

LOG created using Lplot VH Version 3.0, October 16, 2013, Copyright (C) 1999-2009 Pason Systems Corp.

OPERATOR: NOBLE ENERGY INC.
WELL: CROW CREEK STATE AC36-78HN
LOCATION: SSW SEC36 T7N R63W
COUNTY: WELD
STATE: COLORADO
SPOT: 270' FSL 263' FWL
ELEVATION: 4,774' GL, 4,790' KB
FIELD: WATTENBERG
SPUD DATE: 10/8/13
TD DATE: 10/15/13
DATES LOGGED: 10/9/13 - 10/15/13
DEPTHS LOGGED: 611'- 10974'
GEOLOGISTS: GARY MYERS, JESSICA SILVEY
DRILLING FLUID: LSND
DRILLING RIG: PRECISION 828
API: 05-123-37275
LOG TYPE: VERTICAL
SCALE: 1:240 (5 inches per 100 feet)
REMARKS: WELLSITE GEOLOGICAL SERVICES PROVIDED BY COLUMBINE LOGGING INC.

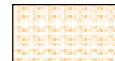
LOG CONTINUES ON FILE: Crow Creek State AC36-78HN Horiz.lplot

LITHOLOGIES

Sandstone



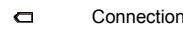
Shaly Sandstone



Shaly Siltstone



Silty Shale

ENGINEERING SYMBOLS

Connection



Connection Gas



Arrow



Midnight Depth



Arrow

GAS

0 UNITS 100

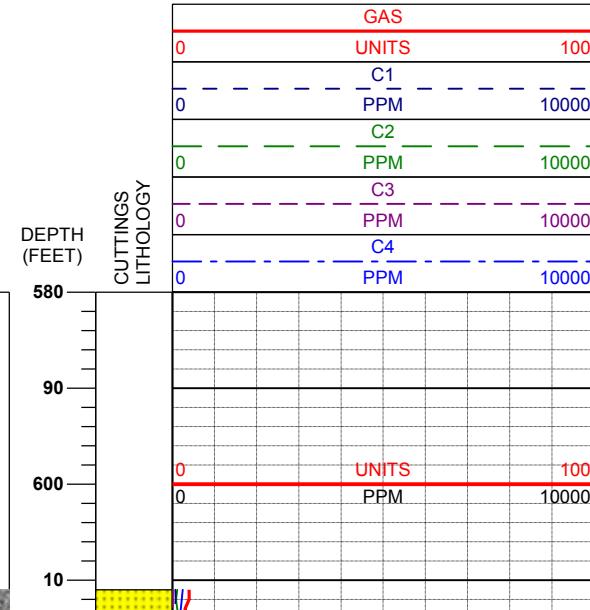
0 C1 PPM 10000

0 C2 PPM 10000

0 C3 PPM 10000

0 C4 PPM 10000

ROP			ROTATE/SLIDE	INTERPRETIVE LITHOLOGY	PICTURE	DEPTH (FEET)	CUTTINGS LITHOLOGY	LITHOLOGY DESCRIPTION
0	FT/HR	1000						
BIT #2								
SMITH								
SDI611, 8.75"								
SER# JH3966								
IN @ MD 611'								
0	FT/HR	1000						



COLUMBINE LOGGING, INC.
ON LOCATION 10/8/13
MANAGED 2-PERSON LOGGING
USING PASON GAS SYSTEM

DRILLED OUT OF SHOE
0200 HRS, 10/9/13

MD 613'
INC 0.5°

AZI 142.7°
TVD 613.0'

SS: gy- mgy, m-fgr, blky-sbbky,
sbrndd-sbang, mod srt, vsft-sft, arg
mtx, non calc, sl mica, tr siltst

MD 703'
INC 0.6°
AZI 172.2°
TVD 703.0'

BEGIN 100' SAMPLES

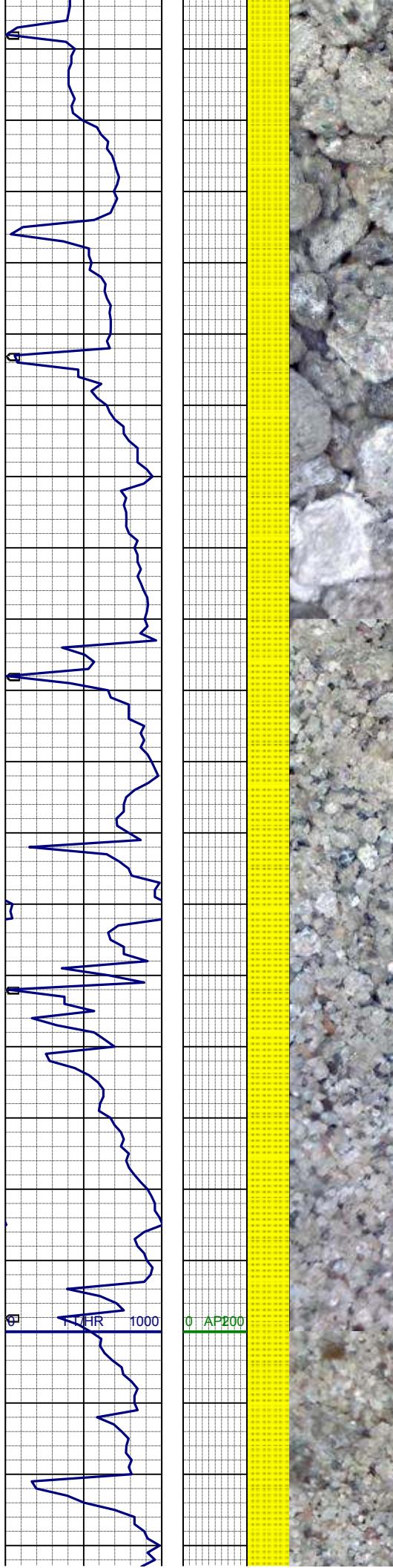
Depth: 753'
WT 8.4
VIS 27
YP 1
pH 10.2
Cl- 750
Ca++ 1320

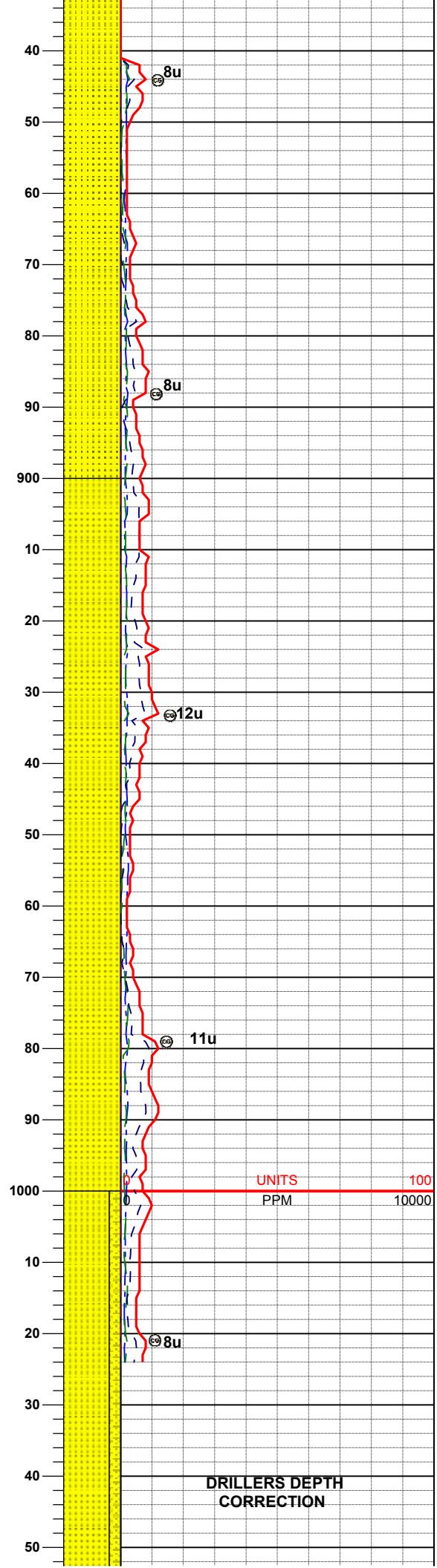
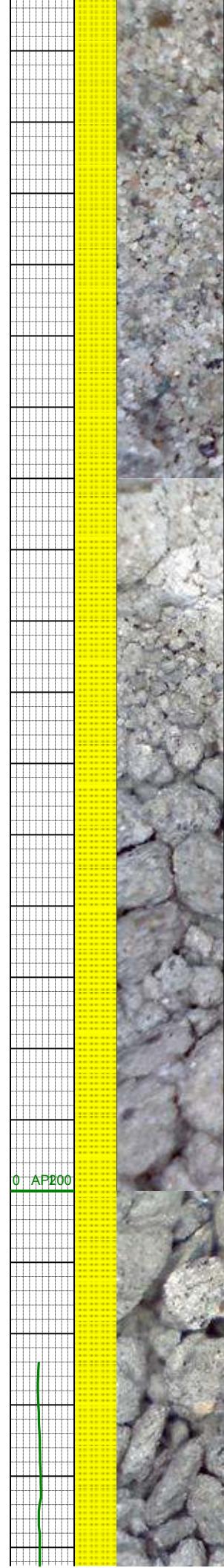
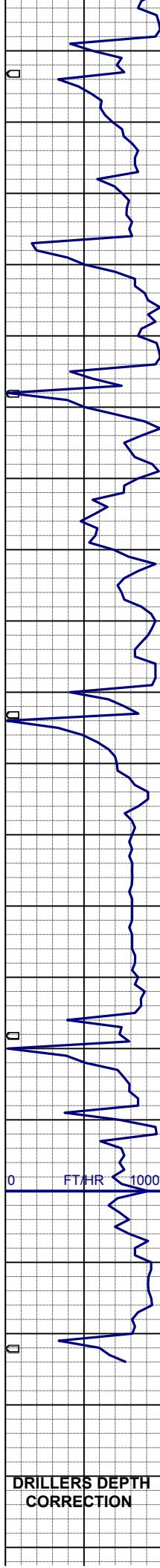
SS: wh-gy- mgy, m-fgr, blky-sbbky,
sbrndd-sbang, mod srt, vsft-sft, arg
mtx, non calc, sl mica, tr siltst

MD 793'
INC 0.6°
AZI 147.9°
TVD 793.0'

UNITS 100
PPM 10000

MISSING GAS DATA





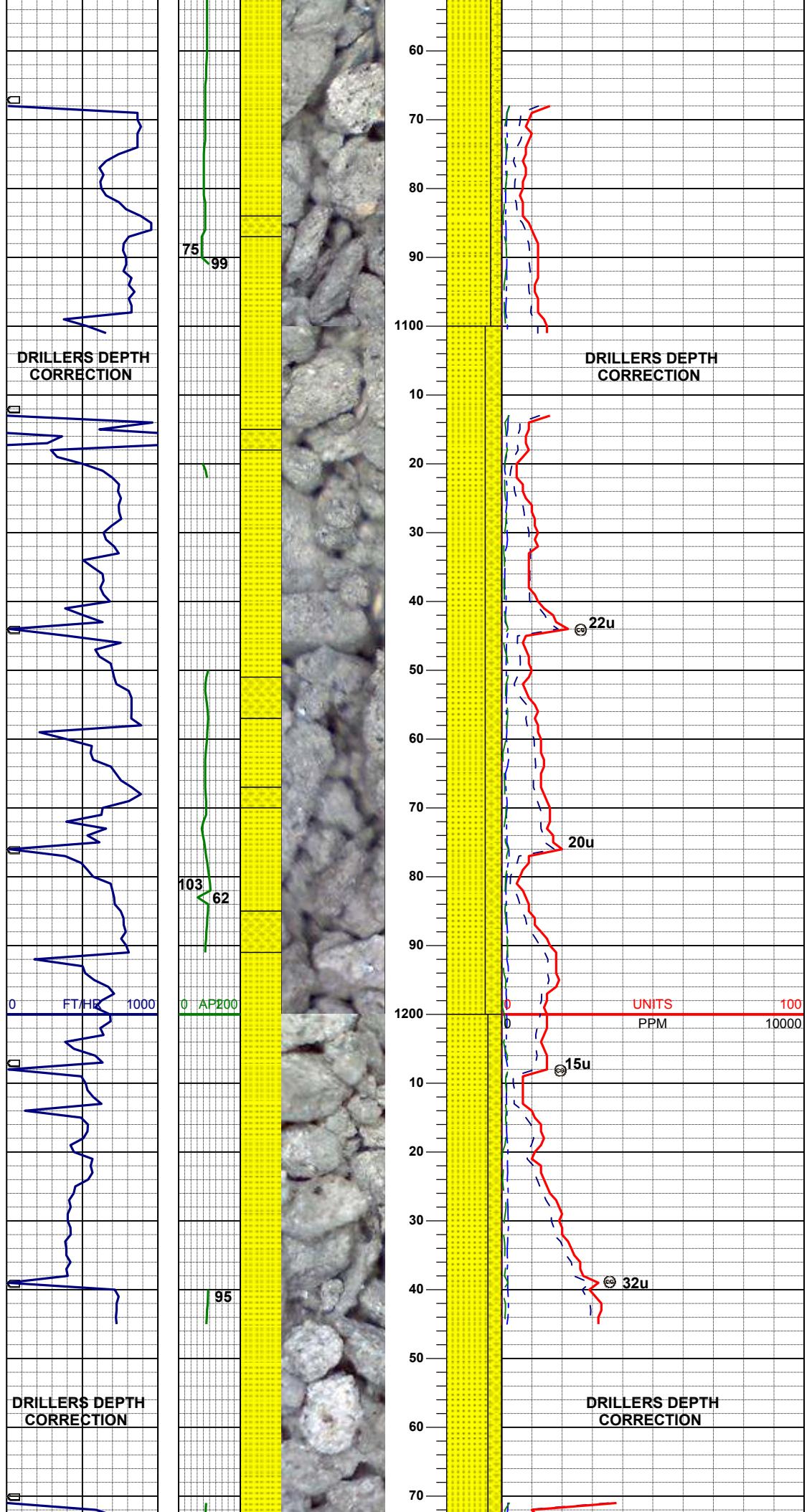
SS: wh- gy- mgy, m- gr, blky- sbblky, sbrndd- sbang, mod srt, vsft-s ft, arg mtx, non calc, sl mica, tr srtst

