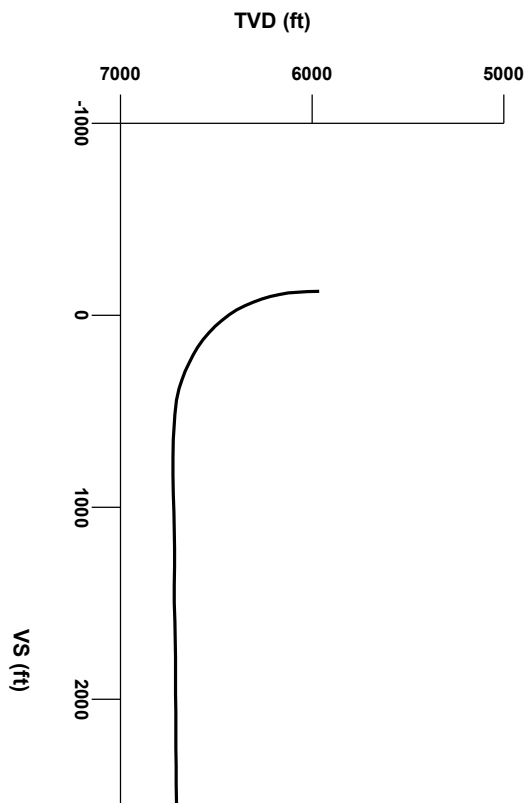


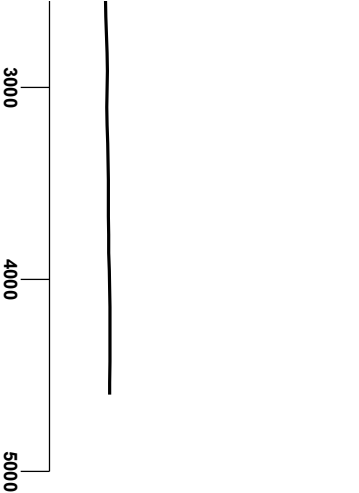
LOG created using LPLLOT VH Version 3.0, January 06, 2013, Copyright (C) 1999-2009 Pason Systems Corp.

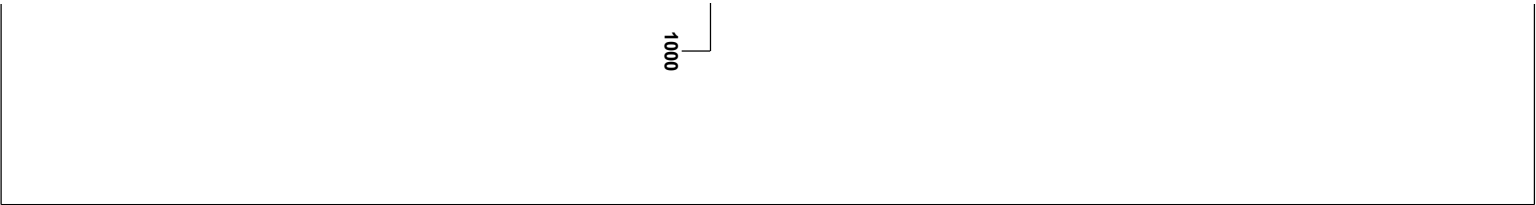
**OPERATOR:** NOBLE ENERGY INC.  
**WELL:** SLW RANCH B01-68-1HN  
**LOCATION:** SEC 1 T5N R64W  
**COUNTY:** WELD  
**STATE:** COLORADO  
**SPOT:** 1,375' FNL; 199' FEL  
**ELEVATION:** 4,613' GL; 4,637' KB  
**FIELD:** WATTENBERG  
**SPUD DATE:** 01/01/2013  
**TD DATE:** 01/06/2013 (HORIZONTAL)  
**DATES LOGGED:** 01/03/2013 - 01/06/2013 (HORIZONTAL)  
**DEPTHS LOGGED:** 6,057' - 11,204' (HORIZONTAL)  
**LOGGERS:** CHRIS SCAHEL; MARK COLE  
**DRILLING FLUID:** LSND  
**DRILLING RIG:** H&P 315  
**API:** 05-123-36320  
**LOG TYPE:** HORIZONTAL  
**SCALE:** 1:240 (5 inches per 100 feet)  
**REMARKS:** SEE CORRESPONDING VERTICAL LOG SLW RANCH B01-68-1HN VERT.  
 LAT/LON 40.431970/-104.489460  
 Wellsite Geological Services Provided by Columbine Logging Inc.



