

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

**OPERATOR:** NOBLE ENERGY INC  
**WELL:** KUMMER PC LE 23-64HN  
**LOCATION:** SEC 23 T8N R61W  
**COUNTY:** WELD  
**STATE:** COLORADO  
**SPOT:** 2197' FSL; 255' FWL  
**ELEVATION:** 4982' GL; 5006' KB  
**FIELD:** WILDCAT  
**SPUD DATE:** 04/21/2013  
**TD DATE:** 04/23/2013  
**DATES LOGGED:** 04/21/2013 - 04/23/2013  
**DEPTHS LOGGED:** 800' - 5788'MD  
**LOGGERS:** LAURA KELLOGG; CONOR PESICKA  
**DRILLING FLUID:** LSND  
**DRILLING RIG:** H&P 273  
**API:** 05-123-36679  
**LOG TYPE:** VERTICAL  
**SCALE:** 1:240 (5 inches per 100 feet)  
**REMARKS:** WELLSITE GEOLOGICAL SERVICES  
 PROVIDED BY COLUMBINE LOGGING INC.

**LITHOLOGIES**



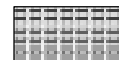
No Sample



Sandstone



Shaly Sandstone



Silty Shale

**ENGINEERING SYMBOLS**



Connection



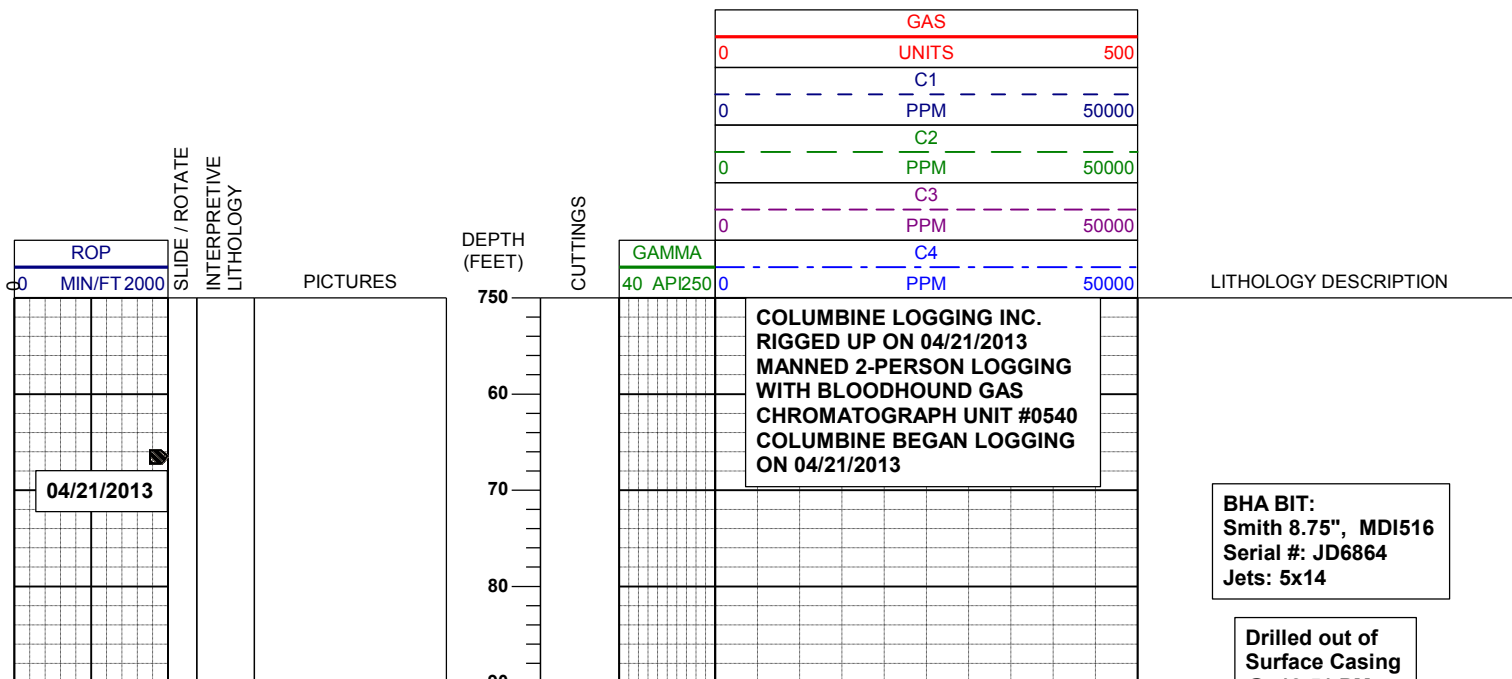
Connection Gas



Arrow

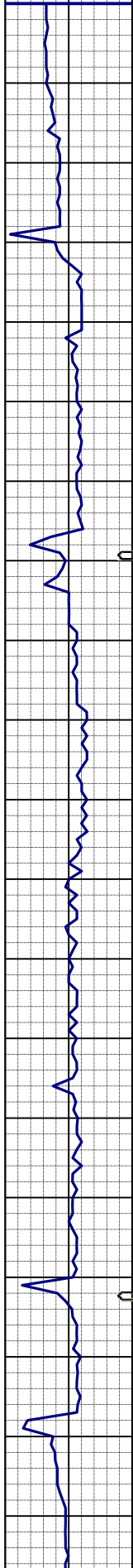


Midnight Depth

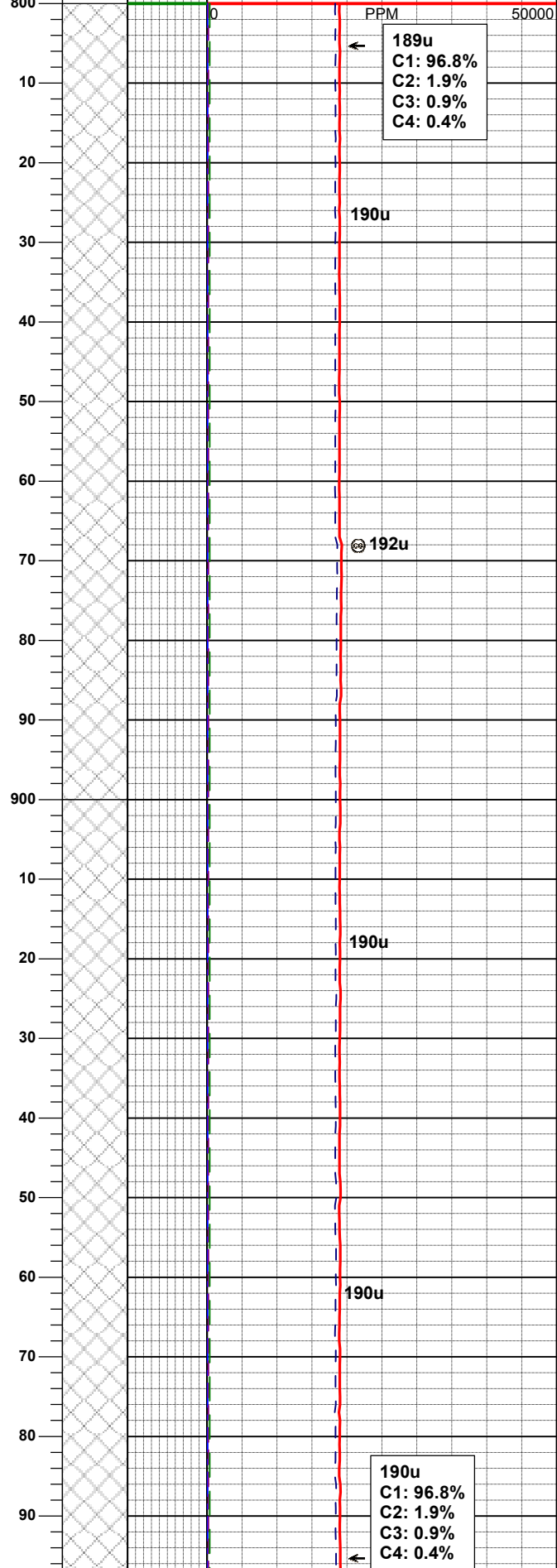


@ 12:51 PM  
04/22/2013

0 MIN/FT2000



40 API250 0 UNITS 500



MD 818'  
INC 0.6°  
AZM 107.3°  
TVD 817.99'

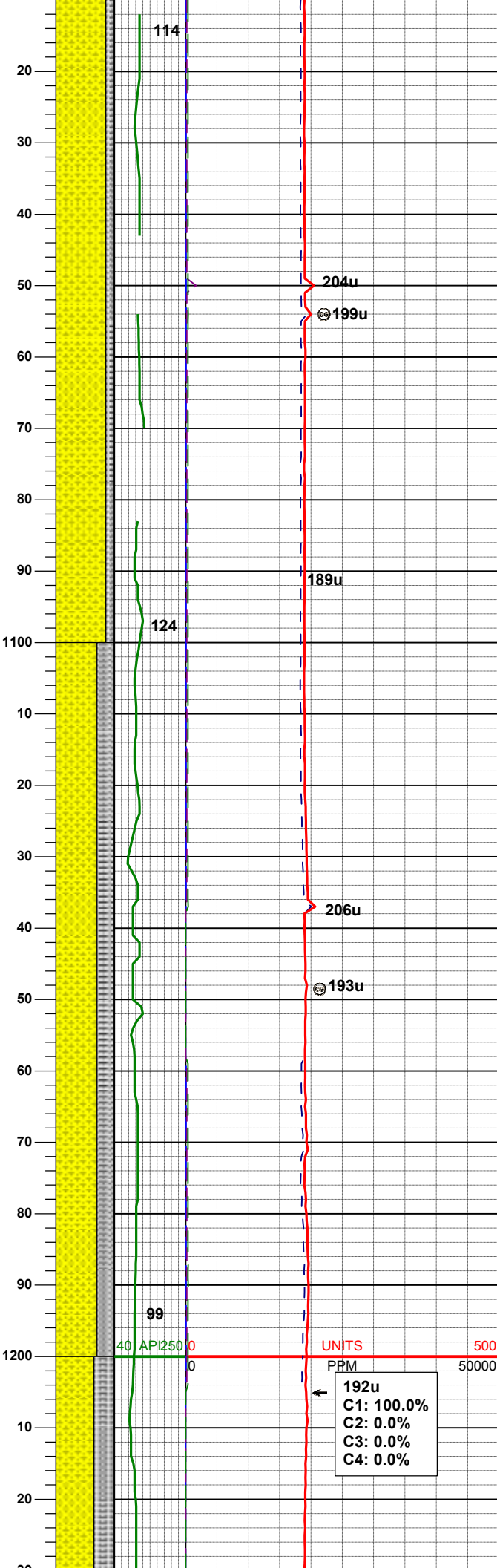
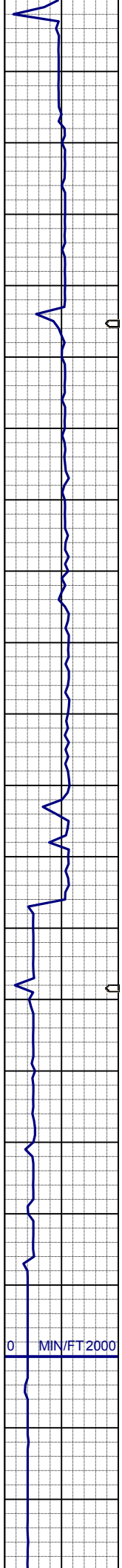
No Sample Coming  
Over Shakers

MD 911'  
INC 0.5°  
AZM 118.7°  
TVD 910.98'

No Sample Coming  
Over Shakers

WT IN 8.30/ OUT 8.60  
VIS IN 27/ OUT 27

MD 1006'  
INC 0.4°



AZM 114.9°  
TVD 1005.98'

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

MD 1097'  
INC 0.5°  
AZM 142.6°  
TVD 1096.97'