MD 883'
INC 0.6°
AZI 174.7°
TVD 883.0

SS: wh- mgy, pred clr qtz, mgr, blky- sbblky, rnndd- sbrndd, wsrt, vsft, p cmt, sil mtx, non calc, sl mica, tr glau, tr srtst

MD 972'
INC 0.9°
AZI 165.5°
TVD 972.0'

SS: - SHYSS: It- mgy, sme wh, trnslop, sme clr, s&p ip, vf- mgr, sbblky, p srt, srt, arq-sil mtx, sl calc, sl mica, tr



glau

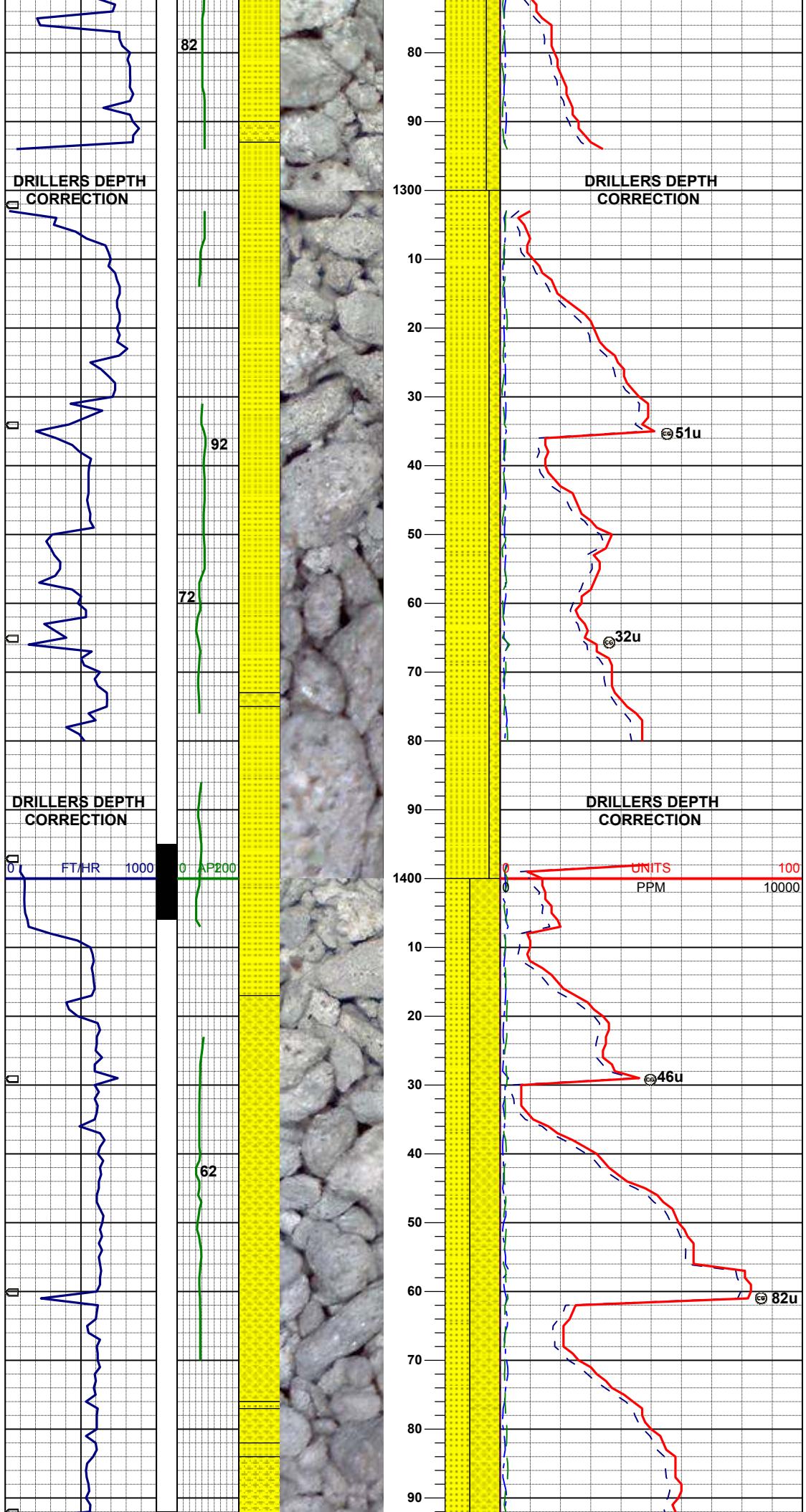
MD 1062'
INC 0.7°
AZI 150.4°
TVD 1062.0'

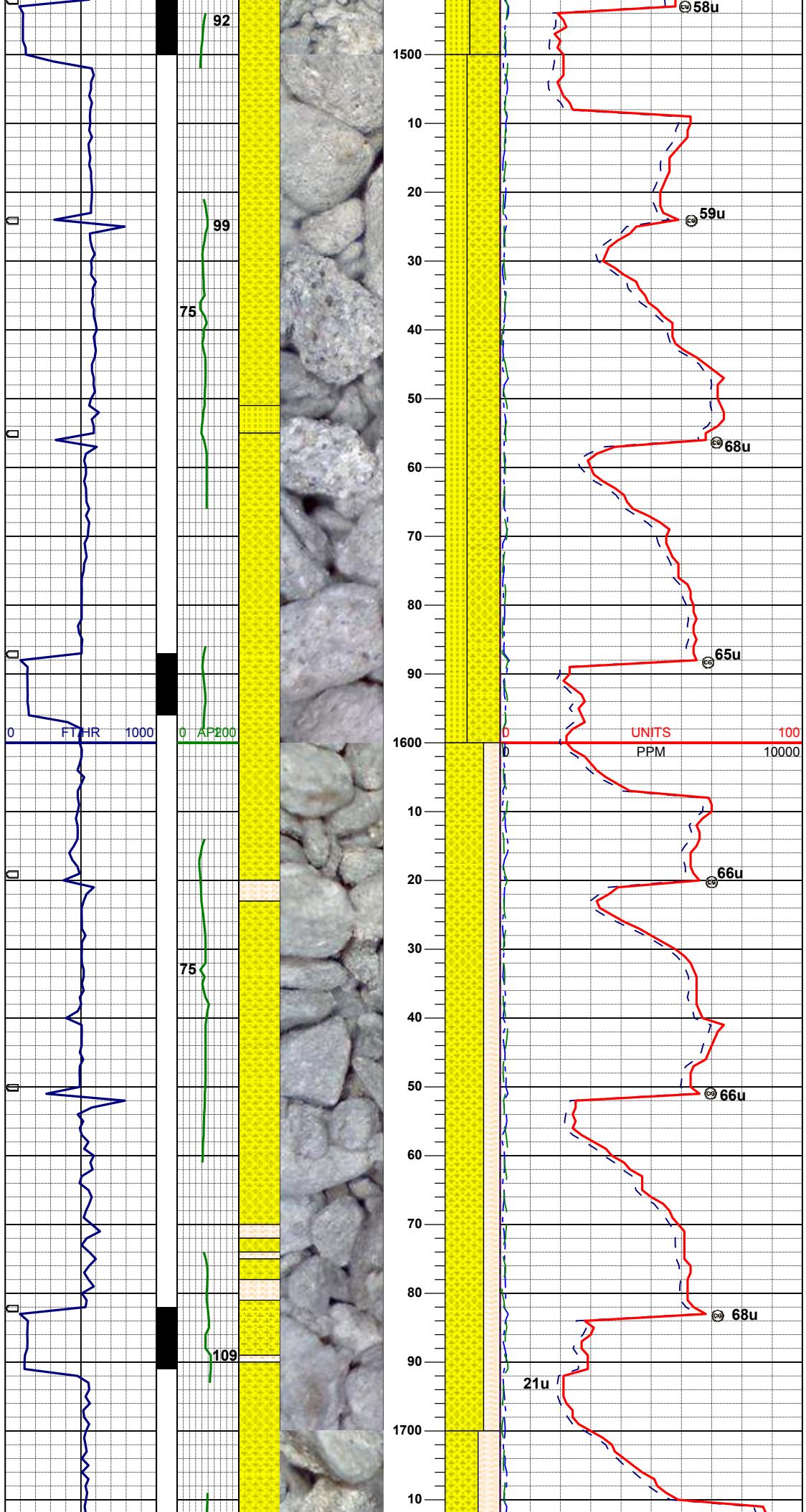
SS: - SHYSS: lt- mgy, sme wh, trnsl-op, sme clr, s&p ip, vf- mgr, sbblk, p srt, sft, arg-sil mtx, sl calc, sl mica, tr glau

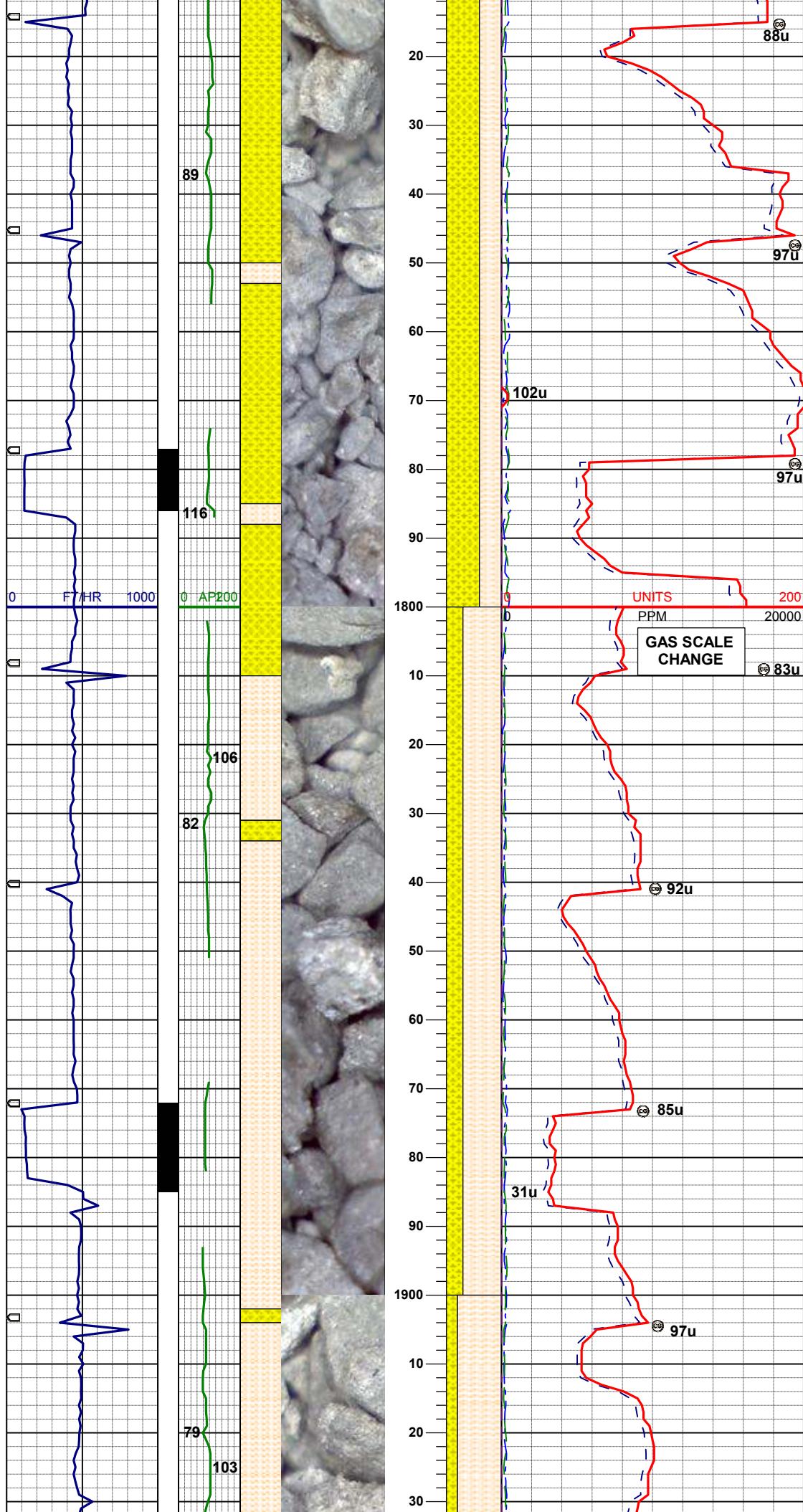
MD 1157'
INC 0.4°
AZI 128.9°
TVD 1157.0'

