

LOG created using LPlot VH Version 3.0, August 30, 2013, Copyright (C) 1999-2009 Pason Systems Corp.

**OPERATOR:** NOBLE ENERGY INC  
**WELL:** ROHN STATE LD04-63HN  
**LOCATION:** SEC 4 T9N R58W  
**COUNTY:** WELD  
**STATE:** COLORADO  
**SPOT:** 1952' FSL; 480' FEL  
**ELEVATION:** 4709' GL; 4733' KB  
**FIELD:** WILDCAT  
**SPUD DATE:** 08/23/2013  
**TD DATE:** 08/24/2013  
**DATES LOGGED:** 08/23/2013 - 08/24/2013  
**DEPTHS LOGGED:** 1200' - 4988' MD  
**LOGGERS:** LAURA KELLOGG; CONOR PESICKA  
**DRILLING FLUID:** LSND  
**DRILLING RIG:** H&P 273  
**API:** 05-123-37448  
**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



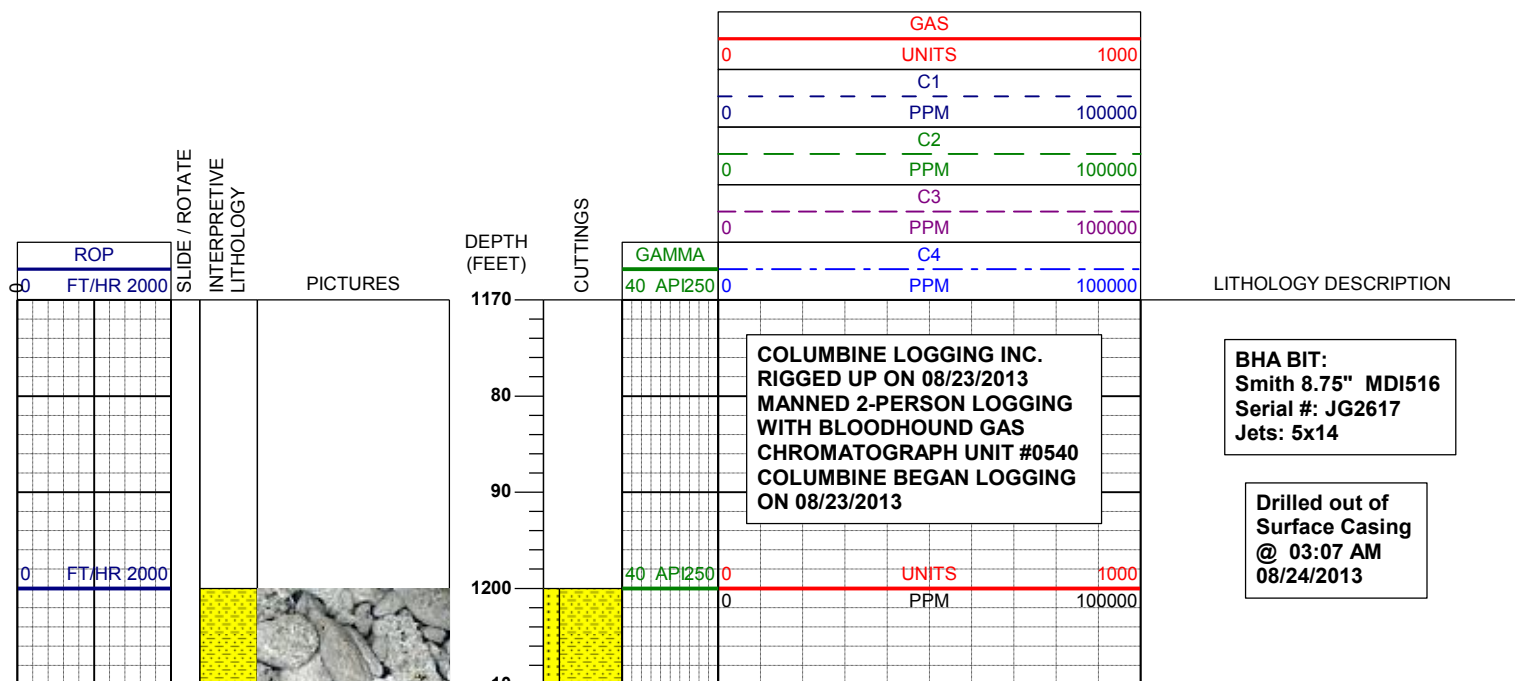
Connection Gas



Arrow



Midnight Depth



The figure is a complex scientific plot, likely a mass spectrum or a similar analytical measurement. It features a vertical axis on the left with numerical values ranging from 0 to 1400, with major ticks every 100 units. A prominent yellow shaded region occupies the leftmost portion of the plot, extending from the top to the bottom. A red horizontal line is drawn across the bottom of the plot, labeled "PPM" in red text. Several data series are plotted as lines: a green line, a purple line, and a red line. The red line shows several distinct peaks and valleys. Key features and labels include:

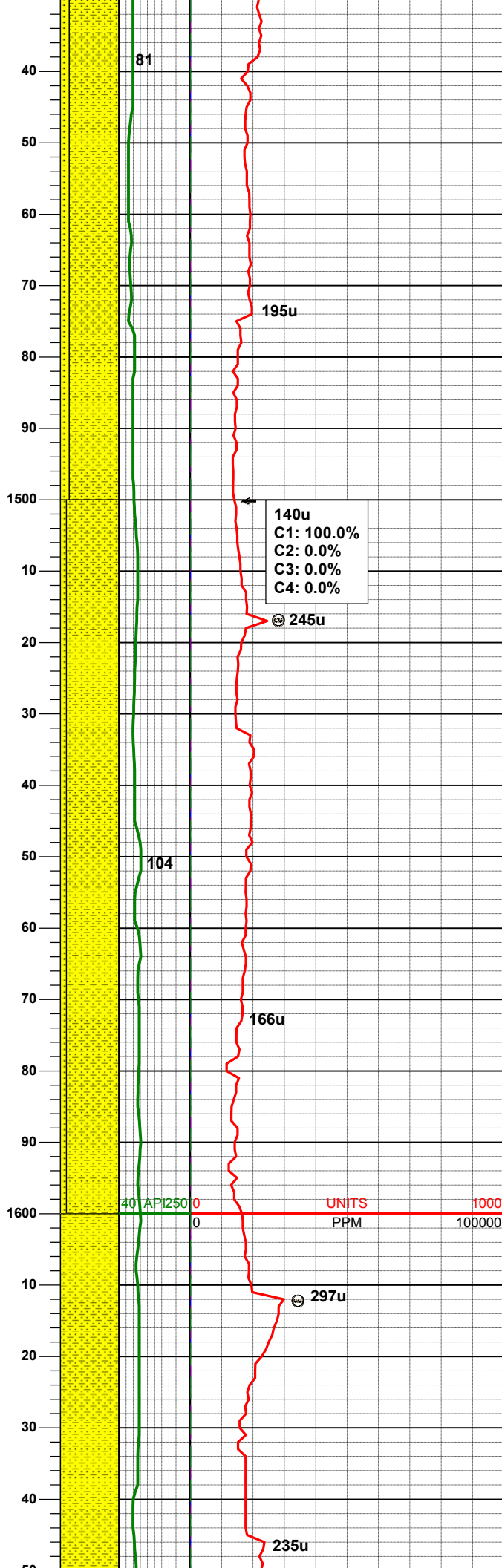
- 153u**: A peak on the red line near the top, labeled with a circled "u" and "153u".
- 140**: A label near a peak on the green line.
- 197u**: A peak on the red line, labeled with "197u".
- 127u**: A peak on the red line, labeled with a circled "u" and "127u". A box next to it contains the following data:
  - C1: 96.8%
  - C2: 1.9%
  - C3: 0.9%
  - C4: 0.4%
- 201u**: A peak on the red line, labeled with a circled "u" and "201u".
- 90**: A label near a peak on the green line.
- 185u**: A peak on the red line, labeled with "185u".
- 227u**: A peak on the red line near the bottom, labeled with a circled "u" and "227u".

At the bottom left, there is a label "40 API2500" in green text. At the bottom right, there is a label "1000" in red text. The overall layout is complex, with multiple overlapping elements and a grid background.

