

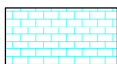
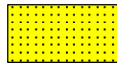
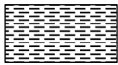
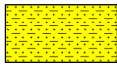


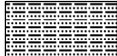







LOG created using LPLOT VH Version 3.0, July 10, 2013, Copyright (C) 1999-2009 Pason Systems Corp.

OPERATOR: NOBLE ENERGY
WELL: VIGILANT STATE AC16-07
LOCATION: SW NE SEC 16, T7N, R63W
COUNTY: WELD
STATE: COLORADO
SPOT: 1980' FNL 1980' FEL
ELEVATION: 4850' GL, 4863' KB
FIELD: WATTENBERG
SPUD DATE: 7/01/13
TD DATE: 7/06/13
DATES LOGGED: 7/04/13 - 7/10/13
DEPTHS LOGGED: 7300' - 8966'
LOGGERS: TERRY ACOMB, RYAN SULLIVAN
DRILLING FLUID: LSND MUD
DRILLING RIG: ENSIGN #121
API: 05-123-37248
LOG TYPE: Vertical
SCALE: 1:240 (5 inches per 100 feet)
REMARKS: Wellsite Geological Services Provided By Columbine Logging Inc.
 Latitude: N40.57600, Longitude: W104.43902

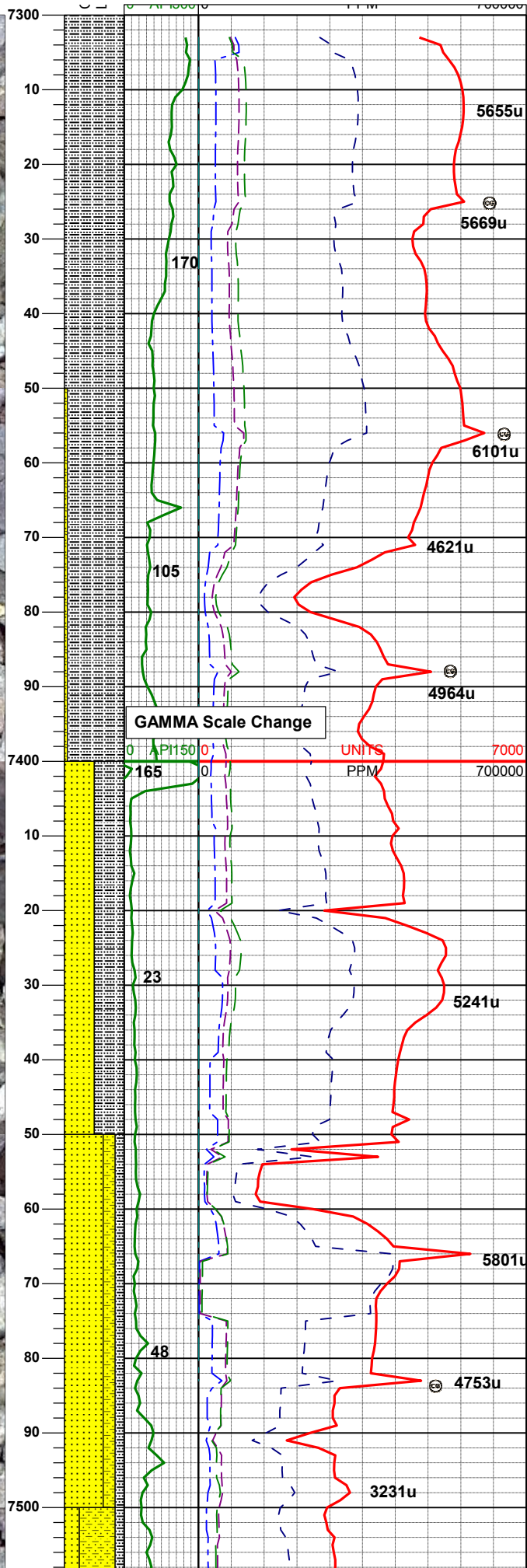
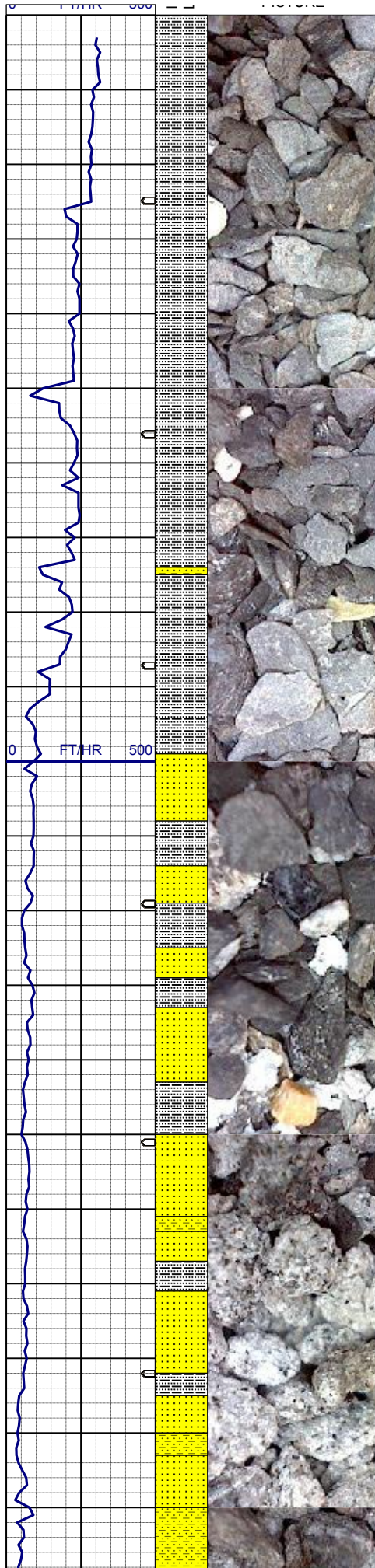
LITHOLOGIES

 Anhydrite	 Dolomitic Limestone	 Limestone
 Sandstone	 Shale	 Shaly Sandstone
 Shaly Siltstone	 Siltstone	 Silty Shale

ENGINEERING SYMBOLS

 Connection	 Connection Gas	 Midnight Depth
 Oil Show	 Questionable	

ROP	DEPTH (FEET)	GAMMA	CO2	PPM	LITHOLOGY DESCRIPTION
0	7000				GAS
0	7000				UNITS
0	700000				C1
0	700000				PPM
0	700000				C2
0	700000				PPM
0	700000				C3
0	700000				PPM
0	700000				C4
0	700000				PPM
0	700000				C5
0	700000				PPM
0	700000				CUTTINGS LITHOLOGY
0	700000				INTERPRETIVE LITHOLOGY
0	700000				PICTURE



**COLUMBINE LOGGING INC
RIGGED UP ON 7/04/2013
MANNED 2-PERSON LOGGING
WITH BLOODHOUND GAS
CHROMATOGRAPH UNIT #0570
BEGAN ON 7/05/2013**

