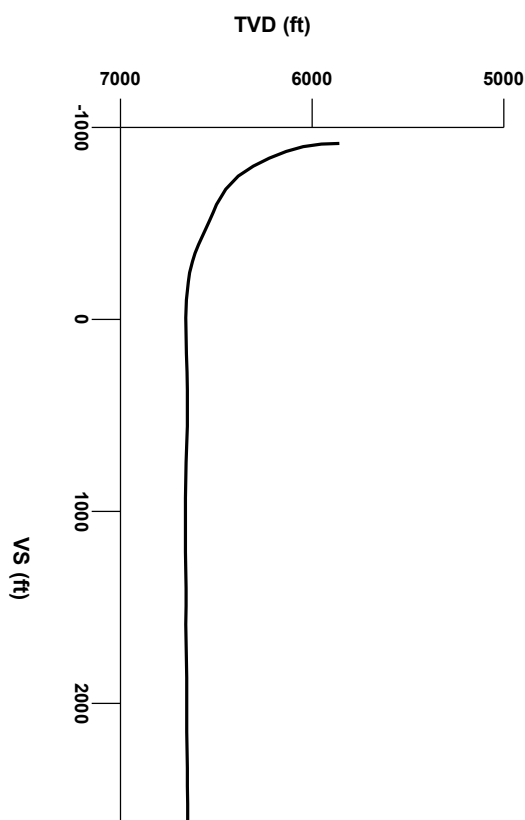




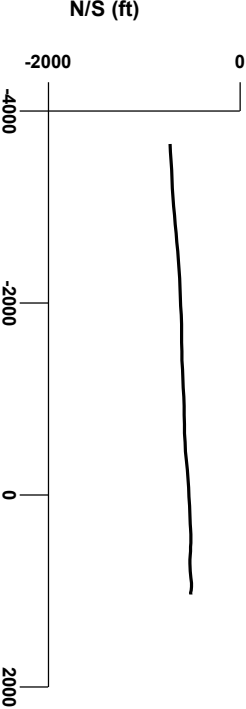
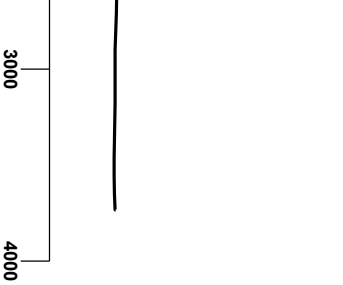
LOG created using Lplot VH Version 3.0, March 31, 2013, Copyright (C) 1999-2009 Pason Systems Corp.

OPERATOR: NOBLE ENERGY INC.
WELL: SLW RANCH B01-62-1HN
LOCATION: SESE SEC 1, T5N, R64W
COUNTY: WELD
STATE: COLORADO
SPOT: 987' FSL, 1077' FEL
ELEVATION: GR 4,604' KB 4,634'
FIELD: WATTENBERG
SPUD DATE: 03/25/2013
TD DATE: 03/31/2013
DATES LOGGED: 03/28/2013 - 03/31/2013
DEPTHS LOGGED: 6037' MD - 11286' MD
LOGGERS: ANDREA ZUIDEMA, CHRISTIAN VENTURINO
DRILLING FLUID: LSND
DRILLING RIG: H&P 326
API: 05-123-36260
LOG TYPE: HORIZONTAL
SCALE: 1:240 (5 inches per 100 feet)
REMARKS: WELLSITE GEOLOGICAL SERVICES
PROVIDED BY COLUMBINE LOGGING INC.



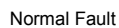
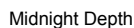
Survey Elevation

Survey Plan





ENGINEERING SYMBOLS

DEPTH
(FEET) 5:

ROP		
0	FT/HR	1000

COLUMBINE LOGGING INC.
RIGGED UP ON 03/26/2013
MANNED 2-PERSON LOGGING
WITH BLOODHOUND GAS
CHROMATOGRAPH UNIT #0298
COLUMBINE BEGAN LOGGING
ON 03/26/2013

**BEGAN DRILLING CURVE
@ 2:09 AM 03/28/2013**

03/28/2013

23804 (5)

CUTTINGS
LITHOLOGYCUTTINGS
LITHOLOGY

TVD

ft

TVD

ft

GAMMA RAY		
30	API	200

GAMMA RAY		
30	API	200

The ratings are based on 7 descriptors: None, Slight trace, Trace, Fair, Moderate, Good, and Excellent. The descriptor used is based on the loggers observations and best judgment of brilliance, color and longevity of the cut.

MD	6020'
INC	1.4°
AZM	137.7°
TVD	5857.45'

WT IN 9.25/ OUT 9.25
VIS IN 31/ OUT 31

SLTYSH: m gy - dk gy, mod sft - mod firm,
sbblky - sbply, shy tex, noncalc, tr ss

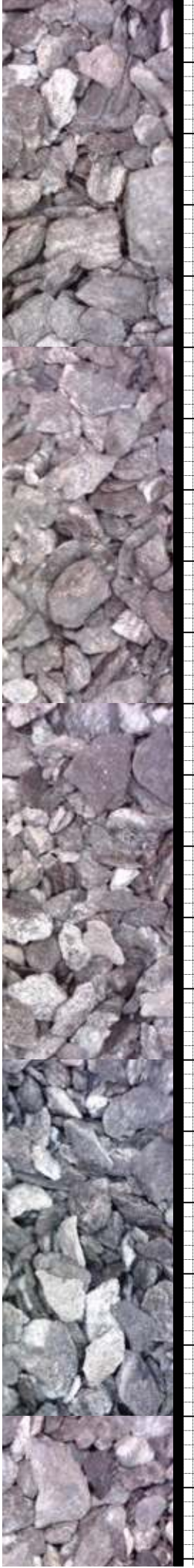
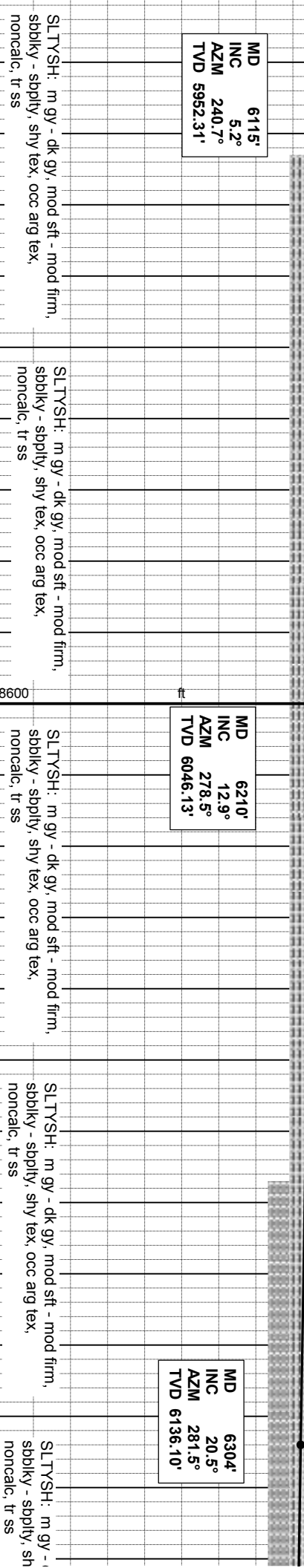
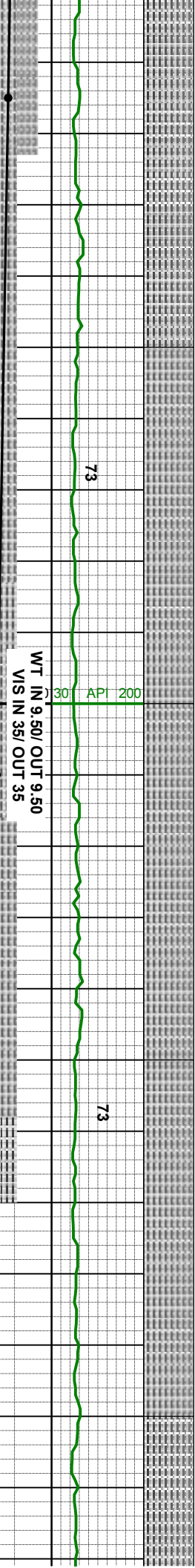
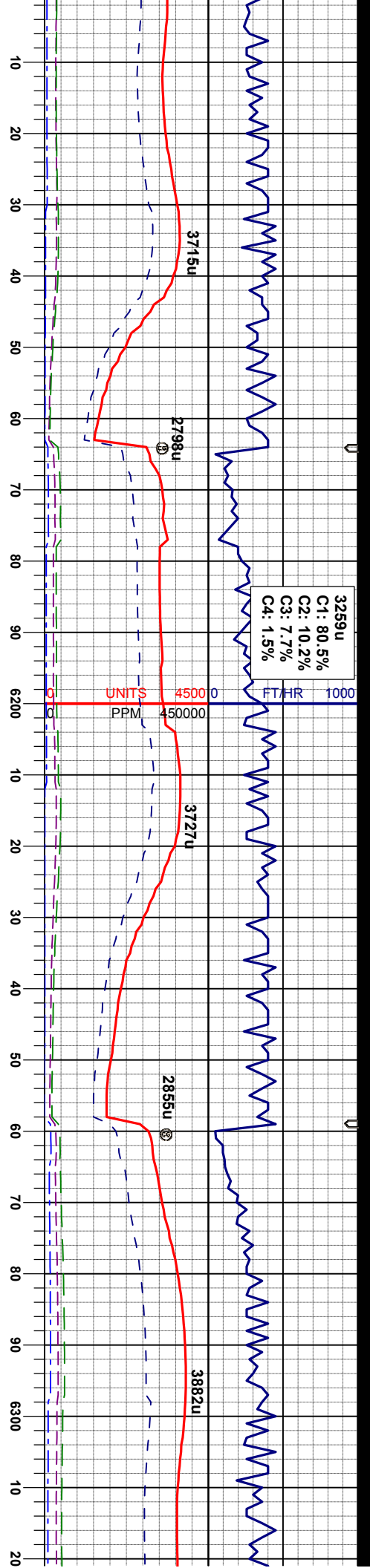
SLTYSH: m gy - dk gy, mod sft - mod firm,
sblky - sbply, shy tex, occ arg tex,
noncalc, tr ss

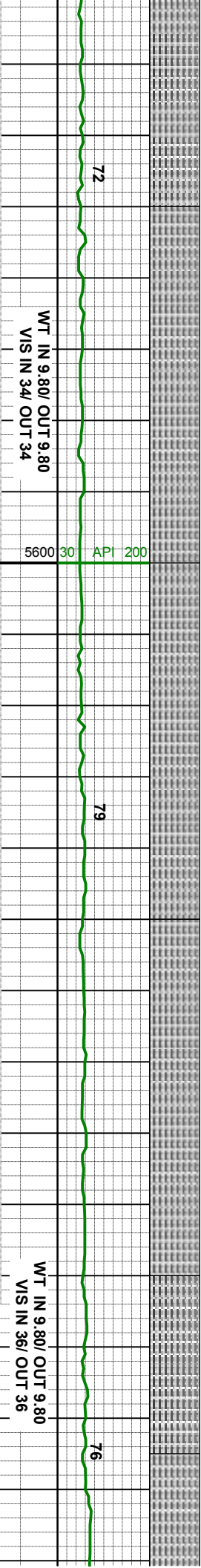
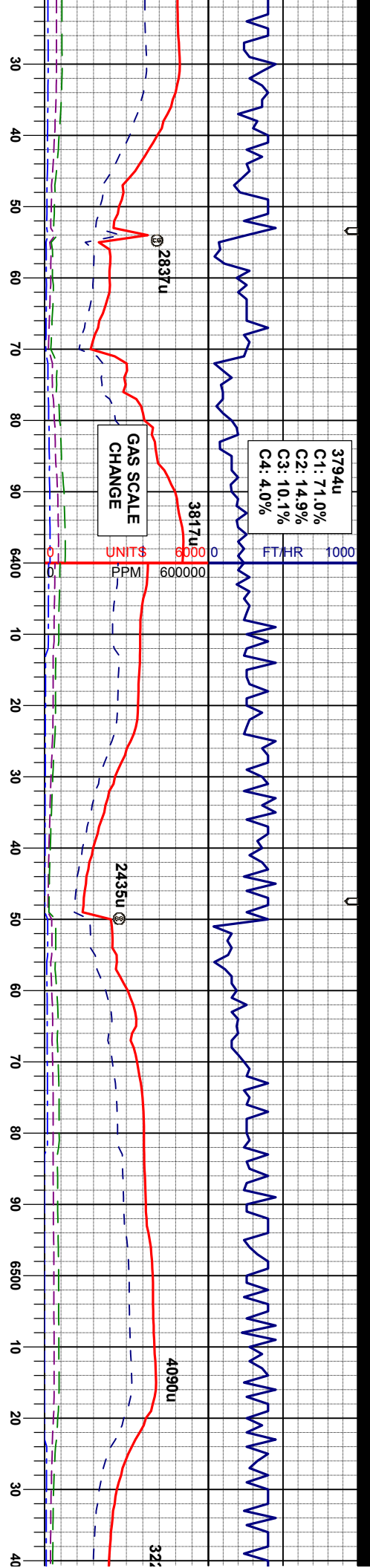
OIL SHOWS
TFG