SHYSS: ltgy-gy, s&p ip, sbang, v fri,  
vfgr, psrt, wrndd, abnt cly, arg cmt, sl  
calc  
SS: ltgy-gy-trnsl, sbang-ang, fgr, psrt,  
wrndd, arg cmt, tr lit frag, abnt glau

SHYSS: ltgy-gy, s&p ip, sbang, v fri,  
vfgr, psrt, wrndd, abnt cly, arg cmt, sl  
calc  
SS: ltgy-gy-trnsl, sbang-ang, fgr, psrt,  
wrndd, arg cmt, tr lit frag, abnt glau

MD	1374'
INC	1.2°
AZM	200.4°
TVD	1373.86'



SHYSS: ltgy-gy, s&p ip, sbang, v fri,  
vfgr, psrt, wrndd, abnt cly, arg cmt  
SS: ltgy-gy-trnsl, sbang-ang, fgr, psrt,  
wrndd, arg cmt, tr lit frag, tr glau

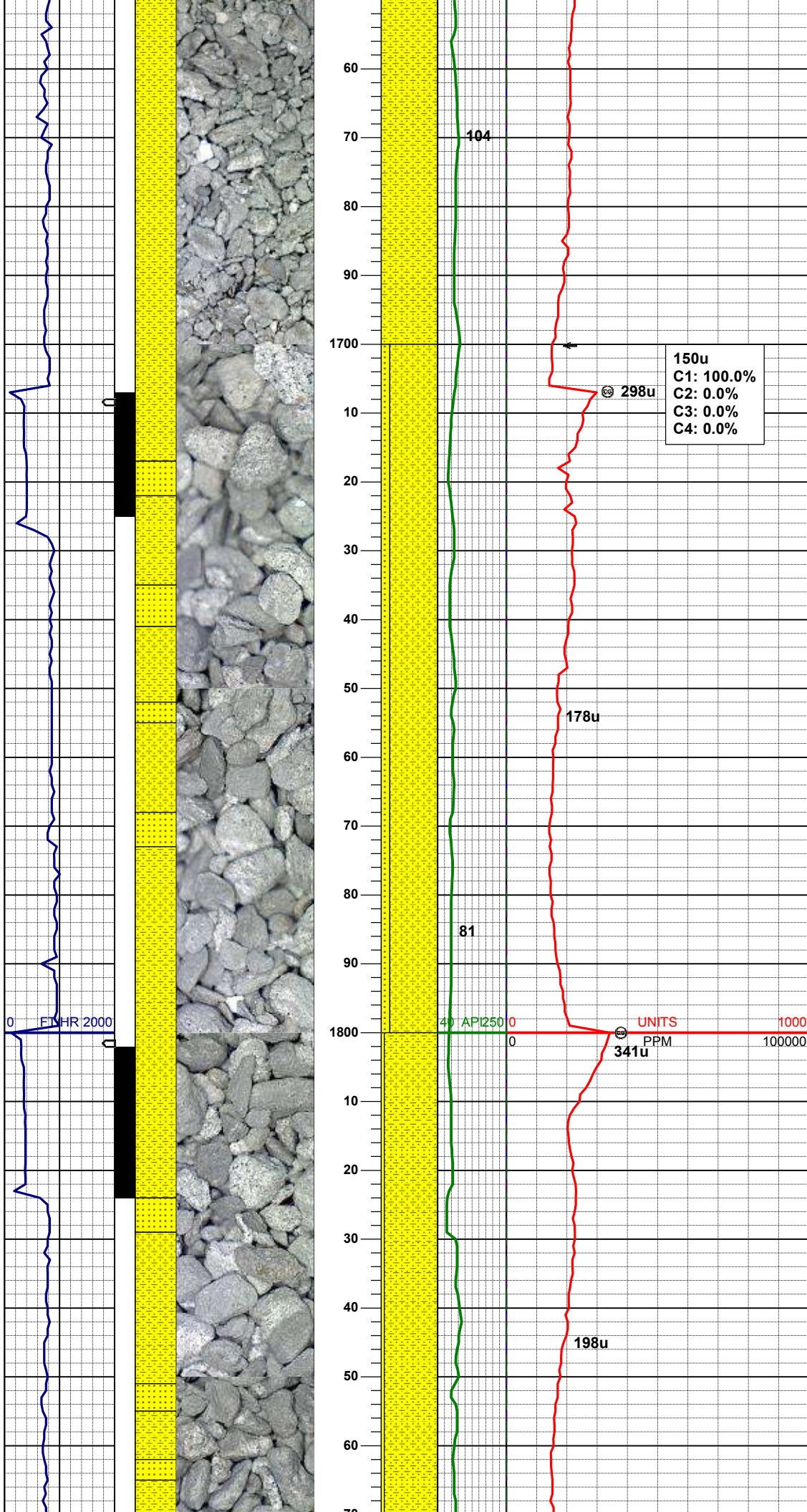
MD	1467'
INC	2.5°
AZM	201.8°
TVD	1466.81'

SHYSS: ltgy-gy, s&p ip, sbang, v fri,  
vfgr, psrt, wrndd, abnt cly, arg cmt  
SS: ltgy-gy-trnsl, sbang-ang, fgr, psrt,  
wrndd, arg cmt, tr lit frag, tr glau

MD	1562'
INC	4.4°
AZM	186.9°
TVD	1561.64'

SHYSS: ltgy-gy, s&p ip, sbang, v fri,  
vfgr, psrt, wrndd, abnt cly, arg cmt





SS: ltgy-gy-trnsl, sbang-ang, fgr, psrt, wrnnd, arg cmt, tr lit frag, tr glau

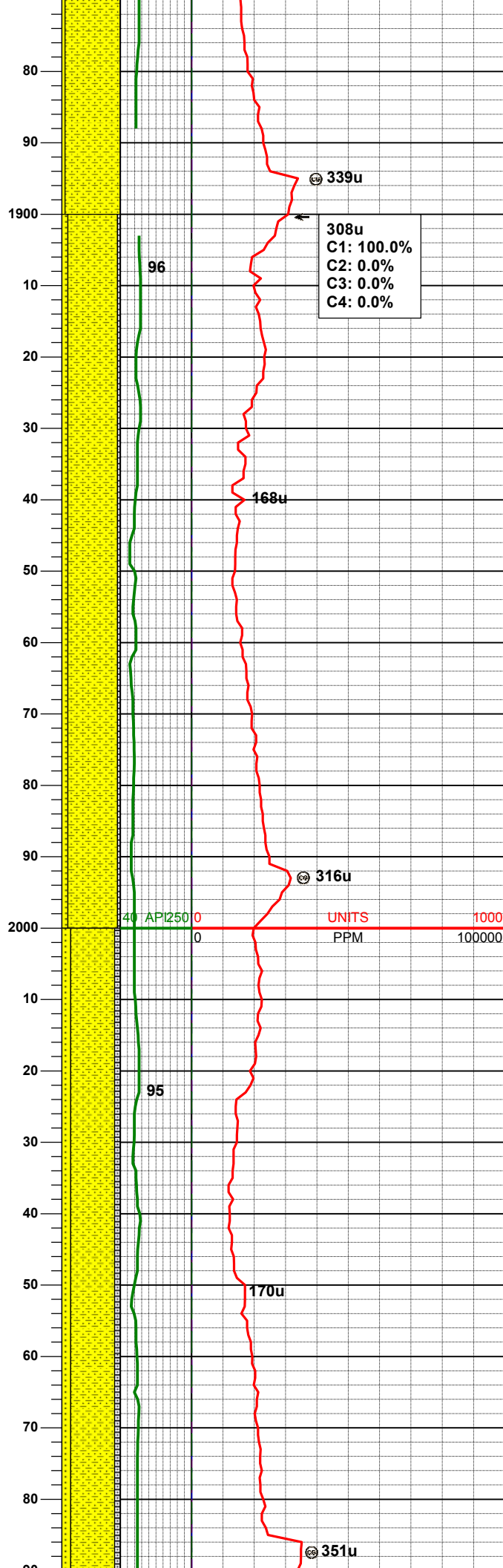
MD 1657'  
INC 5.2°  
AZM 182.8°  
TVD 1656.30'

SHYSS: ltgy-gy, s&p ip, sbang, v fri, vfgr, psrt, wrnnd, abnt cly, arg cmt  
SS: ltgy-gy-trnsl, sbang-ang, fgr, psrt, wrnnd, arg cmt, tr lit frag, tr glau

MD 1752'  
INC 6.1°  
AZM 171.9°  
TVD 1750.84'

SHYSS: ltgy-gy, s&p ip, sbang, v fri, vfgr, psrt, wrnnd, abnt cly, arg cmt  
SS: ltgy-gy-trnsl, sbang-ang, fgr, psrt, wrnnd, arg cmt, tr lit frag, tr glau

MD 1847'  
INC 7.4°  
AZM 170.0°  
TVD 1845.18'