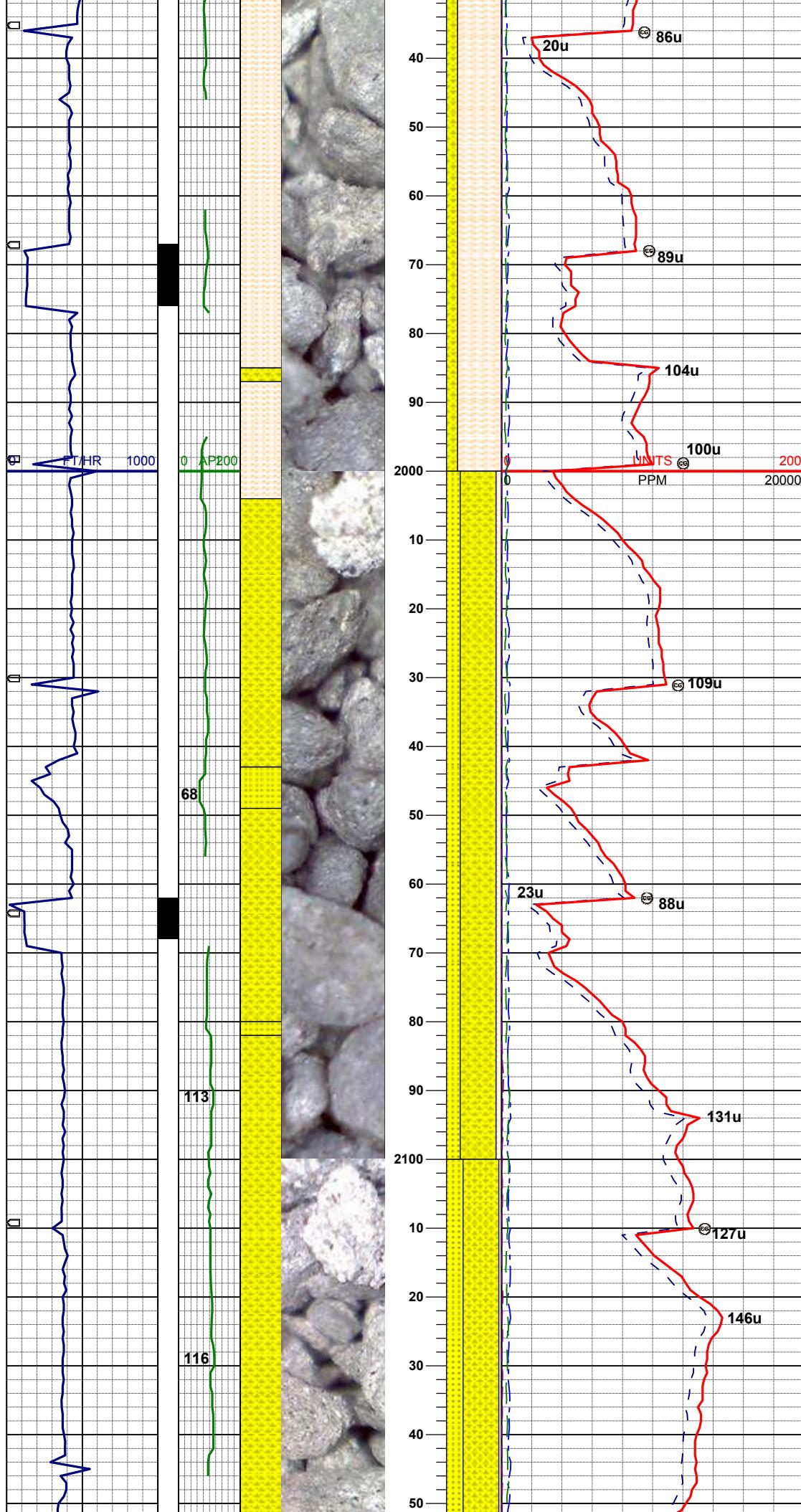
SS: - SHYSS: lt- mgy, sme wh, trnsl-op, sme clr, s&p ip, vf- mgr, sbblkly, p srt, sft, arg-sil mtx, sl calc, sl mica, occ glau

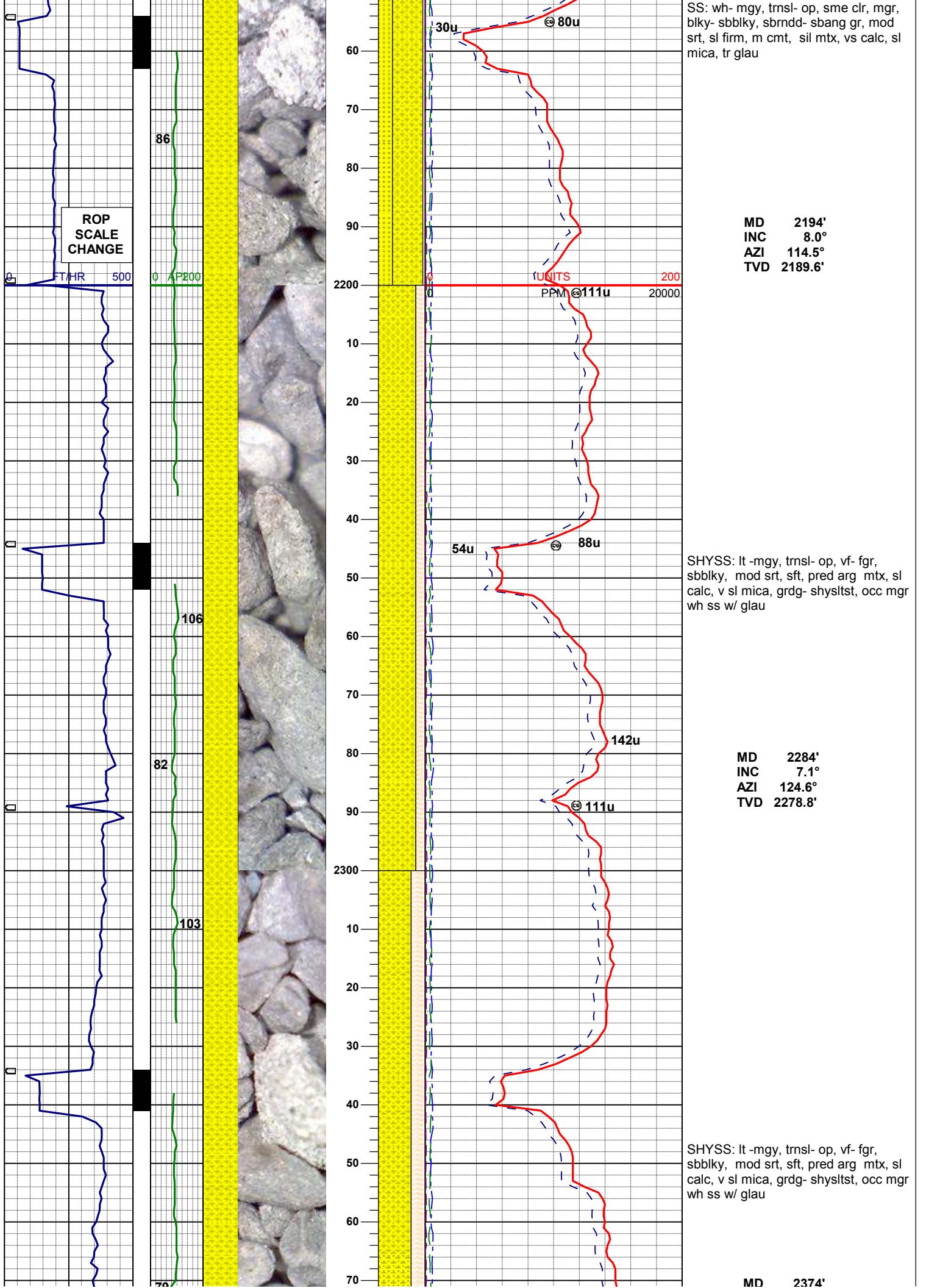
MD 1252'
INC 0.5°
AZI 131.6°
TVD 1252.0'

