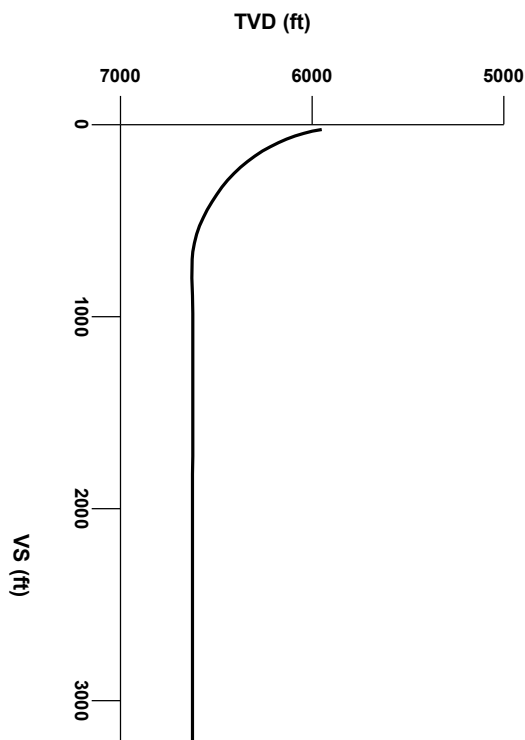


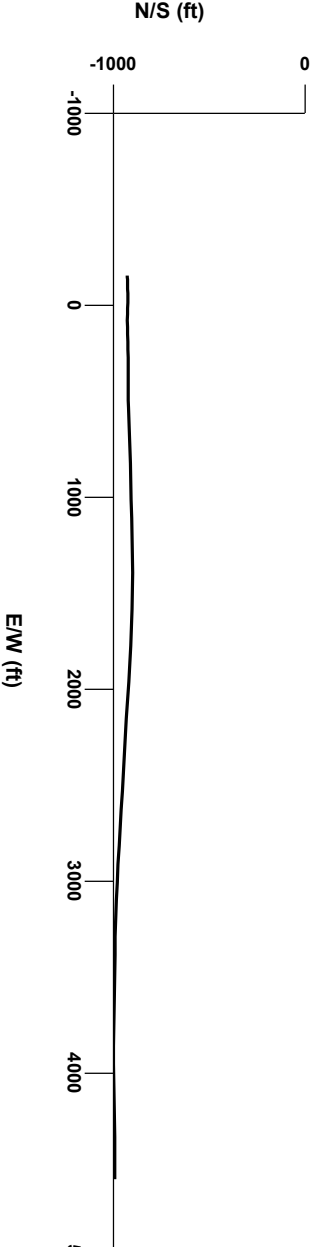
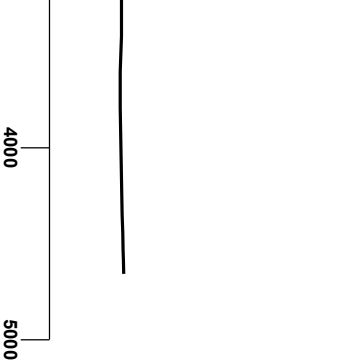
LOG created using LPLOT VH Version 3.0, July 19, 2012, Copyright (C) 1999-2009 Pason Systems Corp.

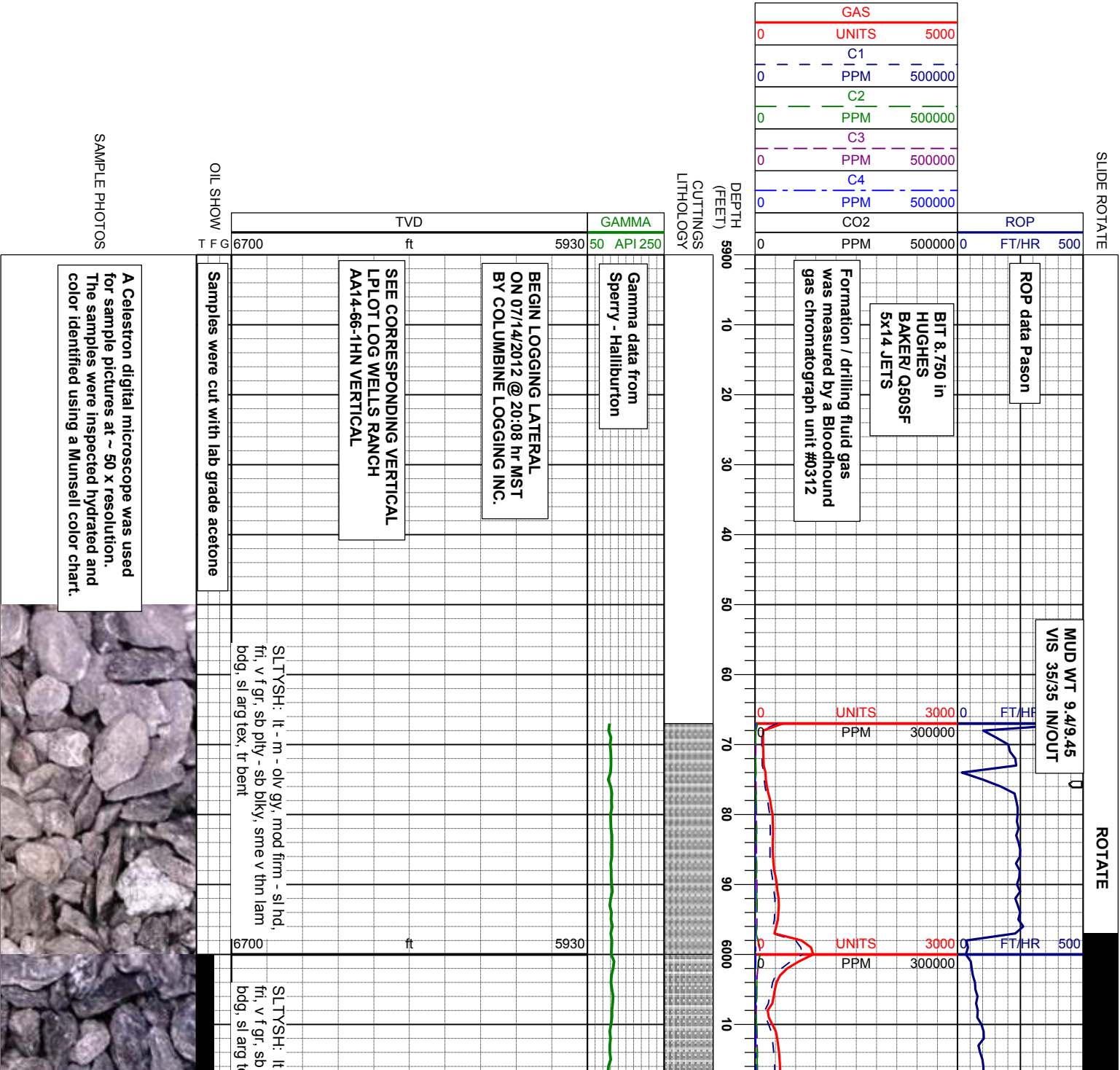
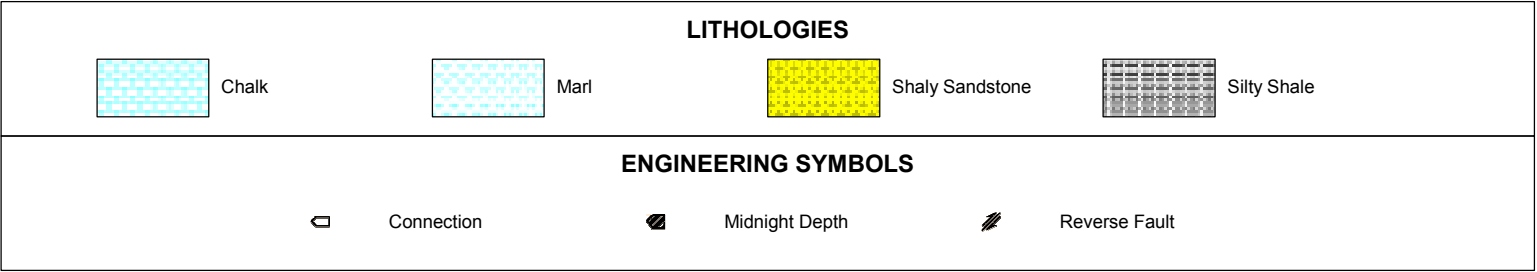
**OPERATOR:** NOBLE ENERGY INC.  
**WELL:** WELLS RANCH AA14-66-1HN  
**LOCATION:** SWNW SEC. 14-T6N-R63W  
**COUNTY:** WELD  
**STATE:** COLORADO  
**SPOT:** 1373' FNL; 249' FWL  
**ELEVATION:** GL 4,780'; KB 4,804'  
**FIELD:** WATTENBERG  
**SPUD DATE:** 7/12/2012  
**TD DATE:** 7/19/2012  
**DATES LOGGED:** 7/14/2012 - 7/19/2012 (HORIZONTAL)  
**DEPTHS LOGGED:** 5,967' - 11,120' (HORIZONTAL)  
**LOGGERS:** MARK COLE; CHRIS COOK  
**DRILLING FLUID:** LSND  
**DRILLING RIG:** H&P 315  
**API:** 05-123-35615  
**LOG TYPE:** HORIZONTAL  
**SCALE:** 1:240 (5 inches per 100 feet)  
**REMARKS:** See corresponding vertical log: WELLS RANCH AA14-66-1HN VERT.  
 LAT 40.490100, LON -104.412520

