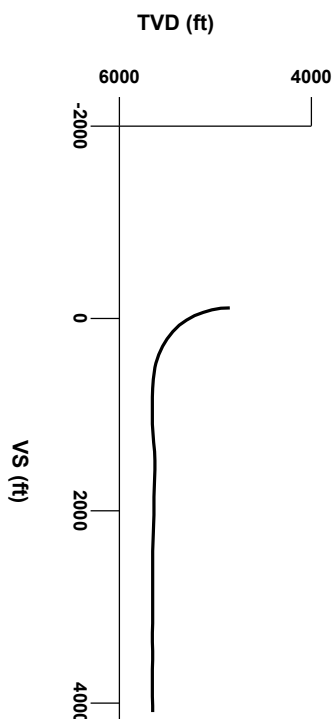


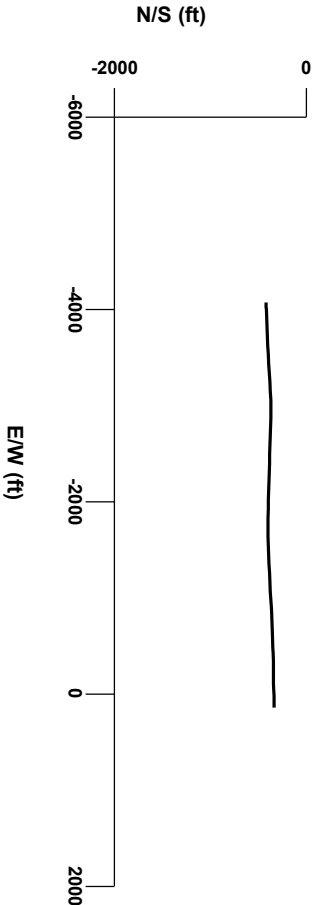
LOG created using LPLOT VH Version 3.0, August 20, 2013, Copyright (C) 1999-2009 Pason Systems Corp.

**OPERATOR:** NOBLE ENERGY INC  
**WELL:** ROHN STATE LD04-64-1HN  
**LOCATION:** SEC 4 T9N R58W  
**COUNTY:** WELD  
**STATE:** COLORADO  
**SPOT:** 1989' FSL; 480' FEL  
**ELEVATION:** 4708' GL; 4732' KB  
**FIELD:** WILDCAT  
**SPUD DATE:** 08/15/2013  
**TD DATE:** 08/20/2013  
**DATES LOGGED:** 08/16/2013 - 08/20/2013  
**DEPTHS LOGGED:** 4868' - 9566' MD  
**LOGGERS:** LAURA KELLOGG; CONOR PESICKA  
**DRILLING FLUID:** LSND  
**DRILLING RIG:** H&P 273  
**API:** 05-123-37482  
**LOG TYPE:** HORIZONTAL  
**SCALE:** 1:240 (5 inches per 100 feet)  
**REMARKS:** WELLSITE GEOLOGICAL SERVICES  
 PROVIDED BY COLUMBINE LOGGING INC.



Survey Elevation

Survey Plan



6000

LITHOLOGIES

Chalk

Marl

Silty Shale

ENGINEERING SYMBOLS

Casing

Connection Gas

Casing

Midnight Depth

Connection

GAS

0

UNITS

2000

C1

0

PPM

200000

C2

0

PPM

200000

C3

0

PPM

200000

C4

0

PPM

200000

ROP

0

FT/HR

500

COLUMBINE LOGGING INC.

RIGGED UP ON 08/16/2013

MANNED 2-PERSON LOGGING

WITH BLOODHOUND GAS

CHROMATOGRAPH UNIT #0540

COLUMBINE BEGAN LOGGING

ON 08/16/2013

BHA BIT:

SEC 8.75" FXD55

Serial #: 120669

Jets: 5x14

BEGAN DRILLING CURVE

@ 3:30 AM 08/17/2013

DEPTH (FEET)

4820

30

40

50

60

70

80

90

4900

10

20

30

40

50

60

70

08/17/2013

0

950u

C1: 91.7%

C2: 2.1%

C3: 5.8%

C4: 0.4%

1477u

CUTTINGS LITHOLOGY

40

API

300

GAMMA RAY

4800

ft

7000

TFG

MD

INC

AZM

TVD

4878'

0.2°

36.1°

4849.99'

WT IN 9.20/ OUT 9.20

VIS IN 29/ OUT 29

MD

INC

AZM

TVD

Acetone was used as the cutting agent with the dimple filled to the rim

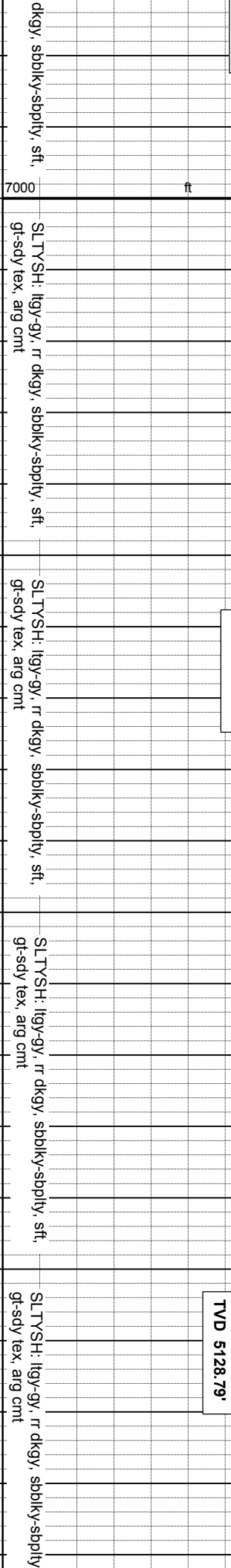
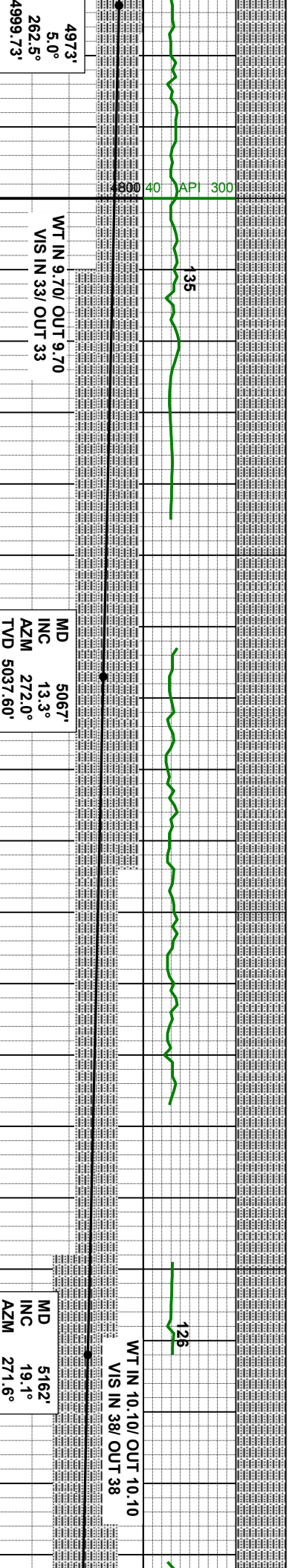
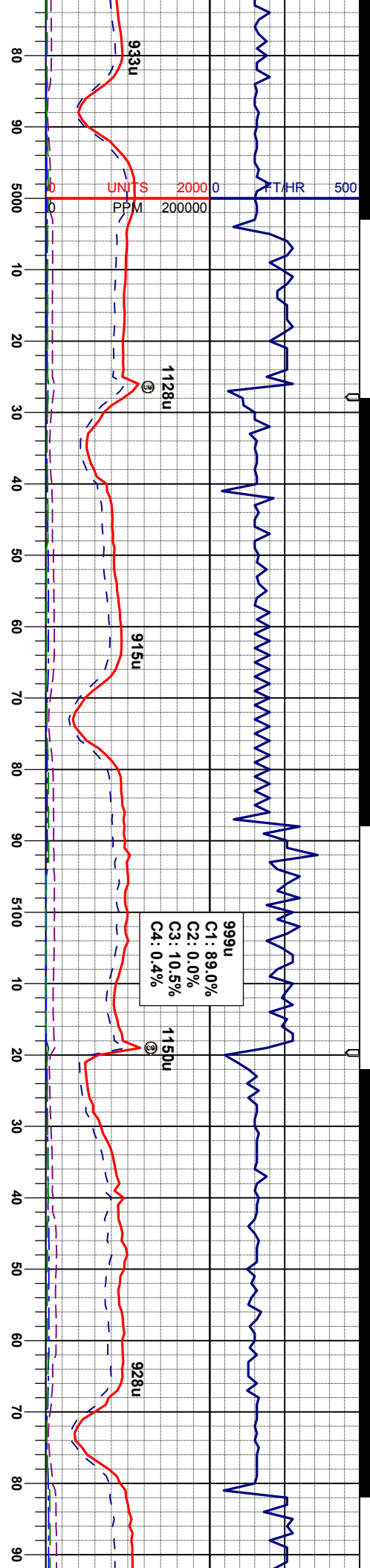
The ratings are based on 7 descriptors: None, Slight trace, Trace, Fair, Moderate, Good, and Excellent. The descriptor used is based on the loggers observations and best judgment of brilliance, color and longevity of the cut.