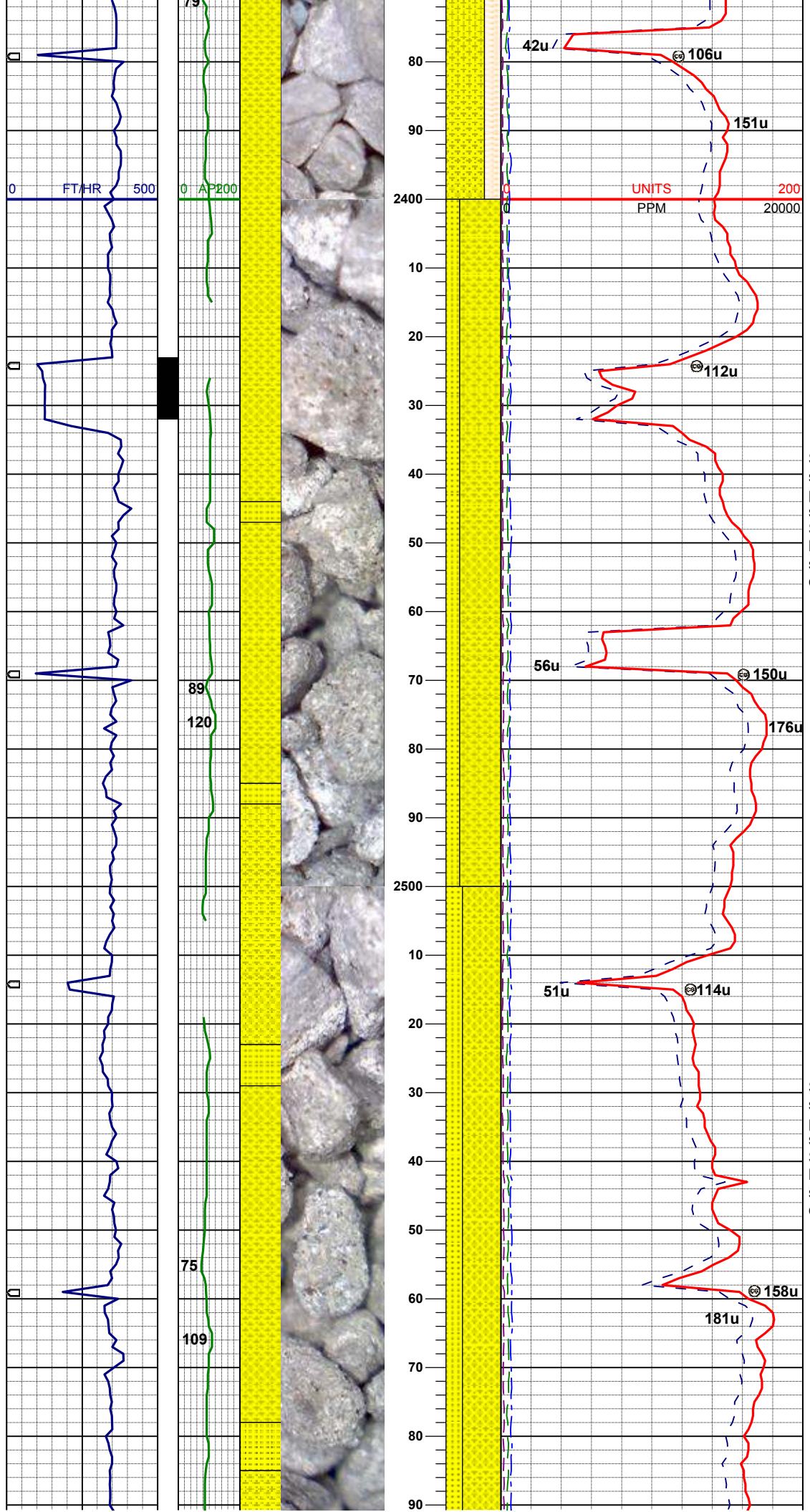


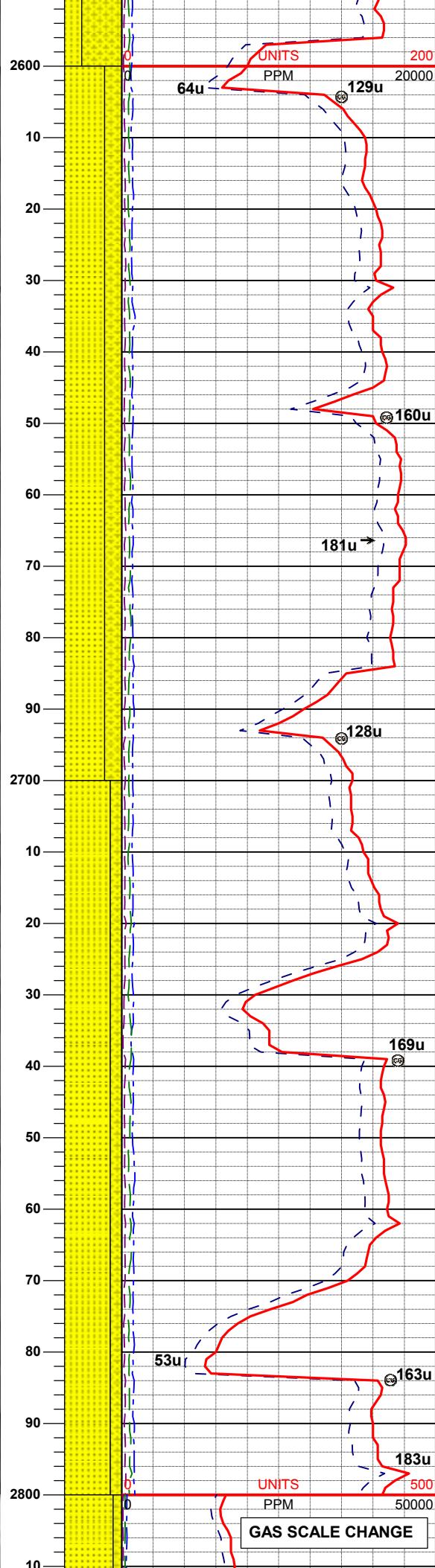
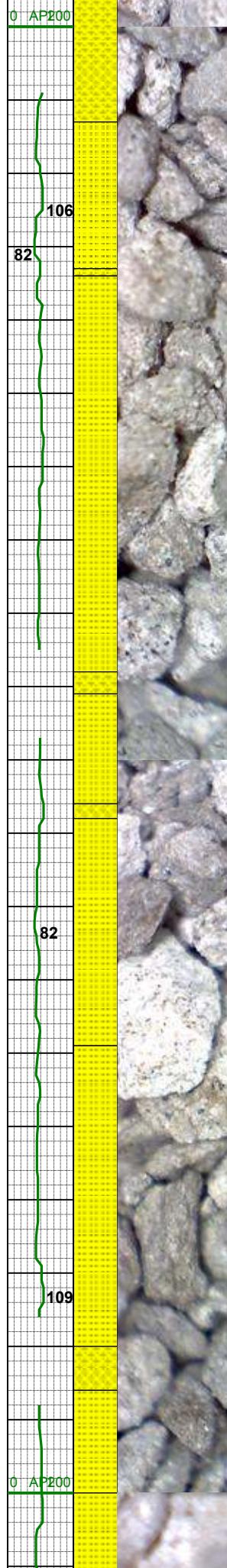
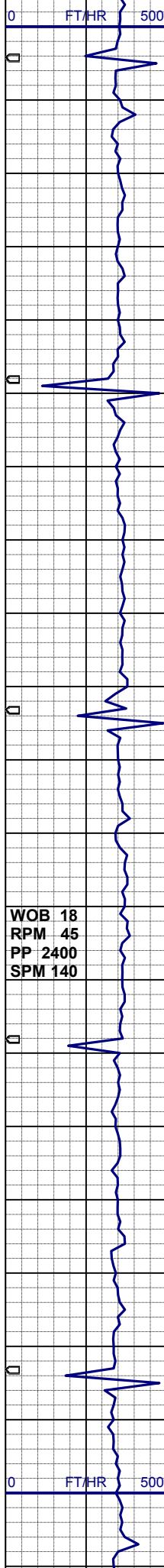