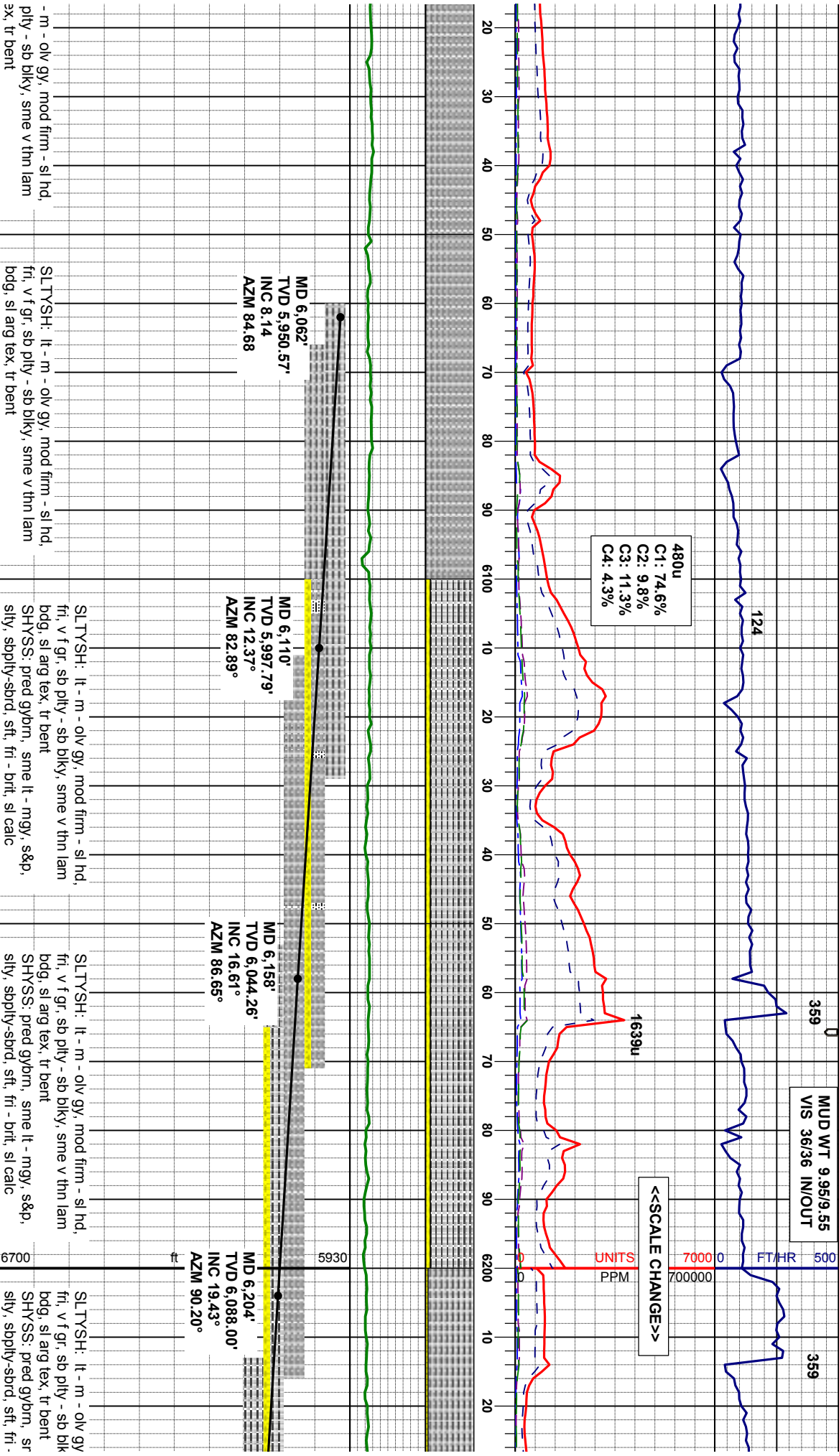


Survey Elevation

Survey Plan









7/14/2012 7/15/2012

MUD WT 10.2/9.8  
VIS 35/35 IN/OUT

MUD WT 10.1/9.9  
VIS 34/34 IN/OUT

260

272

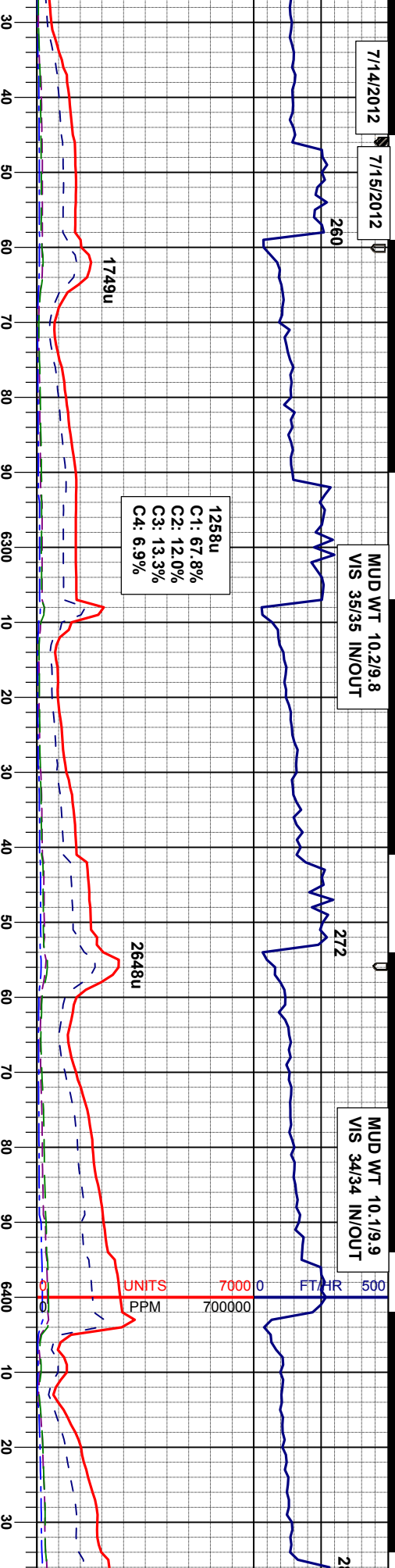
28

1258u  
C1: 67.8%  
C2: 12.0%  
C3: 13.3%  
C4: 6.9%

1749u

2648u

UNITS  
PPM  
70000  
700000  
FT/HR  
500



MD 6,252'  
TVD 6,132.86'  
INC 22.25°  
AZM 89.69°

MD 6,299'  
TVD 6,175.92'  
INC 24.93°  
AZM 87.78°

MD 6,347'  
TVD 6,218.84'  
INC 28.26°  
AZM 88.38°

MD 6,394'  
TVD 6,259.47'  
INC 32.08°  
AZM 89.26°

, mod firm - sl hd,  
y, sme v thn lam  
ne lt - mgy, s&p,  
- brlt, sl calc

SLTYSH: lt - m - olv gy, mod firm - sl hd,  
fri, v f gr, sb ply - sb blk, sme v thn lam  
bdg, sl arg tex, tr bent  
SHYSS: pred gybm, sme lt - mgy, s&p,  
sily, sbply-sbrd, sft, fri - brlt, sl calc

SLTYSH: lt - m - olv gy, mod firm - sl hd,  
fri, v f gr, sb ply - sb blk, sme v thn lam  
bdg, sl arg tex, tr bent

SLTYSH: lt - m - olv gy, mod firm - sl hd,  
fri, v f gr, sb ply - sb blk, sme v thn lam  
bdg, sl arg tex, tr bent

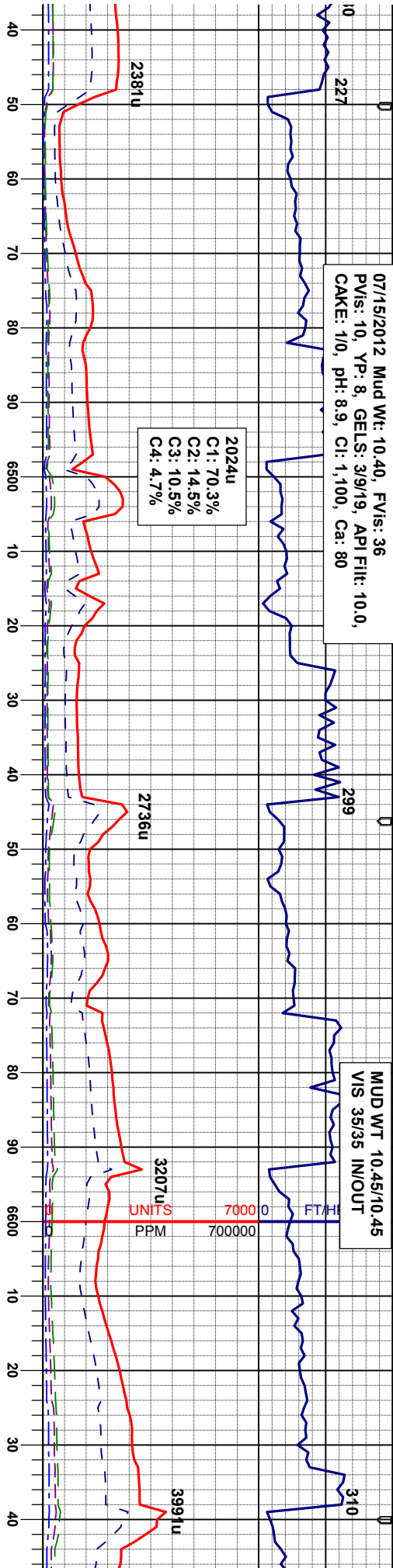
SLTYSH: lt - m - olv gy, mod firm - sl hd,  
fri, v f gr, sb ply - sb blk, sme v thn lam  
bdg, sl arg tex, tr bent  
SHYSS: pred gybm, sme lt - mgy, s&p,  
sily, sbply-sbrd, sft, fri - brlt, sl calc



07/15/2012 Mud Wt: 10.40, FVIs: 36  
PVIs: 10, YP: 8, GEIS: 3/9/19, API Filt: 10.0,  
CAKE: 1/0, PH: 8.9, CI: 1,100, Ca: 80

MUD WT 10.45/10.45  
VIS 35/35 IN/OUT

2024u  
C1: 70.3%  
C2: 14.5%  
C3: 10.5%  
C4: 4.7%



MD 6.442'  
VD 6.299.34'  
NC 35.56°  
ZM 91.70°

MD 6.489'  
TVD 6.336.78'  
INC 38.83°  
AZM 93.21°

MD 6.537'  
TVD 6.373.51'  
INC 41.28°  
AZM 91.57°

MD 6.584'  
TVD 6.408.02'  
INC 44.23°  
AZM 89.76°

MD 6.632'  
TVD 6.440.93'  
INC 49.17°  
AZM 89.00°

m - sl hd,  
/ thn lam  
SLTYSH: lt - m - olv gy, mod firm - sl hd,  
fri, v f gr, sb pily - sb blkly, sme v thn lam  
bdg, sl arg tex, tr bent  
SHYSS: pred gybm, sme lt - mgy, s&p,  
sily, sdpily-sbrd, sfl, fri - brlt, sl calc

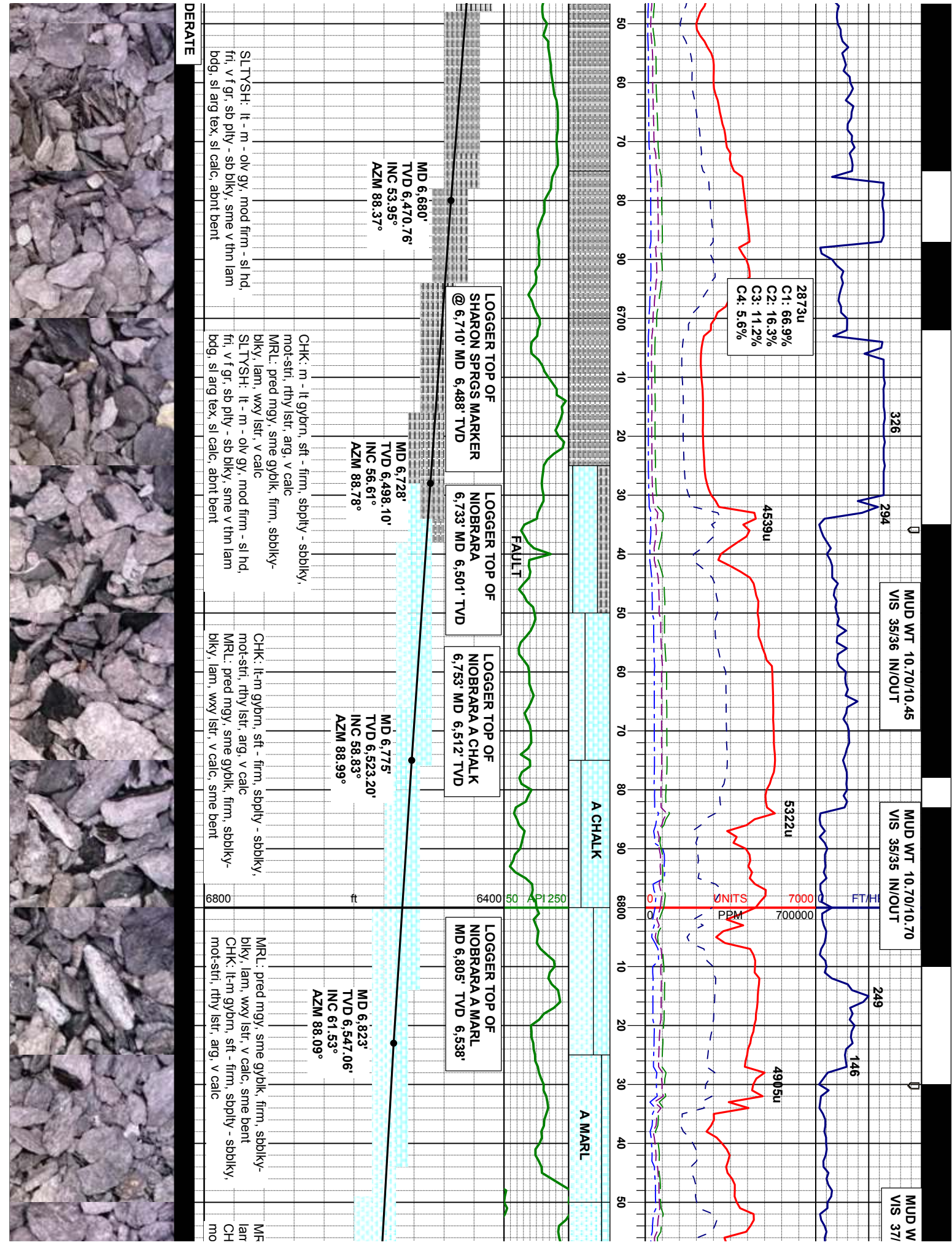
SLTYSH: lt - m - olv gy, mod firm - sl hd,  
fri, v f gr, sb pily - sb blkly, sme v thn lam  
bdg, sl arg tex, sl calc

