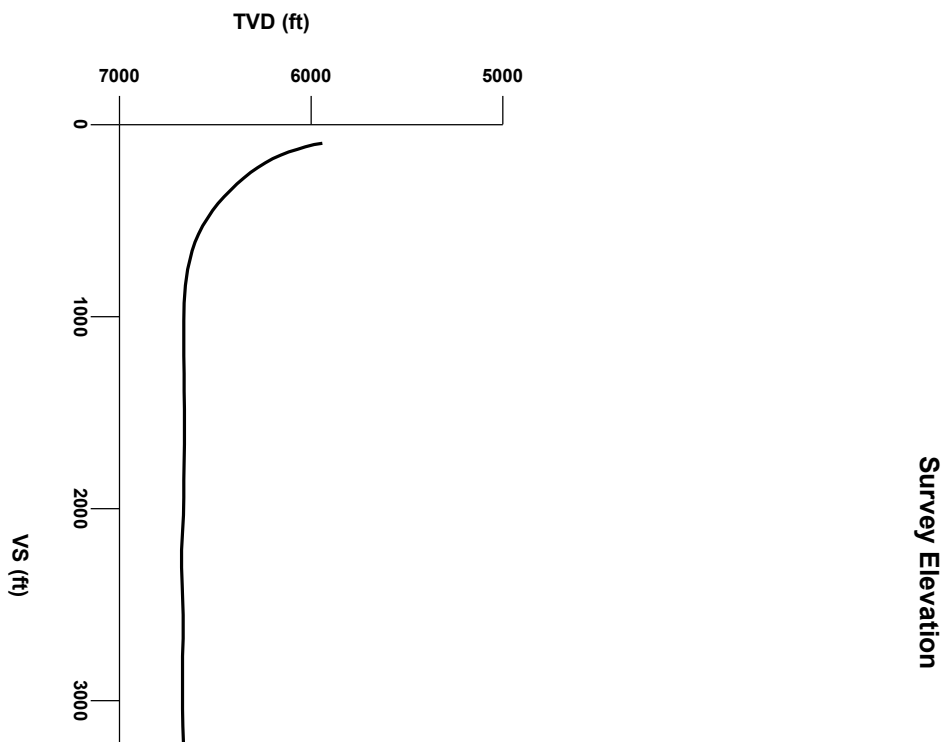
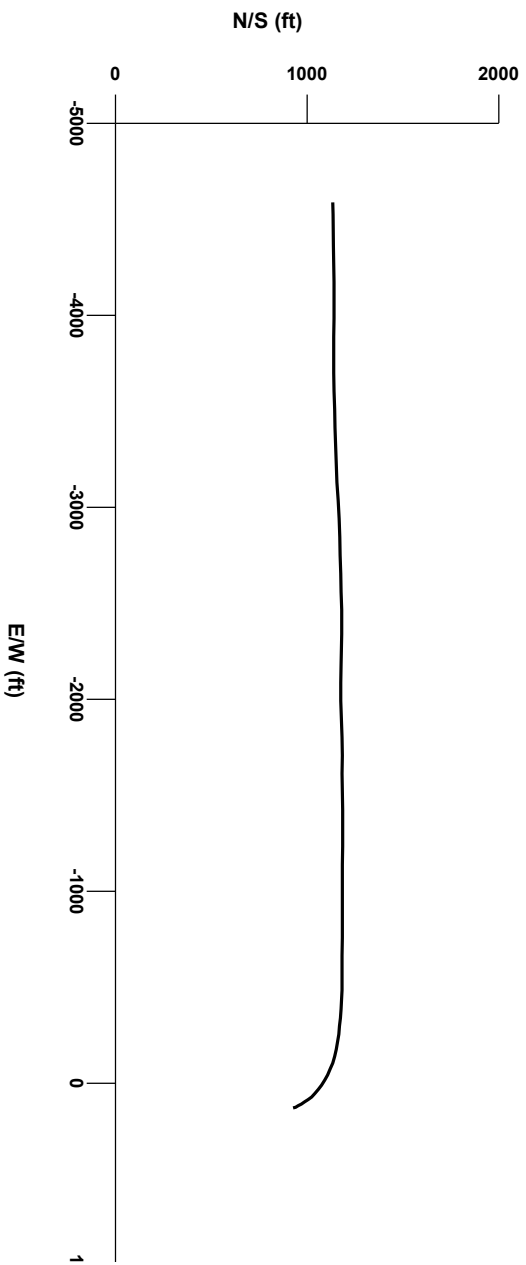


LOG created using L PLOT VH Version 3.0, August 19, 2012, Copyright (C) 1999-2009 Pason Systems Corp.

**OPERATOR:** NOBLE ENERGY INC.  
**WELL:** WELLS RANCH AA12-65-1HN  
**LOCATION:** SEC 12 T6N 63W  
**COUNTY:** WELD  
**STATE:** COLORADO  
**SPOT:** 1,152' FSL 215' FEL  
**ELEVATION:** GL 4,858' KB 4,882'  
**FIELD:** WATTENBERG  
**SPUD DATE:** 8/14/2012  
**TD DATE:** 8/19/2012  
**DATES LOGGED:** 8/16/2012 - 8/19/2012 (HORIZONTAL)  
**DEPTHS LOGGED:** 6,002' - 11,208' (HORIZONTAL)  
**LOGGERS:** CHRIS COOK; CHRIS SCAHEL  
**DRILLING FLUID:** LSND  
**DRILLING RIG:** H&P 315  
**API:** 05-123-35627  
**LOG TYPE:** HORIZONTAL  
**SCALE:** 1:240 (5 inches per 100 feet)  
**REMARKS:** SEE CORRESPONDING VERTICAL LOG WELLS\_RANCH\_AA12\_65\_1HN\_VERT.  
LAT/LON 40.496990/-104.375980

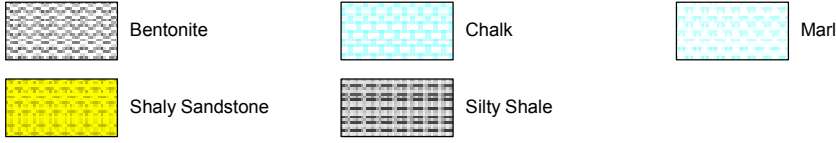


# Survey Plan



000

**LITHOLOGIES**



**ENGINEERING SYMBOLS**



SLIDE ROTATE

GAS	
0	UNITS 60000
0	C1 PPM 600000
0	C2 PPM 600000
0	C3 PPM 600000
0	C4 PPM 600000
0	CO2 % 600000

ROP	
0	FT/HR 600



CUTTINGS LITHOLOGY

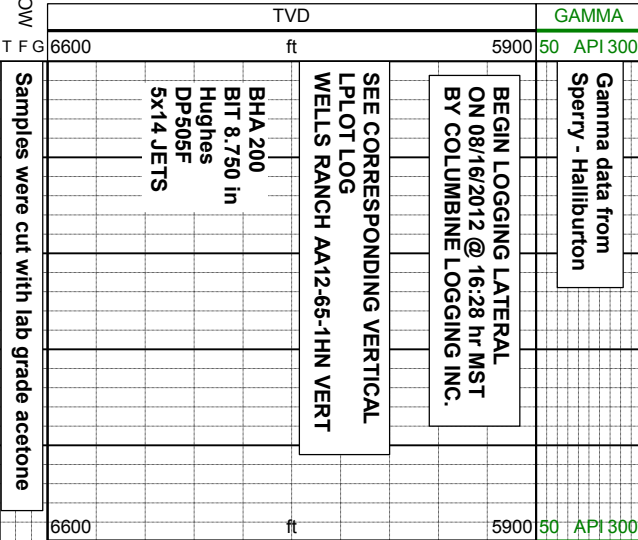
Gamma data from Sperry - Halliburton

BEGIN LOGGING LATERAL ON 08/16/2012 @ 16:28 hr MST BY COLUMBINE LOGGING INC.

SEE CORRESPONDING VERTICAL L PLOT LOG WELLS RANCH AA112-65-1HN VERT

BHA 200  
BIT 8.750 in  
Hughes  
DP505F  
5x14 JETS

OIL SHOW



SAMPLE PHOTOS

A Celestron digital microscope was used for sample pictures at ~ 50 x resolution. The samples were inspected hydrated and color identified using a Munsell color chart.



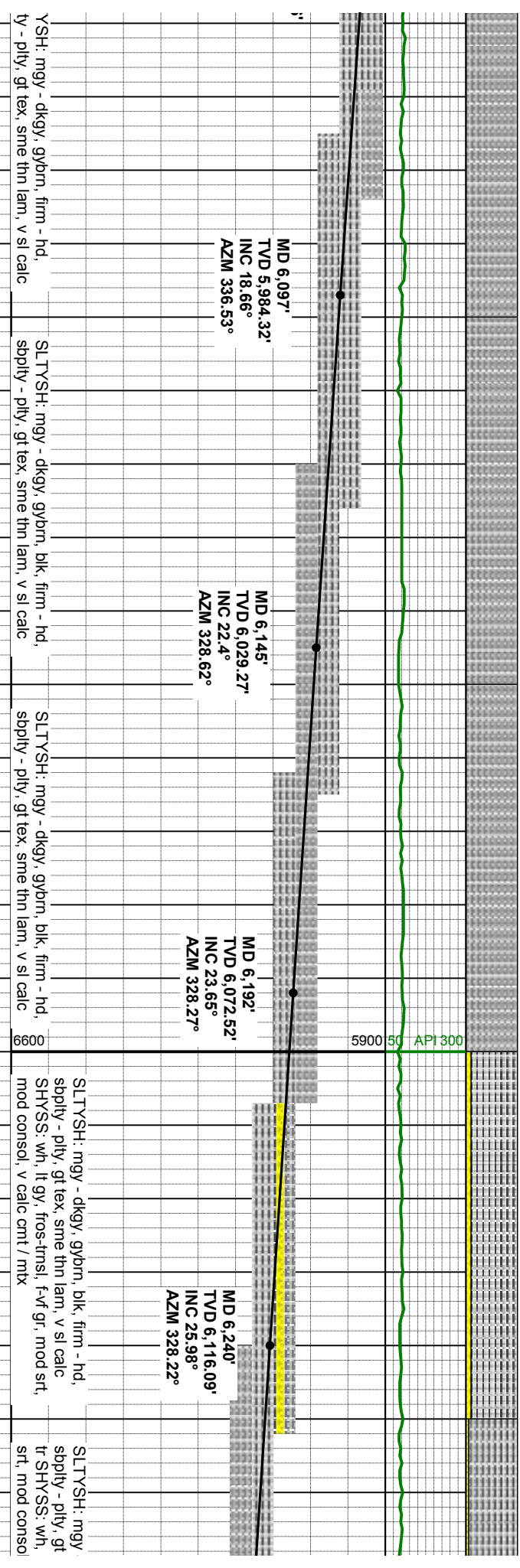
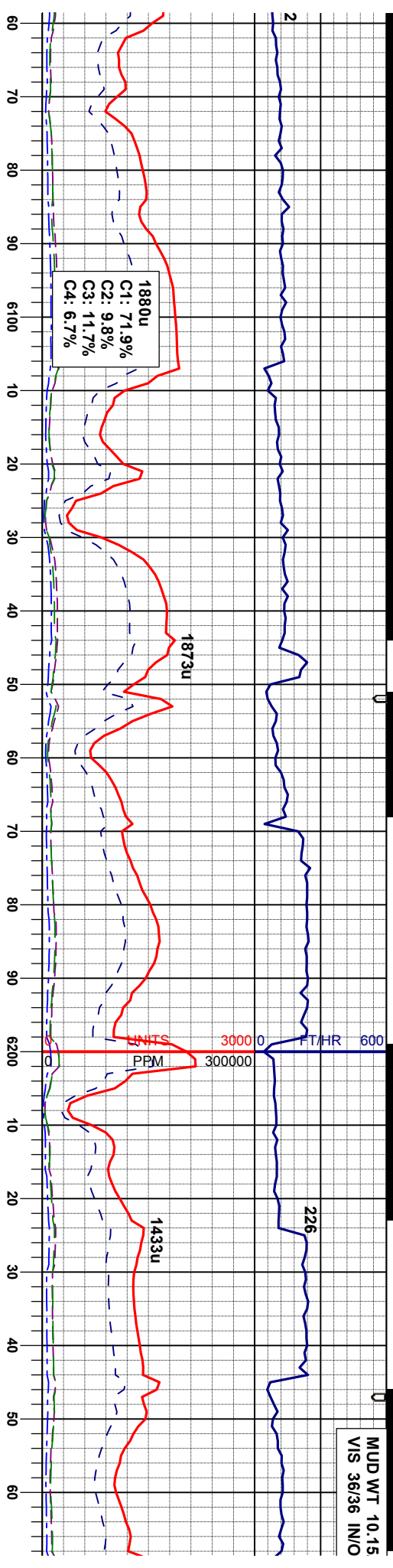
08/16/2012 Mud Wt: 9.20, FVis: 32, PVis: 6, YP: 5, GELS: 2/4/9, API Fil: 14.0, CAKE: 1/0, pH: 9.1, CI: 1.400, Ca: 120

MD 6.052°  
TVD 5.941.26  
INC 15.14°  
AZM 348.88°

SLTYSH: mgy - dkgy, gybrn, firm - hd, sbply - plty, gt lex, sme thn lam, v sl calc

SLT sbpl

MUD WT 10.15  
VIS 36/36 IN/O



Y-SH: mgy - dkgy, gybrn, firm - hd,  
ly - plty, gt tex, sme thn lam, v sl calc

SLTYSH: mgy - dkgy, gybrn, blk, firm - hd,  
sbply - plty, gt tex, sme thn lam, v sl calc

SLTYSH: mgy - dkgy, gybrn, blk, firm - hd,  
sbply - plty, gt tex, sme thn lam, v sl calc

SLTYSH: mgy - dkgy, gybrn, blk, firm - hd,  
sbply - plty, gt tex, sme thn lam, v sl calc  
SHYSS: wh, lt gy, fros-trnsl, f-vf gr, mod srt,  
mod consol, v calc cnt / mix

