

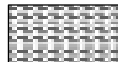
LOG created using L PLOT VH Version 3.0, September 13, 2012, Copyright (C) 1999-2009 Pason Systems Corp.

**OPERATOR:** NOBLE ENERGY INC  
**WELL:** PTASNIK LC20-75HN  
**LOCATION:** SEC20 T9N R59W  
**COUNTY:** WELD  
**STATE:** COLORADO  
**SPOT:** 501' FNL; 2445' FEL  
**ELEVATION:** GE: 4,978' KB: 5,008'  
**FIELD:** SABINE PASS  
**SPUD DATE:** 9/6/12  
**TD DATE:** 9/13/12  
**DATES LOGGED:** 9/7/12 - 9/13/12  
**DEPTHS LOGGED:** 1000' - 10616' MD  
**LOGGERS:** BRAD WILSON, LAURA KELLOGG  
**DRILLING FLUID:** WATER, WATER BASED MUD, POLY  
**DRILLING RIG:** H&P 326  
**API:** 05-123-33311  
**LOG TYPE:** VERTICAL  
**SCALE:** 1:240 (5 inches per 100 feet)  
**REMARKS:**

### LITHOLOGIES



Sandstone



Shale



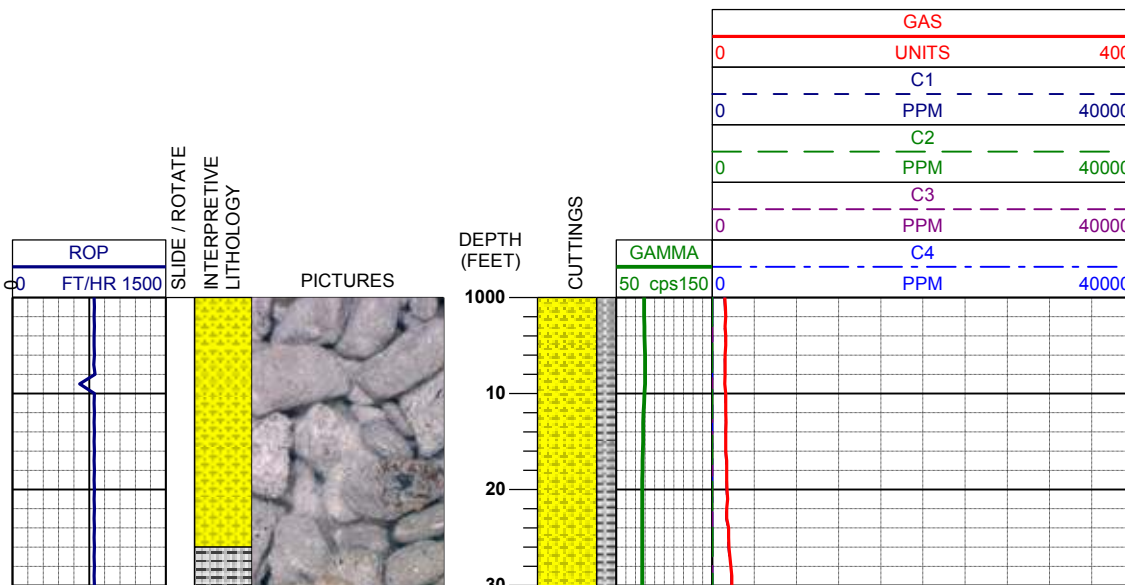
Shaly Sandstone



Silty Shale

### ENGINEERING SYMBOLS

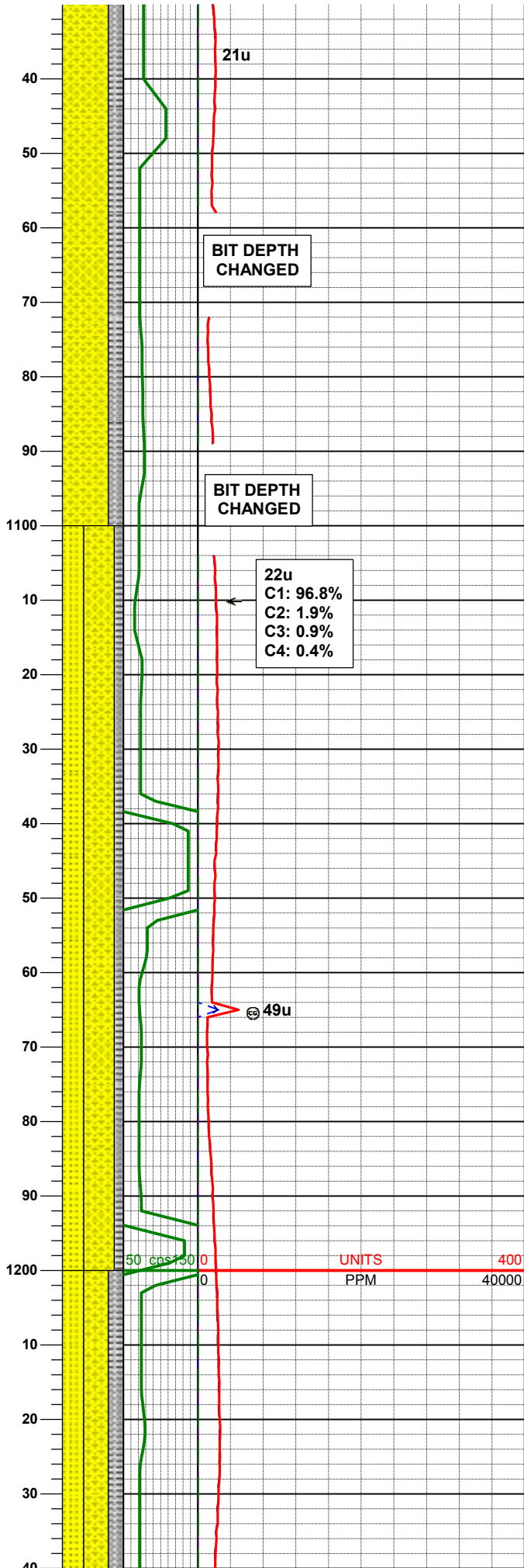
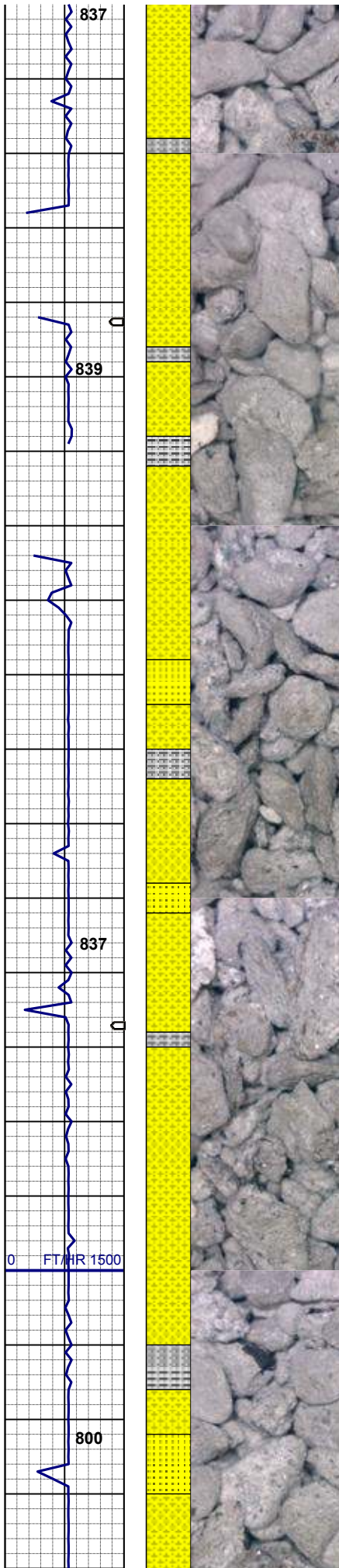
- Connection
- Connection Gas
- Arrow
- Midnight Depth
- Questionable



LITHOLOGY DESCRIPTION

**COLUMBINE LOGGING INC**  
 RIGGED UP ON 9/7/12  
 MANNED 2-PERSON LOGGING  
 WITH BLOODHOUND GAS  
 CHROMATOGRAPH UNIT #0298

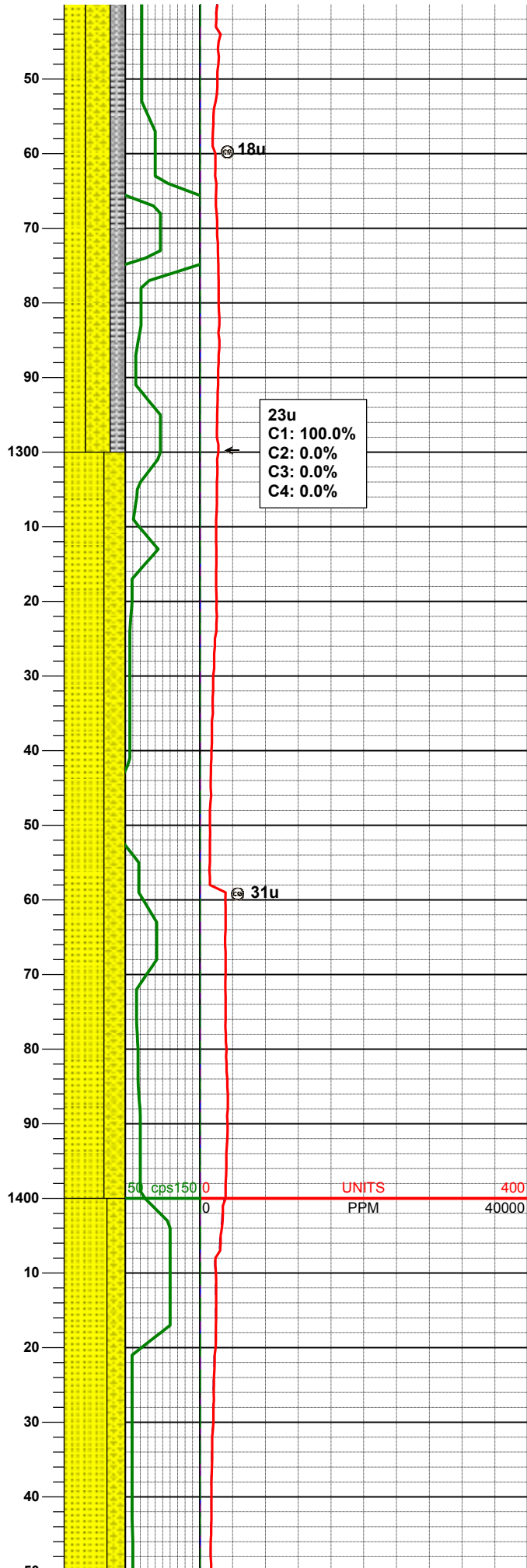
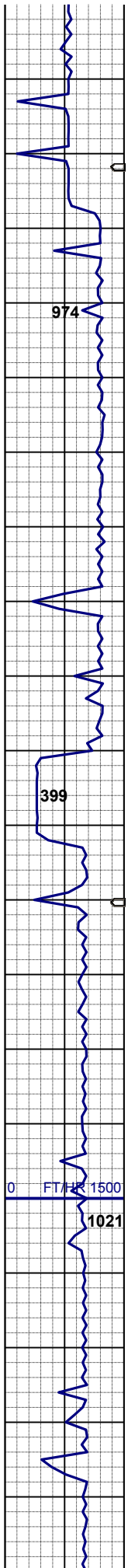
Started Drilling Out of the  
 Shoe at 09/07/2012 6:49pm



75% SHYSS: lt gy, wh - lt gy, occ m gy, f gr, sbang - sbrnnd, mod srt, mod sft - frm, arg cmt, sme glau, mica  
 25% SLTYSH: m - lt gy, occ dk gy, sft - mod firm, sbblky - sbppty, noncalc, mica

MD 1124'  
 INC 0.3°  
 AZM 158.4°  
 TVD 1123.99'

50% SHYSS: lt gy, wh - lt gy, occ m gy, f gr, sbang - sbrnnd, mod srt, mod sft - frm, arg cmt, sme glau, mica, tr coal  
 35% SS: wh, lt gy, mod firm, blk - sbppty, sb mdd, arg cmt, glau  
 15% SLTYSH: m - lt gy, occ dk gy, sft - mod firm, sbblky - sbppty, noncalc, mica

