

LOG created using LPLOT VH Version 3.0, July 27, 2013, Copyright (C) 1999-2009 Pason Systems Corp.

OPERATOR: NOBLE ENERGY INC.
WELL: WELLS RANCH USX AA27-62-1HN
LOCATION: SEC 27, T6N, R63W
COUNTY: WELD
STATE: COLORADO
SPOT: 1426 FSL, 221 FEL
ELEVATION: GL 4793' , KB 4817
FIELD: WATTENBURG
SPUD DATE: 07/18/2013
TD DATE: 07/26/2013
DATES LOGGED: 07/19/2013 - 07/26/2013
DEPTHS LOGGED: 1000' - 11434'
LOGGERS: JOHN READY, MIKE GREENE
DRILLING FLUID: WATER, MUD, POLY
DRILLING RIG: H&P 322
API: 05-123-37143
LOG TYPE: VERTICAL
SCALE: 1:240 (5 inches per 100 feet)
REMARKS: WELLSITE GEOLOGICAL SERVICES PROVIDED BY COLUMBINE LOGGING IN

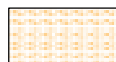
LITHOLOGIES



Sandstone



Shaly Sandstone



Shaly Siltstone



Silty Shale

ENGINEERING SYMBOLS



Bit Change



Connection



Connection Gas



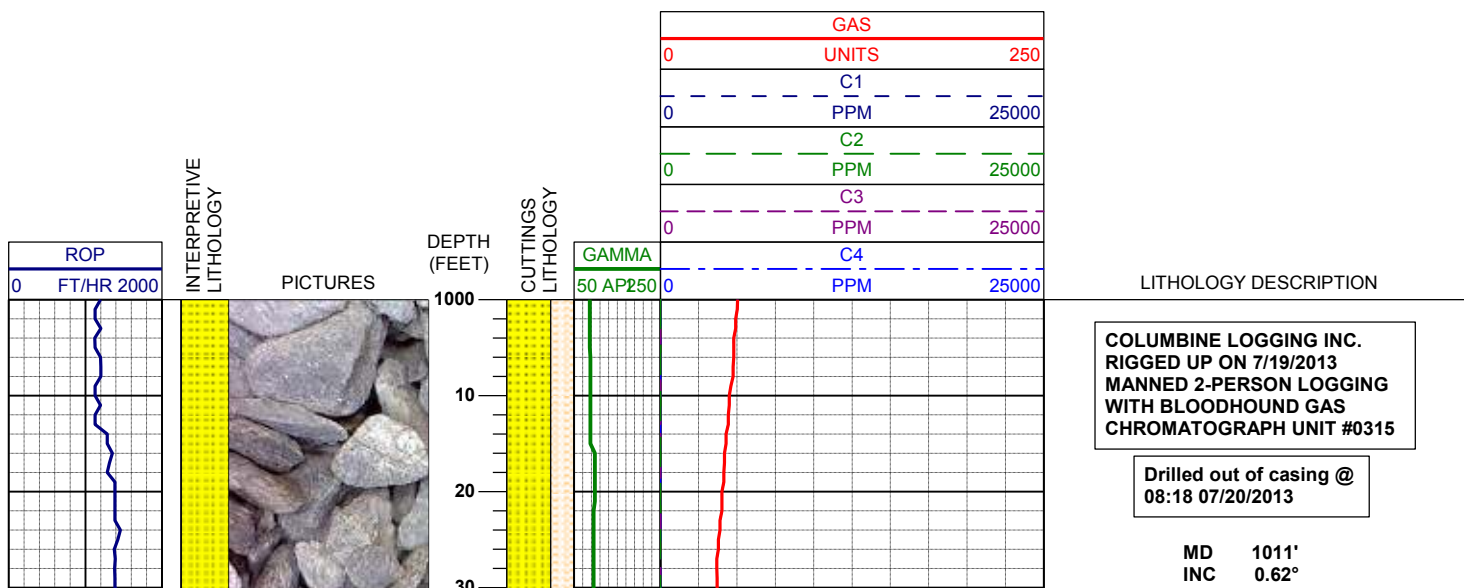
Arrow

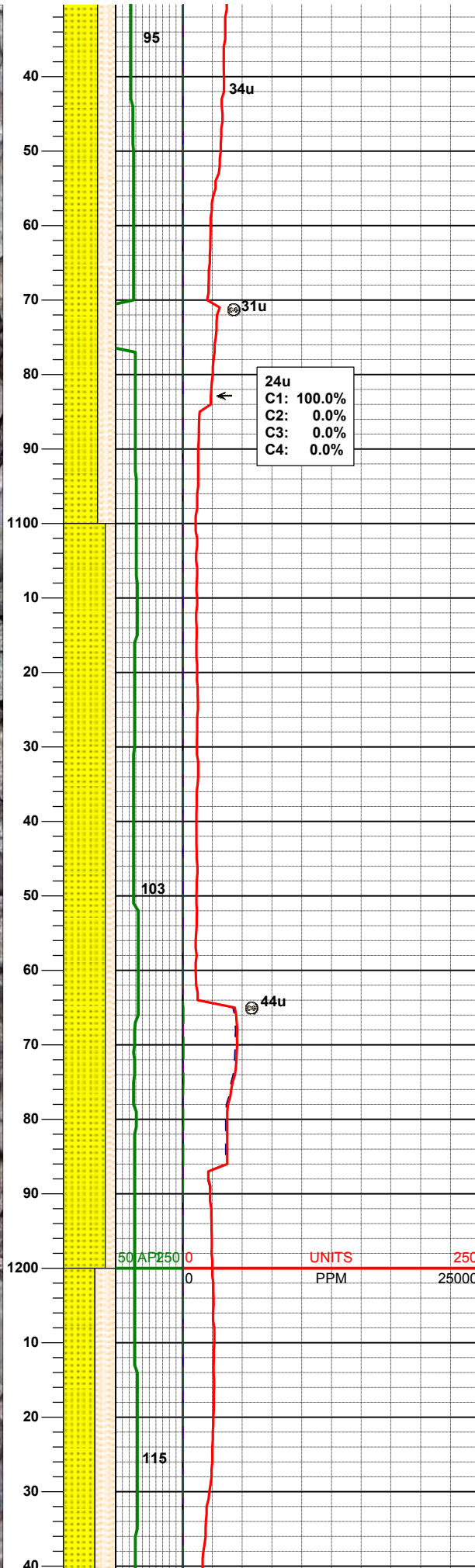
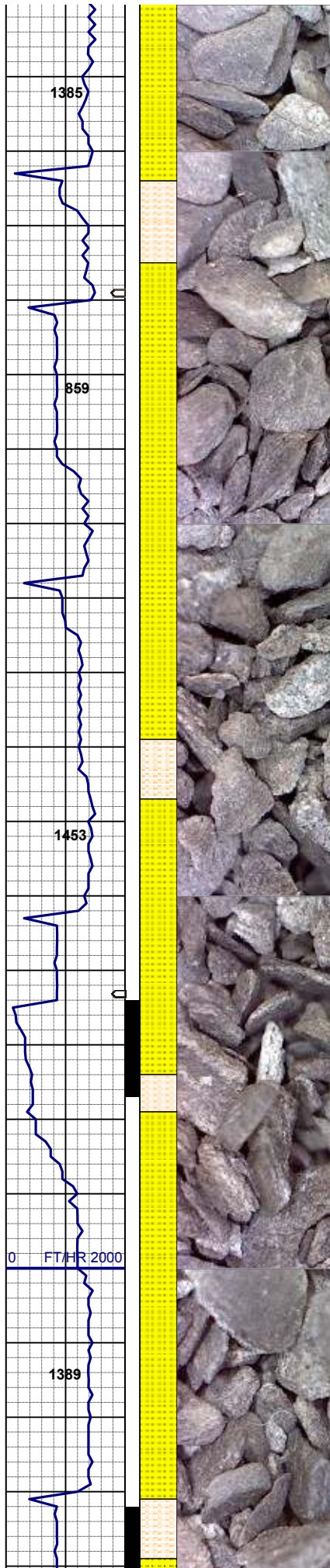


Midnight Depth



Arrow





AZM 242.76°

65% SHSLTST: lt gy, sft- fri, sbblky- sl sbply,
aren- slty tex
35% SS: lt gy - wh, sme s&p, f gr, sbrd - sbang,
mod srt, fri, p por, arg cmt, rr biot, sme glau

BHA #1
Bit: 8.75"
Manufacturer: Schlumberger/Smith
Model: MDi516
Serial Number: JG4637
Nozzles: 5x14

Motor: Sperry Drill
Manufacturer: Sperry Drilling
Model: Sperry Drill
Serial Number: 650-10-152
Bend: 1.50

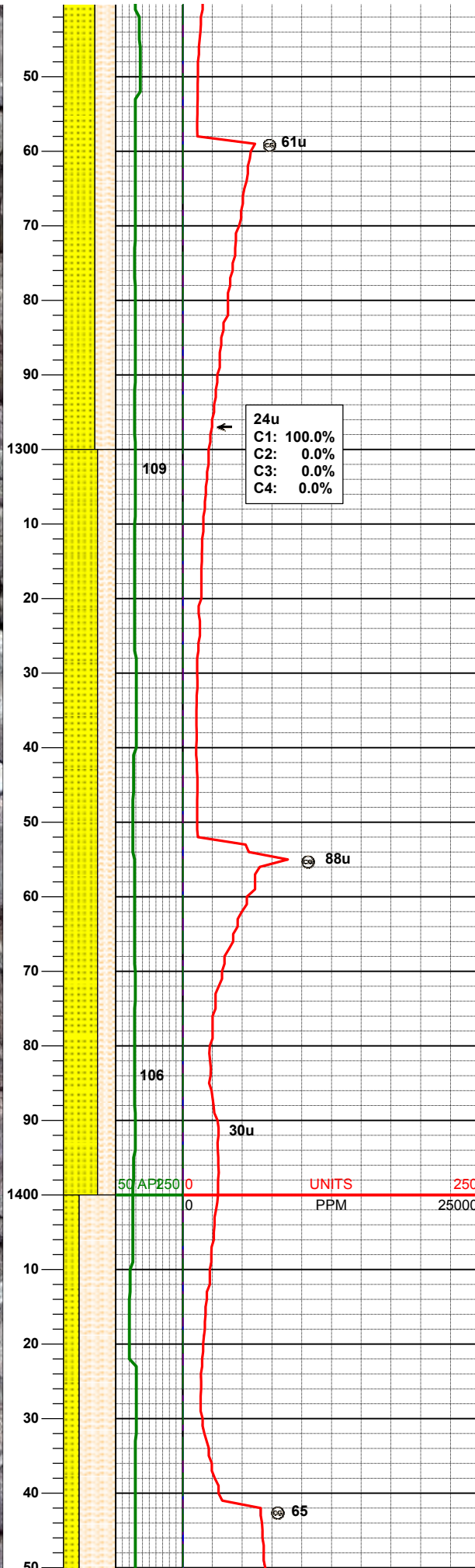
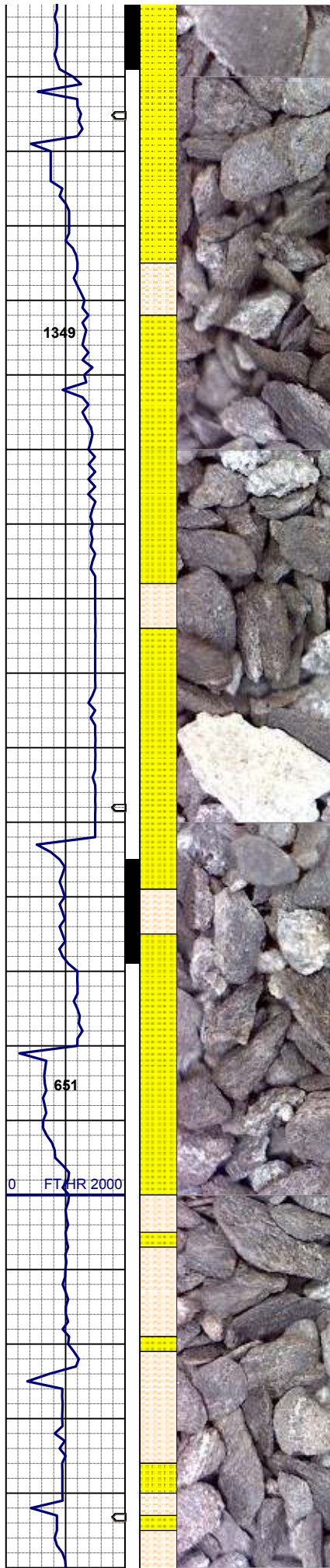
MD 1104'
INC 0.69°
AZM 232.04°

80% SHSLTST: lt gy, sft- fri, sbblky- sl sbply,
aren- slty tex
20% SS: lt gy - wh, sme s&p, f gr, sbrd - sbang,
mod srt, fri, p por, arg cmt