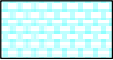
Survey Elevation


**Survey Plan**







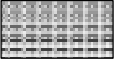
### LITHOLOGIES

Chalk


Marl


Shaly Sandstone


Shaly Siltstone


Silty Shale

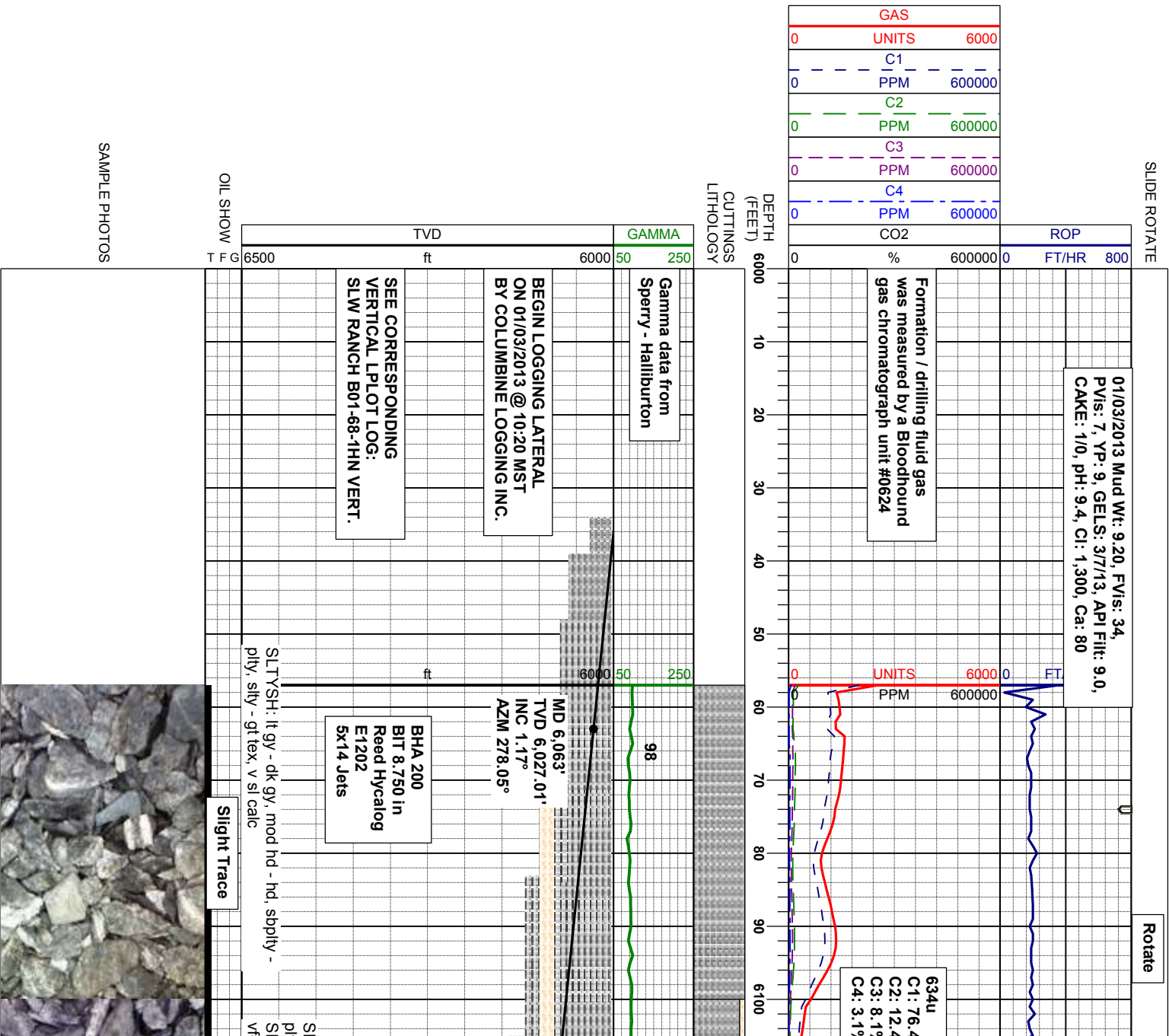
### ENGINEERING SYMBOLS

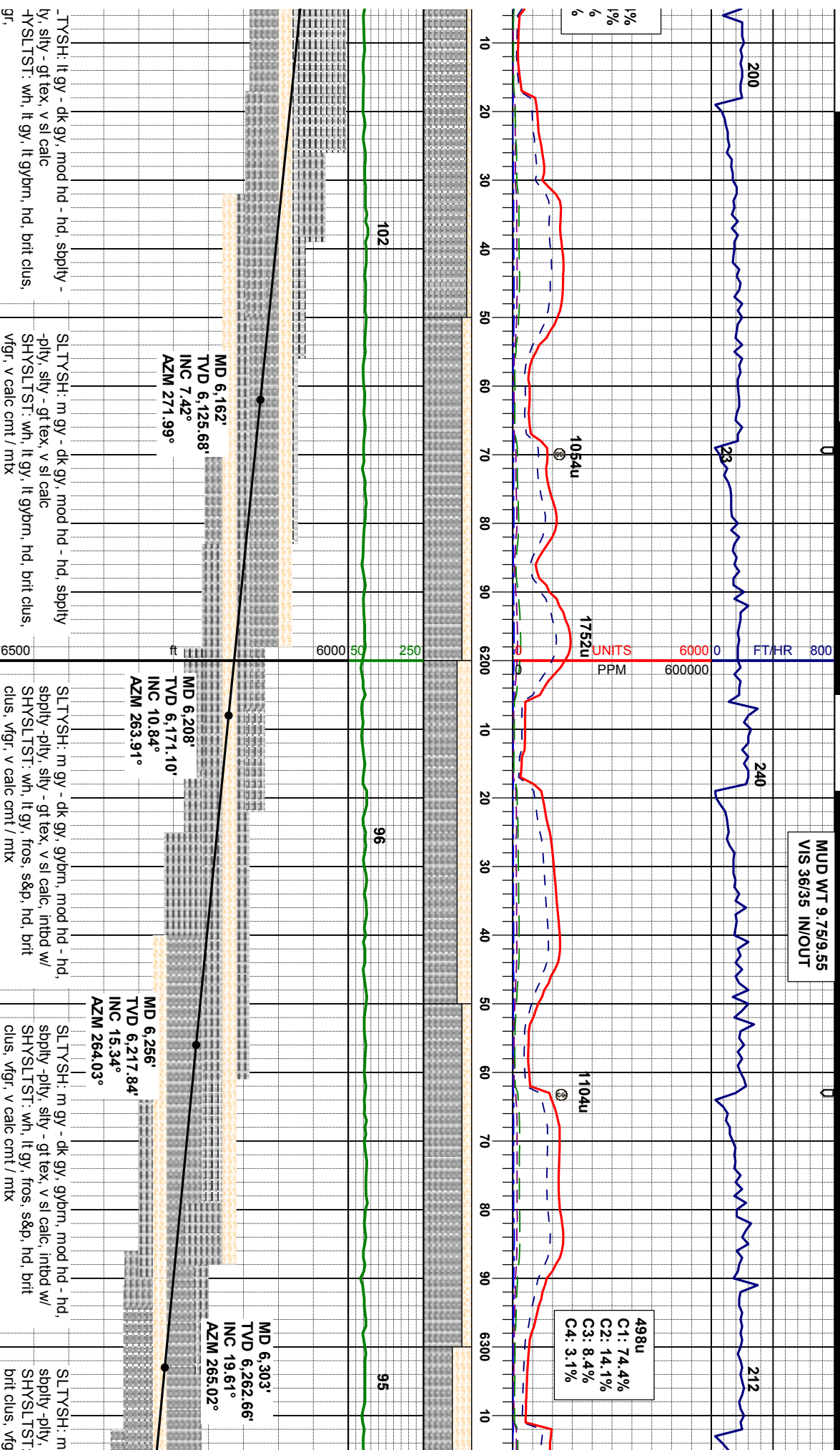
Connection

Connection Gas

Midnight Depth

Normal Fault



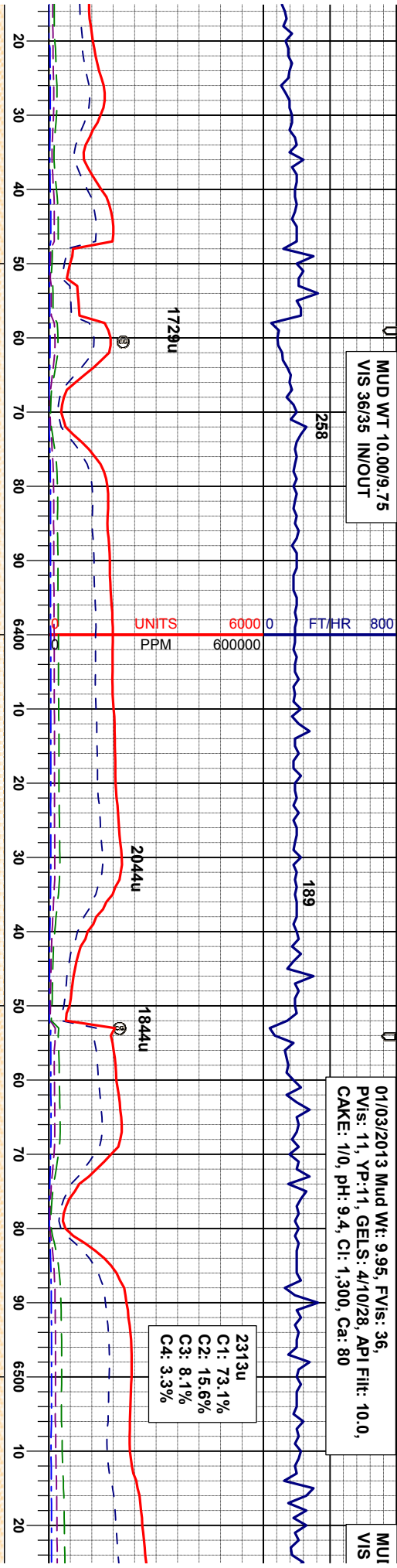




MUD WT 10.00/9.75  
VIS 36/35 IN/OUT

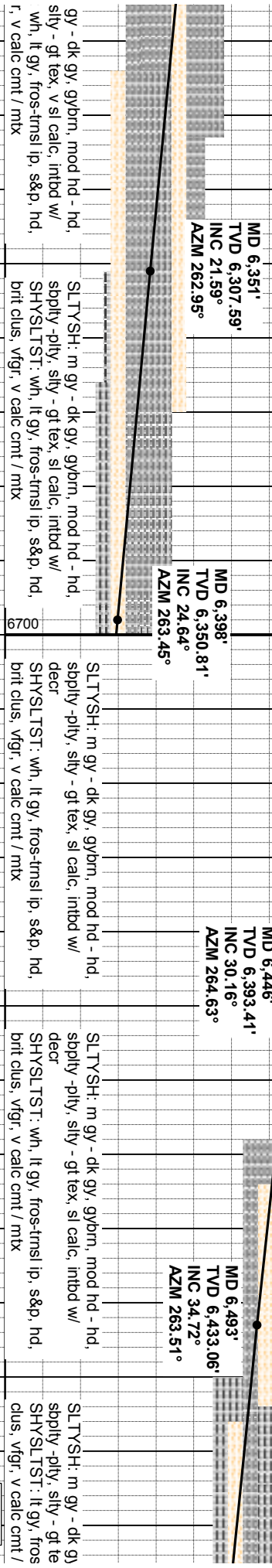
01/03/2013 Mud Wt: 9.95, FVis: 36,  
PVIS: 11, YP:11, GELS: 4/10/28, API Filtr: 10.0,  
CAKE: 1/0, PH: 9.4, CI: 1.300, Ca: 80

MU  
VIS



<<TVD SCALE CHANGE>>

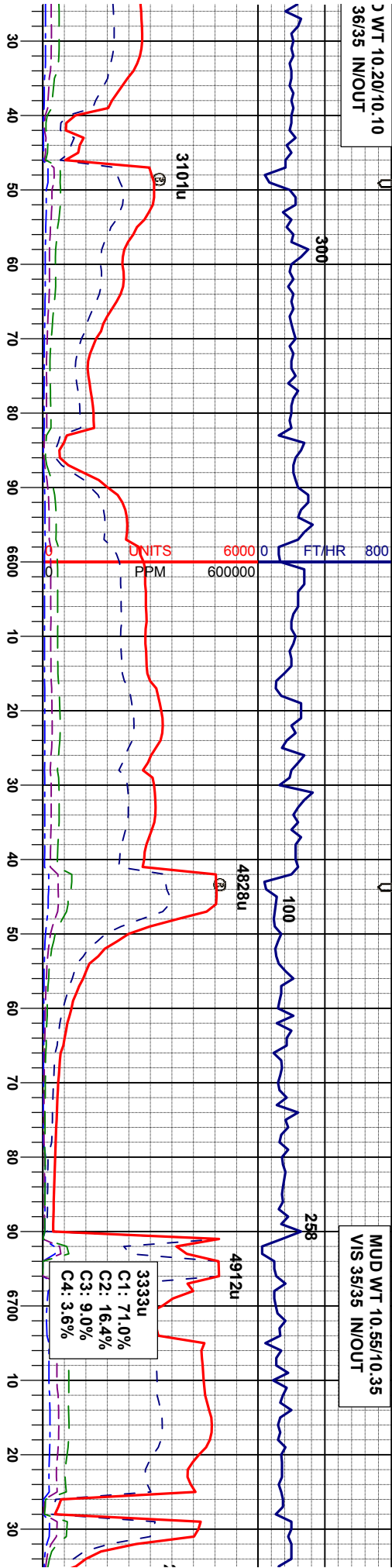
Fault @  
6460' TV  
26' Dow





WT 10.20/10.10  
36/35 IN/OUT

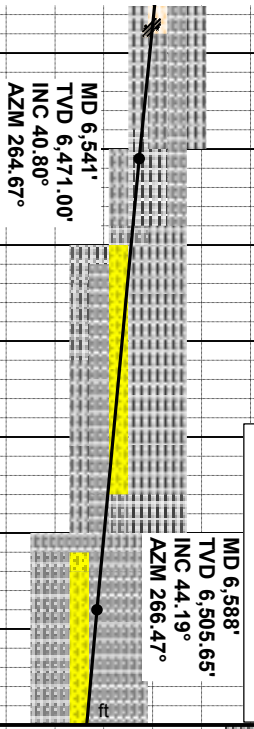
MUD WT 10.55/10.35  
VIS 35/35 IN/OUT



6527' MD;  
/D  
throw

Logger Top Sharon Springs Mkr  
@ 6561' MD; 6486' TVD

<<TVD SCALE CHANGE>>

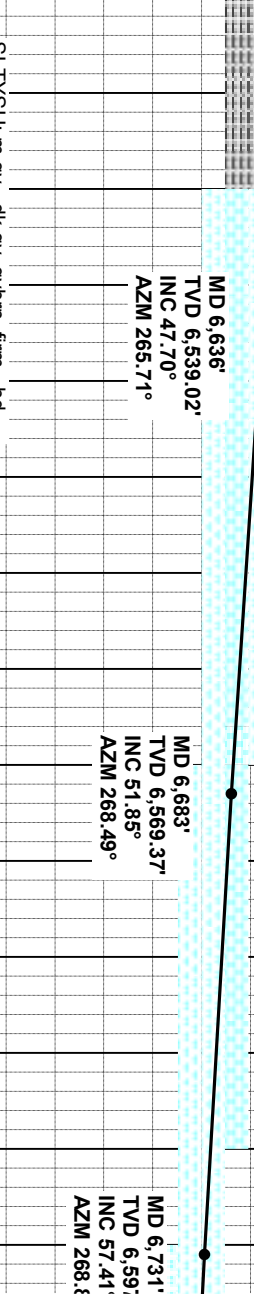


SLTYSH: m gy - dk gy, gybrn, firm - hd,  
sbbly - pty, silty - gt tex, sl calc, intbd w/  
SHYSS: wh - lt gy, fros-trns l ip, s&g, hd, brit  
-trns l ip, s&g, hd, brit  
mtx, tr bent

Logger Top Niobrara  
@ 6633' MD; 6537' TVD

Logger Top Nio A Chalk  
@ 6653' MD; 6550' TVD

Logger Top Nio A Marl  
@ 6690' MD; 6574' TVD



SLTYSH: m gy - dk gy, gybrn, firm - hd,  
sbbly - pty, silty - gt tex, sl calc  
CHK: lt - mgy, lt gybrn, mot, lam, sbbly -  
sbbly, sft - mod firm, fri, rthy,  
MRL: m - dk gy, sbbly - pty, lam mod - v  
hd, brit, gt tex, v calc, sme bent

CHK: lt - mgy, lt gybrn, mot, lam, sbbly -  
sbbly, sft - mod firm, fri, rthy,  
MRL: m - dk gy, sbbly - pty, lam mod - v  
hd, brit, gt tex, v calc, sme bent

MRL: m - dk gy, sbbly - pty, lt  
hd, brit, gt tex, v calc, sme bent  
CHK: lt - mgy, lt gybrn, mot, lam, sbbly -  
sbbly, sft - mod firm, fri, rthy

Moderate





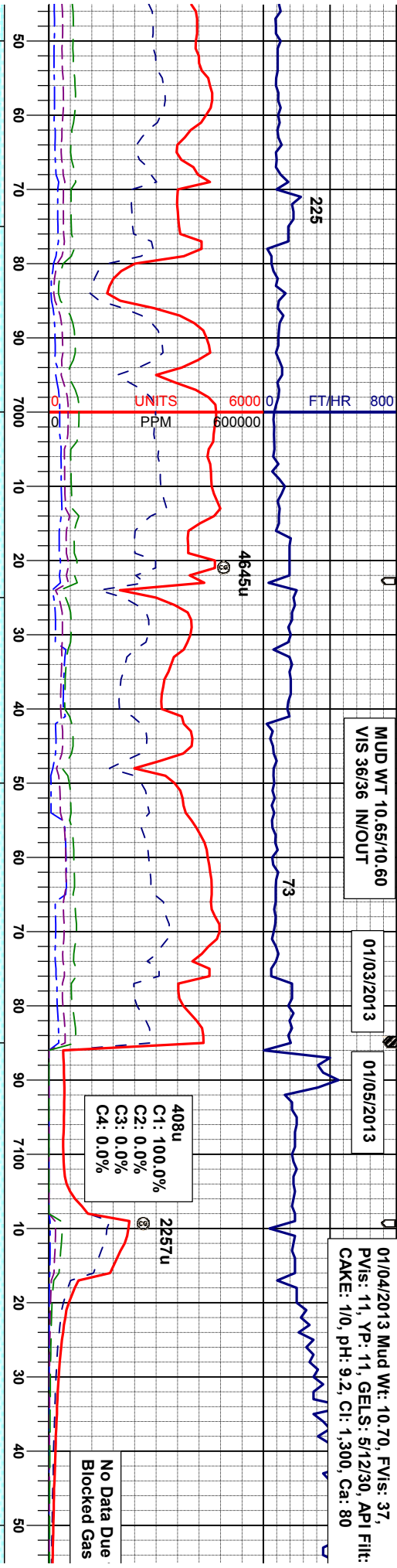




MUD WT 10.65/10.60  
VIS 36/36 IN/OUT

01/03/2013  
01/05/2013

01/04/2013 Mud Wt: 10.70, FVis: 37,  
PVIS: 11, YP: 11, GELS: 5/12/30, API Filtr:  
CAKE: 1/0, pH: 9.2, Cl: 1.300, Ca: 80



