

LOG created using LPLOT VH Version 3.0, April 05, 2013, Copyright (C) 1999-2009 Pason Systems Corp.

OPERATOR: NOBLE ENERGY INC.
WELL: KUMMER PC LE23-65HN
LOCATION: SEC 23 T8N R61W
COUNTY: WELD
STATE: COLORADO
SPOT: 2272' FSL; 255' FWL
ELEVATION: 4982' GL; 5006' KB
FIELD: WILDCAT
SPUD DATE: 03/28/2013
TD DATE: 03/31/2013
DATES LOGGED: 03/29/2013 - 03/31/2013
DEPTHS LOGGED: 800' - 5800' MD
LOGGERS: LAURA KELLOGG; CONOR PESICKA
DRILLING FLUID: LSND
DRILLING RIG: H&P 273
API: 05-123-36682
LOG TYPE: VERTICAL
SCALE: 1:240 (5 inches per 100 feet)
REMARKS: WELLSITE GEOLOGICAL SERVICES
 PROVIDED BY COLUMBINE LOGGING INC.

LITHOLOGIES



Sandstone



Shaly Sandstone



Silty Shale

ENGINEERING SYMBOLS



Connection



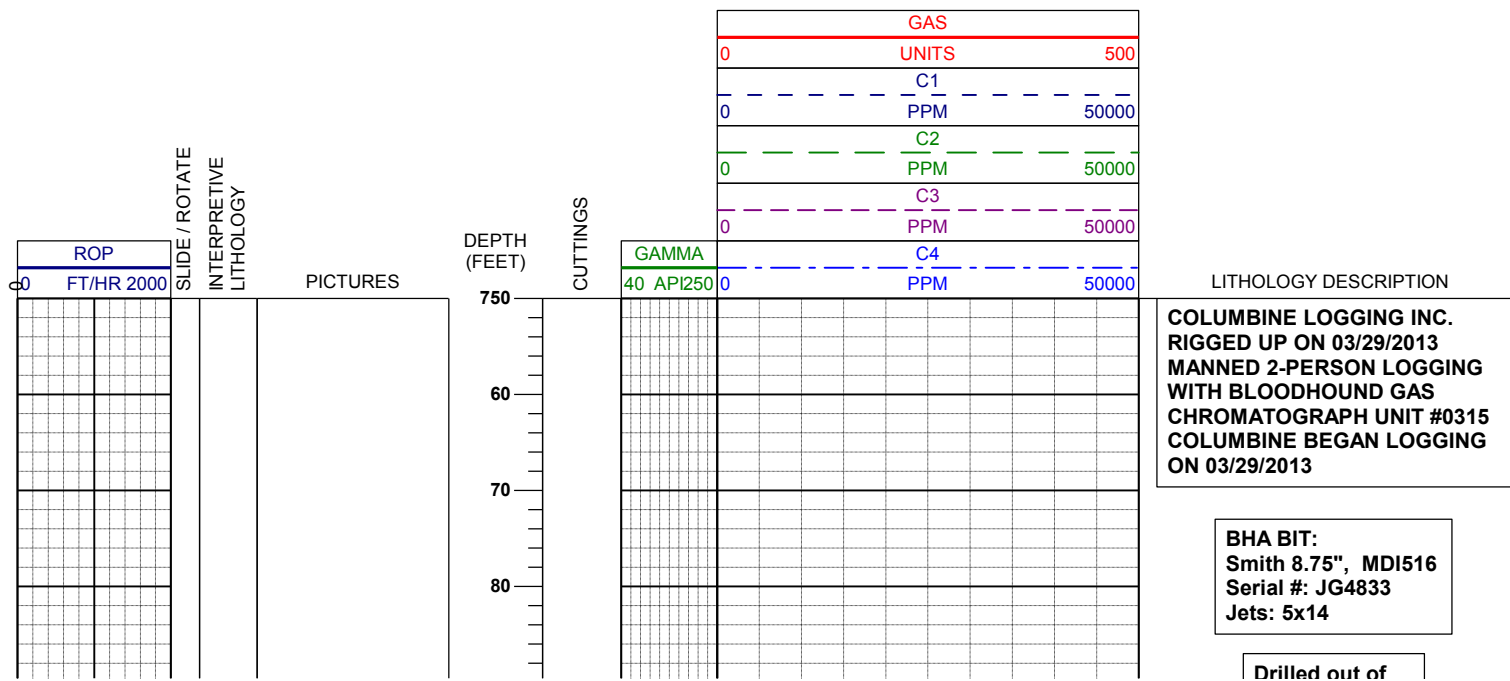
Connection Gas

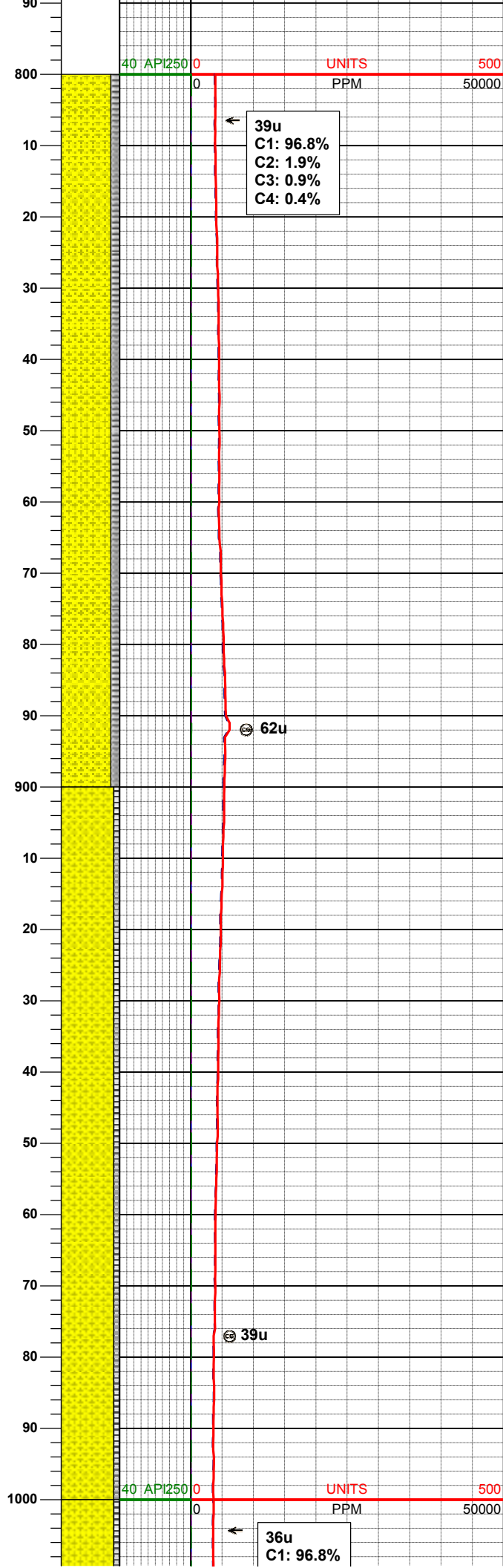
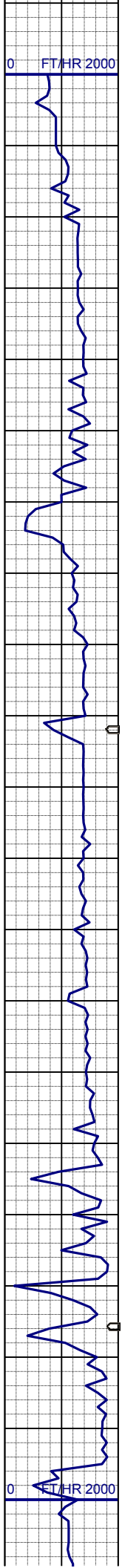


Arrow



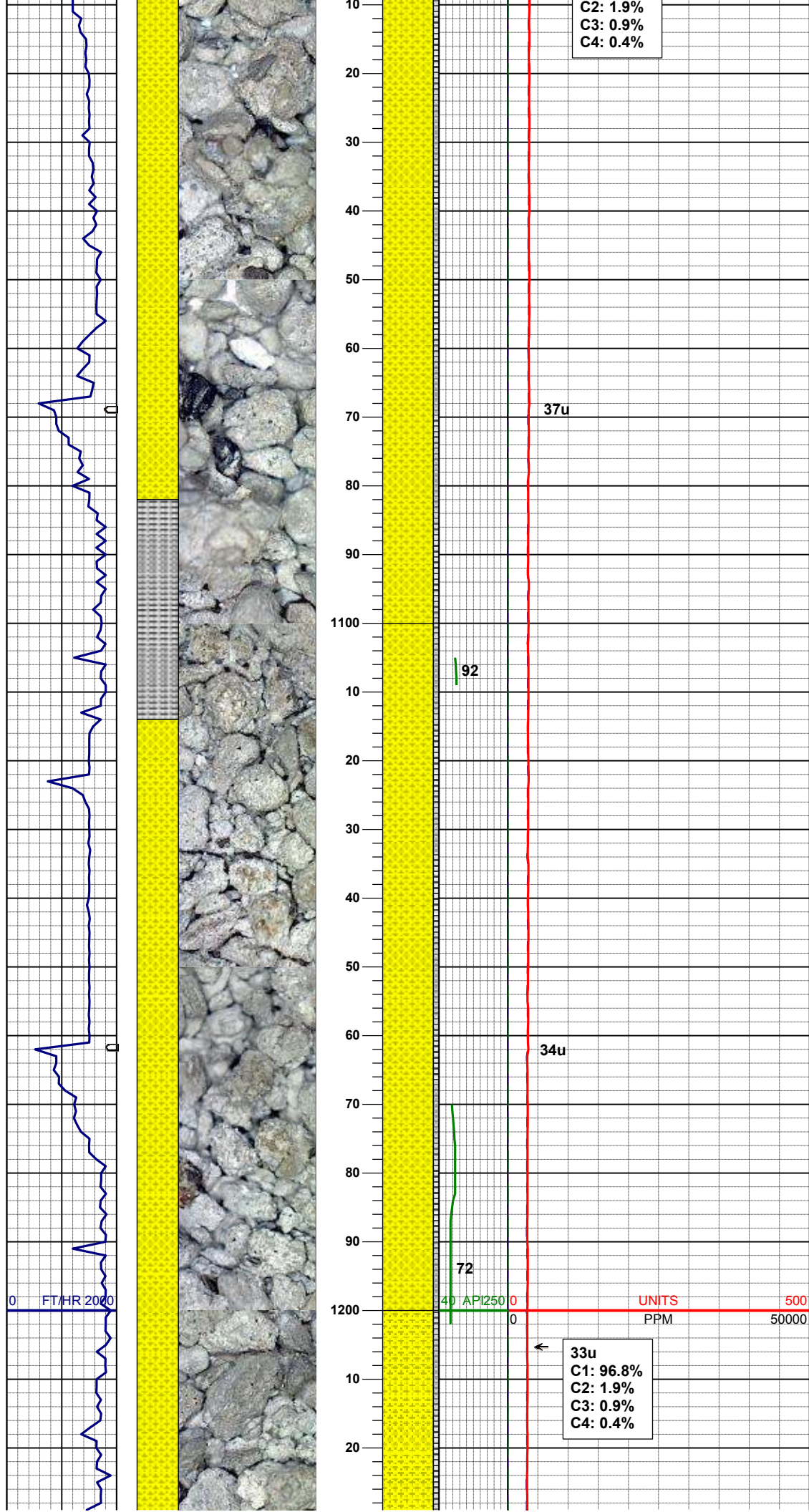
Midnight Depth





SHYSS: wh, lt gy, tr dk lit frag, vfgr,
fri, brit clus, sbang-ang, smwt calc
cmt, v hi % cly mnrl
SLTYSH: gy-dkgy, ltbrn, fri, sbbiky,
slty-gt tex, v sl calc

SHYSS: wh, lt gy, tr dk lit frag, vfgr,
fri, brit clus, sbang-ang, smwt calc
cmt, v hi % cly mnrl
SLTYSH: gy-dkgy, ltbrn, fri, sbbiky,
slty-gt tex, v sl calc