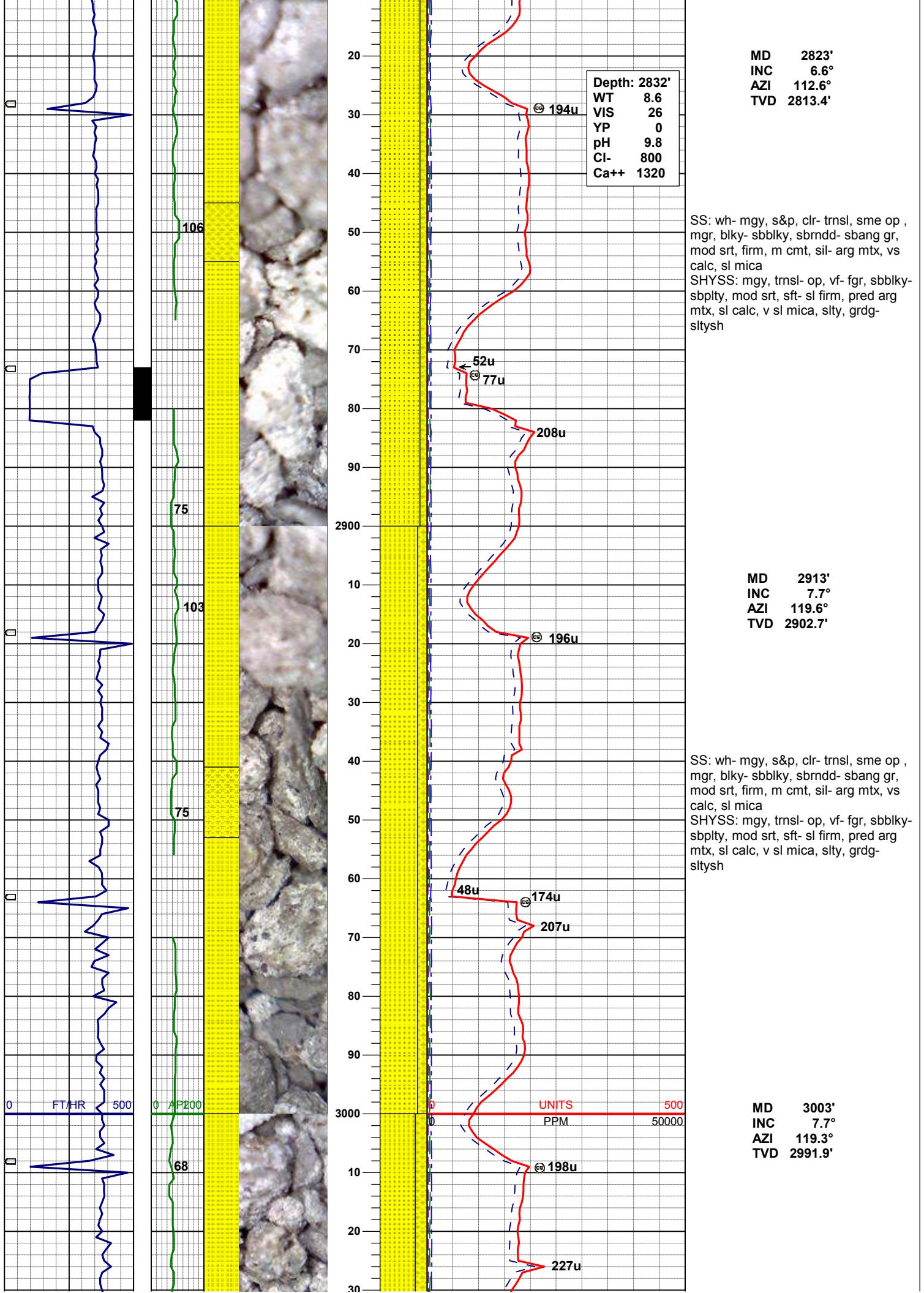


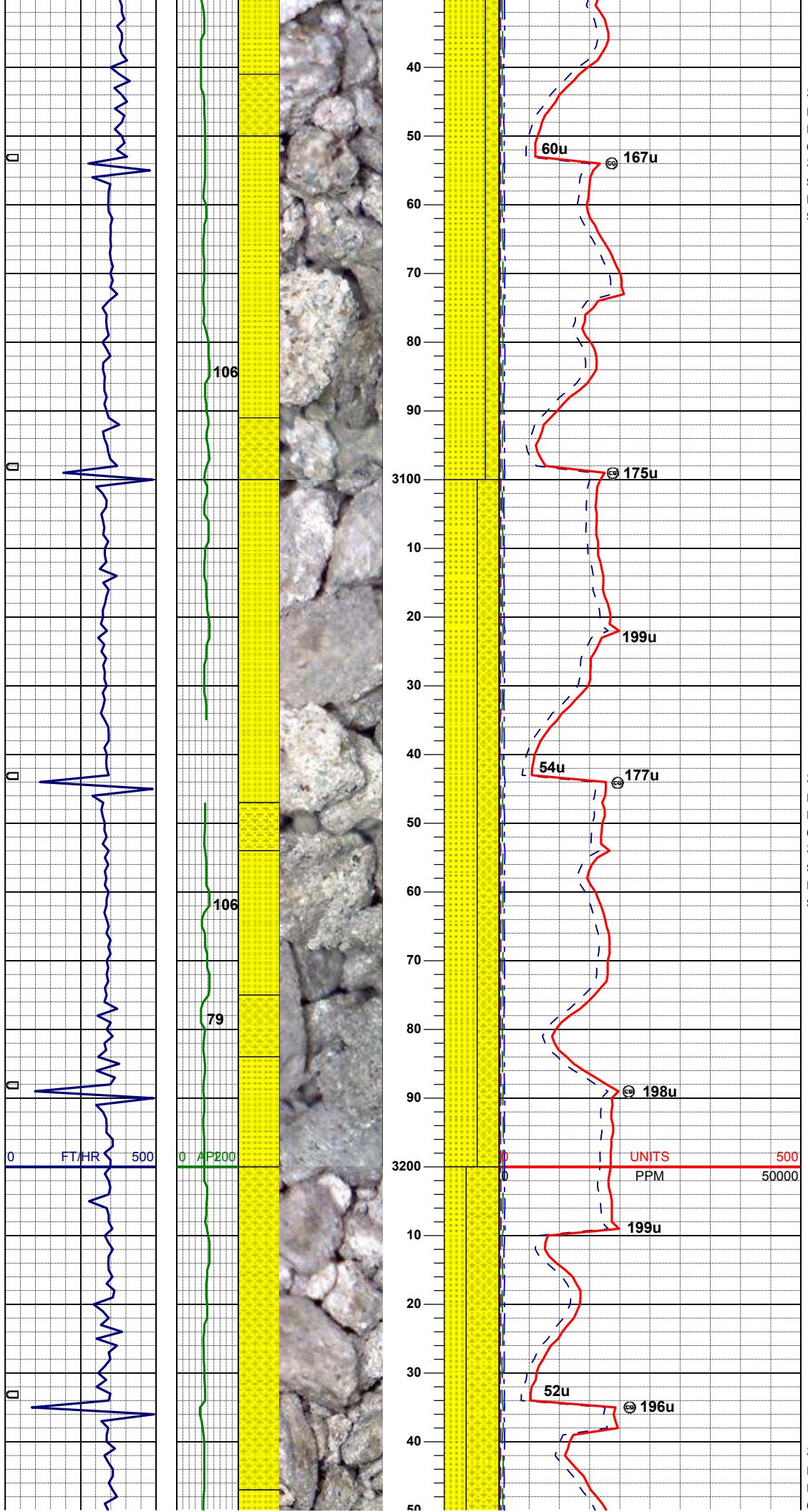


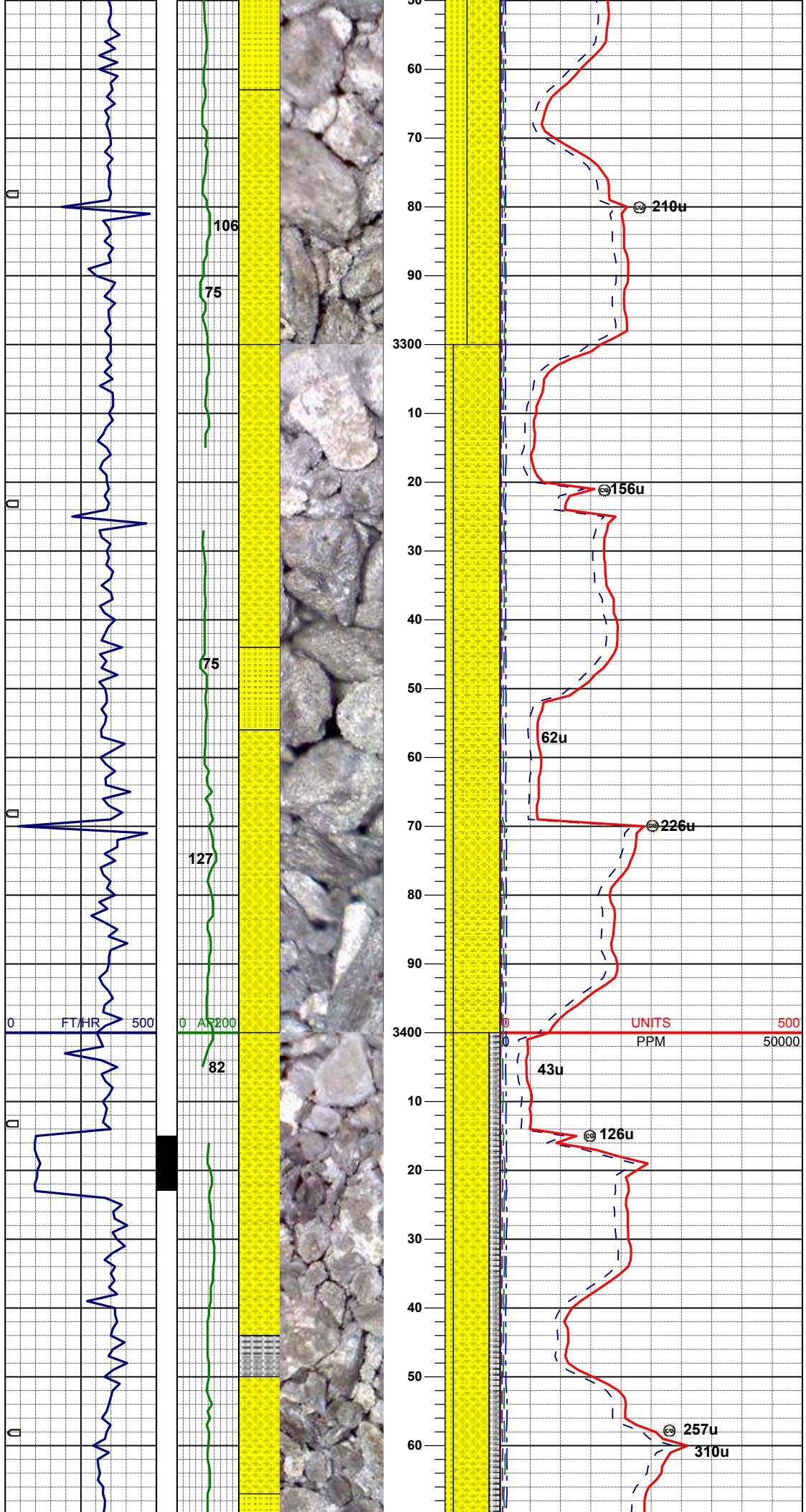


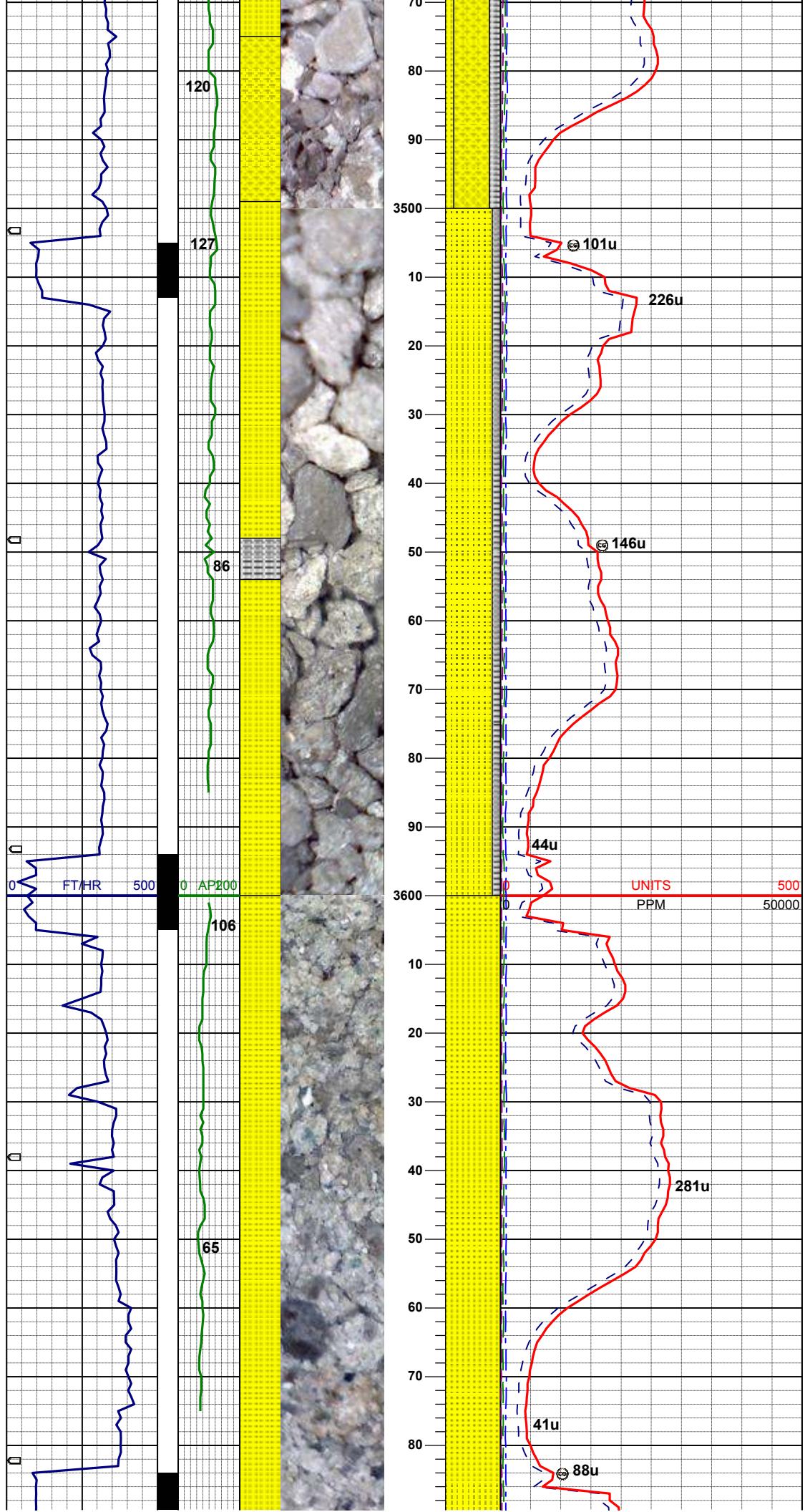






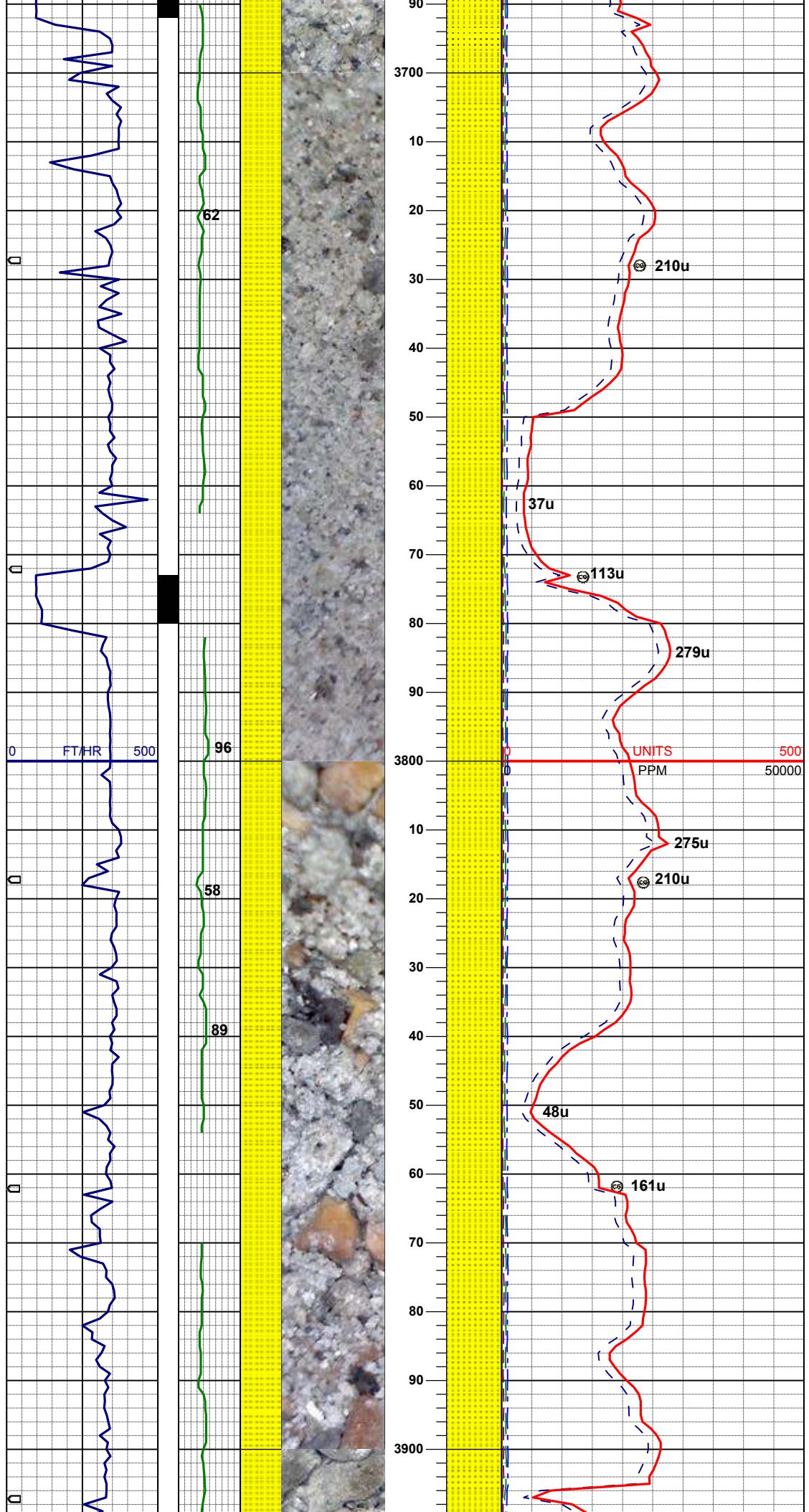


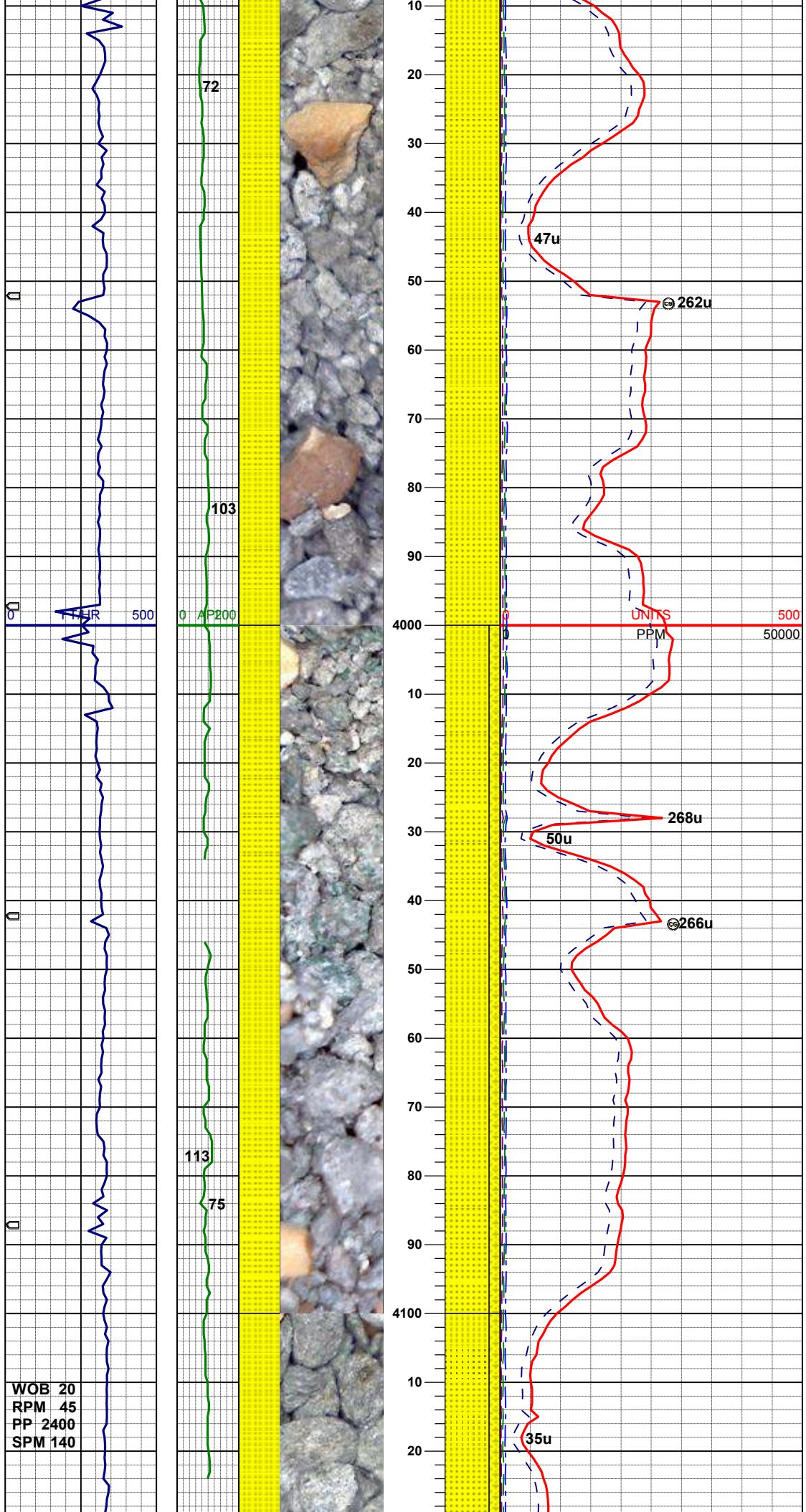


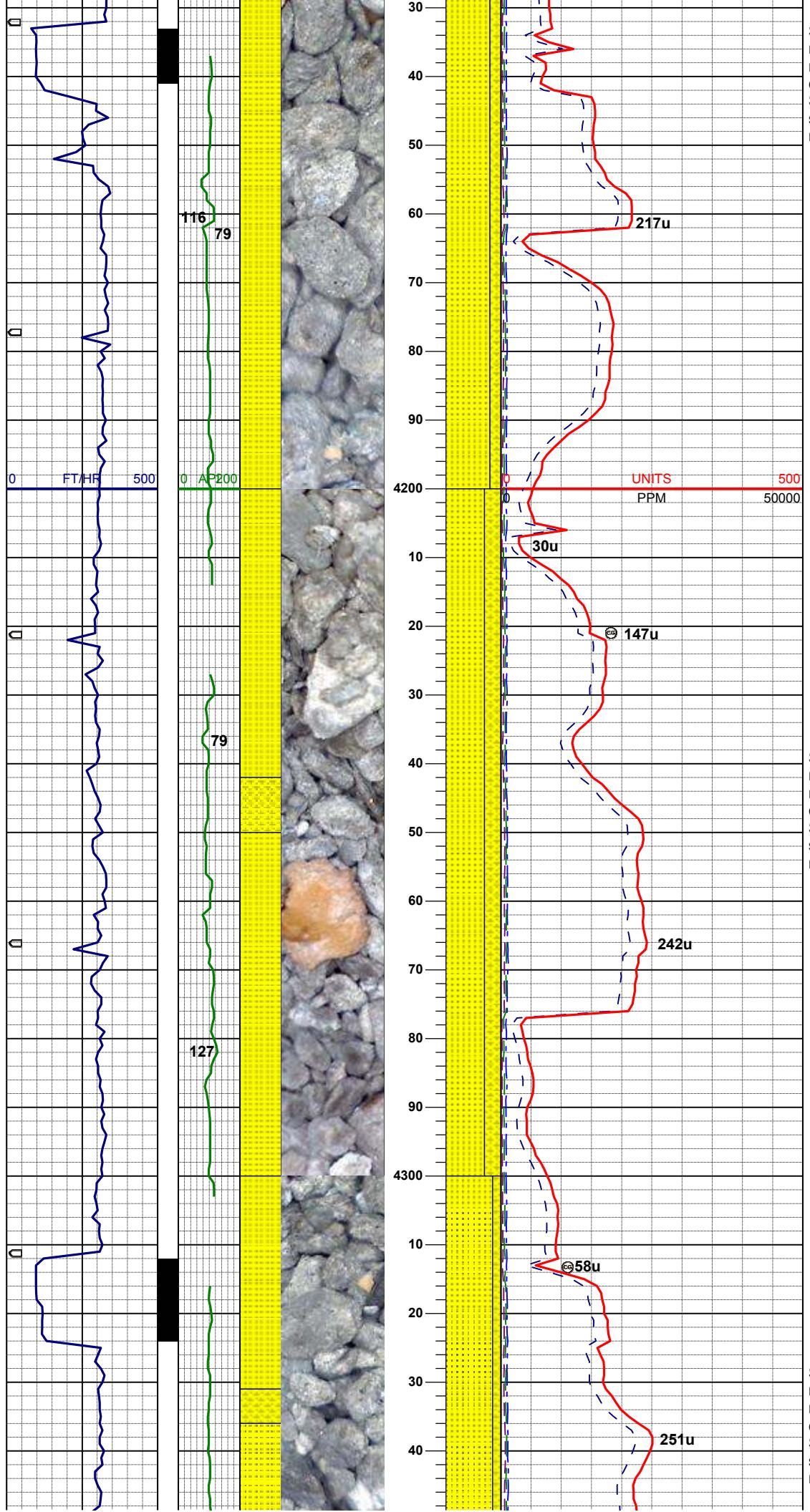


MD 3722'
INC 5.9°
AZI 108.2°
TVD 3706.5'

SS: wh- mgy, s&p, clr- trnsl, sme op ,
mgr, blky- sbblk, sbrndd- sbang gr,
mod srt, p cmt, tr slst, sil- arg mtx, vs
calc, sl mica, tr glau, tr pyr