WT IN 8.40/ OUT 8.40  
VIS IN 26/ OUT 26

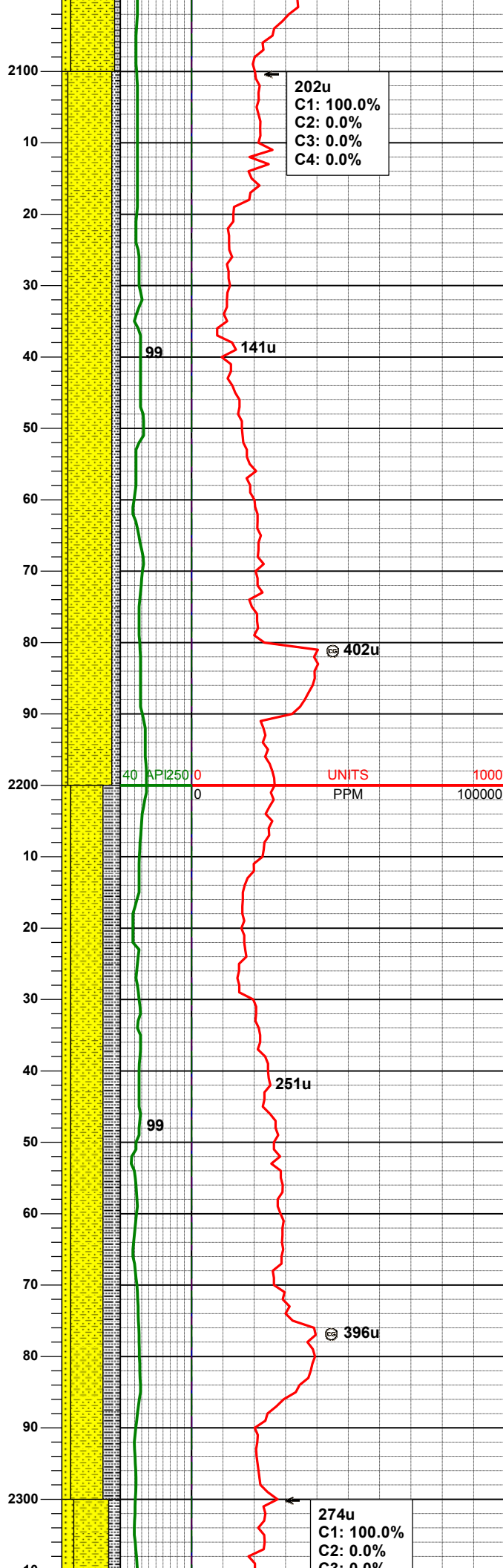
MD 1942'  
INC 8.8°  
AZM 167.5°  
TVD 1939.23'

SHYSS: ltgy-gy, s&p ip, sbang, v fri,  
vfgr, psrt, wrndd, abnt cly, arg cmt  
SLTYSH: ltgy-gy, sbblky-sbply, sft, gt  
-sdy tex, arg cmt  
SS: ltgy-gy-trnsl, sbang-ang, fgr, psrt,  
wrndd, arg cmt, tr lit frag

MD 2036'  
INC 11.0°  
AZM 169.1°  
TVD 2031.83'

SHYSS: ltgy-gy, s&p ip, sbang, v fri,  
vfgr, psrt, wrndd, abnt cly, arg cmt  
SS: ltgy-gy-trnsl, sbang-ang, fgr, psrt,  
wrndd, arg cmt, tr lit frag  
SLTYSH: ltgy-gy, sbblky-sbply, sft, gt  
-sdy tex, arg cmt





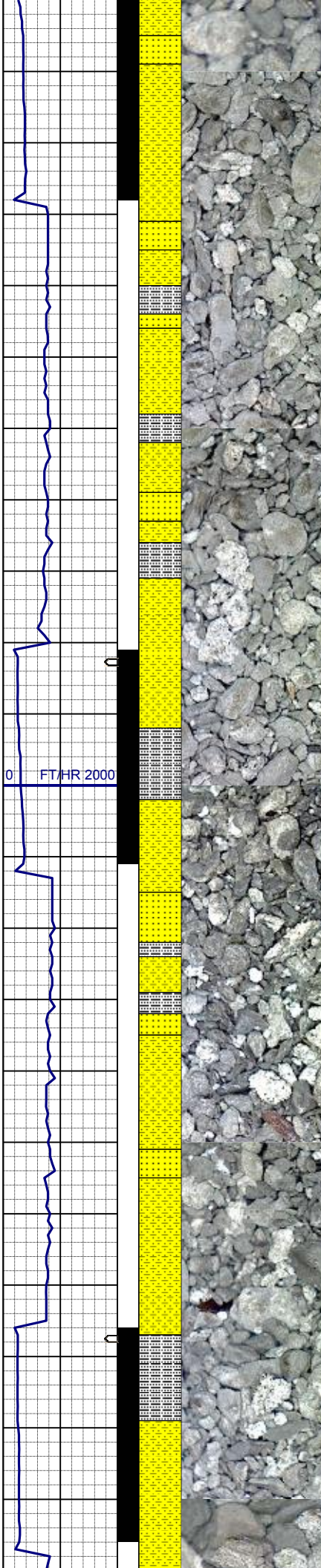
WT IN 8.40/ OUT 8.40  
VIS IN 27/ OUT 27

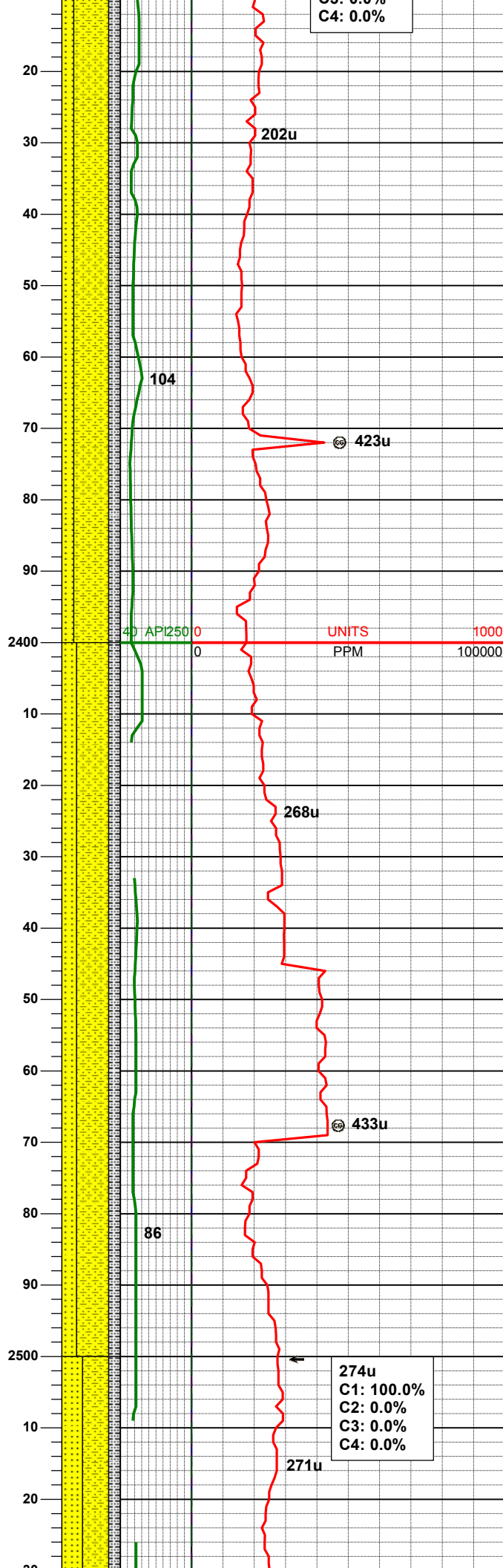
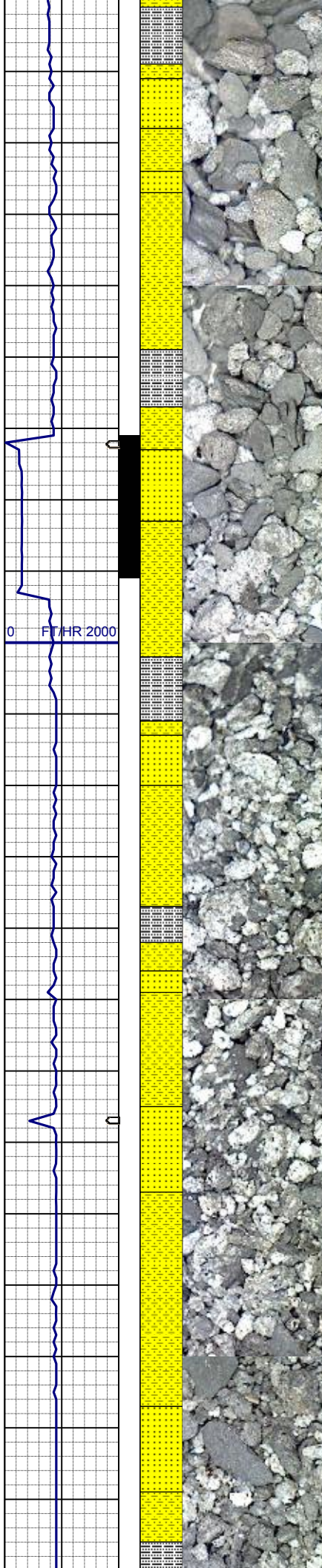
MD 2131'  
INC 12.8°  
AZM 165.4°  
TVD 2124.78'

SHYSS: ltgy-gy, s&p ip, sbang, v fri,  
vfgr, psrt, wrndd, abnt cly, arg cmt  
SLTYSH: ltgy-gy, sbblky-sbply, sft, gt  
-sdy tex, arg cmt  
SS: ltgy-gy-trnsl, sbang-ang, fgr, psrt,  
wrndd, arg cmt, tr lit frag

MD 2226'  
INC 13.6°  
AZM 169.5°  
TVD 2217.27'

