

LOG created using L PLOT VH Version 3.0, January 18, 2013, Copyright (C) 1999-2009 Pason Systems Corp.

OPERATOR: NOBLE ENERGY INC.
WELL: CASTOR FEDERAL LC22-78HN
LOCATION: NWNW SEC 22, T9N, R59W
COUNTY: WELD
STATE: COLORADO
SPOT: 501' FNL, 501' FWL
ELEVATION: GR 4,916' KB 4,946'
FIELD: WILDCAT
SPUD DATE: 01/11/2013
TD DATE: 01/13/2013
DATES LOGGED: 01/12/2013 - 01/13/2013
DEPTHS LOGGED: 700' MD - 5407' MD
LOGGERS: ANDREA ZUIDEMA, LAURA KELLOGG
DRILLING FLUID: LSND
DRILLING RIG: H&P 326
API: 05-123-33080
LOG TYPE: VERTICAL
SCALE: 1:240 (5 inches per 100 feet)
REMARKS: WELLSITE GEOLOGICAL SERVICES
 PROVIDED BY COLUMBINE LOGGING INC.

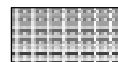
LITHOLOGIES



Sandstone



Shaly Sandstone



Silty Shale

ENGINEERING SYMBOLS



Connection



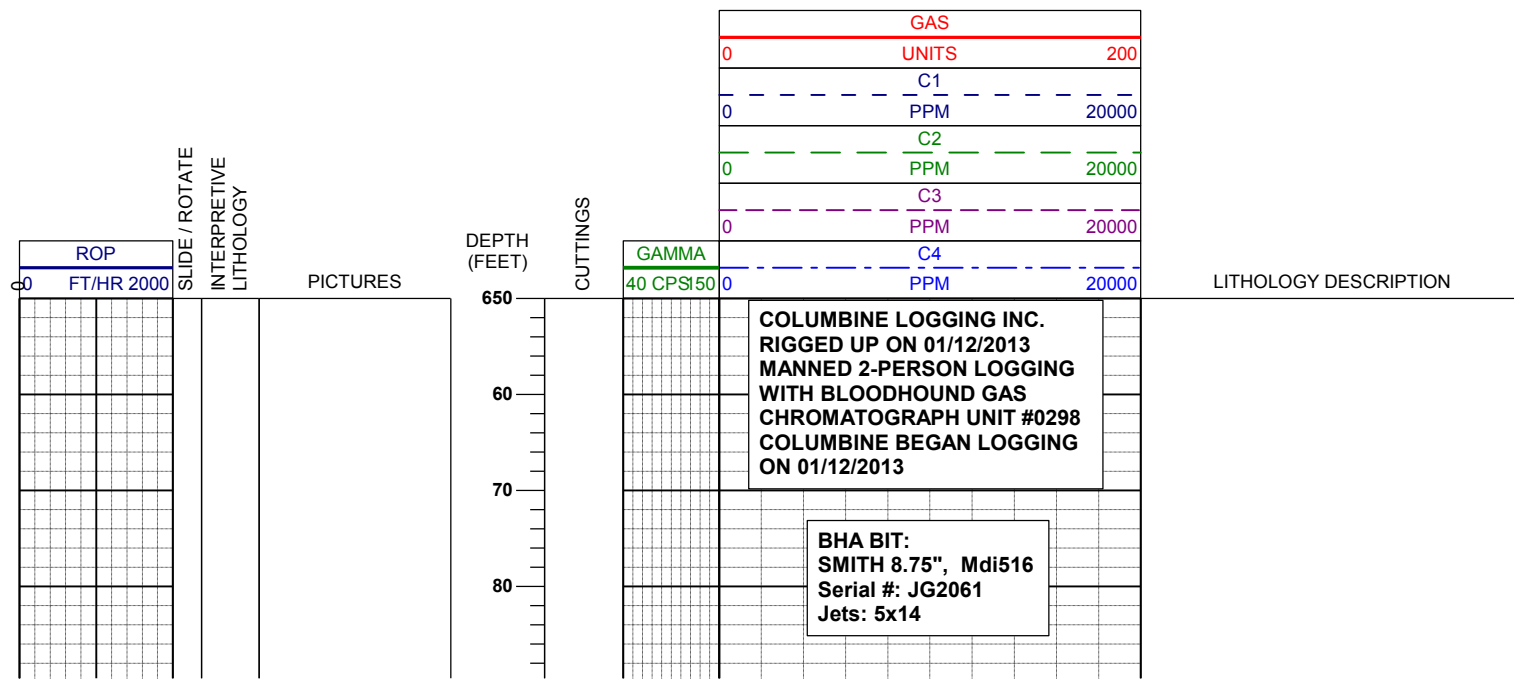
Connection Gas

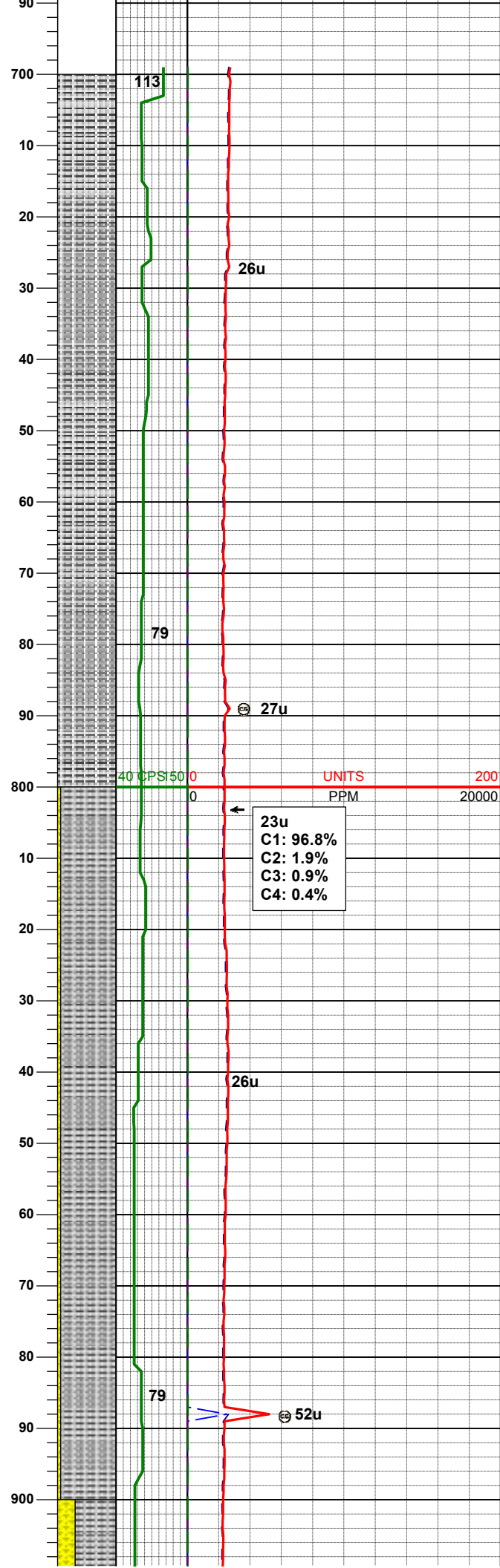
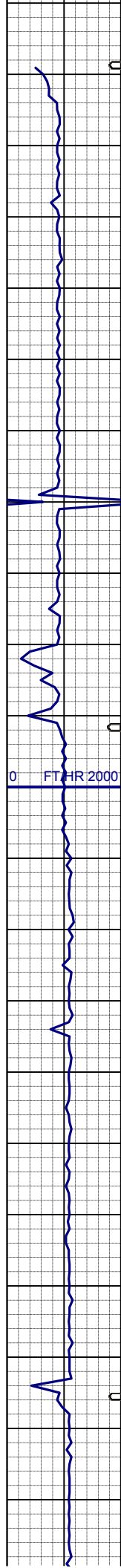


Arrow



Midnight Depth

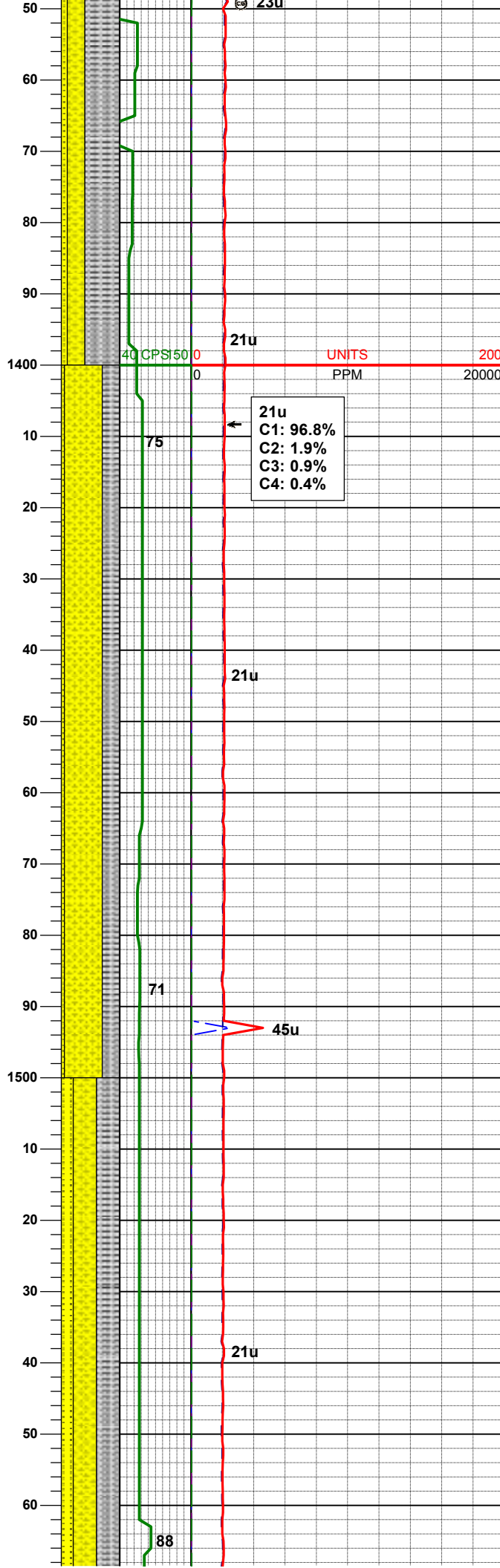
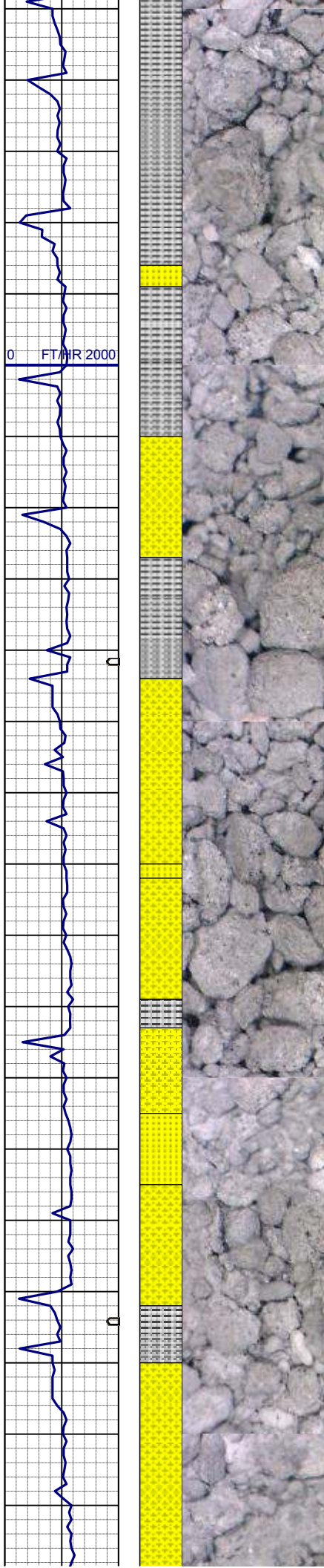