OIL SHOWS
TFG

SAMPLE PHOTOS



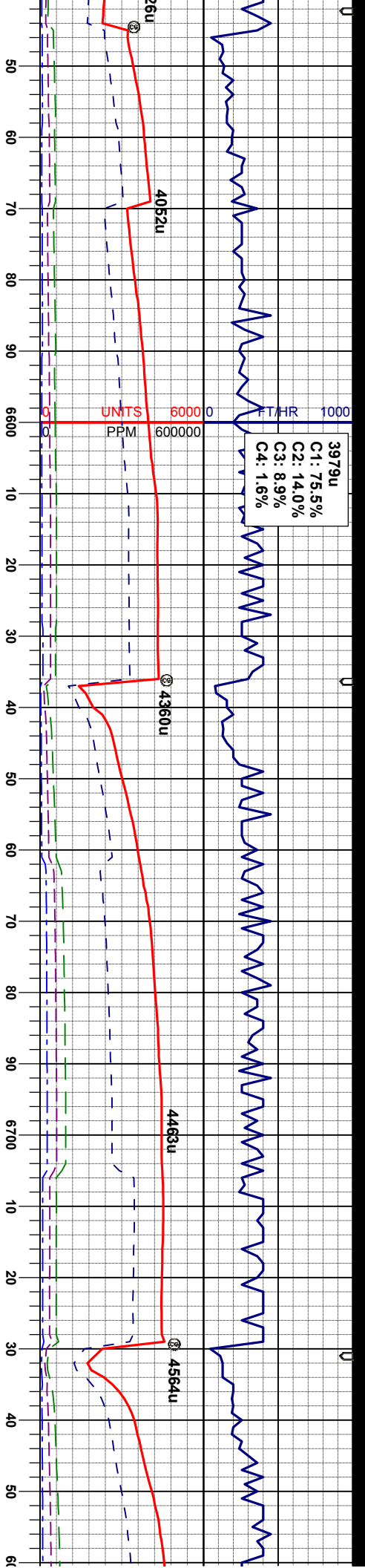




MD 6398'
INC 24.2°
AZM 273.8°
TVD 6223.04'

MD 6493'
INC 29.0°
AZM 263.9°
TVD 6308.00'

dk gy, mod sft - mod firm,
y tex, occ arg tex,
SLTYSH: m gy - dk gy, mod sft - mod firm,
sblky - sblpy, shy tex, occ arg tex,
noncalc, tr ss
SLTYSH: m gy - dk gy, mod sft - mod firm,
sblky - sblpy, shy tex, occ arg tex,
noncalc
SLTYSH: m gy - dk gy, mod sft - mod firm,
sblky - sblpy, shy tex, occ arg tex,
noncalc
SLTYSH: m gy - dk gy, mod sft - mod firm,
sblky - sblpy, shy tex, occ arg tex, tr arg
noncalc



C1: 75.5%
C2: 14.0%
C3: 8.9%
C4: 1.6%

WT IN 10.10/ OUT 10.10
VIS IN 36/ OUT 36

MD 6587'
INC 39.5°
AZM 264.1°
TVD 6385.59'

WT IN 10.20/ OUT 10.15
VIS IN 35/ OUT 33

MD 6682'
INC 52.9°
AZM 263.4°
TVD 6451.20'

SHARON SPRINGS
MARKER BED @
6700' MD/ 6460' TVD

NIOBRARA @
6731' MD/ 6475' TVD

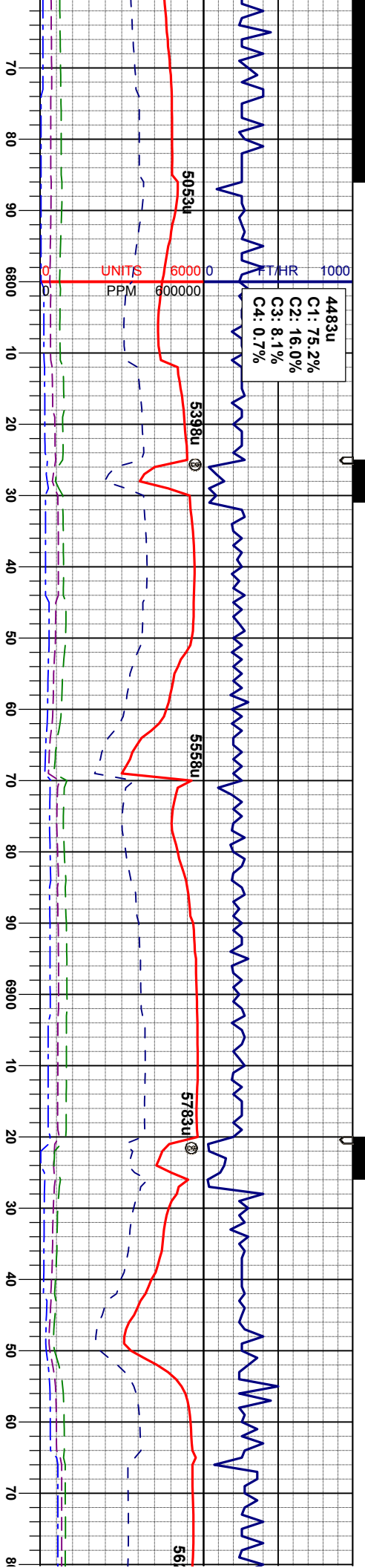
firm,
tex,
SLTYSH: m gy - dk gy, mod sft - mod firm,
sbbiky - sbbiky, occ pily, sly tex, sicalc

SLTYSH: m gy - dk gy, mod sft - mod firm,
sbbiky - sbbiky, occ pily, sly tex, sicalc

SLTYSH: m gy - dk gy, mod sft - mod firm,
sbbiky - sbbiky, occ pily, sly tex, tr bent,
sicalc

SLTYSH: m gy - dk gy, mod sft - mod firm,
sbbiky - sbbiky, occ pily, sly tex, occ
bent, sicalc
MRL: mgy-gyblk, sbbiky-sbbiky, smefis,
mod firm, rthy-sly tex, sl mot, v calc, tr fos

SLTYSH:
sbbiky -
bent, sic
MRL: m
mod firm



MD 6776'
INC 66.4°
AZM 270.8°
TVD 6498.63'

SLTYSH: m gy - dk gy, mod sft - mod firm, sbply - sbply, occ. pily, shy tex, occ. alic
CHK: mgy, occ dkgy, mod sft - mod firm, sbply-sbply, rthy tex - mot, v calc
MRL: mgy-gyblk, sbply-sbply, smefts, mod firm, rthy tex, sl mot, v calc, tr tos

MD 6821'
INC 67.2°
AZM 273.4°
TVD 6516.36'

SLTYSH: m gy - dk gy, mod sft - mod firm, sbply - sbply, occ. pily, shy tex, occ. bent, sicalc
CHK: mgy, occ dkgy, mod sft - mod firm, sbply-sbply, rthy tex - mot, v calc
MRL: mgy-gyblk, sbply-sbply, smefts, mod firm, rthy tex, sl mot, v calc

MD 6871'
INC 66.7°
AZM 273.1°
TVD 6535.94'

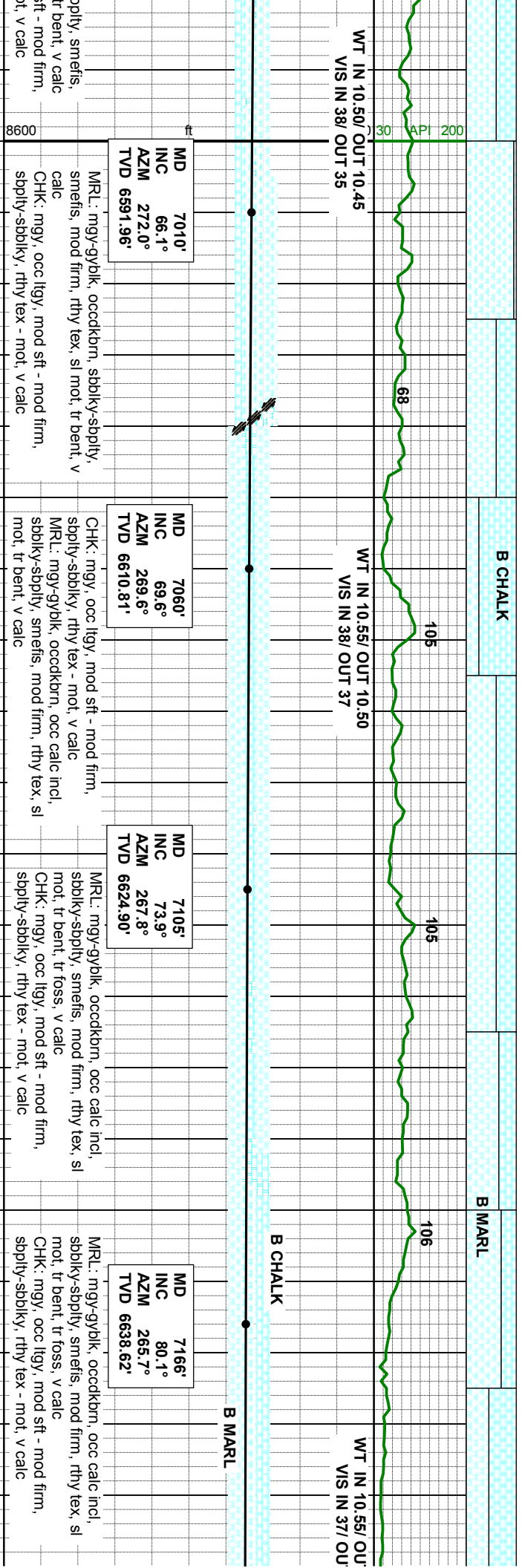
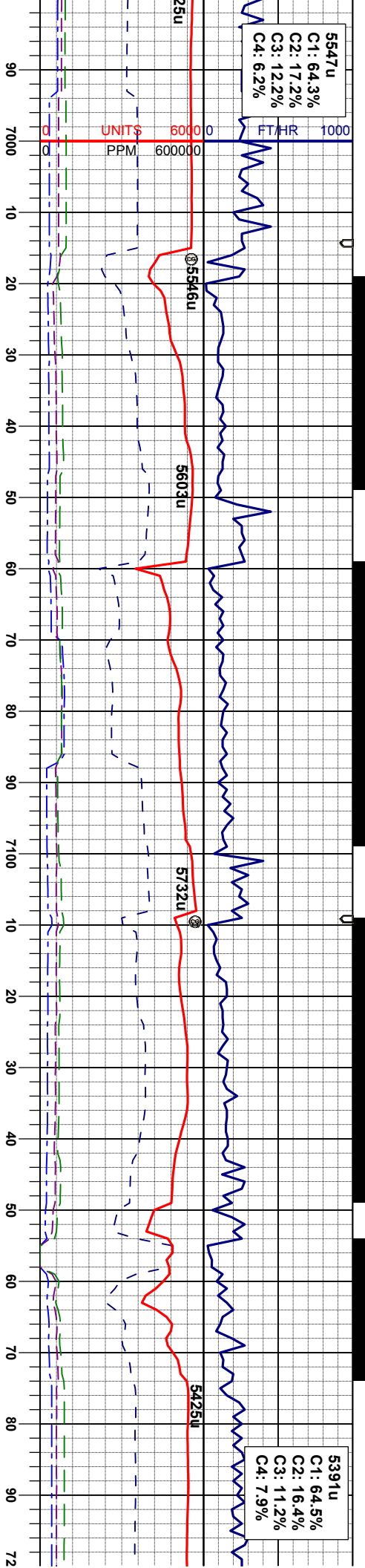
CHK: mgy, occ dkgy, mod sft - mod firm, sbply-sbply, rthy tex - mot, v calc
MRL: mgy-gyblk, sbply-sbply, smefts, mod firm, rthy tex, sl mot, tr bent, v calc