SLTYSH: dkgy, gyblk, sbblky, sbfis - sbply, firm hom, rthy-grty, mtx; arg - slty, tr dism pyr, sl-m calc

**SURVEY
MD 7307'
INC 0.2°
AZI 46.9°**

SH: pred lt - med gy, occ dkgy - gyblk, sbblky, sbfis - sbply, firm hom, rthy-grty, mtx; arg -slty, tr ss, tr pyr clus, tr bent, v sl calc

**MUD WT: 8.8 VIS: 31 IN
MUD WT: 8.8 VIS: 30 OUT**

**LOGGER'S TOP J SAND
@ 7400' MD (PROG - 7384')**

**SURVEY
MD 7402'
INC 0.2°
AZI 119.5°**

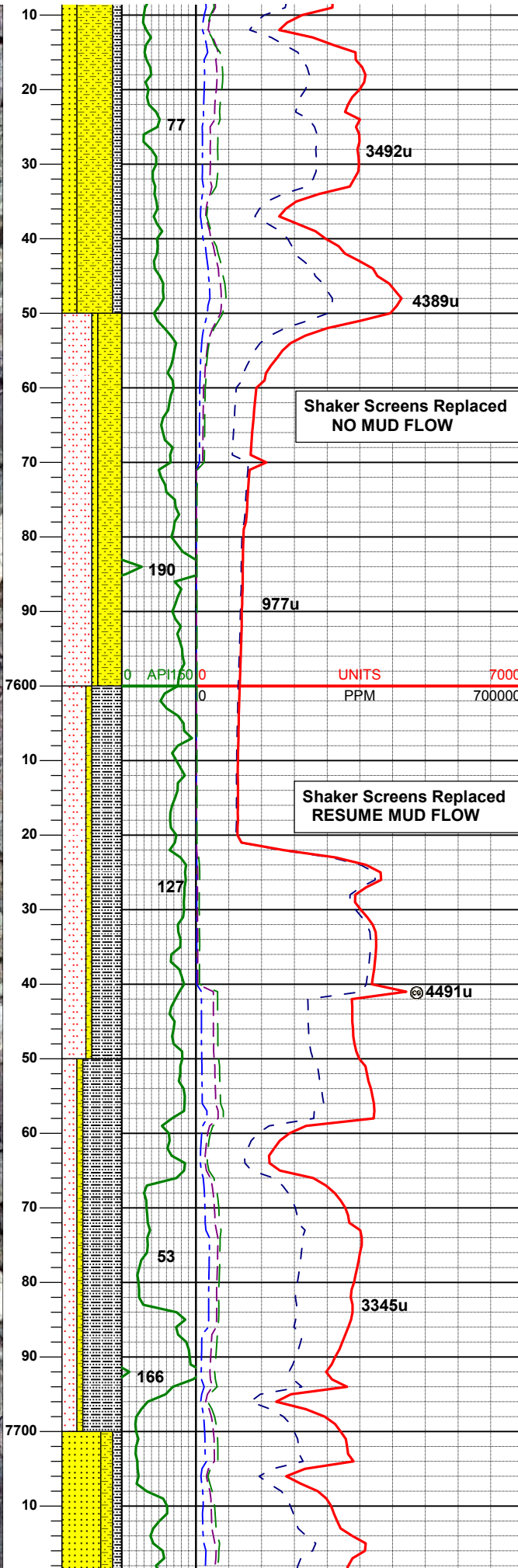
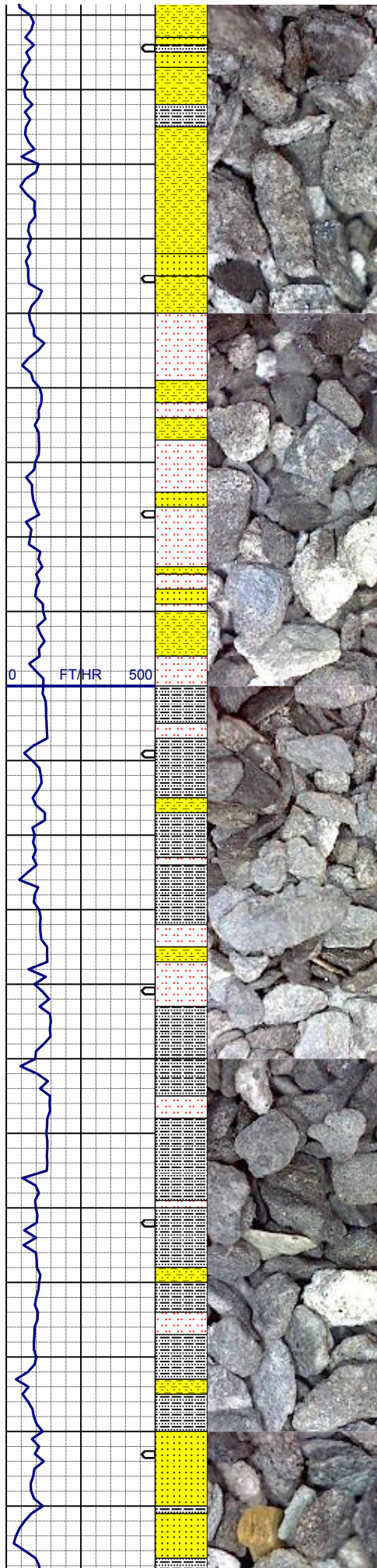
SS: trnsl, wh, sbblky - sbang, hd, brit, p - m srt, non calc; SLTYSH: lt-mgy, sbblky, sbfis - sbply, firm hom, rthy-grty, arg, vsity, sl calc

**MUD WT: 8.8 VIS: 30 IN
MUD WT: 8.8 VIS: 30 OUT**

SS: trnsl, wh - lt gy ish, sbblky - sbang, hd, brit, p - m srt, spec w/ mica frag, non calc; SHY: SS: m gy, f gr, grd from cln ss, sbang - sbblky, firm, brit, w srt, sme mica; SLTYSH: lt-mgy, sbblky, sbfis - sbply, firm hom, rthy-grty, arg, vsity, sl calc, com bent, abnt bri yel-orgn mnrl flor

**SURVEY
MD 7497'
INC 0.2°
AZI 349.3°**

MUD WT: 8.7 VIS: 31 IN



MUD WT: 8.8 VIS: 31 OUT

SHY: SS: m gy, f gr, sbang - sbbkly, firm, brit, w srt, sme mica; SS: trnsf, wh - lt gy ish, sbbkly - sbang, hd, brit, p - m srt, spec w/ mica frag, non calc; SLTYSH: lt-mgy, sbbkly, sbfis - sbply, firm hom, rthy-grty, arg, vslty, sl calc, tr bent, tr bri yel-org mnrl flr

MUD WT: 8.7 VIS: 32 IN
MUD WT: 8.8 VIS: 32 OUT

SLTST: mgy - dkgy, sbbkly, sbfis - sbply, frm hom, rthy-grty, arg, vslty, sl -m calc; SHY: SS: m gy - dk gy, f gr, sbang - sbbkly, firm, brit, w srt, non calc, tr ss, tr dism pyr, tr bent, tr dul org mnrl flr