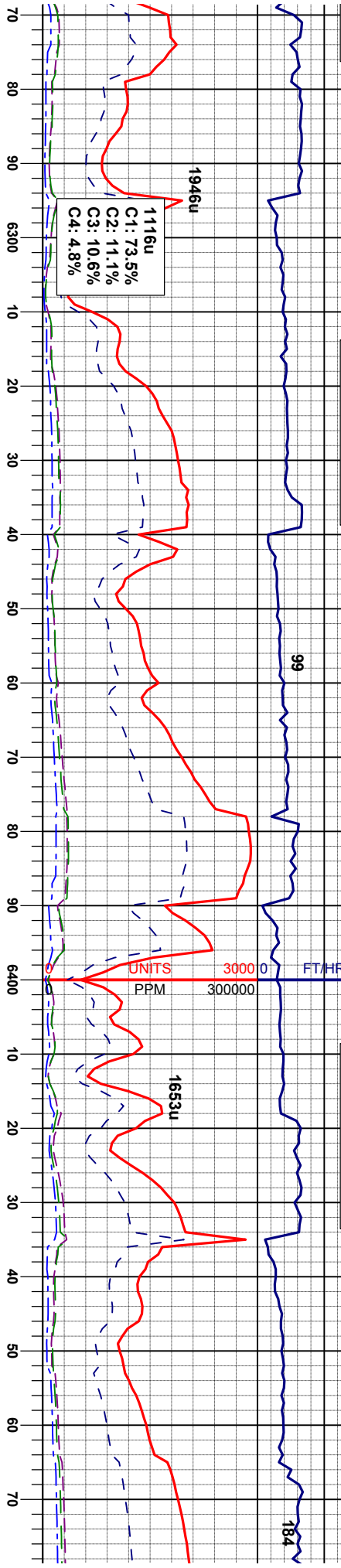
SLTYSH: mgy  
sbply - plty, gt  
tr SHYSS: wh,  
srt, mod consoli



1/10.20  
UT

MUD WT 10.40/10.30  
VIS 38/36 IN/OUT

MUD WT 10.40/10.40  
VIS 36/36 IN/OUT



MD 6,287'  
TVD 6,158.02'  
INC 27.72°  
AZM 325.67°

MD 6,335'  
TVD 6,199.89'  
INC 30.89°  
AZM 318.19°

MD 6,382'  
TVD 6,239.61'  
INC 33.77°  
AZM 312.53°

MD 6,430'  
TVD 6,278.90'  
INC 36.37°  
AZM 308.69°

MD 6,476'  
TVD 6,315  
INC 38.89°  
AZM 305.3

-dkgy, gybrn, blk, firm - hd,  
tex, sme thn lam, v sl calc  
lt gy, fros-trnsl, f-vf gr, mod  
l, v calc cntl / mxb

SLTYSH: mgy - dkgy, gybrn, blk, firm - hd,  
sbply - plty, gt tex, sme thn lam, v sl calc  
SHYSS: wh, lt gy, fros-trnsl, f-vf gr, mod srt,  
mod consol, v calc cntl / mxb

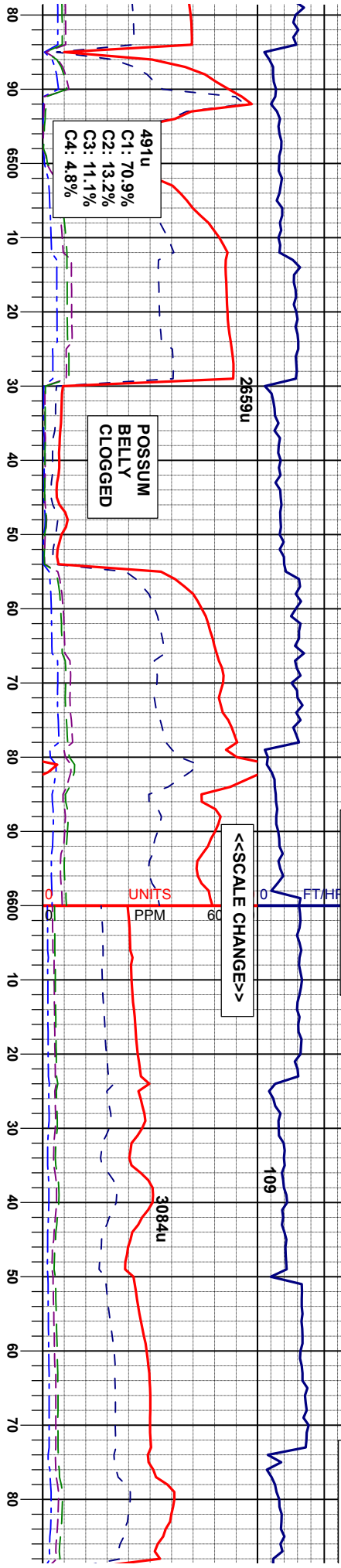
SLTYSH: mgy - dkgy, gybrn, blk, firm - hd,  
sbply - plty, gt tex, sme thn lam, v sl calc  
tr SHYSS: wh, lt gy, fros-trnsl, f-vf gr, mod  
srt, mod consol, v calc cntl / mxb

SLTYSH: mgy - dkgy, gybrn, blk, firm - hd,  
sbply - plty, gt tex, sme thn lam, v sl calc  
SHYSS: wh, lt gy, fros-trnsl, f-vf gr, mod srt,  
mod consol, v calc cntl / mxb

SLTYSH: mgy - dkgy, gybrn, blk, firm - hd,  
sbply - plty, gt tex, sme thn lam, v sl calc  
SHYSS: wh, lt gy, fros-trnsl, f-vf gr, mod srt,  
mod consol, v calc cntl / mxb



08/16/12 08/17/12 MUD WT 10.65/10.45 VIS 36/36 IN/OUT 08/17/12 MUD WT 10.70 VIS 36/37 IN/C



491u  
C1: 70.9%  
C2: 13.2%  
C3: 11.1%  
C4: 4.8%

POSSUM  
BELLY  
CLOGGED

<<SCALE CHANGE>>

MD 6,524'  
TVD 6,352.07'  
INC 41.26°  
AZM 300.02°

MD 6,571'  
TVD 6,386.93'  
INC 43.00°  
AZM 296.07°

MD 6,619'  
TVD 6,421.46'  
INC 44.99°  
AZM 292.98°

MD 6,666'  
TVD 6,454.1'  
INC 47.07°  
AZM 289.51°

LOG#  
SHAI  
MAR  
6,470

m, blk, firm - hd, n lam, v sl calc sl, f-vf gr, mod srt, tx

SLTYSH: mgy - dkgy, gybrn, firm - hd, sbply - plty, gt tex, sme thn lam, sl calc SHYSS: wh, lt gy, fro-trnsi, f-vf gr, mod srt, mod consol, v calc cnt / mtx

SLTYSH: mgy - dkgy, gybrn, firm - hd, sbply - plty, gt tex, sme thn lam, sl calc deor SHYSS: wh, lt gy, fro-trnsi, f-vf gr, mod srt, mod consol, v calc cnt / mtx

SLTYSH: mgy - dkgy, gybrn, firm - hd, sbply - plty, gt tex, sme thn lam bddg, sl calc, tr bent w/ scat yel orng mnrl flor

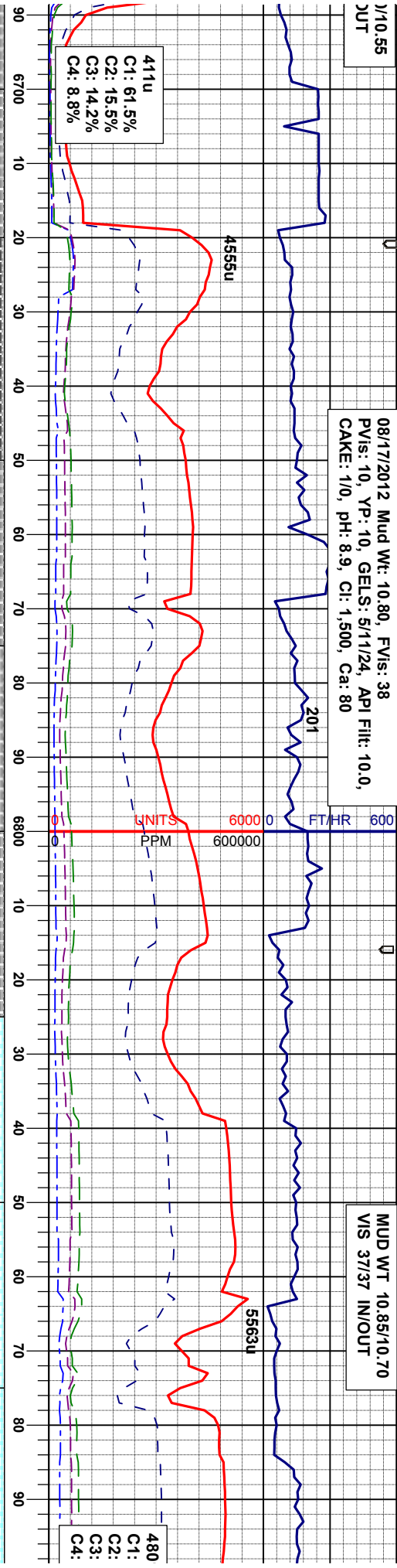
SLTYSH: mgy - dkgy, gybrn, firm - hr sbply - plty, gt tex, sme thn lam bddg, calc, incr bent w/ dism pyr and scat y orng mnrl flor



7/10.55  
DUT

08/17/2012 Mud Wt: 10.80, FVis: 38  
PVIs: 10, YP: 10, GELS: 5/11/24, API Filtr: 10.0,  
CAKE: 1/0, pH: 8.9, CI: 1,500, Ca: 80

MUD WT 10.85/10.70  
VIS 37/37 IN/OUT



GER TOP OF  
RON SPRINGS  
KER @ 6,690' MD  
' TVD

MD 6,761'  
TVD 6,514.93'  
INC 53.91°  
AZM 281.34°

<<TVD SCALE CHANGE>>  
NIOBRARA TOP @  
6,777' MD 6,524' TVD

NIOBRARA A CHALK @ 6,827' MD  
6,550' TVD

NIOBRARA A MARL @ 6,  
6,578' TVD

MD 6,714'  
TVD 6,485.92'  
INC 49.88°  
AZM 285.9°

MD 6,856'  
TVD 6,565.37'  
INC 61.01°  
AZM 276.62°

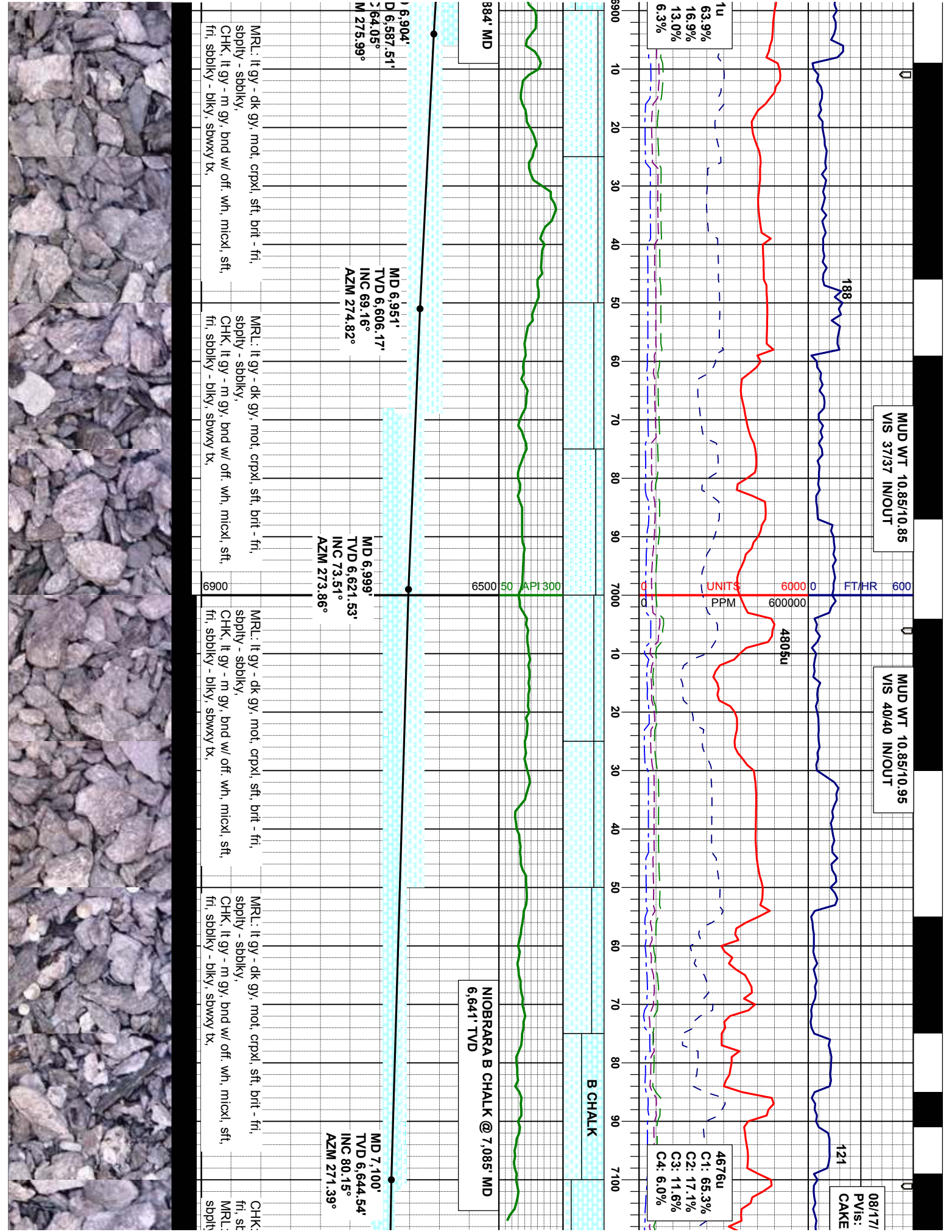
SLTYSH: mgy - dkgy, gybrn, firm - hd,  
soply - ply, gt tex, sme thn lam bdg, incr  
calc.  
BENT: yel, gy, olv gn, v brit, ply - sply, w/  
dism pyr and br yel-ormg mnrl flr