MD 6916'
INC 66.4°
AZM 272.6°
TVD 6553.85'

CHK: mgy, occ dkgy, mod sft - mod firm, sbply-sbply, rthy tex - mot, v calc
MRL: mgy-gyblk, sbply-sbply, smefts, mod firm, rthy tex, sl mot, tr bent, v calc

MD 6965'
INC 65.9°
AZM 272.6°
TVD 6573.66'

MRL: mgy-gyblk, sbply-sbply, mod firm, rthy tex, sl mot, v calc
CHK: mgy, occ dkgy, mod sft - mod firm, sbply-sbply, rthy tex - mot, v calc

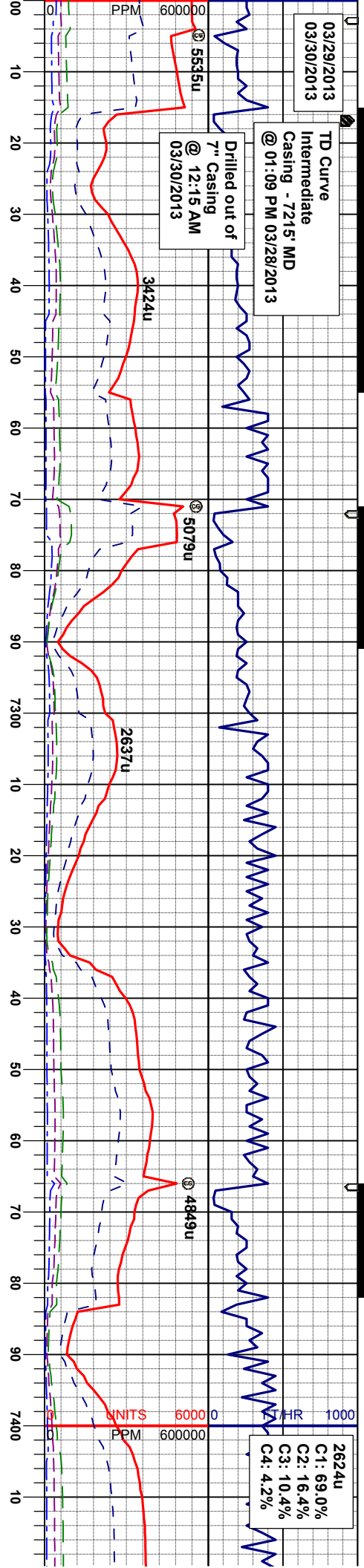


03/29/2013
03/30/2013

TD Curve
Intermediate
Casing - 7215' MD
@ 01:09 PM 03/28/2013

Drilled out of
7" Casing
@ 12:15 AM
03/30/2013

2624u
C1: 69.0%
C2: 16.4%
C3: 10.4%
C4: 4.2%



T 10.55
T 36

WT IN 10.40/ OUT 10.40
VIS IN 34/ OUT 34

MD 7310'
INC 87.1°
AZM 268.2°
TVD 6656.14'

WT IN 9.45/ OUT 9.45
VIS IN 33/ OUT 31

MD 7405'
INC 89.3°
AZM 267.8°
TVD 6659.12'

MD 7215'
INC 81.3°
AZM 267.6°
TVD 6646.54'

CHK: mgy, lgy, mod sft - mod firm, sbply-
sbply, rthy tex - mod, v calc
MRL: mgy-gyblk, occckbm, occ calc incl,
sbply-sbply, smeifs, mod firm, rthy tex, sl
mod, tr bent, tr foss, v calc

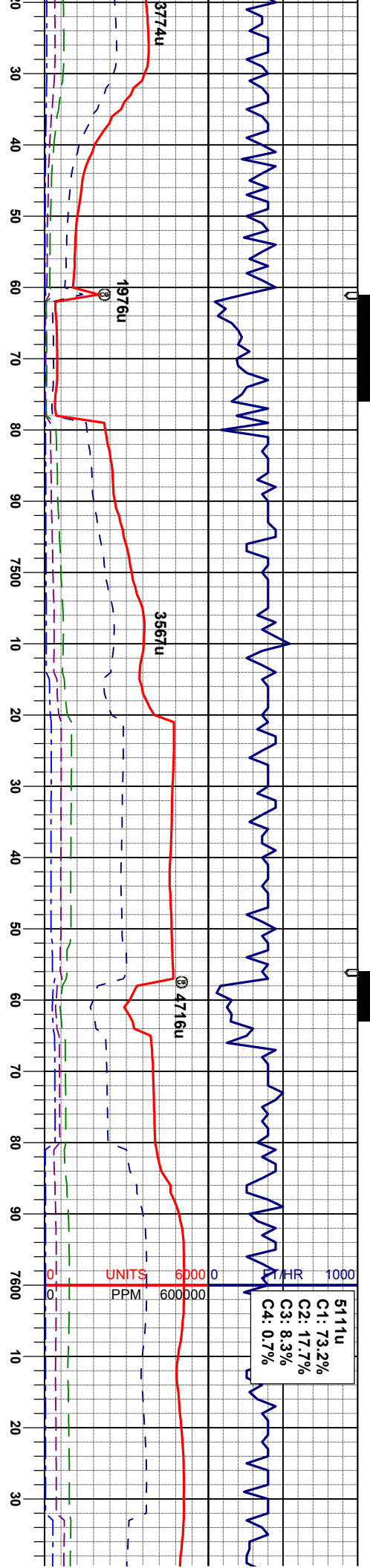
MRL: gyblk, occckbm, sbply-sbply,
smeifs, mod firm, rthy tex, sl mod, tr bent, tr
cmt, v calc
CHK: mgy, mod sft - mod firm, sbply-
sbply, rthy tex - mod, v calc

MRL: gyblk, occckbm, sbply-sbply,
smeifs, mod firm, rthy tex, sl mod, tr bent, tr
cmt, v calc
CHK: mgy, mod sft - mod firm, sbply-
sbply, rthy tex - mod, v calc

MRL: gyblk, occckbm, sbply-sbply,
smeifs, mod firm, rthy tex, sl mod, tr bent, v
calc
CHK: mgy, mod sft - mod firm, sbply-
sbply, rthy tex - mod, v calc

MRL: gyblk, occ
smeifs, mod firm
calc
CHK: mgy - m b
sbply-sbply, tr





MD 7500'
INC 91.5°
AZM 266.9°
TVD 6658.46'

B MARL

C CHALK

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

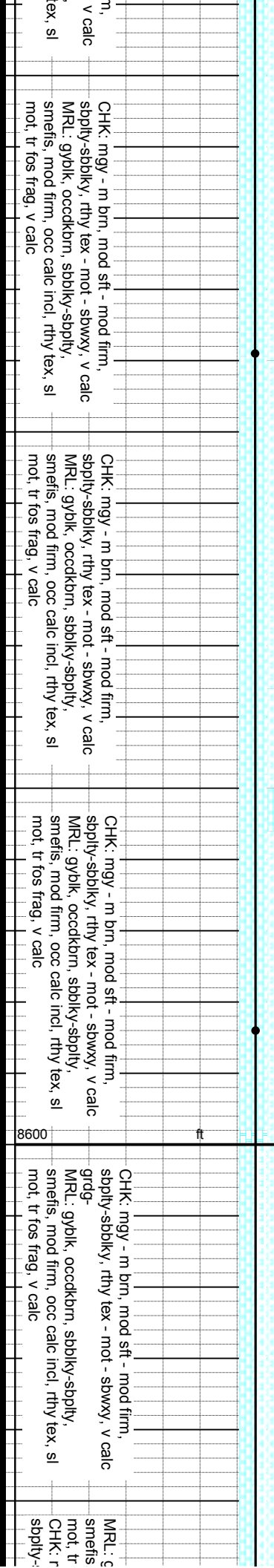
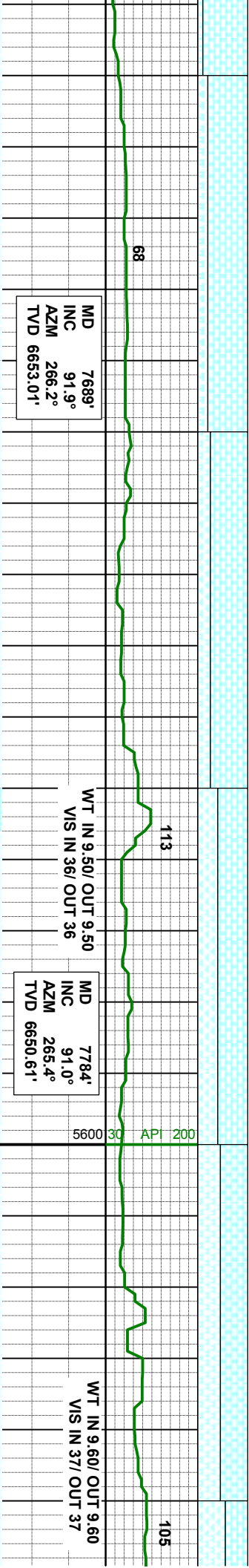
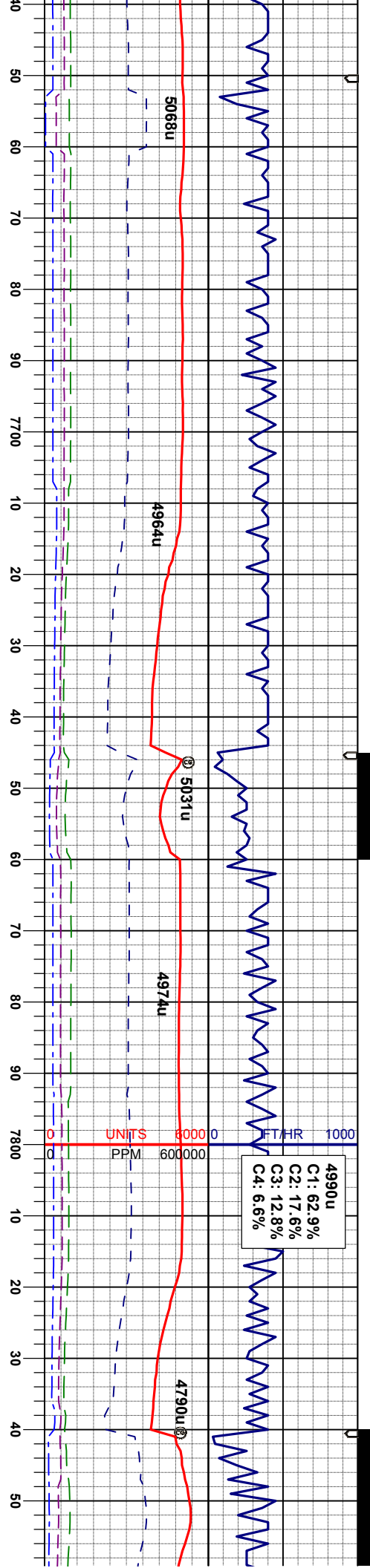
MD 7595'
INC 91.6°
AZM 266.4°
TVD 6655.91'