SLTYSH: lgy-gy, sblky-sbply, sft, gt-sdy tex, arg cnt

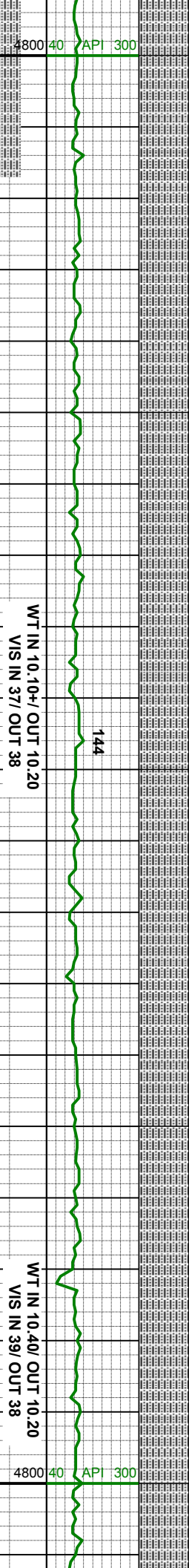
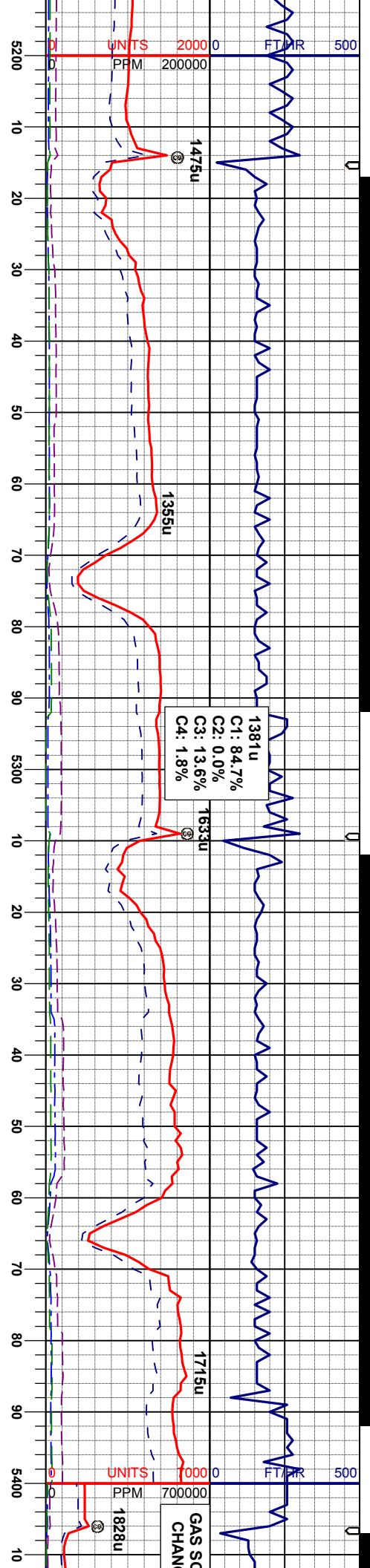
SLTYSH: lgy-gy, r dkgy, sblky-sbply, sft, gt-sdy tex, arg cnt

SLTYSH: lgy-gy, r dkgy, sblky-sbply, sft, gt-sdy tex, arg cnt

SAMPLE PHOTOS

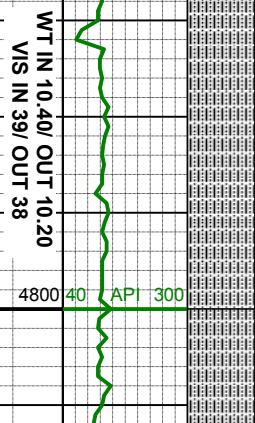






MD 5257'  
INC 24.4°  
AZM 268.1°  
TVD 5217.00'

MD 5352'  
INC 31.6°  
AZM 266.9°  
TVD 5300.83'



SLTYSH: lgy-gy, r dkgy, sbblky-sbply, sft, gt-sdy tex, arg cnt

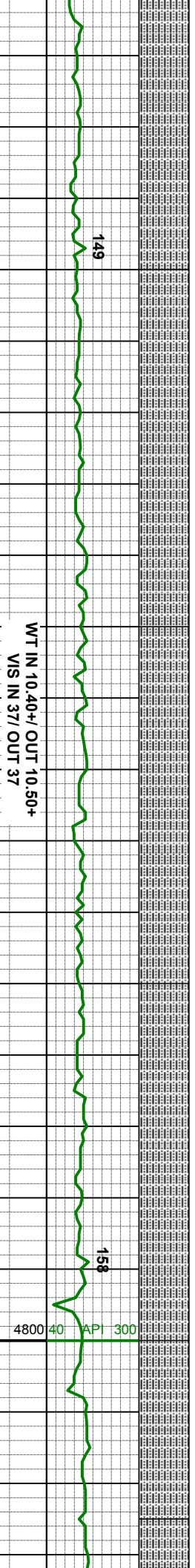
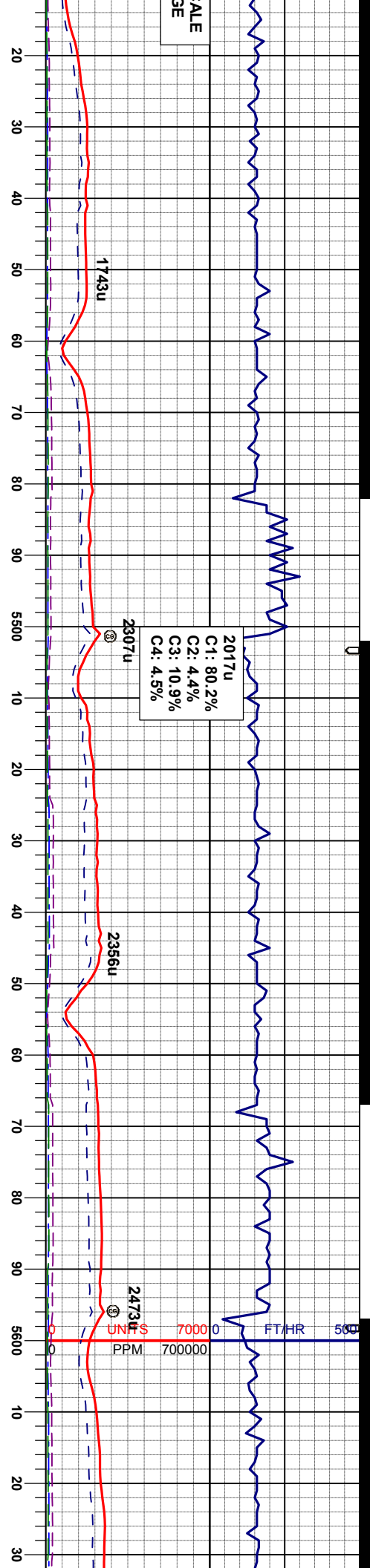
SLTYSH: lgy-gy, r dkgy, sbblky-sbply, sft, gt-sdy tex, arg cnt

SLTYSH: lgy-gy, r dkgy, sbblky-sbply, sft, gt-sdy tex, arg cnt

SLTYSH: lgy-gy, r dkgy, sbblky-sbply, sft, gt-sdy tex, arg cnt







MD 5447'  
INC 39.5°  
AZM 286.7°  
TVD 5378.06'

MD 5542'  
INC 48.4°  
AZM 269.1°  
TVD 5446.39'

MD 5542'  
INC 48.4°  
AZM 269.1°  
TVD 5446.39'

SLTYSH: lgy-gy, rr dkgv, sbblky-sbply, sft, gt-sdy tex, arg cnt

SLTYSH: lgy-gy, rr dkgv, sbblky-sbply, sft, gt-sdy tex, arg cnt

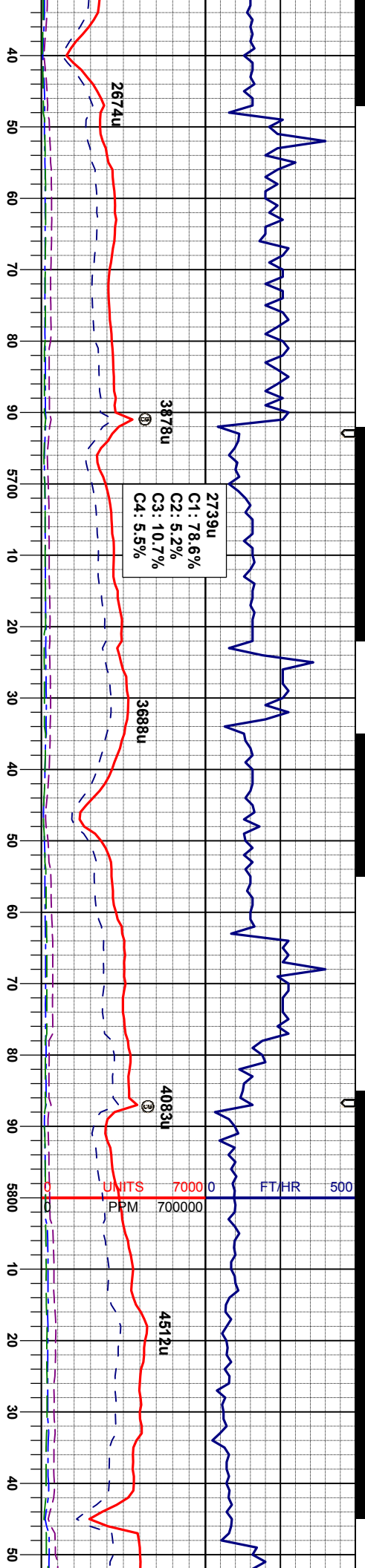
SLTYSH: lgy-gy, rr dkgv, sbblky-sbply, sft, gt-sdy tex, arg cnt

SLTYSH: lgy-gy, rr dkgv, sbblky-sbply, sft, gt-sdy tex, arg cnt

SLTYSH: lgy-gy, rr dkgv, sbblky-sbply, sft, gt-sdy tex, arg cnt







230

230

356

40

300

WT IN 10.40+ OUT 10.50+  
VIS IN 37/ OUT 38

SHARON SPRINGS  
MARKER BED @  
5765 MD/ 5566 TVD

NOBRARA TOP @  
5778 MD/ 5571 TVD

NIO A CHALK @  
5816 MD/ 5587 TVD

WT IN 10.50+ OUT 11.00+  
VIS IN 38/ OUT 39

5637'  
C 57.1°  
M 270.4°  
D 5503.84'

MD 5730'  
INC 61.6°  
AZM 270.4°  
TVD 5551.24'