SLTYSH: mgy - dkgy, gybrn, firm - hd,  
soply - ply, gt tex, sme thn lam bdg, v  
calc.  
MRL: lt gy - dk gy, mot, crpxl, sft, brit - fri,  
soply - sbblky, abnt bent w/ dism pyr and  
scat yel ormgn mnrl flr

CHK, lt gy - m gy, bnd w/ off, wh, micxl, sft,  
fri, sbblky - blk, sbwxy tx,  
MRL: lt gy - dk gy, mot, crpxl, sft, brit - fri,  
soply - sbblky,  
SLTYSH: mgy - dkgy, gybrn, firm - hd,  
soply - ply, gt tex, sme thn lam bdg, v calc  
thru, abnt bent w/ dism pyr and scat yel  
ormgn mnrl flr

CHK, lt gy - m gy, bnd w/ off, wh, micxl, sft,  
fri, sbblky - blk, sbwxy tx,  
MRL: lt gy - dk gy, mot, crpxl, sft, brit - fri,  
soply - sbblky,





08/17/12

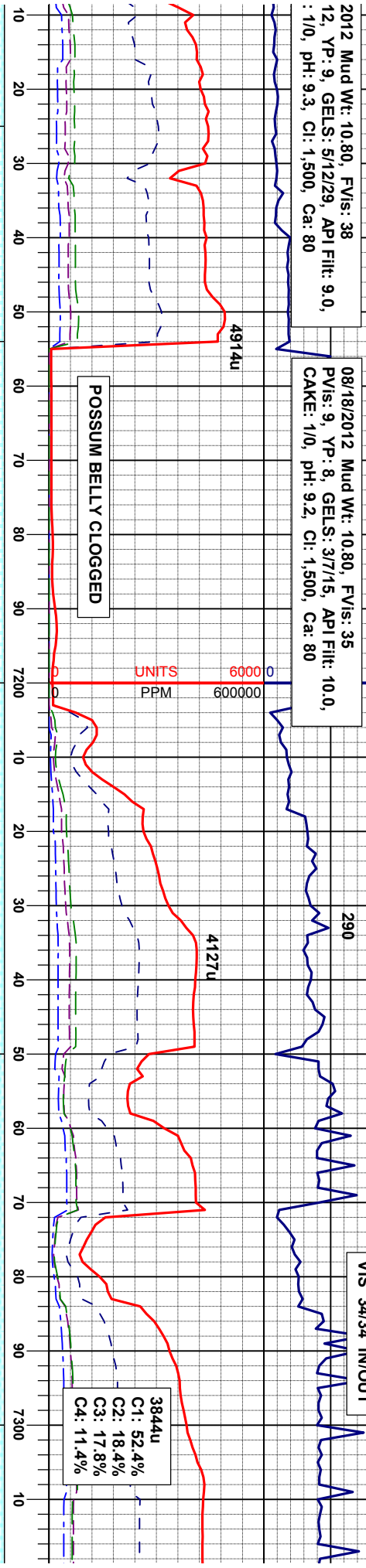
08/18/12

600

2012 Mud Wt: 10.80, FV/s: 38  
12, YP: 9, GELS: 5/12/29, API Filtr: 9.0,  
: 1/0, pH: 9.3, Ci: 1,500, Ca: 80

08/18/2012 Mud Wt: 10.80, FV/s: 35  
PV/s: 9, YP: 8, GELS: 3/7/15, API Filtr: 10.0,  
CAKE: 1/0, pH: 9.2, Ci: 1,500, Ca: 80

MUD WT 9.5/9.5  
VIS 34/34 IN/OUT



NO GAMMA INSIDE CASING

BUILD COMPLETED  
@ 10:05 HR ON 08/17/2012

BEGAN DRILLING LATERAL  
@ 12:10 MST ON 8/18/2012

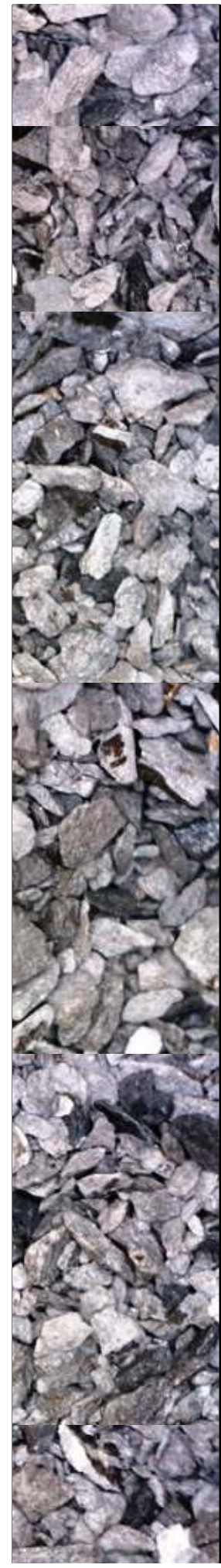
BHA 300  
BIT 6.130 in  
SECURITY  
FXD54  
5x11 JETS  
It gy - m gy, bnd w/ off, wh, micxl, sft,  
shky - blk, sbwxy tx,  
It gy - dk gy, mot, crpxl, sft, brt - fri,  
- sbblk, y,

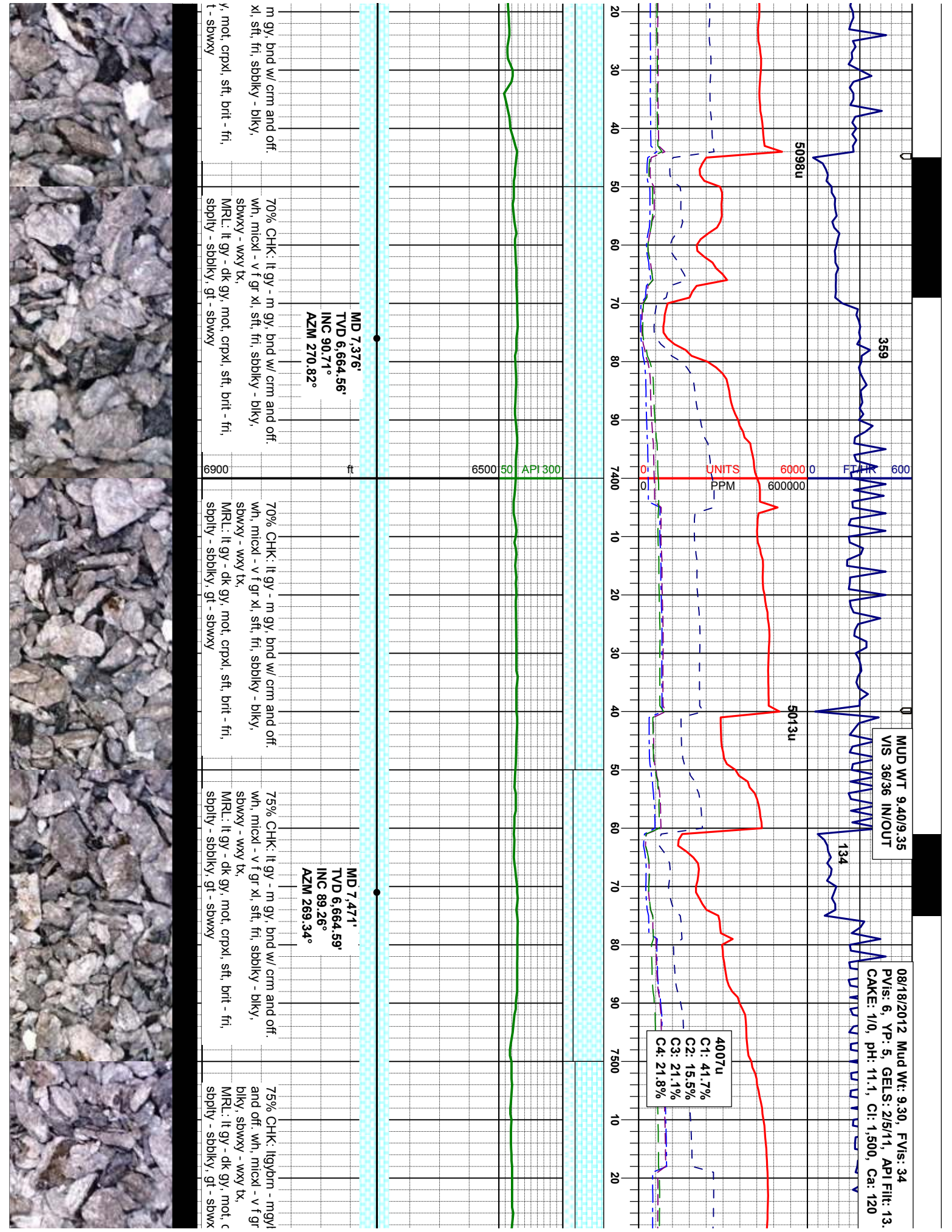
MD 7,186'  
TVD 6,655.86'  
INC 84.71°  
AZM 269.82°  
85% CHK: It gy - m gy, bnd w/ off, wh,  
micxl, sft, fri, sbblk - blk, sbwxy tx,  
MRL: It gy - dk gy, mot, crpxl, sft, brt - fri,  
spltv - sbblk, y,

MD 7,281'  
TVD 6,662.70'  
INC 87.04°  
AZM 270.34°  
70% CHK: It gy - m gy, bnd w/ off, wh,  
micxl, sft, fri, sbblk - blk, sbwxy tx,  
MRL: It gy - dk gy, mot, crpxl, sft, brt - fri,  
spltv - sbblk, y,

MD 7,281'  
TVD 6,662.70'  
INC 87.04°  
AZM 270.34°

70% CHK: It gy -  
wh, micxl - v fr  
sbwxy - wxy tx,  
MRL: It gy - dk g  
spltv - sbblk, y





MUD WT 9.40/9.35  
VIS 36/36 IN/OUT

08/18/2012 Mud Wt: 9.30, FVis: 34  
PVIS: 6, YP: 5, GELS: 25/11, AP1 Fill: 13.  
CAKE: 1/0, pH: 11.1, Cl: 1.500, Ca: 120

4007u  
C1: 41.7%  
C2: 15.5%  
C3: 21.1%  
C4: 21.8%

MID 7,376'  
TVD 6,664.56'  
INC 90.71°  
AZM 270.82°

MID 7,471'  
TVD 6,664.59'  
INC 89.26°  
AZM 269.34°

m gy, bnd w/ crm and off.  
xl, sft, fri, sbblky - blkly,  
y, mot, crpxl, sft, brit - fri,  
t - sbwxy

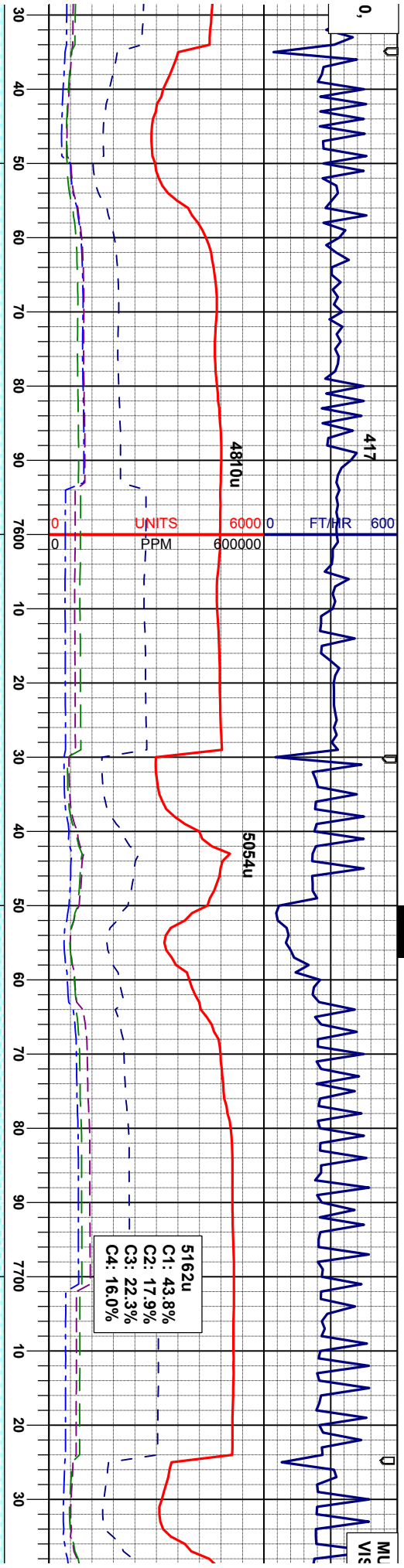
70% CHK: It gy - m gy, bnd w/ crm and off.  
wh, micxl - v f gr xl, sft, fri, sbblky - blkly,  
sbwxy - wxy tx,  
MRL: It gy - dk gy, mot, crpxl, sft, brit - fri,  
spply - sbblky, gt - sbwxy

70% CHK: It gy - m gy, bnd w/ crm and off.  
wh, micxl - v f gr xl, sft, fri, sbblky - blkly,  
sbwxy - wxy tx,  
MRL: It gy - dk gy, mot, crpxl, sft, brit - fri,  
spply - sbblky, gt - sbwxy

75% CHK: It gy - m gy, bnd w/ crm and off.  
wh, micxl - v f gr xl, sft, fri, sbblky - blkly,  
sbwxy - wxy tx,  
MRL: It gy - dk gy, mot, crpxl, sft, brit - fri,  
spply - sbblky, gt - sbwxy

75% CHK: It gy - m gy, bnd w/ crm and off.  
wh, micxl - v f gr xl, sft, fri, sbblky - blkly,  
sbwxy - wxy tx,  
MRL: It gy - dk gy, mot, crpxl, sft, brit - fri,  
spply - sbblky, gt - sbwxy