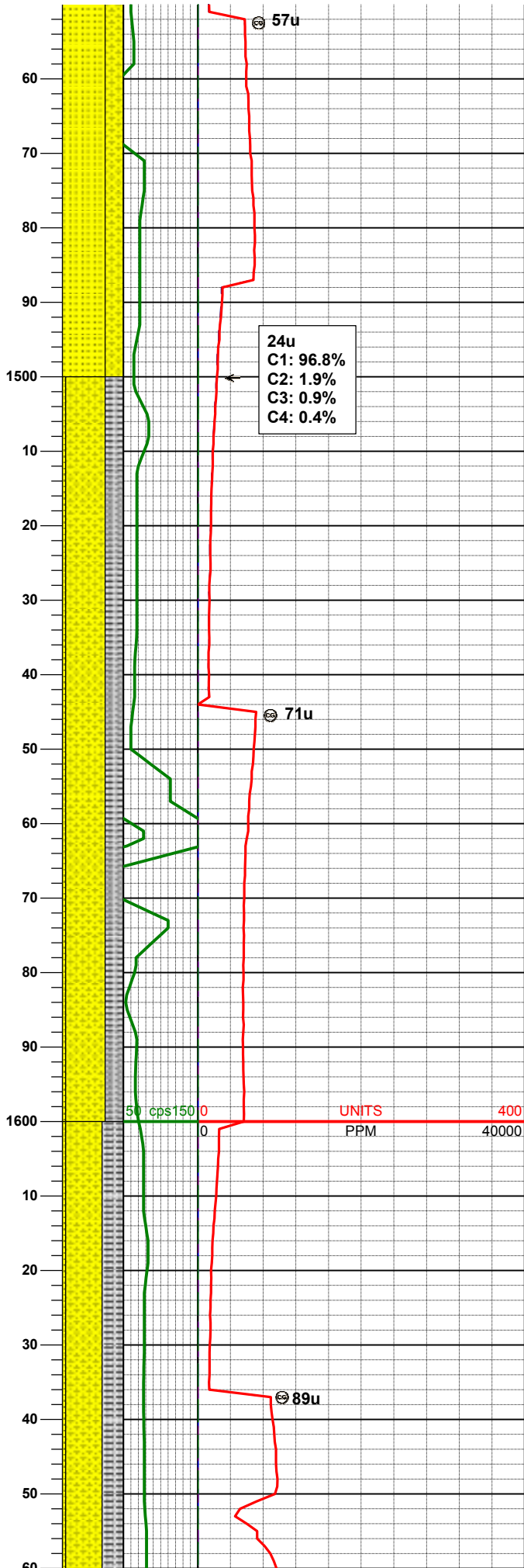
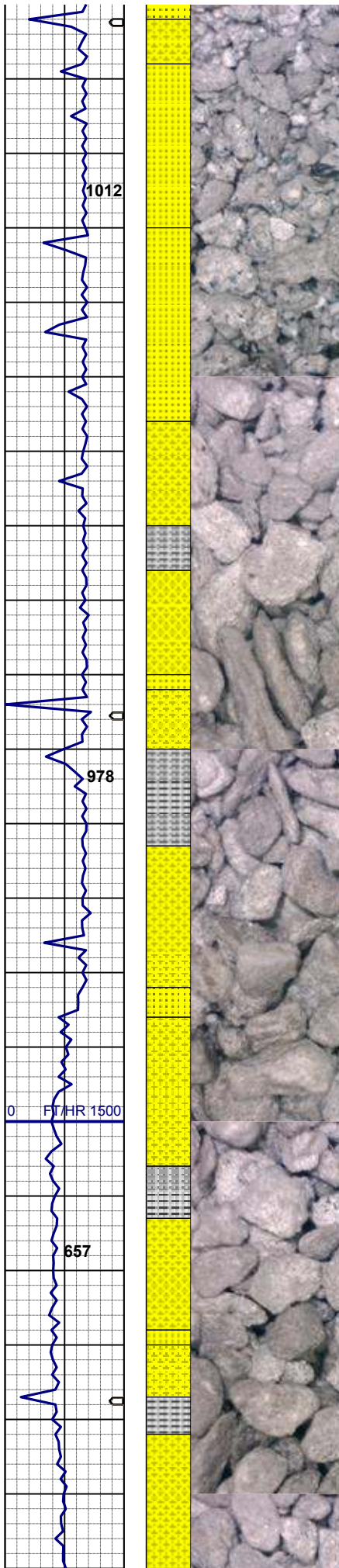


40% SHYSS: lt gy, wh - lt gy, occ m gy, f gr, sbang - sbrndd, mod srt, mod sft - frm, arg cmt, sme glau, mica,  
 35% SS: wh, lt gy, mod firm, blkly - sbply, sb mdd, arg cmt, glau  
 25% SLTYSH: m - lt gy, occ dk gy, sft - mod firm, sbblkly - sbply, noncalc, mica

65% SS: wh, lt gy, mod firm, blkly - sbply, sb mdd, arg cmt, glau  
 35% SHYSS: lt gy, wh - lt gy, occ m gy, f gr, sbang - sbrndd, mod srt, mod sft - frm, arg cmt, sme glau, mica,

MD 1409'  
 INC 0.1°  
 AZM 151.5°  
 TVD 1408.99'

70% SS: wh, lt gy, mod firm, blkly - sbply, sb mdd, arg cmt, glau  
 20% SHYSS: lt gy, wh - lt gy, occ m

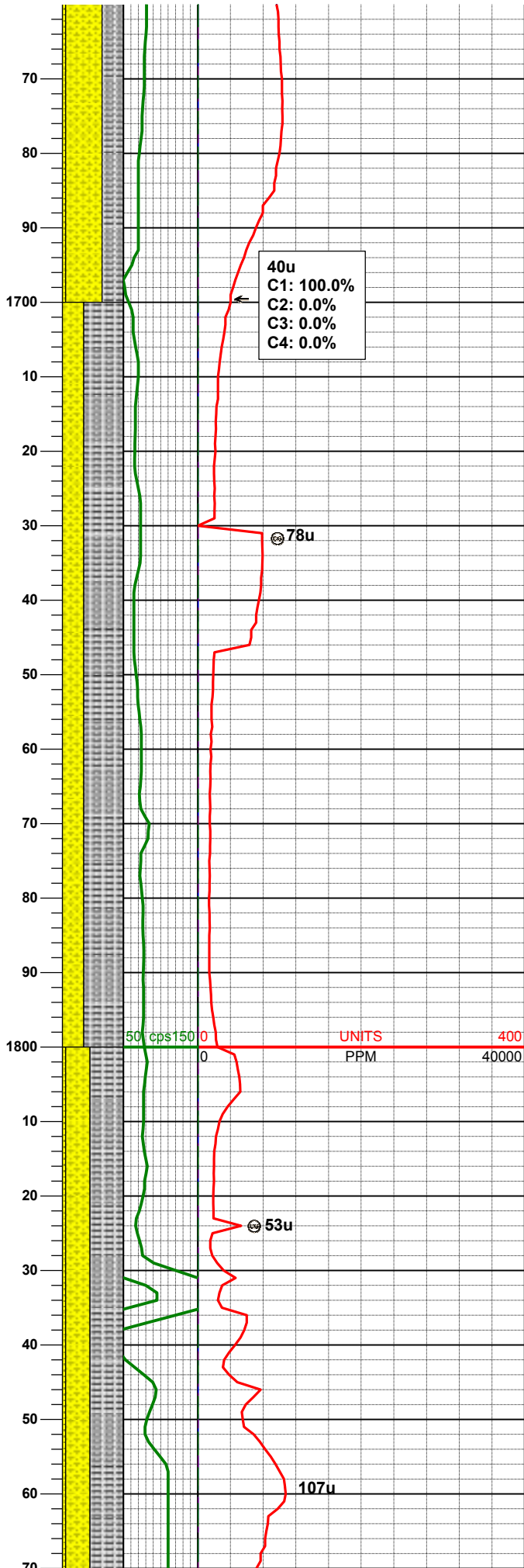
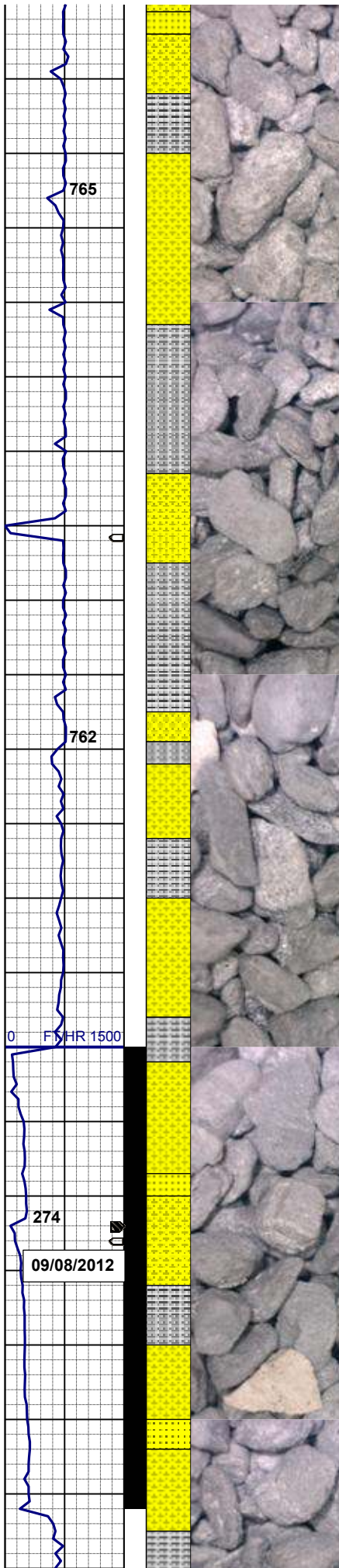


30% SHYSS: lt gy, wh - lt gy, occ m gy, f gr, sbang - sbrndd, mod srt, mod sft - frm, arg cmt, sme glau, mica,

**MUD WT 8.65 VIS 28**

65% SHYSS: lt gy, wh - lt gy, occ m gy, f gr, sbang - sbrndd, mod srt, mod sft - frm, arg cmt, sme glau, mica, 30% SLTYSH: m - lt gy, occ dk gy, sft - mod firm, sbblky - sbplty, noncalc, mica  
5% SS: wh, lt gy, mod firm, blkly - sbplty, sb mdd, arg cmt, glau

60% SHYSS: lt gy, wh - lt gy, occ m gy, f gr, sbang - sbrndd, mod srt, mod sft - frm, arg cmt, sme glau, mica, 35% SLTYSH: m - lt gy, occ dk gy, sft - mod firm, sbblky - sbplty, noncalc, mica  
5% SS: wh, lt gy, mod firm - firm, blkly - sbplty, sb mdd, arg cmt, glau

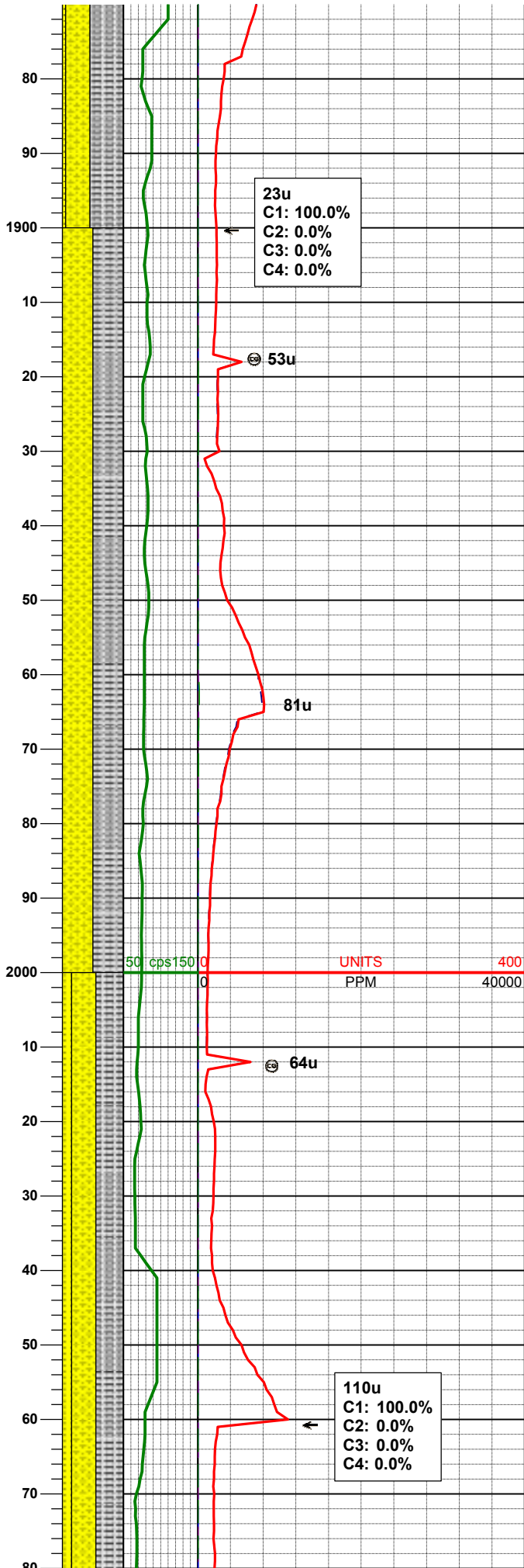
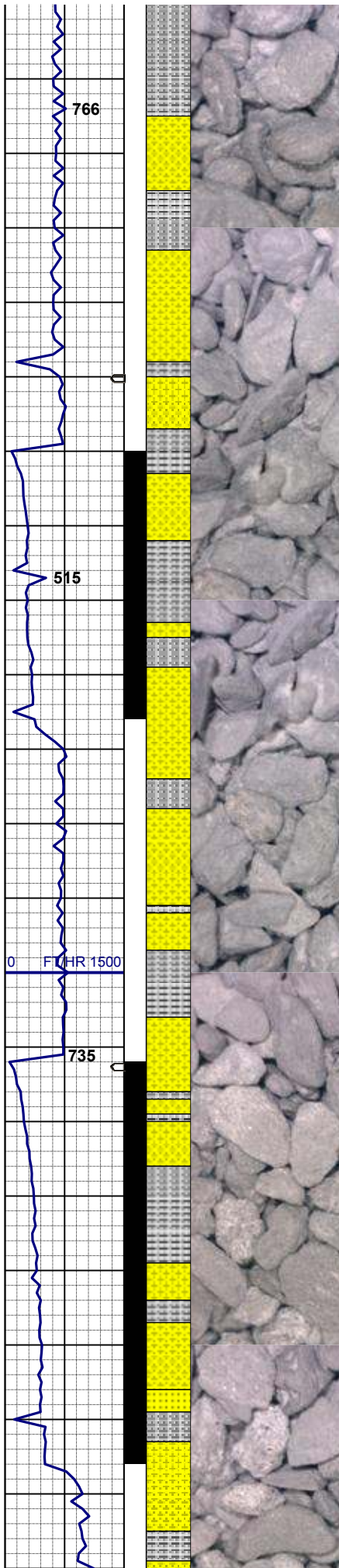


MD 1688'  
 INC 0.2°  
 AZM 84.7°  
 TVD 1687.99'

65% SLTYSH: m - lt gy, occ dk gy, sft - mod firm, sbbiky - sbply, noncalc, mica  
 35% SHYSS: lt gy, wh - lt gy, occ m gy, f gr, sbang - sbrndd, mod srt, mod sft - frm, arg cmt, sme glau, mica,

MD 1783'  
 INC 0.1°  
 AZM 157.3°  
 TVD 1782.99'