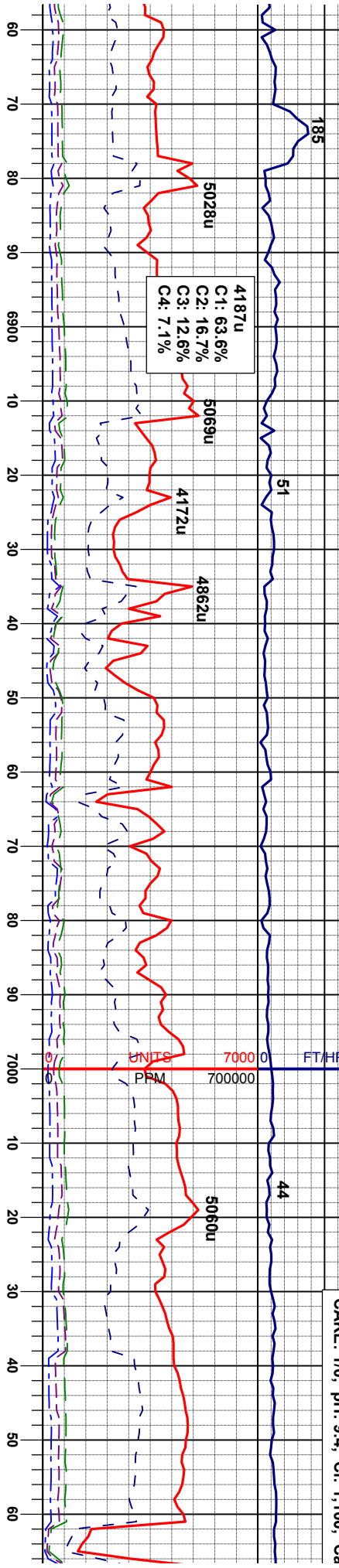
SLTYSH: lt - m - olv gy, mod firm - sl hd,  
fri, v f gr, sb pily - sb blkly, sme v thn lam  
bdg, sl arg tex, sl calc

SLTYSH: lt - m - olv gy, mod firm - sl hd,  
fri, v f gr, sb pily - sb blkly, sme v thn lam  
bdg, sl arg tex, sl calc, tr bent

MO







LOGGER TOP OF  
NIOBRARA B CHALK  
MD 6,987' TVD 6608.88'

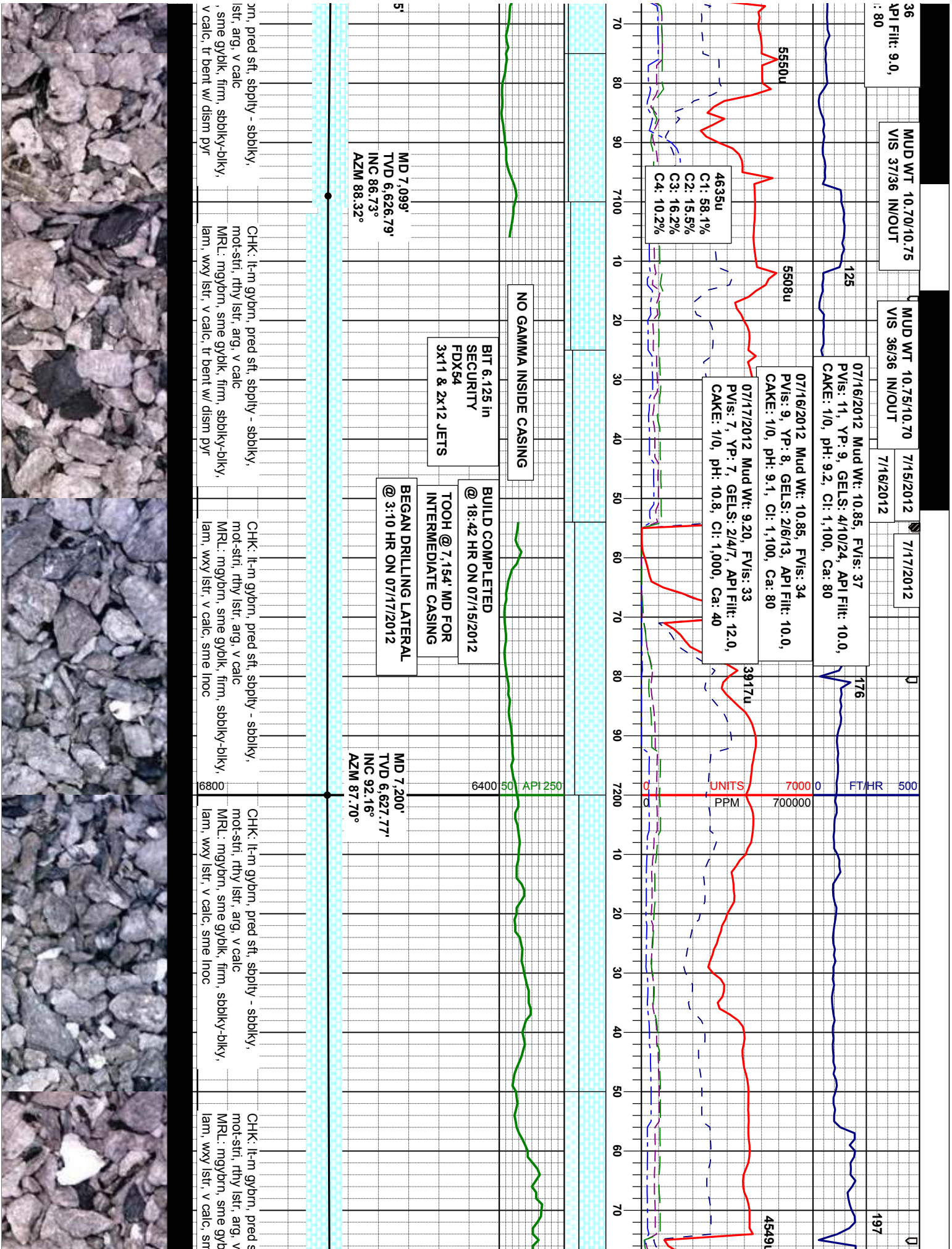
A MARL  
B CHALK

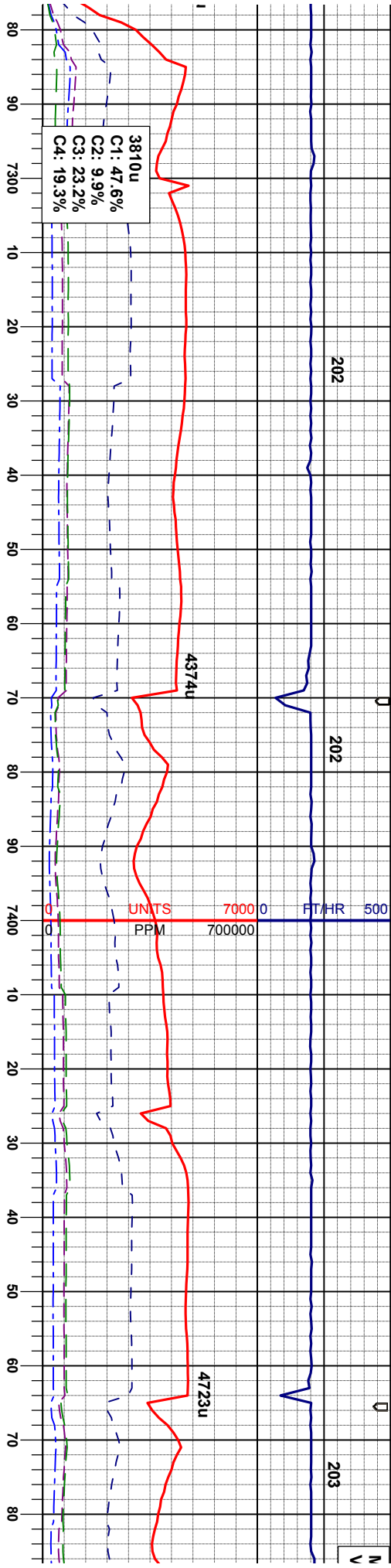
MD 6,870' TVD 6,568.16' INC 65.11° AZM 89.09°	MD 6,918' TVD 6,586.94' INC 68.82° AZM 90.29°	MD 6,965' TVD 6,602.62' INC 72.21° AZM 90.40°	MD 7,013' TVD 6,615.08' INC 77.68° AZM 89.62°	MD 7,060' TVD 6,623.11' INC 82.55° AZM 89.11°
l: mgybm, sme gyblk, firm, sbblky-blky, l, wxy lstr, v calc, tr bent w/ dism pyr IK: l-m gybm, pred sft, sbply - sbblky, t-str, rthy lstr, arg, v calc	MR: mgybm, sme gyblk, firm, sbblky-blky, lam, wxy lstr, v calc, tr bent w/ dism pyr CHK: l-m gybm, pred sft, sbply - sbblky, mot-str, rthy lstr, arg, v calc	MR: mgybm, sme gyblk, firm, sbblky-blky, lam, wxy lstr, v calc, tr bent w/ dism pyr CHK: l-m gybm, pred sft, sbply - sbblky, mot-str, rthy lstr, arg, v calc	CHK: l-m gybm, pred sft, sbply - sbblky, mot-str, rthy lstr, arg, v calc MR: mgybm, sme gyblk, firm, sbblky-blky, lam, wxy lstr, v calc, tr bent w/ dism pyr	CHK: l-m gyt mot-str, rthy MR: mgybm lam, wxy lstr,

GOOD









MD 7,295'  
TVD 6,624.48'  
INC 91.82°  
AZM 88.28°

MD 7,390'  
TVD 6,623.00'  
INC 89.97°  
AZM 88.27°

MD 7,48  
TVD 6,6;  
INC 90.5  
AZM 88.

ift, sbply - sbply, calc  
lk, firm, sbply-bly, ie inoc

CHK: lt-m gybrn, pred sft, sbply - sbply, mot-sti, rthy lstr, arg, v calc  
MRL: mgybrn, sme gyblyk, firm, sbply-bly, lam, wxy lstr, v calc, sme inoc