MD 5825'  
INC 67.9°  
AZM 269.1°  
TVD 5591.74'

ltky-sbply, sft,

SLTYSH: lly-gy, r dkgy, sbply-sbply, sft,  
gt-sdy tex, arg cnt

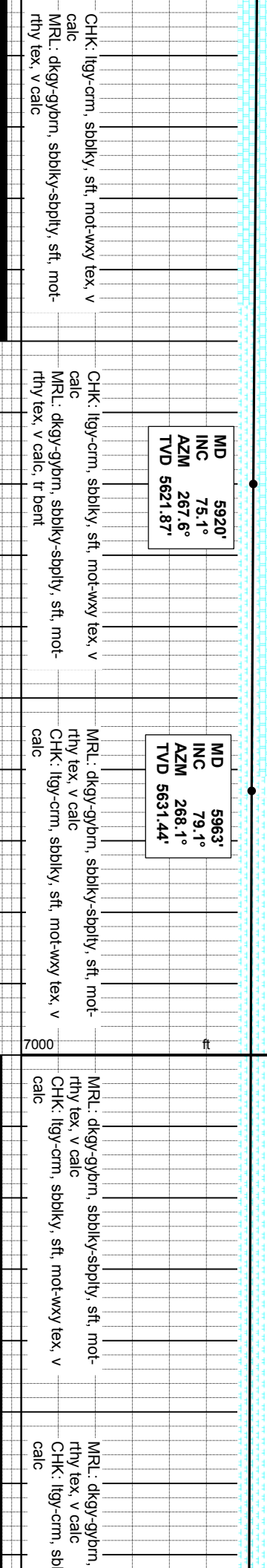
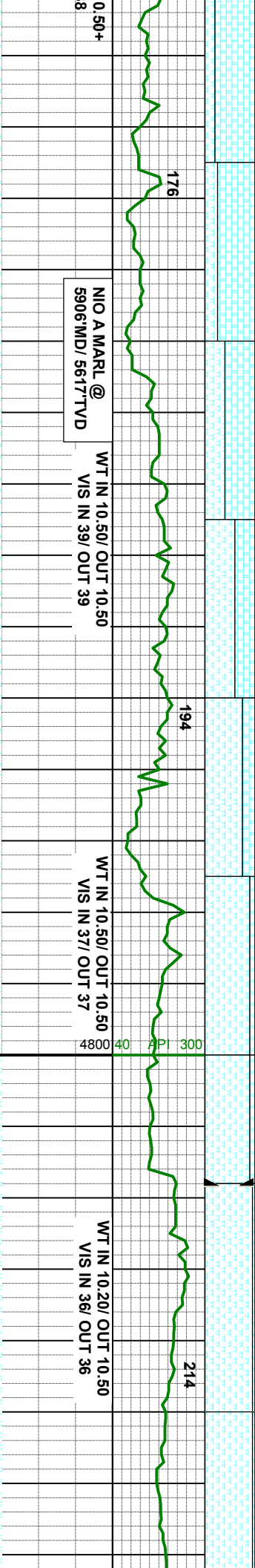
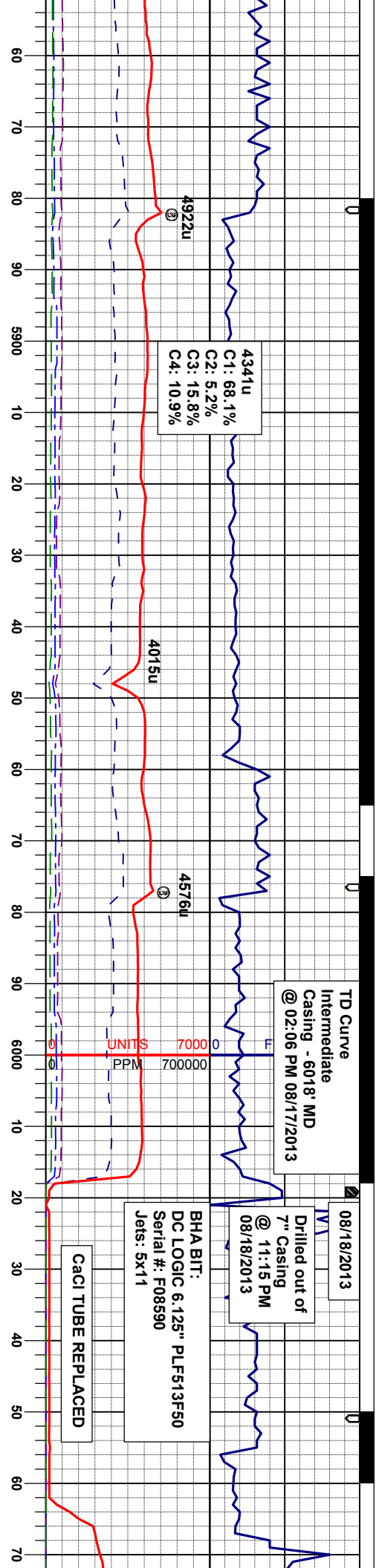
SLTYSH: lly-gy, r dkgy, sbply-sbply, sft,  
gt-sdy tex, arg cnt, abnt bent

SLTYSH: lly-gy, r dkgy, sbply-sbply, sft,  
gt-sdy tex, arg cnt, non calc  
MRL: dkgy-gybm, sbply-sbply, sft, mot-  
rthy tex, v calc, abnt bent  
CHK: lly, sbply, sft, mot-wxy tex, v calc

CHK: lly-crm, sbply, sft, mot-wxy tex, v  
calc  
MRL: dkgy-gybm, sbply-sbply, sft, mot-  
rthy tex, v calc, tr bent









08/19/2013

4344u  
C1: 78.5%  
C2: 6.1%  
C3: 12.3%  
C4: 3.0%

4525u

4630u

4429u

3477u

FT/HR 500  
PPM 700000  
UNITS 70000



191

265

396

WT IN 10.20 OUT 10.50  
VIS IN 34 OUT 34

MD 6083'  
INC 86.1°  
AZM 268.3°  
TVD 5647.53'

MD 6183'  
INC 86.5°  
AZM 266.9°  
TVD 5653.66'

MD 6278'  
INC 89.6°  
AZM 268.1°  
TVD 5656.90'

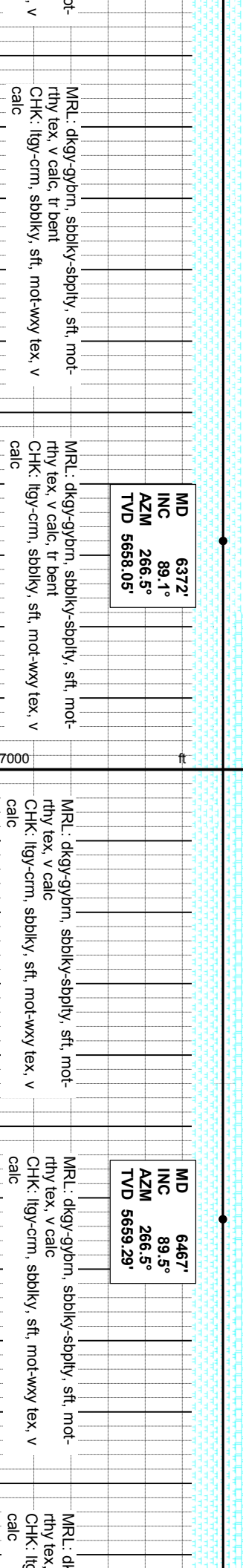
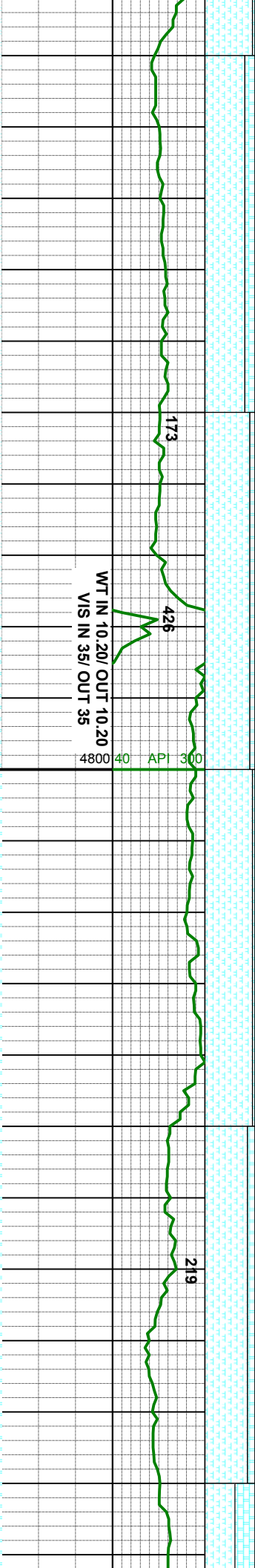
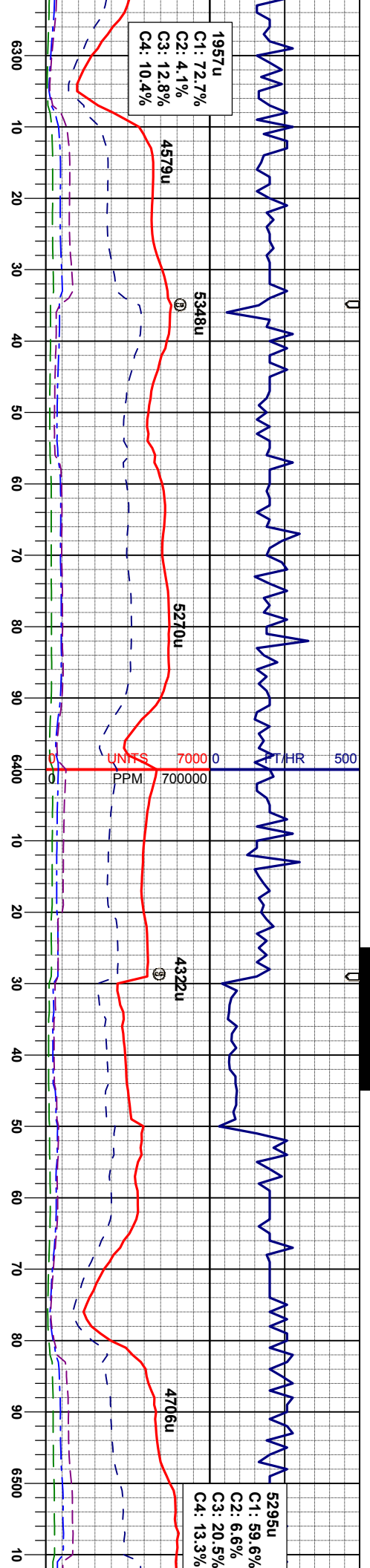
MRL: dkgy-gybrn, sbbiky-sbpity, sft, mot-  
rthy tex, v calc  
CHK: lgy-crm, sbbiky, sft, mot-wxy tex, v  
calc

MRL: dkgy-gybrn, sbbiky-sbpity, sft, mot-  
rthy tex, v calc  
CHK: lgy-crm, sbbiky, sft, mot-wxy tex, v  
calc

