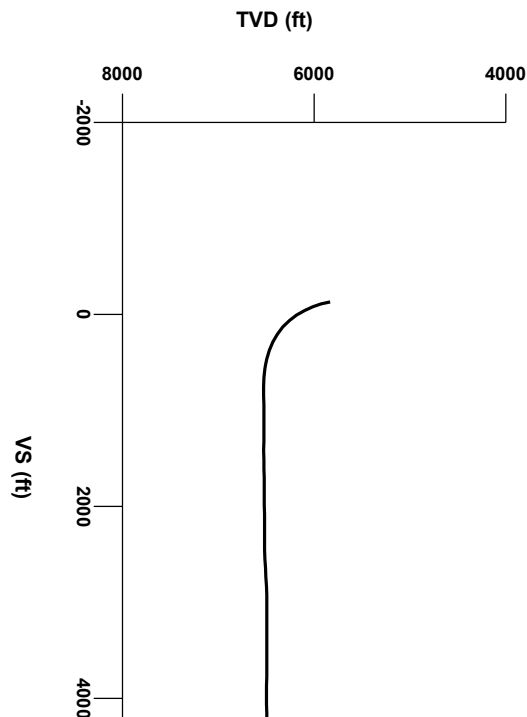


LOG created using LPLOT VH Version 3.0, April 05, 2013, Copyright (C) 1999-2009 Pason Systems Corp.

**OPERATOR:** NOBLE ENERGY INC.  
**WELL:** KUMMER PC LE23-65HN  
**LOCATION:** SEC 23 T8N R61W  
**COUNTY:** WELD  
**STATE:** COLORADO  
**SPOT:** 2272' FSL; 255' FWL  
**ELEVATION:** 4982' GL; 5006' KB  
**FIELD:** WILDCAT  
**SPUD DATE:** 03/28/2013  
**TD DATE:** 04/04/2013  
**DATES LOGGED:** 03/31/2013 - 04/04/2013  
**DEPTHS LOGGED:** 5800' - 10742' MD  
**LOGGERS:** LAURA KELLOGG; CONOR PESICKA  
**DRILLING FLUID:** LSND  
**DRILLING RIG:** H&P 273  
**API:** 05-123-36682  
**LOG TYPE:** HORIZONTAL  
**SCALE:** 1:240 (5 inches per 100 feet)  
**REMARKS:** WELLSITE GEOLOGICAL SERVICES  
 PROVIDED BY COLUMBINE LOGGING INC.



Survey Plan

6000

N/S (ft)



0

2000

4000

6000

E/W (ft)

-2000


0

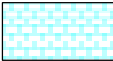
2000


4000

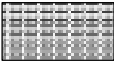
6000

LITHOLOGIES


Bentonite


Chalk


Marl


Silty Shale


ENGINEERING SYMBOLS

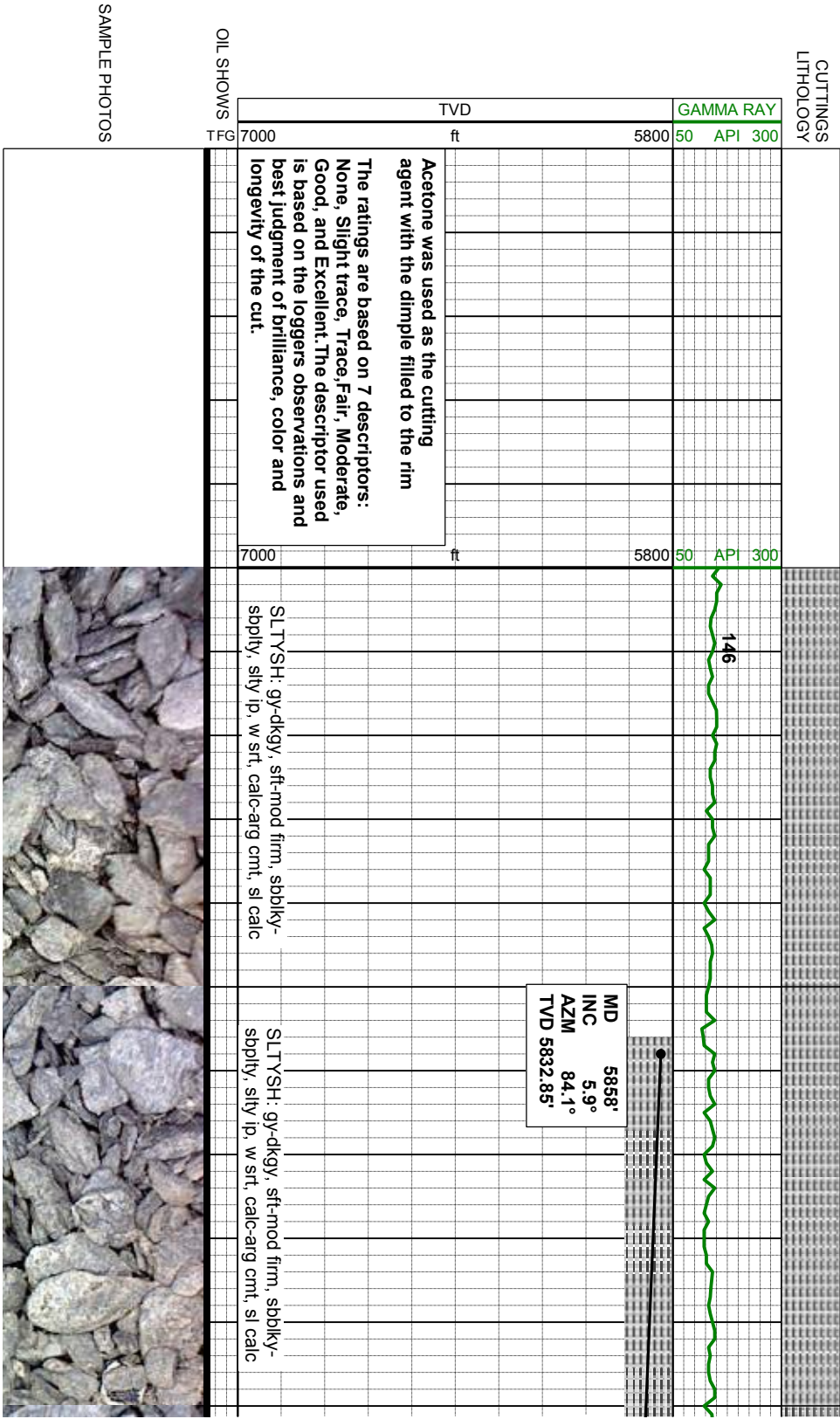
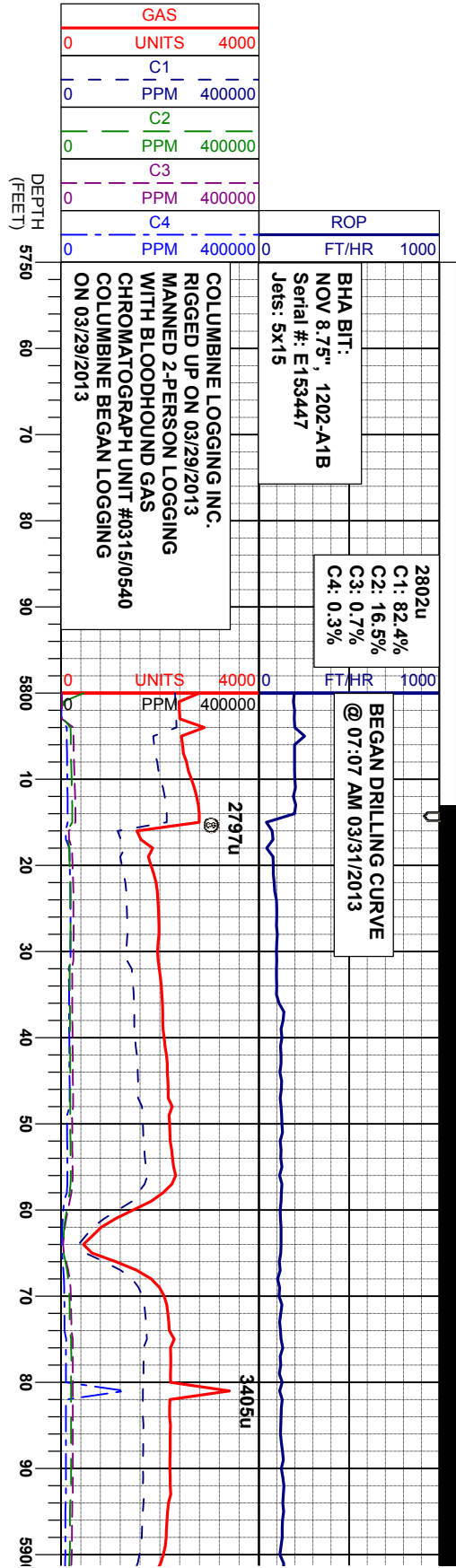
Casing

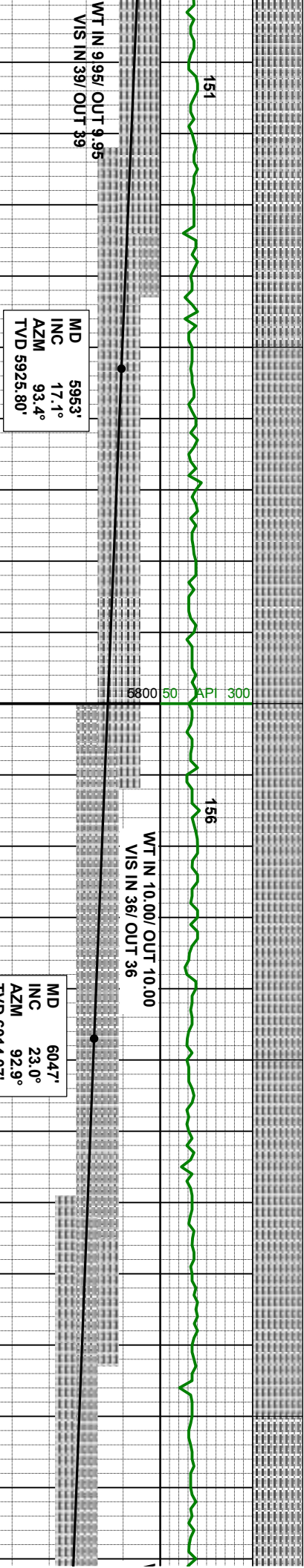
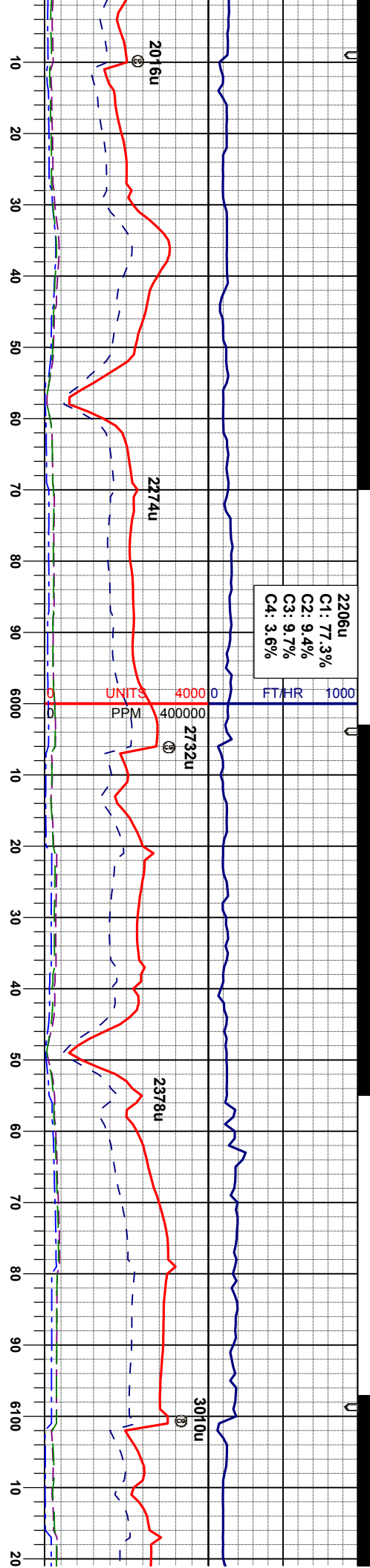
Casing