55% SLTYSH: m - lt gy, occ dk gy, sft - mod firm, sbbiky - sbply, noncalc, mica  
 40% SHYSS: lt gy, wh - lt gy, occ m gy, f gr, sbang - sbrndd, mod srt, mod sft - frm, arg cmt, sme glau, mica,  
 5% SS: wh, lt gy, mod firm - firm, sbang, sb mdd, arg cmt, glau



TOOH for MWD  
1929'MD @ 1:15AM

Contained Drilling @ 6:00AM

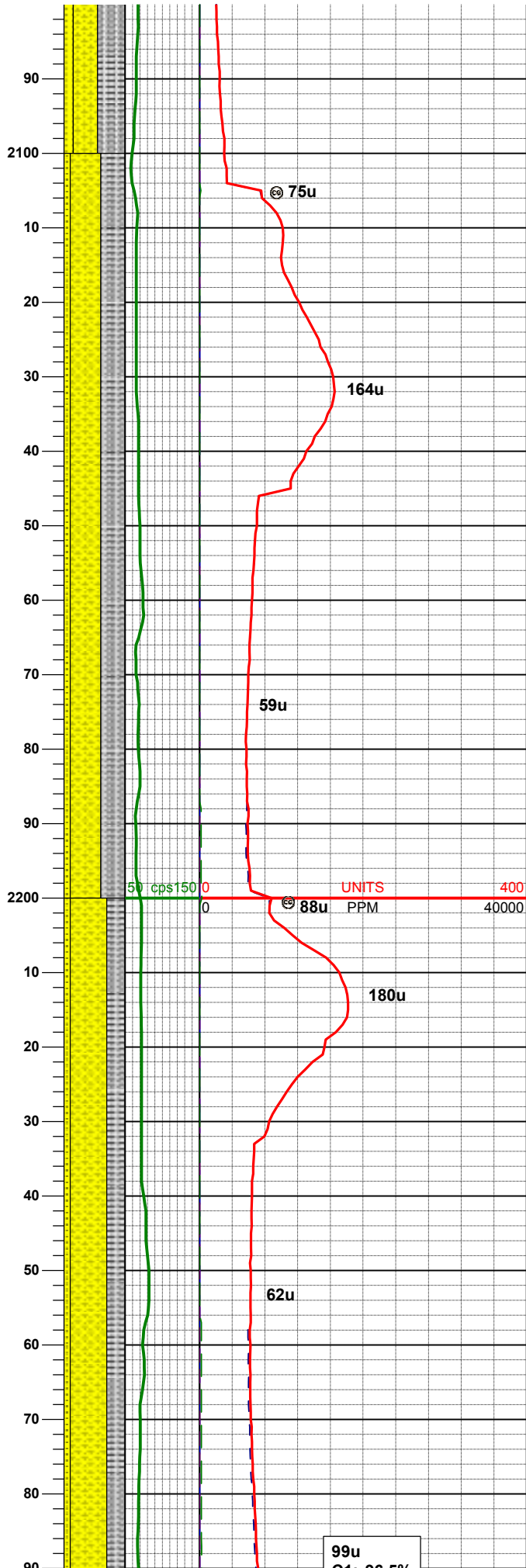
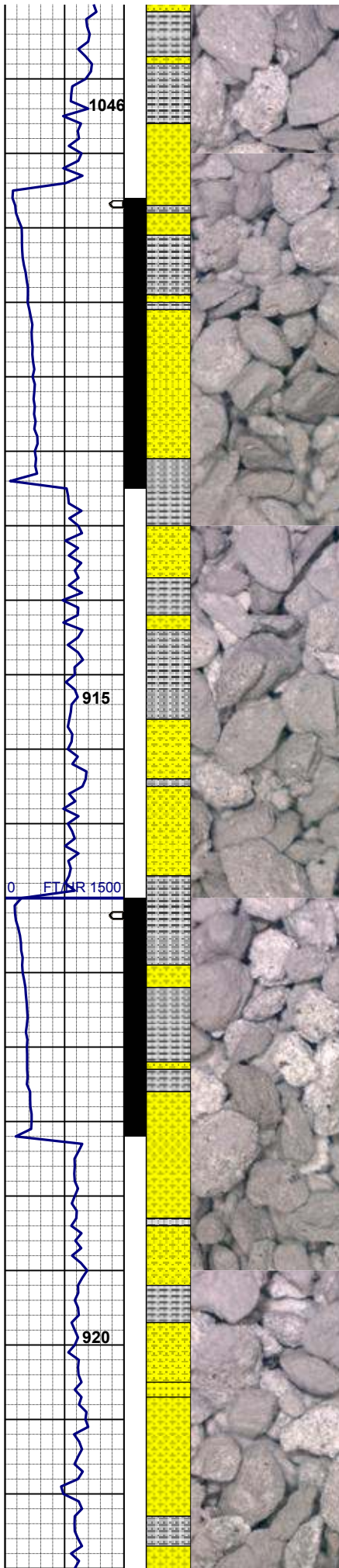
60% SLTYSH: lt-m gy, sft - fri occ sl  
firm, sbbky - sbply, noncalc  
40% SHYSS: lt gy, crm- m gy, f gr,  
sbang - sbrdd, mod srt, mod sft -  
firm, aren, arg cmt, sme glau, tr mica

MD 1972'  
INC 5.4°  
AZM 348.3°  
TVD 1971.60'

MUD WT 8.7 VIS 27

45% SLTYSH: lt-m gy, sft - fri occ sl  
firm, sbbky - sbply, noncalc  
40% SHYSS: lt gy, crm- m gy, f gr,  
sbang - sbrdd, mod srt, mod sft -  
firm, aren, arg cmt, sme glau, tr mica ;  
grdg - ss  
15% SS: wh- op lt gy, mod firm - firm,  
sbang - sbrdd, arg cmt, glau

MD 2065'  
INC 8.1°  
AZM 357.9°  
TVD 2063.00'



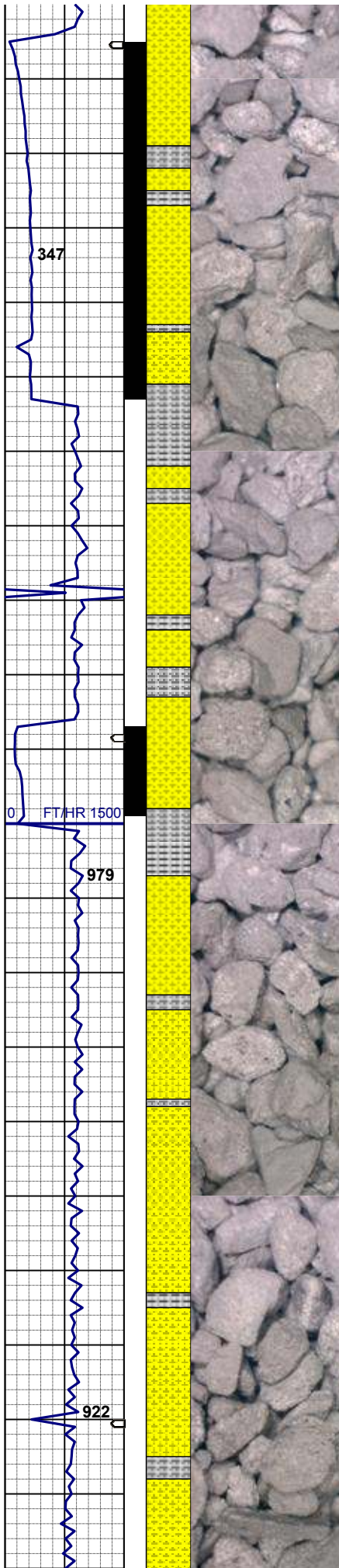
50% SHYSS: lt gy, crm- m gy, f gr, sbang - sbrdd, mod srt, mod sft - firm, aren, arg cmt, sme glau, tr mica ; sl grdg - ss  
 40% SLTYSH: lt-m gy, sft - fri occ sl firm, sbblky - sbply, noncalc  
 15% SS: wh- op lt gy, mod firm - firm, sbang -sb rdd, arg cmt, glau

MD 2159'  
 INC 11.3°  
 AZM 354.0°  
 TVD 2156.00'

60% SHYSS: lt gy, crm- m gy, f gr, sbang - sbrdd, mod srt, mod sft - firm, aren, arg cmt, tr glau  
 30% SLTYSH: lt-m gy, sft - fri occ sl firm, sbblky - sbply, noncalc  
 10% SS: wh- op lt gy, mod firm - firm, sb rdd, arg cmt, glau

MD 2253'  
 INC 12.8°  
 AZM 353.9°  
 TVD 2248.00'

99u  
 01-00-50'



MD 2345'  
 INC 14.9°  
 AZM 349.9°  
 TVD 2337.00'

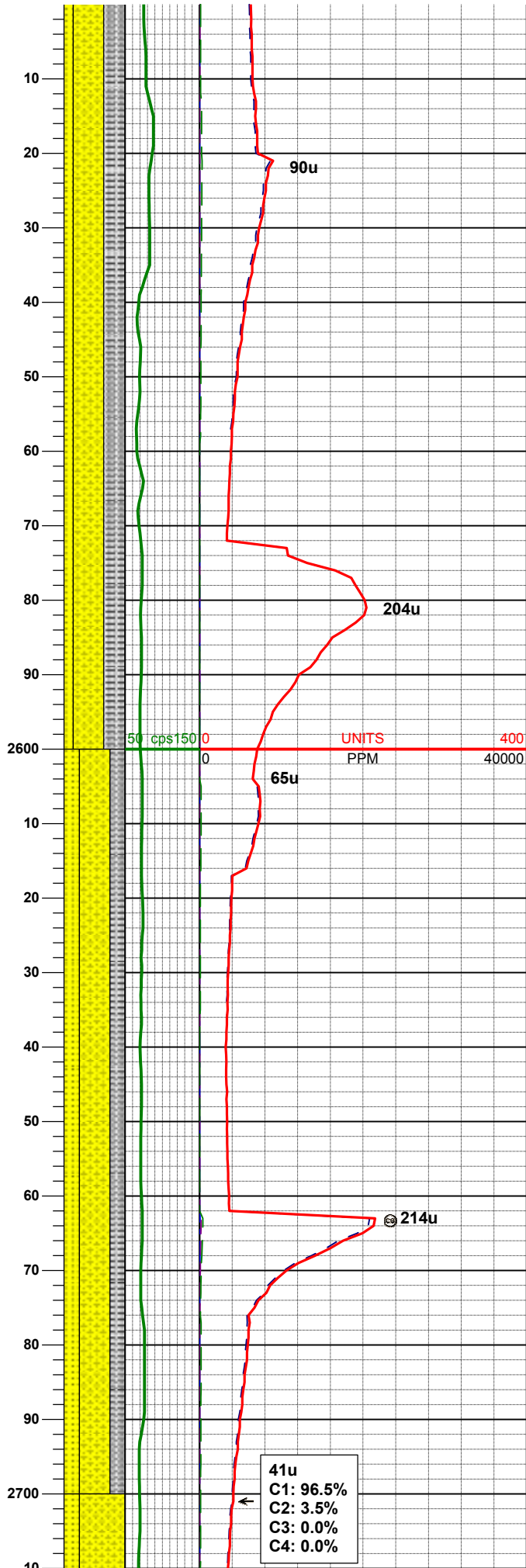
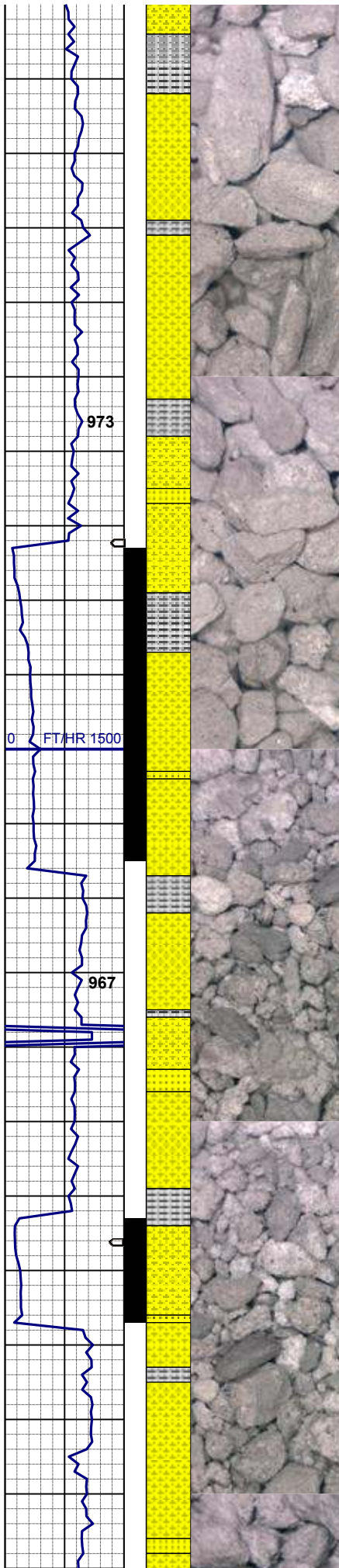
60% SLTYSH: lt-m gy, sft - fri occ sl  
 firm, sbblky - sbply, noncalc  
 40% SHYSS: lt gy, crm- m gy, f gr,  
 mod sft - firm, sbang - sbrnrd, mod  
 srt, aren, arg cmt, tr glau

MUD WT 8.85 VIS 28

MD 2438'  
 INC 15.3°  
 AZM 352.1°  
 TVD 2427.00'

65% SHYSS: lt gy, crm- m gy, f gr,  
 sbang - sbrnrd, mod srt, fri - sft -  
 firm, aren, arg cmt, tr glau  
 25% SLTYSH: lt-m gy, sft - fri occ sl  
 firm, sbblky - sbply, noncalc  
 10% SS: wh- op lt gy, mod firm - firm,  
 sb rnrd, arg cmt, glau

