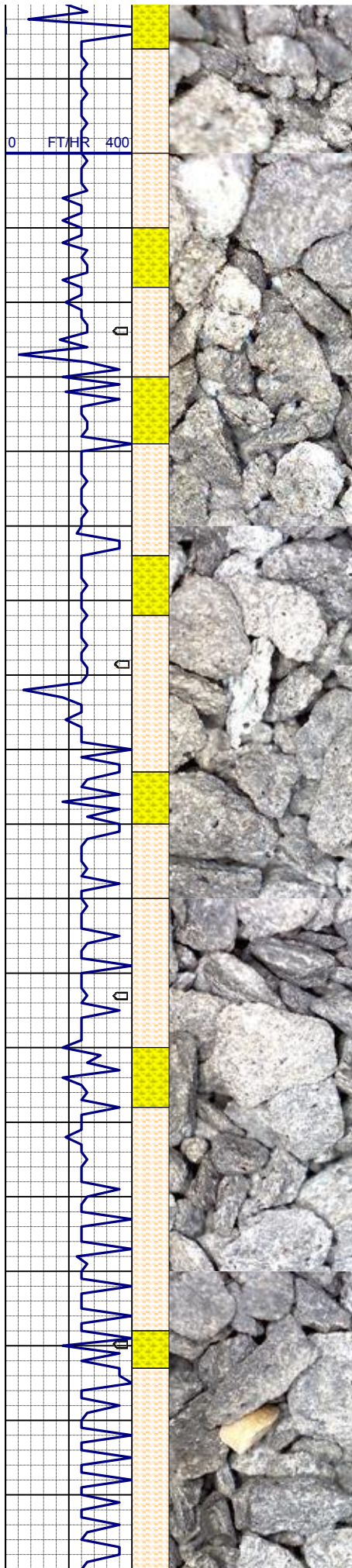
50% SS: wh - clr, s&p, occ ltgy, clr - trnsl, firm - hd-brit, f-m gr, sbang - sbrndd, mod por
25% SHYSLTST: ltgy-mgy-dkgy, sft-firm, sbblky, aren-silty tex, occ glau incl, sl calc, 25% SHLYSS: ltgy, occ wh-op, firm-brit occ sft, v f gr, rndd - sb ang, silty; sme glau, sme biot,

MUD WT: 8.50, VIS 29

40% SHYSLTST: ltgy-mgy-dkgy, sft-firm, sbblky, aren-silty tex, occ glau incl, sl calc, 30% SS: wh - clr, s&p, occ ltgy, clr - trnsl, firm - hd-brit, f-m gr, sbang - sbrndd, mod por
30% SHLYSS: ltgy, occ wh-op, firm-brit occ sft, v f gr, rndd - sb ang, silty; sme glau, sme biot,

SURVEY
MD 4927'
INC 0.47°
AZI 68.42°
TVD 4840.00'

60% SHYSLTST: ltgy-mgy-dkgy, sft-firm, sbblky, aren-silty tex, occ glau incl, sl calc, 25% SS: wh - clr, s&p, occ ltgy, clr - trnsl, firm - hd-brit, f-m gr, sbang - sbrndd, mod por
15% SHLYSS: ltgy, occ wh-op, firm-brit occ sft, v f gr, rndd - sb ang, silty; sme glau, sme biot,



sft, v f gr, mdd - sb ang, slty ; sme glau, sme biot,

SURVEY
MD 5017'
INC 0.59°
AZI 86.86°
TVD 4930.00'

65% SHYSLTST: ltgy-mgy-dkgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, 35% SHLYSS: lt gy, occ wh- op, firm- brit occ sft, v f gr, mdd - sb ang, slty ; sme glau, sme biot,

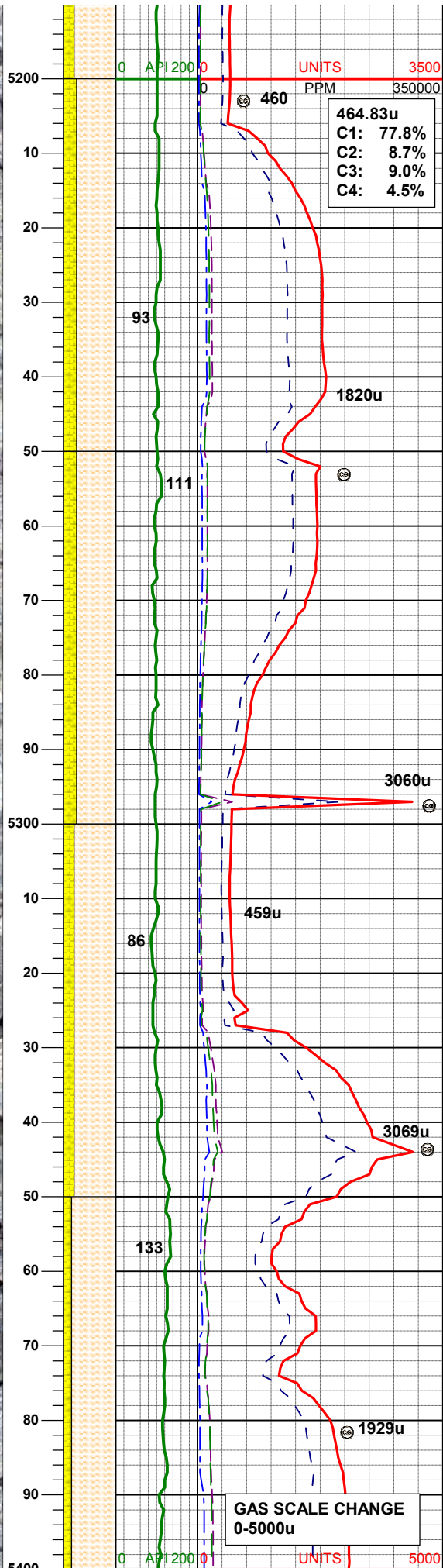
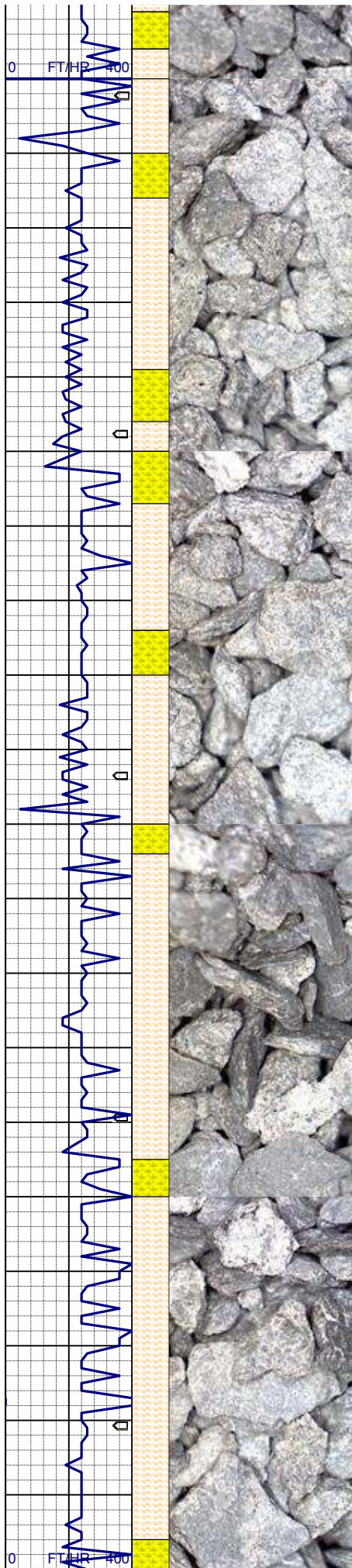
MUD WT: 8.60, VIS 29

