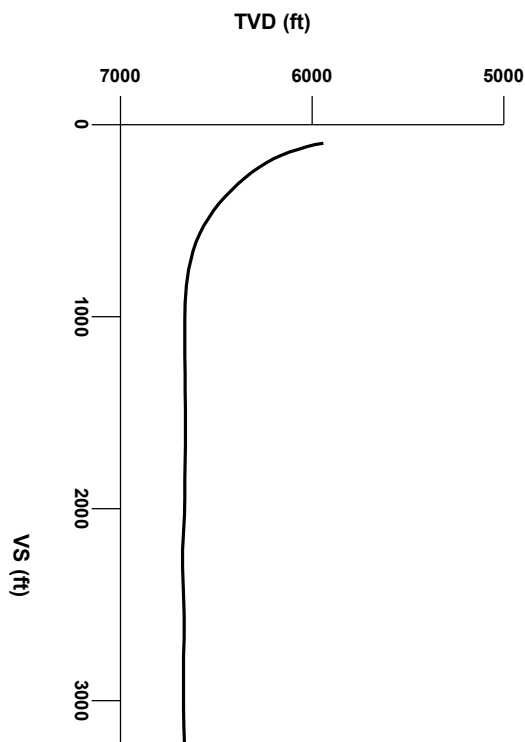


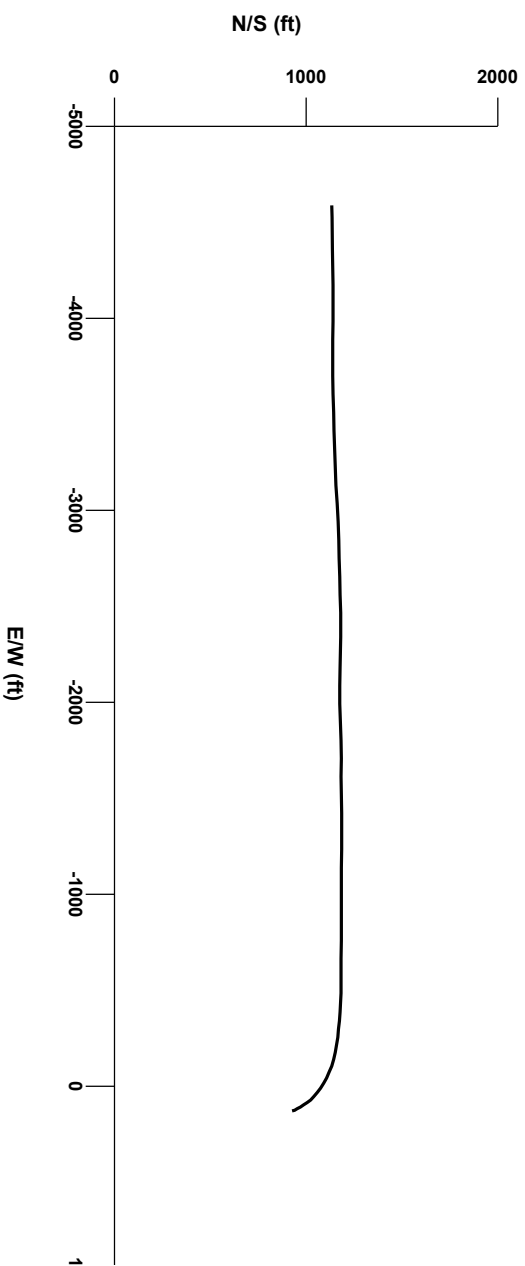
LOG created using L PLOT VH Version 3.0, August 19, 2012, Copyright (C) 1999-2009 Pason Systems Corp.

**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



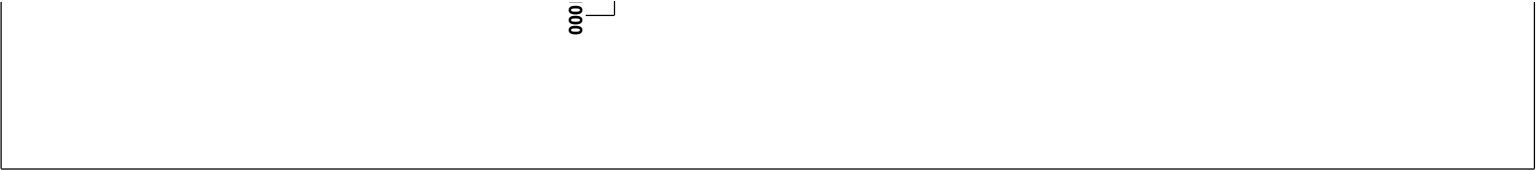
Survey Elevation

Survey Plan



4000

5000



Bentonite

Shaly Sandstone

Chalk

Silty Shale

Marl

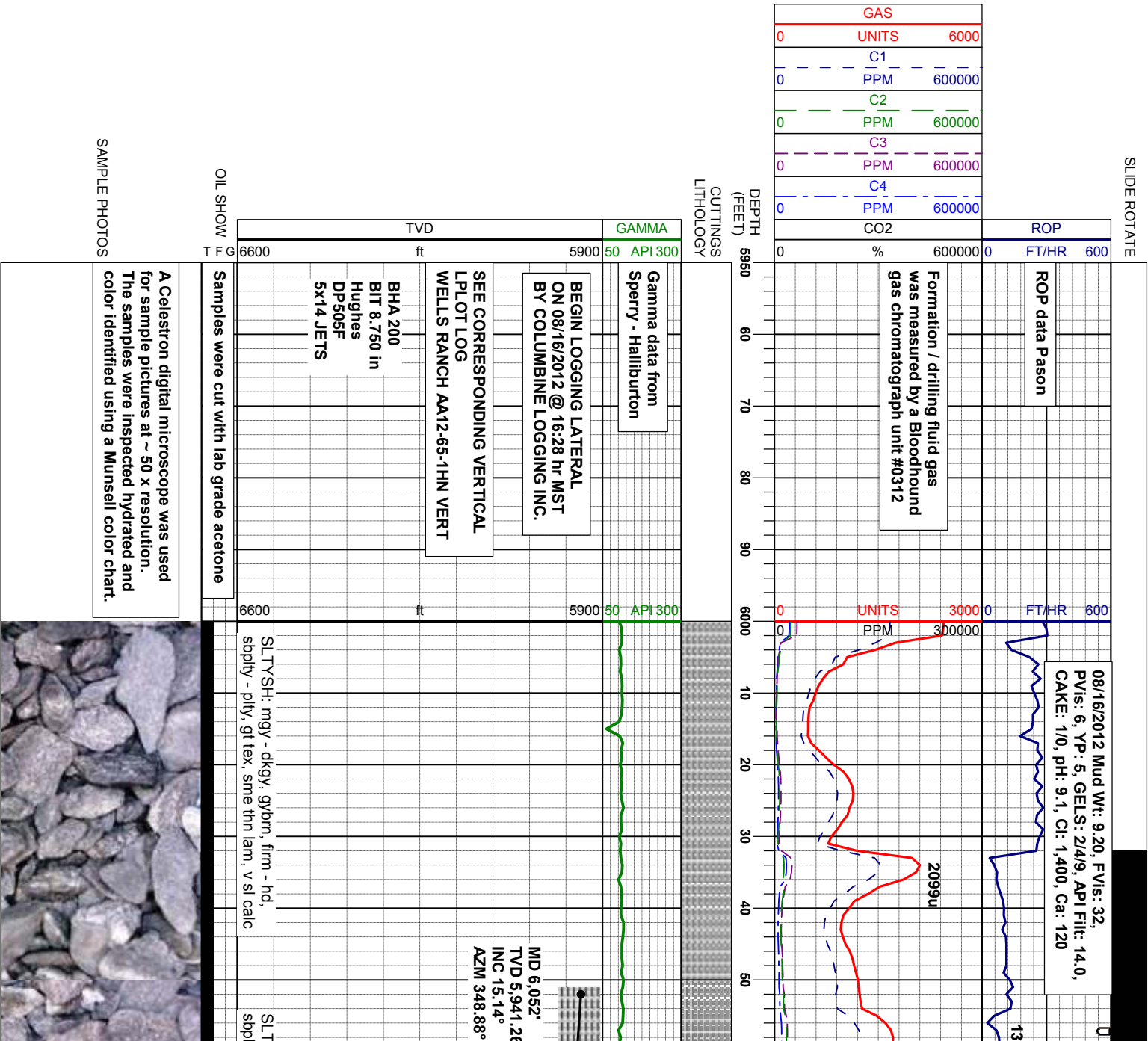
ENGINEERING SYMBOLS

Connection

Midnight Depth

Normal Fault

Reverse Fault



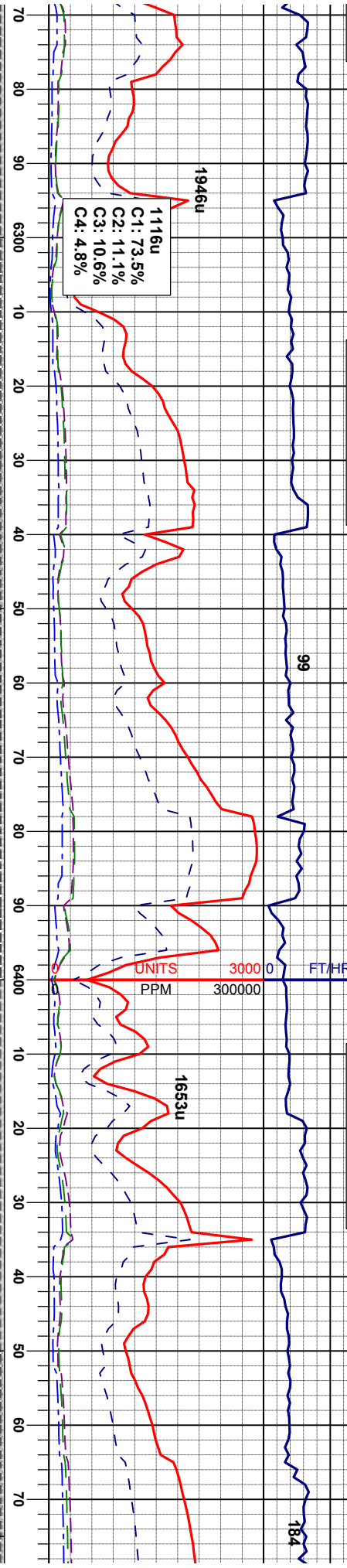




1/10.20  
UT

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

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



1116u  
C1: 73.5%  
C2: 11.1%  
C3: 10.6%  
C4: 4.8%

1946u

1653u

99

184

<<TVD SCALE CHANGE>>

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 / mtx

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

SLTYSH: mgy - dkgy, gybrn, blk, firm - hd,  
sbply - pily, 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 / mtx

