

LOG created using L PLOT VH Version 3.0, December 22, 2012, Copyright (C) 1999-2009 Pason Systems Corp.

OPERATOR: NOBLE ENERGY INC.
WELL: KAUFMAN PC GL20-68HN
LOCATION: SESE SEC18, T11N, R60W
COUNTY: WELD
STATE: COLORADO
SPOT: 275' FSL, 275' FEL
ELEVATION: GR 5282' KB 5312'
FIELD: WILDCAT
SPUD DATE: 12/14/2012
TD DATE: 12/16/2012
DATES LOGGED: 12/14/2012 - 12/16/2012
DEPTHS LOGGED: 1300' MD - 6165' MD
LOGGERS: ANDREA ZUIDEMA, LAURA KELLOGG
DRILLING FLUID: LSND
DRILLING RIG: H&P 326
API: 05-123-35887
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



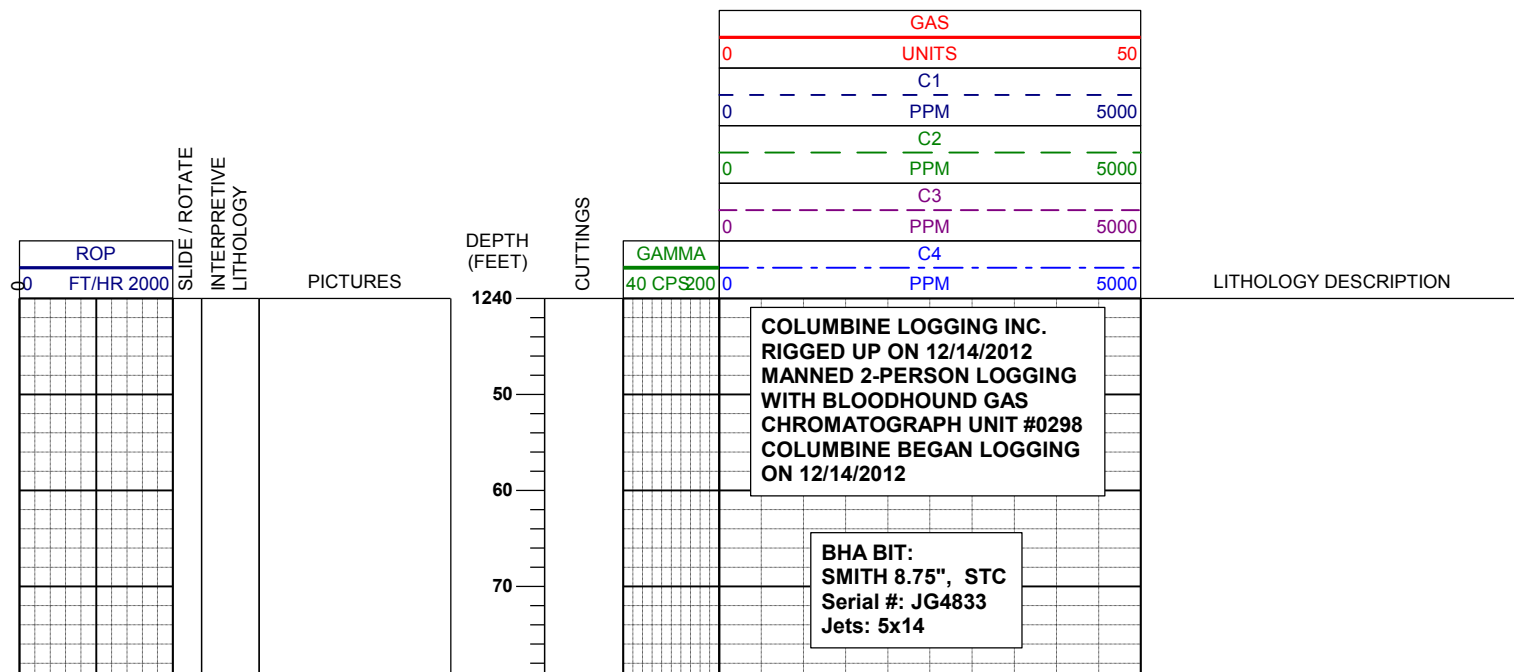
Connection Gas



Arrow

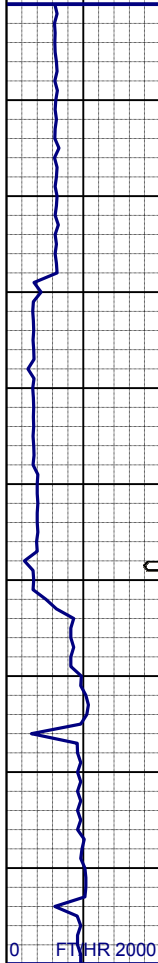


Midnight Depth

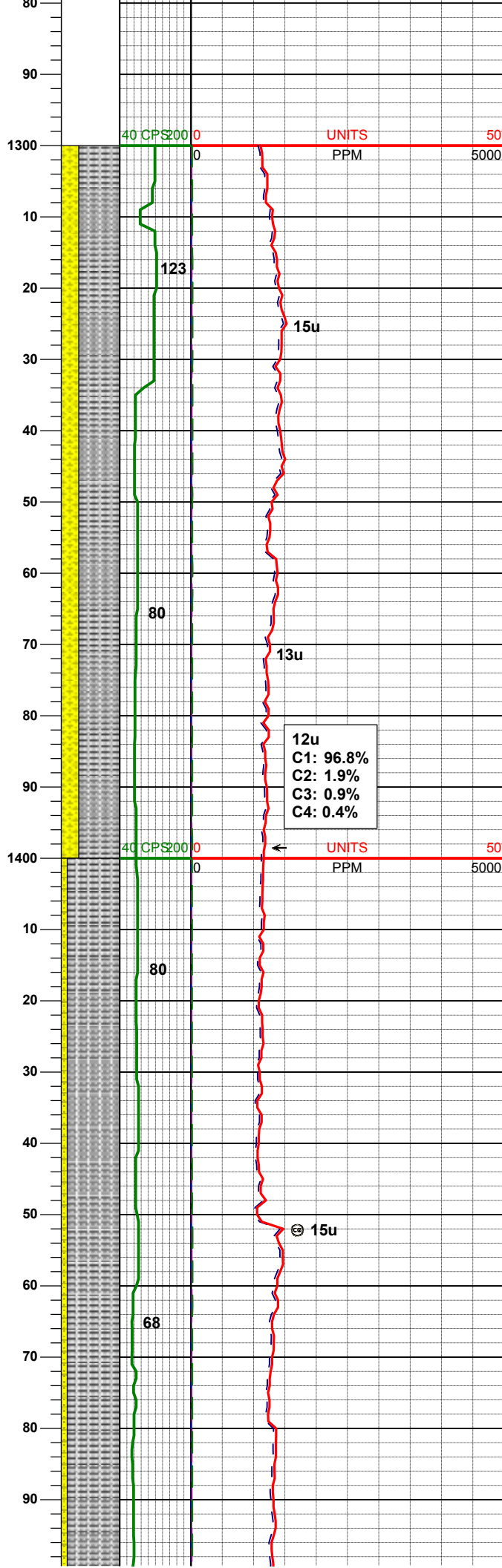
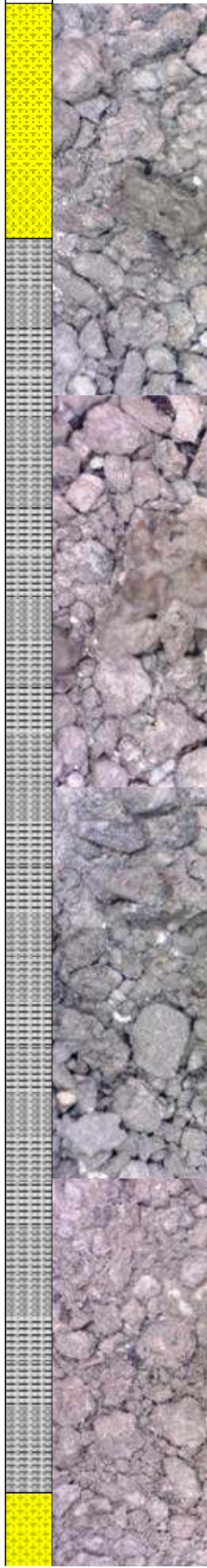
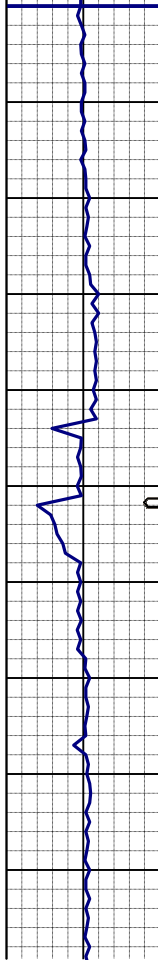


12/15/2012

0 FT/HR 2000



0 FT/HR 2000



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

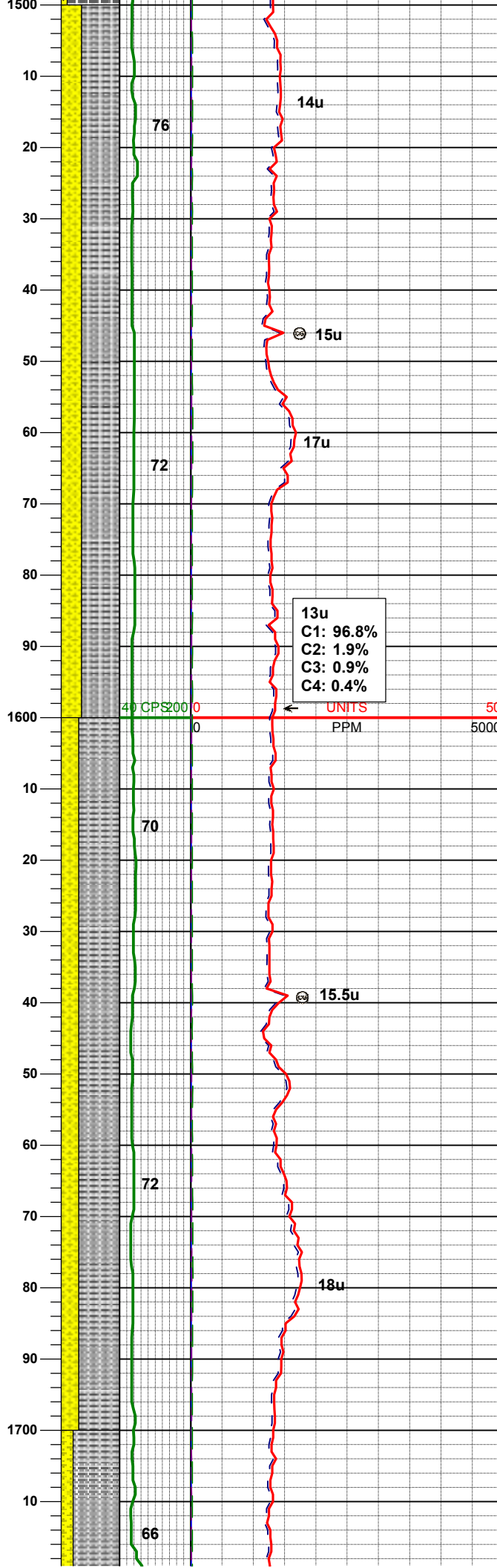
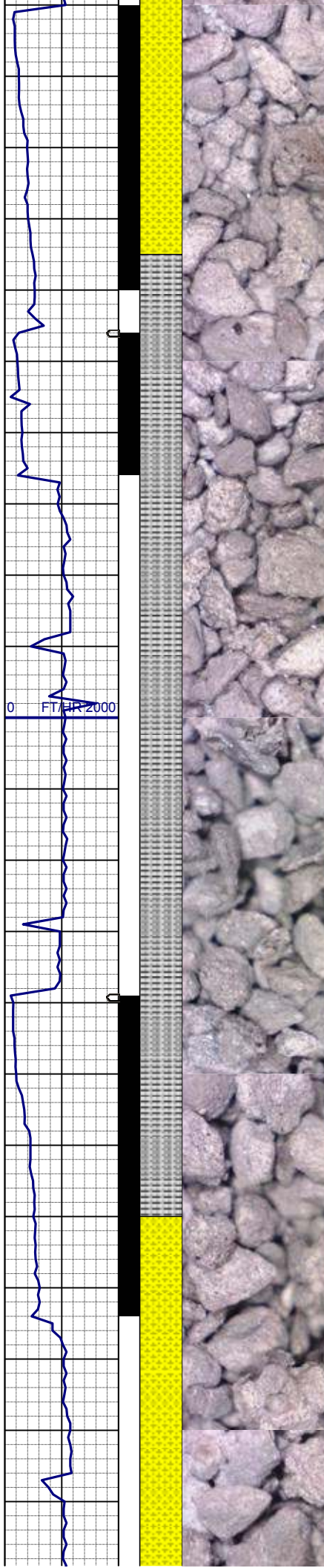
MD 1316'
INC 0.4°
AZM 9.2°
TVD 1316.00'

SLTYSH: m - lt gy, occ dk gy, sft -
mod firm, sbblky - sbply, arg-rthy
mtx, occ phlog, tr coal, noncalc
SHYSS: lt gy, wh - lt gy, occ gybrn,
s&p, f gr, sbang - sbrndd, mod-p srt,
mod sft - frm, arg cmt

12u
C1: 96.8%
C2: 1.9%
C3: 0.9%
C4: 0.4%

MD 1409'
INC 0.4°
AZM 342.3°
TVD 1409.00'

SLTYSH: m - lt gy, occ dk gy, sft -
mod firm, sbblky - sbply, arg-rthy
mtx, occ phlog, noncalc
SHYSS: lt gy, wh - lt gy, occ gybrn,
s&p, f gr, sbang - sbrndd, mod-p srt,
mod sft - frm, arg cmt



MD 1504'
INC 0.4°
AZM 190.1°
TVD 1504.00'

