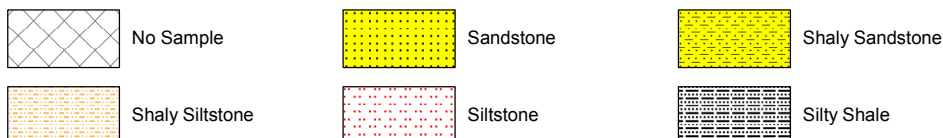


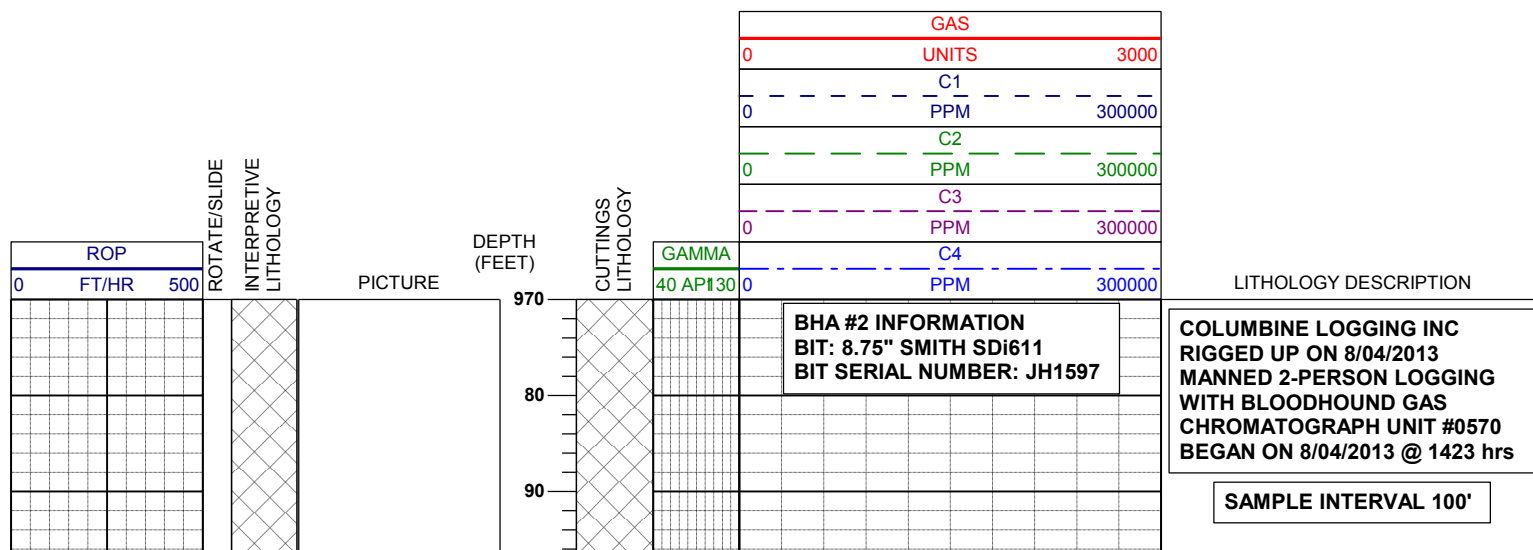
LOG created using LPLOT VH Version 3.0, August 10, 2013, Copyright (C) 1999-2009 Pason Systems Corp.

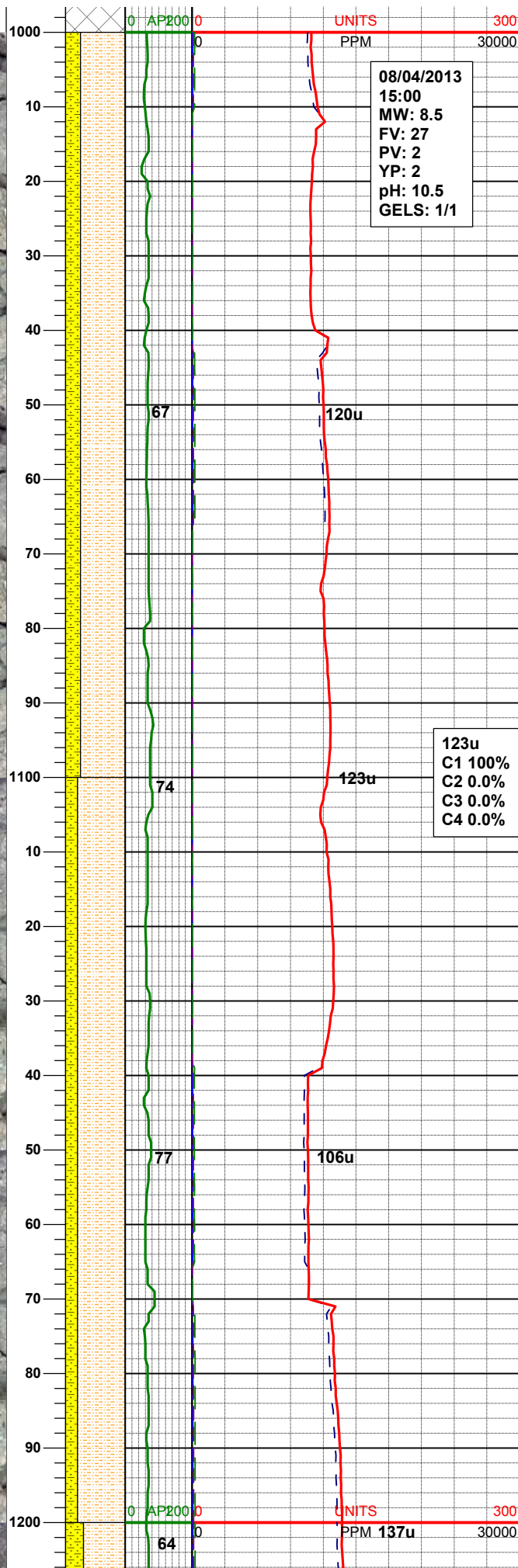
OPERATOR: NOBLE ENERGY
WELL: WALHERT AC23-69HN
LOCATION: NENE SEC 23 T7N R63W
COUNTY: WELD
STATE: COLORADO
SPOT: 280' FNL, 280' FEL
ELEVATION: 4,790' GL, 4,803' KB
FIELD: WATTENBERG
SPUD DATE: 8/03/13
TD DATE: 8/09/13
DATES LOGGED: 8/04/13 - 8/10/13
DEPTHS LOGGED: 1,000' - 10,841'
LOGGERS: RYAN SULLIVAN, MOHAMMED ALMUBARAK
DRILLING FLUID: H2O, LSND MUD
DRILLING RIG: ENSIGN # 121
API: 05-123-37156
LOG TYPE: Vertical
SCALE: 1:240 (5 inches per 100 feet)
REMARKS: Wellsite Geological Services Provided By Columbine Logging Inc.
 Latitude: N40.565890, Longitude: W-104.3948

LITHOLOGIES

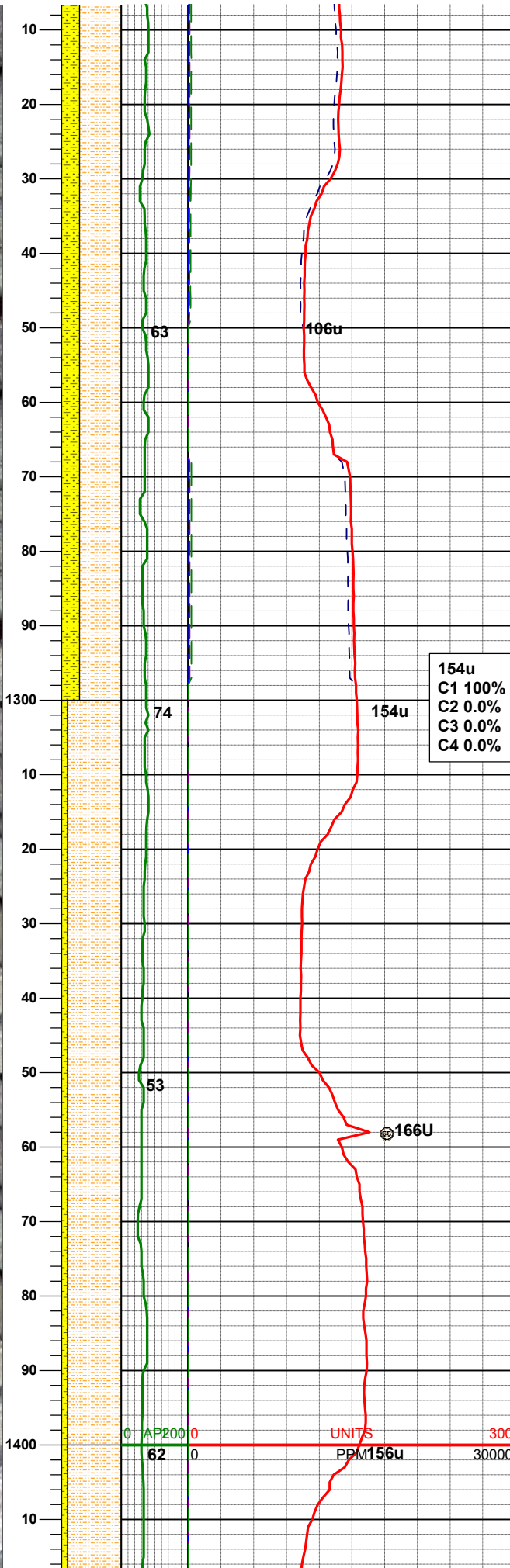
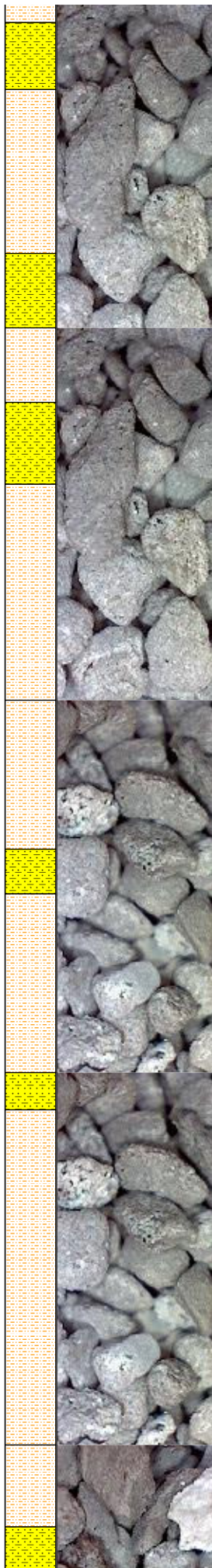
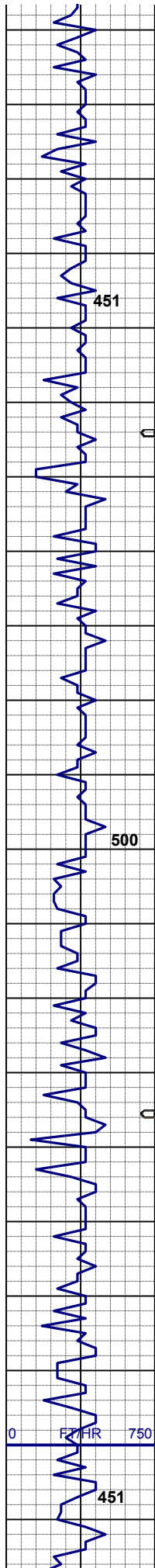


ENGINEERING SYMBOLS





MUD WT: 8.4 VIS: 26 IN
MUD WT: 8.6 VIS: 26 OUT



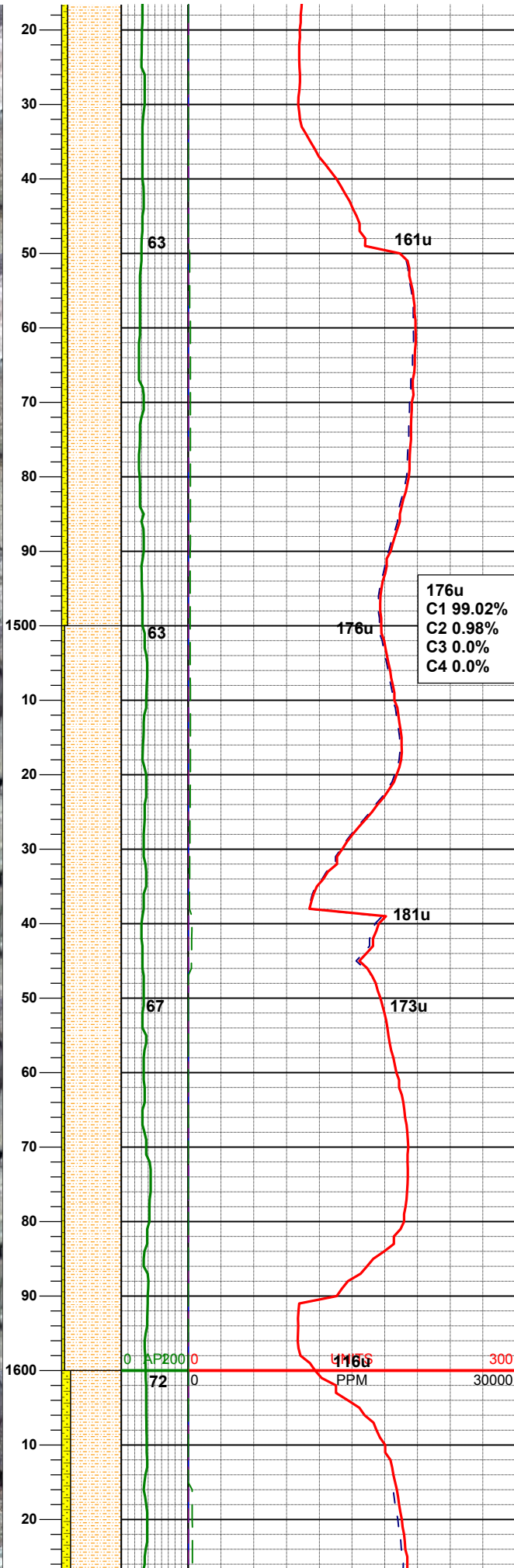
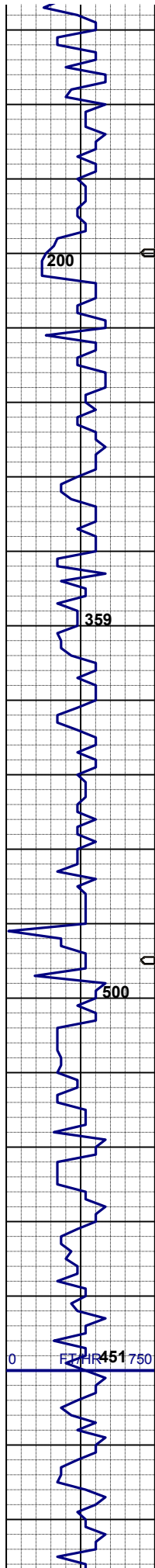
SURVEY @
MD 1213'
INC 0.3°
AZI 309.3°
TVD 1212.98'