MD 1197'
INC 0.88°
AZM 153.94°

24u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

UNITS 250
PPM 25000



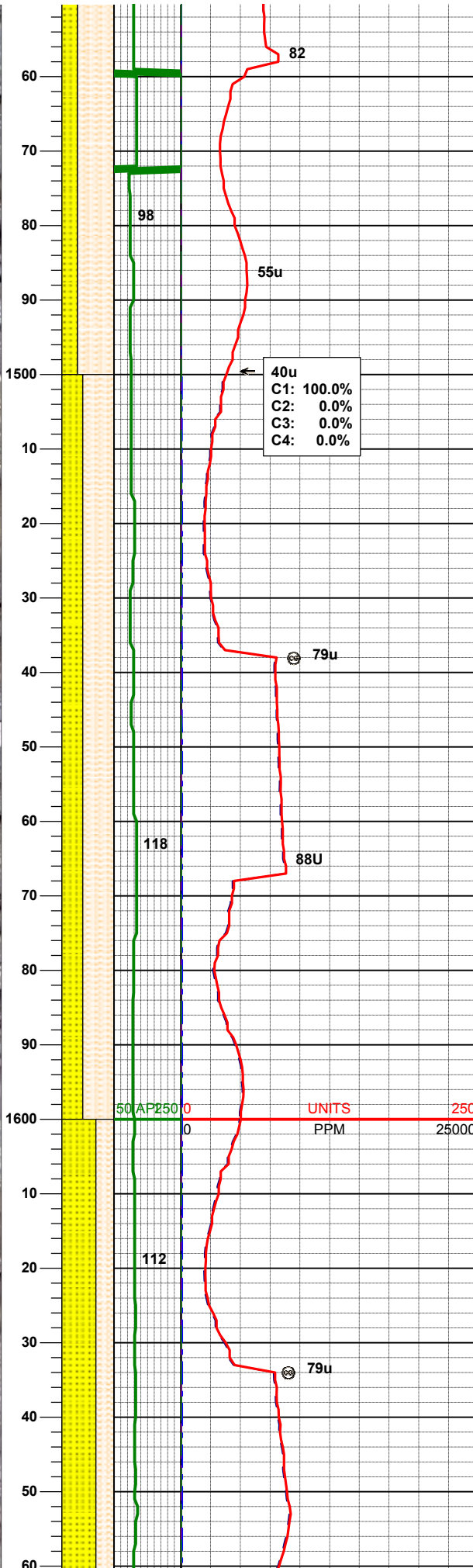
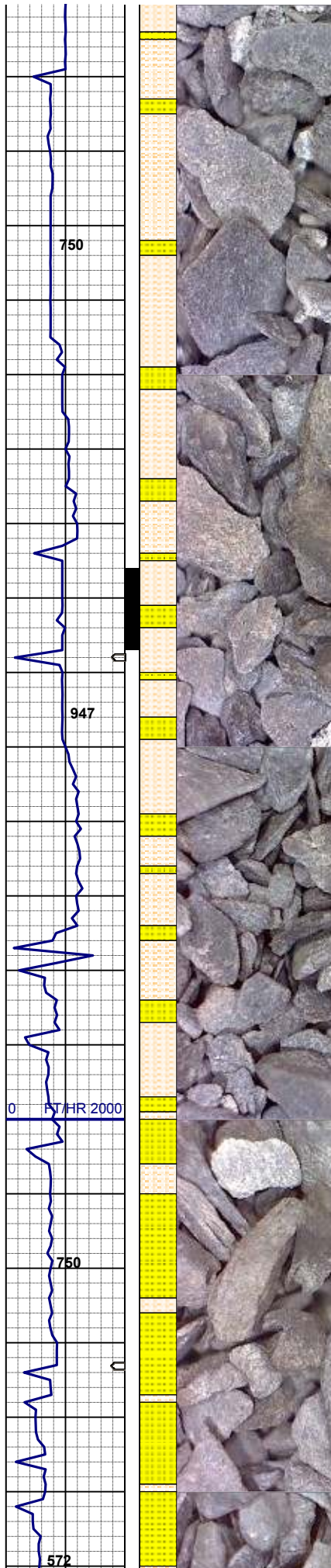
60% SHSLTST: lt gy, sft- fri, sbbky- sl sbply,
aren- slty tex
40% SS: lt gy - wh, sme s&p, f gr, sbrd - sbang,
mod srt, fri, p por, arg cmt, rr biot, sme glau

MD 1290'
INC 1.02°
AZM 146.19°

24u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

65% SHSLTST: lt gy, sft- fri, sbbky- sl sbply,
aren- slty tex
35% SS: lt gy - wh, sme s&p, f gr, sbrd - sbang,
mod srt, fri, p por, arg cmt, rr biot, sme glau

70% SHSLTST: lt gy, sft- fri, sbbky- sl sbply,
aren- slty tex



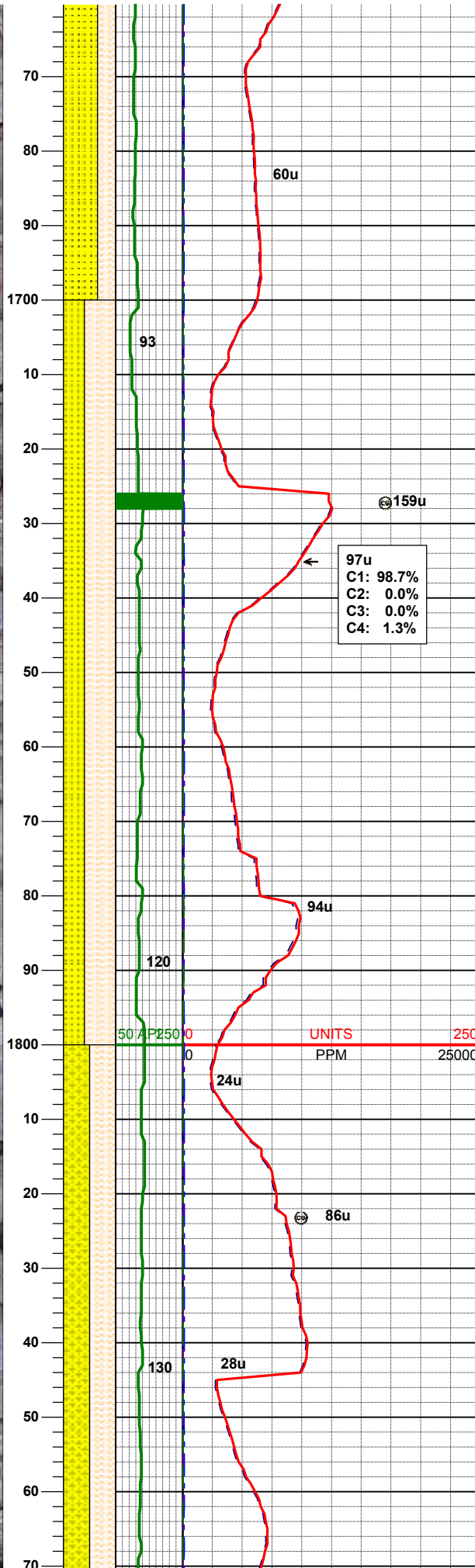
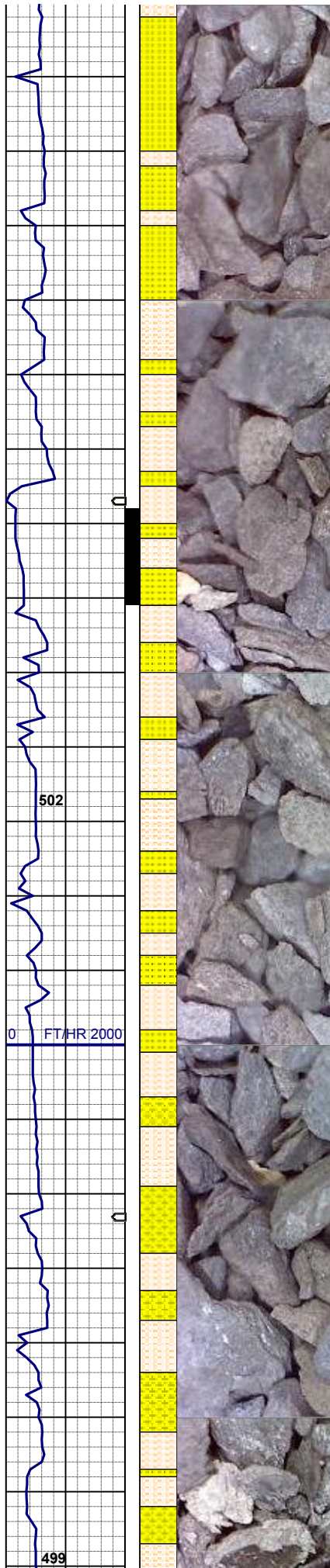
30% SS: lt gy - wh, sme s&p, f gr, sbrd - sbang,
mod srt, fri, p por, arg cmt, rr biot

MD 1480'
INC 0.99°
AZM 150.07°

60% SHSLTST: lt gy, sft- fri, sbbky- sl sbply,
aren- slty tex
40% SS: lt gy - wh, sme s&p, f gr, sbrd - sbang,
mod srt, fri, p por, arg cmt, rr biot, sme glau

MD 1575'
INC 1.14°
AZM 140.51°

65% SS: lt gy - gy, sme s&p, f gr, sbrd - sbang,
mod srt, fri, p por, arg cmt, rr biot
35% SHYSLTST: lt gy, sft- fri, sbbky- sl sbply,
aren- slty tex, tr biot incl



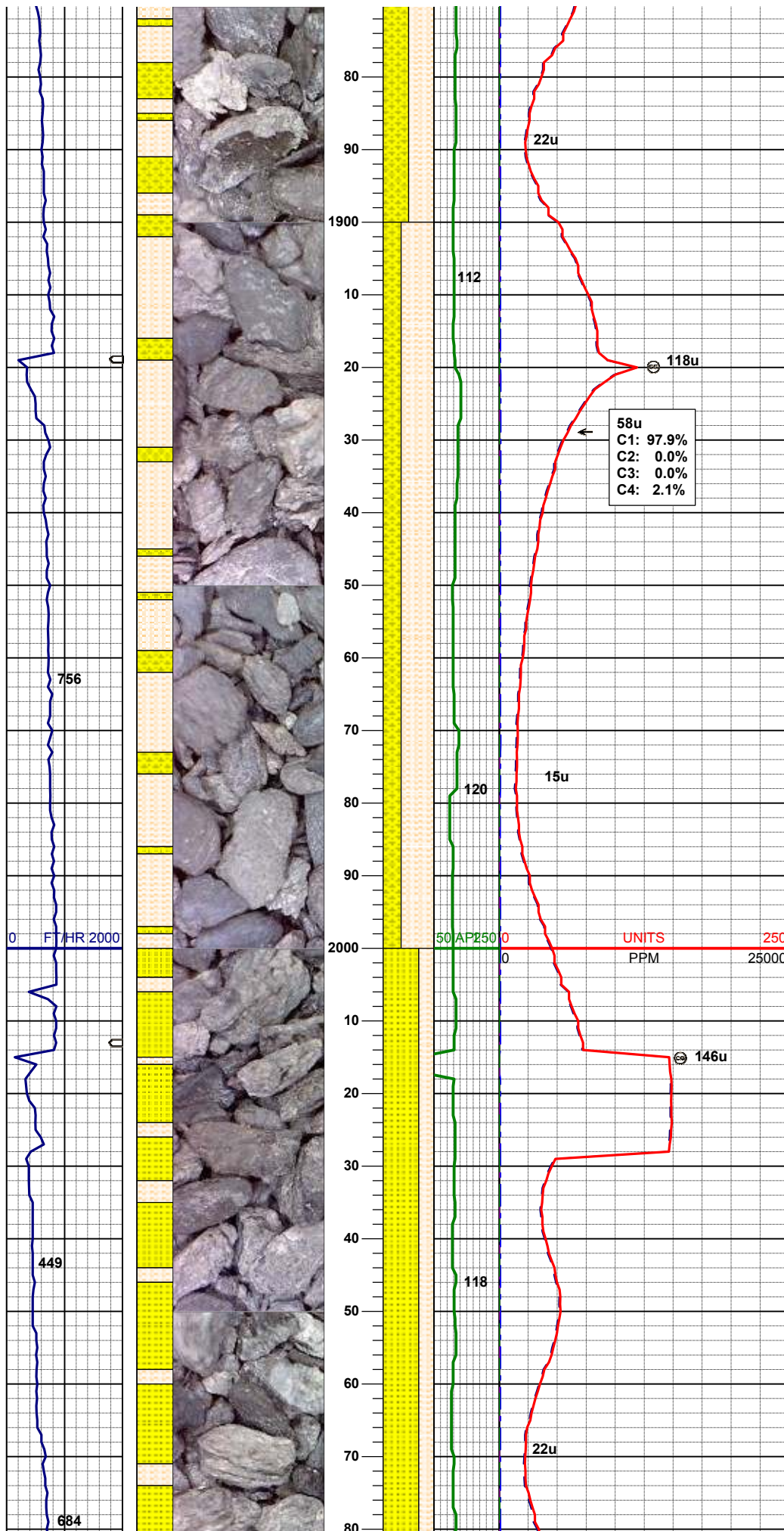
MD 1670'
INC 1.18°
AZM 133.52°

60% SHYSLTST: lt gy, sft- fri, sbbiky- sl sbplty,
aren- slty tex, tr biot incl
40% SS: lt gy - gy, sme s&p, f gr, sbrd - sbang,
mod srt, fri, p por, arg cmt, rr biot, tr bent frag

MD 1765'
INC 0.43°
AZM 11.56°

50% SHYSLTST: lt gy, sft- fri, sbbiky- sl sbplty,
aren- slty tex
50% SHYSS: lt gy - gy, sme s&p, f gr, sbrd -
sbang, mod srt, fri, p por, arg cmt, rr biot