SHYSS: ltgy-gy, s&p ip, sbang, v fri,  
vfgr, psrt, wrndd, abnt cly, arg cmt  
SLTYSH: ltgy-gy, sbblky-sbply, sft, gt  
-sdy tex, arg cmt  
SS: ltgy-gy-trnsl, sbang-ang, fgr, psrt,  
wrndd, arg cmt, tr lit frag





C3: 0.0%  
C4: 0.0%

MD 2321'  
INC 14.9°  
AZM 164.9°  
TVD 2309.35'

SHYSS: ltgy-gy, s&p ip, sbang, v fri,  
vfgr, psrt, wrndd, abnt cly, arg cmt  
SLTYSH: ltgy-gy, sbblky-sbply, sft, gt  
-sdy tex, arg cmt  
SS: ltgy-gy-trnsl, sbang-ang, fgr, psrt,  
wrndd, arg cmt, tr lit frag

MD 2416'  
INC 16.1°  
AZM 167.0°  
TVD 2400.90'

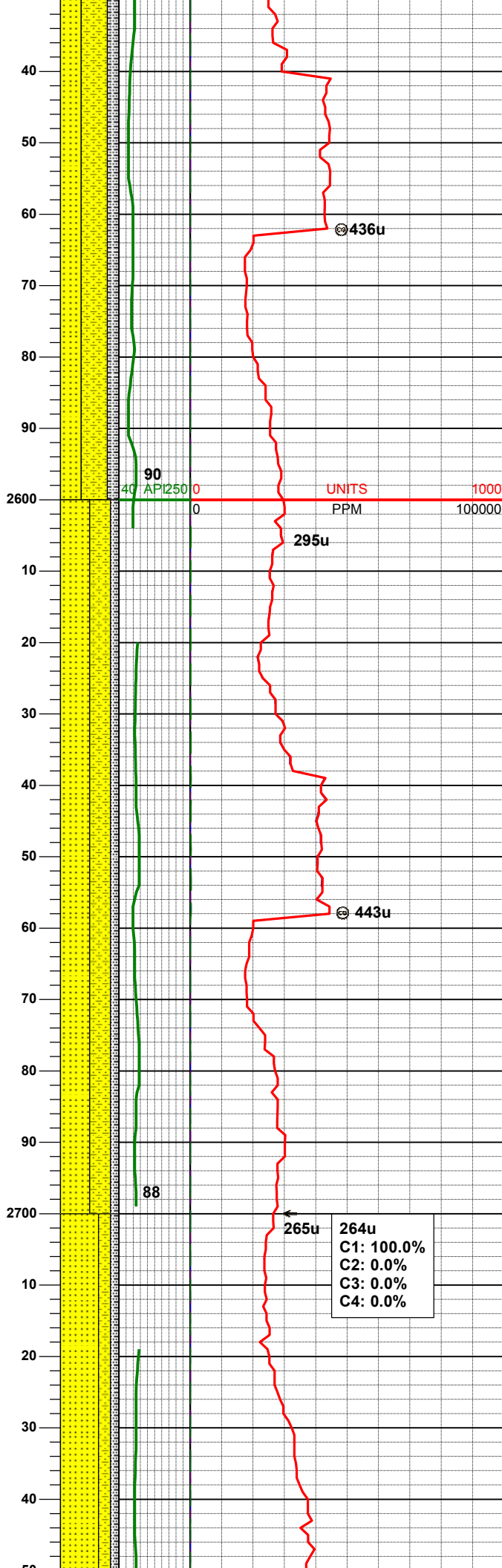
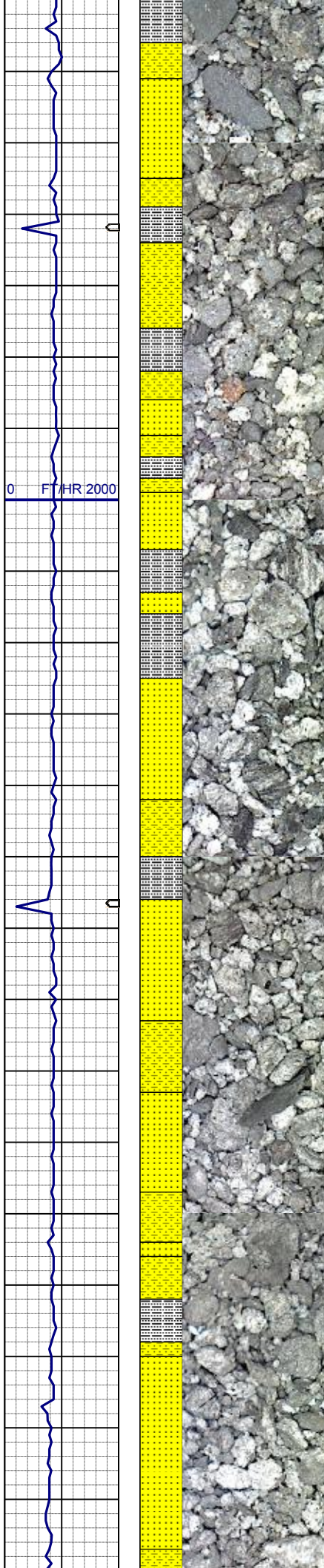
SHYSS: ltgy-gy, s&p ip, sbang, v fri,  
vfgr, psrt, wrndd, abnt cly, arg cmt  
SS: ltgy-gy-trnsl, sbang-ang, fgr, psrt,  
wrndd, arg cmt, occ lit frag, tr glau  
SLTYSH: ltgy-gy, sbblky-sbply, sft, gt  
-sdy tex, arg cmt

WT IN 8.50/ OUT 8.50  
VIS IN 27/ OUT 27

MD 2510'  
INC 16.6°  
AZM 166.1°  
TVD 2491.09'

274u  
C1: 100.0%  
C2: 0.0%  
C3: 0.0%  
C4: 0.0%





SHYSS: ltgy-gy, s&p ip, sbang, v fri, vfgr, psrt, wrndd, abnt cly, arg cmt  
SS: ltgy-gy-trnsl, sbang-ang, fgr, psrt, wrndd, arg cmt, occ lit frag, occ glau  
SLTYSH: ltgy-gy, sbblky-sbply, sft, gt-sdy tex, arg cmt

MD	2605'
INC	16.2°
AZM	164.6°
TVD	2582.23'

SS: ltgy-gy-trnsl, sbang-ang, fgr, psrt, wrndd, arg cmt, occ lit frag, occ glau  
SHYSS: ltgy-gy, s&p ip, sbang, v fri, vfgr, psrt, wrndd, abnt cly, arg cmt  
SLTYSH: ltgy-gy, sbblky-sbply, sft, gt-sdy tex, arg cmt

MD	2700'
INC	15.6°
AZM	164.9°
TVD	2673.59'

264u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

SS: ltgy-gy-trnsl, sbang-ang, fgr, psrt, wrndd, arg cmt, occ lit frag, occ glau  
SHYSS: ltgy-gy, s&p ip, sbang, v fri,