SHYSS: lt-mgy, f-mfgr, sbrd-sbang,
mod-psrt, sft, p por, arg cmt, sl calc,
spec w/ mica, grdg to; SHYSLTST: lt-
mgy, occ dk gy, f-vfgr, sbrd-sbang,
mod srt, arg mtx, sme ss, slow.
diffuse v sl stmg dull bl mky cut, n flor
stn or od

SURVEY @
MD 1305'
INC 0.4°
AZI 293.3°
TVD 1304.97'

SHYSS: lt-mgy, f-mfgr, sbrd-sbang,
mod-psrt, sft, p por, arg cmt, sl calc,
spec w/ mica, grdg to; SHYSLTST: lt-
mgy, occ dk gy, f-vfgr, sbrd-sbang,
mod srt, arg mtx, sme ss, slow.
diffuse v sl stmg dull bl mky cut, n flor
stn or od

SURVEY @
MD 1399'
INC 0.4°
AZI 288.4°
TVD 1398.97'



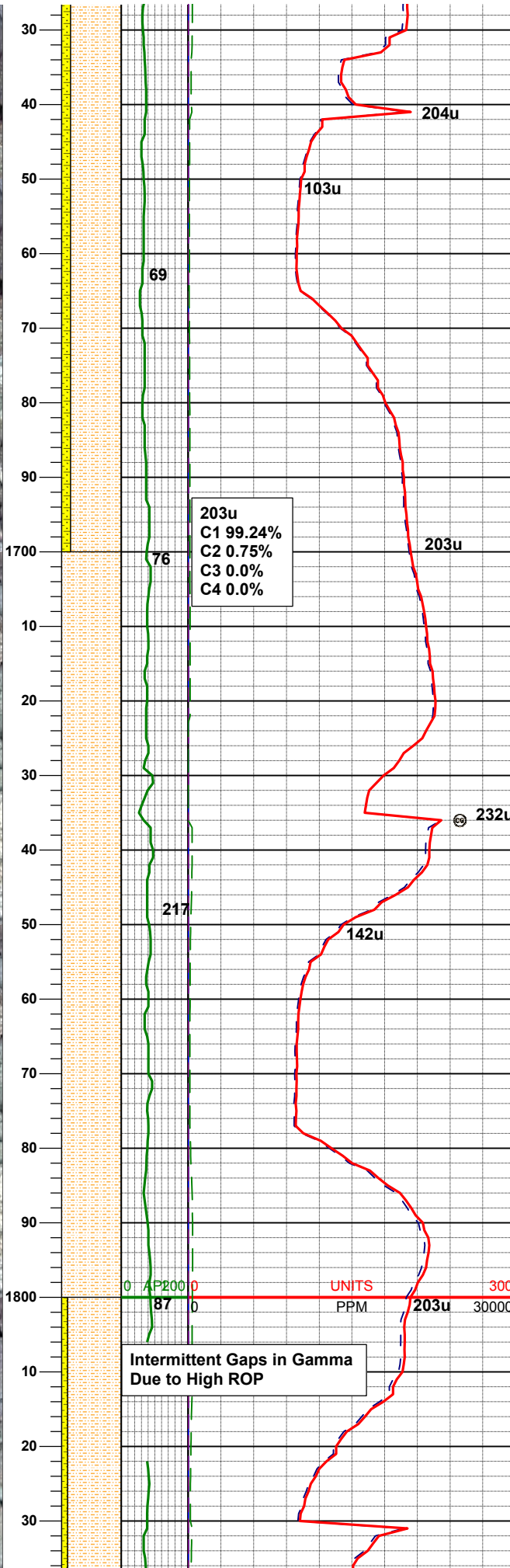
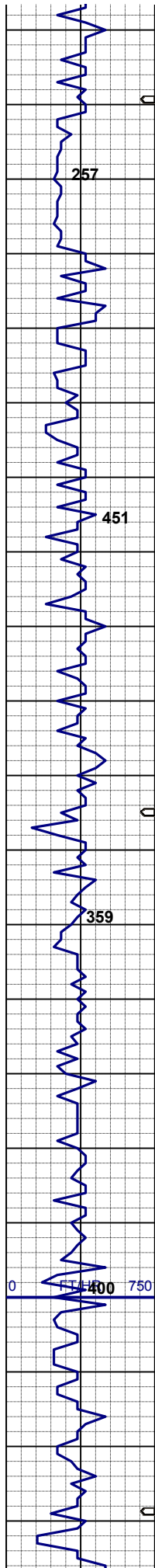
SHYSS: lt-mgy, f-mfgr, sbrd-sbang,
mod-psrt, sft, p por, arg cmt, sl calc,
spec w/ mica, grdg to; SHYSLTST: lt-
mgy, occ dk gy, f-vfgr, sbrd-sbang,
mod srt, arg mtz, sme ss, slow.
diffuse v sl stmg dull bl mky cut, n flor
stn or od

SURVEY @
MD 1494'
INC 0.7°
AZI 268.9°
TVD 1493.97'

SHYSS: lt-mgy, f-mfgr, sbrd-sbang,
mod-psrt, sft, p por, arg cmt, sl calc,
spec w/ mica, grdg to; SHYSLTST: lt-
mgy, occ dk gy, f-vfgr, sbrd-sbang,
mod srt, arg mtz, sme ss, slow.
diffuse v sl stmg dull bl mky cut, n flor
stn or od

SURVEY @
MD 1589'
INC 0.6°
AZI 328.5°
TVD 1588.96'

MUD WT: 8.4 VIS: 26 IN
MUD WT: 8.4 VIS: 26 OUT



SHYSS: lt-mgy, f-mfgr, sbdr-sbang, mod-psrt, sft, p por, arg cmt, sl calc, spec w/ mica, grdg to; SHYSLTST: lt-mgy, occ dk gy, f-vfgr, sbdr-sbang, mod srt, arg mtx, sme ss, slow. diffuse v sl stmg dull bl mky cut, n flor stn or od

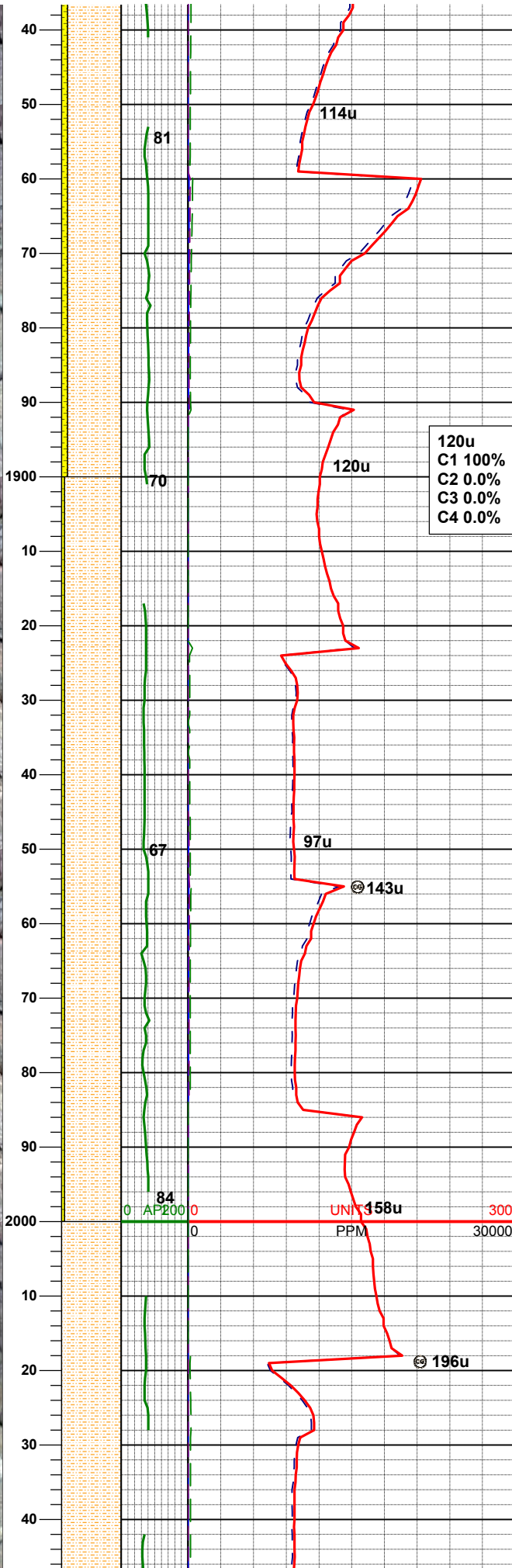
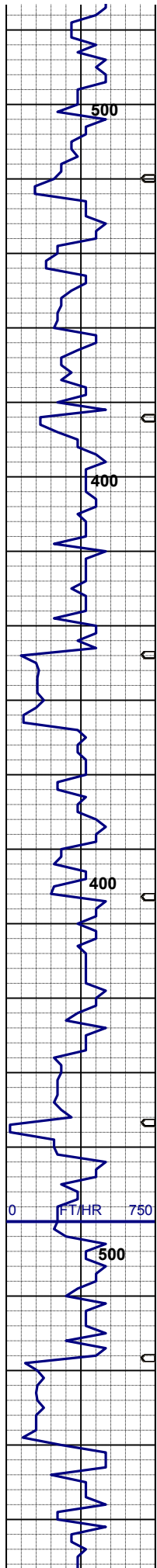
SURVEY @
MD 1684'
INC 0.6°
AZI 324.1°
TVD 1683.96'

SURVEY @
MD 1778'
INC 0.4°
AZI 309.8°
TVD 1777.95'

SHYSLTST: lt-mgy, occ dk gy, f-vfgr, sbdr-sbang, mod srt, arg mtx, sme ss, slow. diffuse v sl stmg dull bl mky cut, n flor stn or od

MUD WT: 8.5 VIS: 26 IN
MUD WT: 8.5 VIS: 26 OUT

SURVEY @
MD 1873'
INC 0.2°
AZI 212.8°
TVD 1872.95'

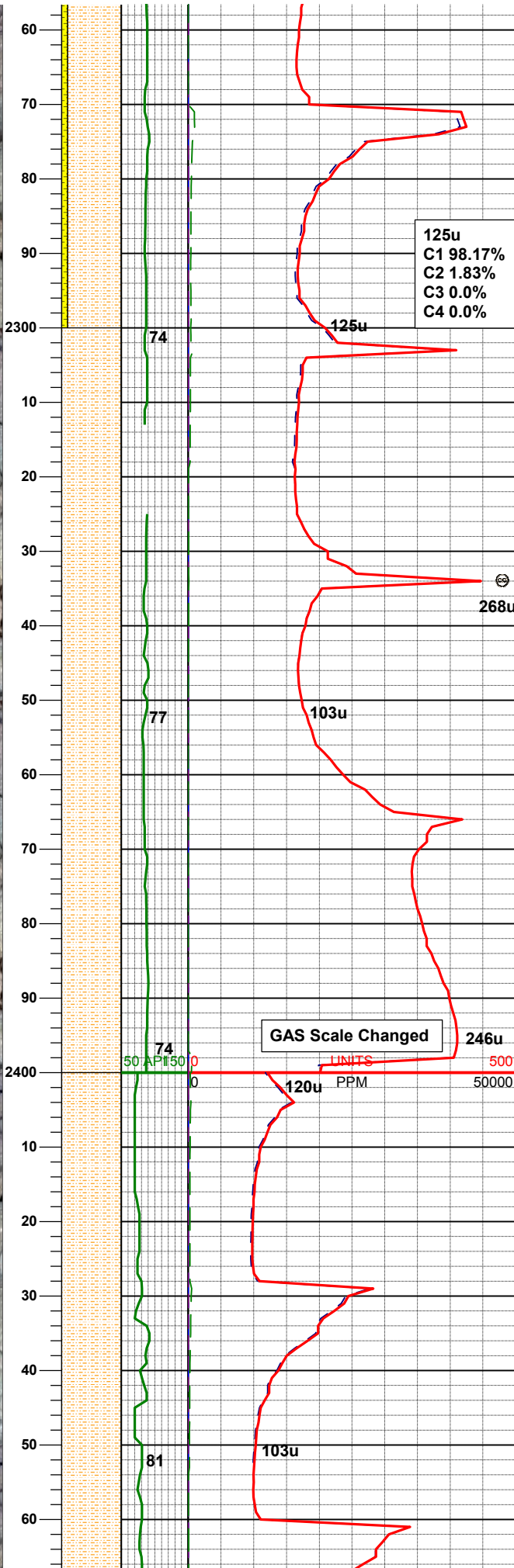
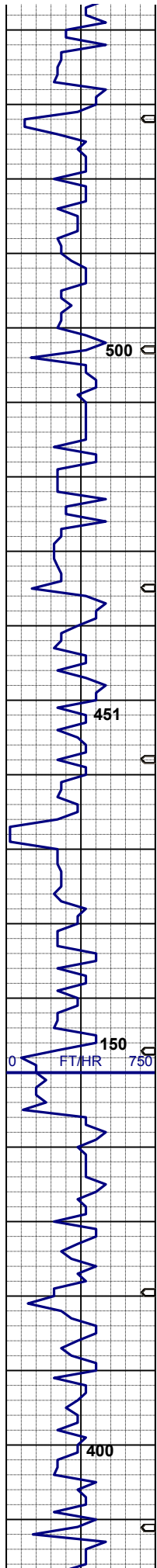


SHYSS: lt-mgy, f-mfgr, sbrd-sbang, mod-psrt, sft, p por, arg cmt, sl calc, spec w/ mica, grdg to; SHYSLTST: lt-mgy, occ dk gy, f-vfgr, sbrd-sbang, mod srt, arg mtz, sme ss, slow. diffuse v sl stmg dull bl mky cut, n flor stn or od

SURVEY @
MD 1968'
INC 1.8°
AZI 346.2°
TVD 1967.94'

SHYSS: lt-mgy, f-mfgr, sbrd-sbang, mod-psrt, sft, p por, arg cmt, sl calc, spec w/ mica, grdg to; SHYSLTST: lt-mgy, occ dk gy, f-vfgr, sbrd-sbang, mod srt, arg mtz, sme ss, slow. diffuse v sl stmg dull bl mky cut, n flor stn or od

SURVEY @
MD 2063'
INC 3.2°
AZI 348.5°
TVD 2062.84'



