

LOG created using Lplot VH Version 3.0, November 30, 2012, Copyright (C) 1999-2009 Pason Systems Corp.

OPERATOR: NOBLE ENERGY INC
WELL: FIVE M E28-69HN
LOCATION: SEC 28, T6N, R65W
COUNTY: WELD
STATE: COLORADO
SPOT: 646' FNL, 284' FWL
ELEVATION: GL 4712', KB 4736'
FIELD: WATTENBERG
SPUD DATE: 11/19/2012
TD DATE: 11/29/2012
DATES LOGGED: 11/21/2012 - 11/29/2012
DEPTHS LOGGED: 1,000' - 14,060'
LOGGERS: BRAD WILSON, JAKOB PAMMER
DRILLING FLUID: WATER, WATER BASED MUD, POLY
DRILLING RIG: HP 322
API: 05123347970000
LOG TYPE: VERTICAL
SCALE: 1:240 (5 inches per 100 feet)
REMARKS: WELLSITE GEOLOGICAL SERVICES PROVIDED BY COLUMBINE LOGGING, INC.

LITHOLOGIES



Sandstone



Shaly Sandstone



Shaly Siltstone



Siltstone



Silty Shale

ENGINEERING SYMBOLS



Connection



Connection Gas



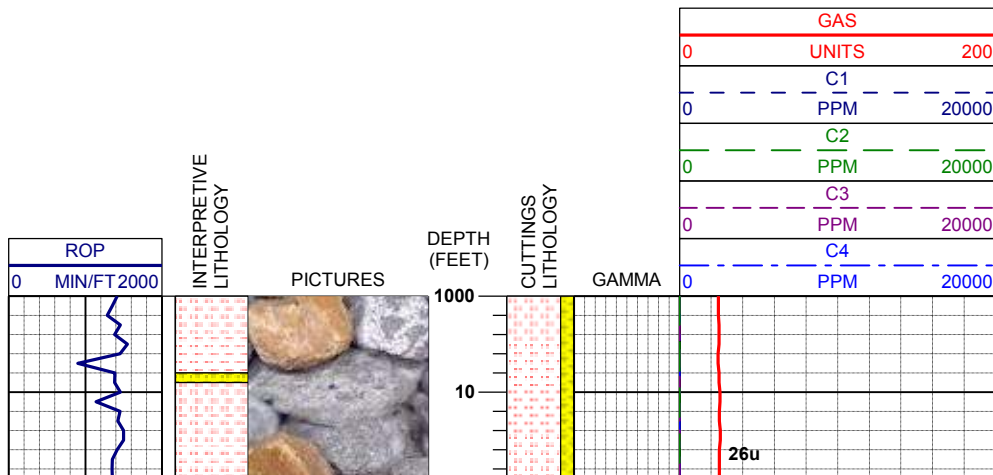
Arrow



Midnight Depth



Arrow



LITHOLOGY DESCRIPTION

COLUMBINE LOGGING INC.
 RIGGED UP ON 11/20/2012
 MANNED 2-PERSON LOGGING
 WITH BLOODHOUND GAS
 CHROMATOGRAPH UNIT #0160

DRILL OUT OF SURFACE CASING

AT 7:00 HRS ON 11/21/2012

MUD WT 8.4 VIS 28

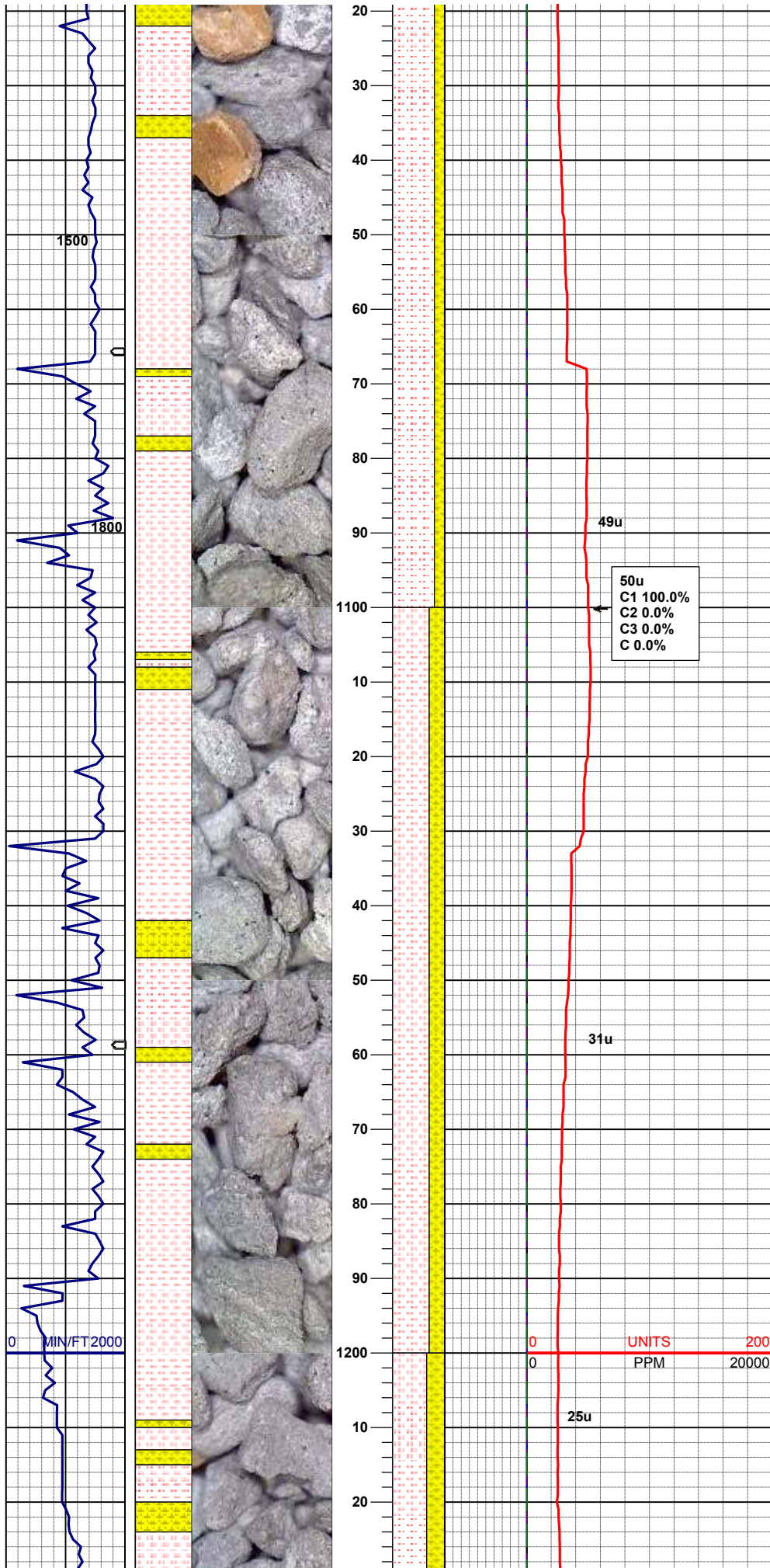
80% SLTST: ltgy, sft- fri, sbblky, aren-sltly tex,
occ biot incl, sl calc
20% SHYSS: ltgy-mgy, s&p, vf-fgr, sbrd, mod
srt, firm-sft, p por, arg cmt, rr biot;
; abnt m-dkgy cly

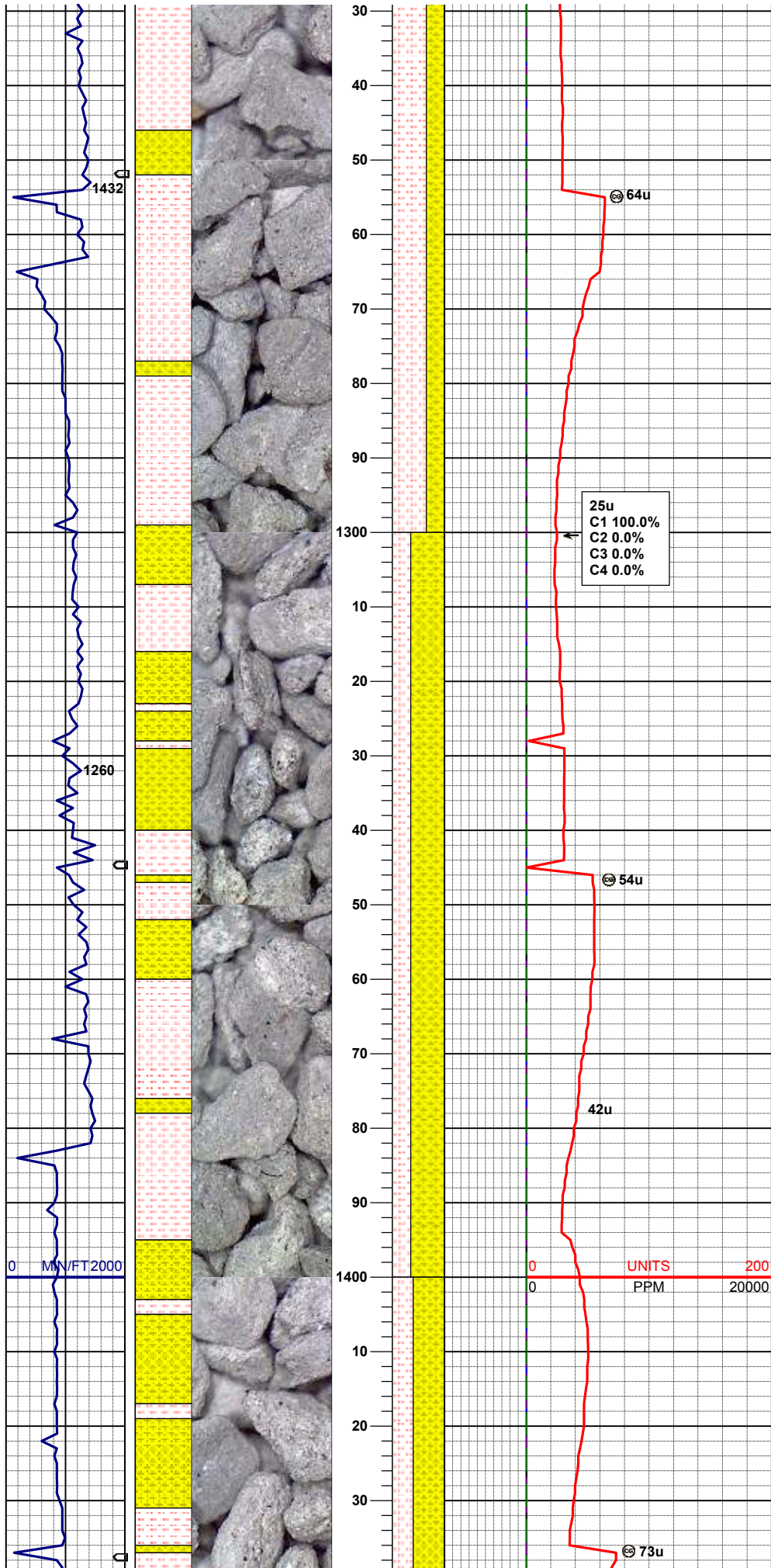
MD 1102'
INC 0.7
AZM 110.6

70% SLTST: ltgy, sft- fri, sbblky, aren-sltly tex,
tr biot incl, sl grdg - shyss
30% SHYSS: ltgy-mgy, s&p, vf-fgr, sbrd, mod
srt, firm-sft, p por, arg cmt, rr biot;
; abnt m-dkgy cly

MD 1195'
INC 1.1
AZM 86.0

Abundant Clay





65% SLTST: ltgy-mgy, sft- fri, sbblky, aren-sltly
tex, tr biot incl, sl grdg - shyss
35% SHYSS: ltgy-mgy, s&p, vf-fgr, sbrd, mod
srt, firm-sft, p por, arg cmt, rr biot;
; abnt m-dkgy cly