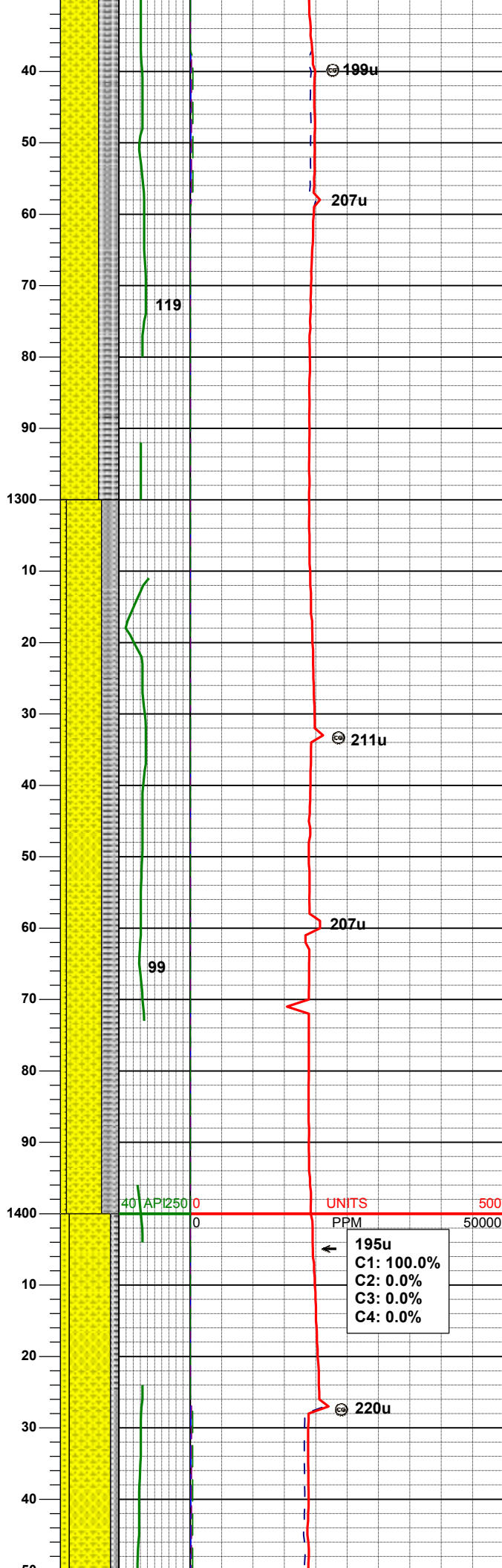
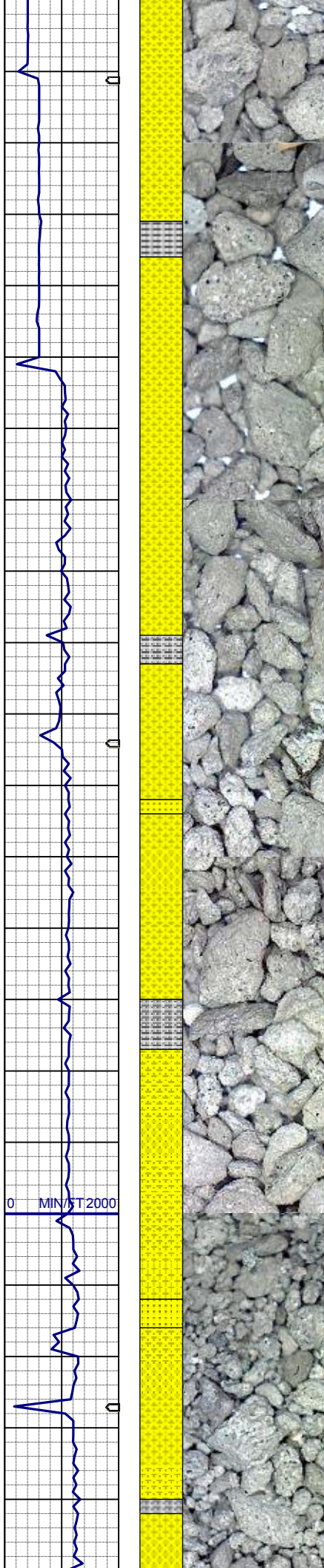
SHYSS: wh, lt gy, tr dk lit frag, vfgr,  
fri, brit clus, sbang-ang, smwt calc  
cmt, v hi % cly mnrl  
SLTYSH: gy-dkggy, ltbrn, fri, sbblky,  
slty-gt tex, v sl calc

MD 1190'  
INC 0.4°  
AZM 234.6°  
TVD 1189.97'

WT IN 8.30/ OUT 8.30  
VIS IN 26/ OUT 26

192u  
C1: 100.0%  
C2: 0.0%  
C3: 0.0%  
C4: 0.0%





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

MD 1283'  
INC 0.7°  
AZM 221.7°  
TVD 1282.97'

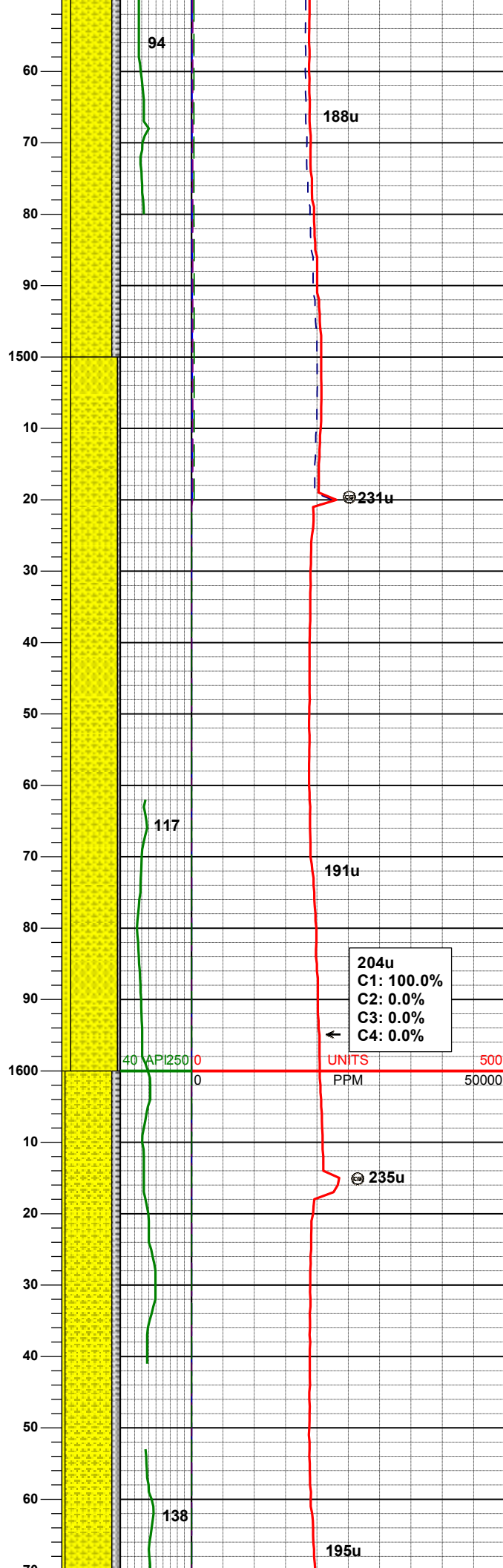
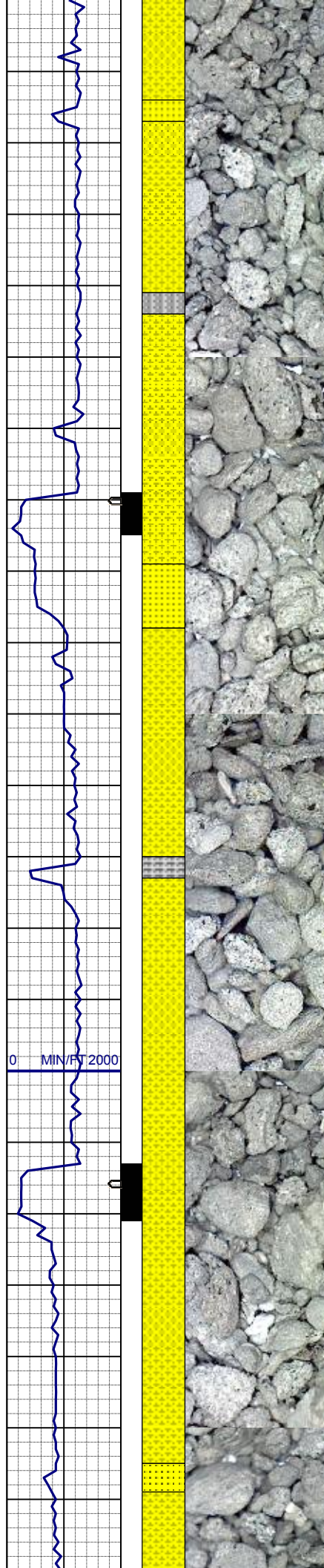
SHYSS: wh, lt gy, tr dk lit frag, vfgr,  
fri, brit clus, sbang-ang, smwt calc  
cmt, v hi % cly mnrl  
SLTYSH: gy-dkgy, ltbrn, fri, sbblky,  
slty-gt tex, v sl calc  
SS: wh, ltgy, trns, tr dk lit frag, tr glau,  
vfgr-fgr, v p srt, fri, sbang-ang, calc-  
arg cmt

MD 1376'  
INC 0.8°  
AZM 240.9°  
TVD 1375.96'

195u  
C1: 100.0%  
C2: 0.0%  
C3: 0.0%  
C4: 0.0%

SHYSS: wh, lt gy, tr dk lit frag, vfgr,  
fri, brit clus, sbang-ang, smwt calc  
cmt, v hi % cly mnrl  
SLTYSH: qv-dkqv, ltbrn, fri, sbblkv,





slty-gt tex, v sl calc  
SS: wh, ltgy, trns, tr dk lit frag, tr glau,  
vfgr-fgr, v p srt, fri, sbang-ang, calc-  
arg cmt

MD	1469'
INC	1.0°
AZM	235.8°
TVD	1468.95'

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

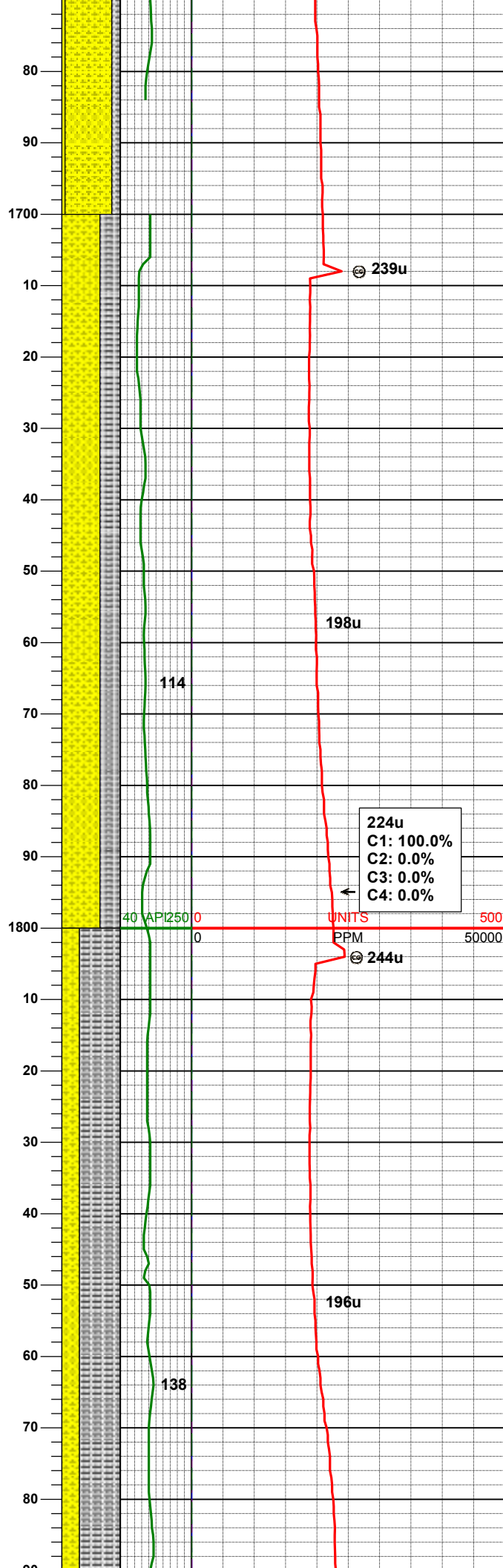
MD	1563'
INC	1.7°
AZM	236.5°
TVD	1562.92'