MD 1860'
INC 0.19°
AZM 257.66°

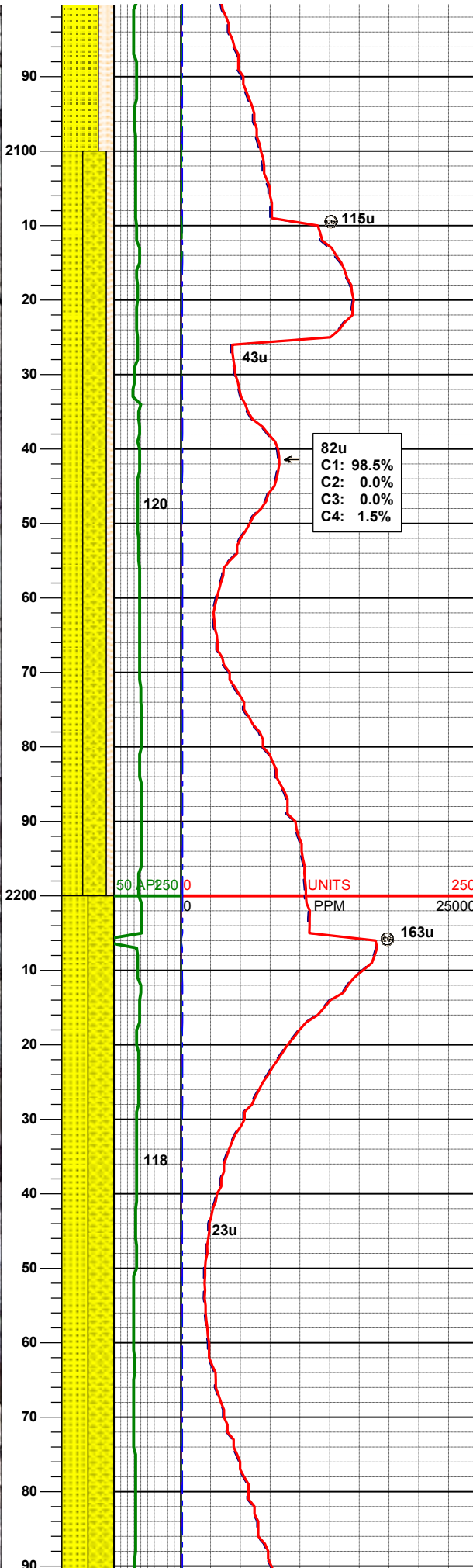
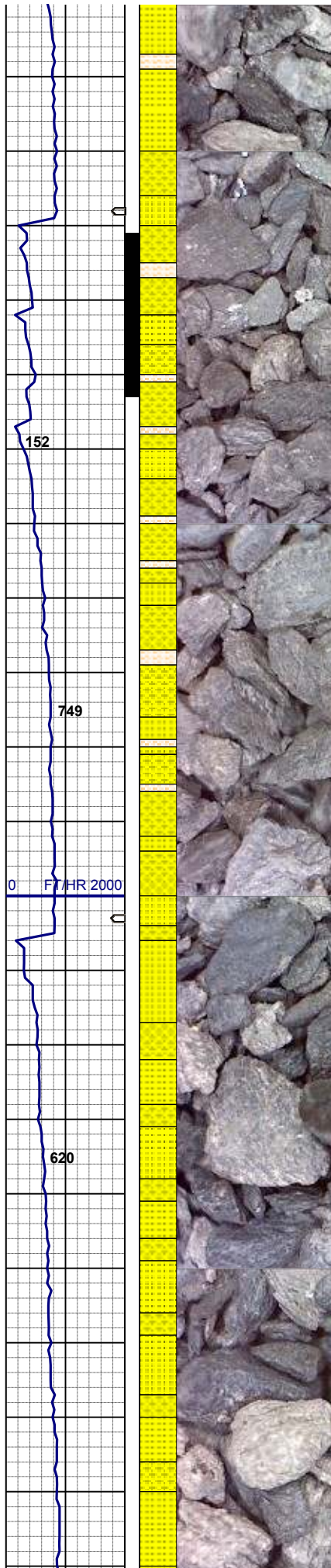


65% SHYSLTST: lt gy, sft- fri, sbbly- sl sbply,
aren- slty tex, tr biot incl
35% SHYSS: lt gy - gy, sme s&p, f gr, sbrd -
sbang, mod srt, fri, p por, arg cmt, rr biot, tr bent
frag

MD 1954'
INC 0.64°
AZM 311.43°

70% SS: lt gy - gy, sme s&p, f gr, sbrd - sbang,
mod srt, fri, p por, arg cmt, rr biot
30% SHSLTST: lt gy, sft- fri, sbbly- sl sbply,
aren- slty tex, tr biot incl

MD 2049'
INC 1.25°
AZM 332.32°

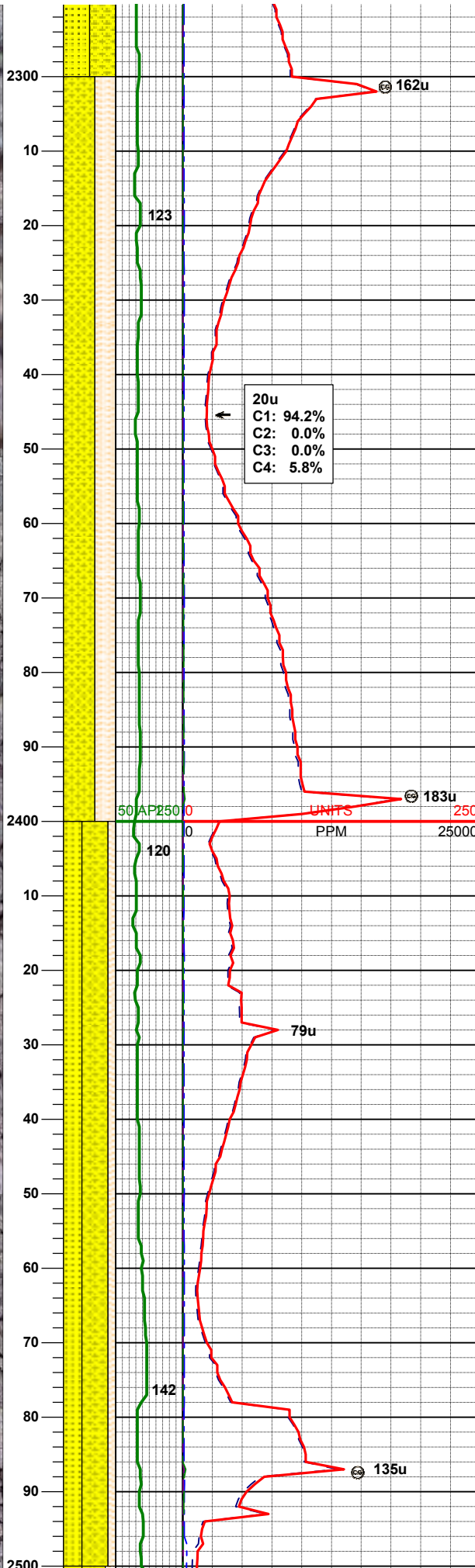
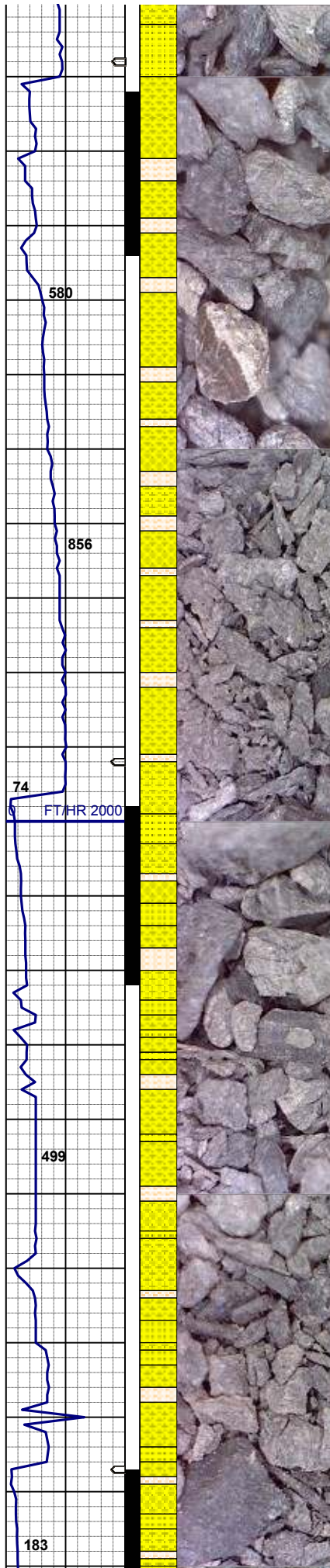


MD 2144'
INC 0.33°
AZM 333.37°

40% SHYSS: lt gy-dk gy, firm- hd, sbblky-sbplty, aren-slty tex
40% SS: wh-lt gy sme s&p, f gr, sbrd-ang, mod srt, fri, mod por, arg cmt, occ biot, rr pyr
20% SHYSLTST: lt gy, sft- fri, sbblky- sbplty

MD 2239'
INC 0.63°
AZM 316.29°

50% SS: wh-lt gy sme s&p, f gr, sbrd-ang, fr srt, fri, mod por, arg cmt, occ biot, pyr, glau
50% SHLYSS: lt gy-dk gy, firm- hd, sbblky-sbplty slty tex

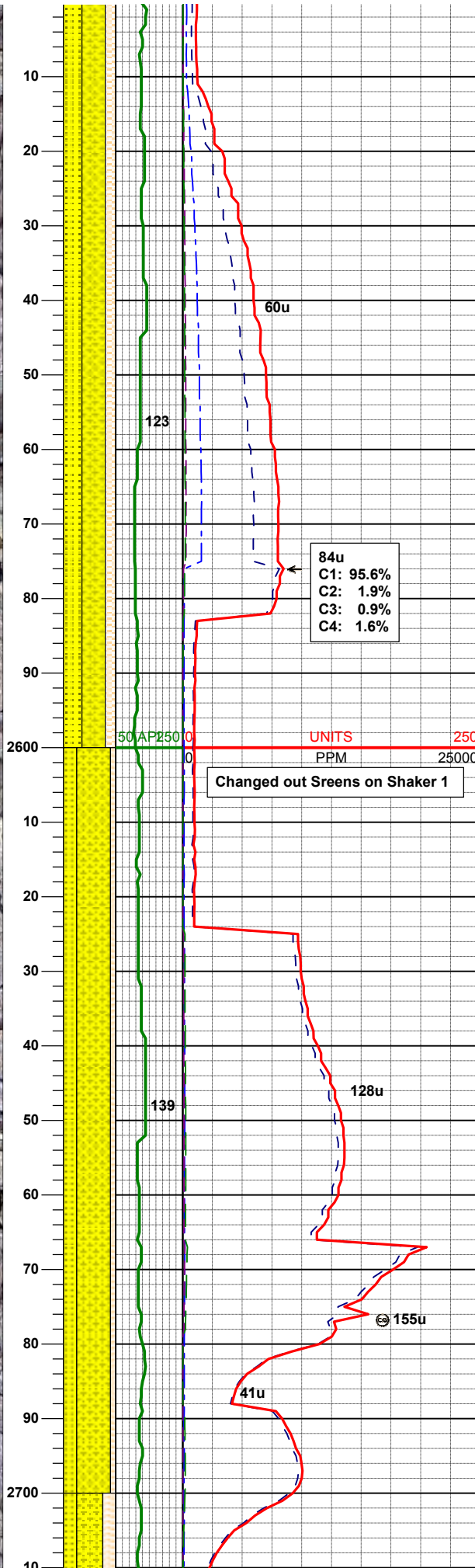
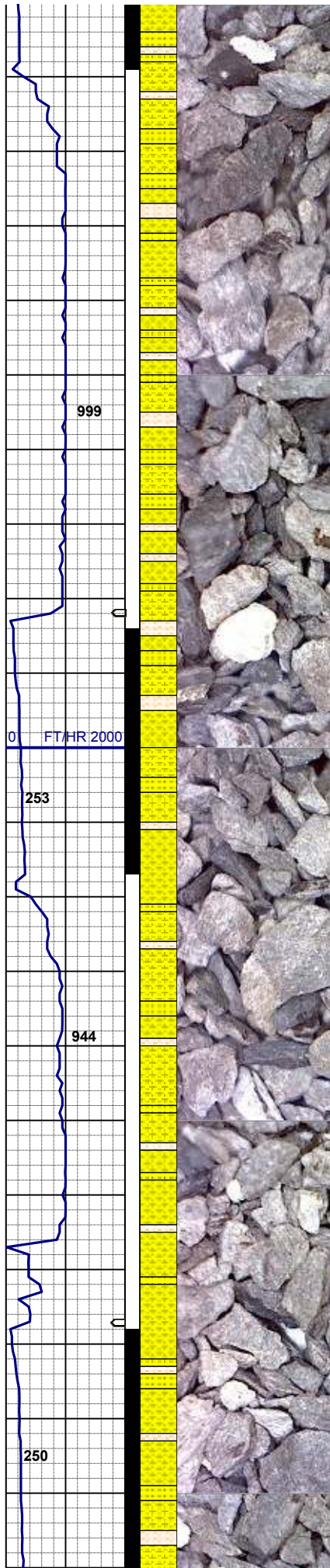


MD 2334'
INC 0.98°
AZM 300.54°

60% SHYSS: wh-lt gy sme s&p, f gr, sbrd-ang,
fr srt, fri, mod por, arg cmt, occ biot, pyr, glau, r
40% SHYSLTST: lt gy, sft- fri, sbblky- sbply,
sily tex

MD 2429'
INC 2.57°
AZM 260.24°

50% SHYSS: lt gy-dk gy, firm- hd, sbblky-
sbply, aren-sly tex
35% SS: wh-lt gy sme s&p, f gr, sbrd-ang, mod
srt, fri, mod por, arg cmt, occ biot
15% SHYSLTST: lt gy, sft- fri, sbblky- sbply,
aren-sly tex

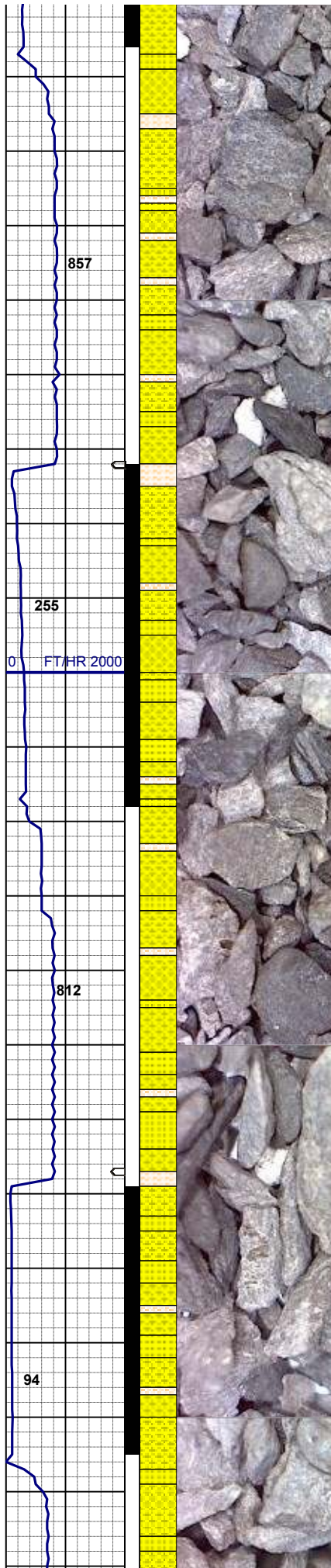


MD 2524'
INC 2.36°
AZM 238.83°

45% SHYSS: lt gy-dk gy, firm- hd, sbblky-sbplty
silty tex
35% SS: wh-lt gy sme s&p, f gr, sbdr-ang, mod
srt, fri, mod por, arg cmt, occ biot, rr pyr
20% SHYSLTST: lt gy, sft- fri, sbblky- sbplty,
aren- silty tex