70% SHYSLTST: ltgy-mgy-dkgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, 30% SHLYSS: lt gy, occ wh- op, firm- brit occ sft, v f gr, mdd - sb ang, slty ; sme glau, sme biot,

SURVEY
MD 5107'
INC 0.40°
AZI 61.13°
TVD 5020.00'

85% SHYSLTST: ltgy-mgy-dkgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, 15% SHLYSS: lt gy, occ wh- op, firm- brit occ sft, v f gr, mdd - sb ang, slty ; sme glau, sme biot,

80% SHYSLTST: ltgy-mgy-dkgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, 20% SHLYSS: lt gy, occ wh- op, firm- brit occ sft, v f gr, mdd - sb ang, slty ; sme glau, sme biot,



SURVEY
MD 5196'
INC 0.19°
AZI 314.80°
TVD 5109.00'

75% SHYSLTST: ltgy-mgy-dkgy, sft- firm,
sbbkly, aren-slty tex, occ glau incl, sl calc,
25% SHLYSS: lt gy, occ wh- op, firm- brit occ
sft, v f gr, rndd - sb ang, slty ; sme glau, sme
biot,

MUD WT: 8.80, VIS 32

75% SHYSLTST: ltgy-mgy-dkgy, sft- firm,
sbbkly, aren-slty tex, occ glau incl, sl calc,
25% SHLYSS: lt gy, occ wh- op, firm- brit occ
sft, v f gr, rndd - sb ang, slty ; sme glau, sme
biot,

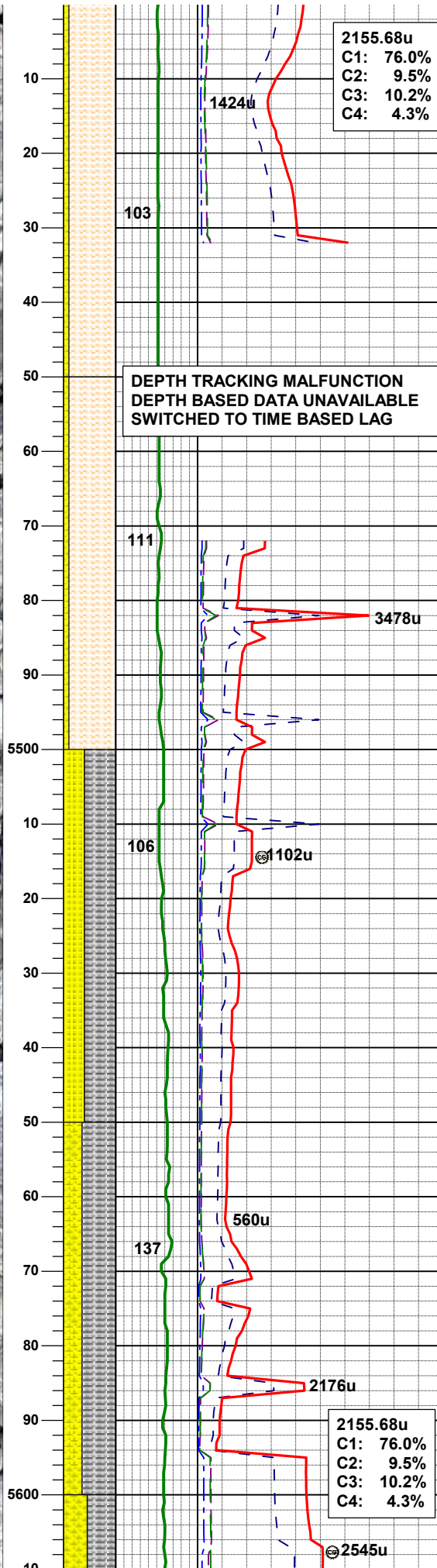
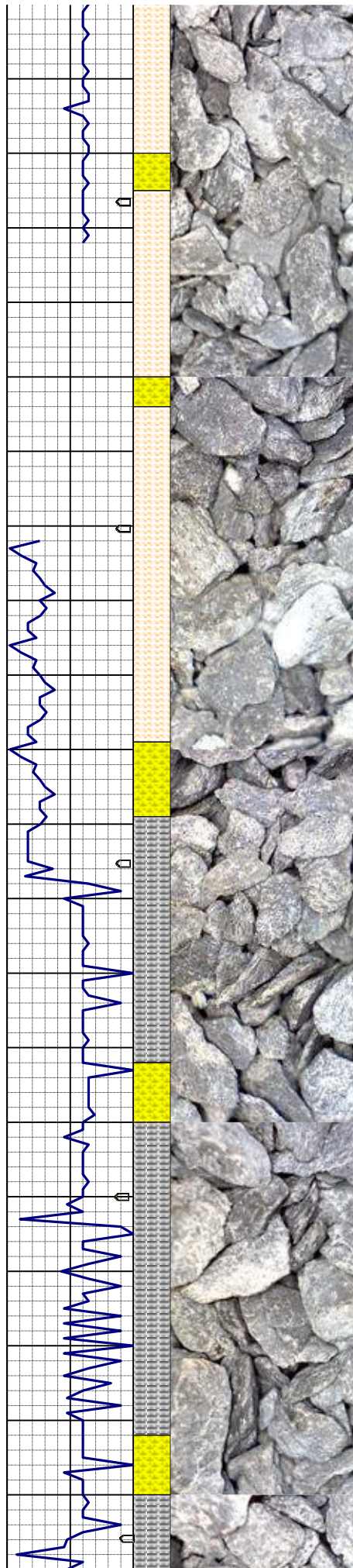
SURVEY
MD 5286'
INC 0.25°
AZI 3.97°
TVD 5199.00'

80% SHYSLTST: ltgy-mgy-dkgy, sft- firm,
sbbkly, aren-slty tex, occ glau incl, sl calc,
20% SHLYSS: lt gy, occ wh- op, firm- brit occ
sft, v f gr, rndd - sb ang, slty ; sme glau, sme
biot,

85% SHYSLTST: ltgy-mgy-dkgy, sft- firm,
sbbkly, aren-slty tex, occ glau incl, sl calc,
15% SHLYSS: lt gy, occ wh- op, firm- brit occ
sft, v f gr, rndd - sb ang, slty ; sme glau, sme
biot,

SURVEY
MD 5375'
INC 0.61°
AZI 326.61°
TVD 5288.00'

GAS SCALE CHANGE
0-5000u



2155.68u
C1: 76.0%
C2: 9.5%
C3: 10.2%
C4: 4.3%

DEPTH TRACKING MALFUNCTION
DEPTH BASED DATA UNAVAILABLE
SWITCHED TO TIME BASED LAG

SURVEY
MD 5465'
INC 0.44°
AZI 309.61°
TVD 5378.00'

90% SHYSLTST: ltgy-mgy-dkgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, 10% SHLYSS: lt gy, occ wh- op, firm- brit occ sft, v f gr, rndd - sb ang, slty ; sme glau, sme biot,

90% SHYSLTST: ltgy-mgy-dkgy, sft- firm, sbblky, aren-slty tex, occ glau incl, sl calc, 10% SHLYSS: lt gy, occ wh- op, firm- brit occ sft, v f gr, rndd - sb ang, slty ; sme glau, sme biot,