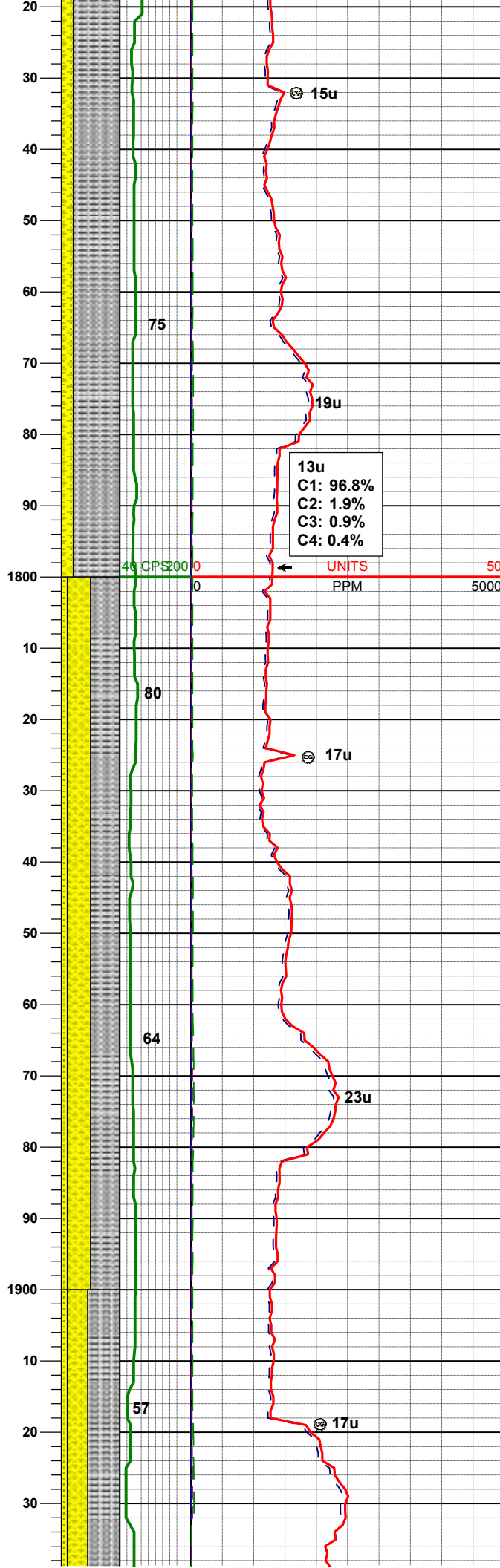
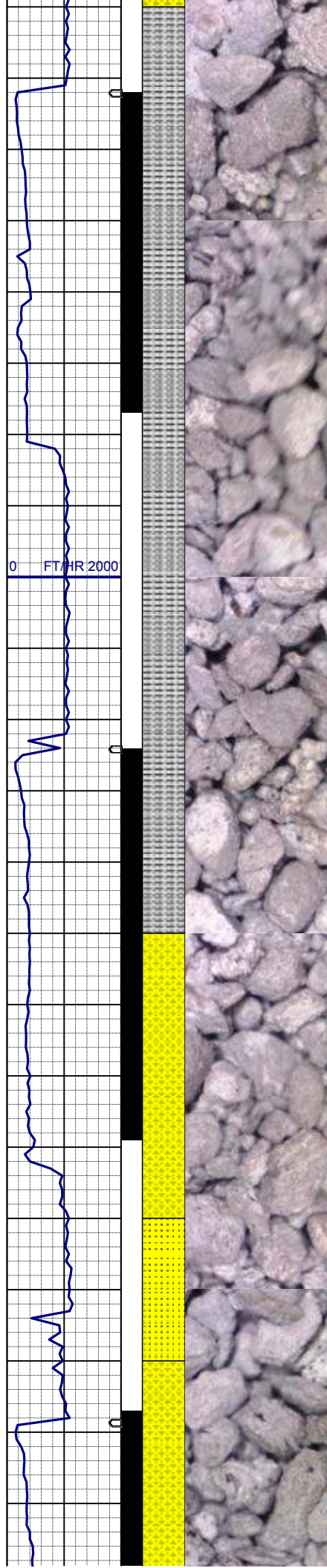
SLTYSH: m - lt gy, occ dk gy, sft -
mod firm, sbblky - sbply, arg-rthy
mtx, occ phlog, noncalc
SHYSS: lt gy, wh - lt gy, occ gybrn,
s&p, f gr, sbang - sbrndd, mod-p srt,
mod sft - frm, occ phlog&qtz, tr glauc,
tr fld incl, arg cmt

MD 1597'
INC 3.4°
AZM 168.5°
TVD 1596.94'

WT IN 8.50/ OUT 8.50
VIS IN 28/ OUT 28

SLTYSH: m - lt gy, occ dk gy, sft -
mod firm, sbblky - sbply, arg-rthy
mtx, occ phlog, noncalc
SHYSS: lt gy, wh - lt gy, occ gybrn,
s&p, f gr, sbang - sbrndd, mod-p srt,
mod sft - frm, occ phlog&qtz, occ
glauc, tr fld incl, arg cmt

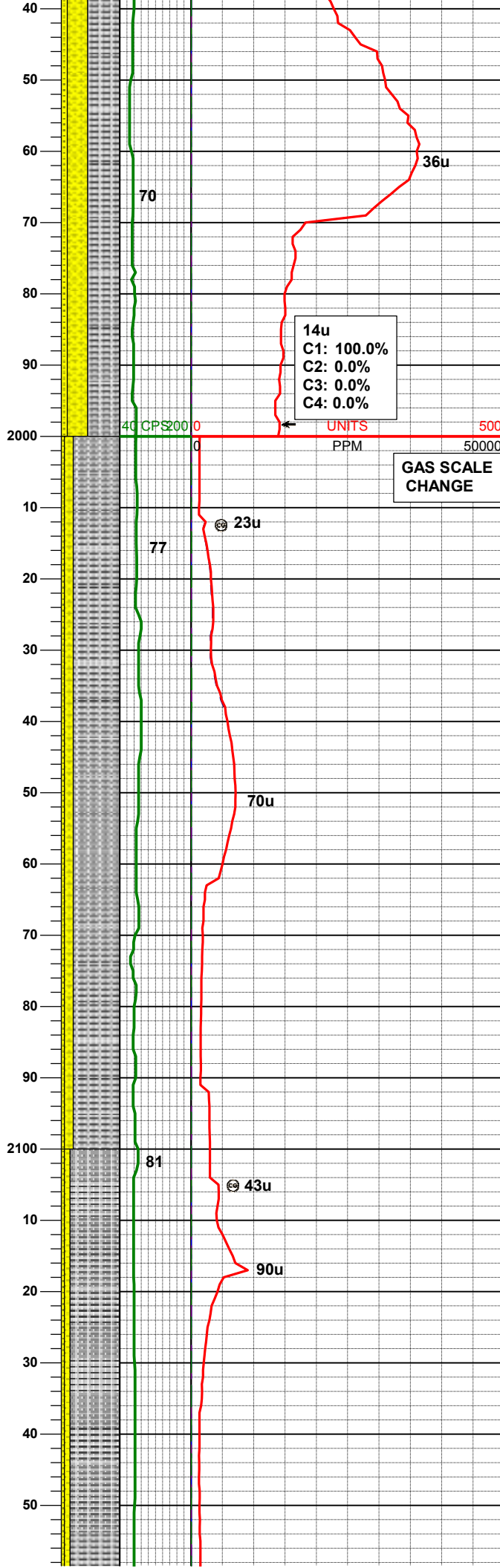
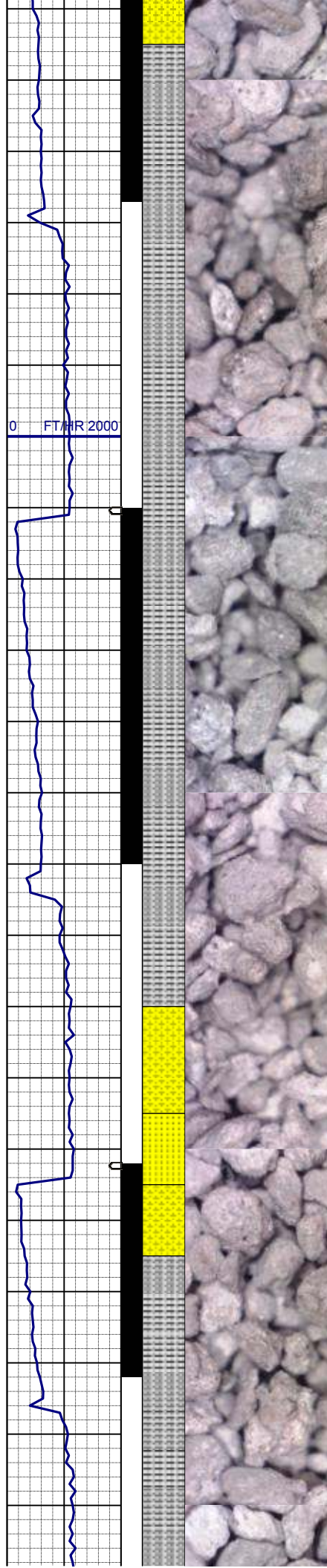
MD 1690'
INC 6.0°
AZM 152.1°
TVD 1689.62'



SLTYSH: m - lt gy, occ dk gy, sft -
mod firm, sbblky - sbply, arg-rthy
mtx, occ phlog, noncalc
SHYSS: lt gy, wh - lt gy, occ gybrn,
s&p, f gr, sbang - sbrndd, mod-p srt,
mod sft - frm, occ phlog&qtz, occ
glauc, tr fld incl, arg cmt, tr SS:

MD	1782'
INC	8.0°
AZM	137.9°
TVD	1780.94'

SLTYSH: m - lt gy, tr dk gy, sft - mod
firm, sbblky - sbply, arg-rthy mtx, occ
phlog, noncalc
SHYSS: lt gy, wh - lt gy, occ gybrn,
s&p, f gr, sbang - sbrndd, mod-p srt,
mod sft - frm, occ phlog, occ glauc, tr
fld incl, arg cmt,
SS: wh-trnsl, s&p, f gr, sbang-sbrndd,
p srt, arg cmt, tr glauc



SLTYSH: m - lt gy, tr dk gy, sft - mod firm, sbbly - sbply, arg-rthy mtx, occ phlog, noncalc
SHYSS: lt gy, wh - lt gy, occ gybrn, s&p, f gr, sbang - sbrndd, mod-p srt, mod sft - frm, occ phlog, occ glauc, tr fld incl, arg cmt,
SS: wh-trnsl, s&p, f gr, sbang-sbrndd, p srt, arg cmt, tr glauc

MD 1968'
INC 13.1°
AZM 160.1°
TVD 1963.76'

14u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

GAS SCALE
CHANGE

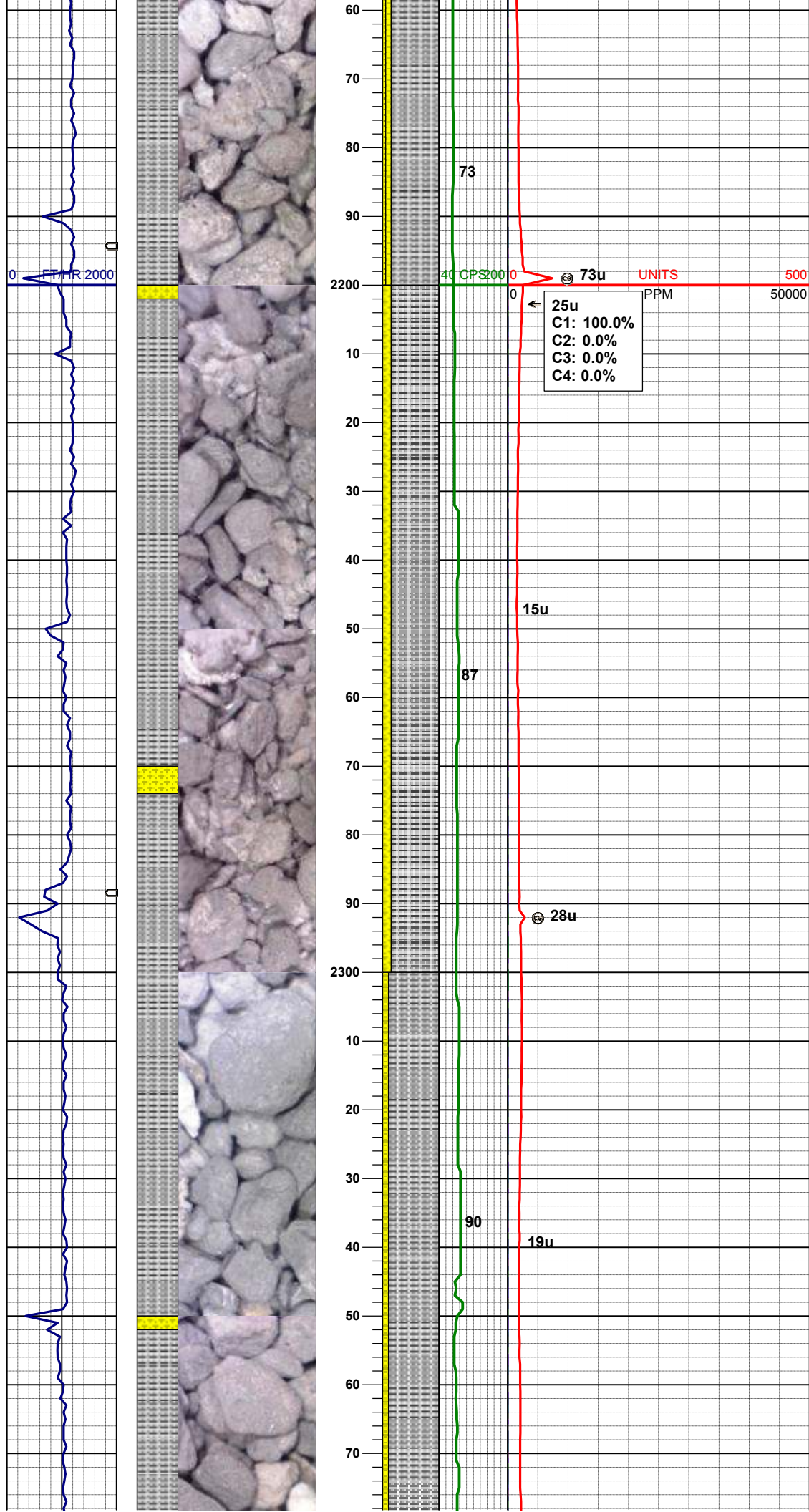
WT IN 8.30/ OUT 8.30
VIS IN 29 / OUT 29

SLTYSH: m - lt gy, tr dk gy, sft - mod firm, sbbly - sbply, arg-rthy mtx, occ phlog, noncalc
SHYSS: lt gy, wh - lt gy, occ gybrn, s&p, f gr, sbang - sbrndd, mod-p srt, mod sft - frm, occ phlog, occ glauc, tr fld incl, arg cmt,
SS: wh-trnsl, s&p, f gr, sbang-sbrndd, p srt, arg cmt, occ glauc