MD 1288'
INC1.2
AZM 76.4

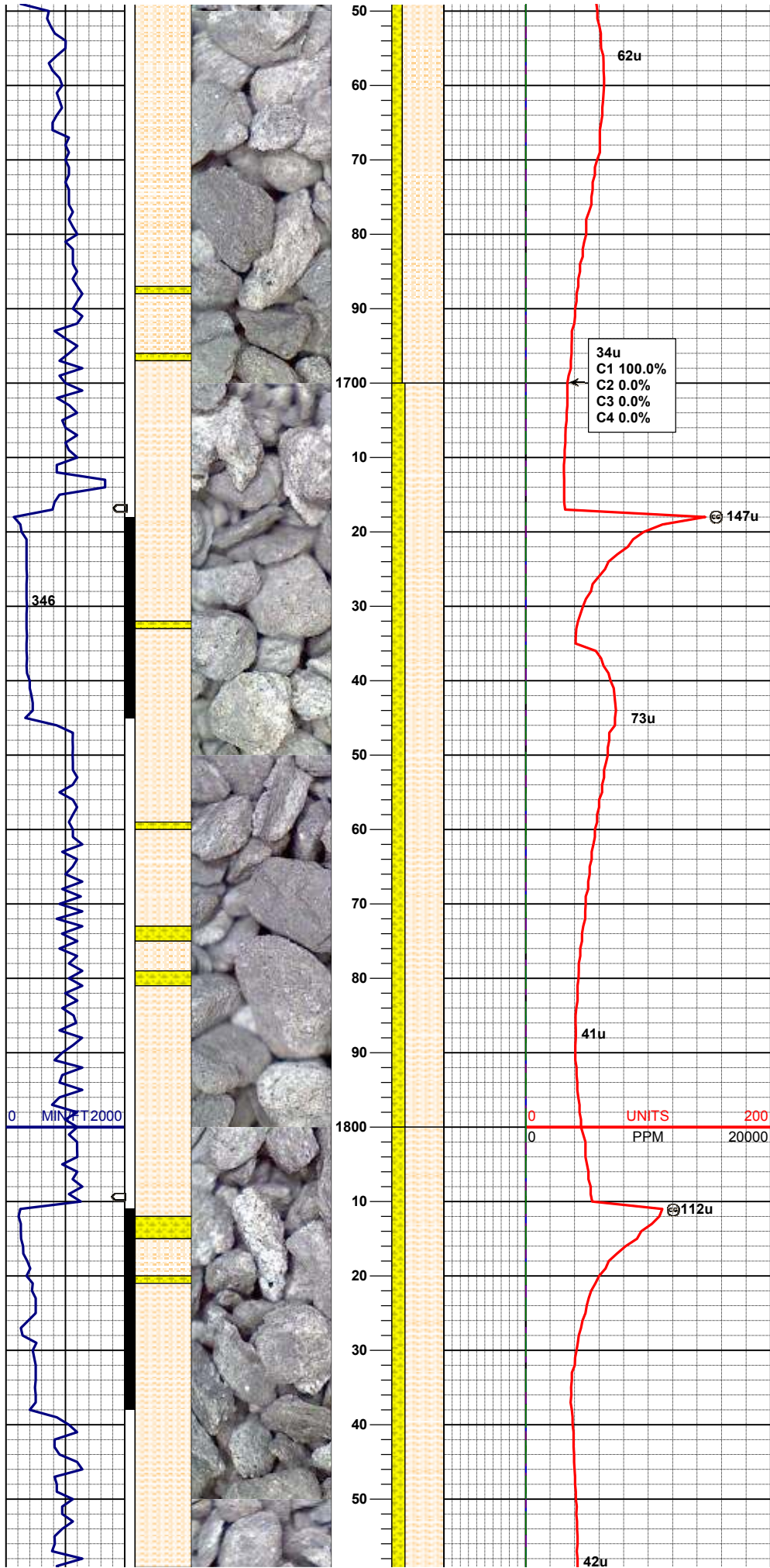
MUD WT 8.4 VIS 28

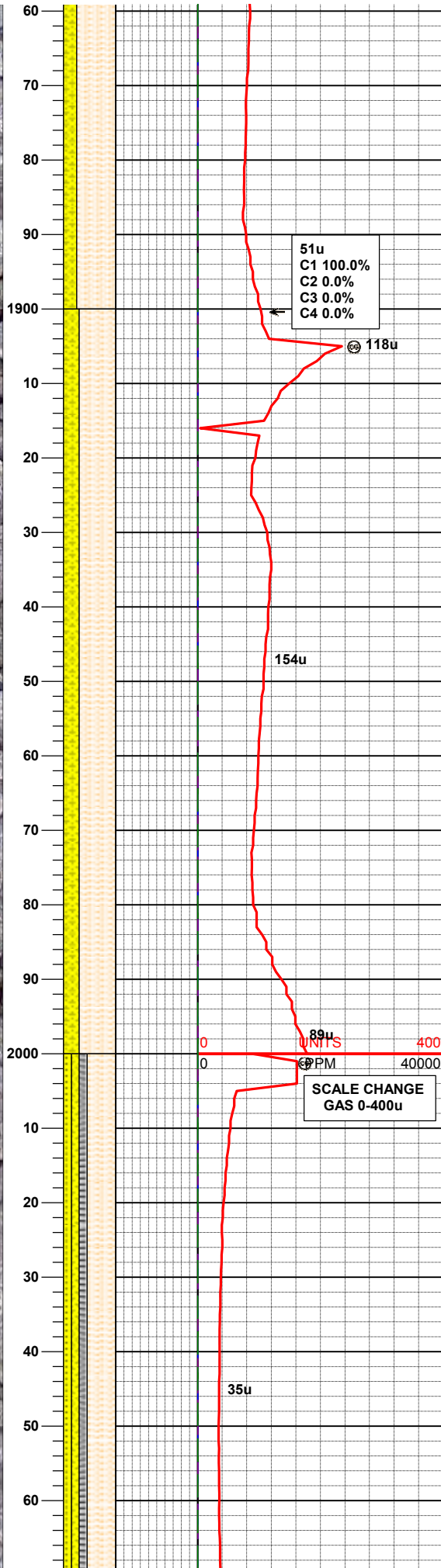
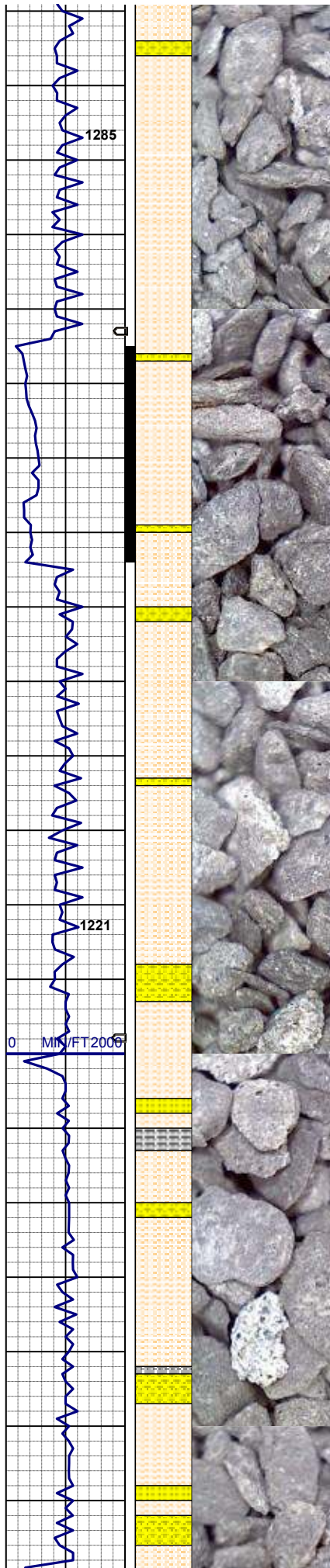
65% SHYSS: ltgy, s&p, tr op-clr, vf-fgr, sbrd,
mod srt, firm-sft, p por, arg cmt, rr biot occ
glau ; occ grdg - ss
35% SLTST: ltgy, sft- fri, sbblky, aren-sltly tex,
tr biot incl ; abnt m-dkgy cly

MD 1381'
INC 1.2
AZM 105.9

Abundant Clay

60% SHYSS: ltgy-mgy, s&p, tr op-clr, vf-fgr,
sbrd, mod srt, firm-sft, p por, arg cmt, rr biot occ
glau ; occ grdg - ss





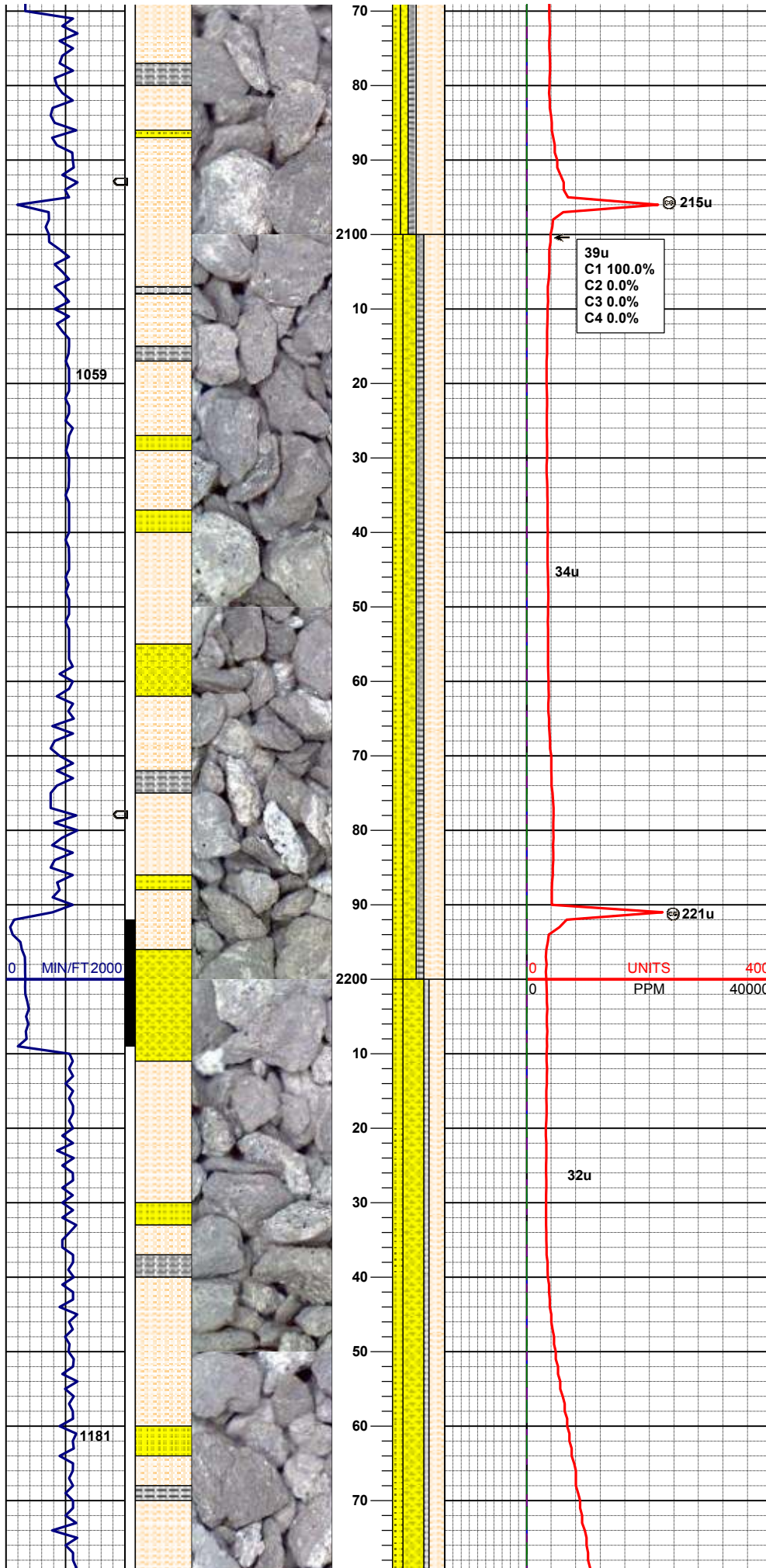
70% SHALY SLTST: mgy occ ltgy, sft- fri, sbblky, aren-sltly tex, sl tr biot incl, 25% SHYSS: mgy, tr s&p, vf-fgr, sbrd, mod srt, firm-sft, p por, arg cmt, sl tr biot

MD 1941'
INC 11.6
AZM 329.9

70% SHALY SLTST: mgy occ ltgy, sft- fri, sbblky, aren-sltly tex, sl tr biot incl, 30% SHYSS: mgy, tr s&p, vf-fgr, sbrd, mod srt, firm-sft, p por, arg cmt, sl tr biot, occ grdg - ss

MD 2036'
INC 10.5
AZM 327.3

55% SHALY SLTST: mgy occ ltgy, sft- fri, sbblky, aren-sltly tex, sl tr biot incl, 15% SHYSS: mgy, tr s&p, vf-fgr, sbrd, mod srt, firm-sft, p por, arg cmt, sl tr biot 15% SLTYSH: mgy, occ lt and dk gy, blk- sbblky, occ sbply, firm-m hd, rthy - sl slty tex, arg mtx 15% SS: wh-ltav s&n vf-mar sbrd mod srt