MD 7.566'  
 TVD 6,664.23'  
 INC 91.17°  
 AZM 270.39°

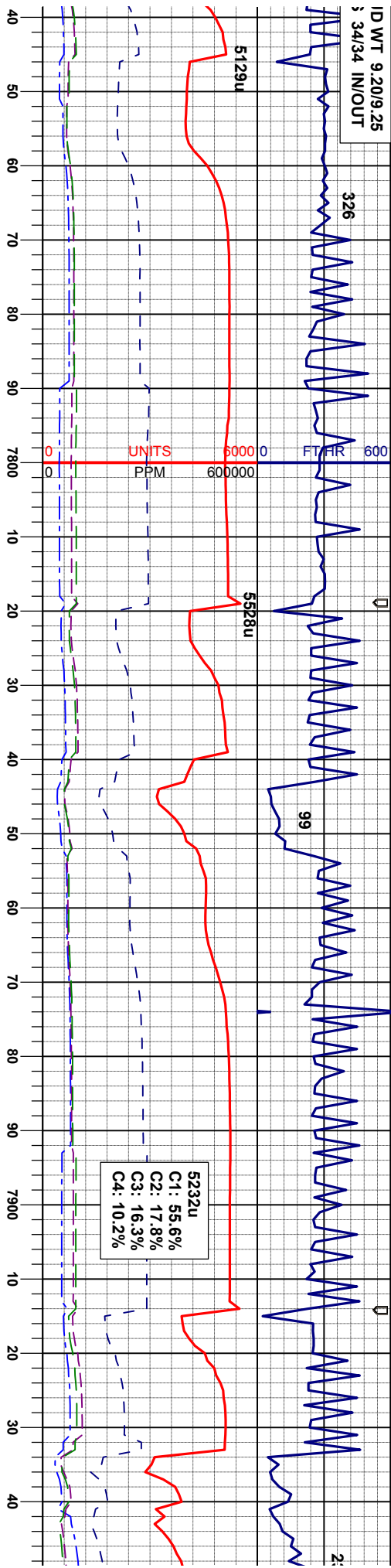
85% CHK: lgybrn - mgybrn, bnd w/ crm  
 and off. wh, micxl - v f gr xl, sft, fri, sbbkly -  
 blkly, sbwxy - wxy tx,  
 MRL: lt gy - dk gy, mot, crpxl, sft, brit - fri,  
 sbply - sbbkly, gt - sbwxy

MD 7.660'  
 TVD 6,663.47'  
 INC 89.75°  
 AZM 270.01°

80% CHK: lgybrn - mgybrn, bnd w/ crm  
 and off. wh, micxl - v f gr xl, sft, fri, sbbkly -  
 blkly, sbwxy - wxy tx,  
 MRL: lt gy - dk gy, mot, crpxl, sft, brit - fri,  
 sbply - sbbkly, gt - sbwxy

85% CHK: lgybrn - mgybrn, bnd w/ crm  
 and off. wh, micxl - v f gr xl, sft, fri, s  
 blkly, sbwxy - wxy tx,  
 MRL: lt gy - dk gy, mot, crpxl, sft, br  
 sbply - sbbkly, gt - sbwxy





MD 7,755'  
TVD 6,663.34'  
INC 90.40°  
AZM 270.83°

MD 7,850'  
TVD 6,661.89'  
INC 91.35°  
AZM 270.77°

MD 7,945'  
TVD 6,666'  
INC 90.49°  
AZM 269.1°

crm  
:bbiky -  
it - fri,  
90% CHK: ltgybrn - mgybrn, bnd w/ crm  
and off. wh, micxl - v f gr xl, sft, fri, sbblky -  
blky, sbwxy - wxy tx,  
MRL: lt gy - dk gy, mot, crpxl, sft, brit - fri,  
sbply - sbblky, gt - sbwxy

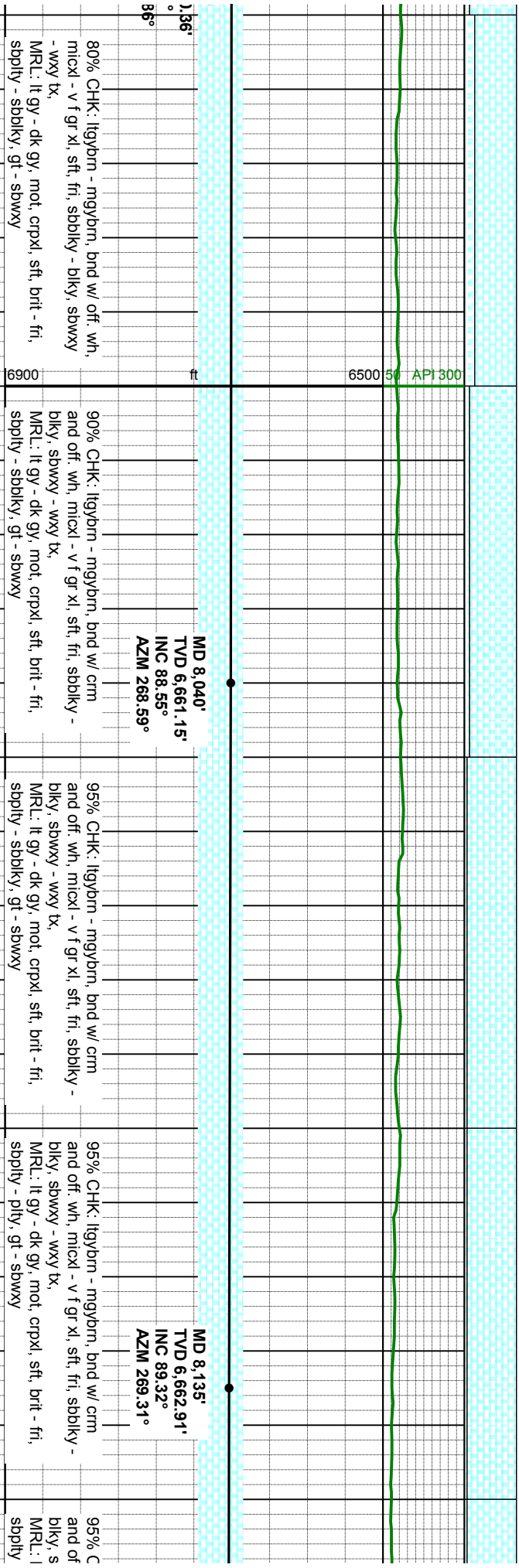
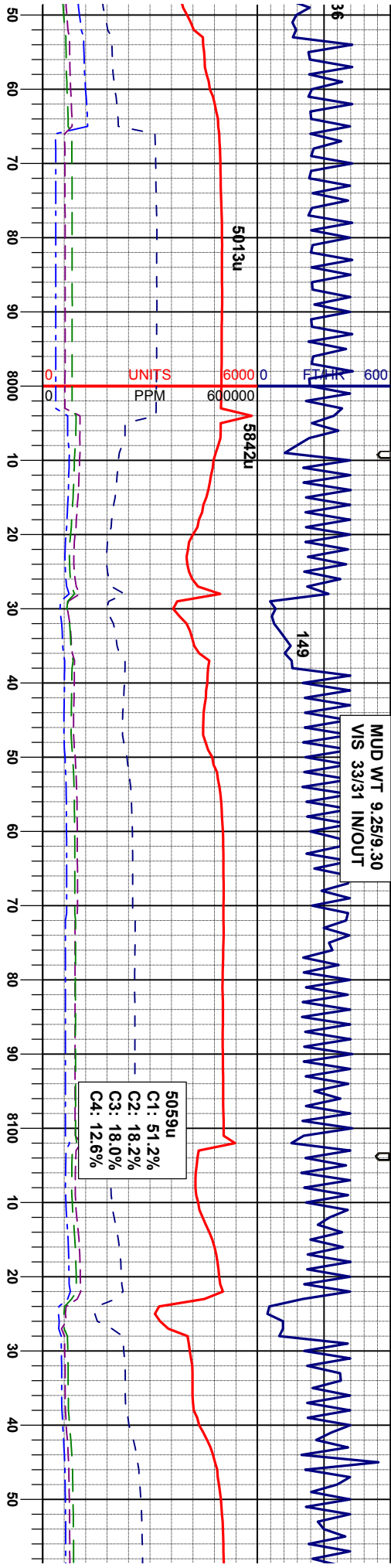
90% CHK: ltgybrn - mgybrn, bnd w/ crm  
and off. wh, micxl - v f gr xl, sft, fri, sbblky -  
blky, sbwxy - wxy tx,  
MRL: lt gy - dk gy, mot, crpxl, sft, brit - fri,  
sbply - sbblky, gt - sbwxy

95% CHK: ltgybrn - mgybrn, bnd w/ crm  
and off. wh, micxl - v f gr xl, sft, fri, sbblky -  
blky, sbwxy - wxy tx,  
MRL: lt gy - dk gy, mot, crpxl, sft, brit - fri,  
sbply - sbblky, gt - sbwxy

90% CHK: ltgybrn - mgybrn, bnd w/ off. wh,  
micxl - v f gr xl, sft, fri, sbblky - blky, sbwxy  
- wxy tx,  
MRL: lt gy - dk gy, mot, crpxl, sft, brit - fri,  
sbply - sbblky, gt - sbwxy



MUD WT 9.25/9.30  
VIS 33/31 IN/OUT



1,36°  
86°

80% CHK: llybrn - mgybrn, brnd w/ off. wh, mxcxl - v f gr xl, sft, fri, sbblky - blkly, sbwxy - wxy tx.  
MRL: lt gy - dk gy, mot, crpxl, sft, brnt - fri, sbply - sbblky, gt - sbwxy

90% CHK: llybrn - mgybrn, brnd w/ crm and off wh, mxcxl - v f gr xl, sft, fri, sbblky - blkly, sbwxy - wxy tx.  
MRL: lt gy - dk gy, mot, crpxl, sft, brnt - fri, sbply - sbblky, gt - sbwxy

95% CHK: llybrn - mgybrn, brnd w/ crm and off wh, mxcxl - v f gr xl, sft, fri, sbblky - blkly, sbwxy - wxy tx.  
MRL: lt gy - dk gy, mot, crpxl, sft, brnt - fri, sbply - plty, gt - sbwxy

95% C and of blkly, s MRL: l sbply

MD 8,040'  
TVD 6,661.15'  
INC 88.55°  
AZM 268.59°

MD 8,135'  
TVD 6,662.91'  
INC 89.32°  
AZM 269.31°

6900

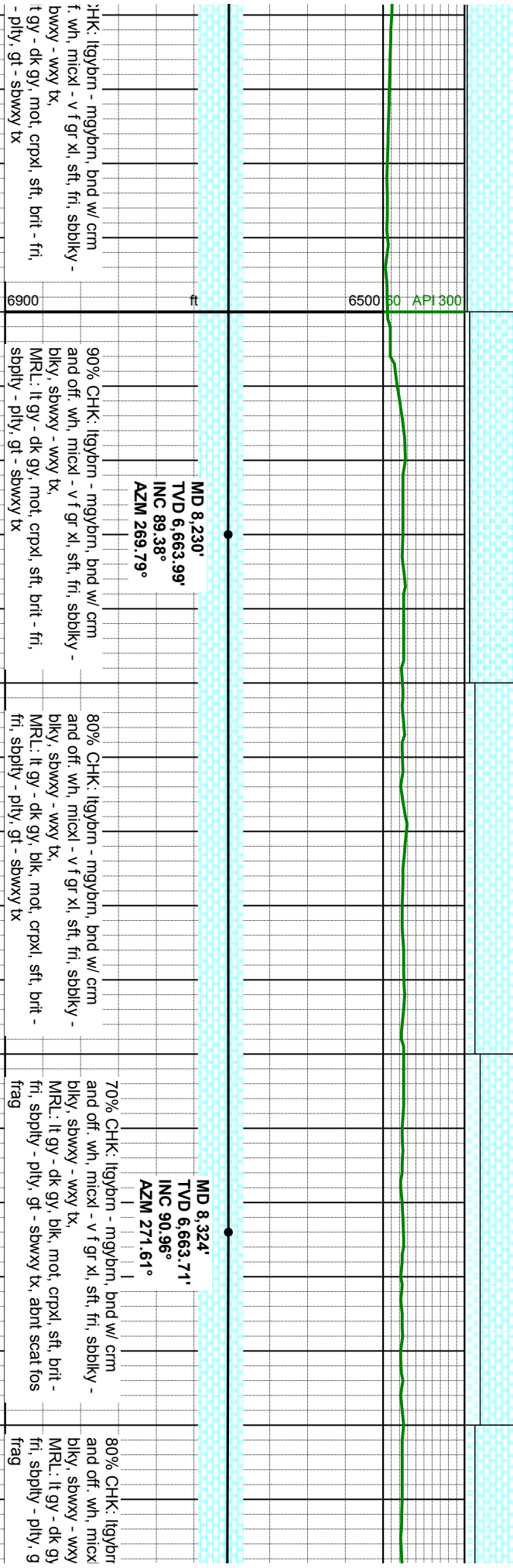
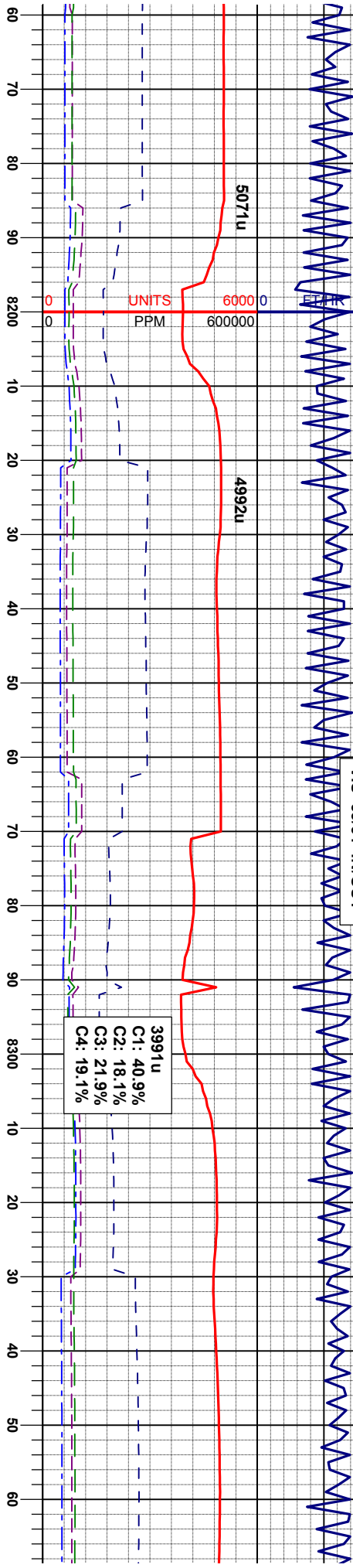