MD 2060'
INC 16.3°
AZM 166.6°
TVD 2052.75'

SLTYSH: m - lt gy, tr dk gy, sft - mod firm, sbbly - sbply, arg-rthy mtx, occ phlog, noncalc
SHYSS: lt gy, wh - lt gy, occ gybrn, s&p, f gr, sbang - sbrndd, mod-p srt, mod sft - frm, occ phlog, occ glauc, tr fld incl, arg cmt,
SS: wh-trnsl, s&p, f gr, sbang-sbrndd, p srt, arg cmt, occ glauc

MD 2153'
INC 17.0°



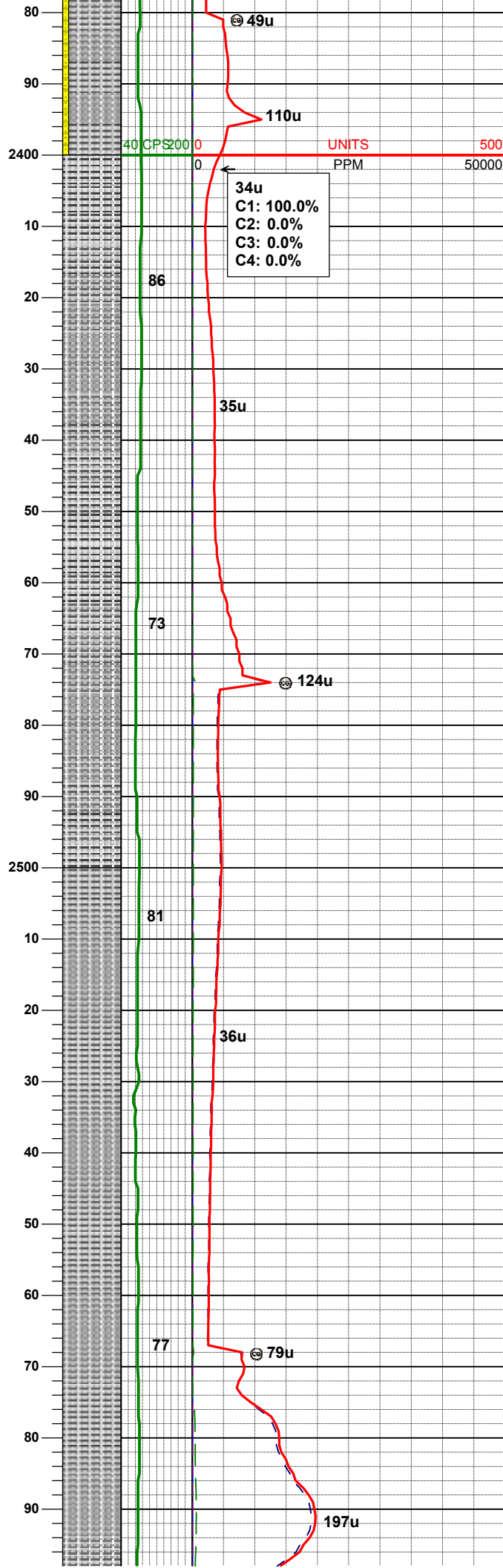
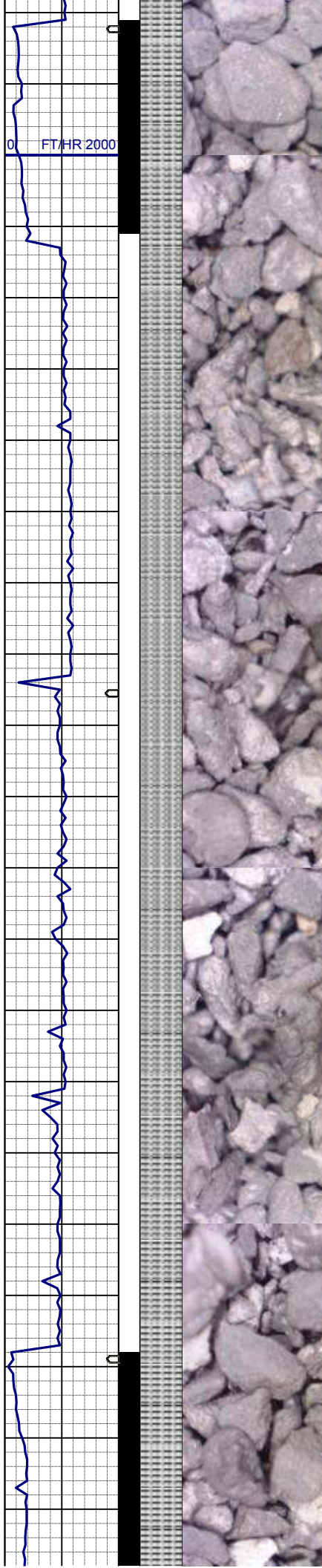
INC 17.3°
AZM 167.3°
TVD 2141.63'

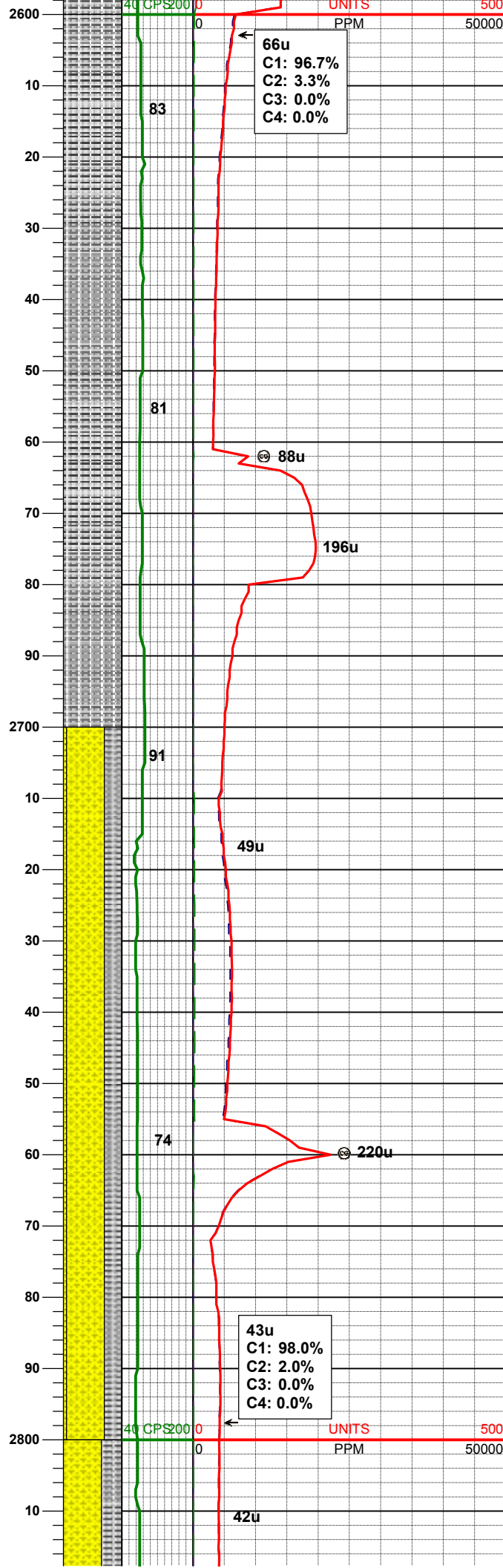
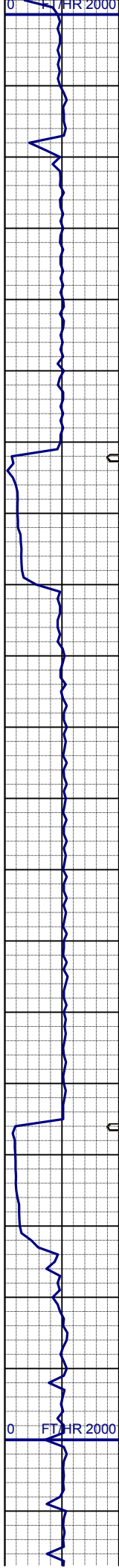
MD 2246'
INC 17.7°
AZM 166.9°
TVD 2230.18'

SLTYSH: m - lt gy, tr dk gy, sft - mod firm, sbblky - sbply, arg-rthy mtx, occ phlog, noncalc
SHYSS: lt gy, wh - lt gy, occ gybrn, s&p, f gr, sbang - sbrndd, mod-p srt, mod sft - frm, occ phlog, occ glauc, tr fld incl, arg cmt

MD 2339'
INC 16.4°
AZM 167.4°
TVD 2319.09'

SLTYSH: m - lt gy, tr dk gy, sft - mod firm, sbblky - sbply, arg-rthy mtx, occ phlog, noncalc
SHYSS: lt gy, wh - lt gy, occ gybrn, s&p, f gr, sbang - sbrndd, mod-p srt, mod sft - frm, occ phlog, occ glauc, arg cmt





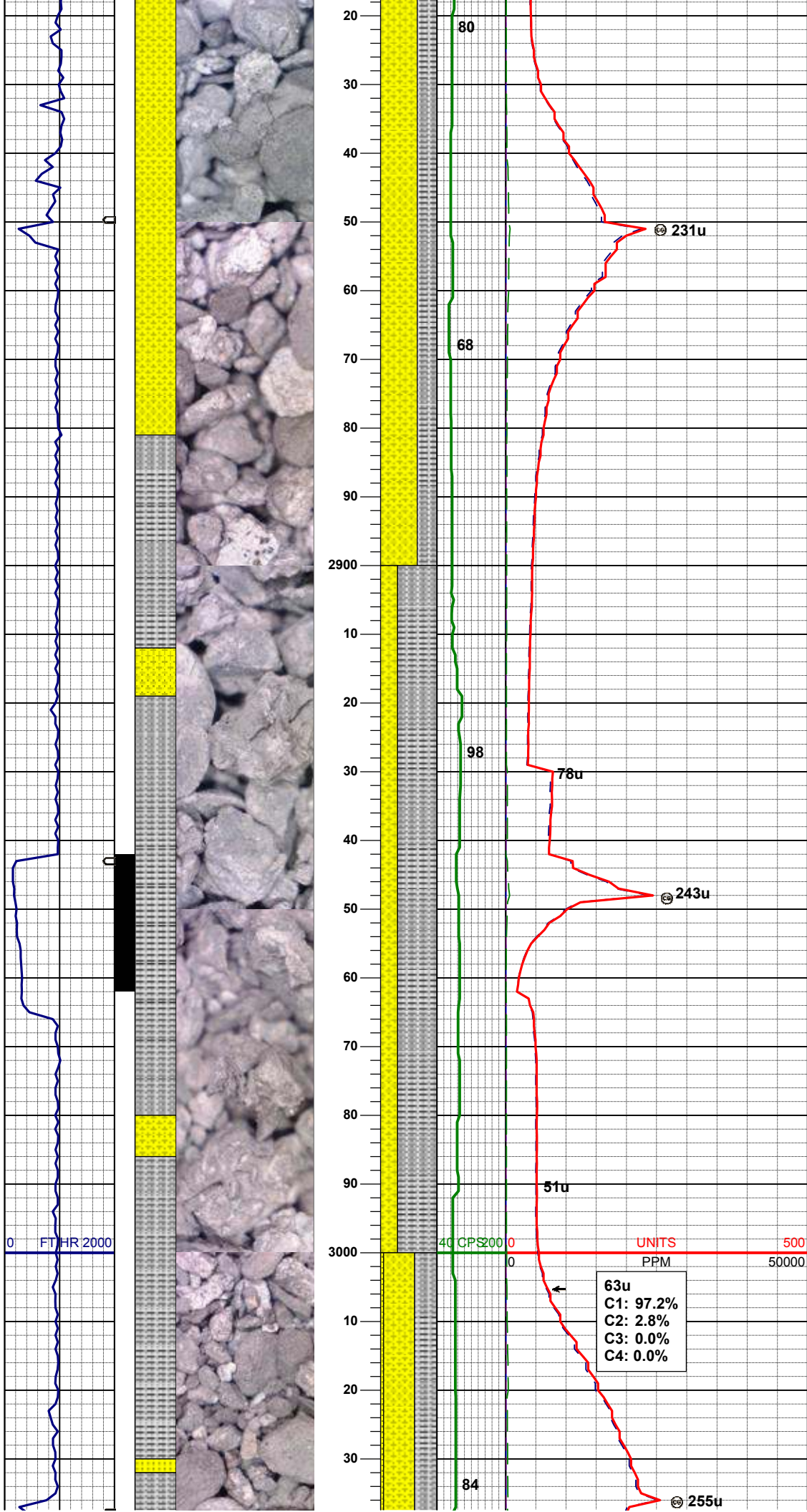
MD 2619'
INC 16.8°
AZM 165.7°
TVD 2587.22'

SLTYSH: m - lt gy, tr dk gy, sft - mod firm, sbbkly - sbply, arg-rthy mtx, occ phlog, noncalc

MD 2713'
INC 16.8°
AZM 163.7°
TVD 2677.21'