Connection

Connection Gas

Midnight Depth

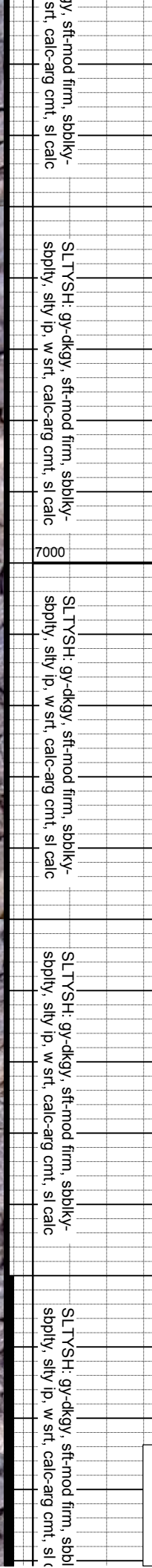
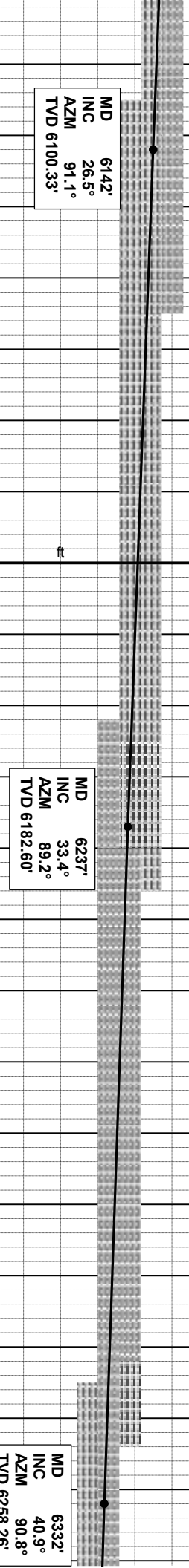
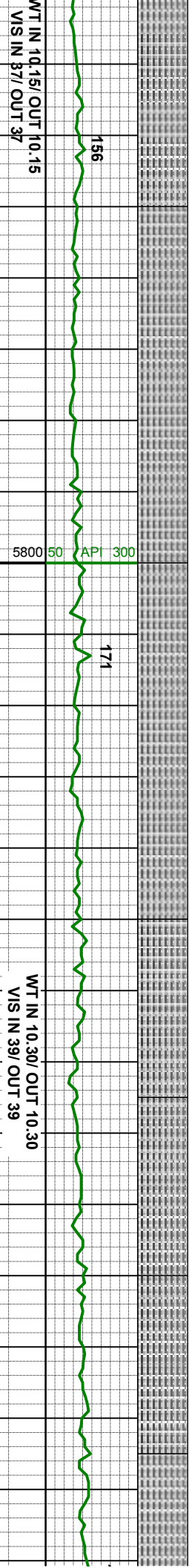
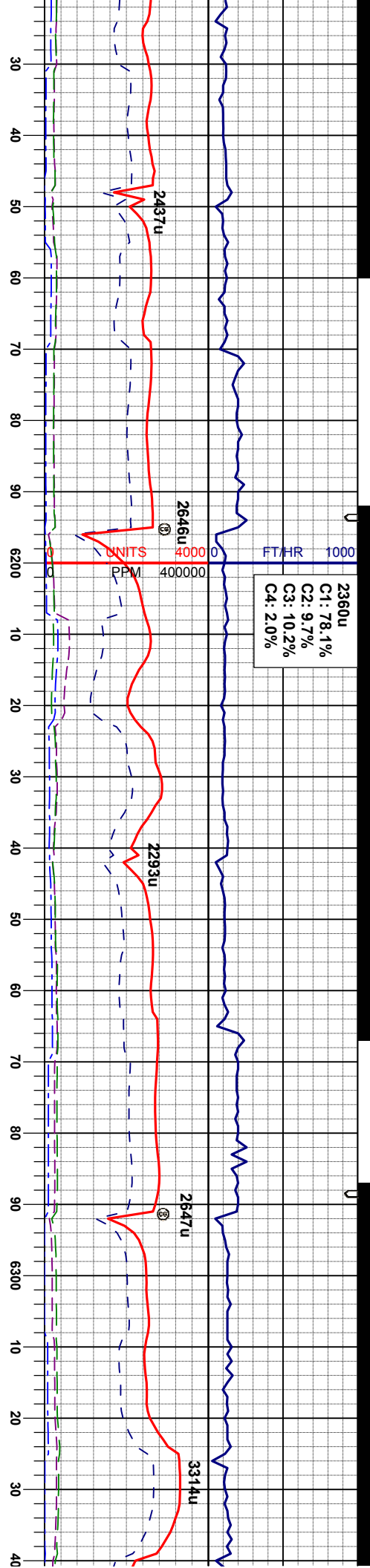




SLTYSH: gy-dkgy, sft-mod firm, sbblky-sbply, slty ip, w srt, calc-arg cnt, sl calc	SLTYSH: gy-dkgy, sft-mod firm, sbblky-sbply, slty ip, w srt, calc-arg cnt, sl calc	SLTYSH: gy-dkgy, sft-mod firm, sbblky-sbply, slty ip, w srt, calc-arg cnt, sl calc	SLTYSH: gy-dkgy, sft-mod firm, sbblky-sbply, slty ip, w srt, calc-arg cnt, sl calc
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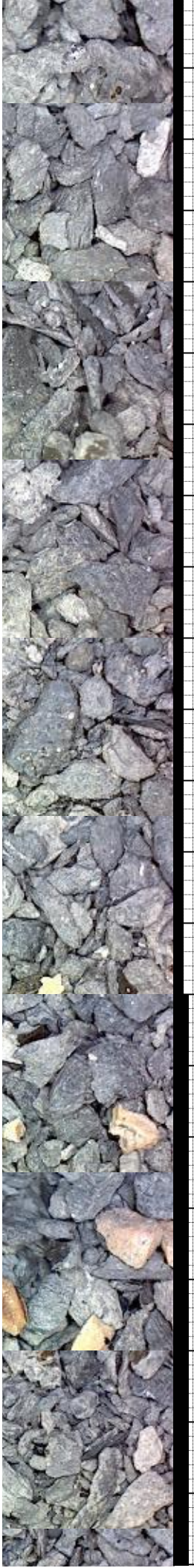
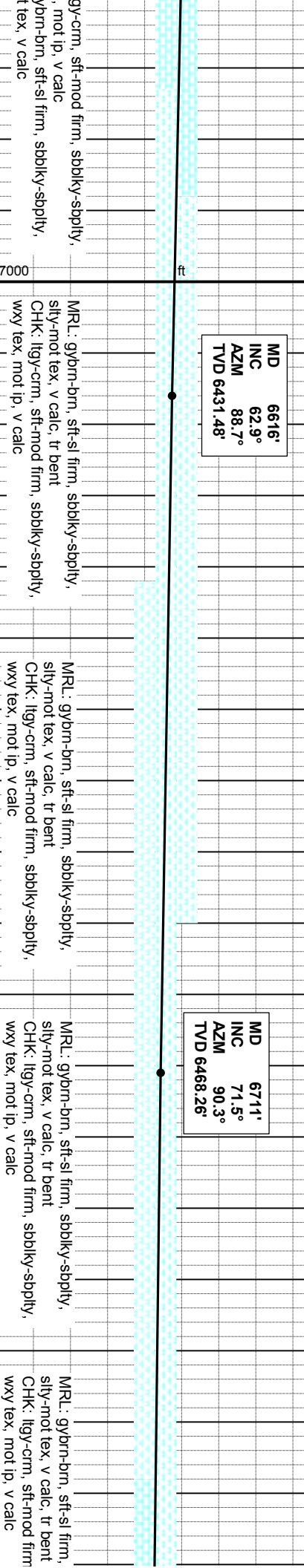
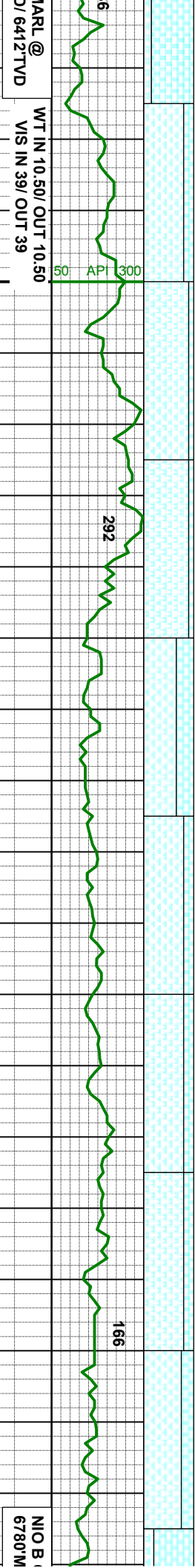
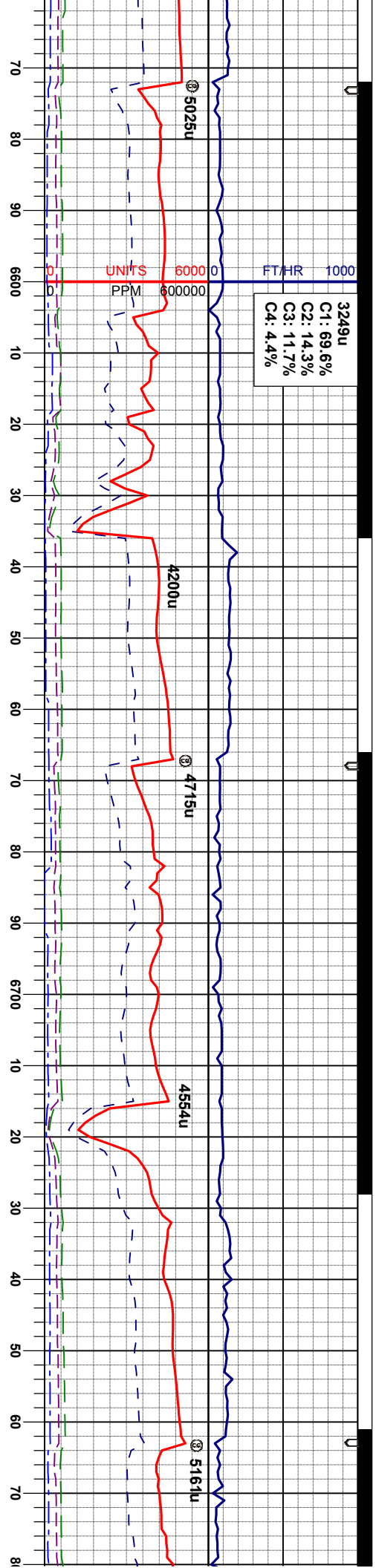