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

SLTYSH: mgy - dkgy, gyb  
sbply - pily, gt tex, sme th  
SHYSS: wh, lt gy, fros-trns  
mod consol, v calc cntl / n

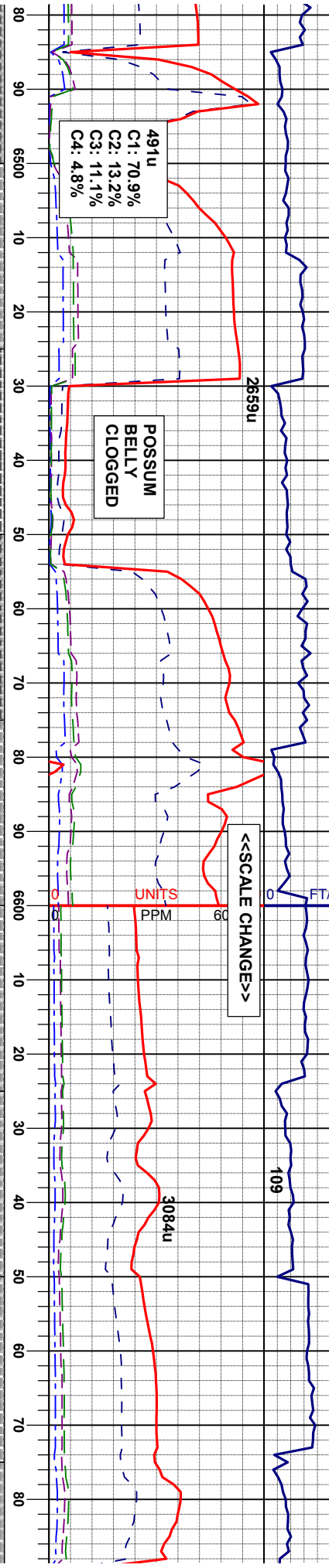




08/16/1208/17/12

MUD WT 10.65/10.45  
VIS 36/36 IN/OUT

MUD WT 10.70  
VIS 36/37 IN/C

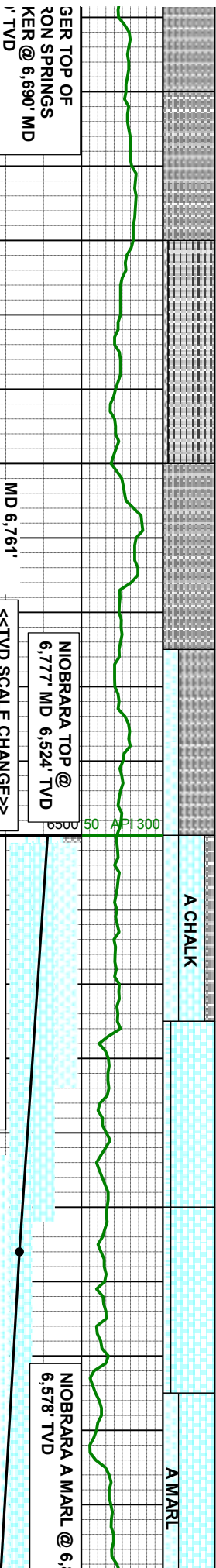


MD 6,524' TVD 6,352.07' INC 41.26° AZM 300.02°	MD 6,571' TVD 6,386.93' INC 43.00° AZM 296.07°	MD 6,619' TVD 6,421.46' INC 44.99° AZM 292.98°	MD 6,666' TVD 6,454.1' INC 47.07° AZM 289.51°
SL.TYSH: mgy - dkgy, gybrn, firm - hd, sblply - plty, gt tex, sme thn lam, sl calc SHYSS: wh, lt gy, fros-trnsl, f-vf gr, mod srt, mod consol, v calc cnt / mtx	SL.TYSH: mgy - dkgy, gybrn, firm - hd, sblply - plty, gt tex, sme thn lam, sl calc SHYSS: wh, lt gy, fros-trnsl, f-vf gr, mod srt, mod consol, v calc cnt / mtx	SL.TYSH: mgy - dkgy, gybrn, firm - hd, sblply - plty, gt tex, sme thn lam bdg, sl calc, tr bent w/ scat yel orng mnrl flr	SL.TYSH: mgy - dkgy, gybrn, firm - hd, sblply - plty, gt tex, sme thn lam bdg, calc, incr bent w/ disn pyr and scat y orng mnrl flr





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



NIORARA A MARL @ 6,  
6,578' TVD


CHK: It gy - m gy, bnd w/ off, wh, micxl, sft  
frī, sbdky - bky, sbwxy tx,  
MR.: It gy - dk gy, moī, cpxl, sft, brī - frī,  
spply - sbdky,







08/17/12

08/18/12

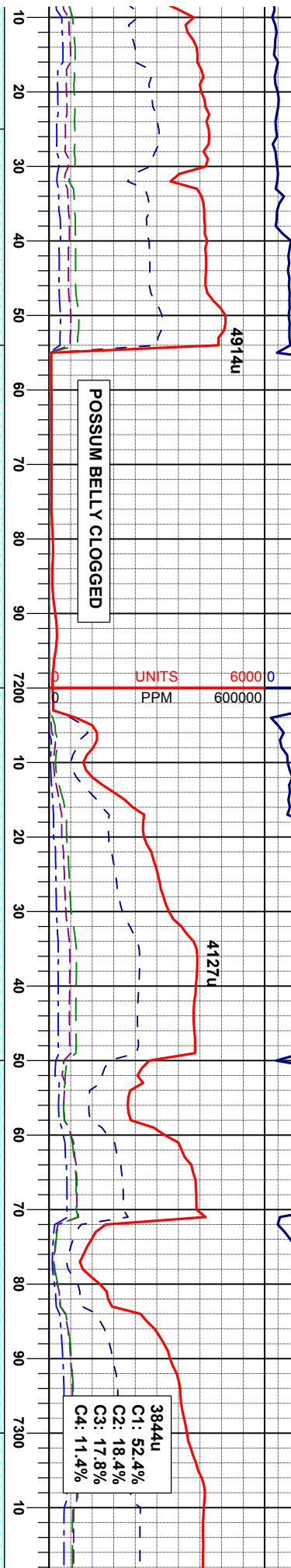
600

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

2012 Mud Wt: 10.80, FVIs: 38  
12, YP: 9, GELS: 5/12/29, API Filtr: 9.0,  
1/10, pH: 9.3, Cl: 1,500, Ca: 80

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

290



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

MD 7,186'  
TVD 6,655.86'  
INC 84.71°  
AZM 269.82°

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

lt gy - m gy, bnd w/ off. wh, micxl, sft,  
bbky - blk, sbwxy tx,  
lt gy - dk gy, mot, crpxl, sft, brt - fri,  
/ - sbblky,

85% CHK: lt gy - m gy, bnd w/ off. wh,  
micxl, sft, fr, sbblky - blk, sbwxy tx,  
MRL: lt gy - dk gy, mot, crpxl, sft, brt - fri,  
sblpy - sbblky,

70% CHK: lt gy - m gy, bnd w/ off. wh,  
micxl, sft, fr, sbblky - blk, sbwxy tx,  
MRL: lt gy - dk gy, mot, crpxl, sft, brt - fri,  
sblpy - sbblky,

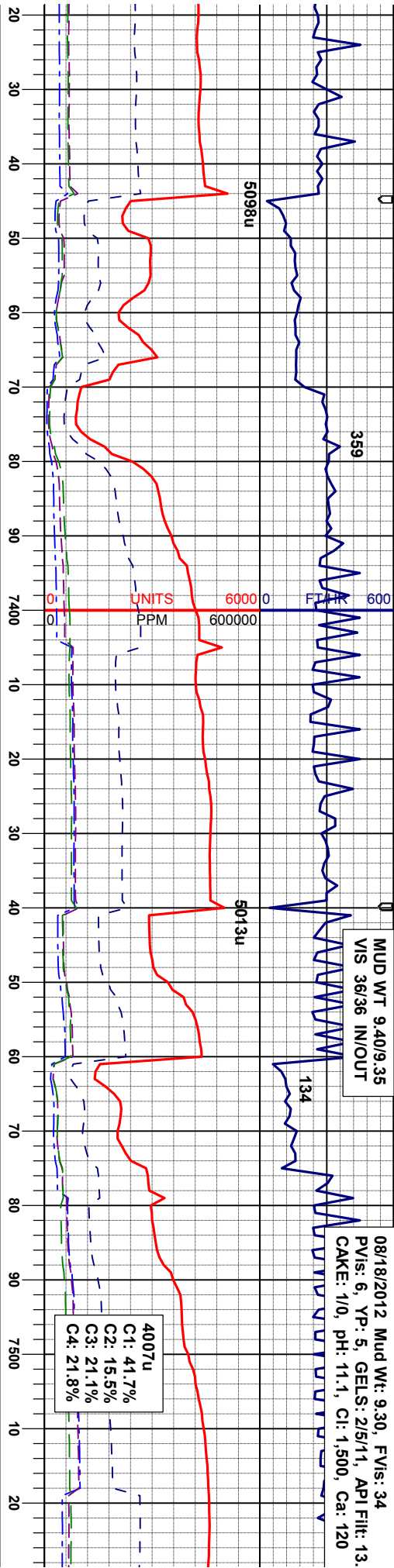
75% CHK: lt gy - m gy, bnd w/ off. wh,  
micxl, sft, fr, sbblky - blk, sbwxy tx,  
MRL: lt gy - dk gy, mot, crpxl, sft, brt - fri,  
sblpy - sbblky,

70% CHK: lt gy -  
wh, micxl - v f gr  
sbwxy - wxy tx,  
MRL: lt gy - dk g,  
sblpy - sbblky, g



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: 2/5/11, API Filtr: 13.  
CAKE: 1/0, pH: 11.1, Cl: 1.500, Ca: 120



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

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

m gy, bnd w/ crm and off.  
xl, sft, fri, sbbiky - biky,  
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, sbbiky - biky,  
sbwxy - wxy tx,  
MRL: It gy - dk gy, mot, crpxl, sft, brit - fri,  
spblty - sbbiky, gt - sbwxy