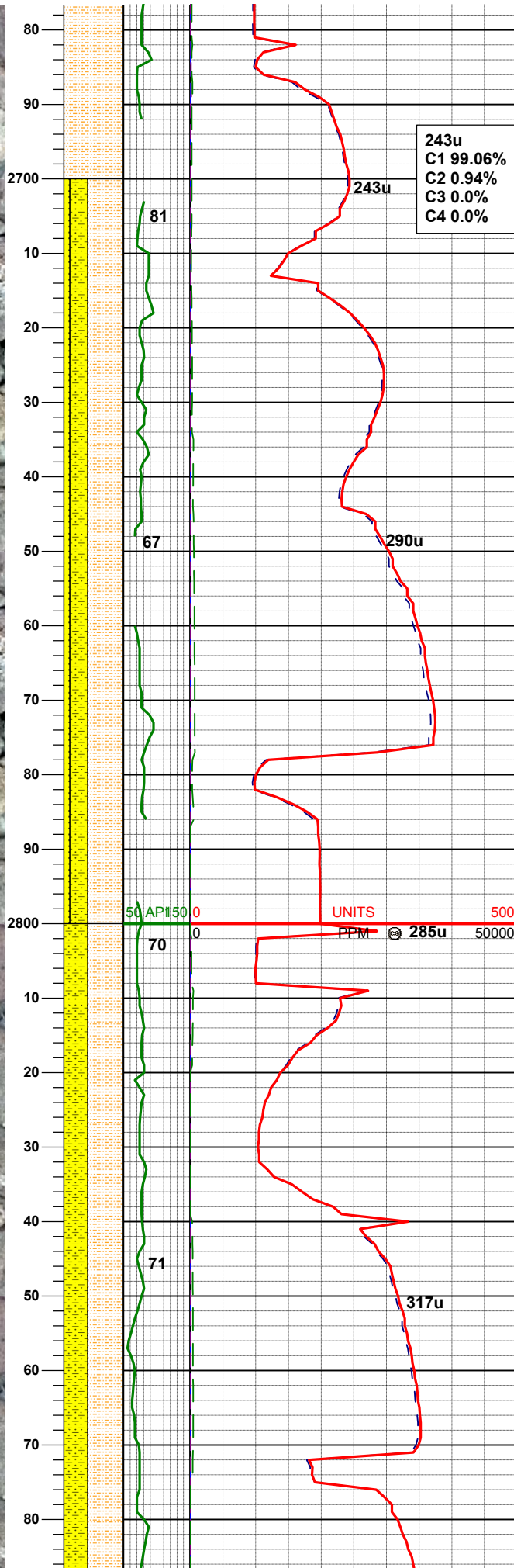
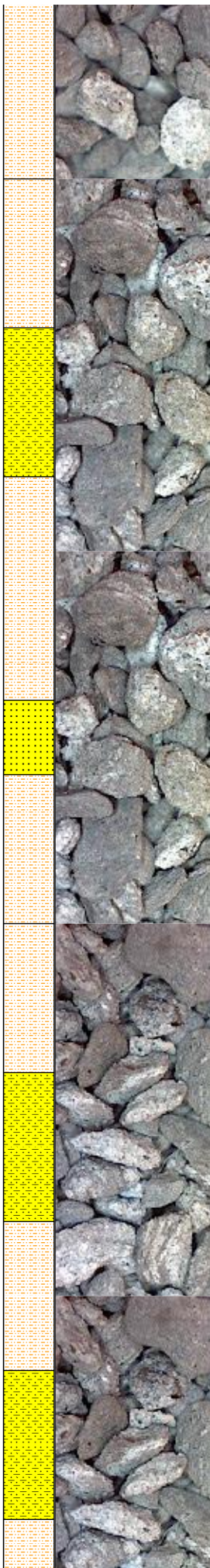
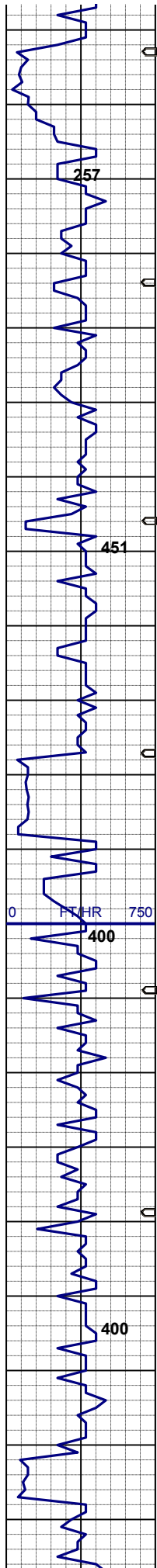
stn or od

SURVEY @
MD 2347'
INC 5.4°
AZI 343.9°
TVD 2345.85'

SHYSLTST: lt-mgy, occ dk gy, f-vfgr, sbrd-sbang, mod srt, arg mtx, sme ss, slow. diffuse v sl stmg dull bl mky cut, n flor stn or od

SURVEY @
MD 2442'
INC 5.5°
AZI 354.7°
TVD 2440.43'

SHYSLTST: lt-mgy, occ dk gy, mod firm, f-vfgr, sbrd-sbang, mod srt, arg mtx, slow. diffuse v sl stmg dull bl mky cut, n flor stn or od



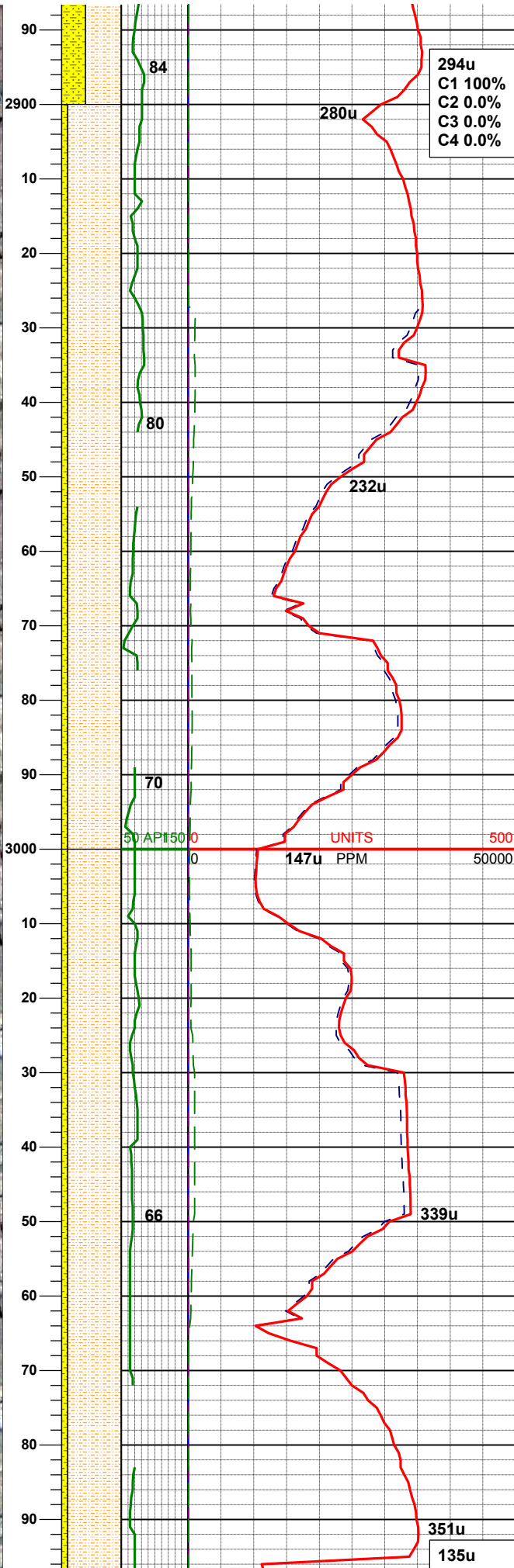
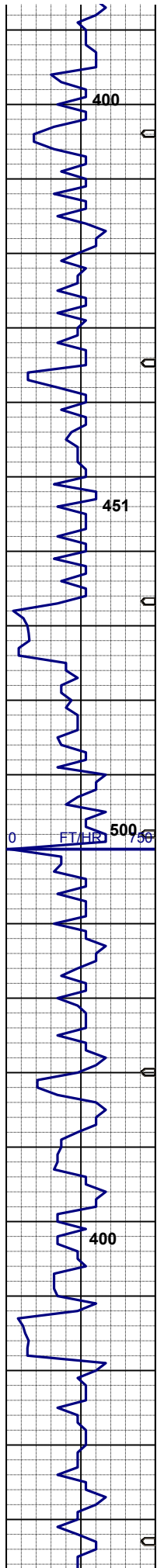
SURVEY @
MD 2726'
INC 5.3°
AZI 346.4°
TVD 2723.30'

SHYSLTST: lt-mgy, occ dk gy, mod firm, brit - smwt fri ip, f-vfgr, sbrd-sbang, mod srt, arg mtz, grdng to; SHYSS: lt-mgy, vf-fgr, sbrd-sbang, mod-psrt, pred hd, brit, p por, arg cmt, sl calc, spec w/ mica, tr ss, slow. diffuse v sl stmg dull bl mky cut, n flor stn or od

SURVEY @
MD 2821'
INC 5.4°
AZI 2.2°
TVD 2817.89'

MUD WT: 8.4 VIS: 26 IN
MUD WT: 8.5 VIS: 26 OUT

SHYSLTST: lt-mgy, occ dk gy, f-vfgr, sbrd-sbang, mod srt, arg mtz, grdng to; SHYSS: lt-mgy, vf-fgr, sbrd-sbang, mod-psrt, hd, brit, p por, arg cmt, sl calc, spec w/ mica, tr ss, slow. diffuse v sl stmg dull bl mky cut, n flor stn or od

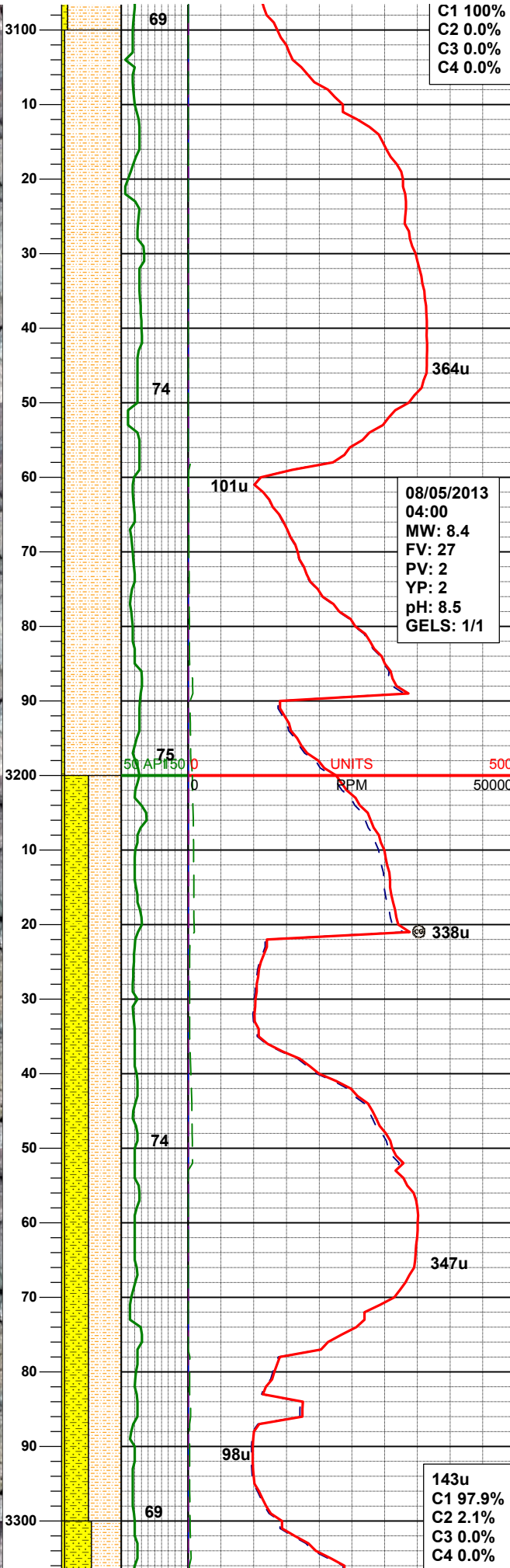
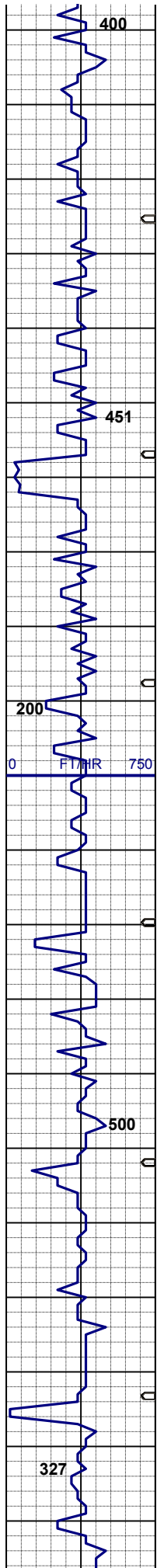


SURVEY @
MD 2916'
INC 5.7°
AZI 345.9°
TVD 2912.45'

SHYSLTST: lt-mgy, occ dk gy, mod firm, brit - smwt fri ip, f-vfgr, sbdr-sbang, mod srt, arg mtx, grdng to; SHYSS: lt-mgy, vf-fgr, sbdr-sbang, mod-psrt, hd, brit, p por, arg cmt, sl calc, spec w/ mica, tr ss, slow. diffuse v sl stmg dull bl mky cut, n flor stn or od

SURVEY @
MD 3011'
INC 3.7°
AZI 3.7°
TVD 3007.12'

SHYSLTST: lt-mgy, occ dk gy, mod firm, brit - smwt fri ip, f-vfgr, sbdr-sbang, mod srt, arg mtx, grdng to; SHYSS: lt-mgy, vf-fgr, sbdr-sbang, mod-psrt, hd, brit, p por, arg cmt, sl calc, spec w/ mica, tr ss, slow. diffuse v sl stmg dull bl mky cut, n flor stn or od