203u  
 C1: 96.8%  
 C2: 1.9%  
 C3: 0.9%  
 C4: 0.4%



MD 2530'  
 INC 13.4°  
 AZM 353.9°  
 TVD 2516.00'

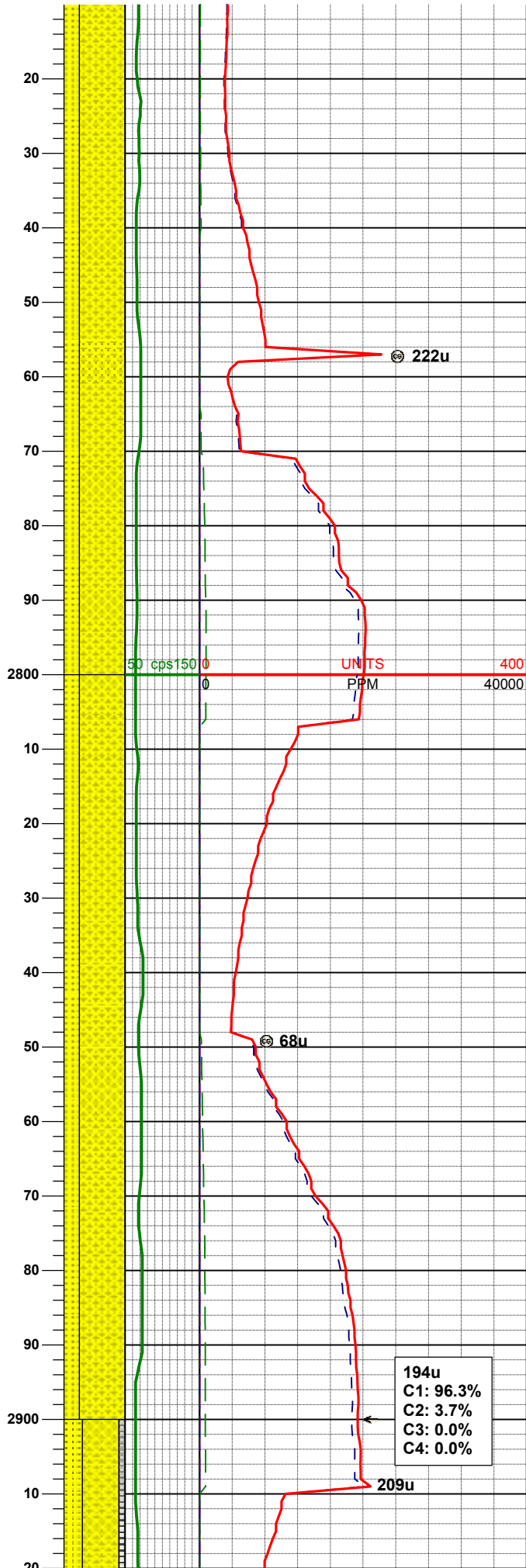
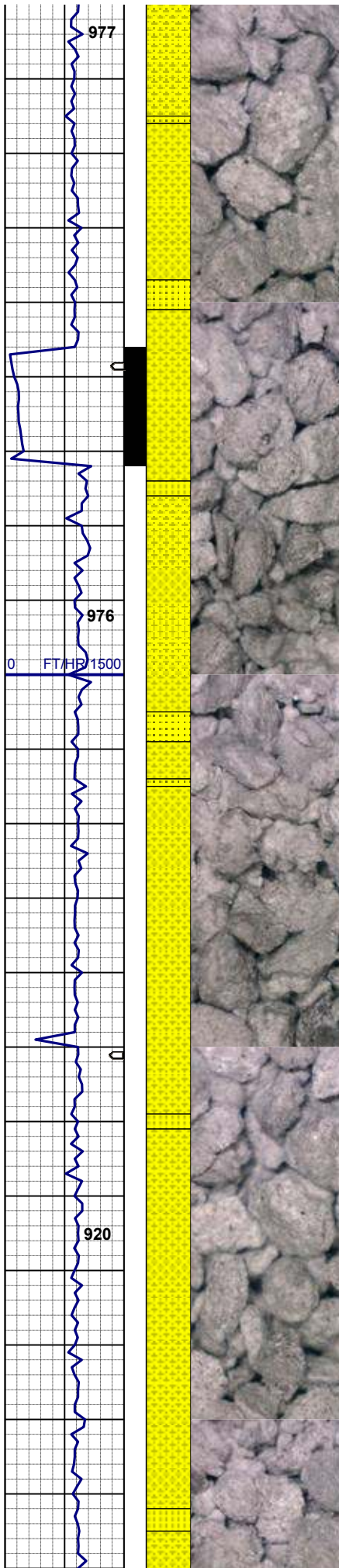
50% SHYSS: lt gy, crm- m gy, f gr,  
 sbang - sbrnrd, mod srt, fri - sft -  
 firm , aren, arg cmt, tr glau  
 35% SLTYSH: lt-m gy, sft - fri occ sl  
 firm, sbbly - sbply, noncalc  
 15% SS: wh- op lt gy, mod firm - firm,  
 sb rddd- sbang, arg cmt, glau

MD 2624'  
 INC 15.7°  
 AZM 348.0°  
 TVD 2607.00'

50% SHYSS: lt gy, crm- m gy, f gr,  
 sbang - sbrnrd, mod srt, fri - sft -  
 firm , aren, arg cmt, tr glau  
 25% SLTYSH: lt-m gy, sft - fri occ sl  
 firm, sbbly - sbply, noncalc  
 25% SS: wh- op - clr occ lt gy, mod  
 firm - firm, sb rddd- sbang, arg cmt,  
 glau

41u  
 C1: 96.5%  
 C2: 3.5%  
 C3: 0.0%  
 C4: 0.0%

MD 2719'



INC 15.7°  
 AZM 351.2°  
 TVD 2697.00'

75% SHYSS: lt-m gy, f-v f gr, sbang - sbrnndd, mod srt, fri - sft - firm, aren, arg cmt, tr glau  
 25% SS: wh- op - clr occ lt gy, mod firm - firm, sb rddd- sbang, arg cmt, glau

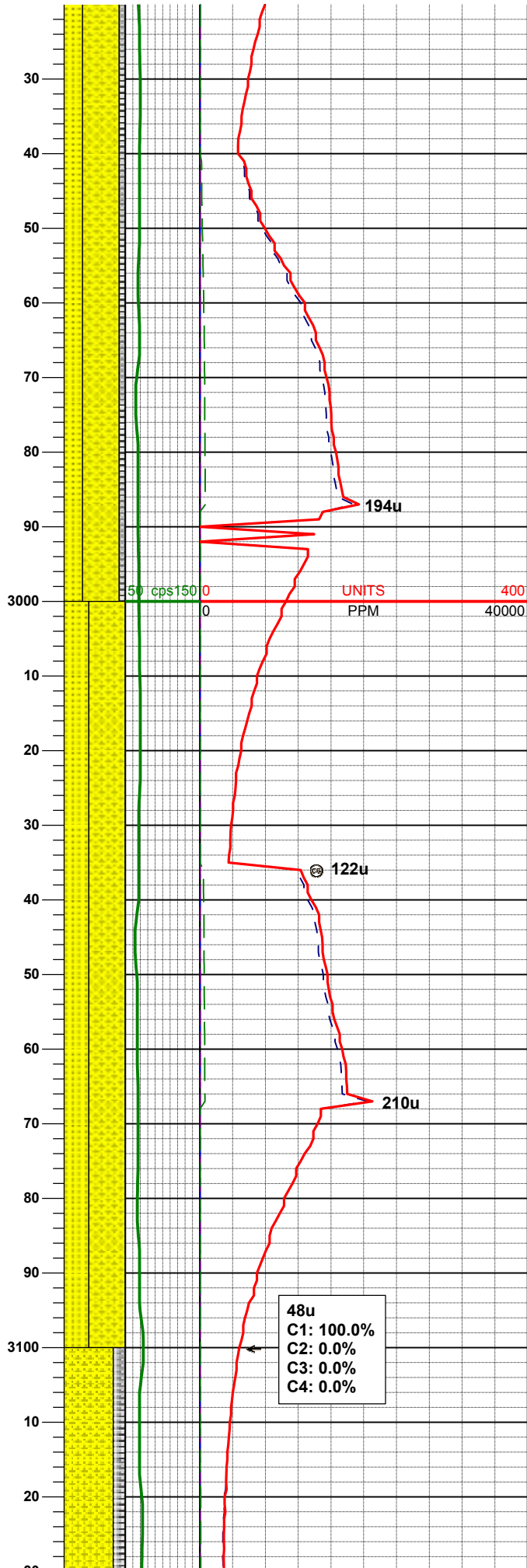
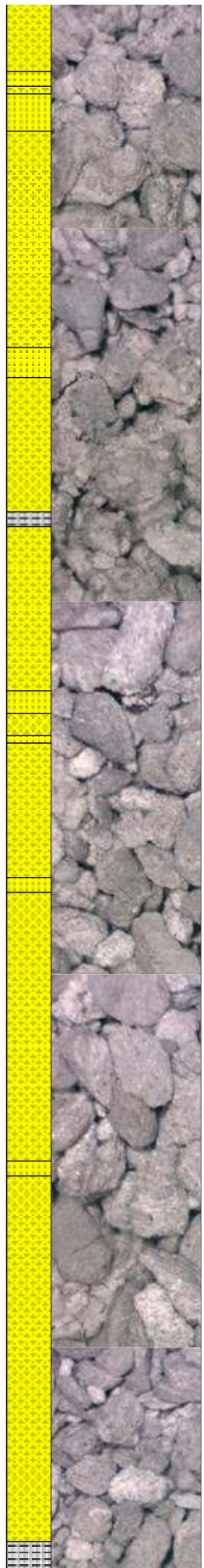
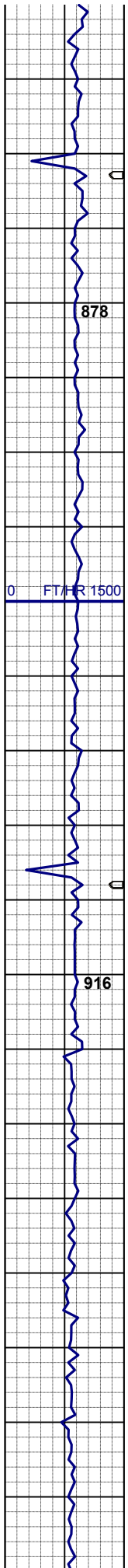
MUD WT 8.95 VIS 30

MD 2814'  
 INC 16.7°  
 AZM 351.2°  
 TVD 2785.00'

75% SHYSS: lt-m gy, f-v f gr, sbang - sbrnndd, mod srt, fri - sft - firm, aren, arg cmt, tr glau  
 25% SS: wh- op - clr occ lt gy, mod firm - firm, sb rddd- sbang, arg cmt, glau

194u  
 C1: 96.3%  
 C2: 3.7%  
 C3: 0.0%  
 C4: 0.0%

MD 2901'  
 INC 16.8°  
 AZM 350.2°  
 TVD 2785.00'



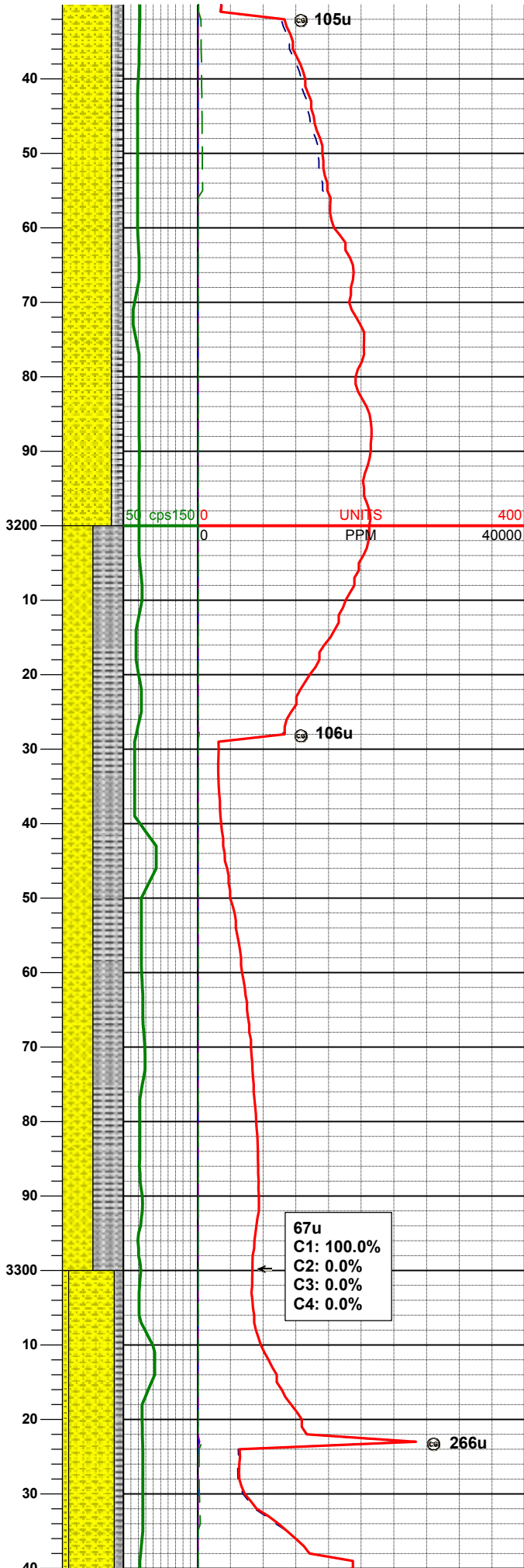
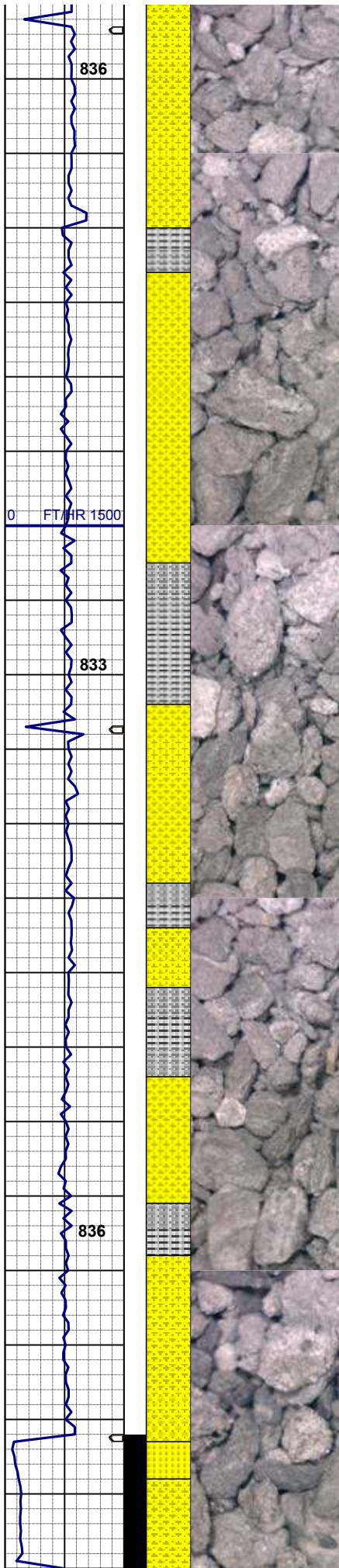
60% SHYSS: lt-m gy, f-v f gr, sbang - sbrnidd, mod srt, fri - sft - firm , aren, arg cmt, tr glau  
 30% SS: wh- op - clr occ lt gy, mod firm - firm occ hd - brit, sb mddd-sbang, arg cmt, glau  
 10% SLTYSH: lm gy occ dk gy, sl sft - fri occ sl firm, sbbkly - sbply, noncalc