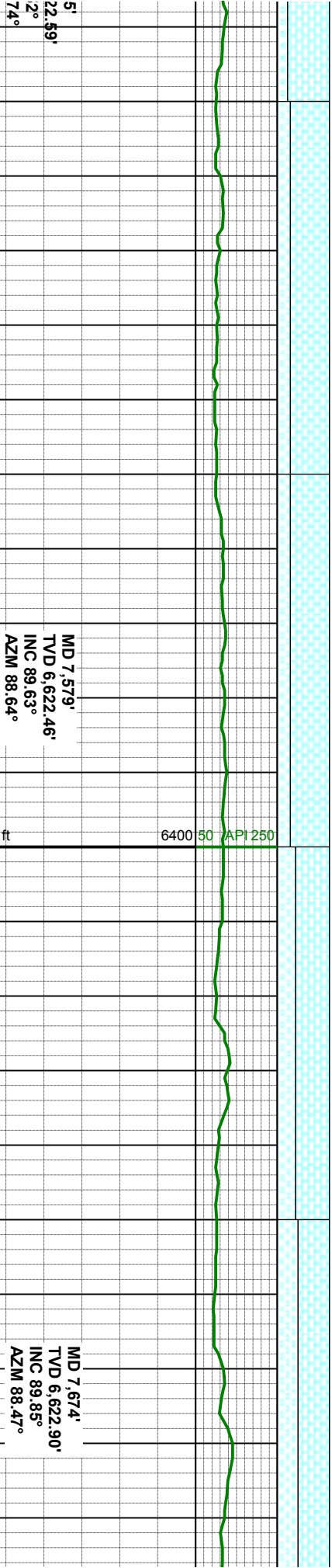
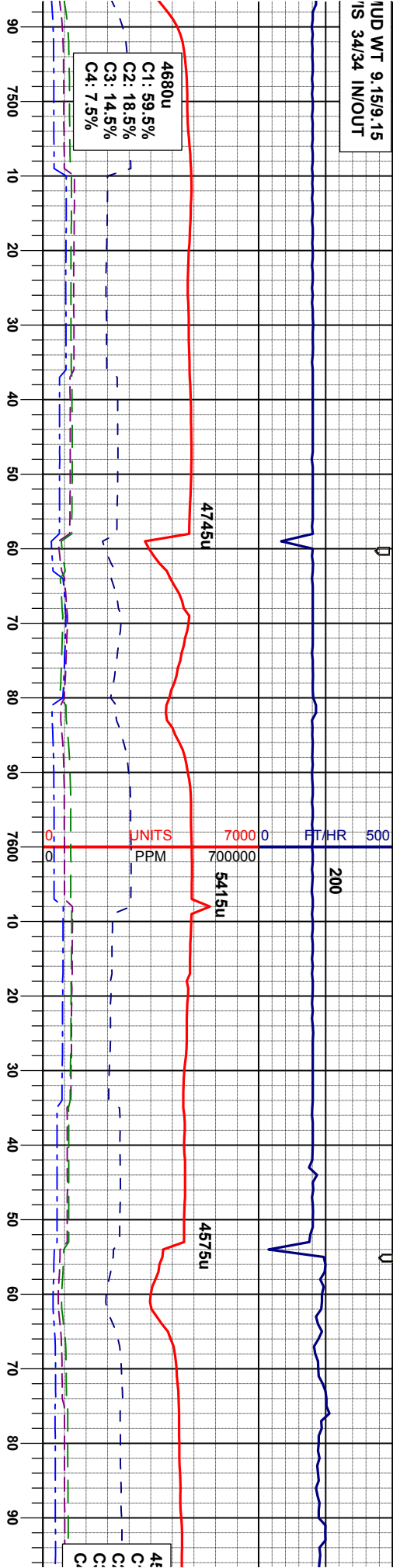
CHK: lt-m gybrn, pred sft, sbply - sbply, mot-sti, rthy lstr, arg, v calc  
MRL: mgybrn, sme gyblyk, firm, sbply-bly, lam, wxy lstr, v calc, tr inoc

CHK: lt-m gybrn, sft - firm, sbply - mot-sti, rthy lstr, arg, v calc  
MRL: mgybrn, sme gyblyk, firm, sbt lam, wxy lstr, v calc, tr inoc



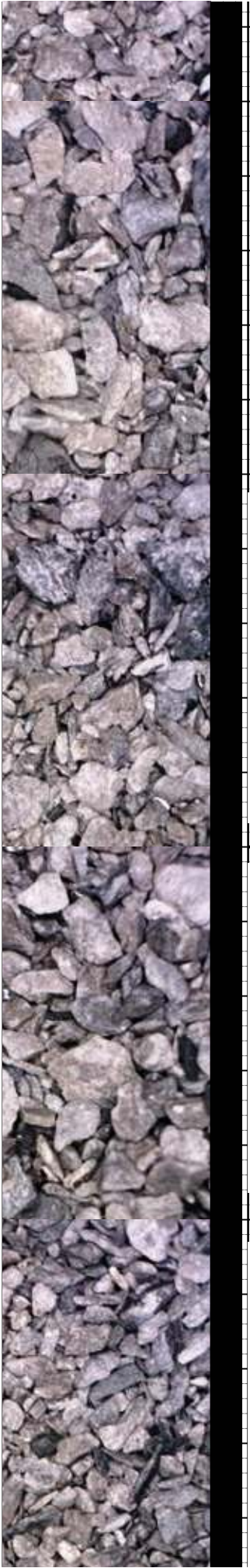


HUD WT 9.15/9.15  
IS 34/34 IN/OUT



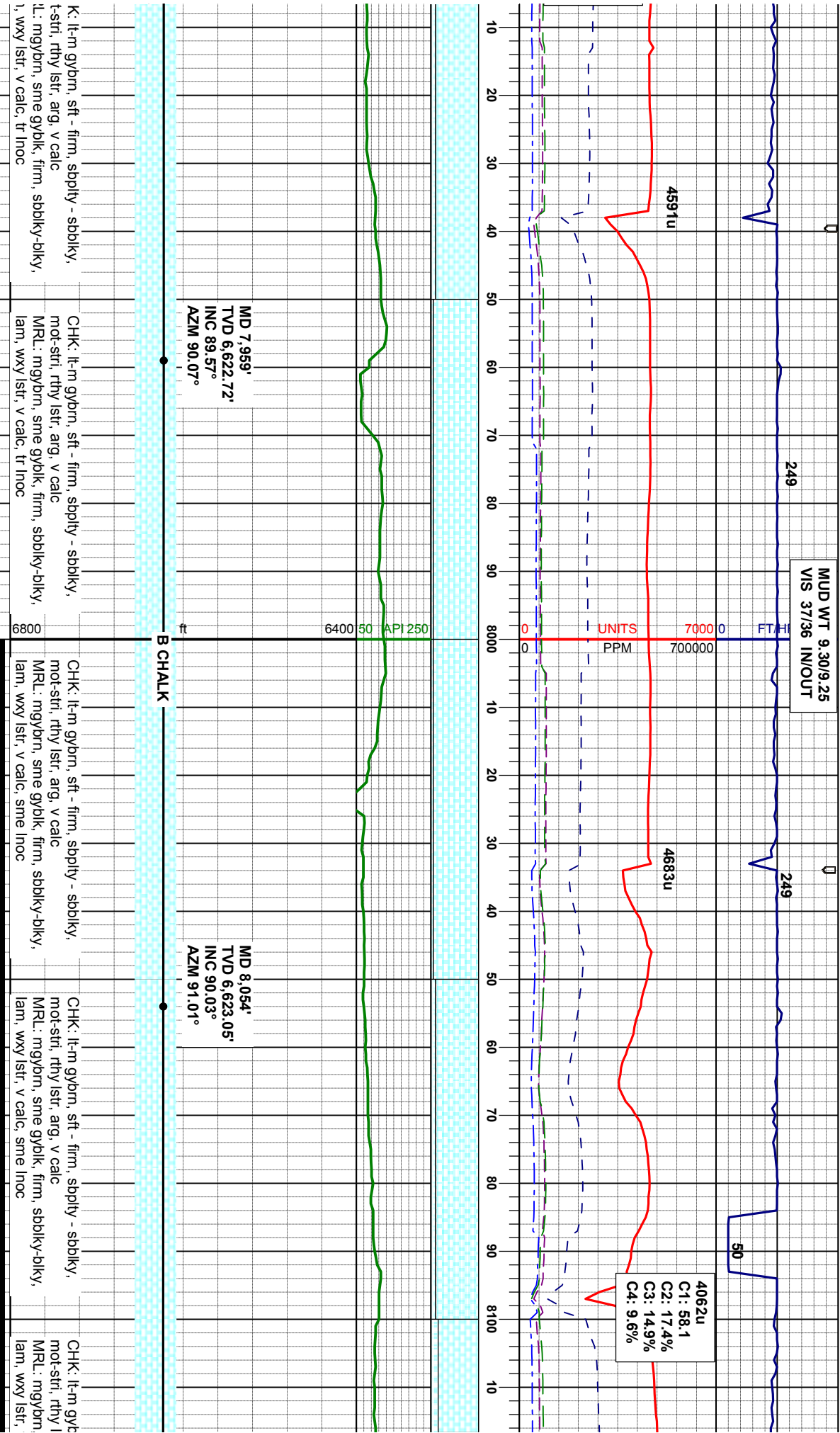
sbdkly,	CHK: lt-m gybrn, sft - firm, sbply - sbdkly, mot-sti, rthy istr, arg, v calc	CHK: lt-m gybrn, sft - firm, sbply - sbdkly, mot-sti, rthy istr, arg, v calc	CHK: lt-m gybrn, sft - firm, sbply - sbdkly, mot-sti, rthy istr, arg, v calc
dkly-bdkly,	MRL: mgybrn, sme gybdk, firm, sbdkly-bdkly, lam, wxy istr, v calc, tr inoc	MRL: mgybrn, sme gybdk, firm, sbdkly-bdkly, lam, wxy istr, v calc, tr inoc	MRL: mgybrn, sme gybdk, firm, sbdkly-bdkly, lam, wxy istr, v calc, tr inoc

