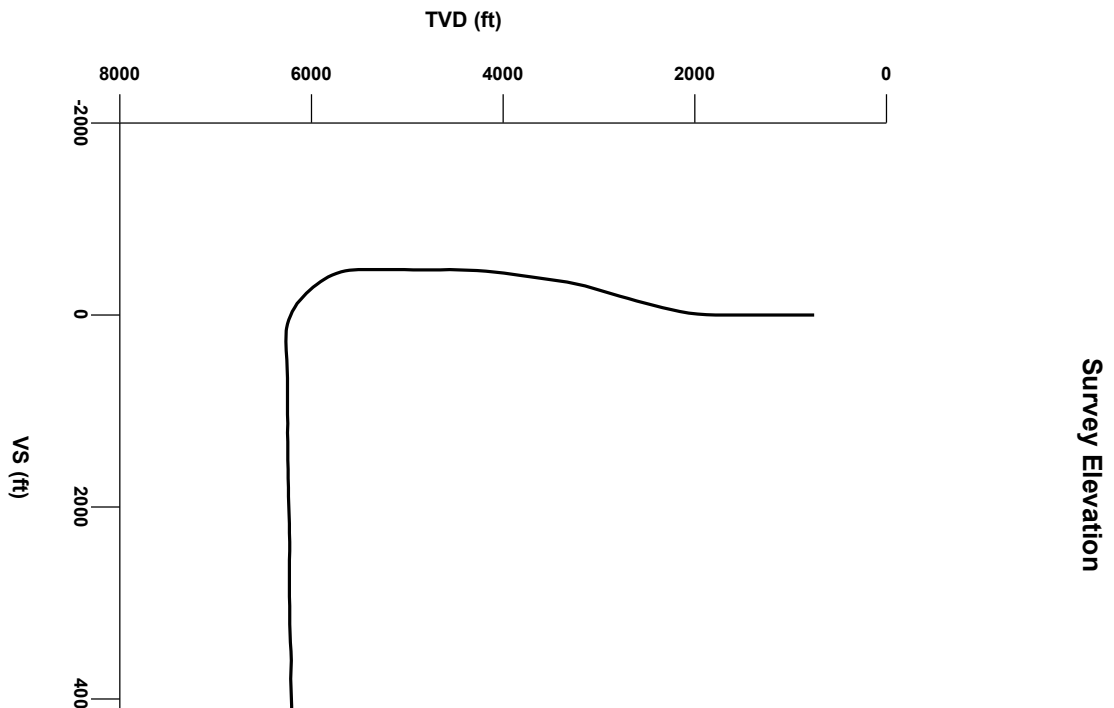
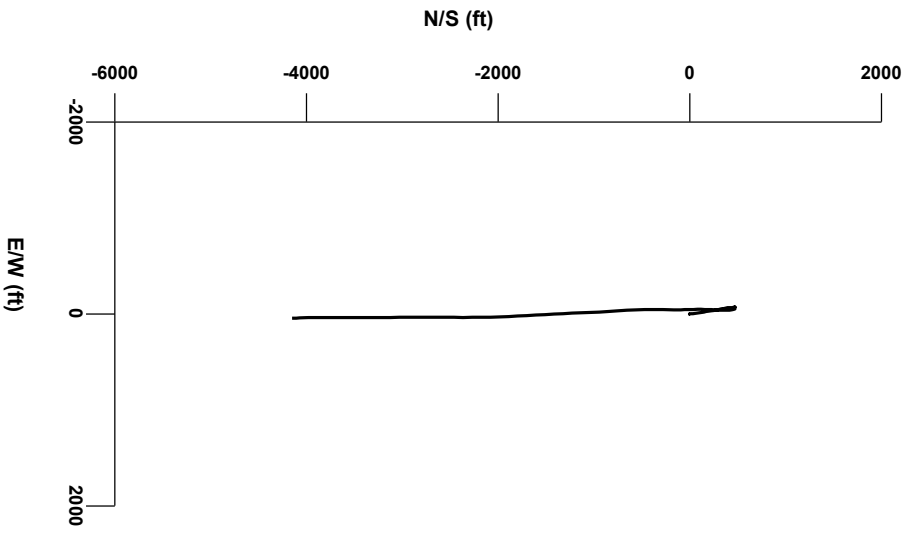


LOG created using L PLOT VH Version 3.0, September 13, 2012, Copyright (C) 1999-2009 Pason Systems Corp.

**OPERATOR:** NOBLE ENERGY INC  
**WELL:** PTASNIK LC20-75HN  
**LOCATION:** SEC20 T9N R59W  
**COUNTY:** WELD  
**STATE:** COLORADO  
**SPOT:** 501' FNL; 2445' FEL  
**ELEVATION:** GE: 4,978' KB: 5,008'  
**FIELD:** SABINE PASS  
**SPUD DATE:** 9/6/12  
**TD DATE:** 9/13/12  
**DATES LOGGED:** 9/8/12 - 9/13/12  
**DEPTHS LOGGED:** 5500' - 10616' MD  
**LOGGERS:** BRAD WILSON, LAURA KELLOGG  
**DRILLING FLUID:** WATER, WATER BASED MUD, POLY  
**DRILLING RIG:** H&P 326  
**API:** 05-123-33311  
**LOG TYPE:** HORIZONTAL  
**SCALE:** 1:240 (5 inches per 100 feet)  
**REMARKS:**