408u  
C1: 100.0%  
C2: 0.0%  
C3: 0.0%  
C4: 0.0%

No Data Due  
Blocked Gas

Fault @ 6986' MD; 6699' TVD  
24' Uplthrow  
B Marl to C Chalk

No Gamma Inside Casing

BUILD COMPLETED  
@ 23:39 MST  
01/03/2013

BEGAN DRILLING LATERAL  
ON 01/05/2013 @ 02:01 HRS MST

TOOH @ 7.085' MD FOR  
INTERMEDIATE CASING

BHA 300  
BIT 6.125 in  
Varel VM513S  
5x15 JETS

MD 7.030'  
TVD 6.707.72'  
INC 80.73°  
AZM 271.43°

MD 7.105'  
TVD 6.716.69'  
INC 85.53°  
AZM 273.33°

MD 6.968'  
TVD 6.694.63'  
INC 74.88°  
AZM 271.39°

CHK: It brn - tan, spec w/ wh, mot, lam,  
sbbly - sbbly, sft- mod firm, fri, rthy  
MRL: m - dk gy, sbbly - ply, lam mod - v  
hd, brit, gt tex, v calc, tr bent, sme fos frag

CHK: It brn, spec w/ wh, mot, lam, sbbly -  
sbbly, sft- mod firm, fri, rthy  
MRL: m - dk gy, sbbly - ply, lam mod - v  
hd, brit, gt tex, v calc, sme bent, sme fos  
frag

CHK: It brn - tan, spec w/ wh, mot, lam,  
sbbly - sbbly, sft- mod firm, fri, rthy  
MRL: m - dk gy, sbbly - ply, lam mod - v  
hd, brit, gt tex, v calc, tr bent, tr fos frag

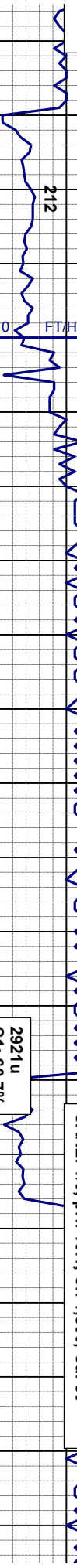
60%CHK: It - ngybrn, sme tan spec w/ wh,  
mot, lam, sbbly - sbbly, sft- mod firm, fri,  
rthy  
40%MRL: m - dk gy, sbbly - ply, lam, mod  
- v hd, brit, gt tex, v calc, tr fos frag

Good





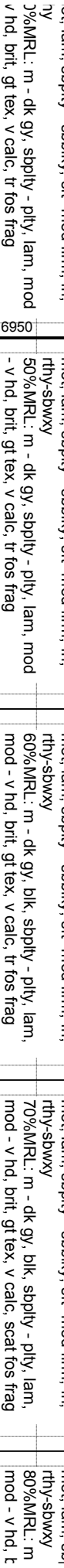
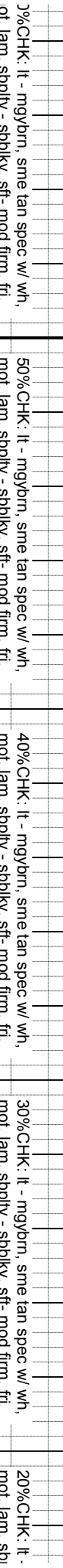
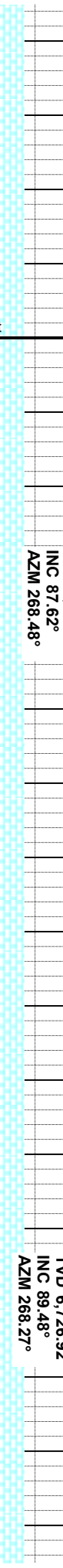
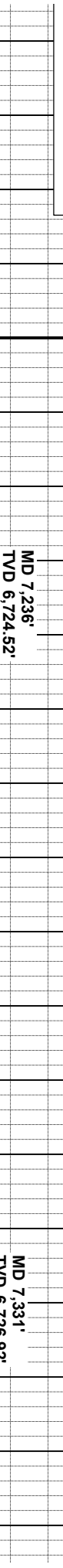
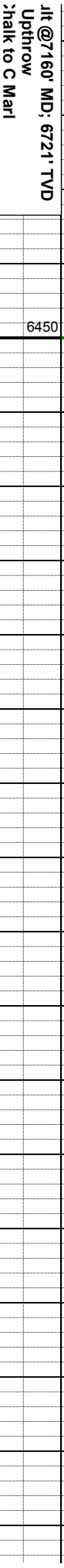
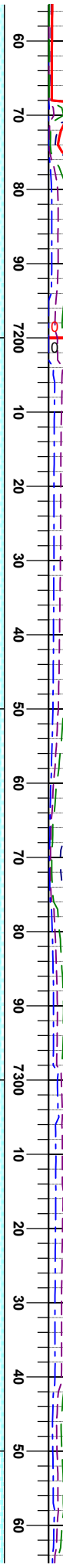
9.0, MUD WT 9.30/9.35 VIS 33/33 IN/OUT 500 01/05/2013 Mud Wt: 9.30, FVis: 32, PVIS: 6, YP: 4, GELS: 2/4/9, API Filtr: 12.0, CAKE: 1/0, pH: 10.1, Cl: 1,500, Ca: 80



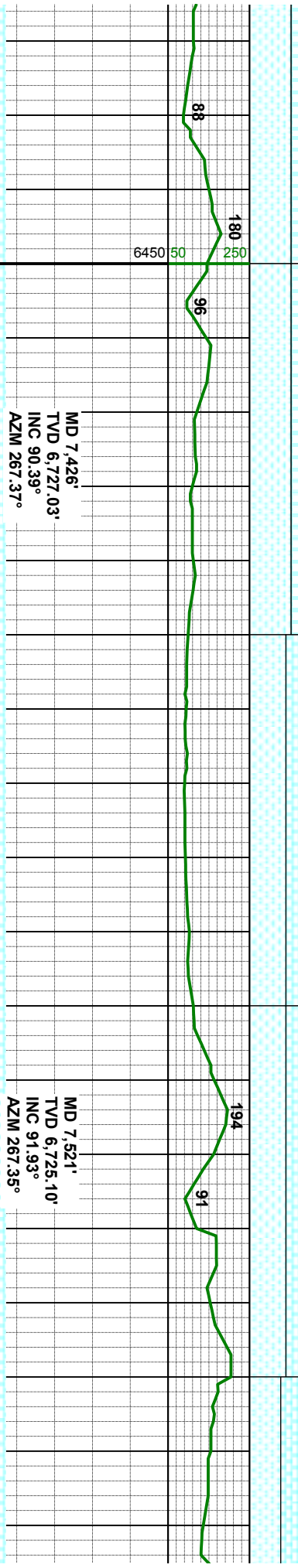
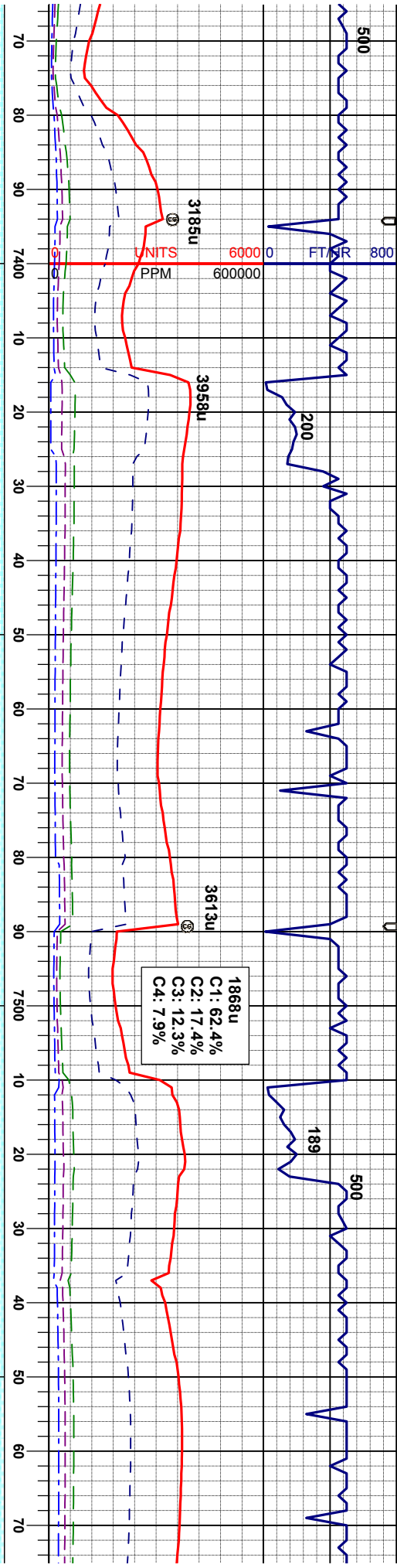
2921u  
C1: 60.7%  
C2: 18.5%  
C3: 12.4%  
C4: 8.5%