C2: 1.9%
C3: 0.9%
C4: 0.4%

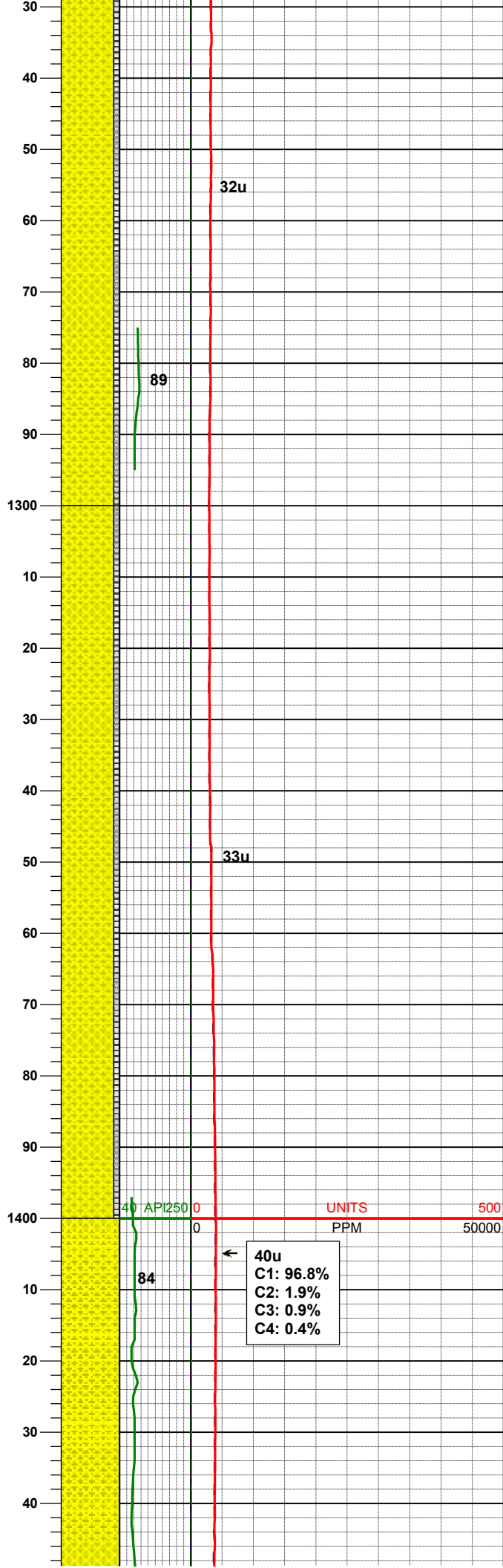
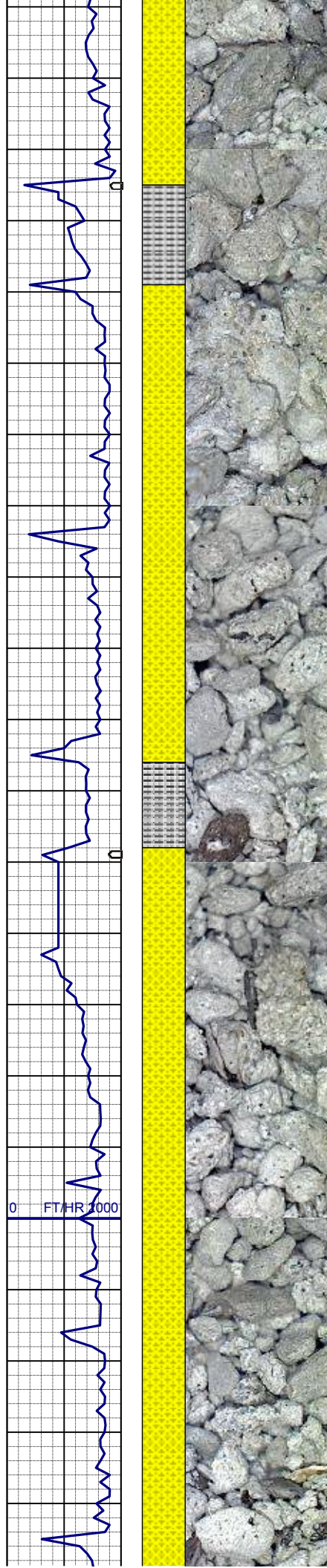
SHYSS: wh, lt gy, tr dk lit frag, vfgr,
fri, brit clus, sbang-ang, smwt calc
cmt, v hi % cly mnrl
SLTYSH: gy-dkgy, ltbrn, fri, sblky,
slty-gt tex, v sl calc

MD 1126'
INC 0.8°
AZM 81.8°
TVD 1025.92'

SHYSS: wh, lt gy, tr dk lit frag, vfgr,
fri, brit clus, sbang-ang, smwt calc
cmt, v hi % cly mnrl
SLTYSH: gy-dkgy, ltbrn, fri, sblky,
slty-gt tex, v sl calc

UNITS 500
PPM 50000

33u
C1: 96.8%
C2: 1.9%
C3: 0.9%
C4: 0.4%



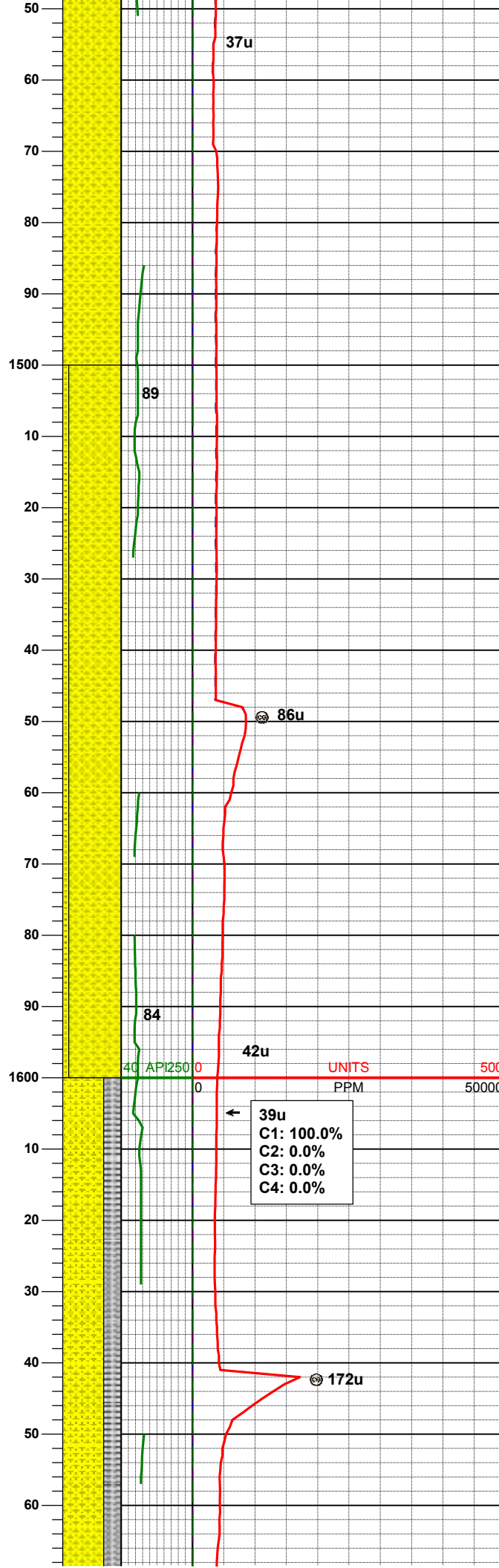
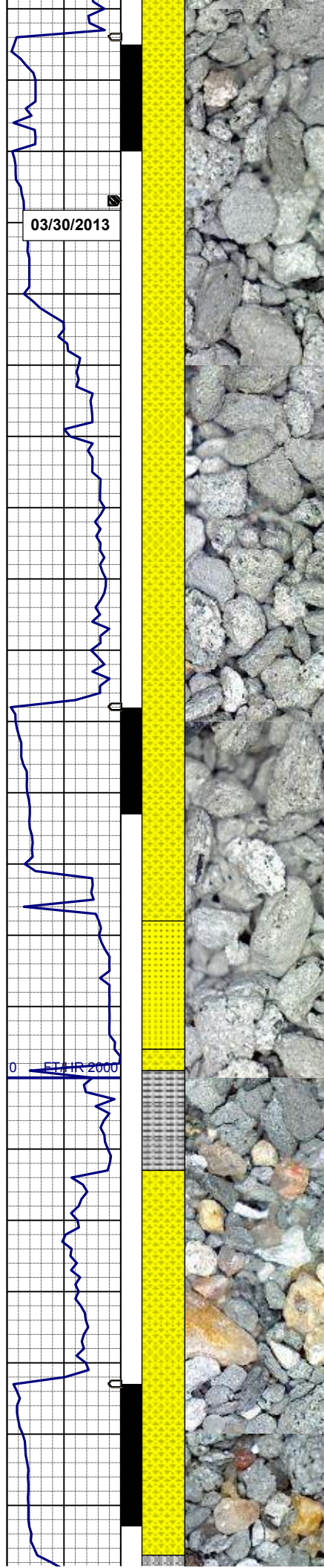
SHYSS: wh, lt gy, tr dk lit frag, vfgr, fri, brit clus, sbang-ang, smwt calc cmt, v hi % cly mnrl
SLTYSH: gy-dkgy, ltbrn, fri, sbblky, slty-gt tex, v sl calc

SHYSS: wh, lt gy, tr dk lit frag, tr glau, vfgr, fri, brit clus, sbang-ang, smwt calc cmt, v hi % cly mnrl
SLTYSH: gy-dkgy, ltbrn, fri, sbblky, slty-gt tex, v sl calc

MD 1405'
INC 1.0°
AZM 78.0°
TVD 1404.89'

40u
C1: 96.8%
C2: 1.9%
C3: 0.9%
C4: 0.4%

SHYSS: wh, lt gy, tr dk lit frag, tr glau,



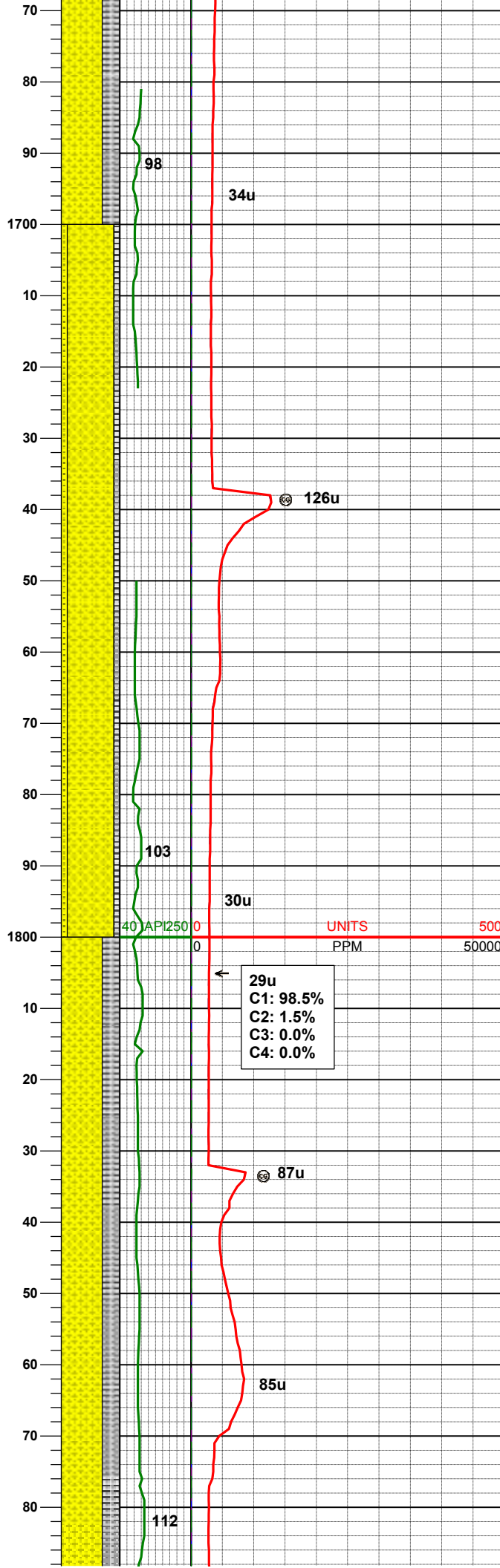
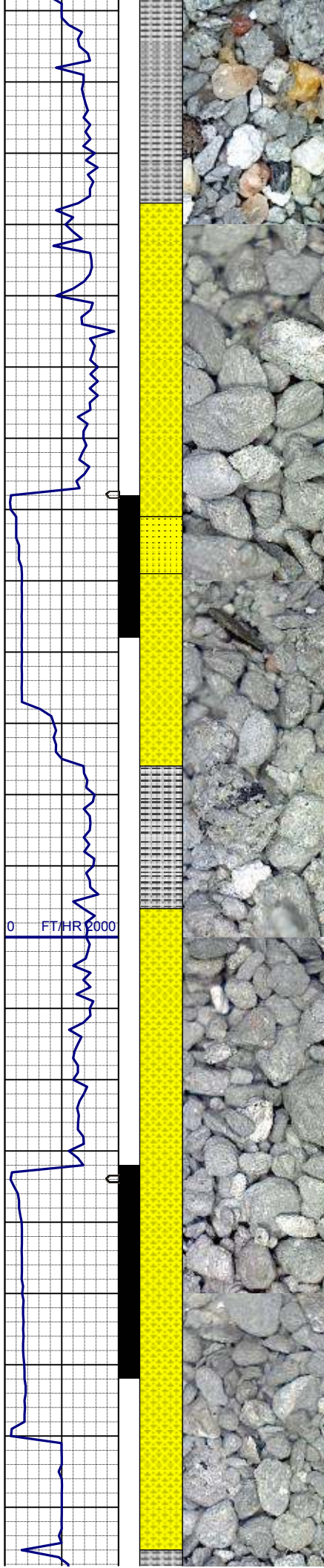
vfgr, fri, brit clus, sbang-ang, smwt
calc cmt, v hi % cly mnrl