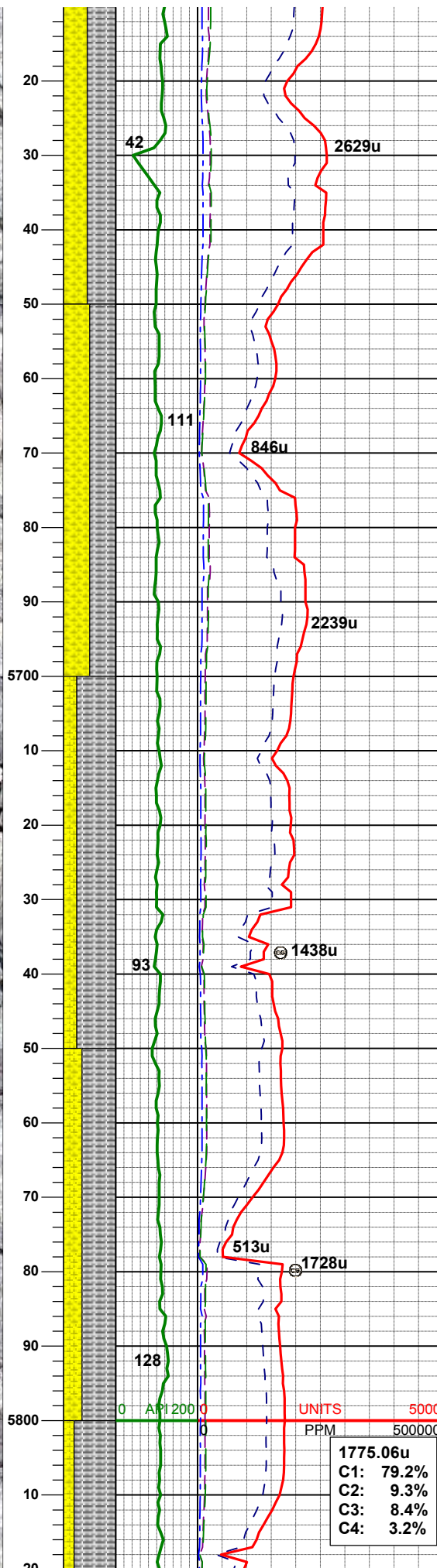
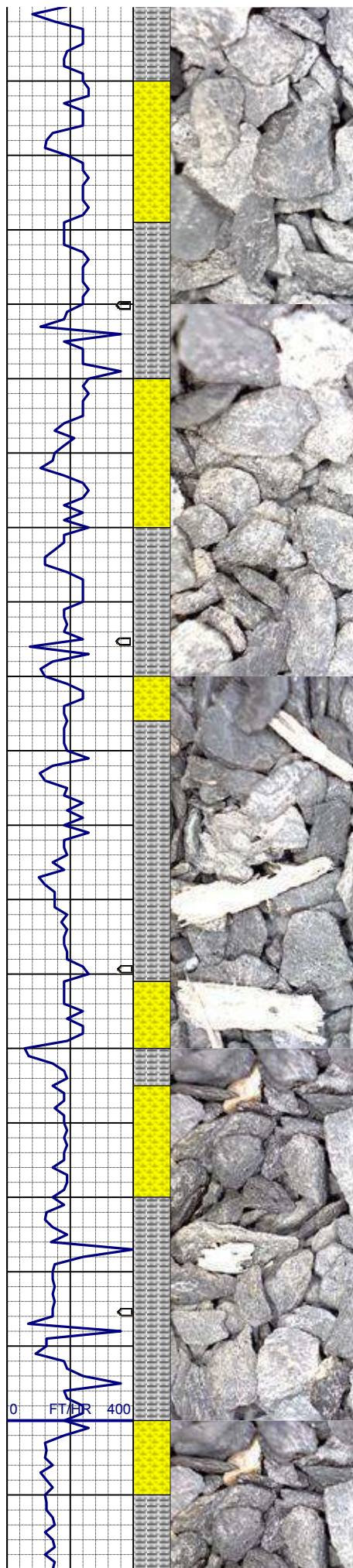
MUD WT: 8.90, VIS 36

SURVEY
MD 5554'
INC 0.60°
AZI 302.94°
TVD 5467.00'

60% SLTYSH: mgy, occ lt and dk gy, blk- sbblky, occ sbplty, firm-m hd, rthy - sl slty tex, arg mtx, non calc 40% SHLYSS: lt gy, occ wh- op, firm- brit occ sft, v f gr, rndd - sb ang, slty ; mod glau

65% SLTYSH: mgy, occ lt and dk gy, blk- sbblky, occ sbplty, firm-m hd, rthy - sl slty tex, arg mtx, non calc 35% SHLYSS: lt gy, occ wh- op, firm- brit occ sft, v f gr, rndd - sb ang, slty ; mod glau

2155.68u
C1: 76.0%
C2: 9.5%
C3: 10.2%
C4: 4.3%



55% SLTYSH: mgy, occ lt and dk gy, blk-
sbbkly, occ sbplty, firm-m hd, rthy - sl slty tex,
arg mtx, non calc
45% SHLYSS: lt gy, occ wh- op, firm- brit occ
sft, v f gr, rndd - sb ang, slty ; mod glau

50% SLTYSH: mgy, occ lt and dk gy, blk-
sbbkly, occ sbplty, firm-m hd, rthy - sl slty tex,
arg mtx, non calc
50% SHLYSS: lt gy, occ wh- op, firm- brit occ
sft, v f gr, rndd - sb ang, slty ; mod glau

MUD WT: 9.10, VIS 36

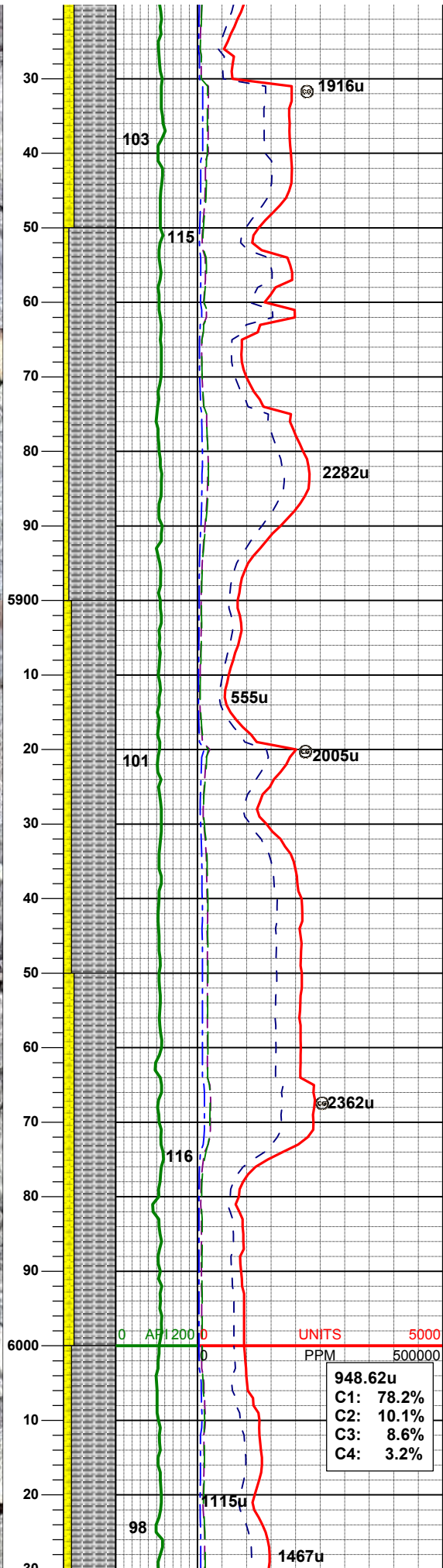
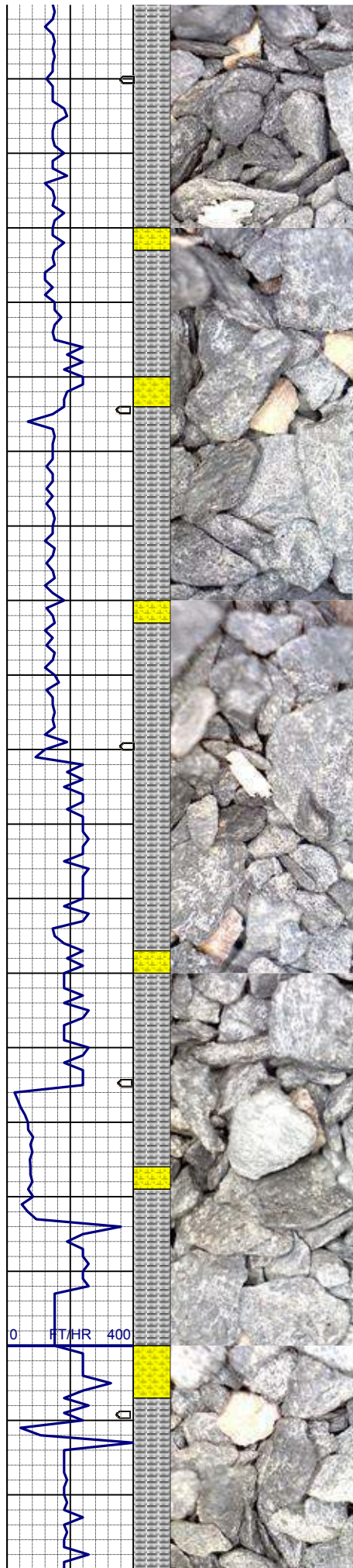
75% SLTYSH: mgy, occ lt and dk gy, blk-
sbbkly, occ sbplty, firm-m hd, rthy - sl slty tex,
arg mtx, non calc
25% SHLYSS: lt gy, occ wh- op, firm- brit occ
sft, v f gr, rndd - sb ang, slty ; mod glau