UNITS 6000 0 600000 PPM 3645u

to Line







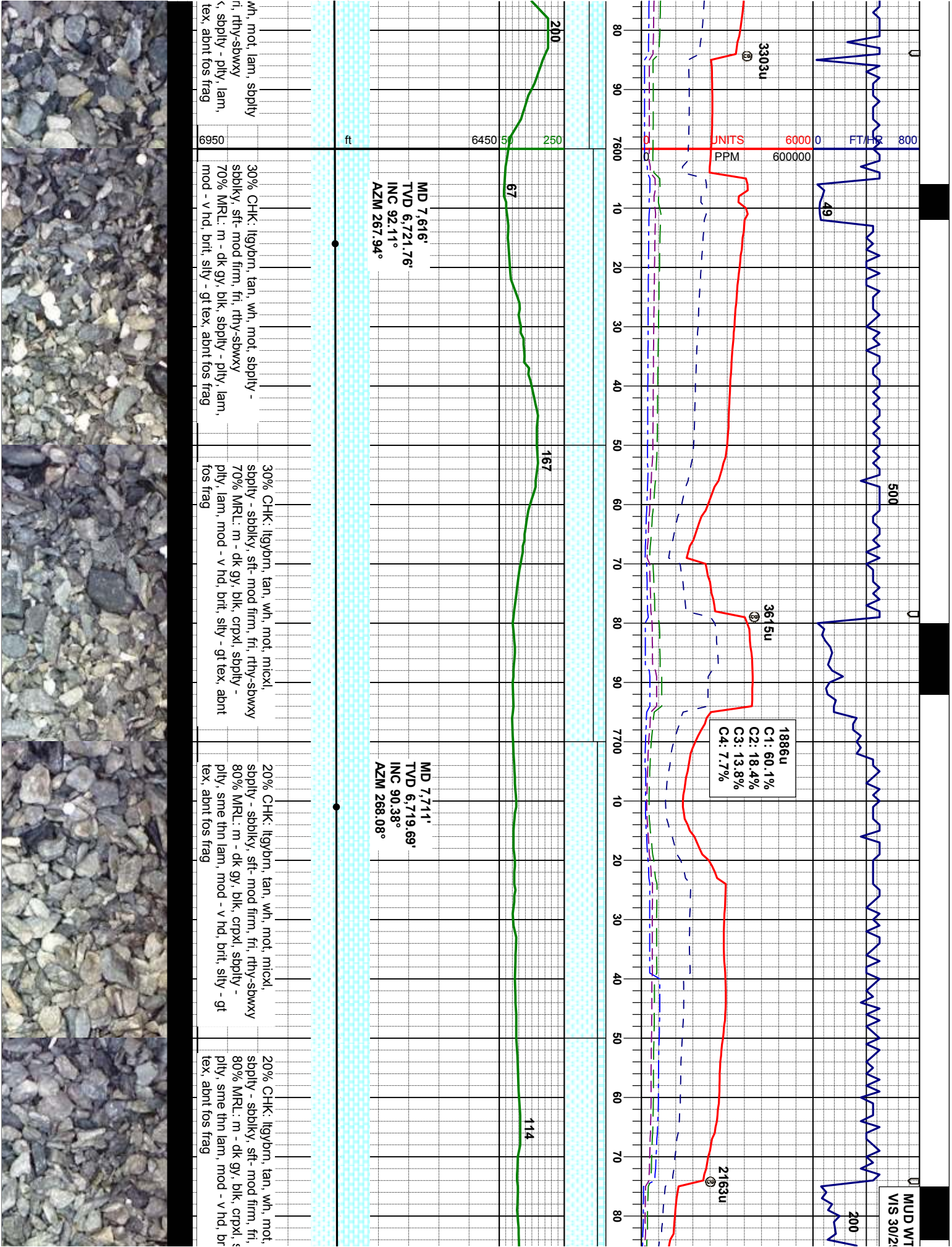
ft

MD 7,426'  
TVD 6,727.03'  
INC 90.39°  
AZM 267.37°

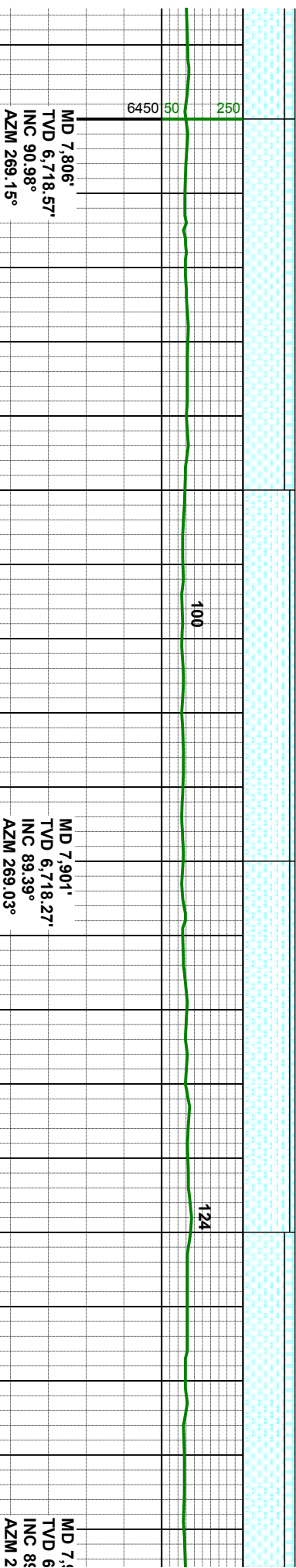
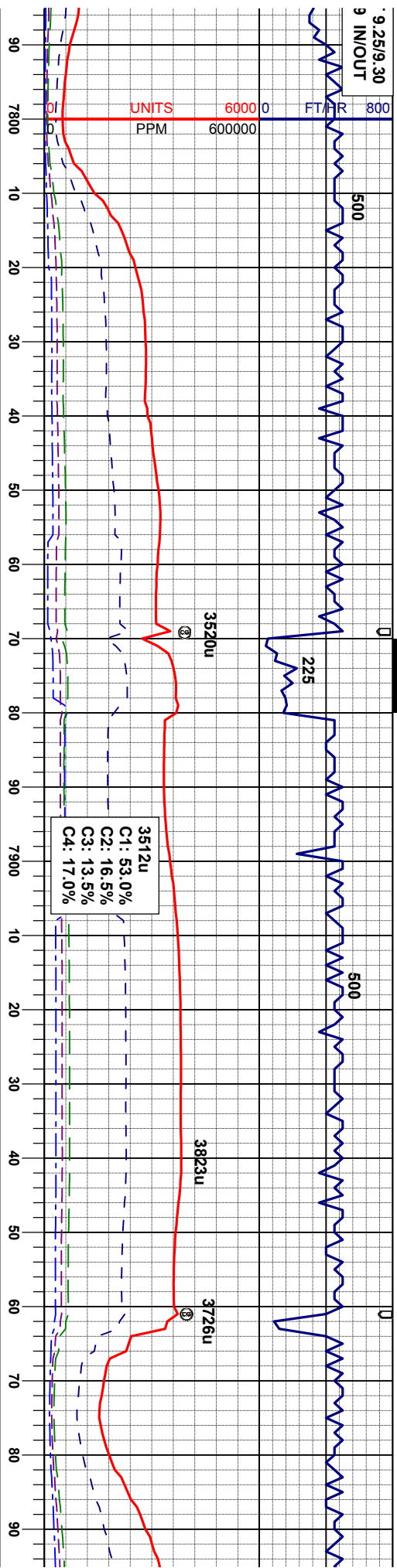
MD 7,521'  
TVD 6,725.10'  
INC 91.93°  
AZM 267.35°



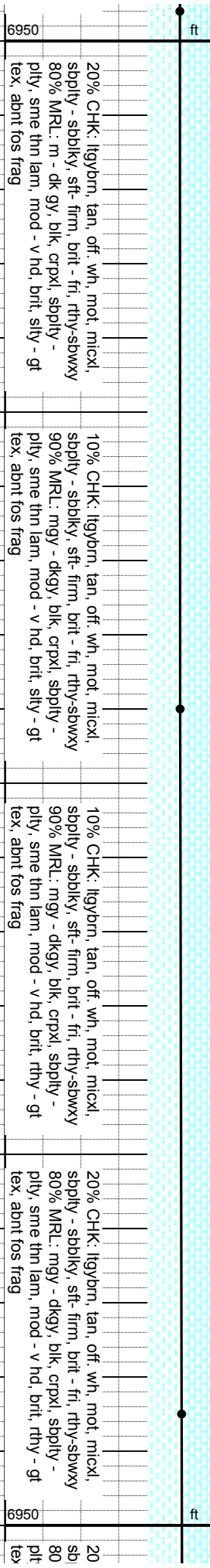
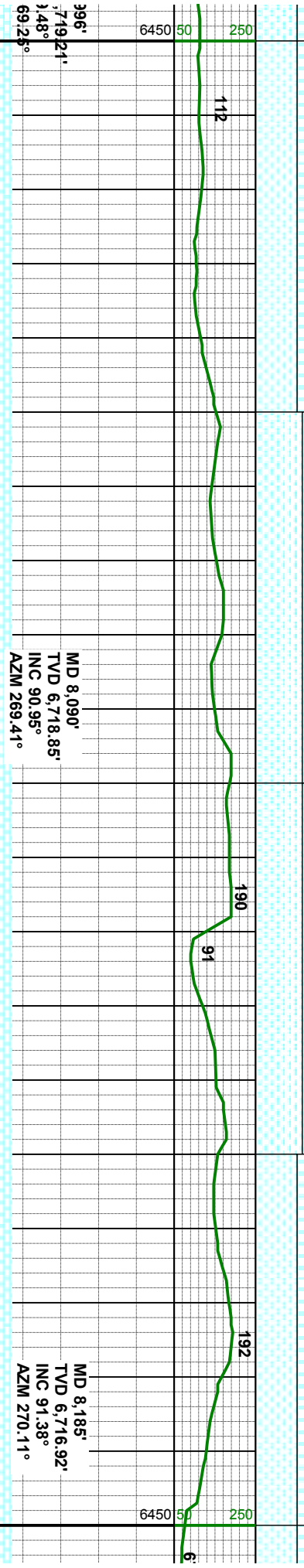
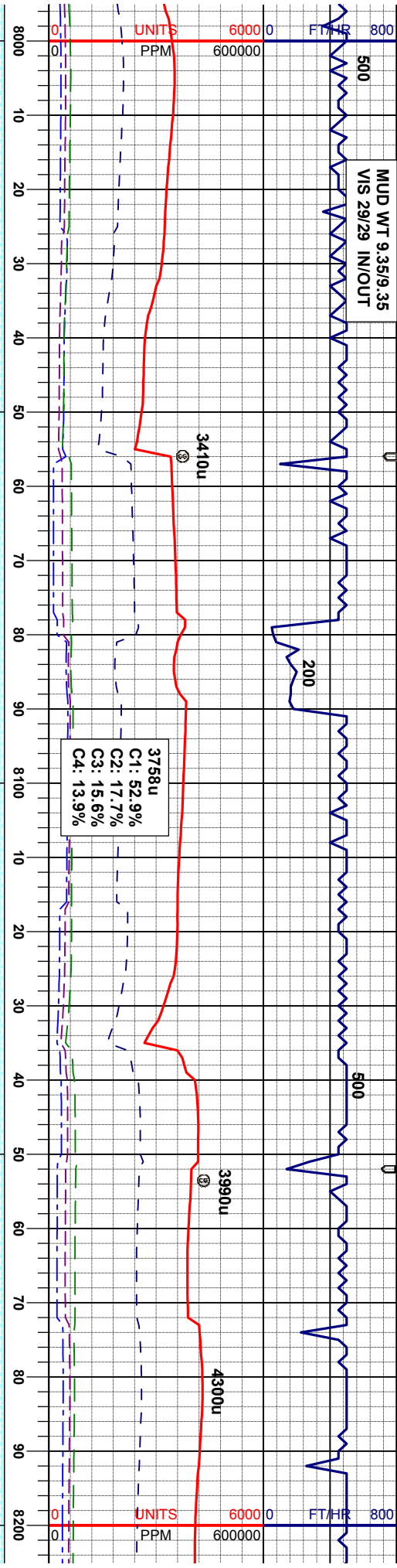






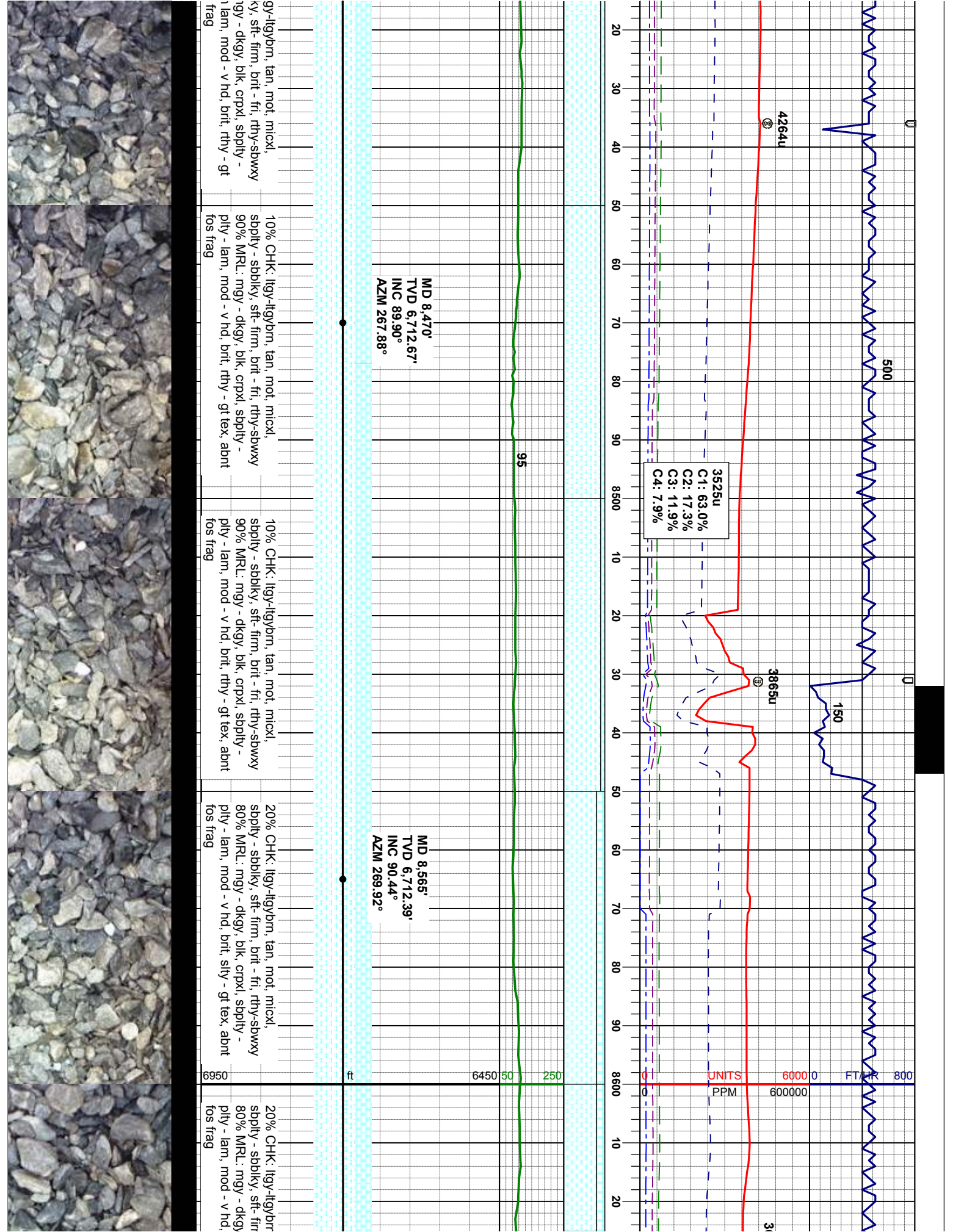
[illegible]