MD 1498'
INC 1.2°
AZM 357.6°
TVD 1497.87'

SHYSS: wh, lt gy, tr dk lit frag, tr glau,
vfgr, fri, brit clus, sbang-ang, smwt
calc cmt, v hi % cly mnrl
SS: wh, trnsl, tr dk lit frag, tr glau, fgr,
hd-pfri, sbang-ang, calc-arg cmt

MD 1593'
INC 2.5°
AZM 341.3°
TVD 1592.82'

SHYSS: wh, lt gy, tr dk lit frag, tr glau,
vfgr, fri, brit clus, sbang-ang, smwt
calc cmt, v hi % cly mnrl
SLTYSH: gy-dkgy, ltbrn, fri, sbblky,
silty-gt tex, v sl calc



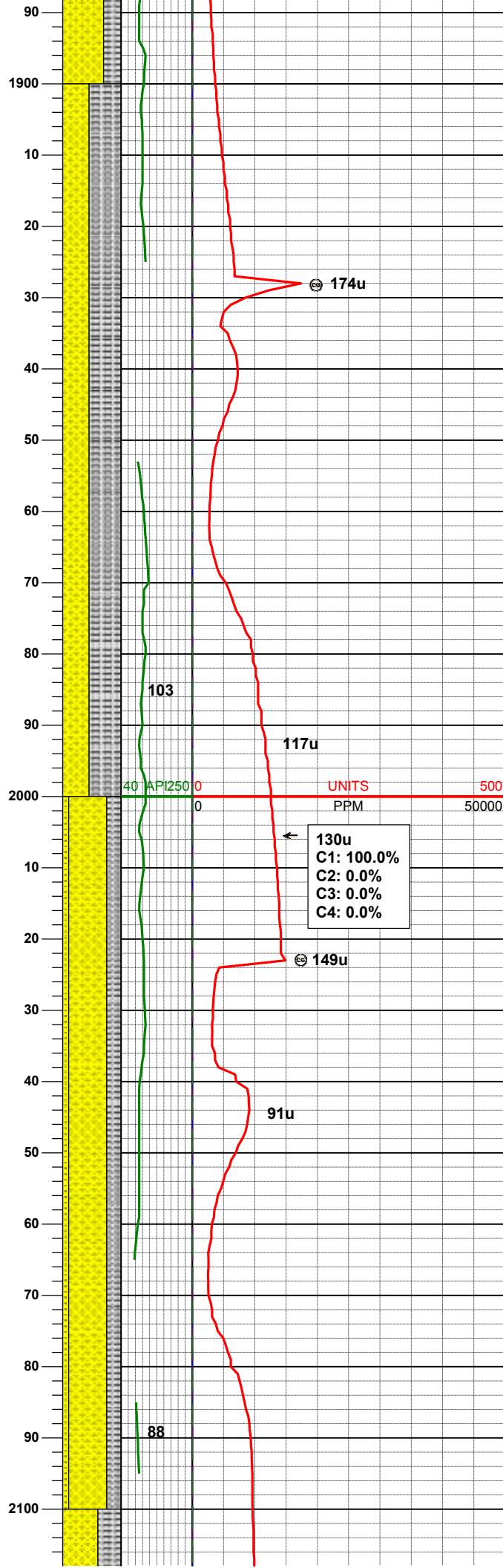
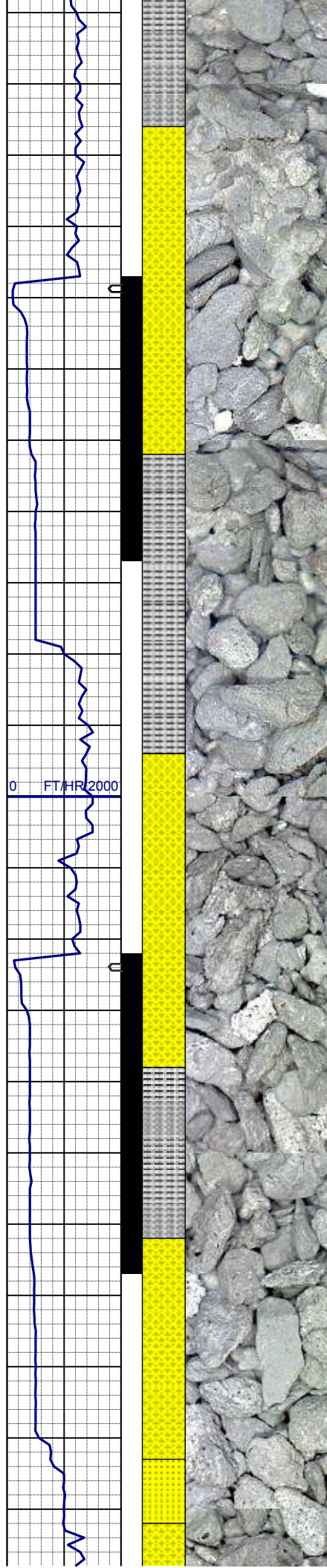
MD 1688'
INC 3.3°
AZM 327.0°
TVD 1687.70'

SHYSS: wh, lt gy, tr dk lit frag, tr glau,
vfgr, fri, brit clus, sbang-ang, smwt
calc cmt, v hi % cly mnrl
SS: wh, trnsl, tr dk lit frag, tr glau, fgr,
hd-pfri, sbang-ang, calc-arg cmt
SLTYSH: gy-dkgy, ltbrn, fri, sbblky,
slty-gt tex, v sl calc

MD 1782'
INC 4.2°
AZM 329.5°
TVD 1781.40'

SHYSS: wh, lt gy, tr dk lit frag, tr glau,
vfgr, fri, brit clus, sbang-ang, smwt
calc cmt, v hi % cly mnrl
SLTYSH: gy-dkgy, ltbrn, fri, sbblky,
slty-gt tex, v sl calc

MD 1877'
INC 5.0°
AZM 326.7°
TVD 1876.19'



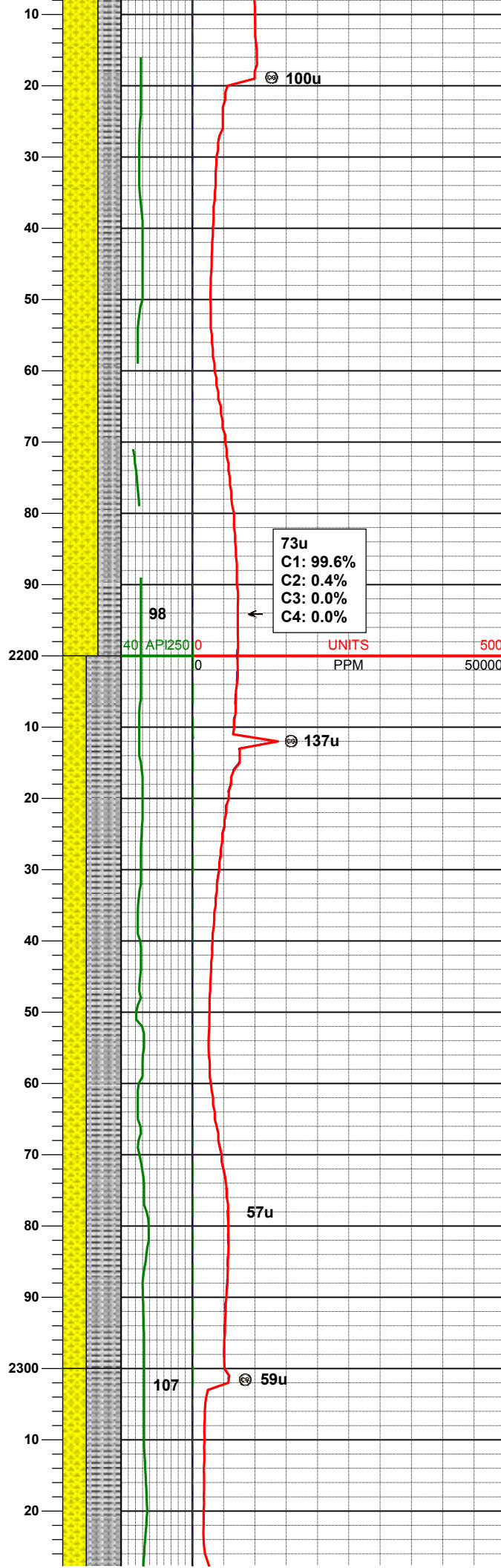
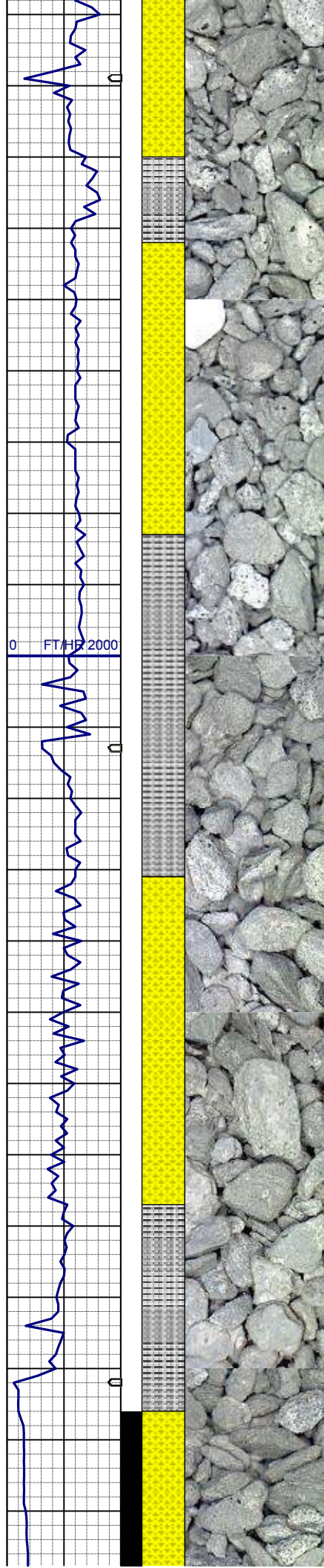
SLTYSH: gy-dkgy, ltbrn, fri, sbblky,
slty-gt tex, v sl calc
SHYSS: wh, lt gy, gybrn, tr dk lit frag,
tr glau, vfgr, fri, brit clus, sbang-ang,
sl calc cmt, v hi % cly mnrl

MD	1972'
INC	5.8°
AZM	325.8°
TVD	1970.77'

130u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

SHYSS: wh, lt gy, gybrn, tr dk lit frag,
tr glau, vfgr, fri, brit clus, sbang-ang,
sl calc cmt, v hi % cly mnrl
SLTYSH: gy-dkgy, ltbrn, fri, sbblky,
slty-gt tex, v sl calc
SS: wh, trnsl, tr dk lit frag, tr glau, fgr,
hd-pfri, sbang-ang, calc-arg cmt

MD	2067'
INC	7.7°
AZM	332.1°
TVD	2065.11'



WT IN 9.60/ OUT 9.60
VIS IN 31/ OUT 31

SHYSS: wh, lt gy, gybrn, tr dk lit frag,
tr glau, vfgr, fri, brit clus, sbang-ang,
sl calc cmt, v hi % cly mnrl, grdg to ss
SLTYSH: gy-dkgy, ltbrn, fri, sbblky,
slty-gt tex, v sl calc

MD 2162'
INC 7.3°
AZM 329.7°
TVD 2159.30'