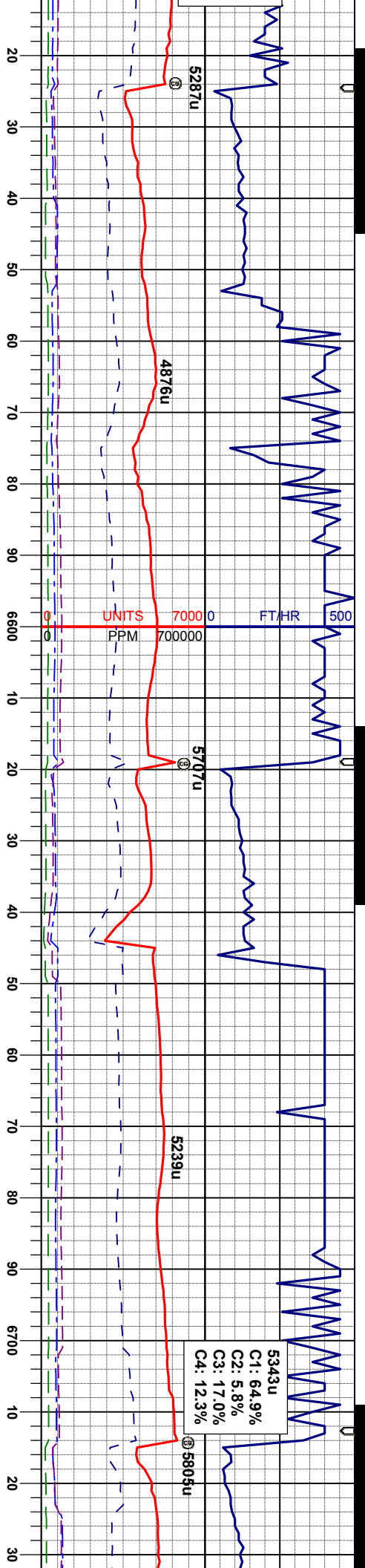
MRL: dkgy-gybrn, sbbiky-sbpity, sft, mot-  
rthy tex, v calc  
CHK: lgy-crm, sbbiky, sft, mot-wxy tex, v  
calc

MRL: dkgy-gybrn, sbbiky-sbpity, sft, m-  
rthy tex, v calc, tr bent  
CHK: lgy-crm, sbbiky, sft, mot-wxy tex  
calc









5343u  
C1: 64.9%  
C2: 5.8%  
C3: 17.0%  
C4: 12.3%

MD 6557'  
INC 92.9°  
AZM 267.4°  
TVD 5657.40'

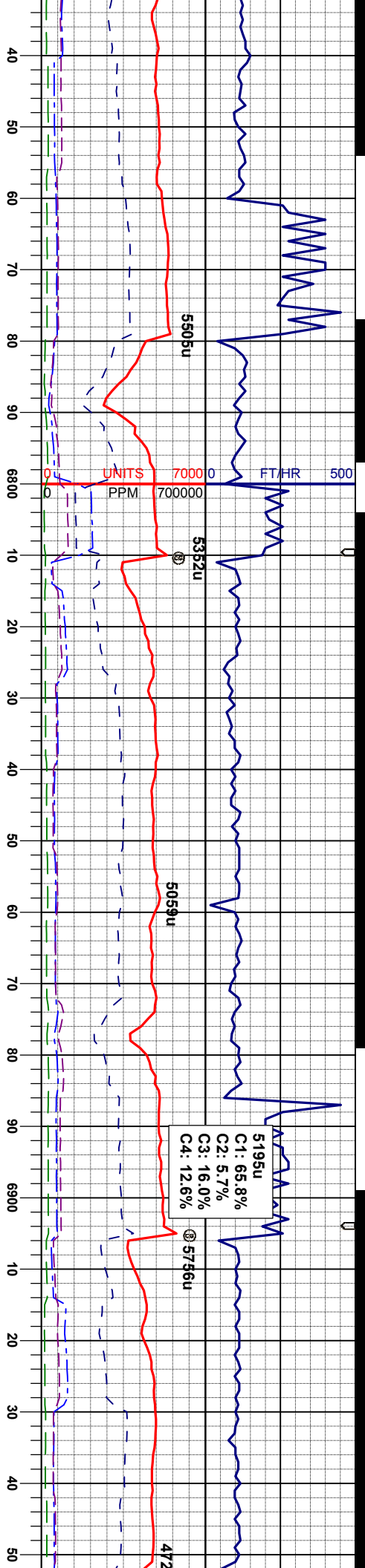
MD 6651'  
INC 94.6°  
AZM 267.4°  
TVD 5642.05'

CHK: lgy-crm, sbblky, sft, mot-wxy tex, v  
calc  
MRL: dkg-gy-brn, sbblky-sbply, sft, mot-  
rthy tex, v calc

CHK: lgy-crm, sbblky, sft, mot-wxy tex, v  
calc  
MRL: dkg-gy-brn, sbblky-sbply, sft, mot-  
rthy tex, v calc

CHK: lgy-crm, sbblky, sft, mot-wxy tex, v  
calc  
MRL: dkg-gy-brn, sbblky-sbply, sft, mot-  
rthy tex, v calc





MD 6747'  
INC 94.7°  
AZM 266.9°  
TVD 5643.04'

of-wxy tex, v  
CHK: lgy-crm, sbblky, sft, mot-wxy tex, v  
calc  
MRL: dky-gy/brn, sbblky-sbply, sft, mot-  
rthy tex, v calc

WT IN 10.30+/ OUT 10.30+  
VIS IN 35/ OUT 35

WT IN 10.30/ OUT 10.30  
VIS IN 35/ OUT 35

WT IN 10.25/ OUT 10  
VIS IN 34/ OUT 34

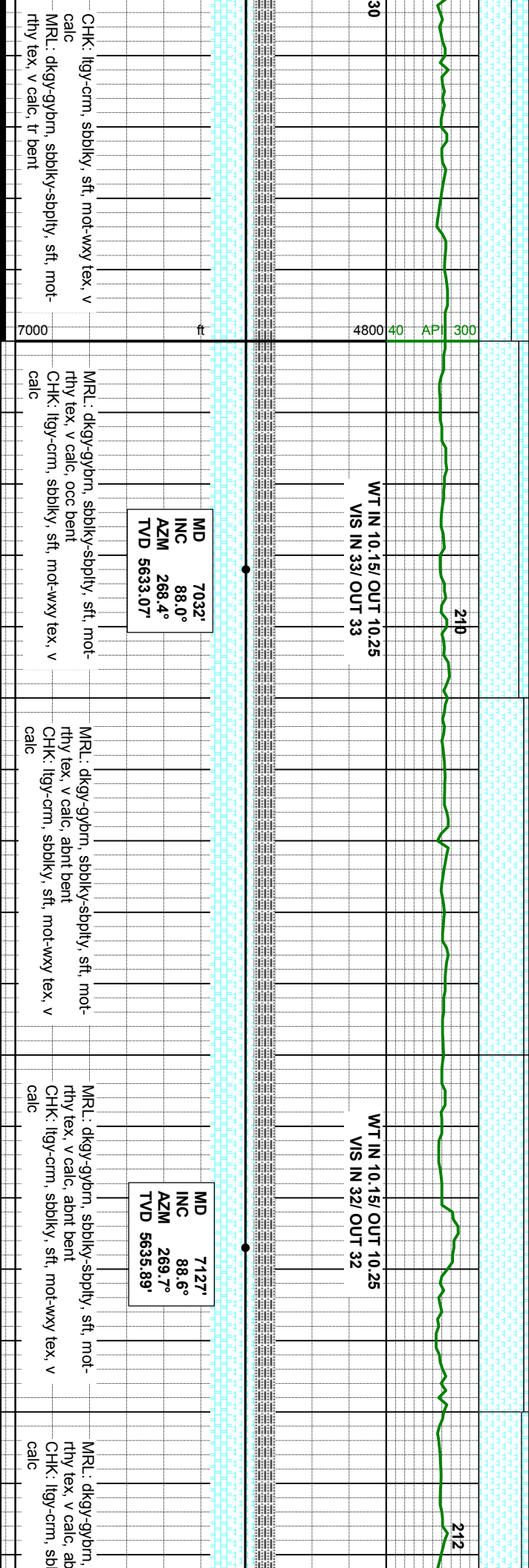
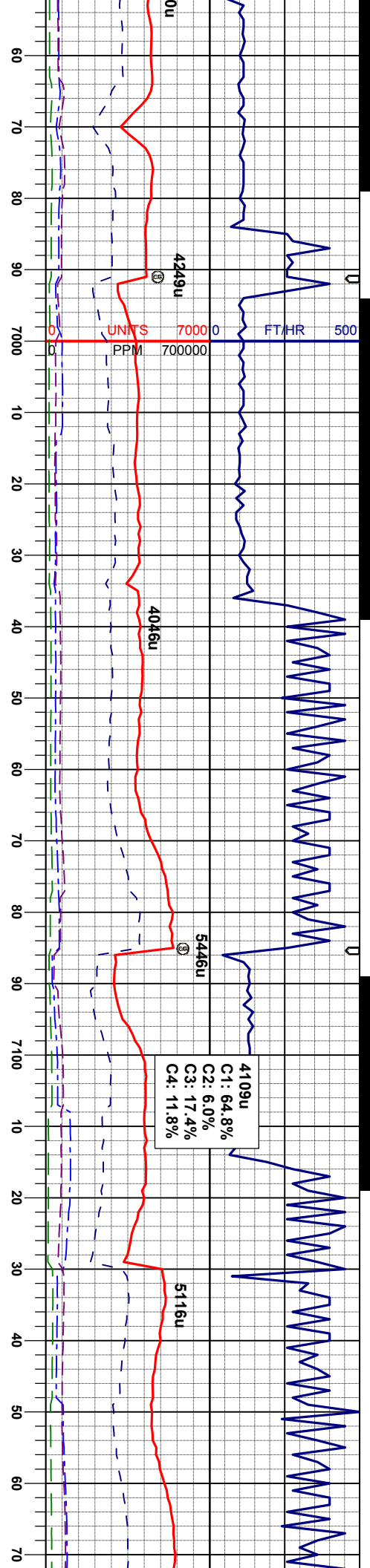
MD 6842'  
INC 93.6°  
AZM 266.7°  
TVD 5636.39'