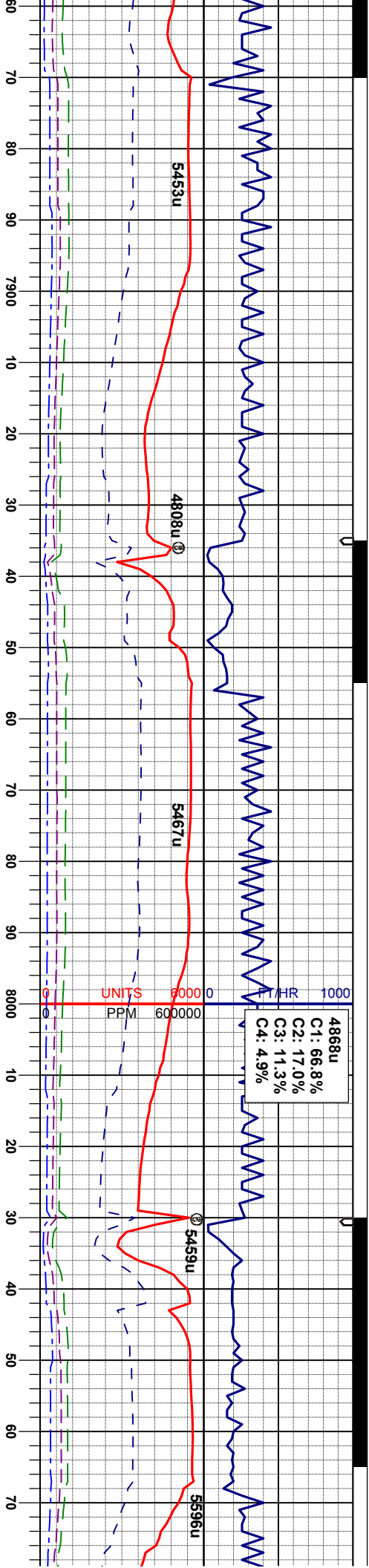
30 API 200

dkbrn, sbbly-sbply, rthy tex, sl mot, tr bent, v
MRL: gyblk, occdkbrn, sbbly-sbply, smetfs, mod firm, rthy tex, sl mot, v calc
CHK: mgy - m brn, mod sft - mod firm, sbbly-sbply, rthy tex - mot, v calc
mod sft - mod firm, sbbly-sbply, rthy tex - mot, v calc

CHK: mgy - m brn, mod sft - mod firm, sbbly-sbply, rthy tex - mot - sbwxy, v calc
MRL: gyblk, occdkbrn, sbbly-sbply, smetfs, mod firm, occ calc incl, rthy tex, sl mot, tr fos frag, v calc
CHK: mgy - m brn, mod sft - mod firm, sbbly-sbply, rthy tex - mot - sbwxy, v calc
MRL: gyblk, occdkbrn, sbbly-sbply, smetfs, mod firm, occ calc incl, rthy tex, sl mot, tr fos frag, v calc







MD 7879'
INC 89.2°
AZM 264.1°
TVD 6650.44'

MD 7974'
INC 89.2°
AZM 264.5°
TVD 6651.77'

MD 8069'
INC 88.3°
AZM 267.6°
TVD 6653.84'

MR: gyblk, occdkbrn, sbblky-sbply,
mod firm, occ calc incl, rthy tex, sl
fos frag, v calc
mgy - m brn, mod sft - mod firm,
sbply-sbply, rthy tex - mot - sbwxy, v calc

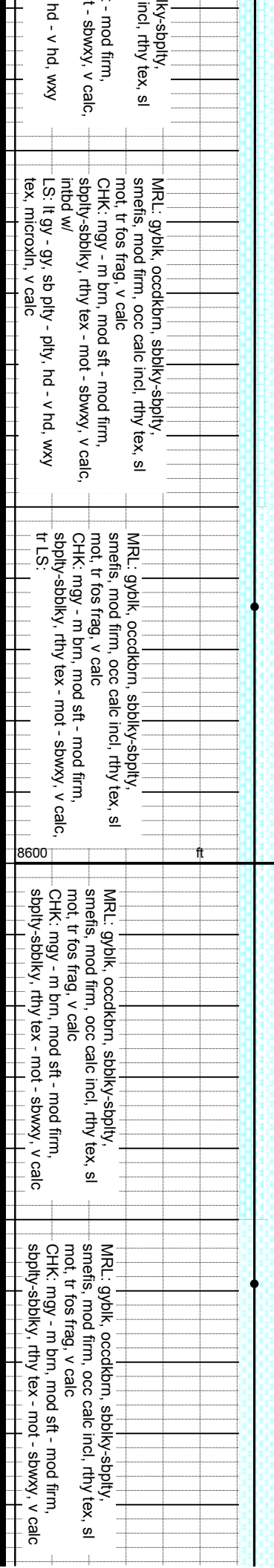
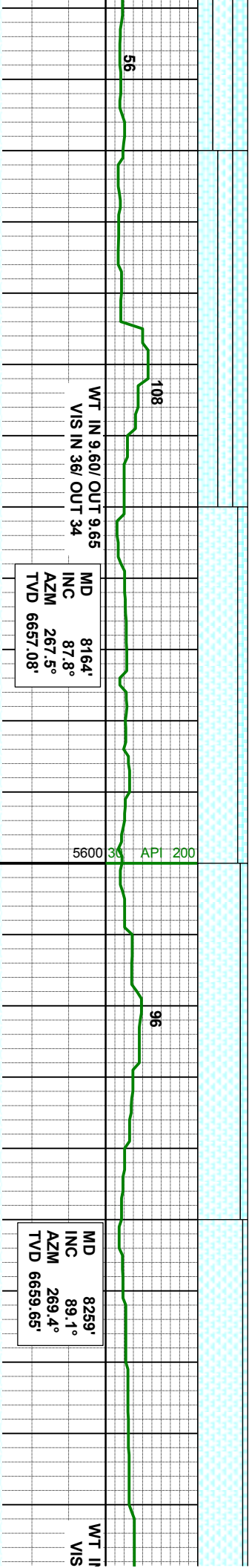
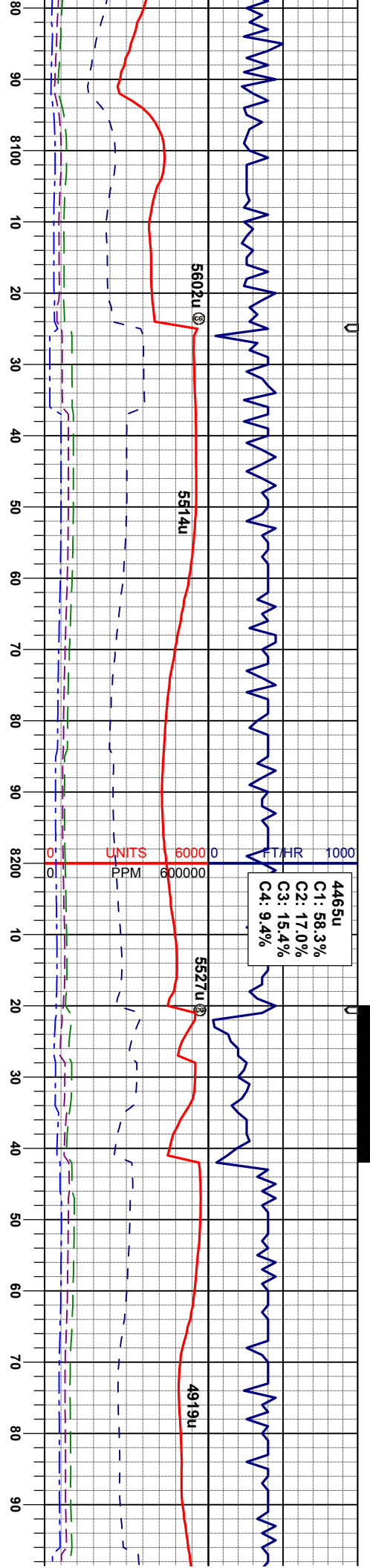
MR: gyblk, occdkbrn, sbblky-sbply,
smefts, mod firm, occ calc incl, rthy tex, sl
mot, tr fos frag, v calc
CHK: mgy - m brn, mod sft - mod firm,
sbply-sbply, rthy tex - mot - sbwxy, v calc

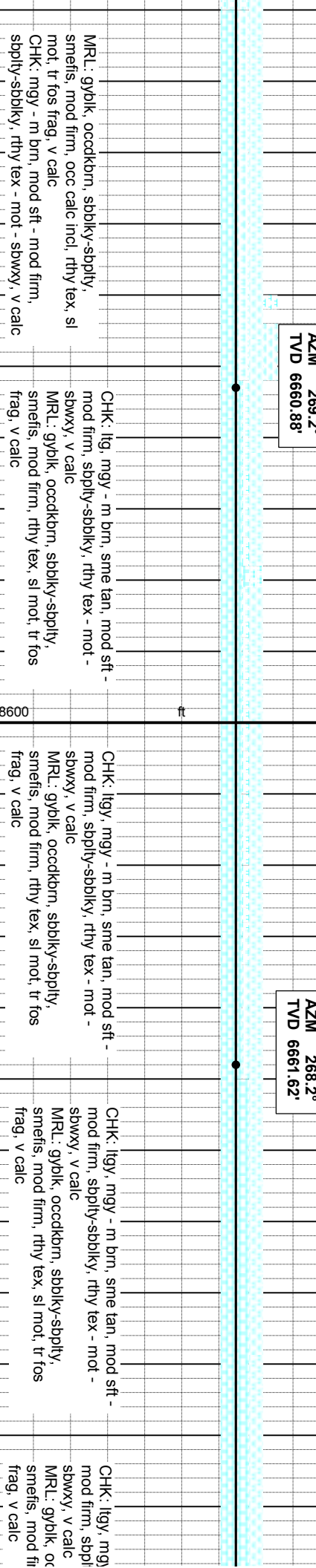
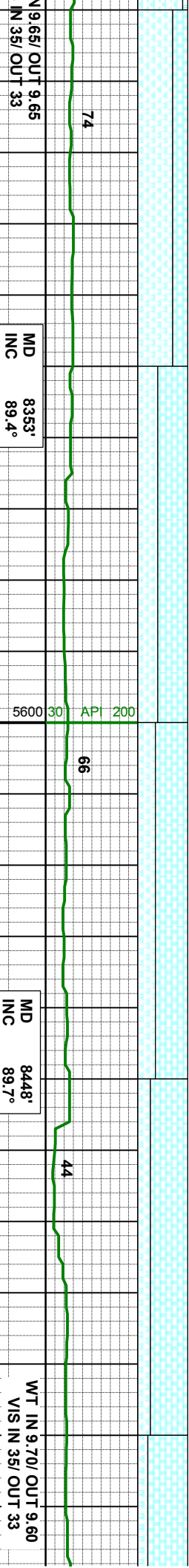
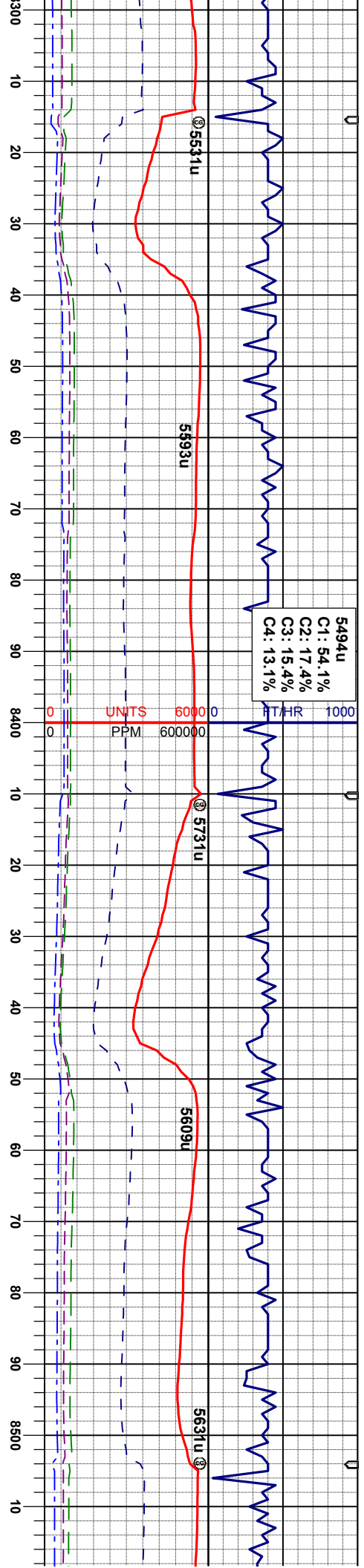
MR: gyblk, occdkbrn, sbblky-sbply,
smefts, mod firm, occ calc incl, rthy tex, sl
mot, tr fos frag, v calc
CHK: mgy - m brn, mod sft - mod firm,
sbply-sbply, rthy tex - mot - sbwxy, v calc