SHYSS: lt gy, wh - lt gy, occ gybrn, s&p, f gr, sbang - sbrndd, mod-p srt, mod sft - frm, occ phlog, occ glauc, arg cmt, SLTYSH: m - lt gy, tr dk gy, sft - mod firm, sbbkly - sbply, arg-rthy mtx, occ phlog, noncalc SS: wh-trnsl, s&p, f gr, sbang-sbrndd, p srt, arg cmt, occ glauc

MD 2806'
INC 17.6°
AZM 165.5°
TVD 2766.05'



SHYSS: lt gy, wh - lt gy, occ gybrn,
s&p, f gr, sbang - sbrndd, mod-p srt,
mod sft - frm, occ phlog, occ glauc,
arg cmt,
SLTYSH: m - lt gy, tr dk gy, sft - mod
firm, sbblky - sbply, arg-rthy mtx, occ
phlog, noncalc

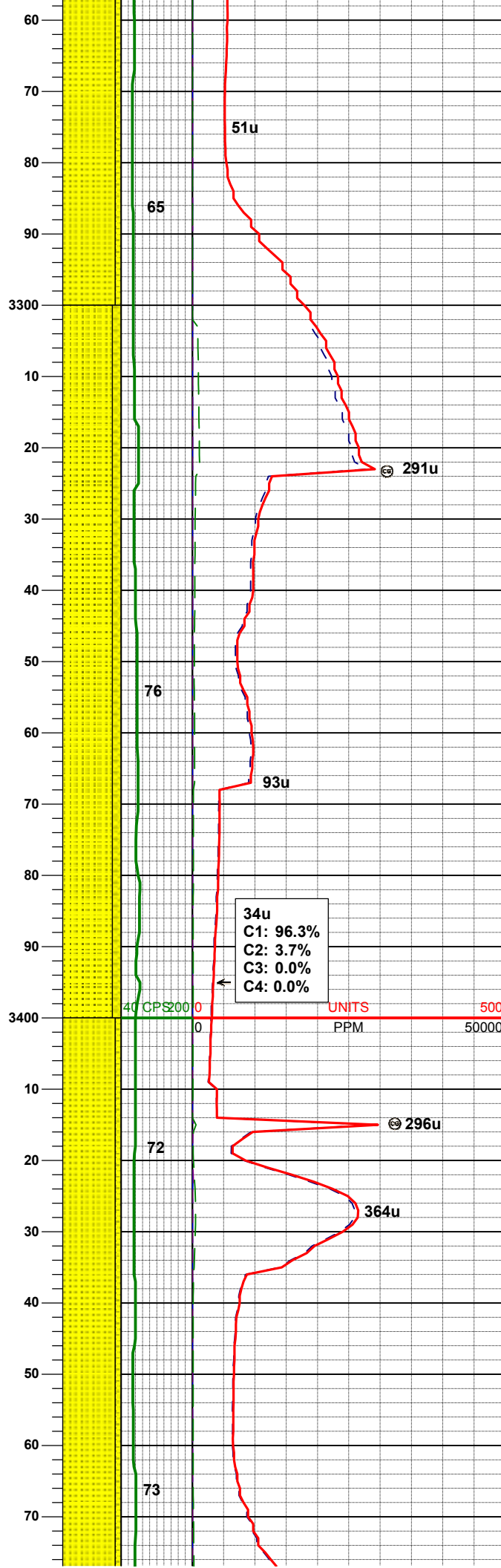
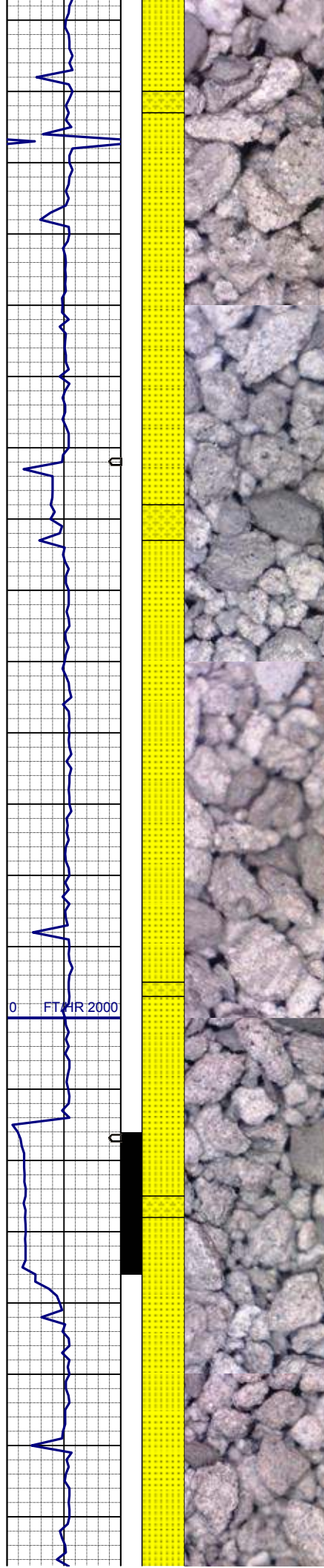
MD 2900'
INC 16.9°
AZM 164.8°
TVD 2855.82'

WT IN 8.90/ OUT 8.90
VIS IN 31 / OUT 31

SLTYSH: m - lt gy, tr dk gy, sft - mod
firm, sbblky - sbply, arg-rthy mtx, occ
phlog, noncalc
SHYSS: lt gy, wh - lt gy, occ gybrn,
s&p, f gr, sbang - sbrndd, mod-p srt,
mod sft - frm, occ phlog, occ glauc,
arg cmt,

MD 2994'
INC 17.3°
AZM 165.3°
TVD 2945.67'

63u
C1: 97.2%
C2: 2.8%
C3: 0.0%
C4: 0.0%



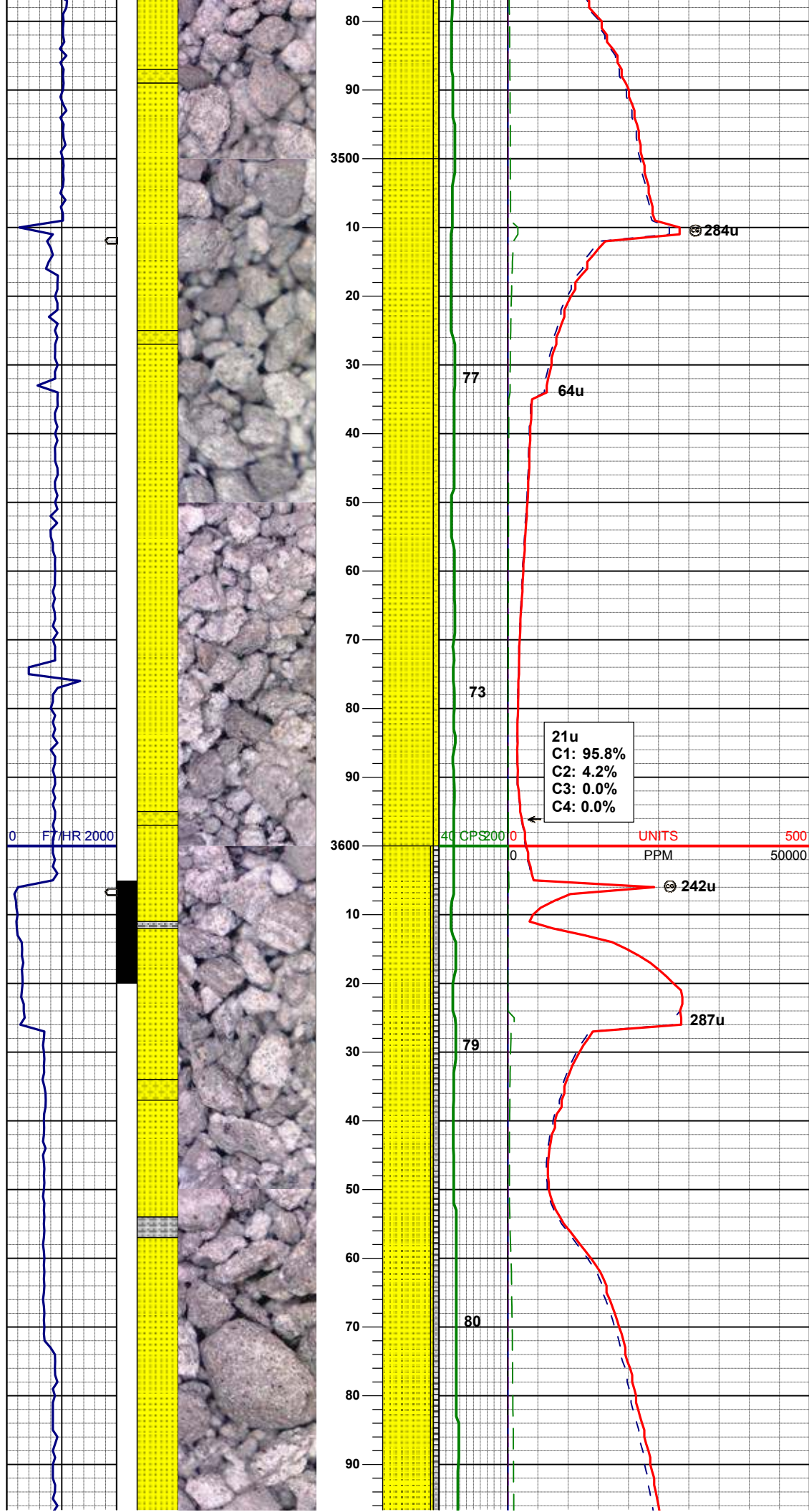
MD 3280'
INC 17.9°
AZM 163.7°
TVD 3218.91'

SS: wh-trnsl, s&p, f gr, sbang-sbrnidd,
p srt, arg cmt, occ glauc
SHYSS: lt gy, wh - lt gy, occ gybrn,
s&p, f gr, sbang - sbrnidd, mod-p srt,
mod sft - frm, occ phlog, occ glauc,
arg cmt,

MD 3374'
INC 18.5°
AZM 163.7°
TVD 3308.21'

SS: wh-trnsl, s&p, f gr, sbang-sbrnidd,
p srt, arg cmt, occ glauc
SHYSS: lt gy, wh - lt gy, occ gybrn,
s&p, f gr, sbang - sbrnidd, mod-p srt,
mod sft - frm, occ phlog, occ glauc,
arg cmt,

MD 3469'
INC 17.1°
AZM 166.6°
TVD 3398.66'



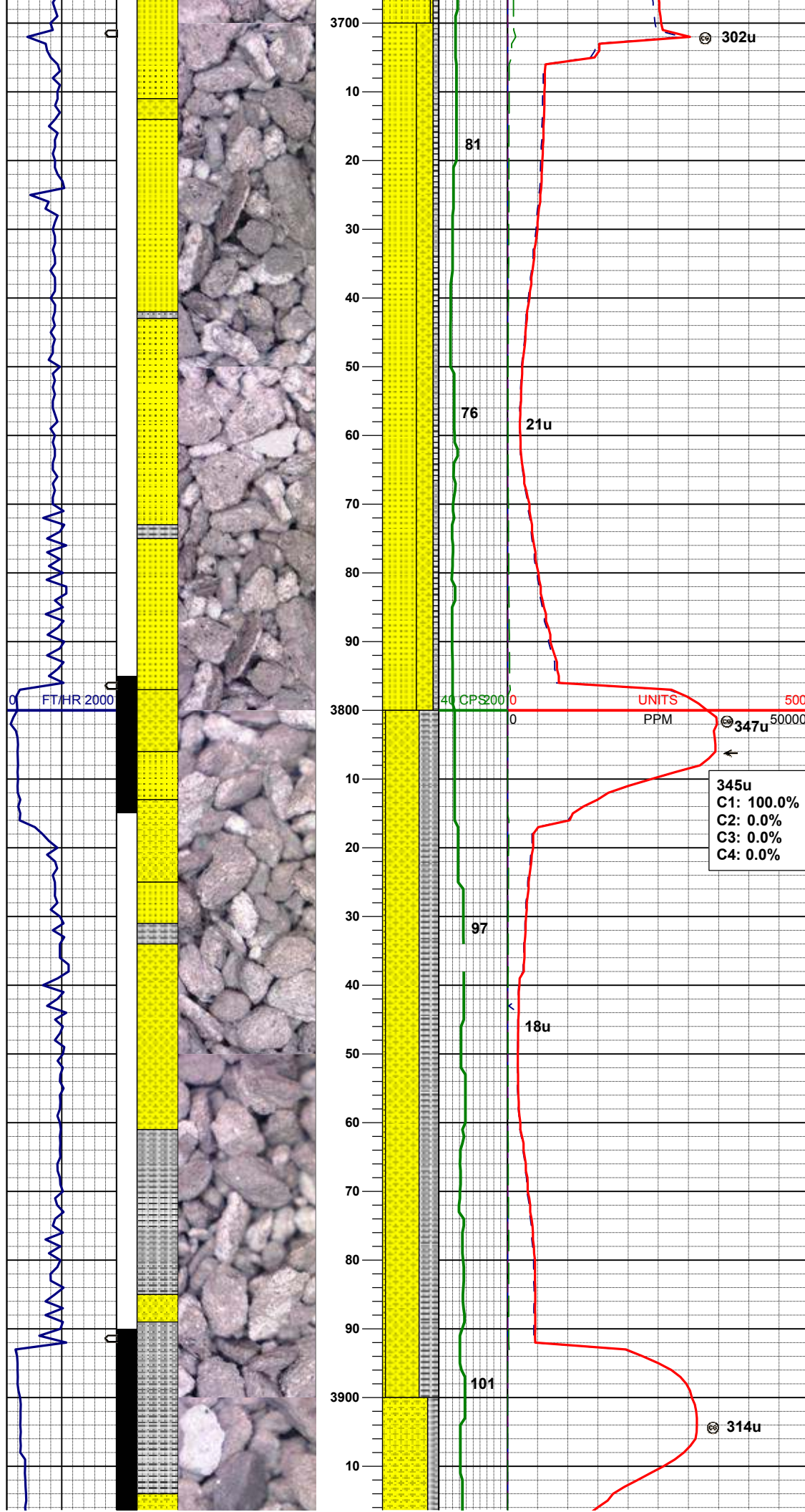
SS: wh-trnsl, s&p, f gr, sbang-sbrnndd,
p srt, arg cmt, occ glauc
SHYSS: lt gy, wh - lt gy, occ gybrn,
s&p, f gr, sbang - sbrnndd, mod-p srt,
mod sft - frm, occ phlog, occ glauc,
arg cmt,