427

608

MUD WT 9.10/9.25  
VIS 33/31 IN/OUT

419



CHK: lgybrn - mgybrn, bnd w/ crm  
f. wh, micxl - v f gr xl, sft, fri, sbdkly -  
bwwy - wxy tx,  
t gy - dk gy, mot, crpxl, sft, brit - fri,  
- plty, gt - sbwwy tx

90% CHK: lgybrn - mgybrn, bnd w/ crm  
and off. wh, micxl - v f gr xl, sft, fri, sbdkly -  
blky, sbwwy - wxy tx,  
MRL: lt gy - dk gy, mot, crpxl, sft, brit - fri,  
sbply - plty, gt - sbwwy tx

80% CHK: lgybrn - mgybrn, bnd w/ crm  
and off. wh, micxl - v f gr xl, sft, fri, sbdkly -  
blky, sbwwy - wxy tx,  
MRL: lt gy - dk gy, blk, mot, crpxl, sft, brit -  
fri, sbply - plty, gt - sbwwy tx

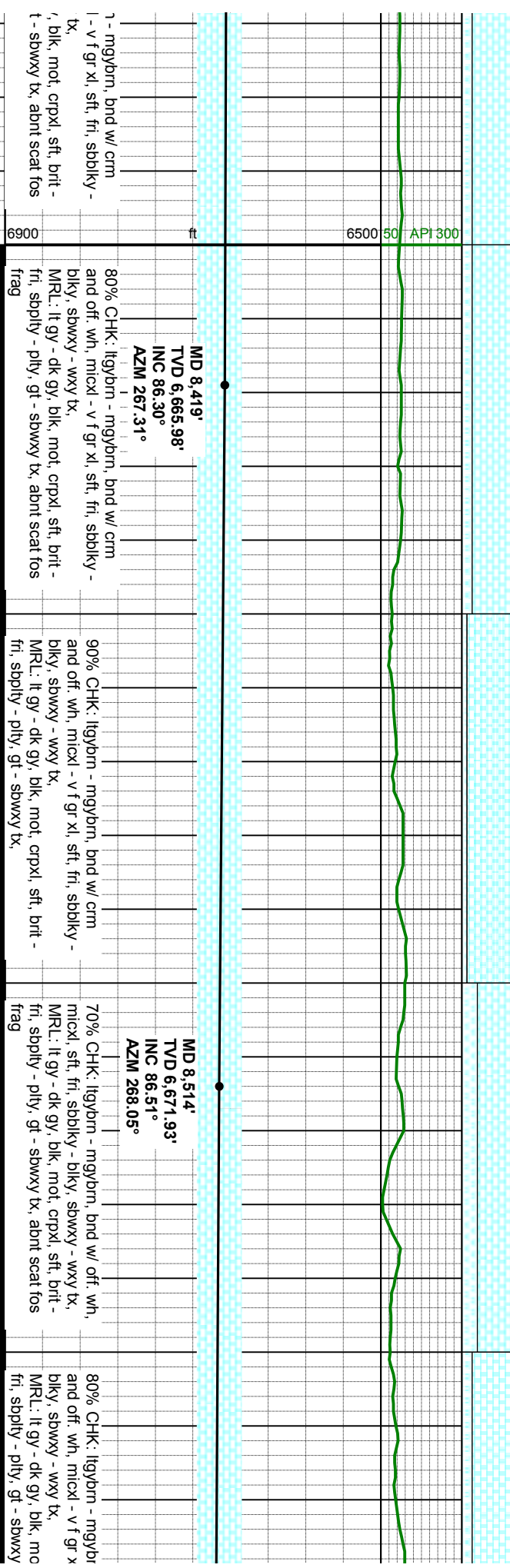
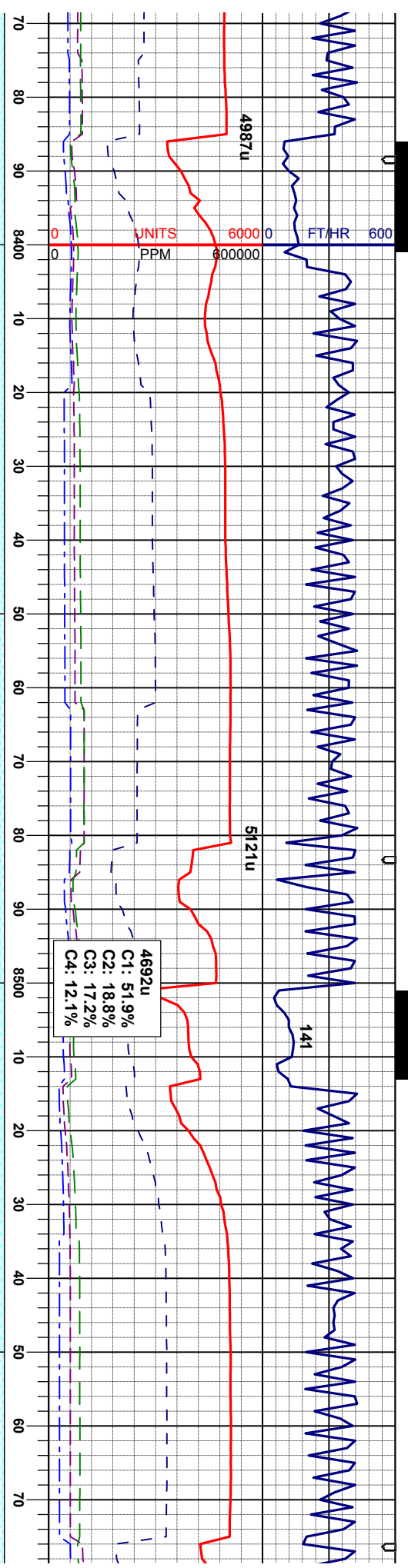
70% CHK: lgybrn - mgybrn, bnd w/ crm  
and off. wh, micxl - v f gr xl, sft, fri, sbdkly -  
blky, sbwwy - wxy tx,  
MRL: lt gy - dk gy, blk, mot, crpxl, sft, brit -  
fri, sbply - plty, gt - sbwwy tx, abnt scat fos  
frag

80% CHK: lgybrn  
and off. wh, micxl  
blky, sbwwy - wxy  
MRL: lt gy - dk gy  
fri, sbply - plty, g  
frag

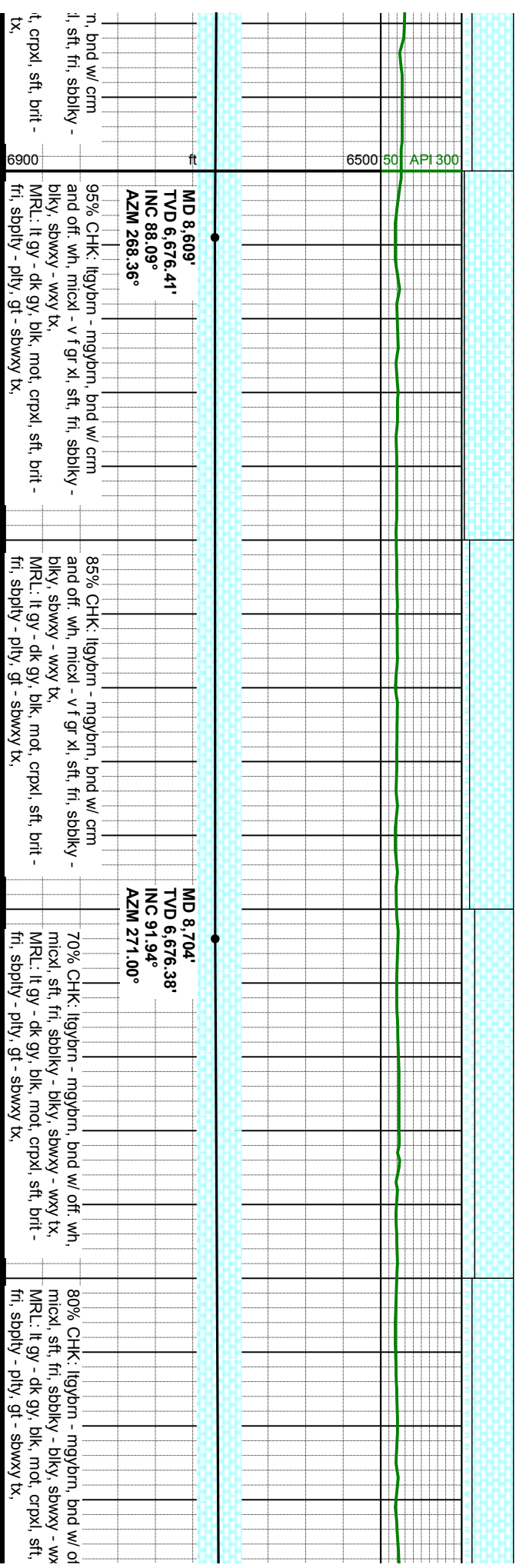
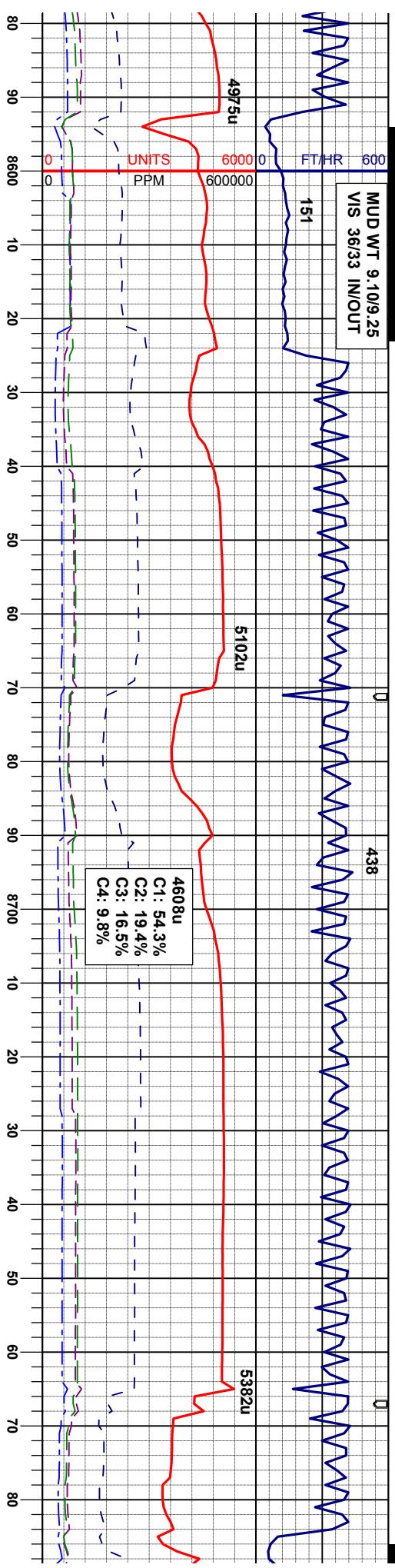
MD 8,230'  
TVD 6,663.99'  
INC 89.38°  
AZM 269.79°

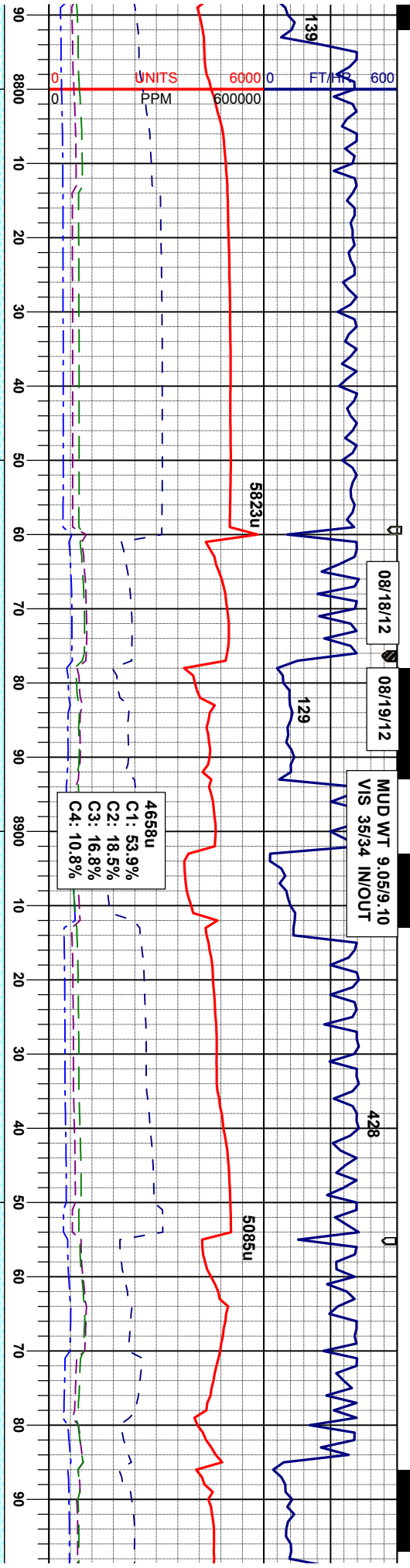
MD 8,324'  
TVD 6,663.71'  
INC 90.96°  
AZM 271.61°





MUD WT 9.10/9.25  
VIS 36/33 IN/OUT





MD 8,799'  
 TVD 6,672.37'  
 INC 92.90°  
 AZM 271.50°

90% CHK: lgy - mgy, gybrn, bnd w/ crm  
 and off. wh, micxl - vf gr xl, sft, fri, sdblkly -  
 blkly, sbwxy - wxy tx,  
 MRL: lt gy - dk gy, blk, mot, crpxl, sft, brit -  
 fri, sbply - plty, gt - sbwxy tx.