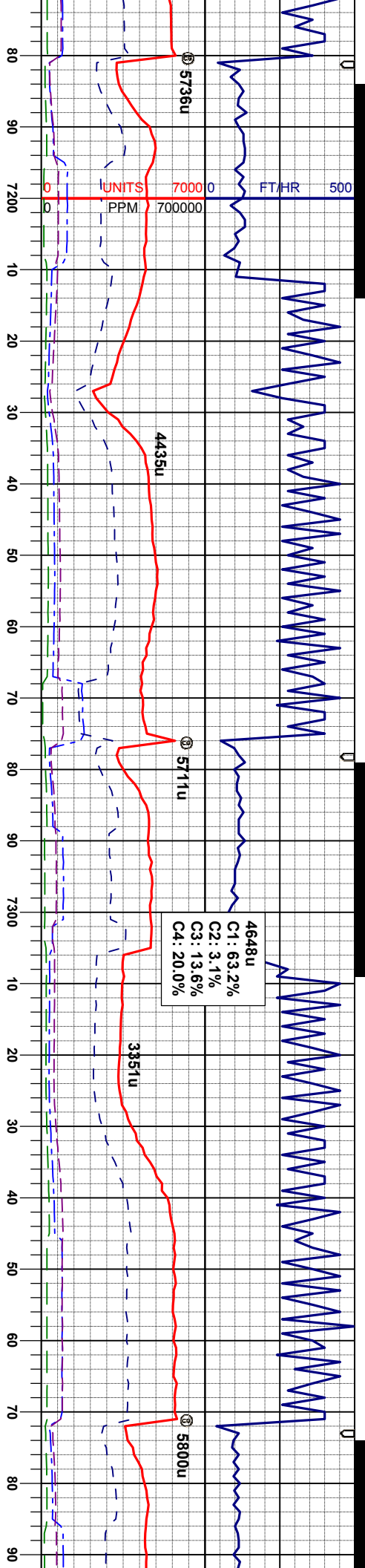
of-wxy tex, v  
CHK: lgy-crm, sbblky, sft, mot-wxy tex, v  
calc  
MRL: dky-gy/brn, sbblky-sbply, sft, mot-  
rthy tex, v calc

MD 6937'  
INC 91.2°  
AZM 267.4°  
TVD 5632.41'

of-wxy tex, v  
CHK: lgy-crm, sbblky, sft, mot-wxy tex, v  
calc  
MRL: dky-gy/brn, sbblky-sbply, sft, mot-  
rthy tex, v calc







API 300

WT IN 10.00/ OUT 10.20  
VIS IN 34/ OUT 33

MD 7222'  
INC 88.6°  
AZM 270.6°  
TVD 5638.21'

MR.L: dkg-y/brn, sbbky-sbply, sft, mot-  
rthy tex, v calc  
CHK: lly-crm, sbbky, sft, mot-wxy tex, v  
calc

MR.L: dkg-y/brn, sbbky-sbply, sft, mot-  
rthy tex, v calc  
CHK: lly-crm, sbbky, sft, mot-wxy tex, v  
calc

MD 7317'  
INC 88.9°  
AZM 270.0°  
TVD 5640.28'

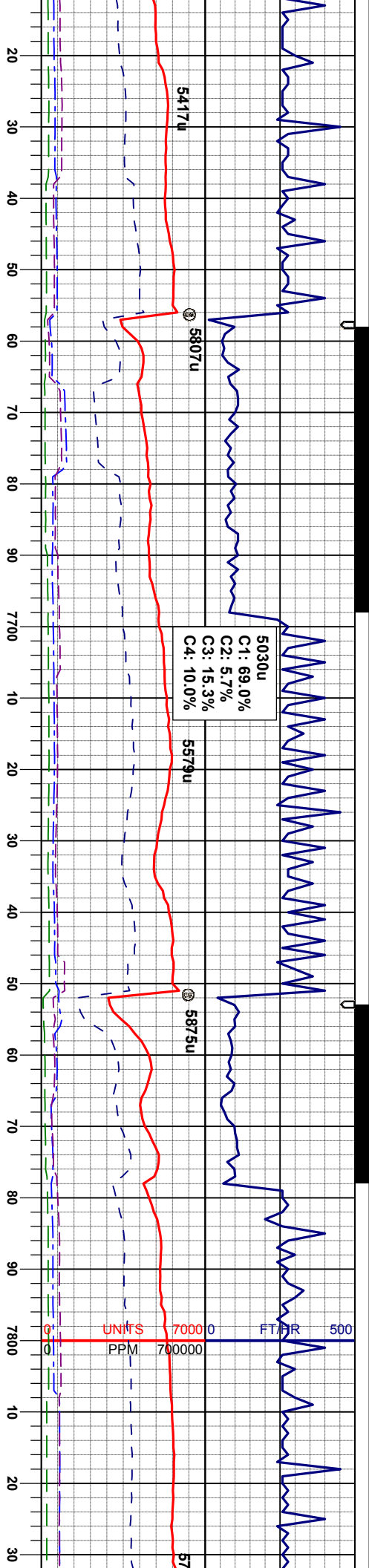
MR.L: dkg-y/brn, sbbky-sbply, sft, mot-  
rthy tex, v calc  
CHK: lly-crm, sbbky, sft, mot-wxy tex, v  
calc

MR.L: dkg-y/brn, sbbky-sbply, sft, mot-  
rthy tex, v calc  
CHK: lly-crm, sbbky, sft, mot-wxy tex, v  
calc









WT IN 10.10+ / OUT 10.20  
VIS IN 35 / OUT 35

MD 7696'  
INC 88.1°  
AZM 271.6°  
TVD 5647.89'

WT IN 10.10+ / OUT 10.10+  
VIS IN 44 / OUT 44

MD 7791'  
INC 88.2°  
AZM 272.3°  
TVD 5650.95'

v-crm, sbdkly, sft, mot-wxy tex, v  
gy-gybm, sbdkly-sbply, sft, mot-  
v calc, tr bent

CHK: lly-crm, sbdkly, sft, mot-wxy tex, v  
calc  
MRL: dky-gybm, sbdkly-sbply, sft, mot-  
rthy tex, v calc, tr bent

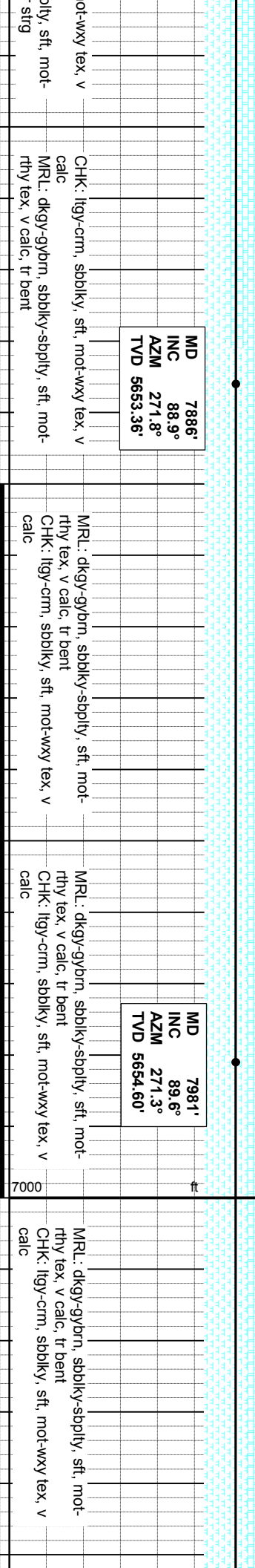
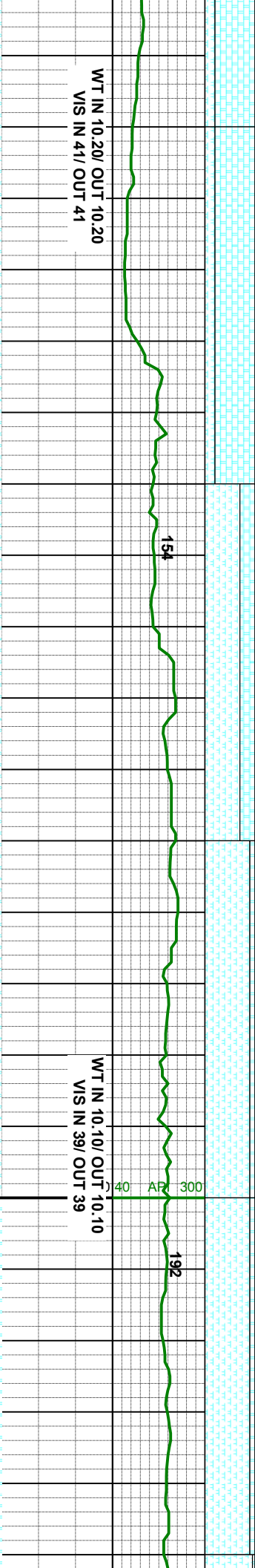
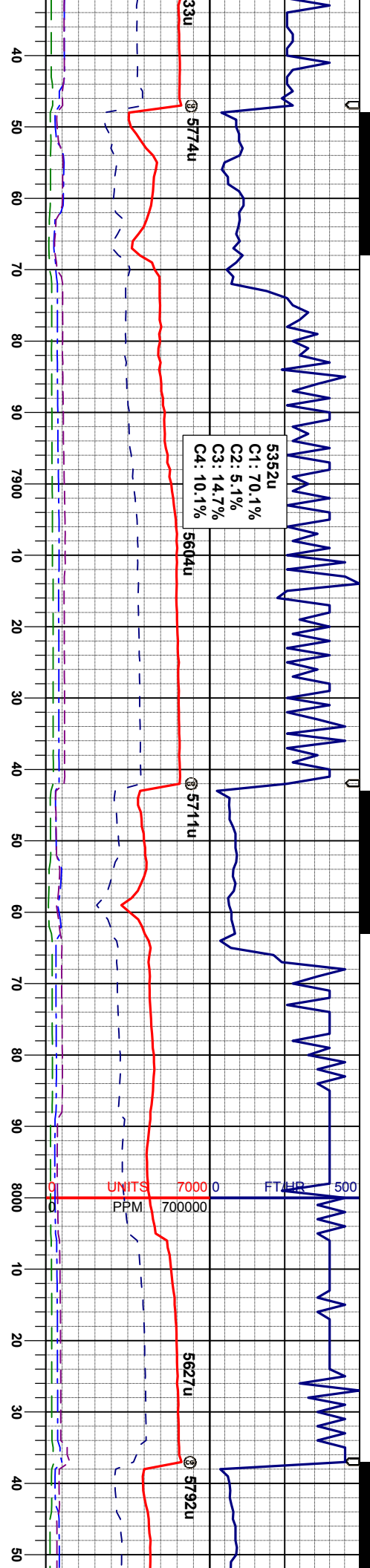
CHK: lly-crm, sbdkly, sft, mot-wxy tex, v  
calc  
MRL: dky-gybm, sbdkly-sbply, sft, mot-  
rthy tex, v calc, tr bent