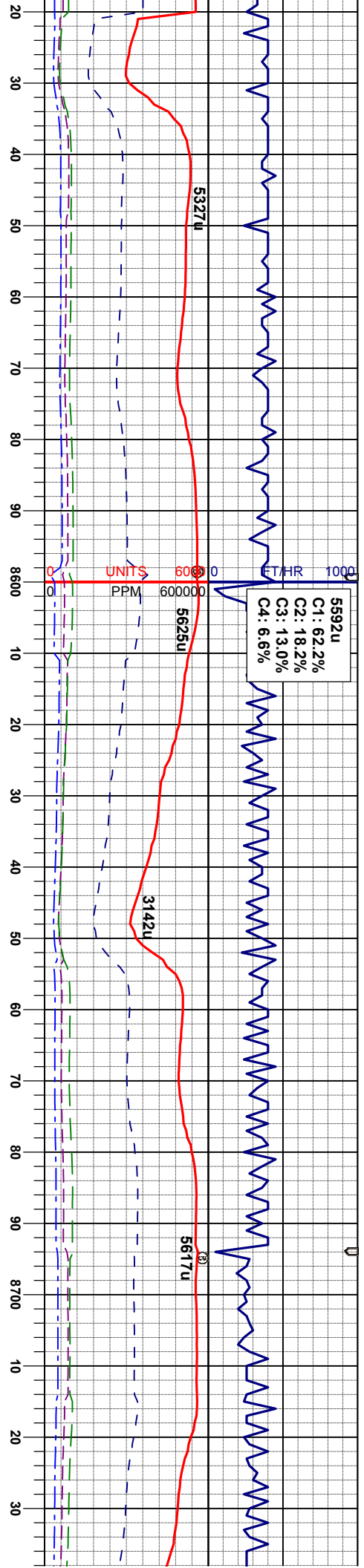
MR: gyblk, occdkbrn, sbblky-sbply,
smefts, mod firm, occ calc incl, rthy tex, sl
mot, tr fos frag, v calc
CHK: mgy - m brn, mod sft - mod firm,
sbply-sbply, rthy tex - mot - sbwxy, v calc

MR: gyblk, occdkbrn, sbblky-sbply,
smefts, mod firm, occ calc incl, rthy tex, sl
mot, tr fos frag, v calc
CHK: mgy - m brn, mod sft - mod firm,
sbply-sbply, rthy tex - mot - sbwxy, v calc









MD 8543'
INC 90.4°
AZM 267.8°
TVD 6661.54'

MD 8638'
INC 90.9°
AZM 267.8°
TVD 6660.46'

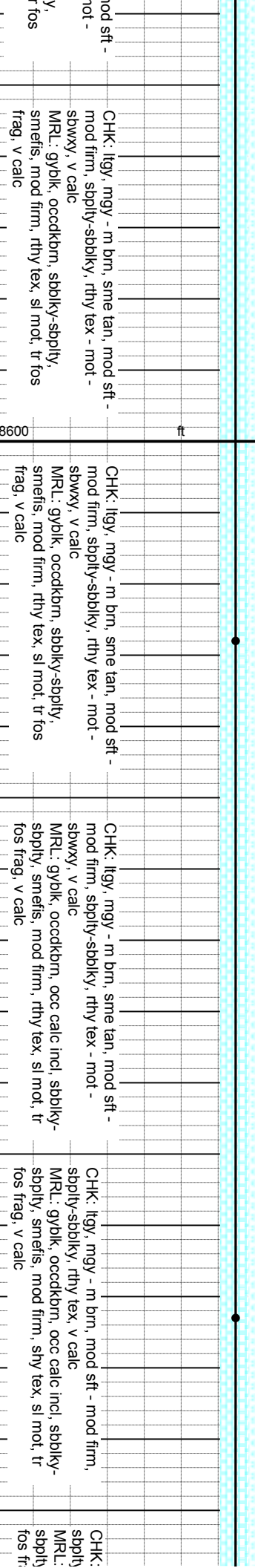
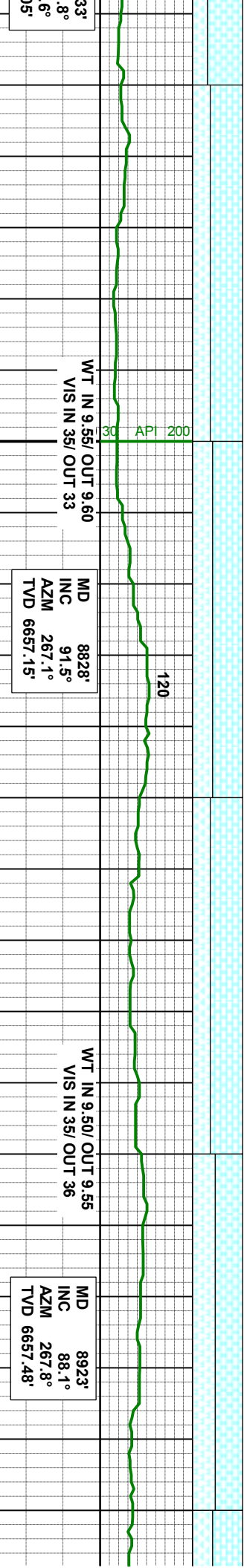
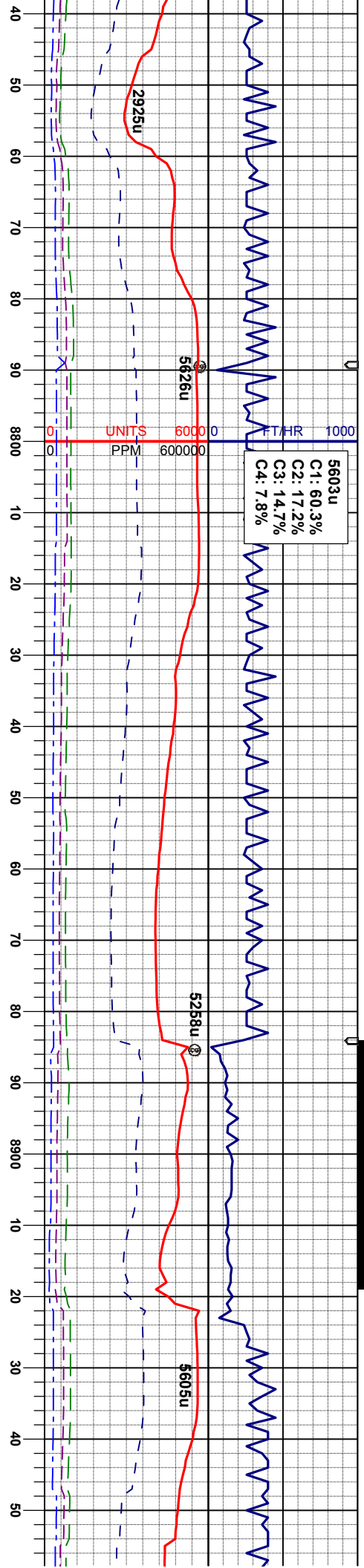
MD 87'
INC 90
AZM 266
TVD 6659.0

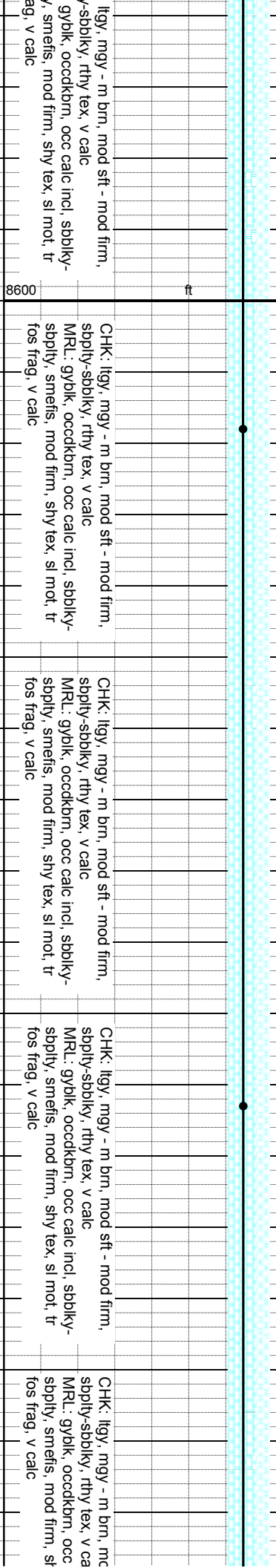
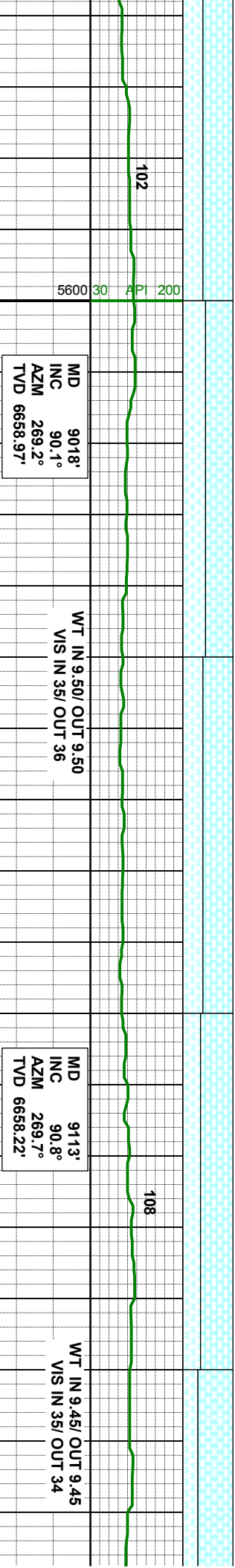
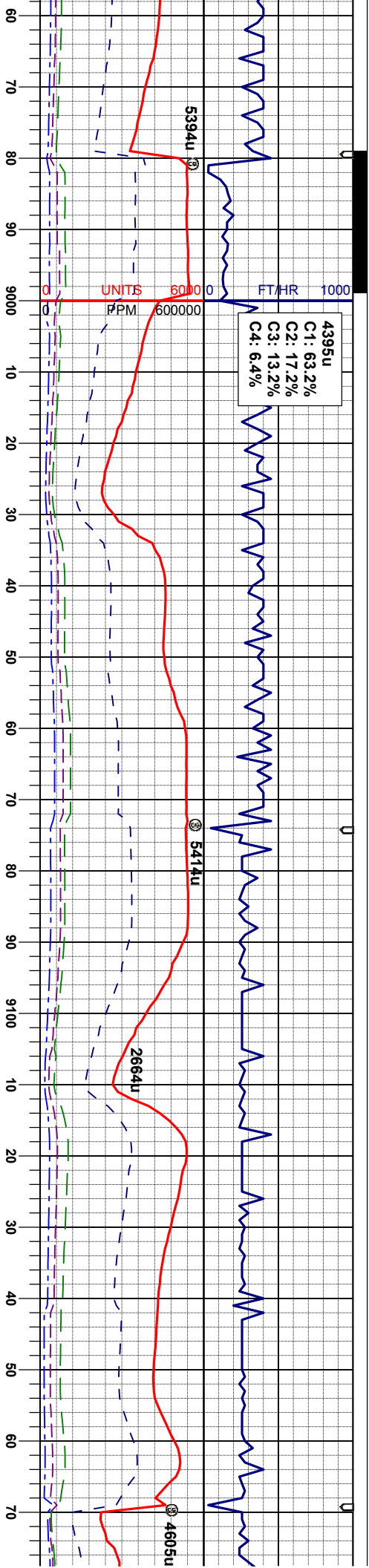
76 121 72 73