73u
C1: 99.6%
C2: 0.4%
C3: 0.0%
C4: 0.0%

98

40 API 250

0

UNITS

500

PPM

50000

137u

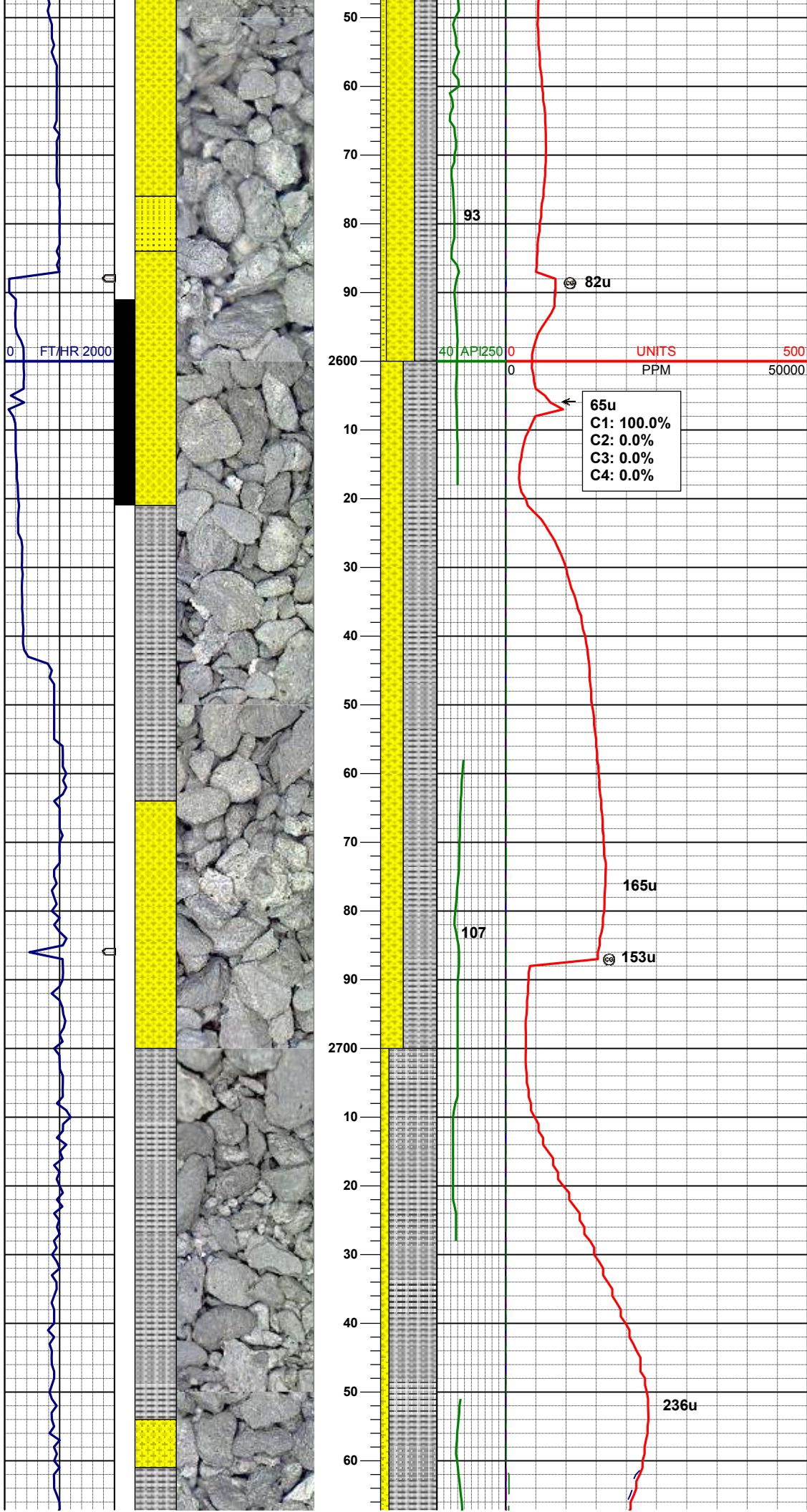
57u

107

59u

SLTYSH: gy-dkgy, ltbrn, fri, sbblky,
slty-gt tex, v sl calc
SHYSS: wh, lt gy, gybrn, tr dk lit frag,
tr glau, vfgr, fri, brit clus, sbang-ang,
sl calc cmt, v hi % cly mnrl, grdg to ss

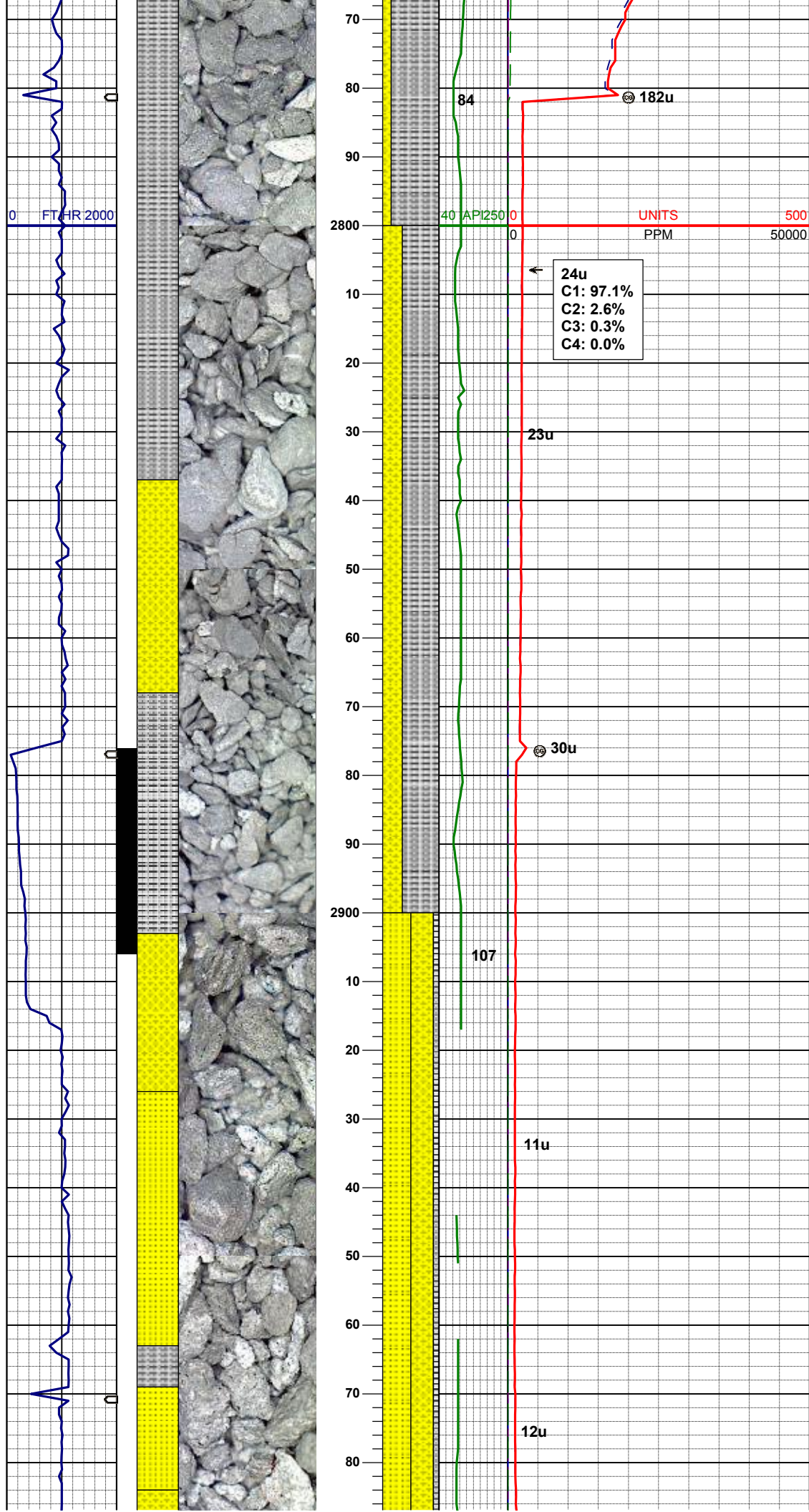
MD 2256'
INC 5.5°
AZM 329.7°
TVD 2252.71'



SHYSS: wh, lt gy, gybrn, tr dk lit frag,
tr glau, vfgr, fri, brit clus, sbang-ang,
sl calc cmt, v hi % cly mnrl
SS: wh, trns, tr dk lit frag, tr glau, fgr,
hd-pfri, sbang-ang, calc-arg cmt

SLTYSH: gy-dkgy, ltbrn, fri, sbblky,
silty-gt tex, v sl calc
SHYSS: wh, lt gy, gybrn, tr dk lit frag,
tr glau, vfgr, fri, brit clus, sbang-ang,
sl calc cmt, v hi % cly mnrl, grdg to ss

SHYSS: wh, lt gy, gybrn, tr dk lit frag,
tr glau, vfgr, fri, brit clus, sbang-ang,
sl calc cmt, v hi % cly mnrl, grdg to ss
SLTYSH: gy-dkgy, ltbrn, fri, sbblky,
silty-gt tex, v sl calc

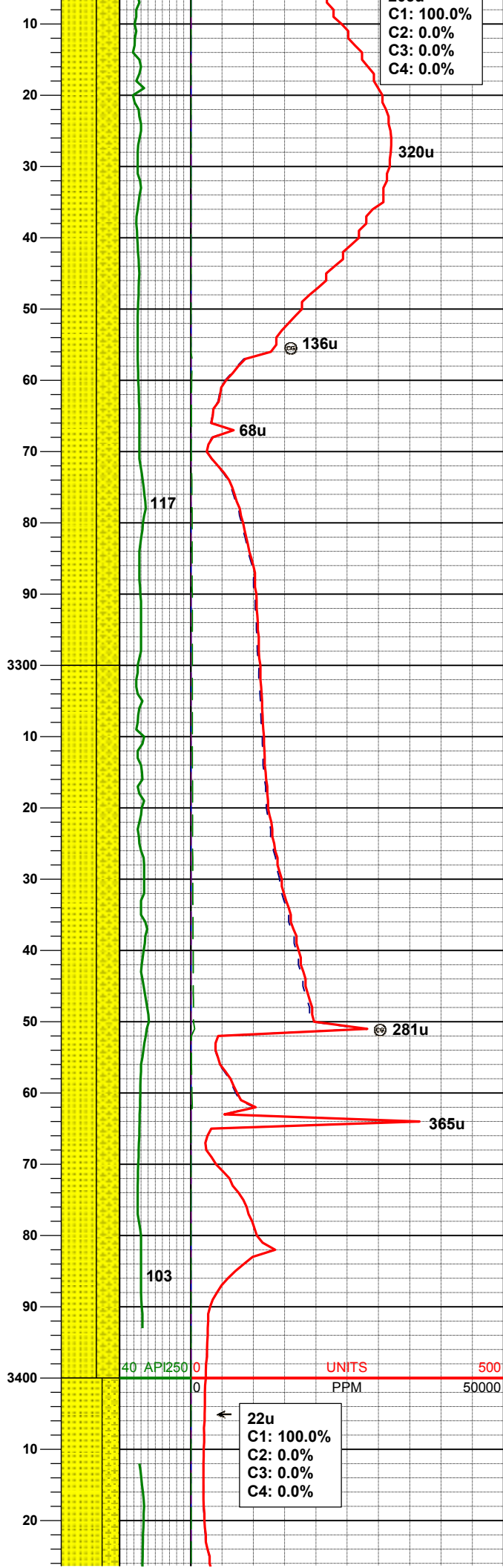
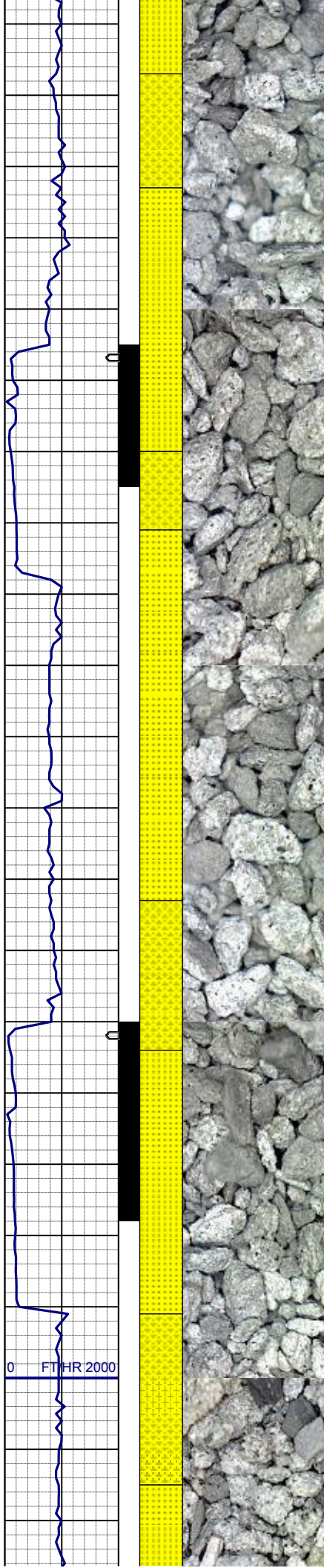


MD 2826'
INC 6.3°
AZM 332.1°
TVD 2818.98'

SHYSS: wh, lt gy, gybrn, tr dk lit frag,
tr glau, vfgr, fri, brit clus, sbang-ang,
sl calc cmt, v hi % cly mnrl, grdg to ss
SLTYSH: gy-dkgy, ltbrn, fri, sbblky,
silty-gt tex, v sl calc

MD 2921'
INC 7.5°
AZM 330.7°
TVD 2813.29'