MD	3563'
INC	17.6°
AZM	166.9°
TVD	3488.39'

WT IN 9.00/ OUT 9.00
VIS IN 30 / OUT 30

SS: wh-trnsl, s&p, f gr, sbang-sbrnndd,
p srt, arg cmt, occ glauc
SLTYSH: m - lt gy, tr dk gy, sft - mod
firm, sbblky - sbply, arg-rthy mtx, occ
phlog, noncalc
SHYSS: lt gy, wh - lt gy, occ gybrn,
s&p, f gr, sbang - sbrnndd, mod-p srt,
mod sft - frm, occ phlog, occ glauc,
arg cmt,

MD	3658'
INC	16.5°
AZM	162.5°
TVD	3579.21'

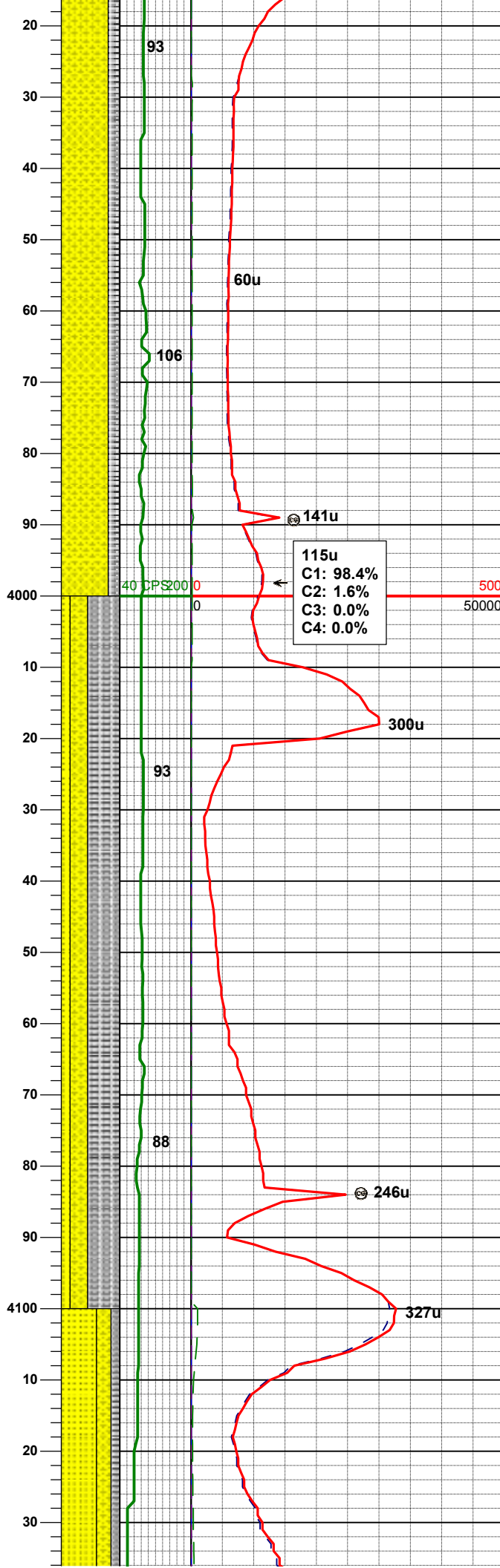
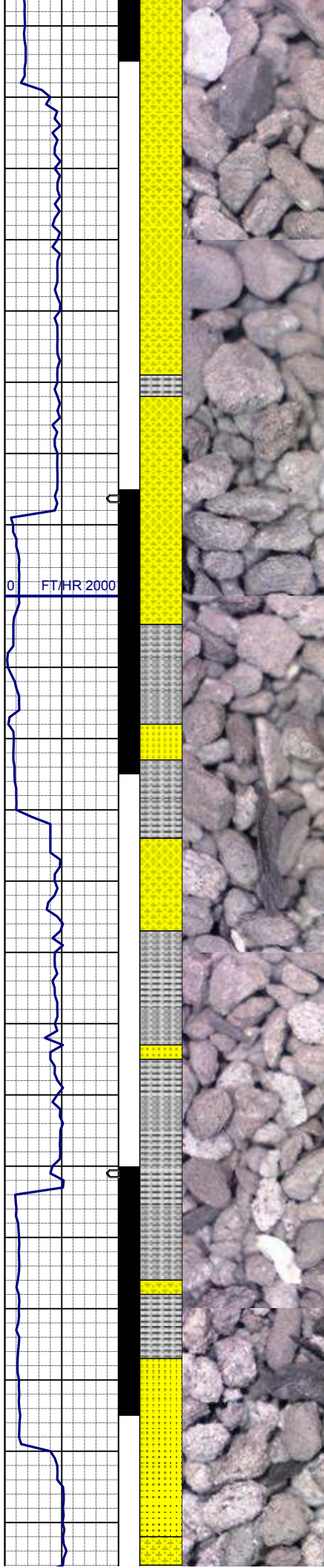


MD 3753'
INC 15.8°
AZM 162.3°
TVD 3670.46'

SS: wh-trnsl, s&p, f gr, sbang-sbrnndd, p srt, arg cmt, occ glauc
SHYSS: lt gy, wh - lt gy, occ gybrn, s&p, f gr, sbang - sbrnndd, mod-p srt, mod sft - frm, occ phlog, occ glauc, arg cmt,
SLTYSH: m - lt gy, tr dk gy, sft - mod firm, sbbiky - sbply, arg-rthy mtx, occ phlog, noncalc

MD 3848'
INC 14.8°
AZM 160.4°
TVD 3762.10'

SHYSS: lt gy, wh - lt gy, occ gybrn, s&p, f gr, sbang - sbrnndd, mod-p srt, mod sft - frm, occ phlog, occ glauc, arg cmt,
SLTYSH: m - lt gy, tr dk gy, sft - mod firm, sbbiky - sbply, arg-rthy mtx, occ phlog, noncalc
SS: wh-trnsl, s&p, f gr, sbang-sbrnndd, p srt, arg cmt, occ glauc



MD 3943'
INC 15.5°
AZM 165.0°
TVD 3853.80'

SHYSS: lt gy, wh - lt gy, occ gybrn,
s&p, f gr, sbang - sbrndd, mod-p srt,
mod sft - frm, occ phlog, occ glauc,
arg cmt,
SLTYSH: m - lt gy, tr dk gy, sft - mod
firm, sbblky - sbply, arg-rthy mtx, occ
phlog, noncalc

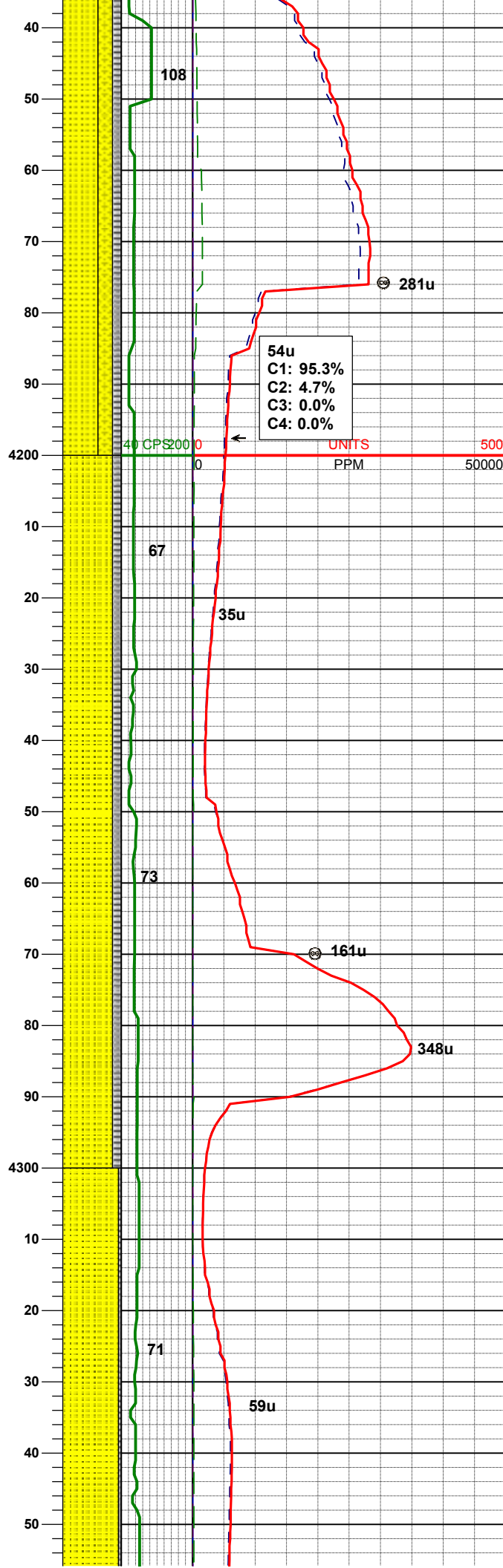
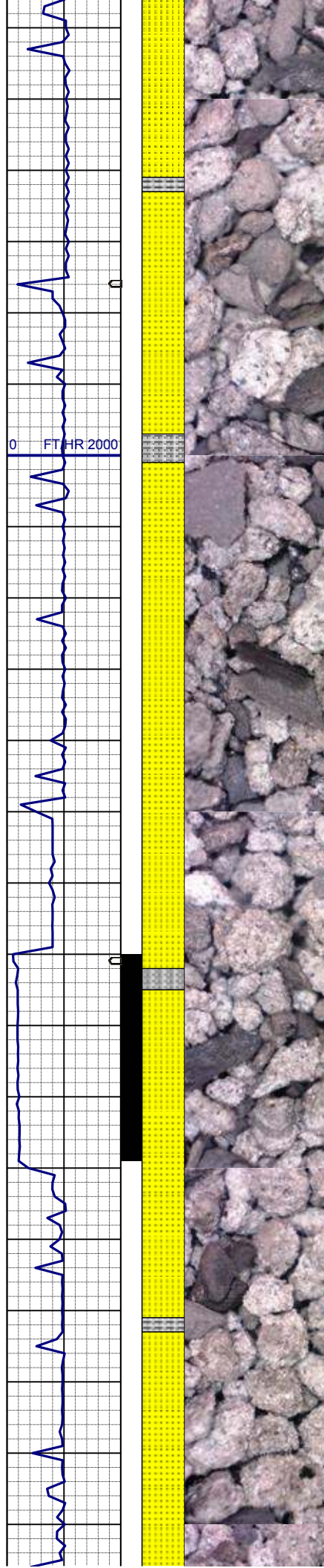
WT IN 8.90/ OUT 8.90
VIS IN 30 / OUT 30

115u
C1: 98.4%
C2: 1.6%
C3: 0.0%
C4: 0.0%

SLTYSH: m - lt gy, tr dk gy, sft - mod
firm, sbblky - sbply, arg-rthy mtx, occ
phlog, noncalc
SHYSS: lt gy, wh - lt gy, occ gybrn,
s&p, f gr, sbang - sbrndd, mod-p srt,
mod sft - frm, occ phlog, occ glauc,
arg cmt,
SS: wh-trnsl, s&p, f gr, sbang-sbrndd,
p srt, arg cmt, occ glauc

MD 4080'
INC 16.4°
AZM 163.2°
TVD 3945.14'

MD 4133'
INC 18.2°
AZM 166.7°



AZM 166.7°
TVD 4035.84'