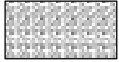


Survey Plan

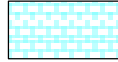


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6000

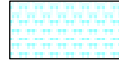
### LITHOLOGIES



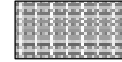
Breccia



Chalk



Marl



Silty Shale

### ENGINEERING SYMBOLS



Casing



Casing



Connection



Connection Gas



Arrow

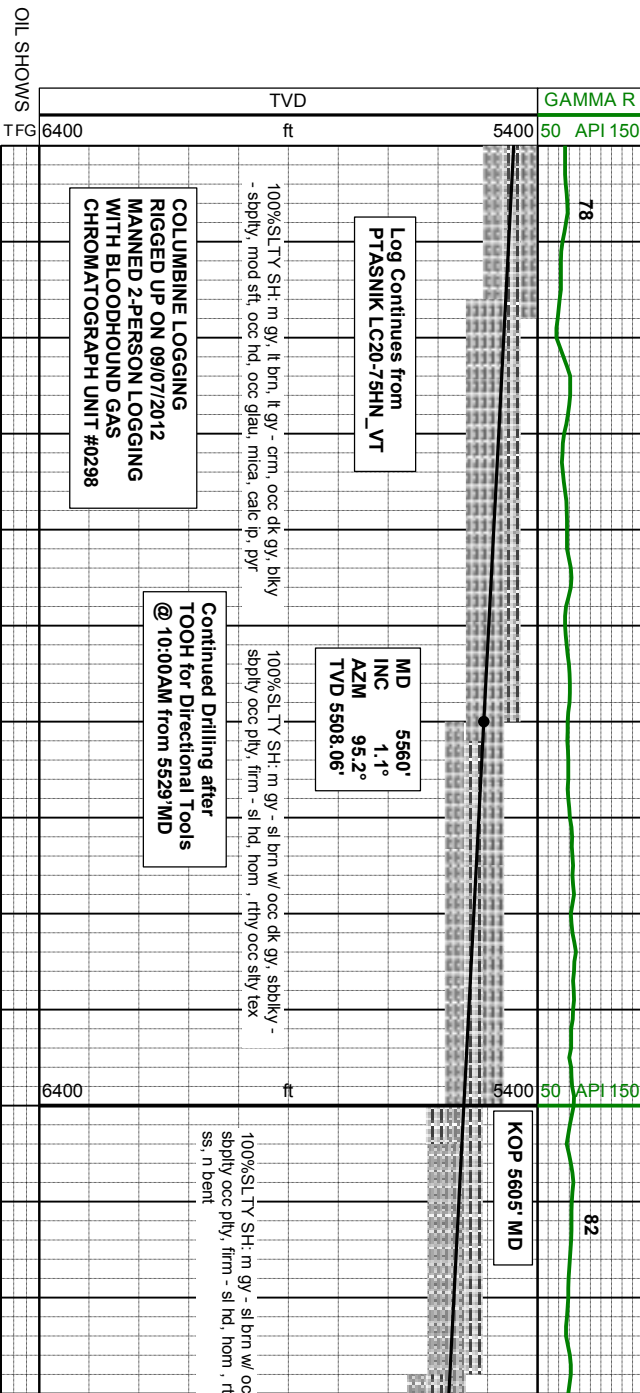


Midnight Depth

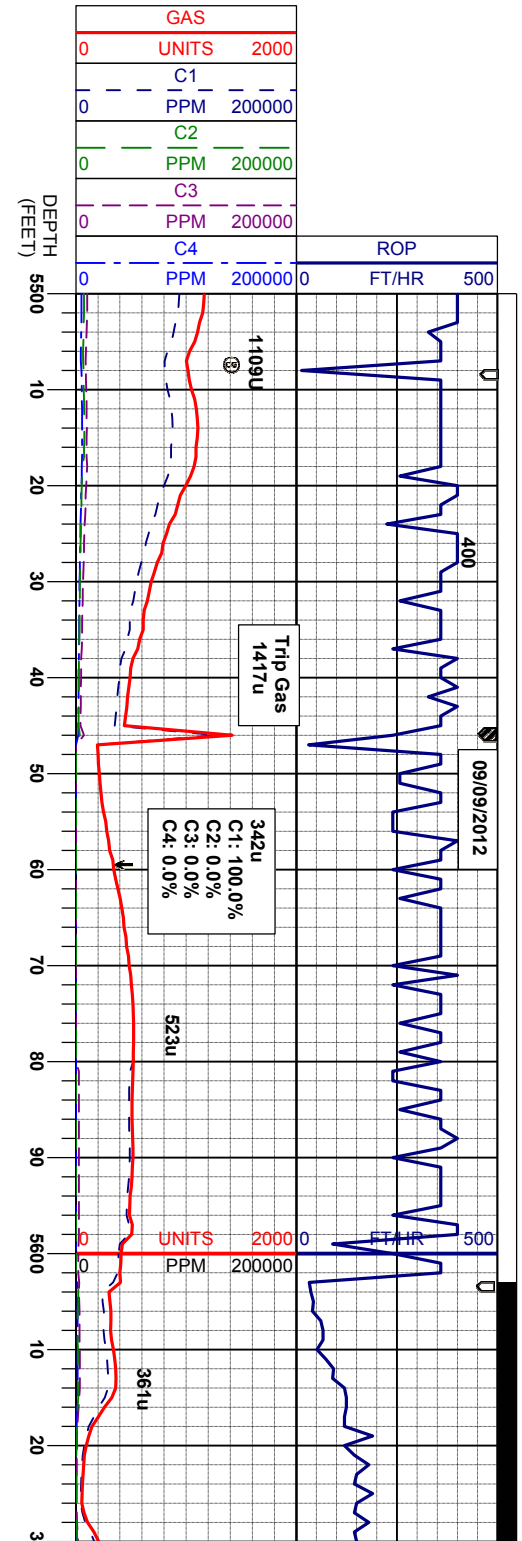


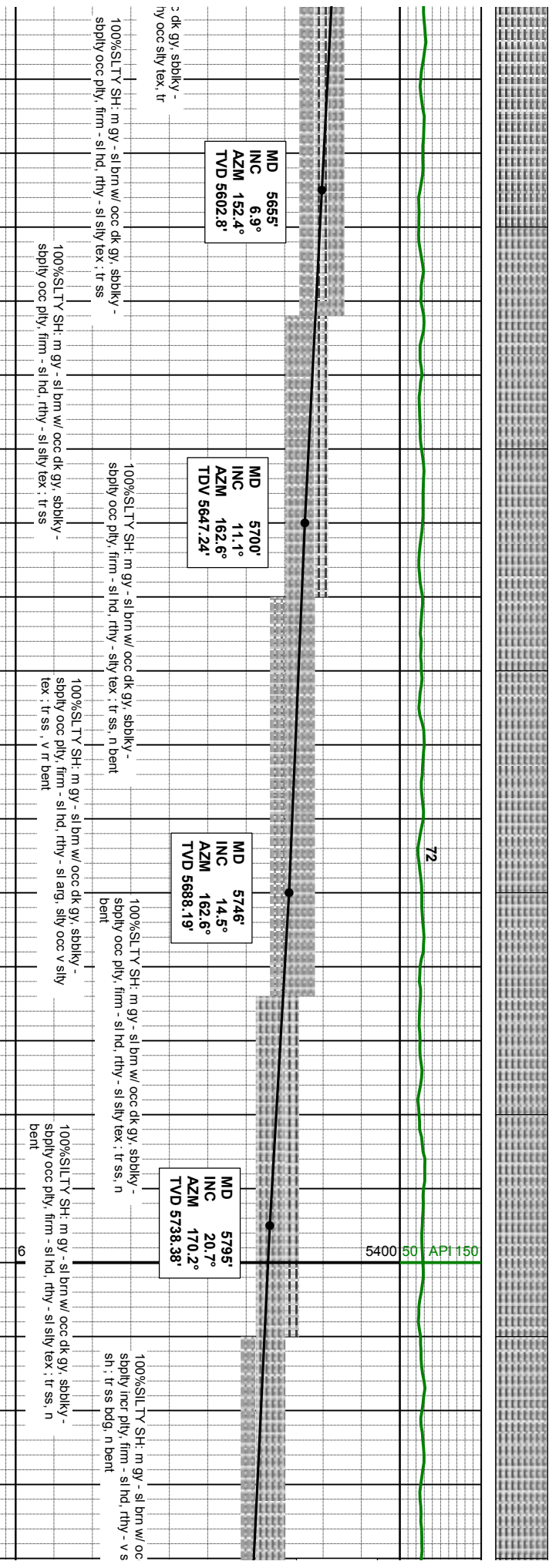
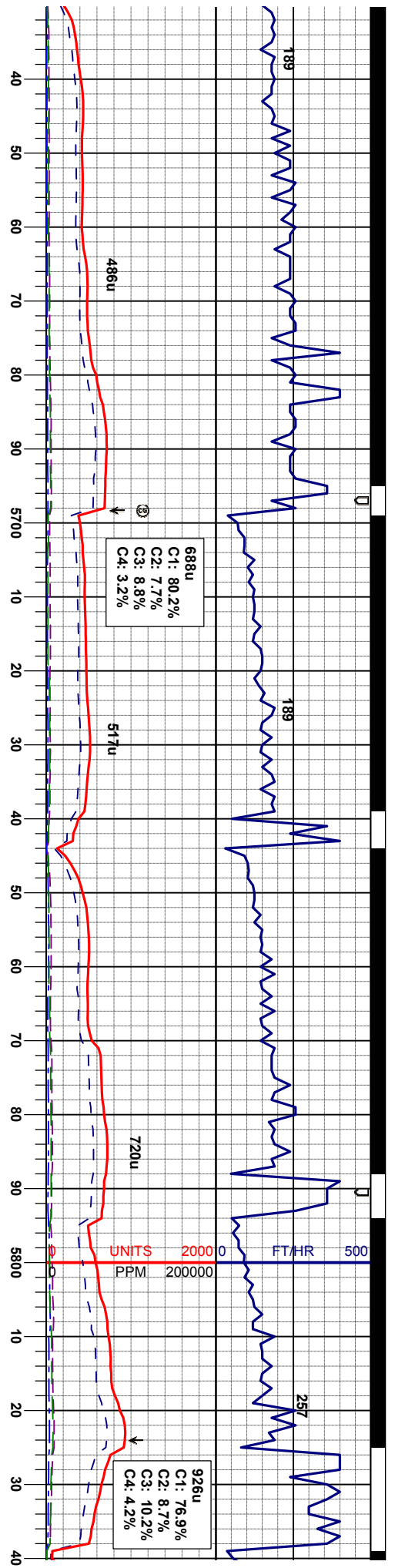
Arrow

SAMPLE PHOTOS

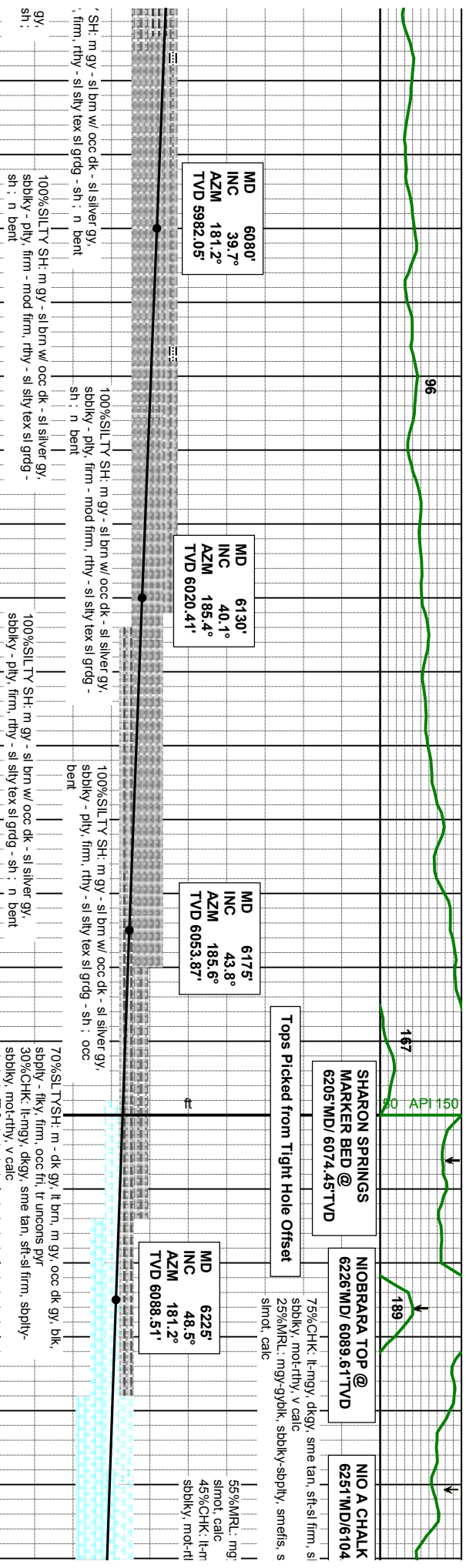
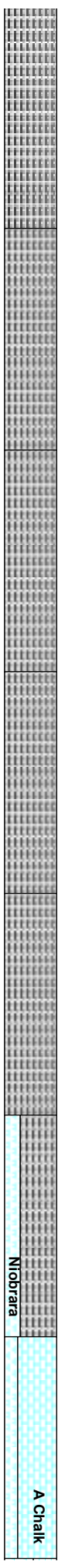
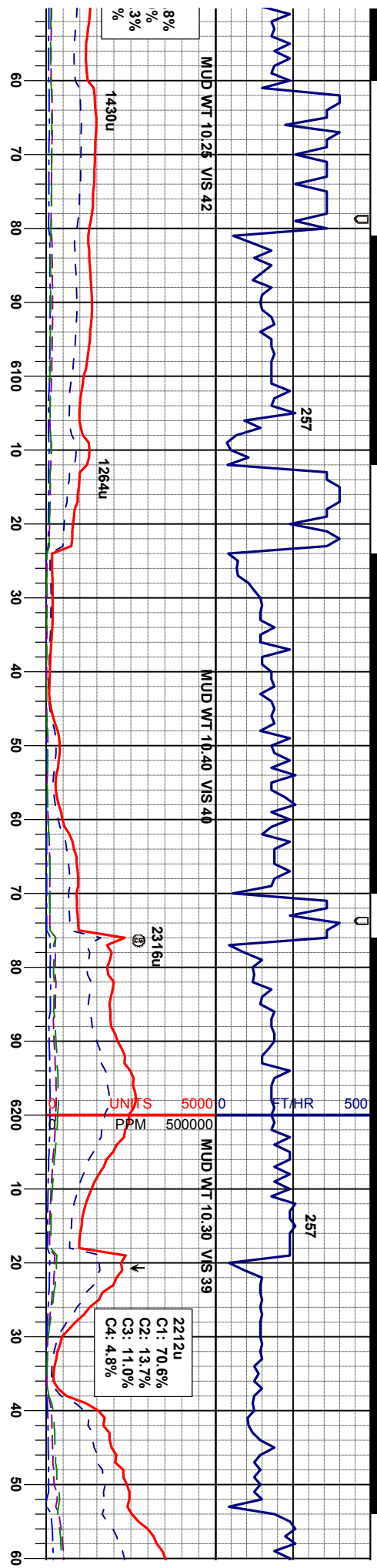


CUTTINGS LITHOLOGY









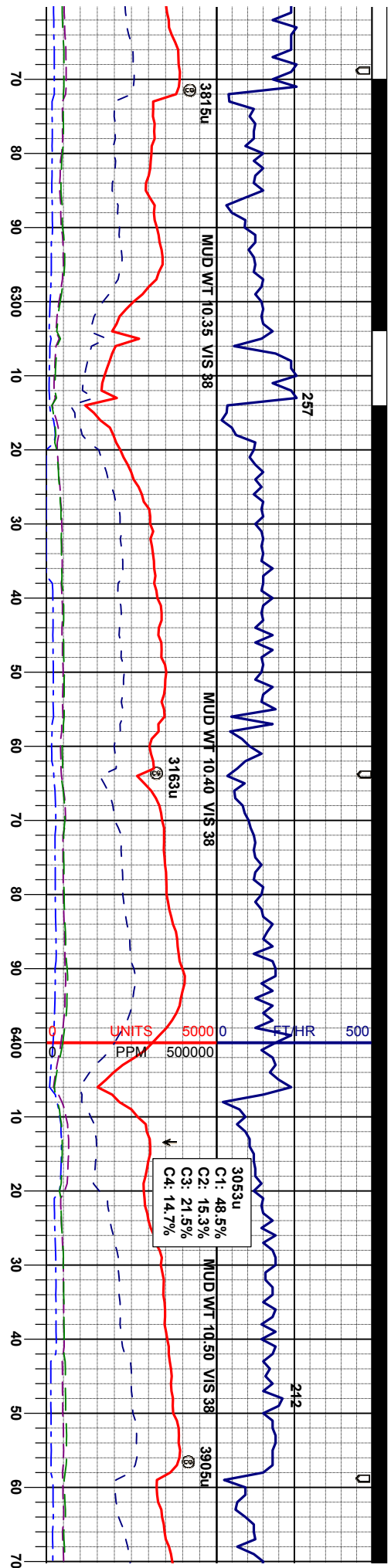
SH: m gy - sl bn w/ occ dk - sl silver gy, firm, rthy - sl sily tex sl grdg - sh: n bent

100% SILTY SH: m gy - sl bn w/ occ dk - sl silver gy, sbblky - ply, firm - mod firm, rthy - sl sily tex sl grdg - sh: n bent

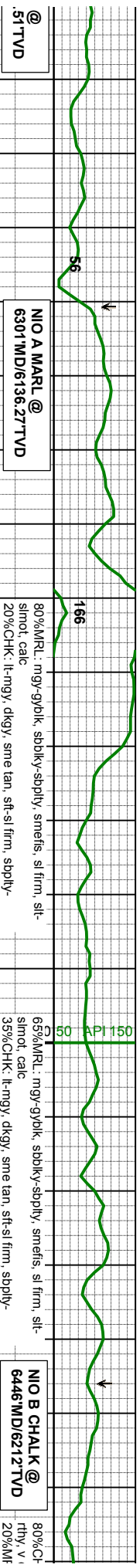
100% SILTY SH: m gy - sl bn w/ occ dk - sl silver gy, sbblky - ply, firm - mod firm, rthy - sl sily tex sl grdg - sh: n bent

70% SILTY SH: m - dk gy, lk bn, m gy, occ dk gy, blk, sbply - flky, firm, occ fri, tr uncours pyr  
30%CHK, lk-ny, dkgy, sme tan, str-si firm, sbply - sbblky, mot-rny, v calc





**A Marl** | **B Chalk**



**51 TVD @**  
 90%MRU: mgy-gyblk, sbdky-sbply, smeifs, sl firm, silt-simot, calc  
 10%CHK: lt-mgy, dkgy, sme tan, sft-si firm, sbply-sbdky, mot-rthy, v calc

**NIO A MARL @ 6301MD/6136.27TVD**  
 80%MRU: mgy-gyblk, sbdky-sbply, smeifs, sl firm, silt-simot, calc  
 20%CHK: lt-mgy, dkgy, sme tan, sft-si firm, sbply-sbdky, mot-rthy, v calc

**50 API 150**  
 65%MRU: mgy-gyblk, sbdky-sbply, smeifs, sl firm, silt-simot, calc  
 35%CHK: lt-mgy, dkgy, sme tan, sft-si firm, sbply-sbdky, mot-rthy, v calc