MD 748'
INC 0.2°
AZM 56.1°
TVD 748.0'

SLTYSH: m - lt gy-crmbn, occ dk gy,
sft - mod firm, sbblky - sbply, noncalc

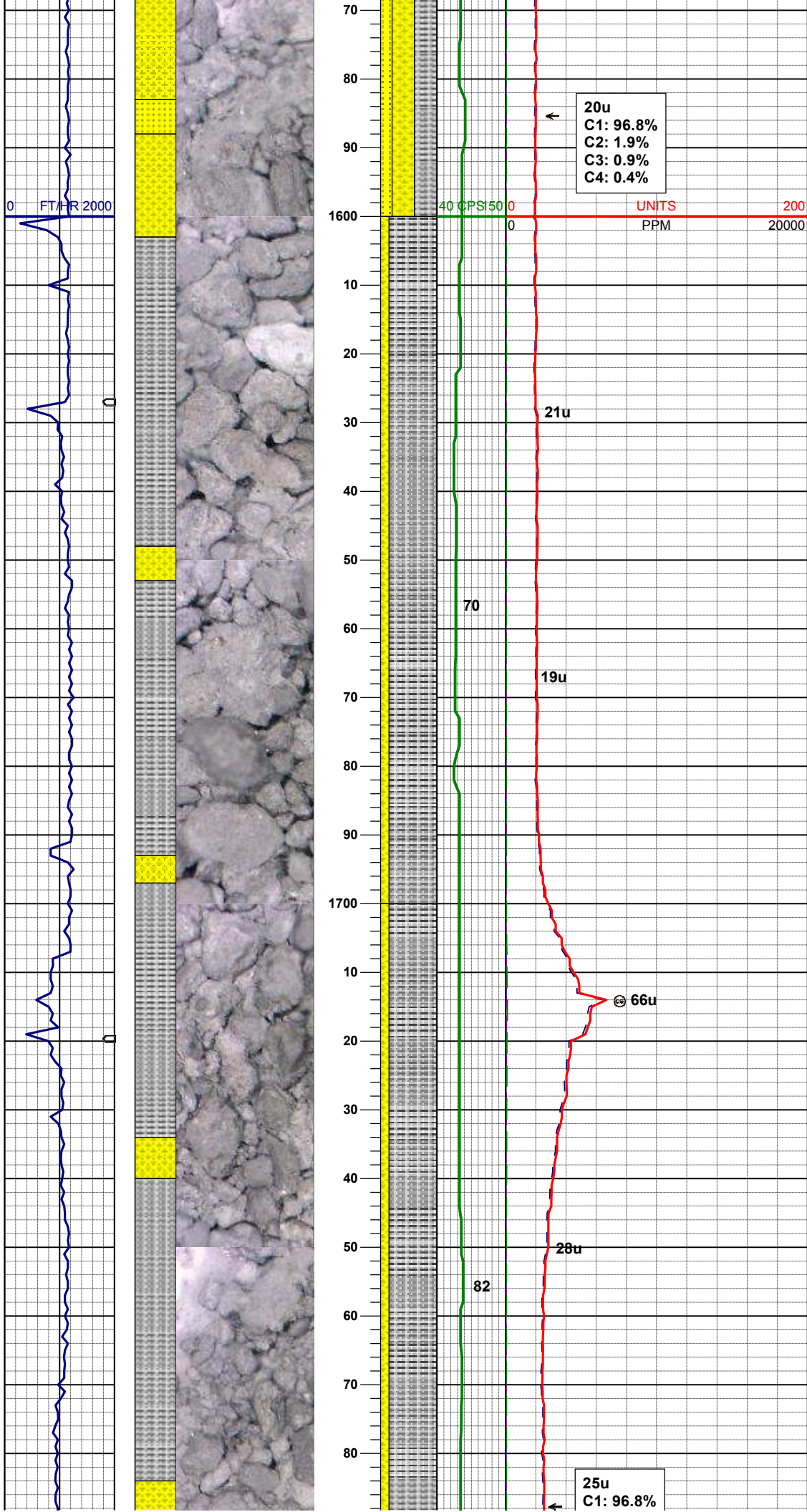
SLTYSH: m - lt gy-crmbn, occ dk gy,
sft - mod firm, sbblky - sbply, noncalc
SHYSS: lt gy, wh - lt gy, occ m gy, f
gr, sbang - sbrnrd, mod srt, mod sft -
frm, arg cmt



gr, sbang - sbrnrd, mod srt, mod sft - frm, occ glau & phlog, arg cmt
SS: wh, lt gy, mod firm, blk - sbply, sb rdd, arg cmt, glau & phlog, occ uncons

SHYSS: lt gy, wh - lt gy, occ m gy, f gr, sbang - sbrnrd, mod srt, mod sft - frm, occ glau & phlog, arg cmt
SLTYSH: m - lt gy-crmbn, occ dk gy, sft - mod firm, sbply - sbply, noncalc
SS: wh, lt gy, mod firm, blk - sbply, sb rdd, arg cmt, glau & phlog, occ uncons

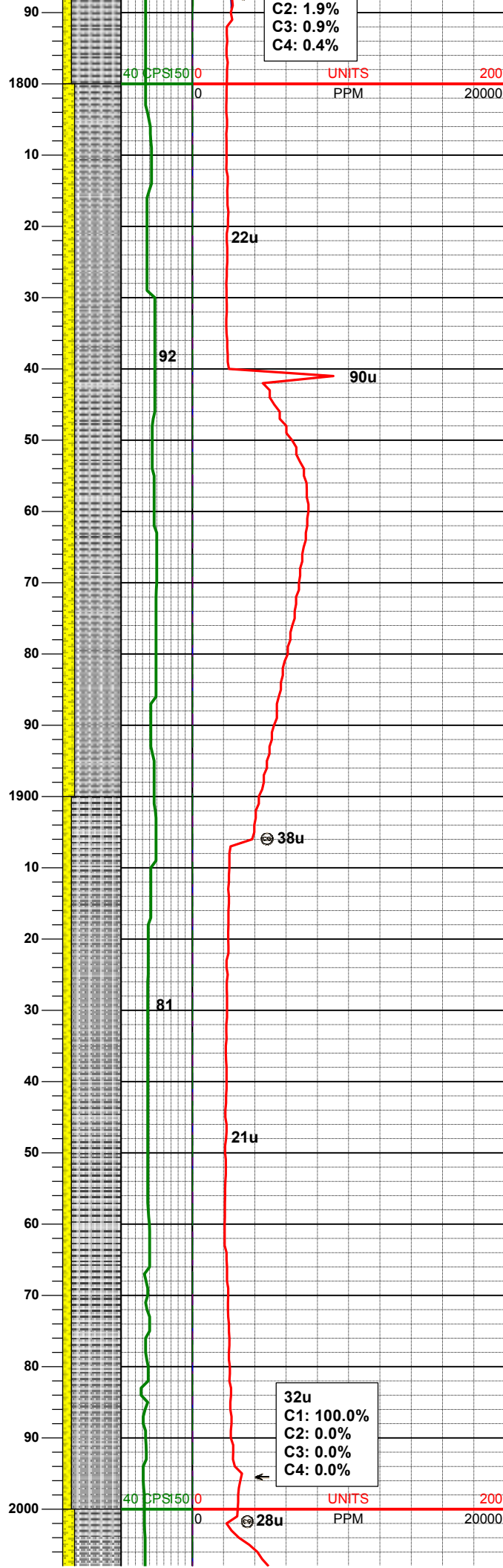
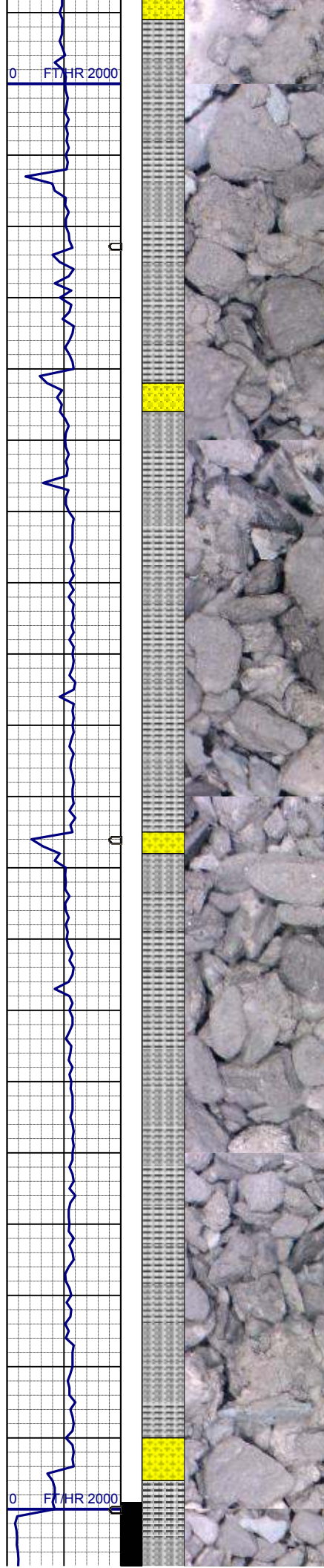
SHYSS: lt gy, wh - lt gy, occ m gy, f gr, sbang - sbrnrd, mod srt, mod sft - frm, occ glau & phlog, arg cmt
SLTYSH: m - lt gy-crmbn, occ dk gy, sft - mod firm, sbply - sbply, noncalc
SS: wh, lt gy, mod firm, blk - sbply, sb rdd, arg cmt, glau & phlog, occ uncons



MD 1585'
INC 0.3°
AZM 110.6°
TVD 1584.99'

SLTYSH: m - lt gy-crmbn, occ dk gy,
sft - mod firm, sbblky - sbply, noncalc
SHYSS: lt gy, wh - lt gy, occ m gy, f
gr, sbang - sbrndd, mod srt, mod sft -
frm, tr glau & phlog, arg cmt

SLTYSH: m - lt gy-crmbn, occ dk gy,
sft - mod firm, sbblky - sbply, noncalc
SHYSS: lt gy, wh - lt gy, occ m gy, f
gr, sbang - sbrndd, mod srt, mod sft -
frm, tr glau & phlog, arg cmt