C1 100%
C2 0.0%
C3 0.0%
C4 0.0%

08/05/2013
04:00
MW: 8.4
FV: 27
PV: 2
YP: 2
pH: 8.5
GELS: 1/1

143u
C1 97.9%
C2 2.1%
C3 0.0%
C4 0.0%

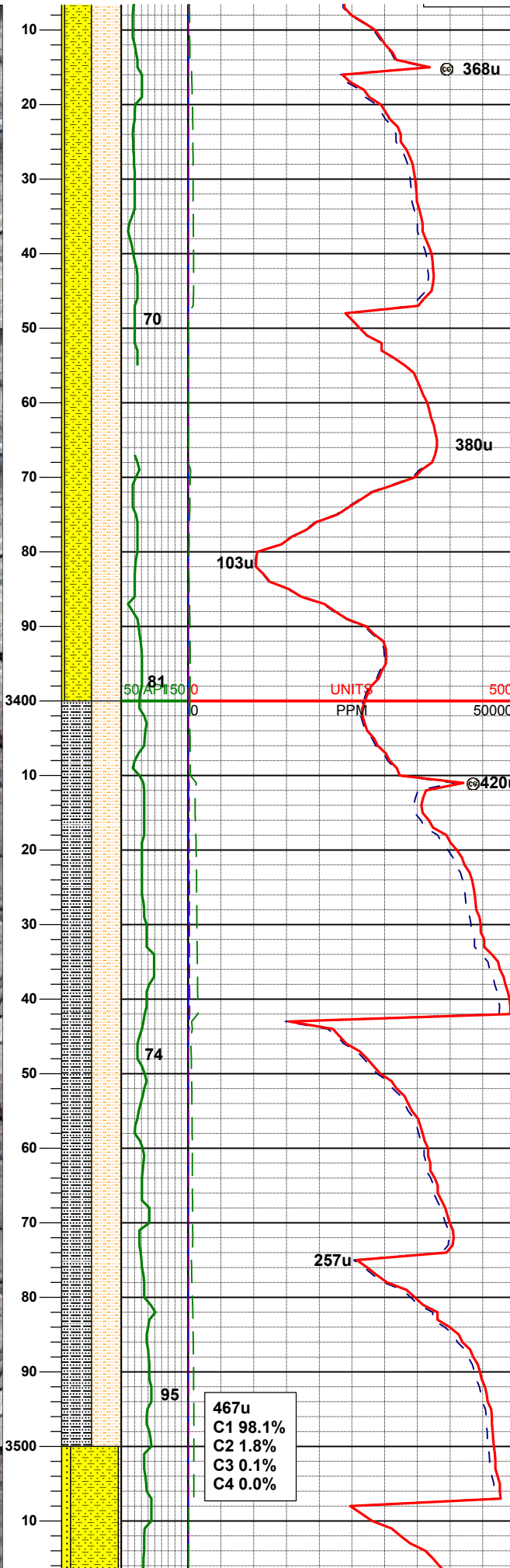
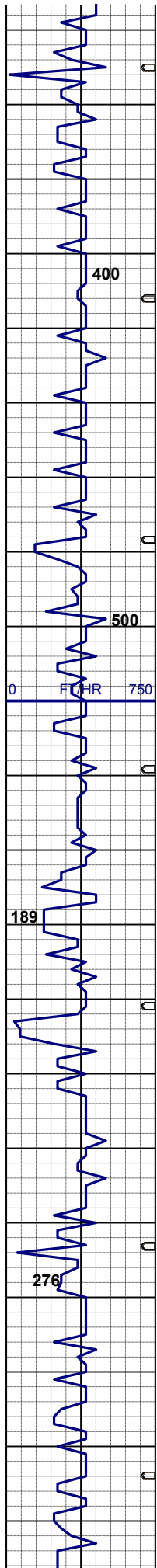
SURVEY @
MD 3106'
INC 5.50°
AZI 2.10°
TVD 3101.81'

SHYSLTST: lt-mgy, occ dk gy, mod firm, brit - smwt fri ip, f-vfgr, sbrd-sbang, mod srt, arg mtx, grdng to; SHYSS: lt-mgy, vf-fgr, sbrd-sbang, mod-psrt, hd, brit, p por, arg cmt, sl calc, spec w/ mica, sme ss, slow. diffuse v sl stmg dull bl mky cut, n flor stn or od

SURVEY @
MD 3200'
INC 4.60°
AZI 357.0°
TVD 3195.45'

SHYSLTST: lt-mgy, occ dk gy, mod - firm, smwt fri ip, vf gr, sbrd-sbang, mod srt, arg mtx, grdng to; SHYSS: lt-mgy, pred hd, brit, vf-fgr, sbrd-sbang, mod srt, p por, arg cmt, sl calc, spec w/ mica, w/ sme ss, slow. diffuse v sl stmg dull bl mky cut, n flor stn or od

SURVEY @
MD 3295'
INC 4.70°
AZI 355.6°
TVD 3290.14'



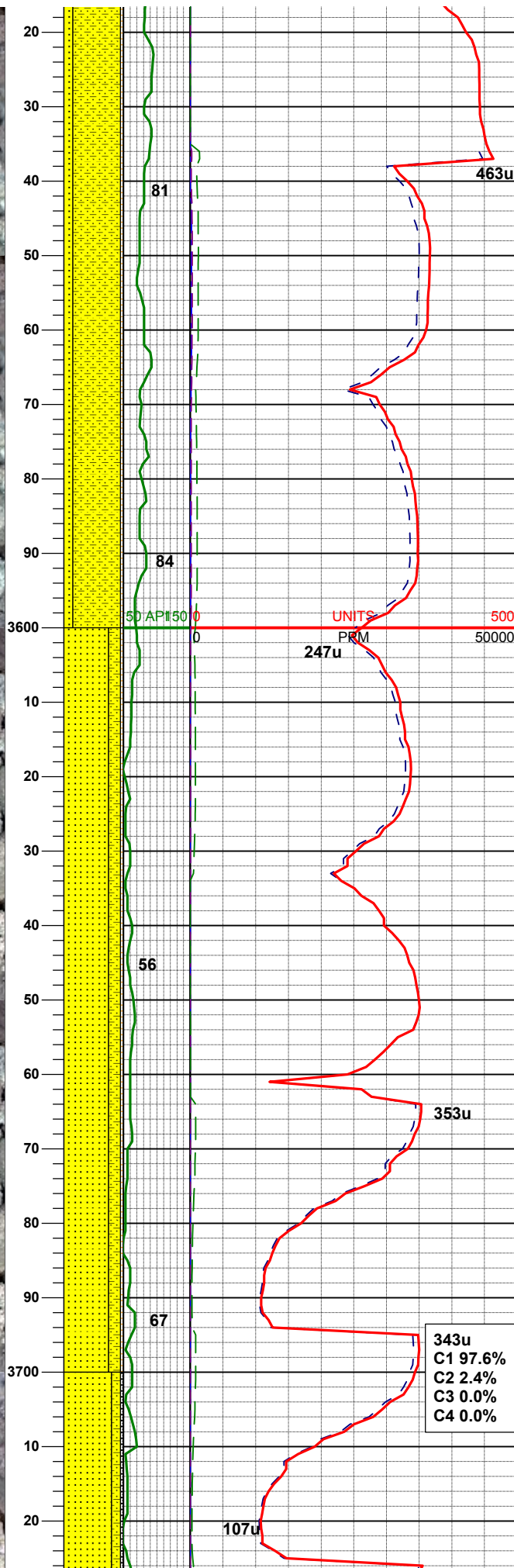
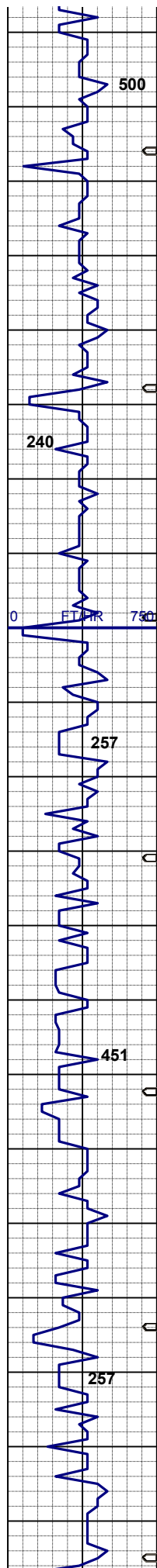
SHYSLTST: lt-mgy, occ dk gy, mod - firm, smwt fri ip, vf gr, sbrd-sbang, mod srt, arg mtx, grdng to; SHYSS: lt-mgy, pred hd, brit, vf-fgr, sbrd-sbang, mod srt, p por, arg cmt, sl calc, spec w/ mica, w/ sme ss, slow. diffuse v sl stmg dull bl mky cut, n flor stn or od

SURVEY @
MD 3390'
INC 4.70°
AZI 352.7°
TVD 3384.82'

MUD WT: 8.4 VIS: 26 IN
MUD WT: 8.4 VIS: 26 OUT

SHYSLTST: lt-mgy, occ dk gy, mod - firm, smwt fri ip, vf gr, sbrd-sbang, sdy - rthy tex, arg mtx, sl calc; SLTYSH: lt-mgy, pred mod firm, occ sft, blk - sub platy, rthy - sl gt tex, slty, sl calc, slow. diffuse v sl stmg dull bl mky cut, n flor stn or od

SURVEY @
MD 3485'
INC 5.1°
AZI 353.4°
TVD 3479.47'



Logger's Top Parkman
@ 3527' MD / 3521' TVD

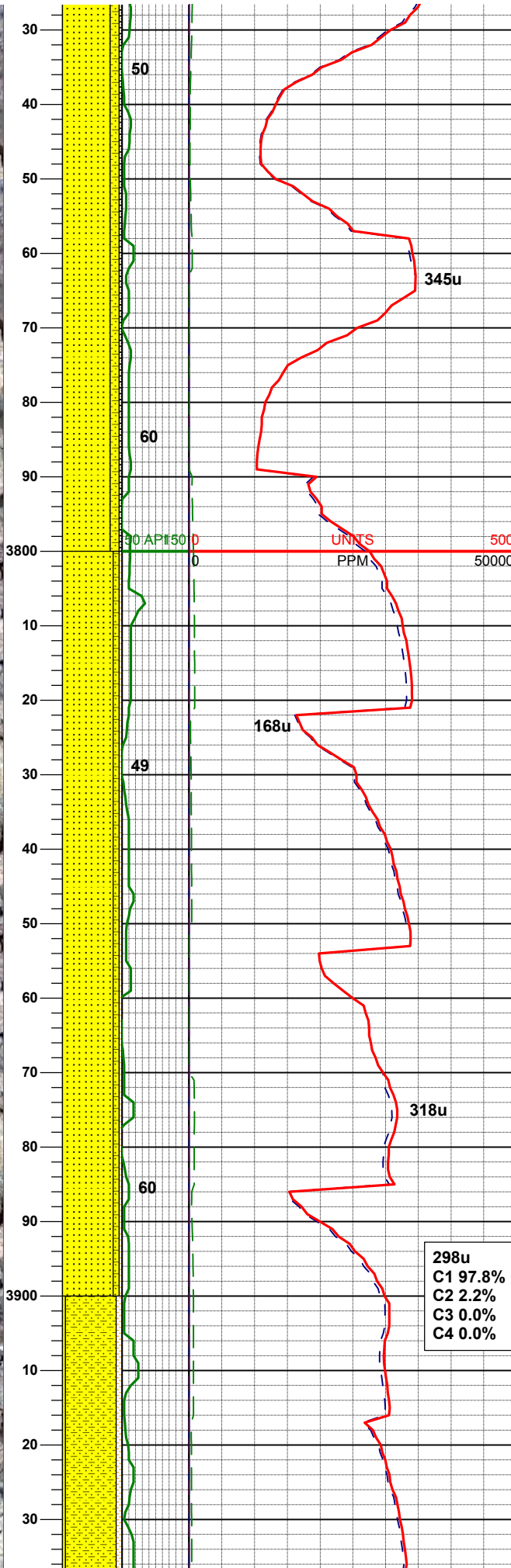
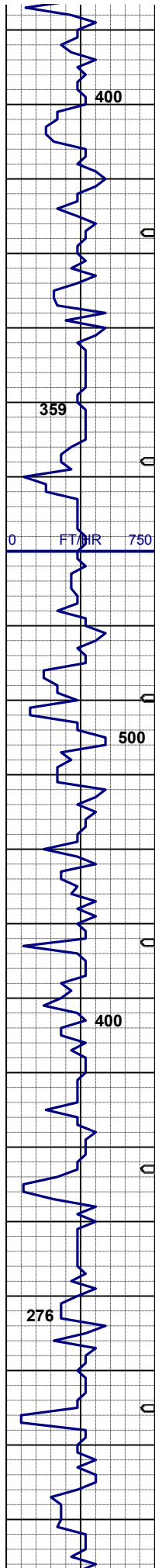
SHYSS: lt-mgy, pred mod hd, brit, vf-mgr, sbrrd-sbang, mod - p srt, arg cmt, sl calc, spec w/ mica and glau; SS: wh - lt gy, s&p, pred mod hd, brit, vf-mgr, sbrrd-sbang, mod - p srt, arg cmt, sl calc, spec w/ mica and glau, tr shysltst, v slow, diffuse stmg frnt bl cut, n flor stn or od

SURVEY @
MD 3580'
INC 5.0°
AZI 349.9°
TVD 3574.1'

SS: wh - lt gy, s&p, pred mod hd, brit,
pred-mgr, sbrd-sbang, mod - p srt,
arg cmt, sl calc, spec w/ mica and
glau; SHYSS: lt-mgy, pred mod hd,
brit, vf-mgr, sbrd-sbang, mod - p srt,
arg cmt, sl calc, spec w/ mica and
glau, tr shysltst, n flor stn cut or od

MUD WT: 8.4 VIS: 26 IN
MUD WT: 8.4 VIS: 26 OUT

SURVEY @
MD 3674'
INC 5.1°
AZI 347.6°
TVD 3667.74'



SS: wh - lt gy, s&p, sl - mod hd, brit, pred-mgr, sbrd-sbang, mod - p srt, arg cmt, mod calc, spec w/ mica and glau; SHYSS: lt-mgy, sl - mod hd, brit, vf-mgr, sbrd-sbang, mod - p srt, arg cmt, mod calc, spec w/ mica and glau, tr sltysh, n flor stn cut or od