SURVEY
MD 5734'
INC 1.44°
AZI 302.54°
TVD 5647.54'

65% SLTYSH: mgy, occ lt and dk gy, blk-
sbbkly, occ sbplty, firm-m hd, rthy - sl slty tex,
arg mtx, non calc
35% SHLYSS: lt gy, occ wh- op, firm- brit occ
sft, v f gr, rndd - sb ang, slty ; mod glau

1775.06u
C1: 79.2%
C2: 9.3%
C3: 8.4%
C4: 3.2%

SURVEY
MD 5824'



INC 1.56°
AZI 293.50°
TVD 5737.51'

80% SLTYSH: mgy, occ lt and dk gy, blk-
sbbkly, occ sbplty, firm-m hd, rthy - sl slty tex,
arg mtx, non calc
20% SHLYSS: lt gy, occ wh- op, firm- brit occ
sft, v f gr, rndd - sb ang, slty ; mod glau

90% SLTYSH: mgy, occ lt and dk gy, blk-
sbbkly, occ sbplty, firm-m hd, rthy - sl slty tex,
arg mtx, non calc
10% SHLYSS: lt gy, occ wh- op, firm- brit occ
sft, v f gr, rndd - sb ang, slty ; mod glau

MUD WT: 9.30, VIS 36

SURVEY
MD 5913'
INC 1.72°
AZI 287.23°
TVD 5826.48'

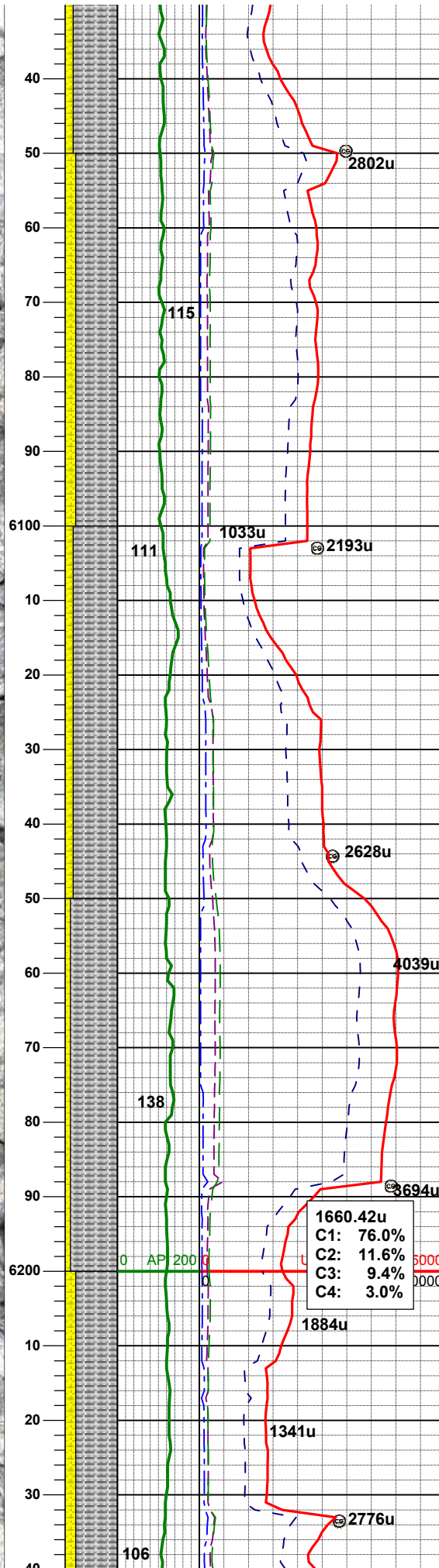
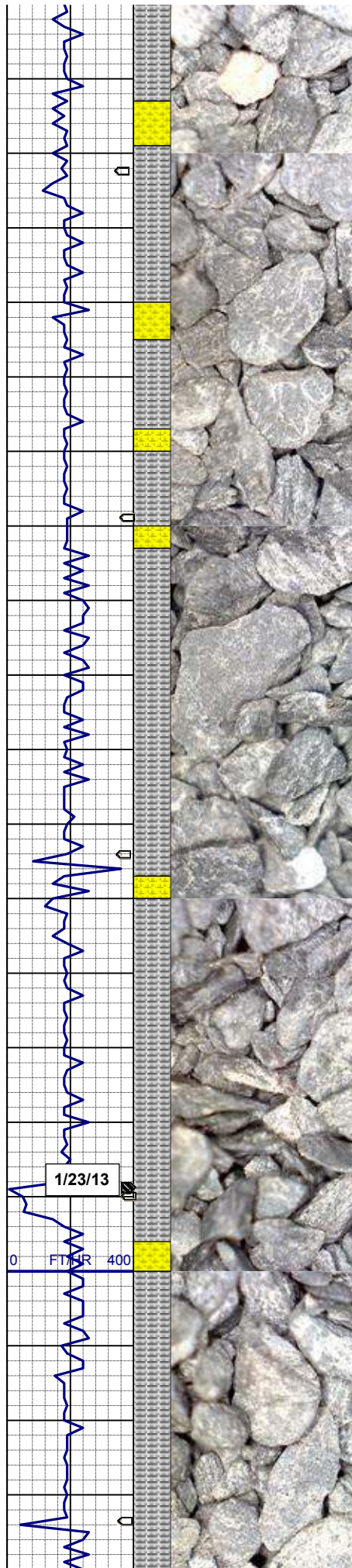
85% SLTYSH: mgy, occ lt and dk gy, blk-
sbbkly, occ sbplty, firm-m hd, rthy - sl slty tex,
arg mtx, non calc
15% SHLYSS: lt gy, occ wh- op, firm- brit occ
sft, v f gr, rndd - sb ang, slty ; mod glau