10% SS: wh-ltgy, s&p, vf-mgr, sbdr, mod srt, firm-hd, arg cmt, sme glau

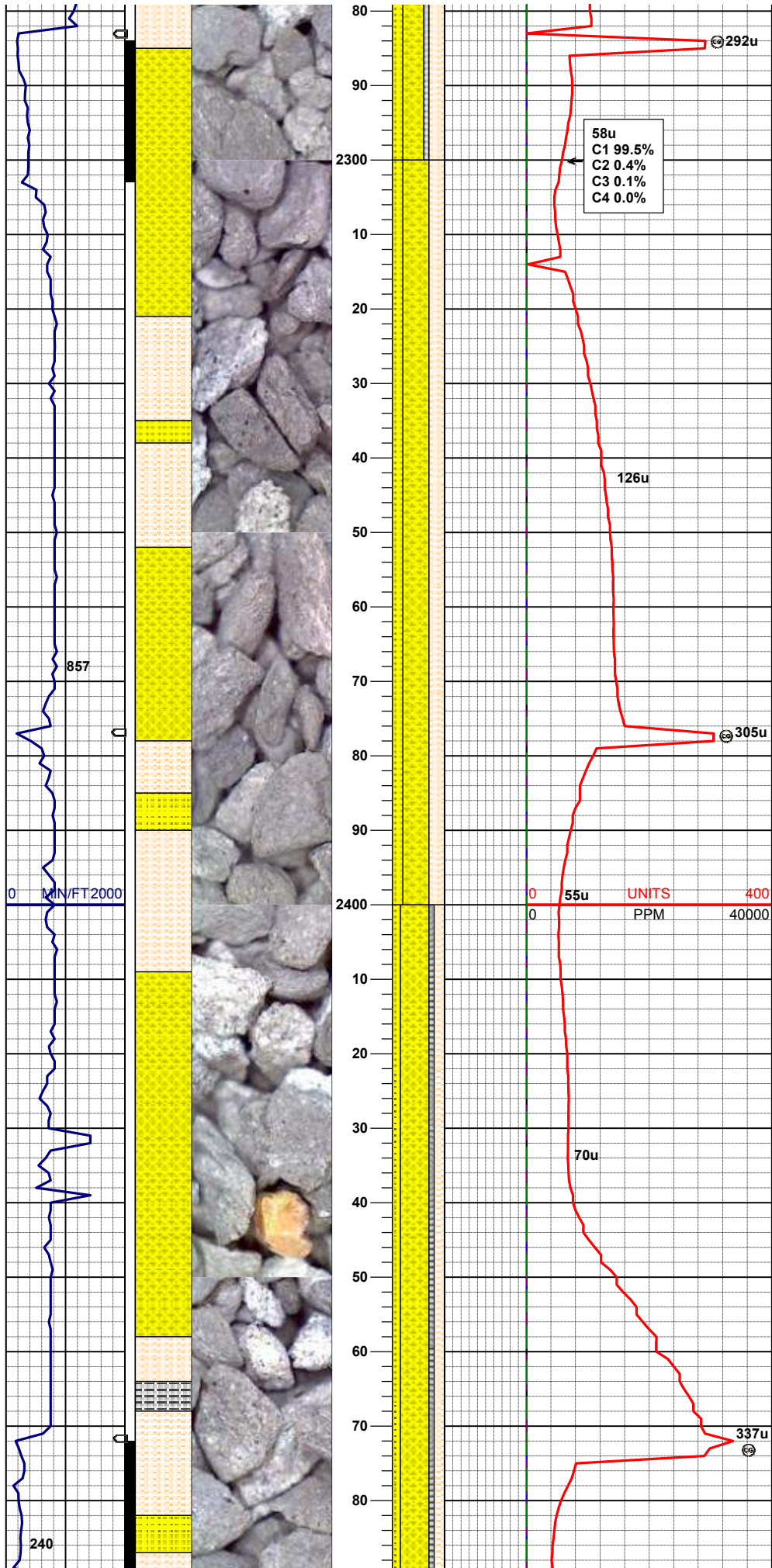
MD 2131'
INC 9.16
AZM 325.4

40% SHALY SLTST: mgy occ ltgy, sft-fri, sbbkly, aren-sltly tex, sl tr biot incl, 25% SHYSS: mgy, tr s&p, vf-fgr, sbdr, mod srt, firm-sft, p por, arg cmt, sl tr biot 20% SS: wh-ltgy, s&p, vf-mgr, sbdr, mod srt, firm-hd, arg cmt, sme glau 15% SLTYSH: mgy, occ lt and dk gy, blkly-sbbkly, occ sbply, firm-m hd, rthy - sl slty tex, arg mtx

MUD WT 8.45 VIS 28

MD 2226'
INC 9.16
AZM 326.75

40% SHYSS: mgy, tr s&p, vf-fgr, sbdr, mod srt, firm-sft, p por, arg cmt, sl tr biot 30% SHALY SLTST: mgy occ ltgy, sft-fri, sbbkly, aren-sltly tex, sl tr biot incl, 20% SS: wh-ltgy, s&p, vf-mgr, sbdr, mod srt, firm-hd, arg cmt, sme glau 10% SLTYSH: mgy, occ lt and dk gy, blkly-sbbkly, occ sbply, firm-m hd, rthy - sl slty tex, arg mtx



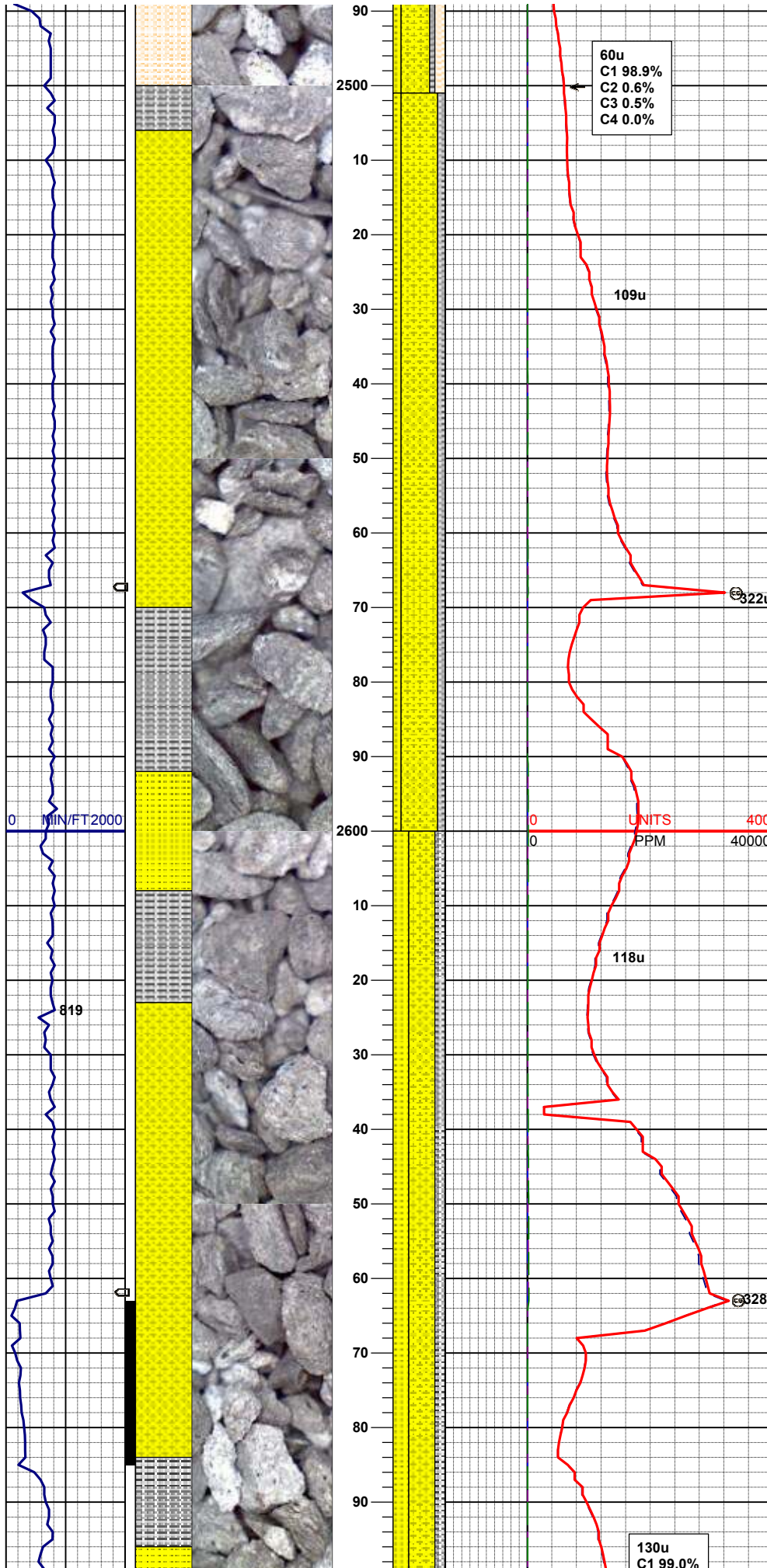
MD 2320'
INC 10.5
AZM 328.3

50% SHYSS: mgy, tr s&p, vf-fgr, sbrd, mod srt, firm-sft occ brit, p por, arg cmt, sl tr biot
30% SHALY SLTST: mgy occ ltgy, sft- frim, sbbiky, aren-sltly tex, sl tr biot incl,
20% SS: wh-ltgy, s&p, vf-mgr, sbrd, mod srt, firm- hd, arg cmt, tr glau

MUD WT 8.45 VIS 28

MD 2415'
INC 9.6
AZM 330.0

55% SHYSS: mgy, tr s&p, vf-fgr, sbrd, mod srt, firm-sft occ brit, p por, arg cmt, sl tr biot
20% SHALY SLTST: mgy occ ltgy, sft- frim, sbbiky, aren-sltly tex, sl tr biot incl,
15% SS: wh-ltgy, s&p, vf-mgr, sbrd, mod srt, firm- hd, arg cmt, tr glau
10% SLTYSH: mgy, occ lt and dk gy, blk- sbbiky, occ sbply, firm-m hd, rthy - sl slty tex, arg mtx



Prog Top:
Pierre @ 2497' MD

MD 2510'
INC 10.4
AZM 326.6

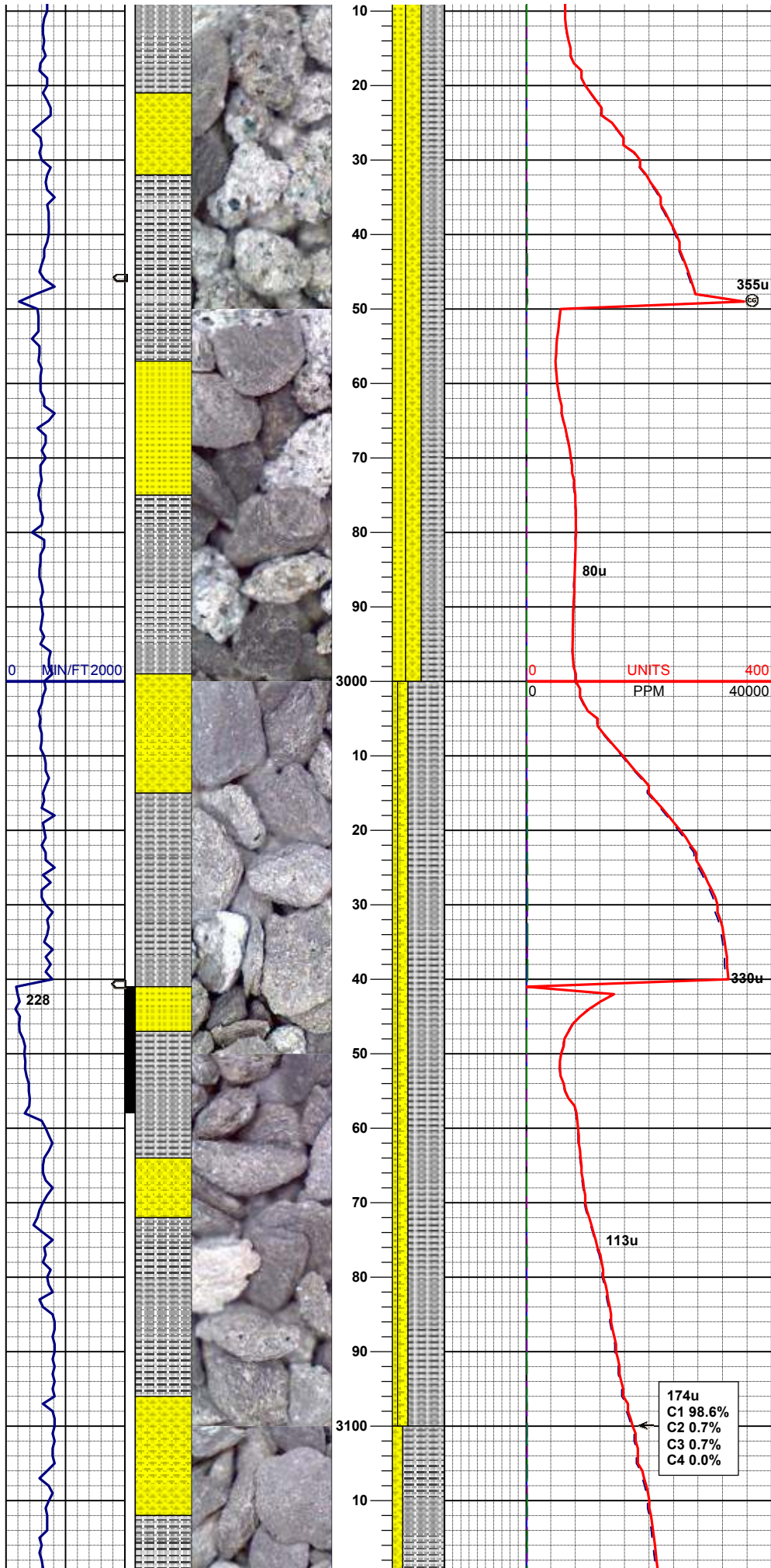
MUD WT 8.4 VIS 29

70% SHYSS: mgy, tr s&p, vf-fgr, sbrd, mod srt, firm-sft occ brit, p por, arg cmt, sl tr biot
15% SS: wh-ltgy, s&p, vf-mgr, sbrd, mod srt, firm- hd, arg cmt, tr glau
15% SLTYSH: mgy, occ lt and dk gy, blk- sbbkly, occ sbply, firm-m hd, rthy - sl slty tex, arg mtx