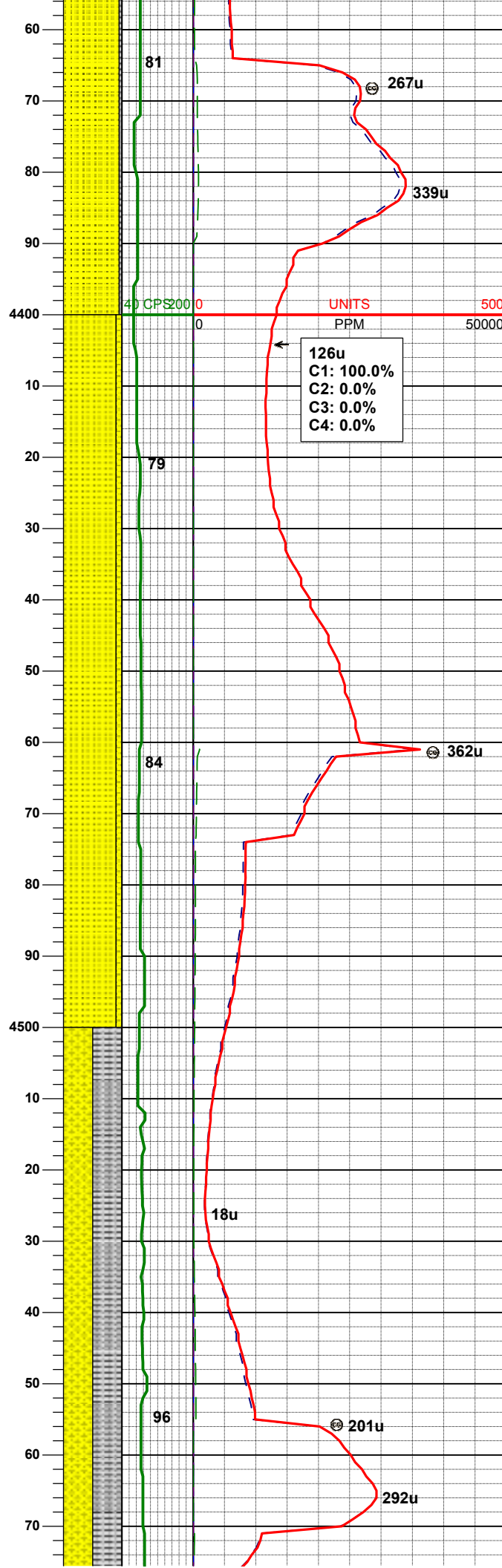
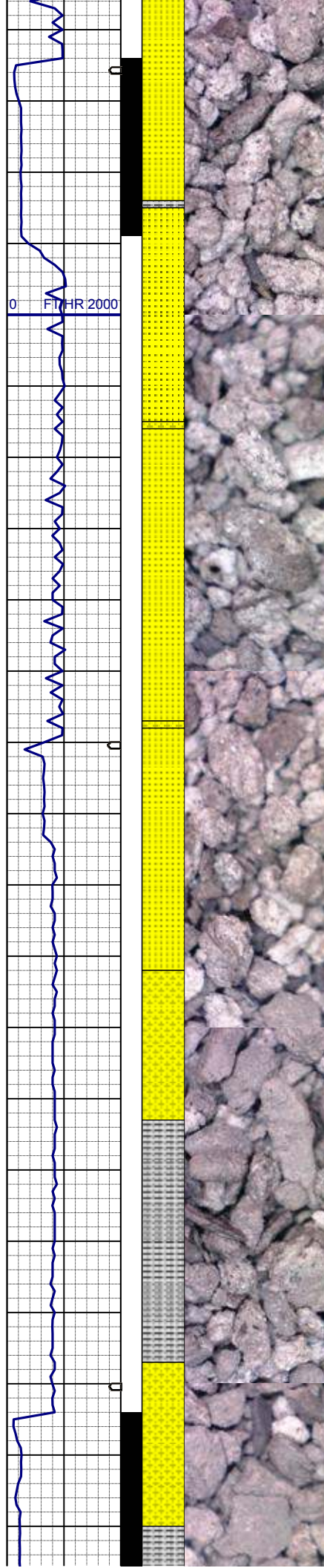
SS: wh-trnsl, s&p, f gr, sbang-sbrnodd,
p srt, arg cmt, occ glauc
SHYSS: lt gy, wh - lt gy, occ gybrn,
s&p, f gr, sbang - sbrnodd, mod-p srt,
mod sft - frm, occ phlog, occ glauc,
arg cmt,
SLTYSH: m - lt gy, tr dk gy, sft - mod
firm, sbbiky - sbply, arg-rthy mtx, occ
phlog, noncalc

MD 4228'
INC 19.7°
AZM 167.4°
TVD 4125.69'

SS: wh-trnsl, s&p, f gr, sbang-sbrnodd,
p srt, arg cmt, occ glauc
SLTYSH: m - lt gy, tr dk gy, sft - mod
firm, sbbiky - sbply, arg-rthy mtx, occ
phlog, noncalc

MD 4322'
INC 18.5°
AZM 163.2°
TVD 4214.52'

SS: wh-trnsl, s&p, f gr, sbang-sbrnodd,
p srt, arg cmt, occ glauc
SLTYSH: m - lt gy, tr dk gy, sft - mod
firm, sbbiky - sbply, arg-rthy mtx, occ
phlog, noncalc



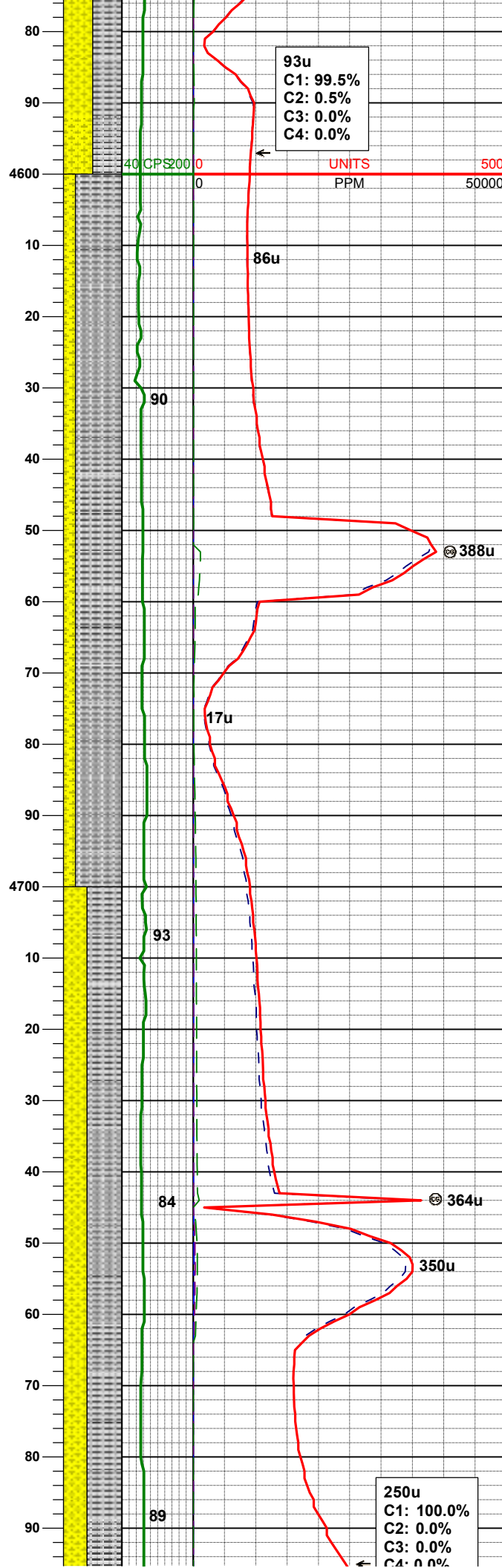
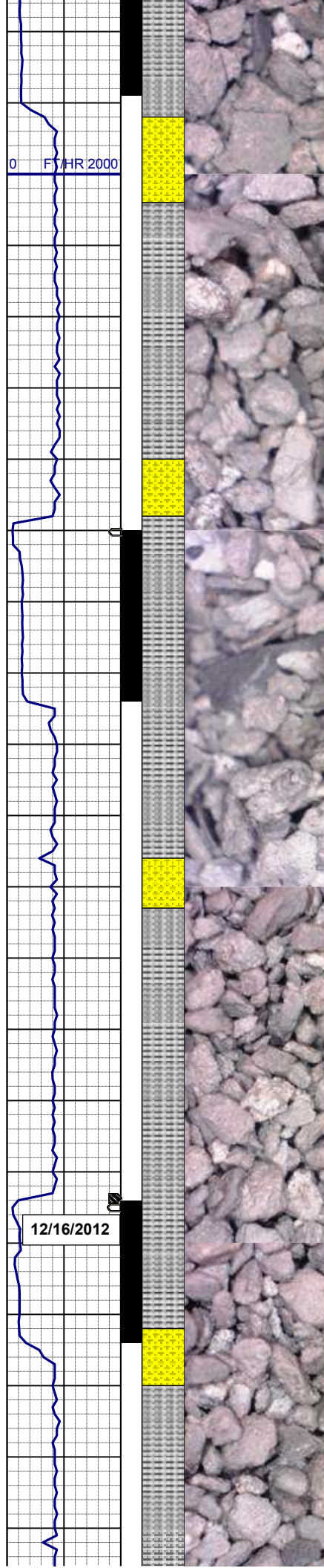
phlog, noncalc

SS: wh-trnsl, s&p, f gr, sbang-sbrndd, p srt, arg cmt, occ glauc
SHYSS: lt gy, wh - lt gy, occ gybrn, s&p, f gr, sbang - sbrndd, mod-p srt, mod sft - frm, occ phlog, occ glauc, arg cmt,

MD 4417'
INC 17.1°
AZM 160.2°
TVD 4304.97'

MD 4512'
INC 16.2°
AZM 159.9°
TVD 4395.98'

SHYSS: lt gy, wh - lt gy, occ gybrn, s&p, f gr, sbang - sbrndd, mod-p srt, mod sft - frm, occ phlog, occ glauc, arg cmt,
SLTYSH: m - lt gy, tr dk gy, sft - mod firm, sbblky - sbply, arg-rthy mtx, occ phlog, noncalc



MD 4607'
INC 18.4°
AZM 160.8°
TVD 4486.68'

SLTYSH: m - lt gy, tr dk gy, sft - mod firm, sbblky - sbply, arg-rthy mtx, occ phlog, noncalc
SHYSS: lt gy, wh - lt gy, occ gybrn, s&p, f gr, sbang - sbrndd, mod-p srt, mod sft - frm, occ phlog, occ glauc, arg cmt,

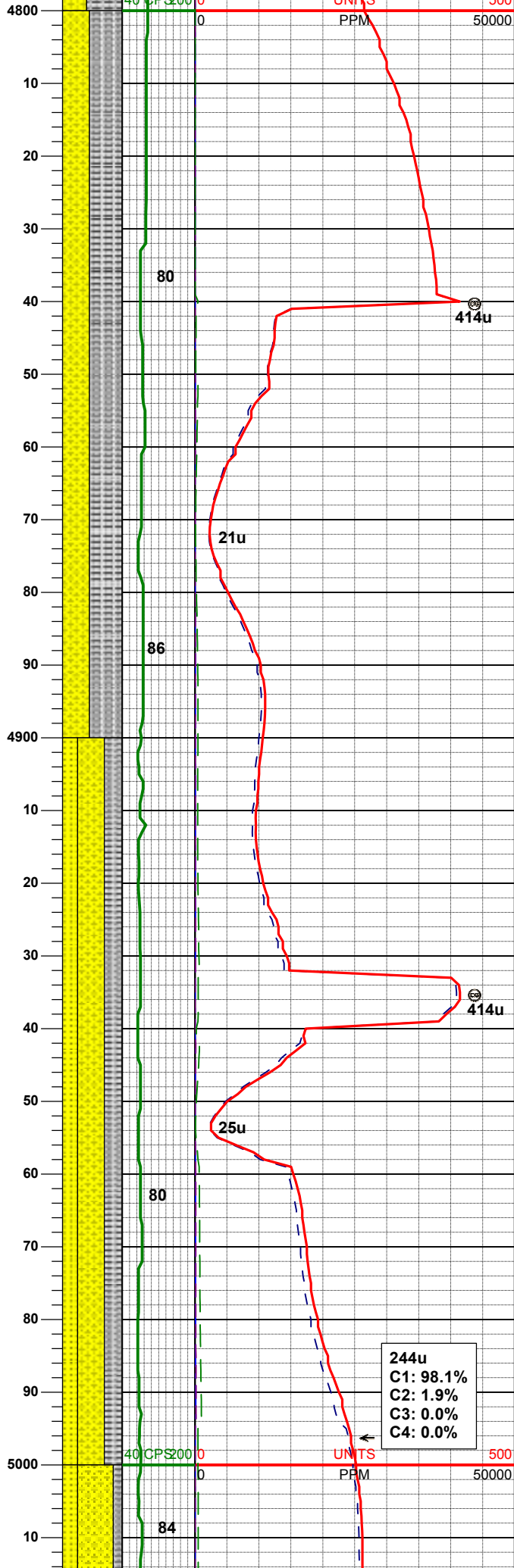
MD 4702'
INC 15.5°
AZM 164.4°
TVD 4577.55'

SLTYSH: m - lt gy, tr dk gy, sft - mod firm, sbblky - sbply, arg-rthy mtx, occ phlog, noncalc
SHYSS: lt gy, wh - lt gy, occ gybrn, s&p, f gr, sbang - sbrndd, mod-p srt, mod sft - frm, occ phlog, occ glauc, arg cmt,

MD 4797'
INC 16.4°
AZM 163.4°
TVD 4668.00'

0 FT/HR 2000

0 FT/HR 2000



TVD 4668.89'

WT IN 9.10/ OUT 9.10
VIS IN 34 / OUT 34

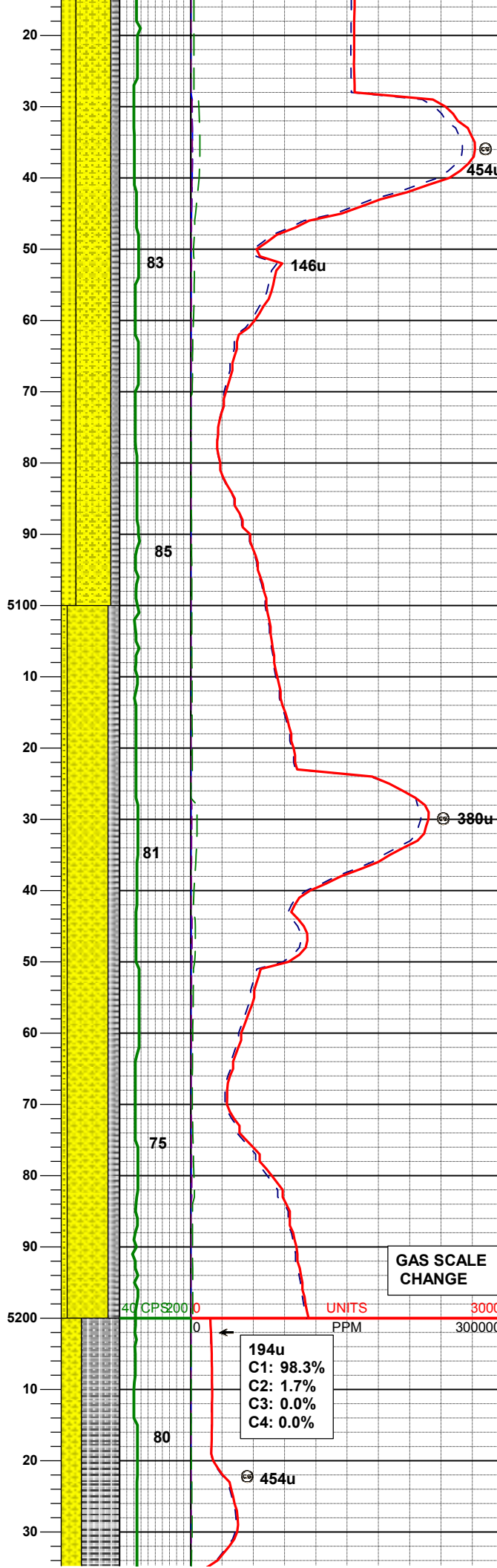
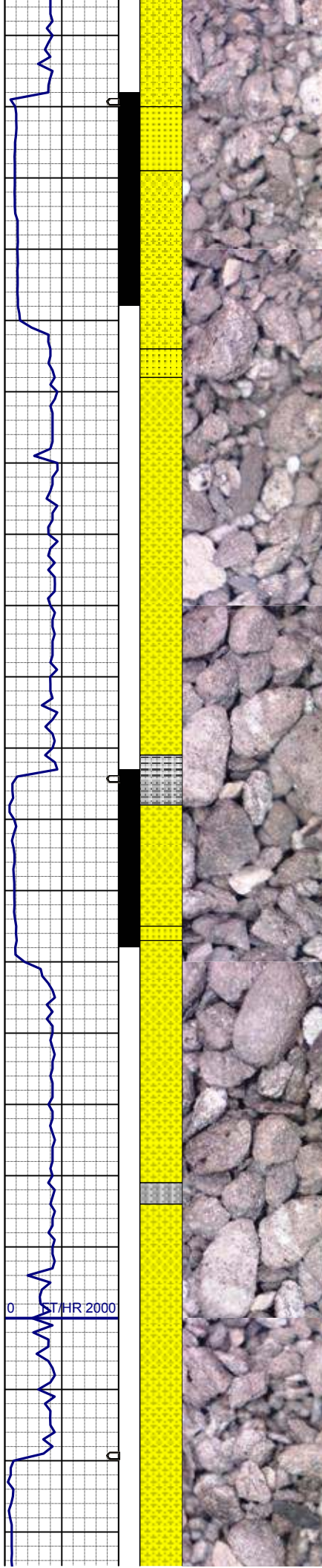
SLTYSH: m - lt gy, tr dk gy, sft - mod firm, sbbly - sbply, arg-rthy mtx, occ phlog, noncalc
SHYSS: lt gy, wh - lt gy, occ gybrn, s&p, f gr, sbang - sbrndd, mod-p srt, mod sft - frm, occ phlog, occ glauc, arg cmt,