80% SLTYSH: mgy, occ lt and dk gy, blk-
sbbkly, occ sbplty, firm-m hd, rthy - sl slty tex,
arg mtx, non calc
20% SHLYSS: lt gy, occ wh- op, firm- brit occ
sft, v f gr, rndd - sb ang, slty ; mod glau

948.62u
C1: 78.2%
C2: 10.1%
C3: 8.6%
C4: 3.2%

SURVEY
MD 6003'
INC 0.37°
AZI 266.05°
TVD 5916.46'

85% SLTYSH: mgy, occ lt and dk gy, blk-



80% SLTYSH: mgy, occ lt and dk gy, blk-
sbbly, occ sbply, firm-m hd, rthy - sl slty tex,
arg mtx, non calc
15% SHLYSS: lt gy, occ wh- op, firm- brit occ
sft, v f gr, rndd - sb ang, slty ; mod glau

80% SLTYSH: mgy, occ lt and dk gy, blk-
sbbly, occ sbply, firm-m hd, rthy - sl slty tex,
arg mtx, non calc
20% SHLYSS: lt gy, occ wh- op, firm- brit occ
sft, v f gr, rndd - sb ang, slty ; mod glau

SURVEY
MD 6092'
INC 0.59°
AZI 276.25°
TVD 6005.46'

MUD WT: 9.30, VIS 38

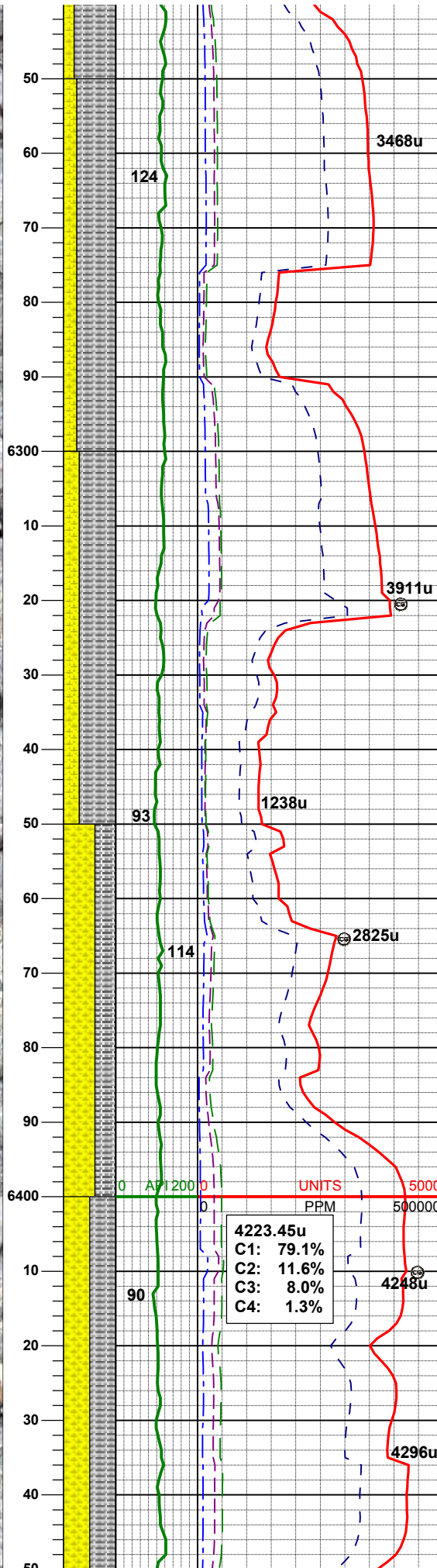
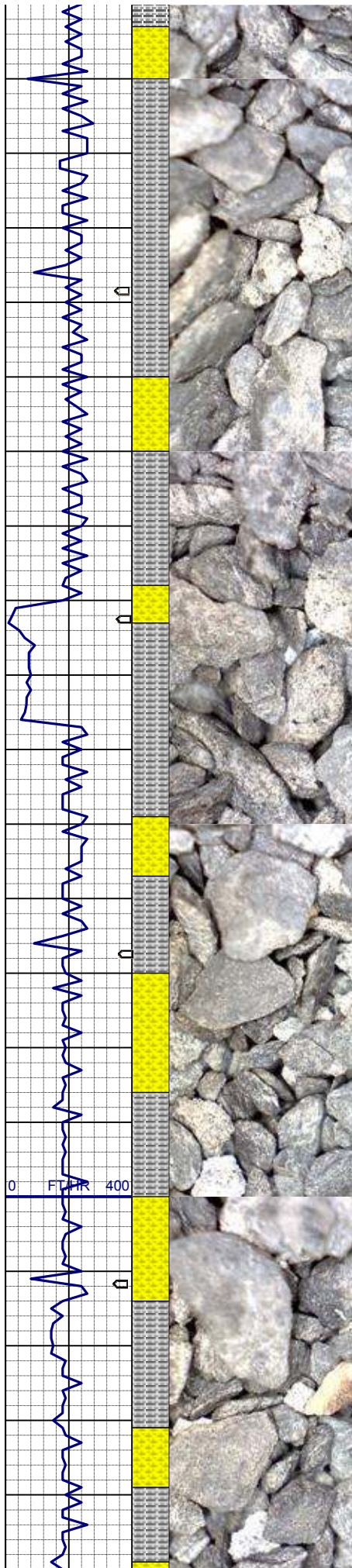
85% SLTYSH: mgy, occ lt and dk gy, blk-
sbbly, occ sbply, firm-m hd, rthy - sl slty tex,
arg mtx, non calc
15% SHLYSS: lt gy, occ wh- op, firm- brit occ
sft, v f gr, rndd - sb ang, slty ; mod glau

90% SLTYSH: mgy, occ lt and dk gy, blk-
sbbly, occ sbply, firm-m hd, rthy - sl slty tex,
arg mtx, non calc
10% SHLYSS: lt gy, occ wh- op, firm- brit occ
sft, v f gr, rndd - sb ang, slty ; mod glau

SURVEY
MD 6182'
INC 1.08°
AZI 305.71°
TVD 6095.45'

1660.42u
C1: 76.0%
C2: 11.6%
C3: 9.4%
C4: 3.0%

80% SLTYSH: mgy, occ lt and dk gy, blk-
sbbly, occ sbply, firm-m hd, rthy - sl slty tex,
arg mtx, non calc
20% SHLYSS: lt gy, occ wh- op, firm- brit occ
sft, v f gr, rndd - sb ang, slty ; mod glau



75% SLTYSH: mgy, occ lt and dk gy, blk-
sbbkly, occ sbplty, firm-m hd, rthy - sl slty tex,
arg mtx, non calc
25% SHLYSS: lt gy, occ wh- op, firm- brit occ
sft, v f gr, rndd - sb ang, slty ; mod glau

SURVEY
MD 6271'
INC 1.42°
AZI 310.52°
TVD 6184.43'

MUD WT: 9.20, VIS 40

70% SLTYSH: mgy, occ lt and dk gy, blk-
sbbkly, occ sbplty, firm-m hd, rthy - sl slty tex,
arg mtx, non calc
30% SHLYSS: lt gy, occ wh- op, firm- brit occ
sft, v f gr, rndd - sb ang, slty ; mod glau