SS: wh, trnsl, tr dk lit frag, tr glau, fgr,
hd-pfri, sbang-ang, calc-arg cmt
SHYSS: wh, lt gy, gybrn, tr dk lit frag,
tr glau, vfgr, fri, brit clus, sbang-ang,
sl calc cmt, v hi % cly mnrl
SLTYSH: gy-dkgy, ltbrn, fri, sbblky,
silty-gt tex, v sl calc



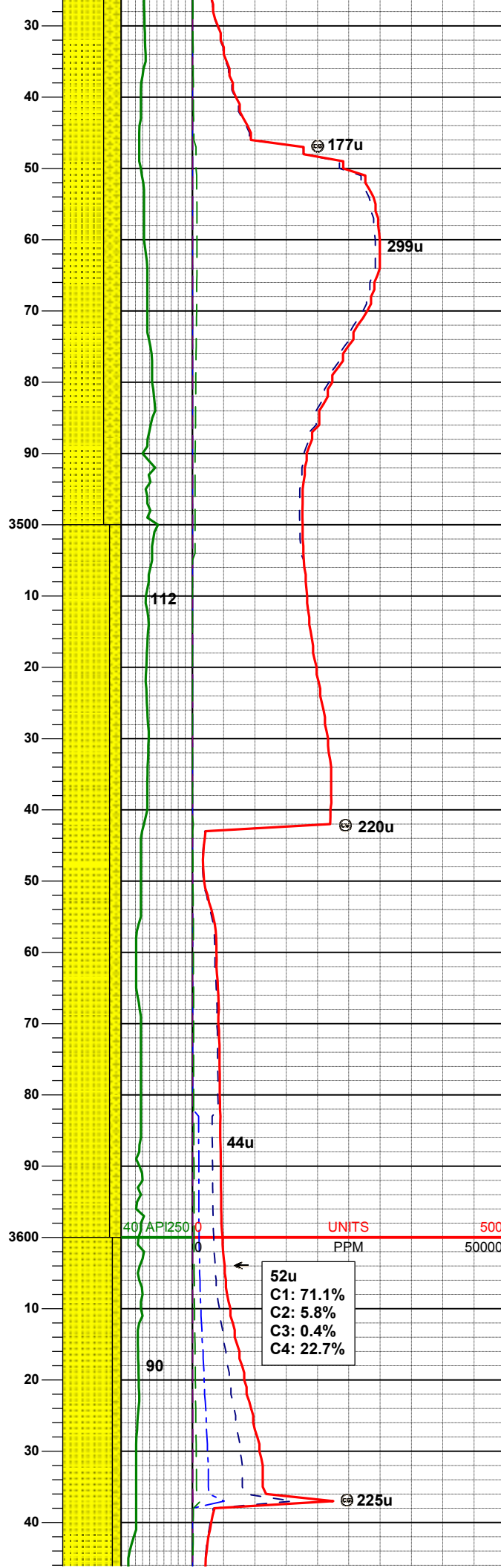
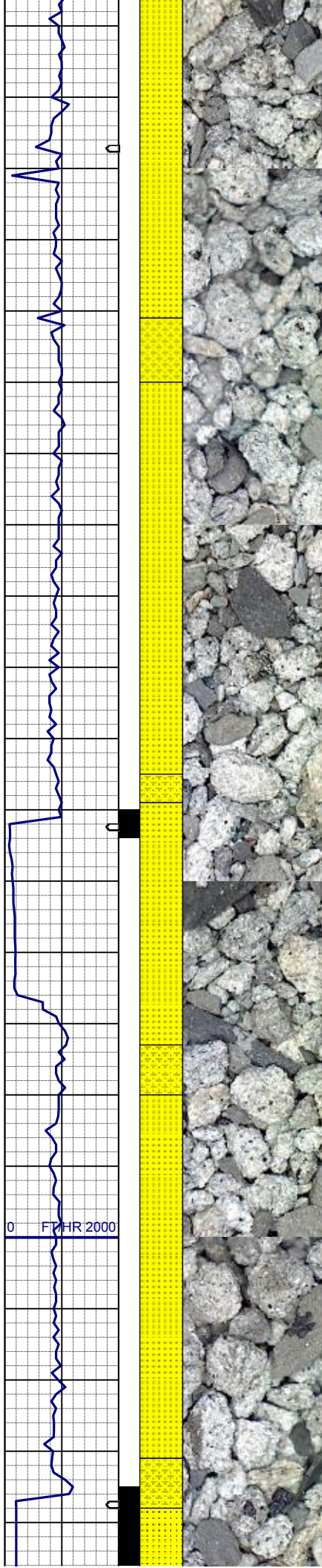
AZM 327.2°
TVD 3195.33'

SS: wh, trns, tr dk lit frag, tr glau, fgr, hd-pfri, sbang-ang, calc-arg cmt
SHYSS: wh, lt gy, gybrn, tr dk lit frag, tr glau, vfgr, fri, brit clus, sbang-ang, sl calc cmt, v hi % cly mnrl

MD 3300'
INC 5.8°
AZM 335.8°
TVD 3289.85'

SS: wh, trns, tr dk lit frag, abnt glau, fgr, hd-pfri, sbang-ang, calc-arg cmt
SHYSS: wh, lt gy, gybrn, tr dk lit frag, occ glau, vfgr, fri, brit clus, sbang-ang, sl calc cmt, v hi % cly mnrl

MD 3395'
INC 7.0°
AZM 345.7°
TVD 3384.25'



SS: wh, trnsl, tr dk lit frag, abnt glau,
fgr, hd-pfri, sbang-ang, calc-arg cmt
SHYSS: wh, lt gy, gybrn, tr dk lit frag,
occ glau, vfgr, fri, brit clus, sbang-ang,
sl calc cmt, v hi % cly mnrl

MD 3490'
INC 5.7°
AZM 345.3°
TVD 3478.67'

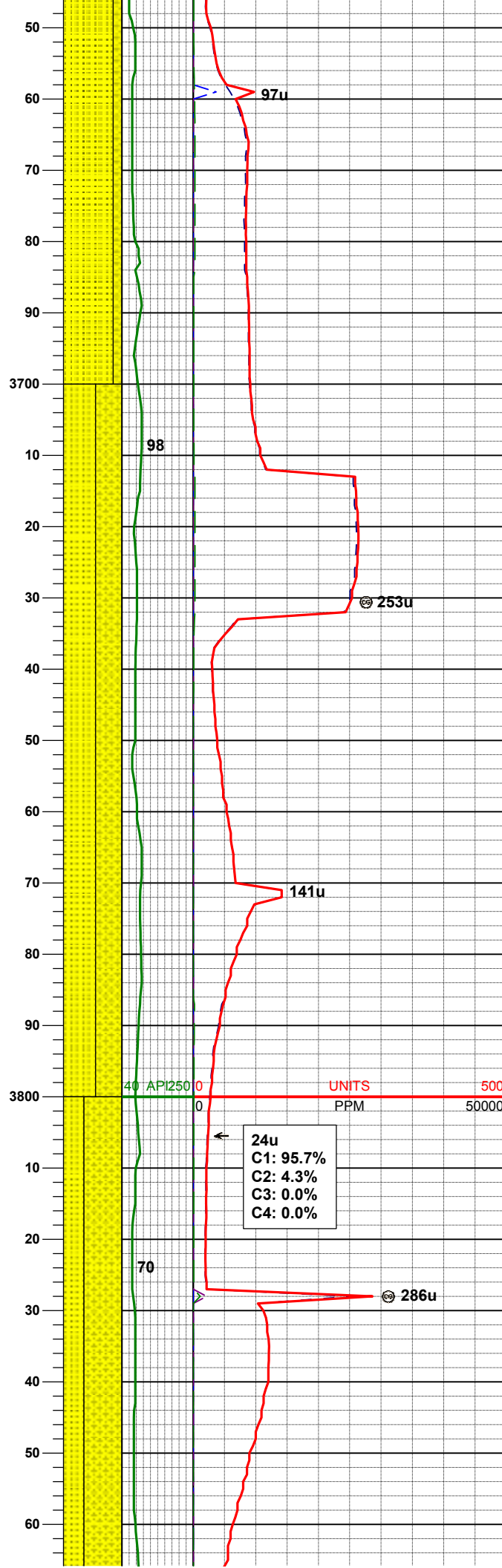
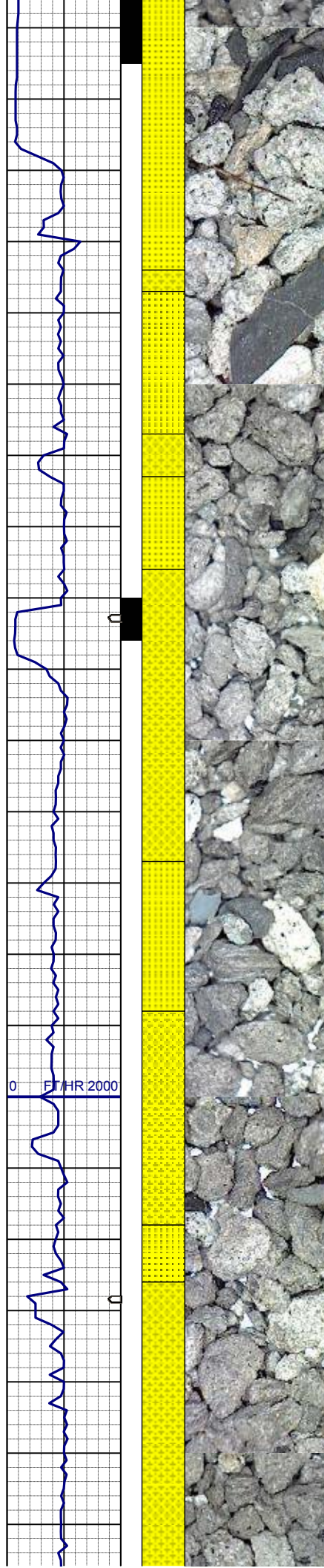
WT IN 8.65/ OUT 8.65
VIS IN 30/ OUT 30

SS: wh, trnsl, tr dk lit frag, abnt glau,
fgr, hd-pfri, sbang-ang, sme unconcs,
calc-arg cmt
SHYSS: wh, lt gy, gybrn, tr dk lit frag,
occ glau, vfgr, fri, brit clus, sbang-ang,
sl calc cmt, v hi % cly mnrl

WT IN 8.65/ OUT 8.65
VIS IN 29/ OUT 29

MD 3585'
INC 6.2°
AZM 341.1°
TVD 3573.16'

SS: wh, trnsl, tr dk lit frag, abnt glau,
fgr, hd-pfri, sbang-ang, calc-arg cmt



fgr, hd-pfri, sbang-ang, sme unconc,
calc-arg cmt
SHYSS: wh, lt gy, gybrn, tr dk lit frag,
occ glau, vfgr, fri, brit clus, sbang-ang,
sl calc cmt, v hi % cly mnrl

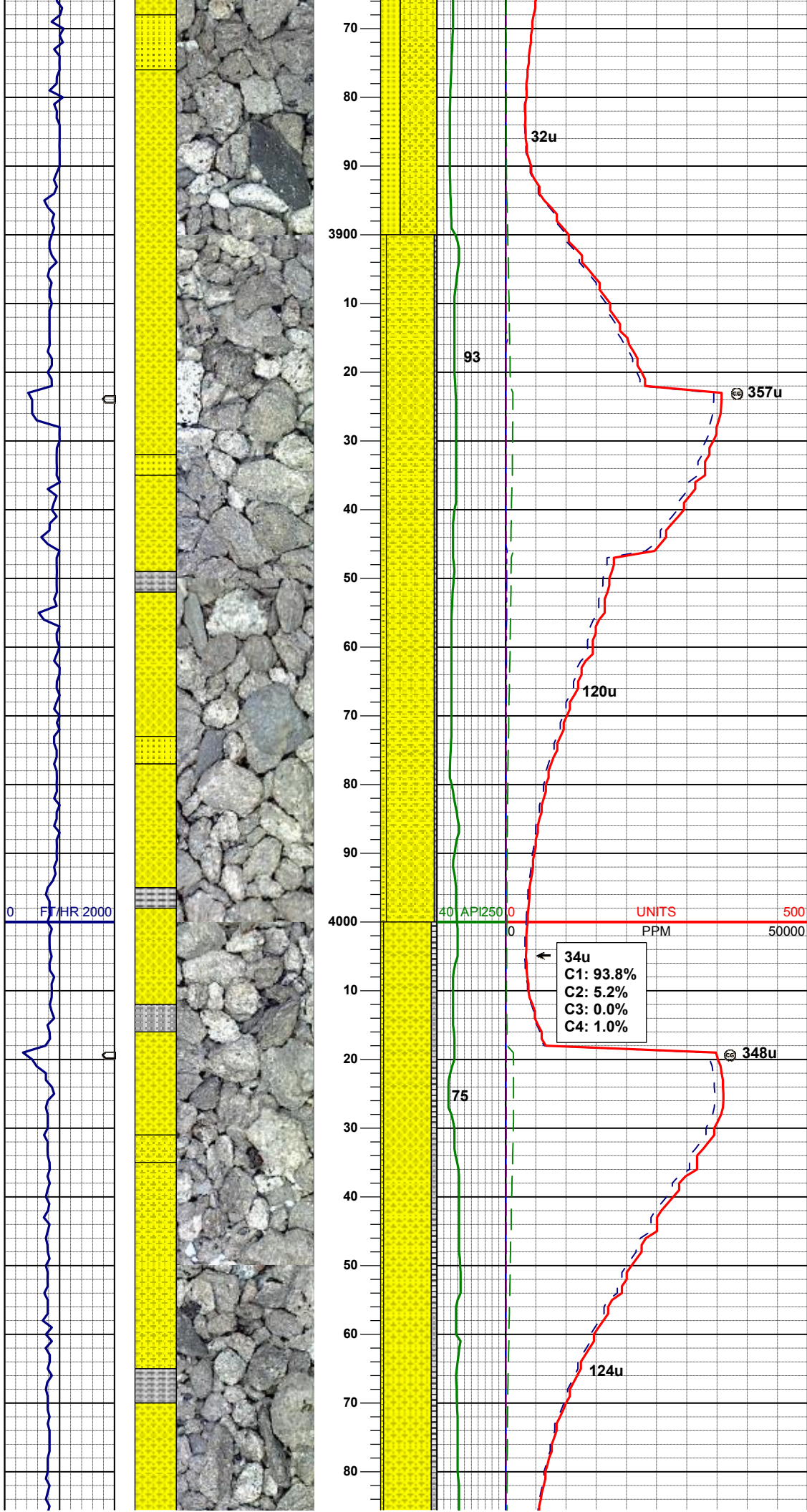
MD 3680'
INC 7.2°
AZM 335.0°
TVD 3667.51'