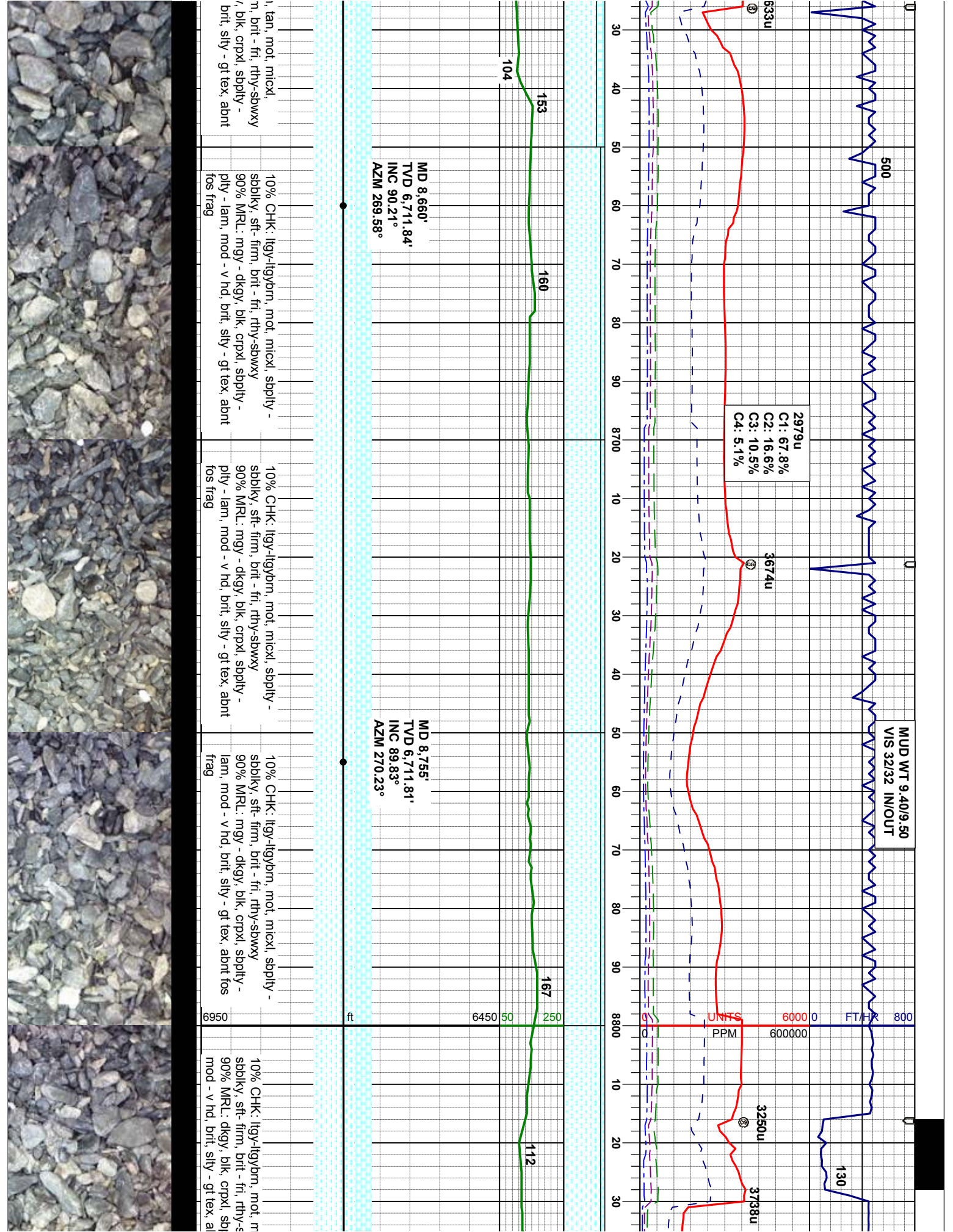










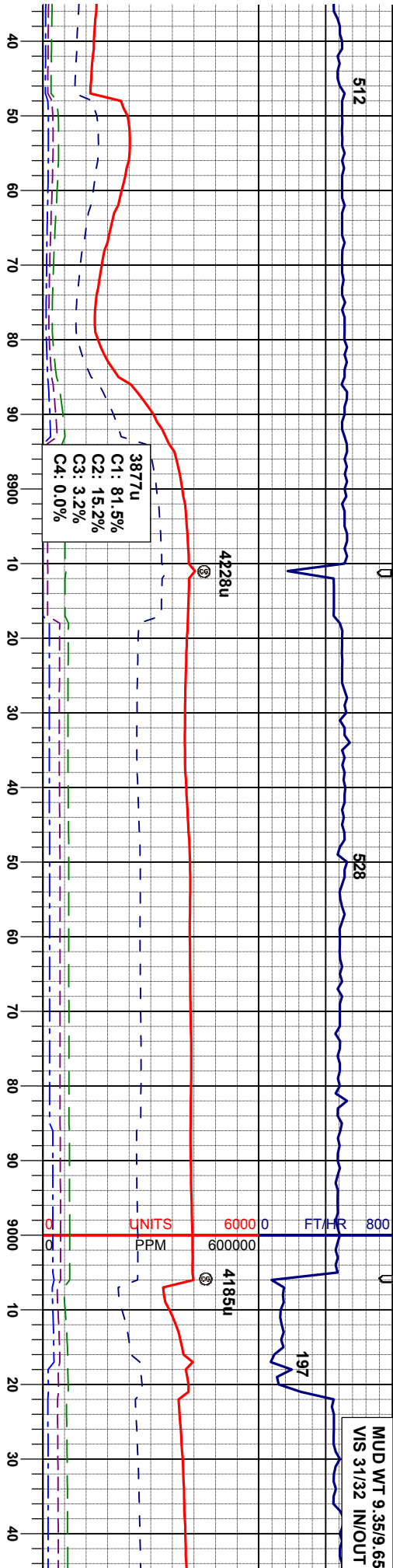




512

528

MUD WT 9.35/9.65  
VIS 31/32 IN/OUT



3877u  
C1: 81.5%  
C2: 15.2%  
C3: 3.2%  
C4: 0.0%

4128u

4185u

197

UNITS  
PPM  
FT/HR  
60000  
600000

MD 8,849'  
TVD 6,710.79'  
INC 91.41°  
AZM 269.30°

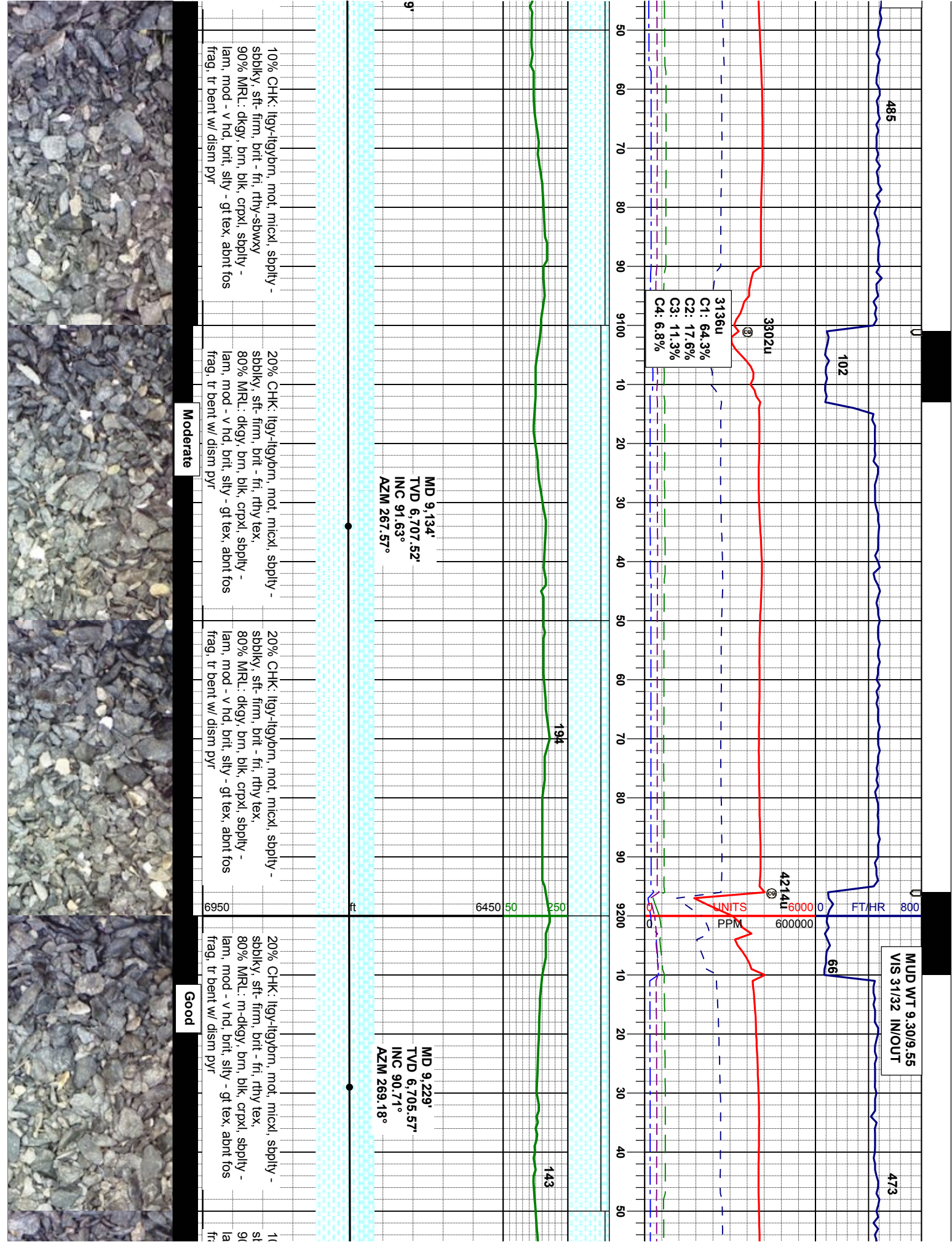
MD 8,944'  
TVD 6,709.76'  
INC 89.83°  
AZM 268.45°

MD 9,039'  
TVD 6,709.3'  
INC 90.63°  
AZM 267.12°

Interval	10% CHK	10% CHK	10% CHK
MD 8,849' - MD 8,944'	lgy-lgybrn, mot, micxl, sbply - sbply, sft-firm, brt - fri, rthy-sbwy	lgy-lgybrn, mot, micxl, sbply - sbply, sft-firm, brt - fri, rthy-sbwy	lgy-lgybrn, mot, micxl, sbply - sbply, sft-firm, brt - fri, rthy-sbwy
MD 8,944' - MD 9,039'	lgy-lgybrn, mot, micxl, sbply - sbply, sft-firm, brt - fri, rthy-sbwy	lgy-lgybrn, mot, micxl, sbply - sbply, sft-firm, brt - fri, rthy-sbwy	lgy-lgybrn, mot, micxl, sbply - sbply, sft-firm, brt - fri, rthy-sbwy

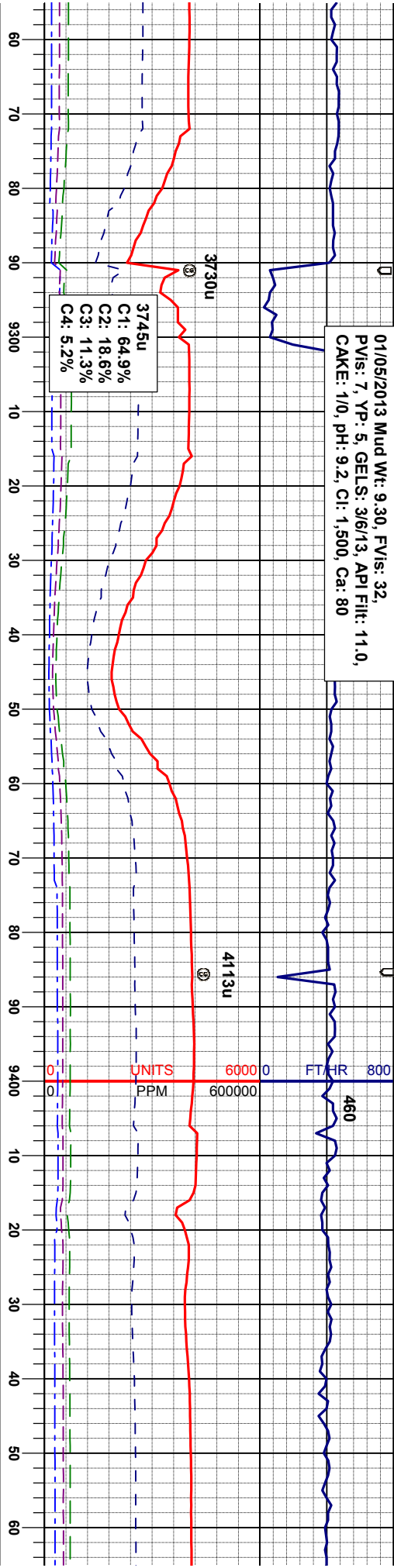








01/05/2013 Mud Wt: 9.30, FVIs: 32,  
PVIs: 7, YP: 5, GELS: 3/6/13, API Filt: 11.0,  
CAKE: 1/0, pH: 9.2, Cl: 1.500, Ca: 80