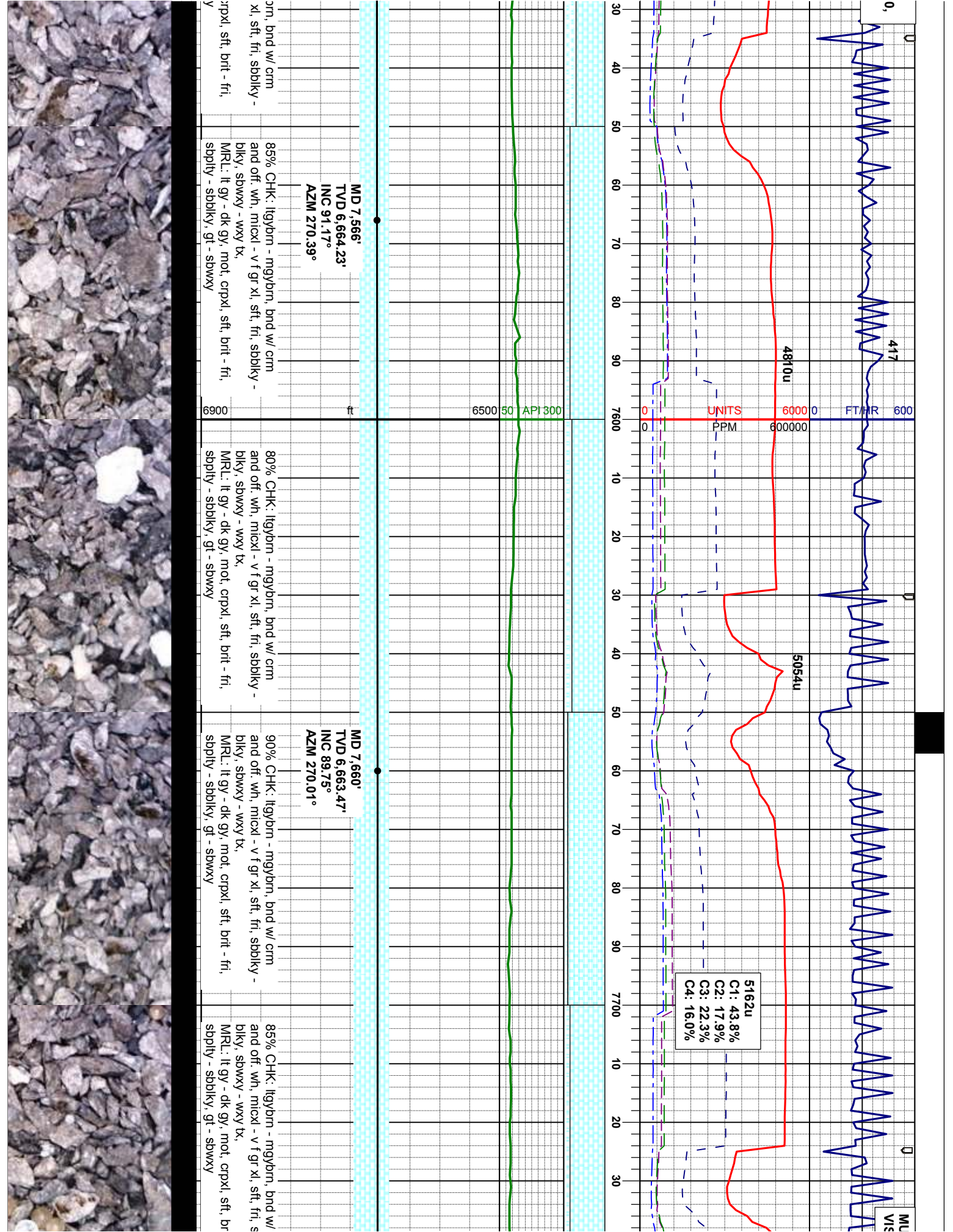
70% CHK: It gy - m gy, bnd w/ crm and off.  
wh, micxl - v f gr xl, sft, fri, sbbiky - biky,  
sbwxy - wxy tx,  
MRL: It gy - dk gy, mot, crpxl, sft, brit - fri,  
spblty - sbbiky, gt - sbwxy

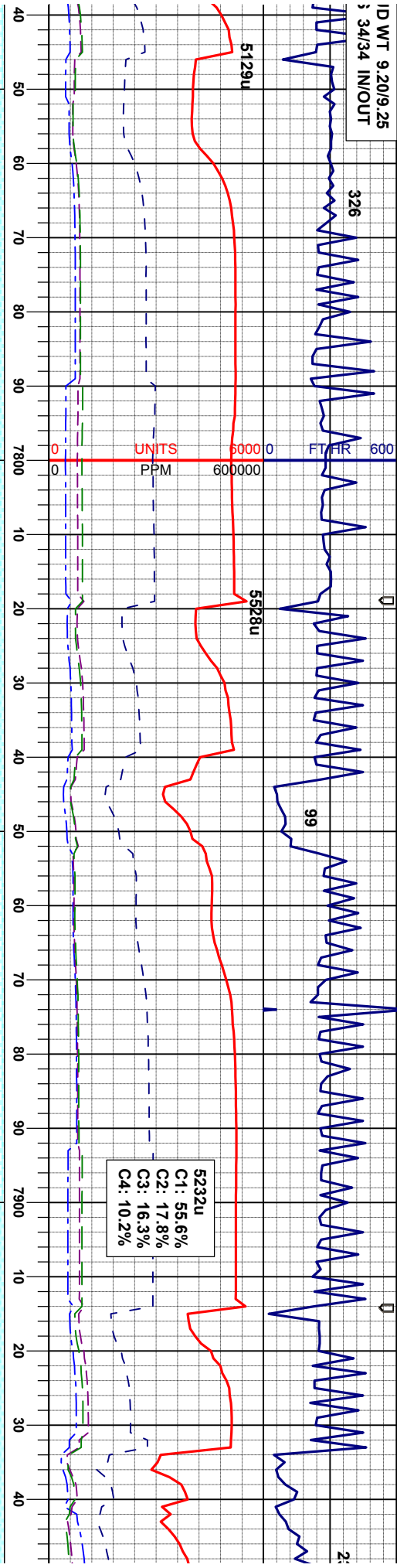
75% CHK: It gy - m gy, bnd w/ crm and off.  
wh, micxl - v f gr xl, sft, fri, sbbiky - biky,  
sbwxy - wxy tx,  
MRL: It gy - dk gy, mot, crpxl, sft, brit - fri,  
spblty - sbbiky, gt - sbwxy

75% CHK: It gybm - mgyt  
and off, wh, micxl - v f gr  
biky, sbwxy - wxy tx,  
MRL: It gy - dk gy, mot, c  
spblty - sbbiky, 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 6,660'  
INC 90.49°  
AZM 269.1°

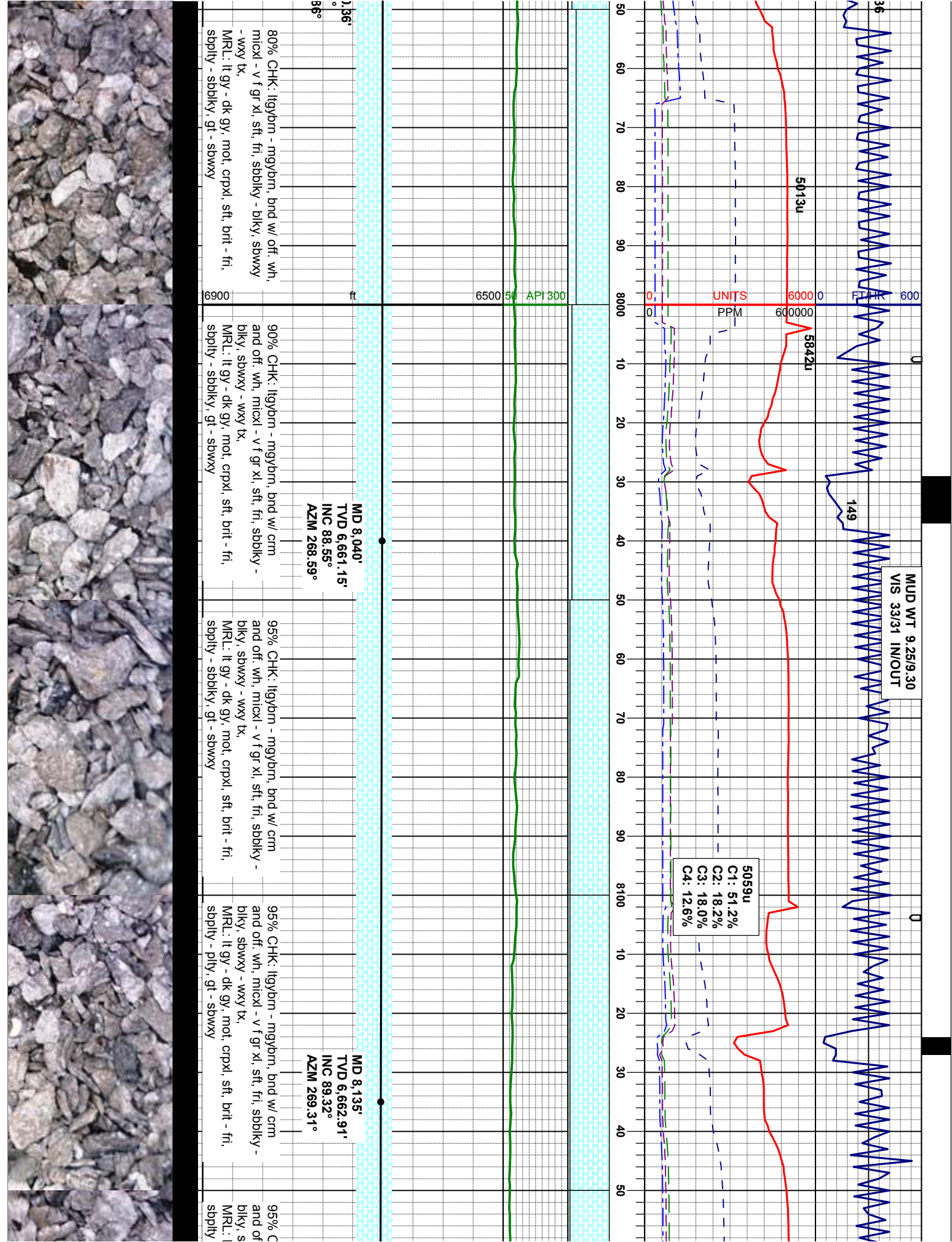
90% CHK: ltgybrn - mgybrn, bnd w/ crm  
and off. wh, micxl - v f gr xl, sft, fri, sbblky -  
blky, sbwxy - wxy tx.  
MRL: lt gy - dk gy, mot, crpxl, sft, brt - fri,  
sbply - sbblky, gt - sbwxy