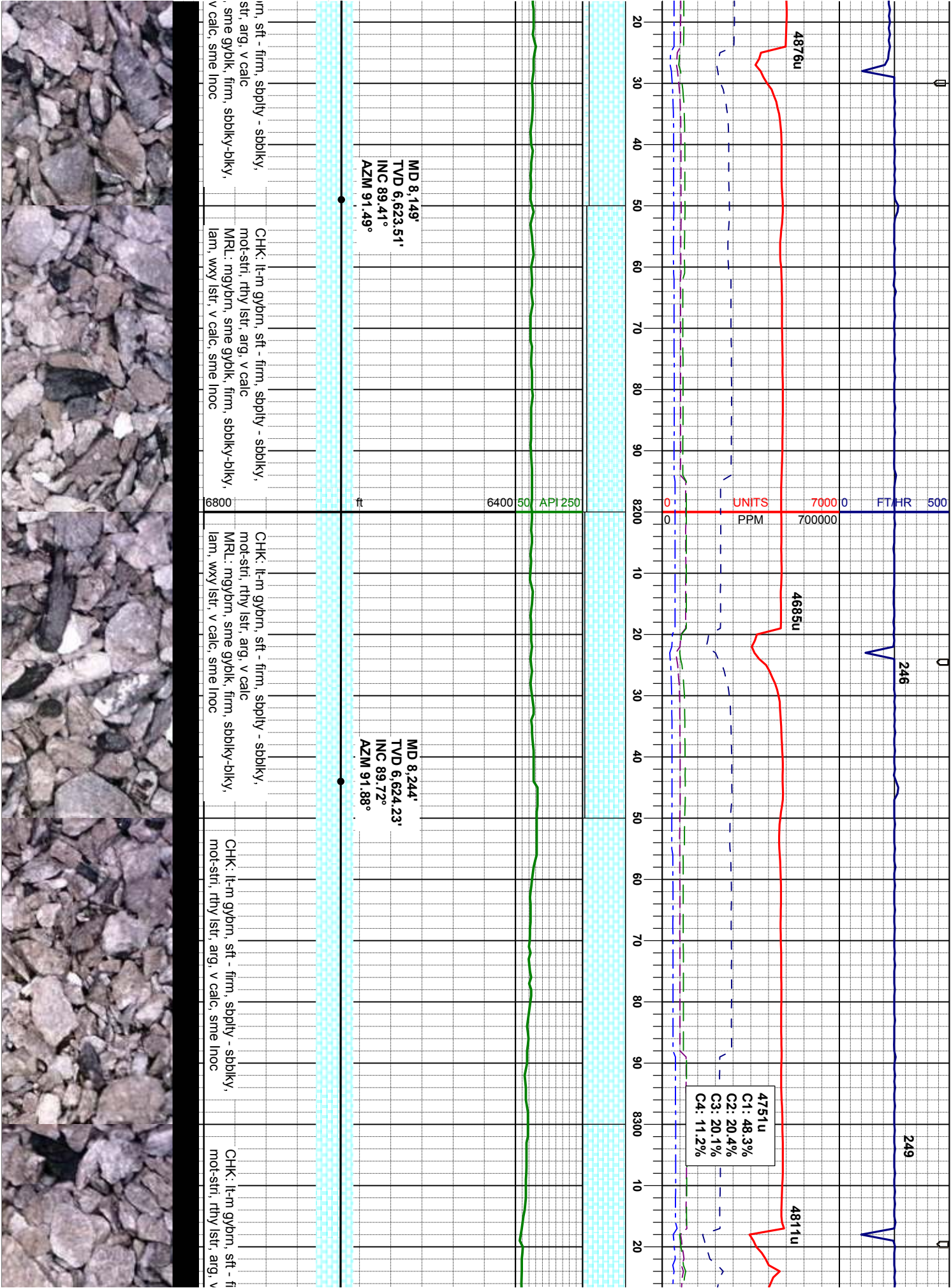
B CHALK  
B MARL









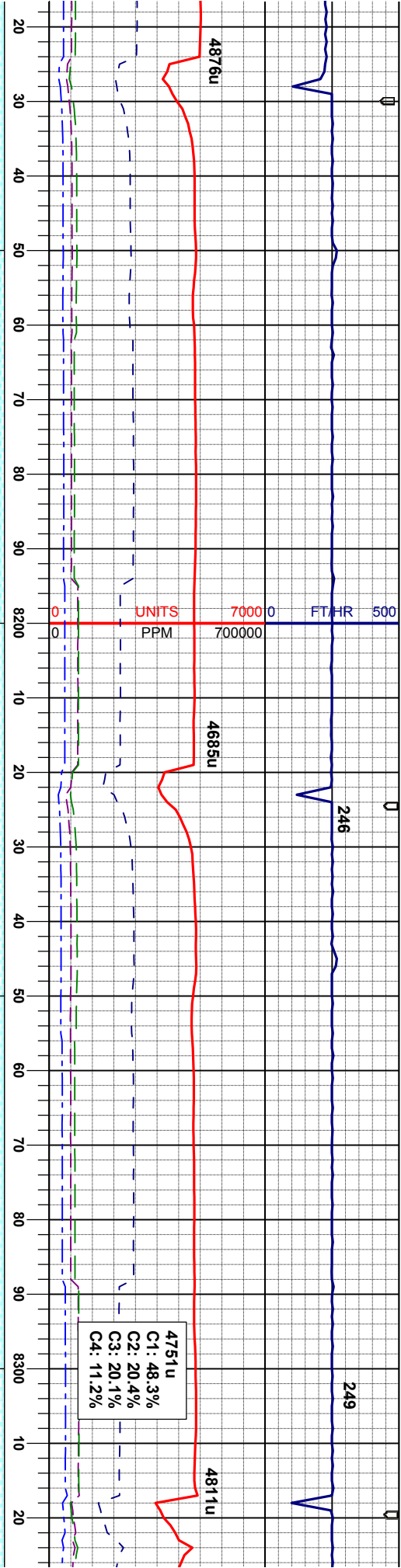


rn, sft - firm, sbply - sbply,  
str, arg, v calc  
sme gybk, firm, sbply-bly,  
v calc, sme inoc

CHK: lt-m gybm, sft - firm, sbply - sbply,  
mot-str, rthy istr, arg, v calc  
MRL: mgybm, sme gybk, firm, sbply-bly,  
lam, wxy istr, v calc, sme inoc

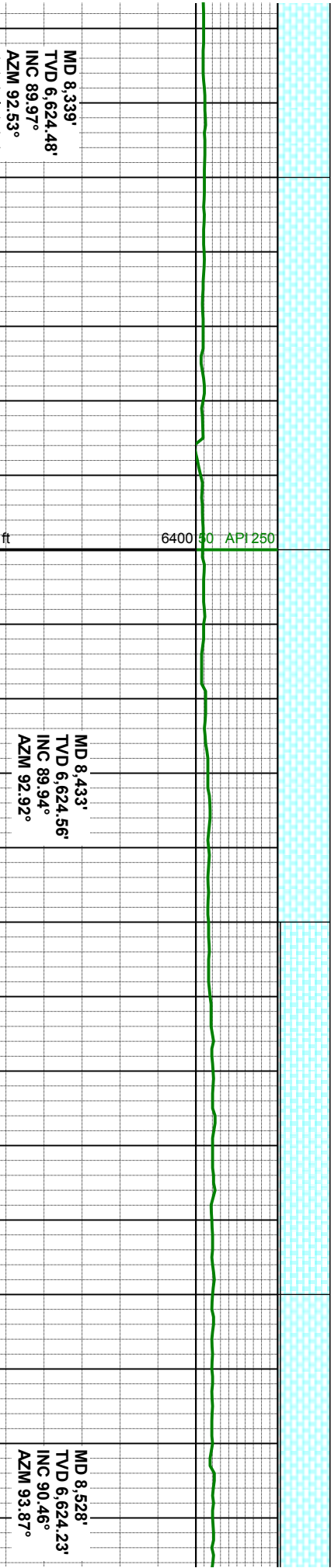
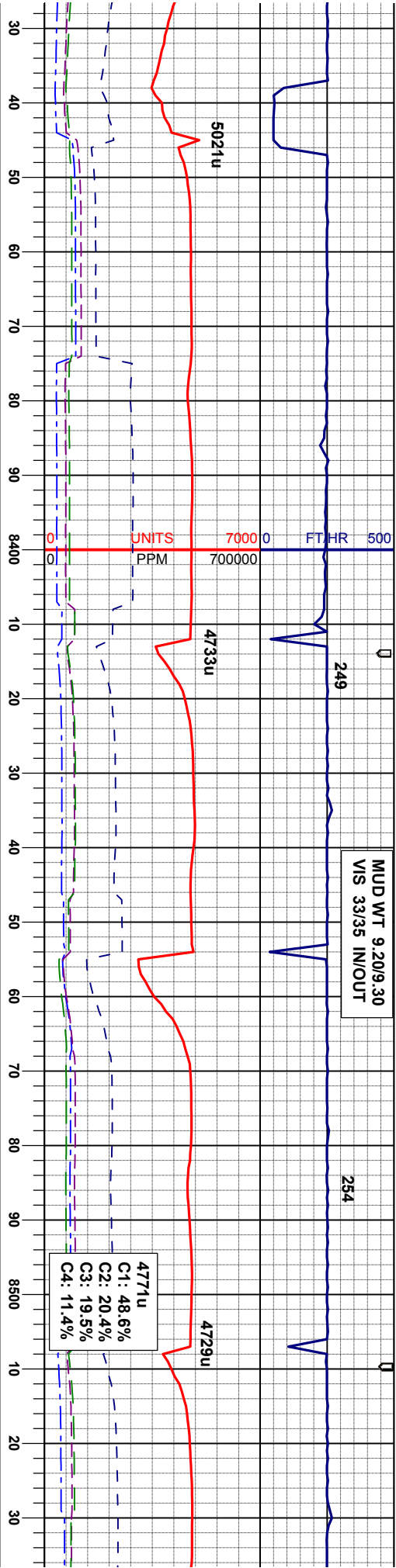
CHK: lt-m gybm, sft - firm, sbply - sbply,  
mot-str, rthy istr, arg, v calc  
MRL: mgybm, sme gybk, firm, sbply-bly,  
lam, wxy istr, v calc, sme inoc

CHK: lt-m gybm, sft - firm, sbply - sbply,  
mot-str, rthy istr, arg, v calc  
MRL: mgybm, sme gybk, firm, sbply-bly,  
lam, wxy istr, v calc, sme inoc



4751u  
C1: 48.3%  
C2: 20.4%  
C3: 20.1%  
C4: 11.2%





ft

CHK: lt-m gybm, sft - firm, sbply - sbply,  
mot-stri, rthy istr, arg, v calc, sme inoc

CHK: lt-m gybm, sft - firm, sbply - sbply,  
mot-stri, rthy istr, arg, v calc, sme inoc

CHK: lt-m gybm, sft - firm, sbply - sbply,  
mot-stri, rthy istr, arg, v calc

MRL: dk gybm - gyblk, firm, sbply-blky,  
lam, wxy istr, v calc, sme inoc

CHK: lt-m gybm, sft - firm, sbply  
mot-stri, rthy istr, arg, v calc

MRL: dk gybm - gyblk, firm, sbbl  
lam, wxy istr, v calc, sme inoc

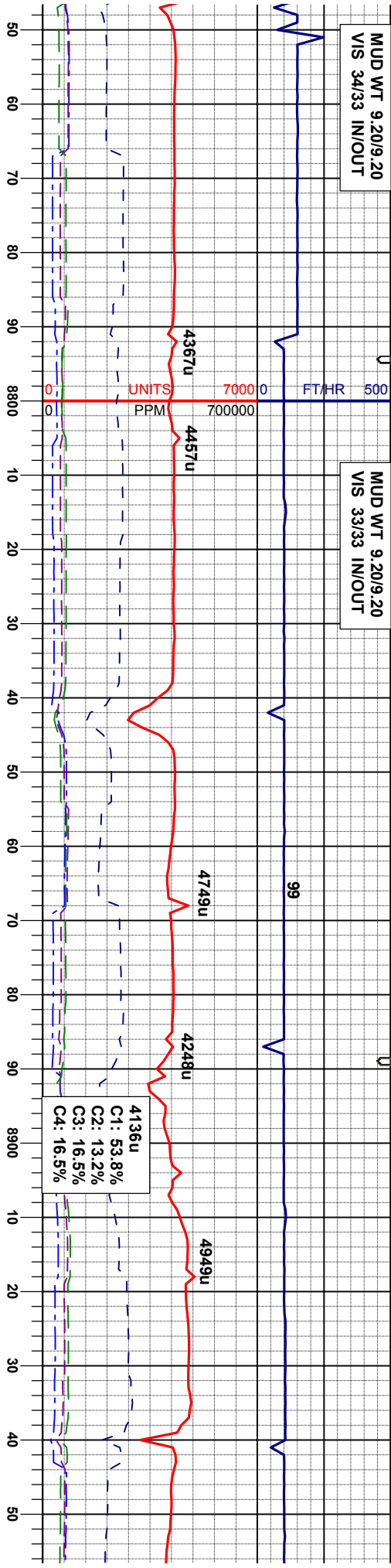






MUD WT 9.20/9.20  
VIS 34/33 IN/OUT

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



FAULT @ 8.839' MD  
11' DOWNTHROW

MD 8,813'  
TVD 6,624.53'  
INC 89.97°  
AZM 93.27°

MD 8,908'  
TVD 6,624.94'  
INC 89.54°  
AZM 92.67°

CHK: lt-m gybm, sft - firm, sbply - sbply,  
mot-stf, rthy lstr, arg, v calc, sme inoc

CHK: lt-m gybm, sft - firm, sbply - sbply,  
mot-stf, rthy lstr, arg, v calc  
MRL: dk gybm - gyblk, firm, sbply-blky,  
lam, wxy lstr, v calc, sme inoc