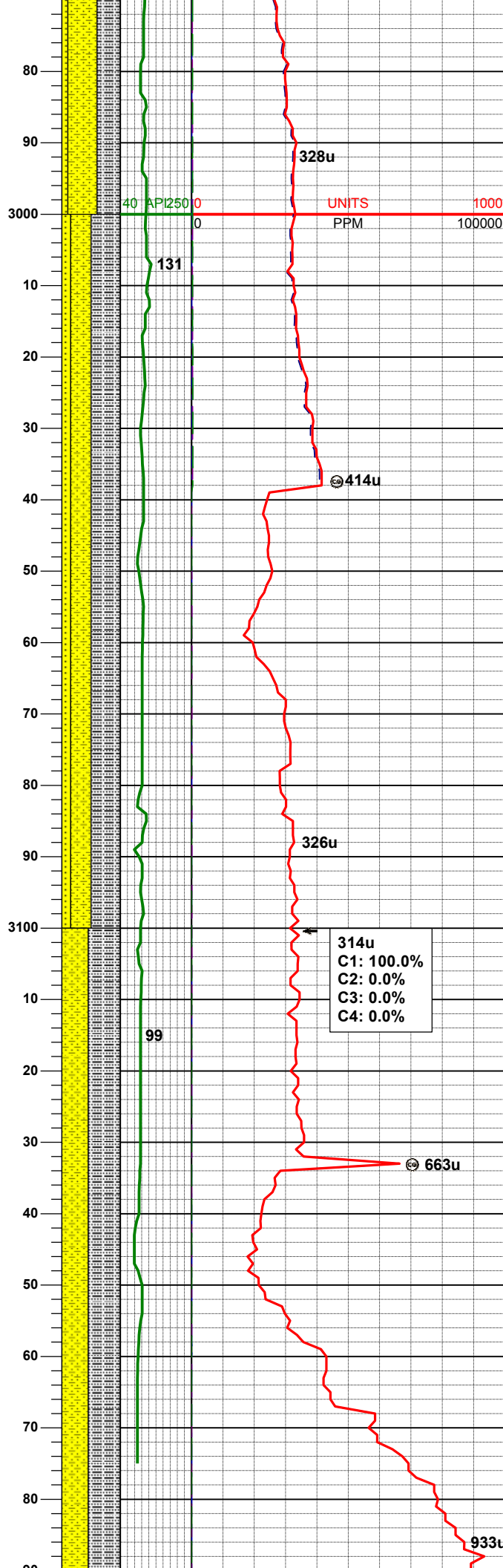
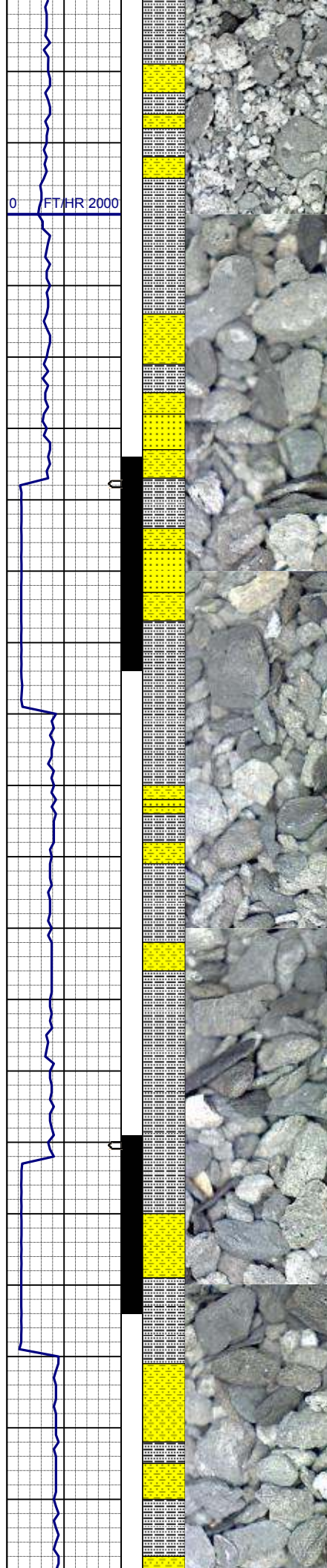


Mass spectrum plot showing relative intensity (%) vs m/z. The plot features a green line for the sample spectrum and a red line for the reference spectrum. The x-axis ranges from 2800 to 100000 m/z, and the y-axis ranges from 0 to 100% relative intensity. Key peaks are labeled: 99, 192u, 434u, 446u, 262u, 104, and 526u. A yellow shaded region is present on the left side of the plot. A table of isotopic data is visible on the right side of the plot.

m/z	Relative Intensity (%)	Isotope	Abundance (%)
99	~10	<sup>99</sup> Ti	100.0
104	~10	<sup>104</sup> Mo	100.0
192u	~10	<sup>192</sup> Os	100.0
260u	~10	<sup>260</sup> Os	100.0
262u	~10	<sup>262</sup> Os	100.0
434u	~10	<sup>434</sup> Os	100.0
446u	~10	<sup>446</sup> Os	100.0
526u	~10	<sup>526</sup> Os	100.0

SS: ltgy-gy-trnsl, sbang-ang, fgr, psrt,  
wrnrd, arg cmt, occ lit frag, occ glau  
SHYSS: ltgy-gy, s&p ip, sbang, v fri,  
vfgr, psrt, wrnrd, abnt cly, arg cmt  
SLTYSH: ltgy-gy, sbblky-sbply, sft, gt  
-sdy tex, arg cmt

SHYSS: ltgy-gy, s&p ip, sbang, v fri,  
vfgr, psrt, wrndd, abnt cly, arg cmt  
SLTYSH: ltgy-gy, sbblky-sbpity, sft, gt  
-sdy tex, arg cmt  
SS: ltgy-gy-trnsl, sbang-ang, fgr, psrt,  
wrndd, arg cmt, occ lit frag, occ glau



MD 2984'  
INC 13.0°  
AZM 164.4°  
TVD 2948.94'

WT IN 8.60/ OUT 8.60  
VIS IN 28/ OUT 28

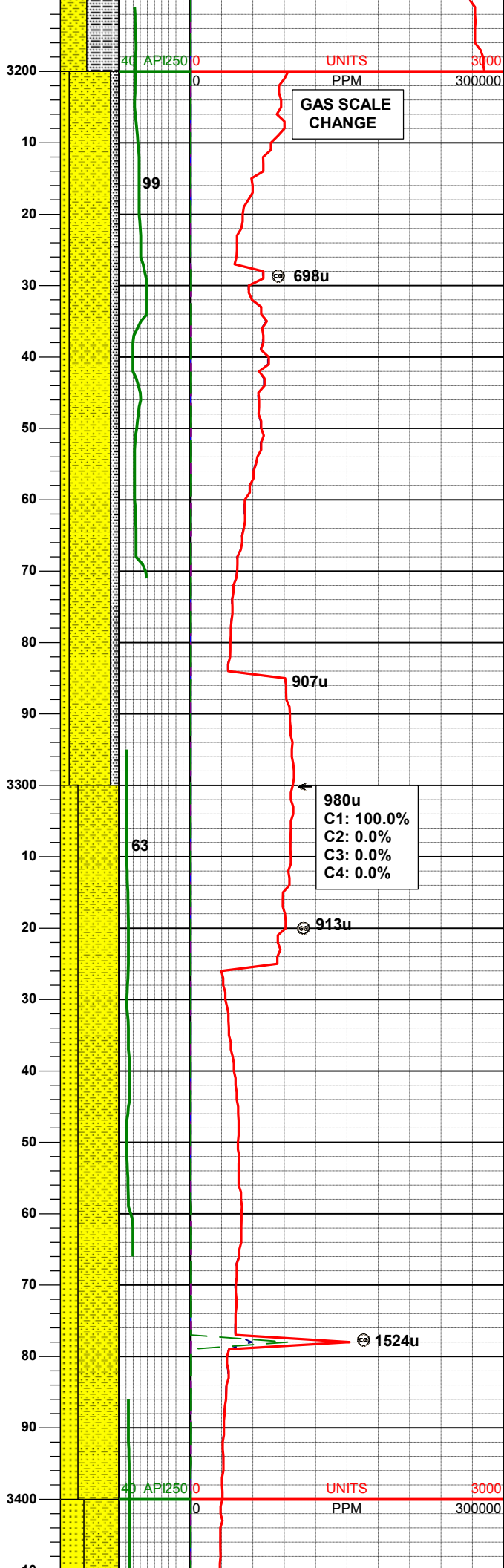
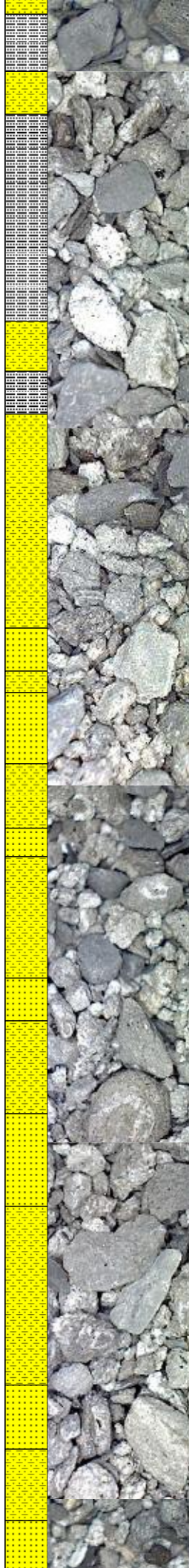
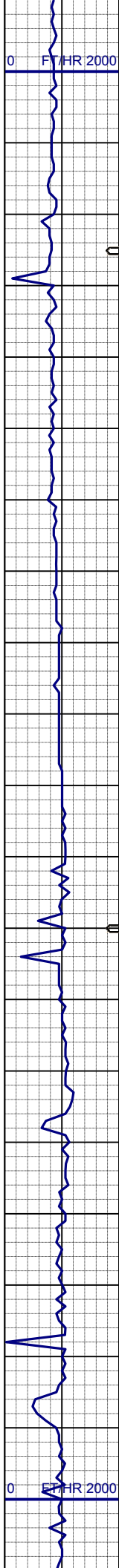
SLTYSH: ltgy-gy, sbblky-sbplty, sft, gt  
-sdy tex, arg cmt  
SHYSS: ltgy-gy, s&p ip, sbang, v fri,  
vfgr, psrt, wrndd, abnt cly, arg cmt  
SS: ltgy-gy-trnsl, sbang-ang, fgr, psrt,  
wrndd, arg cmt, occ lit frag, occ glau

MD 3079'  
INC 13.6°  
AZM 169.8°  
TVD 3041.39'

SLTYSH: ltgy-gy, sbblky-sbplty, sft, gt  
-sdy tex, arg cmt  
SHYSS: ltgy-gy, s&p ip, sbang, v fri,  
vfgr, psrt, wrndd, abnt cly, arg cmt

MD 3174'  
INC 15.8°  
AZM 169.3°  
TVD 3133.28'