80% CHK: lgy - mgy, gybrn, bnd w/ crm  
 and off. wh, micxl - vf gr xl, sft, fri, sdblkly -  
 blkly, sbwxy - wxy tx,  
 MRL: lt gy - dk gy, blk, mot, crpxl, sft, brit -  
 fri, sbply - plty, gt - sbwxy tx.

85% CHK: lgy - mgy, gybrn, bnd w/ crm  
 and off. wh, micxl - vf gr xl, sft, fri, sdblkly -  
 blkly, sbwxy - wxy tx,  
 MRL: lt gy - dk gy, blk, mot, crpxl, sft, brit -  
 fri, sbply - plty, gt - sbwxy tx.

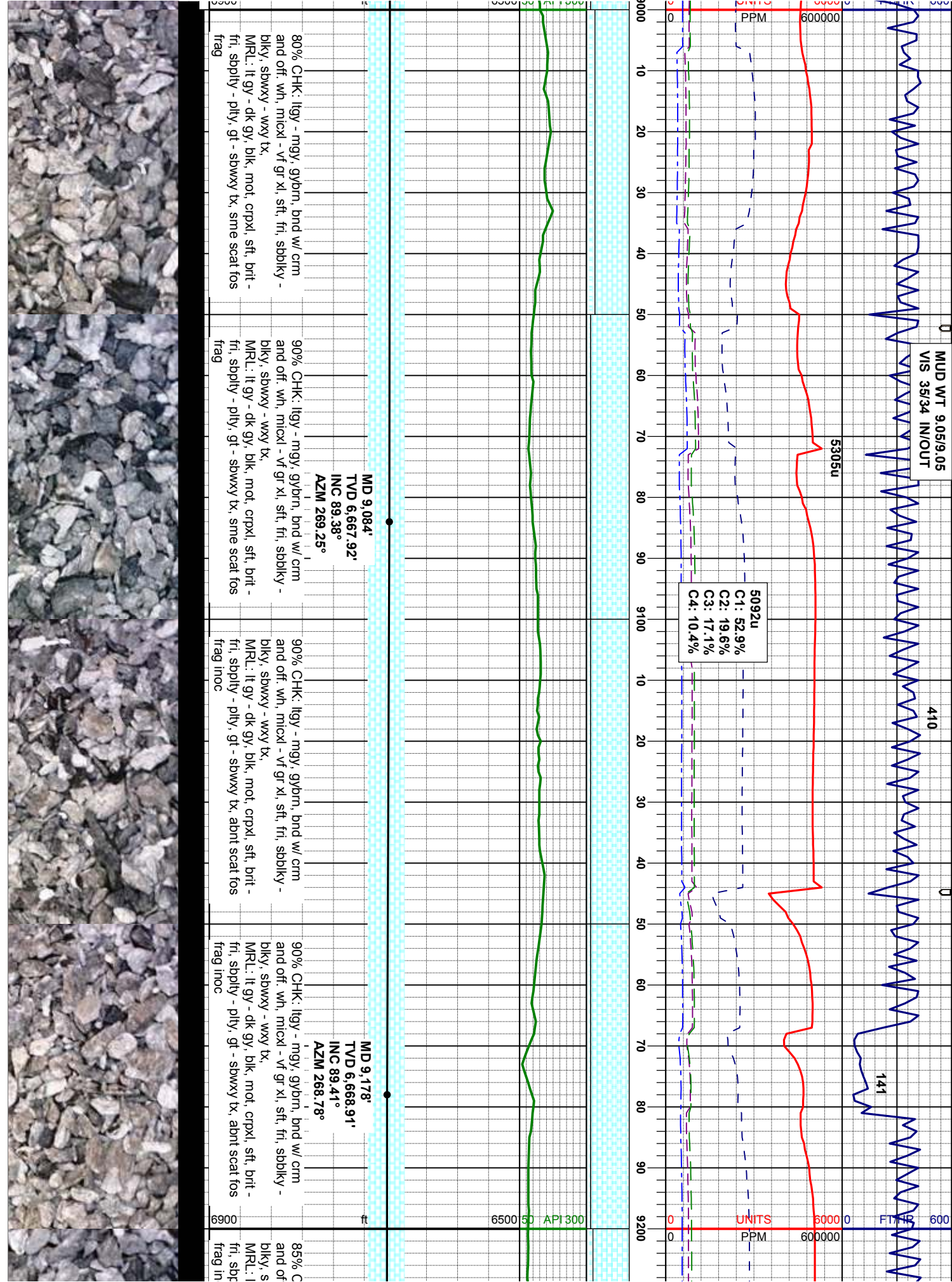
MD 8,957'  
 TVD 6,667.23'  
 INC 90.83°  
 AZM 271.12°

90% CHK: lgy - mgy, gybrn, bnd w/ crm  
 and off. wh, micxl - vf gr xl, sft, fri, sdblkly -  
 blkly, sbwxy - wxy tx,  
 MRL: lt gy - dk gy, blk, mot, crpxl, sft, brit -  
 fri, sbply - plty, gt - sbwxy tx, sme scat fos  
 frag

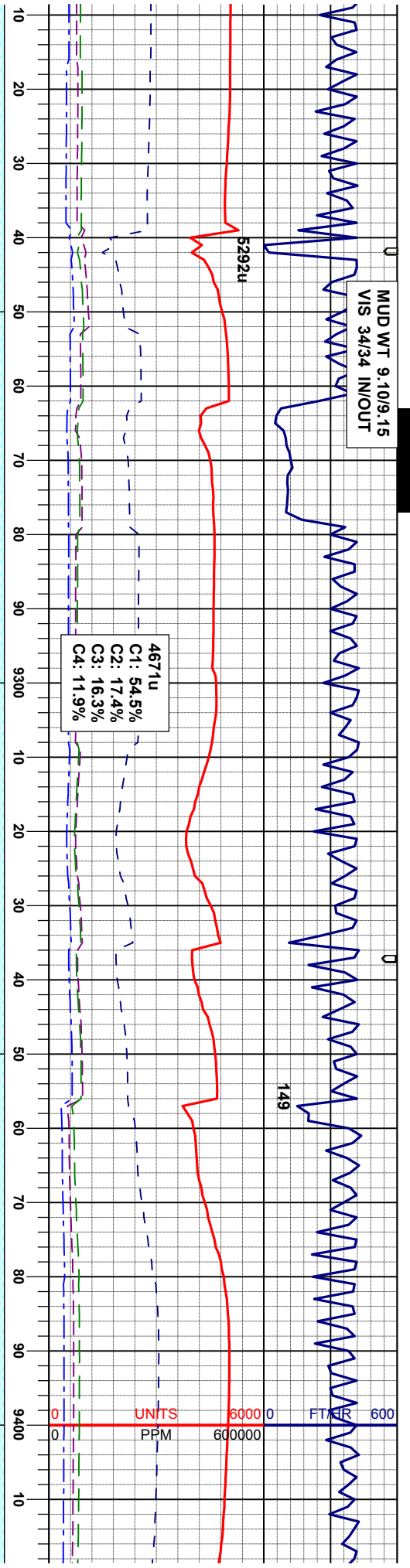
MD 8,989'  
 TVD 6,667.10'  
 INC 89.63°  
 AZM 269.21°



6500 50 AP1300



MUD WT 9.109.15  
VIS 34/34 IN/OUT



FAULT @ 9,276' MD  
DOWNTHROW 24'

A MARL

MD 9,273'  
TVD 6,669.47'  
INC 89.91°  
AZM 268.40°

MD 9,368'  
TVD 6,671.44'  
INC 89.88°  
AZM 268.73°

70% CHK: lgy - mgy, gybrn, bnd w/ crm and off. wh, micxl - vf gr xl, sft, fri, sbdky - blk, sbwxy - wxy tx  
MR.L: lt gy - dk gy, blk, mot, crpxl, sft, brit - fri, sbply - plty, gt - sbwxy tx, abnt scat fos frag inoc

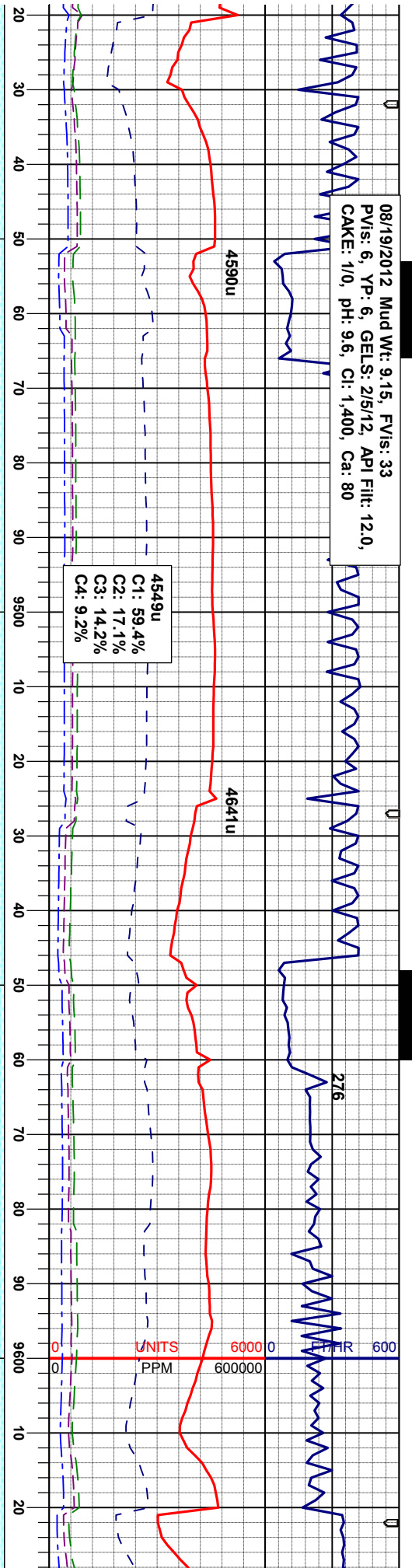
60% CHK: lgy - mgy, gybrn, bnd w/ crm and off. wh, micxl - vf gr xl, sft, fri, sbdky - blk, sbwxy - wxy tx  
MR.L: lt gy - dk gy, blk, mot, crpxl, sft, brit - fri, sbply - plty, gt - sbwxy tx, abnt scat fos frag inoc

60% CHK: lgy - mgy, gybrn, bnd w/ crm and off. wh, micxl - vf gr xl, sft, fri, sbdky - blk, sbwxy - wxy tx  
MR.L: lt gy - dk gy, blk, mot, crpxl, sft, brit - fri, sbply - plty, gt - sbwxy tx, abnt scat fos frag inoc

45% CHK: lgy and off. wh, micxl, sbwxy - wxy tx  
MR.L: lt gy - dk gy, blk, mot, crpxl, sft, brit - fri, sbply - plty, gt - sbwxy tx, abnt scat fos frag inoc



08/19/2012 Mud Wt: 9.15, FV/s: 33  
 PVis: 6, YP: 6, GELS: 2/5/12, API Filtr: 12.0,  
 CAKE: 1/0, pH: 9.6, CI: 1.400, Ca: 80



MD 9.463'  
 TVD 6,670.96'  
 INC 90.71°  
 AZM 268.58°

40% CHK: lgy - mgy, gybrn, bnd w/ crm  
 and off. wh, micxl - vt gr xl, sft, fri, sdblkly -  
 blkly, sbwxy - wxy tx  
 MRL: lt gy - dk gy, blk, mot, crpxl, sft, bnt -  
 fri, spply - plty, gt - sbwxy tx, abnt scat fos  
 frag inoc

35% CHK: lgy - mgy, gybrn, bnd w/ crm  
 and off. wh, micxl - vt gr xl, sft, fri, sdblkly -  
 blkly, sbwxy - wxy tx  
 MRL: lt gy - dk gy, blk, mot, crpxl, sft, bnt -  
 fri, spply - plty, gt - sbwxy tx, abnt scat fos  
 frag inoc

MD 9.558'  
 TVD 6,669.12'  
 INC 91.51°  
 AZM 267.30°

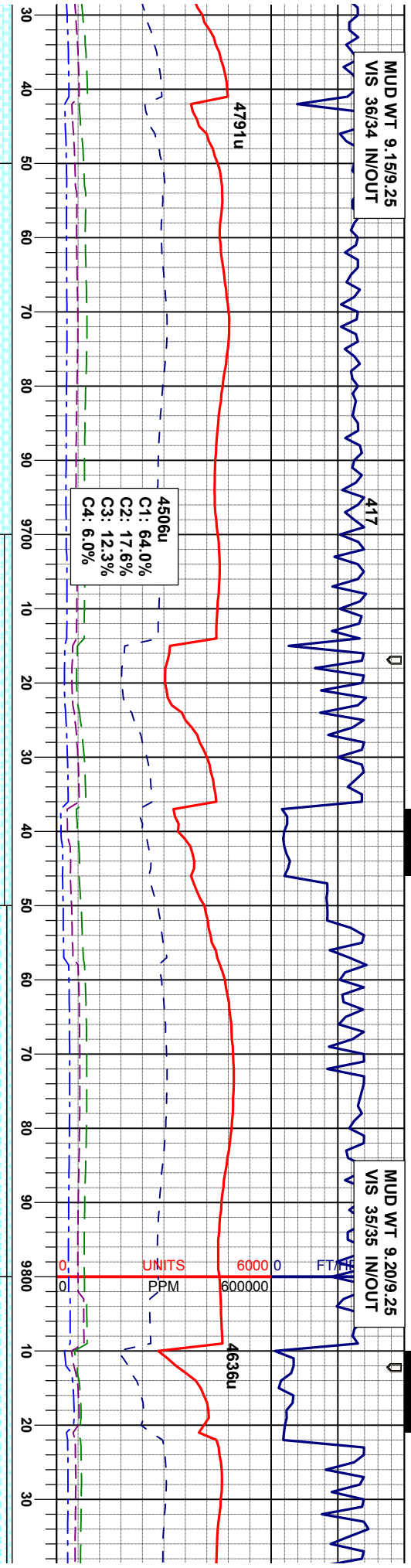
40% CHK: lgy - mgy, gybrn, bnd w/ crm  
 and off. wh, micxl - vt gr xl, sft, fri, sdblkly -  
 blkly, sbwxy - wxy tx  
 MRL: lt gy - dk gy, blk, mot, crpxl, sft, bnt -  
 fri, spply - plty, gt - sbwxy tx, abnt scat fos  
 frag inoc