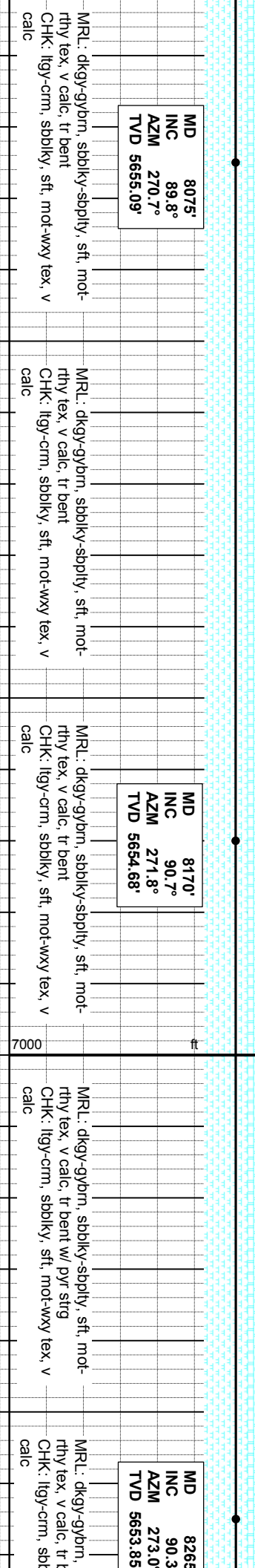
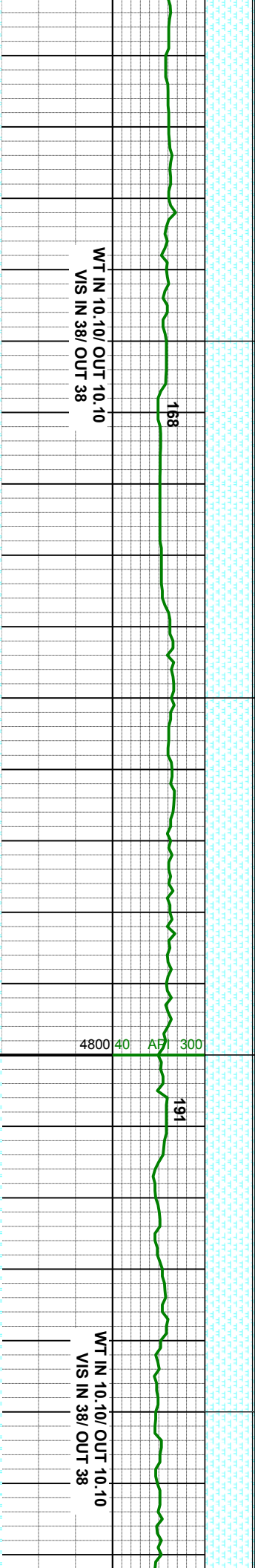
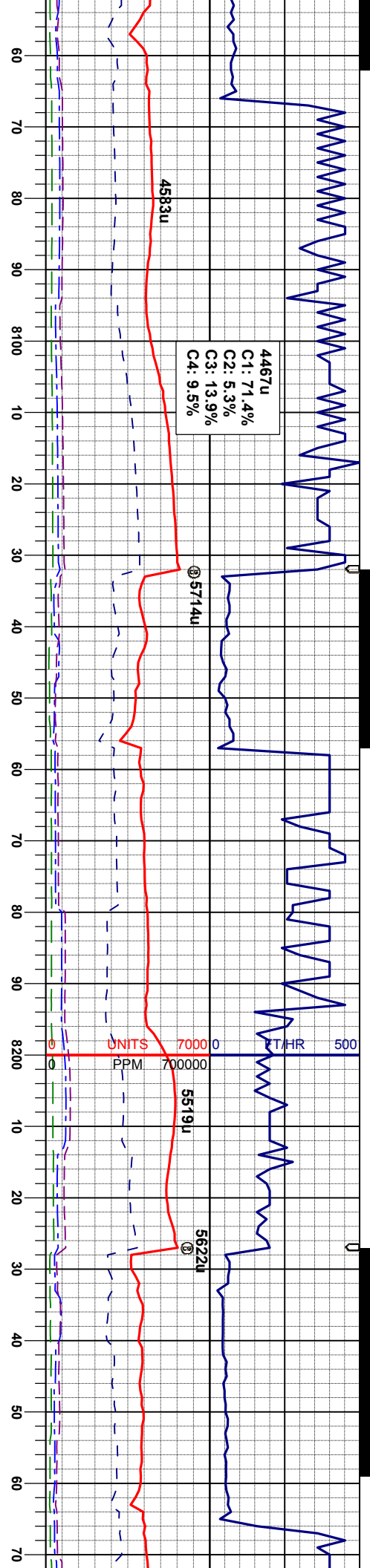
CHK: lly-crm, sbdkly, sft, mot-wxy tex, v  
calc  
MRL: dky-gybm, sbdkly-sbply, sft, mot-  
rthy tex, v calc, tr bent w/ py strg

CHK: lly-crm, sbdkly, sft, m  
calc  
MRL: dky-gybm, sbdkly-sb  
rthy tex, v calc, tr bent w/ py









MD 8075'  
INC 89.8°  
AZM 270.7°  
TVD 5655.09'

MRL: dkgy-gybrn, sbblky-sbply, sft, mot-  
rthy tex, v calc, tr bent  
CHK: llyg-crm, sbblky, sft, mot-wxy tex, v  
calc

MD 8170'  
INC 90.7°  
AZM 271.8°  
TVD 5654.68'

MRL: dkgy-gybrn, sbblky-sbply, sft, mot-  
rthy tex, v calc, tr bent  
CHK: llyg-crm, sbblky, sft, mot-wxy tex, v  
calc

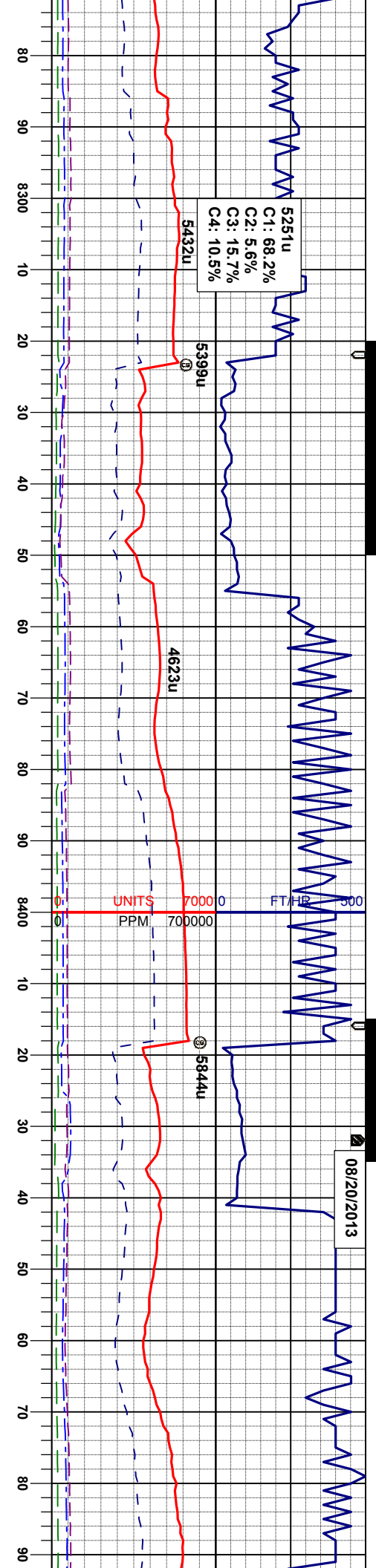
MD 8265'  
INC 90.3°  
AZM 273.0°  
TVD 5653.85'

MRL: dkgy-gybrn, sbblky-sbply, sft, mot-  
rthy tex, v calc, tr bent w/ pyr strg  
CHK: llyg-crm, sbblky, sft, mot-wxy tex, v  
calc





08/20/2013



5251u  
C1: 68.2%  
C2: 5.6%  
C3: 15.7%  
C4: 10.5%

5432u

539u

4623u

5844u

UNITS  
PPM

WT IN 10.15/ OUT 10.15  
VIS IN 37/ OUT 37

WT IN 10.20/ OUT 10.20  
VIS IN 36/ OUT 36

MD 8360'  
INC 89.4°  
AZM 271.3°  
TVD 5654.10'