SURVEY
MD 7592'
INC 0.2°
AZI 146.2°

Shaker Screens Replaced
NO MUD FLOW

Shaker Screens Replaced
RESUME MUD FLOW

SLTYSH: lt-mgy, sbbkly, sbfis - sbply, mod frm hom, rthy-grty, arg, dism pyr, non calc; SLTST: mgy - dkgy, sbbkly, sbfis - sbply, frm hom, rthy-grty, arg, vslty, sl-m calc; tr shyss, tr ss, tr bent, tr dul yel org mnrl flr

MUD WT: 8.7 VIS: 32 IN
MUD WT: 8.8 VIS: 32 OUT

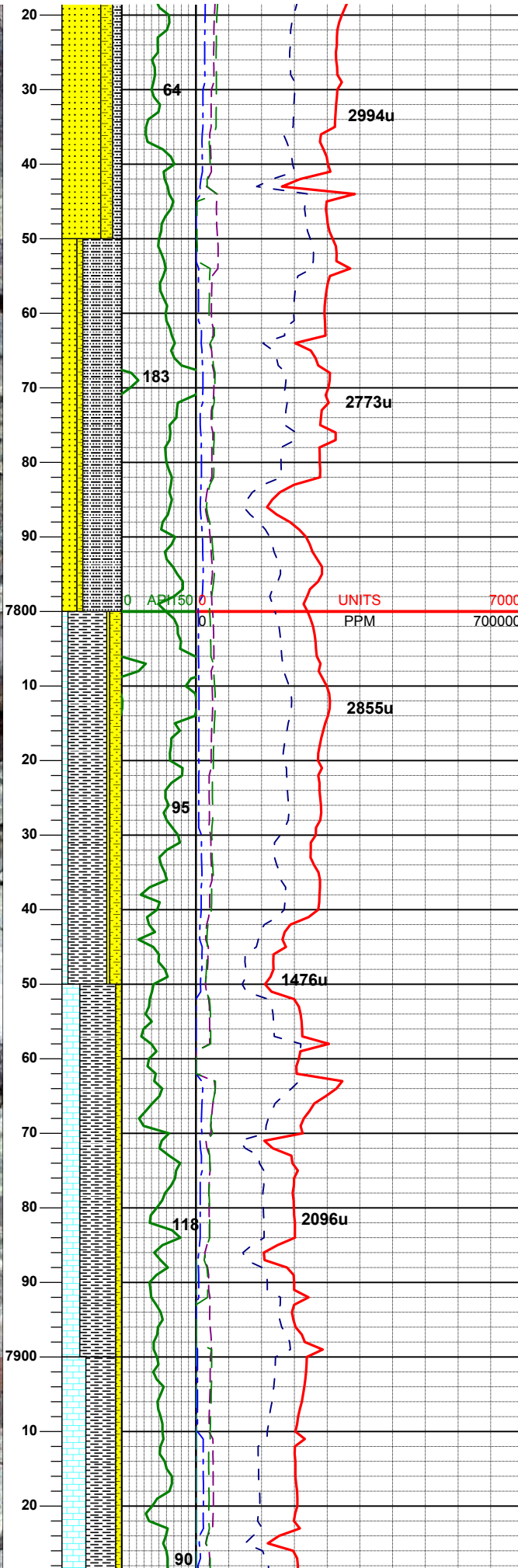
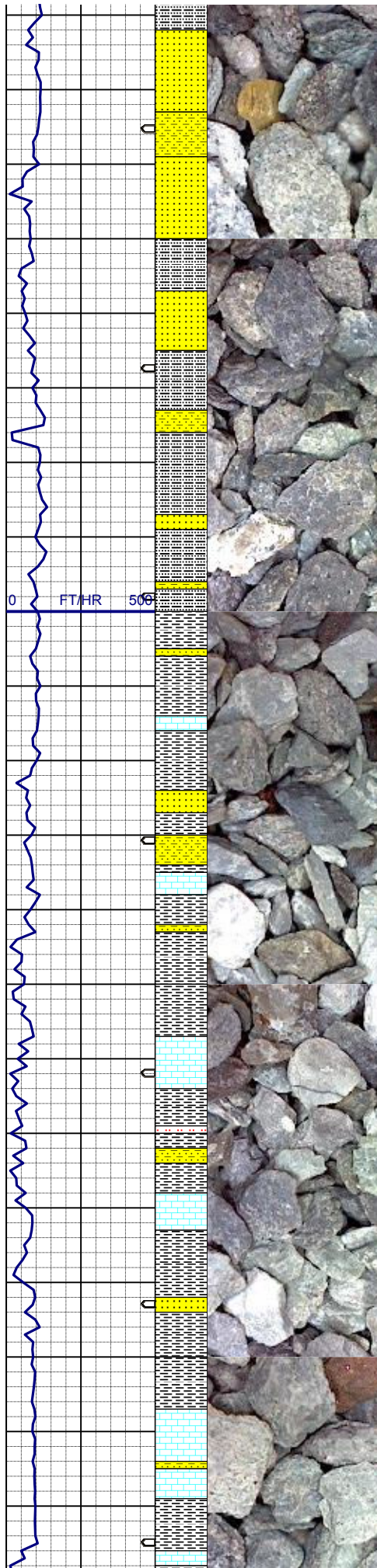
LOGGER'S TOP DAKOTA
@ 7645' MD (PROG - 7650')

SLTYSH: lt-mgy, sbbkly, sbfis - sbply, mod frm hom, rthy-grty, arg, dism pyr, non calc; SLTST: mgy - dkgy, sbbkly, sbfis - sbply, frm hom, rthy-grty, arg, vslty, sl-m calc; tr shyss, tr ss, tr bent, tr dul yel org mnrl flr

SURVEY
MD 7687'
INC 0.2°
AZI 37.8°

MUD WT: 8.7 VIS: 32 IN
MUD WT: 8.8 VIS: 32 OUT

SS: ord wh - av. sme pale an. hd.



brit, sbplty-sbblky, non calc, p - mod srt, f-vfgr, ang-sbang; SHLYSS:offwh, lt-mgy, vf gr, grdg ss; SLTYSH: lt-mgy, sbblky, sbfis - sbplty, frm hom, rthy-grty, arg, dism pyr, non calc, occ bent, occ yel - org mnrl flr

SH: pale gn, lt-mgy bl purp, sbblky, mod - firm, sbfis - sbplty - fri ip, rthy-grty, arg, sl-m calc; SS: wh, tr pale gn, hd, brit, sbplty-sbblky, p srt, v-vfgr, ang-sbang, non calc; SHLYSS:offwh, lt-mgy, vf gr, grdg ss; tr bent, tr dul yel org mnrl flr

MUD WT: 8.7 VIS: 32 IN
MUD WT: 8.7 VIS: 32 OUT

SURVEY
MD 7782'
INC 0.2°
AZI 355.8°

LOGGER'S TOP MORRISON
@ 7785' MD (PROG - 7774')