204u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

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  
SS: wh, ltgy, trns, tr dk lit frag, tr glau,  
vfgr-fgr, v p srt, fri, sbang-ang, calc-  
arg cmt

MD	1658'
INC	2.9°
AZM	226.7°

TVD 1657.84'



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

MD 1753'  
INC 4.2°  
AZM 222.6°  
TVD 1752.66'

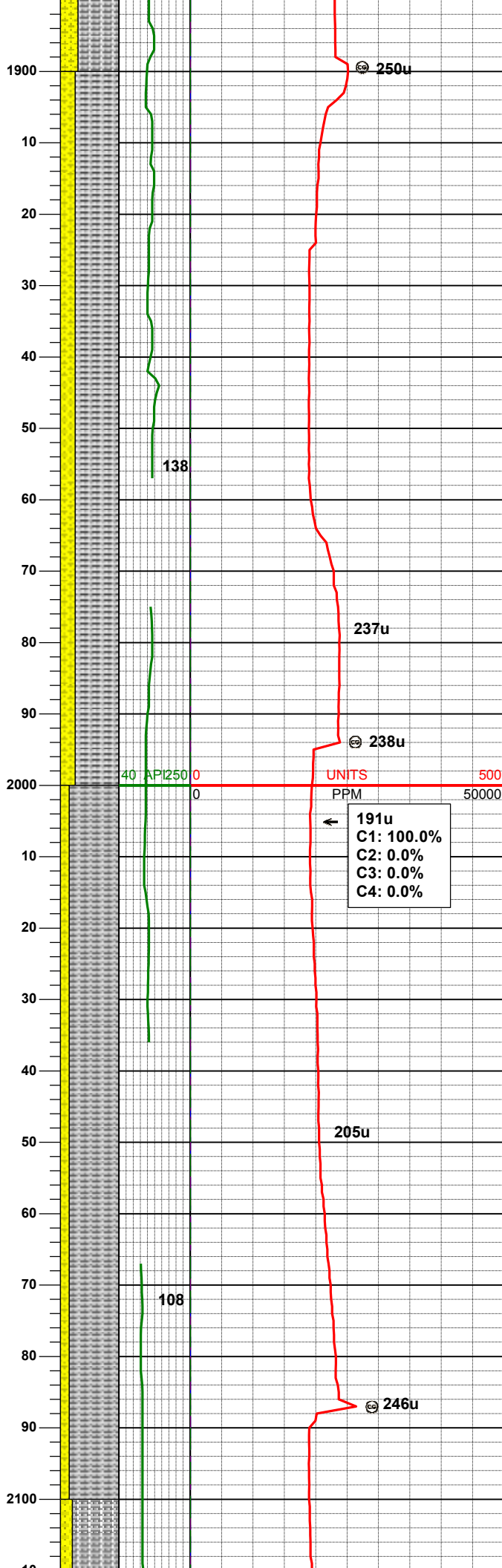
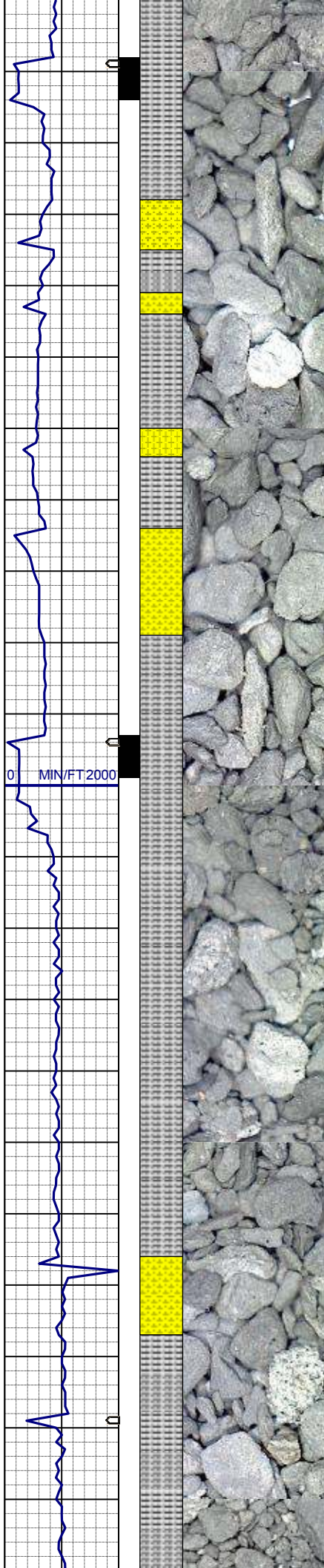
224u  
C1: 100.0%  
C2: 0.0%  
C3: 0.0%  
C4: 0.0%

UNITS 500  
PPM 50000

MD 1848'  
INC 5.0°  
AZM 224.9°  
TVD 1847.35'

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





MD 1943'  
INC 5.0°  
AZM 218.2°  
TVD 1941.99'

SLTYSH: gy-dkgy, ltbrn, fri, sbbiky,  
slyt-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

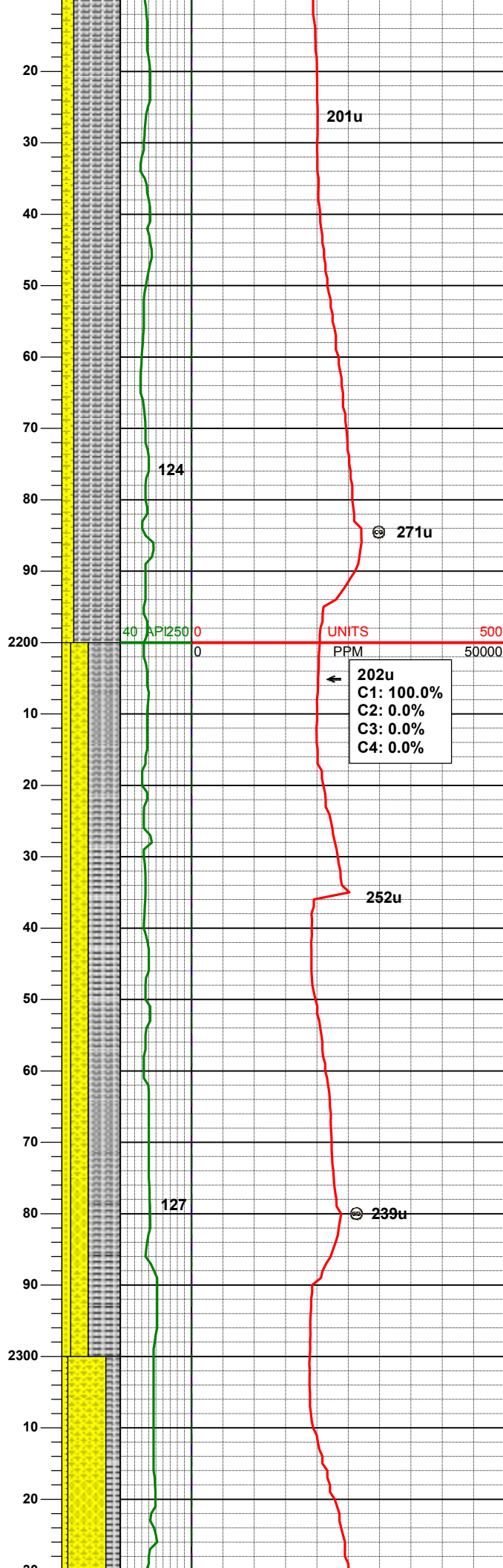
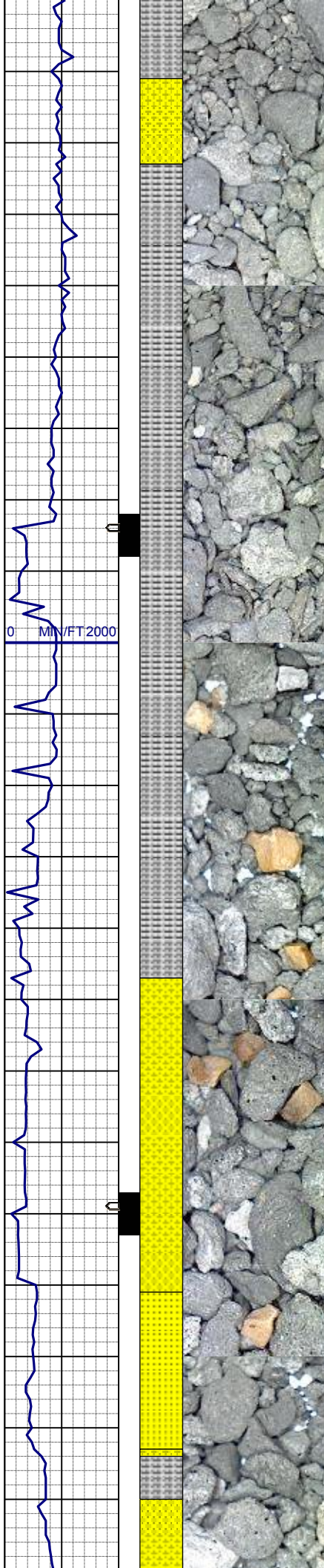
WT IN 8.50+/- OUT 8.90  
VIS IN 27/ OUT 27

191u  
C1: 100.0%  
C2: 0.0%  
C3: 0.0%  
C4: 0.0%

MD 2037'  
INC 6.2°  
AZM 211.4°  
TVD 2035.54'

SLTYSH: gy-dkgy, ltbrn, fri, sbbiky,  
slyt-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