MD 2605'
INC 9.0
AZM 328.0

50% SHYSS: mgy, tr s&p, vf-fgr, sbrd, mod srt, firm-sft occ brit, p por, arg cmt, sl tr biot
30% SS: wh-ltgy, s&p, vf-mgr, sbrd, mod srt, firm- hd, arg cmt, tr glau
20% SLTYSH: mgy, occ lt and dk gy, blk- sbbkly, occ sbply, firm-m hd, rthy - sl slty tex, arg mtx

MD 2699
INC 10.3
AZM 329.3



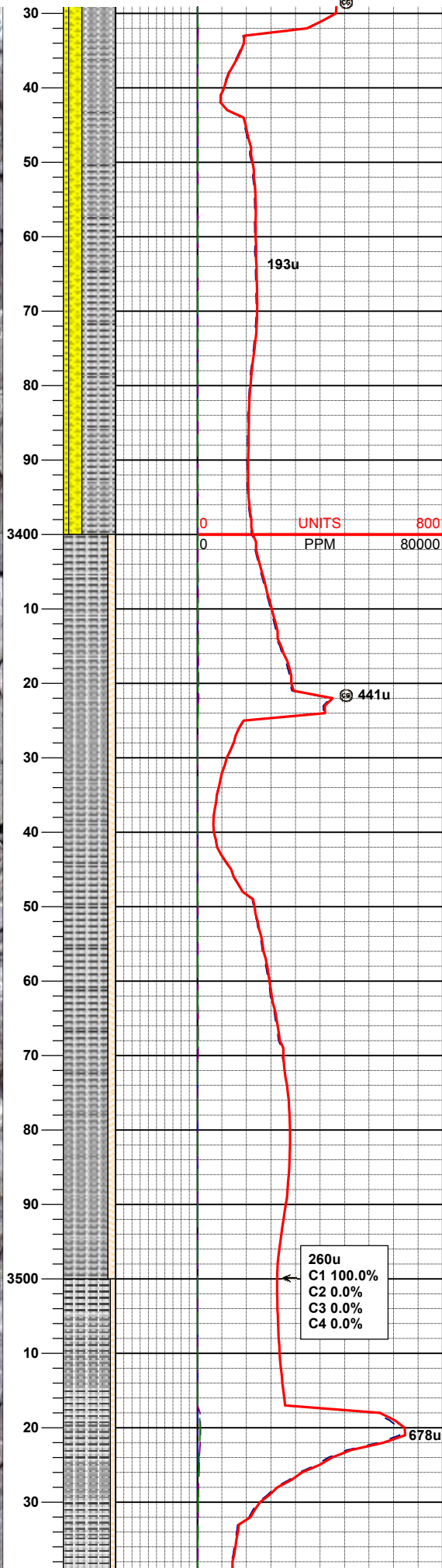
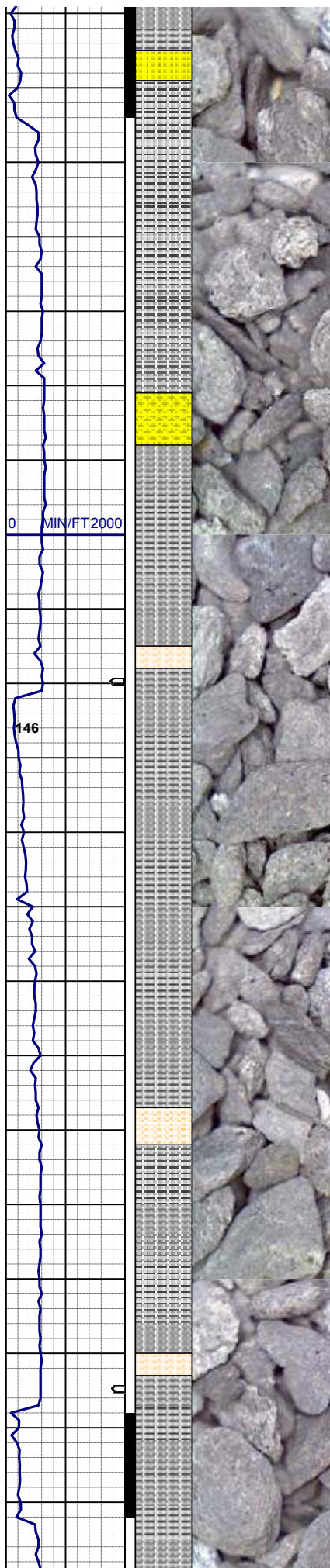
45% SLTYSH: mgy, occ dk gy, blk-ssbblky, occ sbplty, firm-m hd, rthy - sl slty tex, arg mtx
30% SHYSS: mgy, tr s&p, vf-fgr, sbrd, mod srt, firm-sft occ brit, p por, arg cmt, sl tr biot
25% SS: wh clr-op s&p sl tr brn o stn ss, vf-mgr, sbrd- sbang, mod srt, firm- hd, arg cmt, occ glau

MD 2984'
INC 10.1
AZM 324.4

70% SLTYSH: mgy, occ dk gy, blk-ssbblky, occ sbplty, firm-m hd, rthy - sl slty tex, arg mtx
20% SHYSS: mgy, tr s&p, vf-fgr, sbrd, mod srt, firm-sft occ brit, p por, arg cmt, sl tr biot
10% SS: wh clr-op s&p, vf-mgr, sbrd- sbang, mod srt, firm- hd, arg cmt, occ glau

MD 3079'
INC 11.0
AZM 331.1

MUD WT 8.5 VIS 29



65% SLTYSH: mgy, occ dk gy, blk-sbblky, occ sbplty, firm-m hd, rthy - sl slty tex, arg mtx
25% SHYSS: mgy, rr s&p, vf-fgr, sbrd, mod srt, firm-sft occ brit, p por, arg cmt
10% SS: wh clr-op s&p, vf-fgr, sbrd- sbang, mod srt, firm- hd, arg cmt, sme glau, tr biot

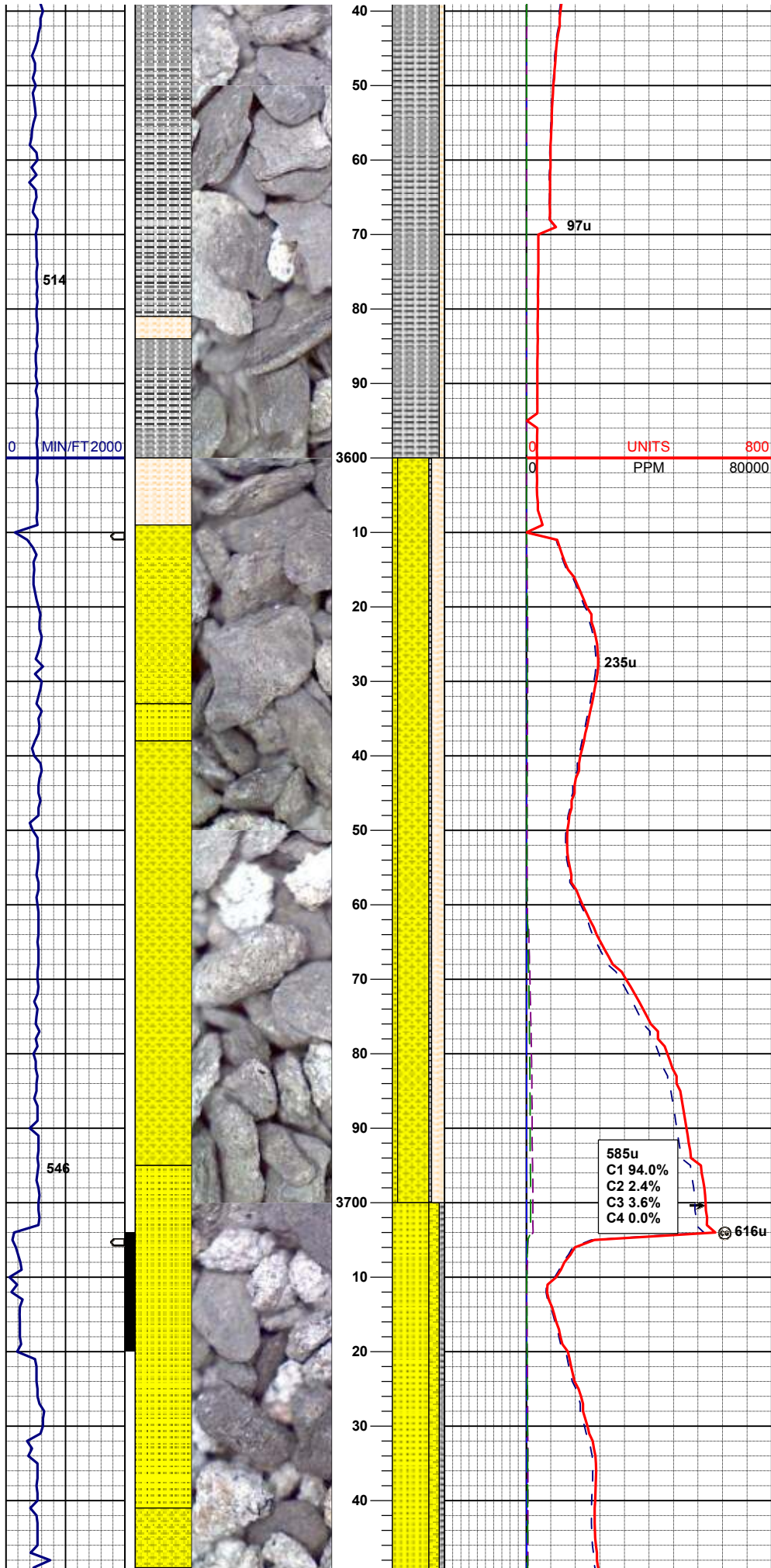
MD 3363'
INC 9.0
AZM 326.8

85% SLTYSH: m-dkgy, blk-sbblky, occ sbplty, firm, slty tex, v sl calc
15% SHYSLTST: lt-mgy, blk-sbblky, mod sft, gt, sl calc

MD 3458'
INC 10.2
AZM 329.9

260u
C1 100.0%
C2 0.0%
C3 0.0%
C4 0.0%

90% SLTYSH: m-dkgy, blk-sbblky, occ sbplty, firm, slty tex, v sl calc
10% SHYSLTST: lt-mgy, blk-sbblky, mod sft,



gt, sl calc, tr snyss

MD 3553'
INC 10.0
AZM 329.5

60% SHYSS: mgy, sbblky-blky, mod sft, gt
25% SHYSLTST: lt-mgy, blky-sbblky, mod sft, gt, sl calc
10% SS: wh, occ clr, sbblky-sbang, sft, tr glau
5% SLTYSH: m-dkgy, blky-sbblky, occ sbply, firm, slty tex, v sl calc