5041u  
C1: 64.1%  
C2: 16.7%  
C3: 12.8%  
C4: 6.4%

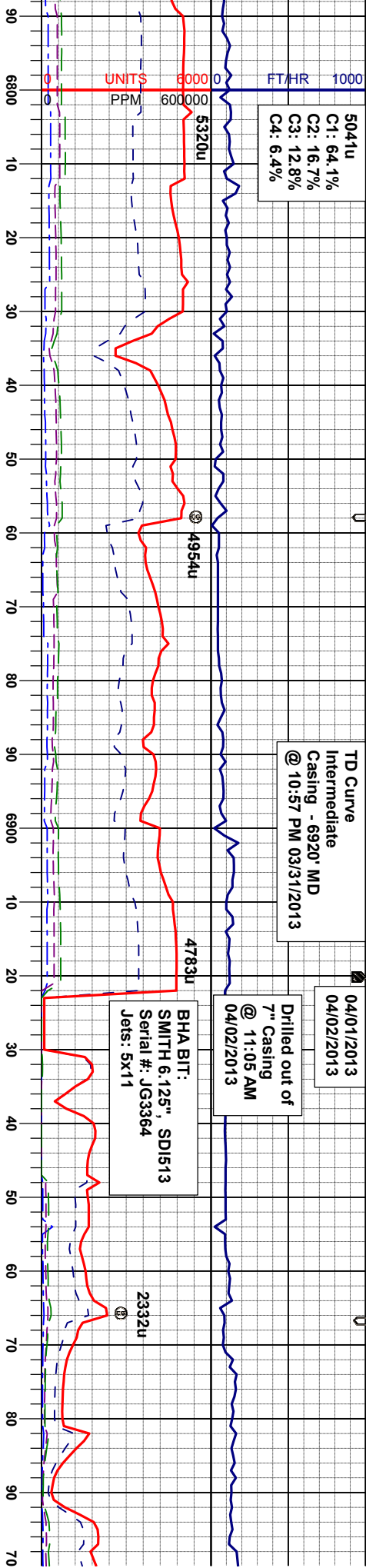
FT/HR 1000

TD Curve  
Intermediate  
Casing - 6920' MD  
@ 10:57 PM 03/31/2013

04/01/2013  
04/02/2013

Drilled out of  
7" Casing  
@ 11:05 AM  
04/02/2013

BHA BIT:  
SMITH 6.125", SD1513  
Serial #: JG3364  
Jets: 5x11



CHALK @  
D/6488 TVD

MD 6806'  
INC 75.4°  
AZM 87.6°  
TVD 6495.32'

MD 6870'  
INC 80.1°  
AZM 89.2°  
TVD 6508.90'

MD 6910'  
INC 82.4°  
AZM 89.0°  
TVD 6514.98'

WT IN 10.80/ OUT 10.80  
VIS IN 39/ OUT 39

NIO B MARL @  
6901 MD/ 6513 TVD

WT IN 10.80/ OUT 10.80  
VIS IN 40/ OUT 40

sbblky-sbply,  
n, sbblky-sbply,  
7000

CHK: lly-crm, sft-mod firm, sbblky-sbply,  
wxy tex, mot ip, v calc  
MRL: gybrn-brn, sft-sl firm, sbblky-sbply,  
sily-mot tex, v calc, tr calcite

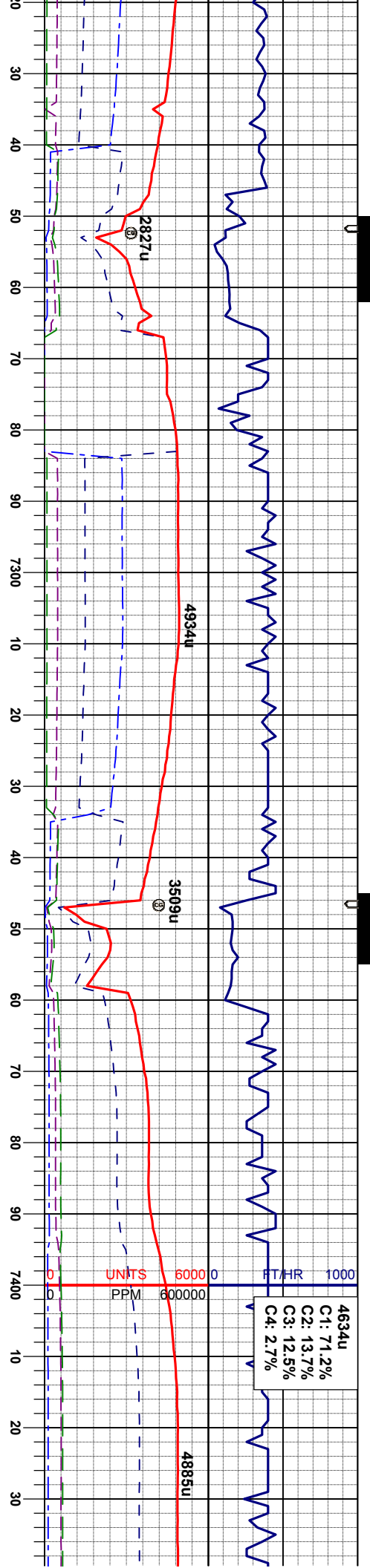
MRL: gybrn-brn, sft-sl firm, sbblky-sbply,  
sily-mot tex, v calc, abnt bent, abnt fos  
CHK: lly-crm, sft-mod firm, sbblky-sbply,  
wxy tex, mot ip, v calc, occ cnt

MRL: gybrn-brn, sft-sl firm, sbblky-sbply,  
sily-mot tex, v calc, abnt bent, abnt fos  
CHK: lly-crm, sft-mod firm, sbblky-sbply,  
wxy tex, mot ip, occ bent, v calc

MD 6910'  
INC 82.4°  
AZM 89.0°  
TVD 6514.98'







MD 7290'  
INC 90.4°  
AZM 88.5°  
TVD 6525.41'

MD 7385'  
INC 90.7°  
AZM 87.6°  
TVD 6524.50'

WT IN 9.80/ OUT 9.80  
VIS IN 36/ OUT 36

MR.L: gybrn-brn, sft-sl firm, sbblky-sbply,  
sily-mot tex, v calc, abnt bent, abnt fos  
CHK: ilgy-crm, sft-mod firm, sbblky-sbply,  
wxy tex, mot ip, abnt bent, v calc

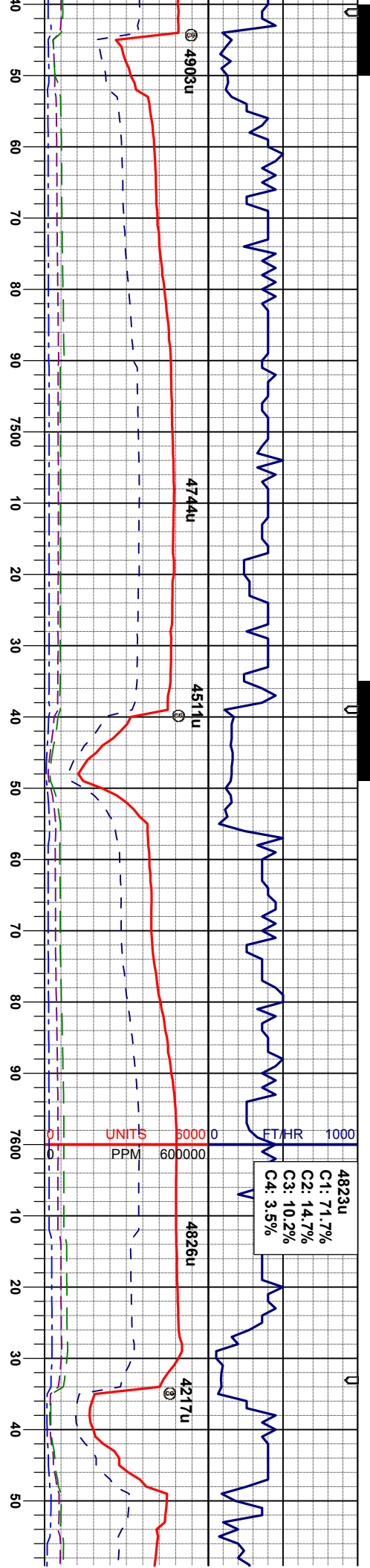
MR.L: gybrn-brn, sft-sl firm, sbblky-sbply,  
sily-mot tex, v calc, abnt bent, abnt fos  
CHK: ilgy-crm, sft-mod firm, sbblky-sbply,  
wxy tex, mot ip, abnt bent, v calc

MR.L: gybrn-brn, sft-sl firm, sbblky-sbply,  
sily-mot tex, v calc, abnt bent, abnt fos  
CHK: ilgy-crm, sft-mod firm, sbblky-sbply,  
wxy tex, mot ip, abnt bent, v calc

MR.L: gybrn-brn, sft-sl firm, sbblky-s  
sily-mot tex, v calc, abnt bent w/ pyr  
abnt fos  
CHK: ilgy-crm, sft-mod firm, sbblky-  
wxy tex, mot ip, v calc







MD 7480'  
INC 90.9°  
AZM 86.9°  
TVD 6523.17'

WT IN 9.80/ OUT 9.80  
VIS IN 36/ OUT 36

MD 7574'  
INC 88.7°  
AZM 87.5°  
TVD 6523.50'