MD 2996'  
 INC 16.8°  
 AZM 350.2°  
 TVD 2964.00'

60% SHYSS: lt-m gy, f-v f gr, sbang - sbrnidd, mod srt, fri - sft - firm , aren, arg cmt, tr glau  
 40% SS: wh- op - clr occ lt gy, mod firm - firm occ hd - brit, sb mddd-sbang, arg cmt, glau

MD 3091'  
 INC 16.4°  
 AZM 349.5°  
 TVD 3055.00'

48u  
 C1: 100.0%  
 C2: 0.0%  
 C3: 0.0%  
 C4: 0.0%



80% SHYSS: lt-m gy, f-v f gr, sbang - sbrnidd, mod srt, fri - sft - firm , aren, arg cmt, tr glau  
 20% SLTYSH: lm gy occ dk gy, sl sft - fri occ sl firm, sbblky - sbppty, noncalc

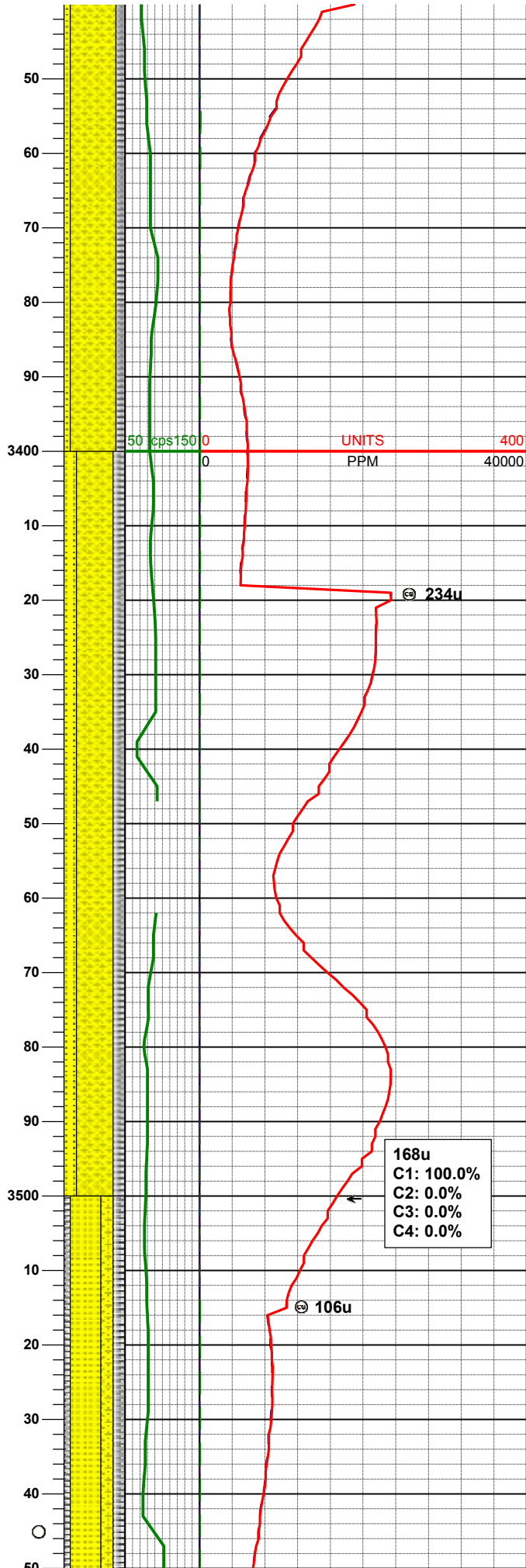
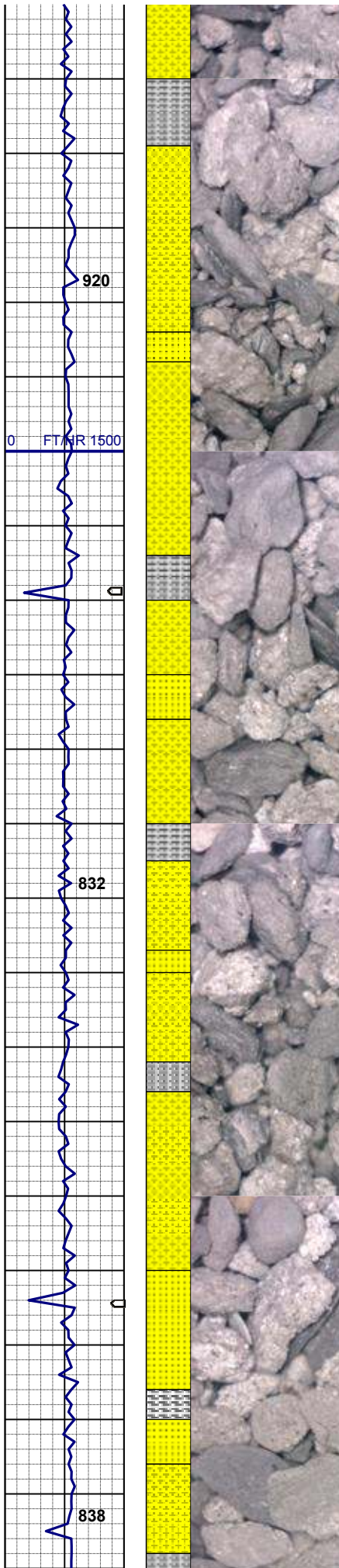
MD 3185'  
 INC 15.0°  
 AZM 349.2°  
 TVD 3146.00'

MUD WT 9.0 VIS 30

50% SHYSS: lt-m gy, f-v f gr, sbang - sbrnidd, mod srt, fri - sft - firm , aren, arg cmt, tr glau  
 50% SLTYSH: lm gy occ dk gy, sl sft - fri occ sl firm, sbblky - sbppty, noncalc

MD 3280'  
 INC 12.8°  
 AZM 347.5°  
 TVD 3238.00'

67u  
 C1: 100.0%  
 C2: 0.0%  
 C3: 0.0%  
 C4: 0.0%



80% SHYSS: lt-m gy, f-v f gr, sbang - sbrnrd, mod srt, fri - sft - firm , aren, arg cmt, tr glau  
 10% SS: wh- op - clr occ lt gy, mod firm - firm occ hd - brit, sb mdd-sbang, arg cmt, glau  
 15% SLTYSH: lm gy occ dk gy, sl sft - fri occ sl firm, sbblky - sbply, noncalc

**MD 3375'**  
**INC 9.4°**  
**AZM 351.8°**  
**TVD 3331.00'**

60% SHYSS: lt-m gy, f-v f gr, sbang - sbrnrd, mod srt, fri - sft - firm , aren, arg cmt, tr glau  
 20% SS: wh- op - clr occ lt gy, mod firm - firm occ hd - brit, sb mdd-sbang, arg cmt, glau  
 20% SLTYSH: lm gy occ dk gy, sl sft - fri occ sl firm, sbblky - sbply, noncalc

**PROG TOP**  
**PARKMAN 3398' TVD**

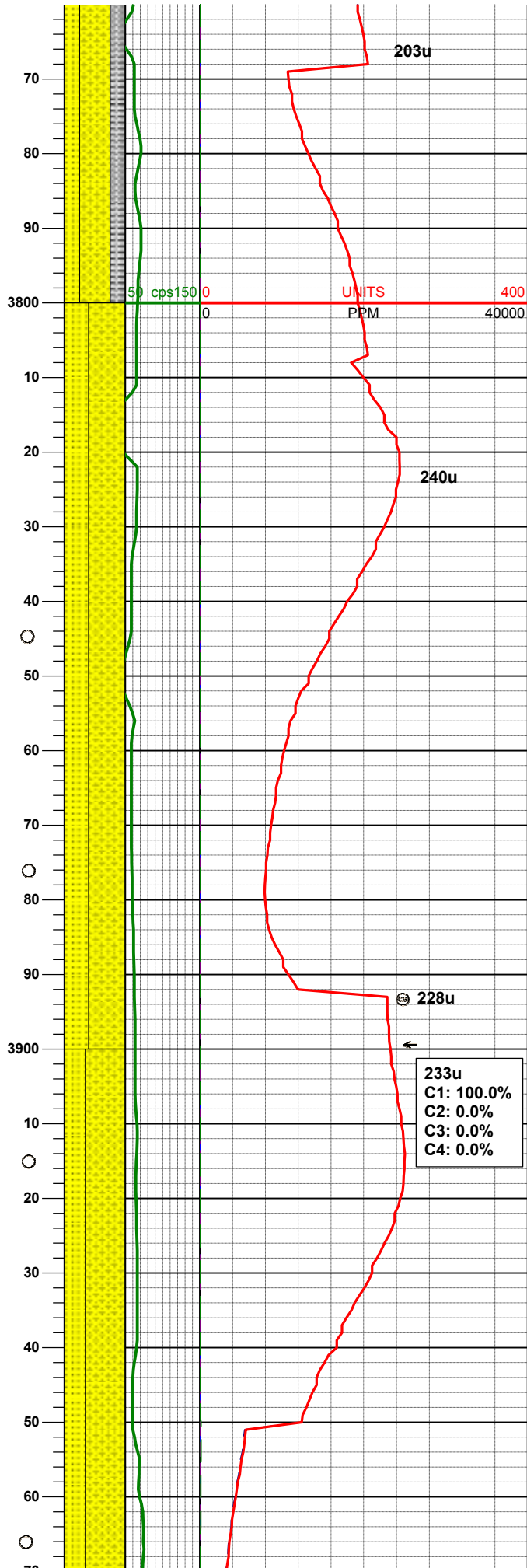
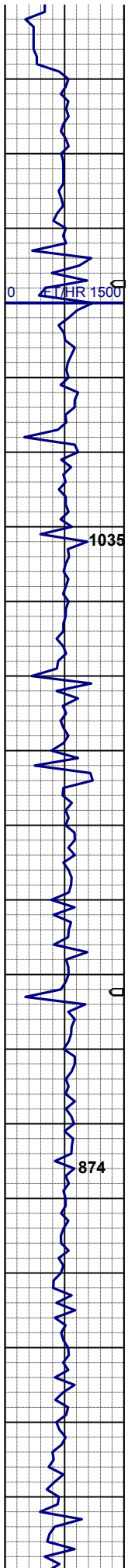
**MD 3470'**  
**INC 8.2°**  
**AZM 347.7°**  
**TVD 3425.00'**

**Very Unconsolidated,**  
**Fine Grained Sandstones**

**168u**  
**C1: 100.0%**  
**C2: 0.0%**  
**C3: 0.0%**  
**C4: 0.0%**

50% SS: trnsl- wh, g- dk gy, vf gr occ f-m gr, sb rd-rd, w srt, sl firm - v firm occ brit, v uncons, sl por, arg-cly cmt, v sl calc, tr o stn ss w/ dim dk yel flor  
 20% SLTYSH: lt-m gy, sft - fri occ sl





MD 3755'  
 INC 7.6°  
 AZM 356.5°  
 TVD 3707.00'