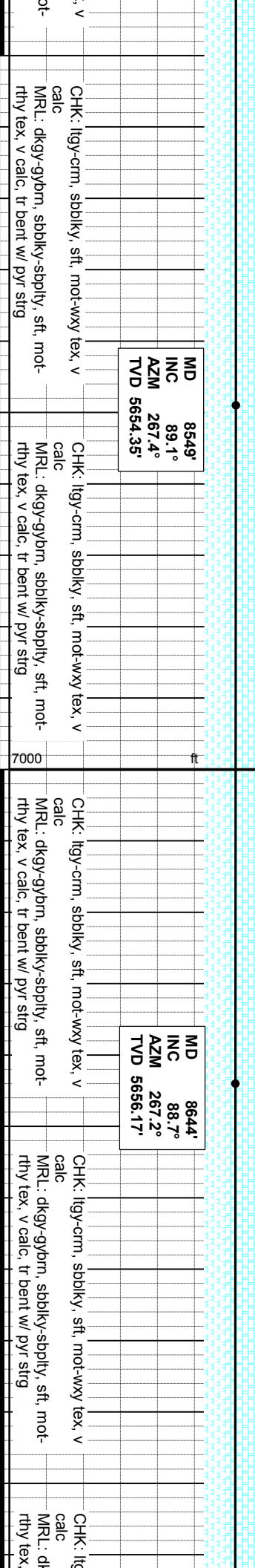
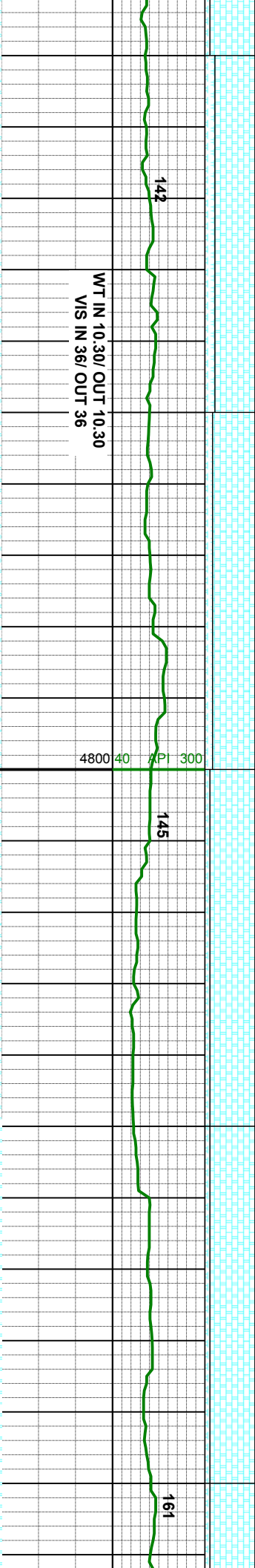
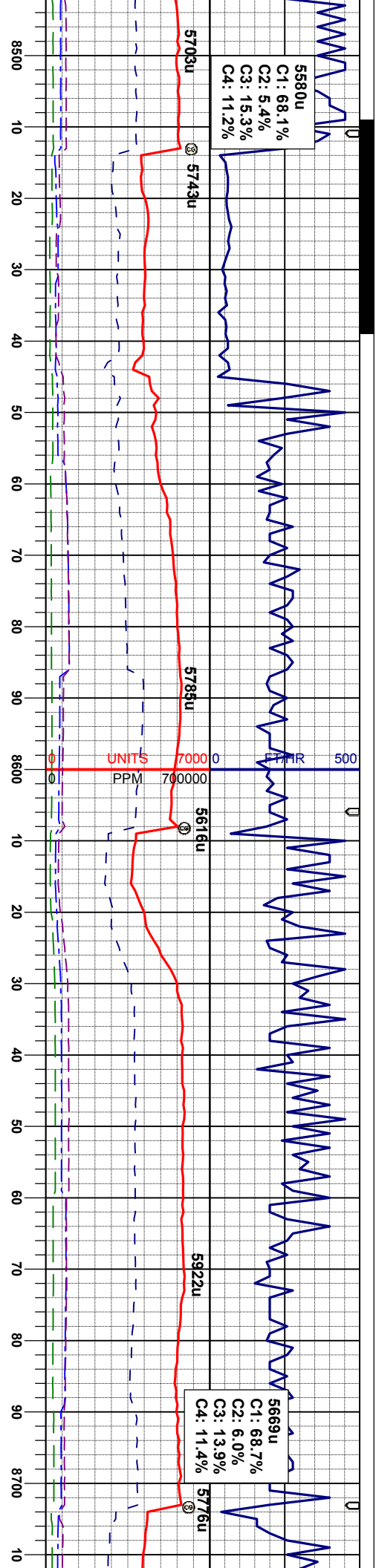
MD 8454'  
INC 90.6°  
AZM 270.8°  
TVD 5654.10'

MRL: dkgy-gybrn, sbblky-sbply, sft, mot-  
rthy tex, v calc, tr bent w/ pyr strg  
CHK: llyg-crm, sbblky, sft, mot-wxy tex, v  
calc

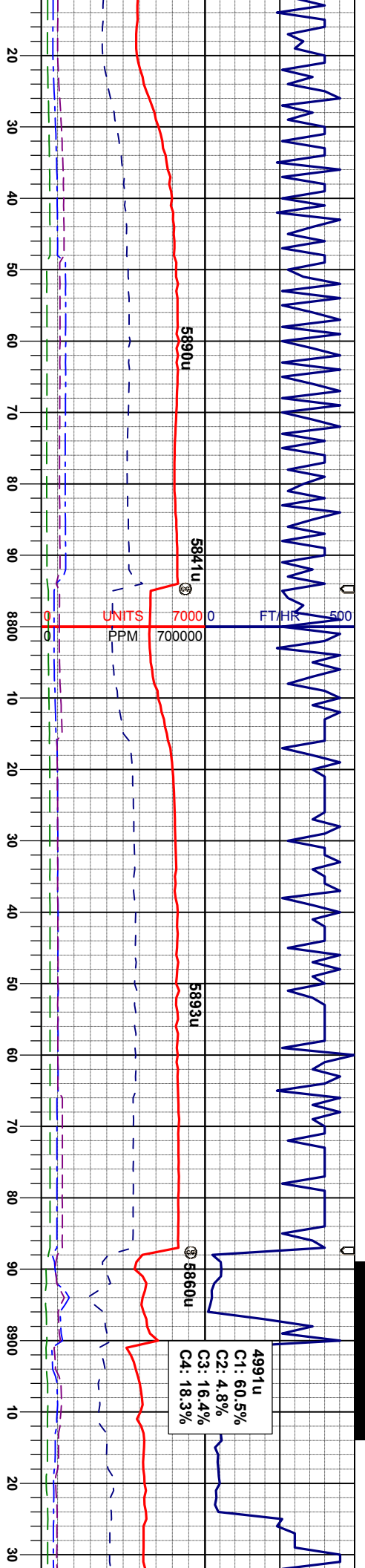
MRL: dkgy-gybrn, sbblky-sbply, sft, mot-  
rthy tex, v calc, tr bent w/ pyr strg  
CHK: llyg-crm, sbblky, sft, mot-wxy tex, v  
calc

MRL: dkgy-gybrn, sbblky-sbply, sft, mot-  
rthy tex, v calc, tr bent w/ pyr strg  
CHK: llyg-crm, sbblky, sft, mot-wxy tex, v  
calc









4991u  
C1: 60.5%  
C2: 4.8%  
C3: 16.4%  
C4: 18.3%

WT IN 10.20/ OUT 10.20  
VIS IN 38/ OUT 38

WT IN 10.25/ OUT 10.25  
VIS IN 36/ OUT 36

WT IN 10.30/ OUT 10.30  
VIS IN 38/ OUT 38

MD 8739'  
INC 88.9°  
AZM 266.3°  
TVD 5658.33'

MD 8834'  
INC 91.5°  
AZM 266.3°  
TVD 5657.83'

MD 8834'  
INC 91.5°  
AZM 266.3°  
TVD 5655'

CHK: lgy-crm, sblky, sft, mot-wxy tex, v  
MRL: dky-gybrn, sblky-sbply, sft, mot-rthy tex, v calc, tr bent w/ pyr strg

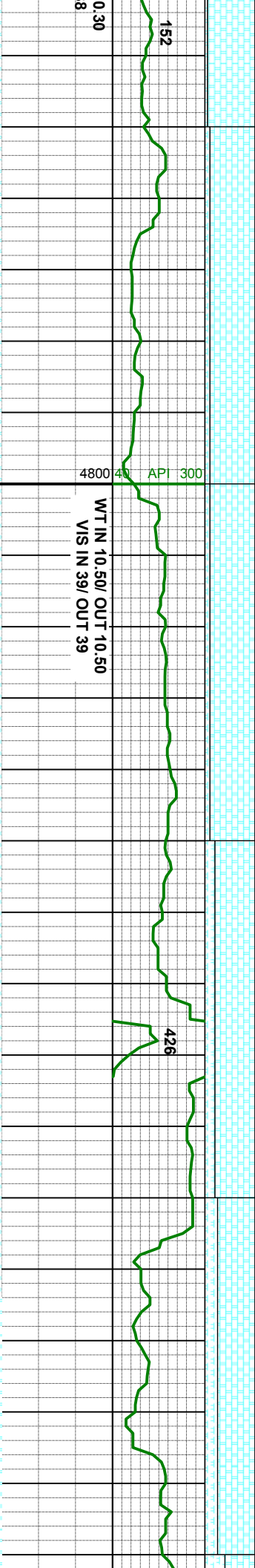
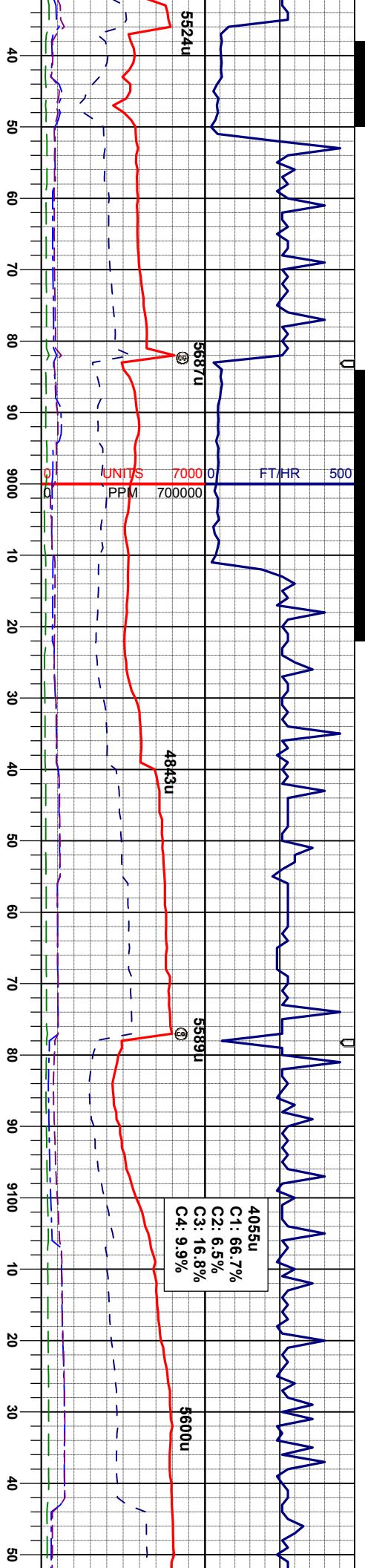
CHK: lgy-crm, sblky, sft, mot-wxy tex, v  
MRL: dky-gybrn, sblky-sbply, sft, mot-rthy tex, v calc, tr bent w/ pyr strg