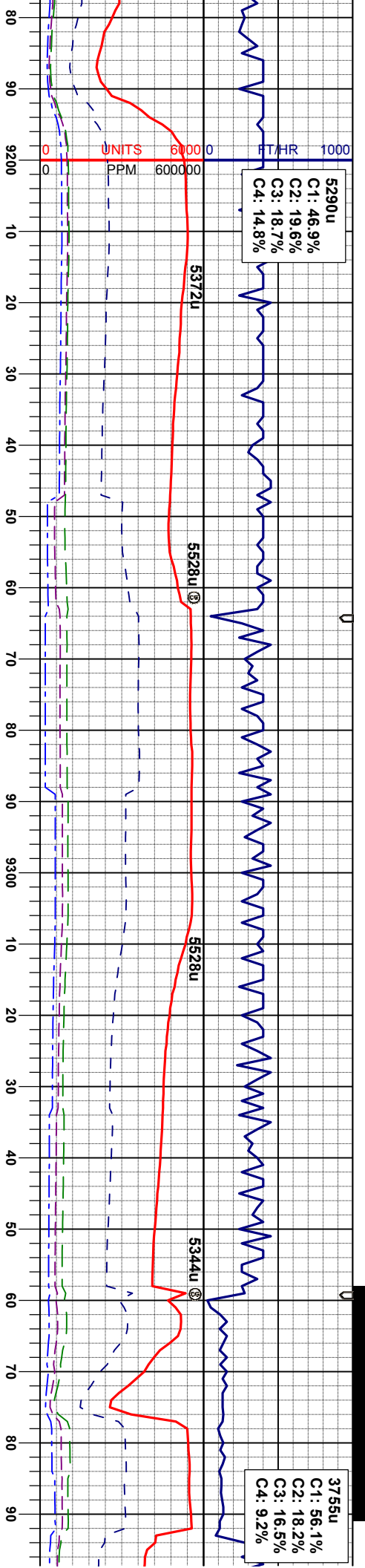
CHK: lly, mgy - m brn, sme tan, mod sft -
mod firm, sbply-sbply, rthy tex - mot -
sbwxy, v calc

MR: gyblk, occdkbrn, sbply-sbply,
smefts, mod firm, rthy tex, sl mot, tr fos
frag, v calc









MD 9207'
INC 90.8°
AZM 269°
TVD 6656.91'

MD 9302'
INC 91.4°
AZM 269.4°
TVD 6655.08'

MD 92
INC
AZM
TVD 66

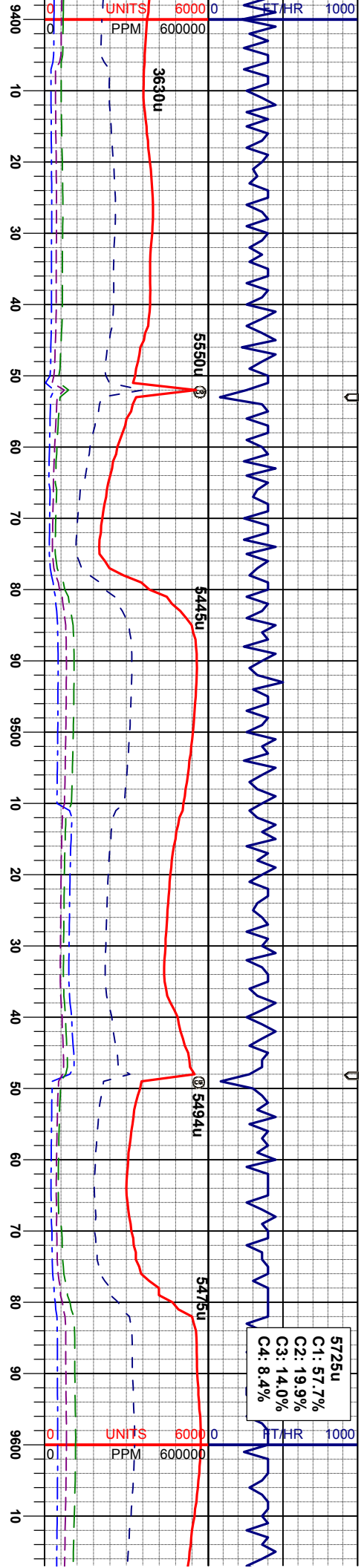
CHK: ltgy, mgy - m brn, mod sft - mod firm, sbply-sbply, rthy tex, v calc
MRU: gyblk, occdkbrn, occ calc incl, sbply-sbply, smefts, mod firm, shy tex, sl mot, tr fos frag, v calc

CHK: ltgy, mgy - m brn, mod sft - mod firm, sbply-sbply, rthy tex, v calc
MRU: gyblk, occdkbrn, occ calc incl, sbply-sbply, smefts, mod firm, shy tex, sl mot, tr fos frag, v calc

CHK: ltgy, mgy - m brn, mod sft - mod firm, sbply-sbply, rthy tex, v calc
MRU: gyblk, occdkbrn, occ calc incl, sbply-sbply, smefts, mod firm, shy tex, sl mot, tr fos frag, v calc

CHK: ltgy, mgy - m brn, mod sft - mod firm, sbply-sbply, rthy tex, v calc
MRU: gyblk, occdkbrn, occ calc incl, sbply-sbply, smefts, mod firm, shy tex, sl mot, tr fos frag, v calc





5725u
C1: 57.7%
C2: 19.9%
C3: 14.0%
C4: 8.4%

9397'
89.9°
267.6°
54.00'

WT IN 9.55/ OUT 9.55
VIS IN 35/ OUT 33

MD 9492'
INC 89.5°
AZM 266.8°
TVD 6654.50'

MD 9587'
INC 90.9°
AZM 268.2°
TVD 6654.17'

CHK: lty, mgy - m brn, mod sft - mod firm, sbply-sbply, rthy tex, v calc
MRL: gyblk, occdkbrn, occ calc incl, sbply-sbply, smefts, mod firm, shy tex, sl mot, tr fos frag, v calc

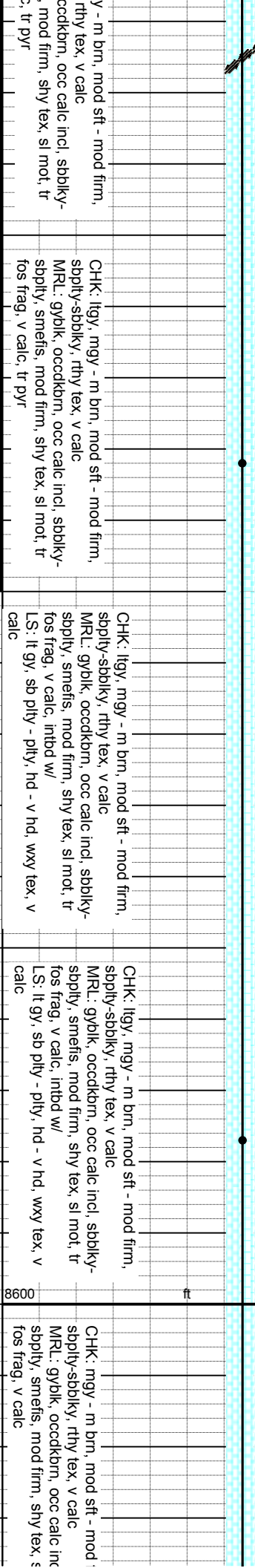
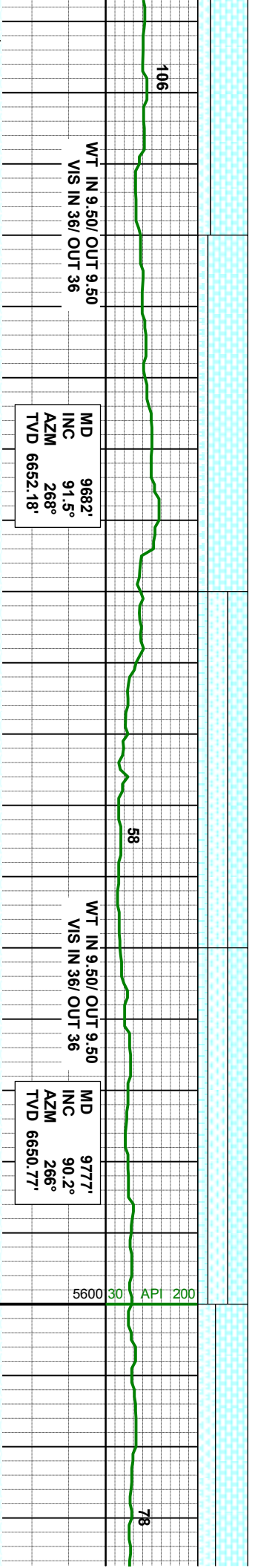
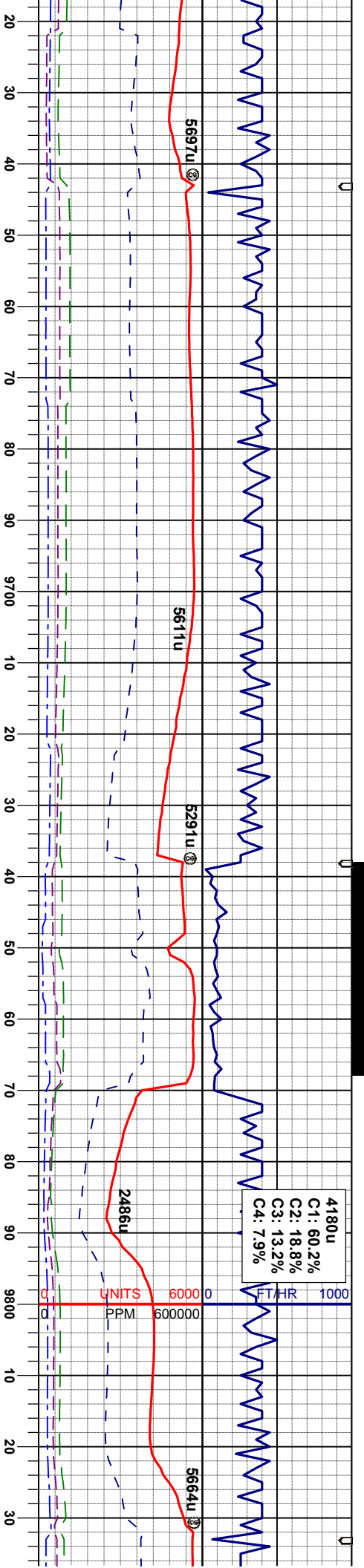
CHK: lty, mgy - m brn, mod sft - mod firm, sbply-sbply, rthy tex, v calc
MRL: gyblk, occdkbrn, occ calc incl, sbply-sbply, smefts, mod firm, shy tex, sl mot, tr fos frag, v calc