MD 2619'
INC 3.58°
AZM 217.04°

65% SHYSS: lt gy-dk gy, firm- hd, sbblky-
sbplty, silty tex
25% SS: wh-lt gy sme s&p, f gr, sbdr-ang, mod
srt, fri, mod por, arg cmt, occ biot, rr pyr
10% SHYSLTST: lt gy, sft- fri, sbblky- sbplty,
silty tex



MD 2714'
INC 5.46°
AZM 202.57°

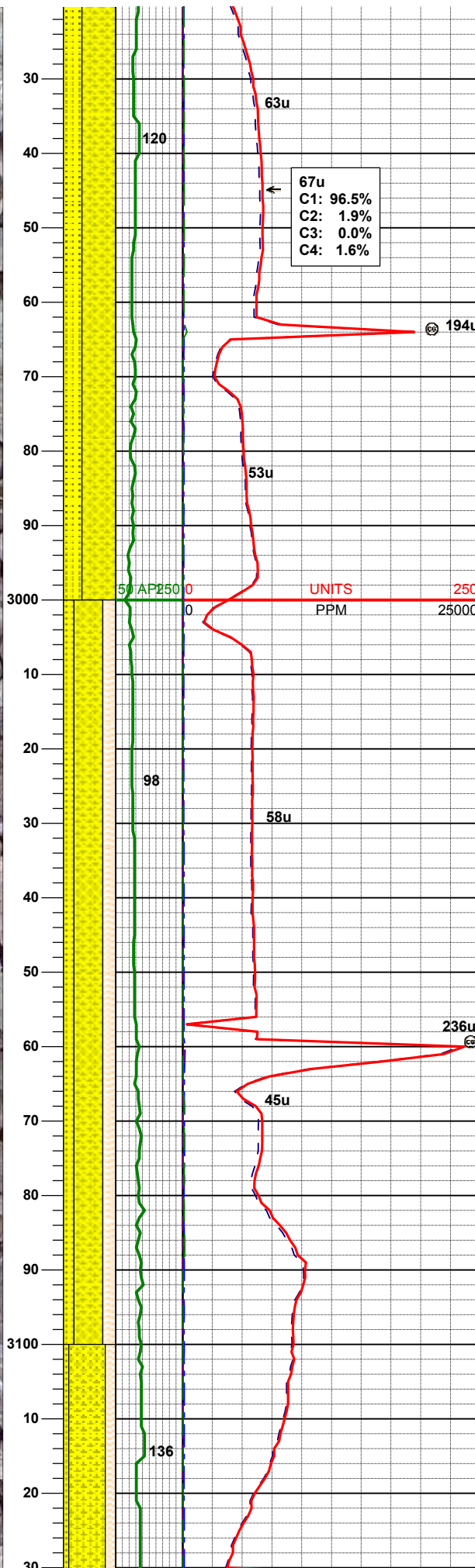
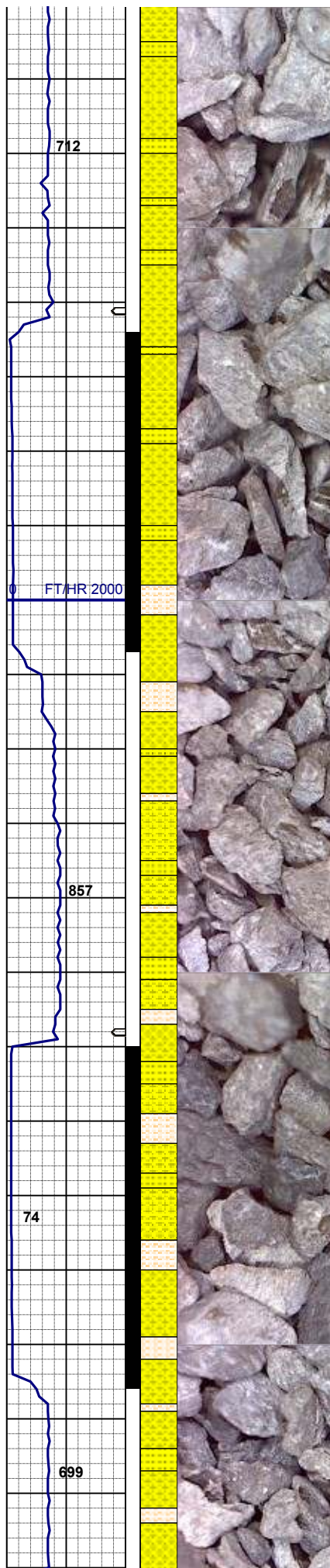
50% SHYSS: lt gy-dk gy, firm- hd, sbbiky-
sbplty, aren-sity tex
25% SS: wh-lt gy sme s&p, f gr, sbrd-ang, mod
srt, fri, mod por, arg cmt, occ biot, rr pyr
25% SHYSLTST: lt gy, sft- fri, sbbiky- sbplty,
aren- sity tex

115u
C1: 98.0%
C2: 1.0%
C3: 0.0%
C4: 1.2%

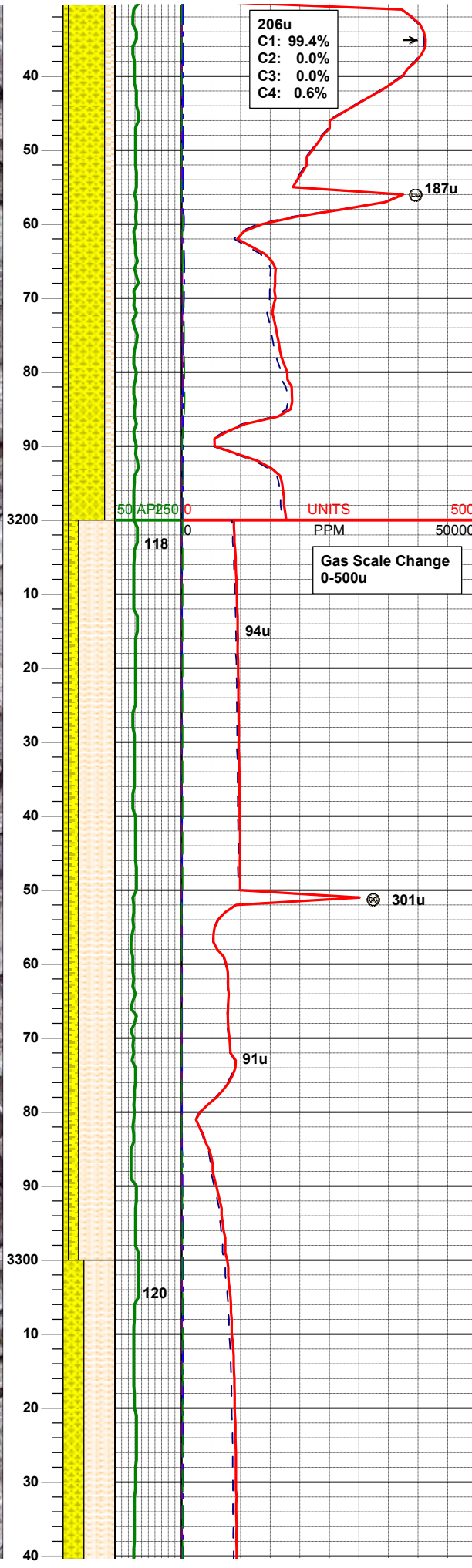
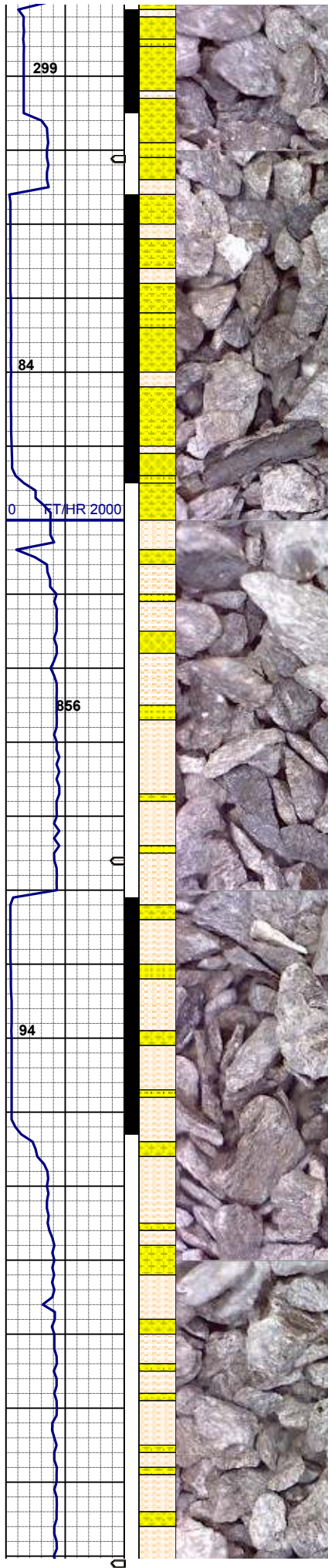
MD 2809'
INC 7.15°
AZM 203.61°

50% SHYSS: lt gy-dk gy, firm- hd, sbbiky-
sbplty, sity tex
40% SS: wh-lt gy sme s&p, f gr, sbrd-ang, mod
srt, fri, mod por, arg cmt, occ biot, rr pyr, sme
glau
10% SHYSLTST: lt gy, sft- fri, sbbiky- sbplty,
sity tex

MD 2903'
INC 8.10°
AZM 199.38°



65% SHYSS: lt gy-dk gy, firm- hd, sbblky-sbply, aren-silty tex
35% SS: wh-lt gy sme s&p, f gr, sbdr-ang, mod
srt, fri, mod por, arg cmt, occ biot, rr pyr



206u
C1: 99.4%
C2: 0.0%
C3: 0.0%
C4: 0.6%

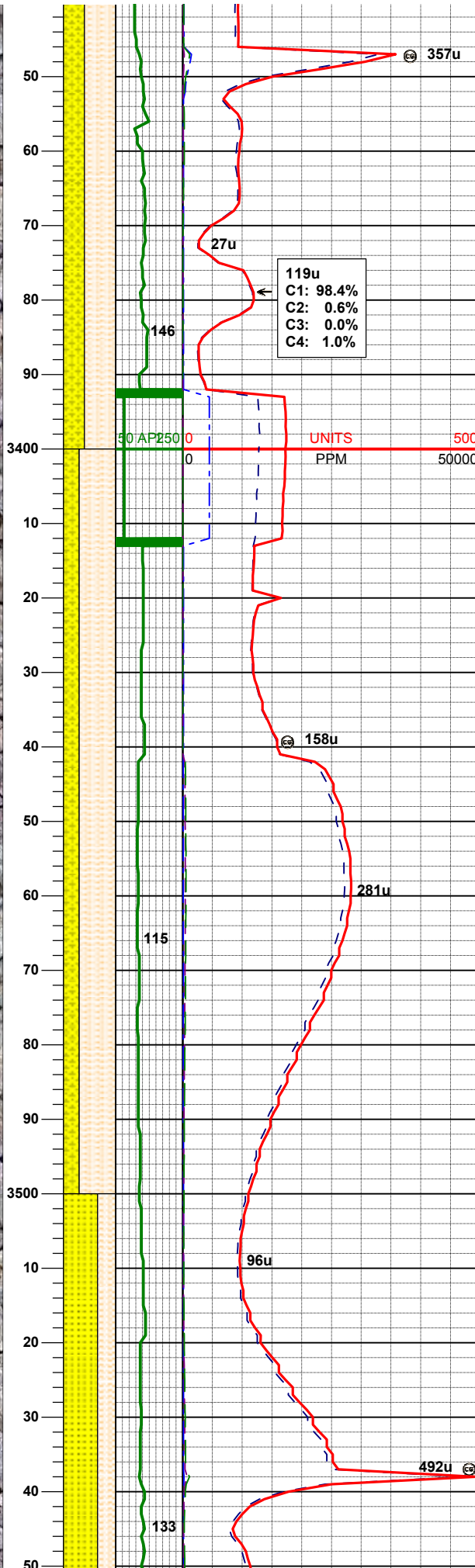
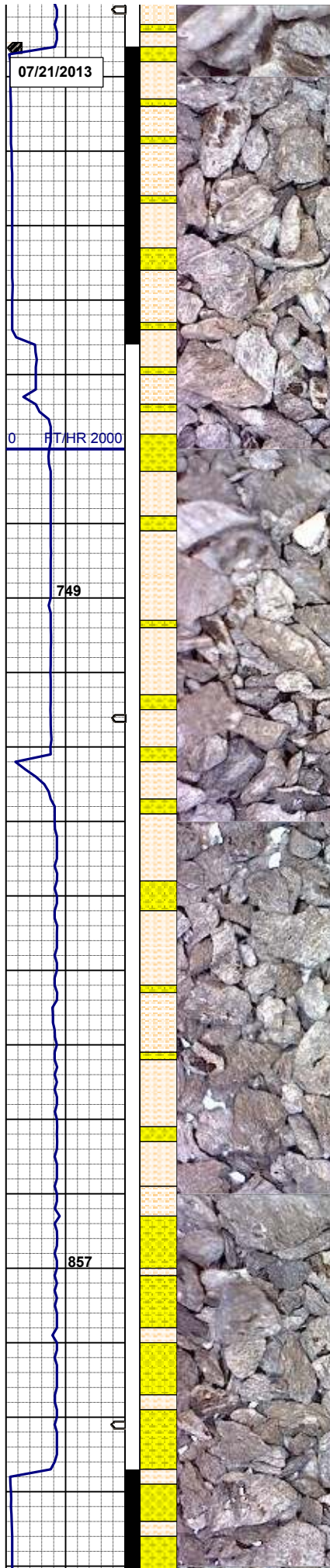
70% SHYSS: lt-m gy, firm, fgr sub rd- sbang, sl calc mxb, occ fos
20% SHYSLT: dk gy, firm, flaky- sbply, fine tex, sl calc, rr pyr
10% SS: trnsi-wh sme s&p, f-vf, mod-w srt, firm, fr por, sl calc, occ fos