MD 4933'
INC 15.7°
AZM 166.0°
TVD 4759.23'

SHYSS: lt gy, wh - lt gy, occ gybrn, s&p, f gr, sbang - sbrndd, mod-p srt, mod sft - frm, occ phlog, abnt glauc, arg cmt,
SLTYSH: m - lt gy, tr dk gy, sft - mod firm, sbbly - sbply, arg-rthy mtx, occ phlog, noncalc
SS: wh-trnsl, s&p, f gr, sbang-sbrndd, p srt, arg cmt, occ glauc

MD 4986'
INC 13.6°
AZM 163.2°
TVD 4851.13'

244u
C1: 98.1%
C2: 1.9%
C3: 0.0%
C4: 0.0%



SHYSS: lt gy, wh - lt gy, occ gybrn, s&p, f gr, sbang - sbrndd, mod-p srt, mod sft - frm, occ phlog, abnt glauc, arg cmt, SS: wh-trnsl, s&p, f gr, sbang-sbrndd, p srt, arg cmt, occ glauc SLTYSH: m - lt gy, tr dk gy, sft - mod firm, sbblky - sbply, arg-rthy mtx, occ phlog, noncalc

MD 5081'
INC 10.6°
AZM 160.8°
TVD 4944.10'

WT IN 9.00/ OUT 9.00
VIS IN 32 / OUT 32

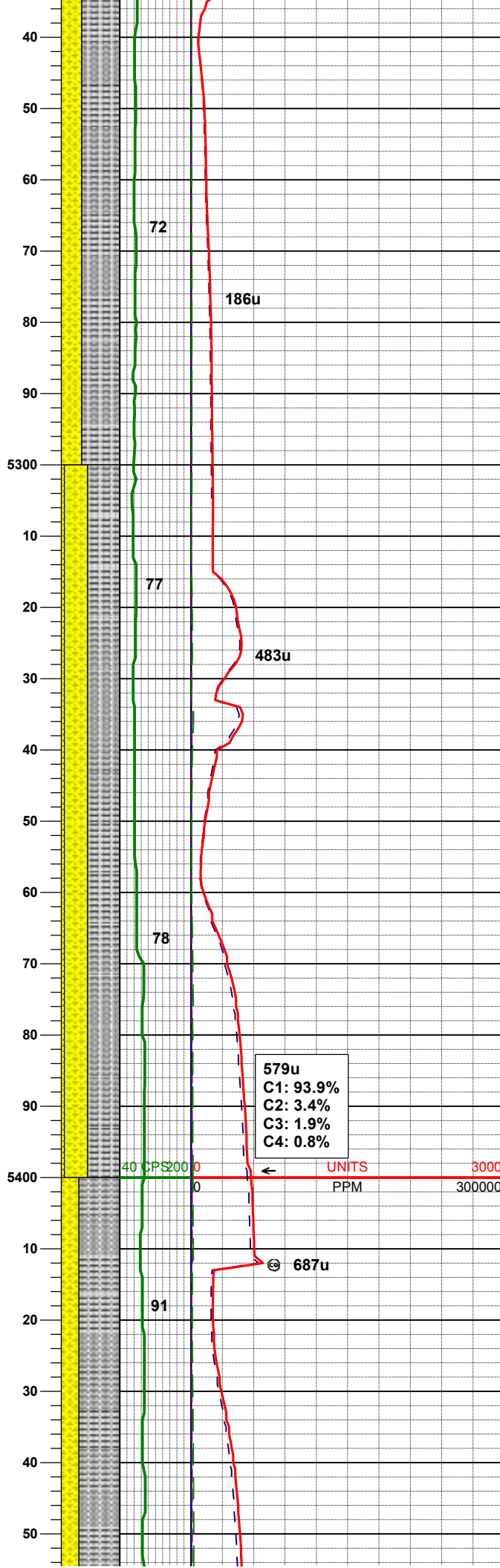
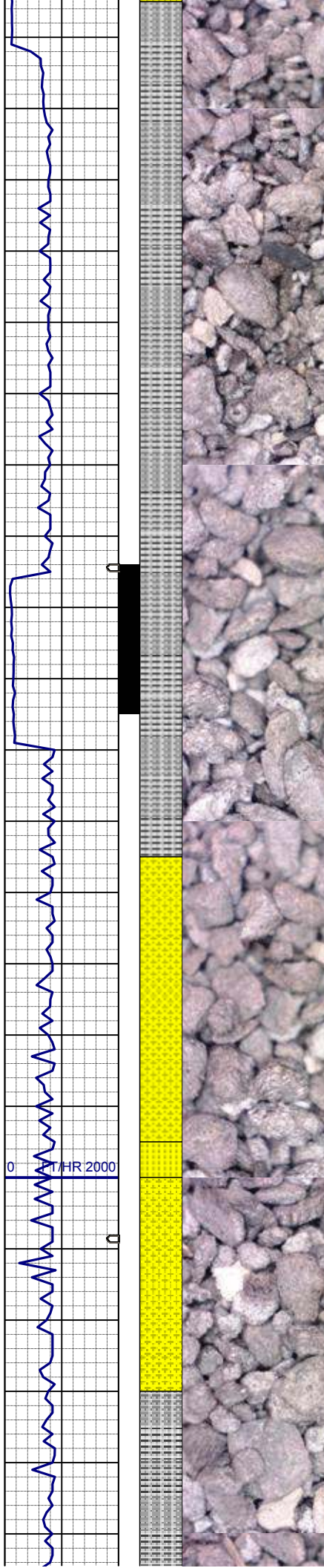
SHYSS: lt gy, wh - lt gy, occ gybrn, s&p, f gr, sbang - sbrndd, mod-p srt, mod sft - frm, occ phlog, abnt glauc, arg cmt, SLTYSH: m - lt gy, tr dk gy, sft - mod firm, sbblky - sbply, arg-rthy mtx, occ phlog, noncalc SS: wh-trnsl, s&p, f gr, sbang-sbrndd, p srt, arg cmt, occ glauc

MD 5176'
INC 7.7°
AZM 168.3°
TVD 5037.80'

GAS SCALE
CHANGE

194u
C1: 98.3%
C2: 1.7%
C3: 0.0%
C4: 0.0%

454u



SLTYSH: m - lt gy, tr dk gy, sft - mod firm, sbblky - sbply, arg-rthy mtx, occ phlog, noncalc
SHYSS: lt gy, wh - lt gy, occ gybrn, s&p, f gr, sbang - sbrndd, mod-p srt, mod sft - frm, occ phlog, abnt glauc, arg cmt, tr SS:

MD 5271'
INC 5.1°
AZM 174.3°
TVD 5132.20'

WT IN 9.10/ OUT 9.10
VIS IN 34 / OUT 34

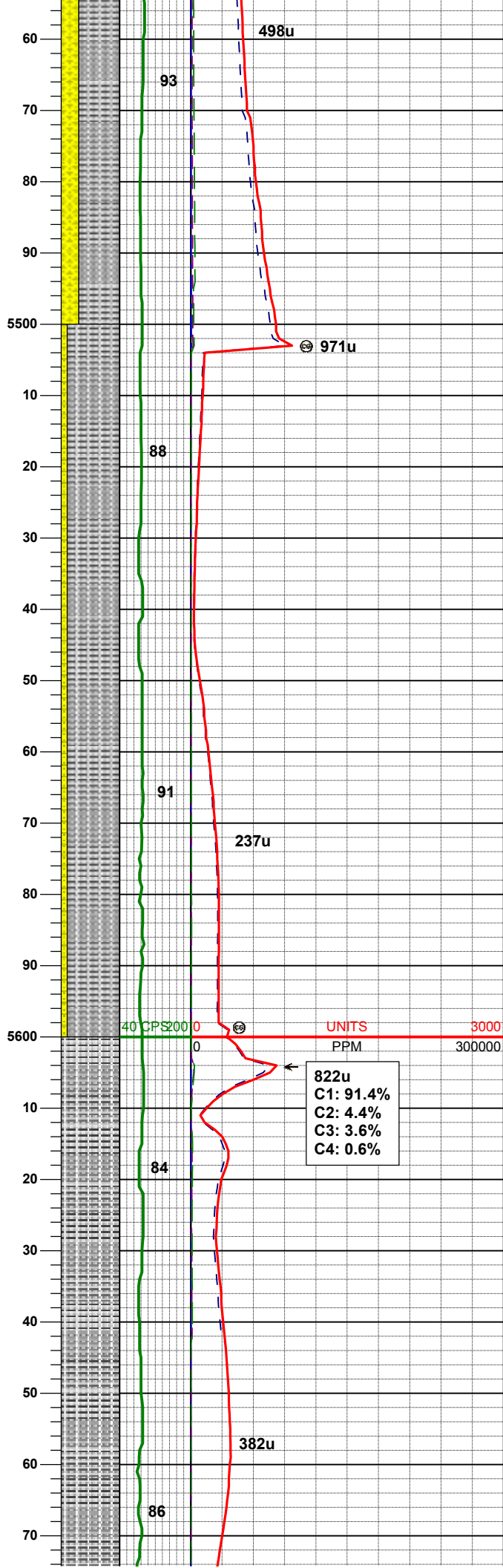
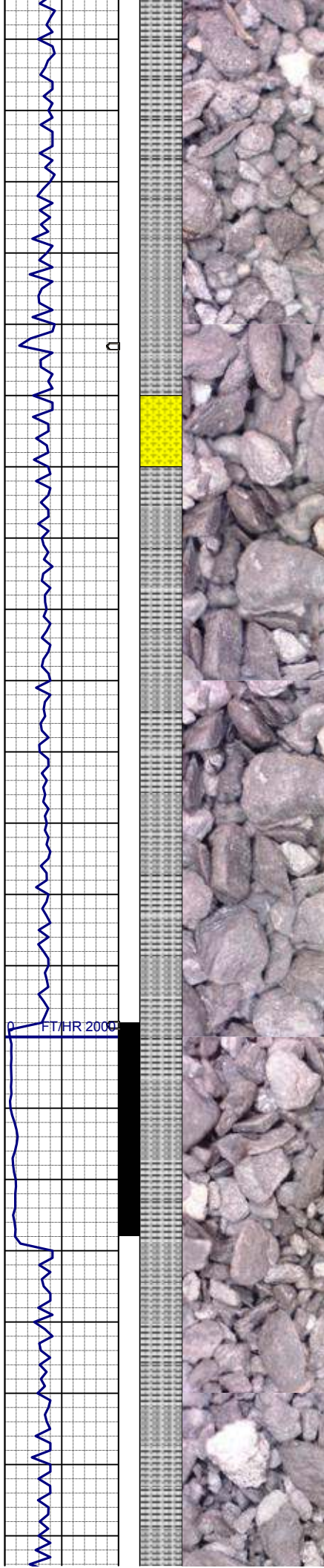
SLTYSH: m - lt gy, tr dk gy, sft - mod firm, sbblky - sbply, arg-rthy mtx, occ phlog, noncalc
SHYSS: lt gy, wh - lt gy, occ gybrn, s&p, f gr, sbang - sbrndd, mod-p srt, mod sft - frm, occ phlog, abnt glauc, arg cmt,
SS: wh-trnsl, s&p, f gr, sbang-sbrndd, p srt, arg cmt, occ glauc

MD 5366'
INC 1.2°
AZM 163.7°
TVD 5227.04'

579u
C1: 93.9%
C2: 3.4%
C3: 1.9%
C4: 0.8%

UNITS
PPM

SLTYSH: m - lt gy, tr dk gy, sft - mod firm, sbblky - sbply, arg-rthy mtx, occ phlog, noncalc
SHYSS: lt gy, wh - lt gy, occ gybrn, s&p, f gr, sbang - sbrndd, mod-p srt, mod sft - frm, occ phlog, occ glauc, arg cmt, tr SS:



MD 5461'
INC 1.0°
AZM 130.3°
TVD 5322.02'