**NIO B CHALK @ 6446MD/6212TVD**  
 80%Chalk, 20%MRU  
 rthy, v calc, simot

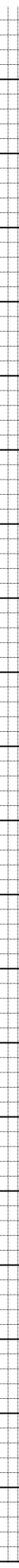
**MD 6270'**  
 INC 50.0°  
 AZM 180.02°  
 TVD 6117.89'

**MD 6320'**  
 INC 52.9°  
 AZM 180.7°  
 TVD 6149.04'

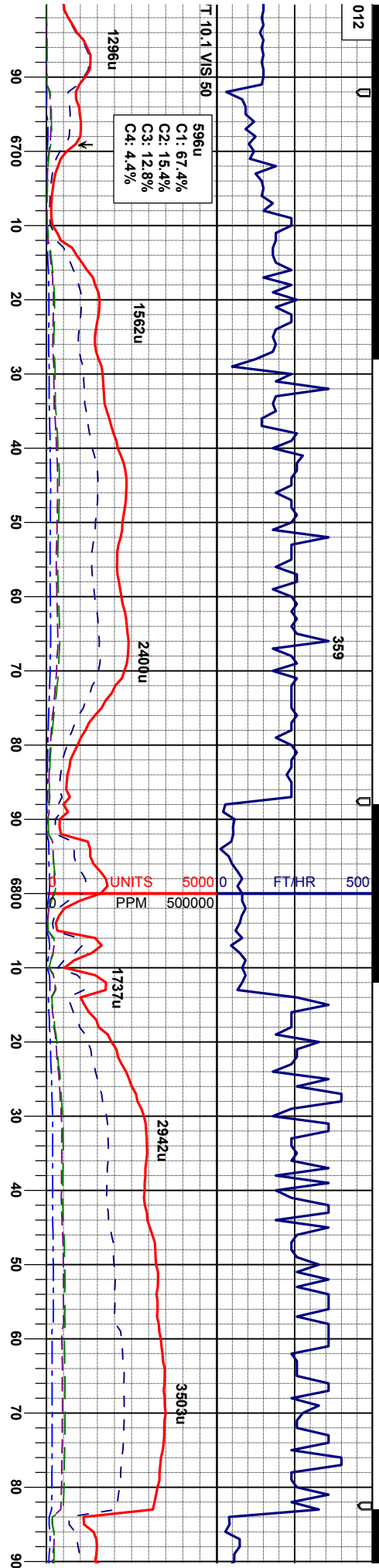
**MD 6365'**  
 INC 57.4°  
 AZM 180.0°  
 TVD 6174.75'

**MD 6415'**  
 INC 63.0°  
 AZM 179.0°  
 TVD 6199.59'

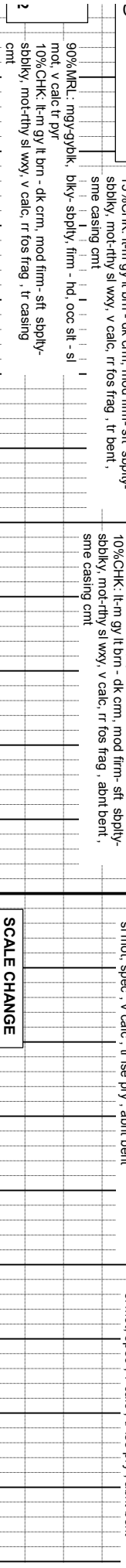
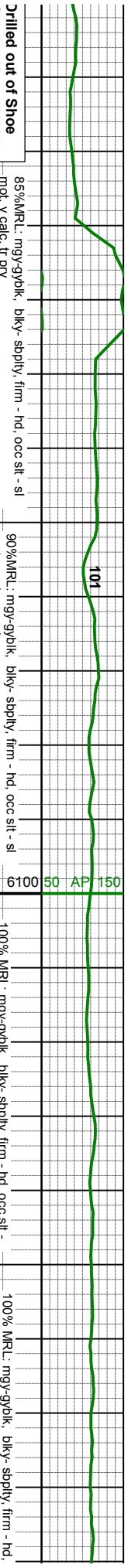
**MD 6460'**  
 INC 67.4°  
 AZM 177.8°  
 TVD 6218.46'







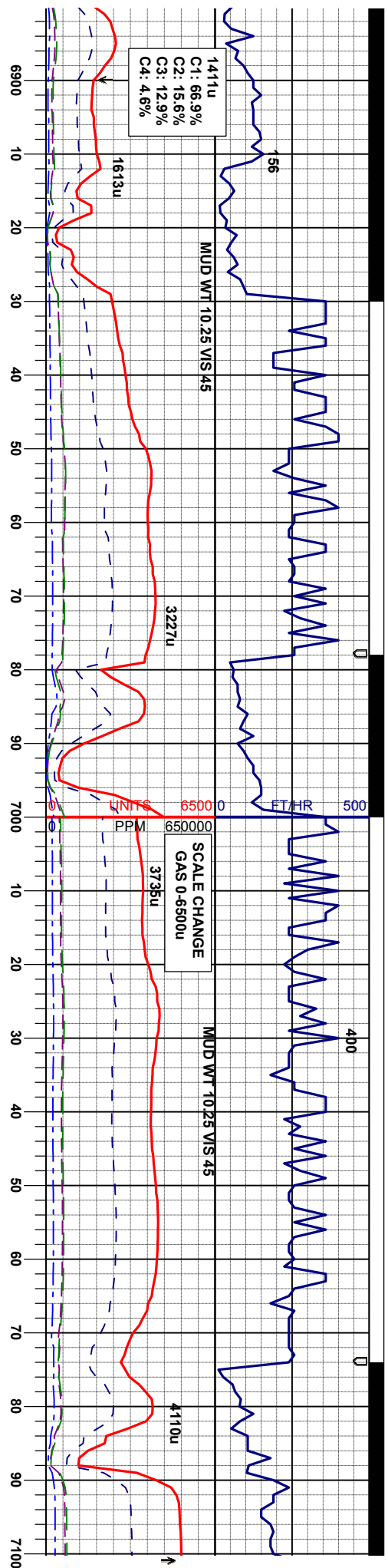
B Marl



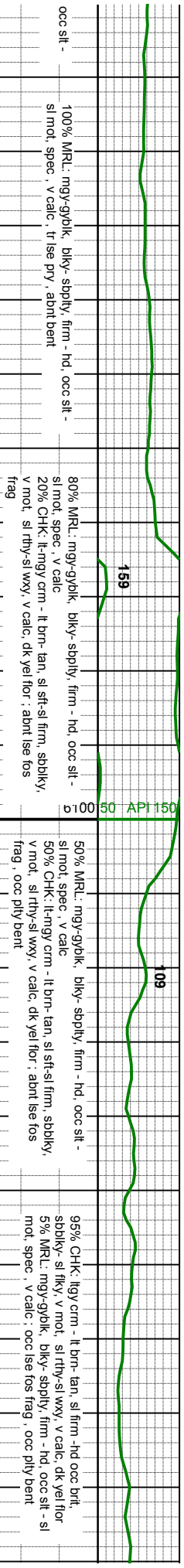
MD 6742'  
INC 92.4°  
AZM 180.6°  
TVD 6266.00'

MID 6837'  
INC 92.9°  
AZM 180.7°  
TVD 6262.45'





Fossils Bentonite B Chalk

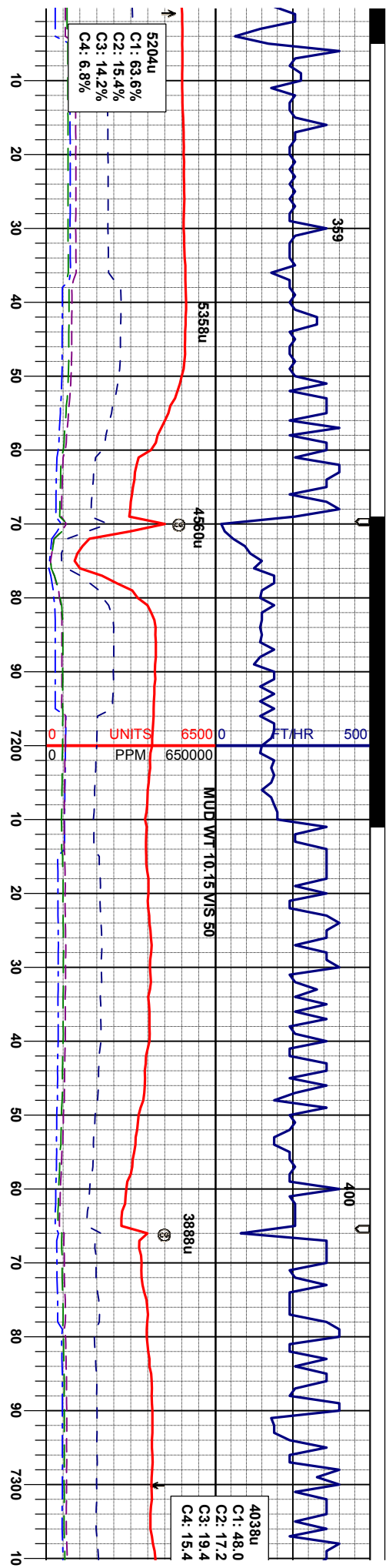


MD 6932'  
 INC 92.2°  
 AZM 180.0°  
 TVD 6258.23'

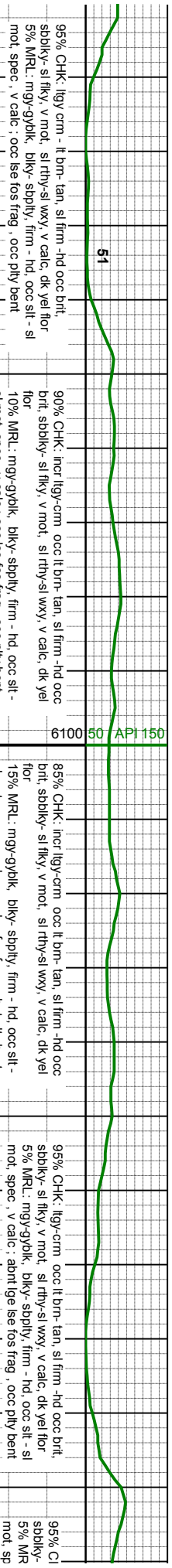
MD 7027'  
 INC 91.8°  
 AZM 177.8°  
 TVD 6254.91'

6300 ft





Clean B Chalk



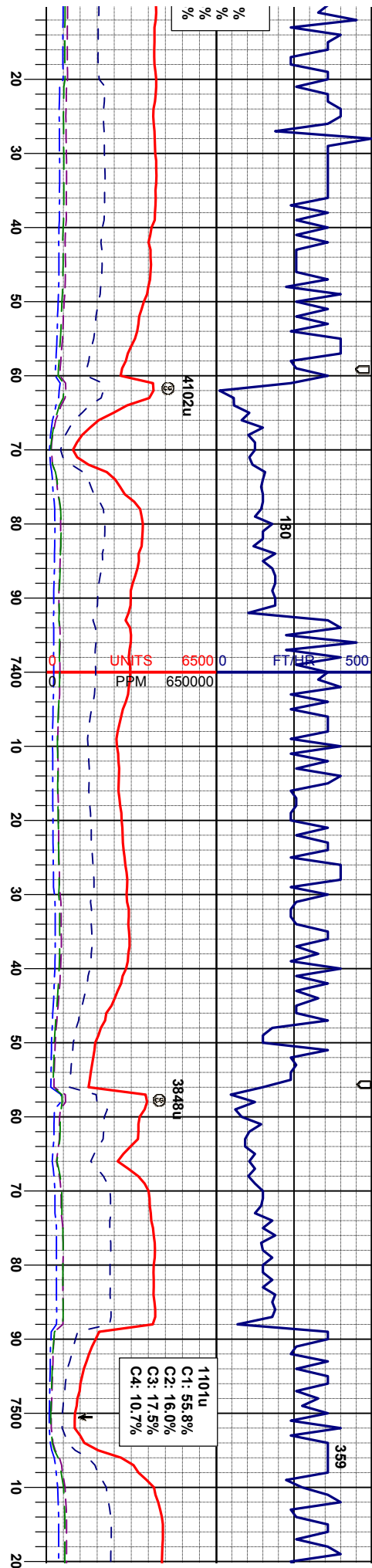
MD 7122'  
INC 91.7°  
AZM 176.8°  
TVD 6252.01'

MD 7166'  
INC 91.7°  
AZM 176.8°  
TVD 6250.7'

MD 7217'  
INC 89.4°  
AZM 176.1°  
TVD 6251.1'