SS: wh, trnsl, tr dk lit frag, abnt glau,
fgr, hd-pfri, sbang-ang, sme unconc,
calc-arg cmt
SHYSS: wh, lt gy, gybrn, tr dk lit frag,
occ glau, vfgr, fri, brit clus, sbang-ang,
sl calc cmt, v hi % cly mnrl

MD 3775'
INC 9.1°
AZM 328.8°
TVD 3761.55'

WT IN 8.65/ OUT 8.65
VIS IN 30/ OUT 30

SHYSS: wh, lt gy, gybrn, tr dk lit frag,
occ glau, vfgr, fri, brit clus, sbang-ang,
sl calc cmt, v hi % cly mnrl
SS: wh, trnsl, tr dk lit frag, abnt glau,
fgr, hd-pfri, sbang-ang, sme unconc,
calc-arg cmt



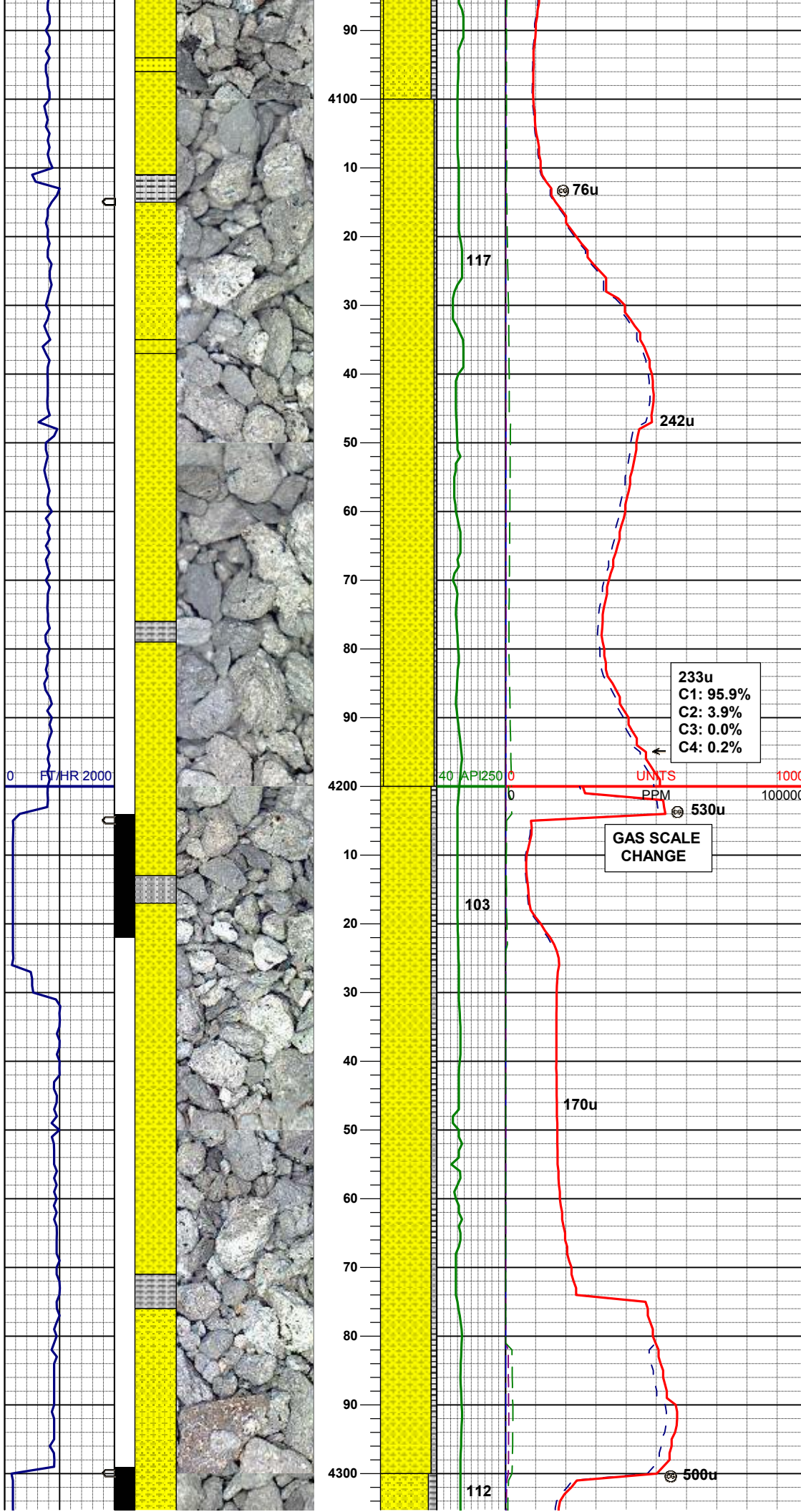
MD 3870'
INC 10.6°
AZM 327.4°
TVD 3855.14'

SHYSS: wh, lt gy, gybrn, tr dk lit frag, occ glau, vfgr, fri, brit clus, sbang-ang, sl calc cmt, v hi % cly mnrl
SS: wh, trnsl, tr dk lit frag, occ glau, fgr, hd-pfri, sbang-ang, calc-arg cmt
SLTYSH: gy-dkgy, ltbrn, fri, sbbiky, slty-gt tex, v sl calc

MD 3965'
INC 11.7°
AZM 328.4°
TVD 3948.35'

SHYSS: wh, lt gy, gybrn, tr dk lit frag, tr glau, vfgr, fri, brit clus, sbang-ang, sl calc cmt, v hi % cly mnrl
SLTYSH: gy-dkgy, ltbrn, fri, sbbiky, slty-gt tex, v sl calc
SS: wh, trnsl, tr dk lit frag, tr glau, fgr, hd-pfri, sbang-ang, calc-arg cmt

MD 4059'
INC 11.2°
AZM 327.9°
TVD 4040.48'

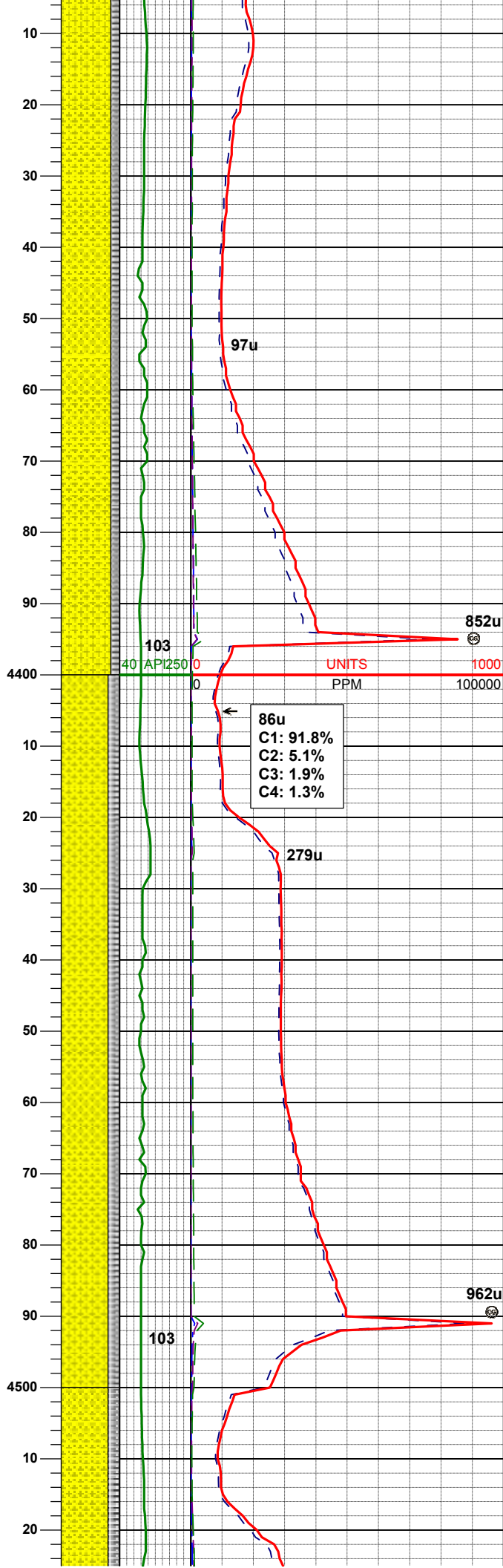
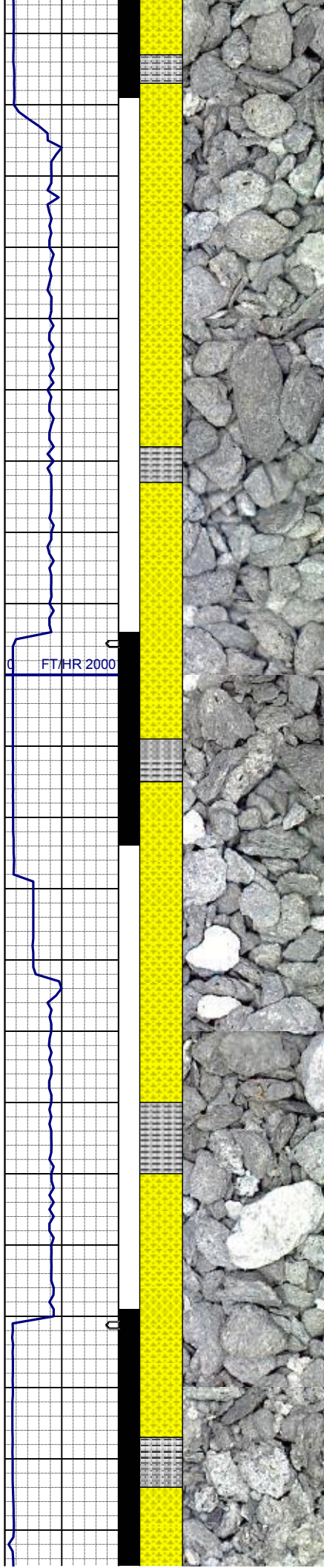


SHYSS: wh, lt gy, gybrn, tr dk lit frag, tr glau, vfgr, fri, brit clus, sbang-ang, sl calc cmt, v hi % cly mnrl
SLTYSH: gy-dkgy, ltbrn, fri, sbbiky, slty-gt tex, v sl calc
SS: wh, trnsl, tr dk lit frag, tr glau, fgr, hd-pfri, sbang-ang, calc-arg cmt

MD 4154'
INC 9.4°
AZM 327.9°
TVD 4133.94'

MD 4249'
INC 8.4°
AZM 326.9°
TVD 4227.80'

SHYSS: wh, lt gy, gybrn, tr dk lit frag, tr glau, vfgr, fri, brit clus, sbang-ang, sl calc cmt, v hi % cly mnrl
SLTYSH: gy-dkgy, ltbrn, fri, sbbiky, slty-gt tex, v sl calc



MD 4344'
INC 5.5°
AZM 329.5°
TVD 4322.09'

SHYSS: wh, lt gy, gybrn, tr dk lit frag,
tr glau, vfgr, fri, brit clus, sbang-ang,
sl calc cmt, v hi % cly mnrl
SLTYSH: gy-dkgy, ltbrn, fri, sbblky,
slty-gt tex, v sl calc