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

UNITS
PPM

200
20000

22u

92

90u

SLTYSH: m - lt gy-crmbn, occ dk gy,
sft - mod firm, sbblky - sbplty, noncalc
SHYSS: lt gy, wh - lt gy, occ m gy, f
gr, sbang - sbrnnd, mod srt, mod sft -
frm, tr glau & phlog, arg cmt

MD 1863'
INC 0.4°
AZM 49.5°
TVD 1862.99'

38u

81

21u

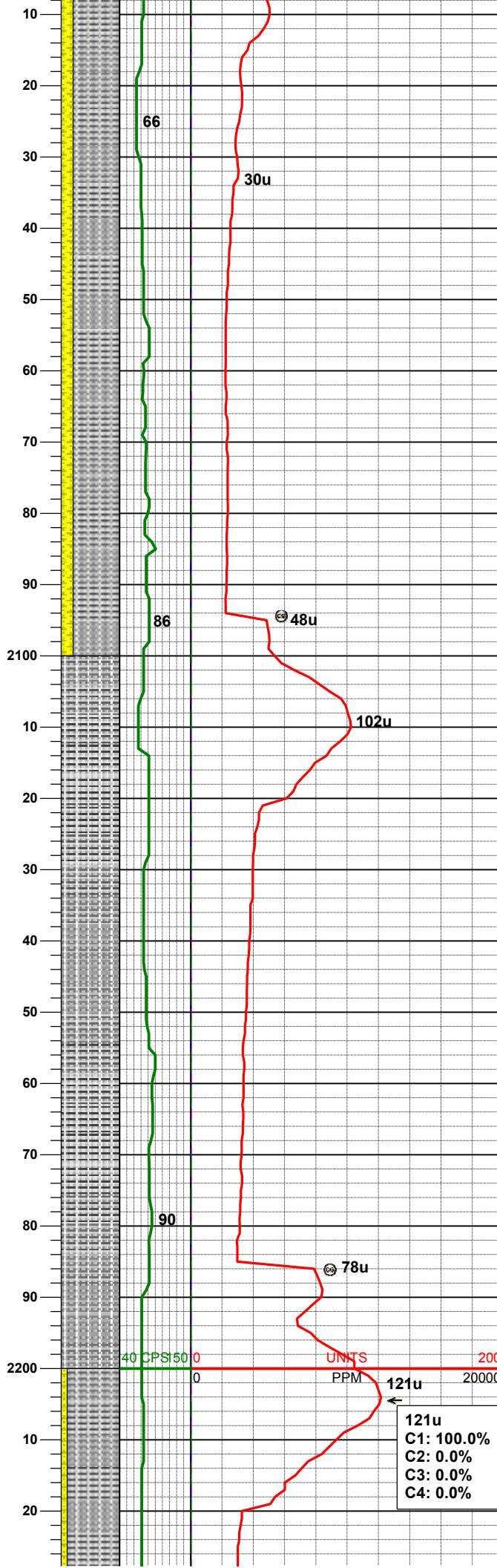
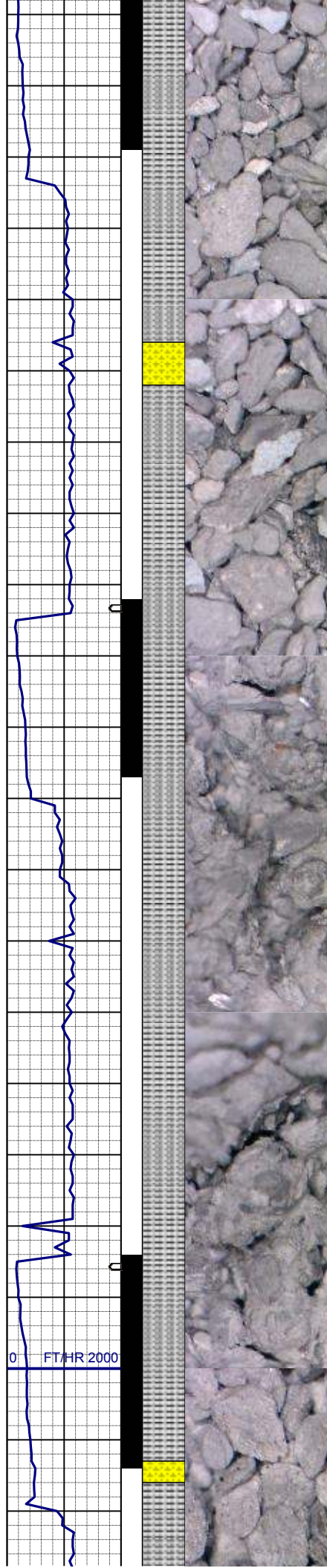
SLTYSH: m - lt gy-crmbn, occ dk gy,
sft - mod firm, sbblky - sbplty, noncalc
SHYSS: lt gy, wh - lt gy, occ m gy, f
gr, sbang - sbrnnd, mod srt, mod sft -
frm, tr glau & phlog, arg cmt

32u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

UNITS
PPM

200
20000

28u

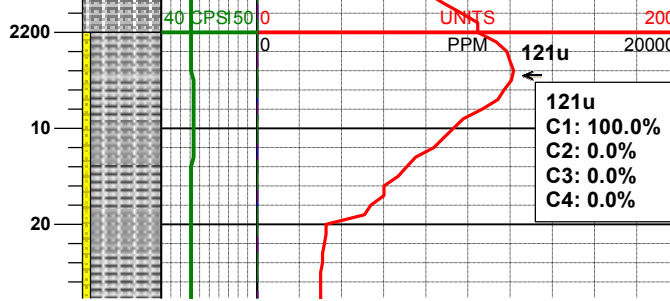


SLTYSH: m - lt gy-crmbn, occ dk gy,
sft - mod firm, sbblky - sbply, noncalc
SHYSS: lt gy, wh - lt gy, occ m gy, f
gr, sbang - sbrdd, mod srt, mod sft -
frm, tr glau & phlog, arg cmt

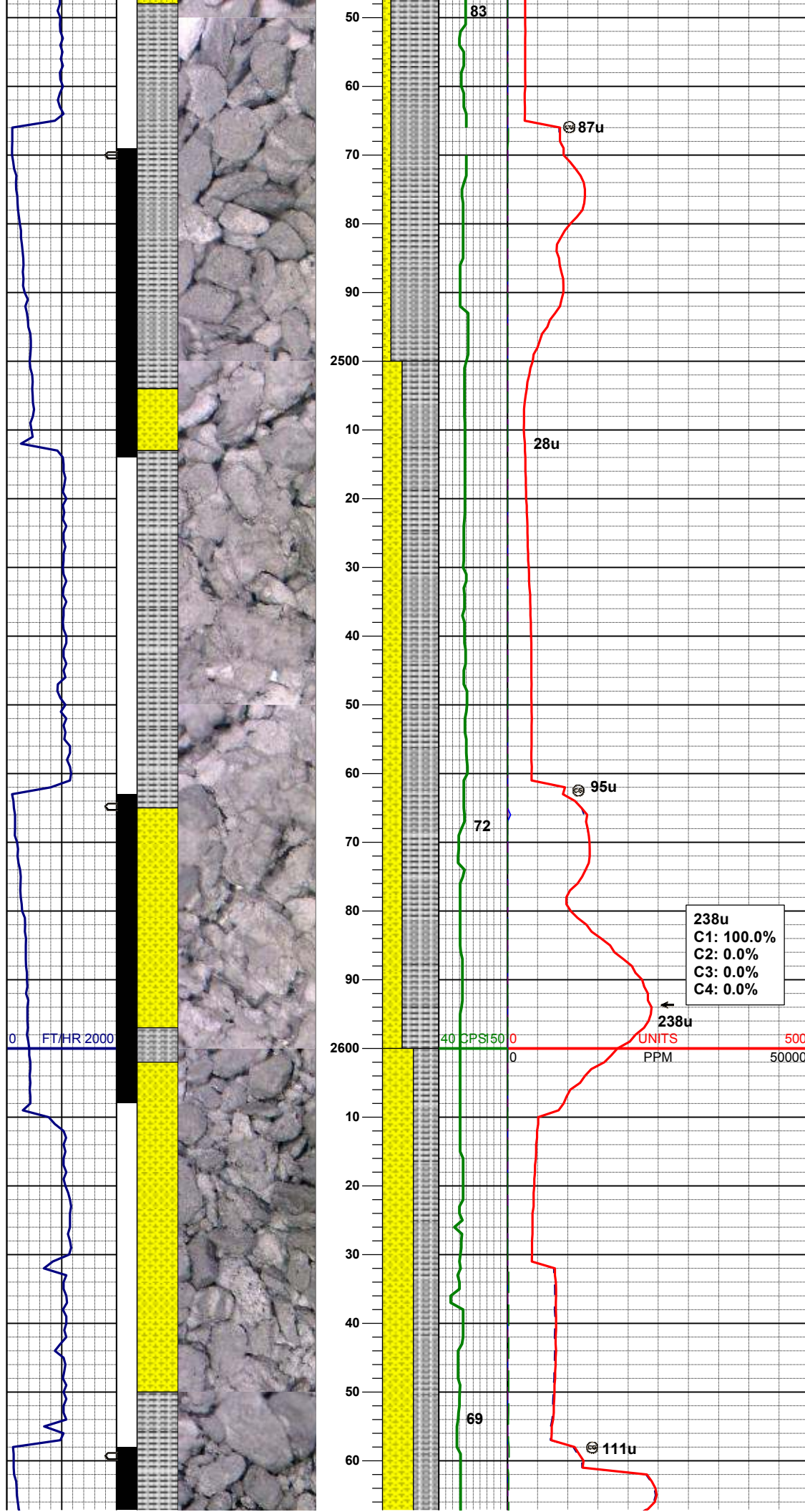
MD	2050'
INC	2.7°
AZM	30.6°
TVD	2049.95'

MD	2142'
INC	4.4°
AZM	23.6°
TVD	2141.77'

SLTYSH: m - lt gy-crmbn, occ dk gy,
sft - mod firm, sbblky - sbply, noncalc



121u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%



SLTYSH: m - lt gy-crmbn, occ dk gy, sft - mod firm, sbblky - sbplty, noncalc
SHYSS: lt gy, wh - lt gy, occ m gy, f gr, sbang - sbrndd, mod srt, mod sft - frm, tr glau & phlog, arg cmt