MD 3188'
INC 9.53°
AZM 177.38°

Gas Scale Change
0-500u

70% SHYSLTST: lt gy, sft- fri, sbbky- sbply, aren- slty tex
20% SHYSS: lt gy-dk gy, firm- hd, sbbky- sbply, aren-sltty tex
10% SS: wh-lt gy sme s&p, f gr, sbrd-ang, mod srt, fri, mod por, arg cmt, occ biot, rr pyr, sme glau

MD 3283'
INC 9.86°
AZM 174.43°



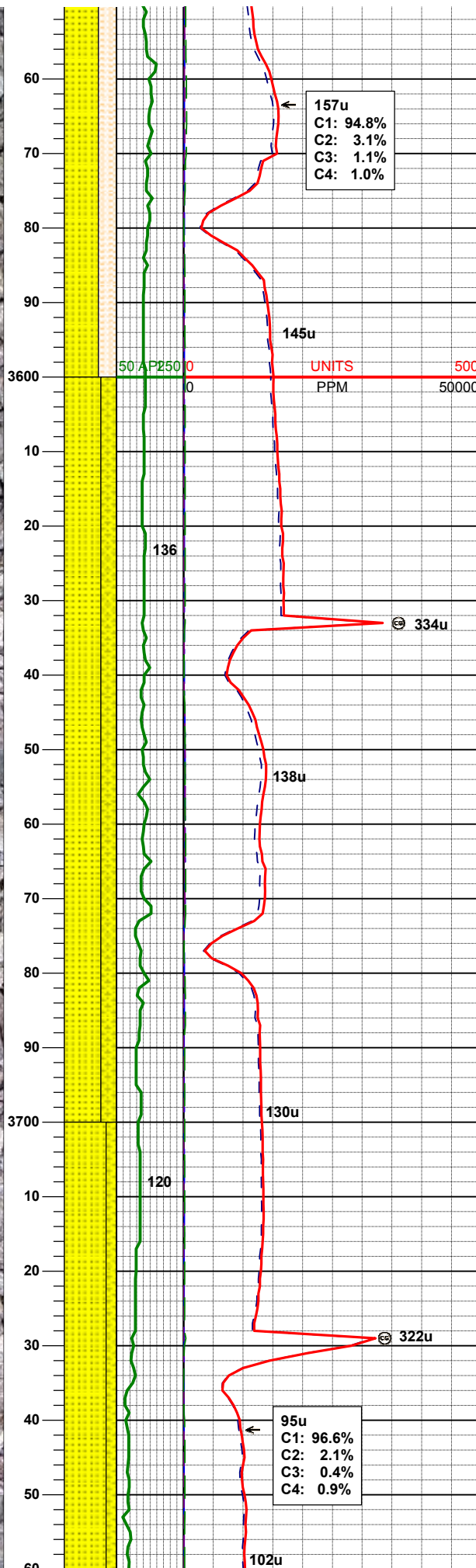
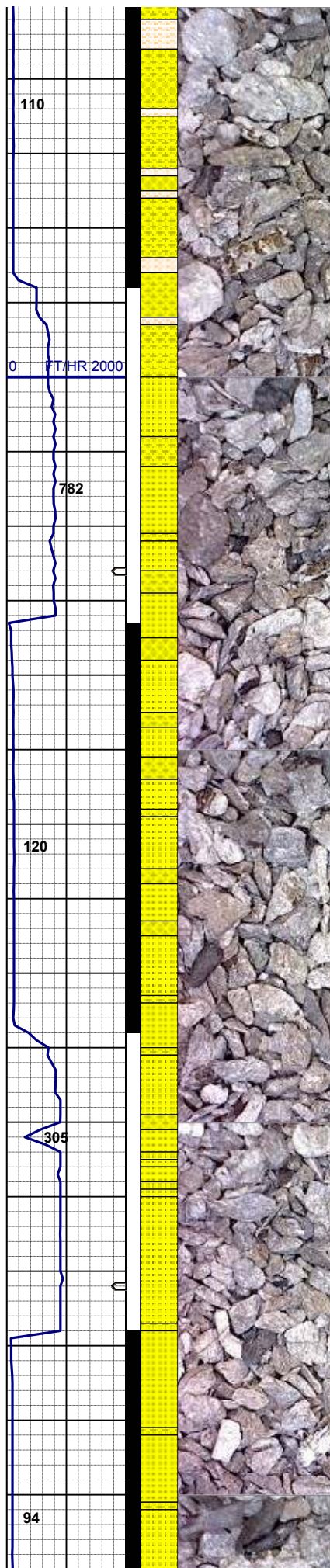
60% SHYSLTST: lt gy, sft- fri, sbblky- sbppty,
aren- slty tex
40% SHYSS: lt gy-dk gy, firm- hd, sbblky-
sbppty, aren-sltly tex

MD 3378'
INC 0.41°
AZM 172.14°

70% SHYSLTST: lt gy, sft- fri, sbblky- sbppty,
slty tex
30% SHYSS: lt gy-dk gy, firm- hd, sbblky-
sbppty, slty tex

MD 3473'
INC 7.32°
AZM 177.06°

65% SHYSS: lt gy-dk gy, firm- hd, sbblky-
sbppty, aren-sltly tex



35% SHYSLTŠT: It gy, sft- fri, sbblky- sbplyt,
aren- slty tex

MD 3568'
INC 8.22°
AZM 172.05°

MUD WT 8.6 VIS 27

70% SS: wh-med gy, med-f, sme s&p, ang-sbang, w sort, fri-firm, g por, arg cmt, occ glau, occ pyr
30% SHYSS: lt gy-dk gy, sft-firm, sbblky-blky, tex f-sdy, mod calc

30% SHYSS: lt gy-dk gy, sft-firm, sbblky-blky,
tex f-sdy, mod calc

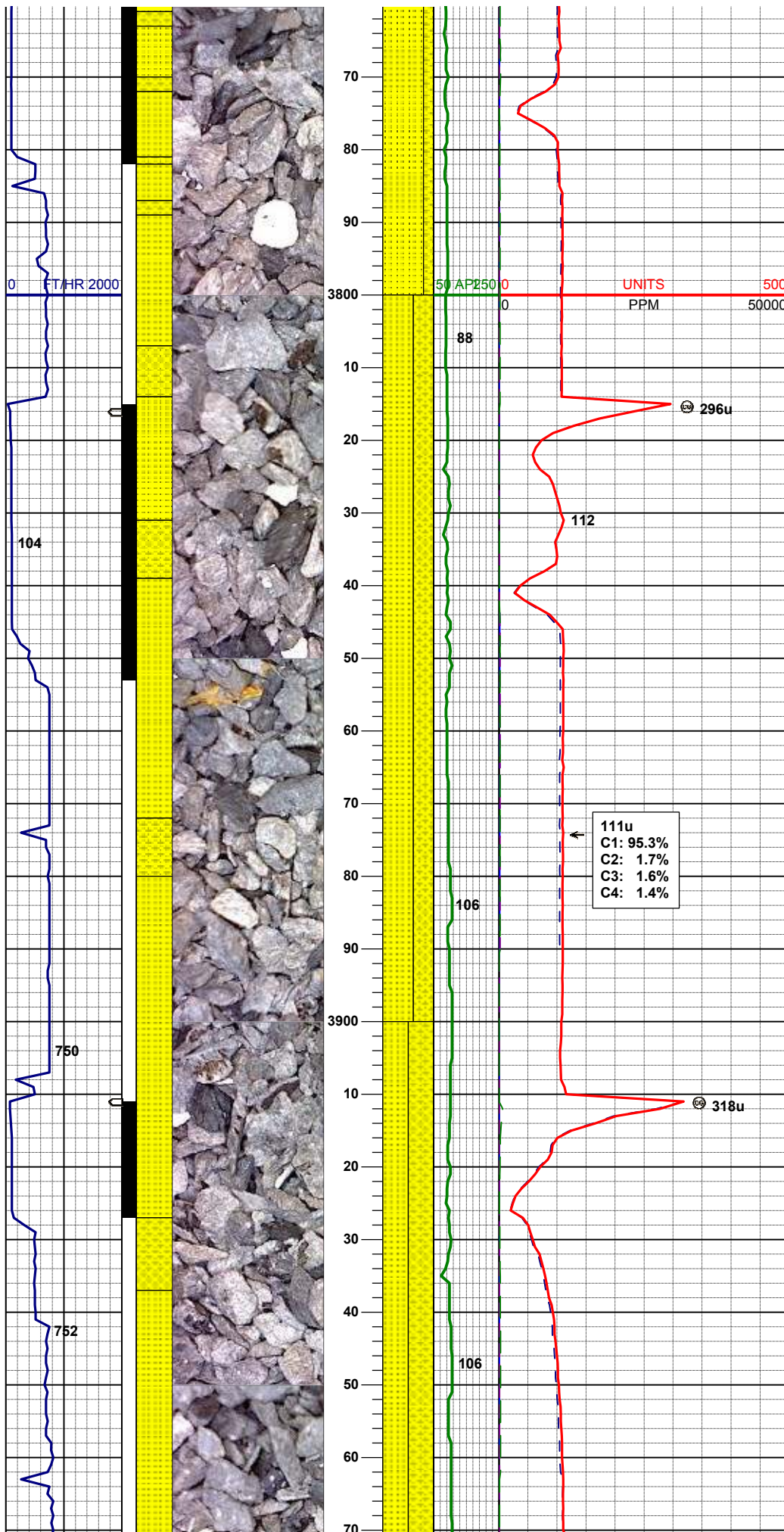
MD 3663'
INC 8.99°
AZM 173.14°

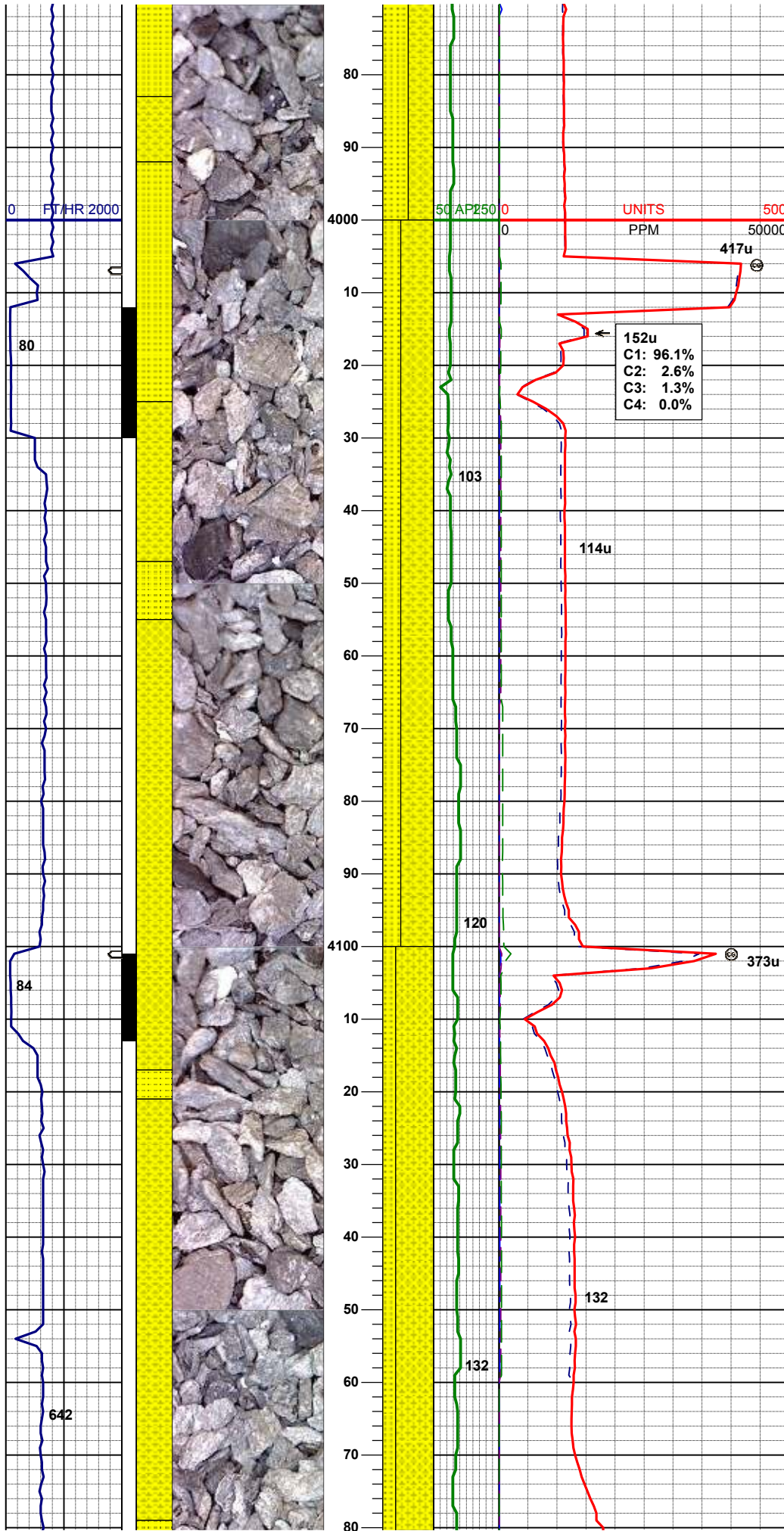
80% SS: wh-med gy, med-f, sme s&p, ang-sbang, w sort, fri-firm, g por, arg cmt, occ glau, occ pyr, com banding
20% SHYSS: lt gy-dk gy, sft-firm, sbblky-blky, tex f-sdy, mod calc

20% SHYSS: lt gy-dk gy, sft-firm, sbblky-blky,
tex f-sdy, mod calc

MD 3758'

50% SS: wh-med gy, med-f, sme s&p, ang-sbang, w sort, fri-firm, g por, arg cmt, occ glau, occ pyr, com banding
50% SHYSS: lt gy-dk gy, sft-firm, sbblky-blky, tex f-sdy, tr calc