MD 3648'
INC 8.4
AZM 328.6

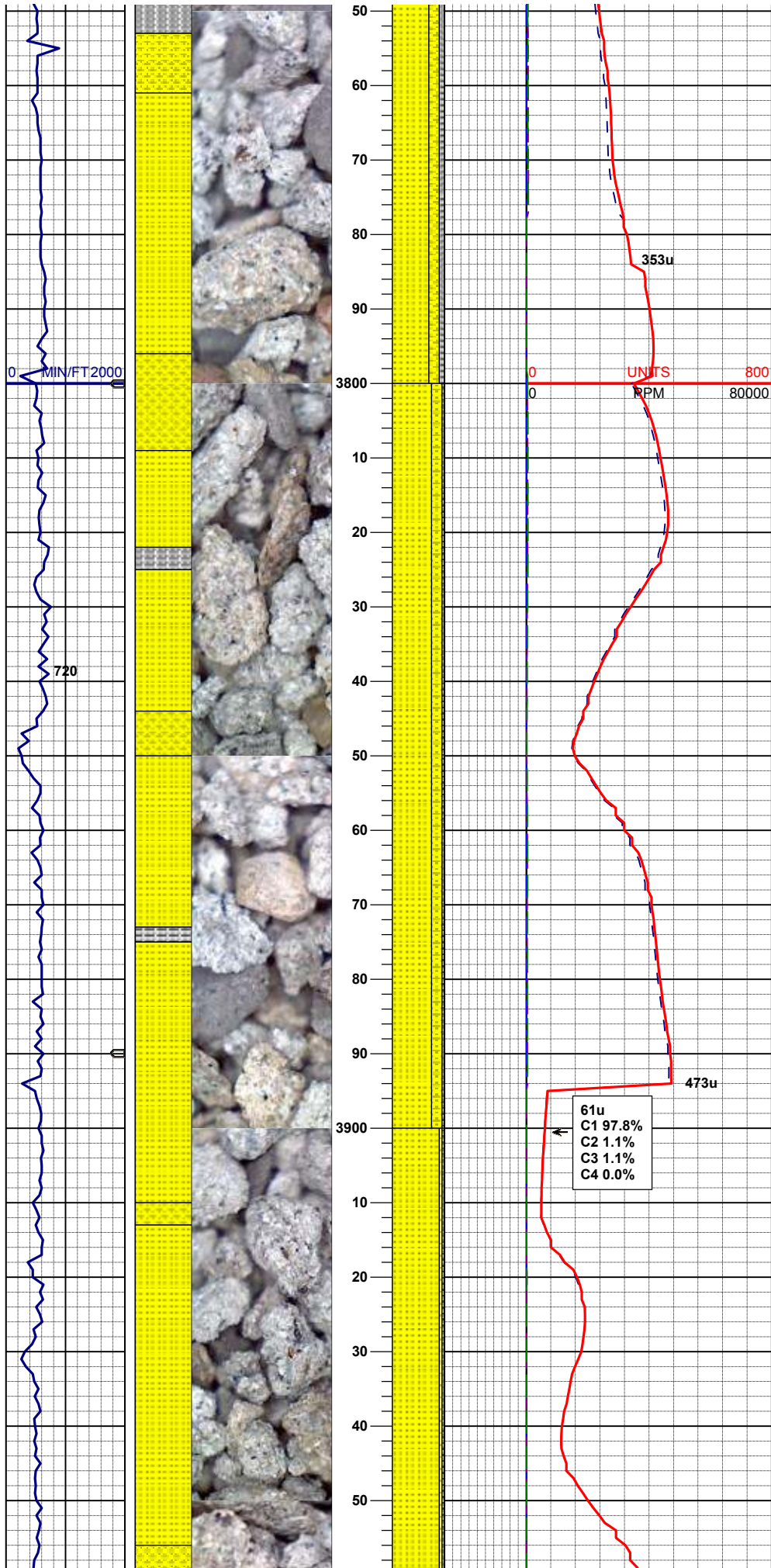
Prog Top:
Parkman @ 3645' MD

585u
C1 94.0%
C2 2.4%
C3 3.6%
C4 0.0%

616u

70% SS: wh-clr, occ brn, s&p, sbblky-sbang, sft, tr glau
20% SHYSS: mgy, sbblky-blky, mod sft, gt
10% SLTYSH: m-dkgy, blky-sbblky, occ sbply, firm, slty tex, v sl calc

MD 3743'
INC 9.8
AZM 328.5



MUD WT 8.4 VIS 27

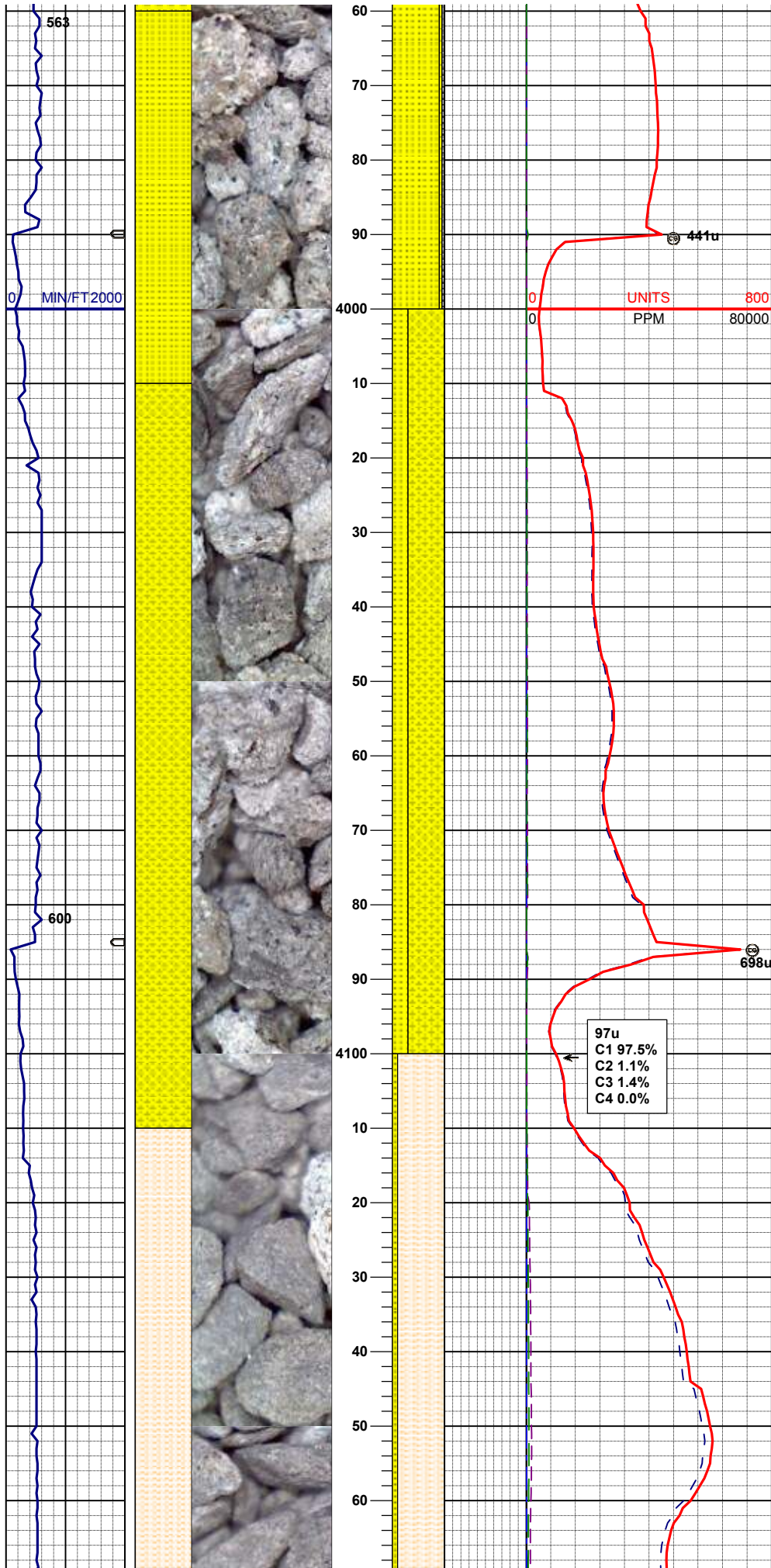
75% SS: wh-clr, occ brn, s&p, sbblky-sbang, sft, tr glau, calc
20% SHYSS: mgy, sbblky-blky, mod sft, gt, calc
5% SLTYSH: m-dkgy, blky-sbblky, occ sbply, firm, slty tex, v sl calc

MD 3838'
INC 10.9
AZM 329.6

61u
C1 97.8%
C2 1.1%
C3 1.1%
C4 0.0%

MD 3933'
INC 11.0
AZM 329.2

75% SS: wh-clr, brn, s&p, sbblky-sbang, sft, scat glau, calc



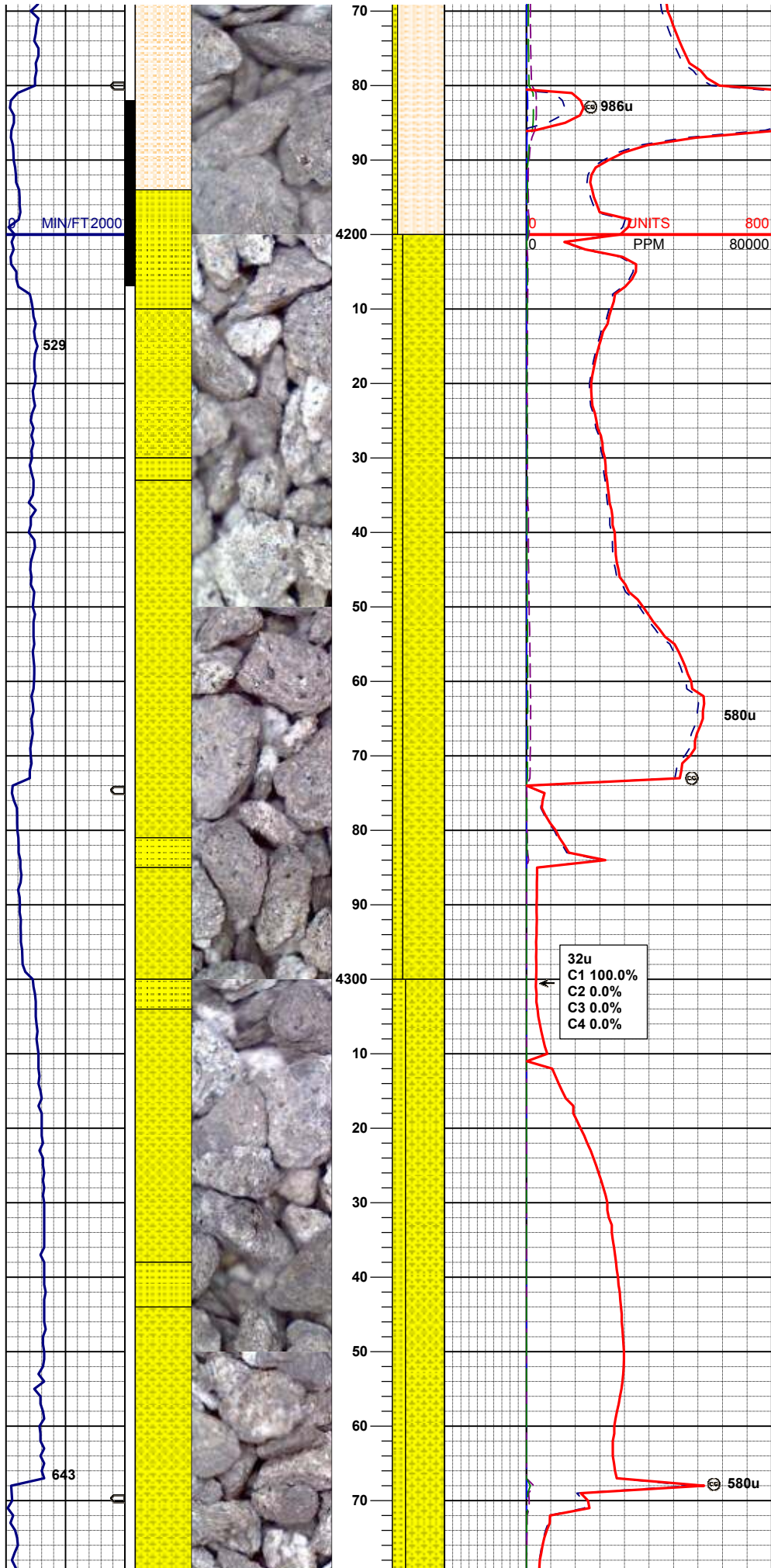
5% SHYSS: m-dkgy, sbbiky-blky, mod sft, gt, tr glauc, calc
5% SLTYSH: m-dkgy, blky-sbbiky, occ sbply, firm, slty tex, v sl calc

MD 4028'
INC 9.4
AZM 328.1

70% SHYSS: m-dkgy, occ brn, sbbiky-blky, mod sft, gt, tr glauc, calc
30% SS: wh-clr, brn, s&p, sbbiky-sbang, sft, scat glau, calc

MD 4123'
INC 6.7
AZM 318.7

90% SHYSLTST: m-dkgy, sbrd-sbply, mod sft, gt, sl calc
10% SS: wh-clr, sbbiky-sbang, mod sft, fri, sl calc