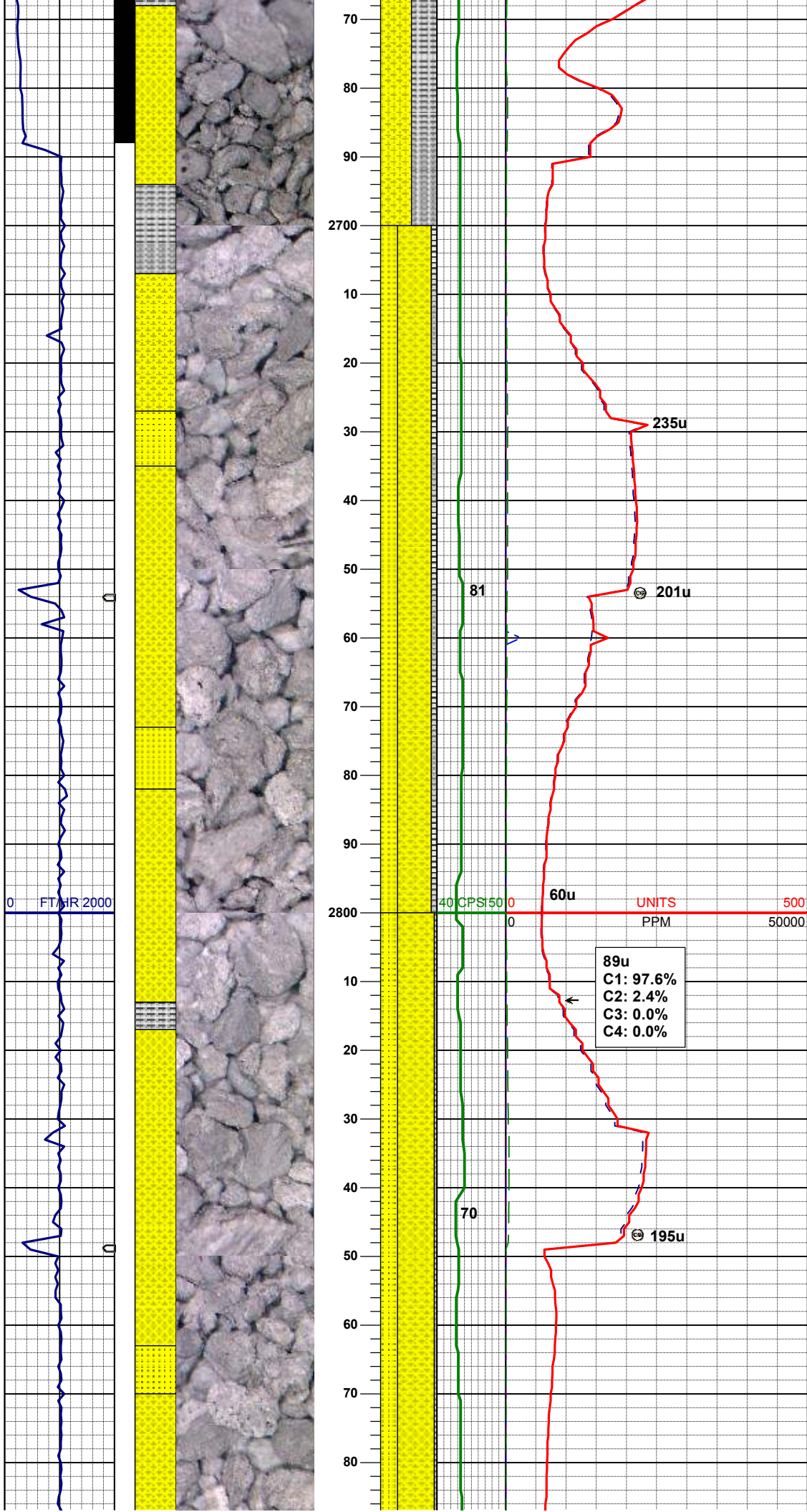
MD 2521'
INC 11.7°
AZM 15.2°
TVD 2516.91'

SLTYSH: m - lt gy-crmbn, occ dk gy, sft - mod firm, sbblky - sbplty, noncalc
SHYSS: lt gy, wh - lt gy, occ m gy, f gr, sbang - sbrndd, mod srt, mod sft - frm, tr glau & phlog, arg cmt

WT IN 8.80/ OUT 8.80
VIS IN 31/ OUT 31

MD 2616'
INC 13.6°
AZM 19.2°
TVD 2609.60'

SHYSS: lt gy, wh - lt gy, occ m gy, f gr, sbang - sbrndd, mod srt, mod sft - frm, tr glau & phlog, arg cmt
SLTYSH: m - lt gy-crmbn, occ dk gy, sft - mod firm, sbblky - sbplty, noncalc



MD 2711'
INC 15.3°
AZM 17.6°
TVD 2701.59'

SHYSS: lt gy, wh - lt gy, occ m gy, f
gr, sbang - sbrnodd, mod srt, mod sft -
frm, arg cmt, trglau
SS: wh, lt gy, mod firm, blkly - sbply,
sb rndd, arg cmt, glau
SLTYSH: m - lt gy-crmbn, occ dk gy,
sft - mod firm, sbbly - sbply, noncalc

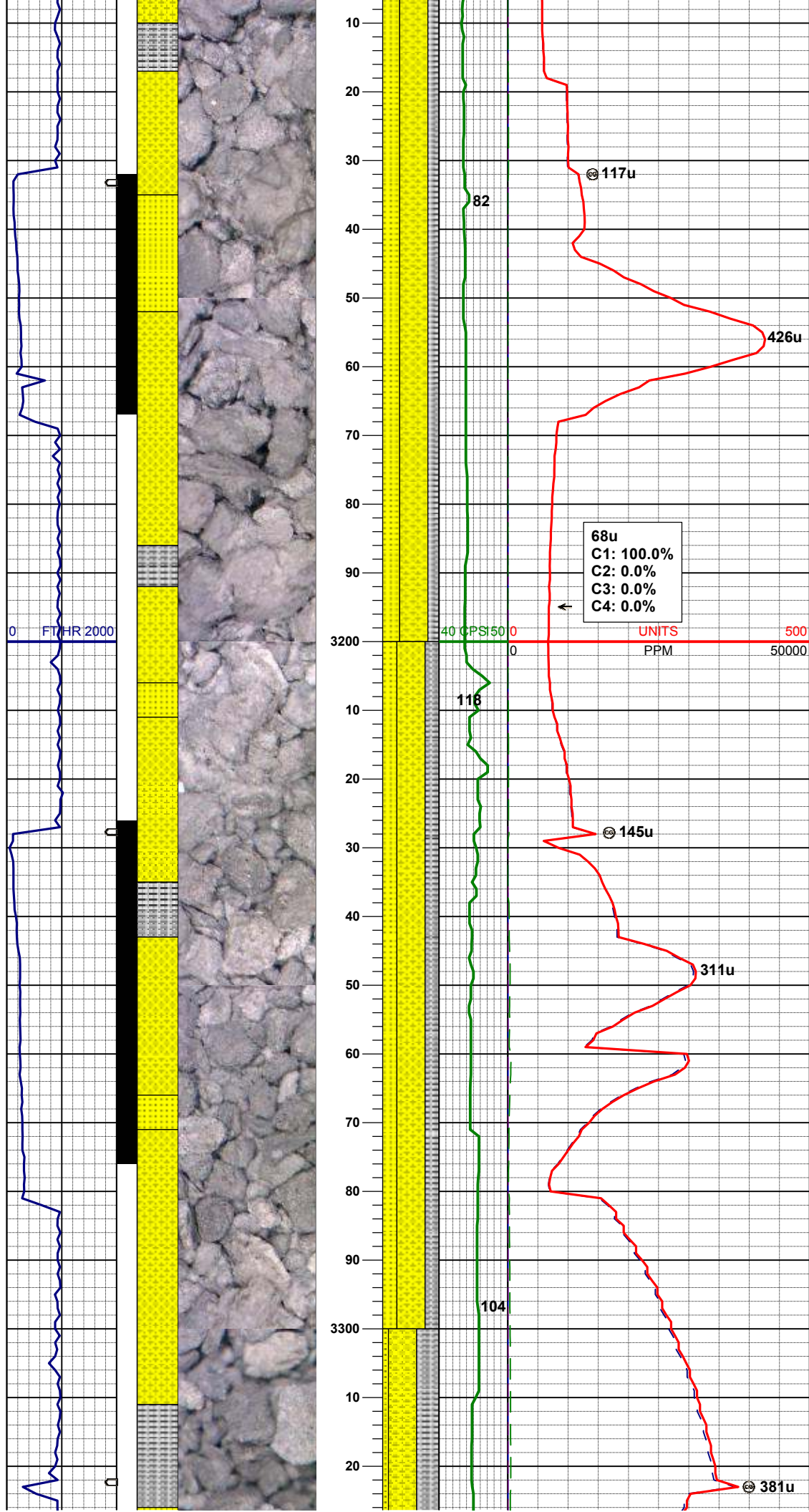
MD 2805'
INC 15.3°
AZM 17.5°
TVD 2792.26'

SHYSS: lt gy, wh - lt gy, occ m gy, f
gr, sbang - sbrnodd, mod srt, mod sft -
frm, arg cmt, trglau
SS: wh, lt gy, mod firm, blkly - sbply,
sb rndd, arg cmt, glau
SLTYSH: m - lt gy-crmbn, occ dk gy,
sft - mod firm, sbbly - sbply, noncalc

SHYSS: lt gy, wh - lt gy, occ m gy, f
gr, sbang - sbrnnd, mod srt, mod sft -
frm, arg cmt, trglau
SS: wh, lt gy, mod frm, blk - sbply,
sbr nnd, arg cmt, glau
SLTYSH: m - lt gy-crmbn, occ dk gy,
sft - mod frm, sbbly - sbply, noncalc

SHYSS: lt gy, wh - lt gy, occ m gy, f
gr, sbang - sbrnnd, mod srt, mod sft -
frm, arg cmt, trglau
SLTYSH: m - lt gy-crmbn, occ dk gy,
sft - mod frm, sbblky - sbply, noncalc
SS: wh, lt gy, mod frm, bkly - sbply,
sb rndd, arg cmt, glau

MD	3090'
INC	14.0°
AZM	19.0°
TVD	3068.24'