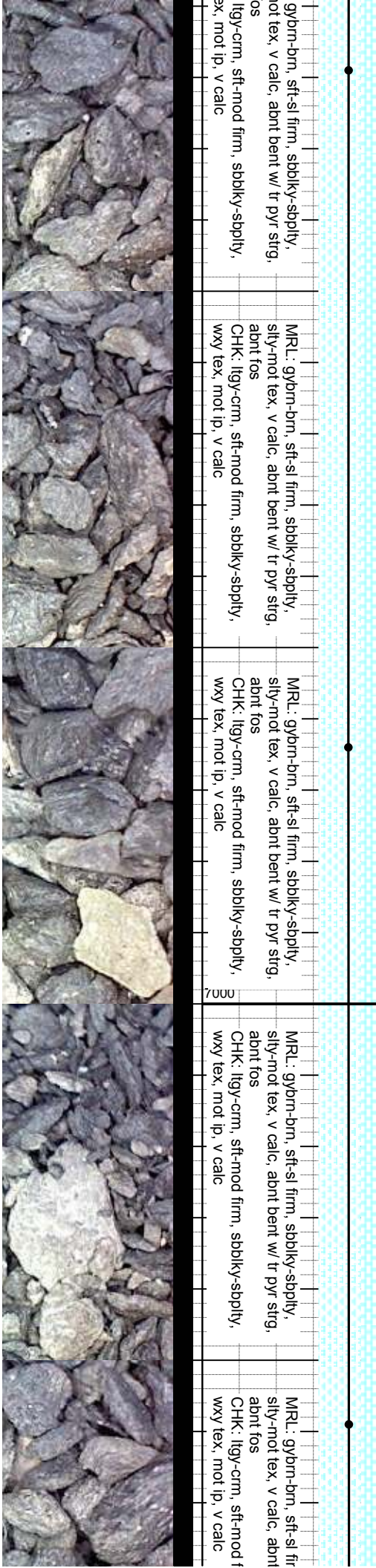
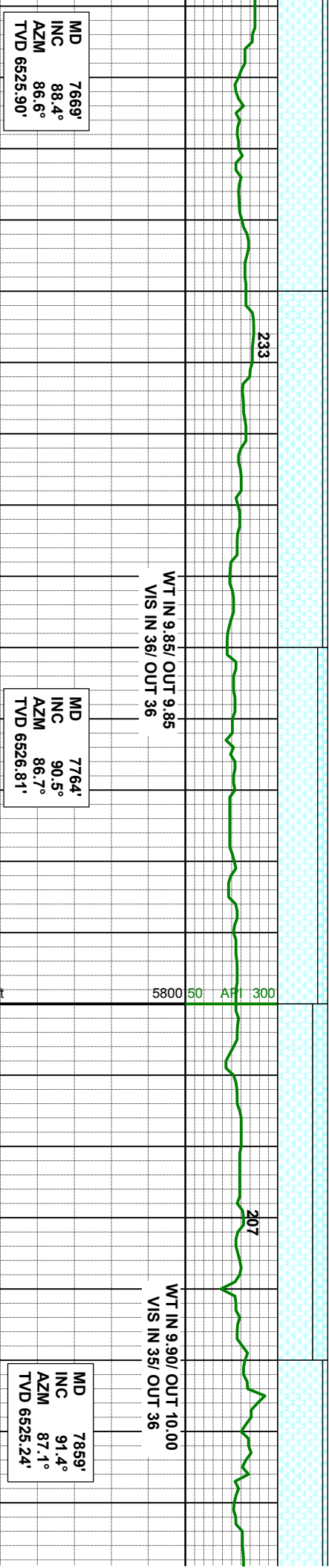
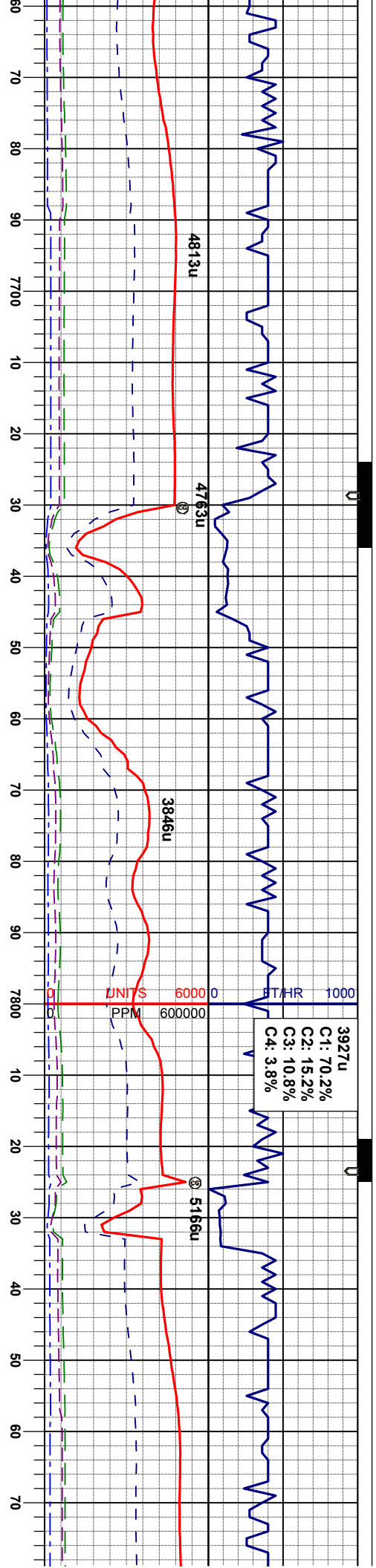
MRL: gybrn-brn, sft-sl firm, sbblky-sbply, silty-mot tex, v calc, abnt bent w/ tr pyr strg, abnt fos  
CHK: ltgy-crm, sft-mod firm, sbblky-sbply, wxy tex, mot ip, v calc

MRL: gybrn-brn, sft-sl firm, sbblky-sbply, silty-mot tex, v calc, abnt bent w/ tr pyr strg, abnt fos  
CHK: ltgy-crm, sft-mod firm, sbblky-sbply, wxy tex, mot ip, v calc

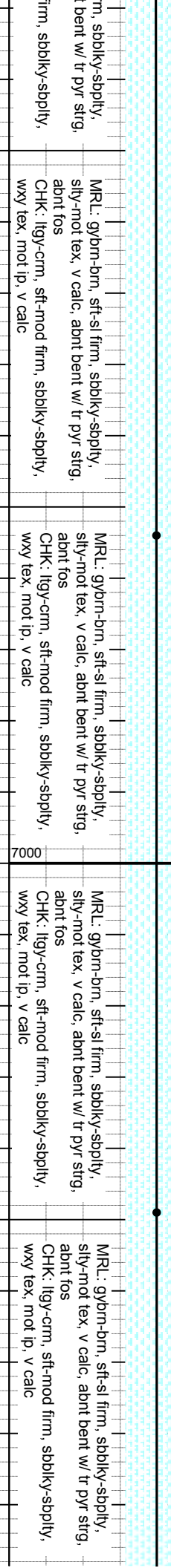
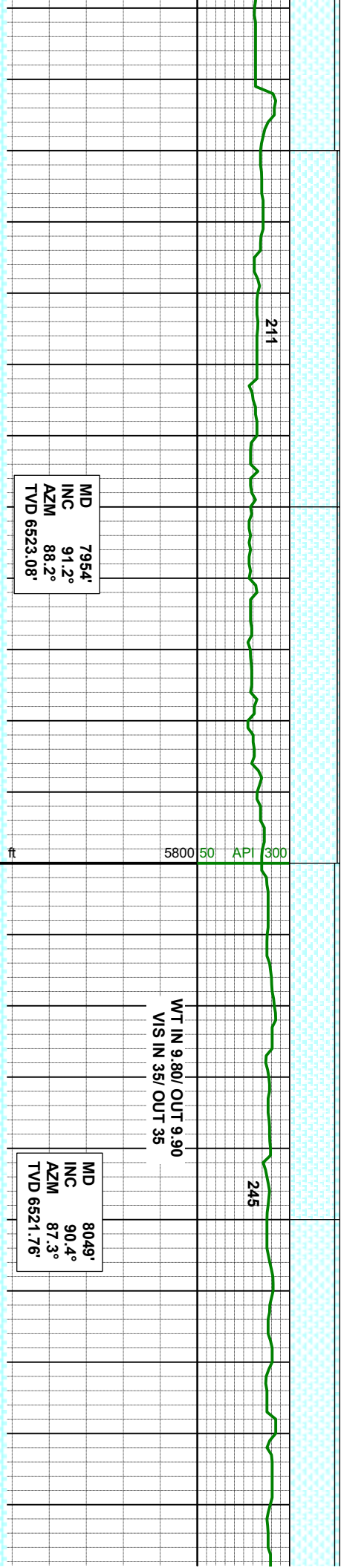
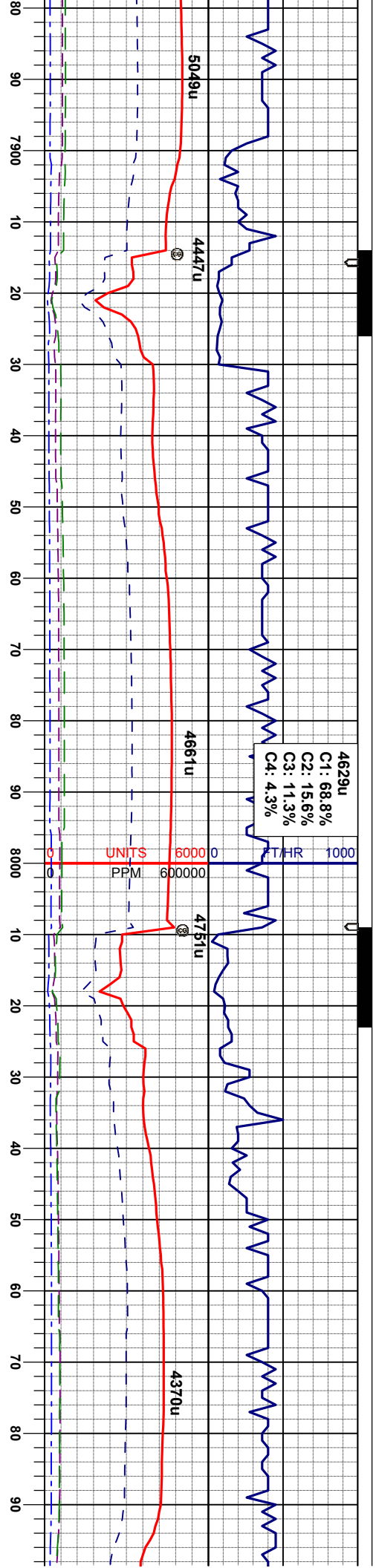
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CHK: ltgy-crm, sft-mod firm, sbblky-sbply, wxy tex, mot ip, v calc







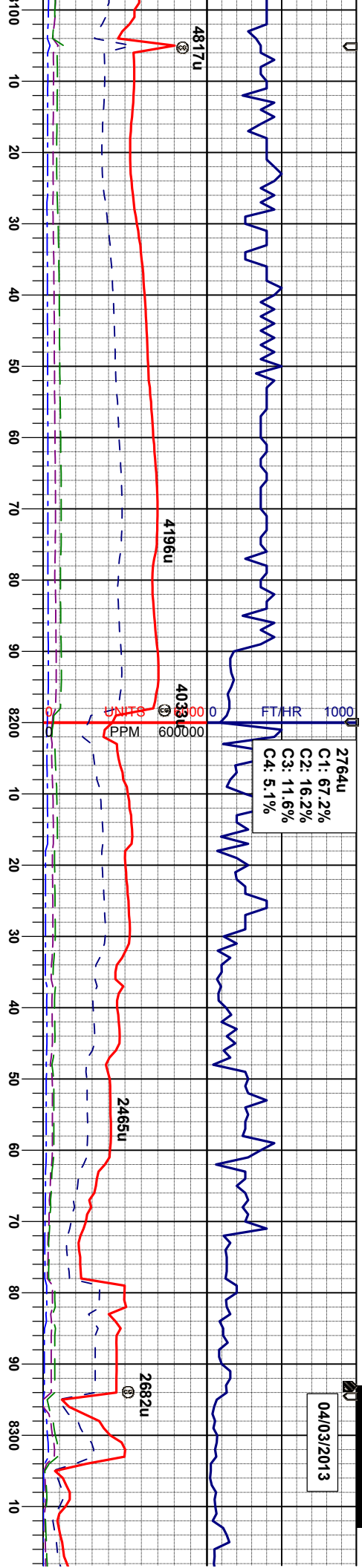






04/03/2013

2764u  
C1: 67.2%  
C2: 16.2%  
C3: 11.6%  
C4: 5.1%



MD 8144'  
INC 90.5°  
AZM 86.2°  
TVD 6521.01'

MRL: gybrn-brn, sft-sl firm, sbbiky-sbply,  
sily-mot tex, v calc, abnt bent w/ tr pyr strg,  
abnt fos  
CHK: llyg-crm, sft-mod firm, sbbiky-sbply,  
wxy tex, mot ip, v calc