MD INC  
AZM TVD





B Chalk

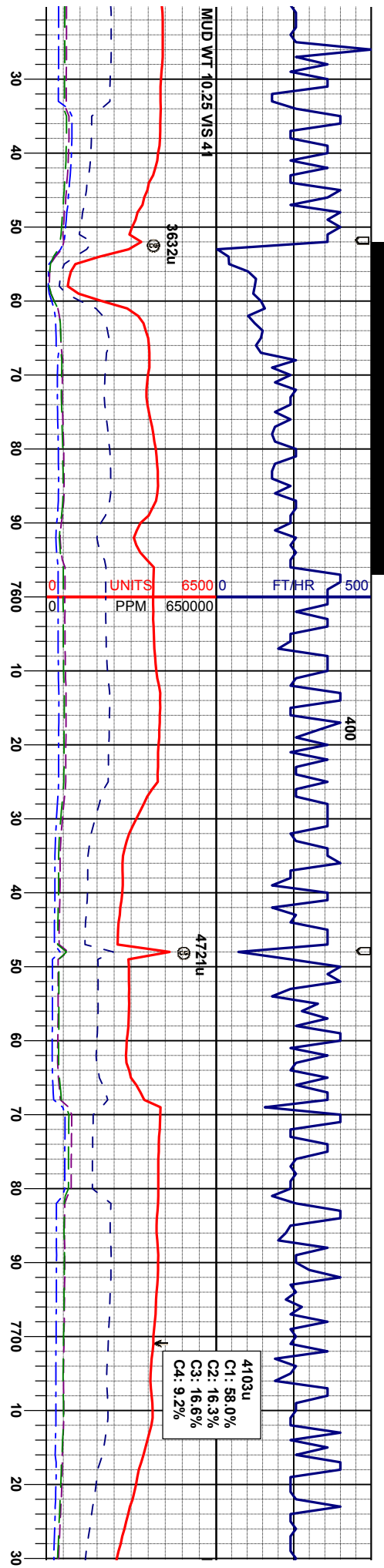
-K: lly-crm occ lt brn- tan, sl firm -hd occ brtl, sl filly- v mot, sl rthy-sl wxy, v calc, dk yei flor  
 L: mgy-gyblk, bly- sbply, firm - hd, occ slit - sl nec, v calc ; abnt lge lse fos frag, occ ply bent  
 100% CHK: lly-crm occ lt brn- tan, sl firm -hd occ brtl, sbkly- sl filly, v mot, sl rthy-sl wxy, v calc, dk yei flor ; abnt lge lse fos frag, occ ply bent  
 95% CHK: lly-crm occ lt brn- tan, sl firm -hd occ brtl, sbkly- sl filly, v mot, sl rthy-sl wxy, v calc, dk yei flor 5% MR.L: mgy-gyblk, bly- sbply, firm - hd, occ slit - sl mot, spec, v calc ; tr fos frag, tr ply bent  
 90% CHK: lly-crm occ lt brn- tan, sl firm -hd occ brtl, sbkly- sl filly, v mot, sl rthy-sl wxy, v calc, dk yei flor 10% MR.L: mgy-gyblk, bly- sbply, firm - hd, occ slit - sl mot, spec, v calc ; rr fos frag, tr pyr  
 90% CHK: lly-crm occ lt brn- tan, sl firm -hd occ brtl, sbkly- sl filly, v mot, sl rthy-sl wxy, v calc, dk yei flor 10% MR.L: mgy-gyblk, bly- sbply, firm - hd, occ slit - sl mot, spec, v calc ; rr fos frag

7312' 90.2° 175.6° 6251.43'

MD 7407' INC 90.5° AZM 176.7° TVD 6250.84'

MD 7502' INC 91.3° AZM 177.2° TVD 6249.36'





B Chalk

121

90% CHK: lgy-erm occ lt brn-tan, sl firm -hd occ brt, sbdky-si flly, v mot, sl rthy-si wxy, v calc, dk, yel flbr 10% MR.L: mgy-gy/bk, bkly-sply, hd, occ slit - sl mot, spec, v calc, tr pyr

6100 50 P1150

95% CHK: lgy-erm occ lt brn-tan, sl firm -hd occ brt, sbdky-si flly, v mot, sl rthy-si wxy, v calc, dk, yel flbr 5% MR.L: mgy-gy/bk, bkly-sply, hd, occ slit - sl mot, spec, v calc

140

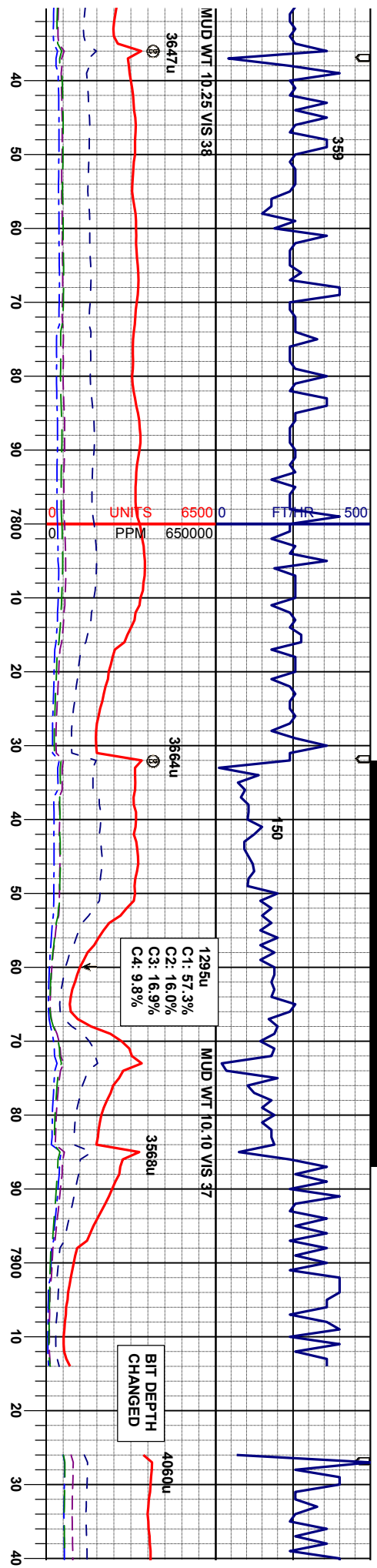
90% CHK: lgy-erm occ lt brn-tan, sl firm -hd occ brt, sbdky-si flly, v mot, sl rthy-si wxy, v calc, dk, yel flbr 10% MR.L: mgy-gy/bk, bkly-sply, hd, occ slit - sl mot, spec, v calc, abrt fos frag

95% CHK: lgy-erm occ lt brn-tan, sl firm -hd occ brt, sbdky-si flly, v mot, sl rthy-si wxy, v calc, dk, yel flbr 5% MR.L: mgy-gy/bk, bkly-sply, hd, occ slit - sl mot, spec, v calc, abrt fos frag, tr disr

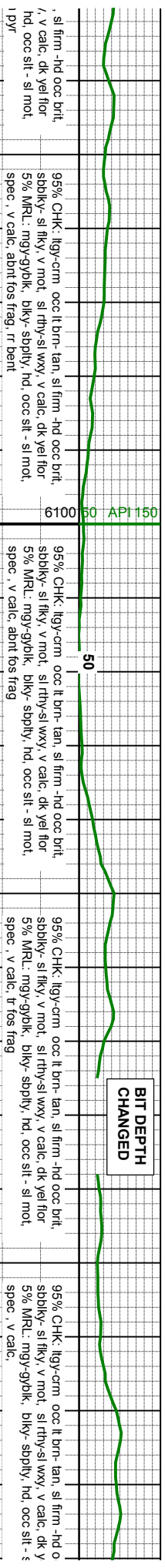
MD 7597'  
INC 89.4°  
AZM 178.4°  
TVD 6248.78'

MD 7691'  
INC 90.5°  
AZM 177.3°  
TVD 6248.86'





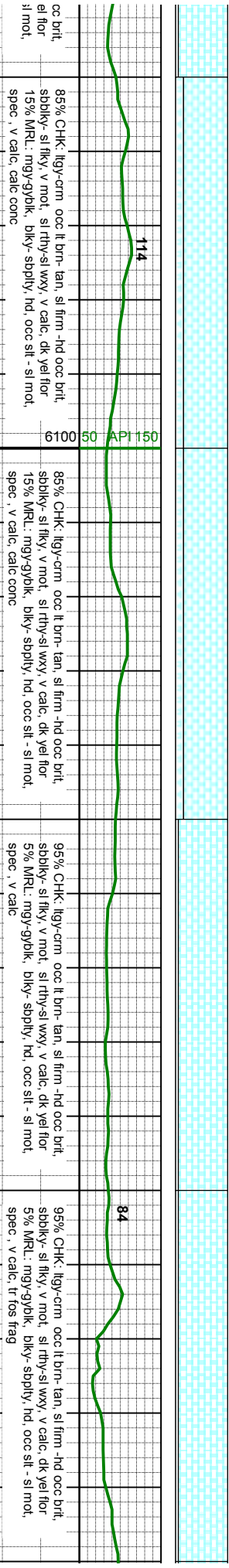
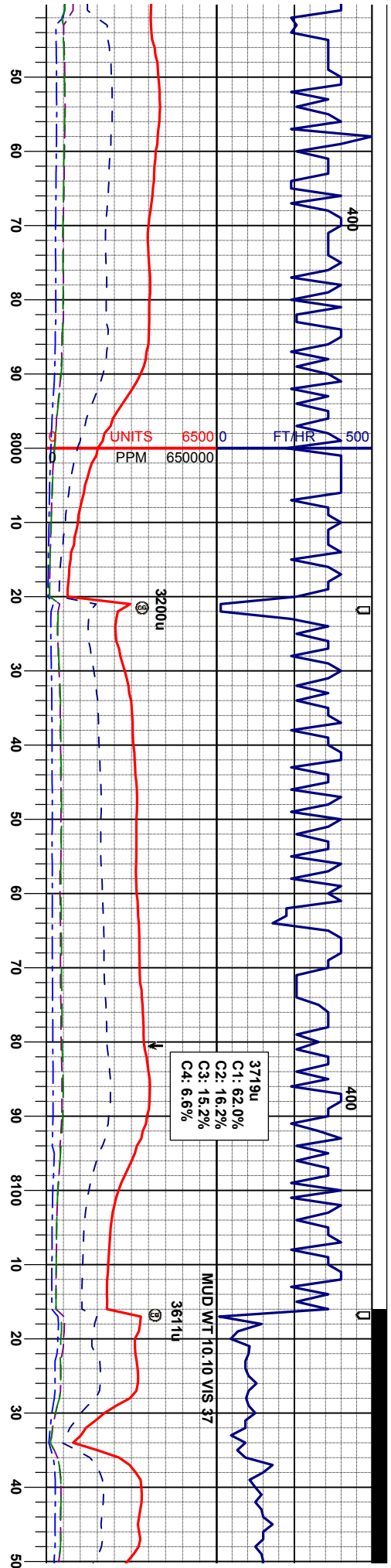
B Chalk



MD 7786'  
INC 91.4°  
AZM 176.3°  
TVD 6247.28'