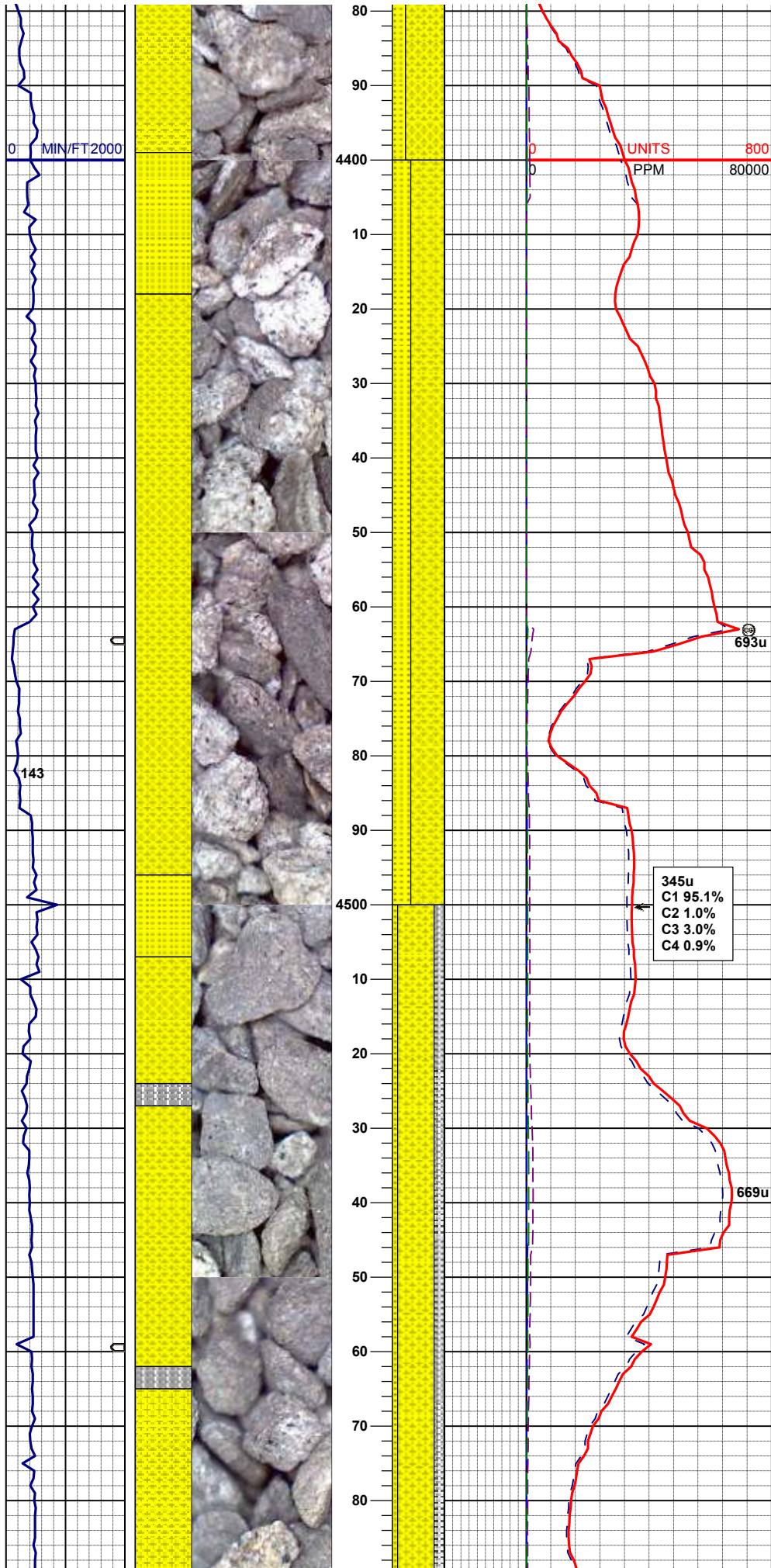


MD 4217'
INC 4.9
AZM 323.9

80% SHYSS: m-dkgy, plty-sbplty, mod firm, gt,
sl calc
20% SS: wh-clr, sbblky-sbang, mod sft, fri, tr
glau, sl calc

MD 4312'
INC 2.4
AZM 297.5

75% SHYSS: m-dkgy, plty-sbplty, mod firm, gt,
sl calc
25% SS: wh-clr, sbblky-sbang, mod sft, fri, tr
glau, sl calc



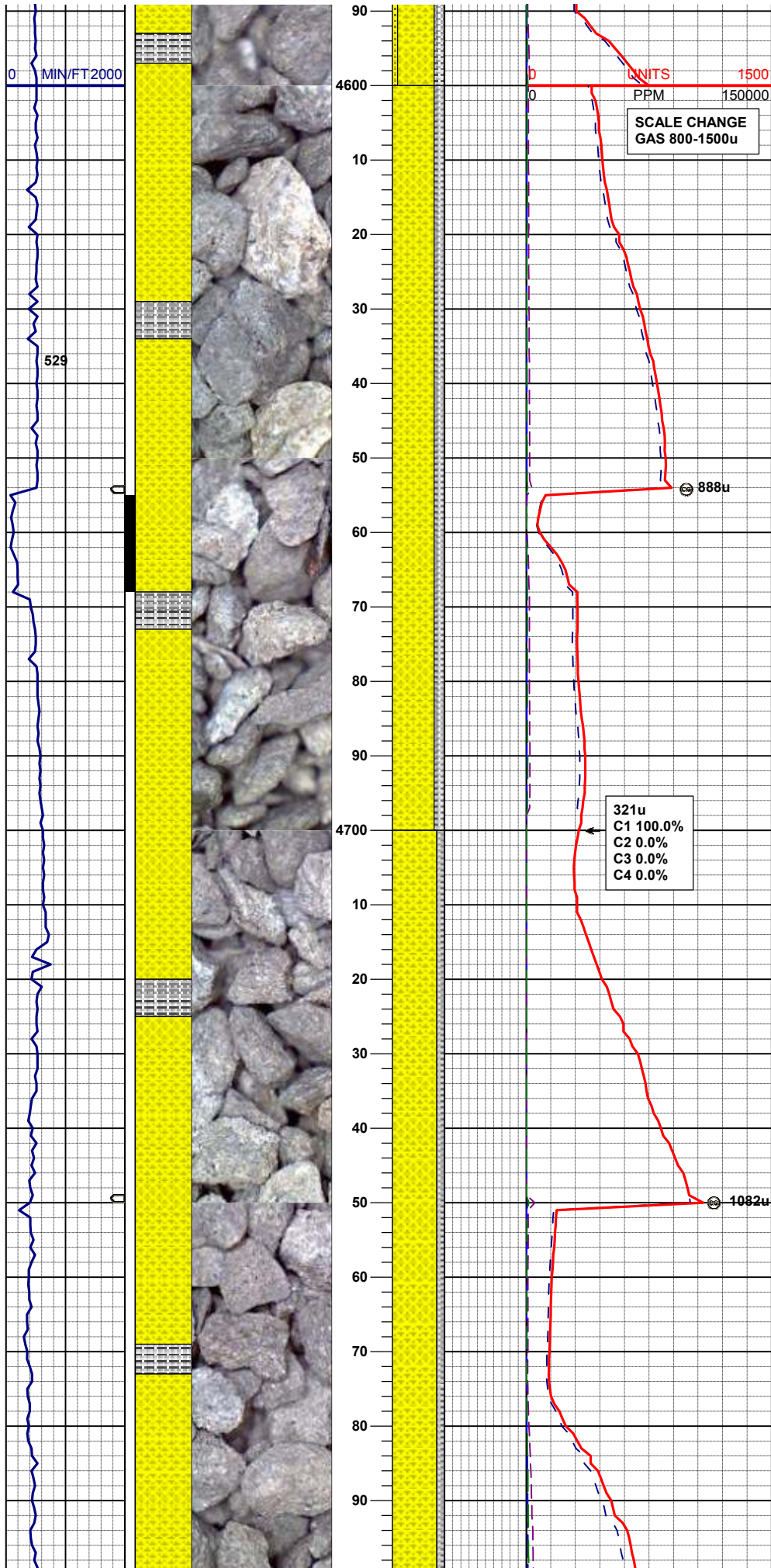
MD 4407'
INC 1.4
AZM 270.6

Prog Top:
Sussex @ 4440' MD

65% SHYSS: m-dkgy, plty-sbplty, mod firm, gt,
sl calc
35% SS: wh-clr, sbblky-sbang, mod sft, fri, tr
glau, sl calc

MD 4502'
INC 1.4
AZM 195.4

70% SHYSS: m-dkgy, plty-sbplty, mod firm, gt,
fgr, sl calc
20%: SLTYSH: m-dkgy, sbblky-sbrd, mod firm,
sfty tex, sl calc
10% SS: wh-clr, sbblky-sbang, mod sft, fri, tr
glau, sl calc

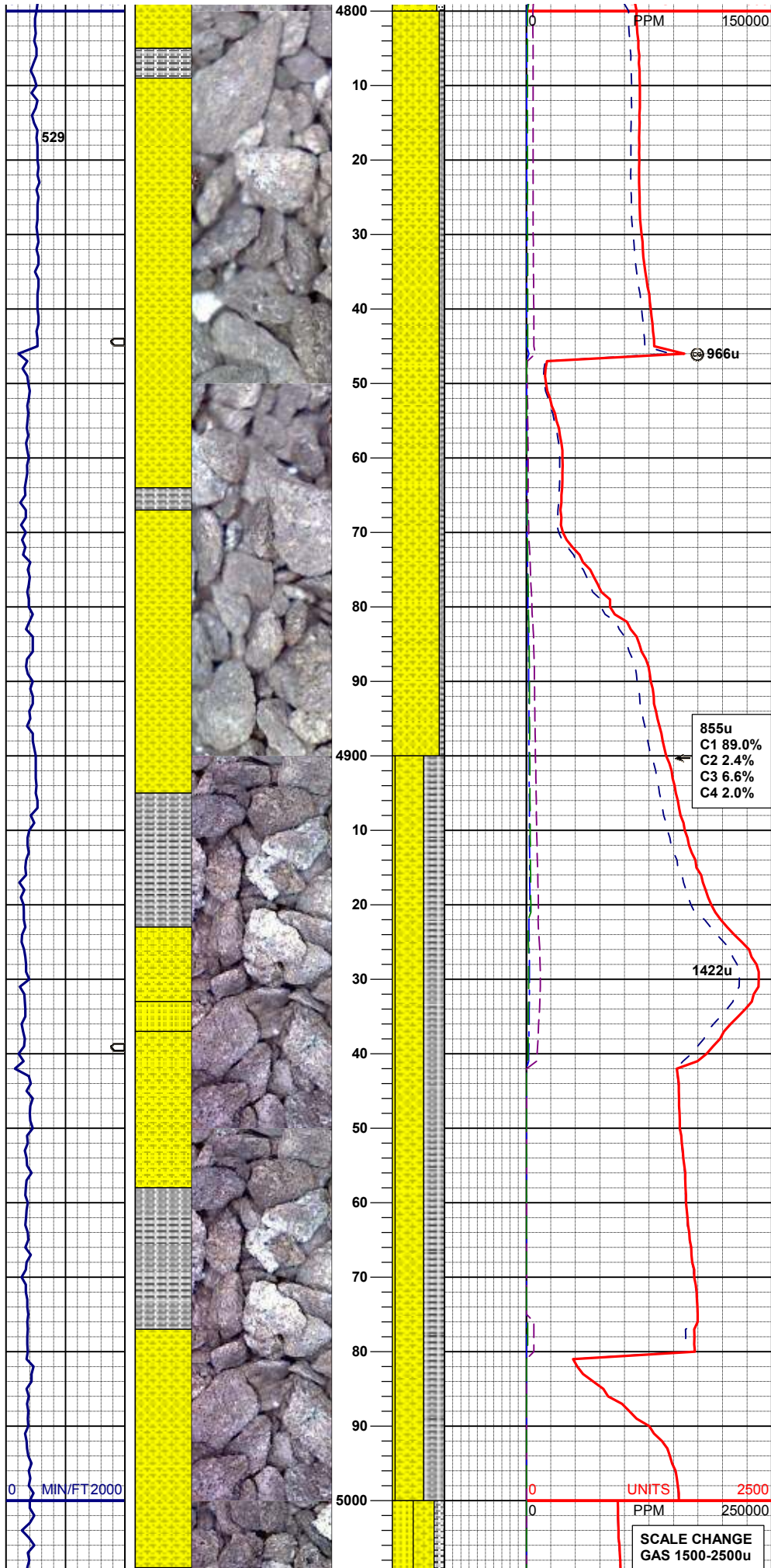


MD 4597'
INC 1.4
AZM 207.6

MUD WT 8.4 VIS 28

80% SHYSS: m-dkgy, plty-sbplty, mod firm, gt,
fgr, sl calc
20%: SLTYSH: m-dkgy, sbblky-sbplty, mod
firm, slty tex, sl calc

85% SHYSS: m-dkgy, plty-sbplty, mod firm, gt,
fgr, sl calc
15%: SLTYSH: m-dkgy, sbblky-sbplty, mod
firm, slty tex, sl calc