WT IN 8.70/ OUT 8.70
VIS IN 28/ OUT 28

103

40 API 250

UNITS

PPM

852u

86u
C1: 91.8%
C2: 5.1%
C3: 1.9%
C4: 1.3%

279u

WT IN 8.80/ OUT 8.80
VIS IN 29/ OUT 29

MD 4439'
INC 4.3°
AZM 338.6°
TVD 4416.74'

SHYSS: wh, lt gy, gybrn, tr dk lit frag,
tr glau, vfgr, fri, brit clus, sbang-ang,
sl calc cmt, v hi % cly mnrl
SLTYSH: gy-dkgy, ltbrn, fri, sbblky,
slty-gt tex, v sl calc

962u

103

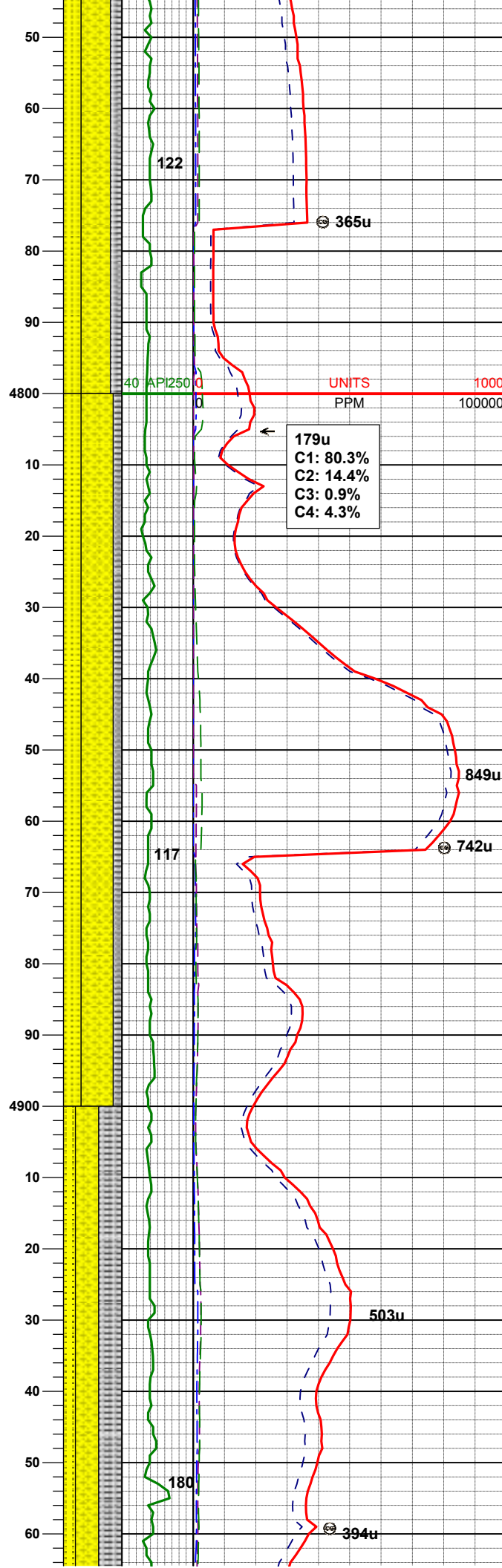
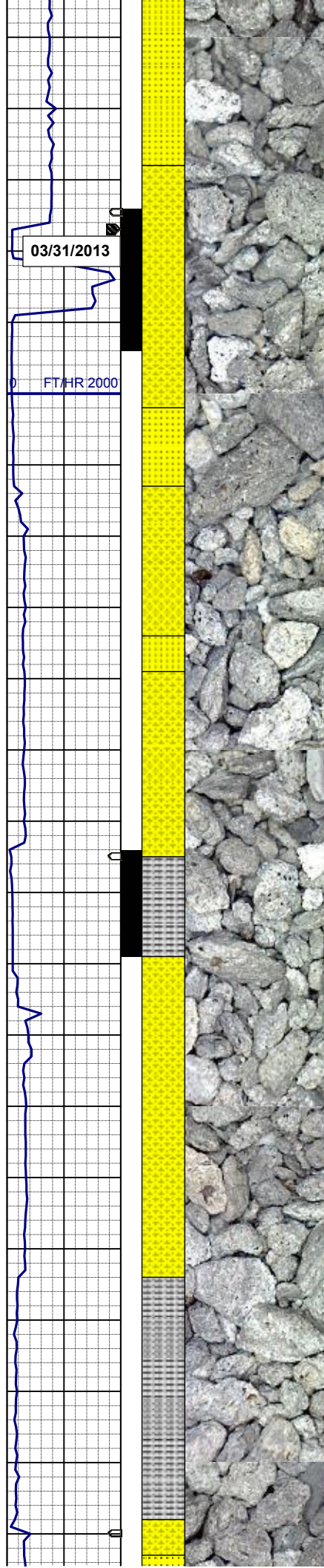
4500

MD	4629'
INC	2.3°
AZM	355.0°
TVD	4606.43'

SHYSS: wh, lt gy, gybrn, tr dk lit frag,
tr glau, vfgr, fri, brit clus, sbang-ang,
sl calc cmt
SLTYSH: gy-dkgy, ltbrn, fri, sbblky,
slty-gt tex, v sl calc

MD	4724'
INC	2.8°
AZM	53.2°
TVD	4701.35'

SHYSS: wh, lt gy, gybrn, tr dk lit frag,
tr alau. vfar. fri. brit clus. sbana-ana.



sl calc cmt, v hi % cly mnrl
SS: wh, trnsl, tr dk lit frag, tr glau, fgr,
hd-pfri, sbang-ang, calc-arg cmt
SLTYSH: gy-dkgy, ltbrn, fri, sbblky-
sbply, slty-gt tex, v sl calc

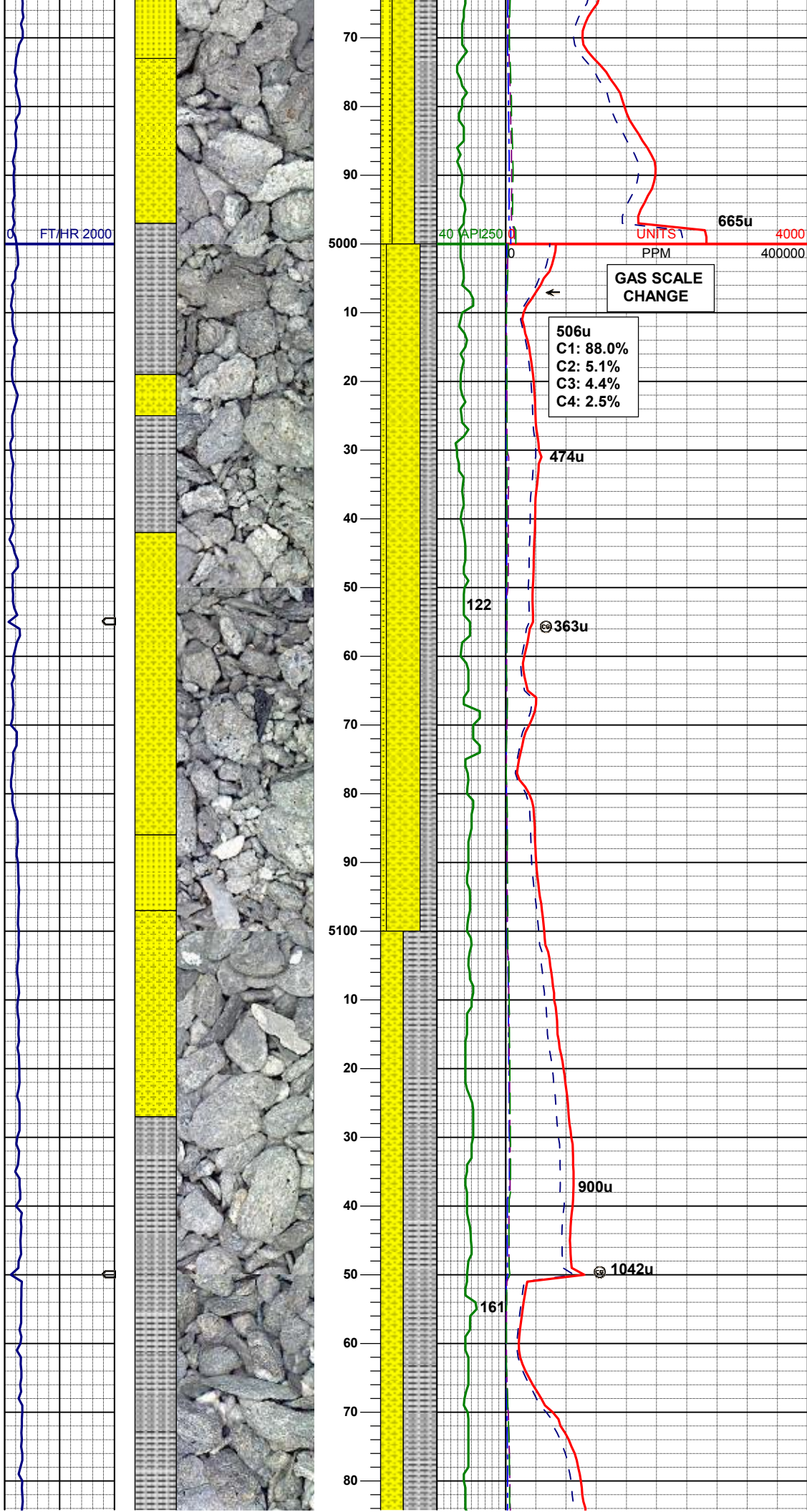
WT IN 8.90/ OUT 8.90
VIS IN 28/ OUT 28

MD 4814'
INC 4.2°
AZM 8.0°
TVD 4791.20'

SHYSS: wh, lt gy, gybrn, tr dk lit frag,
tr glau, vfgr, fri, brit clus, sbang-ang,
sl calc cmt, v hi % cly mnrl
SS: wh, trnsl, tr dk lit frag, tr glau, fgr,
hd-pfri, sbang-ang, calc-arg cmt
SLTYSH: gy-dkgy, ltbrn, fri, sbblky-
sbply, slty-gt tex, v sl calc

MD 4909'
INC 5.6°
AZM 337.4°
TVD 4885.86'

SHYSS: wh, lt gy, gybrn, tr dk lit frag,
tr glau, vfgr, fri, brit clus, sbang-ang,
sl calc cmt, v hi % cly mnrl
SS: wh, trnsl, tr dk lit frag, tr glau, fgr,
hd-pfri, sbang-ang, calc-arg cmt
SLTYSH: gy-dkgy, ltbrn, fri, sbblky-
sbply, slty-gt tex, v sl calc

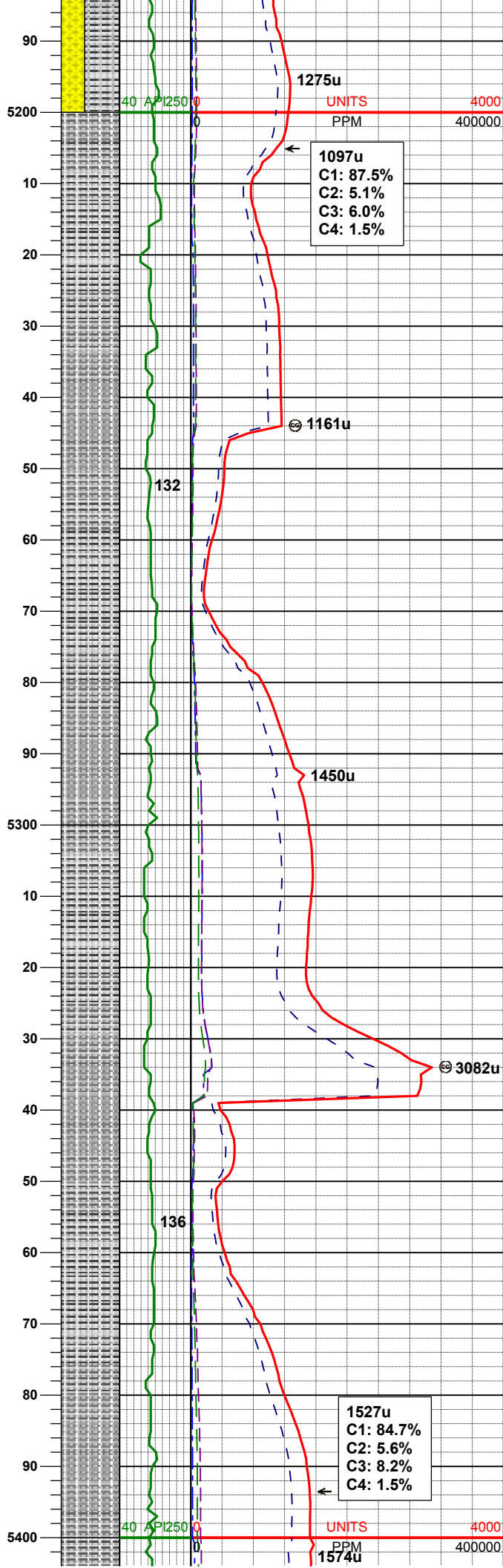
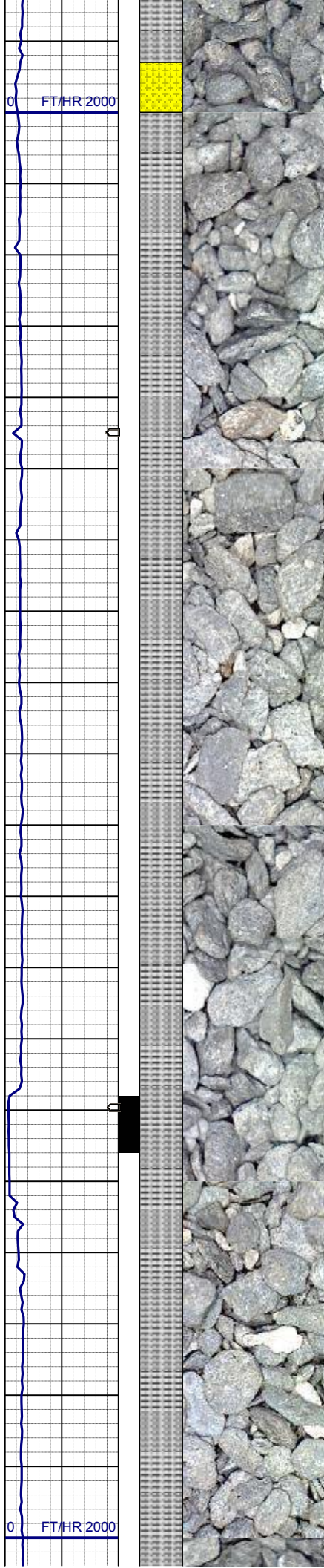