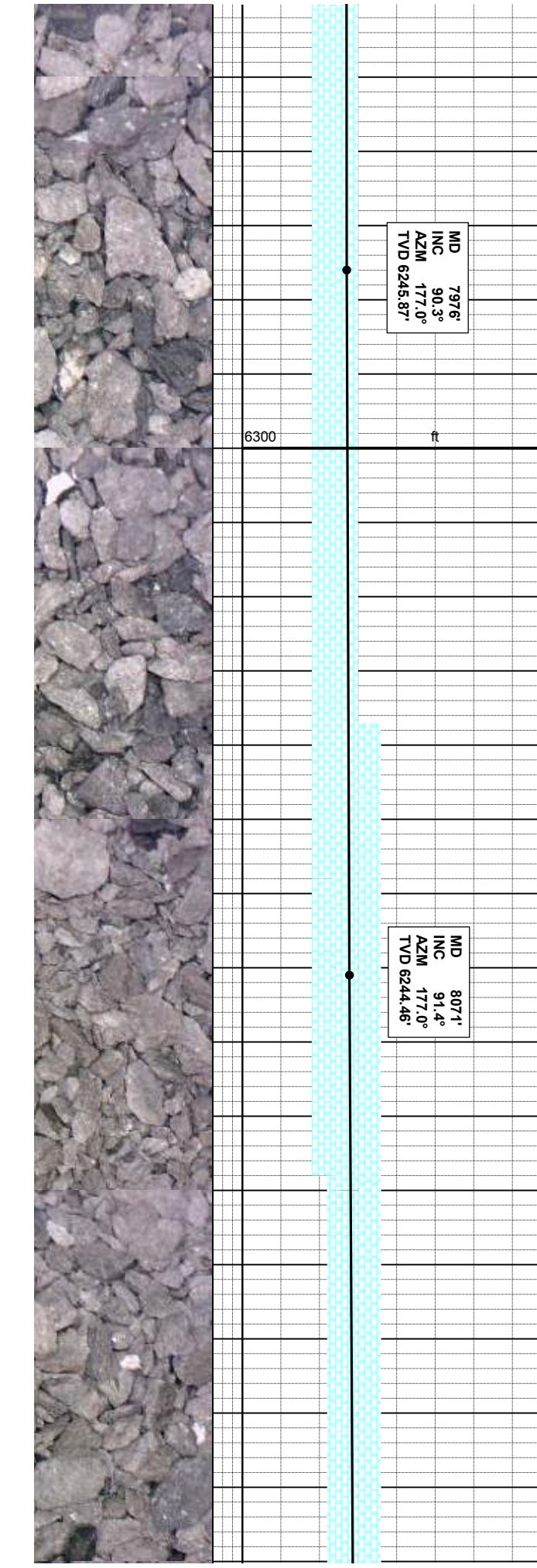
MD 7881'  
INC 90.0°  
AZM 177.3°  
TVD 6246.12'

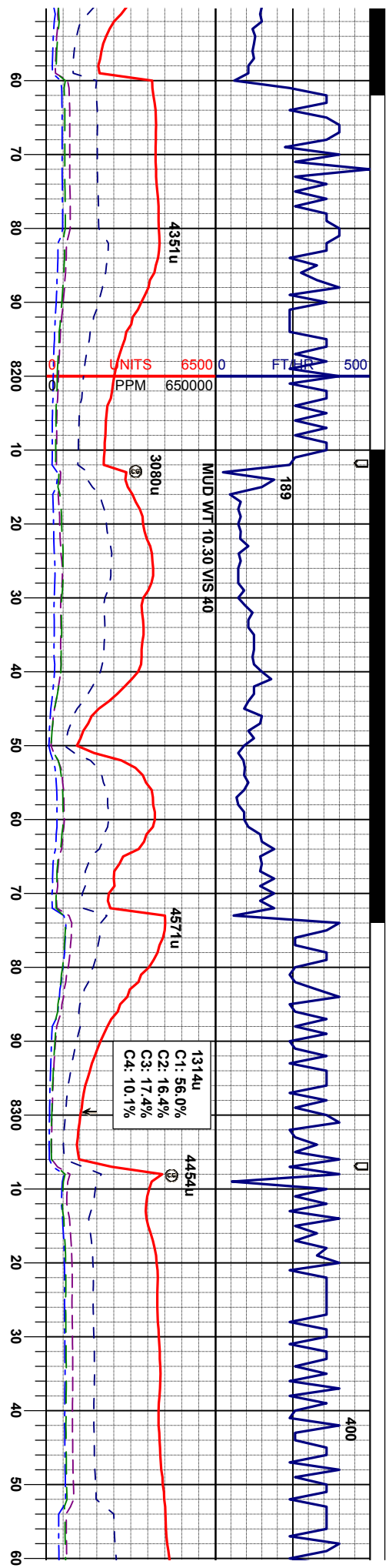




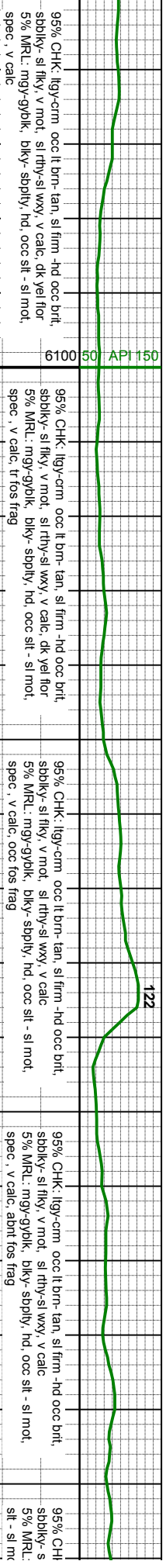
MD 7976'  
 INC 90.3°  
 AZM 177.0°  
 TVD 6245.87'

MD 8071'  
 INC 91.4°  
 AZM 177.0°  
 TVD 6244.46'





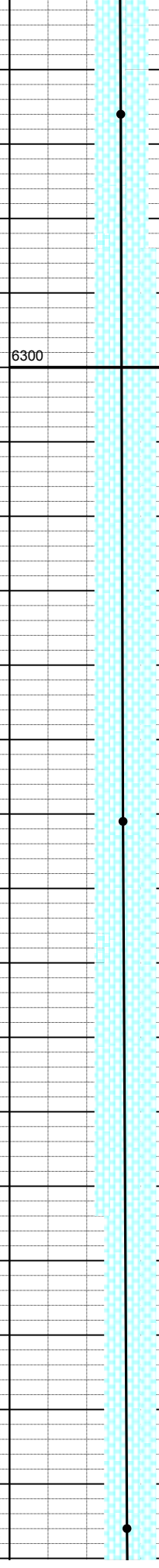
B Chalk

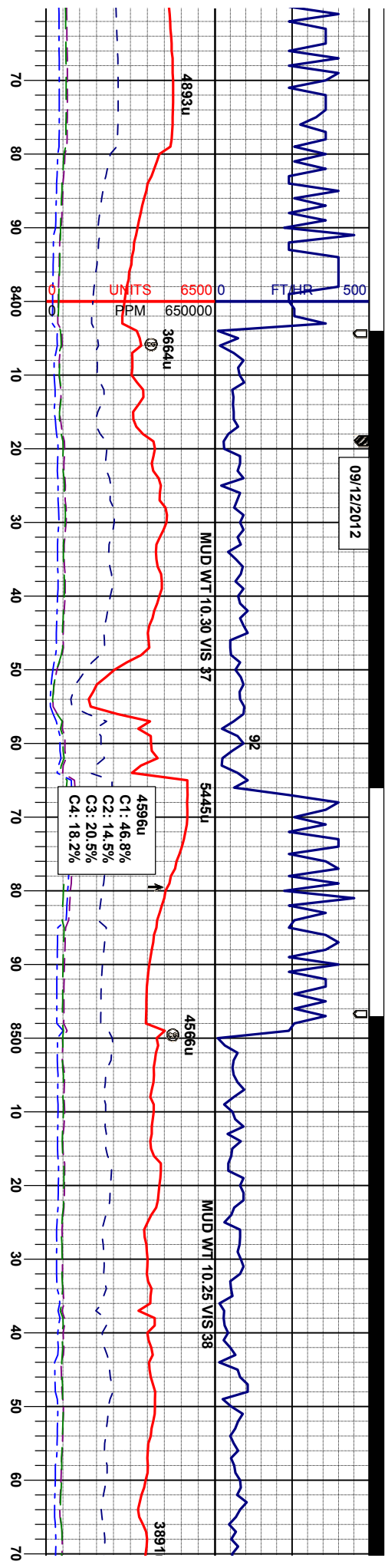


MD 8166'  
INC 91.1°  
AZM 177.1°  
TVD 6242.39'

MD 8261'  
INC 90.3°  
AZM 177.5°  
TVD 6241.23'

MD 83'  
INC 92°  
AZM 176°  
TVD 6239.0'





C1: 46.8%  
 C2: 14.5%  
 C3: 20.5%  
 C4: 18.2%

90% CHK: lgy-crm occ lt brn- tan, sl firm -hd occ brt, sbdkly- sl flky, v mot, sl rthy-sl wxy, v calc 10% MRL: mgy-gyblk, bky- sbply, mod firm - hd, occ slt - sl mot, spec, v calc, tr calc conc, occ fos frag

90% CHK: lgy-crm occ lt brn- tan, sl firm -hd occ brt, sbdkly- sl flky, v mot, sl rthy-sl wxy, v calc 10% MRL: mgy-gyblk, bky- sbply, mod firm - hd, occ slt - sl mot, spec, v calc, occ fos frag

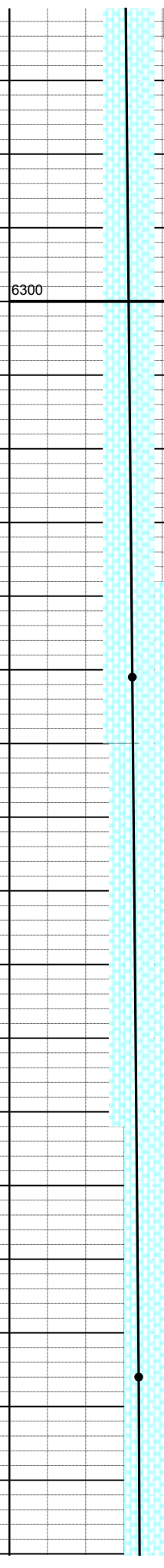
90% CHK: lgy-crm occ lt brn- tan, sl firm -hd occ brt, sbdkly- sl flky, v mot, sl rthy-sl wxy, v calc 10% MRL: mgy-gyblk, bky- sbply, mod firm - hd, occ slt - sl mot, spec, v calc

95% CHK: lgy-crm occ lt brn- tan, sl firm -hd occ brt, sbdkly- sl flky, v mot, sl rthy-sl wxy, v calc 5% MRL: mgy-gyblk, bky- sbply, mod firm - hd, occ slt - sl mot, spec, v calc

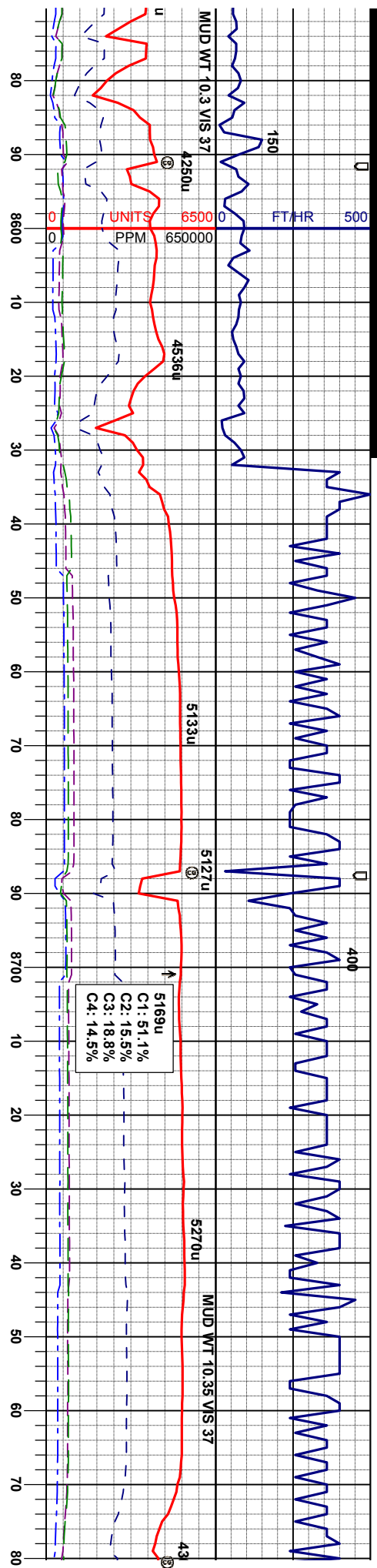
56' : 1° : 1.2° : 24'

MD 8451'  
 INC 92.2°  
 AZM 177.9°  
 TVD 6235.68'

MD 8546'  
 INC 91.9°  
 AZM 179°  
 TVD 6232.28'



Clean Chalks



Very Dirty Chalk

B Chalk

85% CHK: lt-m gy m brn- tan, sl firm -hd occ brtl, sbbkly- sl flky, v mot, sl rthy-sl wxy, v calc 15% MRU: ngy-gyblk, blkly- spply, mod firm, hom - occ sl spec, tr sly, v calc, tr bent