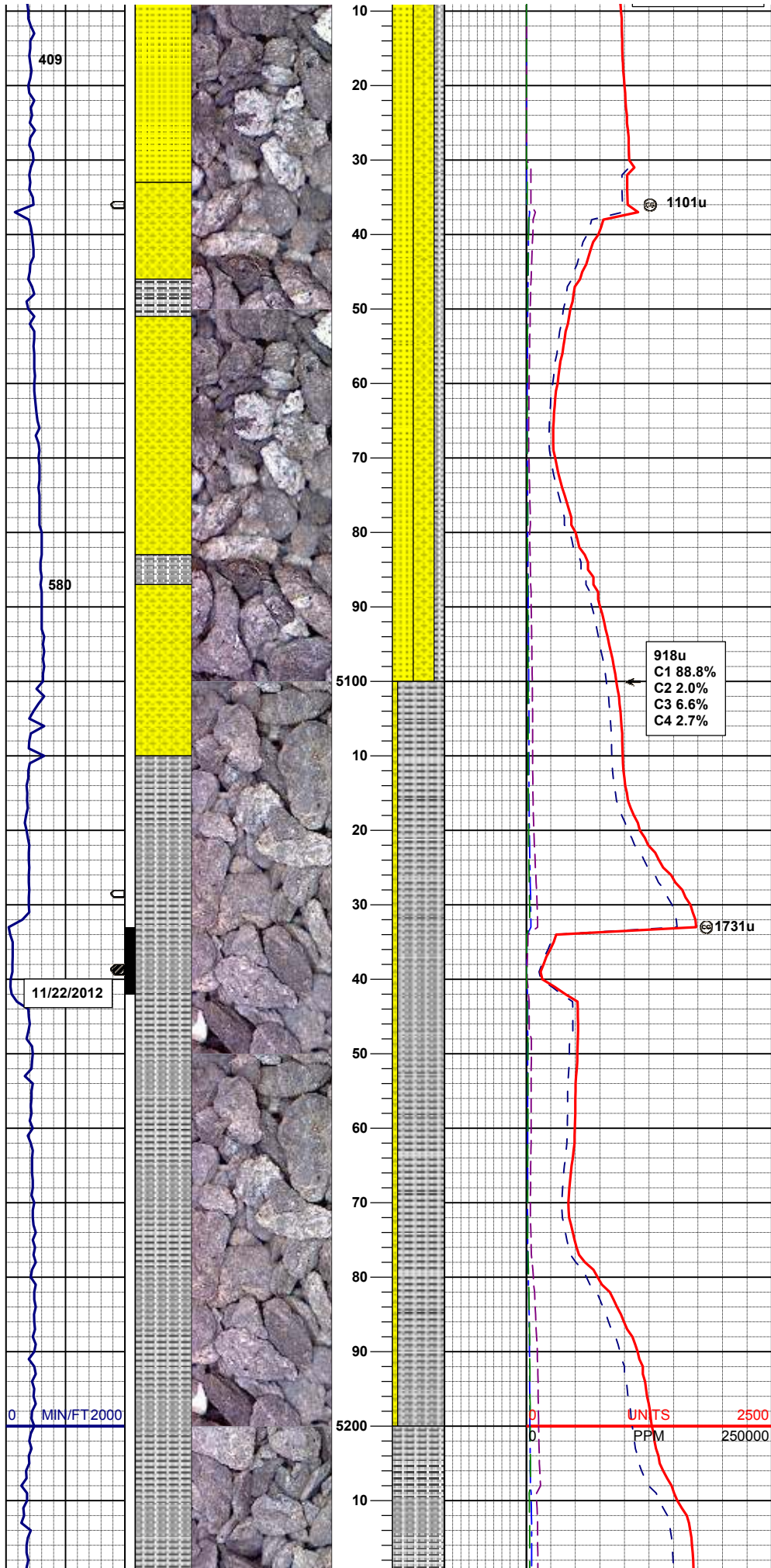


90% SHYSS: m-dkgy, plty-sbplty, mod firm, gt, fgr, sl calc
10%: SLTYSH: m-dkgy, sbblky-sbplty, mod firm, slty tex, sl calc

MD 4882'
INC 0.5
AZM 35.5

55% SHYSS: m-dkgy, plty-sbplty, mod firm, gt, fgr, sl calc
40%: SLTYSH: m-dkgy, sbblky-sbplty, mod firm, slty tex, sl calc
5% SS: wh-clr, sbblky-sbang, mod sft, fri, tr glau, sl calc

MD 4976'
INC 0.0
AZM 313.0



MUD WT 8.4 VIS 28

Prog Top:
Shannon @ 5039' MD

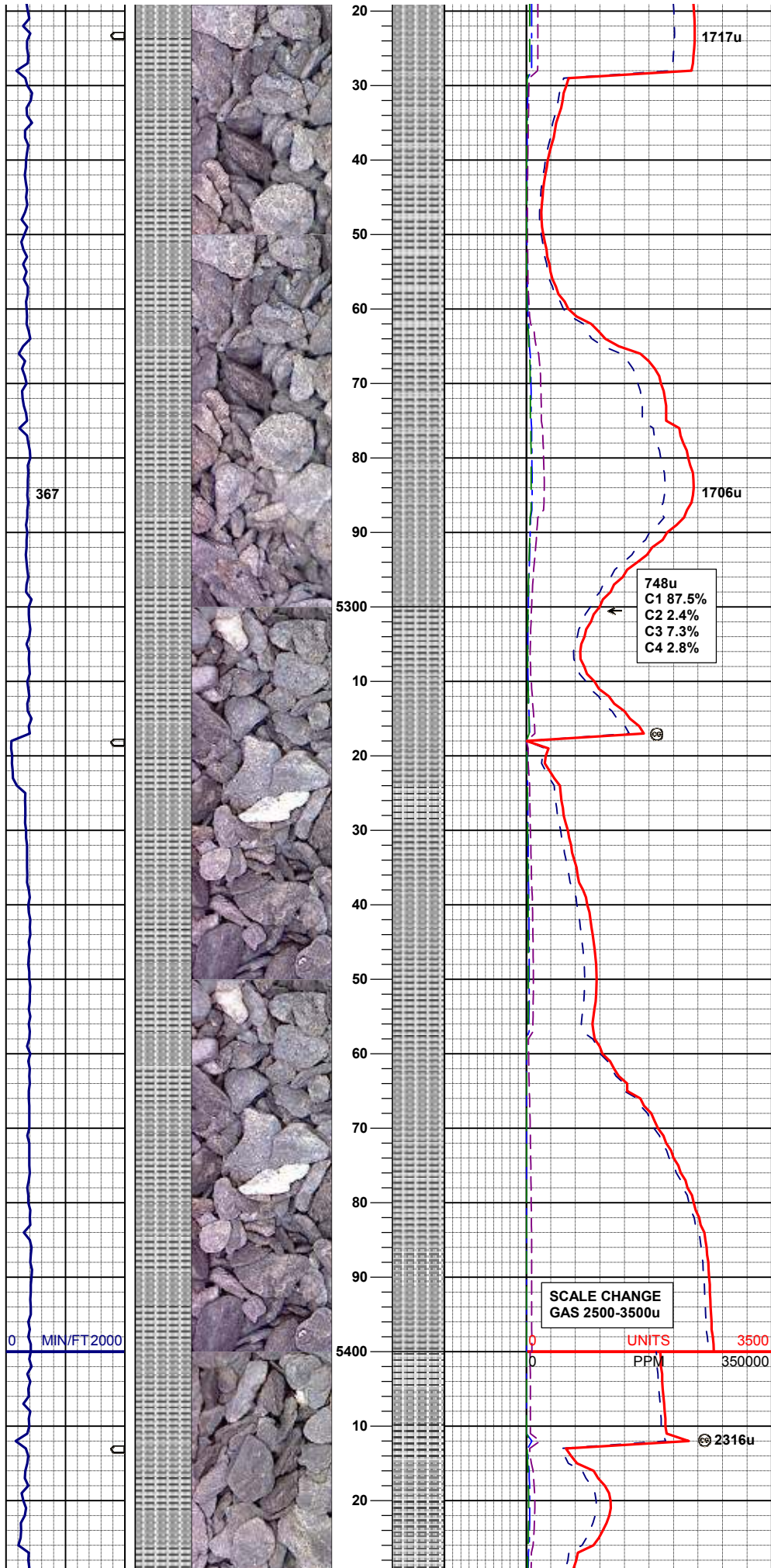
40% SS: wh-clr, sbblky-sbang, mod sft, fri, tr
glau, sl calc
40% SHYSS: m-dkgy, plty-sbplty, mod firm, gt,
fgr, sl calc
20%: SLTYSH: m-dkgy, sbblky-sbplty, mod
firm, slty tex, sl calc

MD 5071'
INC 0.2
AZM 337.2

918u
C1 88.8%
C2 2.0%
C3 6.6%
C4 2.7%

90%: SLTYSH: m-dkgy, sbblky-sbplty, mod
firm, slty tex, v sl calc
10% SHYSS: m-dkgy, plty-sbplty, mod firm, gt,
fgr, tr glau, sl calc