MRL: gybrn-brn, sft-sl firm, sbbiky-sbply,  
sily-mot tex, v calc, abnt fos  
BENT: llyg-lbrn, sft, sbply-pty, sily-sdy  
tex, abnt pyr strg, rr xl pyr  
CHK: llyg-crm, sft-mod firm, sbbiky-sbply,  
wxy tex, mot ip, v calc

MD 8238'  
INC 90.6°  
AZM 85.3°  
TVD 6520.11'

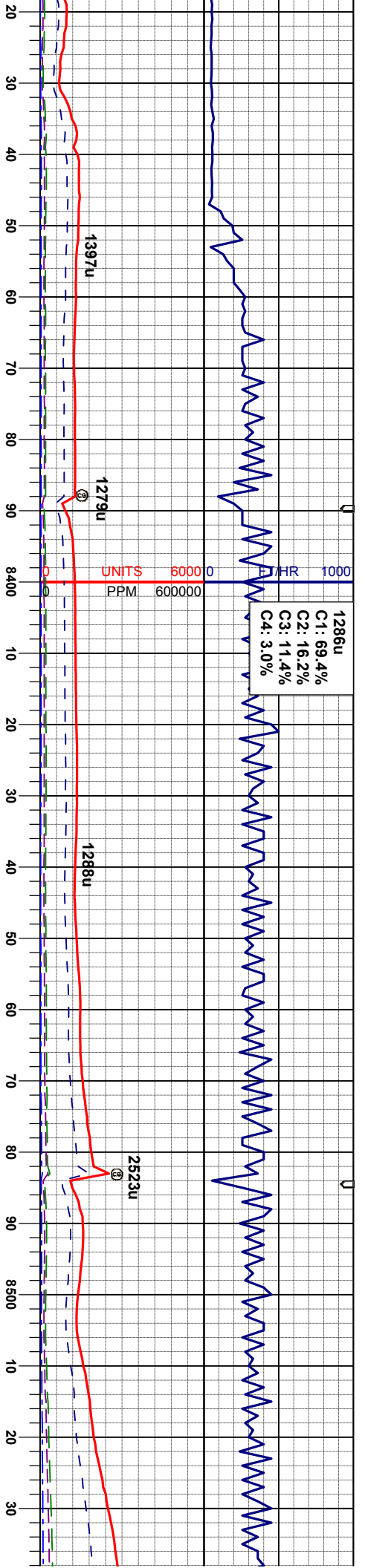
MRL: gybrn-brn, sft-sl firm, sbbiky-sbply,  
sily-mot tex, v calc, abnt fos  
BENT: llyg-lbrn, sft, sbply-pty, sily-sdy  
tex, abnt pyr strg, rr xl pyr  
CHK: llyg-crm, sft-mod firm, sbbiky-sbply,  
wxy tex, mot ip, v calc

MRL: gybrn-brn, sft-sl firm, sbbiky-sbply,  
sily-mot tex, v calc, abnt fos  
BENT: llyg-lbrn, sft, sbply-pty, sily-sdy  
tex, abnt pyr strg, rr xl pyr  
CHK: llyg-crm, sft-mod firm, sbbiky-sbply,  
wxy tex, mot ip, v calc

MRL: gybrn-brn, sft-sl firm, sbbiky-sbply,  
sily-mot tex, v calc, abnt fos  
BENT: llyg-lbrn, sft, sbply-pty, sily-sdy  
tex, abnt pyr strg, rr xl pyr  
CHK: llyg-crm, sft-mod firm, sbbiky-sbply,  
wxy tex, mot ip, v calc

WT IN 10.10/ OUT 10.  
VIS IN 38/ OUT 38





MD 8333'  
INC 90.3°  
AZM 89.7°  
TVD 6519.36'

MR: gybm-brn, sft-sl firm, sbbky-sbply,  
sily-mot tex, v calc  
BENT: llyg-lbrn, sft, sbply-pily, sily-sdy  
tex, abnt pyr strg, rr xl pyr  
CHK: llyg-crm, sft-mod firm, sbbky-sbply,  
wxy tex, mot lp, v calc

MR: gybm-brn, sft-sl firm, sbbky-sbply,  
sily-mot tex, v calc  
BENT: llyg-lbrn, sft, sbply-pily, sily-sdy  
tex, abnt pyr strg, rr xl pyr  
CHK: llyg-crm, sft-mod firm, sbbky-sbply,  
wxy tex, mot lp, v calc

MD 8428'  
INC 90.2°  
AZM 90.3°  
TVD 6518.95'

MR: gybm-brn, sft-sl firm, sbbky-sbply,  
sily-mot tex, v calc  
BENT: llyg-lbrn, sft, sbply-pily, sily-sdy  
tex, abnt pyr strg, rr xl pyr  
CHK: llyg-crm, sft-mod firm, sbbky-sbply,  
wxy tex, mot lp, v calc

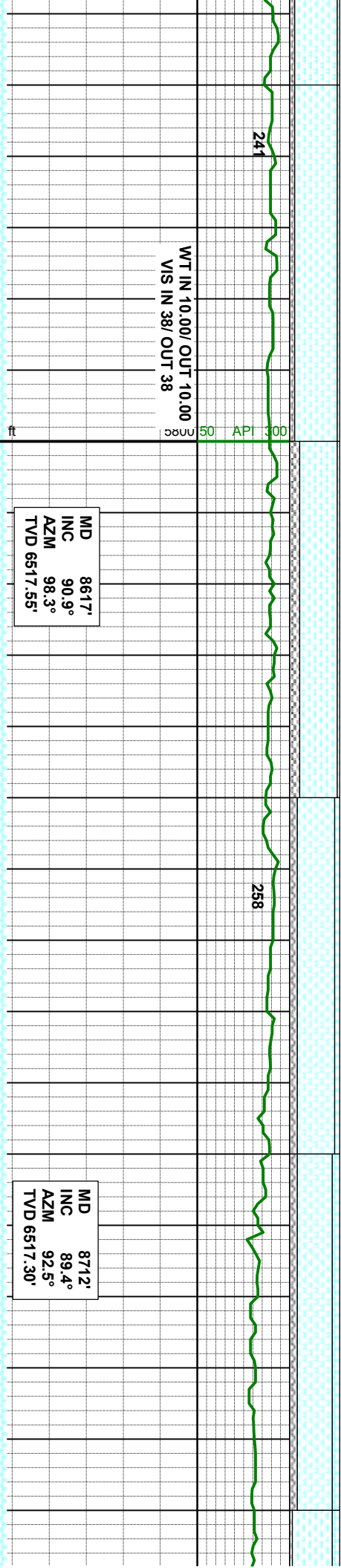
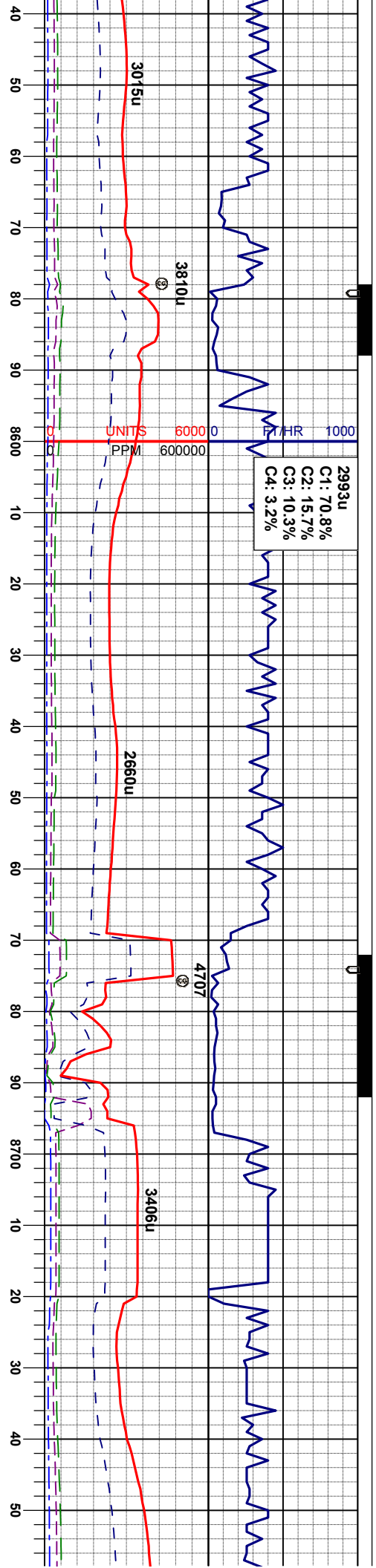
MR: gybm-brn, sft-sl firm, sbbky-sbply,  
sily-mot tex, v calc  
BENT: llyg-lbrn, sft, sbply-pily, sily-sdy  
tex, abnt pyr strg, rr xl pyr  
CHK: llyg-crm, sft-mod firm, sbbky-sbply,  
wxy tex, mot lp, v calc

MD 8523'  
INC 90.3°  
AZM 94.0°  
TVD 6518.53'

MR: gybm-brn, sft-sl firm, sbbky-sbply,  
sily-mot tex, v calc, tr fos frag  
BENT: llyg-lbrn, sft, sbply-pily, sily  
tex, abnt pyr strg, rr xl pyr  
CHK: llyg-crm, sft-mod firm, sbbky  
wxy tex, mot lp, v calc







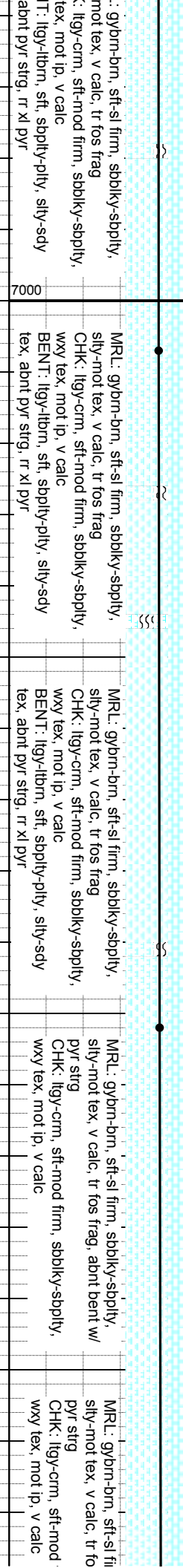
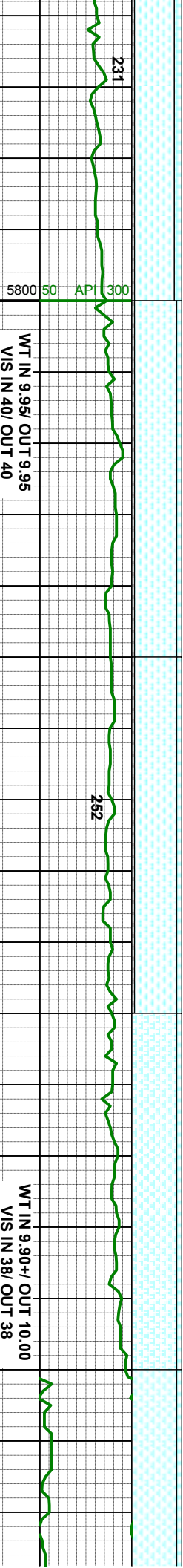
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BENT: llyl-lbrn, sft, sbply-plty, silty-sdy tex, abnt pyr strg, tr xl pyr  
CHK: llyl-crm, sft-mod firm, sbbly-sbply, wxy tex, mot ip, v calc