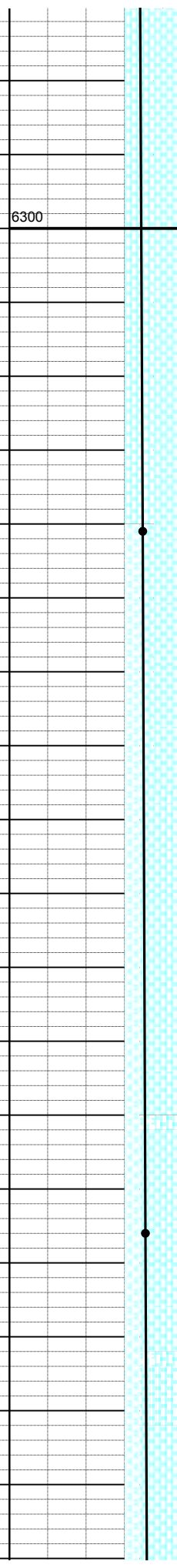
80% CHK: lt-m gy m brn- tan, sl firm -hd occ brtl, sbbkly- sl flky, v mot, sl rthy-sl wxy, v calc 20% MRU: ngy-gyblk, blkly- spply, mod firm, hom - occ sl spec, tr sly, v calc, tr bent

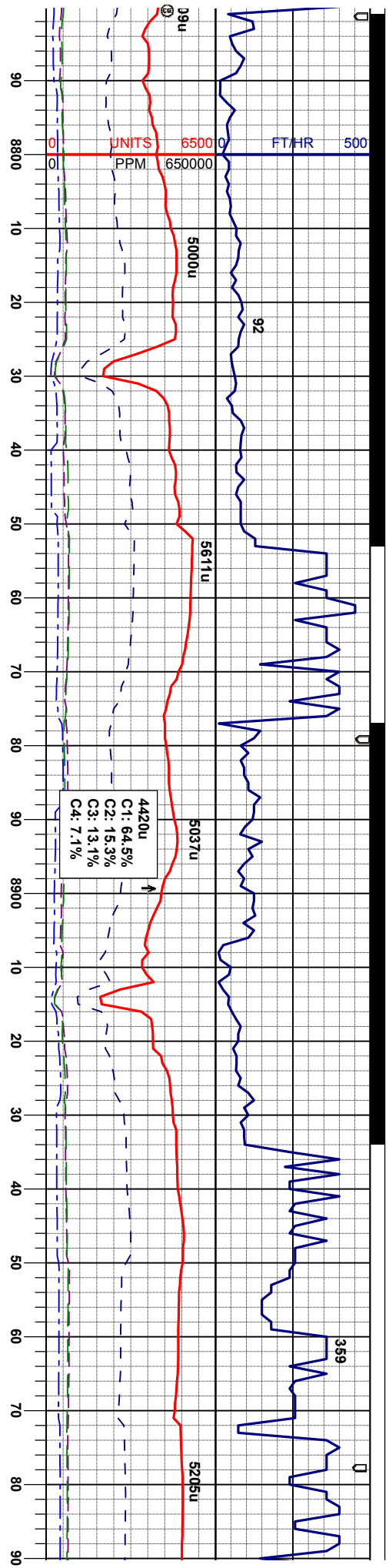
70% CHK: lt-m gy m brn- tan, sl firm -hd occ brtl, sbbkly- sl flky, v mot, sl rthy-sl wxy, v calc 30% MRU: ngy-gyblk, blkly- spply, mod firm, hom - occ sl spec, tr sly, v calc, tr bent

50% CHK: lt gy lt brn- tan, sl firm -h sl flky, v mot, sl rthy-sl wxy, v calc 50% MRU: ngy-gyblk, blkly- spply, occ sl spec, tr sly, v calc, tr bent

MD	8641'
INC	90.3°
AZM	180.2°
TVD	6230.45'

MD	8736'
INC	91.3°
AZM	179.1°
TVD	6229.13'





d occ brnt, sbblky-  
mod firm, hom -

75% CHK: lt gy lt brn- tan, sl firm- hd occ brnt, sbblky-  
sl flky, v mot, sl rhy- sl wxy, v calc  
25% MRL: mgy- gybk, bkly- sbply, mod firm, hom -  
occ sl spec, tr sily, v calc, tr bent

65% CHK: lt gy lt brn- tan, sl firm- hd occ brnt, sbblky-  
sl flky, v mot, sl rhy- sl wxy, v calc  
35% MRL: mgy- gybk, bkly- sbply, mod firm, hom - tr  
sl spec, tr sily, v calc, tr bent

70% CHK: lt gy lt brn- tan, sl firm- hd occ brnt, sbblky-  
sl flky, v mot, sl rhy- sl wxy, v calc  
30% MRL: mgy- gybk, bkly- sbply, mod firm, hom - tr  
sl spec, tr sily, v calc, tr bent, tr fos

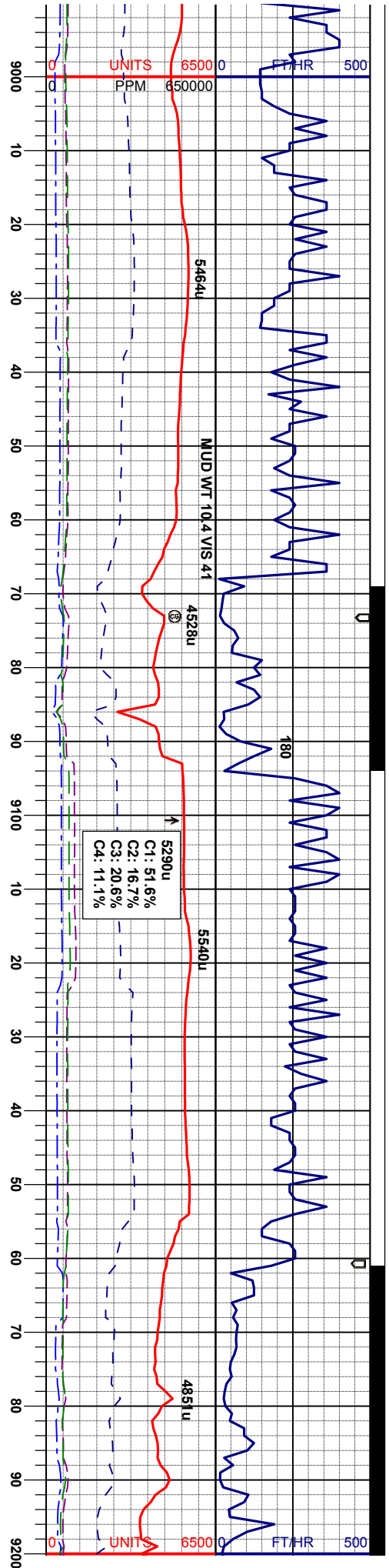
75% CHK: lt gy lt brn- tan, sl firm- hd occ brnt, sbblky-  
sl flky, v mot, sl rhy- sl wxy, v calc  
25% MRL: mgy- gybk, bkly- sbply, mod firm, hc  
sl spec, tr sily, v calc, tr bent, tr fos

MID 8831'  
INC 90.6°  
AZM 180.1°  
TVD 6227.55'

MID 8927'  
INC 88°  
AZM 180.6°  
TVD 6228.73'

B Chalk





Clean B Chalk

79

75% CHK: lt gy/lt brn- tan, sl firm -hd occ brt, sbbkly- sl fky, v mod, sl rthy-sl wxy, v calc  
 25% MRL: mgy-gy/bk, bkly-spply, mod firm, hom - tr  
 sl spec, tr silty, v calc, tr bent, tr fos

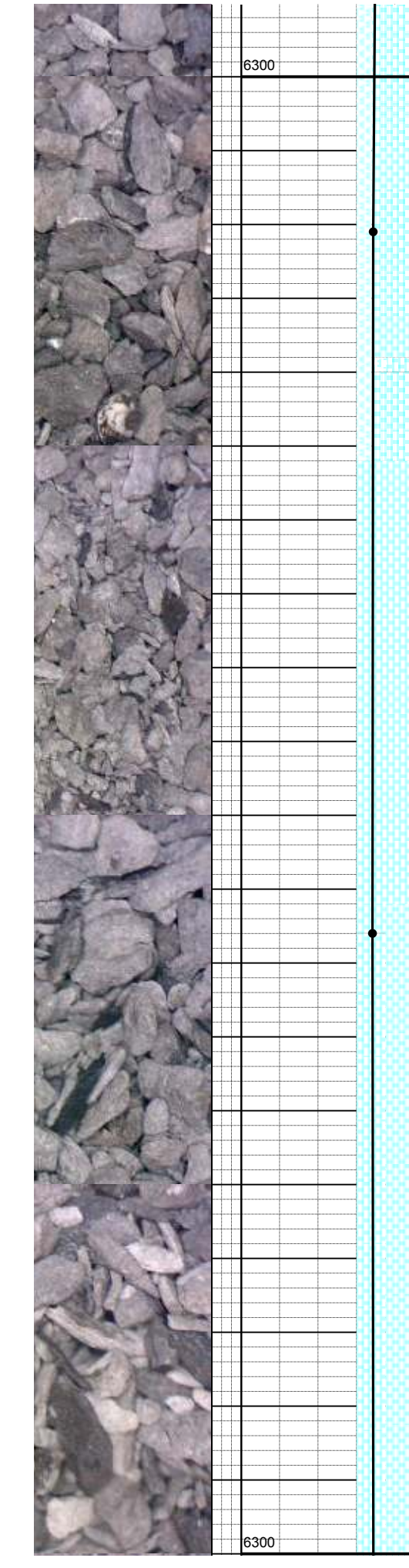
85% CHK: lt gy/lt brn- tan occ m gy, sl firm -hd occ brt, sbbkly- sl fky, v mod, sl rthy-sl wxy, v calc  
 15% MRL: mgy-gy/bk, bkly-spply, mod firm, hom - tr  
 sl spec, tr silty, v calc, tr bent, tr fos, tr lse pyr

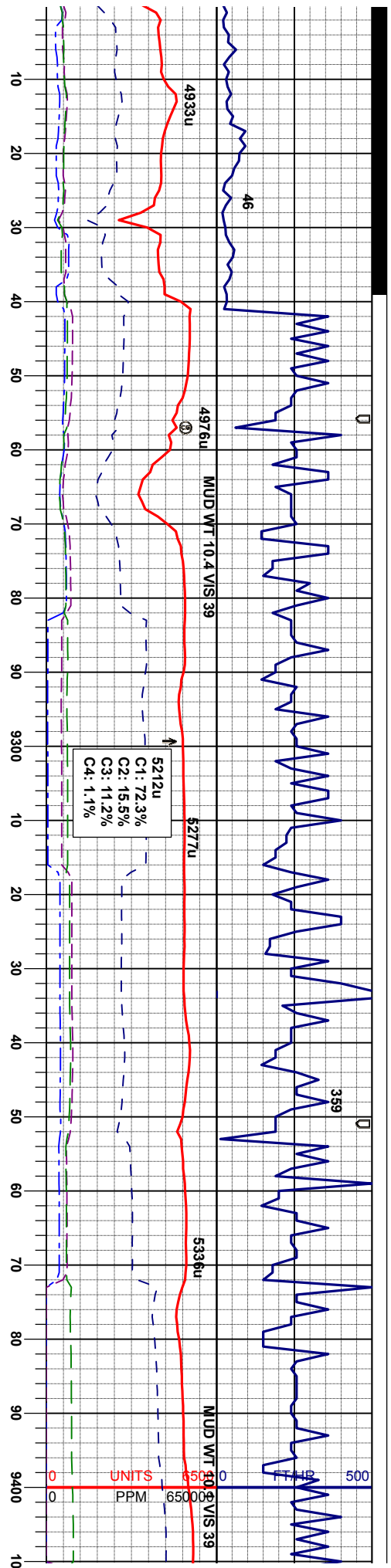
90% CHK: lt gy/lt brn- tan occ m gy, sl firm -hd occ brt, sbbkly- sl fky, v mod, sl rthy-sl wxy, v calc  
 10% MRL: mgy-gy/bk, bkly-spply, mod firm, hom - tr  
 sl spec, tr silty, v calc, tr bent, tr fos, tr lse pyr

90% CHK: lt gy/lt brn- tan occ, sl firm -hd occ brt, sbbkly- sl fky, v mod, sl rthy-sl wxy, v calc, dk yel flor  
 10% MRL: mgy-gy/bk, bkly-spply, mod firm, hom - tr  
 sl spec, tr silty, v calc.