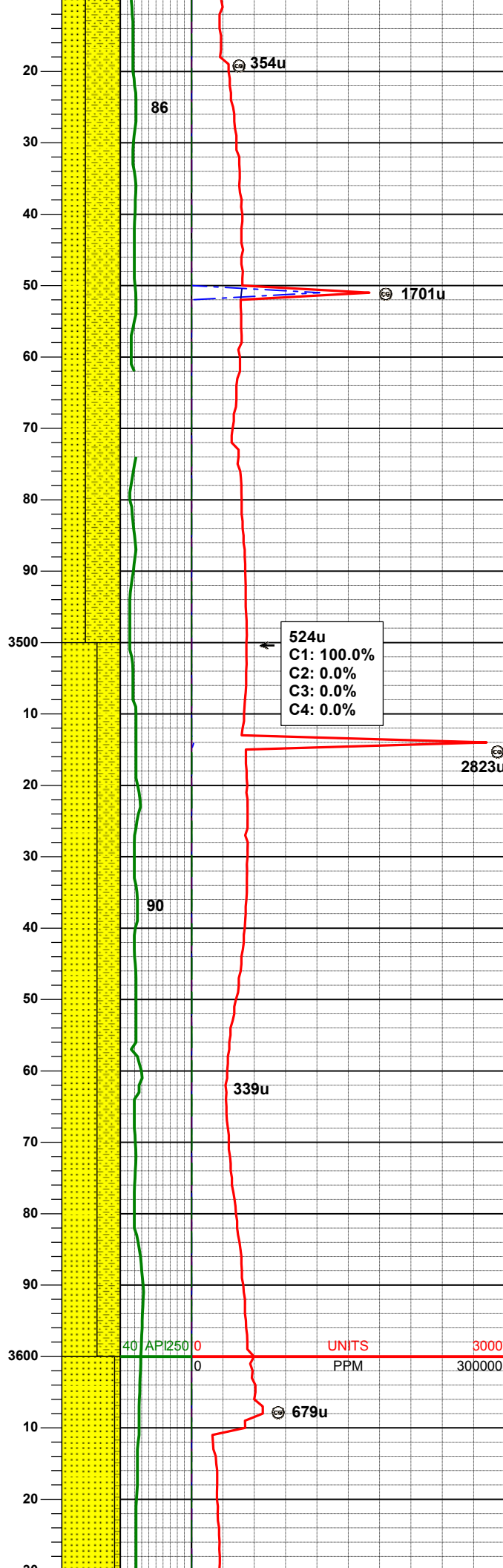
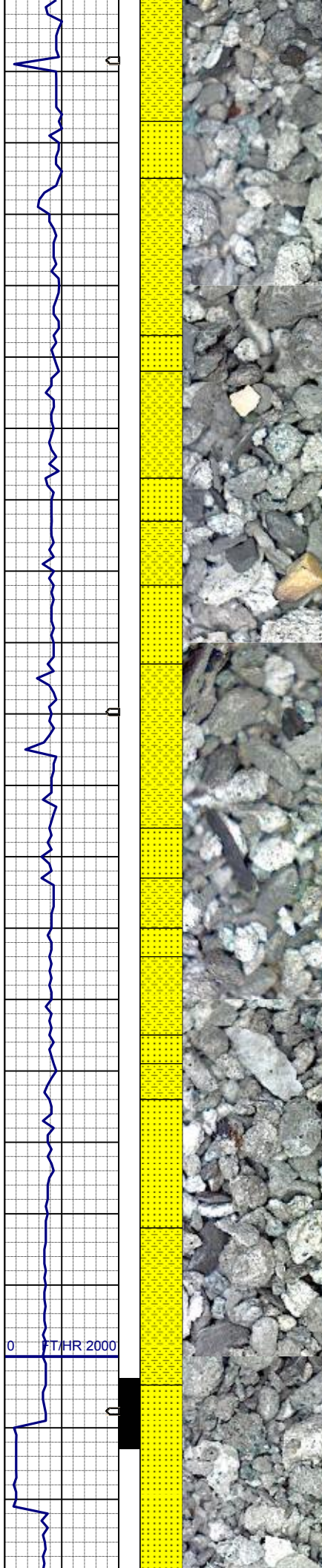


SHYSS: ltgy-gy, s&p ip, sbang, v fri,  
vfgr, psrt, wrndd, abnt cly, arg cmt  
SLTYSH: ltgy-gy, sbblky-sbply, sft, gt  
-sdy tex, arg cmt  
SS: ltgy-gy-trnsl, sbang-ang, fgr, psrt,  
wrndd, arg cmt, occ lit frag, occ glau

MD	3269'
INC	15.7°
AZM	168.6°
TVD	3224.71'

SHYSS: ltgy-gy, s&p ip, sbang, v fri,  
vfgr, psrt, wrndd, abnt cly, arg cmt  
SS: ltgy-gy-trnsl, sbang-ang, fgr, psrt,  
wrndd, arg cmt, occ lit frag, occ glau

MD	3364'
INC	16.3°
AZM	168.8°
TVD	3316.03'



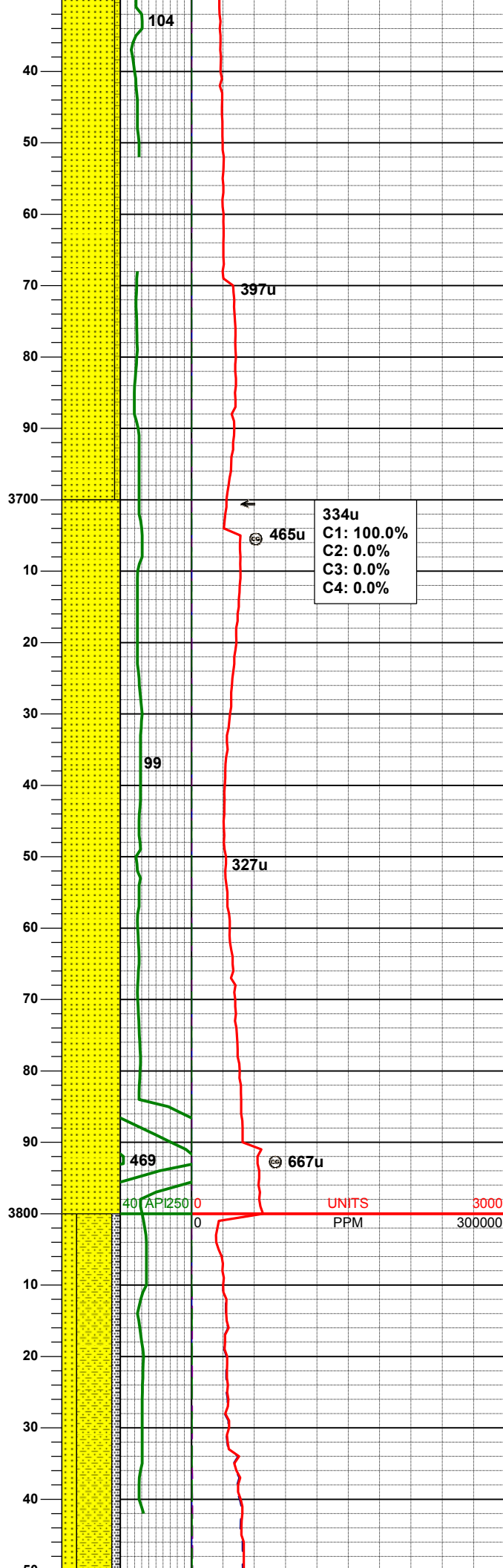
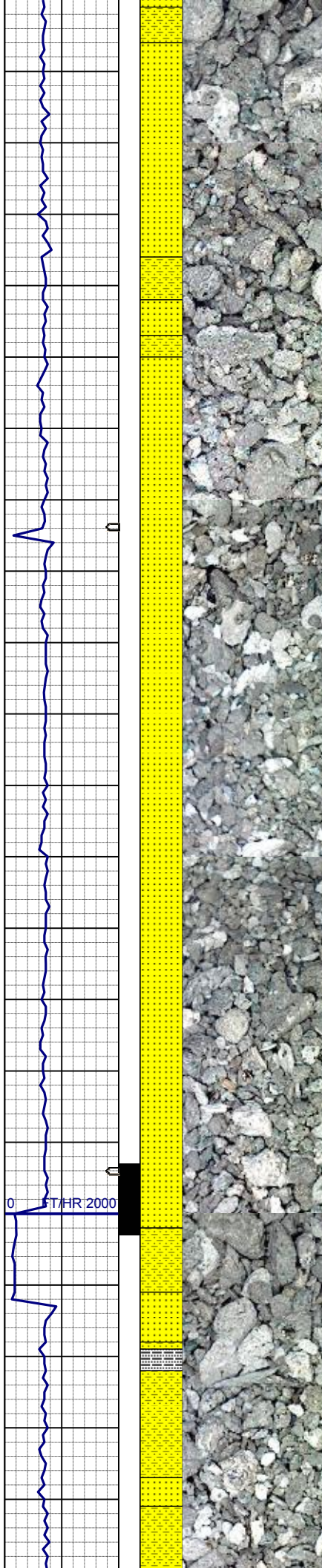
SHYSS: ltgy-gy, s&p ip, sbang, v fri,  
vfgr, psrt, wrnnd, abnt cly, arg cmtt  
SS: ltgy-gy-trnsl, sbang-ang, fgr, psrt,  
wrnnd, arg cmt, occ lit frag, occ glau