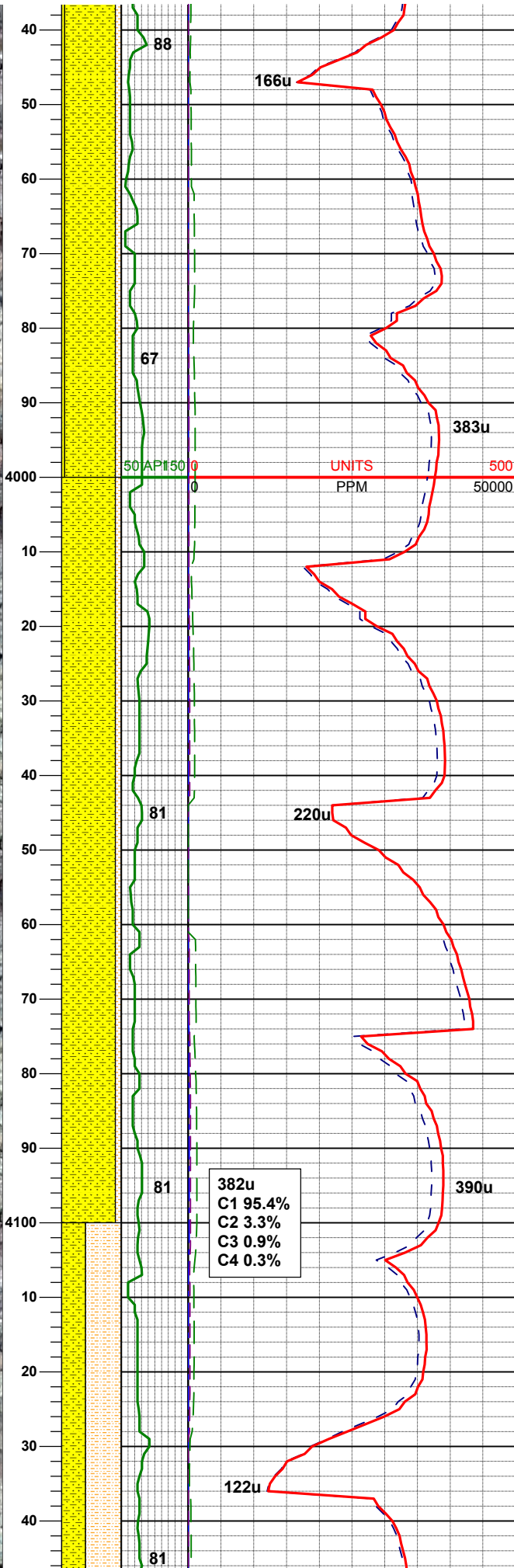
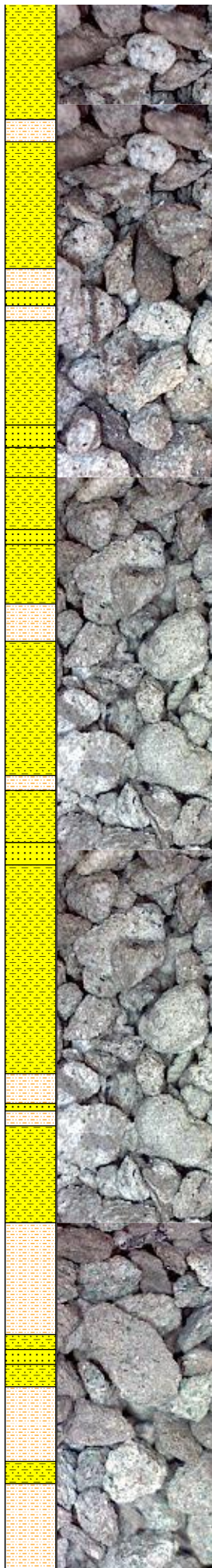
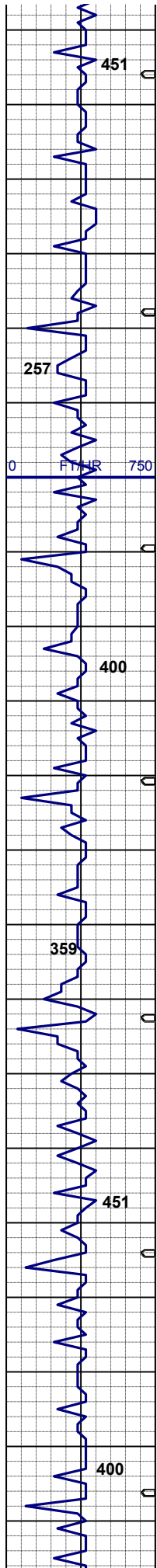
SURVEY @
MD 3769'
INC 5.1°
AZI 347.5°
TVD 3762.36'

MUD WT: 8.3 VIS: 26 IN
MUD WT: 8.4 VIS: 26 OUT

SS: wh - lt gy, s&p, sl - mod hd, brit, pred-mgr, sbrd-sbang, mod - p srt, arg cmt, mod calc, spec w/ mica and glau; SHYSS: lt-mgy, sl - mod hd, brit, vf-mgr, sbrd-sbang, mod - p srt, arg cmt, mod calc, spec w/ mica and glau, tr shyslts, n flor stn cut or od

SURVEY @
MD 3864'
INC 5.4°
AZI 345.9°
TVD 3856.96'

298u
C1 97.8%
C2 2.2%
C3 0.0%
C4 0.0%



SHYSS: off wh-lt-mgy, mod hd, brit, vf
-mgr, sbrd-sbang, p srt - mod srt, arg
cmt, mod calc, spec w/ mica and glau,
occ shysltst, tr ss, n flor stn cut or od

MUD WT: 8.3 VIS: 26 IN
MUD WT: 8.4 VIS: 26 OUT

SURVEY @
MD 3959'
INC 5.4°
AZI 344.5°
TVD 3951.54'

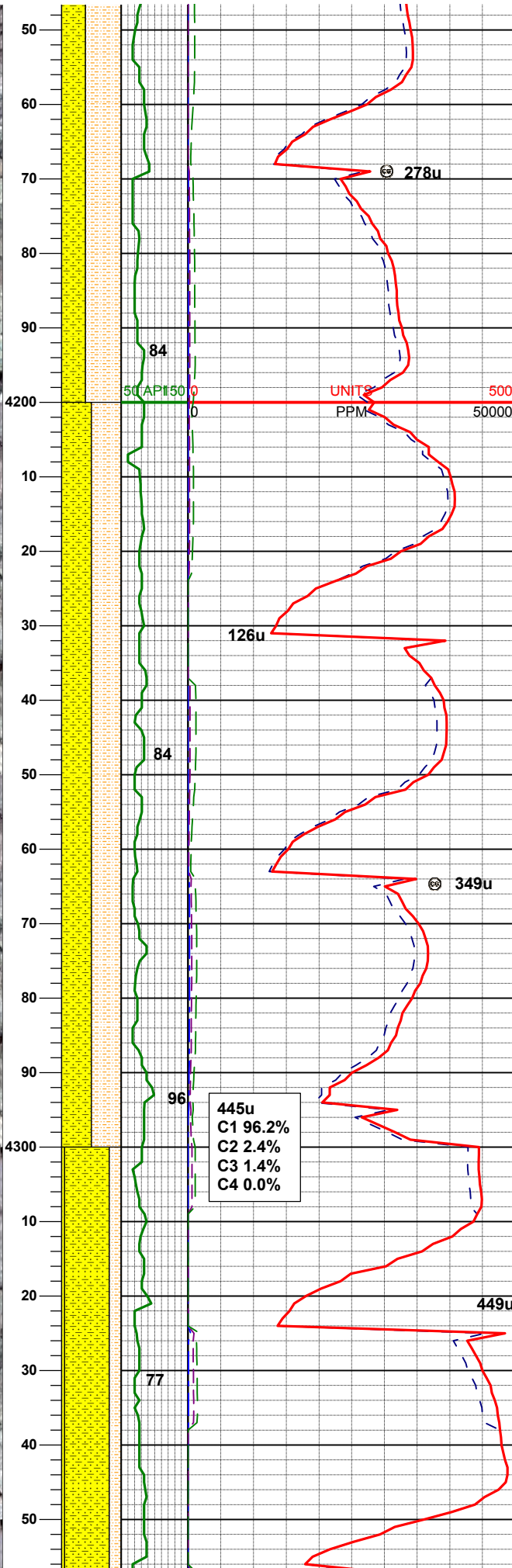
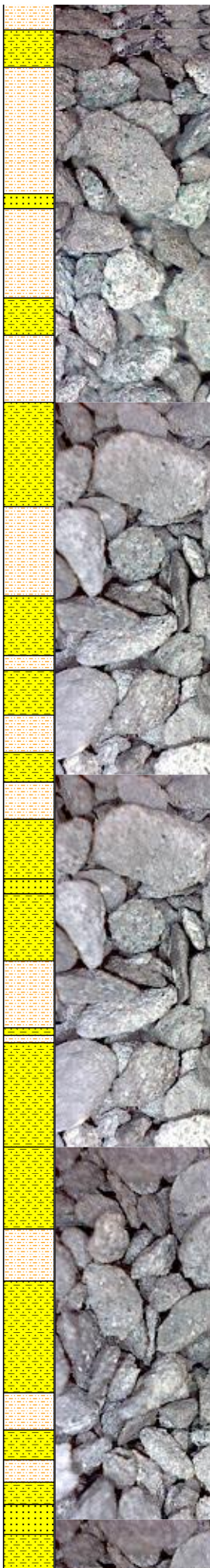
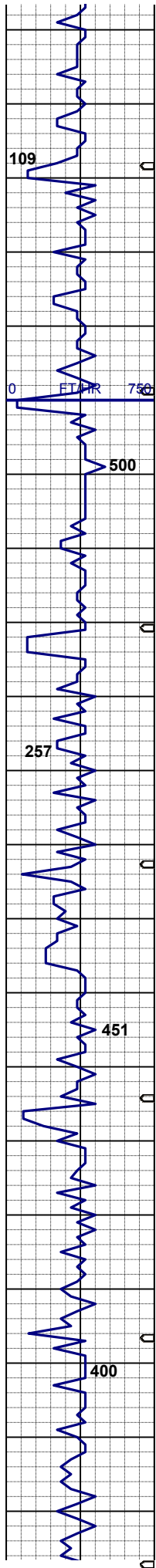
SHYSS: off wh-lt-mgy, sl - mod hd,
brit, vf-mgr, sbrd-sbang, mod - p srt,
arg cmt, mod calc, spec w/ mica and
glau, occ shysltst, tr ss, n flor stn cut
or od

SURVEY @
MD 4053'
INC 5.3°
AZI 344.3°
TVD 4045.13'

MUD WT: 8.3 VIS: 26 IN
MUD WT: 8.5 VIS: 26 OUT

SURVEY @
MD 4148'
INC 5.2°
AZI 342.9°
TVD 4139.73'

SHYSLTST: lt-mgy, occ dk gy, mod -
firm, smwt fri ip, vf gr, sbrd-sbang, sdy
- rthy tex, arg mtx, sl calc, spec w/



abndt glau & dism pyr; SHYSS: off wh -lt-mgy, mod hd, brit, vf-mgr, sbrd-sbang, pred p srt - occ mod srt, arg cmt, mod calc, spec w/ mica and glau, tr ss, n flor stn cut or od

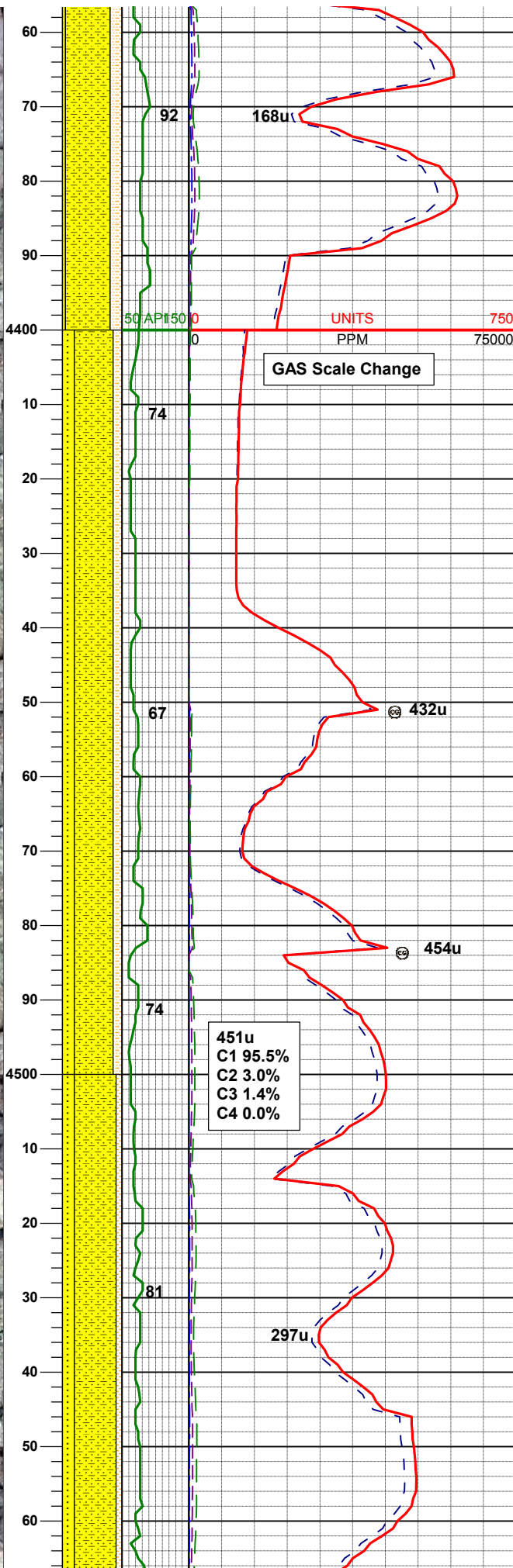
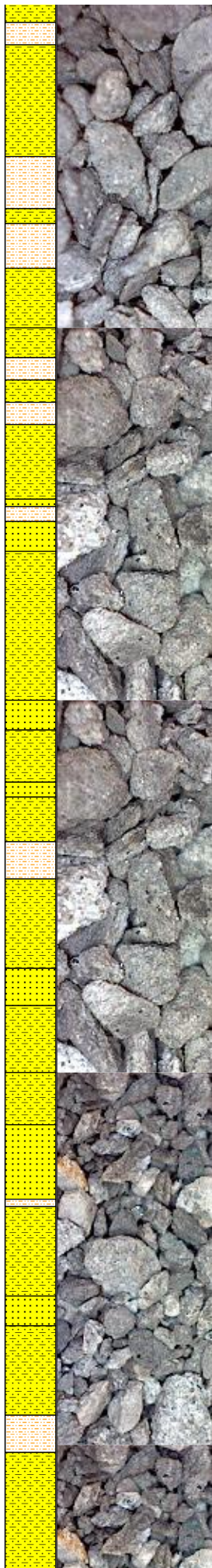
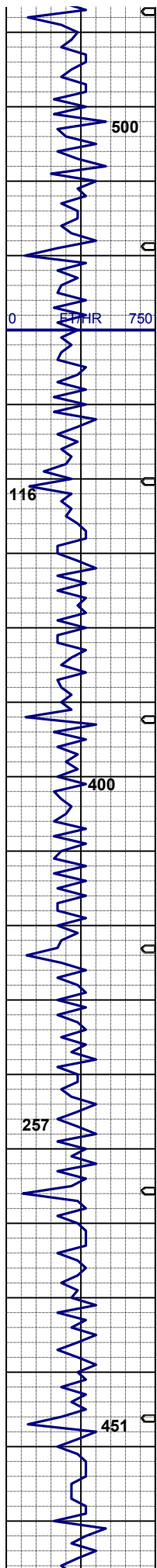
SURVEY @
MD 4243'
INC 4.8°
AZI 343.6°
TVD 4234.9'

SHYSLTST: lt-mgy, occ dk gy, mod - firm, smwt fri ip, vf gr, sbrd-sbang, sdy - rthy tex, arg mtx, sl calc, spec w/ abndt glau & dism pyr; SHYSS: off wh -lt-mgy, mod hd, brit, vf-mgr, sbrd-sbang, pred p srt - occ mod srt, arg cmt, mod calc, spec w/ mica and glau, occ stlysh, tr ss, n flor stn cut or od

SURVEY @
MD 4338'
INC 4.6°
AZI 345.0°
TVD 4329.05'