SH: pale gn, lt-mgy bl purp, sbblky, mod - firm, sbfis - sbplty - fri ip, rthy-grty, arg, sl-m calc; SHLYSS:offwh, lt-mgy, vf gr, grdg ss; LS: tan-lt brn gy, sbplty-sbblky, calc

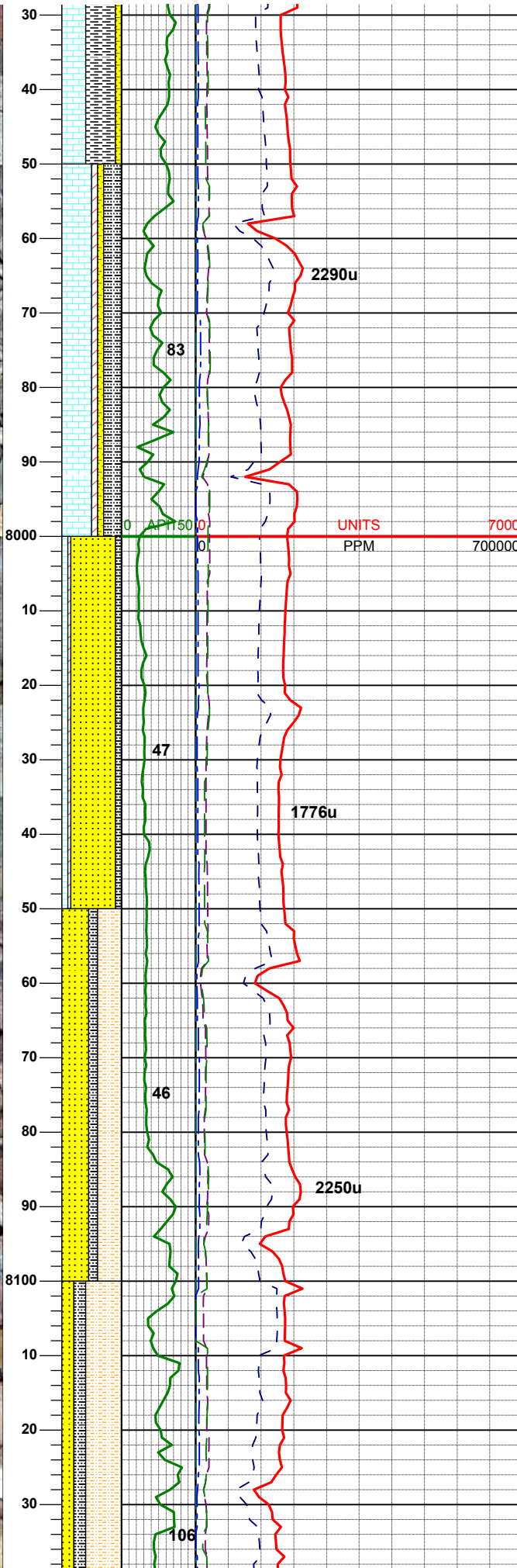
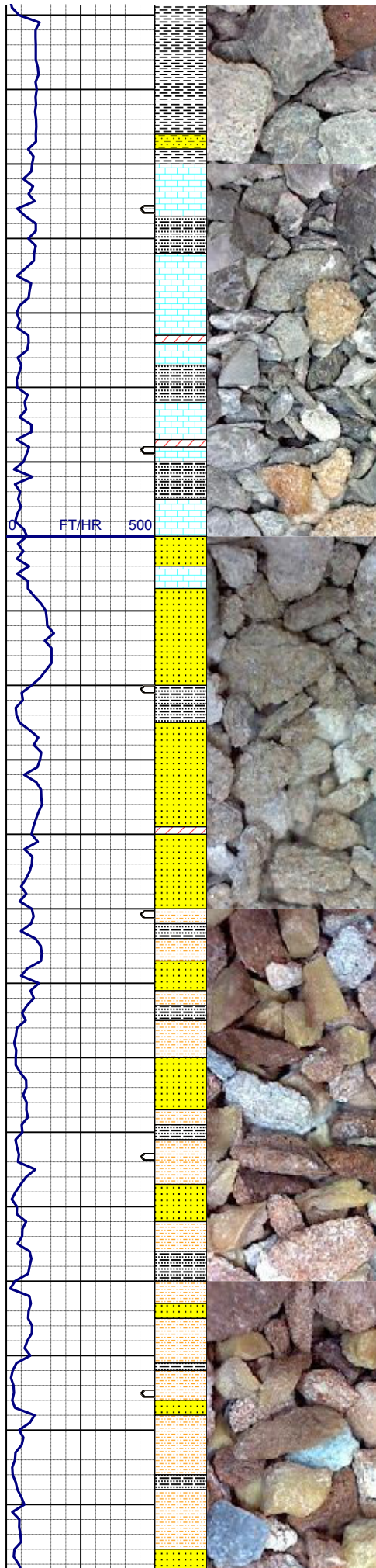
MUD WT: 8.7 VIS: 33 IN
MUD WT: 8.8 VIS: 32 OUT

SH: pale gn, lt-mgy bl purp, sbblky, mod - firm, sbfis - sbplty - fri ip, rthy-grty, arg, sl-m calc; LS: tan-lt brn gy, sbplty-sbblky, calc; SHLYSS: offwh, lt-mgy, vf gr, grdg ss

MUD WT: 8.7 VIS: 34 IN
MUD WT: 8.7 VIS: 34 OUT

SURVEY
MD 7876'
INC 0.2°
AZI 173.1°

SH: pale gn, lt-mgy bl purp, sbblky, mod - firm, sbfis - sbplty - fri ip, rthy-grty, arg, sl-m calc; LS: tan-lt brn gy, sbplty-sbblky, calc; SHLYSS: offwh, lt



-mgy, vf gr, grd ss

MUD WT: 8.7 VIS: 34 IN
MUD WT: 8.8 VIS: 34 OUT

SLTYSH: multi colored offwh, pale gn, purple, lt-mgy, sbblky, sbfis - sbply, frm hom, rthy-grty, arg, sl-m calc; LS: tan-lt brn gy, sbply-sbblky; ANHY: wh, sbblky, rndd, v sft

SURVEY MD 7971' INC 0.2° AZI 175.4°

LOGGER'S TOP ENTRADA @ 7978' MD (PROG - 7965')

RED BEDS START

MUD WT: 8.7 VIS: 35 IN
MUD WT: 8.8 VIS: 35 OUT

SS: pred pale orng, tr crm - blgy, vfgr, sbnd-sbang, firm, brit, mod - w sort, occ slty, non calc; SHLYSLTST: dk brn red-mar, sbply, brit, sl calc; SH: mgy, sbblky, sbfis - sbply, rthy-grty, arg, sl-m calc; SLTYSH: orgrd, lt-dkgy, sbblky, sbfis - sbply, frm hom, rthy-grty; LS: tan-lt brn gy, sbply-sbblky