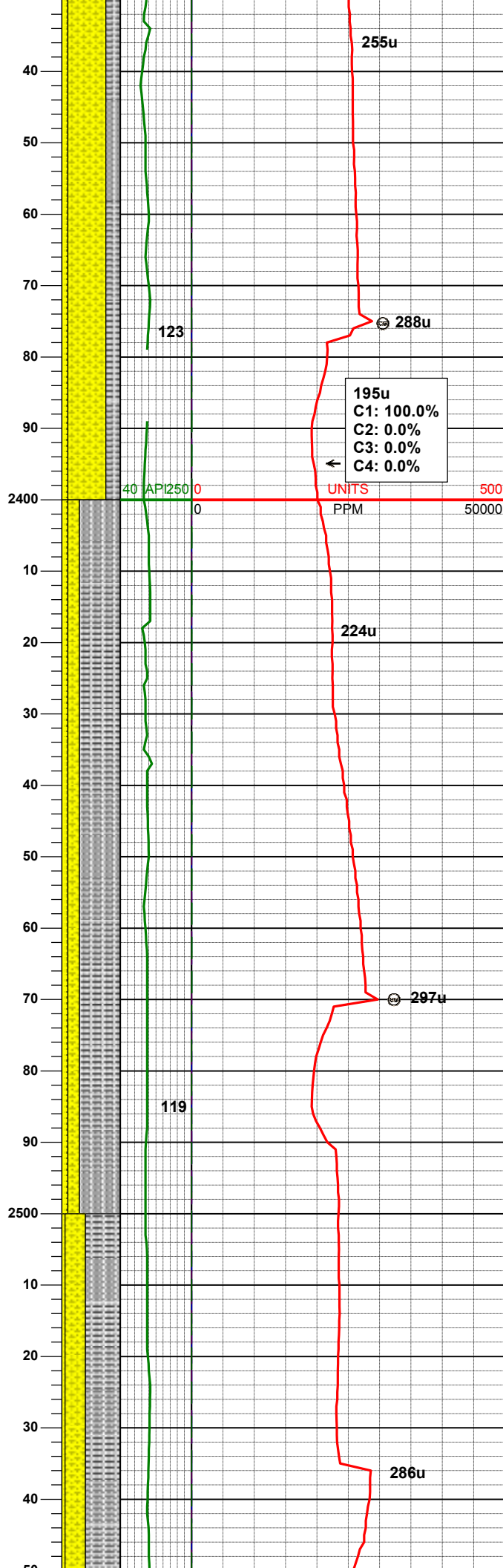
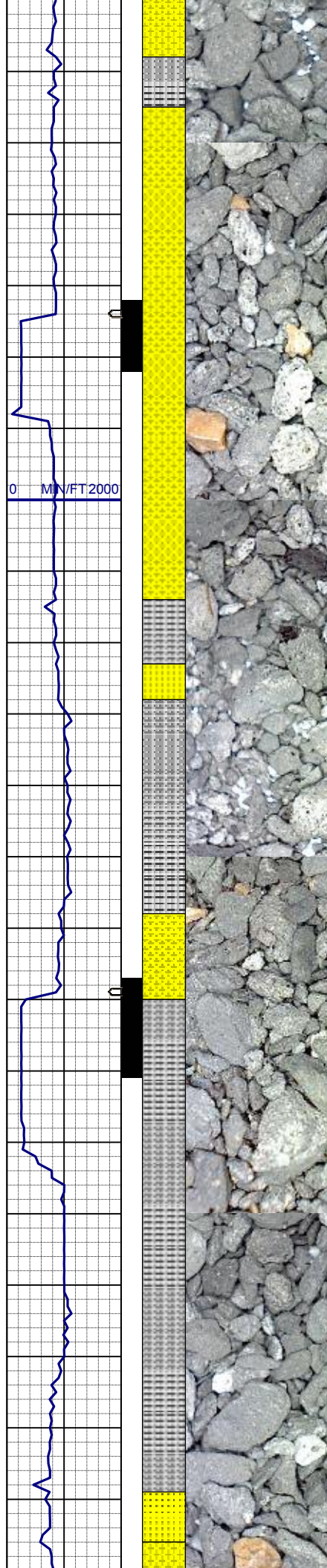
MD 2132'  
INC 6.2°  
AZM 209.8°  
TVD 2129.99'

SLTYSH: gy-dkgy, ltbrn, fri, sbbkly,  
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

MD 2227'  
INC 6.2°  
AZM 204.3°  
TVD 2224.43'

SLTYSH: gy-dkgy, ltbrn, fri, sbbkly,  
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  
SS: wh, ltgy, trns, tr dk lit frag, tr glau,  
vfgr-fgr, v p srt, fri, sbang-ang, calc-  
arg cmt

MD 2322'  
INC 6.2°  
AZM 212.3°  
TVD 2318.88'



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,  
silty-gt tex, v sl calc  
SS: wh, ltgy, trns, tr dk lit frag, tr glau,  
vfgr-fgr, v p srt, fri, sbang-ang, calc-  
arg cmt

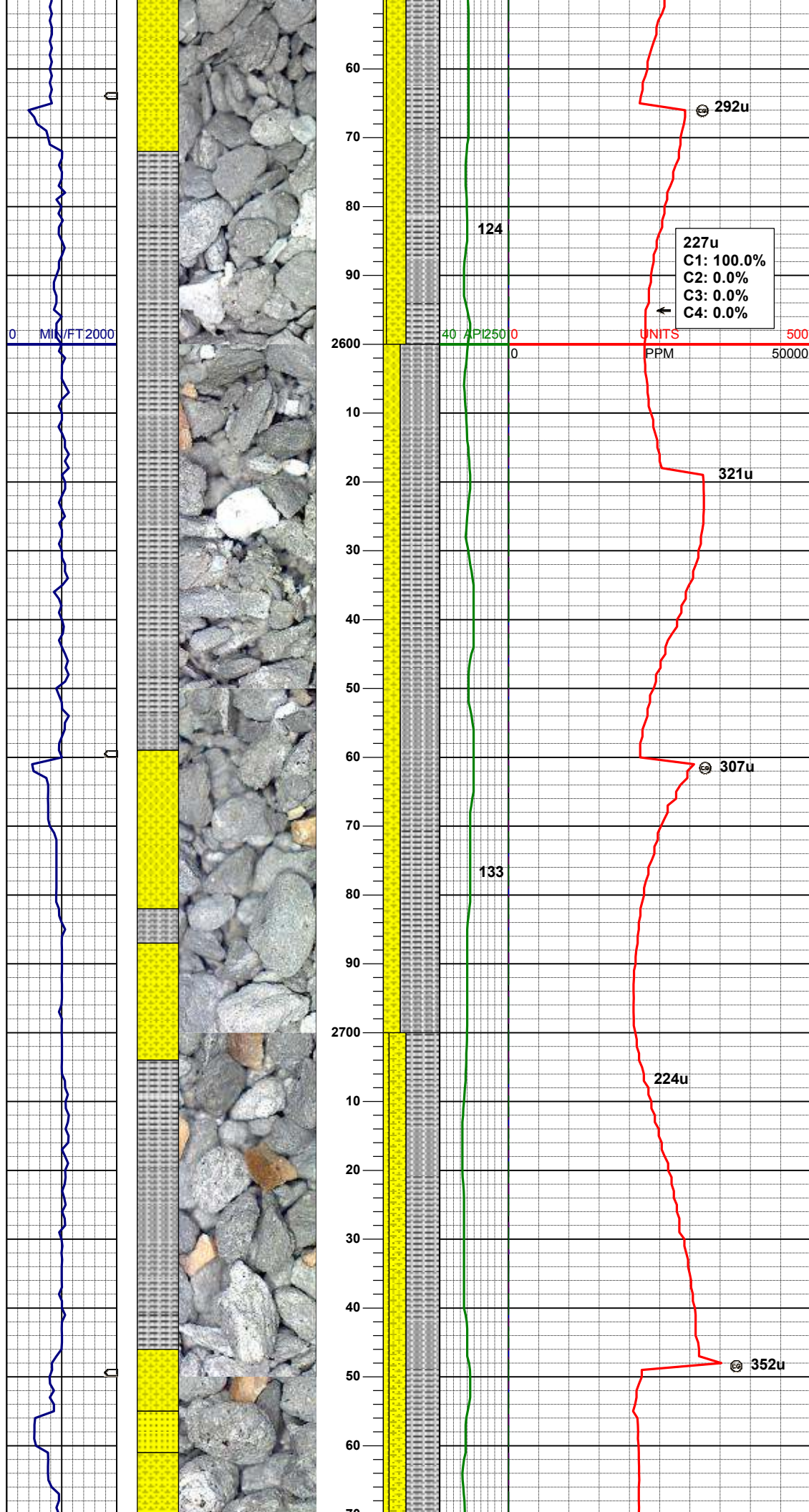
MD 2417'  
INC 5.7°  
AZM 215.1°  
TVD 2413.37'

SLTYSH: gy-dkgy, ltbrn, fri, sbbiky,  
silty-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  
SS: wh, ltgy, trns, tr dk lit frag, tr glau,  
vfgr-fgr, v p srt, fri, sbang-ang, calc-  
arg cmt

MD 2512'  
INC 5.8°  
AZM 253.3°  
TVD 2507.90'

SLTYSH: gy-dkgy, ltbrn, fri, sbbiky,  
silty-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  
SS: wh, ltgy, trns, tr dk lit frag, tr glau,  
vfgr-fgr, v p srt, fri, sbang-ang, calc-  
arg cmt

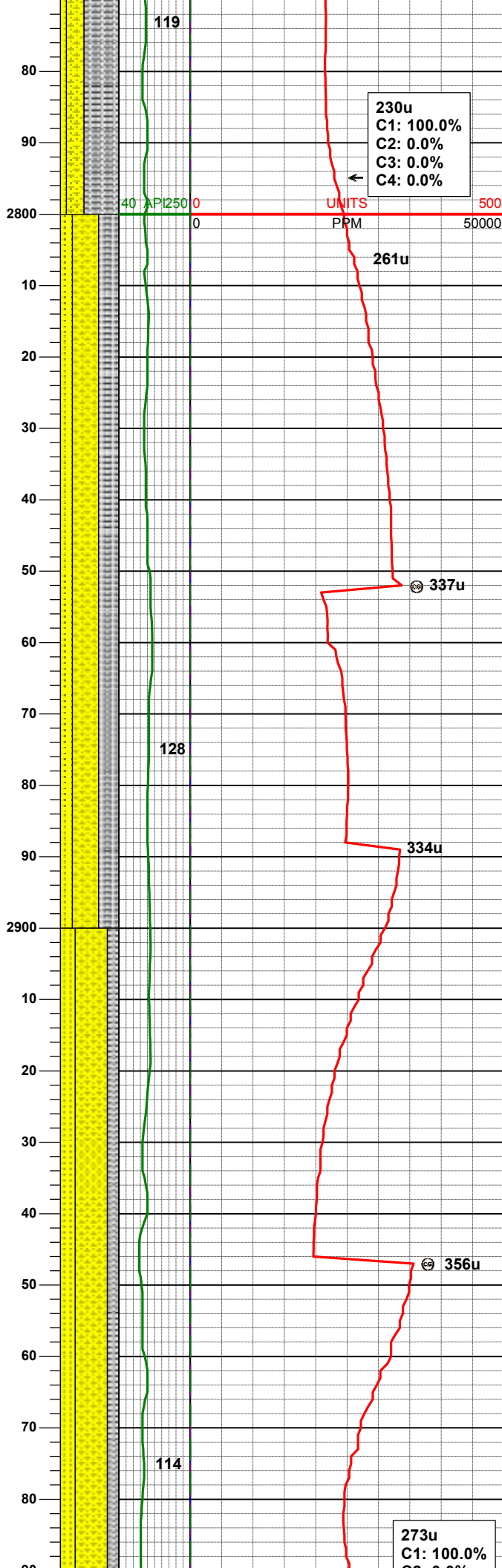
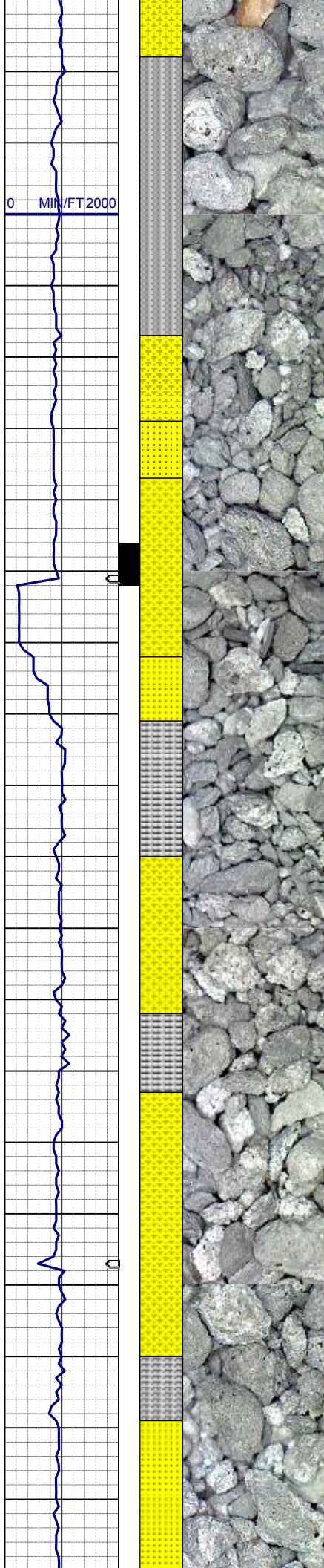
MD 2607'  
INC 5.4°  
AZM 232.8°  
TVD 2602.45'