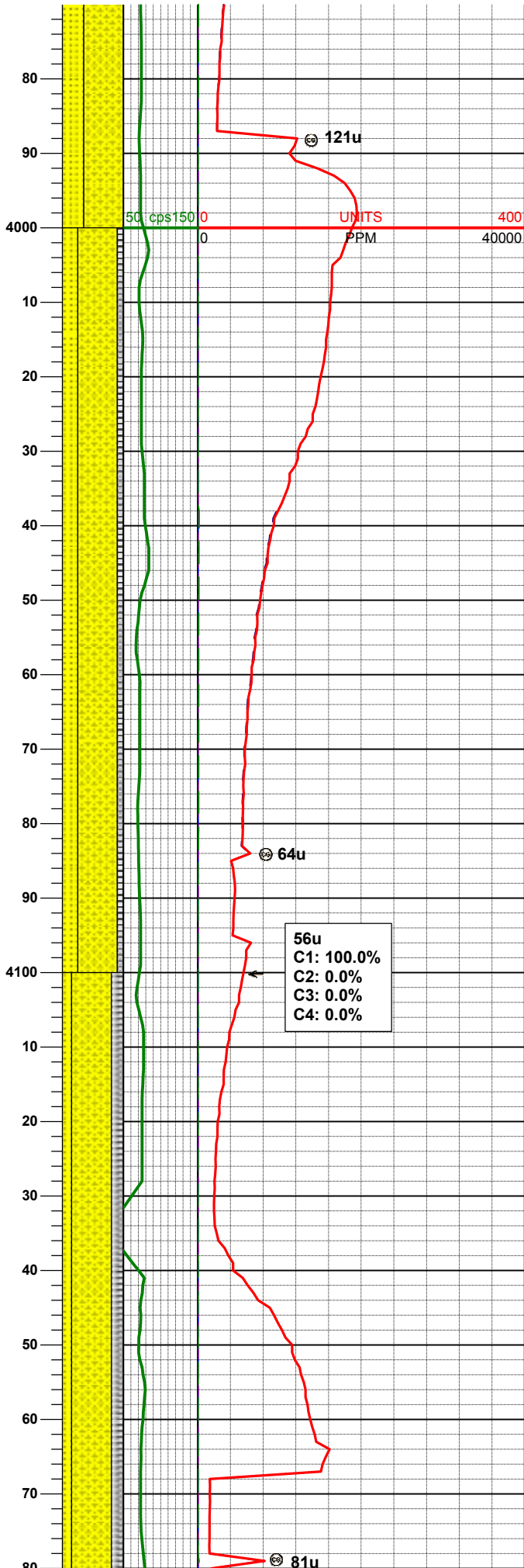
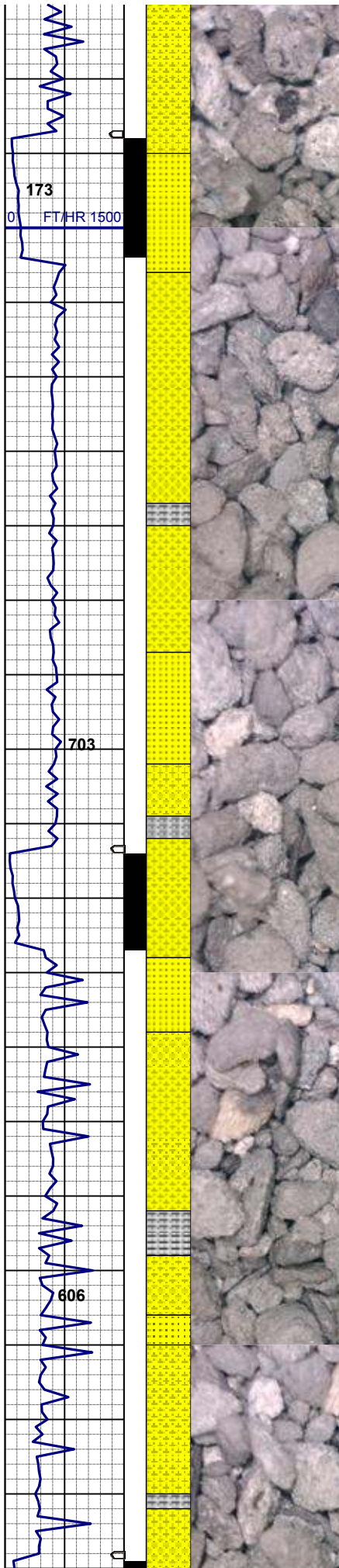
Consolidated Sandstones

MD 3850'  
 INC 7.8°  
 AZM 356.8°  
 TVD 3801.00'

60% SHYSS: lt gy, f gr, brit - firm,  
 sbang - sbrndd, p srt, aren, arg  
 40% SS: trnsl- wh, g- dk gy, m gr, sb  
 rd-rd, w srt, sl firm - v firm occ brit, v  
 consol, sl por, arg-cly cmt, v sl calc, tr  
 o stn ss w/ dim dk yel flor

MD 3945'  
 INC 8.2°  
 AZM 357.8°  
 TVD 3895.00'

65% SHYSS: lt gy, f gr, brit - firm,  
 sbang - sbrndd, p srt, aren, arg  
 35% SS: trnsl- wh, g- dk gy, m gr, sb  
 rd-rd, w srt, sl firm - v firm occ brit, v  
 consol, sl por, arg-cly cmt, v sl calc, tr  
 o stn ss w/ dim dk yel flor

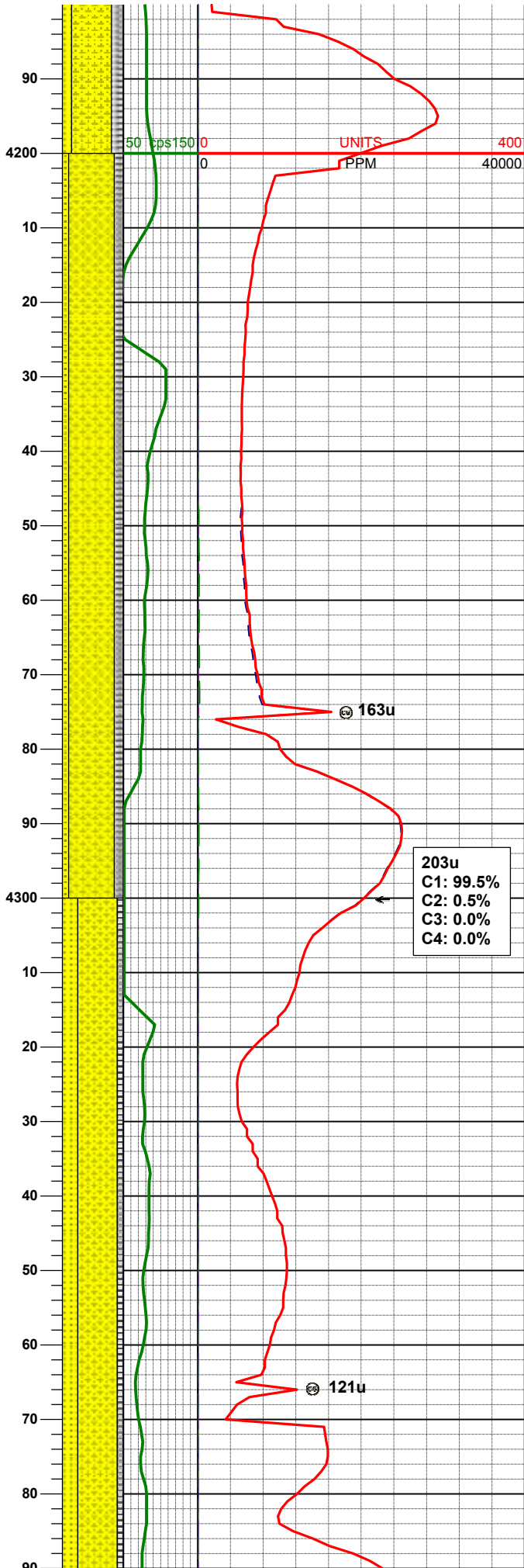
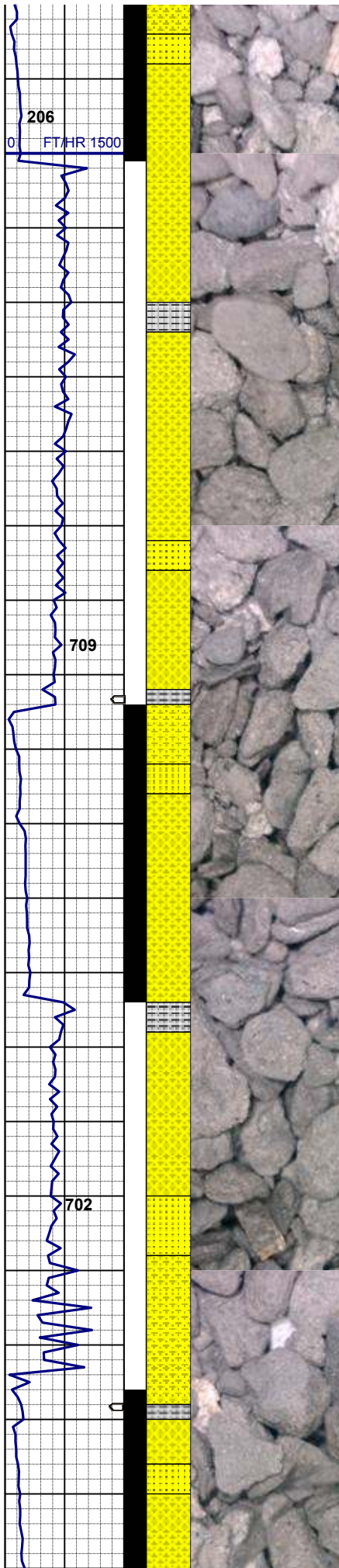


MD 4040'  
 INC 7.4°  
 AZM 335.4°  
 TVD 3990.00'

65% SHYSS: lt gy, f gr, mod sl sft - firm, sbang - sbrnrd, mod srt, aren, arg -cly cmt  
 25% SS: trnsl- wh, g- dk gy, vf gr occ f-m gr, sb rd-rd, w srt, sl firm - v firm occ brit, v uncon, sl por, arg-cly cmt, v sl calc  
 10% SLTYSH: lt-m gy, frim occ sl firm, sbbkly - sbply, noncalc ; tr lse frag

MD 4135'  
 INC 6.4°  
 AZM 358.1°  
 TVD 4084.00'

65% SHYSS: lt gy, f gr, mod sl sft - firm, sbang - sbrnrd, mod srt, aren, arg -cly cmt  
 20% SLTYSH: lt-m gy, frim occ sl firm, sbbkly - sbply, noncalc  
 20% SS: trnsl- wh, g- dk gy, vf gr occ f-m gr, sb rd-rd, w srt, sl firm - v firm occ brit, v uncon, sl por, arg-cly cmt, v sl calc ; tr lse fos frag



MUD WT 8.9 VIS 30

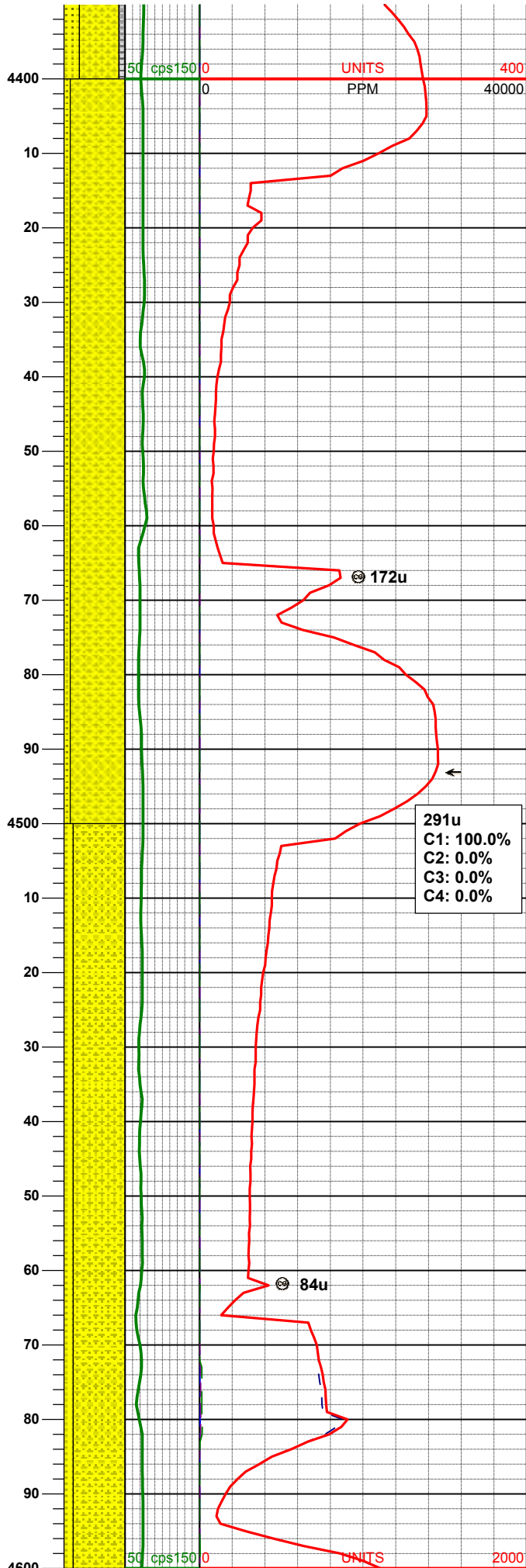
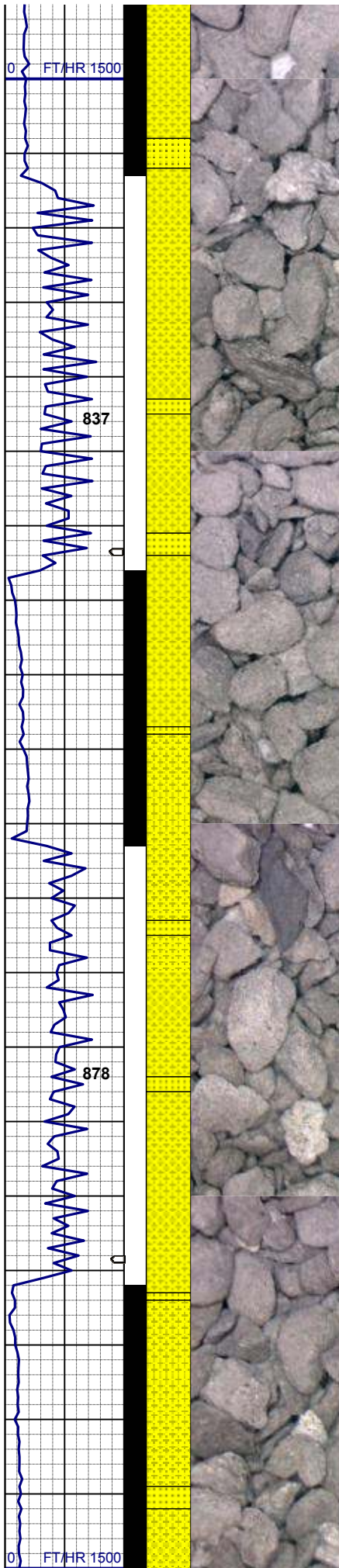
MD 4230'  
INC 5.4°  
AZM 351.4°  
TVD 4178.00'