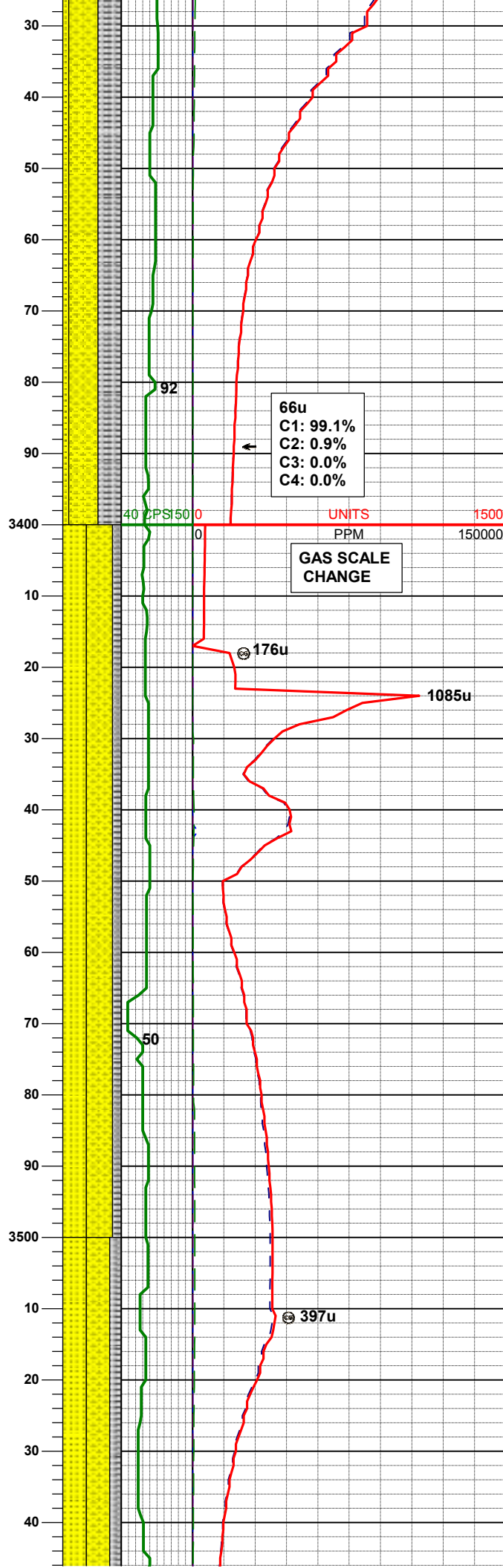
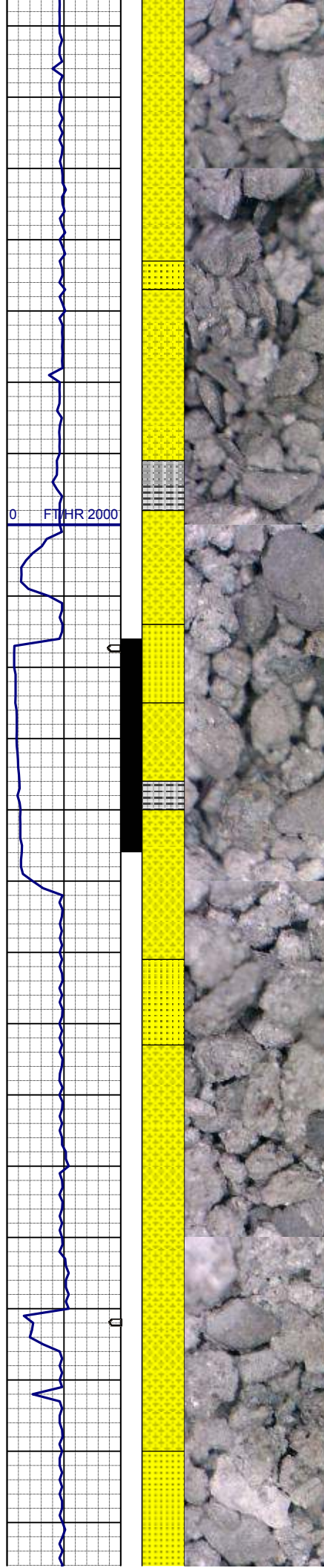


SHYSS: lt gy, wh - lt gy, occ m gy, f
gr, sbang - sbrnnd, mod srt, mod sft -
frm, arg cmt, trglau
SS: wh, lt gy, mod firm, blkly - sbply,
sb rdd, arg cmt, glau
SLTYSH: m - lt gy-crmbn, occ dk gy,
sft - mod firm, sbblkly - sbply, noncalc

MD 3184'
INC 13.9°
AZM 19.9°
TVD 3159.46'

SHYSS: lt gy, wh - lt gy, occ m gy, f
gr, sbang - sbrnnd, mod srt, mod sft -
frm, arg cmt, trglau
SS: wh, lt gy, mod firm, blkly - sbply,
sb rdd, arg cmt, glau
SLTYSH: m - lt gy-crmbn, occ dk gy,
sft - mod firm, sbblkly - sbply, noncalc

MD 3279'
INC 15.9°
AZM 16.2°
TVD 3251.27'



SHYSS: lt gy, wh - lt gy, occ m gy, f
gr, sbang - sbrndd, mod srt, mod sft -
frm, arg cmt, trglau
SLTYSH: m - lt gy-crmbn, occ dk gy,
sft - mod firm, sbblky - sbply, noncalc
SS: wh, lt gy, mod firm, blky - sbply,
sb rndd, arg cmt, glau

MD 3374'
INC 15.1°
AZM 14.1°
TVD 3342.81'

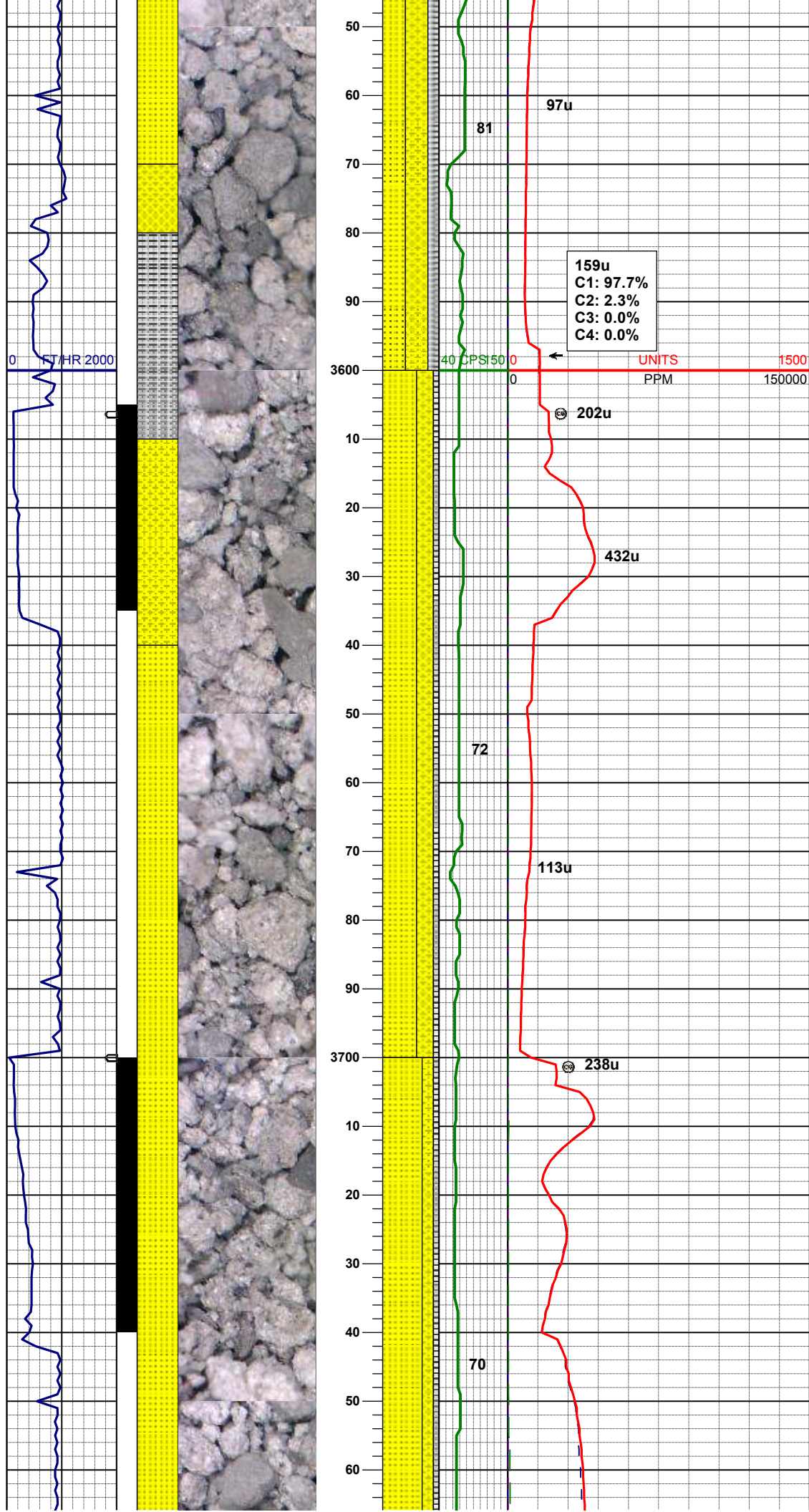
66u
C1: 99.1%
C2: 0.9%
C3: 0.0%
C4: 0.0%

GAS SCALE
CHANGE

SHYSS: lt gy, wh - lt gy, occ m gy, f
gr, sbang - sbrndd, mod srt, mod sft -
frm, arg cmt, trglau
SS: wh, lt gy, mod firm, blky - sbply,
sb rndd, arg cmt, glau
SLTYSH: m - lt gy-crmbn, occ dk gy,
sft - mod firm, sbblky - sbply, noncalc

MD 3469'
INC 16.4°
AZM 20.4°
TVD 3434.25'

SHYSS: lt gy, wh - lt gy, occ m gy, f
gr, sbang - sbrndd, mod srt, mod sft -



frm, arg cmt, trglau
SS: wh, lt gy, mod firm, blkly - sbply,
sb rndd, arg cmt, glau
SLTYSH: m - lt gy-crmbn, occ dk gy,
sft - mod firm, sbblkly - sbply, noncalc

MD	3563'
INC	17.4°
AZM	18.9°
TVD	3524.19'

WT IN 9.05/ OUT 9.05
VIS IN 33/ OUT 33

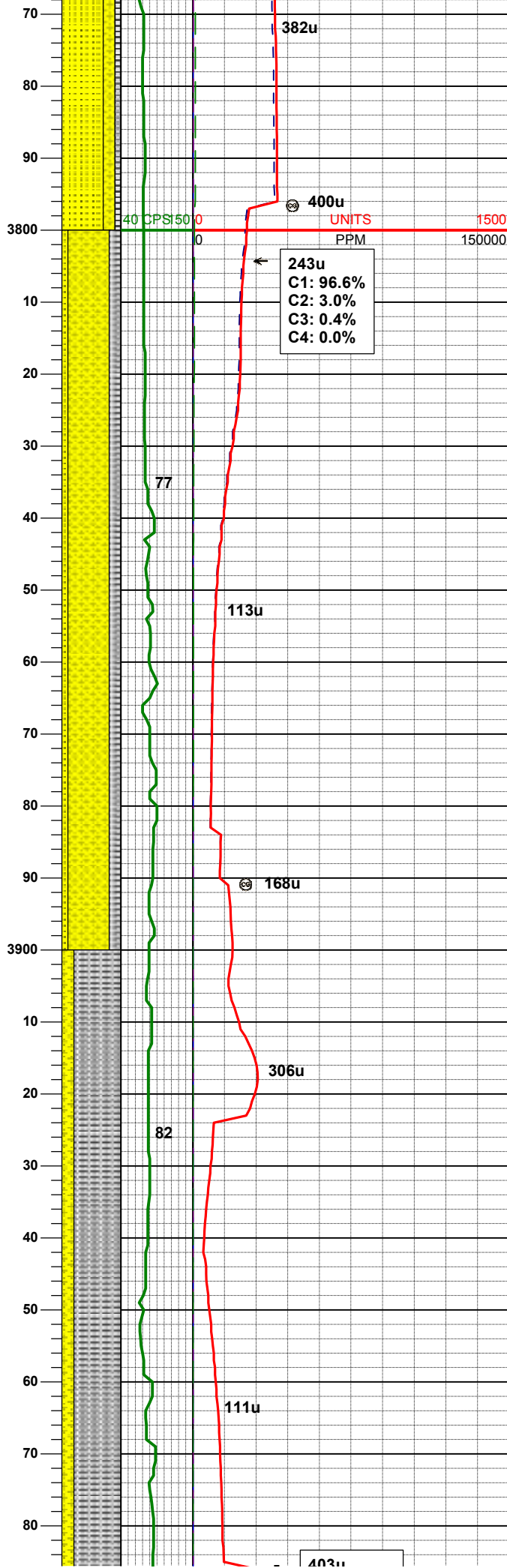
SS: wh, lt gy, mod firm, blkly - sbply,
sb rndd, arg cmt, glau, phlog, occ
uncons
SHYSS: lt gy, wh - lt gy, occ m gy, f
gr, sbang - sbrndd, mod srt, mod sft -
frm, arg cmt, trglau&phlog
SLTYSH: m - lt gy-crmbn, occ dk gy,
sft - mod firm, sbblkly - sbply, noncalc