MD 5166'
INC 0.5
AZM 174.3

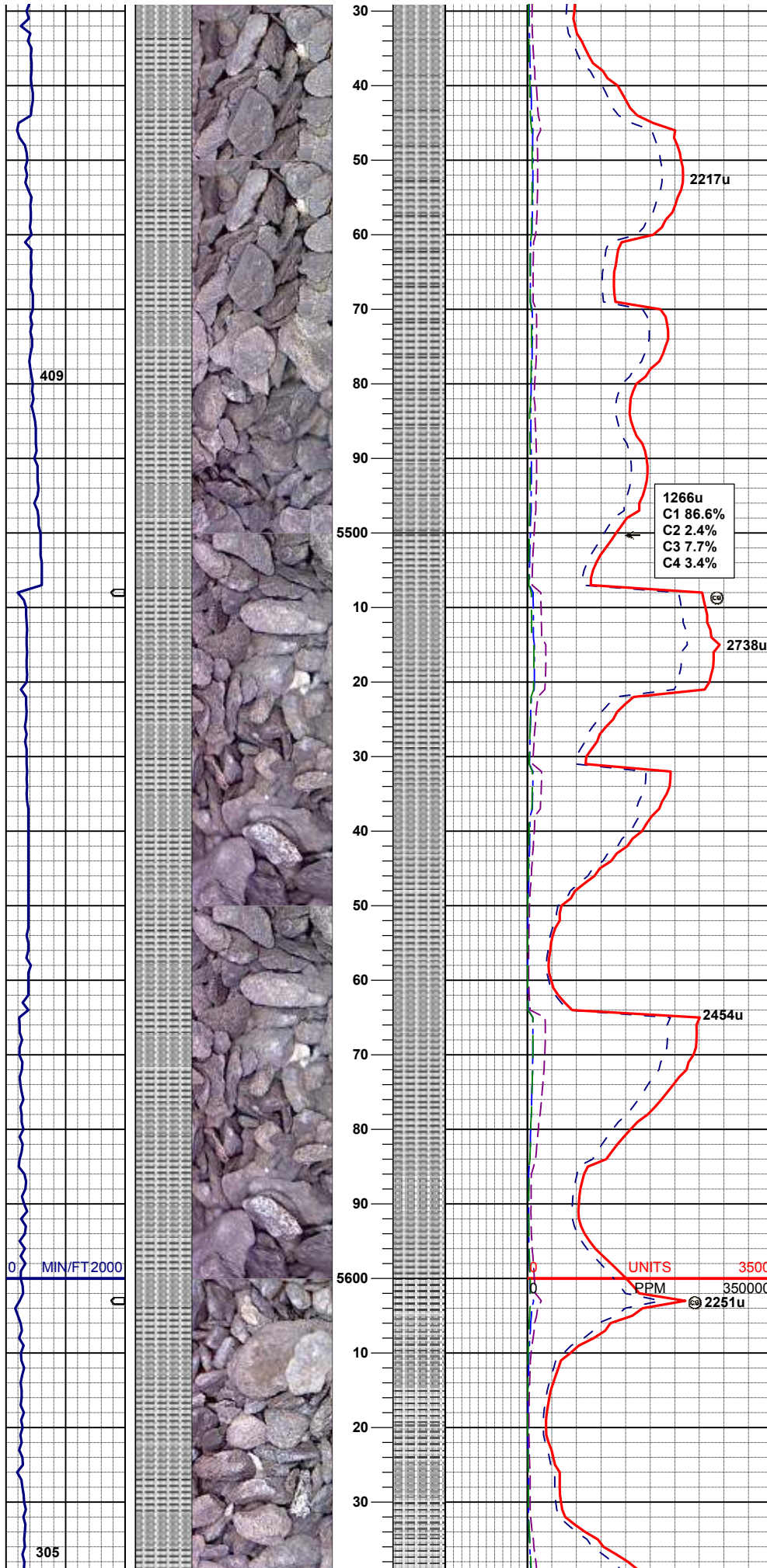


100%: SLTYSH: m-dkgy, sbply-plty, mod firm, slty tex, v sl calc

MD 5261'
INC 0.3
AZM 120.2

100%: SLTYSH: m-dkgy, sbply-plty, mod firm, slty-siky tex, occ lnoc, sl calc

MD 5356'
INC 1.0
AZM 167.8

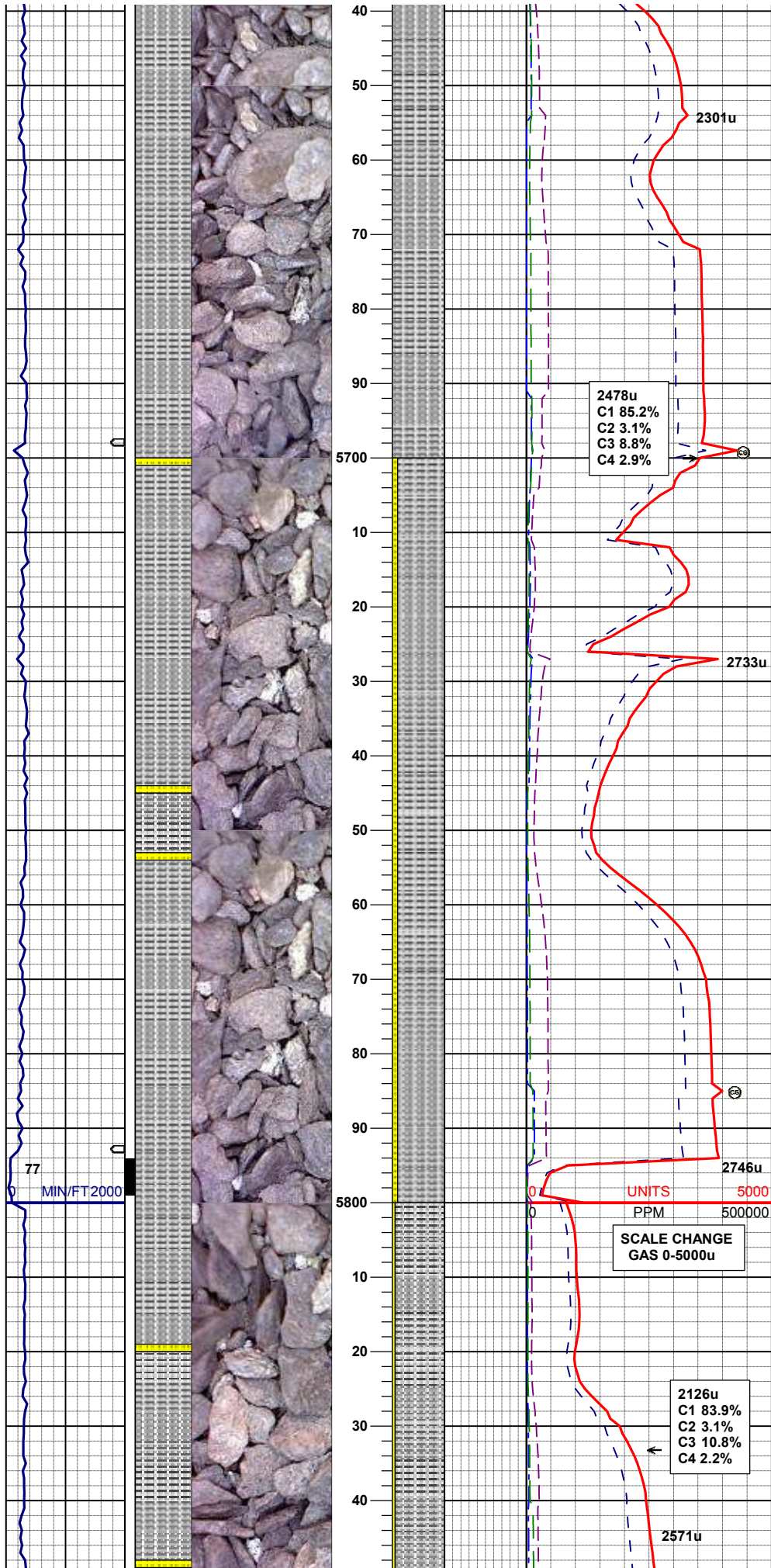


100%: SLTYSH: m-dkgy, sbply-pty, mod firm,
slty-siky tex, occ Inoc

MD 5451'
INC 1.1
AZM 122.6

100%: SLTYSH: m-dkgy, sbply-pty, mod firm,
slty-siky tex, sl calc

MD 5546'
INC 0.6
AZM 130.7



MD 5641'
INC 0.7
AZM 134.5

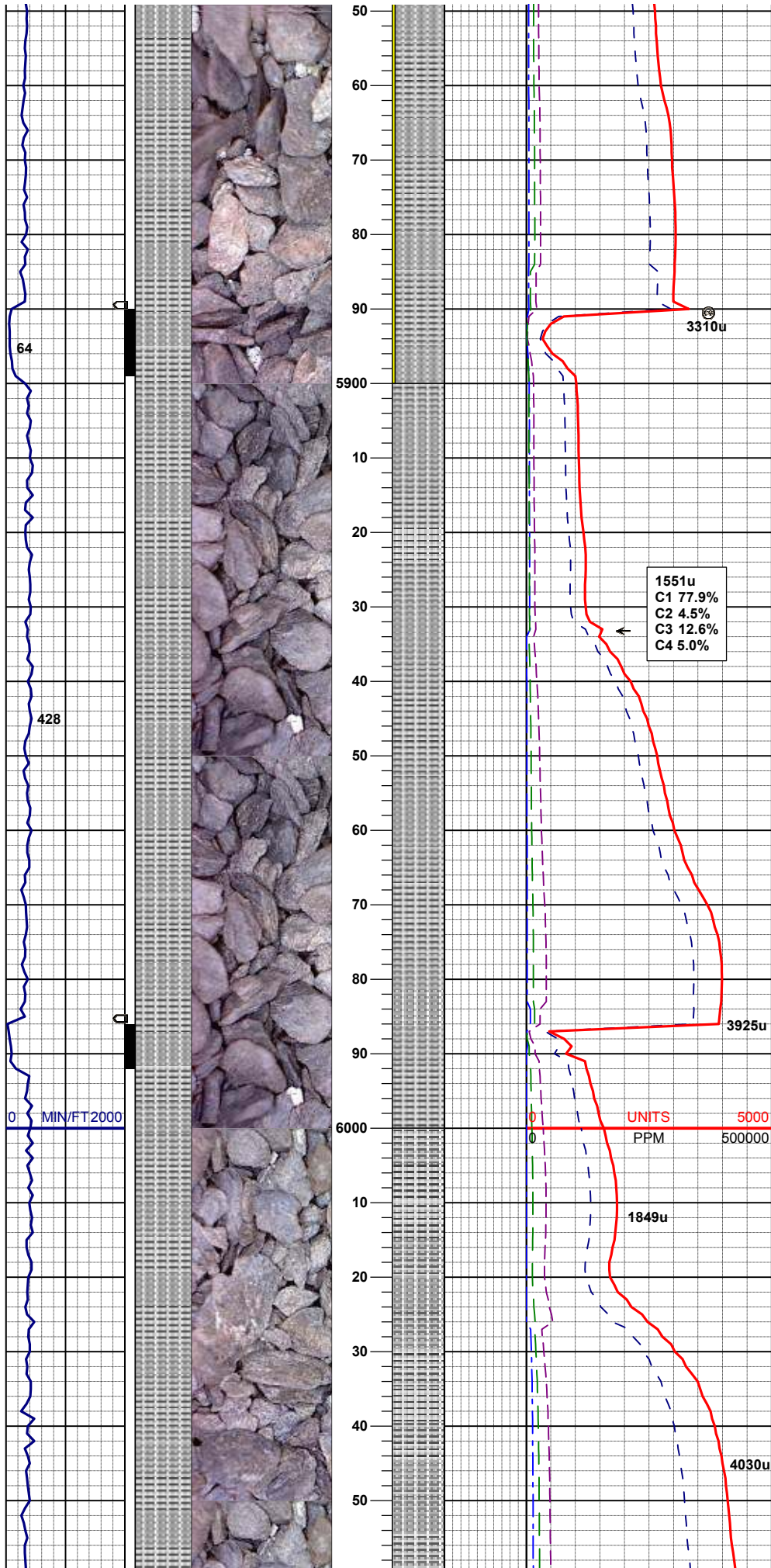
100%: SLTYSH: m-dkgy, sbply-pty, mod firm,
sly-siky tex, occ pyr, sl calc

MUD WT 8.5 VIS 29

MD 5735'
INC 0.5
AZM 105.4

90%: SLTYSH: m-dkgy, sbply-pty, mod firm,
sly-siky tex, occ pyr, sl calc
10% SS: wt-clr-op occ s&p, fgr, sub rndd-
sbang, mod srt, firm- hd - brit, sl arg cmt, tr glau

MD 6030'
INC .72
AZM 106.9



95%: SLTYSH: m-dkgy, sbplty-plty, mod firm, slty-slky tex, occ pyr, sl calc
5% SS: wt-clr-op occ s&p, fgr, sub rndd-sbang, mod srt, firm-hd - brit, sl arg cmt, tr glau

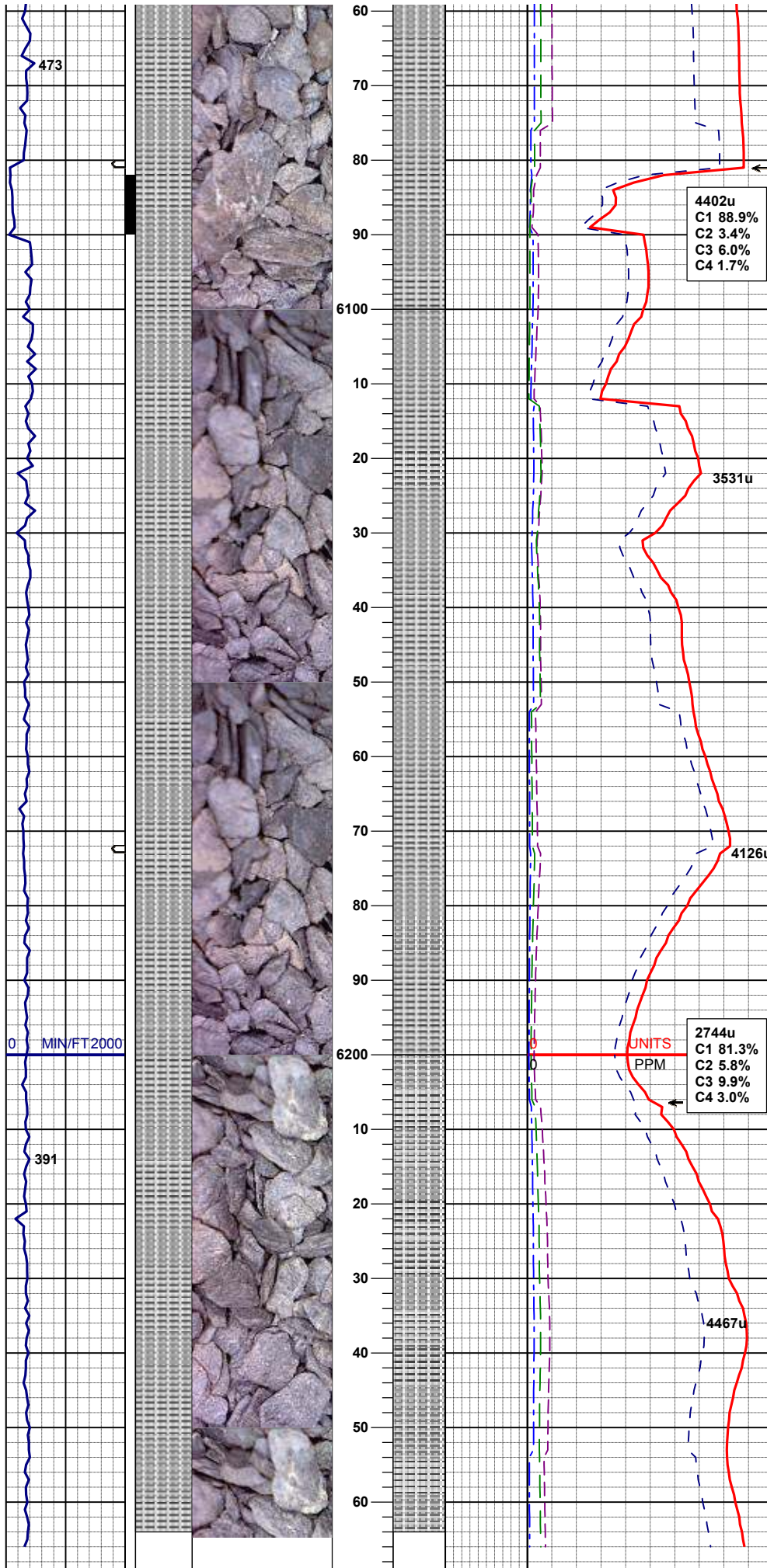
MUD WT 8.9 VIS 33

MD 5925'
INC .85
AZM 132.9

100%: SLTYSH: dk-mgy, sbplty-subblky occ plty, mod firm, slty-rthy tex sl occ mot, rr-tr pyr, vsl calc, n mnrl or bent flor

MD 6020'
INC 1.03
AZM 165.8

100%: SLTYSH: dk-mgy, sbplty-subblky occ plty, mod firm, slty-rthy tex sl occ mot, rr-tr pyr, vsl calc, n mnrl or bent flor



4402u
C1 88.9%
C2 3.4%
C3 6.0%
C4 1.7%

MD 6115'
INC 1.4
AZM 201.9

100%: SLTYSH: dk-mgy, sbply-subblky occ
ply, mod firm, slty-rthy tex sl occ mot, rr-tr pyr,
vsl calc, n mnrl or bent flor

MUD WT 8.9 VIS 34

2744u
C1 81.3%
C2 5.8%
C3 9.9%
C4 3.0%

MD 6210'
INC 2.8
AZM 229.2

100%: SLTYSH: dk-mgy, sbply-subblky occ
ply, mod firm, slty-rthy tex sl occ mot, rr-tr pyr,
vsl calc, n mnrl or bent flor, tr ss

Finished Drilling Vertical
@ 06:30 11/22/2012

Log Continues On
FIVE M E28 69HN HORZ.lplot