MR: gylm-brn, sft-sl firm, sbbly-sbply, silty-mot tex, v calc, tr fos frag  
BENT: llyl-lbrn, sft, sbply-plty, silty-sdy tex, abnt pyr strg, tr xl pyr  
CHK: llyl-crm, sft-mod firm, sbbly-sbply, wxy tex, mot ip, v calc

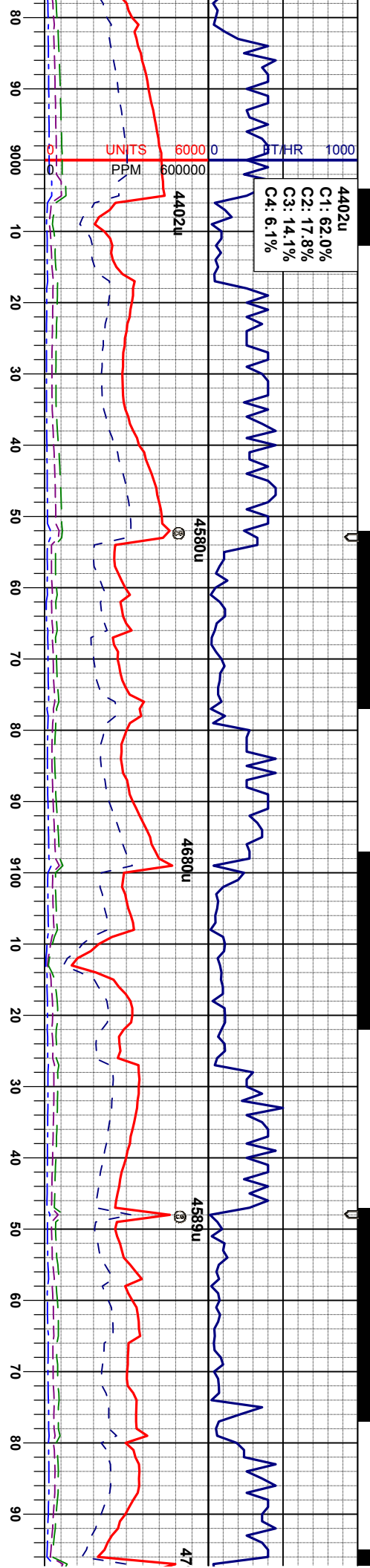
MR: gylm-brn, sft-sl firm, sbbly-sbply, silty-mot tex, v calc, tr fos frag  
BENT: llyl-lbrn, sft, sbply-plty, silty-sdy tex, abnt pyr strg, tr xl pyr  
CHK: llyl-crm, sft-mod firm, sbbly-sbply, wxy tex, mot ip, v calc











MD 8997'  
INC 93.1°  
AZM 87.8°  
TVD 6508.27'

MD 9092'  
INC 93.3°  
AZM 85.7°  
TVD 6502.96'

MD 9186'  
INC 92.4°  
AZM 85.3°  
TVD 6498.29'

firm, sbblky-sbply, sfrag, abnt bent w/ pyr stg  
MR.L: gybrn-brn, sft-sl firm, sbblky-sbply, silty-mot tex, v calc, tr fos frag, abnt bent w/ pyr stg  
CHK: ltgy-crm, sft-mod firm, sbblky-sbply, wxy tex, mot ip, v calc

firm, sbblky-sbply, sfrag, abnt bent w/ pyr stg  
MR.L: gybrn-brn, sft-sl firm, sbblky-sbply, silty-mot tex, v calc, abnt fos frag, abnt bent w/ pyr stg  
CHK: ltgy-crm, sft-mod firm, sbblky-sbply, wxy tex, mot ip, v calc

firm, sbblky-sbply, sfrag, abnt bent w/ pyr stg  
MR.L: gybrn-brn, sft-sl firm, sbblky-sbply, silty-mot tex, v calc, abnt fos frag  
CHK: ltgy-crm, sft-mod firm, sbblky-sbply, wxy tex, mot ip, v calc  
BENT: ltgy-lbrn, sft, sbply-pity, silty-sdy tex, abnt pyr stg

WT IN 9.90/ OUT 9.90  
VIS IN 38/ OUT 38

WT IN 9.90/ OUT 9.90  
VIS IN 38/ OUT 38

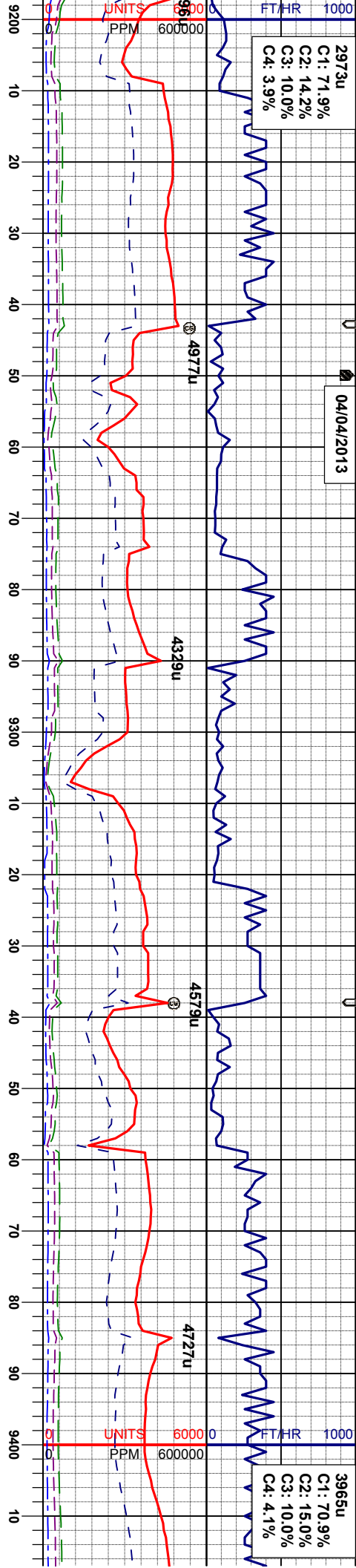




04/04/2013

2973u  
C1: 71.9%  
C2: 14.2%  
C3: 10.0%  
C4: 3.9%

3965u  
C1: 70.9%  
C2: 15.0%  
C3: 10.0%  
C4: 4.1%



FAULT  
9215' MD  
6497' TVD  
7' Downward  
throw

MD 9282'  
INC 92.2°  
AZM 84.3°  
TVD 6494.44'

WT IN 9.90/ OUT 9.90  
VIS IN 38/ OUT 38

MD 9376'  
INC 89.9°  
AZM 83.6°  
TVD 6492.71'

MRL: gybm-brn, sft-sl firm, sbblky-sbply,  
sily-mot tex, v calc, abnt fos frag, abnt bent  
w/ pyr stfg  
CHK: ltgy-crm, sft-mod firm, sbblky-sbply,  
wxy tex, mot ip, v calc

MRL: gybm-brn, sft-sl firm, sbblky-sbply,  
sily-mot tex, v calc, abnt fos frag, abnt bent  
w/ pyr stfg  
CHK: ltgy-crm, sft-mod firm, sbblky-sbply,  
wxy tex, mot ip, v calc

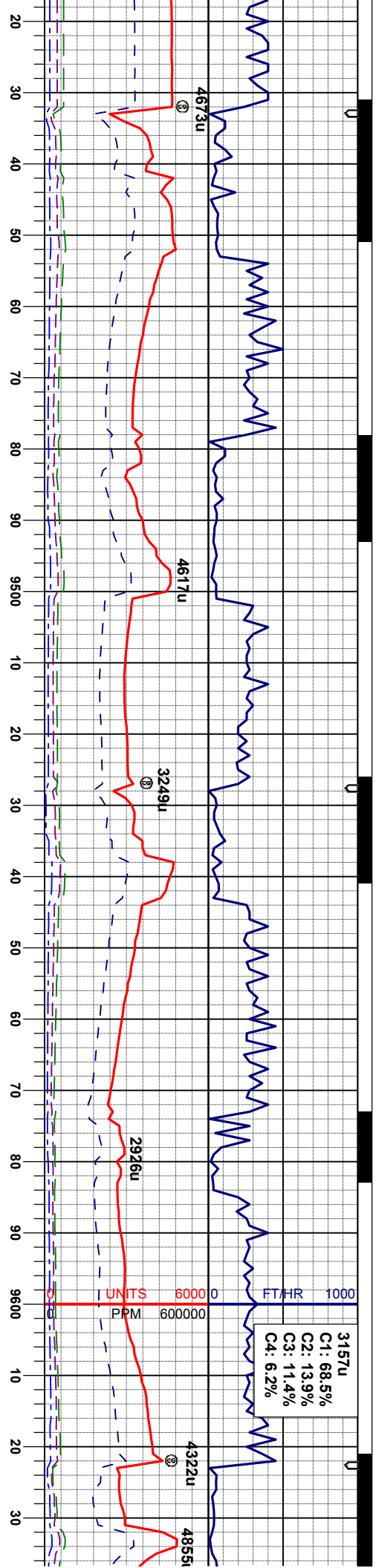
MRL: gybm-brn, sft-sl firm, sbblky-sbply,  
sily-mot tex, v calc, abnt fos frag, abnt bent  
w/ pyr stfg  
CHK: ltgy-crm, sft-mod firm, sbblky-sbply,  
wxy tex, mot ip, v calc

MRL: gybm-brn, sft-sl firm, sbblky-sbply,  
sily-mot tex, v calc, abnt fos frag, abnt bent  
w/ pyr stfg  
CHK: ltgy-crm, sft-mod firm, sbblky-sbply,  
wxy tex, mot ip, v calc

MRL: gybm-brn, sft-sl firm, sbblky-sbply,  
sily-mot tex, v calc, abnt fos frag, abnt bent  
w/ pyr stfg  
CHK: ltgy-crm, sft-mod firm, sbblky-sbply,  
wxy tex, mot ip, v calc







WT IN 9.90/ OUT 9.90  
VIS IN 38/ OUT 38

MD 9471'  
INC 89.4°  
AZM 83.6°  
TVD 6493.29'

WT IN 9.90/ OUT 9.90  
VIS IN 38/ OUT 38

MD 9566'  
INC 88.5°  
AZM 85.7°  
TVD 6495.03'

MRU: gybm-brn, sft-sl firm, sbblky-sbply,  
sily-mot tex, v calc, abnt fos frag, abnt bent  
w/ pyr stg  
CHK: ltgy-crm, sft-mod firm, sbblky-sbply,  
wxy tex, mot ip, v calc