MUD WT: 8.3 VIS: 26 IN
MUD WT: 8.4 VIS: 26 OUT

SHYSS: off wh-lt-mgy, mod hd, brit, vf -mgr, sbrd-sbang, pred p srt - occ mod srt, arg cmt, mod calc, spec w/ mica and glau, SHYSLTST: lt-mgy, occ dk gy, mod - firm, smwt fri ip, vf gr, sbrd-sbang, sdy - rthy tex, arg mtx,



sl calc, spec w/ glau & mica; occ ss, n
flor stn cut or od

Logger's Top Sussex
@ 4371' MD / 4360' TVD

SURVEY @
MD 4432'
INC 4.5°
AZI 338.5°
TVD 4422.76'

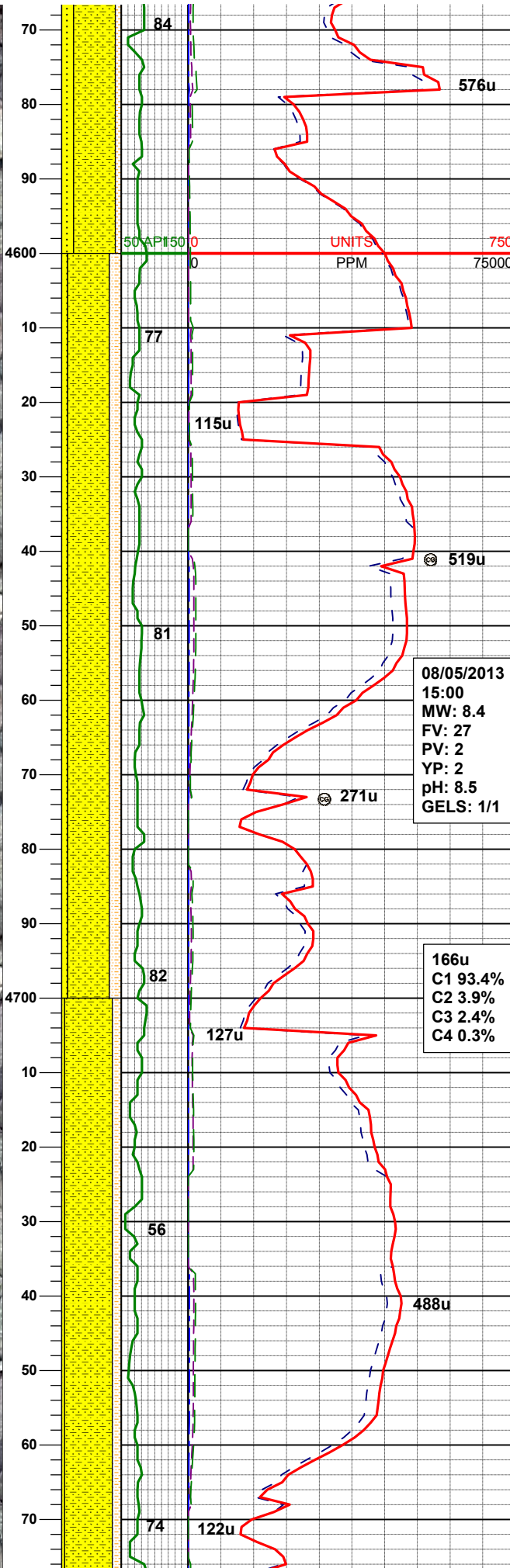
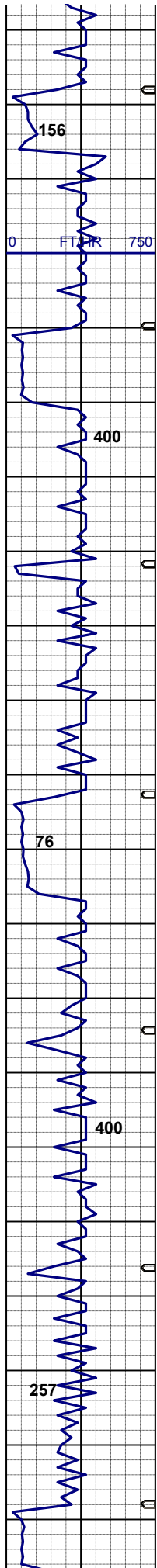
MUD WT: 8.3 VIS: 26 IN
MUD WT: 8.4 VIS: 26 OUT

SHYSS: off wh-lt-mgy, mod hd, brit, vf
-mgr, sbrd-sbang, mod srt, arg cmt, sl
calc, spec w/ mica and glau, SS: wh -
lt gy, s&p, mod hd, brit, pred-mgr,
sbrd-sbang, mod srt, arg cmt, sl calc,
spec w/ mica and glau; grdng. to shy
sltst ; n flor stn cut or od

MUD WT: 8.3 VIS: 26 IN
MUD WT: 8.5 VIS: 26 OUT

SURVEY @
MD 4527'
INC 4.6°
AZI 339.9°
TVD 4517.46'

SHYSS: off wh-lt-mgy, mod hd, brit, vf
-mgr, sbrd-sbang, mod srt, arg cmt, sl
calc, spec w/ mica, SS: wh - lt gy,
s&p, mod hd, brit, pred-mgr, sbrd-
sbang, mod srt, arg cmt, sl calc, spec
w/ mica and glau; grdng. to shy sltst ;
n flor stn cut or od



MUD WT: 8.3 VIS: 26 IN
MUD WT: 8.5 VIS: 26 OUT

SURVEY @
MD 4622'
INC 4.5°
AZI 345.0°
TVD 4612.16'

SHYSS: off wh-lt-mgy, mod hd, brit, vf
-mgr, sbrd-sbang, mod srt, arg cmt, sl
calc, spec w/ mica; SHYSLTST: lt-
mgy, occ dk gy, mod - firm, smwt fri
ip, vf gr, sbrd-sbang, sdy - rthy tex,
arg mtx, sl calc, spec w/ glau & mica;
occ ss, n flor stn cut or od

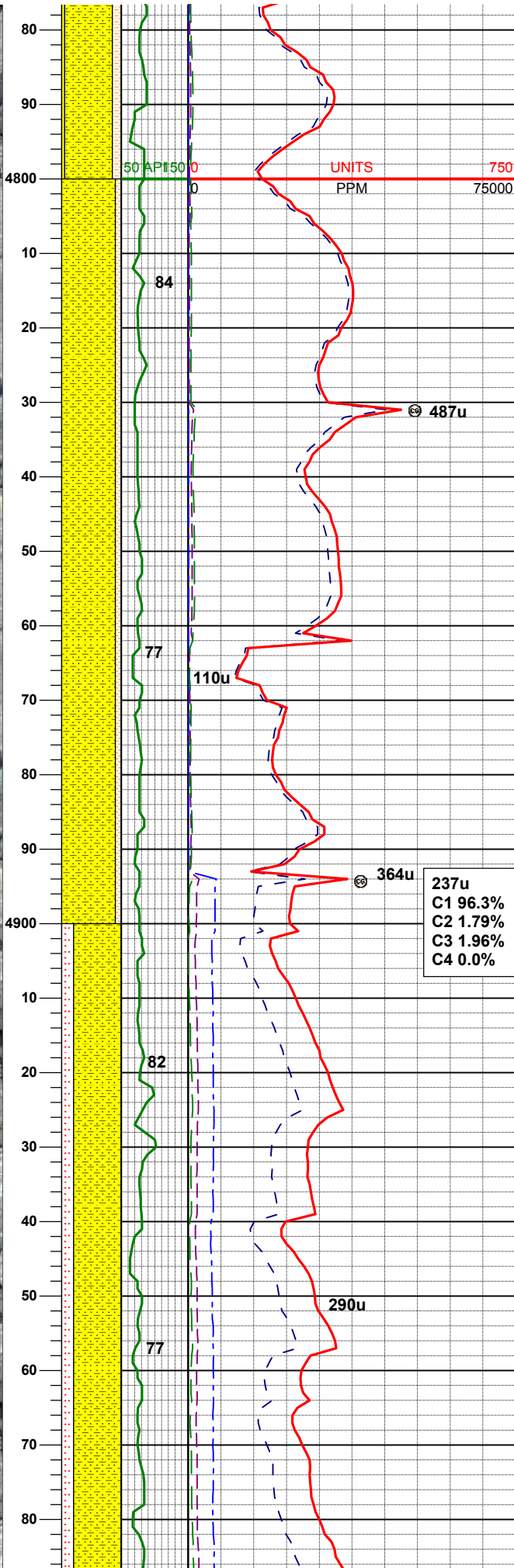
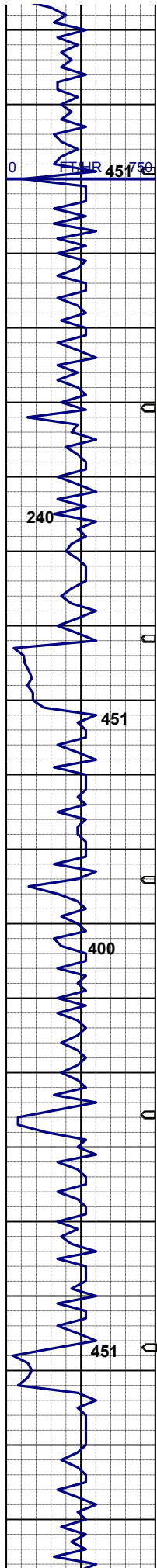
08/05/2013
15:00
MW: 8.4
FV: 27
PV: 2
YP: 2
pH: 8.5
GELS: 1/1

MUD WT: 8.3 VIS: 26 IN
MUD WT: 8.5 VIS: 26 OUT

166u
C1 93.4%
C2 3.9%
C3 2.4%
C4 0.3%

SURVEY @
MD 4717'
INC 4.9°
AZI 349.4°
TVD 4706.87'

SHYSS: off wh-lt-mgy, mod hd, brit, vf
-mgr, sbrd-sbang, mod srt, arg cmt, sl
calc, spec w/ mica; SHYSLTST: lt-
mgy, occ dk gy, mod - firm, smwt fri
ip, vf gr, sbrd-sbang, sdy - rthy tex,
arg mtx, sl calc, spec w/ glau & mica;
occ ss, n flor stn cut or od



MUD WT: 8.3 VIS: 26 IN
MUD WT: 8.5 VIS: 26 OUT

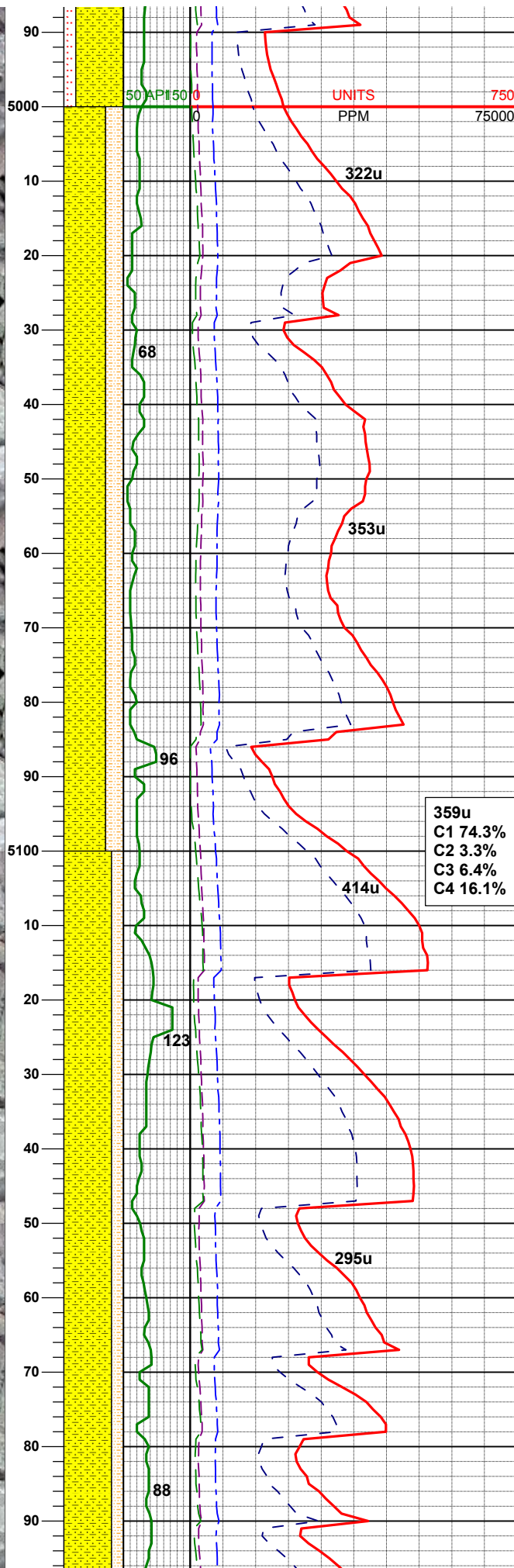
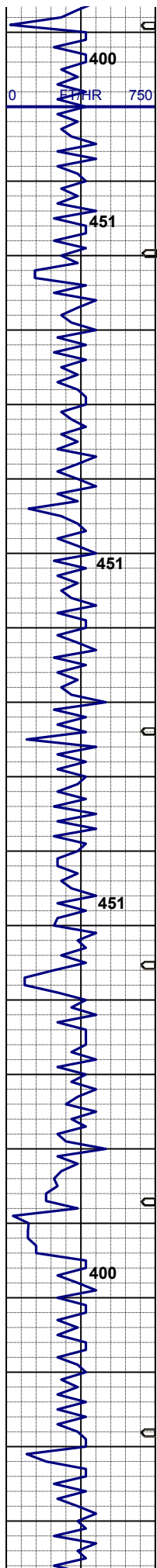
SURVEY @
MD 4811'
INC 5.2°
AZI 346.9°
TVD 4800.47'

SHYSS: off wh-lt-mgy, mod hd, brit, vf
-mgr, sbrd-sbang, mod srt, arg cmt, sl
calc, spec w/ mica; SHYSLTST: lt-
mgy, occ dk gy, mod - firm, smwt fri
ip, vf gr, sbrd-sbang, sdy - rthy tex,
arg mtx, sl calc, spec w/ glau & mica;
occ ss, n flor stn cut or od

SURVEY @
MD 4906'
INC 4.5°
AZI 355.6°
TVD 4895.13'

Logger's Top Shannon
@ 4953' MD / 4942' TVD

SHYSS: off wh-lt-mgy, mod hd, brit, vf
-mgr, sbrd-sbang, mod srt, arg cmt, sl
calc, spec w/ mica; SHYSLTST: lt-
mgy, occ dk gy, mod - firm, smwt fri
ip, vf gr, sbrd-sbang, sdy - rthy tex,
arg mtx, sl calc, spec w/ glau & mica;
occ ss, n flor stn cut or od