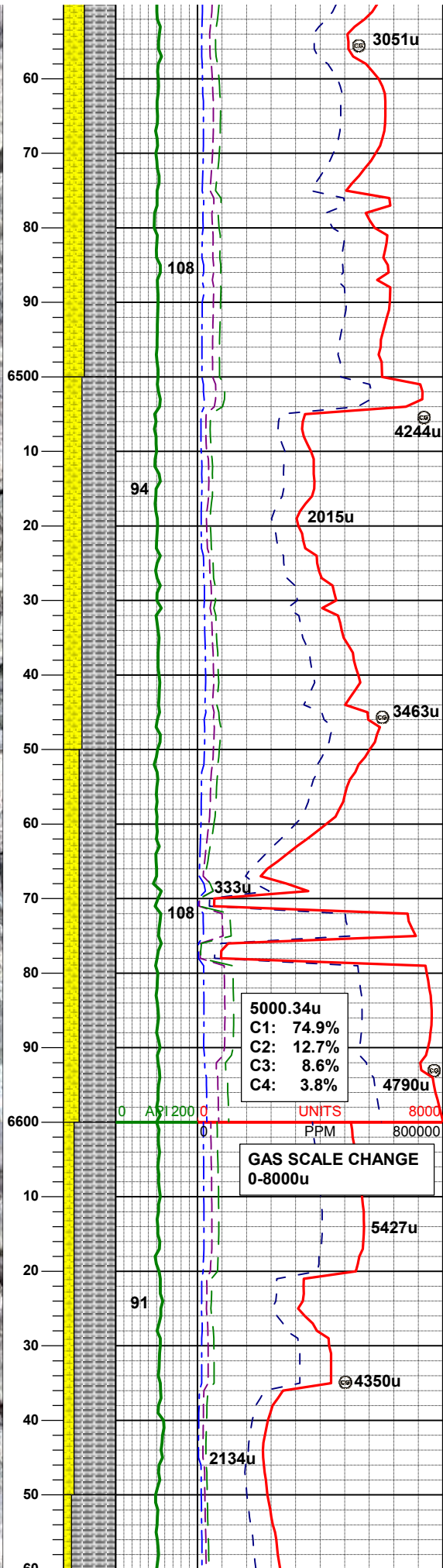
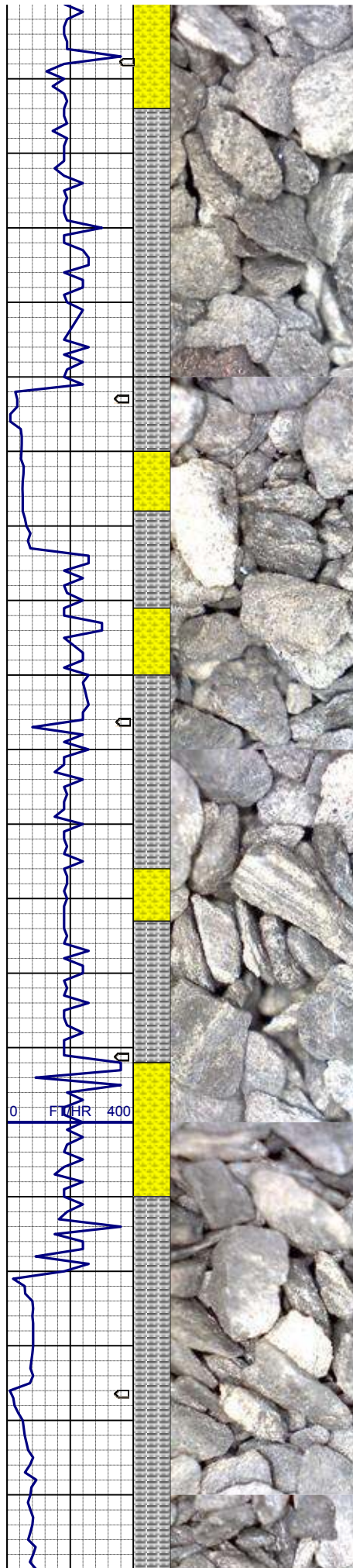
SURVEY
MD 6361'
INC 0.5°
AZI 322.07°
TVD 6274.41'

Teepee Buttes@6365'MD. 6276'TVD

60% SLTYSH: mgy, occ lt and dk gy, blk-
sbbkly, occ sbplty, firm-m hd, rthy - sl slty tex,
arg mtx, non calc
40% SHLYSS: lt gy, occ wh- op, firm- brit occ
sft, f-m gr, rndd - sb ang, slty ; mod glau

4223.45u
C1: 79.1%
C2: 11.6%
C3: 8.0%
C4: 1.3%

50% SLTYSH: mgy, occ lt and dk gy, blk-
sbbkly, occ sbplty, firm-m hd, rthy - sl slty tex,
arg mtx, non calc
50% SHLYSS: lt gy, occ wh- op, firm- brit occ
sft, f-m gr, rndd - sb ang, slty ; mod glau



SURVEY
MD 6451'
INC 1.33°
AZI 322.07°
TVD 6274.41'

60% SLTYSH: mgy, occ lt and dk gy, blk-
sbbkly, occ sbplty, firm-m hd, rthy - sl slty tex,
arg mtx, non calc
40% SHLYSS: lt gy, occ wh- op, firm- brit occ
sft, f-m gr, rndd - sb ang, slty ; mod glau

MUD WT: 9.3, VIS 41

SURVEY
MD 6540'
INC 0.55°
AZI 79.04°
TVD 6453.39'

65% SLTYSH: mgy, occ lt and dk gy, blk-
sbbkly, occ sbplty, firm-m hd, rthy - sl slty tex,
arg mtx, non calc
35% SHLYSS: lt gy, occ wh- op, firm- brit occ
sft, f-m gr, rndd - sb ang, slty ; mod glau

MUD WT: 9.5, VIS 41

70% SLTYSH: mgy, occ lt and dk gy, blk-
sbbkly, occ sbplty, firm-m hd, rthy - sl slty tex,
arg mtx, non calc
30% SHLYSS: lt gy, occ wh- op, firm- brit occ
sft, f-m gr, rndd - sb ang, slty ; mod glau