MD	3658'
INC	16.2°
AZM	18.9°
TVD	3615.14'

SS: wh, lt gy, mod firm, blkly - sbply,
sb rndd, arg cmt, glau, tr phlog, occ
uncons
SHYSS: lt gy, wh - lt gy, occ m gy, f
gr, sbang - sbrndd, mod srt, mod sft -
frm, arg cmt, trglau&phlog
SLTYSH: m - lt gy-crmbn, occ dk gy,
sft - mod firm, sbblkly - sbply, noncalc

MD	3752'
INC	14.2°
AZM	24.2°
TVD	3705.04'

TVD 3705.84'

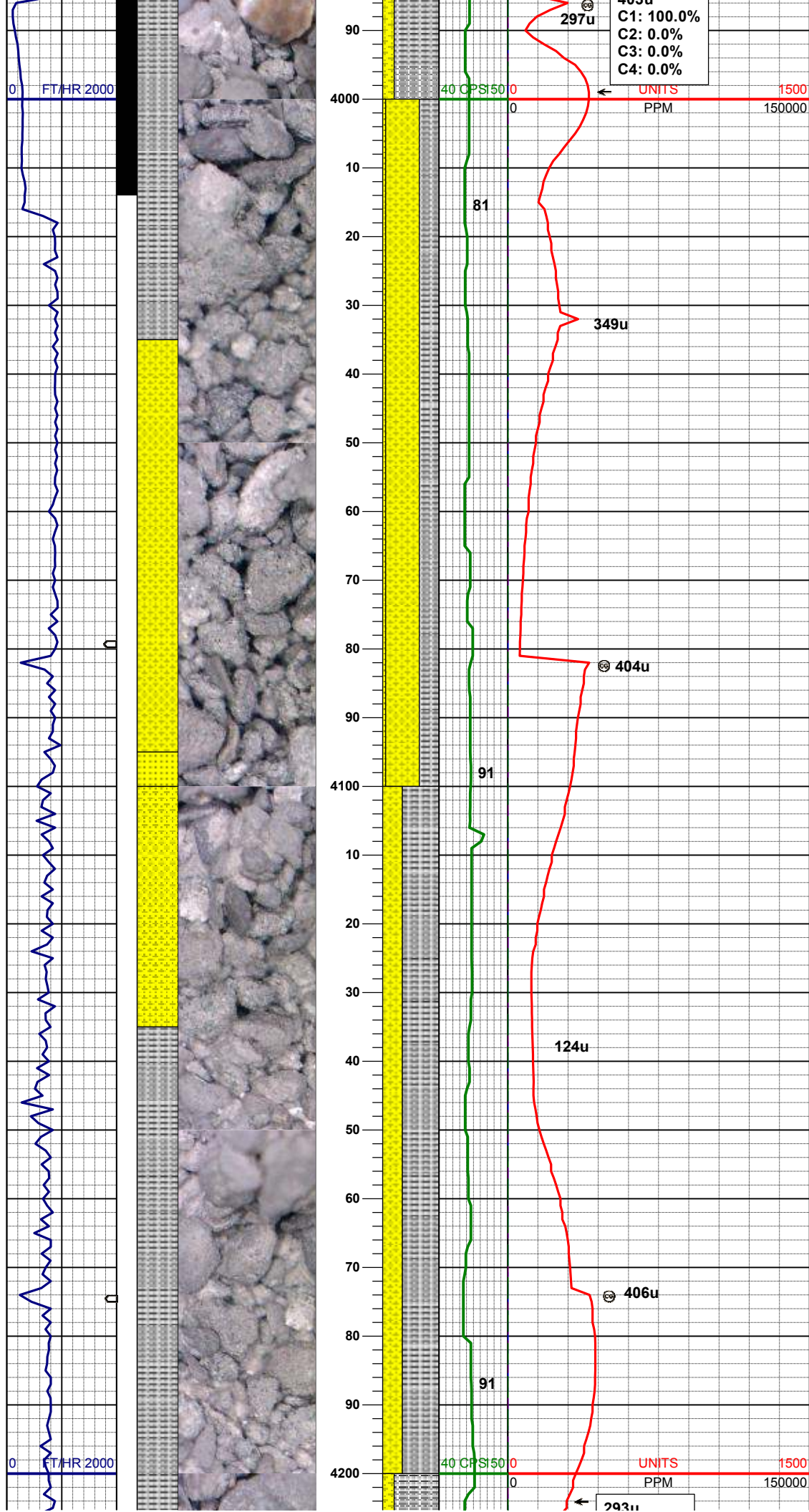


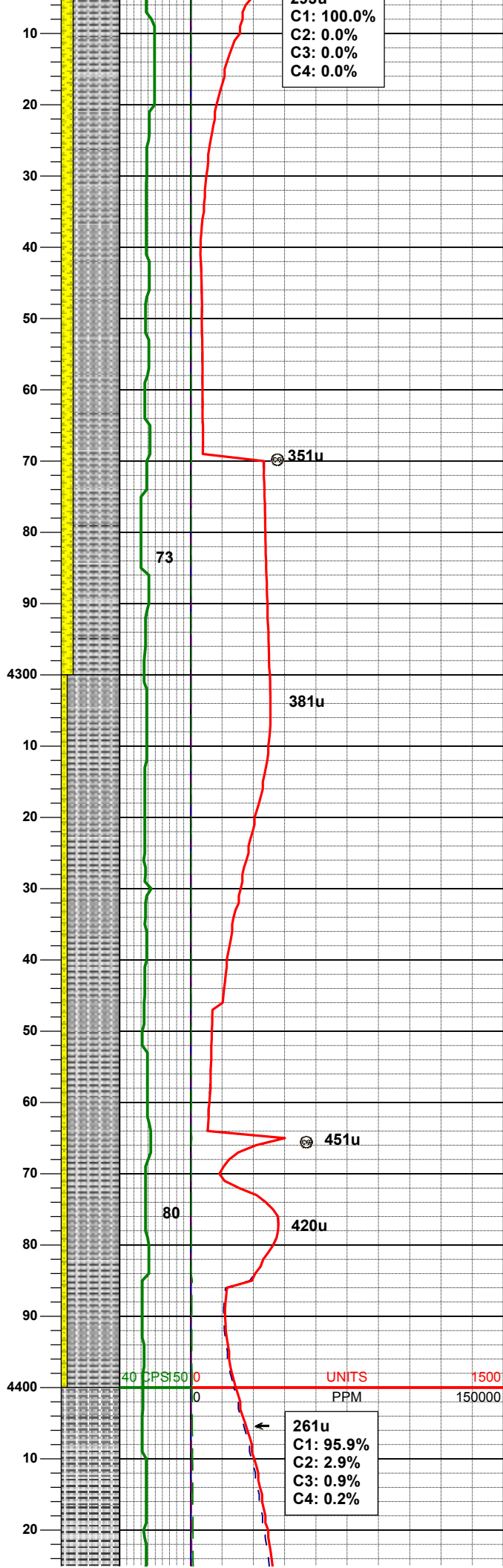
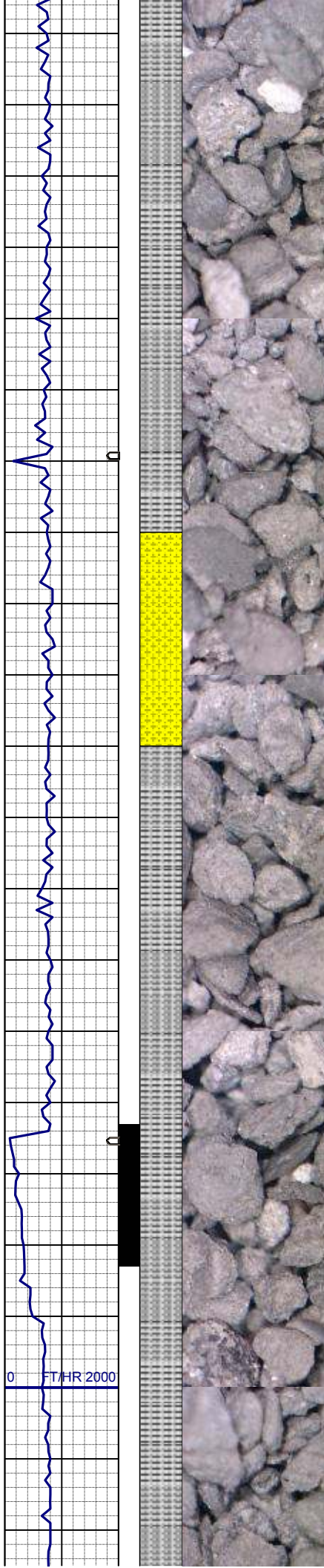
MD 3847'
INC 13.8°
AZM 25.0°
TVD 3798.02'

SHYSS: lt gy, wh - lt gy, occ m gy, f
gr, sbang - sbrnnd, mod srt, mod sft -
frm, arg cmt, trglau&phlog
SLTYSH: m - lt gy-crmbn, occ dk gy,
sft - mod firm, sbblky - sbplty, noncalc
SS: wh, lt gy, mod firm, blky - sbplty,
sb rndd, arg cmt, glau, tr phlog & pyr,
occ uncon

MD 3942'
INC 10.6°
AZM 18.0°
TVD 3890.87'

SLTYSH: m - lt gy-crmbn, occ dk gy,
sft - mod firm, sbblky - sbplty, noncalc
SHYSS: lt gy, wh - lt gy, occ m gy, f
gr, sbang - sbrnnd, mod srt, mod sft -
frm, arg cmt, trglau&phlog