CHK: lgy-crm, sblky, sft, mot-wxy tex, v  
MRL: dky-gybrn, sblky-sbply, sft, mot-rthy tex, v calc, tr bent w/ pyr strg

CHK: lgy-crm, sblky, sft, mot-wxy tex, v  
MRL: dky-gybrn, sblky-sbply, sft, mot-rthy tex, v calc, tr bent w/ pyr strg

CHK: lgy-crm, sblky, sft, mot-wxy tex, v  
MRL: dky-gybrn, sblky-sbply, sft, mot-rthy tex, v calc, tr bent w/ pyr strg

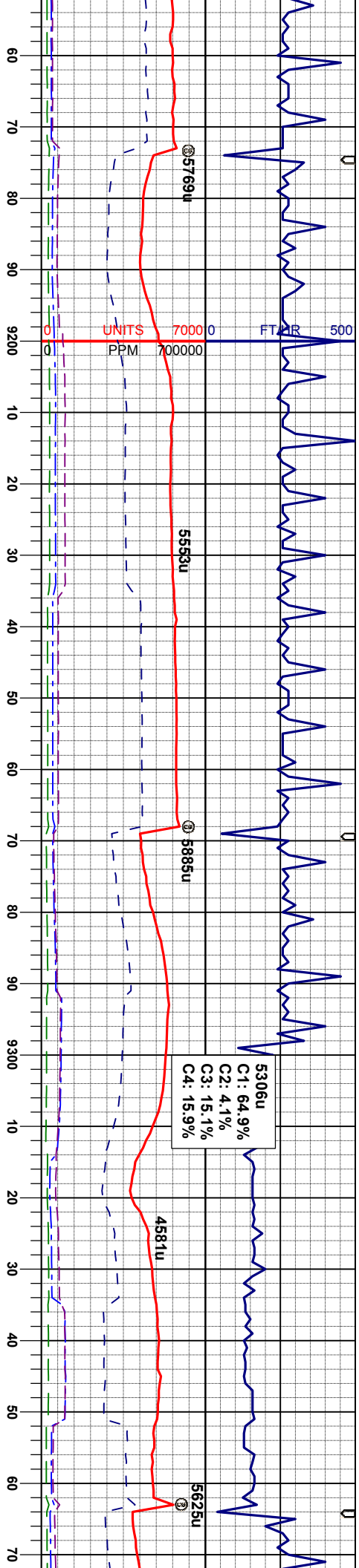




29' 1.9° 01'	CHK: lly-crm, sbblky, sft, mot-wxy tex, v calc MRL: dkgy-gybrn, sbblky-sbply, sft, mot-rthy tex, v calc, tr bent w/ pyr strg	MD 9023' INC 88.5° AZM 266.9° TVD 5654.68'	CHK: lly-crm, sbblky, sft, mot-wxy tex, v calc MRL: dkgy-gybrn, sbblky-sbply, sft, mot-rthy tex, v calc, tr bent w/ pyr strg	MD 9118' INC 88.7° AZM 267.6° TVD 5657.00'
--------------	---	--	---	--







AP 300

WT IN 10.40+ / OUT 10.60  
VIS IN 37 / OUT 39

MD 9213'  
INC 89.3°  
AZM 268.1°  
TVD 5658.66'

CHK: lgy-crm, sbblky, sft, mot-wwy tex, v  
calc  
MRL: dky-gy/brn, sbblky-sbply, sft, mot-  
rthy tex, v calc, tr bent w/ pyr strg

CHK: lgy-crm, sbblky, sft, mot-wwy tex, v  
calc  
MRL: dky-gy/brn, sbblky-sbply, sft, mot-  
rthy tex, v calc, tr bent w/ pyr strg

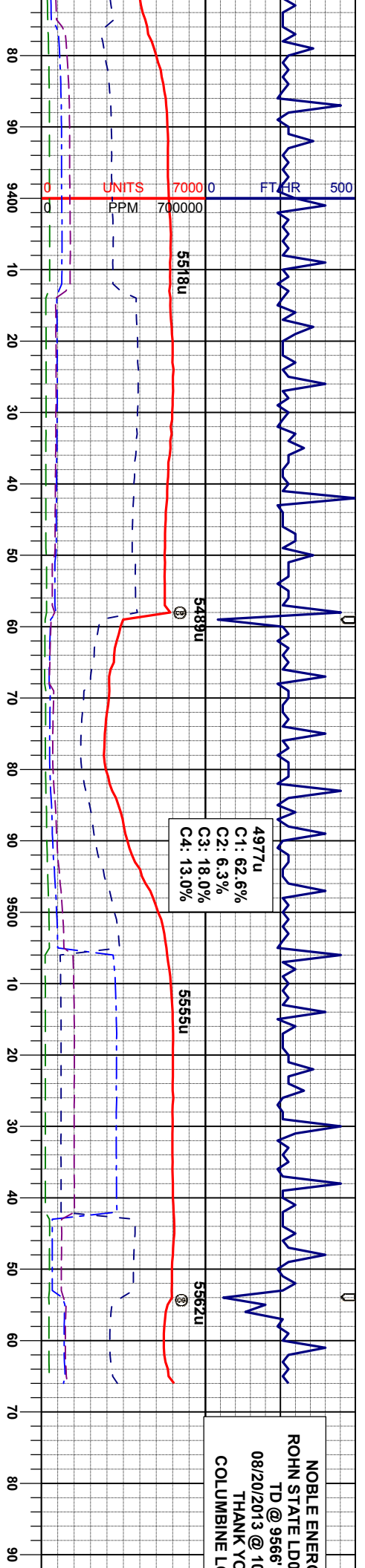
MRL: dky-gy/brn, sbblky-sbply, sft, mot-  
rthy tex, v calc, tr bent w/ pyr strg  
CHK: lgy-crm, sbblky, sft, mot-wwy tex, v  
calc

MD 9308'  
INC 90.0°  
AZM 267.9°  
TVD 5659.24'

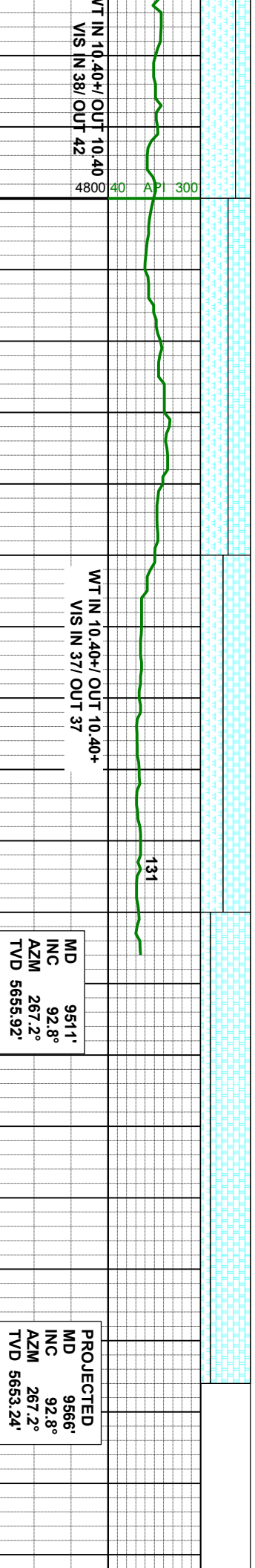
MRL: dky-gy/brn, sbblky-sbply, sft, mot-  
rthy tex, v calc, tr bent w/ pyr strg  
CHK: lgy-crm, sbblky, sft, mot-wwy tex, v  
calc

MRL: dky-gy/brn,  
rthy tex, v calc, tr  
CHK: lgy-crm, sb  
calc



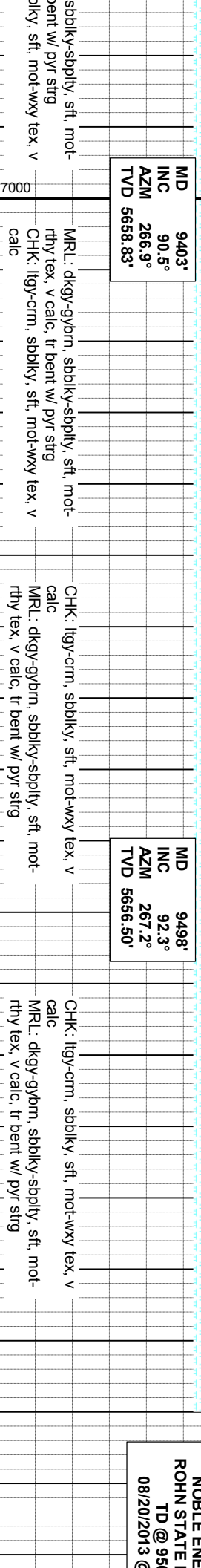


NOBLE ENERGY  
ROHN STATE LD00  
TD @ 9566'  
08/20/2013 @ 10:10  
THANK YOU  
COLUMBINE L



MD 9511'  
INC 92.8°  
AZM 267.2°  
TVD 5655.92'

PROJECTED  
MD 9566'  
INC 92.8°  
AZM 267.2°  
TVD 5653.24'



MD 9403'  
INC 90.5°  
AZM 266.9°  
TVD 5658.83'

MD 9498'  
INC 92.3°  
AZM 267.2°  
TVD 5656.50'

MRL: dkgy-gybrn, sbbiky-sbply, sft, mot-  
rthy tex, v calc, tr bent w/ pyr strg  
CHK: lgy-crm, sbbiky, sft, mot-wxy tex, v  
calc

CHK: lgy-crm, sbbiky, sft, mot-wxy tex, v  
calc  
MRL: dkgy-gybrn, sbbiky-sbply, sft, mot-  
rthy tex, v calc, tr bent w/ pyr strg

CHK: lgy-crm, sbbiky, sft, mot-wxy tex, v  
calc  
MRL: dkgy-gybrn, sbbiky-sbply, sft, mot-  
rthy tex, v calc, tr bent w/ pyr strg

NOBLE ENERGY  
ROHN STATE LD00  
TD @ 9566'  
08/20/2013 @ 10:10



SY INC

4-64-1HN  
MD

2:25 AM

5

## LOGGING

0096

10

RGY INC  
D04-64-1HN

56' MD  
@ 10:25 AM