MD	3458'
INC	17.0°
AZM	167.4°
TVD	3406.09'

SS: ltgy-gy-trnsl, sbang-ang, fgr, psrt,  
wrnnd, arg cmt, occ lit frag, occ glau  
SHYSS: ltgy-gy, s&p ip, sbang, v fri,  
vfgr, psrt, wrnnd, abnt cly, arg cmt

MD	3553'
INC	17.5°
AZM	166.8°
TVD	3496.82'





SS: ltgy-gy-trnsl, sbang-ang, fgr, psrt, wrnnd, arg cmt, occ lit frag, abnt glau  
SHYSS: ltgy-gy, s&p ip, sbang, v fri, vfgr, psrt, wrnnd, abnt cly, arg cmt

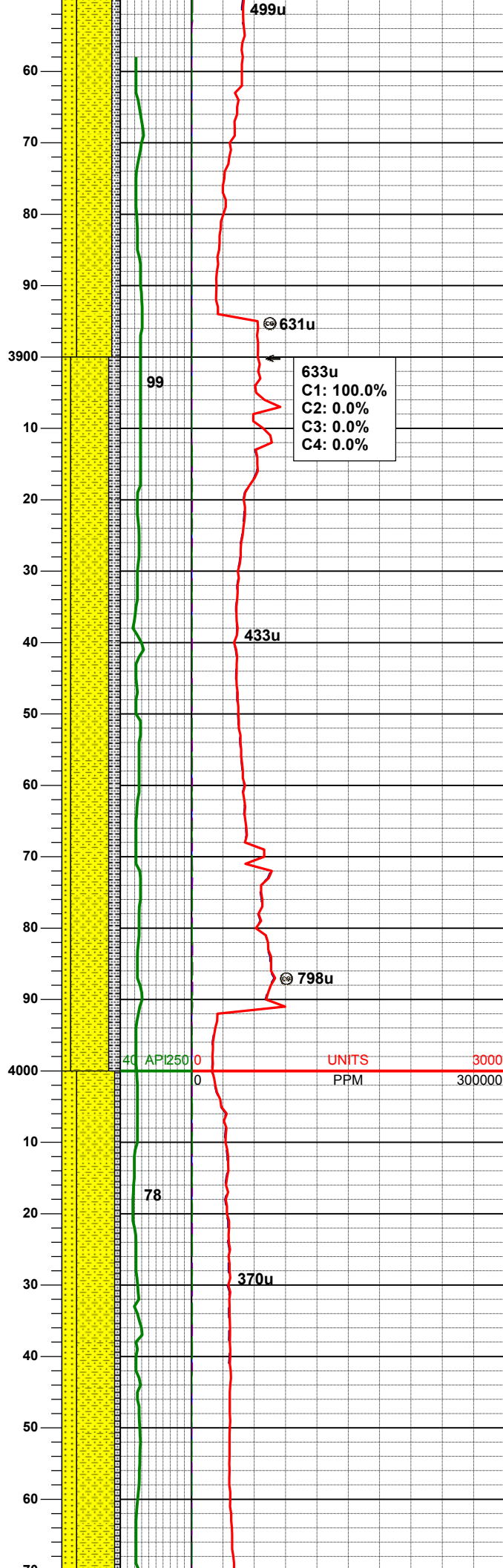
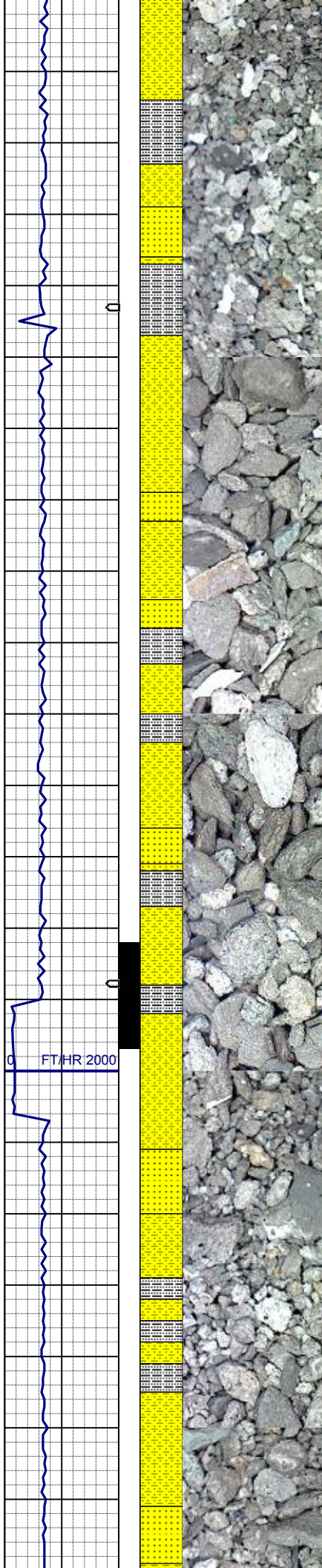
MD 3648'  
INC 15.3°  
AZM 167.2°  
TVD 3587.95'

MD 3743'  
INC 13.4°  
AZM 171.9°  
TVD 3679.98'

SS: ltgy-gy-trnsl, sbang-ang, fgr, psrt, wrnnd, arg cmt, occ lit frag, abnt glau

MD 3838'  
INC 12.3°  
AZM 174.6°  
TVD 3772.60'

SHYSS: ltgy-gy, s&p ip, sbang, v fri, vfgr, psrt, wrnnd, abnt cly, arg cmt  
SS: ltgy-gy-trnsl, sbang-ang, fgr, psrt,



wrndd, arg cmt, occ lit frag, abnt glau  
SLTYSH: ltgy-gy, sbblky-sbply, sft, gt  
-sdy tex, arg cmt

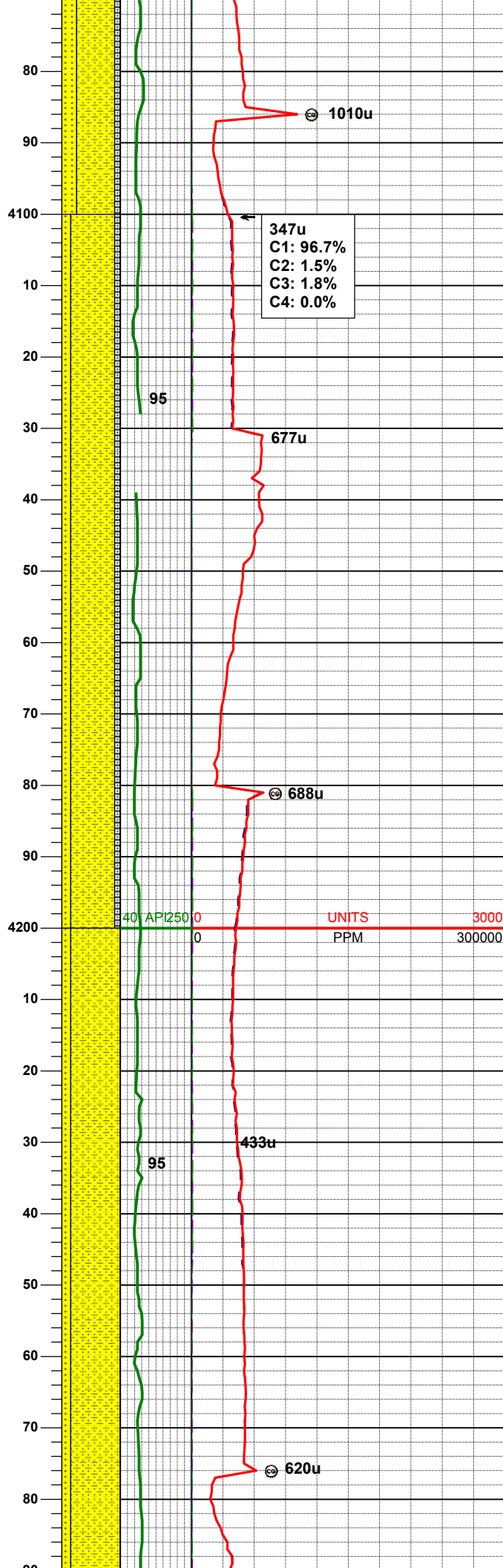
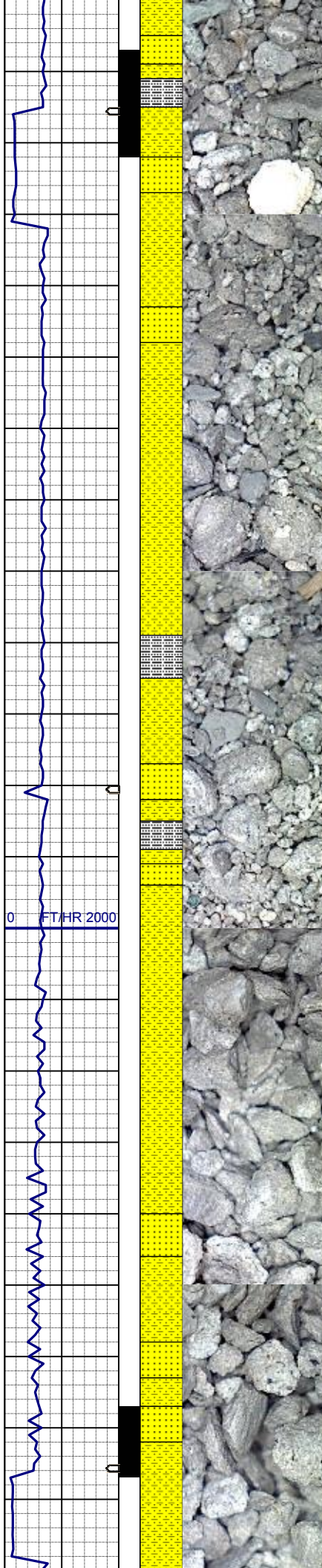
MD 3932'  
INC 11.6°  
AZM 174.9°  
TVD 3864.56'