75% SHYSS: lt gy, f gr, mod sl sft - firm, sbang - sbrddd, mod srt, aren, arg -cly cmt, occ glau  
15% SLTYSH: lt-m gy, frim occ sl firm, sbbkly - sbply, noncalc  
10% SS: trnsI- wh, g- dk gy, vf gr occ f-m gr, sb rd-rd, w srt, sl firm - v firm, occ brit, v unconsl, sl por, arg-cly cmt, v sl calc ; tr lse fos frag

MUD WT 8.9 VIS 29

MD 4325'  
INC 3.3°  
AZM 349.5°  
TVD 4273.00'

65% SHYSS: lt gy, f gr, mod sl sft - firm, sbang - sbrddd, mod srt, aren, arg -cly cmt  
25% SLTYSH: lt-m gy, frim occ sl firm, sbbkly - sbply, noncalc  
10% SS: trnsI- wh, g- dk gy, vf gr occ f-m gr, sb rd-rd, w srt, sl firm - v firm, occ brit, v unconsl, sl por, arg-cly cmt, v sl calc



MD 4420'  
 INC 3.1°  
 AZM 316.7°  
 TVD 4368.00'

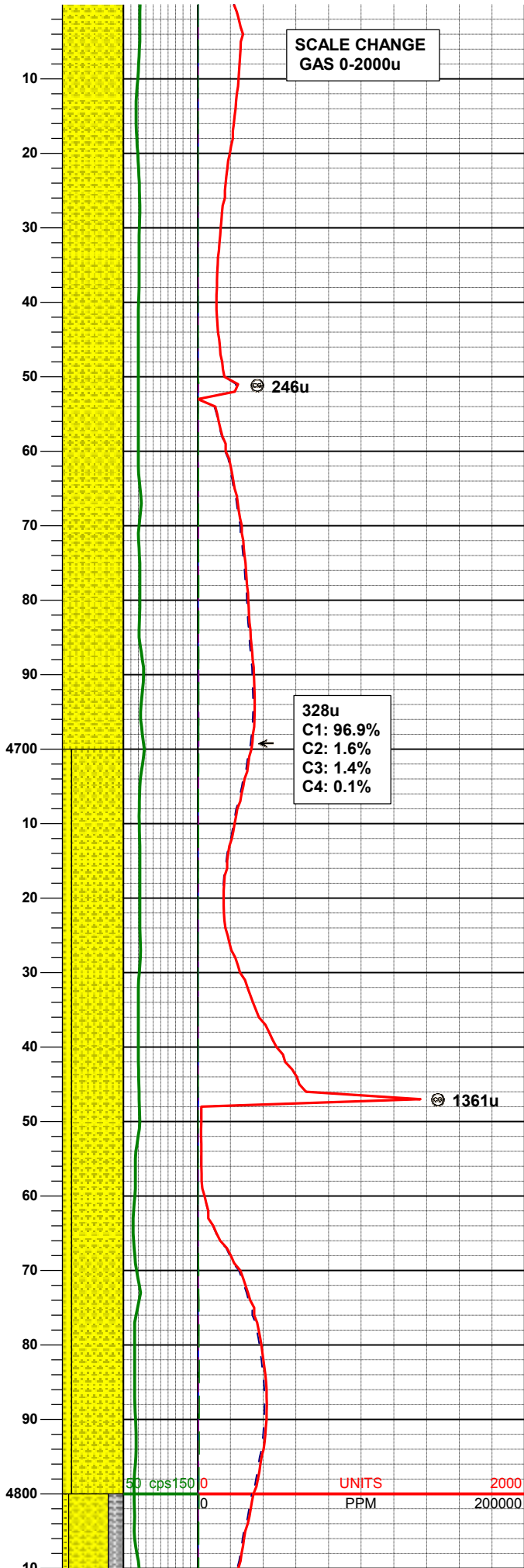
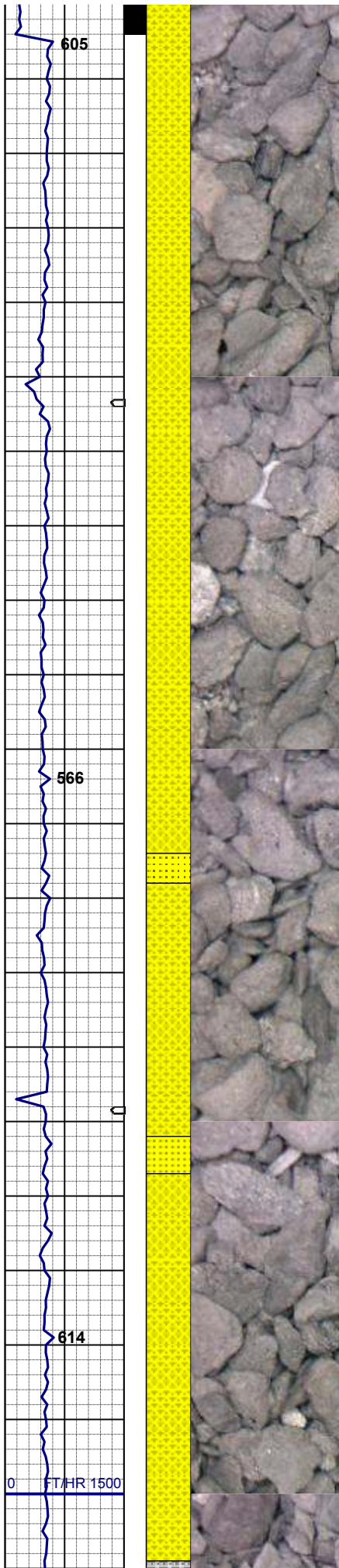
90% SHYSS: lt gy, f gr, mod sl sft - firm, sbang - sbrndd, mod srt, aren, arg -cly cmt  
 10% SS: trnsl- wh, g- dk gy, vf gr occ f-m gr, sb rd-rd, w srt, sl firm - v firm, occ brit, v uncons, sl por, arg-cly cmt, v sl calc

MUD WT 8.9 VIS 30

291u  
 C1: 100.0%  
 C2: 0.0%  
 C3: 0.0%  
 C4: 0.0%

MD 4515'  
 INC 1.5°  
 AZM 339.3°  
 TVD 4363.32'

85% SHYSS: lt gy, f gr, mod sl sft - firm, sbang - sbrndd, mod srt, aren, arg -cly cmt  
 15% SS: trnsl- wh, g- dk gy, vf gr occ f-m gr, sb rd-rd, w srt, sl firm, occ brit, v uncons, sl por, arg-cly cmt, v sl calc



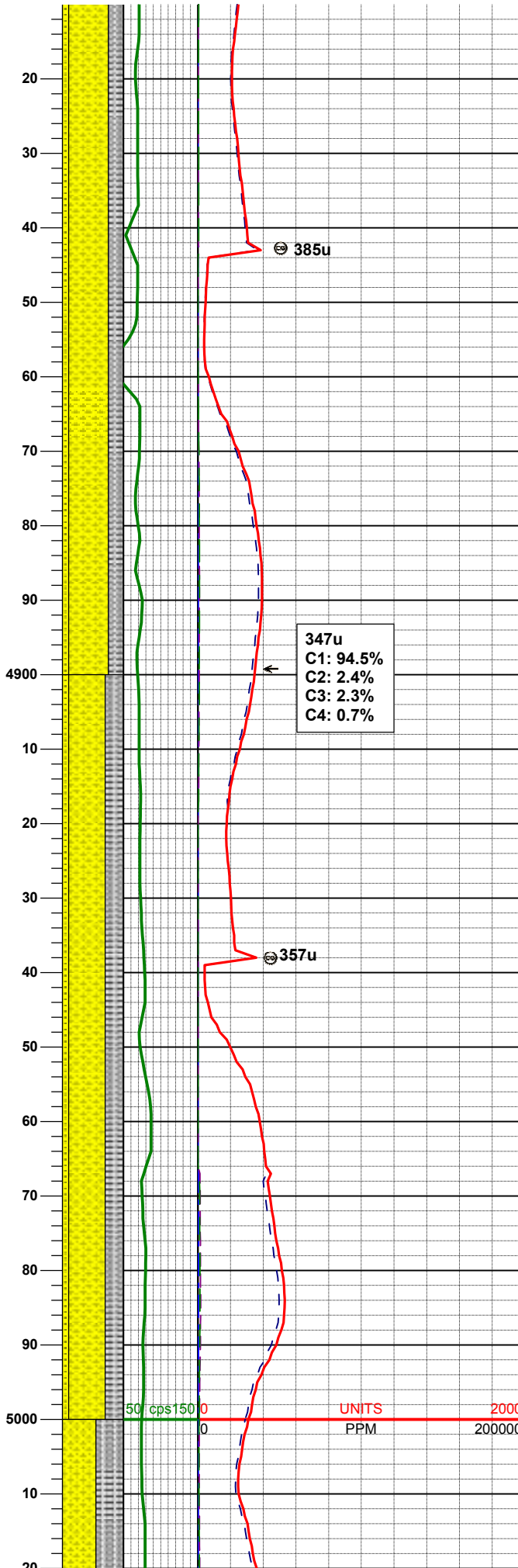
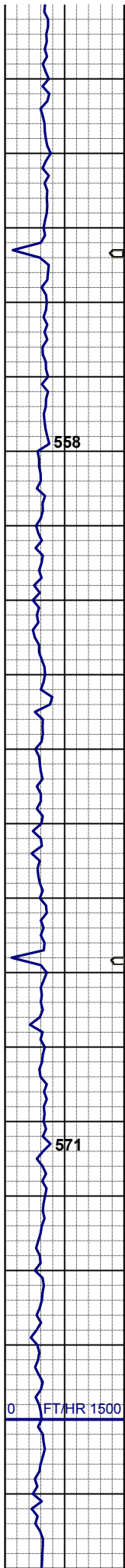
MD 4610'  
 INC 0.8°  
 AZM 124.2°  
 TVD 4558.31'

100% SHYSS: lt gy, f gr, mod sl sft - firm, sbang - sbrddd, mod srt, aren, arg -cly cmt

MD 4705'  
 INC 1.1°  
 AZM 126.8°  
 TVD 4653.30'

85% SHYSS: lt gy, f gr, mod sl sft - firm, sbang - sbrddd, mod srt, aren, arg -cly cmt  
 15% SS: trnsf- wh, g- dk gy, vf gr occ f-m gr, sb rd-rd, w srt, sl firm, occ brit, v uncons, sl por, arg-cly cmt, v sl calc, occ glau

MD 4800'  
 INC 1.1°  
 AZM 105.5°  
 TVD 4748.28'



65% SHYSS: lt gy, f gr, mod sl sft - firm, sbang - sbrnrd, mod srt, aren, arg -cly cmt  
 25% SLTYSH: lt-m gy, frim occ sl firm, sbblky - sbppty, noncalc  
 10% SS: trnsl- wh, g- dk gy, vf gr occ f-m gr, sb rd-rd, w srt, sl firm - v firm, occ brit, v uncon, sl por, arg-cly cmt, v sl calc

MD 4895'  
 INC 1.2°  
 AZM 65.4°  
 TVD 4843.26'

MUD WT 8.95 VIS 30

347u  
 C1: 94.5%  
 C2: 2.4%  
 C3: 2.3%  
 C4: 0.7%

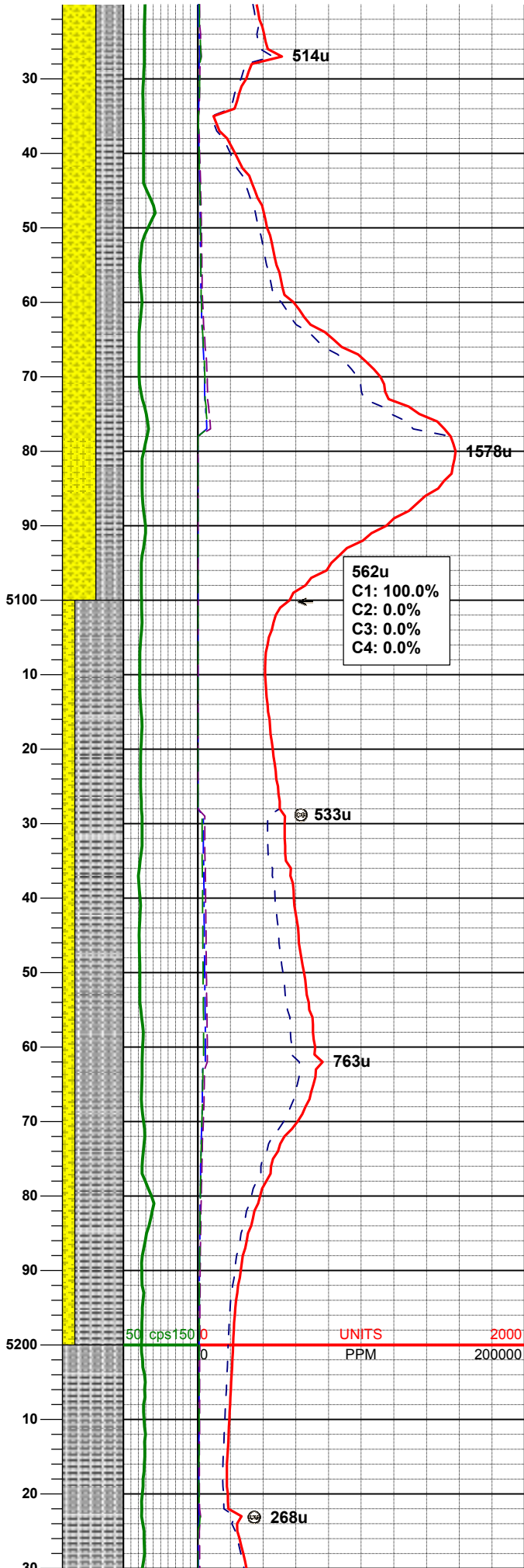
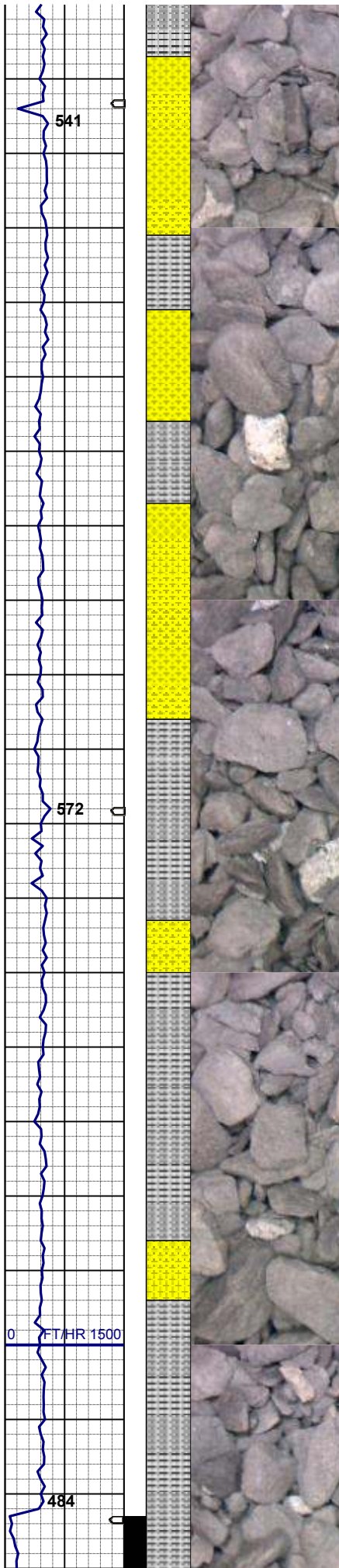
60% SHYSS: lt gy, f gr, mod sl sft - firm, sbang - sbrnrd, mod srt, aren, arg -cly cmt  
 30% SLTYSH: lt-m gy, frim occ sl firm, sbblky - sbppty, noncalc  
 10% SS: trnsl- wh, g- dk gy, vf gr occ f-m gr, sb rd-rd, w srt, sl firm - v firm, occ brit, v uncon, sl por, arg-cly cmt, v sl calc, tr glau