MD 9,324'  
TVD 6,703.30'  
INC 92.03°  
AZM 269.19°

MD 9,419'  
TVD 6,689.78'  
INC 92.21°  
AZM 268.62°

3% CHK: lgy-lgybrn, mot, micxl, sbply -  
sbbly, sft-firm, brt - fri, rthy tex,  
3% MRL: m-dkgy, brn, blk, crpxl, sbply -  
m, mod - v hd, brt, sily - gt tex, abnt fos  
sg, tr bent w/ dism pyr

0% CHK:  
100% MRL: m-dkgybrn, sme blk, sbply -  
sbbly, mod - v hd, brt, sily - gt tex, sme  
fos frag, tr bent w/ dism pyr

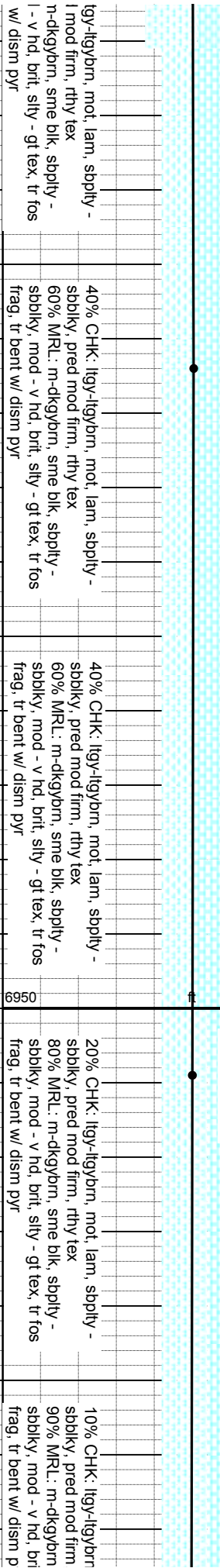
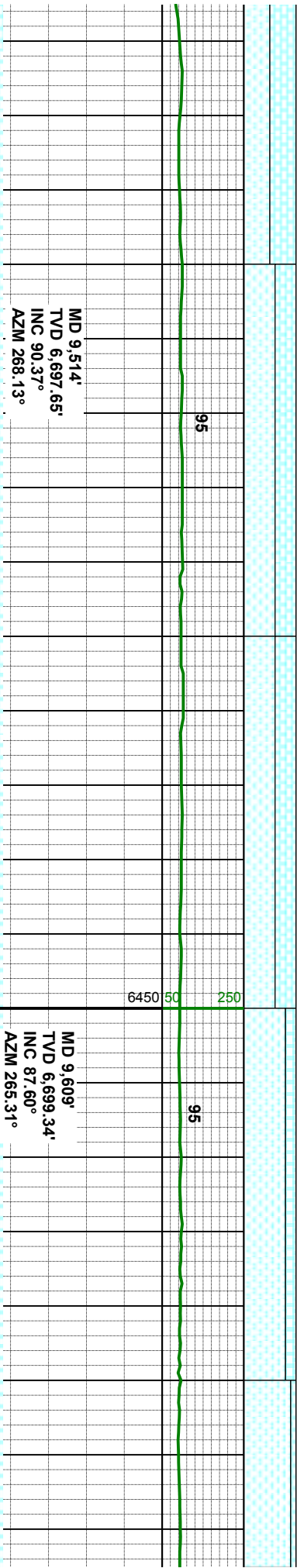
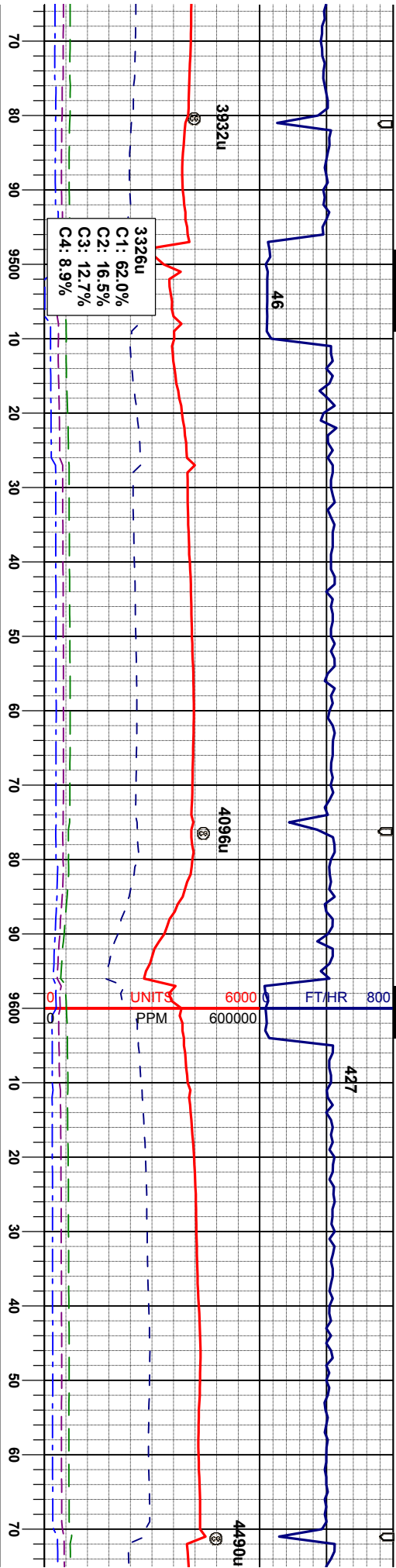
10% CHK: lgy-lgybrn, mot, lam, sbply -  
sbbly, sft- mod firm, rthy tex  
90% MRL: m-dkgybrn, sme blk, sbply -  
sbbly, mod - v hd, brt, sily - gt tex, sme  
fos frag, tr bent w/ dism pyr

50% CHK: lgy-lgybrn, mot, lam, sbply -  
sbbly, pred mod firm, rthy tex  
50% MRL: m-dkgybrn, sme blk, sbply -  
sbbly, mod - v hd, brt, sily - gt tex, tr fos  
frag, tr bent w/ dism pyr

50% CHK: l  
sbbly, pred  
50% MRL: r  
sbbly, mod  
frag, tr bent













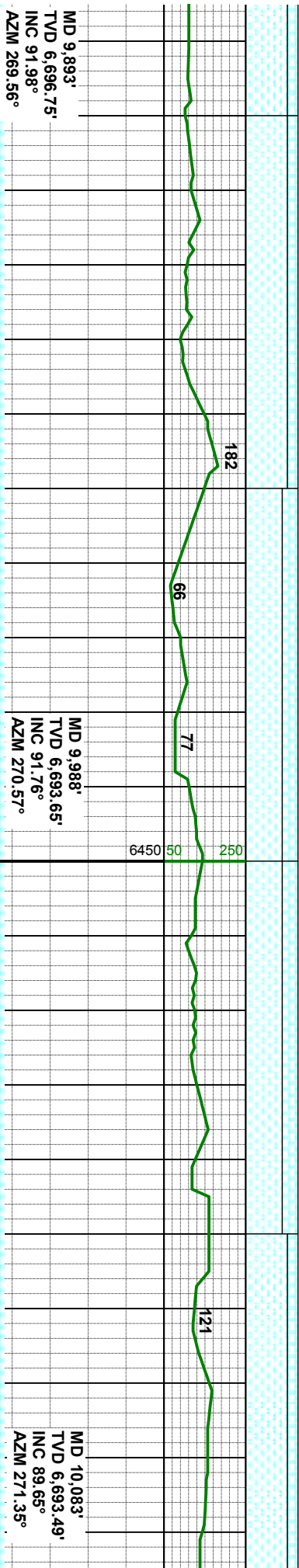
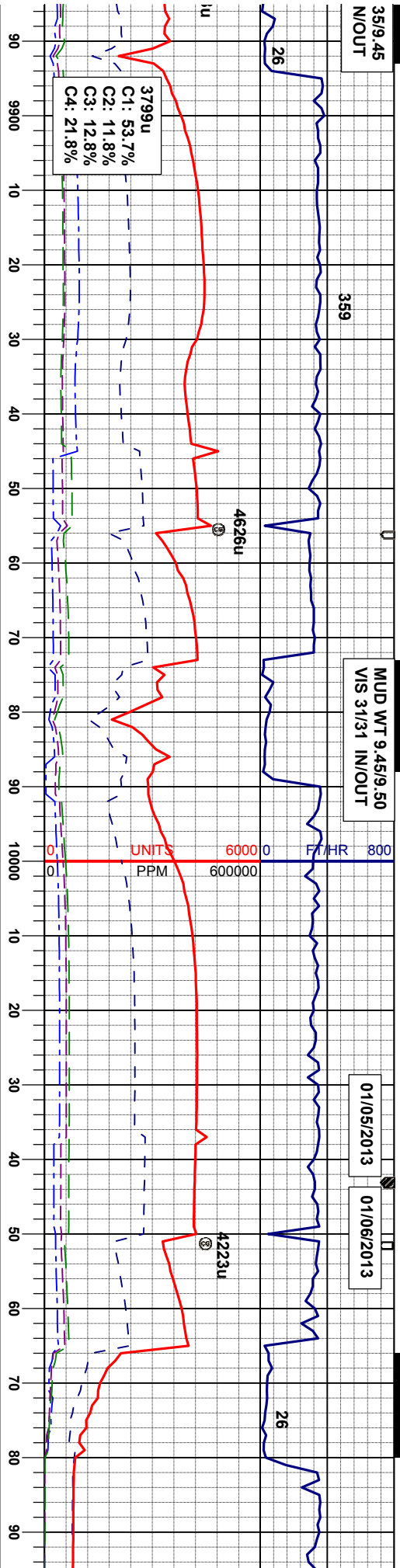
35/9.45  
N/OUT

359

MUD WT 9.45/9.50  
VIS 31/31 IN/OUT

01/05/2013

01/06/2013



ility - sbbkly,	20% CHK: mot lt-mgybrn, lam, sbbply - sbbkly, pred mod firm, rthy tex	30% CHK: mot lt-mgybrn, lam, sbbply - sbbkly, pred mod firm, rthy tex	30% CHK: mot lt-mgybrn, lam, sbbply - sbbkly, pred mod firm, rthy tex	20% CHK: mot lt-mgybrn, lam, sbbply - sbbkly, pred mod firm, rthy tex
tx, tr fos	80% MRL: m-dkgybrn, sme blk, sbbply - sbbkly, mod - v hd, brit, sily - gt tex, tr fos frag, tr bent w/ dism pyr	70% MRL: m-dkgybrn, sme blk, sbbply - sbbkly, mod - v hd, brit, sily - gt tex, tr fos frag, tr bent w/ dism pyr	70% MRL: m-dkgybrn, sme blk, sbbply - sbbkly, mod - v hd, brit, sily - gt tex, tr fos frag, abnt bent w/ dism pyr	80% MRL: m-dkgybrn, sme blk, sbbply - sbbkly, mod - v hd, brit, sily - gt tex, tr fos frag, abnt bent w/ dism pyr