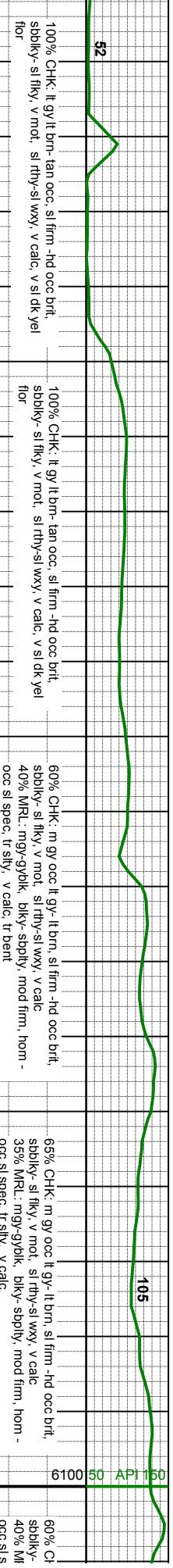
MD 9021'  
 INC 88.9°  
 AZIM 180.1°  
 TVD 6231.27'

MD 9116'  
 INC 90.6°  
 AZIM 180.2°  
 TVD 6231.68'





Dirty Chalks



100% CHK: lt gy lt brn- tan occ, sl firm- hd occ brlt, sdblkly- sl flky, v mot, sl rthy- sl wxy, v calc, v sl dk yel flor

100% CHK: lt gy lt brn- tan occ, sl firm- hd occ brlt, sdblkly- sl flky, v mot, sl rthy- sl wxy, v calc, v sl dk yel flor

60% CHK: m gy occ lt gy- lt brn, sl firm- hd occ brlt, sdblkly- sl flky, v mot, sl rthy- sl wxy, v calc 40% MRL: mgy- gyblk, blkly- sblply, mod firm, hom - occ sl spec, tr silty, v calc, tr bent

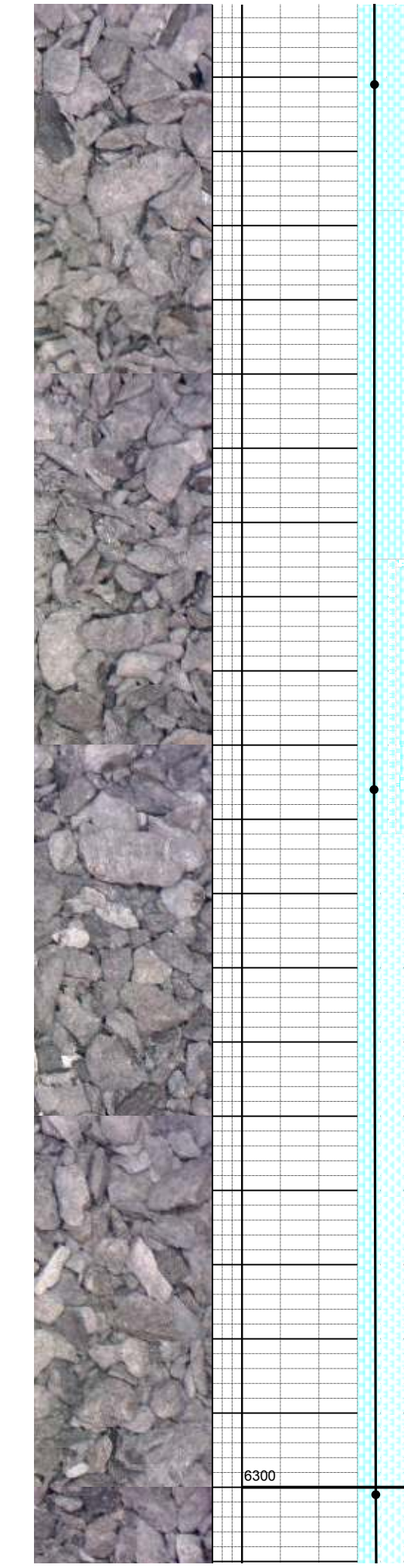
65% CHK: m gy occ lt gy- lt brn, sl firm- hd occ brlt, sdblkly- sl flky, v mot, sl rthy- sl wxy, v calc 35% MRL: mgy- gyblk, blkly- sblply, mod firm, hom - occ sl spec, tr silty, v calc,

60% Ch sdblkly- 40% M occ sl s

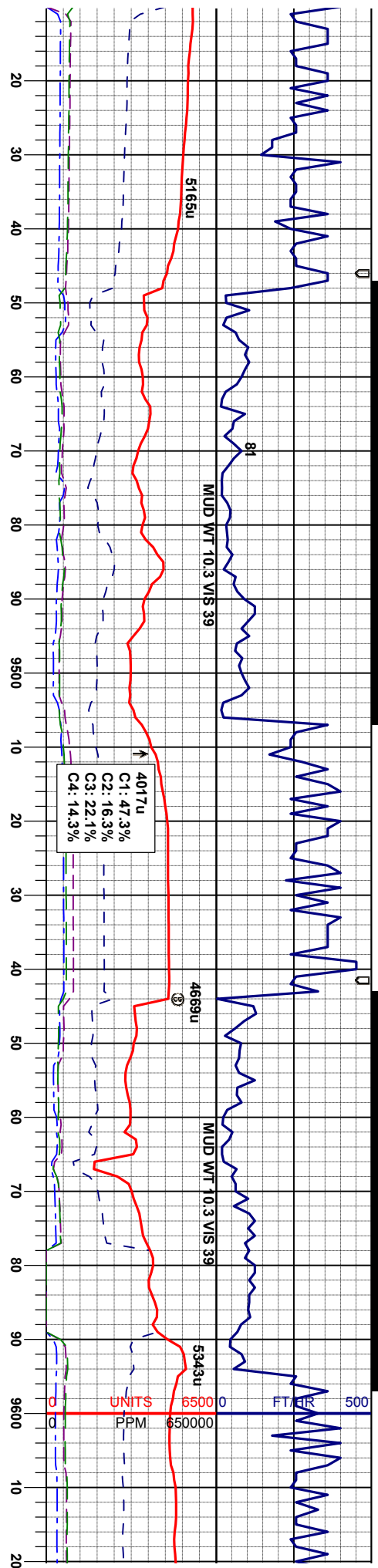
MD 9211' INC 90° AZM 180.1° TVD 6231.19'

MD 9306' INC 89.7° AZM 180.2° TVD 6231.43'

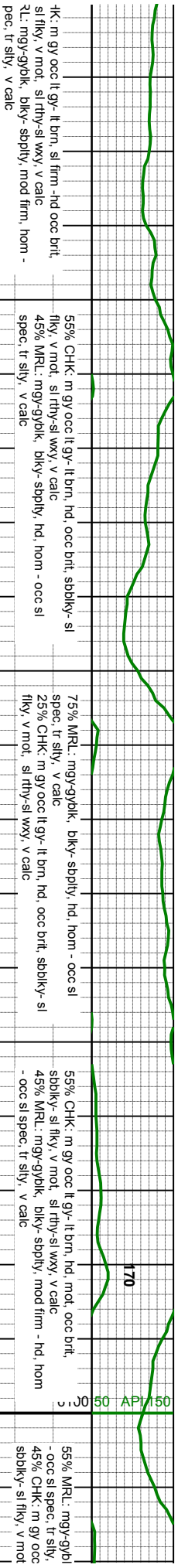
MD 9401' INC 91.5° AZM 179.4° TVD 6230.44'



6300



A Marl

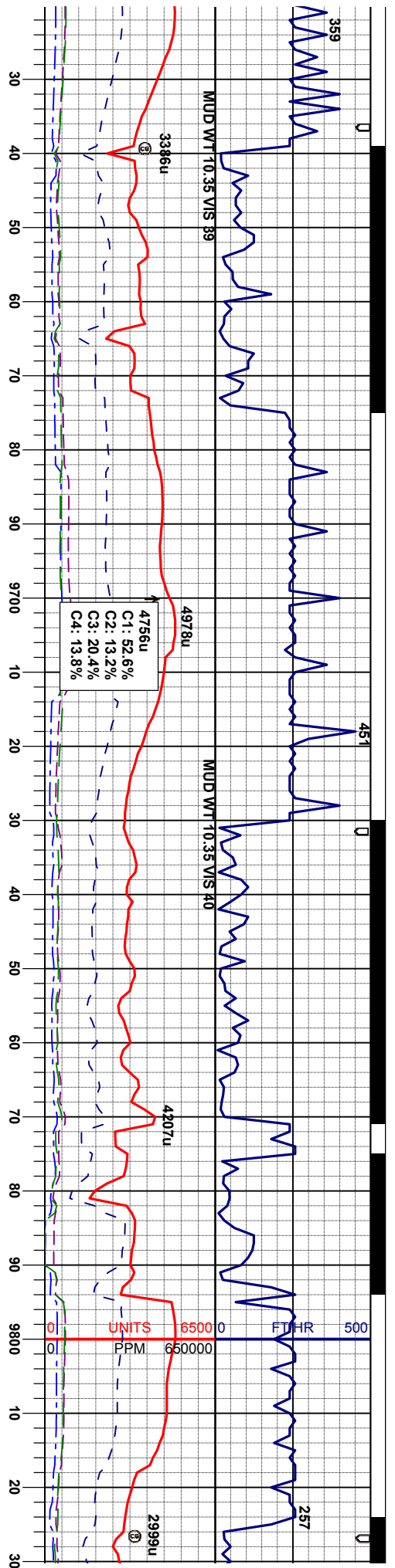


MD 9496'  
INC 91.2°  
AZM 179.3°  
TVD 6228.20'

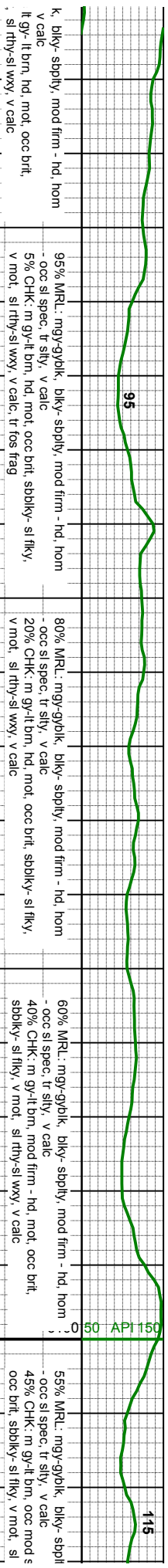
MD 9591'  
INC 90.0°  
AZM 180.0°  
TVD 6227.21'

6300





A Marl



MD 9686'

INC 91.0°

AZIM 180.0°

TVD 6226.38'

MD 9781'

INC 92.0°

AZIM 179.5°

TVD 6223.89'

k, bkly- sbply, mod frm - hd, hom  
v calc  
It gy- It brn, hd, mot, occ brtl,  
, sl rthy- sl wxy, v calc

95% MRU: mgy-gyblk, bkly- sbply, mod frm - hd, hom  
- occ sl spec, tr slty, v calc  
5% CHK: m gy-lt brn, hd, mot, occ brtl, sbdkly- sl flky,  
v mot, sl rthy- sl wxy, v calc, tr fos frag

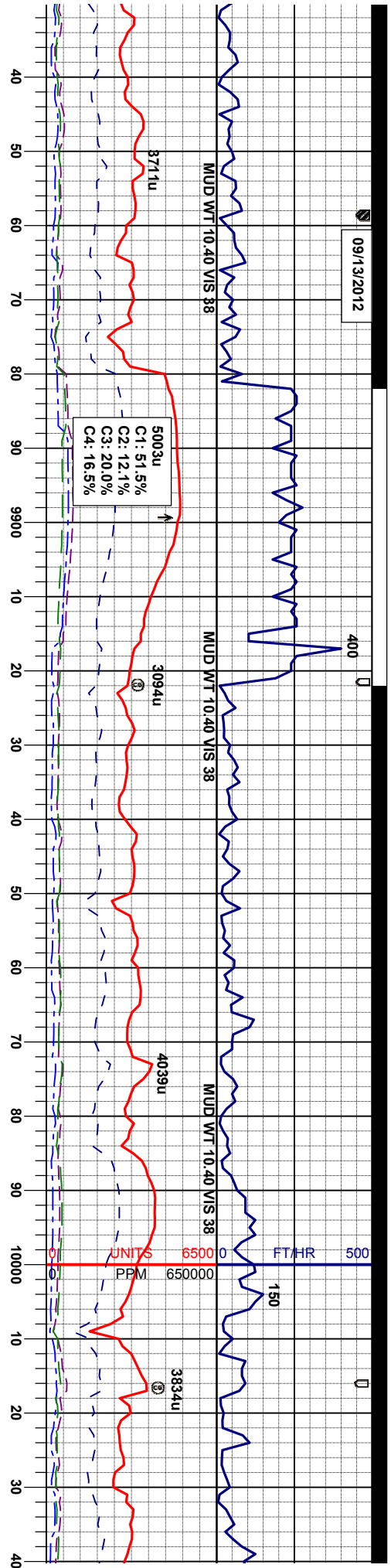
80% MRU: mgy-gyblk, bkly- sbply, mod frm - hd, hom  
- occ sl spec, tr slty, v calc  
20% CHK: m gy-lt brn, hd, mot, occ brtl, sbdkly- sl flky,  
v mot, sl rthy- sl wxy, v calc