SHYSS: ltgy-gy, s&p ip, sbang, v fri,  
vfgr, psrt, wrndd, abnt cly, arg cmt  
SLTYSH: ltgy-gy, sbblky-sbply, sft, gt  
-sdy tex, arg cmt  
SS: ltgy-gy-trnsl, sbang-ang, fgr, psrt,  
wrndd, arg cmt, occ lit frag, abnt glau

MD 4027'  
INC 11.2°  
AZM 169.5°  
TVD 3957.69'

SHYSS: ltgy-gy, s&p ip, sbang, v fri,  
vfgr, psrt, wrndd, abnt cly, arg cmt  
SS: ltgy-gy-trnsl, sbang-ang, fgr, psrt,  
wrndd, arg cmt, occ lit frag, abnt glau  
SLTYSH: ltgy-gy, sbblky-sbply, sft, gt  
-sdy tex, arg cmt





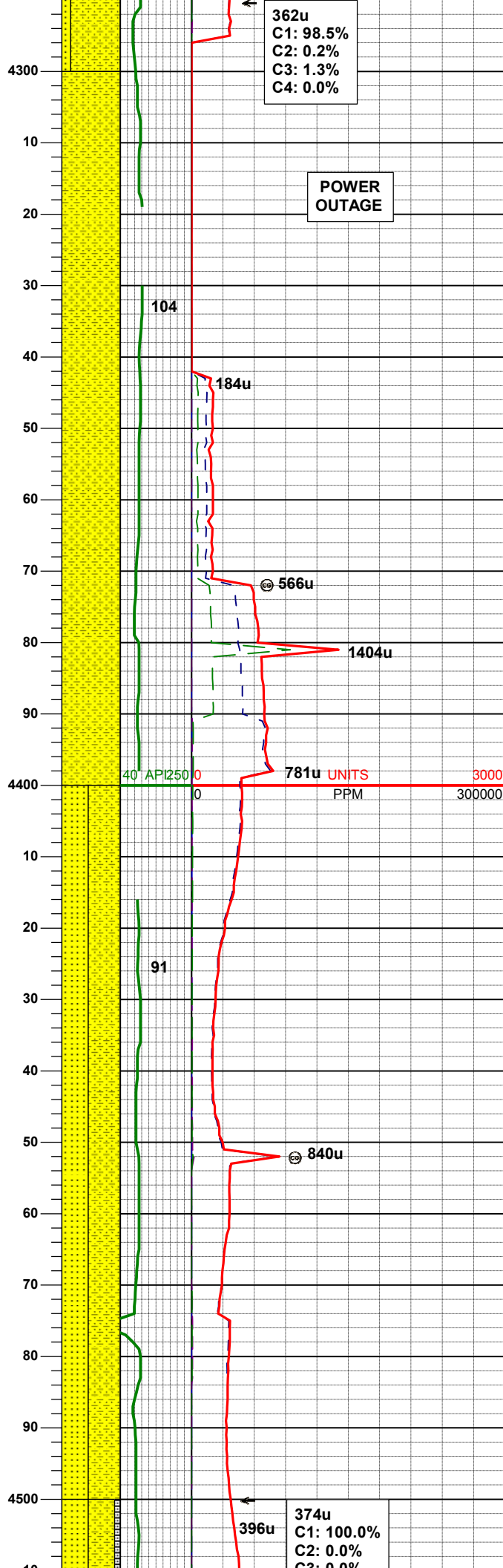
WT IN 9.00/ OUT 9.00  
VIS IN 29/ OUT 29

MD 4122'  
INC 9.7°  
AZM 164.0°  
TVD 4051.12'

SHYSS: ltgy-gy, s&p ip, sbang, v fri,  
vfgr, psrt, wrndd, abnt cly, arg cmt  
SS: ltgy-gy-trnsl, sbang-ang, fgr, psrt,  
wrndd, arg cmt, occ lit frag, abnt glau  
SLTYSH: ltgy-gy, sbblky-sbplty, sft, gt  
-sdy tex, arg cmt

MD 4217'  
INC 7.8°  
AZM 165.3°  
TVD 4145.01'

SHYSS: ltgy-gy, s&p ip, sbang, v fri,  
vfgr, psrt, wrndd, abnt cly, arg cmt  
SS: ltgy-gy-trnsl, sbang-ang, fgr, psrt,  
wrndd, arg cmt, occ lit frag, occ glau



MD 4312'  
INC 7.9°  
AZM 158.1°  
TVD 4239.12'

WT IN 9.25/ OUT 9.25  
VIS IN 32/ OUT 32

SHYSS: ltgy-gy, s&p ip, sbang, v fri,  
vfgr, psrt, wrndd, abnt cly, arg cmt

MD 4406'  
INC 6.5°  
AZM 159.3°  
TVD 4332.37'

SHYSS: ltgy-gy, s&p ip, sbang, v fri,  
vfgr, psrt, wrndd, abnt cly, arg cmt  
SS: ltgy-gy-trnsl, sbang-ang, fgr, psrt,  
wrndd, arg cmt, occ lit frag, occ glau

WT IN 9.50/ OUT 9.50  
VIS IN 34/ OUT 34

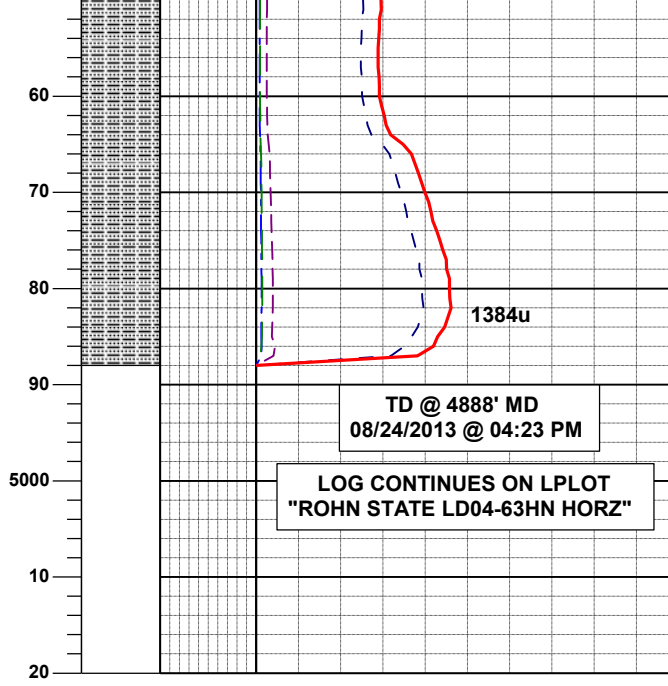
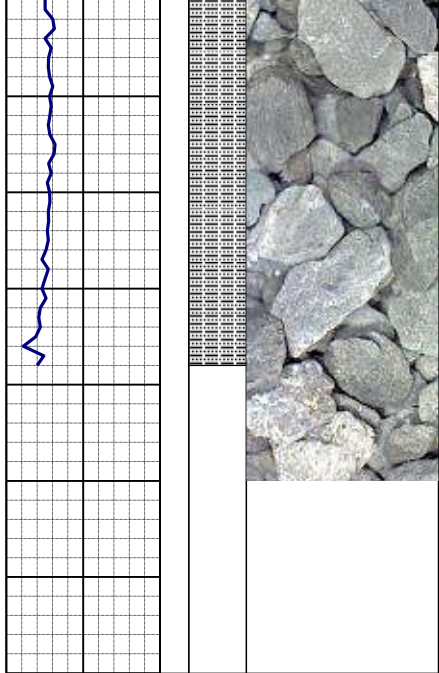
MD 4501'  
INC 5.1°  
AZM 153.5°  
TVD 4426.89'











-sdy tex, arg cmt