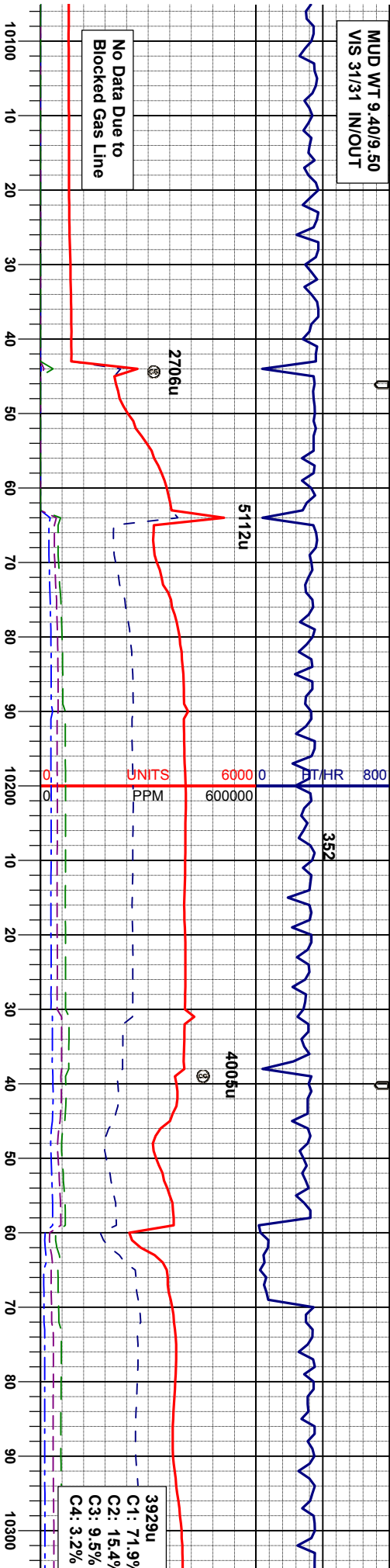
Moderate





MUD WT 9.40/9.50  
VIS 31/31 IN/OUT

No Data Due to  
Blocked Gas Line



MD 10,178'  
TVD 6,693.33'  
INC 90.55°  
AZM 271.34°

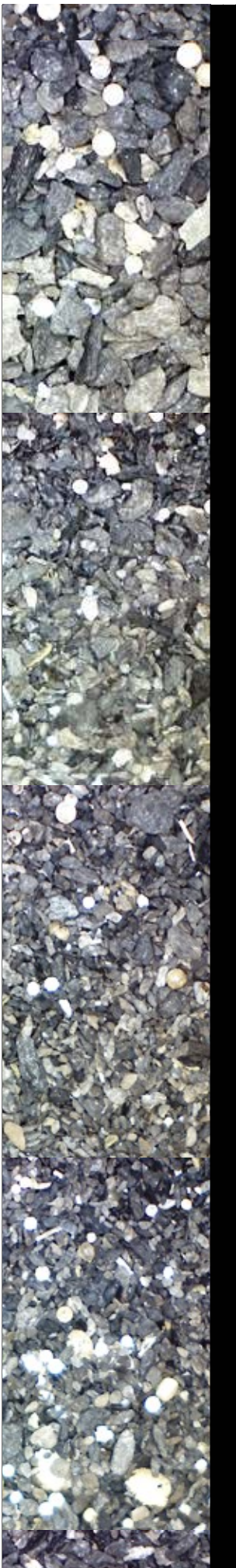
MD 10,273'  
TVD 6,692.57'  
INC 90.36°  
AZM 270.89°

10% CHK: mot lt-mgybrn, lam, sbply -  
sbbky, pred mod firm, rthy tex  
90% MRL: m-dkgybrn, sme blk, sbply -  
sbbky, mod - v hd, brt, silty - gt tex, tr fos  
frag, abnt bent w/ dism pyr

10% CHK: mot lt-mgybrn, lam, sbply -  
sbbky, pred mod firm, rthy tex  
90% MRL: m-dkgybrn, sme blk, sbply -  
sbbky, mod - v hd, brt, silty - gt tex, tr fos  
frag, abnt bent w/ dism pyr

10% CHK: mot lt-mgybrn, lam, sbply -  
sbbky, pred mod firm, rthy tex  
90% MRL: m-dkgybrn, sme blk, sbply -  
sbbky, mod - v hd, brt, silty - gt tex, abnt  
fos frag, sme bent w/ dism pyr

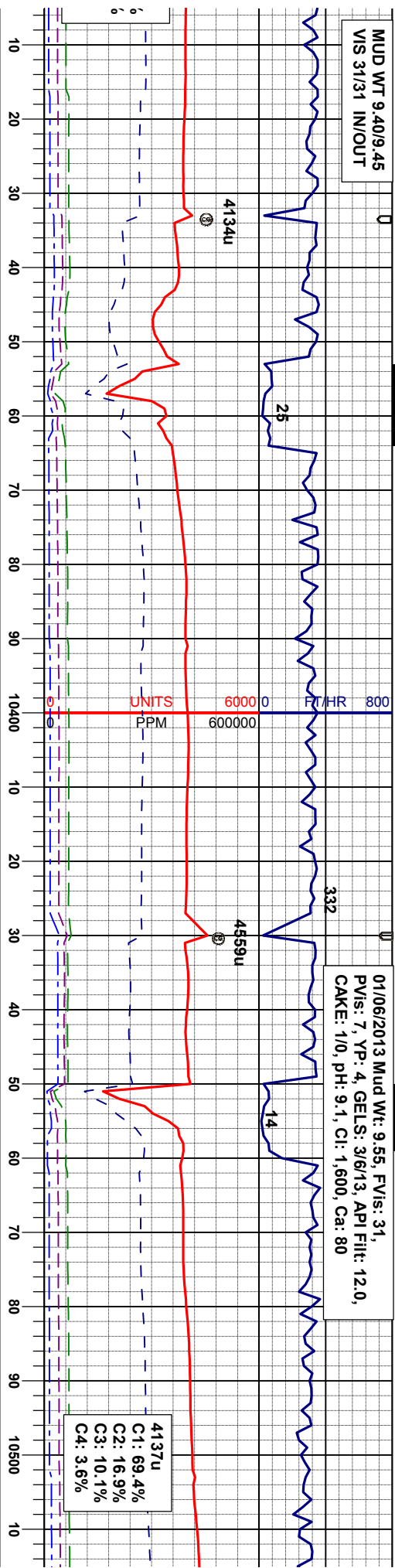
10% CHK: mot lt-mgybrn, lam, sbply -  
sbbky, pred mod firm, rthy tex  
90% MRL: m-dkgybrn, sme blk, sbply -  
sbbky, mod - v hd, brt, silty - gt tex, abnt  
fos frag, sme bent w/ dism pyr





MUD WT 9.40/9.45  
VIS 31/31 IN/OUT

01/06/2013 Mud Wt: 9.55, F/Vis: 31,  
PVIS: 7, YP: 4, GELS: 36/13, API Filtr: 12.0,  
CAKE: 1/0, pH: 9.1, Cl: 1,600, Ca: 80



MD 10,368'  
TVD 6,691.86'  
INC 90.50°  
AZM 269.78°

MD 10,463'  
TVD 6,690.53'  
INC 91.10°  
AZM 268.80°

0% CHK: mot lt-mgybrn, lam, sbply -  
bbiky, pred mod firm, rthy tex  
0% MRL: m-dkybrn, sme blk, sbply -  
bbiky, mod - v hd, brlt, silty - gt tex, abnt  
fos frag, sme bent w/ dism pyr

40% CHK: mot lt-mgybrn, lam, sbply -  
sbblky, pred mod firm, rthy tex  
60% MRL: m-dkybrn, sme blk, sbply -  
sbblky, mod - v hd, brlt, silty - gt tex, abnt  
fos frag, sme bent w/ dism pyr

50% CHK: llybrn, tan, bnd w/ wh, sbply -  
sbblky, sft - firm, rthy tex  
50% MRL: m-dkybrn, sme blk, sbply -  
sbblky, mod - v hd, brlt, silty - gt tex, abnt  
fos frag, sme bent w/ dism pyr

60% CHK: llybrn, tan, bnd w/ wh, sbply -  
sbblky, sft - firm, rthy - wxy tex,  
40% MRL: m-dkybrn, sme blk, sbply -  
sbblky, mod - v hd, brlt, silty - gt tex, abnt  
fos frag, sme bent w/ dism pyr

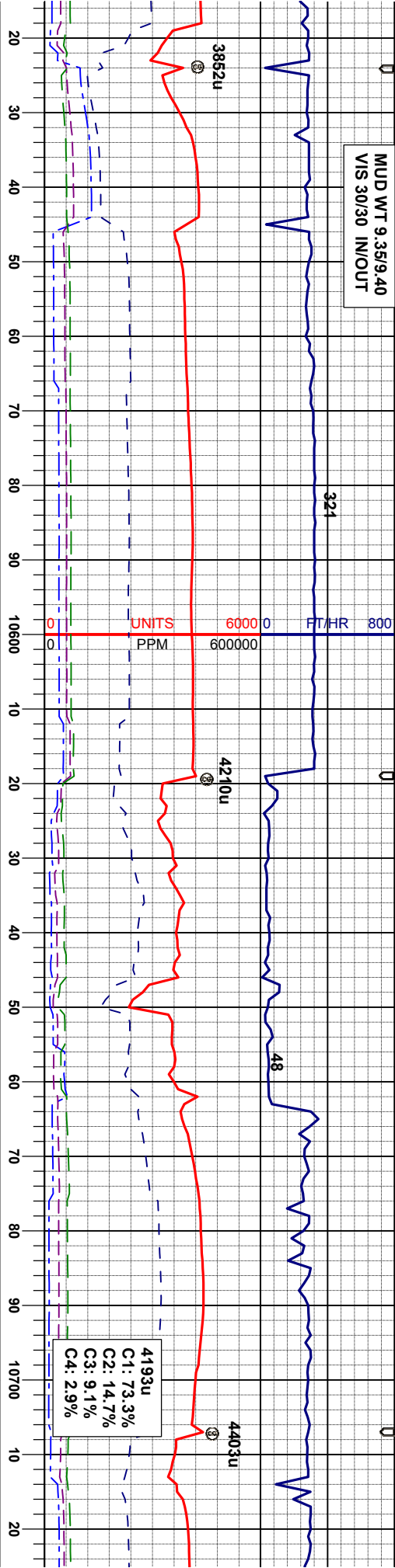
70% CHK:  
vfgrxl, sbpl  
tex  
30% MRL:  
sbblky, mo  
fos frag, tr

Good





MUD WT 9.35/9.40  
VIS 30/30 IN/OUT



MD 10,558'  
TVD 6,687.44'  
INC 92.63°  
AZM 268.25°

MD 10,653'  
TVD 6,685.50'  
INC 89.71°  
AZM 268.75°

llybmn, tan, bnd w/ wh, micx-  
lly - sbdkly, sft - firm, rthy - wxy

80% CHK: llybmn, tan, bnd w/ wh, micx-  
vfgxl, sbply - sbdkly, sft - firm, rthy - wxy  
tex  
20% MRL: m-dkgybrn, sme blk, sbply -  
ply, mod - v hd, brt, sily - gt tex, abnt fos  
frag, tr bent w/ dism pyr

70% CHK: llybmn, tan, bnd w/ wh, micx-  
vfgxl, sbply - sbdkly, sft - firm, rthy - wxy  
tex  
30% MRL: m-dkgybrn, sme blk, sbply -  
ply, hd, brt, sily - gt tex, abnt fos frag, tr  
bent w/ dism pyr