30% CHK: lgy - mgy, gyt  
 and off. wh, micxl - vt gr x  
 blkly, sbwxy - wxy tx  
 MRL: lt gy - dk gy, blk, m  
 fri, spply - plty, gt - sbwxy  
 frag inoc



MUD WT 9.15/9.25  
VIS 36/34 IN/OUT

MUD WT 9.20/9.25  
VIS 35/35 IN/OUT



MD 9,653'  
TVD 6,666.84'  
INC 91.23°  
AZM 266.29°

MD 9,748'  
TVD 6,664.75'  
INC 91.30°  
AZM 267.01°

30% CHK: ltgy - mgy, gybrn, bnd w/ crm  
and off. wh, micxl - v/ gr xl, sft, fri, sbdkly -  
blky, sbwxy - wxy tx  
MRL: lt gy - dk gy, blk, mot, crpxl, sft, bnt -  
fri, sbply - plty, gt - sbwxy tx, abnt scat fos  
frag inoc

15% CHK: ltgy - mgy, gybrn, bnd w/ crm  
and off. wh, micxl - v/ gr xl, sft, fri, sbdkly -  
blky, sbwxy - wxy tx  
MRL: lt gy - dk gy, blk, mot, crpxl, sft, bnt -  
fri, sbply - plty, gt - sbwxy tx, abnt scat fos  
frag inoc

10% CHK: ltgy - mgy, gybrn, bnd w/ crm  
and off. wh, micxl - v/ gr xl, sft, fri, sbdkly -  
blky, sbwxy - wxy tx  
MRL: lt gy - dk gy, blk, mot, crpxl, sft, bnt -  
fri, sbply - plty, gt - sbwxy tx, abnt scat fos  
frag inoc

10% CHK: ltgy - mgy, gybrn, bnd w/ crm  
and off. wh, micxl - v/ gr xl, sft, fri, sbdkly -  
blky, sbwxy - wxy tx  
MRL: lt gy - dk gy, blk, mot, crpxl, sft, bnt -  
fri, sbply - plty, gt - sbwxy tx, abnt scat fos  
frag inoc





1,9,843'  
 DI 6,661.73'  
 : 82.47°  
 M 267.88°

10% CHK: lgy - mgy, gybrn, bnd w/ crm  
 and off. wh, micxl - vf gr xl, sft, fri, sbdkly -  
 blkly, sbwxy - wxy tx  
 MRL: lt gy - dk gy, blk, mot, crpxl, sft, bnt -  
 fri, sbply - plty, gt - sbwxy tx, abnt scat fos  
 frag inoc

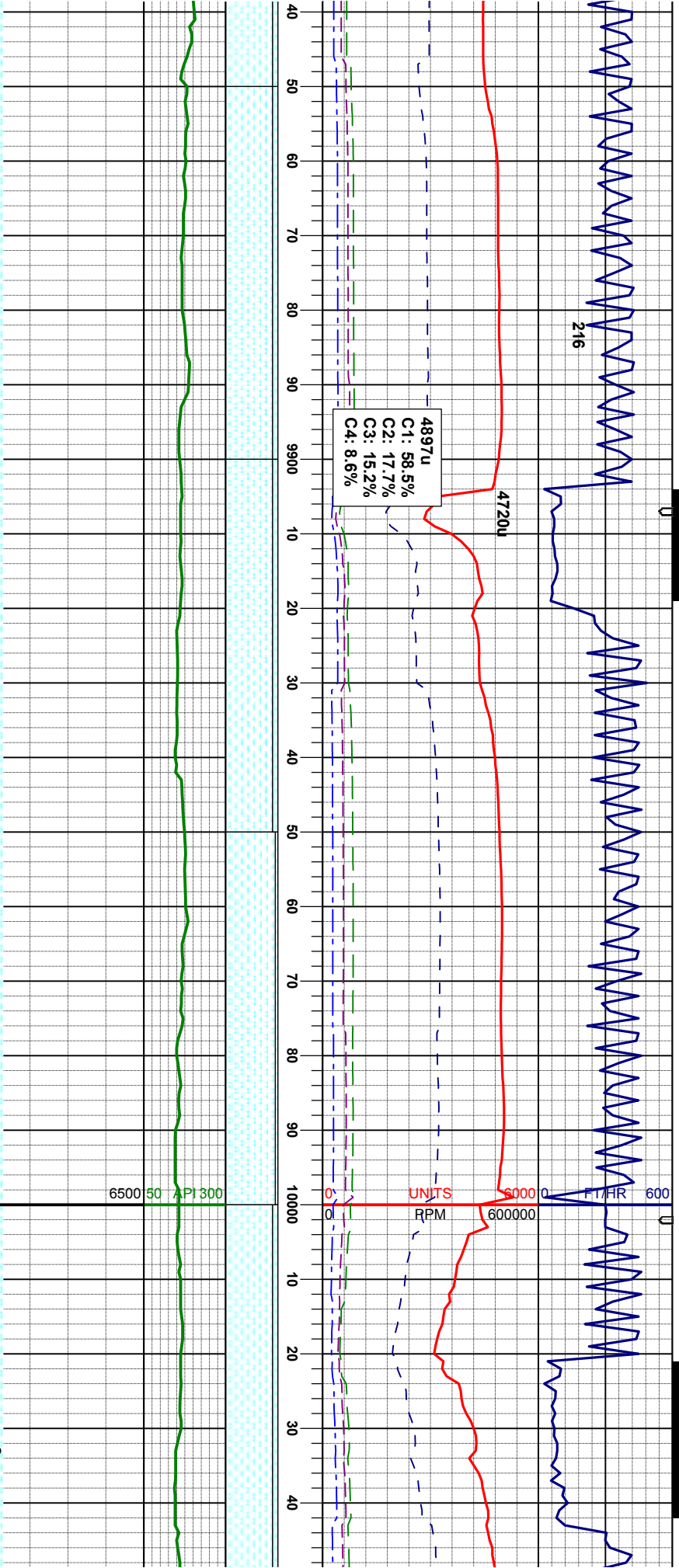
10% CHK: lgy - mgy, gybrn, bnd w/ crm  
 and off. wh, micxl - vf gr xl, sft, fri, sbdkly -  
 blkly, sbwxy - wxy tx  
 MRL: lt gy - dk gy, blk, mot, crpxl, sft, bnt -  
 fri, sbply - plty, gt - sbwxy tx, abnt scat fos  
 frag inoc

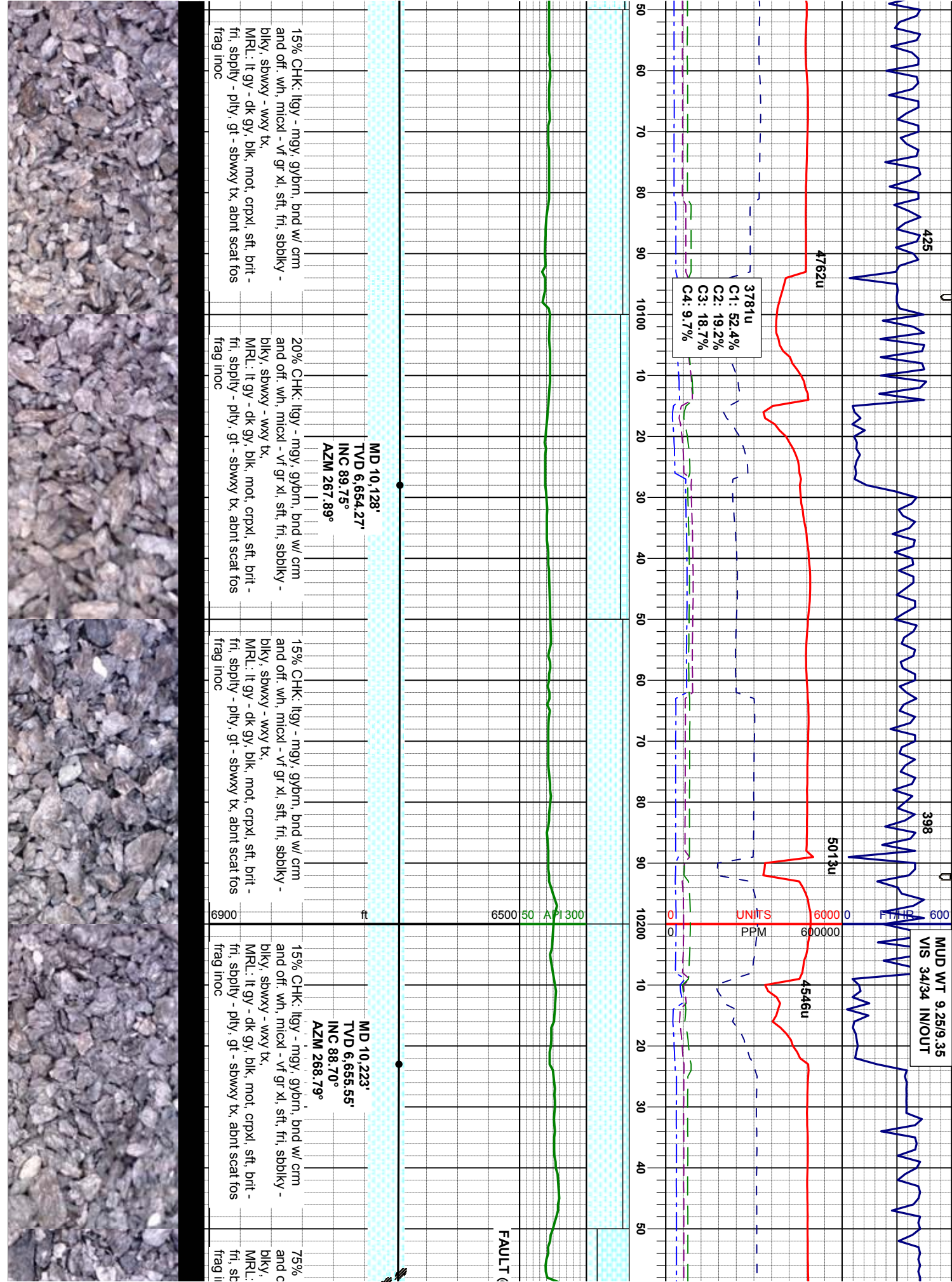
5% CHK: lgy - mgy, gybrn, bnd w/ crm and  
 off. wh, micxl - vf gr xl, sft, fri, sbdkly - blkly,  
 sbwxy - wxy tx  
 MRL: lt gy - dk gy, blk, mot, crpxl, sft, bnt -  
 fri, sbply - plty, gt - sbwxy tx, abnt scat fos  
 frag inoc

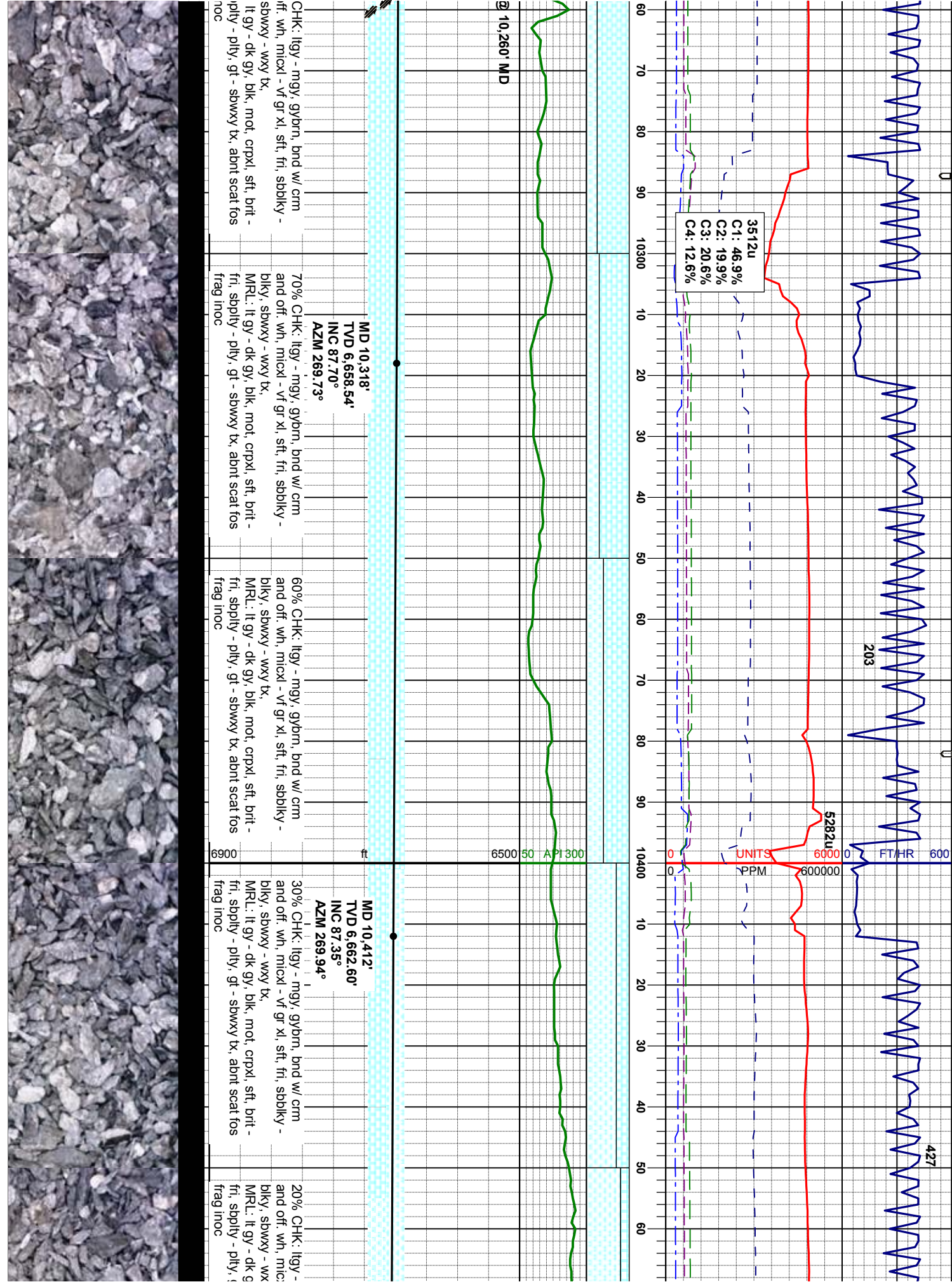
10% CHK: lgy - mgy, gybrn, bnd w/ crm  
 and off. wh, micxl - vf gr xl, sft, fri, sbdkly -  
 blkly, sbwxy - wxy tx  
 MRL: lt gy - dk gy, blk, mot, crpxl, sft, bnt -  
 fri, sbply - plty, gt - sbwxy tx, abnt scat fos  
 frag inoc