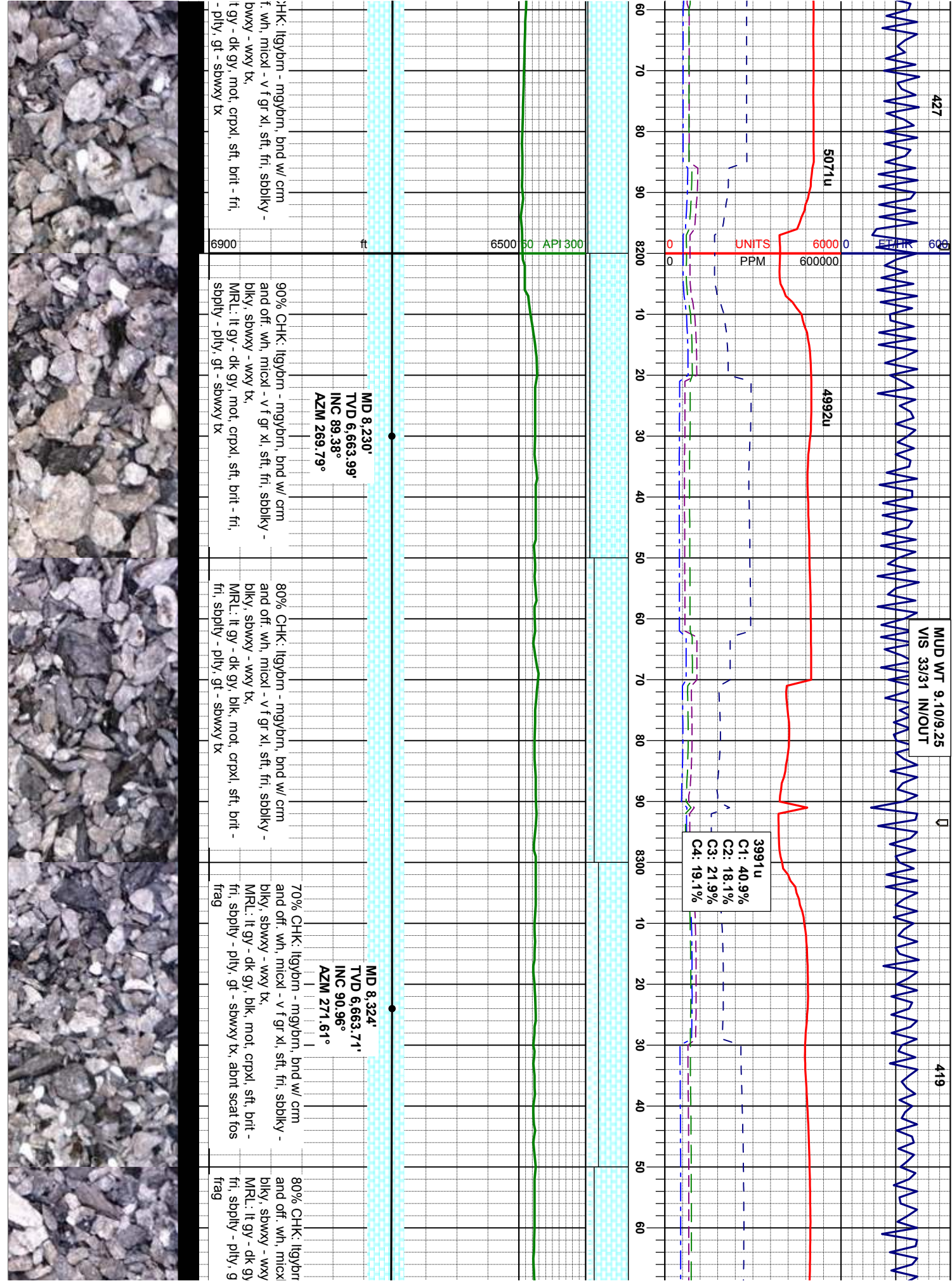
90% CHK: ltgybrn - mgybrn, bnd w/ crm  
and off. wh, micxl - v f gr xl, sft, fri, sbblky -  
blky, sbwxy - wxy tx.  
MRL: lt gy - dk gy, mot, crpxl, sft, brt - fri,  
sbply - sbblky, gt - sbwxy

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, brt - fri,  
sbply - sbblky, gt - sbwxy

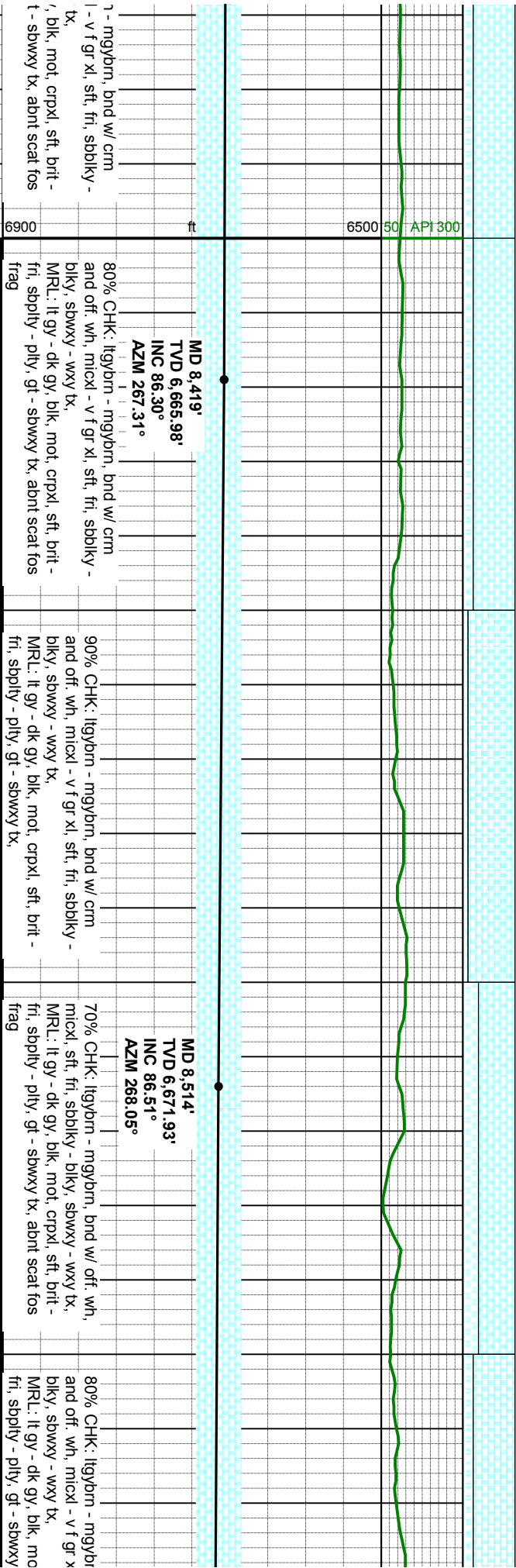
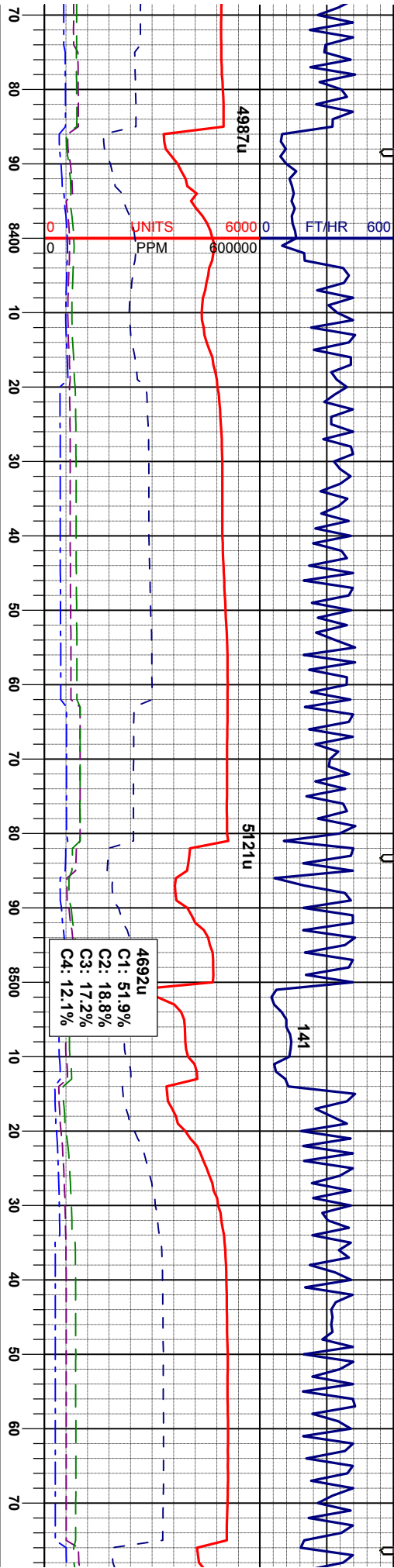