MD 4171'
INC 6.9°
AZI 110.1°
TVD 4152.6'

SS: gy- mgy, s&p, clr- trnsl, sme op , mgr, blky- sbblk, sbrndd- sbang gr, mod srt, mod cmt, sil- arg mtx, vs calc, sl mica, tr glau
SHYSS: mgy, trnsl- op, vf- fgr, sbblk- sbplty, mod srt, sft- sl firm, pred arg mtx, sl calc, v sl mica,

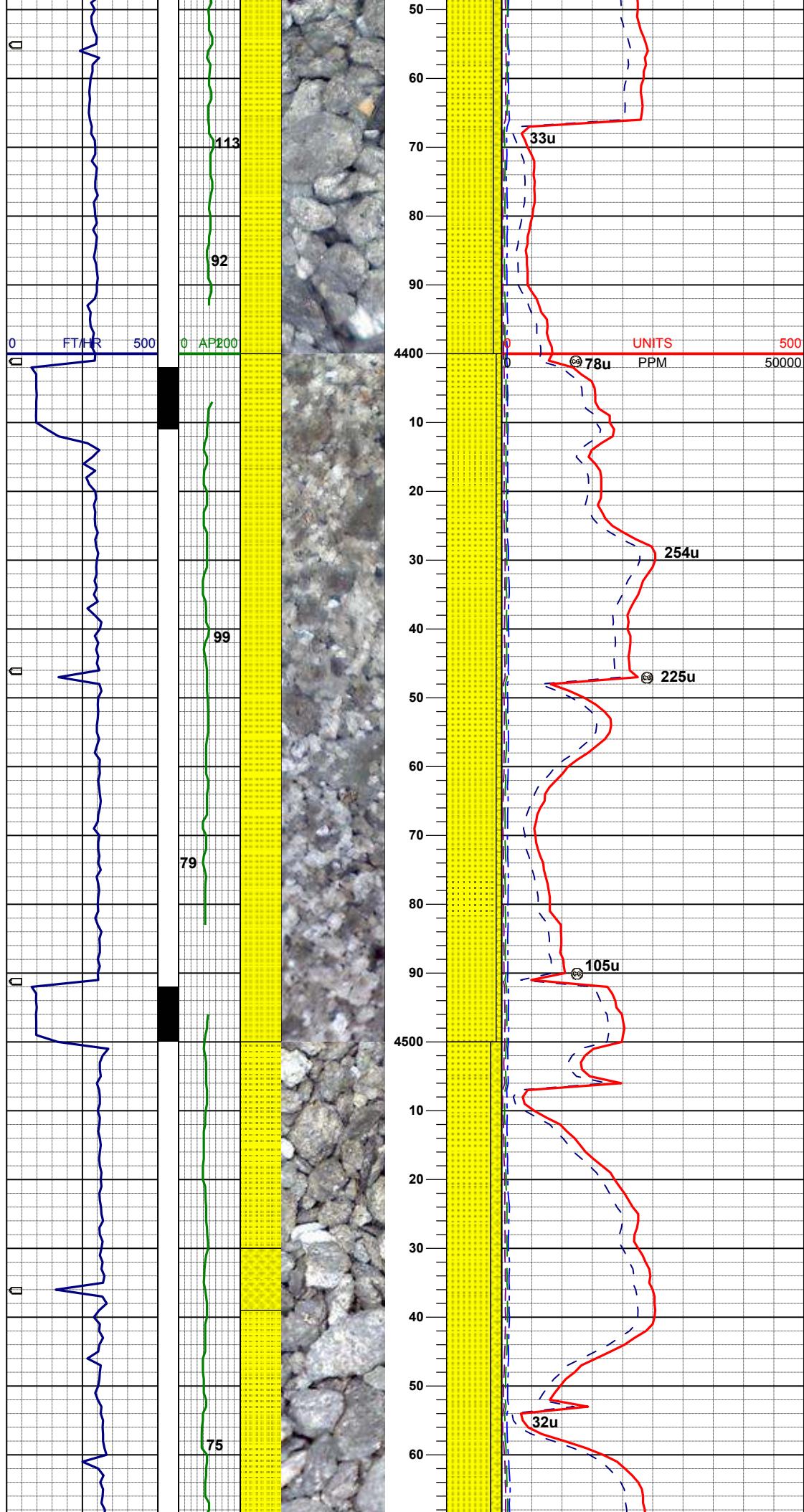
MD 4261'
INC 6.1°
AZI 102.2°
TVD 4242.1'

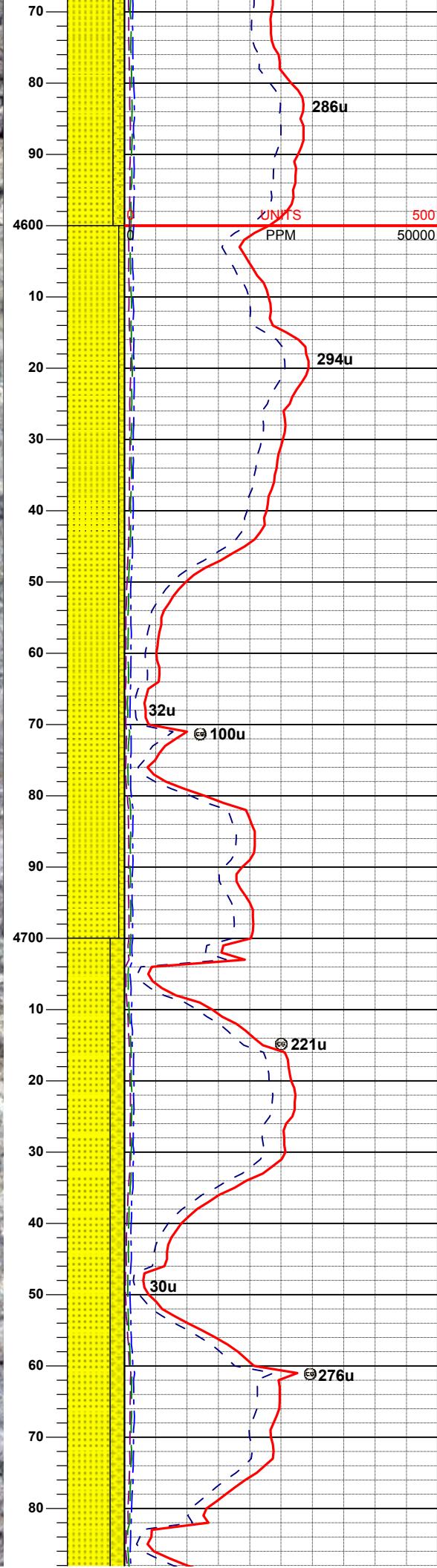
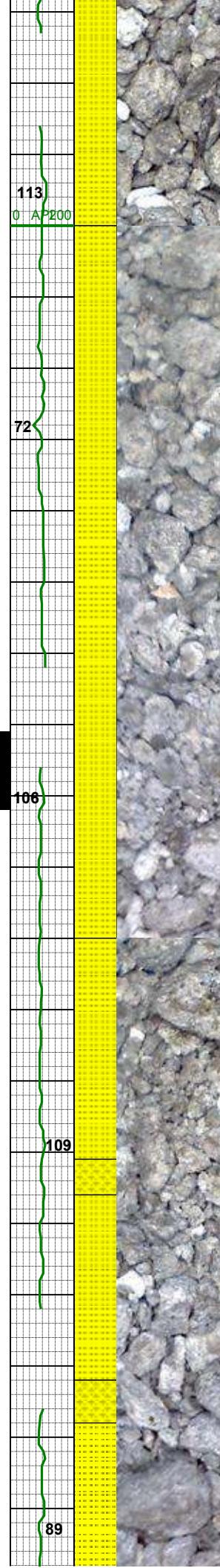
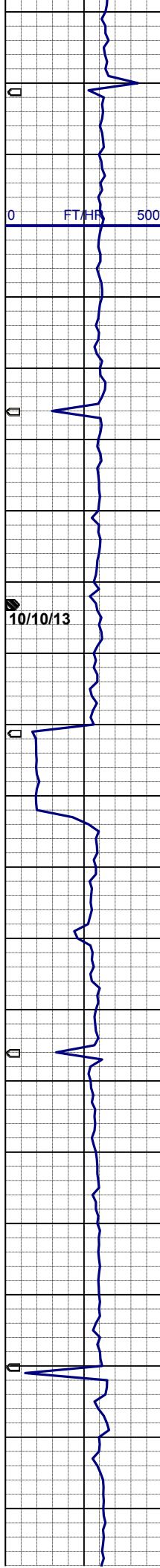
WT 8.7 / VIS 26