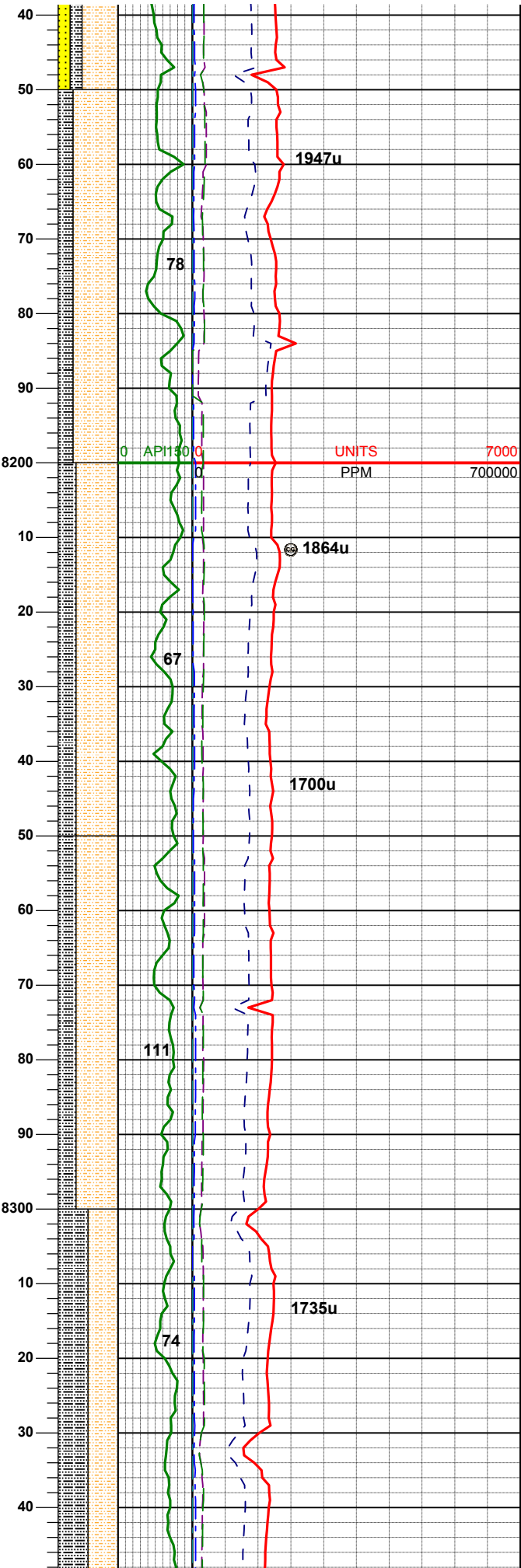
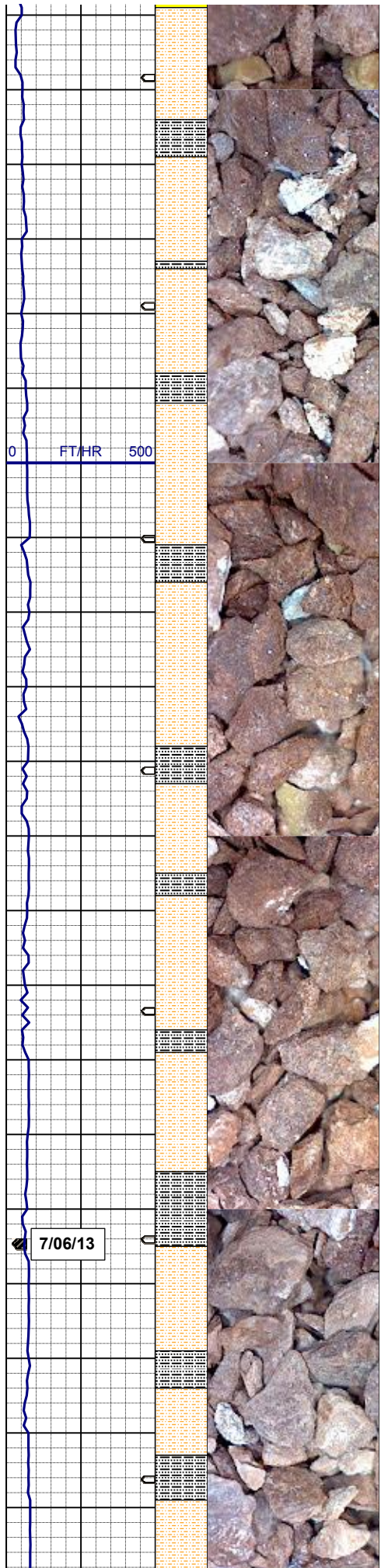
SURVEY MD 8066' INC 0.2° AZI 158.4°

SS: pred pale orng, tr crm - blgy, vfgr, sbnd-sbang, firm, brit, mod - w sort, occ slty, non calc; SHLYSLTST: dk brn red-mar, sbply, brit, sl calc; SH: mgy, sbblky, sbfis - sbply, rthy-grty, arg, sl-m calc; SLTYSH: orgrd, lt-dkgy, sbblky, sbfis - sbply, frm hom, rthy-grty

LOGGER'S TOP LYKINS @ 8061' MD (PROG - 8043')

MUD WT: 8.7 VIS: 34 IN
MUD WT: 8.7 VIS: 34 OUT

SHLYSLTST: orng red, sbply, brit, sl calc; SLTYSH: orng red, lt-dkgy, sbblky, sbfis - sbply, frm hom, rthy-grty; SS: pred pale orng, tr crm, vfgr, sbnd-sbang, firm, brit, non calc;



**SURVEY
MD 8161'
INC 0.2°
AZI 82.2°**

**MUD WT: 8.6 VIS: 34 IN
MUD WT: 8.7 VIS: 34 OUT**

SHLYSLTST: org red, sbply, firm, brit, vflgr, arg - cly mtx, sl calc;
SLTYSH: org red, tr lt-dkgy, sbblky, sbfis - sbply, firm, rthy-grty, non calc, tr ss, n mnrl flr

**MUD WT: 8.6 VIS: 34 IN
MUD WT: 8.6 VIS: 34 OUT**

SHLYSLTST: org red, sbply, firm, brit, vflgr, arg - cly mtx, sl calc;
SLTYSH: org red, tr lt-dkgy, sbblky, sbfis - sbply, firm, rthy-grty, non calc, tr ss, n mnrl flr