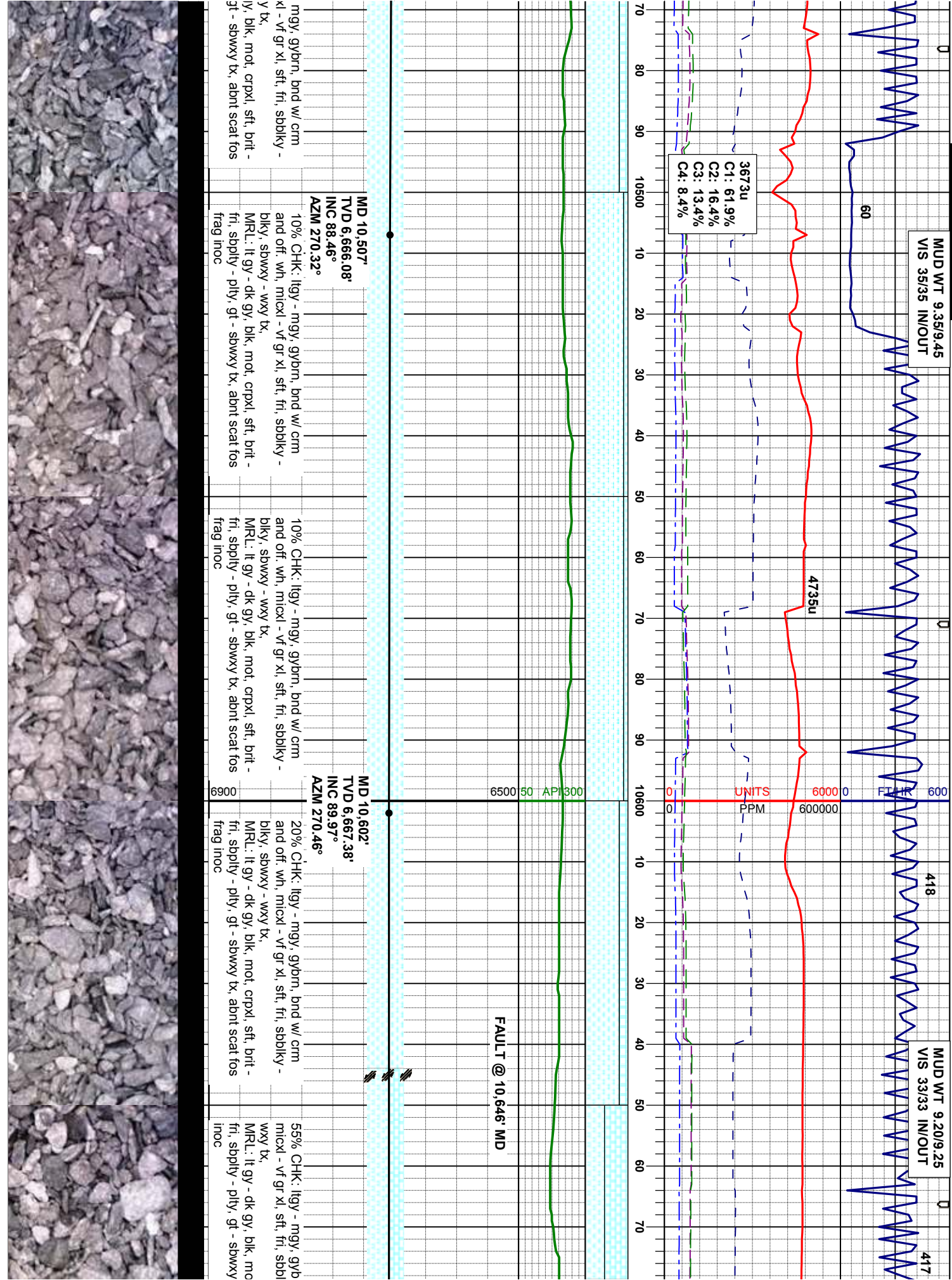
MD 9,938'  
 TVD 6,657.72'  
 INC 92.25°  
 AZM 268.30°

MD 10,033'  
 TVD 6,654.96'  
 INC 91.08°  
 AZM 268.81°

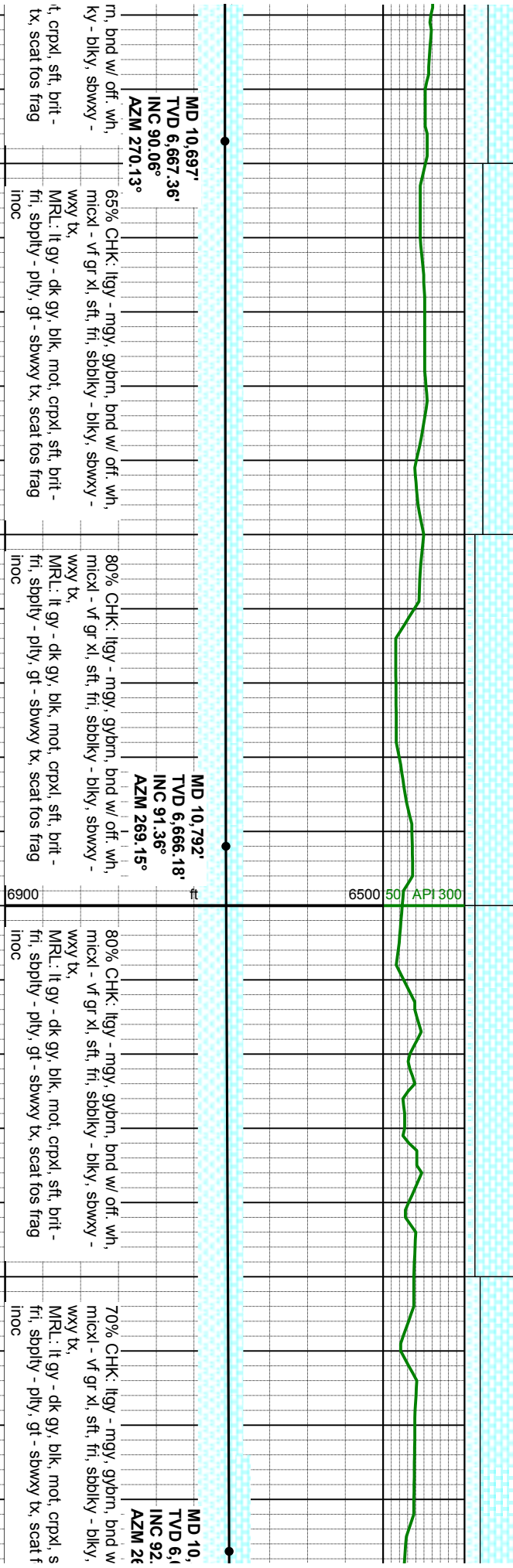
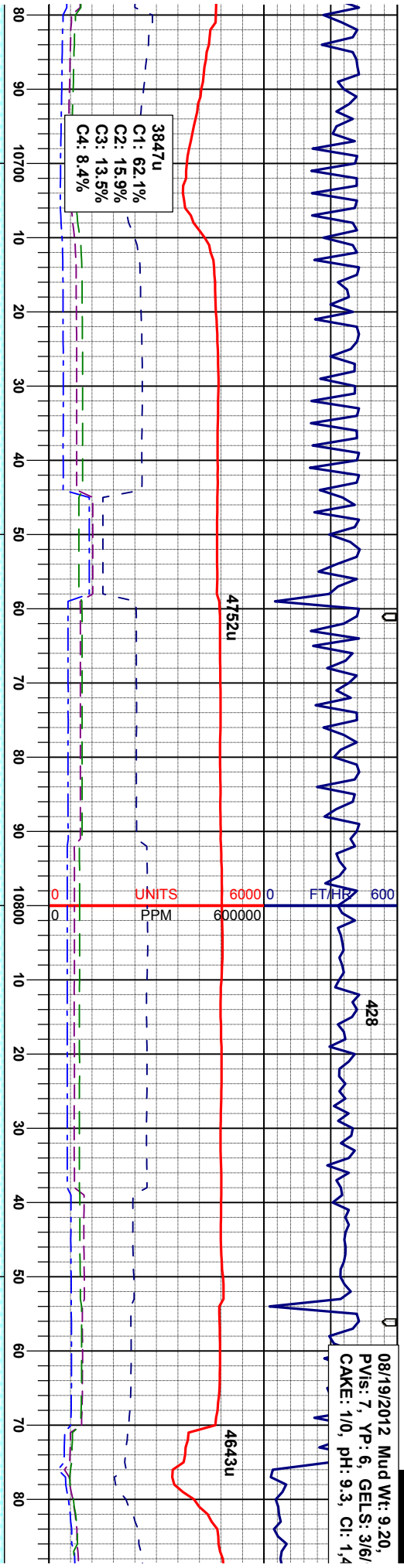






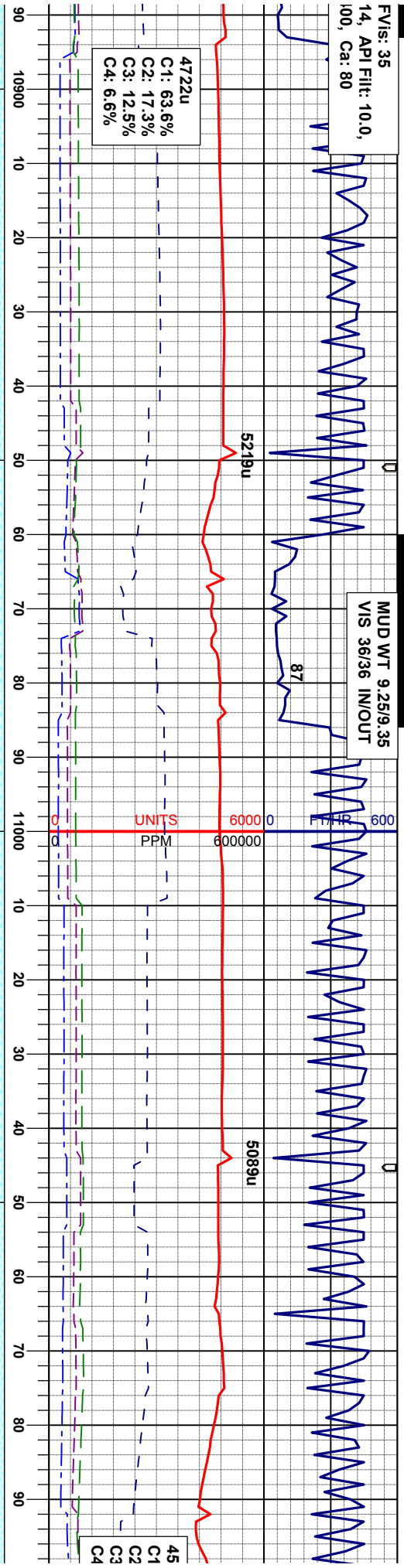


08/19/2012 Mud Wt: 9.20,  
 PVis: 7, YP: 6, GELS: 3/6/  
 CAKE: 1/0, pH: 9.3, CI: 1.4



FVI: 35  
 14, API Fil: 10.0,  
 100, Ca: 80

MUD WT 9.25/9.35  
 VIS 36/36 IN/OUT



4722u  
 C1: 63.6%  
 C2: 17.3%  
 C3: 12.5%  
 C4: 6.6%

45  
 C1  
 C2  
 C3  
 C4

897'  
 362.86°  
 65°  
 19.05°

75% CHK: lgy - mgy, gybrn, bnd w/ off, wh, micxl - vf gr xl, sft, fri, sbdky - blk, sbwxy - wxy tx  
 MRL: lt gy - dk gy, blk, mot, crpxl, sft, brit - fri, sbply - ply, gt - sbwxy tx, scat fos frag inoc

MD 10,982'  
 TVD 6,660.27'  
 INC 90.46°  
 AZM 269.16°

70% CHK: lgy - mgy, gybrn, bnd w/ off, wh, micxl - vf gr xl, sft, fri, sbdky - blk, sbwxy - wxy tx  
 MRL: lt gy - dk gy, blk, mot, crpxl, sft, brit - fri, sbply - ply, gt - sbwxy tx, scat fos frag inoc

70% CHK: lgy - mgy, gybrn, bnd w/ off, wh, micxl sft, fri, sbdky - blk, sbwxy - wxy tx, MRL: lt gy - dk gy, blk, mot, crpxl, sft - firm, brit - fri, sbply - ply, gt - sbwxy tx, scat fos frag inoc

60% CHK: lgy - mgy, gybrn, bnd w/ off, wh, micxl, sft, fri, sbdky - blk, sbwxy - wxy tx, MRL: lt gy - dk gy, blk, mot, crpxl, sft - firm, brit - fri, sbply - ply, gt - sbwxy tx, scat fos frag inoc