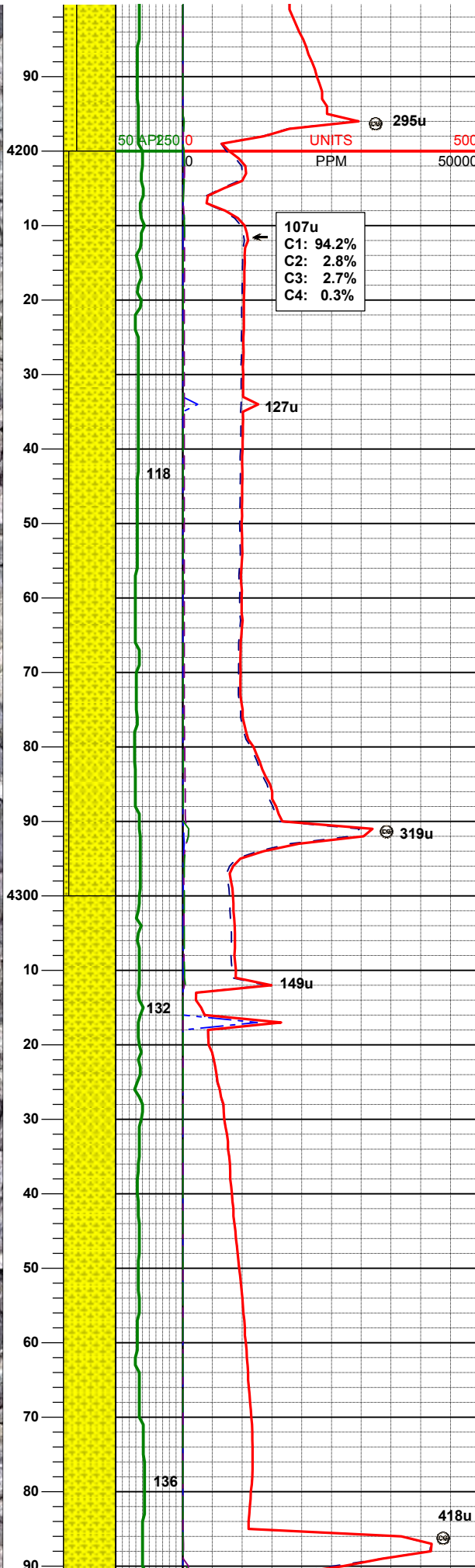
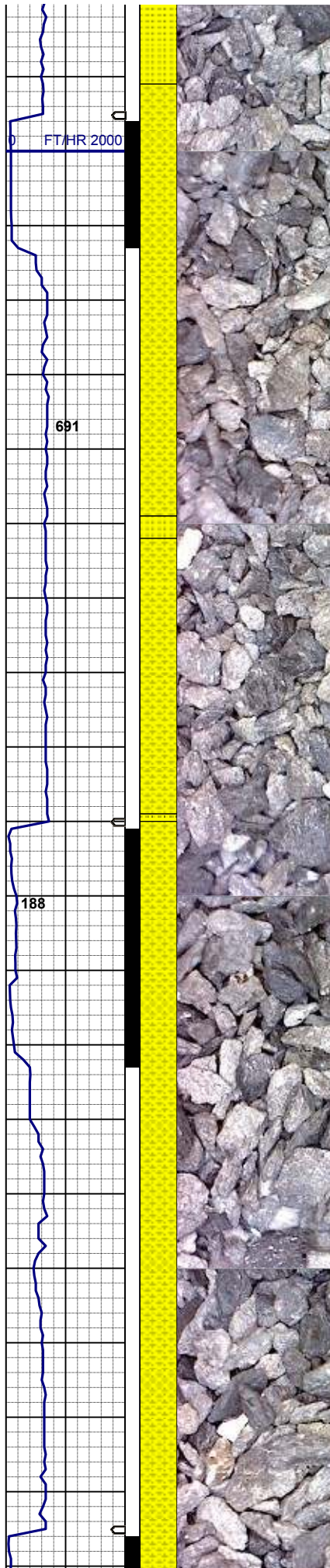


MD 4043'
INC 12.00°
AZM 166.14°

65% SHYSS: lt gy-dk gy, sft-firm, sbbly-blky,
tex f-sdy, tr calc
35% SS: wh-med gy, med-f, sme s&p, ang-
sbang, w sort, fri-firm, g por, arg cmt, occ glau,
occ pyr, com banding

MD 4137'
INC 10.80°
AZM 165.21°

75% SHYSS: lt gy-dk gy, sft-firm, sbbly-blky,
tex f-sdy, tr calc
25% SS: wh-med gy, med-f, sme s&p, ang-
sbang, w sort, fri-firm, g por, arg cmt, occ glau,
occ pyr, com banding



107u
C1: 94.2%
C2: 2.8%
C3: 2.7%
C4: 0.3%

MD 4232'
INC 8.81°
AZM 170.05°

90% SHYSS: lt gy-dk gy, sft-firm, sbbiky-blky,
tex f-sdy, tr calc
10% SS: wh-med gy, med-f, sme s&p, ang-
sbang, w sort, fri-firm, g por, arg cmt, occ glau,
occ pyr, com banding

MD 4327'
INC 9.03°
AZM 174.40°

100% SHYSS: lt gy-dk gy, sft-firm, sbbiky-blky,
tex f-sdy, tr calc

295u
UNITS
PPM
500
50000

127u

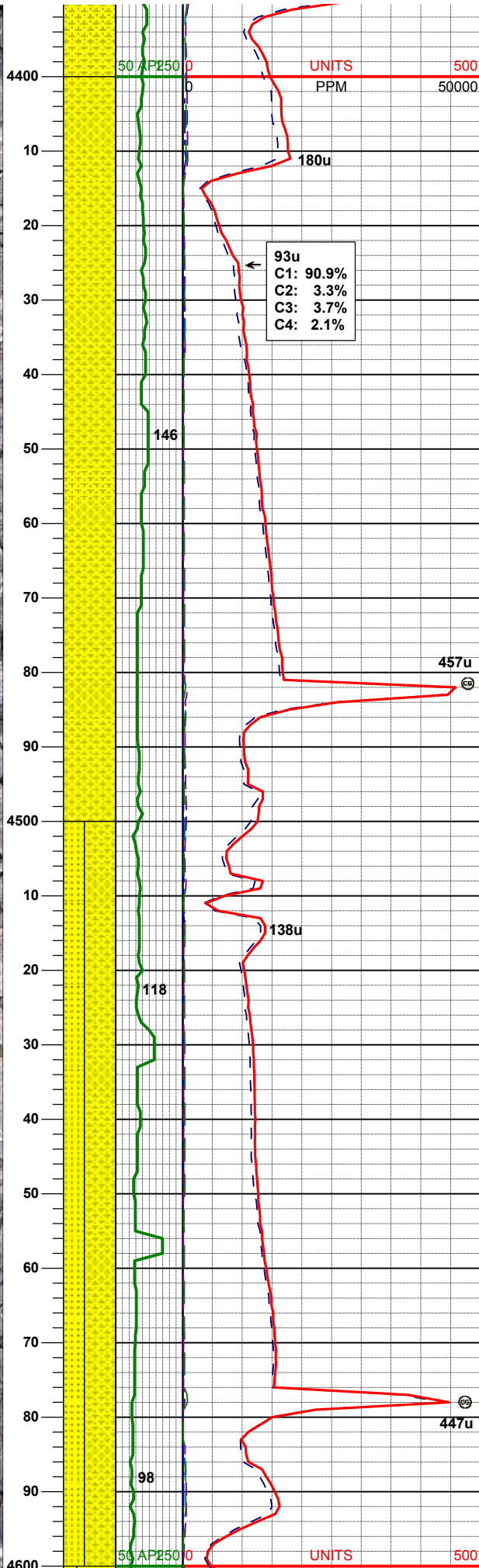
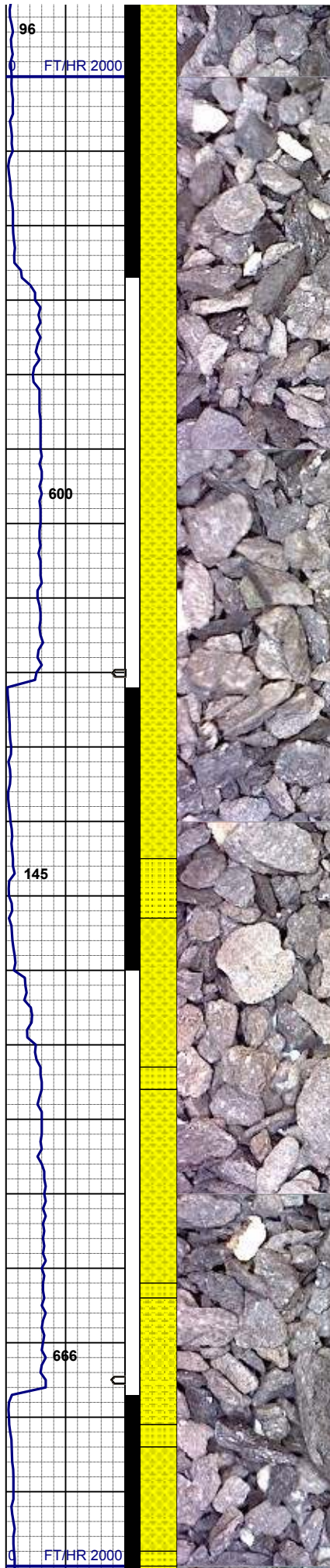
319u

149u

132

136

418u

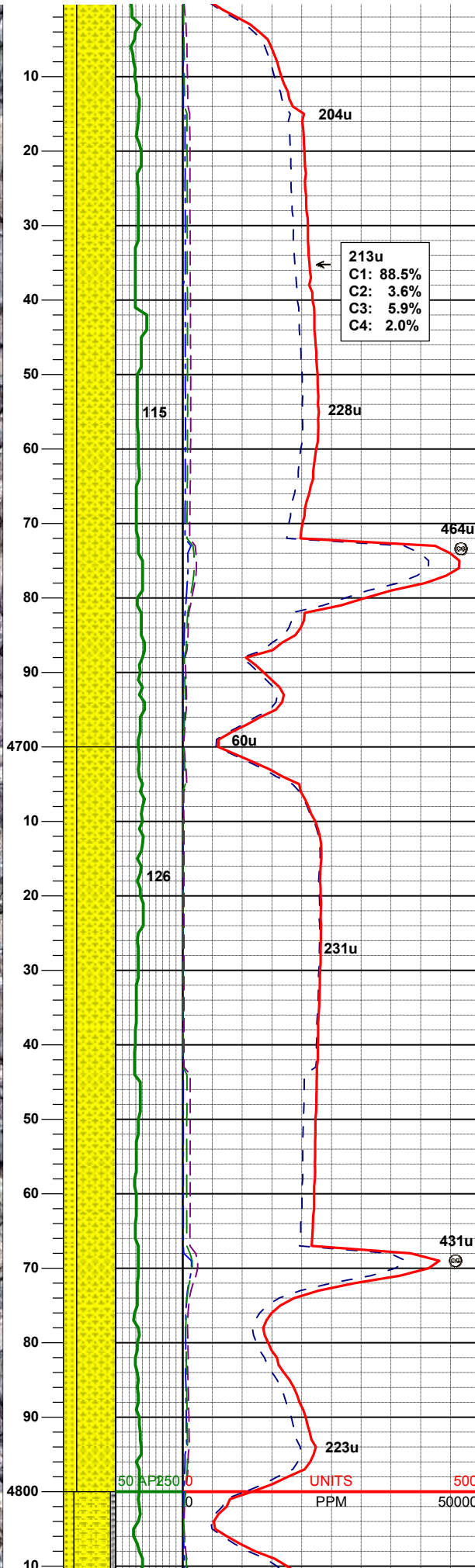
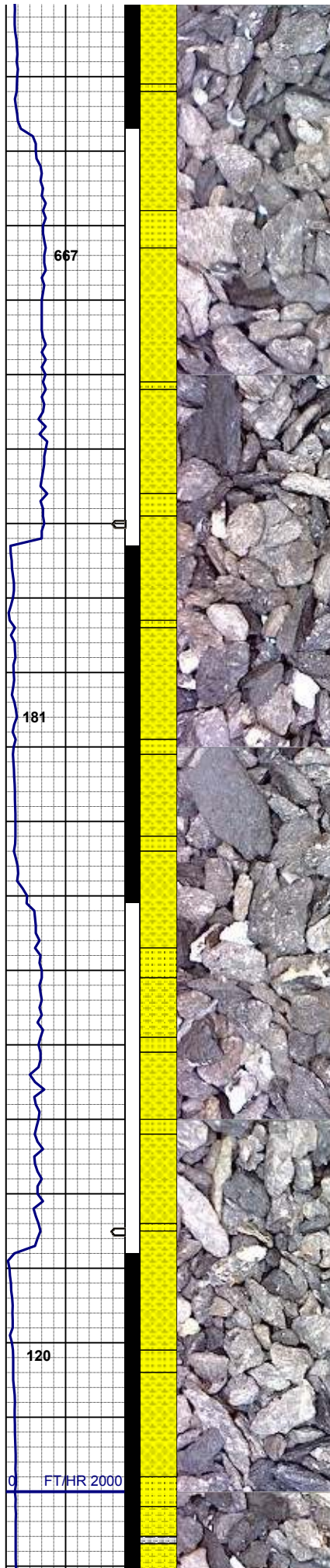


MD 4422'
INC 8.60°
AZM 175.40°

100% SHYSS: lt gy-dk gy, sft-firm, sbbiky-blky,
tex f-sdy, tr calc

MD 4517'
INC 9.07°
AZM 173.76°

60% SHYSS: lt gy-dk gy, sft-firm, sbbiky-blky,
tex f-sdy, tr calc
40% SS: wh-med gy, med-f, sme s&p, ang-
sbang, w sort, fri-firm, g por, arg cmt, occ glau,
com banding