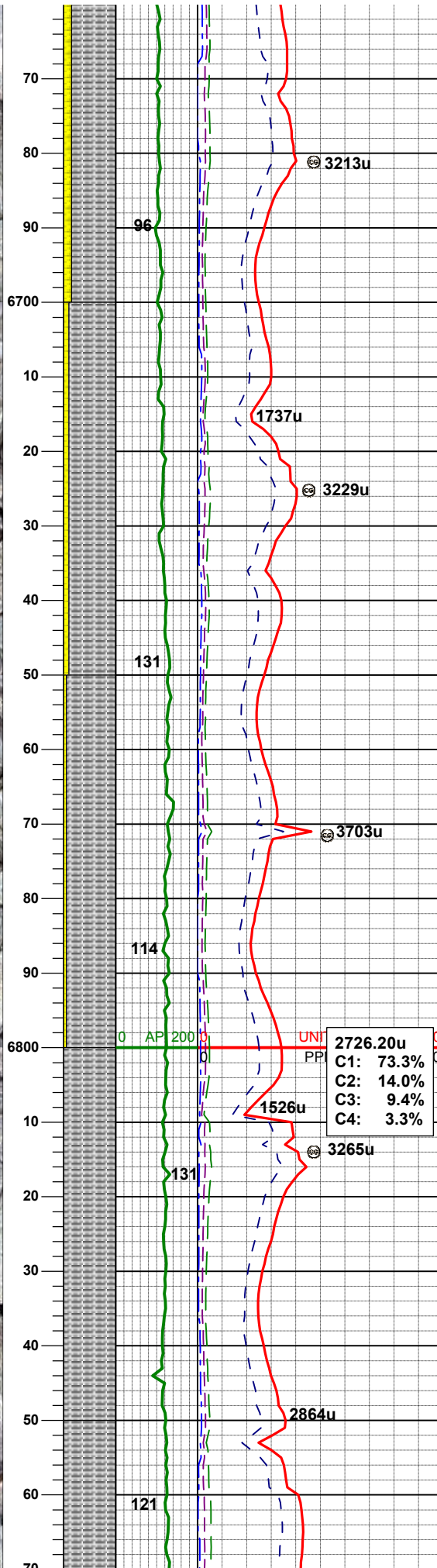
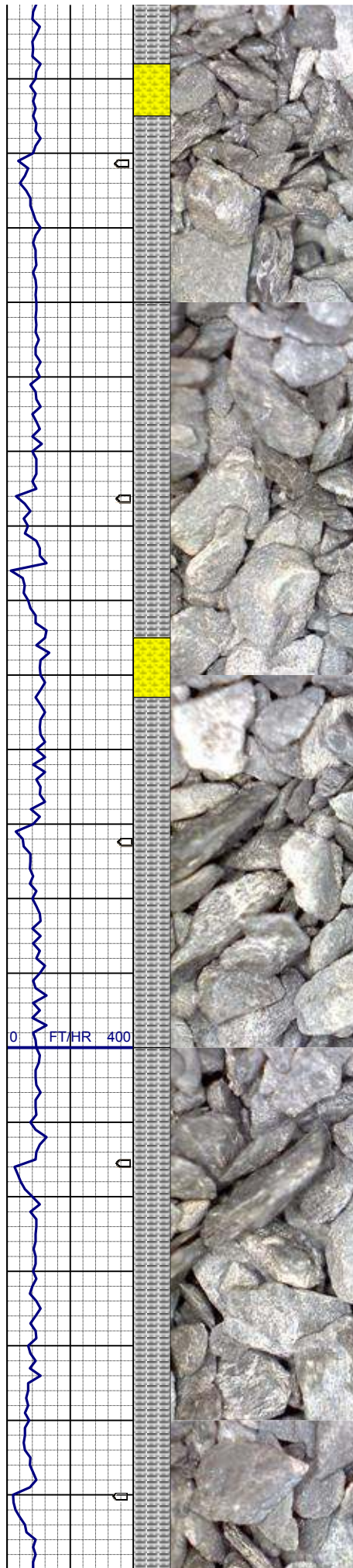
5000.34u
C1: 74.9%
C2: 12.7%
C3: 8.6%
C4: 3.8%

GAS SCALE CHANGE
0-8000u

SURVEY
MD 6630'
INC 1.24°
AZI 77.39°
TVD 6543.00'

80% SLTYSH: mgy, occ lt and dk gy, blk-
sbbkly, occ sbplty, firm-m hd, rthy - sl slty tex,
arg mtx, non calc
20% SHLYSS: lt gy, occ wh- op, firm- brit occ
sft, f-m gr, rndd - sb ang, slty ; mod glau

85% SLTYSH: mgy, occ lt and dk gy, blk-
sbbkly, occ sbplty, firm-m hd, rthy - sl slty tex,
arg mtx, non calc



15% SHLYSS: lt gy, occ wh- op, firm- brit occ sft, f-m gr, rndd - sb ang, slty ; mod glau

BEGIN BUILD @ 6670' MD; 06:24 01/23/2013

MUD WT: 9.6, VIS 41

SURVEY
MD 6675'
INC 3.55°
AZI 84.31°
TVD 6588.00'

90% SLTYSH: mgy, occ lt and dk gy, blk- sbbkly, occ sbplty, firm-m hd, rthy - sl slty tex, arg mtx, non calc
10% SHLYSS: lt gy, occ wh- op, firm- brit occ sft, f-m gr, rndd - sb ang, slty ; mod glau

SURVEY
MD 6719'
INC 6.04°
AZI 94.75°
TVD 6632.00'

SURVEY
MD 6764'
INC 7.79°
AZI 104.65°
TVD 6676.00'

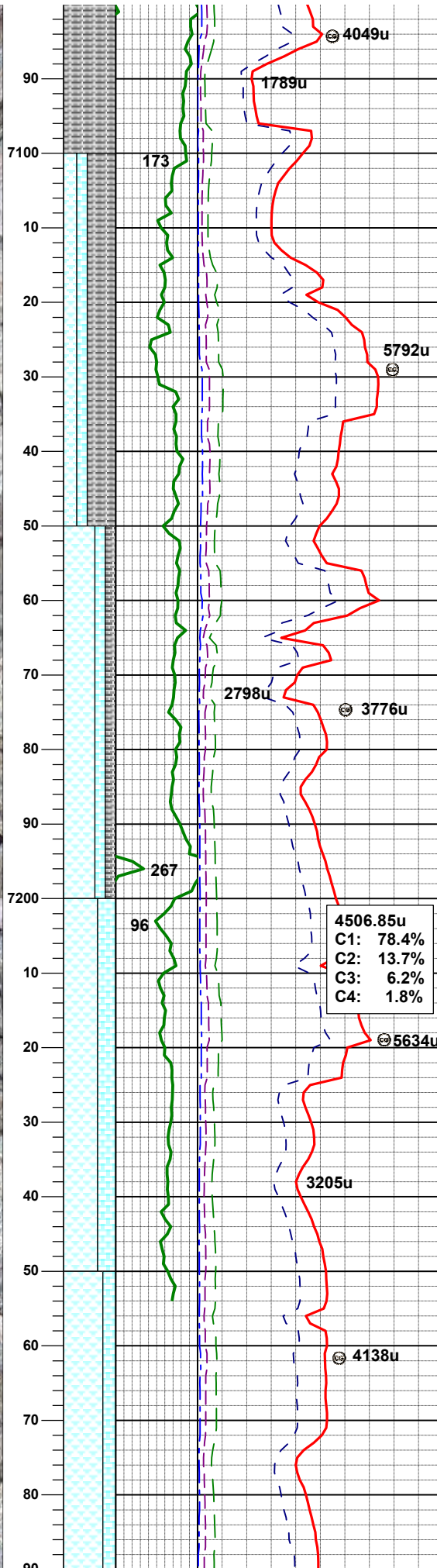
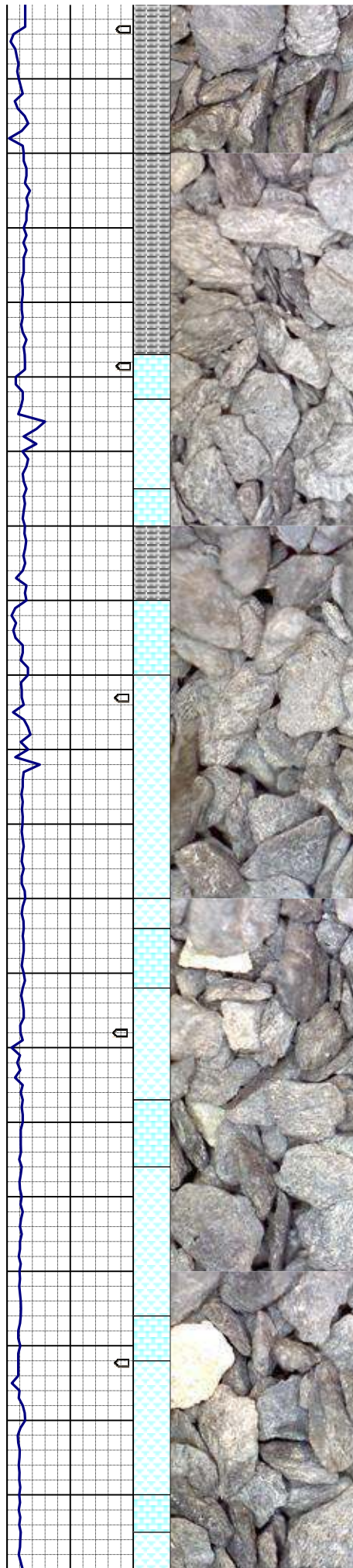
95% SLTYSH: mgy, occ lt and dk gy, blk- sbbkly, occ sbplty, firm-m hd, rthy - sl slty tex, arg mtx, non calc
5% SHLYSS: lt gy, occ wh- op, firm- brit occ sft, f-m gr, mdd - sb ang, slty ; mod glau