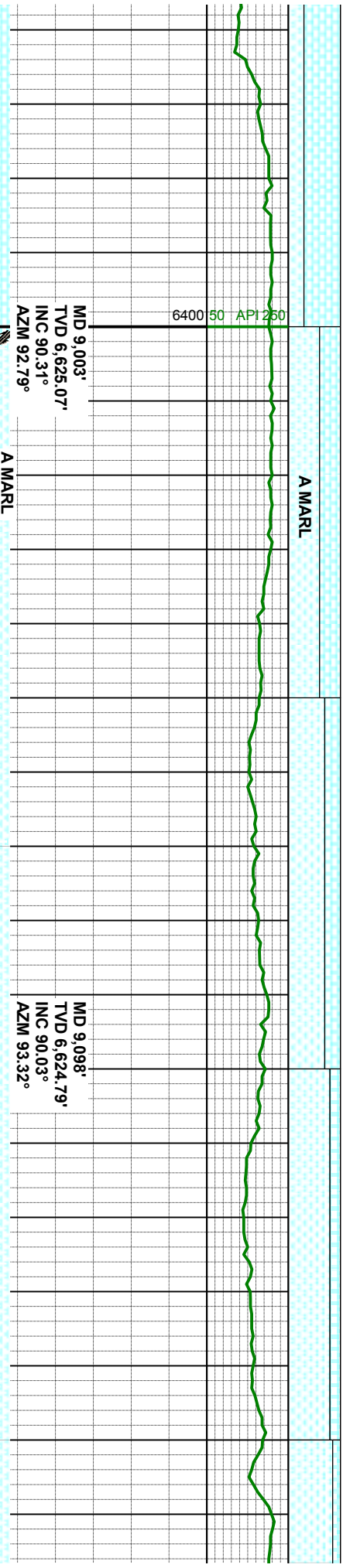
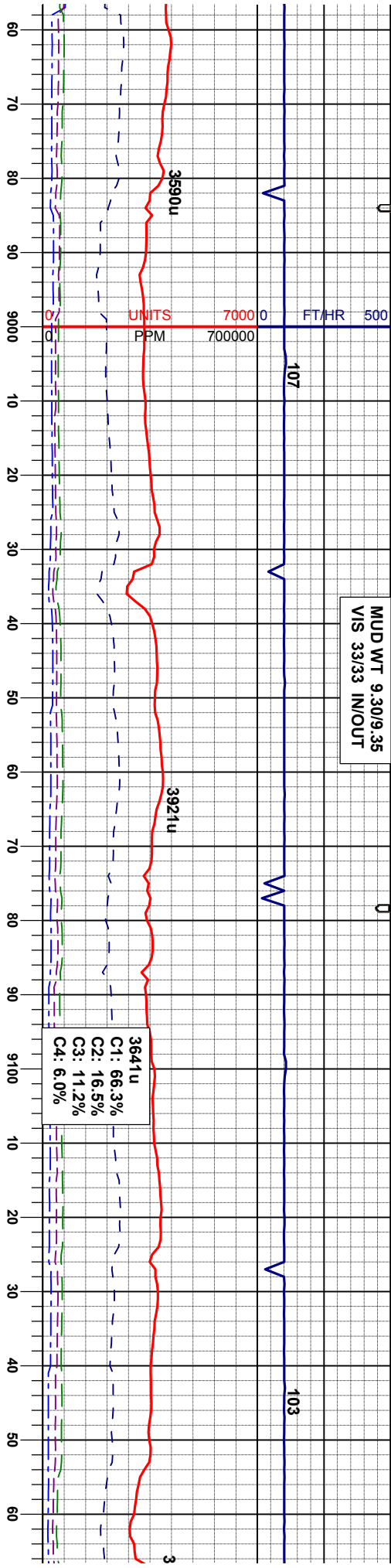
CHK: lt-m gybm, sft - firm, sbply - sbply,  
mot-stf, rthy lstr, arg, v calc  
MRL: dk gybm - gyblk, firm, sbply-blky,  
lam, wxy lstr, v calc, sme inoc

CHK: lt-m gybm, sft - firm, sbply - sbply,  
mot-stf, rthy lstr, arg, v calc  
MRL: dk gybm - gyblk, firm, sbply-blky,  
lam, wxy lstr, v calc, sme inoc

Ch  
mc  
MF  
lan



MUD WT 9.30/9.35  
VIS 33/33 IN/OUT



IK: lt-m gybm, sft - firm, spply - sbdky, lt-stf, rthy lstr, arg, v calc	MRL: dk gybm - gyblk, firm, sbdky-biky, lam, wxy lstr, v calc, sme lnoc	MRL: dk gybm - gyblk, firm, sbdky-biky, lam, wxy lstr, v calc, sme lnoc	MRL: dk gybm - gyblk, firm, sbdky-biky, lam, wxy lstr, v calc, sme lnoc
RL: dk gybm - gyblk, firm, sbdky-biky, 1, wxy lstr, v calc, sme lnoc	CHK: lt-m gybm, sft - firm, spply - sbdky, mot-stf, rthy lstr, arg, v calc	CHK: lt-m gybm, sft - firm, spply - sbdky, mot-stf, rthy lstr, arg, v calc	CHK: lt-m gybm, sft - firm, spply - sbdky, mot-stf, rthy lstr, arg, v calc



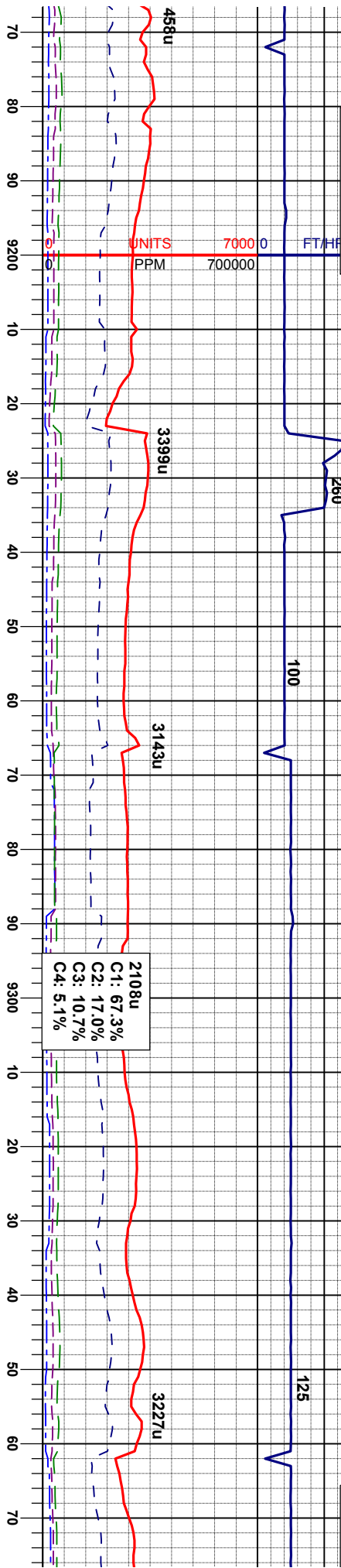


MUD WT 9.25/9.30  
VIS 34/34 IN/OUT

7/17/2012

7/18/2012

MUD WT  
VIS 35/35



MD 9,193'  
TVD 6,624.79'  
INC 89.97°  
AZM 93.55°

MD 9,288'  
TVD 6,624.71'  
INC 90.12°  
AZM 93.44°

n - gybik, firm, sbbiky-biky,  
v calc, sme inoc  
brn, sft - firm, sbbiky - sbbiky,  
lstr, arg, v calc

MRL: dk gybrn - gybik, firm, sbbiky-biky,  
lam, wxy lstr, v calc, sme inoc  
CHK: lt-m gybrn, sft - firm, sbbiky - sbbiky,  
mot-sft, rthy lstr, arg, v calc

MRL: dk gybrn - gybik, firm, sbbiky-biky,  
lam, wxy lstr, v calc, sme inoc  
CHK: lt-m gybrn, sft - firm, sbbiky - sbbiky,  
mot-sft, rthy lstr, arg, v calc

MRL: dk gybrn - gybik, firm, sbbiky-biky,  
lam, wxy lstr, v calc, sme inoc  
CHK: lt-m gybrn, sft - firm, sbbiky - sbbiky,  
mot-sft, rthy lstr, arg, v calc

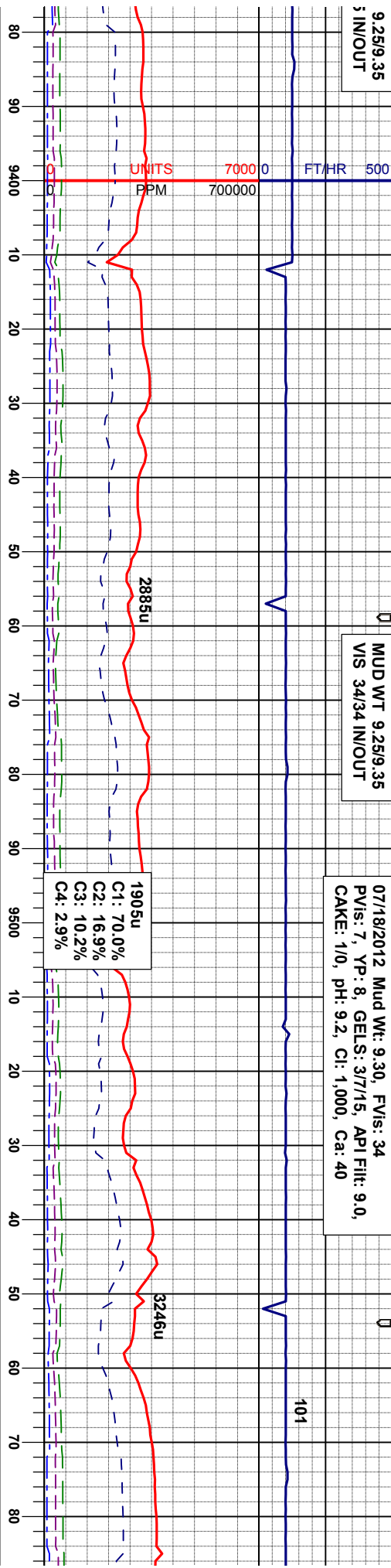
MRL: dk gybrn - gybik, firm, sbbiky-biky,  
lam, wxy lstr, v calc, sme inoc  
CHK: lt-m gybrn, sft - firm, sbbiky - sbbiky,  
mot-sft, rthy lstr, arg, v calc



9.25/9.35  
5 IN/OUT

MUD WT 9.25/9.35  
VIS 34/34 IN/OUT

07/18/2012 Mud Wt: 9.30, FVis: 34  
PVIS: 7, YP: 8, GELS: 3/7/15, API Filtr: 9.0,  
CAKE: 1/0, pH: 9.2, CI: 1.000, Ca: 40



MD 9.383'  
TVD 6,624.38'  
INC 90.28°  
AZM 93.33°

MD 9.478'  
TVD 6,623.94'  
INC 90.25°  
AZM 93.15°

MD 9.573'  
TVD 6,623.87'  
INC 89.85°  
AZM 92.51°

A MARL  
B CHALK  
B MARL

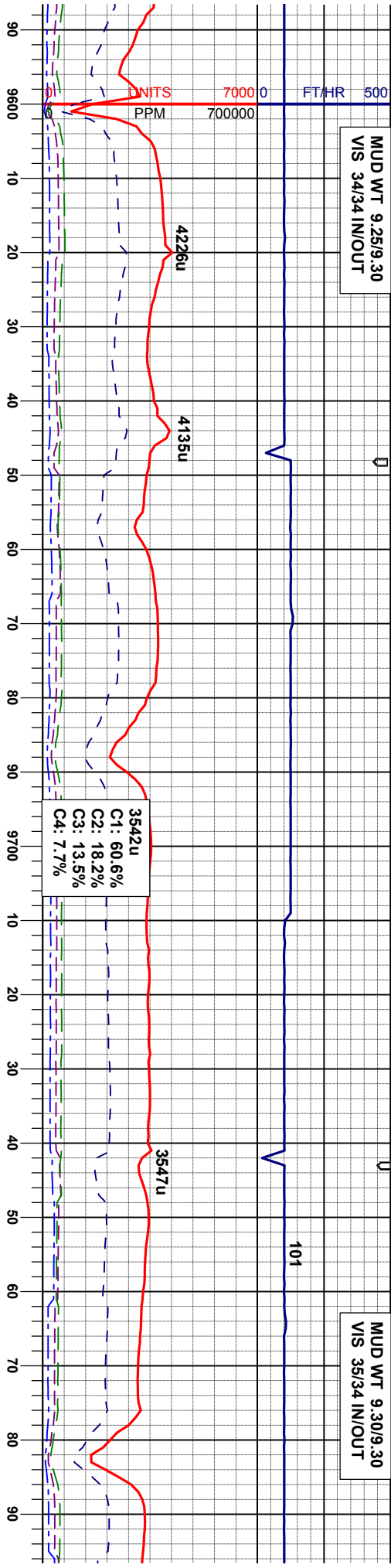
firm, sbbiky-biky, ie Inoc m, sbply - sbbiky, calc  
MRL: dk gybm - gyblk, firm, sbbiky-biky, lam, wxy lstr, v calc, sme Inoc  
CHK: lt-m gybm, sft - firm, sbply - sbbiky, mot-sft, rthy lstr, arg, v calc  
MRL: dk gybm - gyblk, firm, sbbiky-biky, lam, wxy lstr, v calc, sme Inoc  
CHK: lt-m gybm, sft - firm, sbply - sbbiky, mot-sft, rthy lstr, arg, v calc  
MRL: dk gybm - gyblk, firm, sbbiky-biky, lam, wxy lstr, v calc, sme Inoc, sme bent  
CHK: lt-m gybm, sft - firm, sbply - sbbiky, mot, lam, rthy lstr, arg, v calc  
MRL: dk gybm - gyblk, firm, sbbiky-biky, lam, wxy lstr, v calc, sme Inoc, sn