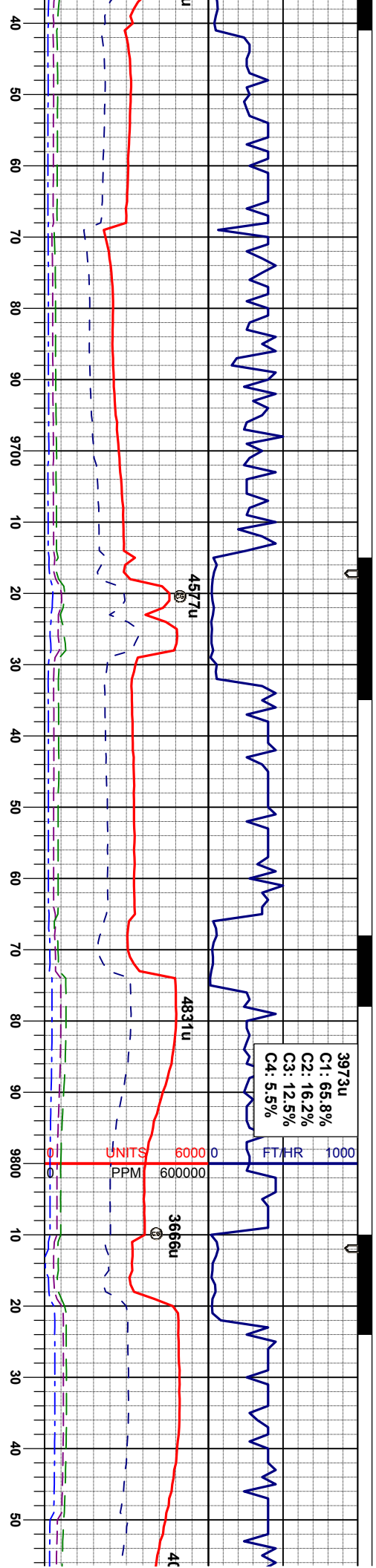
MRU: gybm-brn, sft-sl firm, sbblky-sbply,  
sily-mot tex, v calc, abnt fos frag, abnt bent  
w/ pyr stg  
CHK: ltgy-crm, sft-mod firm, sbblky-sbply,  
wxy tex, mot ip, v calc

MRU: gybm-brn, sft-sl firm, sbblky-sbply,  
sily-mot tex, v calc, abnt fos frag, abnt bent  
w/ pyr stg  
CHK: ltgy-crm, sft-mod firm, sbblky-sbply,  
wxy tex, mot ip, v calc

MRU: gybm-brn, sft-sl firm, sbblky-sbply,  
sily-mot tex, v calc, calc incl, tr fos  
abnt bent w/ pyr stg  
CHK: ltgy-crm, sft-mod firm, sbblky-sbply,  
wxy tex, mot ip, v calc







MD 966.1'  
INC 90.7°  
AZM 88.0°  
TVD 6495.70'

MD 9755'  
INC 89.6°  
AZM 87.1°  
TVD 6495.45'

MD 9851'  
INC 90.1°  
AZM 88.3°  
TVD 6495.70'

MRL: gybm-brn, sft-sl firm, sbblky-sbply,  
sily-mot tex, v calc, calc incl, tr fos frag,  
abnt bent w/ pyr strg  
CHK: ilgy-crm, sft-mod firm, sbblky-sbply,  
wxy tex, mot ip, v calc

MRL: gybm-brn, sft-sl firm, sbblky-sbply,  
sily-mot tex, v calc, calc incl, tr fos frag,  
abnt bent w/ pyr strg  
CHK: ilgy-crm, sft-mod firm, sbblky-sbply,  
wxy tex, mot ip, v calc

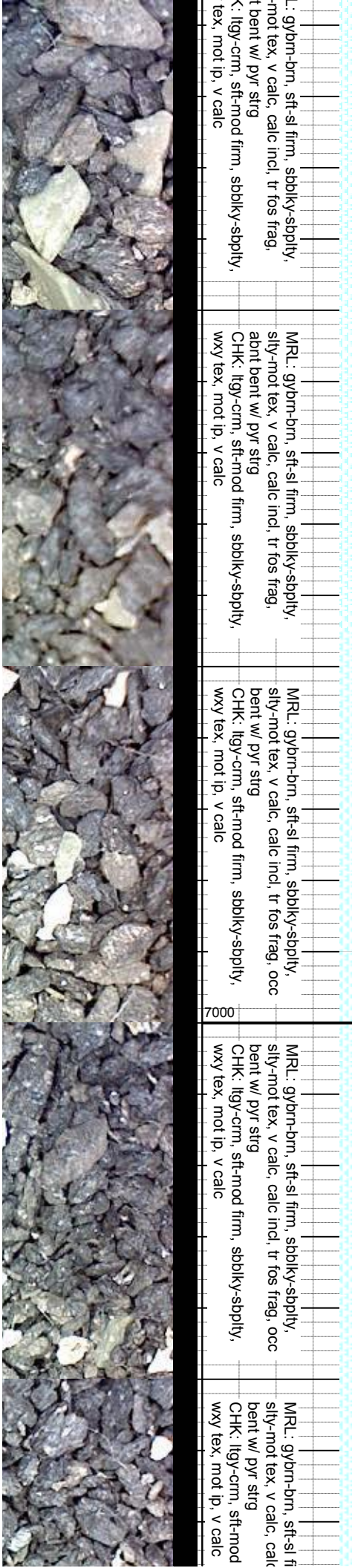
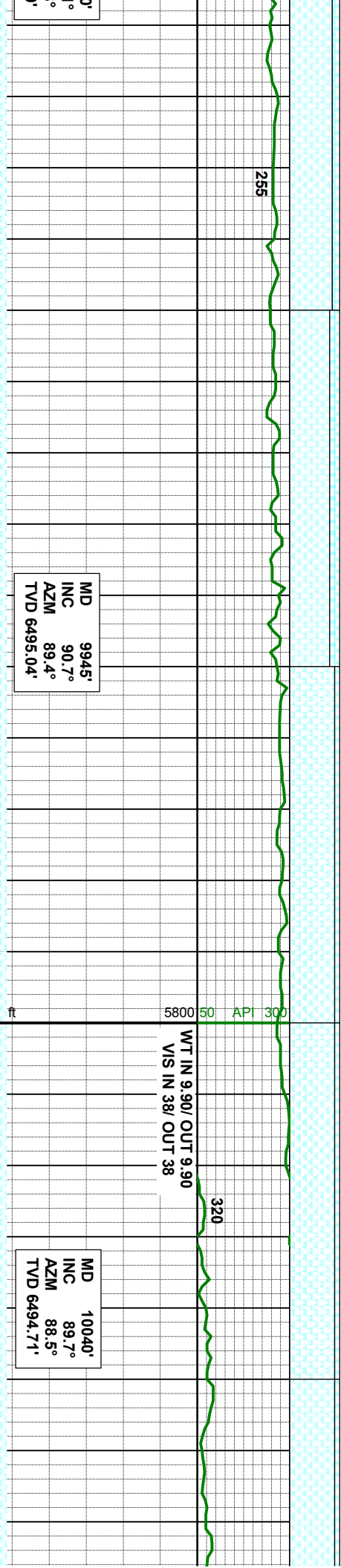
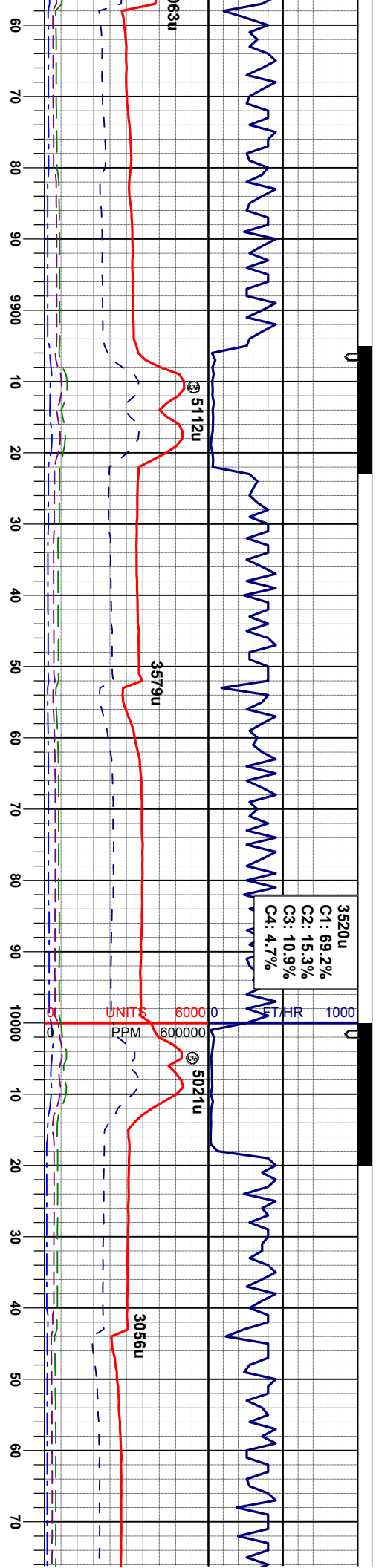
MRL: gybm-brn, sft-sl firm, sbblky-sbply,  
sily-mot tex, v calc, calc incl, tr fos frag,  
abnt bent w/ pyr strg  
CHK: ilgy-crm, sft-mod firm, sbblky-sbply,  
wxy tex, mot ip, v calc

MRL: gybm-brn, sft-sl firm, sbblky-sbply,  
sily-mot tex, v calc, calc incl, tr fos frag,  
abnt bent w/ pyr strg  
CHK: ilgy-crm, sft-mod firm, sbblky-sbply,  
wxy tex, mot ip, v calc

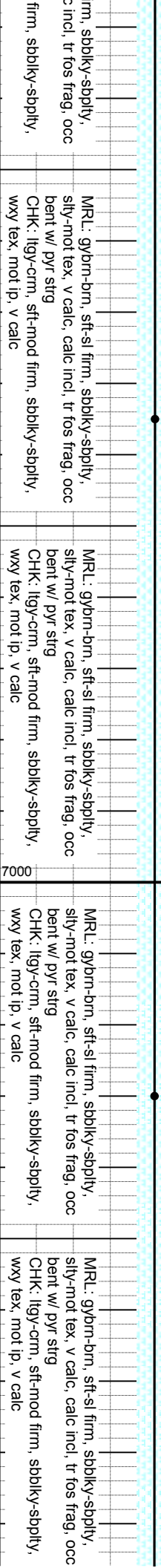
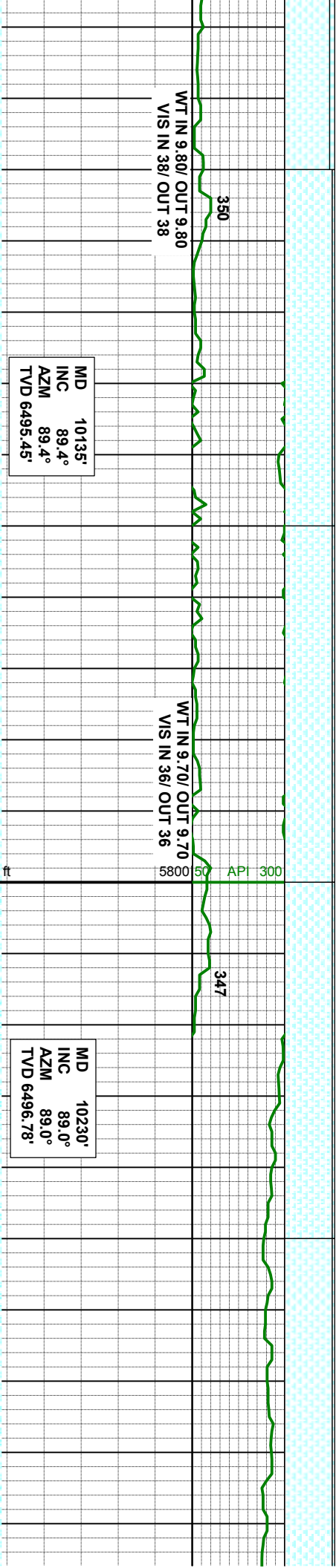
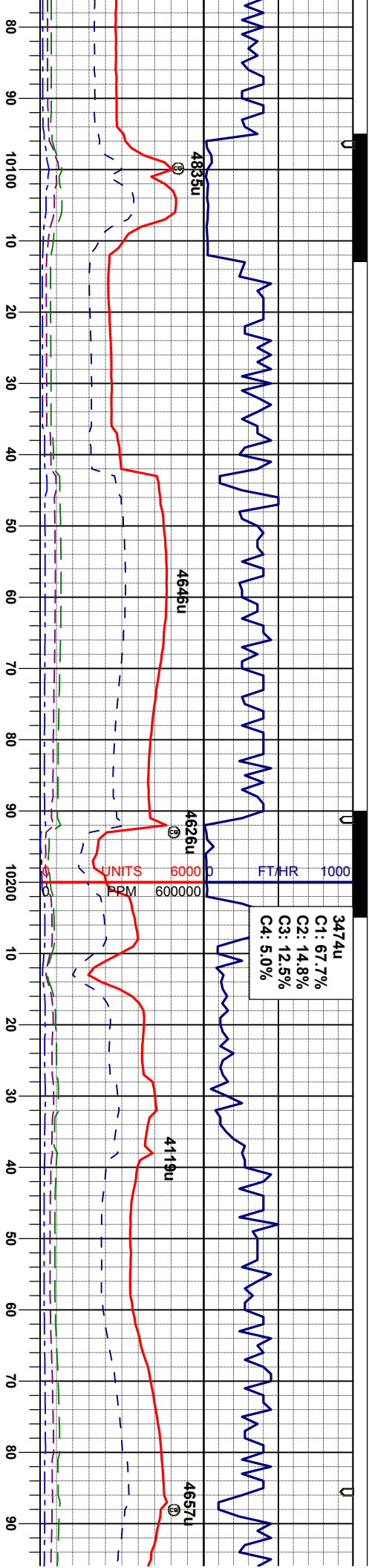
MRL: gybm-brn, sft-sl firm, sbblky-sbply,  
sily-mot tex, v calc, calc incl, tr fos frag,  
abnt bent w/ pyr strg  
CHK: ilgy-crm, sft-mod firm, sbblky-sbply,  
wxy tex, mot ip, v calc