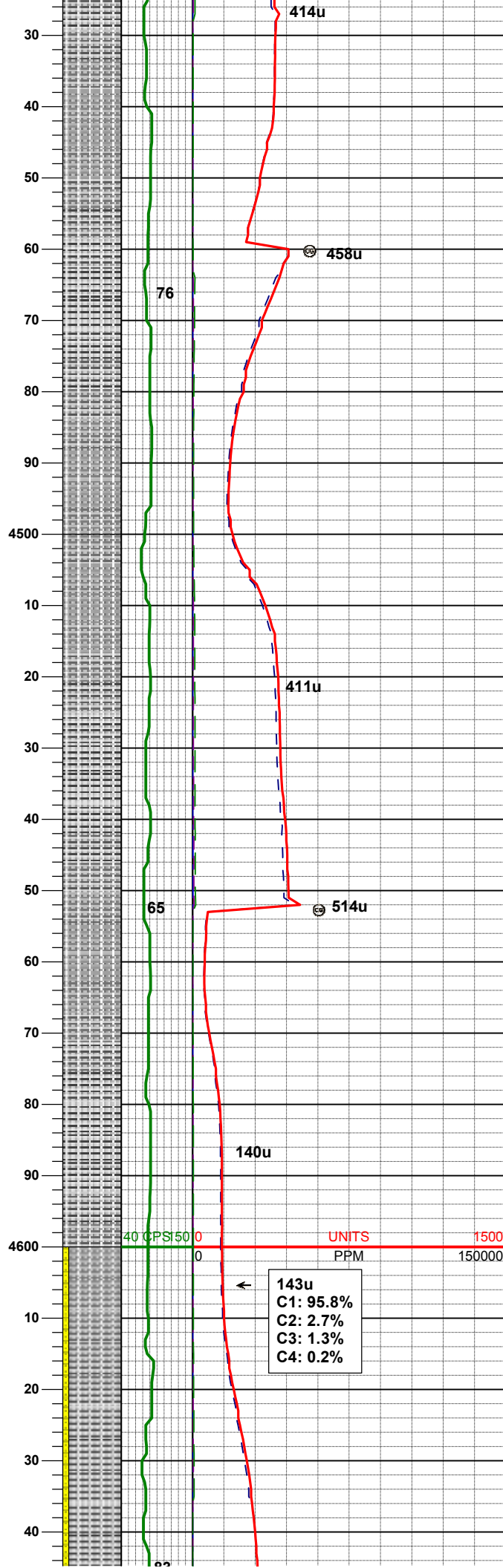
MD 4227'
INC 4.4°
AZM 27.3°
TVD 4173.80'

SLTYSH: m - lt gy-crmbn, occ dk gy,
sft - mod firm, sblky - sbply, noncalc
SHYSS: lt gy, wh - lt gy, occ m gy, f
gr, sbang - sbrndd, mod srt, mod sft -
frm, arg cmt, tr glau

MD 4321'
INC 3.4°
AZM 30.8°
TVD 4267.58'

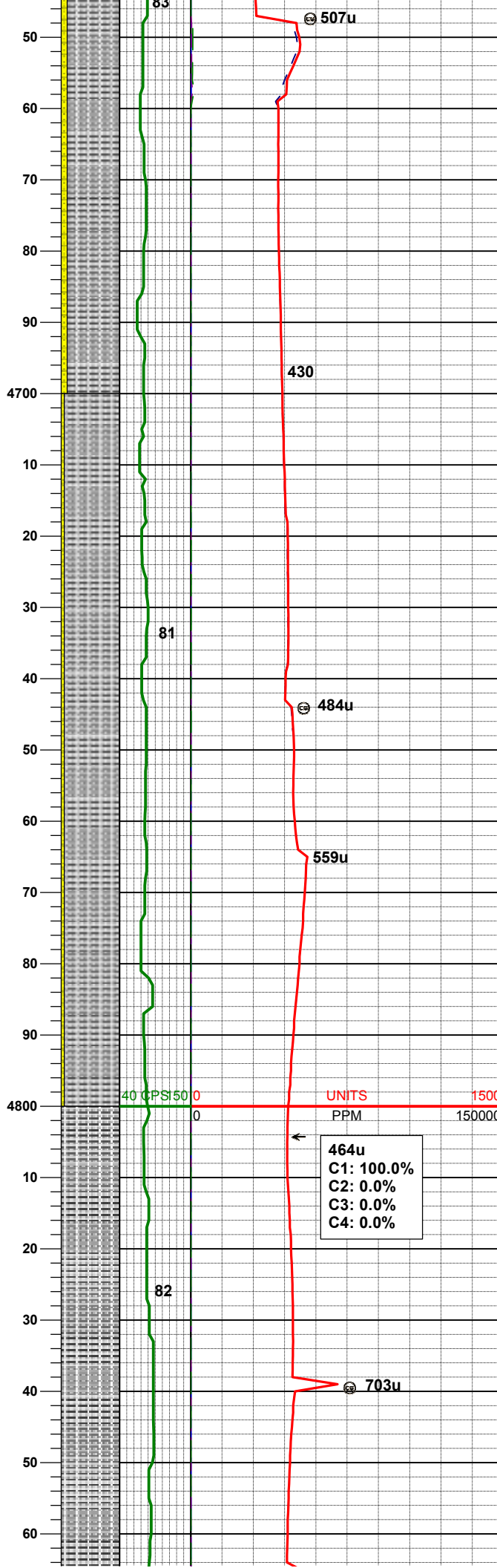
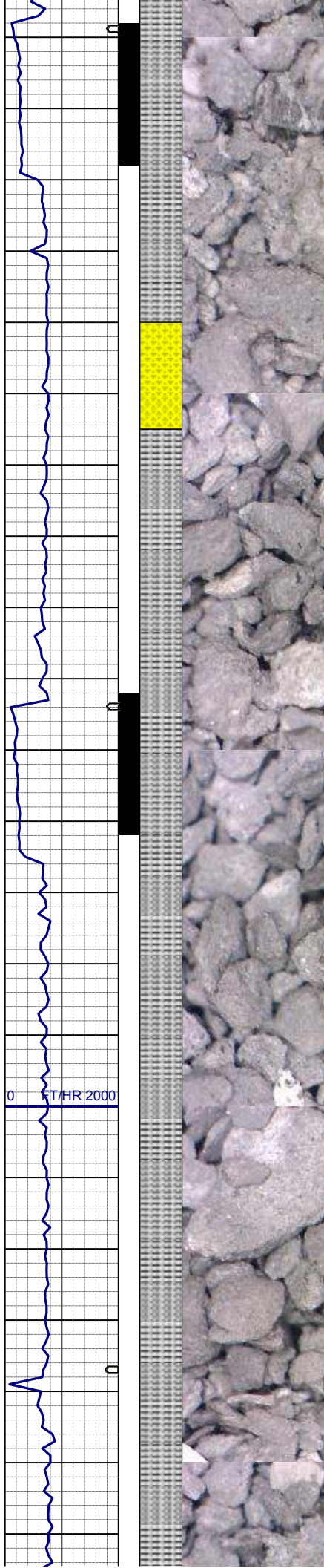
SLTYSH: m - lt gy-crmbn, occ dk gy,
sft - mod firm, sblky - sbply, noncalc
SHYSS: lt gy, wh - lt gy, occ m gy, f
gr, sbang - sbrndd, mod srt, mod sft -
frm, arg cmt, tr glau

MD 4416'
INC 3.8°
AZM 25.9°
TVD 4362.39'



MD	4606'
INC	2.3°
AZM	51.9°
TVD	4552.16'

143u
C1: 95.8%
C2: 2.7%
C3: 1.3%
C4: 0.2%



SLTYSH: m - lt gy-crmbn, occ dk gy,
sft - mod firm, sbbiky - sbply, noncalc
SHYSS: lt gy, wh - lt gy, occ m gy, f
gr, sbang - sbrnrd, mod srt, mod sft -
frm, arg cmt

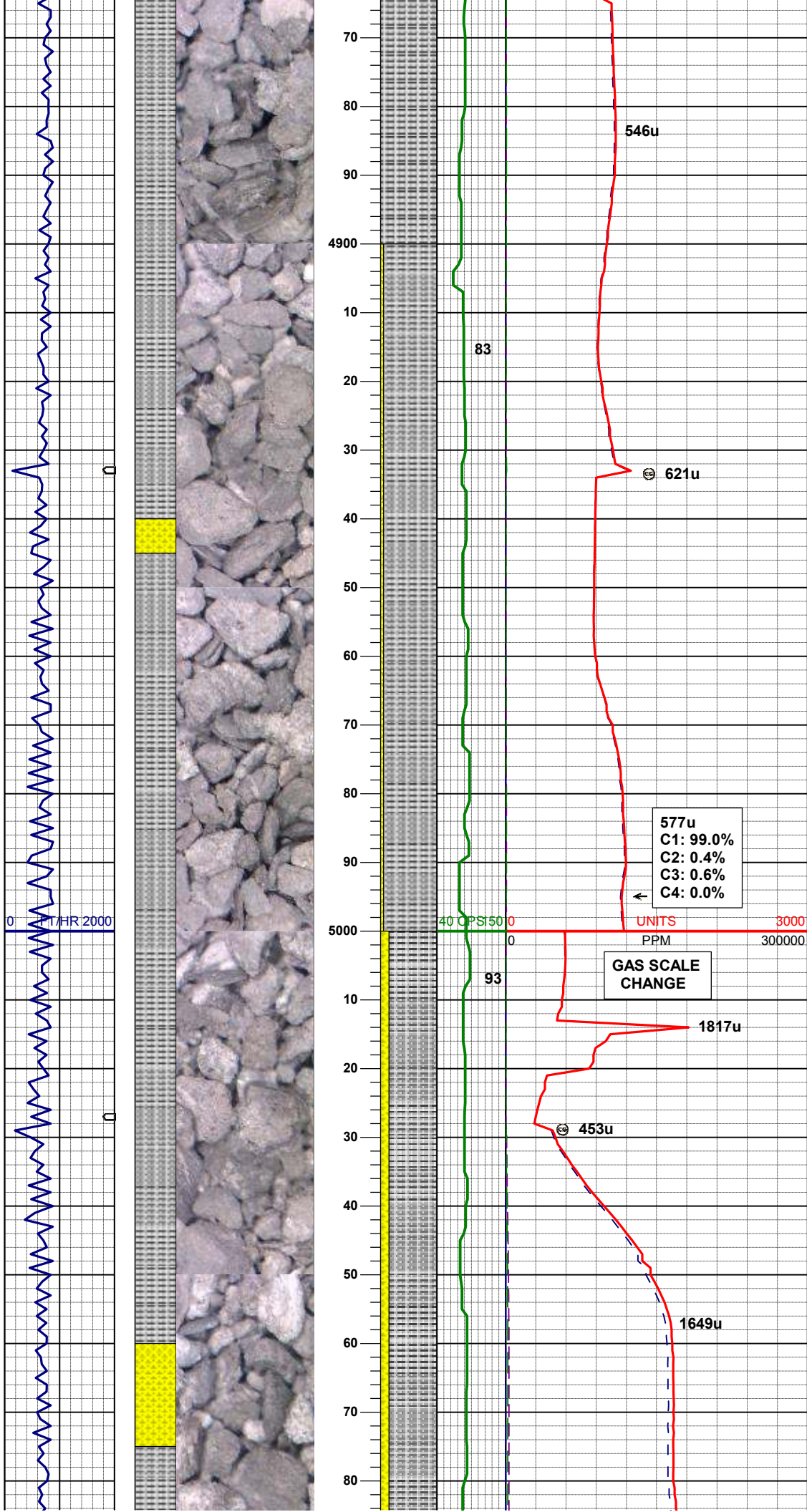
SLTYSH: m - lt gy-crmbn, occ dk gy,
sft - mod firm, sbbiky - sbply, noncalc
SHYSS: lt gy, wh - lt gy, occ m gy, f
gr, sbang - sbrnrd, mod srt, mod sft -
frm, arg cmt