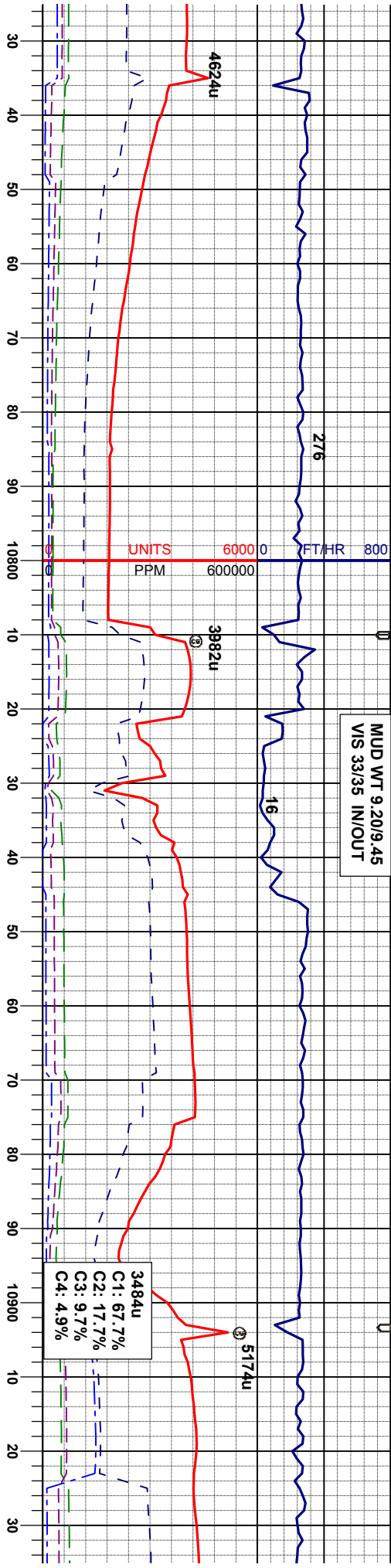
60% CHK: llyg, tan, bnd w/ wh, micx-vfgxl,  
sbply - sbdkly, sft - firm, rthy - wxy tex  
40% MRL: m-dkgybrn, sme blk, sbply -  
ply, hd, brt, sily - gt tex, abnt fos frag, tr  
bent w/ dism pyr

50% CHK: llyg, tan, t  
sbply - sbdkly, sft - fi  
50% MRL: m-dkgybr  
ply, hd, brt, sily - gt i  
bent w/ dism pyr





MUD WT 9.20/9.45  
VIS 33/35 IN/OUT



MD 10,747'  
TVD 6,685.08'  
INC 90.81°  
AZM 270.07°

MD 10,842'  
TVD 6,684.64'  
INC 89.72°  
AZM 270.61°

MD  
TVD  
INC  
AZM

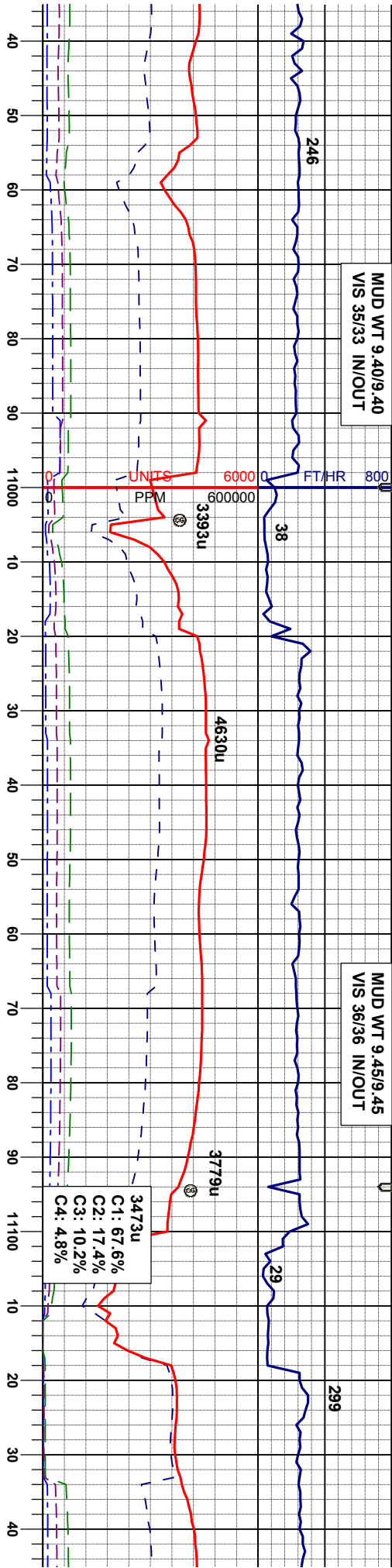
nd w/ wh, micl-vfgrxl, rm, rthy - wxy tex t, sme blk, sbply - tex, abnt fos frag, tr	40% CHK: lly, tan, bnd w/ wh, micl, sbply - sbdky, sft - frm, rthy - sbwxy tex 60% MRL: m-dkgybrn, sme blk, sbply - ply, hd, brit, silty - gt tex, abnt fos frag, tr bent w/ dism pyr	30% CHK: lly, tan, micl, sbply - sbdky, sft - frm, rthy - sbwxy tex 70% MRL: m-dkgybrn, sme blk, sbply - ply, hd, brit, silty - gt tex, abnt fos frag, tr bent w/ dism pyr	20% CHK: lly-lgybrn, tan, micl, sbply - sbdky, sft - frm, rthy - sbwxy tex 80% MRL: m-dkgybrn, blk, sbply - ply, hd, brit, silty - gt tex, abnt fos frag, tr dism pyr	20% CHK: lly-lgybrn, tan, micl, sbdky, sft - frm, rthy - 80% MRL: m-dkgybrn, blk, sbply brit, silty - gt tex, abnt fos frag, tr dism pyr			
6950	ft	6450	50	250	194	135	164





MUD WT 9.40/9.40  
VIS 35/33 IN/OUT

MUD WT 9.45/9.45  
VIS 36/36 IN/OUT



10.937'  
6.684.77'  
90.13°  
271.44°

MD 11.032'  
TVD 6.685.15'  
INC 89.41°  
AZM 270.38°

MD 11.142  
TVD 6.685  
INC 89.89°  
AZM 269.7

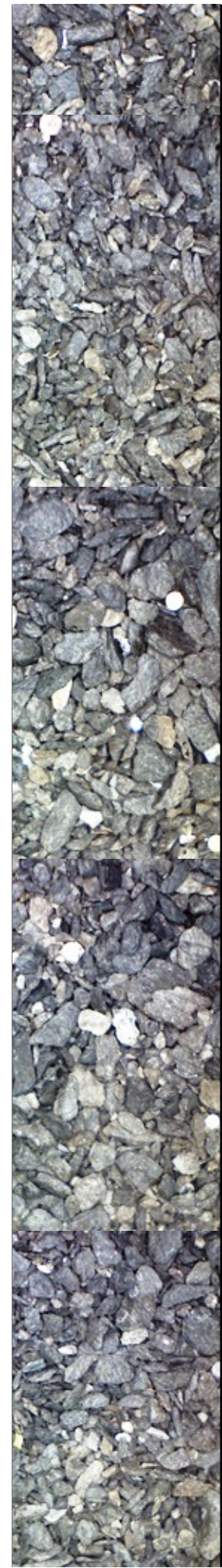
xl sbply -  
sbply -  
ply - hd,  
bent w/

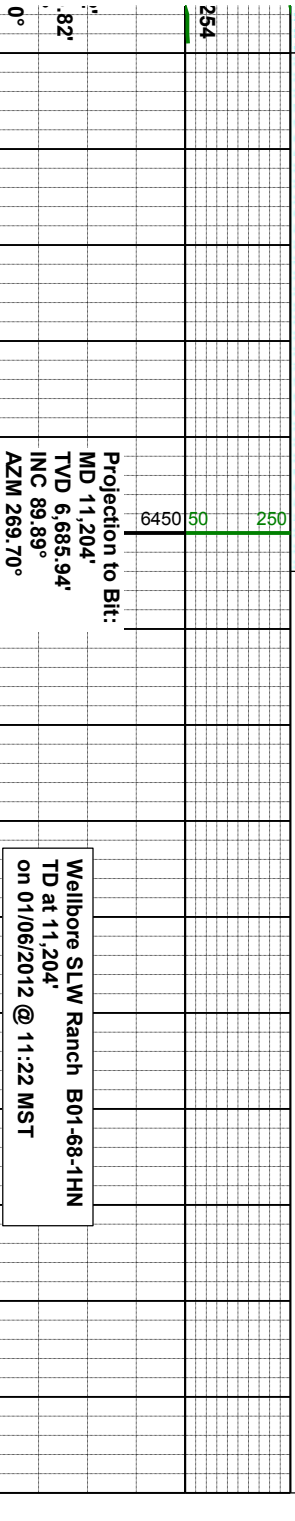
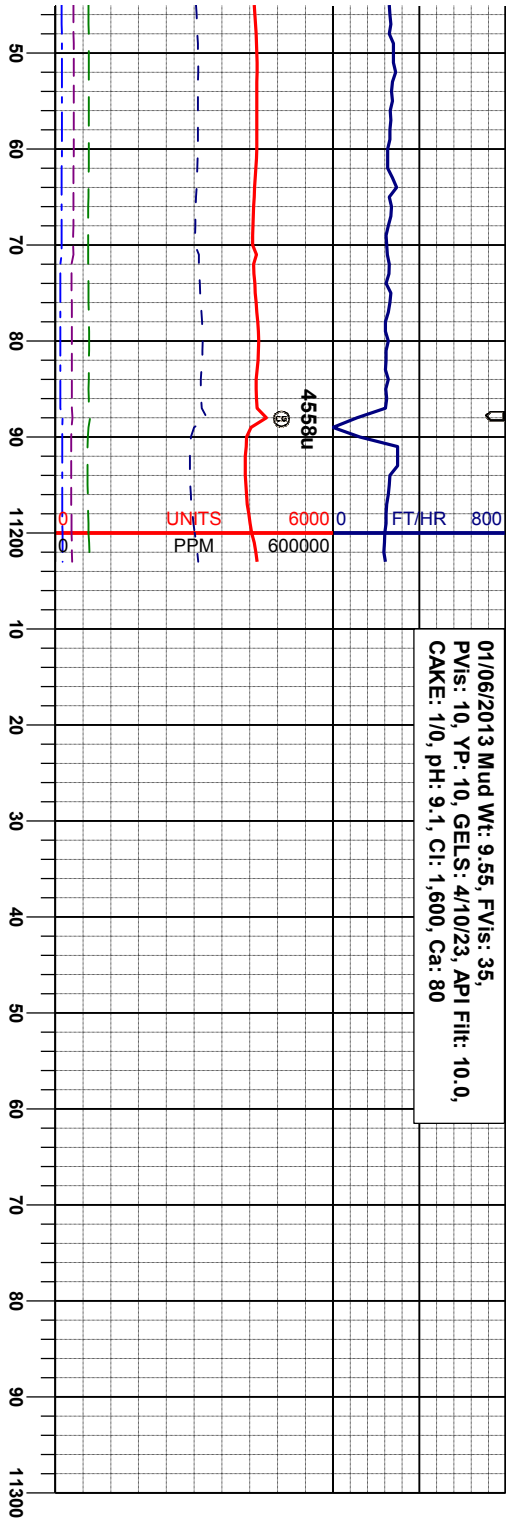
10% CHK: lgy-lgybrn, tan, micxl, sbply -  
sbply, sft - firm, brit - fri, rthy - sbwxy tex  
90% MRL: m-dkgybrn, blk, sbply - ply, hd,  
brit, silty - gt tex, abnt fos frag, tr bent w/  
dism pyr

10% CHK: lgy-mgy, gybrn, micxl, sbply -  
sbply, sft - firm, brit - fri, rthy - sbwxy tex  
90% MRL: m-dkgybrn, blk, sbply - ply, hd,  
brit, silty - gt tex, abnt fos frag, tr bent w/  
dism pyr

10% CHK: lgy-mgy, gybrn, micxl, sbply -  
sbply, sft - firm, brit - fri, rthy - sbwxy tex  
90% MRL: m-dkgybrn, blk, sbply - ply, hd,  
brit, silty - gt tex, abnt fos frag, tr bent w/  
dism pyr

10% CHK: lgy-mgy, gybrn, micxl, sbply -  
sbply, sft - firm, brit - fri, rthy - sbwxy tex  
90% MRL: dkgy, gybrn, blk, sbply - ply,  
hd, brit, silty - gt tex, abnt fos frag, tr bent w/  
dism pyr





10% CHK: ltgy-mgy, gybrn, mixcl, sbply -  
sbbky, sft - firm, brt - fri, rthy - sbwxy tex  
90% MRL: dkgy, gybrn, blk, cpxl, sbply -  
ply, hd, brt, silty - gt tex, abnt fos frag, tr  
bent w/ dism pyr

6950



Wellsite Geological Services Provided by  
Columbine Logging Inc.

Wellbore SLW Ranch B01-68-1HN  
TD at 11,204'  
on 01/06/2012 @ 11:22 MST