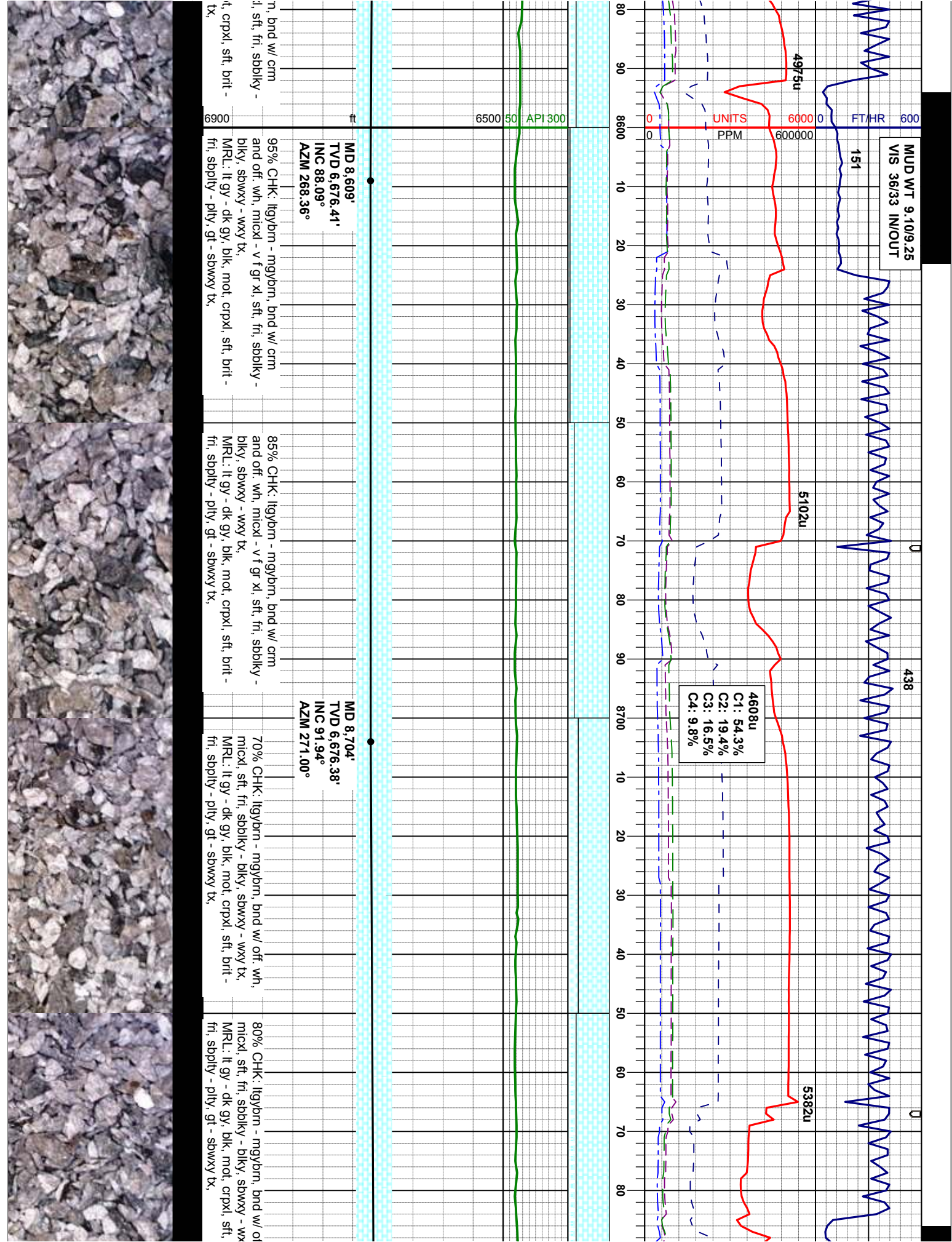




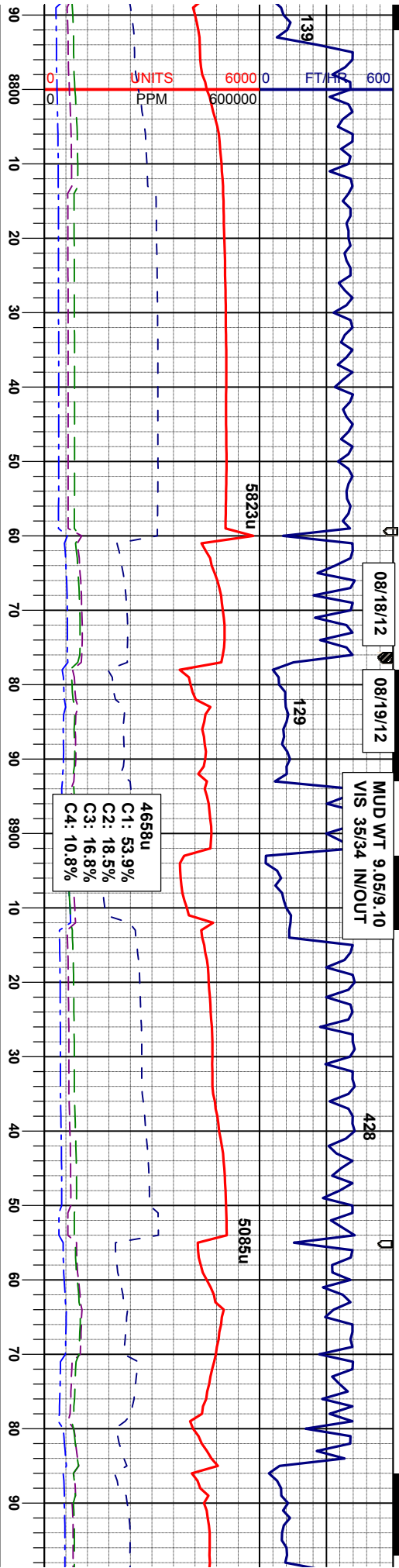












AP1300

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

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

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

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

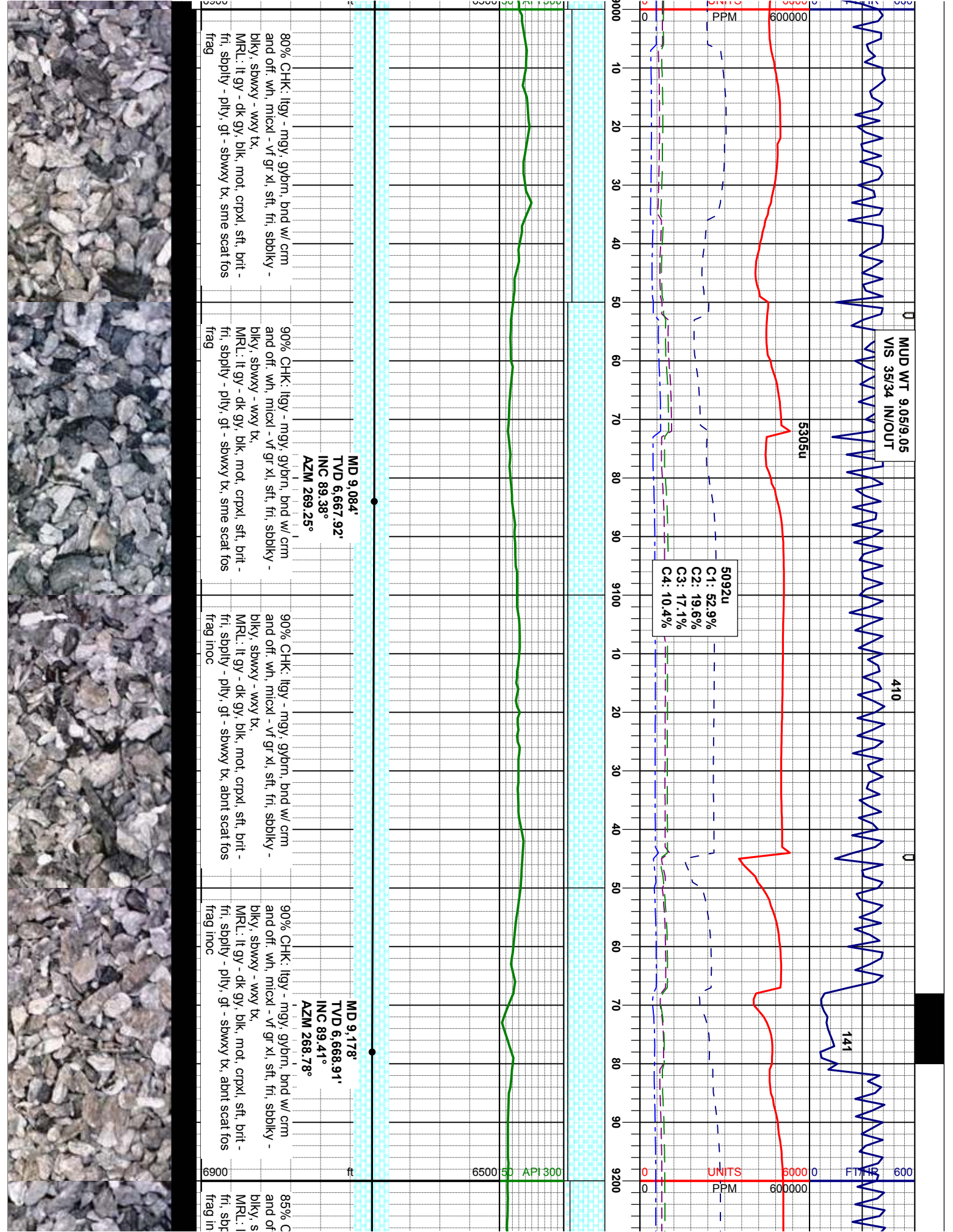
MD 8,957'  
TVD 6,667.23'  
INC 90.83°  
AZM 271.12°

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

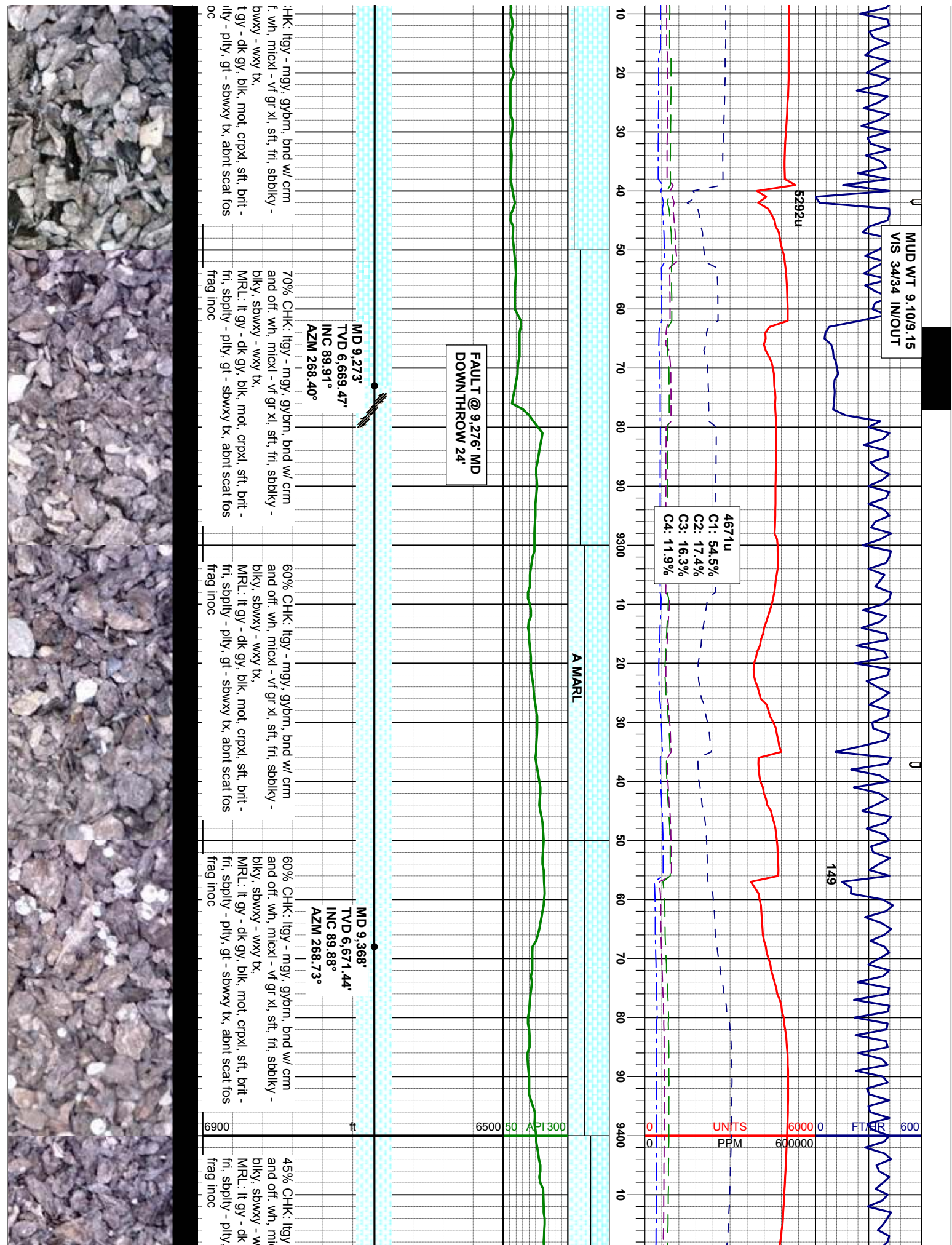
90% CHK: ltgy - mgy, gybrn, bnd w/ crm  
and off. wh, micxl - vf gr xl, sft, fri, sdblkly -  
blky, sbwxy - wxy tx,  
MRL: lt gy - dk gy, blk, mot, crpxl, sft, brit -  
fri, sbply - ply, gt - sbwxy tx, sme scat fos  
frag