SLTYSH: gy-dkgy, ltbrn, fri, sbbiky,  
silty-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

MD 2702'  
INC 5.0°  
AZM 236.2°  
TVD 2697.05'

SLTYSH: gy-dkgy, ltbrn, fri, sbbiky,  
silty-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  
SS: wh, ltgy, trns, tr dk lit frag, tr glau,  
vfgr-fgr, v p srt, fri, sbang-ang, calc-  
arg cmt





MD 2796'  
INC 4.7°  
AZM 233.5°  
TVD 2790.72'

SLTYSH: gy-dkgy, ltbrn, fri, sbbly,  
silty-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  
SS: wh, ltgy, fnt brn stn, trns, tr dk lit  
frag, tr glau, vfgr-fgr, v p srt, fri, sbang  
-ang, calc-arg cmt

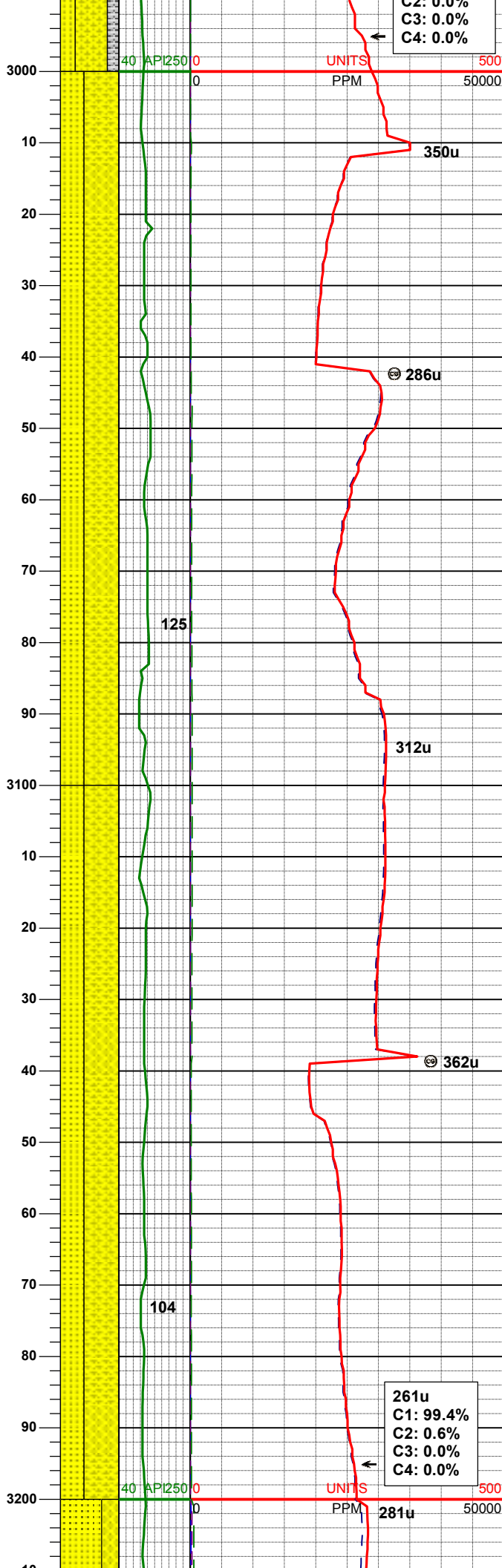
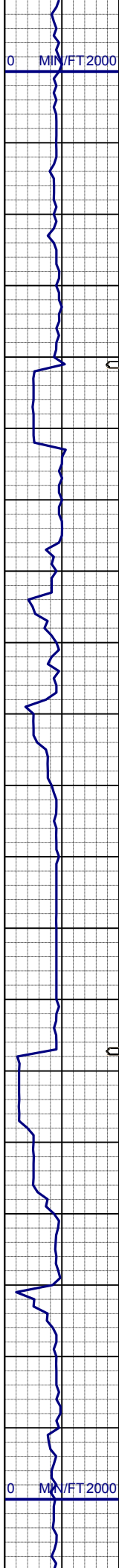
WT IN 8.80/ OUT 8.80  
VIS IN 28/ OUT 28

MD 2891'  
INC 5.5°  
AZM 228.8°  
TVD 2885.34'

SHYSS: wh, lt gy, tr dk lit frag, vfgr,  
fri, brit clus, sbang-ang, smwt calc  
cmt, v hi % cly mnrl  
SS: wh, ltgy, fnt brn stn, trns, tr dk lit  
frag, tr glau, vfgr-fgr, v p srt, fri, sbang  
-ang, calc-arg cmt  
SLTYSH: gy-dkgy, ltbrn, fri, sbbly,  
silty-gt tex, v sl calc

MD 2986'  
INC 5.3°  
AZM 230.0°  
TVD 2979.22'

273u  
C1: 100.0%  
C2: 0.0%  
C3: 0.0%  
C4: 0.0%



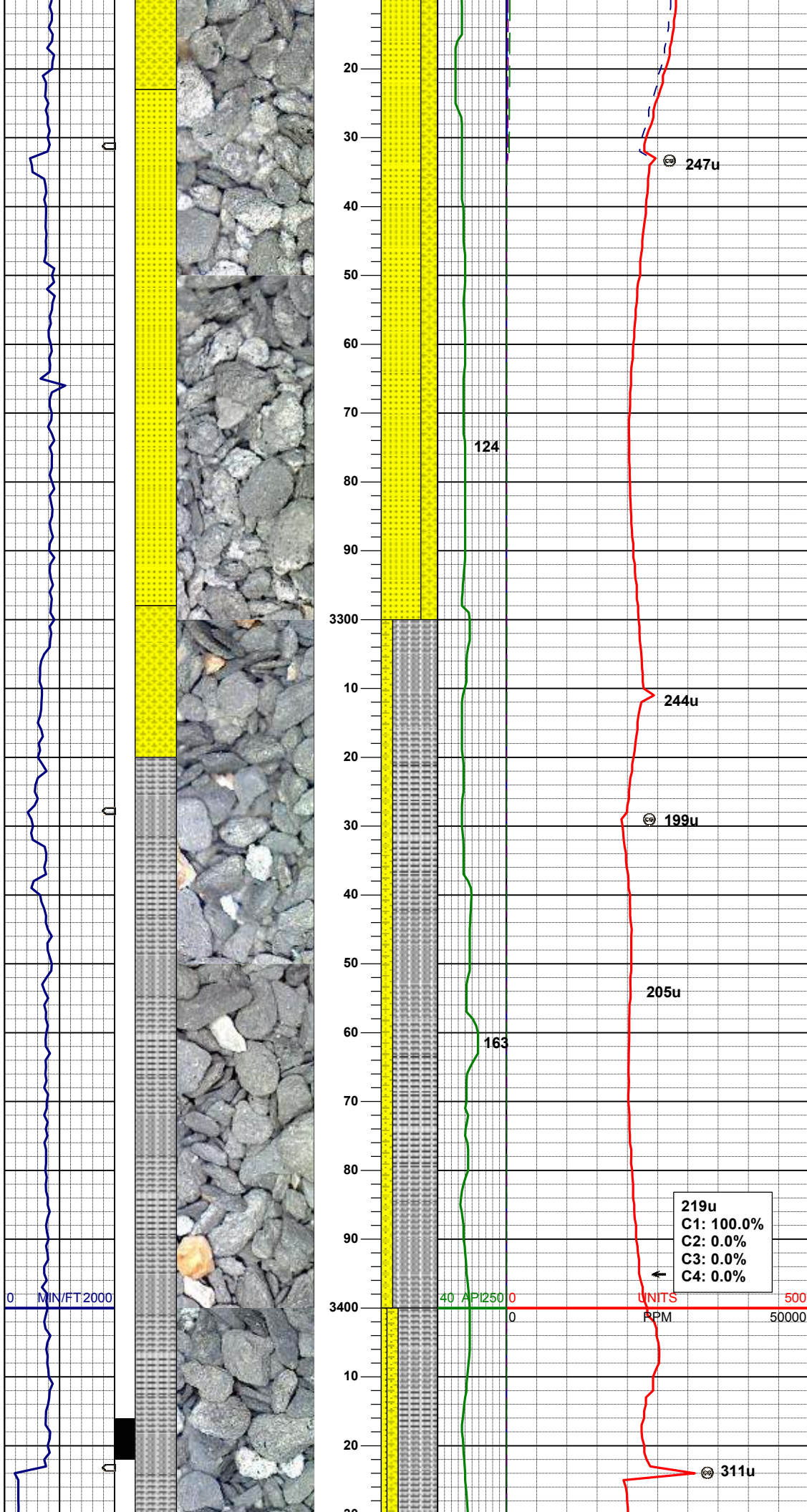
SHYSS: wh, lt gy, tr dk lit frag, vfgr, fri, brit clus, sbang-ang, smwt calc cmt, v hi % cly mnrl  
SS: wh, ltgy, trns, tr dk lit frag, tr glau, vfgr-fgr, v p srt, fri, sbang-ang, calc-arg cmt

MD 3081'  
INC 5.3°  
AZM 229.5°  
TVD 3074.51'

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

MD 3176'  
INC 5.6°  
AZM 222.3°  
TVD 3263.81'





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

MD 3271'  
INC 4.6°  
AZM 222.3°  
TVD 3263.81'

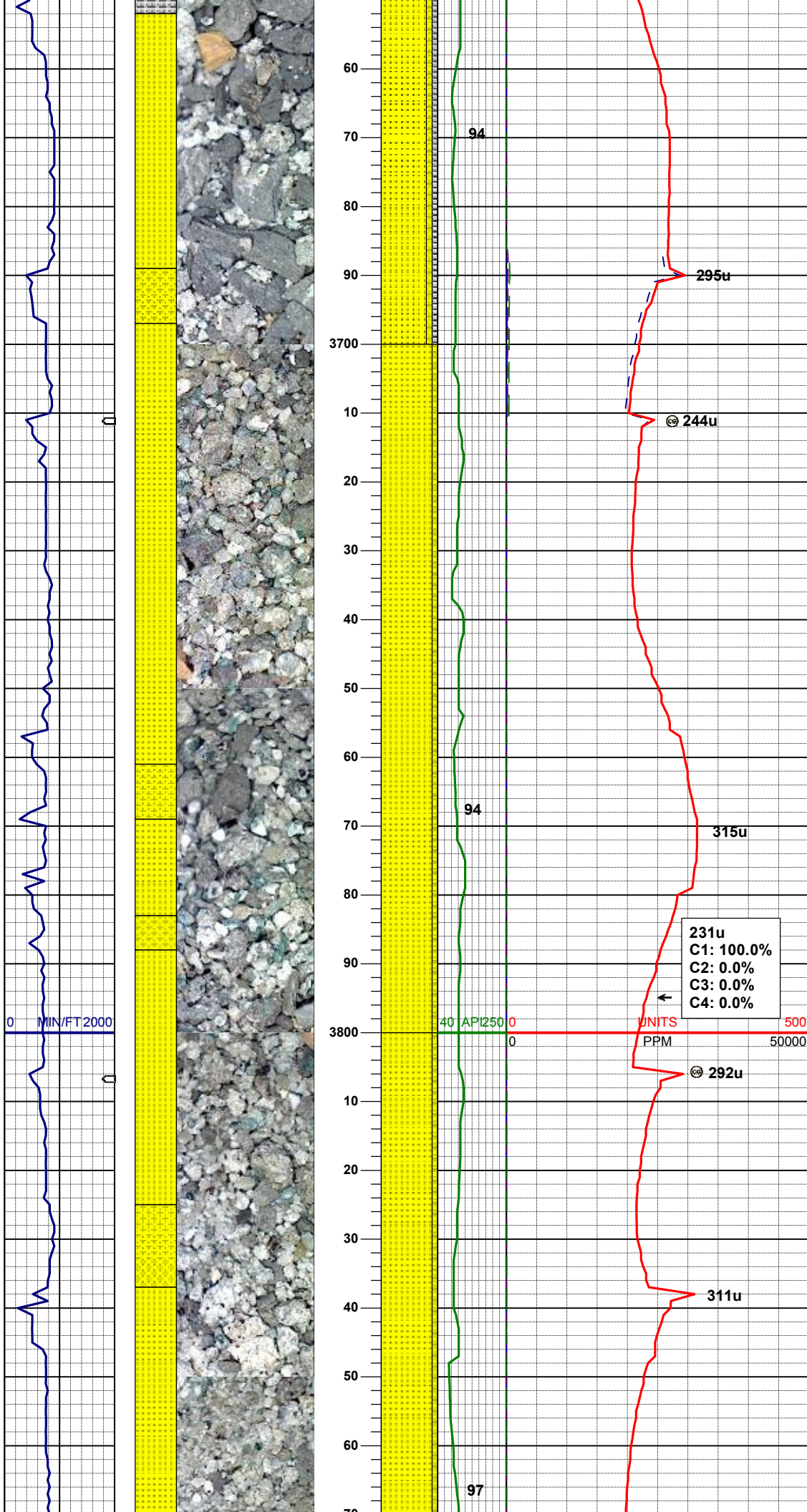
SLTYSH: gy-dkgy, ltbrn, fri, sbbiky, silty-gt tex, v sl calc  
SHYSS: wh, lt gy, tr dk lit frag, vfgr, fri, brit clus, sbang-ang, smwt calc cmt, v hi % cly mnrl