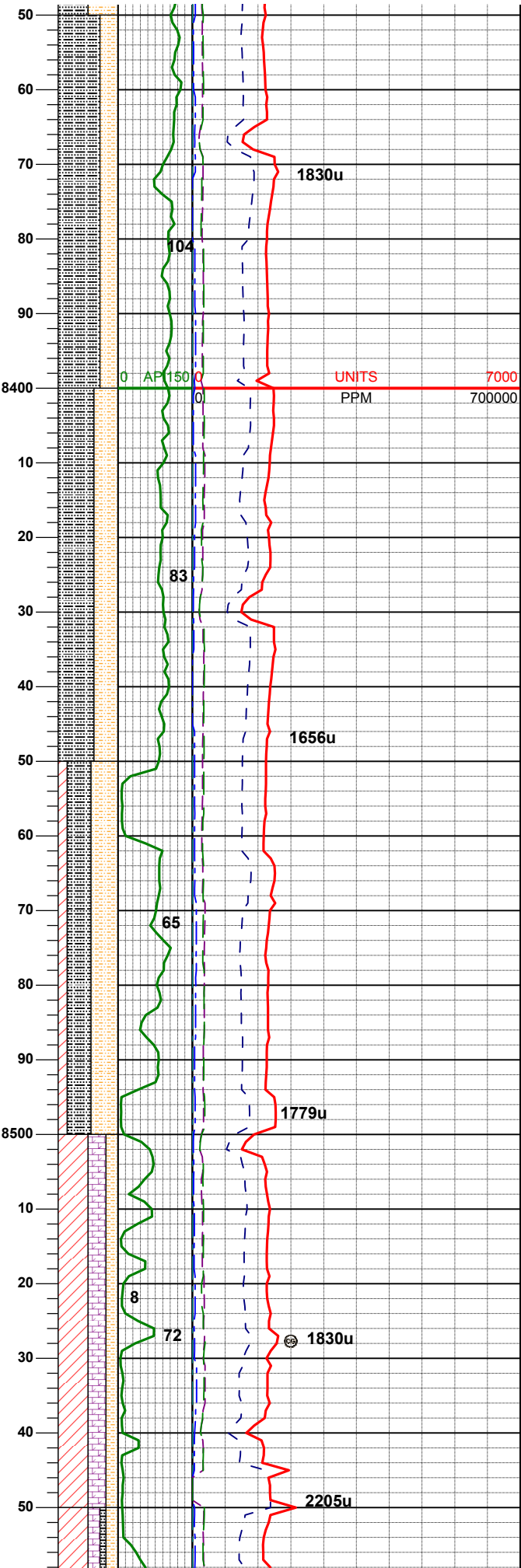
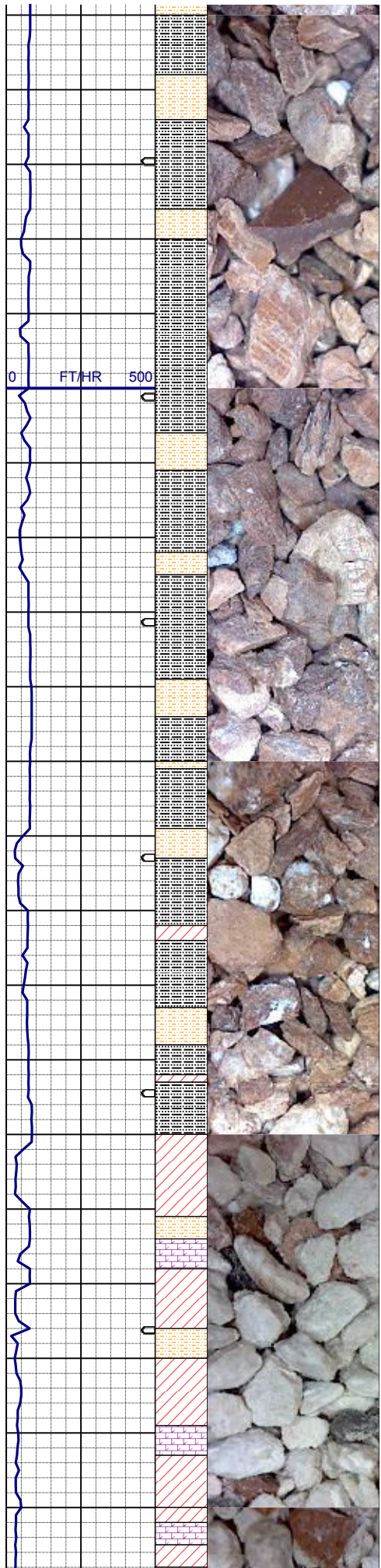
**SURVEY
MD 8256'
INC 0.2°
AZI 217.6°**

SHLYSLTST: org red, sbply, firm, brit, vflgr, arg - cly mtx, sl calc;
SLTYSH: org red, tr lt-dkgy, sbblky, sbfis - sbply, firm, rthy-grty, non calc, tr ss, n mnrl flr

**MUD WT: 8.6 VIS: 35 IN
MUD WT: 8.6 VIS: 34 OUT**

SHLYSLTST: org red, sbply, firm, brit, vflgr, arg - cly mtx, sl calc;
SLTYSH: org red, tr lt-dkgy, sbblky, sbfis - sbply, firm, rthy-grty, non calc, tr ss, n mnrl flr

SURVEY



MD 8351'
INC 0.2°
AZI 15.6°

SLTYSH: org red, tr lt-dkgy, sbblky, sbfis - sbplty, firm, rthy-grty, non calc, SHLYSLTST: org red, sbplty, firm, brit, vflgr, arg - cly mtx, sl calc; n mnrl flr

MUD WT: 8.6 VIS: 35 IN
MUD WT: 8.6 VIS: 35 OUT

SLTYSH: org red, tr lt-dkgy, sbblky, sbfis - sbplty, firm, rthy-grty, non calc, SHLYSLTST: org red, sbplty, firm, brit, vflgr, arg - cly mtx, sl calc; n mnrl flr