MD 5004'
INC 4.9°
AZM 333.0°
TVD 4980.46'

SHYSS: wh, lt gy, gybrn, tr dk lit frag,
tr glau, vfgr, fri, brit clus, sbang-ang,
sl calc cmt, v hi % cly mnrl
SS: wh, trnsi, tr dk lit frag, tr glau, fgr,
hd-pfri, sbang-ang, calc-arg cmt
SLTYSH: gy-dkgy, ltbrn, fri, sbblky-
sbply, slty-gt tex, v sl calc

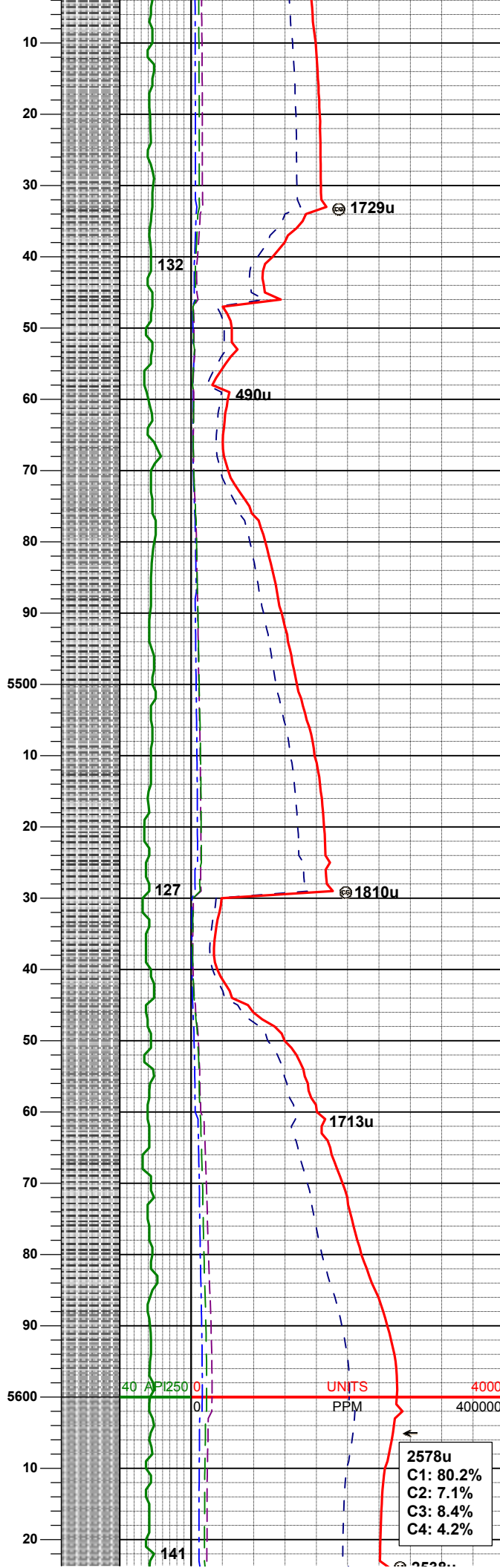
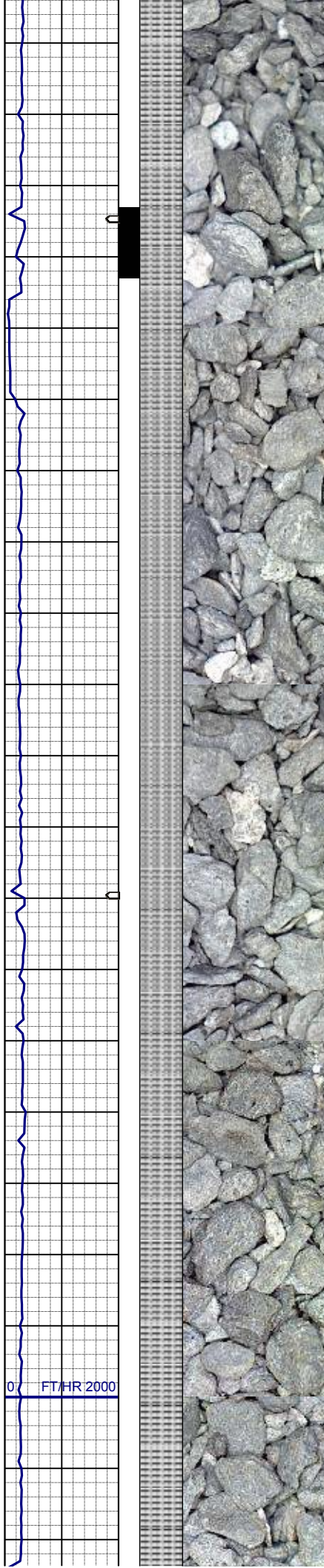
MD 5099'
INC 4.8°
AZM 325.3°
TVD 5075.12'

SLTYSH: gy-dkgy, ltbrn, fri, sbblky-
sbply, slty-gt tex, v sl calc
SHYSS: wh, lt gy, gybrn, tr dk lit frag,
tr glau, vfgr, fri, brit clus, sbang-ang,
sl calc cmt, v hi % cly mnrl



SLTYSH: gy-dkgy, ltbrn, fri, sblbky-sbplty, slty-gt tex, v sl calc

SLTYSH: gy-dkgy, ltbrn, fri, sblbky-sbplty, slty-gt tex, v sl calc



SLTYSH: gy-dkgy, ltbrn, fri, sbblky-sbply, slty-gt tex, v sl calc

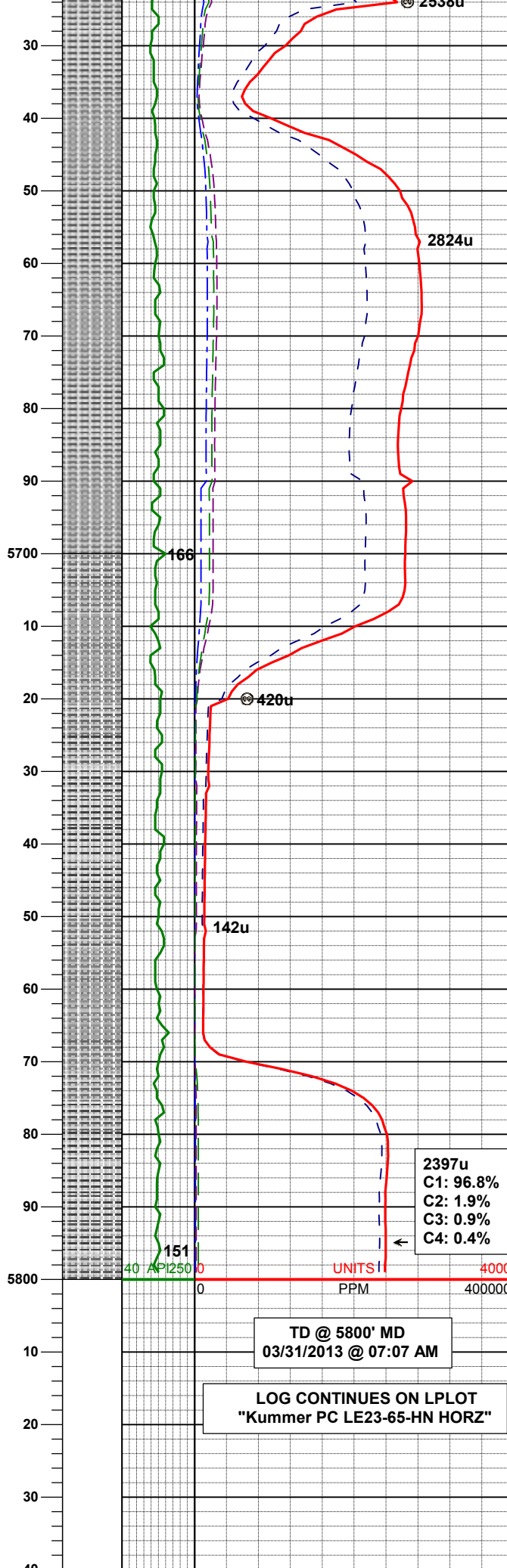
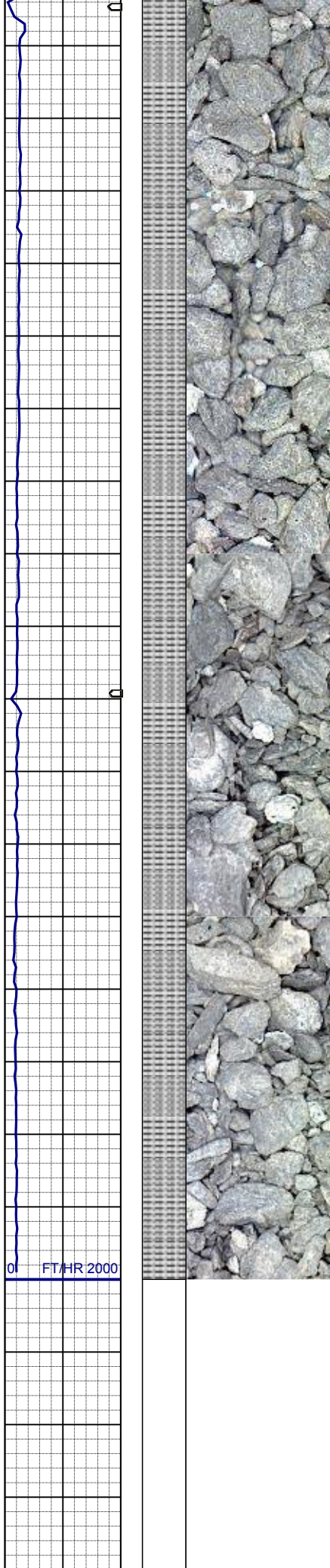
MD 5478'
INC 1.5°
AZM 319.8°
TVD 5453.12'

SLTYSH: gy-dkgy, ltbrn, fri, sbblky-sbply, slty-gt tex, v sl calc

WT IN 9.40/ OUT 9.50
VIS IN 28/ OUT 29

MD 5573'
INC 1.6°
AZM 330.90°
TVD 5548.08'

2578u
C1: 80.2%
C2: 7.1%
C3: 8.4%
C4: 4.2%



SLTYSH: gy-dkgy, ltbrn, fri, sbblky-sbply, slty-gt tex, v sl calc

MD 5668'
INC 1.5°
AZM 332.5°
TVD 5643.05'

SLTYSH: gy-dkgy, ltbrn, fri, sbblky-sbply, slty-gt tex, v sl calc

MD 5763'
INC 1.4°
AZM 336.9°
TVD 5738.02'

WT IN 9.55/ OUT 9.55
VIS IN 32/ OUT 32

2397u
C1: 96.8%
C2: 1.9%
C3: 0.9%
C4: 0.4%

UNITS
PPM

TD @ 5800' MD
03/31/2013 @ 07:07 AM

LOG CONTINUES ON L PLOT
"Kummer PC LE23-65-HN HORZ"