MD 3366'  
INC 4.0°  
AZM 218.8°  
TVD 3358.54'

219u  
C1: 100.0%  
C2: 0.0%  
C3: 0.0%  
C4: 0.0%







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

MD 3650'  
INC 5.5°  
AZM 215.1°  
TVD 3641.82'

MD 3745'  
INC 6.0°  
AZM 215.9°  
TVD 3736.35'

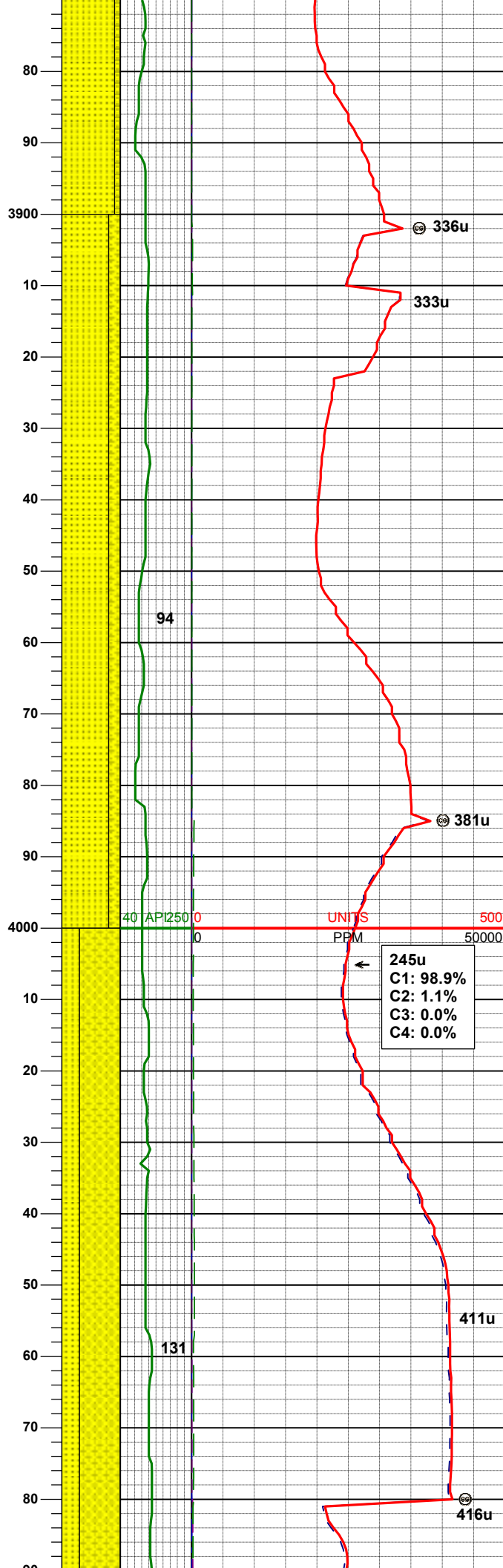
SS: wh, ltgy, trnsl, tr dk lit frag, tr glau,  
vfgr-fgr, v p srt, fri, sbang-ang, calc-  
arg cmt  
SHYSS: wh, lt gy, tr dk lit frag, vfgr,  
fri, brit clus, sbang-ang, smwt calc  
cmt, v hi % cly mnrl

231u  
C1: 100.0%  
C2: 0.0%  
C3: 0.0%  
C4: 0.0%

MD 3840'  
INC 6.2°  
AZM 215.1°  
TVD 3830.81'

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





WT IN 8.80/ OUT 8.80  
VIS IN 27/ OUT 27

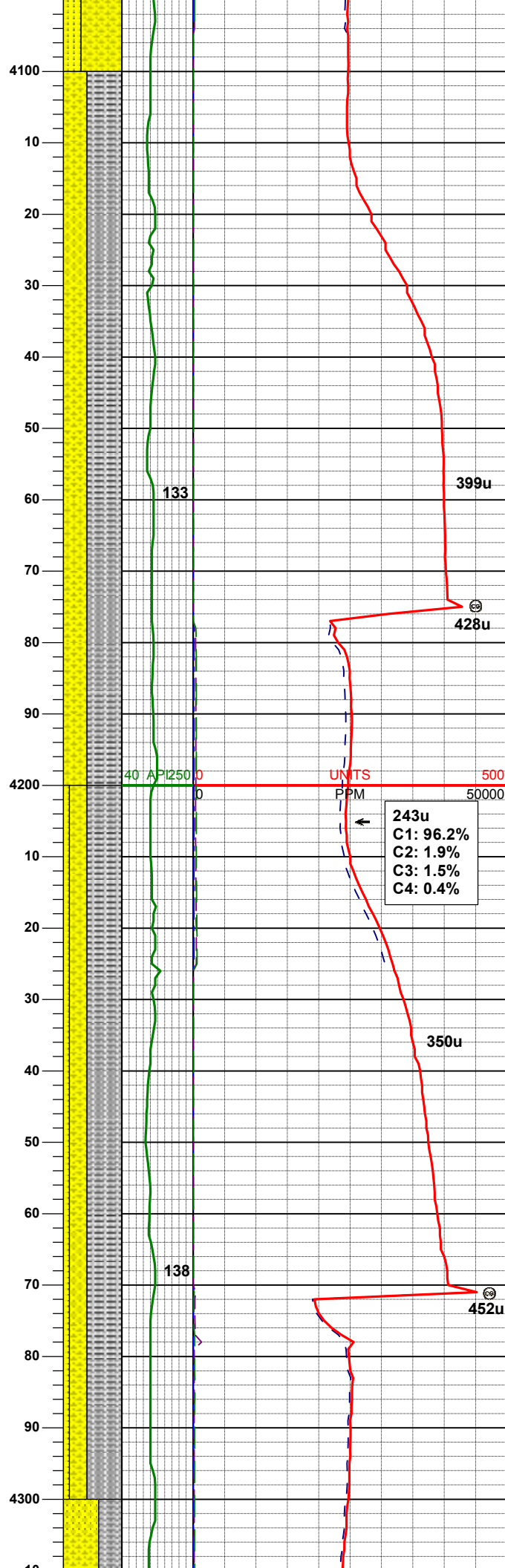
MD 3935'  
INC 6.7°  
AZM 216.6°  
TVD 3925.21'

SS: wh, ltgy, trns, tr dk lit frag, tr glau,  
vfgr-fgr, v p srt, fri, sbang-ang, calc-  
arg cmt  
SHYSS: wh, ltgy, tr dk lit frag, vfgr,  
fri, brit clus, sbang-ang, smwt calc  
cmt, v hi % cly mnrl

MD 4030'  
INC 6.8°  
AZM 214.0°  
TVD 4019.55'

SHYSS: wh, ltgy, tr dk lit frag, vfgr,  
fri, brit clus, sbang-ang, smwt calc  
cmt, v hi % cly mnrl  
SS: wh, ltgy, trns, tr dk lit frag, tr glau,  
vfgr-fgr, v p srt, fri, sbang-ang, calc-  
arg cmt





MD 4125'  
INC 5.6°  
AZM 211.9°  
TVD 4113.99'

SLTYSH: gy-dkgy, ltbrn, fri, sbbkly,  
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, grdg to ss

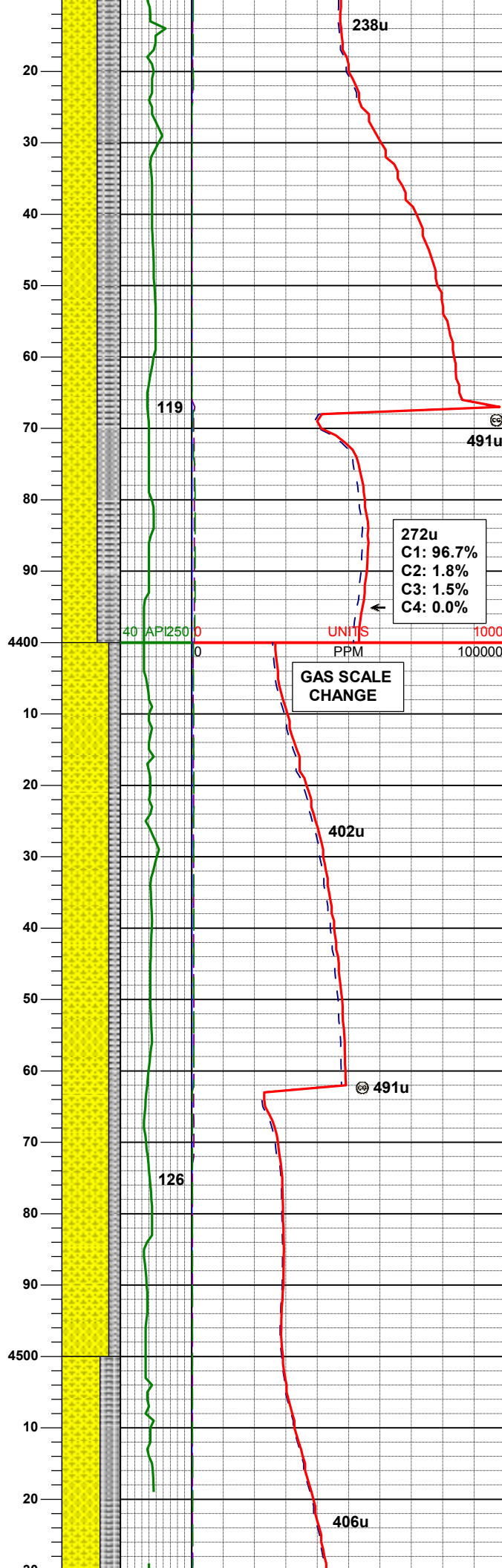
MD 4220'  
INC 5.3°  
AZM 210.3°  
TVD 4208.56'

SLTYSH: gy-dkgy, ltbrn, fri, sbbkly,  
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  
SS: wh, ltgy, trns, tr dk lit frag, tr glau,  
vfgr-fgr, v p srt, fri, sbang-ang, calc-  
arg cmt