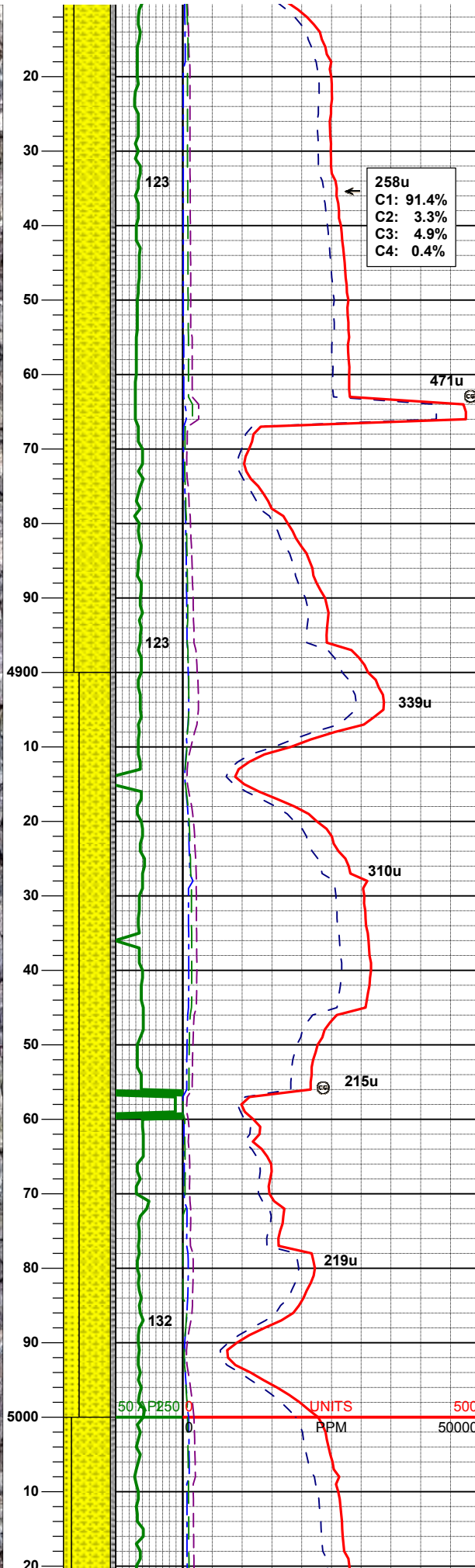
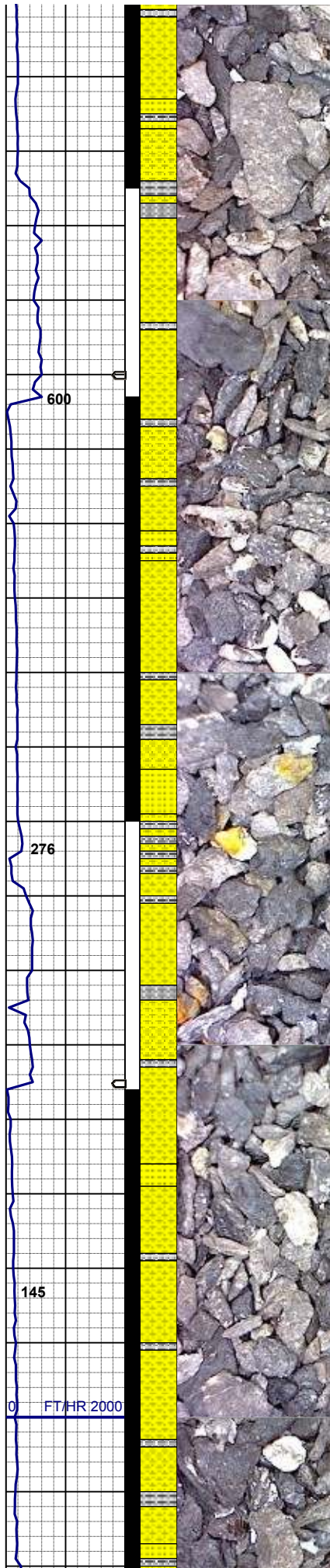
MD 4612'
INC 9.24°
AZM 174.03°

75% SHYSS: lt gy-dk gy, sft-firm, sbbly-blky,
tex f-sdy, tr calc
25% SS: wh-med gy, med-f, sme s&p, ang-
sbang, w sort, fri-firm, g por, arg cmt, abnt glau,
com banding

MD 4707'
INC 8.14°
AZM 174.06°

75% SHYSS: lt gy-dk gy, sft-firm, sbbly-blky,
tex f-sdy, tr calc
25% SS: wh-med gy, med-f, sme s&p, ang-
sbang, w sort, fri-firm, g por, arg cmt, abnt glau,
com banding

MD 4802'
INC 7.99°
AZM 172.87°



MUD WT 8.6+ VIS 27

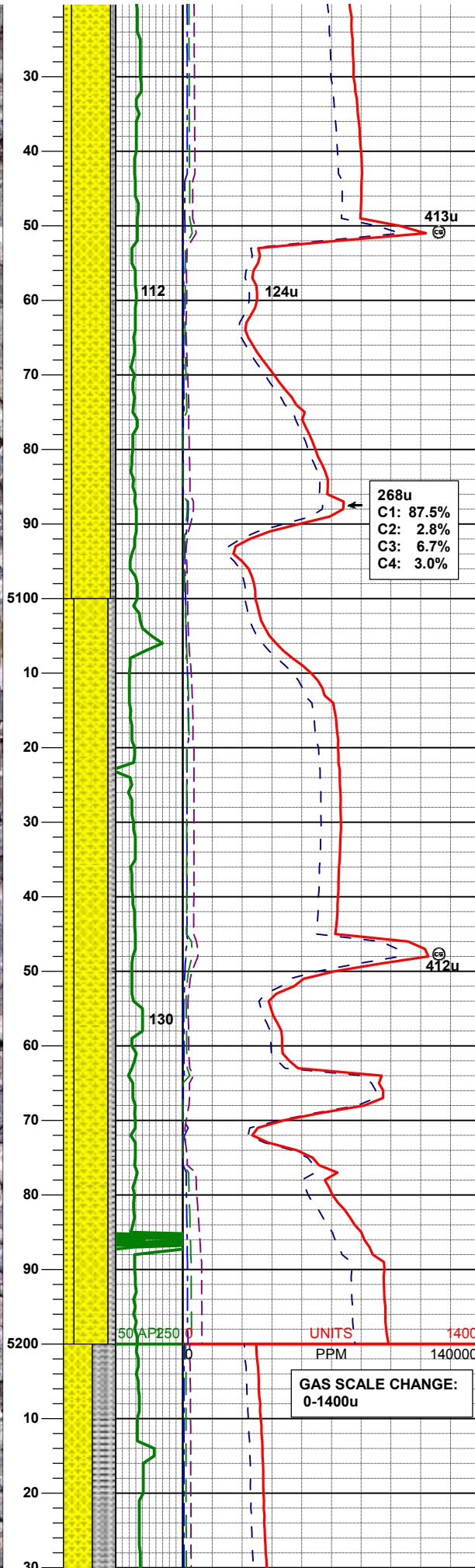
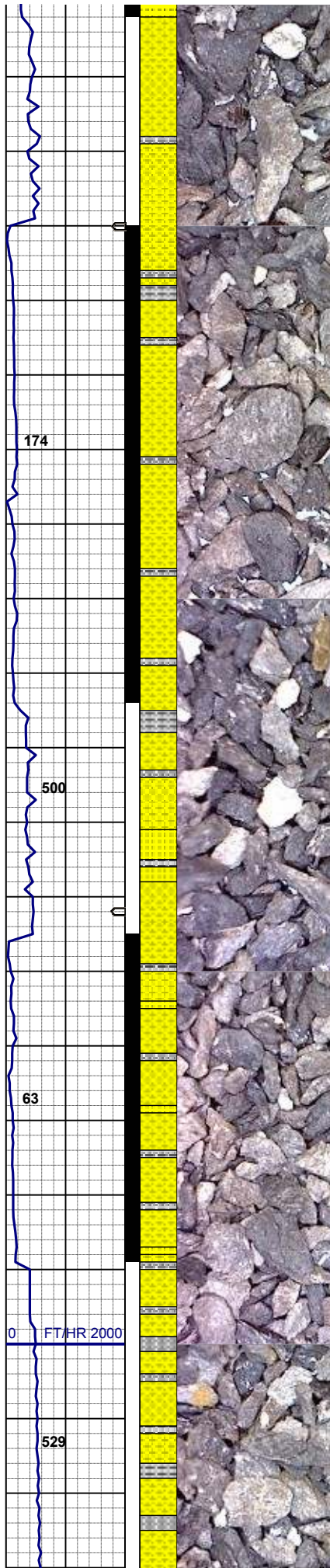
70% SHYSS: lt gy-dk gy, sft-firm, sbblky-blky, tex f-sdy, tr calc
20% SS: wh-med gy, med-f, sme s&p, ang-sbang, w sort, fri-firm, g por, arg cmt, abnt glau, com banding
10% SILTY SH: m-dk gy occ gybrn, firm - sl sft, rthy - sl slty tex rr lse pyr

MD 4897'
INC 8.35°
AZM 182.46°

60% SHYSS: lt gy-dk gy, sft-firm, sbblky-blky, tex f-sdy, tr calc
30% SS: wh-med gy, med-f, sme s&p, ang-sbang, w sort, fri-firm, g por, arg cmt, abnt glau, com banding
10% SILTY SH: m-dk gy occ gybrn, firm - sl sft, rthy - sl slty tex rr lse pyr

MD 4992'
INC 9.09°
AZM 187.67°

UNITS
PPM



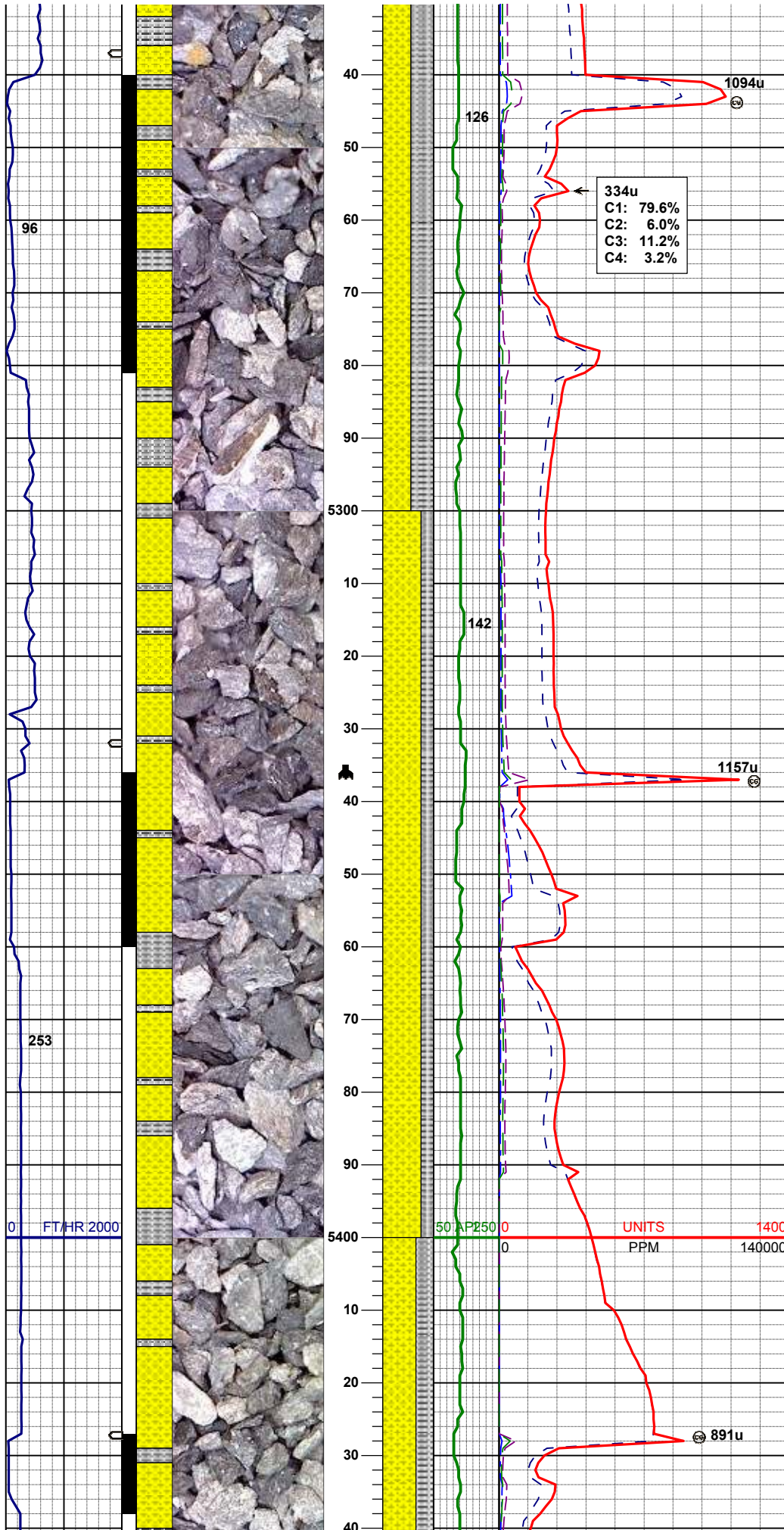
75% SHYSS: lt gy-dk gy, sft-firm, sbbly-blky, tex f-sdy, tr calc
15% SS: wh-med gy, med-f, sme s&p, ang-sbang, w sort, fri-firm, g por, arg cmt, abnt glau, com banding
10% SILTY SH: m-dk gy occ gybrn, firm - sl sft, rthy - sl silty tex rr lse pyr

MD 5087'
INC 10.42°
AZM 185.43°

65% SHYSS: lt gy-dk gy, sft-firm, sbbly-blky, tex f-sdy, tr calc
20% SS: wh-med gy, med-f, sme s&p, ang-sbang, w sort, fri-firm, g por, arg cmt, abnt glau, com banding
15% SILTY SH: m-dk gy occ gybrn, firm - sl sft, rthy - sl silty tex rr lse pyr

MD 5182'
INC 10.29°
AZM 180.85°

GAS SCALE CHANGE:
0-1400u



55% SHYSS: lt gy-dk gy, sft-firm, sblbly-blky,
tex f-sdy, tr calc
45% SILTY SH: m-dk gy occ gybrn, firm - sl sft ,
rthy - sl slty tex