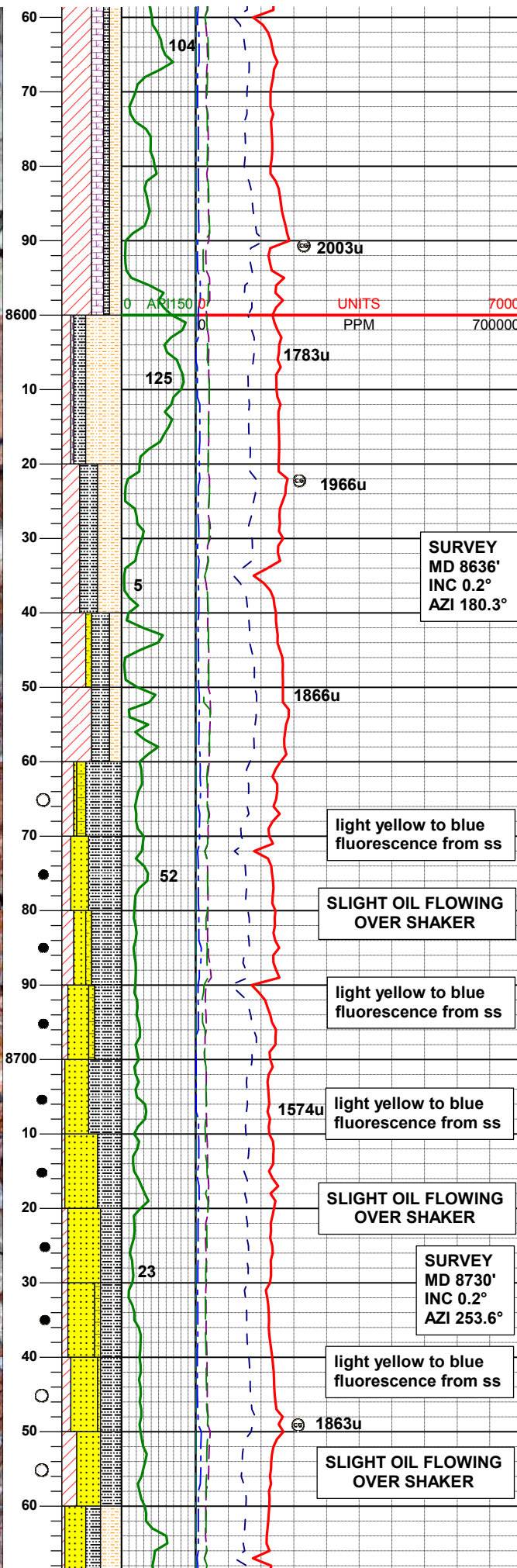
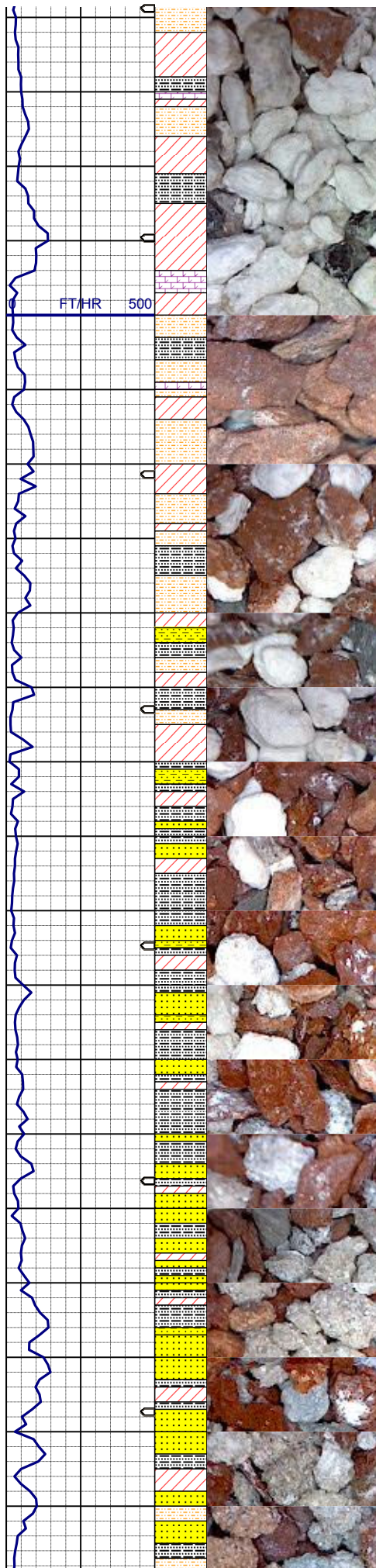
SURVEY
MD 8446'
INC 0.2°
AZI 37.6°

SLTYSH: org red, tr lt-dkgy, sbblky, sbfis - sbplty, firm, rthy-grty, non calc, SHLYSLTST: org red, sbplty, firm, brit, vflgr, arg - cly mtx, sl calc, ANHY: wh - chky wh - crm - lt gy, sbnd, v sft-sl firm

MUD WT: 8.6 VIS: 37 IN
MUD WT: 8.7 VIS: 37 OUT

ANHY: wh - chky wh - crm - lt gy, sbnd, v sft-sl firm; DOL LS: lt gy-gybrn, offwh, sbplty - irreg to sbblky, mod firm, rthy-sbwxy lus mtx, smwt calc; SLTYSH: org red, tr lt-mgy, sbblky, sbfis - sbplty, firm, rthy-grty, non calc, tr bent, tr dul yel org mnrl flr

SURVEY
MD 8541'
INC 0.2°
AZI 307.2°



ANHY: wh - chky wh - crm - lt gy, sbnd, v sft- sl firm; DOL LS: lt gy-gybrn, offwh, sbply - irreg to sblky, mod firm, rthy-sbwxy lus mtx, smwt calc; SHLY SLTST: org red, tr lt-mgy, sblky, sbfis - sbply, firm, rthy-grty, non calc, tr bent, tr dul yel org mnrl flr

MUD WT: 8.6 VIS: 36 IN
MUD WT: 8.7 VIS: 36 OUT

LOGGER'S TOP BLAINE
@ 8633' MD (PROG - 8603')

SHLYSLTST: org red, sbply, firm, brit, vflgr, arg - cly mtx, sl calc, SLTYSH: org red, tr lt-dkgy, sblky, sbfis - sbply, firm, rthy-grty, non calc; ANHY: wh - chky wh - crm - lt gy, sbnd, v sft- sl firm, tr dol ls

SHLYSLTST: org red, sbply, firm, brit, vflgr, arg - cly mtx, sl calc, SLTYSH: org red, tr lt-dkgy, sblky, sbfis - sbply, firm, rthy-grty, non calc; ANHY: wh - chky wh - crm - lt gy, sbnd, v sft- sl firm,

MUD WT: 8.6 VIS: 36 IN
MUD WT: 8.7 VIS: 36 OUT

ANHY: wh - chky wh - crm - lt gy, sbnd, v sft- sl firm; SLTYSH: org red, tr lt-dkgy, sblky, sbfis - sbply, firm, rthy-grty, non calc; SHLYSLTST: org red, sbply, firm, brit, vflgr, arg - cly mtx, sl calc, SLTYSH: org red, occ lt-dkgy, sblky, sbfis - sbply, firm, rthy-grty, non calc; ANHY: wh - chky wh - crm - lt gy, sbnd, v sft- sl firm; SHLY SS: org red, sbply, firm, brit, vflgr, arg - cly mtx, clr - trnsl gr, tr dirty org mtx, hd, brit, fgr - med gr, sbrnd-rnd, sme sbang, non-sl calc, tr ss w/ mod blk oil stain, vis flr

LOGGER'S TOP LYONS SS
@ 8665' MD (PROG - 8641')

SLTYSH: org red, occ lt-dkgy, sblky, sbfis - sbply, firm, rthy-grty, non calc; SS: wh, clr, trnsl, hd, fri, p - mod sort, vf-gr-mgr, sbrnd-rnd, sme sbang, occ uncons, non-sl calc, mod blk oil stain, occ tan oil stn, tr anhy, vis flr