**SURVEY @
MD 5001'
INC 5.6°
AZI 355°
TVD 4989.76'**

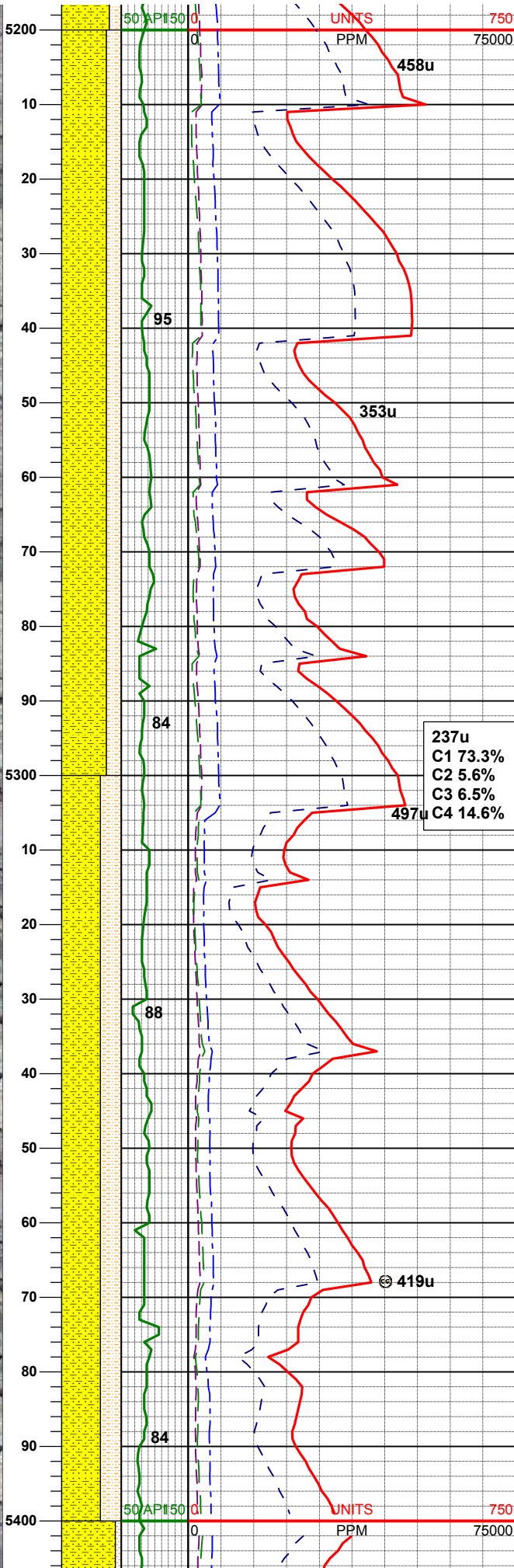
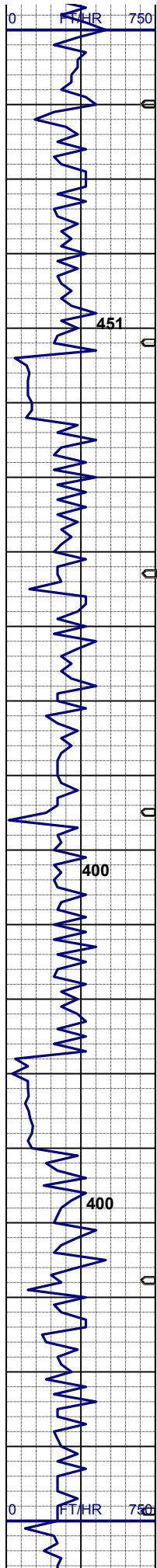
MUD WT: 8.4 VIS: 27 IN
MUD WT: 8.5 VIS: 26 OUT

SHYSS: off wh-lt-mgy, mod hd, brit, vf
-mgr, sbrd-sbang, mod srt, arg cmt, sl
calc, spec w/ mica; SHYSLTST: lt-
mgy, occ dk gy, mod - firm, smwt fri
ip, vf gr, sbrd-sbang, sdy - rthy tex,
arg mtx, sl calc, spec w/ glau & mica;
occ ss, n flor stn cut or od

SURVEY @
MD 5096'
INC 5.5°
AZI 352.6°
TVD 5084.32'

SHYSS: off wh-lt-mgy, mod hd, brit, vf
-mgr, sbrd-sbang, mod srt, arg cmt, sl
calc, spec w/ mica; SHYSLTST: lt-
mgy, occ dk gy, mod - firm, smwt fri
ip, vf gr, sbrd-sbang, sdy - rthy tex,
arg mtx, sl calc, spec w/ glau & mica;
occ ss, n flor stn cut or od

SURVEY @
MD 5101'



MD 5191
INC 4.0°
AZI 348.2°
TVD 5178.99'

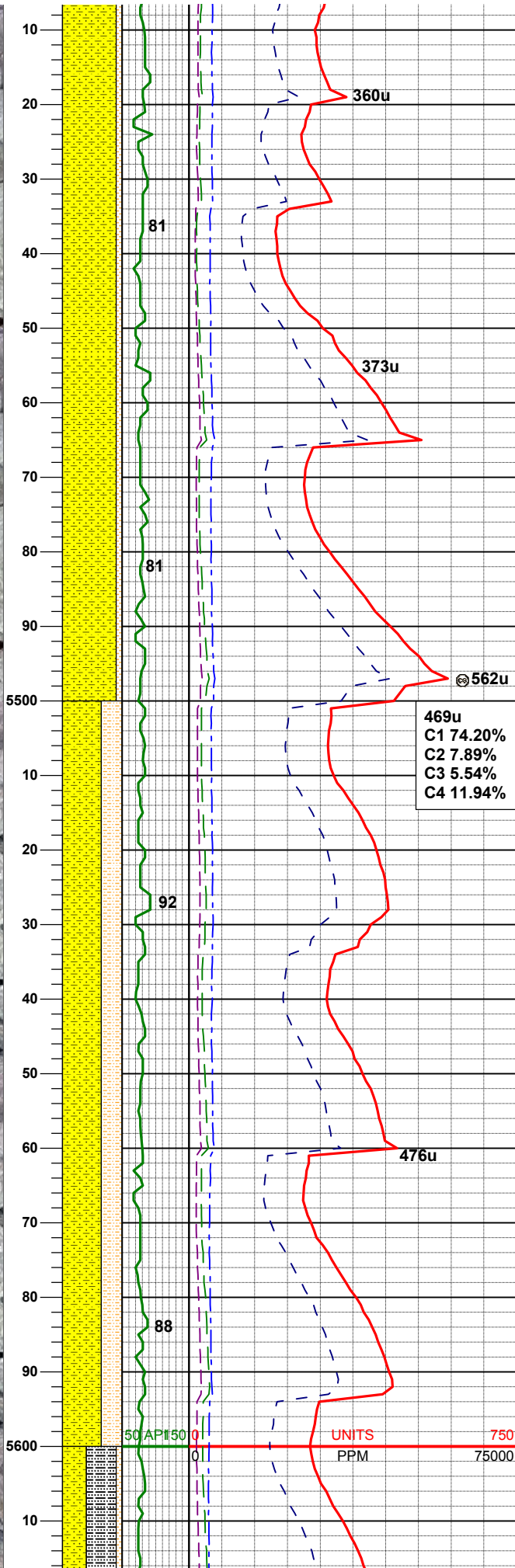
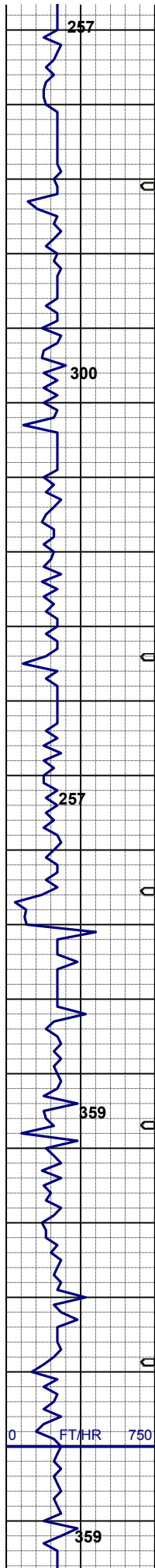
MUD WT: 8.9 VIS: 33 IN
MUD WT: 8.9 VIS: 30 OUT

SHYSS: off wh-lt-mgy, mod hd, brit, vf
-mgr, sbrd-sbang, mod srt, arg cmt, sl
calc, spec w/ mica; SHYSLTST: lt-
mgy, occ dk gy, mod - firm, smwt fri
ip, vf gr, sbrd-sbang, sdy - rthy tex,
arg mtx, sl calc, spec w/ glau & mica;
occ ss, n flor stn cut or od

SURVEY @
MD 5285'
INC 2.0°
AZI 4.2°
TVD 5272.86'

SHYSS: off wh-lt-mgy, mod hd, brit, vf
-mgr, sbrd-sbang, mod srt, arg cmt, sl
calc, spec w/ mica; SHYSLTST: lt-
mgy, occ dk gy, mod - firm, smwt fri
ip, vf gr, sbrd-sbang, sdy - rthy tex,
arg mtx, sl calc, spec w/ glau & mica;
occ ss, n flor stn cut or od

SURVEY @
MD 5380'
INC 0.9°
AZI 1.2°
TVD 5367.83'



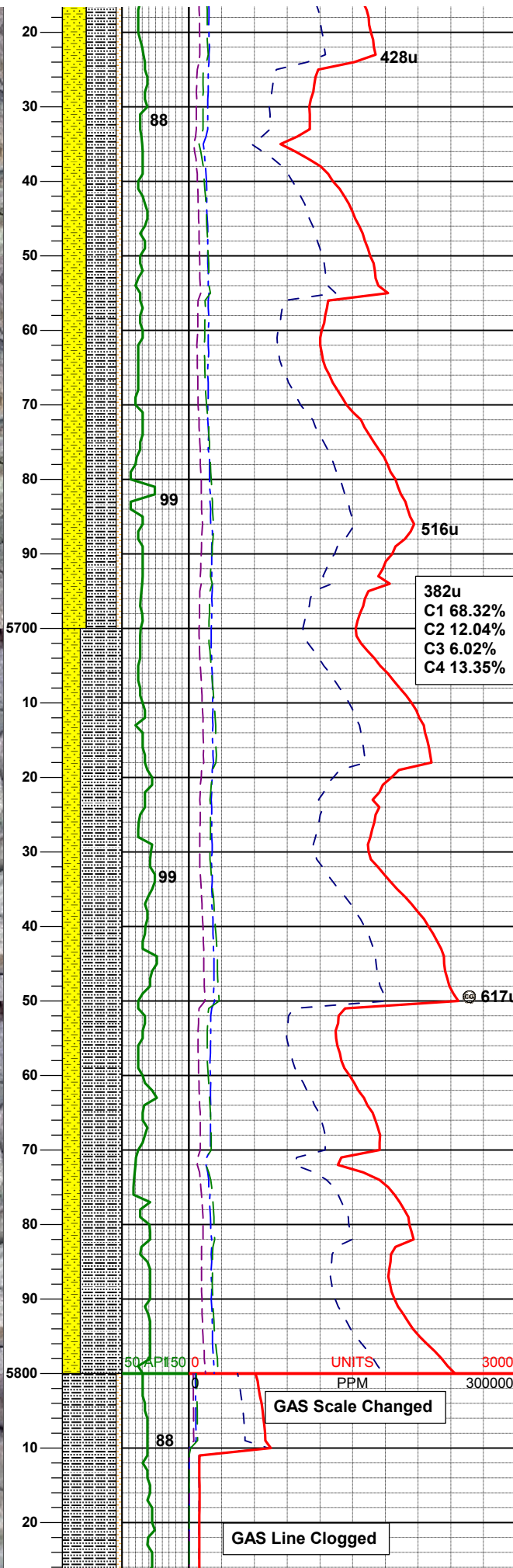
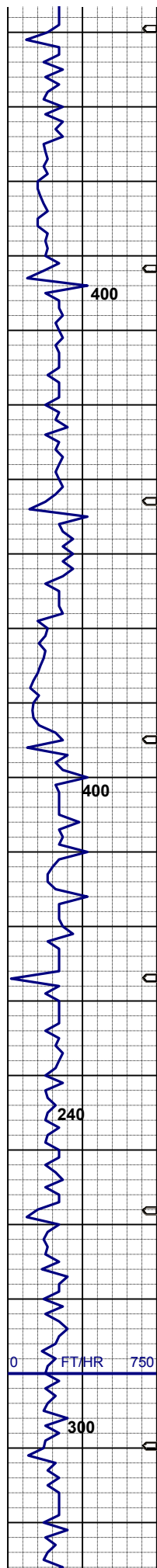
SHYSS: off wh-lt-mgy, mod hd, brit, vf
-mgr, sbrd-sbang, mod srt, arg cmt, sl
calc, spec w/ mica; SHYSLTST: lt-
mgy, occ dk gy, mod - firm, smwt fri
ip, vf gr, sbrd-sbang, sdy - rthy tex,
arg mtx, sl calc, spec w/ glau & mica;
occ ss, n flor stn cut or od

MUD WT: 9.30 VIS: 31 IN
MUD WT: 9.10 VIS: 31 OUT

SURVEY @
MD 5475'
INC 0.4°
AZI 12.6°
TVD 6462.82'

SHYSS: off wh-lt-mgy, mod hd, brit, vf
-mgr, sbrd-sbang, mod srt, arg cmt, sl
calc, spec w/ mica; SHYSLTST: lt-
mgy, occ dk gy, mod - firm, smwt fri
ip, vf gr, sbrd-sbang, sdy - rthy tex,
arg mtx, sl calc, spec w/ glau & mica;
occ ss, n flor stn cut or od

SURVEY @
MD 5569'
INC 1.1°
AZI 134.6°
TVD 5556.81'



MUD WT: 9.70 VIS: 33 IN
MUD WT: 9.50 VIS: 33 OUT

SLTYSH: lt gy - m gy, sme dk gy, v sft
- mod frm, brit ip, sbply - sbblly, sme
ply, sl gt tx, arg-slty mtx, v sl calc,
SHYSLTST: lt gy - gy brn, sdy ip, vf-f
gr, sbang-sbrd, gt tx, arg-slty mtx,
mod srt, m sft - frm, brit-fri, sl calc,
spec w/ mica frag thru; occ shy ss,
slow. diffuse sl stmg dul bl mky cut, tr
dul yelgn & orng mnrl flor, n stn or od