MUD WT 9.25/9.30  
VIS 34/34 IN/OUT

MUD WT 9.30/9.30  
VIS 35/34 IN/OUT



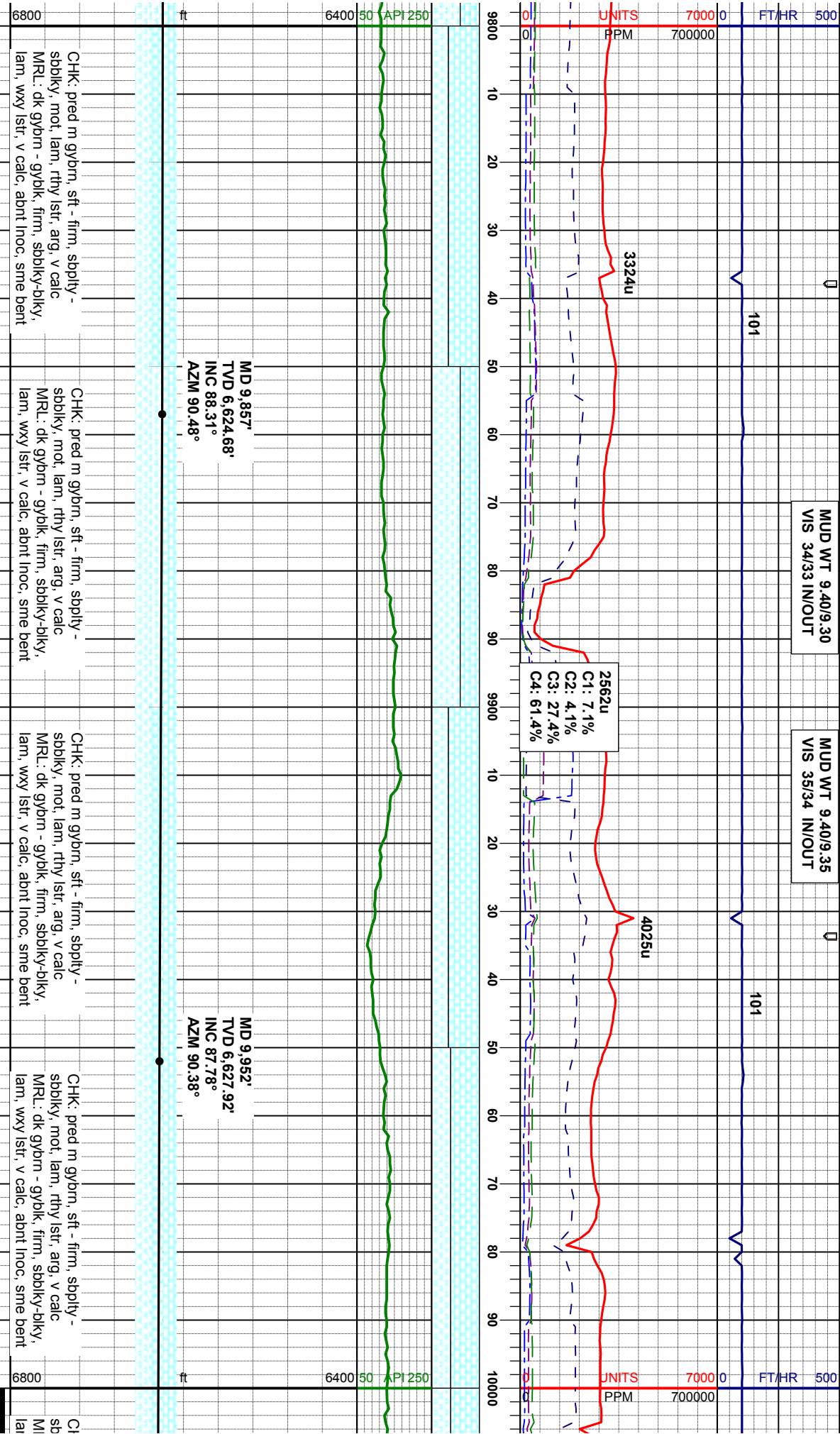
MD 9,667'  
TVD 6,623.99'  
INC 90.00°  
AZM 92.49°

MD 9,762'  
TVD 6,623.64'  
INC 90.43°  
AZM 92.59°

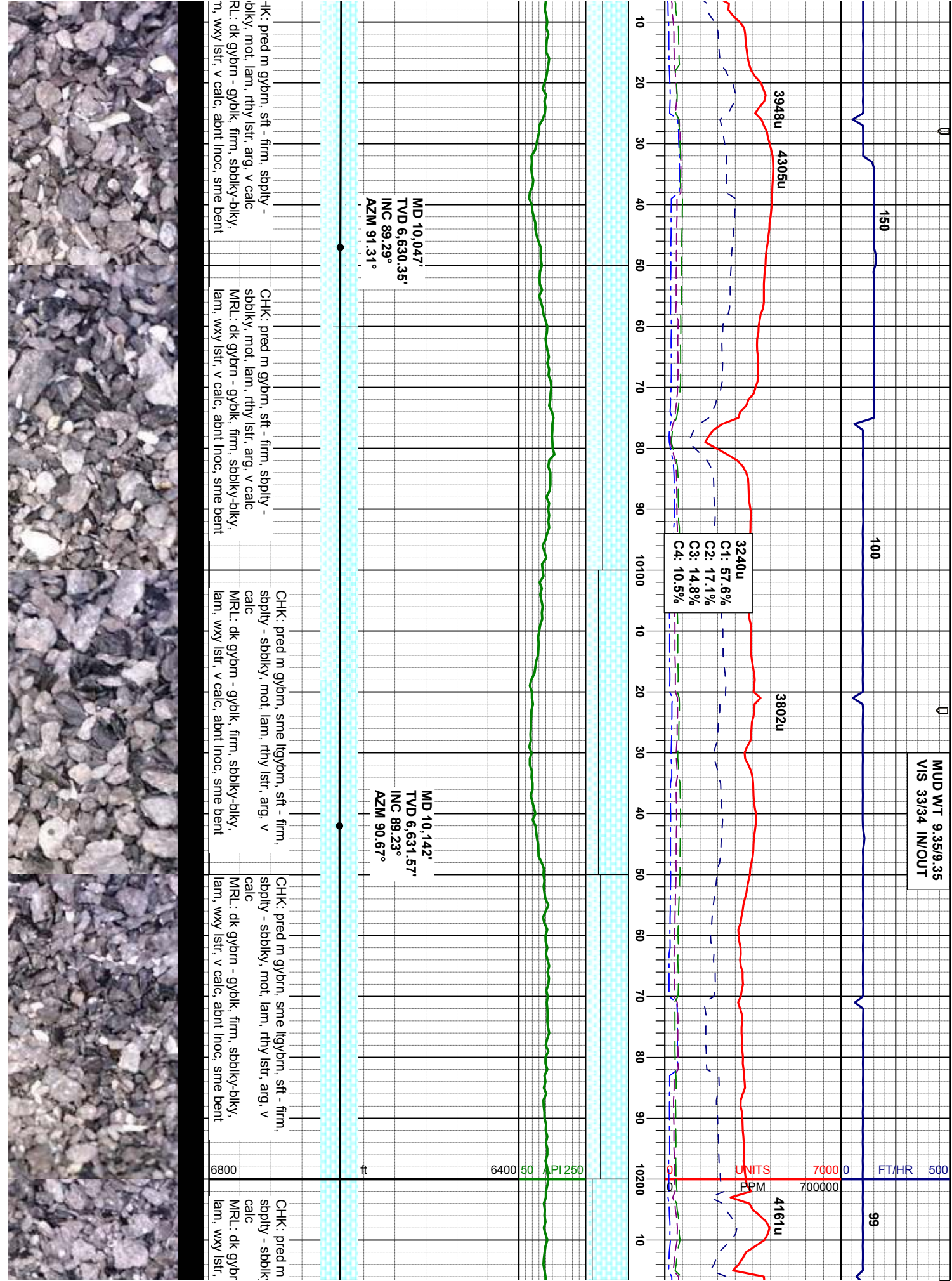
- sbblky, y-blky, ne bent	CHK: pred m gybrn, sft - firm, sbply - sbblky, mot, lam, rthy lstr, arg, v calc MRL: dk gybrn - gyblk, firm, sbply-blky, lam, wxy lstr, v calc, abnt inoc, sme bent	CHK: pred m gybrn, sft - firm, sbply - sbblky, mot, lam, rthy lstr, arg, v calc MRL: dk gybrn - gyblk, firm, sbply-blky, lam, wxy lstr, v calc, abnt inoc, sme bent	CHK: pred m gybrn, sft - firm, sbply - sbblky, mot, lam, rthy lstr, arg, v calc MRL: dk gybrn - gyblk, firm, sbply-blky, lam, wxy lstr, v calc, abnt inoc, sme bent	CHK: pred m gybrn, sft - firm, sbply - sbblky, mot, lam, rthy lstr, arg, v calc MRL: dk gybrn - gyblk, firm, sbply-blky, lam, wxy lstr, v calc, abnt inoc, sme bent
6800				













07/18/2012 Mud Wt: 9.40, FVis: 33  
PVIs: 7, YP: 5, GELS: 2/5/12, API Filtr: 11.0,  
CAKE: 1/0, PH: 9.5, CI: 1.000, Ca: 40

3819u  
C1: 65.4%  
C2: 16.8%  
C3: 11.5%  
C4: 6.2%

4246u

4307u

175

UNITS  
PPM 700000 70000  
FT/HR 500

20 30 40 50 60 70 80 90 10300 10 20 30 40 50 60 70 80 90 10400 10 20

MD 10,237'  
TVD 6,631.09'  
INC 91.36°  
AZM 91.23°

MD 10,331'  
TVD 6,628.76'  
INC 91.48°  
AZM 90.90°

MD 10,4  
TVD 6,6  
INC 90,  
AZM 90

B CHALK

B MARL

gybrn, sme ltgybrn, sft - firm,  
y, mot, lam, rthy istr, arg, v  
CHK: pred m gybrn, sme ltgybrn, sft - firm,  
spply - sbblky, mot, lam, rthy istr, arg, v  
calc  
MRL: dk gybrn - gybtk, firm, sbblky-blky,  
lam, wxy istr, v calc, abnt lnoc, tr bent