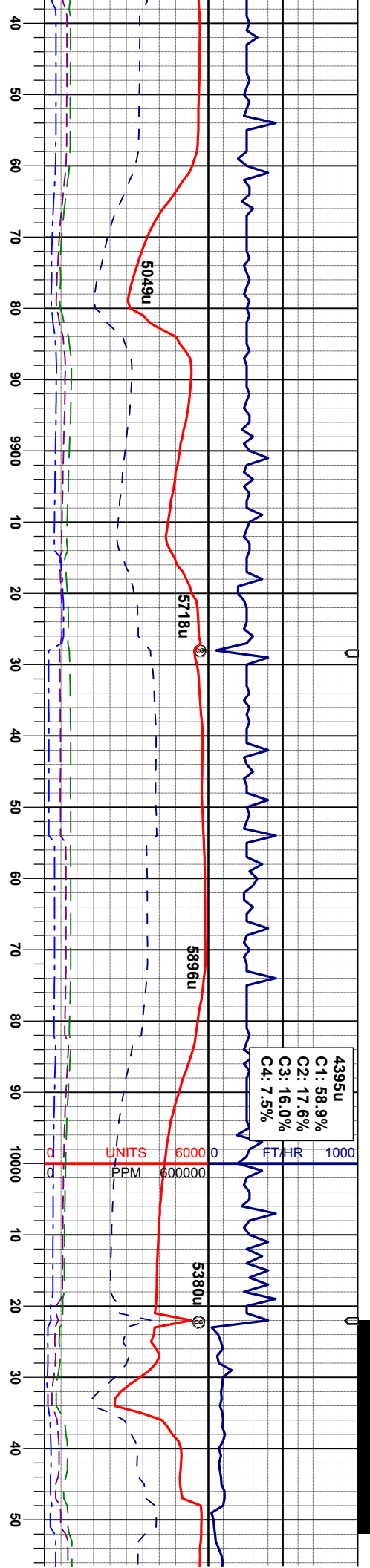
CHK: lty, mgy - m brn, mod sft - mod firm, sbply-sbply, rthy tex, v calc
MRL: gyblk, occdkbrn, occ calc incl, sbply-sbply, smefts, mod firm, shy tex, sl mot, tr fos frag, v calc, tr pyr

CHK: lty, mgy - m brn, mod sft - mod firm, sbply-sbply, rthy tex, v calc
MRL: gyblk, occdkbrn, occ calc incl, sbply-sbply, smefts, mod firm, shy tex, sl mot, tr fos frag, v calc, tr pyr

CHK: lty, mgy - m brn, mod sft - mod firm, sbply-sbply, rthy tex, v calc
MRL: gyblk, occdkbrn, occ calc incl, sbply-sbply, smefts, mod firm, shy tex, sl mot, tr fos frag, v calc







MD 9871'
INC 90.1°
AZM 266°
TVD 6650.53'

WT IN 9.50/ OUT 9.50
VIS IN 35/ OUT 35

MD 9966'
INC 91°
AZM 266.4°
TVD 6649.61'

WT IN 9.55/ OUT 9.55
VIS IN 36/ OUT 36

MD 9966'
INC 91°
AZM 266.4°
TVD 6649.61'

CHK: mgy - m brn, mod sft - mod firm,
sbply-sbply, rthy tex, v calc
MRL: gyblk, occdkbrn, occ calc incl, sbply-
sbply, smefts, mod firm, shy tex, sl mot, tr
fos frag, v calc

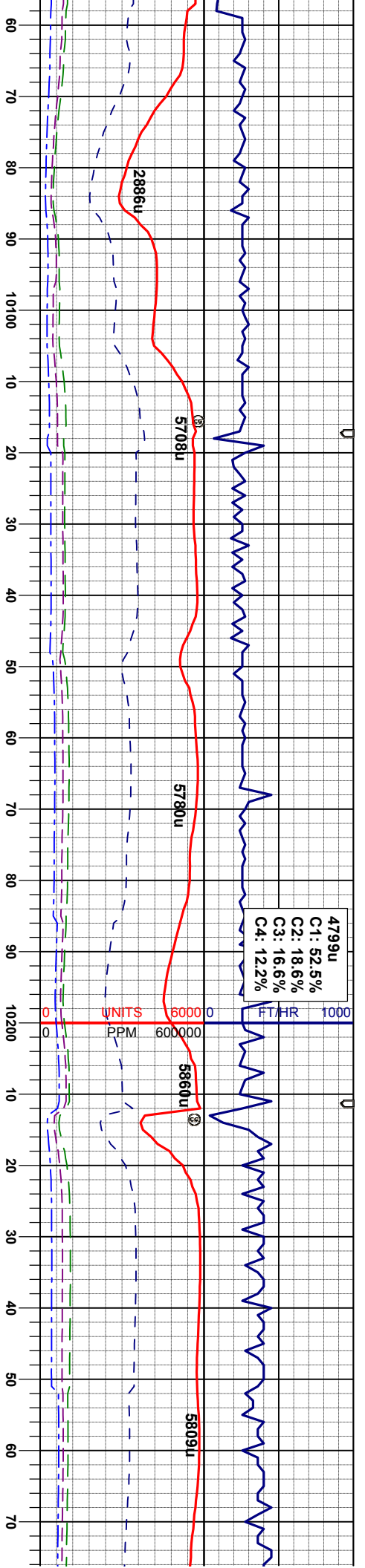
CHK: mgy - m brn, mod sft - mod firm,
sbply-sbply, rthy tex, v calc
MRL: gyblk, occdkbrn, occ calc incl, sbply-
sbply, smefts, mod firm, shy tex, sl mot, tr
fos frag, v calc

CHK: mgy - m brn, mod sft - mod firm,
sbply-sbply, rthy tex, v calc
MRL: gyblk, occdkbrn, occ calc incl, sbply-
sbply, smefts, mod firm, shy tex, sl mot, tr
fos frag, v calc

CHK: mgy - m brn, mod sft - mod firm,
sbply-sbply, rthy tex, v calc
MRL: gyblk, occdkbrn, occ calc incl, sbply-
sbply, smefts, mod firm, shy tex, sl mot, tr
fos frag, v calc

CHK: mgy - m brn, mod sft - mod firm,
sbply-sbply, rthy tex, v calc
MRL: gyblk, occdkbrn, occ calc incl, sbply-
sbply, smefts, mod firm, shy tex, sl mot, tr
fos frag, v calc





10061'	WT IN 9.60/ OUT 9.60	MD 10155'
C 88.9°	VIS IN 35/ OUT 35	INC 88.4°
CM 265.5°		AZM 264.6°
D 6649.70'		TVD 6651.91'

CHK: mgy - m brn, mod sft - mod firm, sbply-sbply, rthy tex, v calc
MRL: gyblk, occdkbrn, occ calc incl, sbply-sbply, smefts, mod firm, shy tex, sl mot, tr fos frag, v calc, tr bent

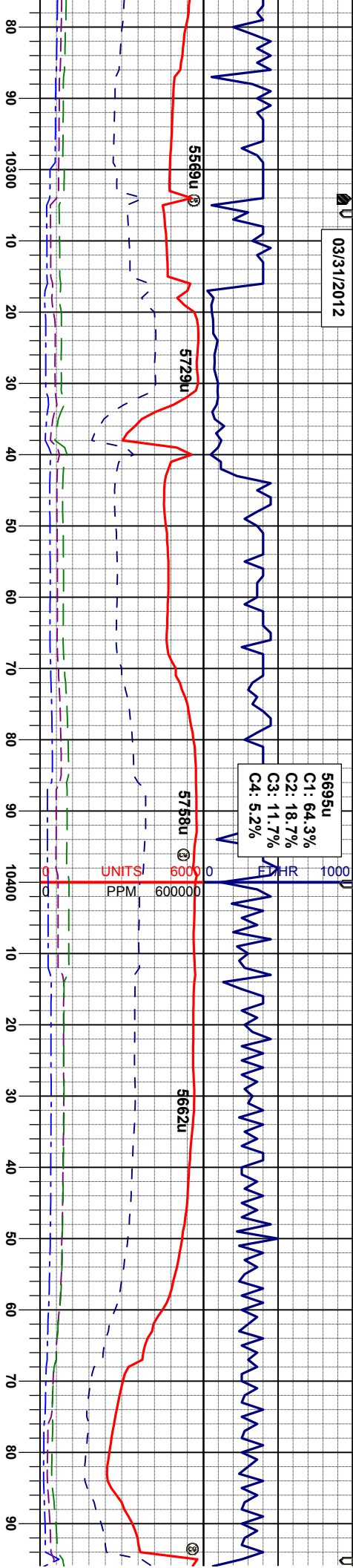
CHK: mgy - m brn, mod sft - mod firm, sbply-sbply, rthy tex, v calc
MRL: gyblk, occdkbrn, occ calc incl, sbply-sbply, smefts, mod firm, shy tex, sl mot, tr fos frag, v calc, tr bent

CHK: mgy - m brn, mod sft - mod firm, sbply-sbply, rthy tex, v calc
MRL: dkgy - blk, occ calc incl, sbply-sbply, smefts, mod firm, shy tex, sl mot, tr fos frag, v calc

CHK: mgy - m brn, mod sft - mod firm, sbply-sbply, rthy tex, v calc
MRL: dkgy - blk, occ calc incl, sbply-sbply, smefts, mod firm, shy tex, sl mot, tr fos frag, v calc



03/31/2012



WT IN 9.65/ OUT 9.65
VIS IN 36/ OUT 36

MD 10344'
INC 89.3°
AZM 265.0°
TVD 6657.27'

AP 200

MD 10439'
INC 89.6°
AZM 265.0°
TVD 6658.18'

WT IN 9.70/ OUT 9.70
VIS IN 36/ OUT 36

sft - mod firm,
calc
incl, sbbky-
shy tex, sl mot, tr

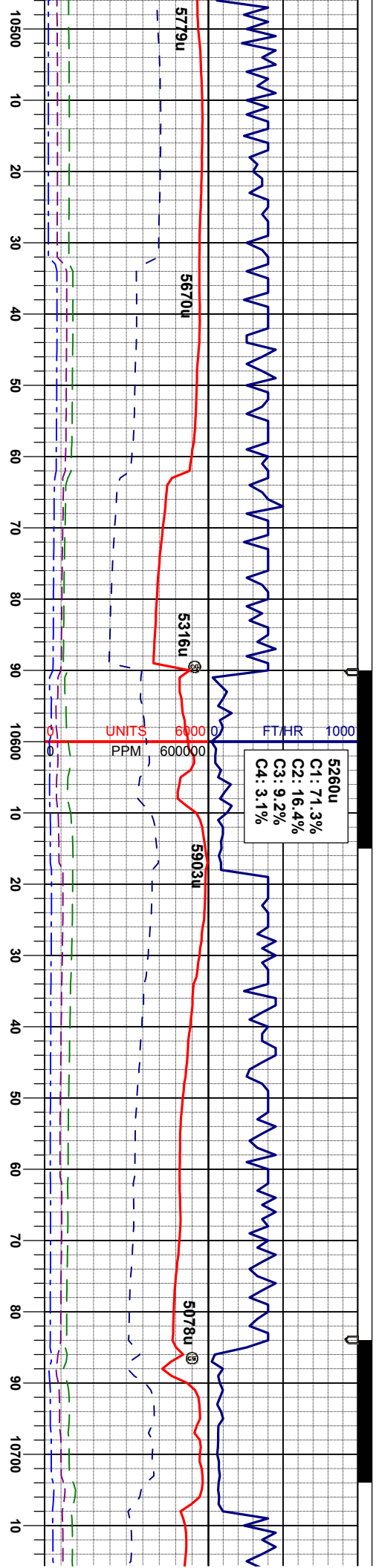
CHK: mgy - m brn, mod sft - mod firm,
sbbly-sbbky, rthy tex, v calc
MRL: dkgy - blk, occ calc incl, sbbky-
sbbly, smefts, mod firm, shy tex, sl mot, tr
fos frag, v calc, tr pyr

CHK: mgy - m brn, mod sft - mod firm,
sbbly-sbbky, rthy tex, v calc
MRL: dkgy - blk, occ calc incl, sbbky-
sbbly, smefts, mod firm, shy tex, sl mot, tr
fos frag, v calc, tr pyr

CHK: mgy - m brn, mod sft - mod firm,
sbbly-sbbky, rthy tex, v calc
MRL: dkgy - blk, occ calc incl, sbbky-
sbbly, smefts, mod firm, shy tex, sl mot, tr
fos frag, v calc

CHK: mgy - m brn, mod sft - mod firm,
sbbly-sbbky, rthy tex, v calc
MRL: dkgy - blk, occ calc incl, sbbky-
sbbly, smefts, mod firm, shy tex, sl mot, tr
fos frag, v calc





MD 10534'
INC 90.7°
AZM 265.0°
TVD 6657.93'

MD 10628'
INC 88.6°
AZM 265.4°
TVD 6658.51'