6900



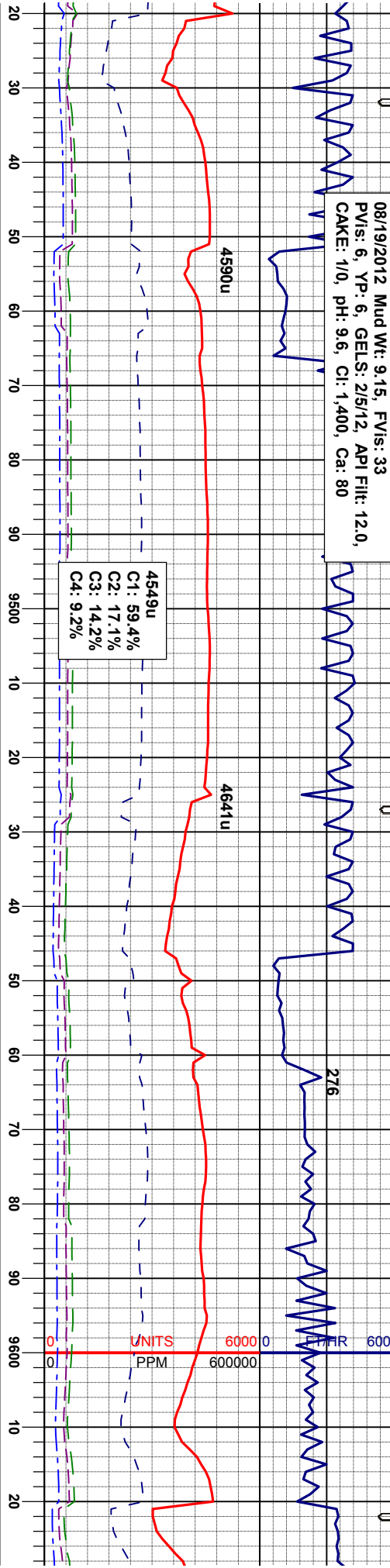








08/19/2012 Mud Wt: 9.15, FVIs: 33  
PVIs: 6, YP: 6, GELS: 2/5/12, API Filtr: 12.0,  
CAKE: 1/0, pH: 9.6, Cl: 1.400, Ca: 80



MD 9,463'  
TVD 6,670.96'  
INC 90.71°  
AZM 268.58°

- mgy, gybrn, bnd w/ crm  
- xl - vt gr xl, sft, fri, sbbiky -  
xy tx,  
- mgy, mot, crpxl, sft, brit -  
gt - sbwxy tx, abnt scat fos

40% CHK: llyy - mgy, gybrn, bnd w/ crm  
and off. wh, micxl - vt gr xl, sft, fri, sbbiky -  
biky, sbwxy - wxy tx,  
MRL: lt gy - dk gy, blk, mot, crpxl, sft, brit -  
fri, sbply - pily, gt - sbwxy tx, abnt scat fos  
frag inoc

MD 9,558'  
TVD 6,669.12'  
INC 91.51°  
AZM 267.30°

35% CHK: llyy - mgy, gybrn, bnd w/ crm  
and off. wh, micxl - vt gr xl, sft, fri, sbbiky -  
biky, sbwxy - wxy tx,  
MRL: lt gy - dk gy, blk, mot, crpxl, sft, brit -  
fri, sbply - pily, gt - sbwxy tx, abnt scat fos  
frag inoc

40% CHK: llyy - mgy, gybrn, bnd w/ crm  
and off. wh, micxl - vt gr xl, sft, fri, sbbiky -  
biky, sbwxy - wxy tx,  
MRL: lt gy - dk gy, blk, mot, crpxl, sft, brit -  
fri, sbply - pily, gt - sbwxy tx, abnt scat fos  
frag inoc

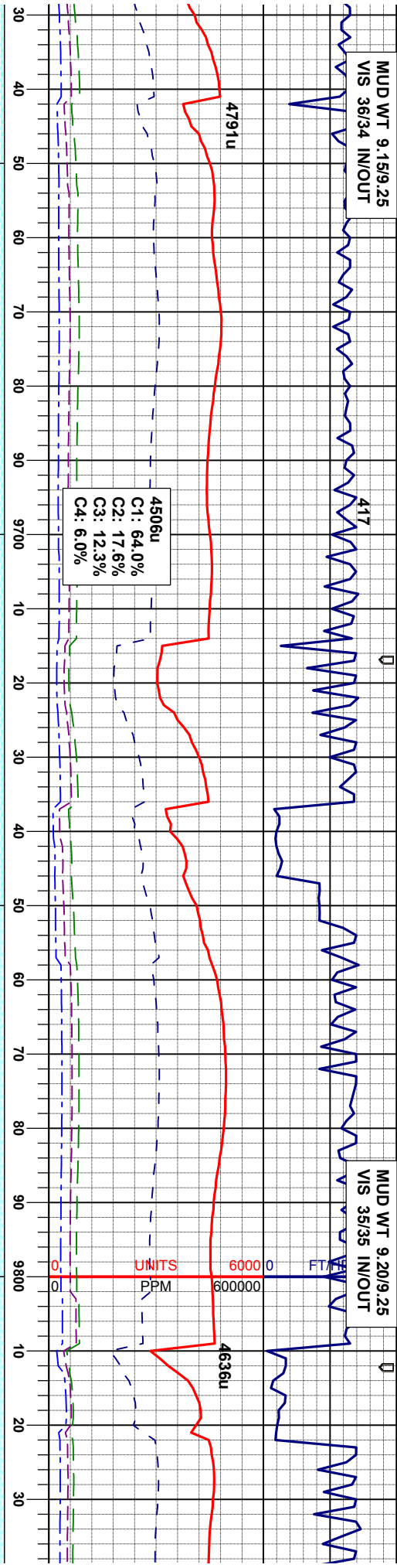
30% CHK: llyy - mgy, gybrn, bnd w/ crm  
and off. wh, micxl - vt gr xl, sft, fri, sbbiky -  
biky, sbwxy - wxy tx,  
MRL: lt gy - dk gy, blk, mot, crpxl, sft, brit -  
fri, sbply - pily, gt - sbwxy tx, abnt scat fos  
frag inoc





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°

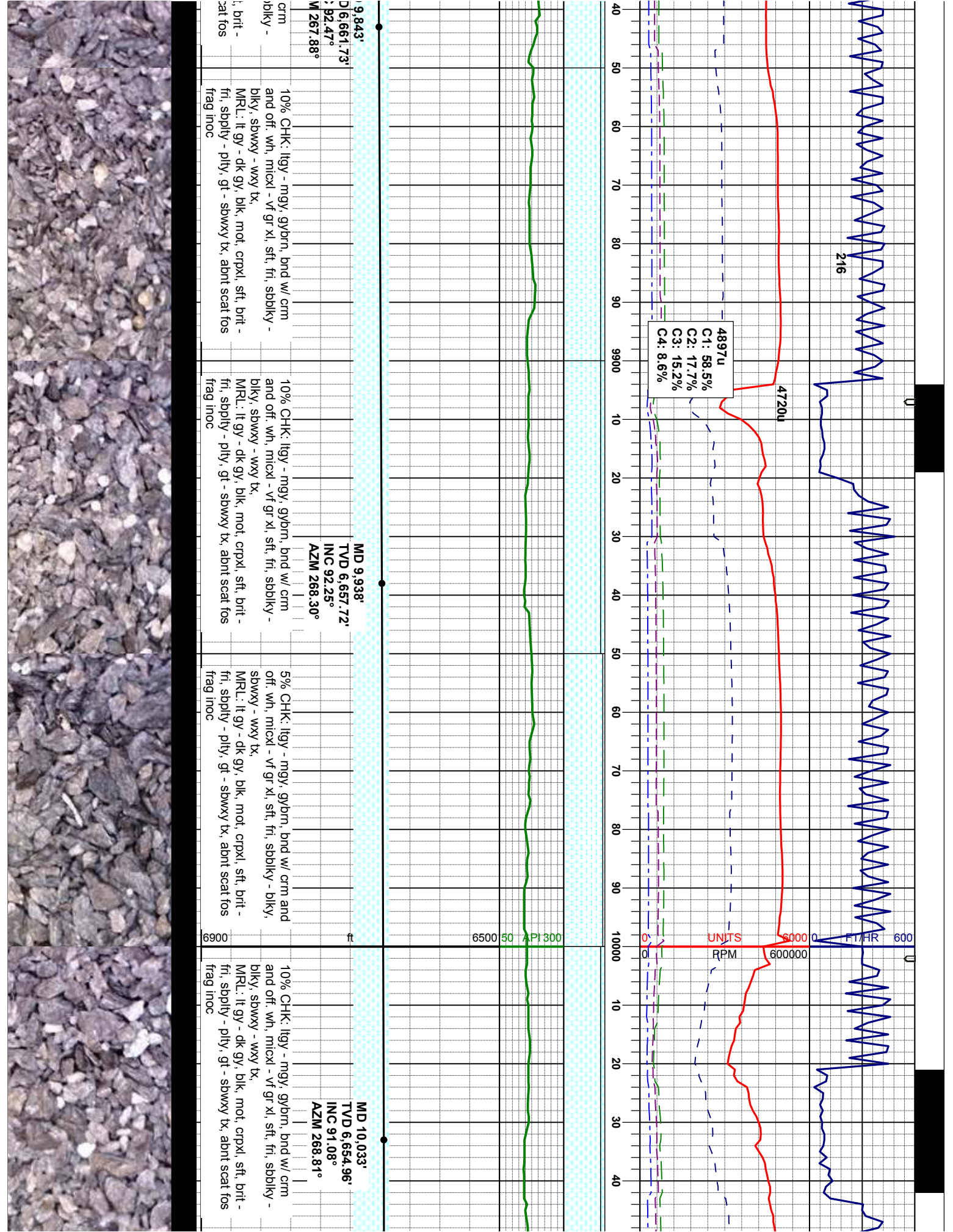
MD 9,748'  
TVD 6,664.75'  
INC 91.30°  
AZM 267.01°