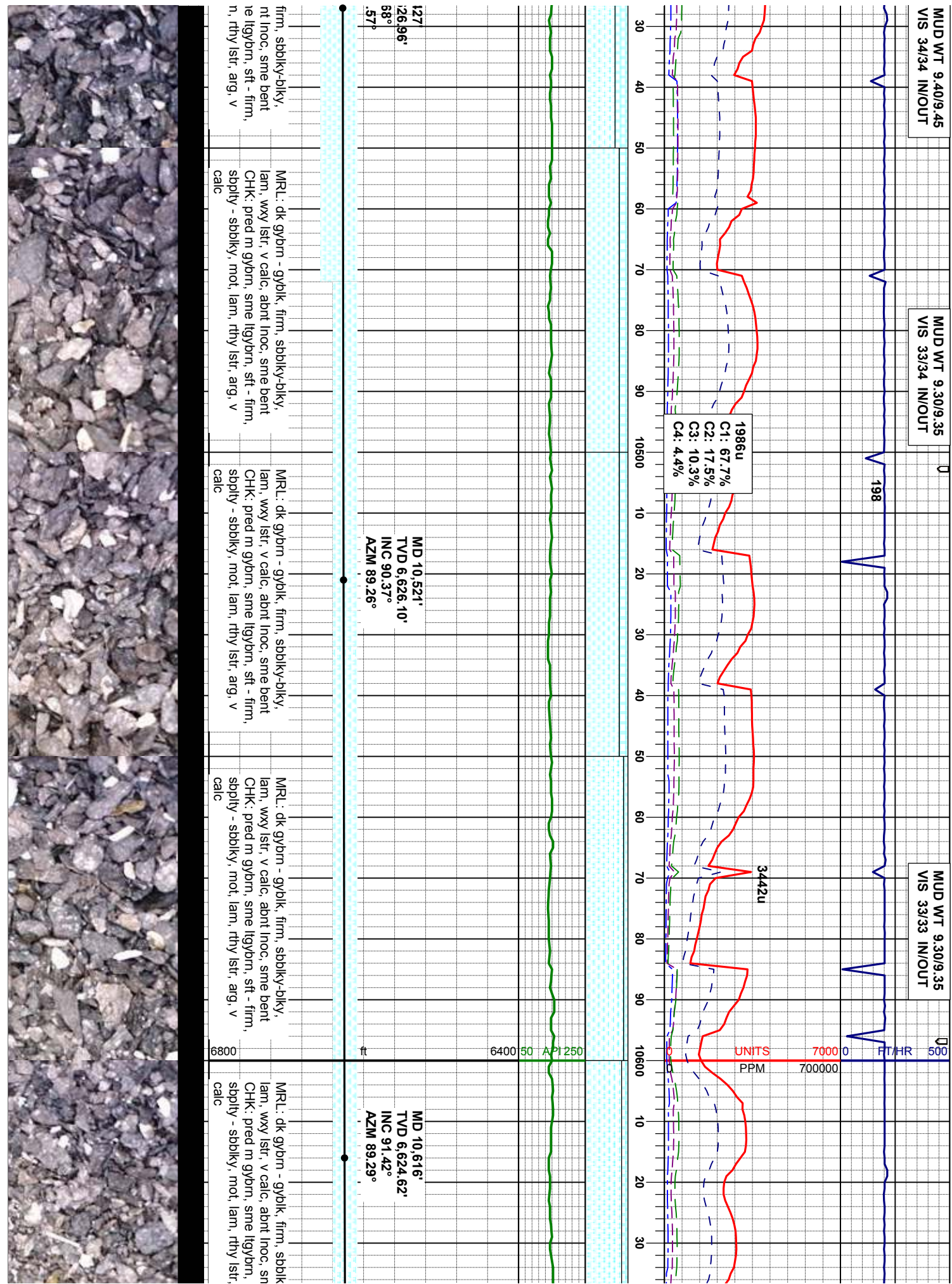
MRL: dk gybrn - gybtk, firm, sbblky-blky,  
lam, wxy istr, v calc, abnt lnoc, sme bent  
CHK: pred m gybrn, sme ltgybrn, sft - firm,  
spply - sbblky, mot, lam, rthy istr, arg, v  
calc

MRL: dk gybrn - gybtk, firm, sbblky-blky,  
lam, wxy istr, v calc, abnt lnoc, sme bent  
CHK: pred m gybrn, sme ltgybrn, sft - firm,  
spply - sbblky, mot, lam, rthy istr, arg, v  
calc

MRL: dk gybrn - gybtk,  
lam, wxy istr, v calc, ab  
CHK: pred m gybrn, str  
spply - sbblky, mot, lar  
calc

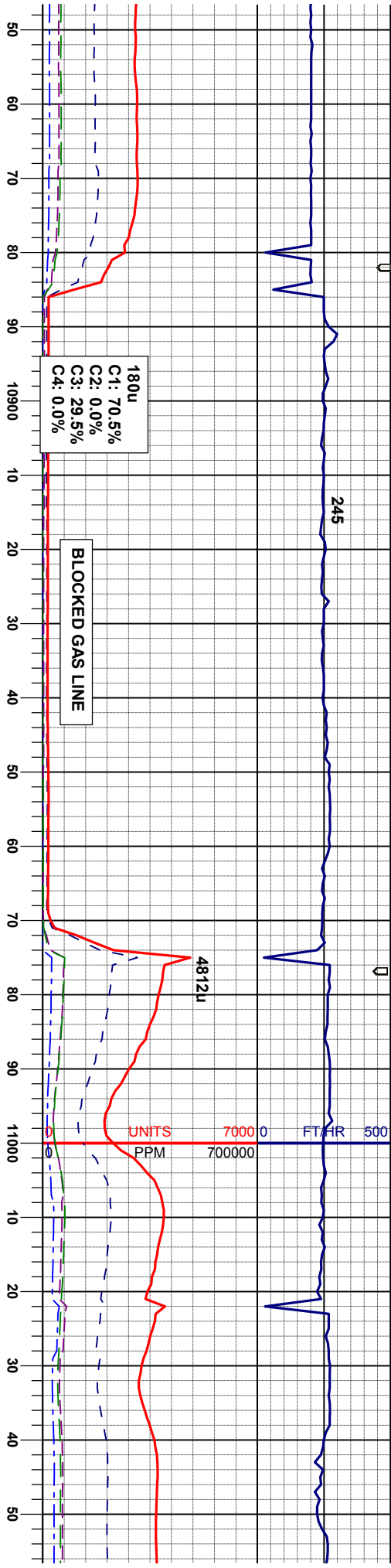












MD 10,901'  
TVD 6,618.18'  
INC 91.42°  
AZM 89.66°

MD 10,996'  
TVD 6,615.78'  
INC 91.48°  
AZM 89.92°

MD 11,045'  
TVD 6,614.56'  
INC 91.39°  
AZM 89.72°

CHK: pred m gybrn, sme ltgybrn, sft - firm,  
sblply - sblply, mot, lam, rthy istr, arg, v  
calc  
MRL: dk gybrn - gyblik, firm, sblply-bliky,  
lam, wxy istr, v calc, sme lnoo, sme bent

CHK: pred m gybrn, sme ltgybrn, sft - firm,  
sblply - sblply, mot, lam, rthy istr, arg, v  
calc  
MRL: dk gybrn - gyblik, firm, sblply-bliky,  
lam, wxy istr, v calc, sme lnoo, sme bent

CHK: pred m gybrn, sme ltgybrn, sft - firm,  
sblply - sblply, mot, lam, rthy istr, arg, v  
calc  
MRL: dk gybrn - gyblik, firm, sblply-bliky,  
lam, wxy istr, v calc, sme lnoo, sme bent

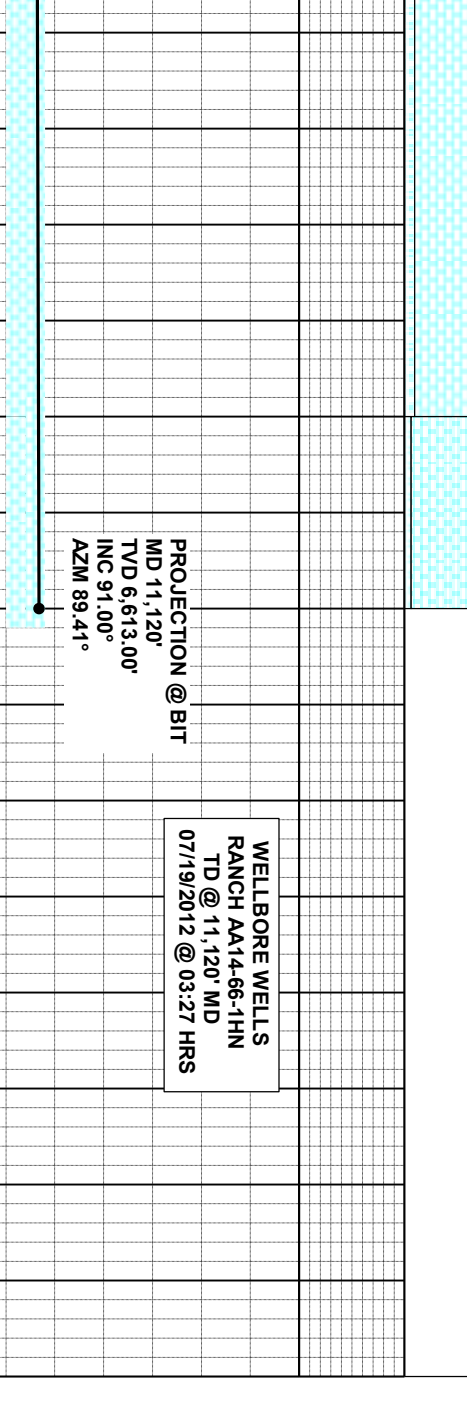
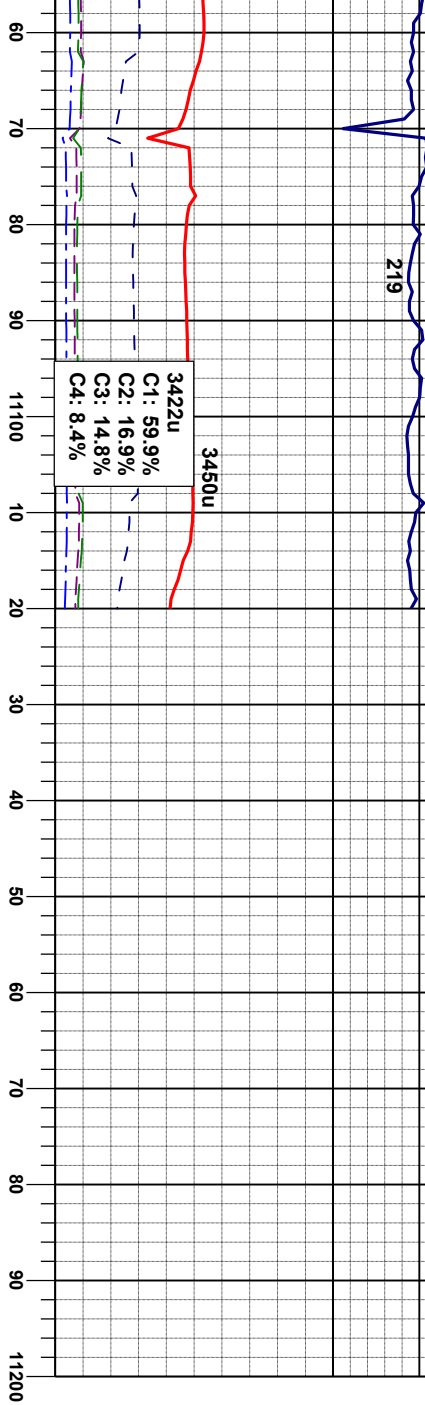
CHK: pred m gybrn, sme ltgybrn, sft - firm,  
sblply - sblply, mot, lam, rthy istr, arg, v  
calc  
MRL: dk gybrn - gyblik, firm, sblply-bliky,  
lam, wxy istr, v calc, sme lnoo, sme bent

CH  
sblply  
calc  
MR  
lam



7/18/2012 7/19/2012

MUD WT 9.30/9.40  
VIS 33/33 IN/OUT



K: pred m gybrn, sme llybrn, sft - firm,  
ilty - sbblky, mot, lam, rthy lstr, arg, v  
L: dk gybrn - gyblk, firm, sbblky-blky,  
l, wxy lstr, v calc, sme lnoc, sme bent

CHK: pred m gybrn, sme llybrn, sft - firm,  
sply - sbblky, mot, lam, rthy lstr, arg, v  
calc  
MR: dk gybrn - gyblk, firm, sbblky-blky,  
lam, wxy lstr, v calc, sme lnoc, sme bent

Thank you for using  
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