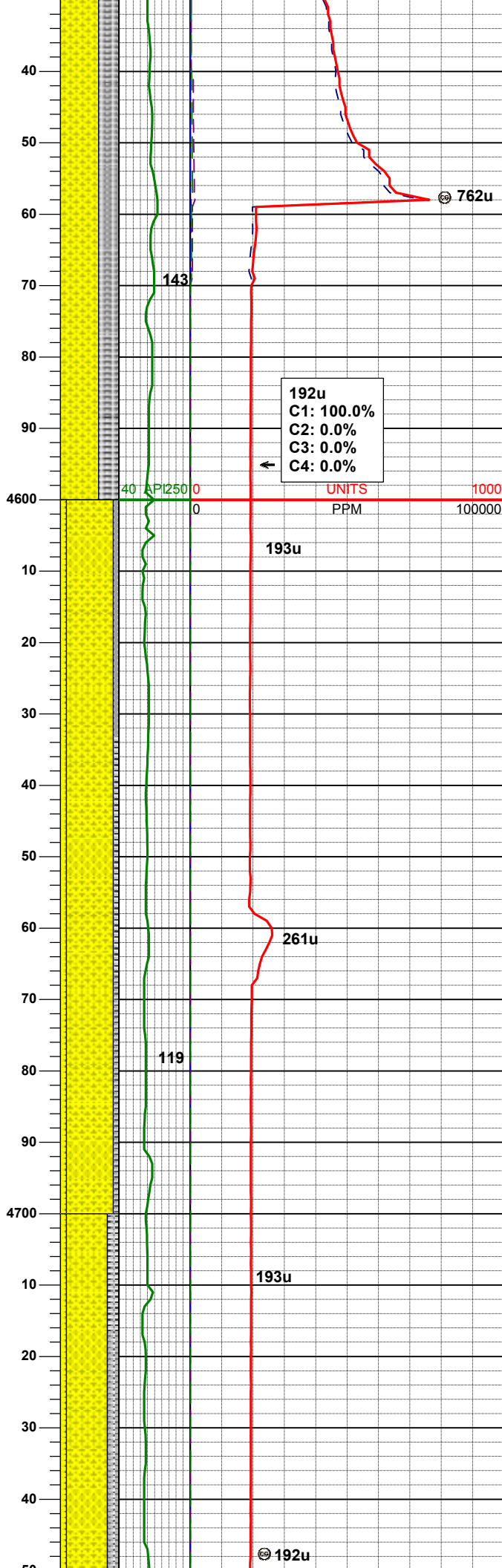
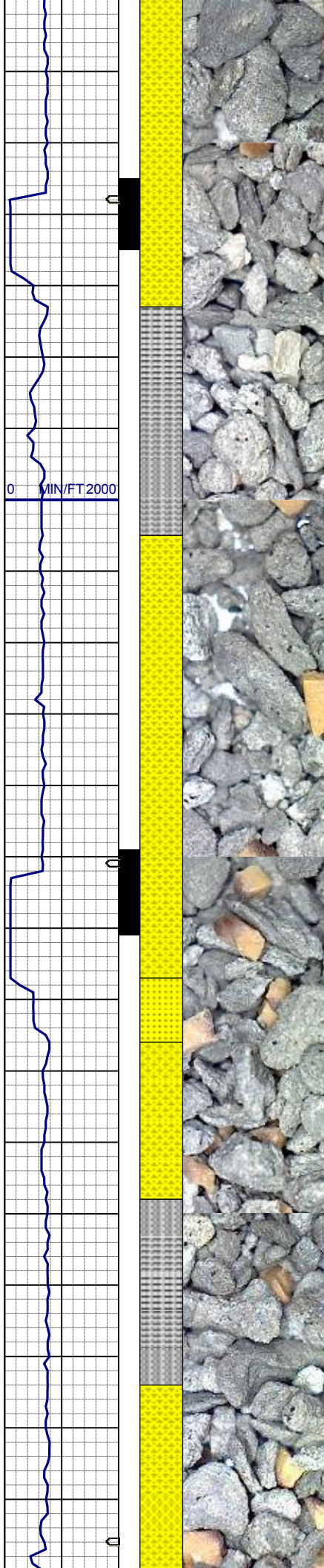
04/23/2013

0 MIN/FT 2000

MD	4505'
INC	2.9°
AZM	173.8°
TVD	4492.97'







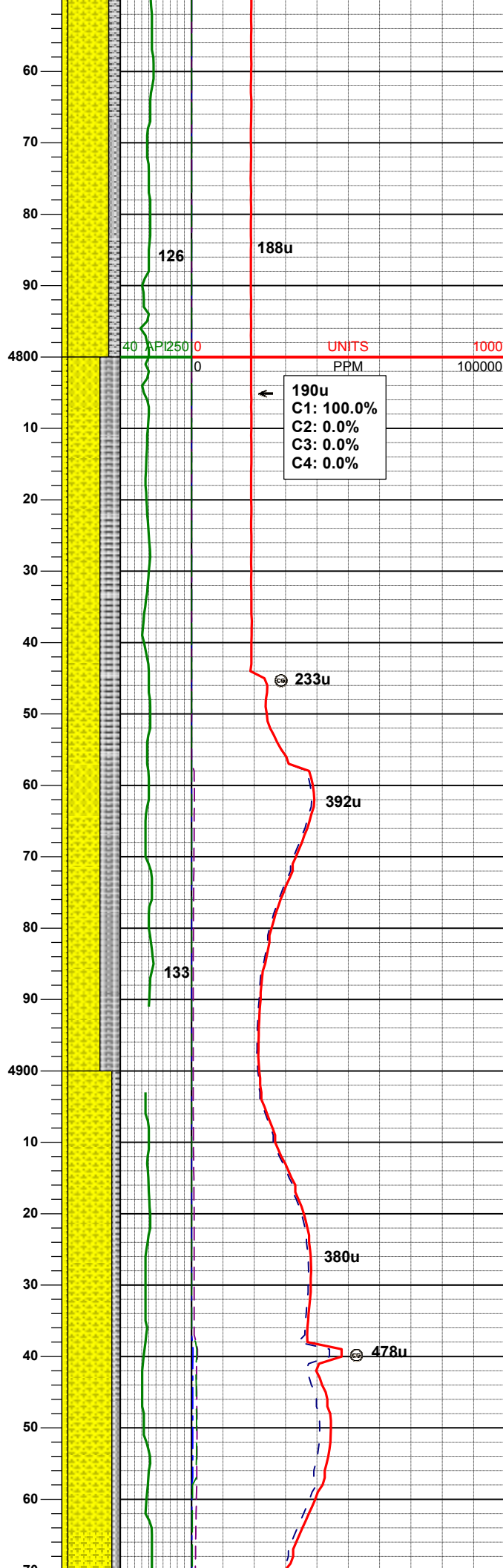
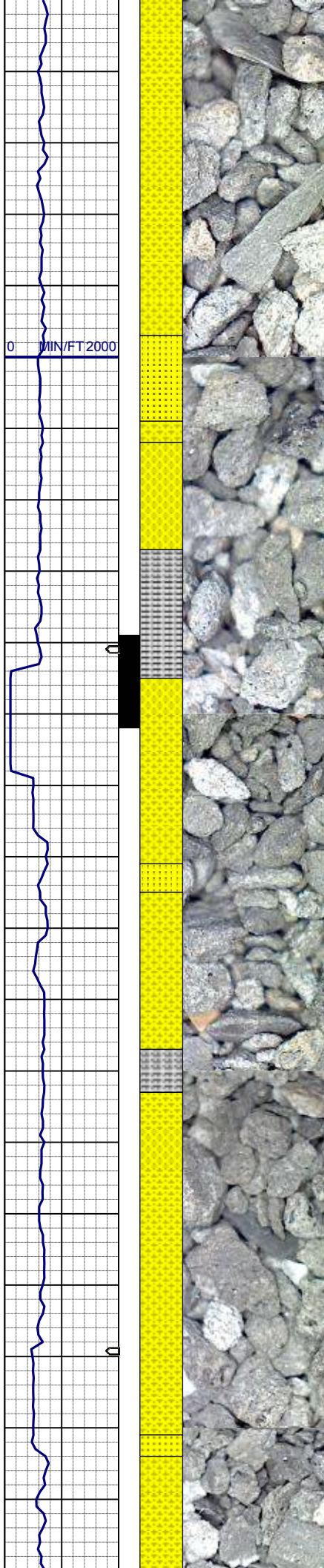
SHYSS: wh, lt gy, tr dk lit frag, vfgr,  
fri, brit clus, sbang-ang, smwt calc  
cmt, v hi % cly mnrl, grdg to ss, tr  
bent  
SLTYSH: gy-dkgy, ltbrn, fri, sbblky,  
slty-gt tex, v sl calc

MD 4599'  
INC 2.6°  
AZM 204.7°  
TVD 4586.87'

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  
SS: wh, ltgy, trnsi, tr dk lit frag, tr glau,  
vfgr-fgr, v p srt, fri, sbang-ang, calc-  
arg cmt

MD 4694'  
INC 1.9°  
AZM 236.7°  
TVD 4681.80'

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  
SS: wh, ltgy, trns, tr dk lit frag, tr glau,  
vfgr-fgr, v p srt, fri, sbang-ang, calc-  
arg cmt

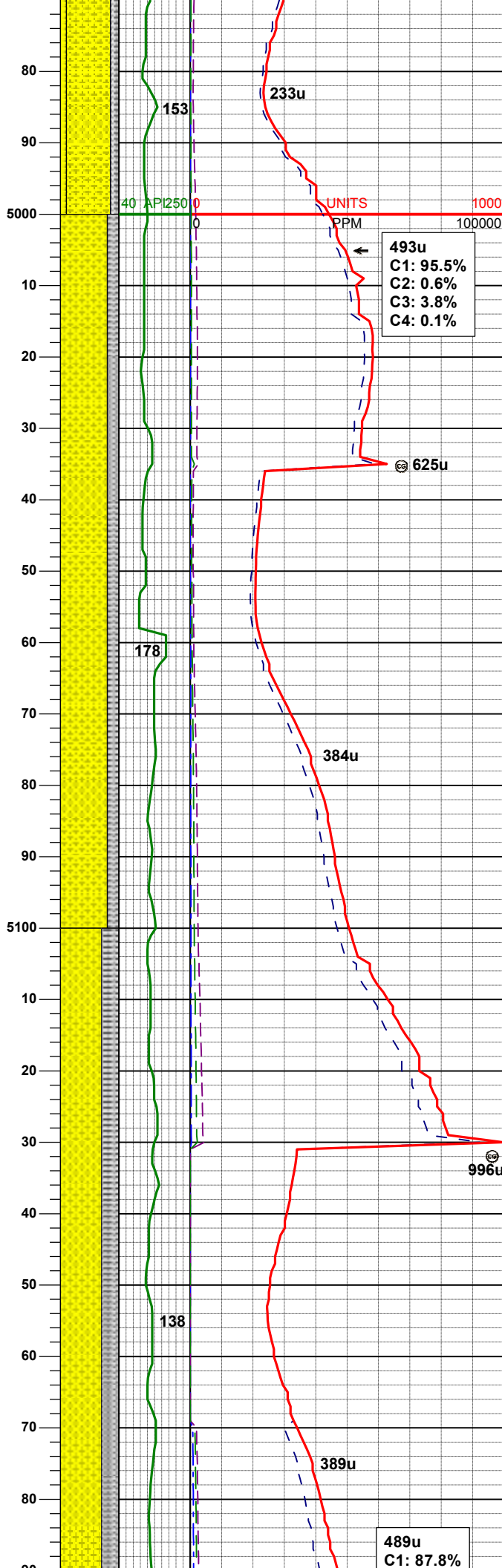
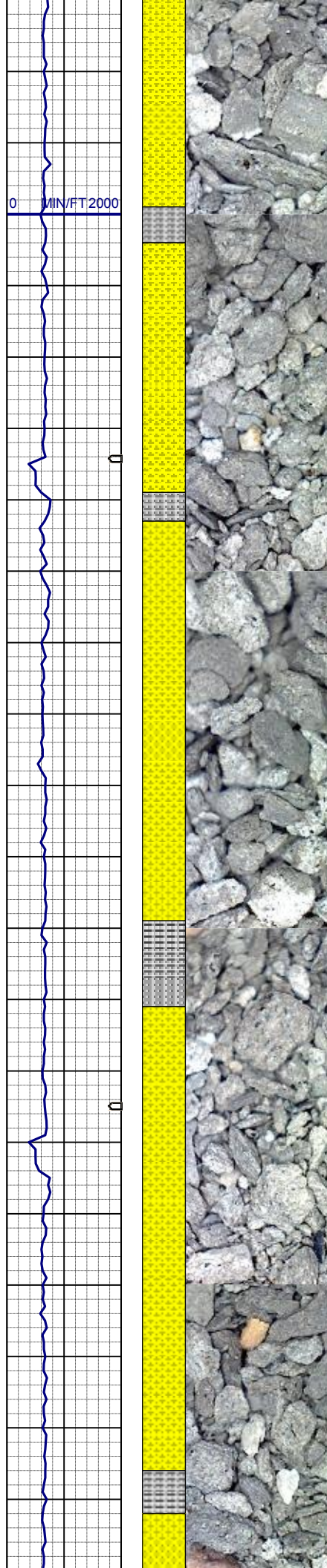
MD 4789'  
INC 1.8°  
AZM 218.8°  
TVD 4776.75'