WT IN 9.60/ OUT 9.60
VIS IN 36/ OUT 36

CHK: mgy - m brn, mod sft - mod firm,
sbply-sbblky, rthy tex, sbwxy, v calc
MRL: dkgy - blk, occ calc incl, sbblky-
sbply, smeifs, mod firm, shy tex, sl mot, tr
fos frag, v calc

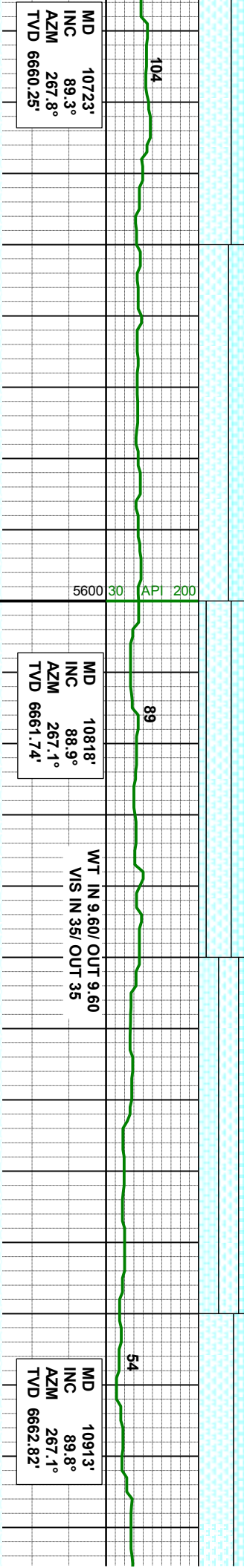
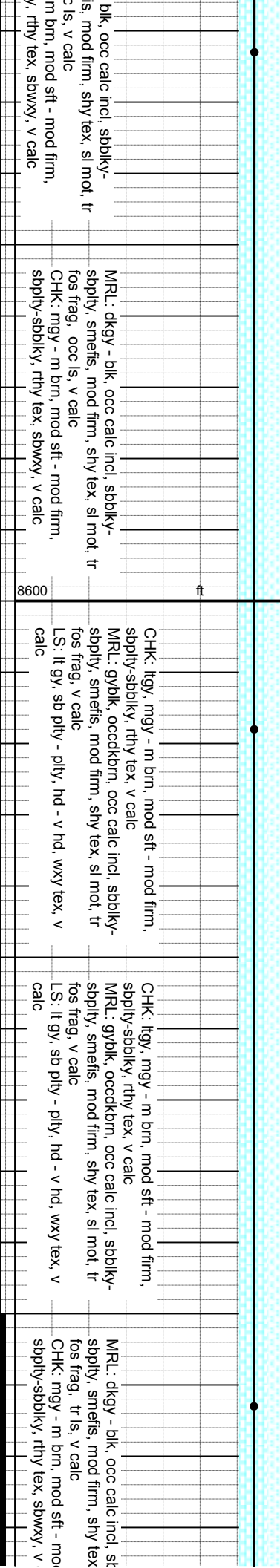
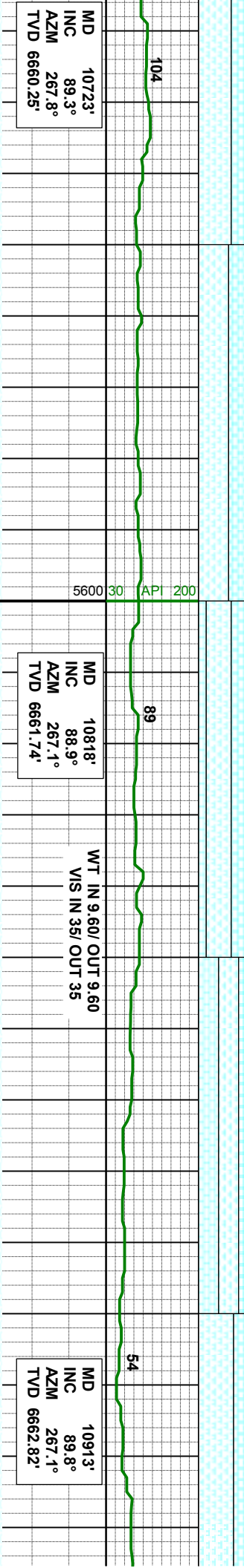
CHK: mgy - m brn, mod sft - mod firm,
sbply-sbblky, rthy tex, sbwxy, v calc
MRL: dkgy - blk, occ calc incl, sbblky-
sbply, smeifs, mod firm, shy tex, sl mot, tr
fos frag, v calc

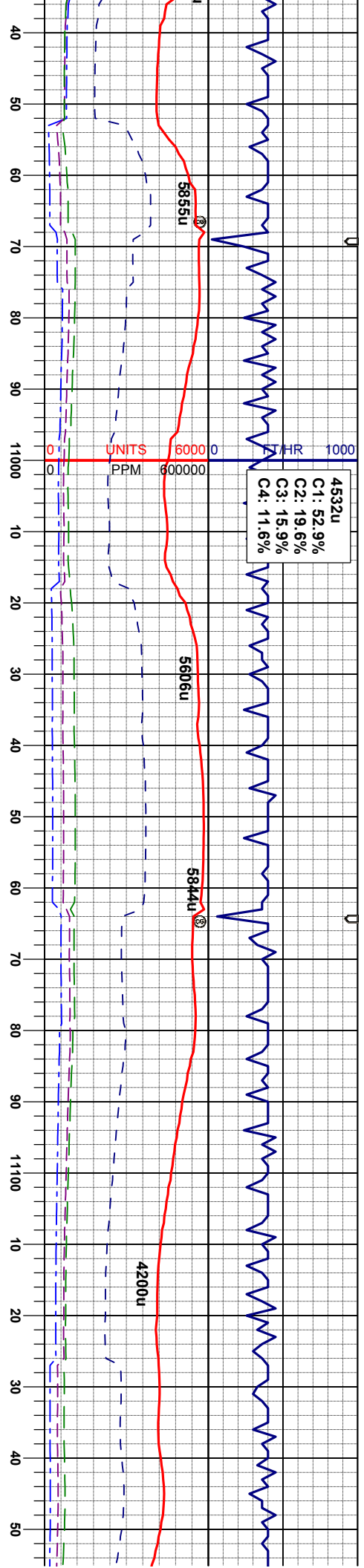
MRL: dkgy - blk, occ calc incl, sbblky-
sbply, smeifs, mod firm, shy tex, sl mot, tr
fos frag, v calc
CHK: mgy - m brn, mod sft - mod firm,
sbply-sbblky, rthy tex, sbwxy, v calc

MRL: dkgy - blk, occ calc incl, sbblky-
sbply, smeifs, mod firm, shy tex, sl mot, tr
fos frag, v calc
CHK: mgy - m brn, mod sft - mod firm,
sbply-sbblky, rthy tex, sbwxy, v calc

MRL: dkgy - blk, occ calc incl, sbblky-
sbply, smeifs, mod firm, shy tex, sl mot, tr
fos frag, v calc
CHK: mgy - m brn, mod sft - mod firm,
sbply-sbblky, rthy tex, sbwxy, v calc







WT IN 9.60/ OUT 9.60
VIS IN 35/ OUT 35

MD 11008'
INC 90.6°
AZM 266.8°
TVD 6662.49'

WT IN 9.60/ OUT 9.60
VIS IN 35/ OUT 37

MD 11102'
INC 91.3°
AZM 266.2°
TVD 6660.93'

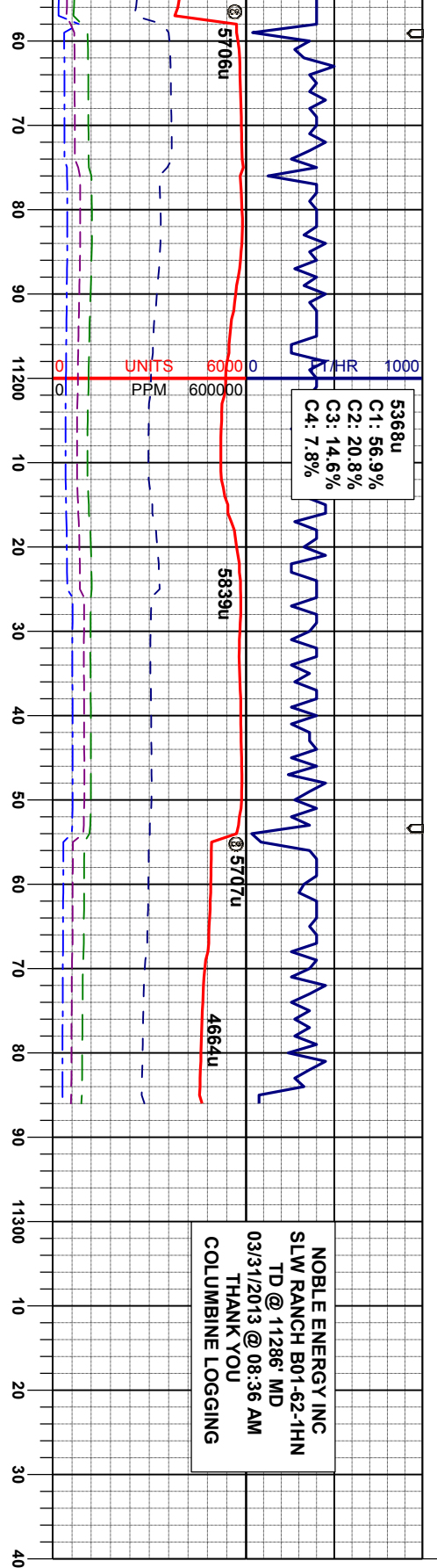
MRL: dkgy - blk, occ calc incl, sbblky-sbply, smefts, mod firm, shy tex, sl mot, tr fos frag, tr ls, v calc, grdg-CHK: mgy - m brn, mod sft - mod firm, sbply-sbblky, rthy tex, sbwxy, v calc

MRL: dkgy - blk, occ calc incl, sbblky-sbply, smefts, mod firm, shy tex, sl mot, tr fos frag, tr ls, v calc, grdg-CHK: mgy - m brn, mod sft - mod firm, sbply-sbblky, rthy tex, sbwxy, v calc

MRL: dkgy - blk, occ calc incl, sbblky-sbply, smefts, mod firm, shy tex, sl mot, tr fos frag, tr ls, v calc, grdg-CHK: mgy - m brn, mod sft - mod firm, sbply-sbblky, rthy tex, sbwxy, v calc

MRL: dkgy - blk, occ calc incl, sbblky-sbply, smefts, mod firm, shy tex, sl mot, tr fos frag, tr ls, v calc, grdg-CHK: mgy - m brn, mod sft - mod firm, sbply-sbblky, rthy tex, sbwxy, v calc





NOBLE ENERGY INC
SLW RANCH B01-62-1HN
TD @ 11286' MD
03/31/2013 @ 08:36 AM
THANK YOU
COLUMBINE LOGGING

MD 11230'
INC 92.2°
AZM 265.2°
TVD 6657.02'

PROJECTED
MD 11286'
INC 92.2°
AZM 265.2°
TVD 6654.87'

NOBLE ENERGY INC
SLW RANCH B01-62-1HN
TD @ 11286' MD
03/31/2013 @ 08:36 AM

MR.L: dkgy - blk, occ calc incl, sbbkly-
sbbply, smeifs, mod firm, shy tex, sl mot, tr
s frag, v calc, grdg-
HK: mgy - m brn, mod sft - mod firm,
sbbply-sbbkly, rthy tex, sbwxy, v calc

MR.L: dkgy - blk, occ calc incl, sbbkly-
sbbply, smeifs, mod firm, shy tex, sl mot, tr
s frag, v calc, grdg-
CHK: mgy - m brn, mod sft - mod firm,
sbbply-sbbkly, rthy tex, sbwxy, v calc

MR.L: dkgy - blk, occ calc incl, sbbkly-
sbbply, smeifs, mod firm, shy tex, sl mot, tr
s frag, v calc, grdg-
CHK: mgy - m brn, mod sft - mod firm,
sbbply-sbbkly, rthy tex, sbwxy, v calc