MUD WT: 9.8, VIS 40

SURVEY
MD 6809'
INC 10.36°
AZI 105.48°
TVD 6721.00'

100% SLTYSH: mgy, occ lt and dk gy, blk- sbbkly, occ sbplty, firm-m hd, rthy - sl slty tex, arg mtx, non calc

SURVEY
MD 6854'
INC 12.76°
AZI 105.33°
TVD 6765.00'



SURVEY
MD 7078'
INC 25.62°
AZI 98.45°
TVD 6978.00'

Niobrara A Chalk@7100'MD. 6997'TVD

60% SLTYSH: m-dk gy, sb pty - pty, firm- hd, rthy - sl slty tex, arg mtx, non calc, tr bent
20% CHK: lt gy-gy, sft, sbrndd, f grn, chky txt, mot ip, argill, v calc,
20% MRL: mgy sl silver gy, firm-brit, sub blkly - blkly occ sb pty, rthy hom txt, m-v calc, tr bent w/ dism pyr, sme lt gn flor, p wht-bl stmg cut, sl od

SURVEY
MD 7123'
INC 29.93°
AZI 97.04°
TVD 7017.00'

MUD WT: 10.50, VIS 42

Niobrara A Marl@7150'MD. 7040'TVD

60% MRL: mgy sl silver gy, firm-brit, sub blkly - blkly occ sb pty, rthy hom txt, m-v calc, sme lt gn flor, p wht-bl stmg cut, sl od
20% CHK: lt gy-gy, sft, sbrndd, f grn, chky txt, mot ip, argill, v calc,
20% SLTYSH: m-dk gy, sb pty - pty, firm- hd, rthy - sl slty tex, arg mtx, non calc, tr bent

SURVEY
MD 7168'
INC 33.58°
AZI 97.15°
TVD 7056.00'

MUD WT: 10.60, VIS 40

Niobrara B Chalk@7202'MD. 7082'TVD

Niobrara B Marl@7219'MD. 7094'TVD

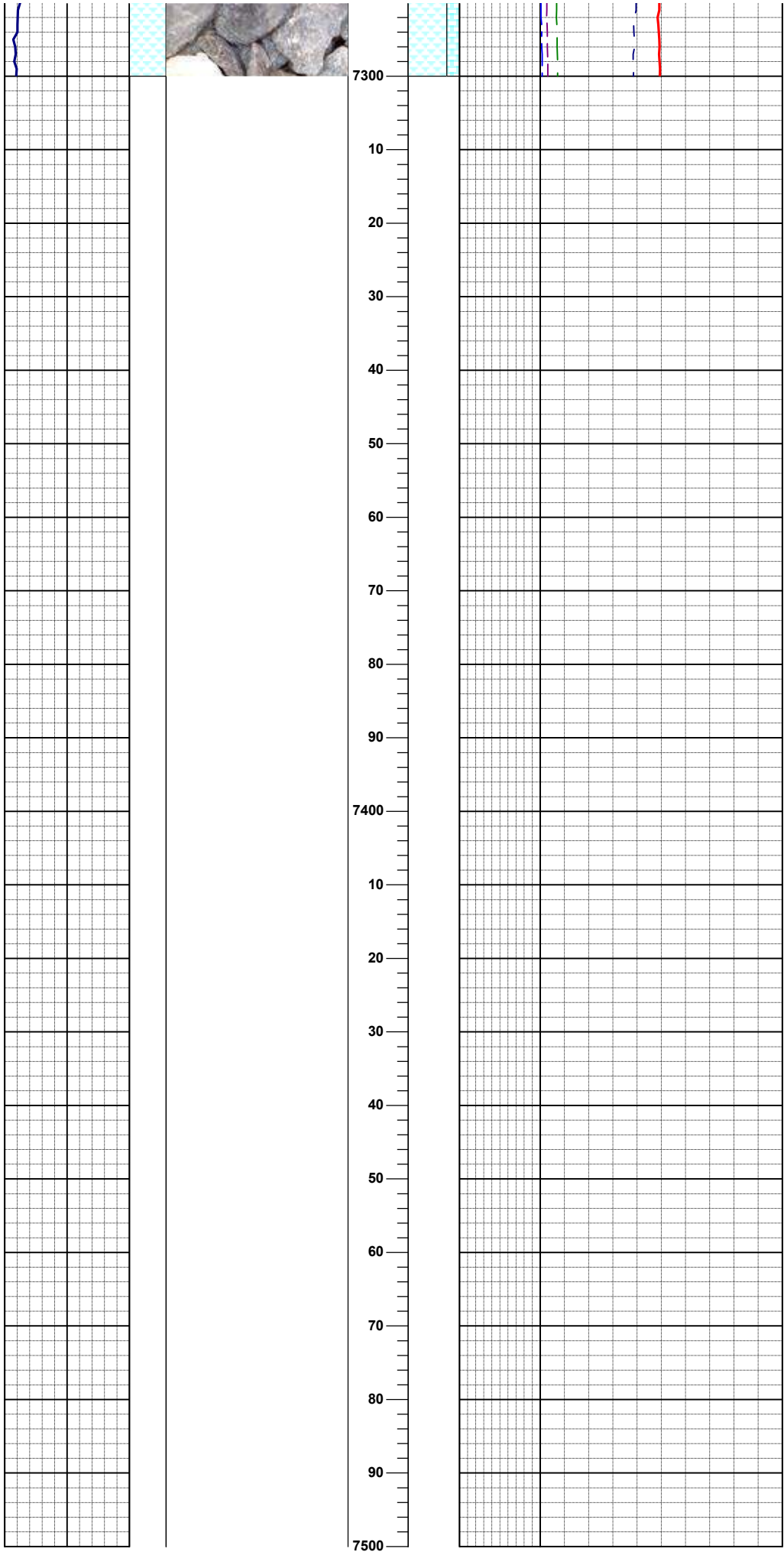
SURVEY
MD 7212'
INC 38.57°
AZI 93.48°
TVD 7091.00'

65% MRL: mgy sl silver gy, firm-brit, sub blkly - blkly occ sb pty, rthy hom txt, m-v calc, sme lt gn flor, p wht-bl stmg cut, sl od
35% CHK: lt gy-gy, sft, sbrndd, f grn, chky txt, mot ip, argill, v calc,

SURVEY
MD 7257'
INC 43.36°
AZI 91.53°
TVD 7125.00'

MUD WT: 10.80, VIS 38

75% MRL: mgy sl silver gy, firm-brit, sub blkly - blkly occ sb pty, rthy hom txt, m-v calc, sme lt gn flor, p wht-bl stmg cut, sl od
25% CHK: lt gy-gy, sft, sbrndd, f grn, chky txt, m



not ip, drgm, v eale,

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