60% MRU: mgy-gyblk, bkly- sbply, mod frm - hd, hom  
- occ sl spec, tr slty, v calc  
40% CHK: m gy-lt brn, mod frm - hd, mot, occ brtl,  
sbdkly- sl flky, v mot, sl rthy- sl wxy, v calc

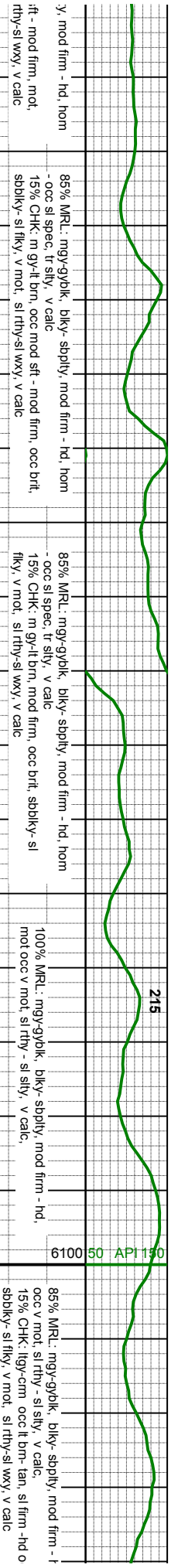
55% MRU: mgy-gyblk, bkly- sbply  
- occ sl spec, tr slty, v calc  
45% CHK: m gy-lt brn, occ mod s  
occ brtl, sbdkly- sl flky, v mot, sl

6300





A Marl



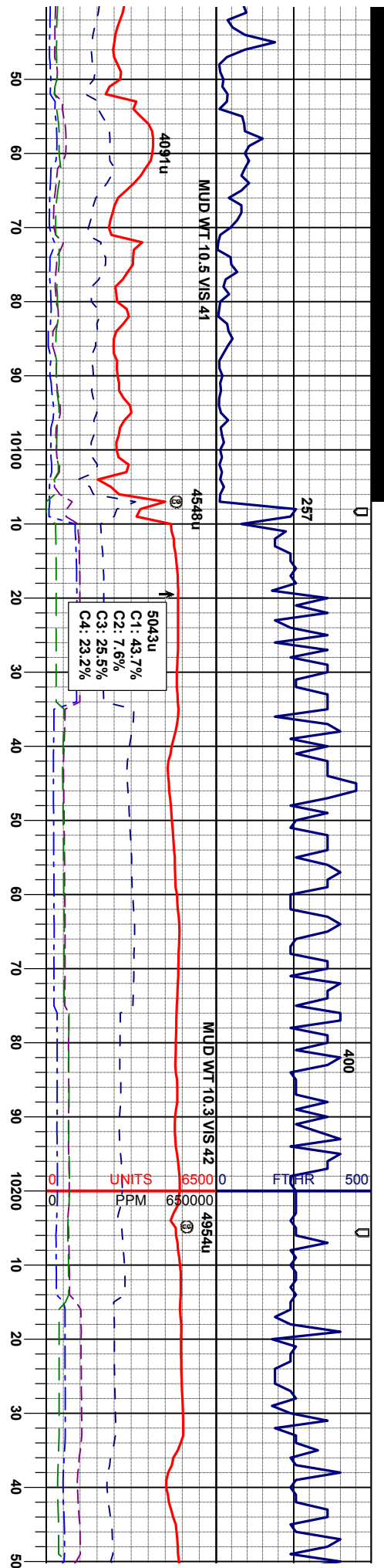
MD 9876'  
INC 93.1°  
AZM 179.3°  
TVD 6219.66'

MD 9971'  
INC 93.2°  
AZM 179.5°  
TVD 6214.44'

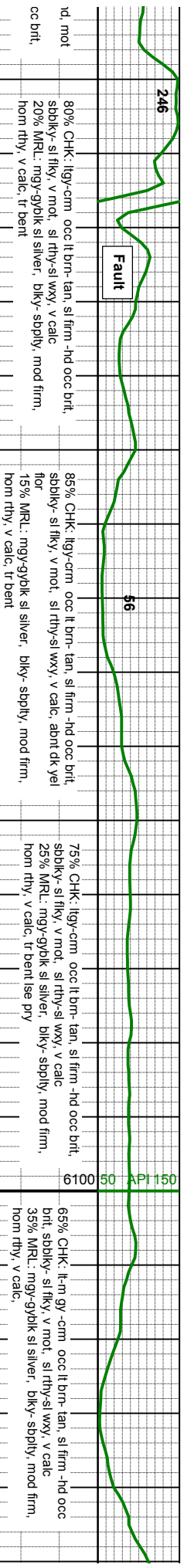
6300

ft





B Chalk



Fault

Fault

MD 10066'  
INC 89.7°  
AZM 181.1°  
TVD 6212.04'

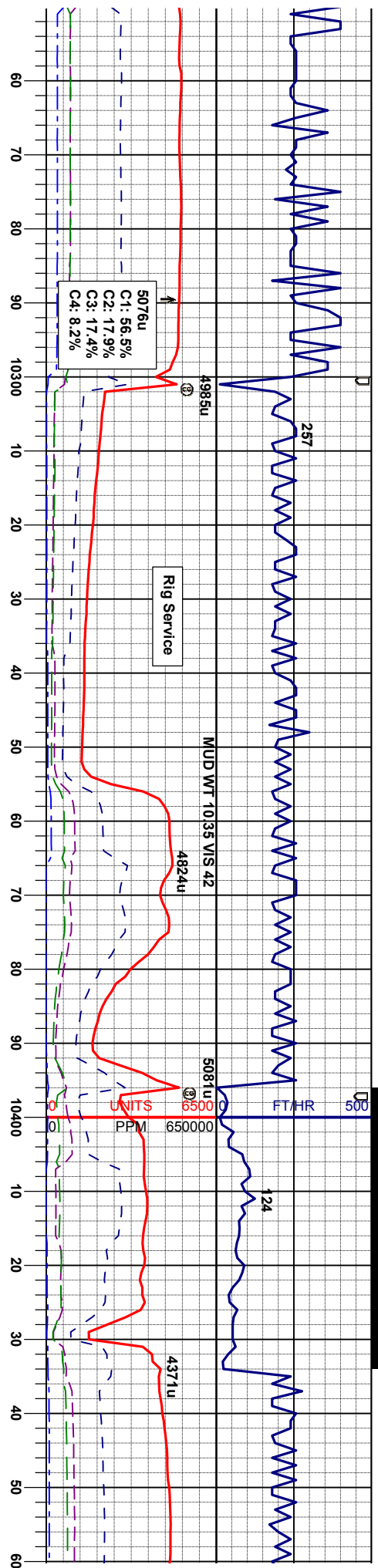
MD 10161'  
INC 88.3°  
AZM 180.4°  
TVD 6213.7'

6300

ft

6100 50 API 150





Very Dirty Chalk

50% CHK: lm gy -dk crm occ m -lt brn occ lt gy, sl firm -hd occ brt, sbdky- sl flky, v mot, sl rthy-sl wxy, v calc, tr int dk yet flr  
 50% MRL: mgy-gyblk sl silver, bkly- sbdky, mod firm, hom rthy, v calc.

85% MRL: mgy-gyblk sl silver, bkly- sbdky, mod firm, v mot sl silty, v calc.  
 15% CHK: gy -dk crm occ m -lt brn, sl firm -hd occ brt, sbdky- sl flky, v mot, sl rthy-sl wxy, v calc, tr int dk yet flr

80% MRL: mgy-gyblk sl silver, bkly- sbdky, mod firm, v mot sl silty, v calc.  
 20% CHK: gy -dk crm occ m -lt brn, sl firm -hd occ brt, sbdky- sl flky, v mot, sl rthy-sl wxy, v calc, tr int dk yet flr

60% CHK: lt-m gy-crm occ lt brn- tan, sl firm -hd occ brt, sbdky- sl flky, v mot, sl rthy-sl wxy, v calc  
 40% MRL: mgy-gyblk sl silver, bkly- sbdky, mod firm, hom rthy, v calc, mrl-chk ctc

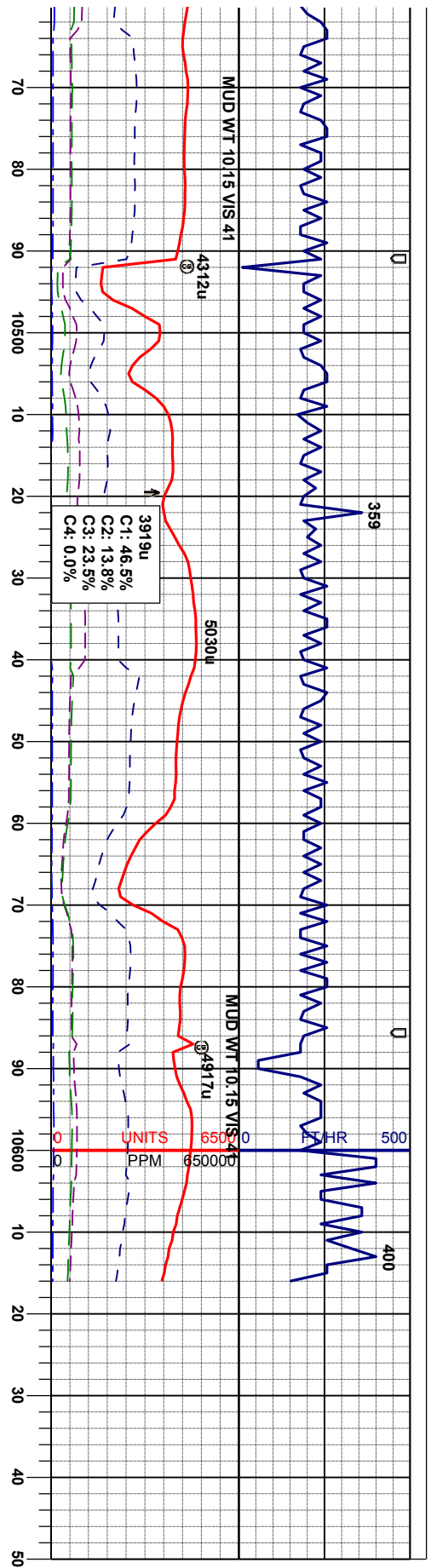
90% MR v mot sl 10% CH brt, sbdky dk yet flr

WD 10256'  
 NC 89.3°  
 AZM 180.1°  
 TVD 6215.69'

MD 10351'  
 INC 91.8°  
 AZM 178.8°  
 TVD 6214.78'

MD 10446'  
 INC 91.5°  
 AZM 179.1°  
 TVD 6212.04'





**A Marl**

L: mgy-gyblk sl silver, blk-y- sptlly, mod firm, silty, v calc.  
 K: gy -dk crm occ m -lt brn, sl firm -hd occ ky- sl flky, v mod, sl rthy-sl wxy, v calc, tr frt

95% MRL: mgy-gyblk sl silver, blk-y- sptlly, mod firm, v mot sl silty, v calc.  
 5% CHK- gy -dk crm occ m -lt brn, sl firm -hd occ bnt, sbbly- sl flky, v mod, sl rthy-sl wxy, v calc, tr frt dk yel flor

90% MRL: mgy-gyblk sl silver, blk-y- sptlly, mod firm, v mot sl silty, v calc.  
 10% CHK- gy -dk crm occ m -lt brn, sl firm -hd occ bnt, sbbly- sl flky, v mod, sl rthy-sl wxy, v calc, tr frt dk yel flor

MD 10541'  
 INC 93.1°  
 AZM 177.8°  
 TVD 6208.23'

MD 10572'  
 INC 93.6°  
 AZM 177.5°  
 TVD 6206.42'

PROJECTED  
 MD 10616'  
 INC 93.6°  
 AZM 177.5°  
 TVD 6203.65'

THANK YOU FOR USING  
 COLUMBINE LOGGING

NOBLE ENERGY INC  
 PTASNIK LC20-75HN  
 TD @ 10,616MD  
 3:30PM 9-13-12



6300

50 API 150