MD  
TVI  
INC  
AZI

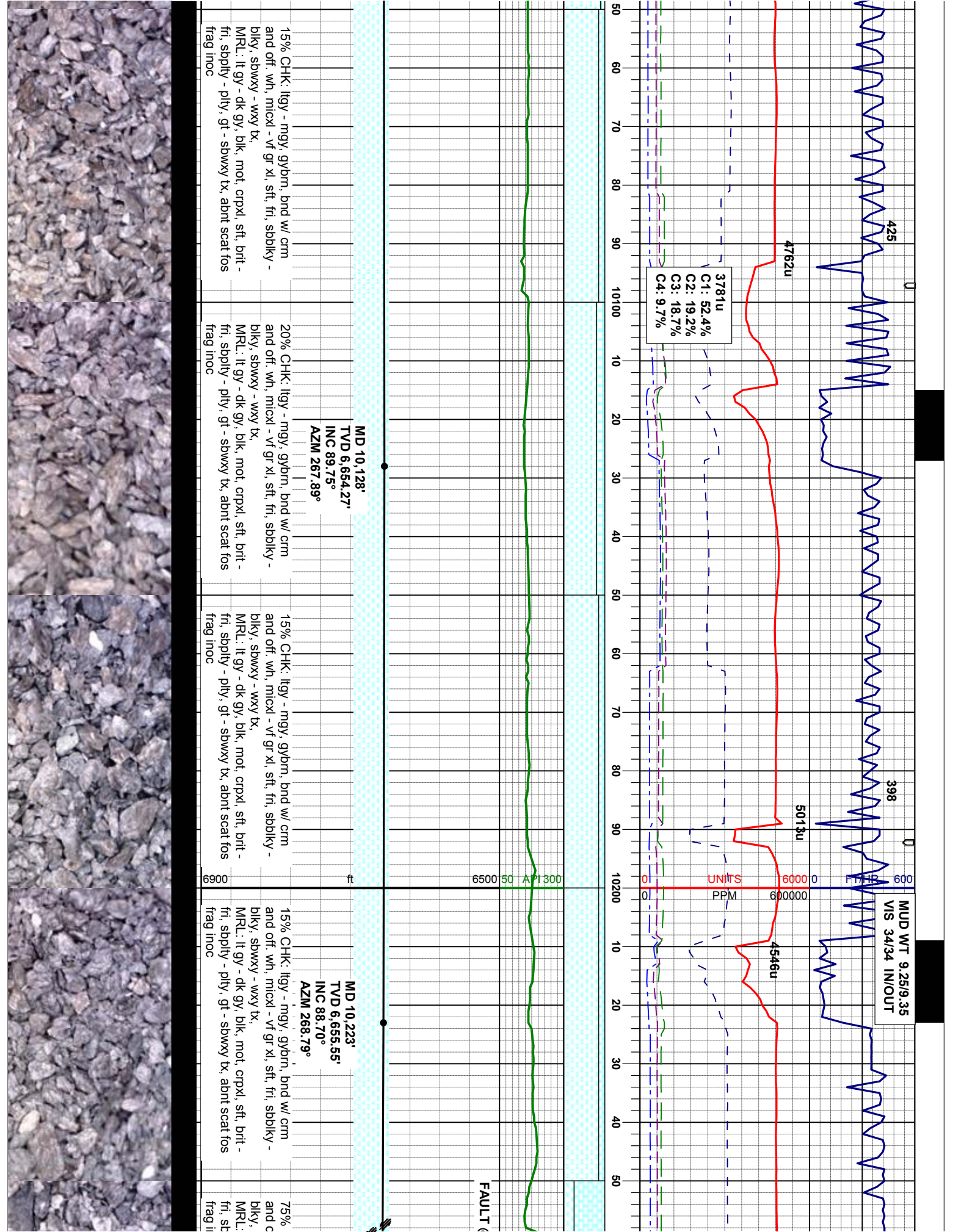
30% CHK: ltgy - mgy, gybrn, bnd w/ crm and off. wh, micxl - vt gr xl, sft, fri, sbdky - blkly, sbwxy - wxy tx, MRL: lt gy - dk gy, blk, mot, crpxl, sft, bnt - fri, sbply - plty, gt - sbwxy tx, abnt scat fos frag inoc	15% CHK: ltgy - mgy, gybrn, bnd w/ crm and off. wh, micxl - vt gr xl, sft, fri, sbdky - 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: ltgy - mgy, gybrn, bnd w/ crm and off. wh, micxl - vt gr xl, sft, fri, sbdky - 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
30% CHK: ltgy - mgy, gybrn, bnd w/ crm and off. wh, micxl - vt gr xl, sft, fri, sbdky - 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	15% CHK: ltgy - mgy, gybrn, bnd w/ crm and off. wh, micxl - vt gr xl, sft, fri, sbdky - 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: ltgy - mgy, gybrn, bnd w/ crm and off. wh, micxl - vt gr xl, sft, fri, sbdky - 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



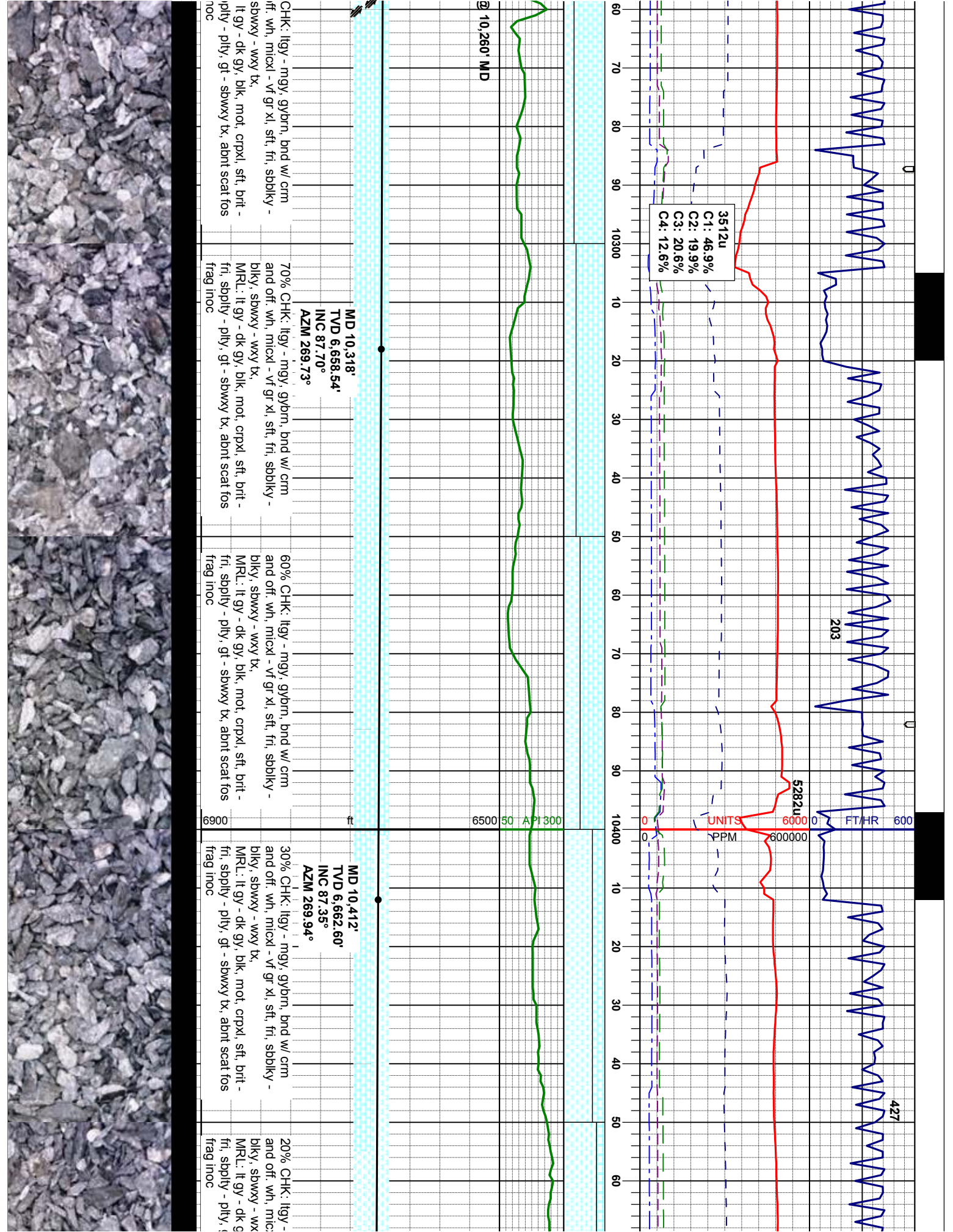












203

427

52820

60000

UNITS

PPM

3512u  
C1: 46.9%  
C2: 19.9%  
C3: 20.6%  
C4: 12.6%

@ 10,260' MD

MD 10,318'

TVD 6,658.54'

INC 87.70°

AZM 269.73°

MD 10,412'

TVD 6,662.60'

INC 87.35°

AZM 269.94°

6500 50 A P 1300

CHK: lly - mgy, gybrn, bnd w/ crm  
ff, wh, micxl - v/ gr xl, sft, fri, sbdky -  
sbwxy - wxy tx,  
lt gy - dk gy, blk, mot, crpxl, sft, bnt -  
ply, gt - sbwxy tx, abnt scat fos  
noc

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

60% CHK: lly - mgy, gybrn, bnd w/ crm  
and off, wh, micxl - v/ gr xl, sft, fri, sbdky -  
blk, sbwxy - wxy tx,  
MRL: lt gy - dk gy, blk, mot, crpxl, sft, bnt -  
fri, sbply - ply, gt - sbwxy tx, abnt scat fos  
frag inoc

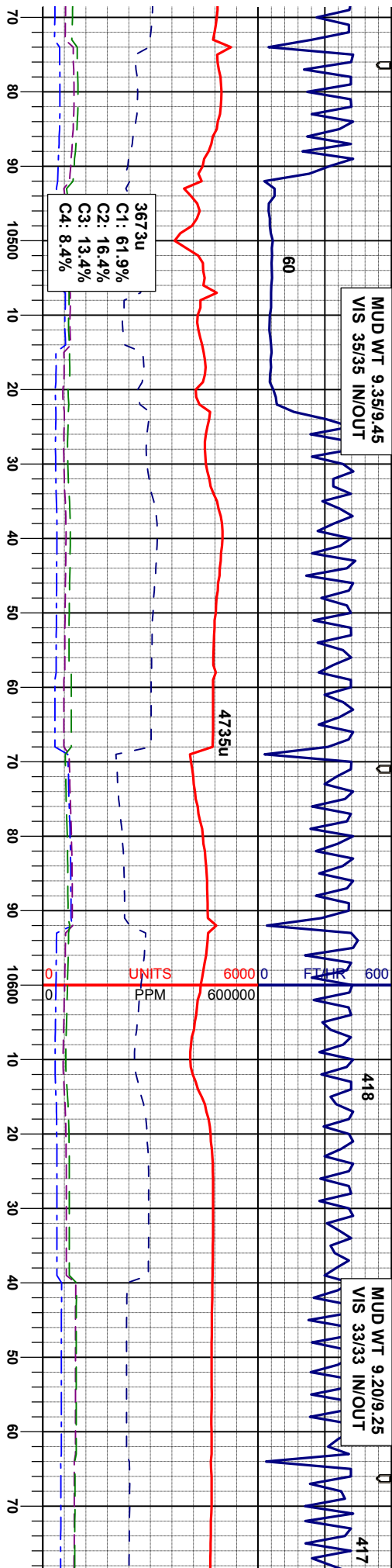
30% CHK: lly - mgy, gybrn, bnd w/ crm  
and off, wh, micxl - v/ gr xl, sft, fri, sbdky -  
blk, sbwxy - wxy tx,  
MRL: lt gy - dk gy, blk, mot, crpxl, sft, bnt -  
fri, sbply - ply, gt - sbwxy tx, abnt scat fos  
frag inoc