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  
SS: wh, ltgy, trns, tr dk lit frag, tr glau,  
vfgr-fgr, v p srt, fri, sbang-ang, calc-  
arg cmt

MD 4884'  
INC 2.2°  
AZM 257.4°  
TVD 4871.69'

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  
SS: wh, ltgy, trns, tr dk lit frag, tr glau,  
vfgr-fgr, v p srt, fri, sbang-ang, calc-  
arg cmt





MD 4979'  
INC 1.9°  
AZM 241.1°  
TVD 4966.63'

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

493u  
C1: 95.5%  
C2: 0.6%  
C3: 3.8%  
C4: 0.1%

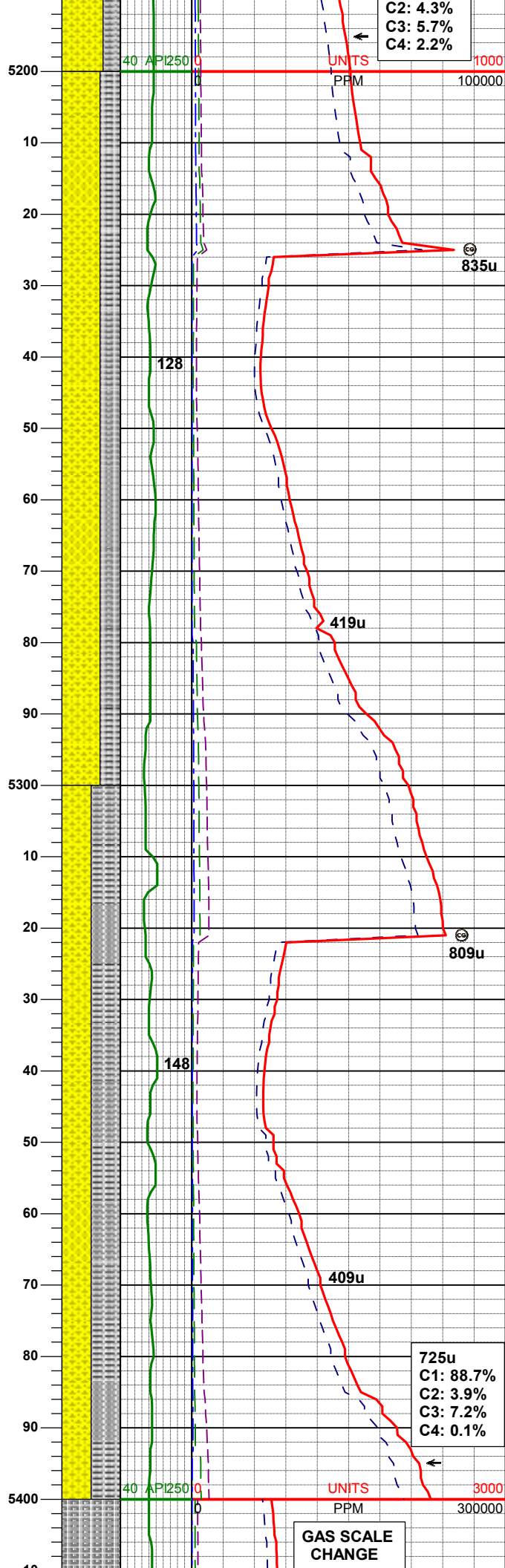
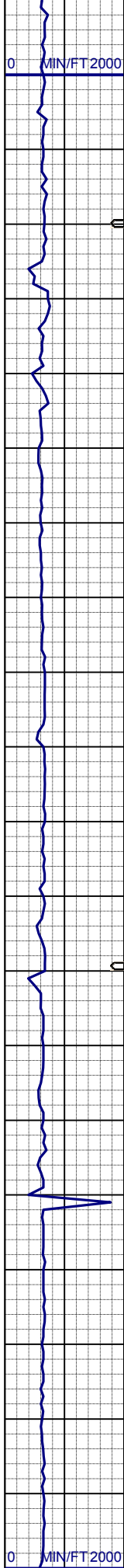
SHYSS: wh, lt gy, tr dk lit frag, vfgr,  
fri, brit clus, sbang-ang, smwt calc  
cmt, v hi % cly mnrl  
SLTYSH: gy-dkgy, ltbrn, fri, sbblky,  
slty-gt tex, v sl calc

MD 5074'  
INC 1.4°  
AZM 230.0°  
TVD 5061.59'

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

MD 5169'  
INC 1.3°  
AZM 232.1°  
TVD 5156.57'

489u  
C1: 87.8%



C2: 4.3%  
C3: 5.7%  
C4: 2.2%

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

MD 5264'  
INC 1.4°  
AZM 215.4°  
TVD 5251.54'

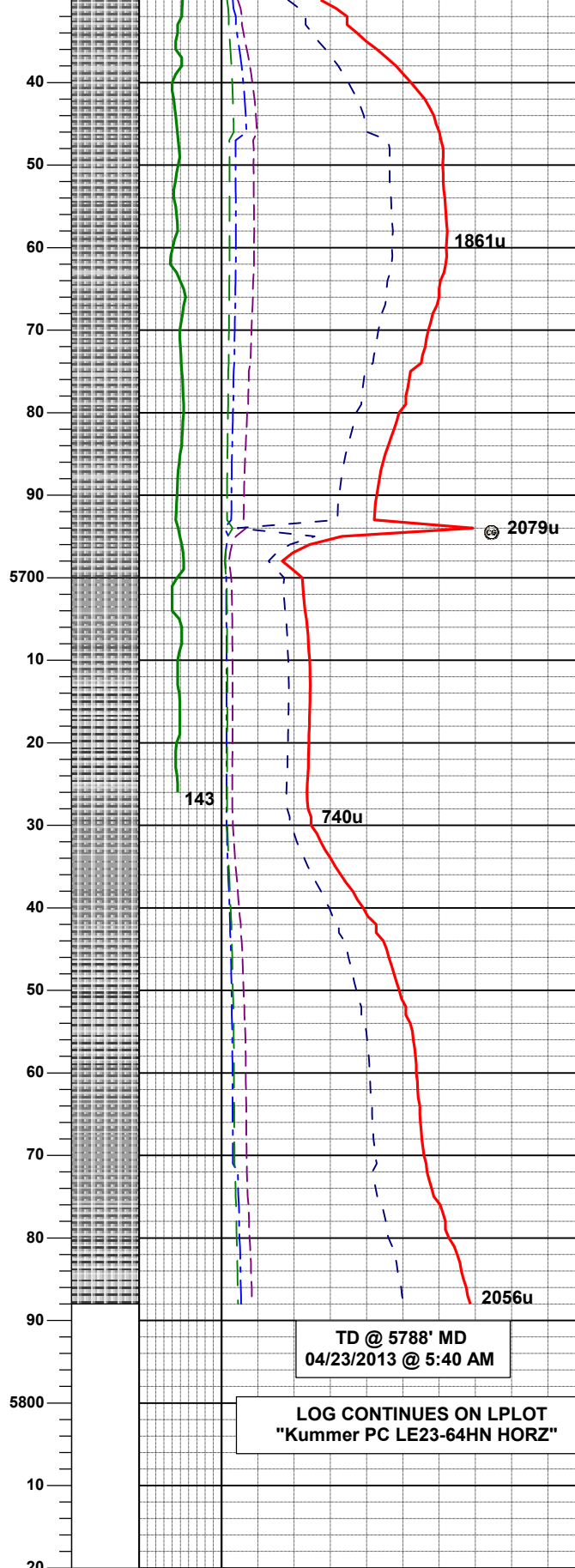
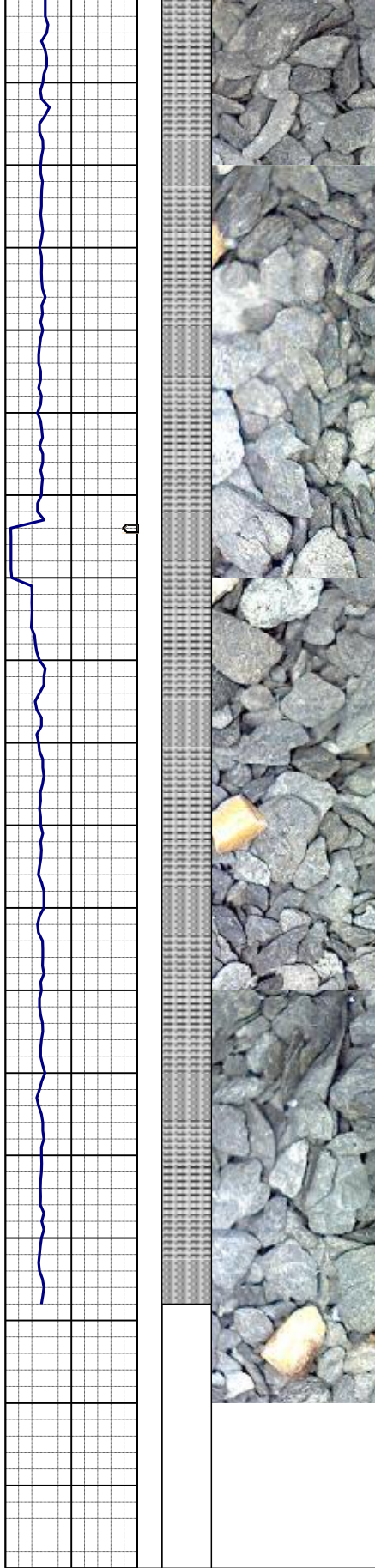
SHYSS: wh, lt gy, tr dk lit frag, vfgr,  
fri, brit clus, sbang-ang, smwt calc  
cmt  
SLTYSH: gy-dkgy, ltbrn, fri, sbblky,  
slty-gt tex

MD 5358'  
INC 1.2°  
AZM 200.0°  
TVD 5345.52'

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







MD 5643'  
INC 1.1°  
AZM 178.0°  
TVD 5630.46'

SLTYSH: gy-dkgy, ltbrn, fri, sblky,  
slty-gt tex

MD 5738'  
INC 1.0°  
AZM 194.1°  
TVD 5725.44'

SLTYSH: gy-dkgy, ltbrn, fri, sblky,  
slty-gt tex