SS: gy- mgy, s&p, clr- trnsl, sme op , mgr, blky- sbblk, sbrndd- sbang gr, mod srt, mod cmt, sil- arg mtx, vs calc, sl mica, tr glau
SHYSS: mgy, trnsl- op, vf- fgr, sbblk- sbplty, mod srt, sft- sl firm, pred arg mtx, sl calc, v sl mica

MD 4351'

INC 6.8°
AZI 110.7°
TVD 4331.5'



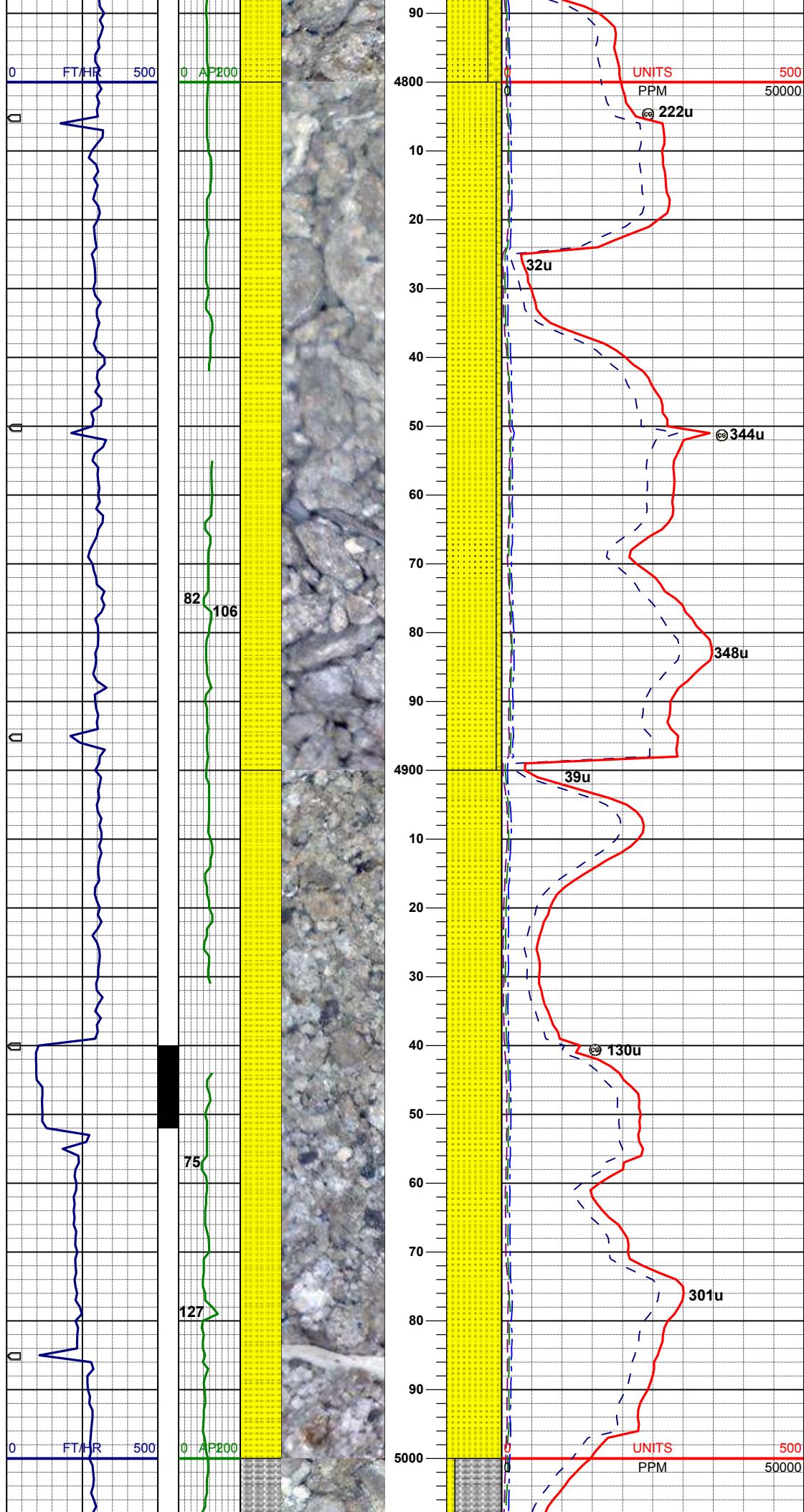


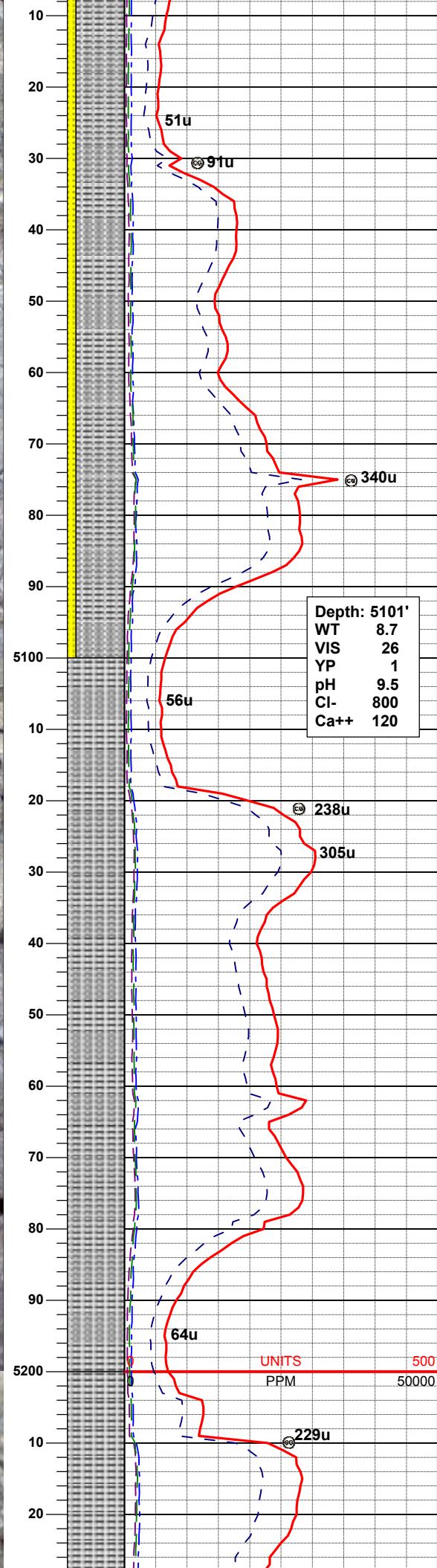
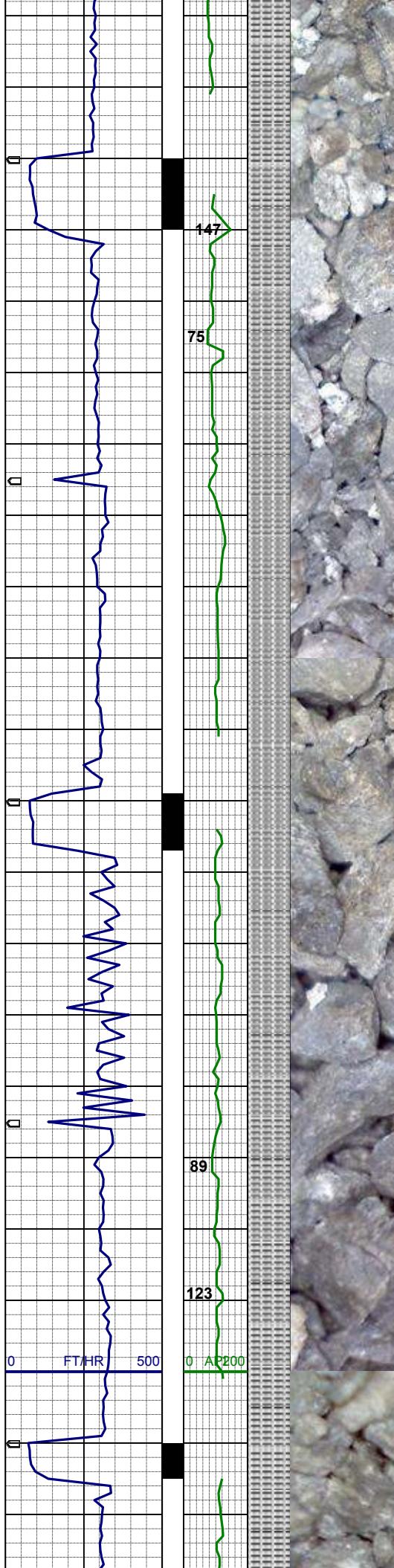
MD 4621'
INC 6.7°
AZI 125.4°
TVD 4599.2'

SS: gy- mgy, sme wh , clr- trnsl, sme op , f-mgr, blky- sbblk, sbrndd-sbng gr, p-mod srt, mod cmt, sil- arg mtx, vs calc, sl mica, tr glau
SHYSS: mgy, trnsl- op, vf- fgr, sbblk-sbplty, mod srt, sft- sl firm, pred arg mtx, sl calc, sl mica

MD 4710'
INC 7.3°
AZI 118.9°
TVD 4687.6'

SS: gy- mgy, sme wh , clr- trnsl, sme op , f-mgr, blky- sbblk, sbrndd-sbng gr, p-mod srt, mod cmt, sil- arg mtx, vs calc, sl mica, tr glau
SHYSS: mgy, trnsl- op, vf- fgr, sbblk-sbplty, mod srt, sft- sl firm, pred arg mtx, sl calc