MD 4990'  
 INC 1.4°  
 AZM 54.7°  
 TVD 4938.24'

UNITS 2000  
 PPM 200000

FT/HR 1500

50 cps 150



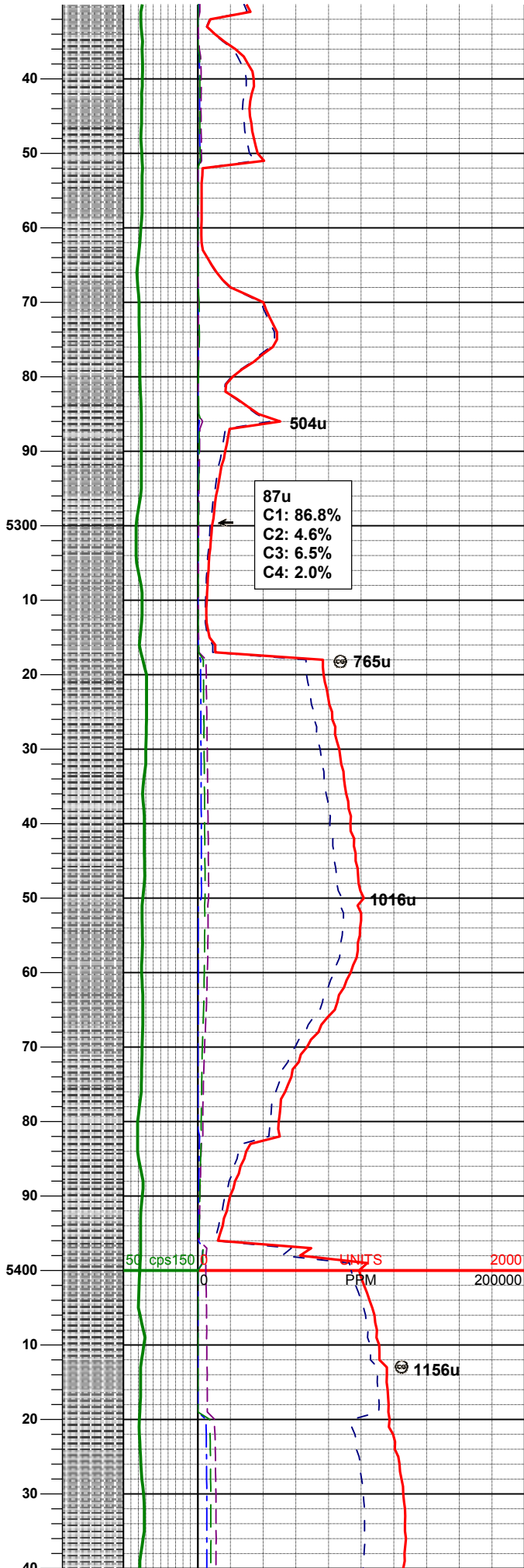
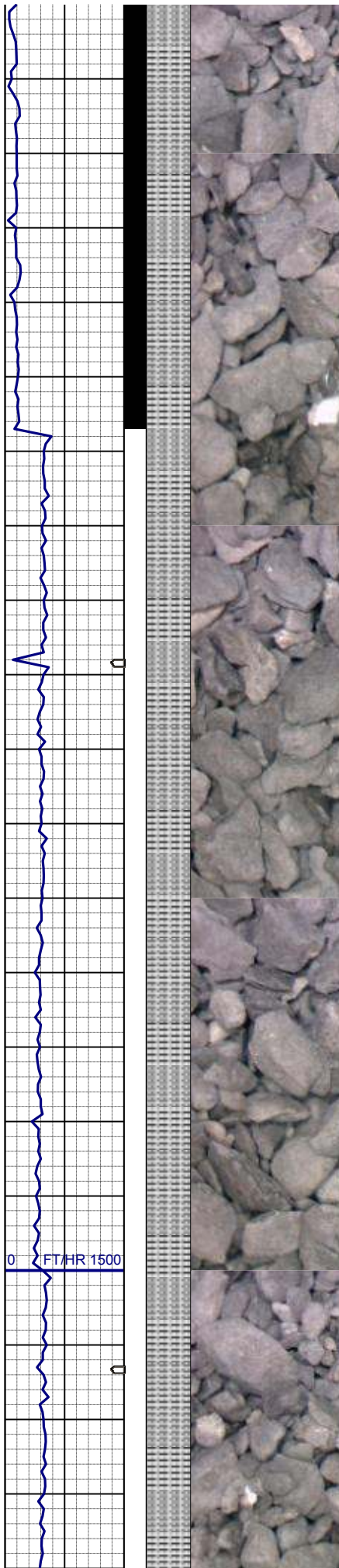
55% SHYSS: lt gy, f gr, mod sl sft - firm, sbang - sbrnrd, mod srt, aren, arg -cly cmt  
 45% SLTYSH: lt-m gy, frim occ sl firm, sbbkly - sbply, noncalc

MD 5085'  
 INC 1.1°  
 AZM 66.3°  
 TVD 5033.22'

MUD WT 8.95 VIS 28

80% SHYSS: lt gy, f gr, mod sl sft - firm, sbang - sbrnrd, mod srt, aren, arg -cly cmt, tr glau  
 20% SLTYSH: lt-m gy, frim occ sl firm, sbbkly - sbply, noncalc

MD 5180'  
 INC 2.1°  
 AZM 65.5°  
 TVD 5128.18'



100% SLTYSH: m gy, lt brn, occ dk gy, blkly - sbply, mod sft, occ hd, occ glau, mica, calc ip, uncons pyr

MD 5275'  
 INC 1.8°  
 AZM 116.3°  
 TVD 5223.13'

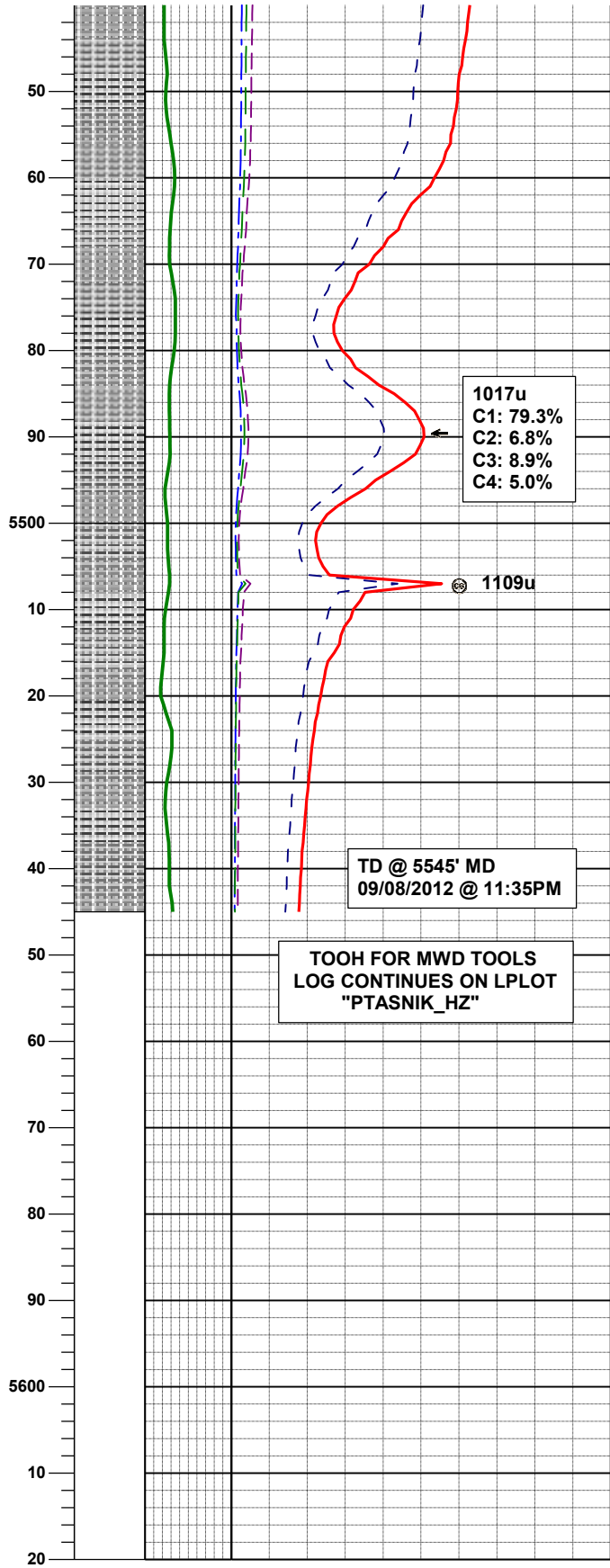
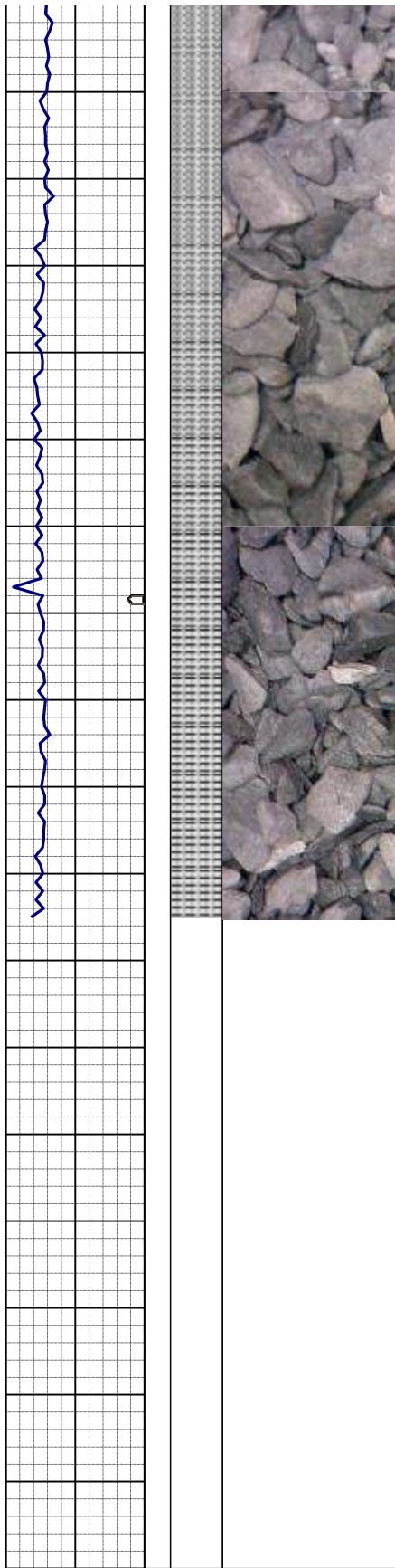
100% SLTYSH: m gy, lt brn, occ dk gy, blkly - sbply, mod sft, occ hd, mica, calc ip, uncons pyr

MD 5370'  
 INC 1.3°  
 AZM 104.1°  
 TVD 5318.10'

0 FT/HR 1500

50 cps/150 UNITS 2000  
 PPM 200000

87u  
 C1: 86.8%  
 C2: 4.6%  
 C3: 6.5%  
 C4: 2.0%



100% SLTYSH: m gy, lt brn, lt gy - crm, occ dk gy, blk y - sbply, mod sft, occ hd, tr glau, arg-rthy mtx

MD 5465'  
 INC 1.1°  
 AZM 99.6°  
 TVD 5413.08'

100% SLTYSH: m gy, lt brn, lt gy - crm, occ dk gy, blk y - sbply, mod sft, occ hd, occ glau, mica, calc ip, pyr

TD @ 5545' MD  
 09/08/2012 @ 11:35PM

TOOH FOR MWD TOOLS  
 LOG CONTINUES ON L PLOT  
 "PTASNIK\_HZ"