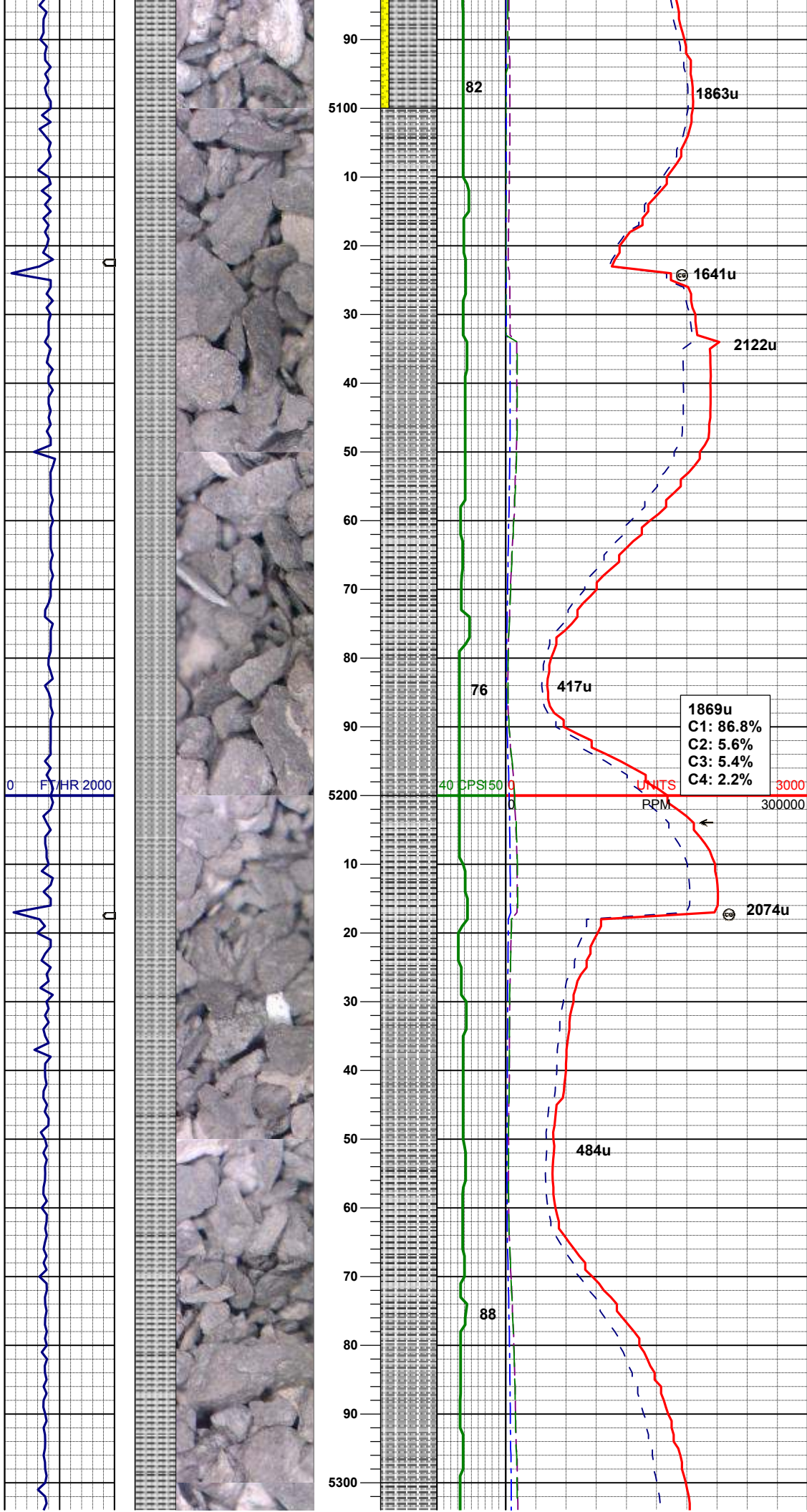
SLTYSH: m - lt gy-crmbn, occ dk gy,
sft - mod firm, sbbiky - sbply, occ
ply, noncalc

MD	4700'
INC	1.7°
AZM	33.6°
TVD	4646.10'

MD	4795'
INC	1.4°
AZM	16.9°
TVD	4741.06'

464u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

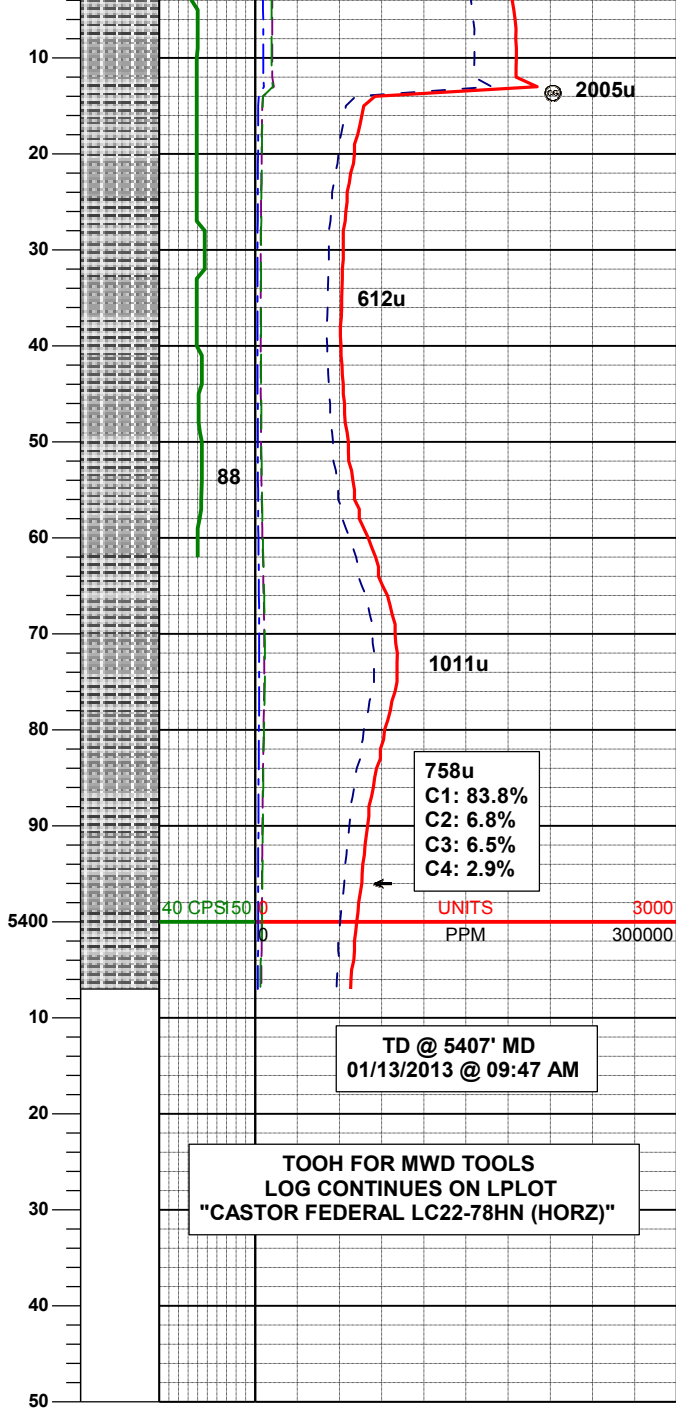
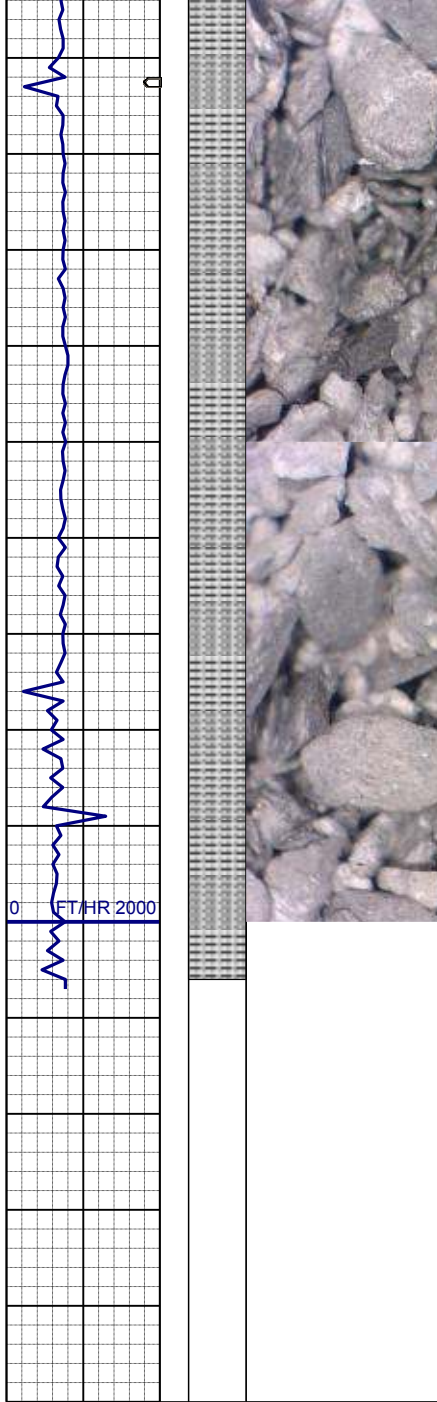




WT IN 9.20/ OUT 9.50
VIS IN 41/ OUT 37

SLTYSH: m - lt gy-crmbn, occ dk gy,
sft - mod firm, sbblky - sbplty, occ
plty, noncalc, tr pyr

SLTYSH: m - lt gy-crmbn, occ dk gy,
sft - mod firm, rthy mtx, sbblky -
sbplty, occ plty, non calc



SLTYSH: m - lt gy-crmbn, occ dk gy,
sft - mod firm, rthy mtx, sbblky -
sbply, occ plty, non calc

MD	5365'
INC	0.6°
AZM	339.8°
TVD	5311.00'

758u
C1: 83.8%
C2: 6.8%
C3: 6.5%
C4: 2.9%

TD @ 5407' MD
01/13/2013 @ 09:47 AM

TOOH FOR MWD TOOLS
LOG CONTINUES ON L PLOT
"CASTOR FEDERAL LC22-78HN (HORZ)"