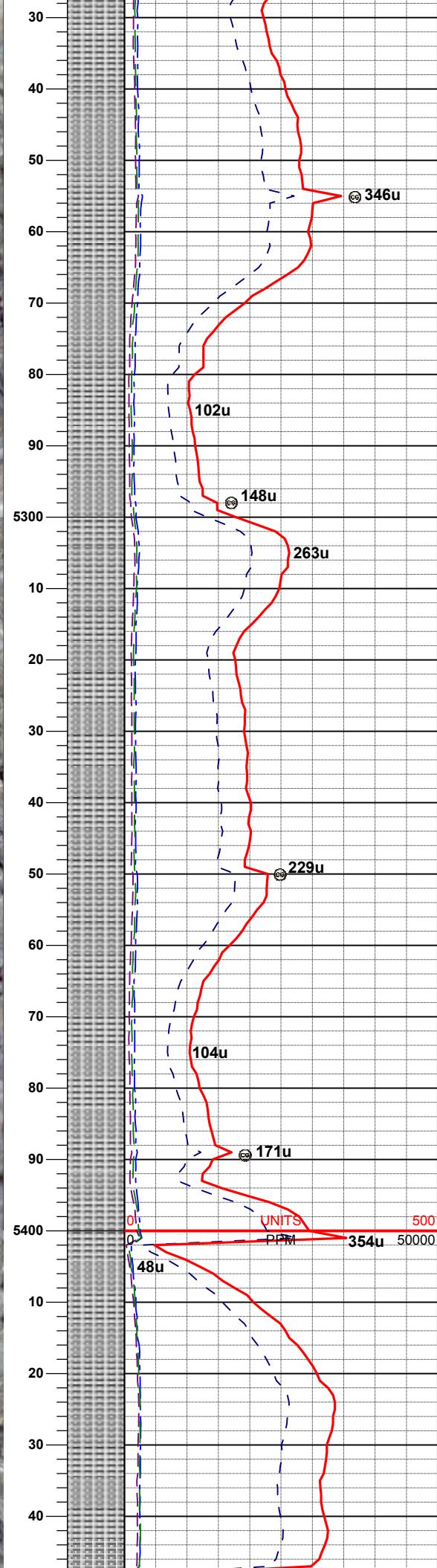
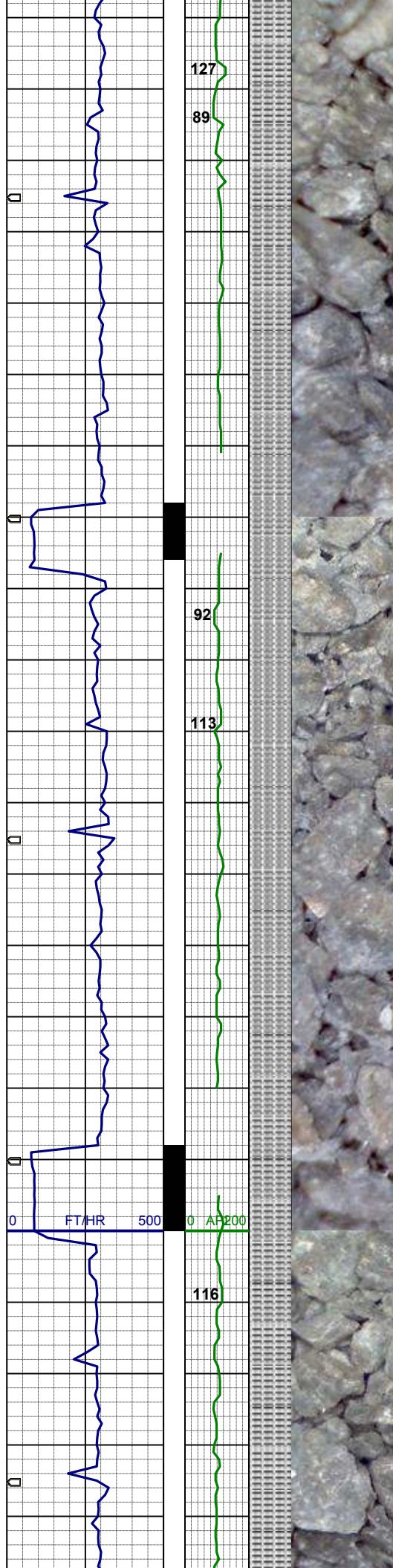


SLTYSH: lt-mgy, f-vgr, sbblkly-sbpsty, occ pty, sft-firm, arg, sl calc, pyr clus
 SS: wh-mgy, s&p, clr-trns, sme op, mgr, blkly-sblkly, sbrndd-sbng gr, mod srt, firm, m cmt, sil-arg mtx, vs calc, sl mica

MD 5070'
 INC 6.2°
 AZI 123.0°
 TVD 5045.2'

SLTYSH: m-dkg, sme tan, sbblkly-sbpsty, occ pty, sft-sl firm, arg, sl calc w/ occ calc frag, occ pyr, sdy ip, grdg-shyss

MD 5160'
 INC 3.8°
 AZI 121.4°
 TVD 5134.9'



MD 5250'
INC 2.9°
AZI 122.1°
TVD 5224.7'

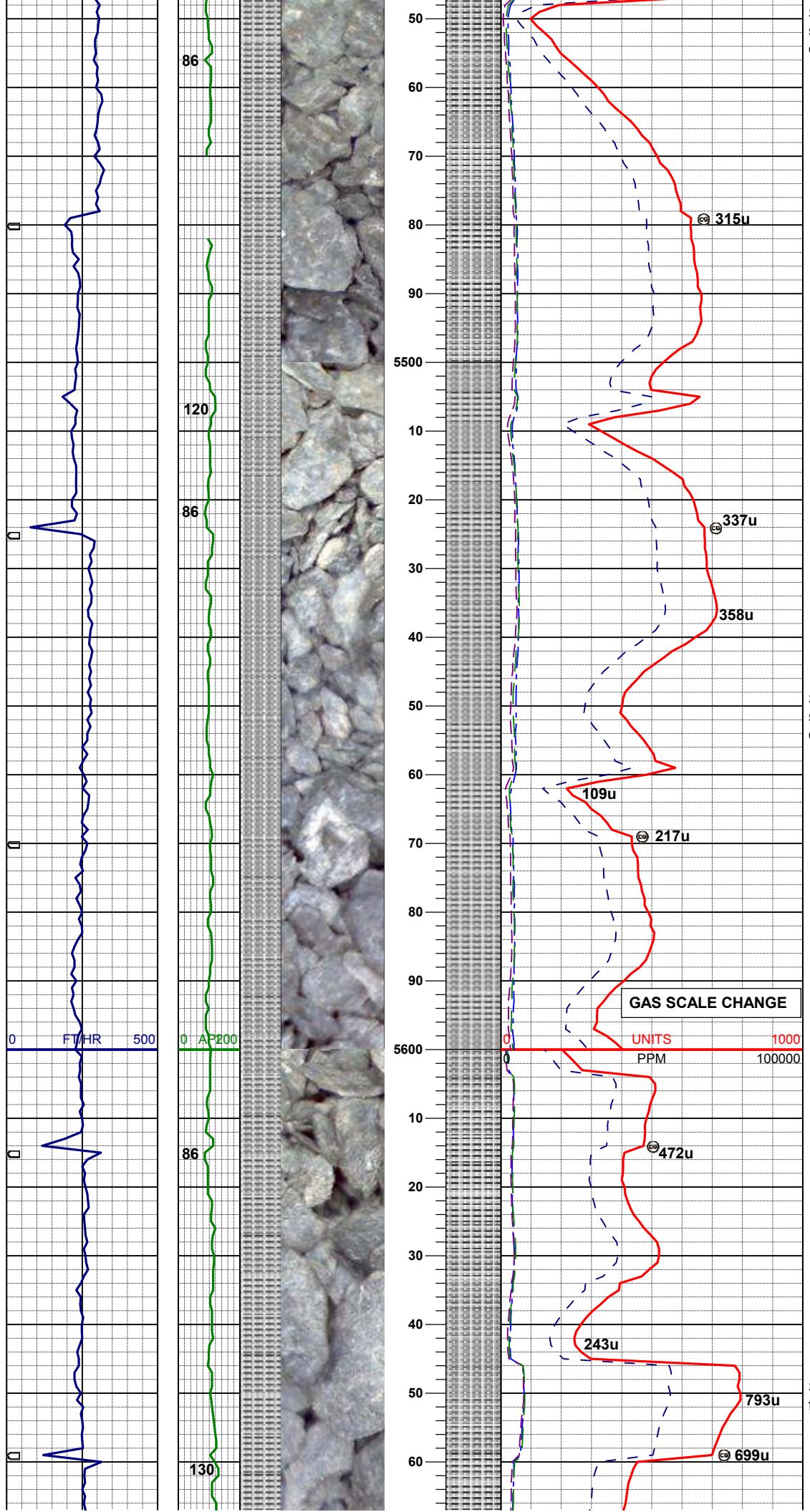
SLTYSH: m- dkg, sme tan, plty- sbpfty, sft- sl firm, arg, sl calc w/ occ calc frag, occ fos frag, sdy ip, grdg- shys

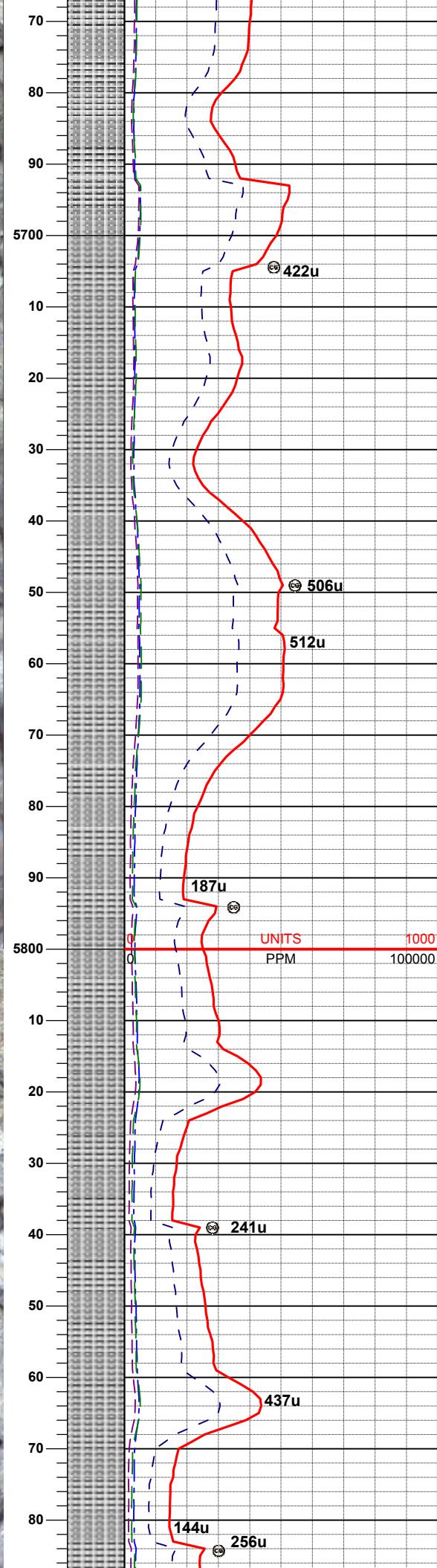
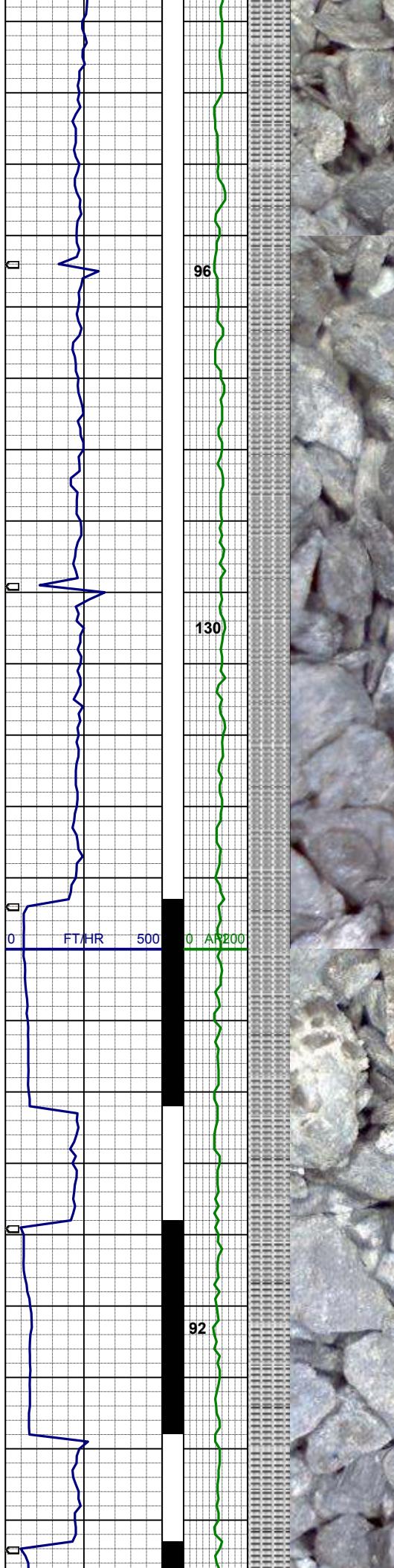
MD 5340'
INC 2.0°
AZI 143.7°
TVD 5314.7'

SLTYSH: mgy, sme tan, plty- sbpfty, sft- sl firm, arg, sl calc w/ occ calc frag, occ fos frag, sdy ip, grdg- shys

MD 5430'
INC 0.5°
AZI 270.6°
TVD 5404.6'

WT 9.3 / VIS 36





MD 5789'
INC 1.1°
AZI 302.4°
TVD 5763.6'

WT 9.55 / VIS 34

MD 5834'
INC 3.4°
AZI 348.0°
TVD 5808.6'

SLTYSH: m- dkgy, plty- sbplty, sft- sl firm, sl calc, tr fos frag, sdy ip

MD 5879'
INC 6.5°
AZI 352.5°
TVD 5853.4'