MD 5276'
INC 8.51°
AZM 184.77°

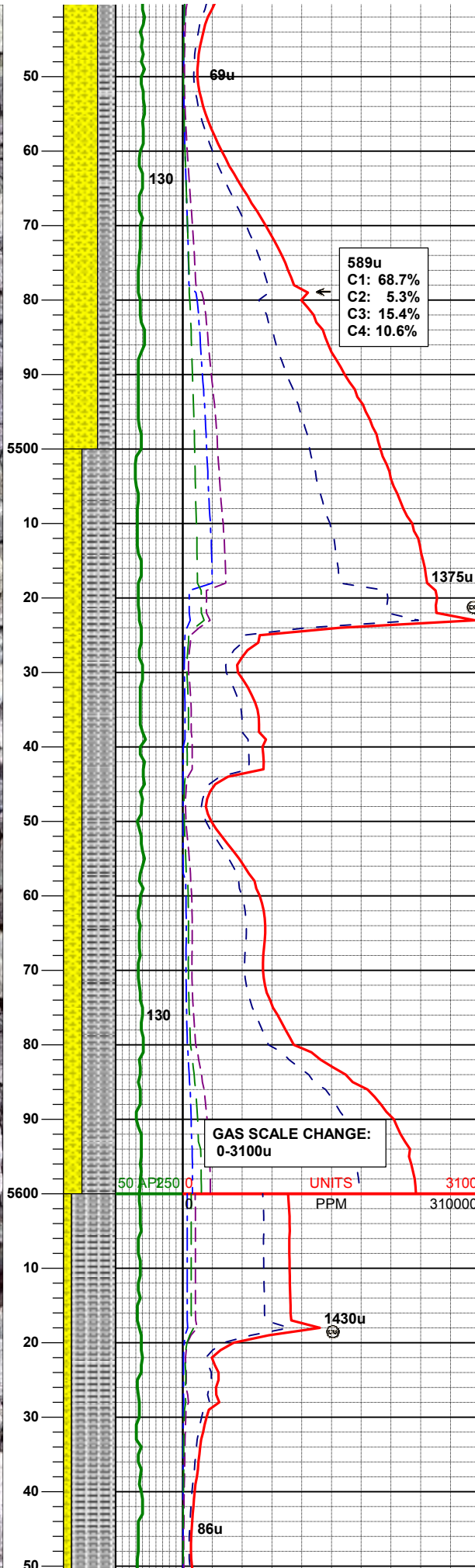
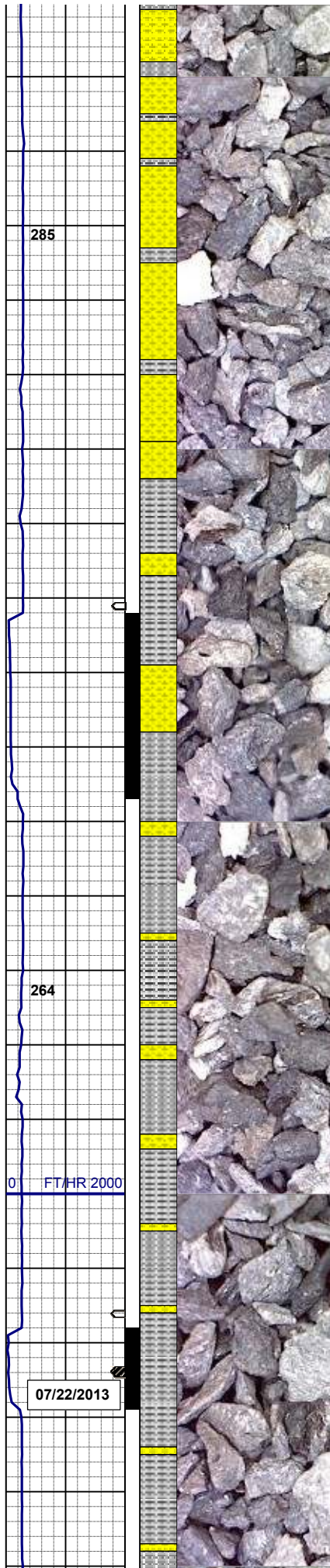
TOOH for BHA #2
5336' MD 15:25hrs 07/21/13
Resumed Drilling 21:30hrs 07/21/13

75% SHYSS: lt gy-dk gy, sft-firm, sblbly-blky,
tex f-sdy, tr calc
25% SILTY SH: m-dk gy occ gybrn, firm - sl sft ,
rthy - sl slty tex rr lse pyr

BHA #2
Bit: 8.750"
Manufacturer: NOV/ReedHycalog
Model: E1202
Serial Number: E168010
Nozzles: 5x15
Motor: 6.75"
Manufacturer: Sperry Drilling
Model: Sperry Drill
Serial Number: 675-0154
Bend: 2.00

MD 5371'
INC 10.18°
AZM 164.45°

MUD WT 8.75 VIS 30



65% SHYSS: lt gy-dk gy, sft-firm, sblbly-blky, tex f-sdy, tr calc
35% SILTY SH: m-dk gy occ gybrn, firm - sl sft, rthy - sl slty tex

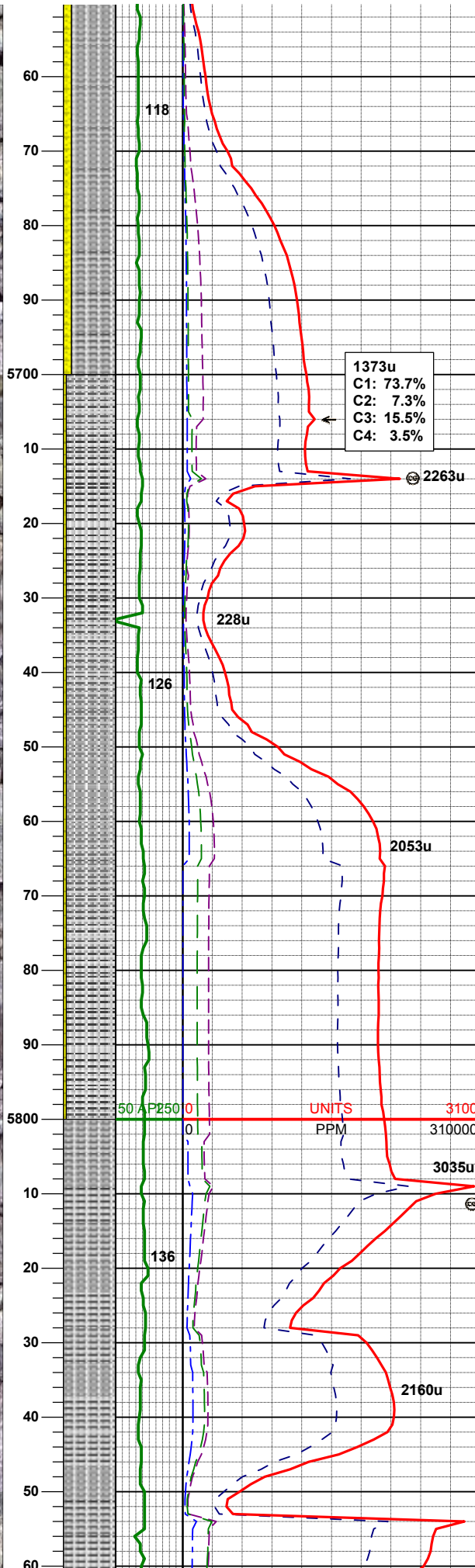
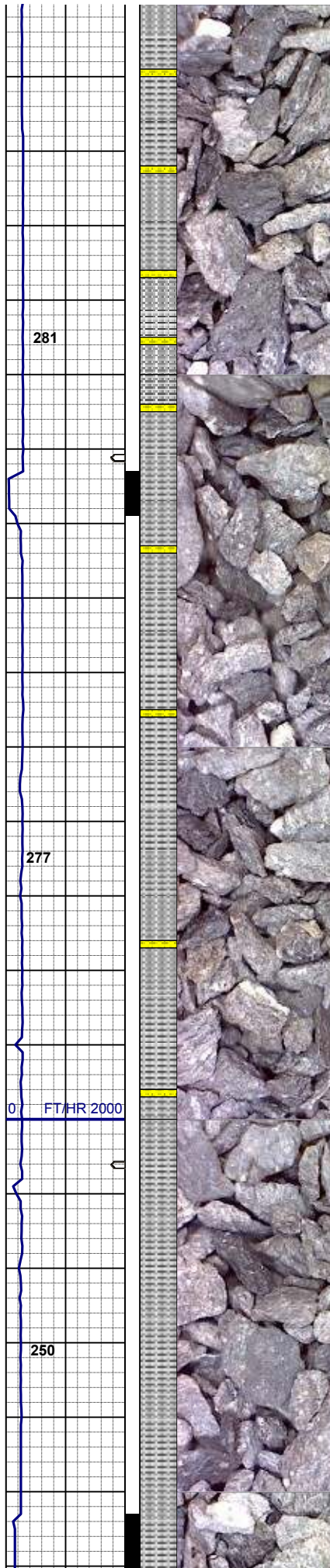
MD 5466'
INC 8.70°
AZM 168.61°

MUD WT 8.80 VIS 32

65% SILTY SH: m-dk gy occ gybrn, firm - sl sft, rthy - sl slty tex rr lse pyr
35% SHYSS: lt-m gy - sme s&p, vf-fgr, sbdr - sbang, mod srt, firm-fri, p por, arg cmt, rr biot, tr glau

MD 5561'
INC 10.60°
AZM 170.19°

85% SILTY SH: m-dk gy occ gybrn, firm - sl sft, rthv - sl slty tex



15% SHYSS: lt-m gy - sme s&p, vf-fgr, sbrd -
sbang, mod srt, firm-fri, p por, arg cmt, rr biot, tr
pyr

MD 5656'
INC 11.12°
AZM 170.58°

1373u
C1: 73.7%
C2: 7.3%
C3: 15.5%
C4: 3.5%

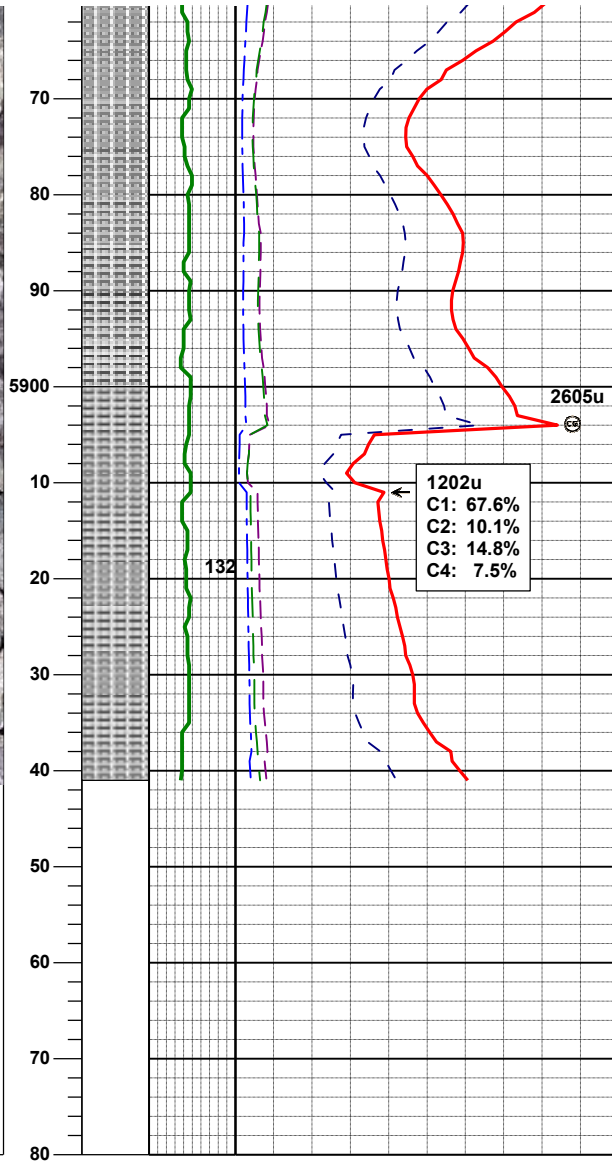
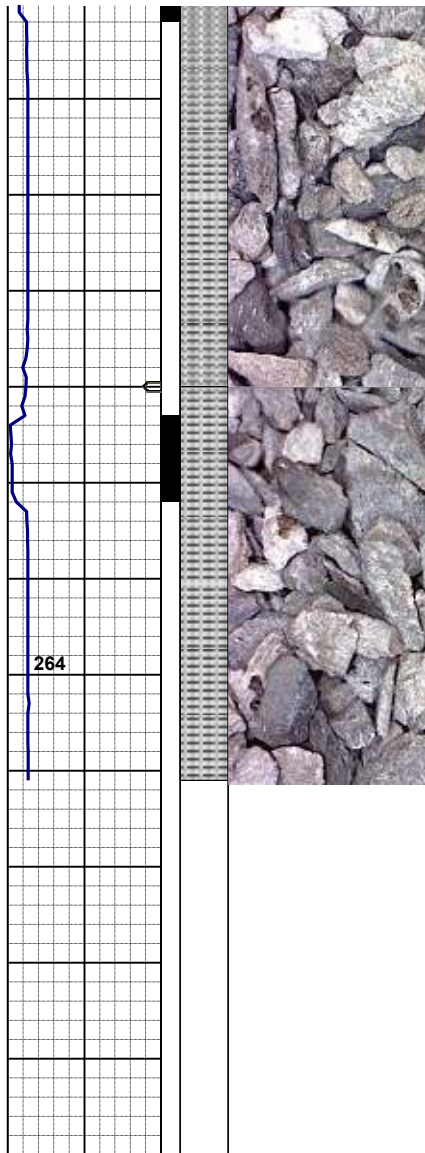
95% SILTY SH: m-dk gy occ gybrn, firm - sl sft ,
rthy - sl slty tex
5% SHYSS: lt-m gy - sme s&p, vf-fgr, sbrd -
sbang, mod srt, firm-fri, p por, arg cmt, rr biot, tr
pyr

MUD WT 9.40 VIS 34

MD 5751'
INC 11.07°
AZM 169.21°

MD 5845'
INC 10.7°
AZM 167.30°

100% SILTY SH: m-dk gy occ m brn -tan, firm -
sl sft , rthy - sl slty tex, tr ss, tr glau, tr lse pyr



MUD WT 9.65 VIS 34

100% SILTY SH: m-dk gy occ m brn -tan, firm -
sl sft , rthy - sl silty tex, tr ss, tr glau, tr lse pyr

BEGAN BUILD @
02:54hrs 07/22/2013

MD 5940'
INC 11.51°
AZM 175.95°

Log Continued On:
WELLS RANCH USX
AA27-62-1HN(HORZ).lplot

Thank you for choosing
Columbine Logging Inc.