20% CHK: lly - mgy, gybrn, bnd w/ crm  
and off, wh, micxl - v/ gr xl, sft, fri, sbdky -  
blk, sbwxy - wxy tx,  
MRL: lt gy - dk gy, blk, mot, crpxl, sft, bnt -  
fri, sbply - ply, gt - sbwxy tx, abnt scat fos  
frag inoc



MUD WT 9.35/9.45  
VIS 35/35 IN/OUT

MUD WT 9.20/9.25  
VIS 33/33 IN/OUT



FAULT @ 10,646' MD

MD 10,507'  
TVD 6,666.08'  
INC 88.46°  
AZM 270.32°

MD 10,602'  
TVD 6,667.38'  
INC 89.97°  
AZM 270.46°

mg, gybrn, bnd w/ cm  
xl - vfr gr xl, sft, fri, sbdkly -  
y tx,  
ly, blk, mot, crpxl, sft, bnt -  
gt - sbwxy tx, abnt scat fos

10% CHK: lly - mg, gybrn, bnd w/ cm  
and off, wh, micxl - vfr gr xl, sft, fri, sbdkly -  
blk, sbwxy - wxy tx,  
MRL: lt gy - dk gy, blk, mot, crpxl, sft, bnt -  
fri, sbply - ply, gt - sbwxy tx, abnt scat fos  
frag inoc

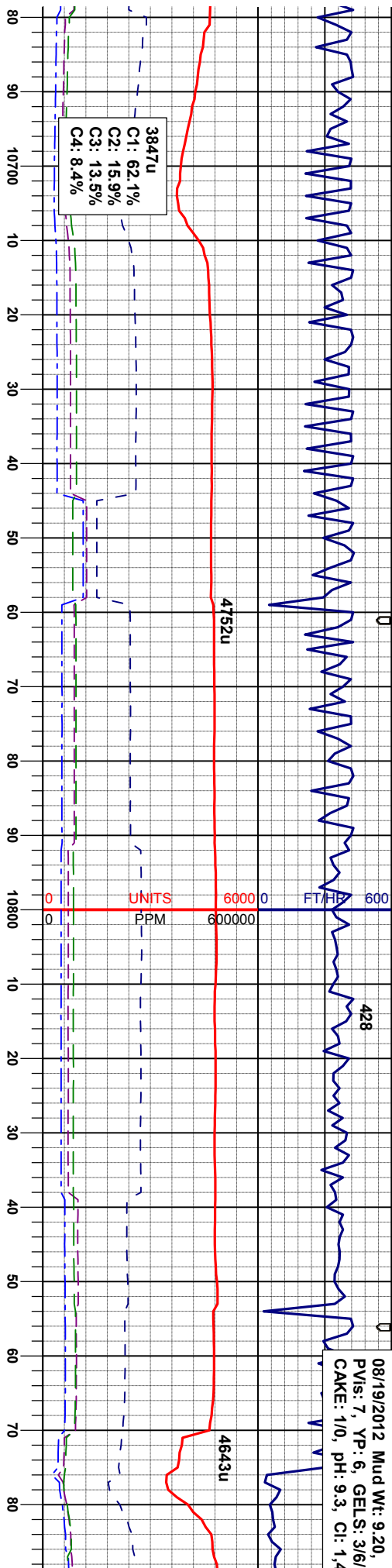
10% CHK: lly - mg, gybrn, bnd w/ cm  
and off, wh, micxl - vfr gr xl, sft, fri, sbdkly -  
blk, sbwxy - wxy tx,  
MRL: lt gy - dk gy, blk, mot, crpxl, sft, bnt -  
fri, sbply - ply, gt - sbwxy tx, abnt scat fos  
frag inoc

20% CHK: lly - mg, gybrn, bnd w/ cm  
and off, wh, micxl - vfr gr xl, sft, fri, sbdkly -  
blk, sbwxy - wxy tx,  
MRL: lt gy - dk gy, blk, mot, crpxl, sft, bnt -  
fri, sbply - ply, gt - sbwxy tx, abnt scat fos  
frag inoc

55% CHK: lly - mg, gyb  
micxl - vfr gr xl, sft, fri, sbdkly -  
wxy tx,  
MRL: lt gy - dk gy, blk, mo  
fri, sbply - ply, gt - sbwxy  
inoc



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



MD 10,697'  
TVD 6,667.36'  
INC 90.06°  
AZM 270.13°

65% CHK: ltgy - mgy, gybrn, bnd w/ off, wh, micyl - vf gr xl, sft, frt, 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 10,792'  
TVD 6,666.18'  
INC 91.36°  
AZM 269.15°

80% CHK: ltgy - mgy, gybrn, bnd w/ off, wh, micyl - vf gr xl, sft, frt, 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,  
TVD 6,  
INC 92,  
AZM 26

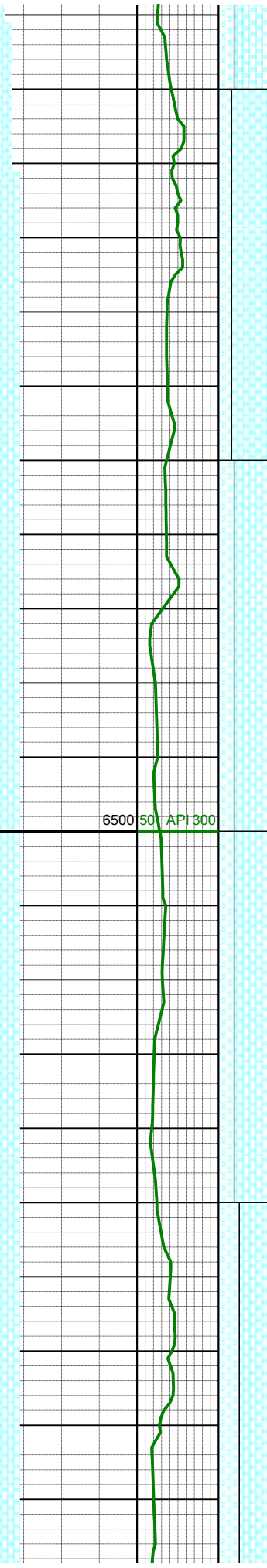
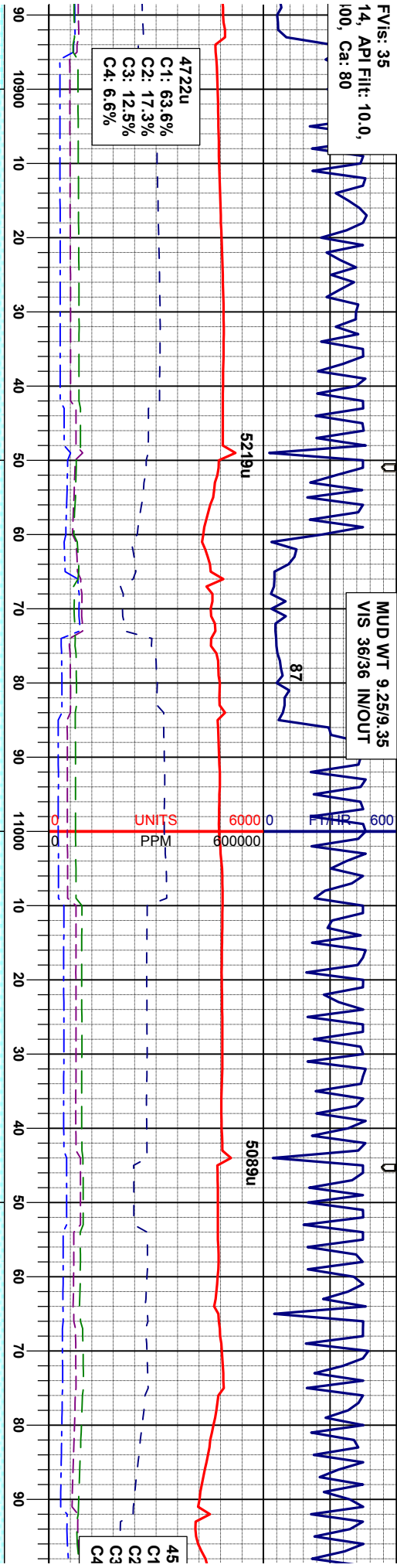
70% CHK: ltgy - mgy, gybrn, bnd w micyl - vf gr xl, sft, frt, sbdky - blk, wxy tx, MRL: lt gy - dk gy, blk, mot, crpxl, s fri, sbply - ply, gt - sbwxy tx, scat f inoc





FVIs: 35  
14, API Filt: 10.0,  
100, Ca: 80

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



887'	MD 10,982'
362.86°	TVD 6,660.27'
65°	INC 90.46°
39.05°	AZM 269.16°
/ off, wh, sbwxy -	75% CHK: ltgy - mgy, gybrn, bnd w/ off, wh, micxl - vf gr xl, sft, frt, sbdky - blk, sbwxy - wxy tx
ft, brit - os frag	MRL: lt gy - dk gy, blk, mot, crpxl, sft, brit - frt, sbply - ply, gt - sbwxy tx, scat fos frag inoc
	70% CHK: ltgy - mgy, gybrn, bnd w/ off, wh, micxl - vf gr xl, sft, frt, sbdky - blk, sbwxy - wxy tx
	MRL: lt gy - dk gy, blk, mot, crpxl, sft, brit - frt, sbply - ply, gt - sbwxy tx, scat fos frag inoc
	70% CHK: ltgy - mgy, gybrn, bnd w/ off, wh, micxl, sft, frt, sbdky - blk, sbwxy - wxy tx, MRL: lt gy - dk gy, blk, mot, crpxl, sft - firm, brit - frt, sbply - ply, gt - sbwxy tx, scat fos frag inoc
	60% CHK: ltgy - mgy, gybrn, bnd w/ off, wh, micxl, sft, frt, sbdky - blk, sbwxy - wxy tx, MRL: lt gy - dk gy, blk, mot, crpxl, sft - firm, brit - frt, sbply - ply, gt - sbwxy tx, scat fos frag inoc