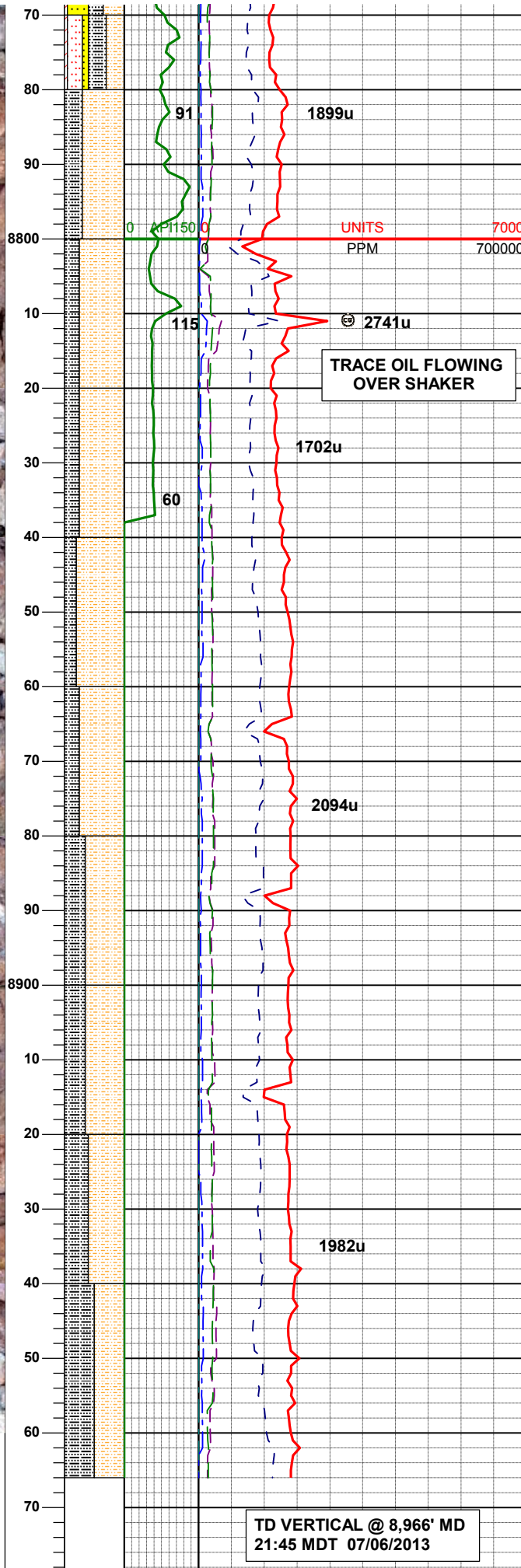
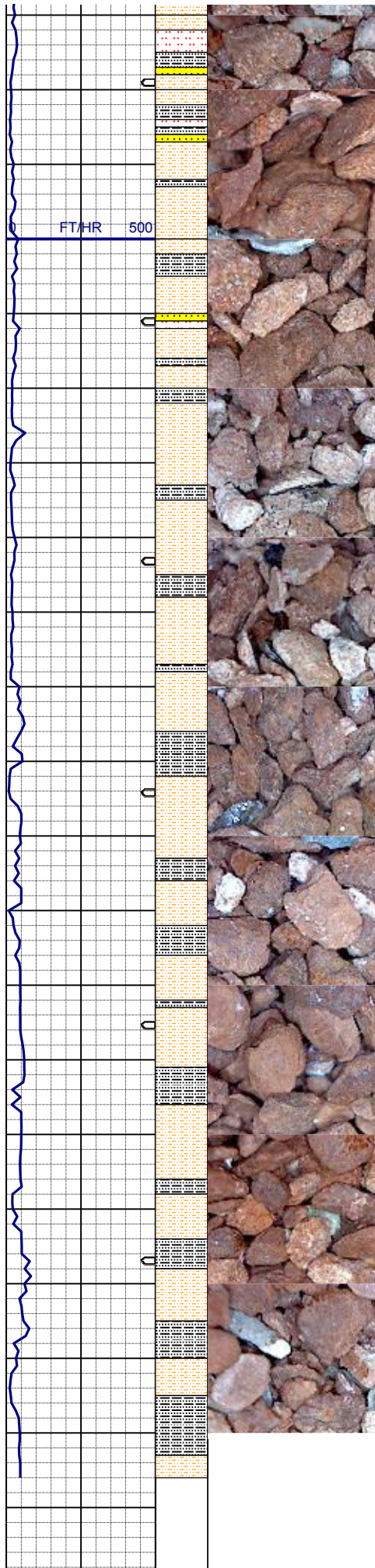
SLTYSH: org red, occ lt-dkgy, sblky, sbfis - sbply, firm, rthy-grty, non calc; SS: wh, clr, trnsl, hd, fri, p - mod sort, vf-gr-mgr, sbrnd-rnd, sme sbang, occ uncons, non-sl calc, mod blk oil stain, occ to abnt tan oil stn, tr anhy, vis flr

SS: wh, clr, trnsl, hd, fri, p - mod sort, vf-gr-mgr, sbrnd-rnd, sme sbang, occ uncons, non-sl calc, mod blk oil stain, occ to abnt tan oil stn, SLTYSH: org red, occ lt-dkgy, sblky, sbfis - sbply, firm, rthy-grty, non calc; tr anhy, tr shly ss, occ vis flr

LOGGER'S TOP SATANKA
@ 8766' MD (PROG - 8745')

MUD WT: 8.6 VIS: 40 IN
MUD WT: 8.7 VIS: 37 OUT

SHLYSLTST: pale org, sblky - sbfis, hd, brit, grd to sltst and to slty



sh, non calc; SLTYSH: org red, occ lt-dkgy, sbbiky, sbfis - sbply, firm, rthy -grty, non calc; SLTST: pk - lt org, sbbiky - sbfis, mod hd, brit, non calc; tr anhy, tr ss, tr vis flor

SHLYSLTST: pale org, sbbiky - sbfis, hd, brit, grd to sltst and to slty sh, non calc; SLTYSH: org red, occ lt-dkgy, sbbiky, sbfis - sbply, firm, rthy -grty, non calc; tr anhy, tr ss

MUD WT: 8.7 VIS: 37 IN
MUD WT: 8.7 VIS: 37 OUT

SHLYSLTST: pale org, sbbiky - sbfis, hd, brit, grd to sltst and to slty sh, non calc; SLTYSH: org red, occ lt-dkgy, sbbiky, sbfis - sbply, firm, rthy -grty, non calc; tr anhy, tr ss

SURVEY
MD 8825'
INC 0.2°
AZI 110.4°

SHLYSLTST: pale org, sbbiky - sbfis, hd, brit, grd to sltst and to slty sh, non calc; SLTYSH: org red, occ lt-dkgy, sbbiky, sbfis - sbply, firm, rthy -grty, non calc; tr anhy, tr ss

SURVEY
MD 8886'
INC 0.2°
AZI 312.9°

MUD WT: 8.7 VIS: 36 IN
MUD WT: 8.8 VIS: 37 OUT

SHLYSLTST: pale org, sbbiky - sbang, brit, grd to sltst and to slty sh, non calc; SLTY: SH: red brn, sbply - sbang, firm, tr sltst, non calc

SHLYSLTST: pale org, sbbiky - sbang, brit, grd to sltst and to slty sh, non calc; SLTY: SH: red brn, sbply - sbang, firm, tr sltst, non calc

MUD WT: 8.7 VIS: 35 IN
MUD WT: 8.8 VIS: 35 OUT

TD VERTICAL @ 8,966' MD
21:45 MDT 07/06/2013