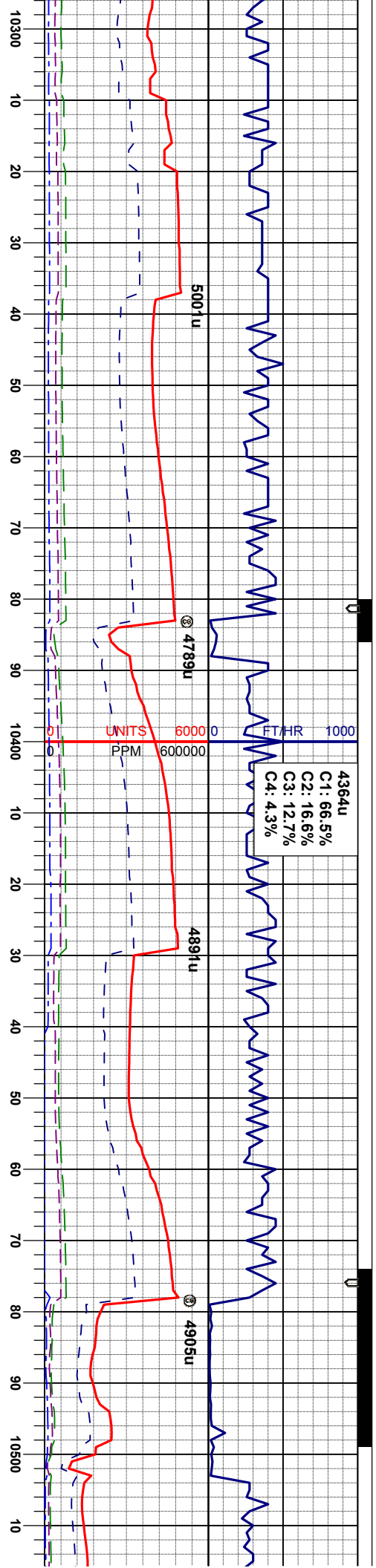












MD 10325'  
INC 89.9°  
AZM 87.8°  
TVD 6497.69'

MR: gybm-bm, sft-sl firm, sbblky-sbply,  
sily-mot tex, v calc, calc incl, tr fos frag, occ  
bent w/ pyr strg  
CHK: ilgy-crm, sft-mod firm, sbblky-sbply,  
wxy tex, mot ip, v calc

MR: gybm-bm, sft-sl firm, sbblky-sbply,  
sily-mot tex, v calc, calc incl, tr fos frag, occ  
bent w/ pyr strg  
CHK: ilgy-crm, sft-mod firm, sbblky-sbply,  
wxy tex, mot ip, v calc

MD 10419'  
INC 91.5°  
AZM 89.2°  
TVD 6496.53'

MR: gybm-bm, sft-sl firm, sbblky-sbply,  
sily-mot tex, v calc, calc incl, tr fos frag, occ  
bent w/ pyr strg  
CHK: ilgy-crm, sft-mod firm, sbblky-sbply,  
wxy tex, mot ip, v calc

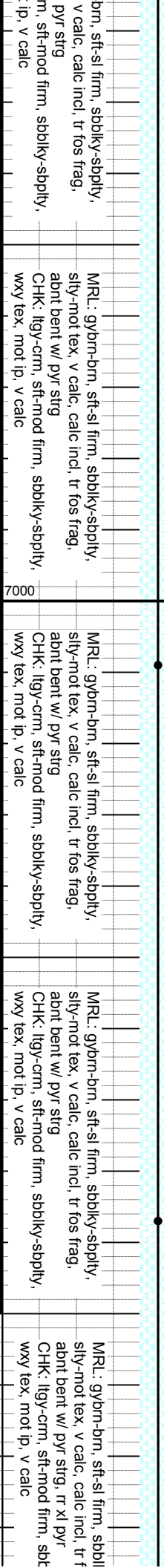
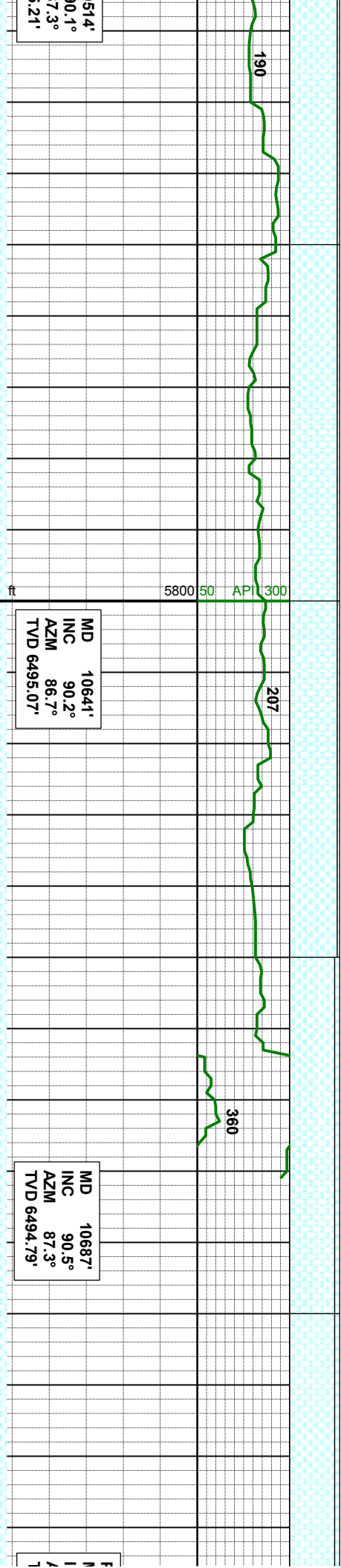
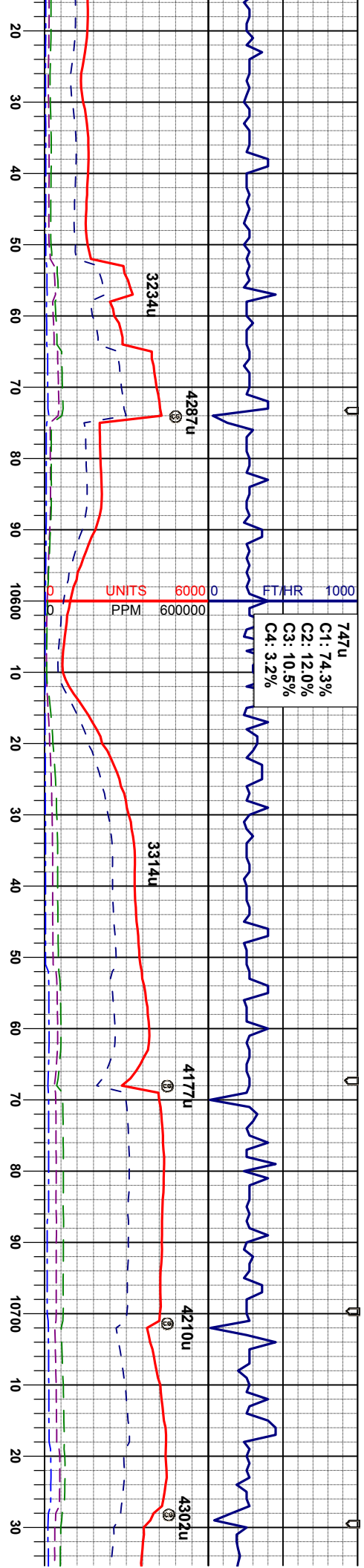
MR: gybm-bm, sft-sl firm, sbblky-sbply,  
sily-mot tex, v calc, calc incl, tr fos frag,  
abnt bent w/ pyr strg  
CHK: ilgy-crm, sft-mod firm, sbblky-sbply,  
wxy tex, mot ip, v calc

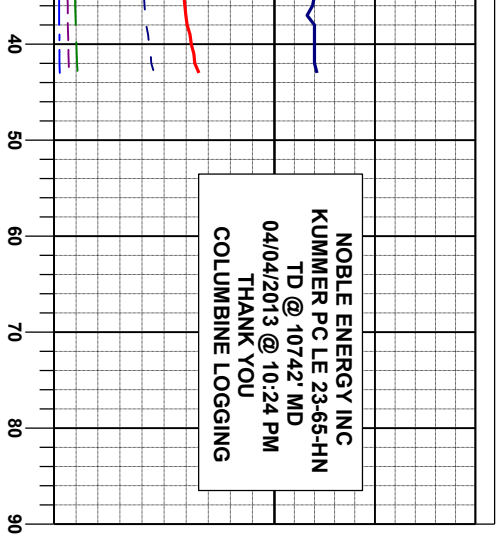
MD 10  
INC 8  
AZM 8  
TVD 6495

MR: gybm-  
sily-mot tex,  
abnt bent w/  
CHK: ilgy-cr  
wxy tex, mot









PROJECTION  
MD 10742'  
NC 90.5°  
ZM 87.3°  
VD 6494.30'

NOBLE ENERGY INC  
KUMMER PC LE 23-65-HN  
TD @ 10742' MD  
04/04/2013 @ 10:24 PM

ky-sbply,  
os frag,  
lky-sbply,