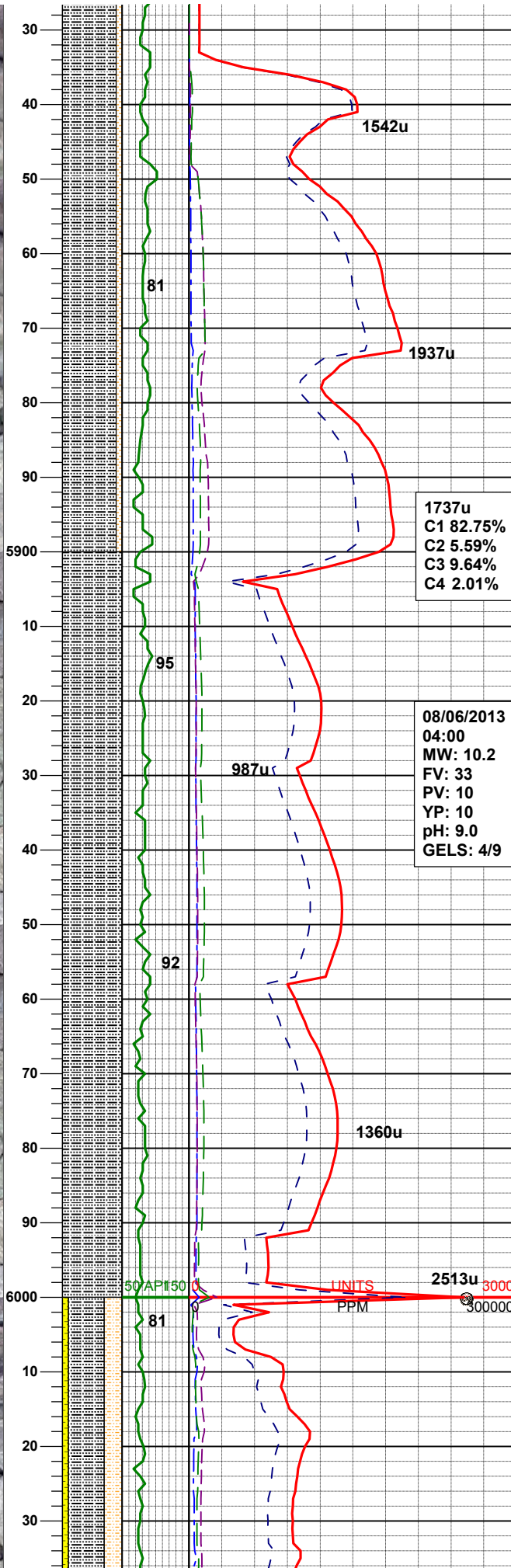
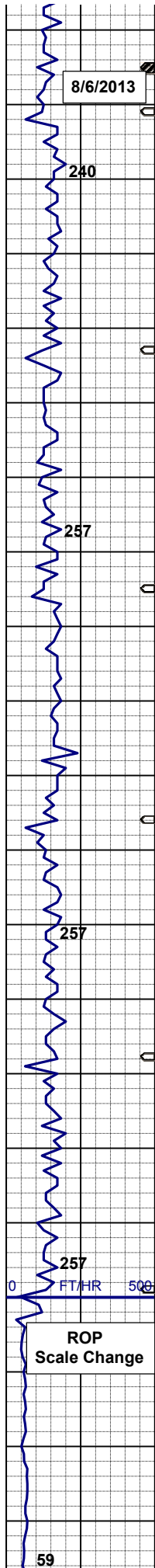
SURVEY @
MD 5664'
INC 0.8°
AZI 127.0°
TVD 5651.80'

**Logger's Top Teepee Buttes
@ 5750' MD / 5737' TVD**

SLTYSH: lt gy - m gy, sme dk gy, v sft
- mod firm, brit ip, sbply - sbblky, sme
ppty, sl gt tex, arg-slty mtx, v sl calc,
SHYSLSTST: lt gy - gy brn, sdy ip, vf-
f u, sbang-sbrd, gt tex, arg-slty mtx,
mod srt, m sft - firm, brit-fri, sl calc,
spec w/ mica frag thru; occ shy ss,
slow. diffuse sl stmg dl bl mky cut, tr
dul yelgn & orng mnrl flr, n stn or od

SURVEY @
MD 5759'
INC 1.1°
AZI 93.6°
TVD 5746.79'

MUD WT: 10.1 VIS: 32 IN
MUD WT: 10.1 VIS: 32 OUT



SLTYSH: lt gy - m gybrn, sme dk gy, firm, brit, sbply - sbbky, sl gt tex, arg-slty mtx, w/ dism pyr, v sl calc;
SHYSLTST: lt gy - m gy brn, sdy ip, vf -f gr, sbang - sbrd - sbply, gt tex, arg-slty mtx, w srt, m sft - firm, fri - brit, sl calc, tr dul yel org mnrl flr, slow. diffuse dull bl wh cut, n stn or od

**SURVEY @
MD 5854'
INC 1.2°
AZI 71.8°
TVD 5841.77'**

**MUD WT: 10.2 VIS: 31 IN
MUD WT: 10.2 VIS: 31 OUT**

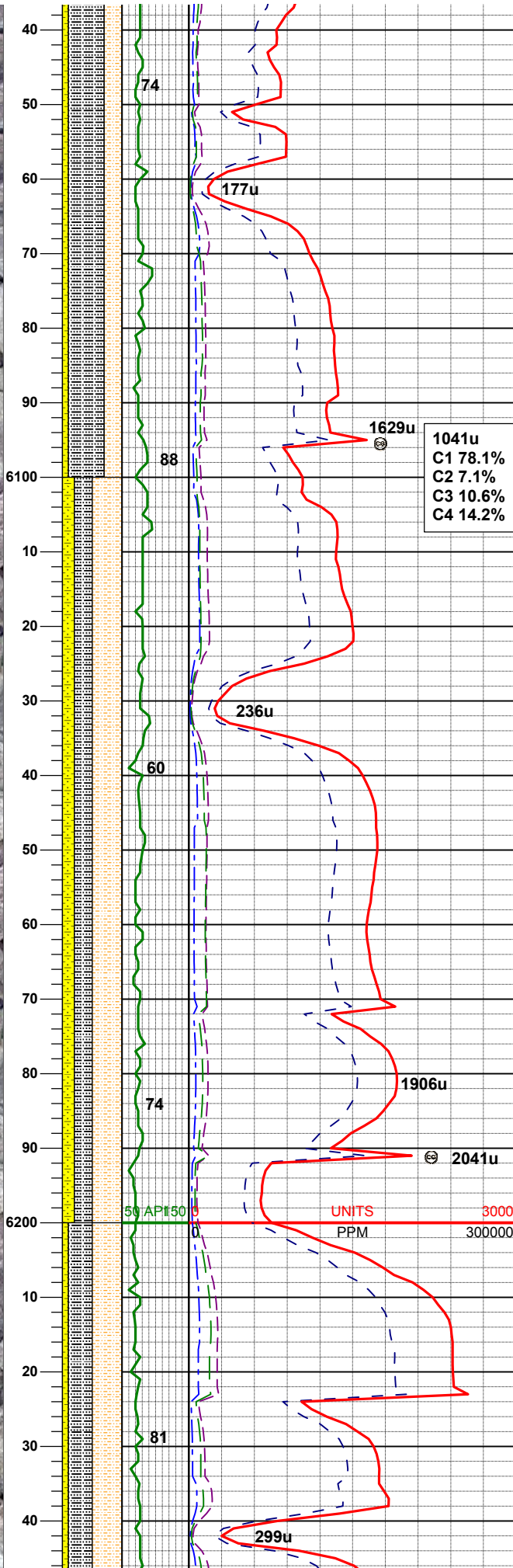
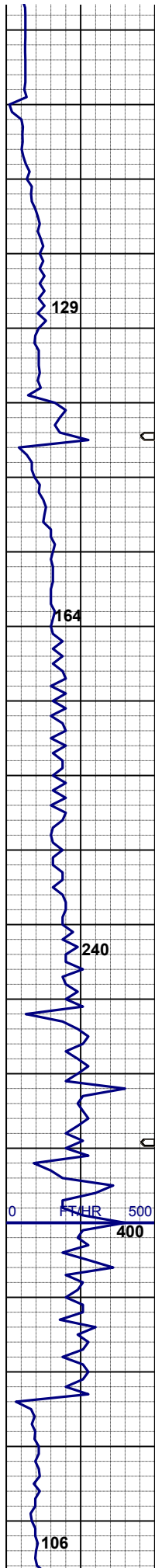
**08/06/2013
04:00
MW: 10.2
FV: 33
PV: 10
YP: 10
pH: 9.0
GELS: 4/9**

SLTYSH: lt gy - m gybrn, sme dk gy, mod firm, brit, sbply - sbbky, sme ply, sl gt tex, arg-slty mtx, w/ dism pyr, v sl calc, mod fast diffuse, sl stmg, mod bri bl wh cut, n flr stn or od

**SURVEY @
MD 5948'
INC 1.3°
AZI 78.3°
TVD 5935.75'**

**Begin Building Curve
@ 6007' MD**

**SURVEY @
MD 6043'**



INC 5.2°
AZI 264.1°
TVD 6030.64'

SLTYSH: lt gy - m gybrn, sme dk gy, firm, brit, sbply - sbbly, sl gt tex, arg-sltly mtx, v sl calc; SHYSLTST: lt gy - m gy brn, m sft - firm, sbang - sbrd - sbply, fri - brit, gt tex, sdy ip, vf-f gr, v sl calc, occ shy ss, mod fast diffuse, sl stmng, mod bri bl wh cut, n flor stn or od

MUD WT: 10.2 VIS: 33 IN
MUD WT: 10.3 VIS: 33 OUT

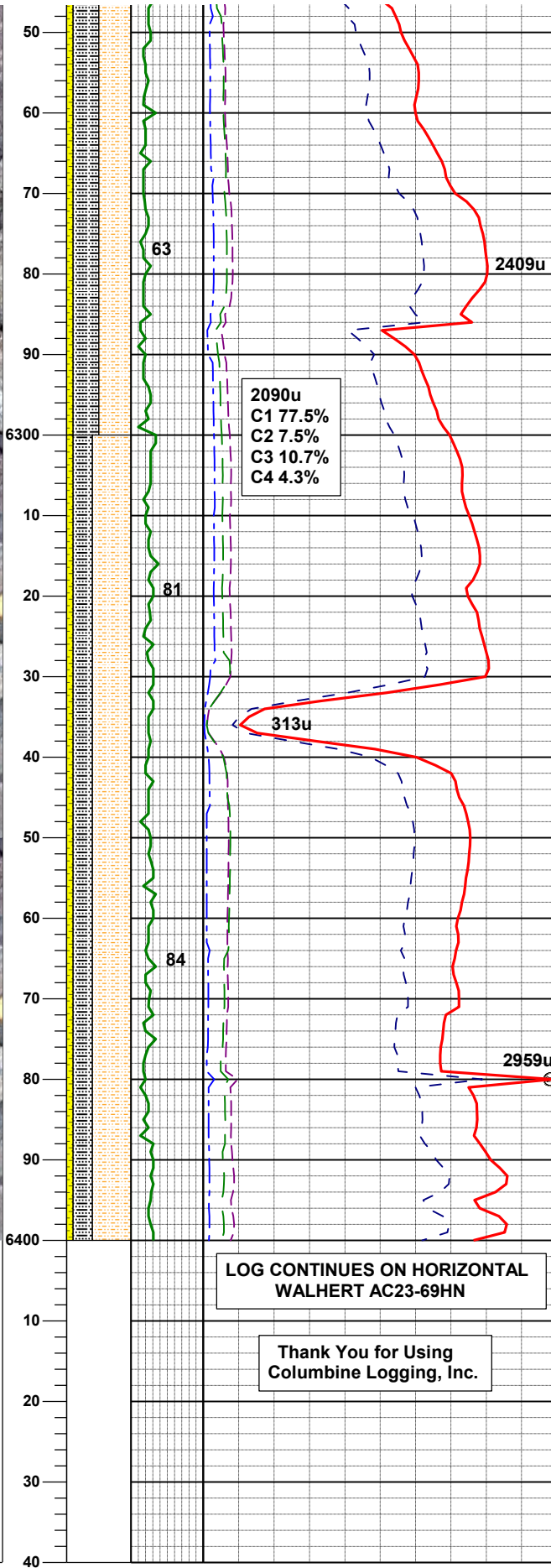
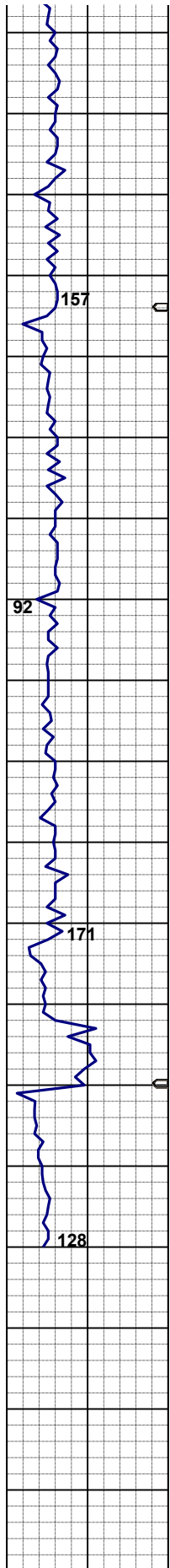
SURVEY @
MD 6138'
INC 16.1°
AZI 263.4°
TVD 6123.86'

SHYSLTST: lt gy - m gy brn, m sft - firm, sbang - sbrd - sbply, fri - brit, gt tex, sdy ip, vf-f gr, v sl calc; SLTYSH: lt gy - m gybrn, sme dk gy, firm, brit, sbply - sbbly, sl gt tex, arg-sltly mtx, v sl calc; occ shy ss, mod fast diffuse, sl stmng, mod bri bl wh cut, n flor stn or od

SURVEY @
MD 6223'
INC 17.9°
AZI 268.9°
TVD 6214.71'

MUD WT: 10.4+ VIS: 33 IN
MUD WT: 10.4 VIS: 33 OUT

SHYSLTST: lt gy - m gy brn, m sft - firm, sbang - sbply, fri - brit, gt tex, sdy ip, vf-f gr, v sl calc; SLTYSH: lt gy - m gybrn, sme dk gy, firm, brit, sbply - sbbly, sl gt tex, arg-sltly mtx, v sl calc; occ shy ss, mod fast diffuse, sl stmng, mod bri bl wh cut, n flor stn or od



sdyp, vif gr, v sl calc, SLTYSH: lt gy - m gybrn, sme dk gy, firm, brit, sbply - m gybrn, sme dk gy, firm, brit, sbply - sbbly, sl gt tex, arg-sly mtx, v sl calc; occ shy ss, mod fast diffuse, sl stmng, mod bri bl wh cut, n flor stn or od

SURVEY @
MD 6328'
INC 27.3°
AZI 270.3°
TVD 6302.32'

MUD WT: 10.7 VIS: 34 IN
MUD WT: 10.6 VIS: 34 OUT

SHYSLTST: lt gy - m gy brn, m sft - firm, sbang - sbply, fri - brit, gt tex, sdyp, vf-f gr, spec w/ mica, v sl calc; SLTYSH: lt gy - m gybrn, sme dk gy, firm, brit, sbply - sbbly, sl gt tex, arg-sly mtx, v sl calc; occ shy ss, mod fast diffuse, sl stmng, mod bri bl wh cut, n flor stn or od

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