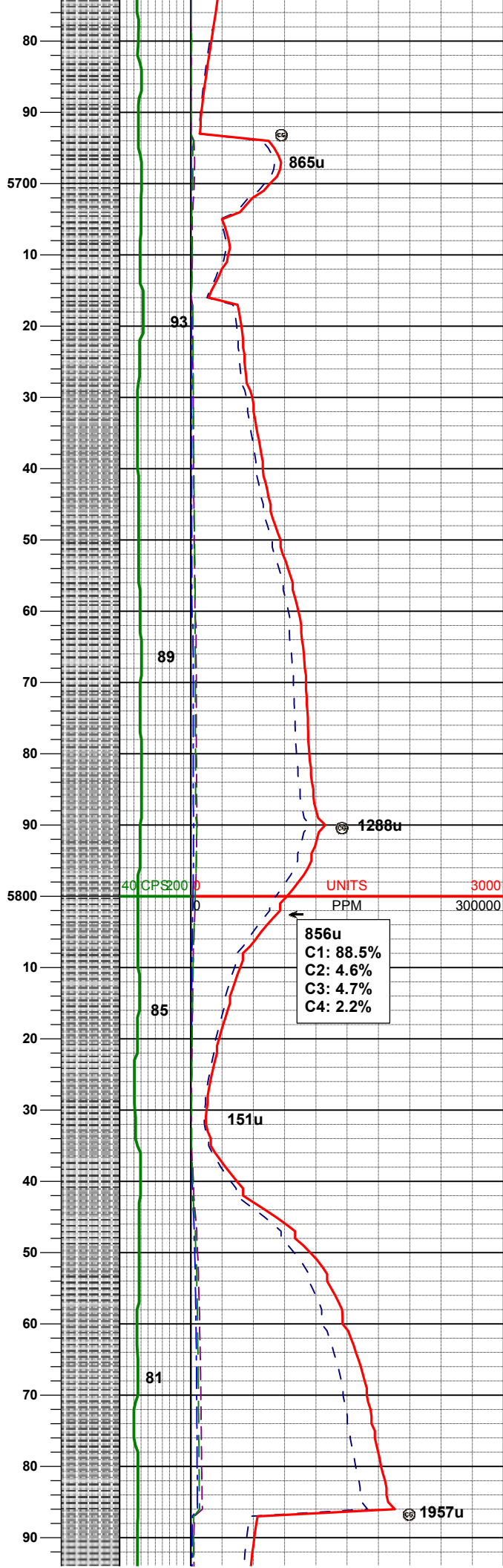
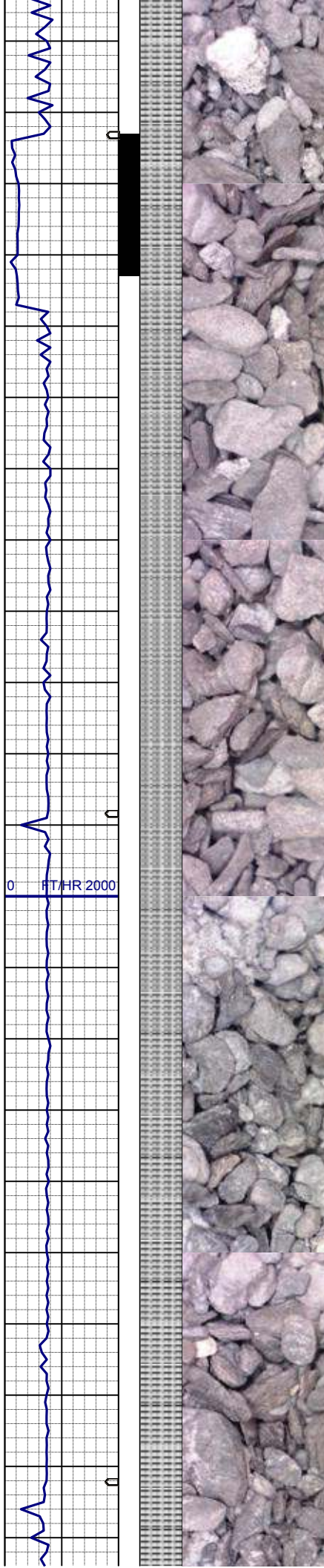
SLTYSH: m - lt gy, tr dk gy, sft - mod
firm, sbblky - sbply, arg-rthy mtx, occ
phlog, noncalc
SHYSS: lt gy, wh - lt gy, occ gybrn,
s&p, f gr, sbang - sbrndd, mod-p srt,
mod sft - frm, occ phlog, occ glauc,
arg cmt, tr SS:

MD 5556'
INC 1.1°
AZM 101.7°
TVD 5417.00'

822u
C1: 91.4%
C2: 4.4%
C3: 3.6%
C4: 0.6%

MD 5651'
INC 0.8°
AZM 276.8°
TVD 5512.00'

SLTYSH: m - lt gy, tr dk gy, sft - mod
firm, sbblky - sbply, arg-rthy mtx, occ
phlog, noncalc, tr SHYSS:



WT IN 9.10/ OUT 9.10
VIS IN 33 / OUT 33

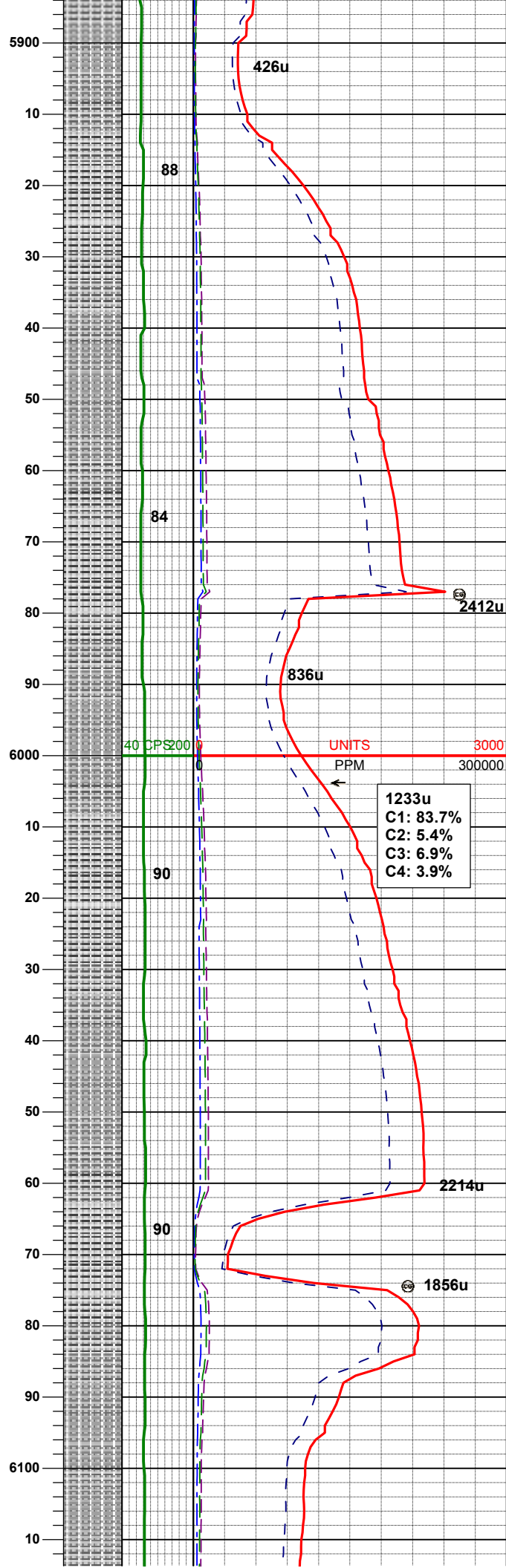
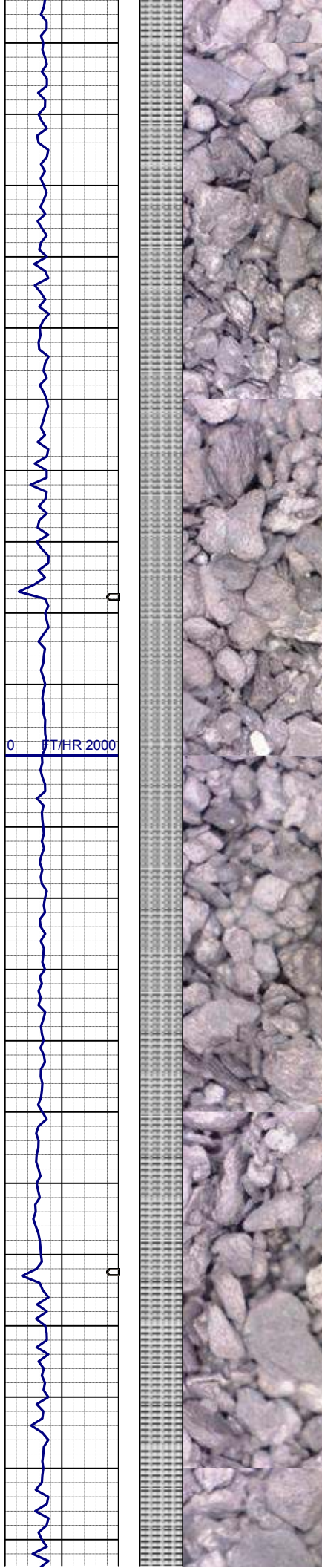
MD 5746'
INC 1.8°
AZM 275.9°
TVD 5606.97'

SLTYSH: m - lt gy, occ dk gy, sft -
mod firm, sbbiky - sbply, rthy mtx, tr
arg mtx, trphlog, noncalc, tr SHYSS:

856u
C1: 88.5%
C2: 4.6%
C3: 4.7%
C4: 2.2%

MD 5840'
INC 1.1°
AZM 270.1°
TVD 5700.94'

SLTYSH: m - lt gy, occ dk gy, sft -
mod firm, sbbiky - sbply, rthy mtx, tr
arg mtx, trphlog, noncalc, tr SHYSS:

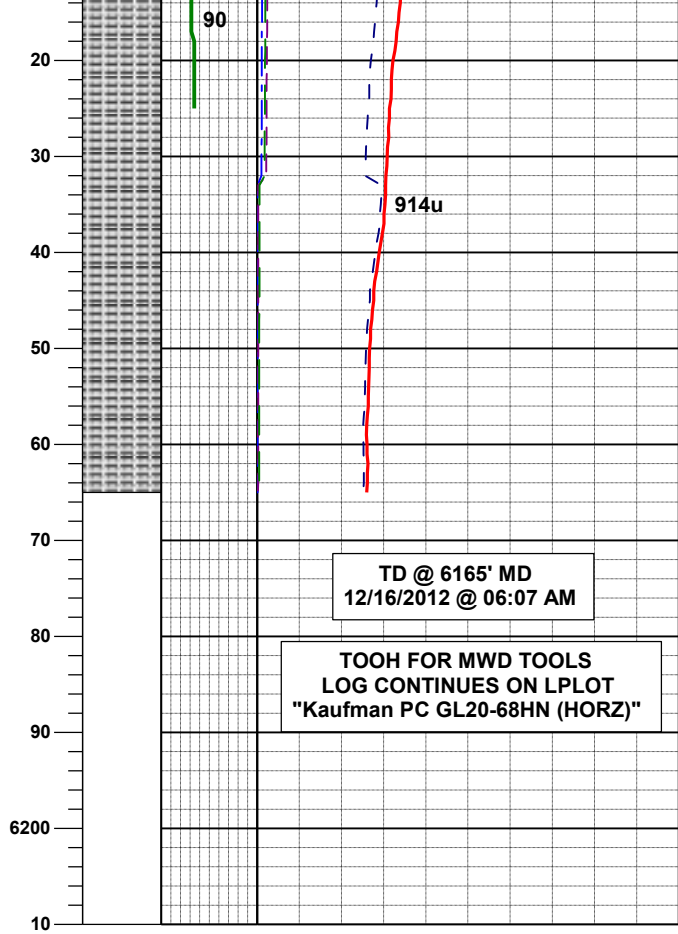
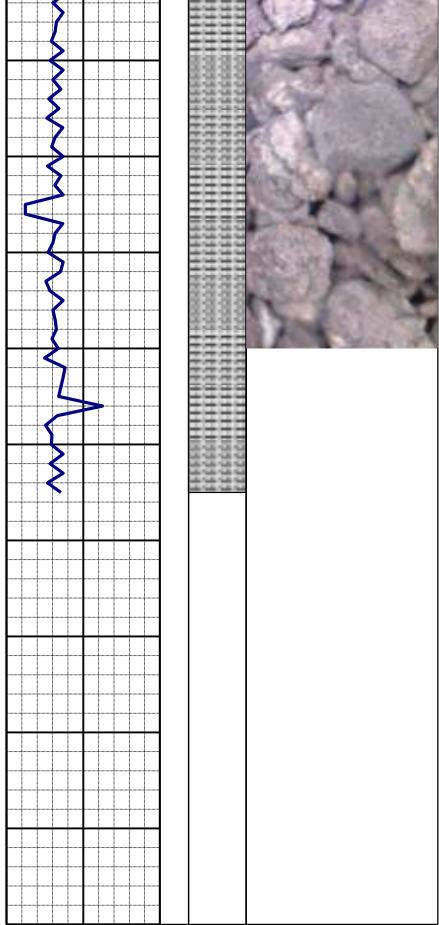


MD 5935'
INC 0.2°
AZM 234.4°
TVD 5795.94'

SLTYSH: m - lt gy, occ dk gy, sft -
mod firm, sbblky - sbply, rthy mtx, tr
arg mtx, trphlog, noncalc, tr SHYSS:

MD 6030'
INC 0.7°
AZM 96.4°
TVD 5890.93'

SLTYSH: m - lt gy, occ dk gy, sft -
mod firm, sbblky - sbply, rthy mtx, tr
arg mtx, trphlog, noncalc, tr SHYSS:



MD 6125'
INC 0.9°
AZM 123.0°
TVD 5985.92'

SLTYSH: m - lt gy, occ dk gy, sft -
mod firm, sbbiky - sbply, rthy mtx, tr
arg mtx, trphlog, noncalc, tr SHYSS:

WT IN 9.30/ OUT 9.30
VIS IN 45 / OUT 45