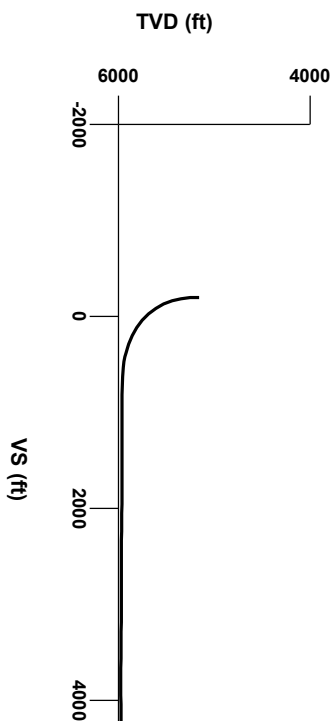


LOG created using LPLOT VH Version 3.0, February 27, 2013, Copyright (C) 1999-2009 Pason Systems Corp.

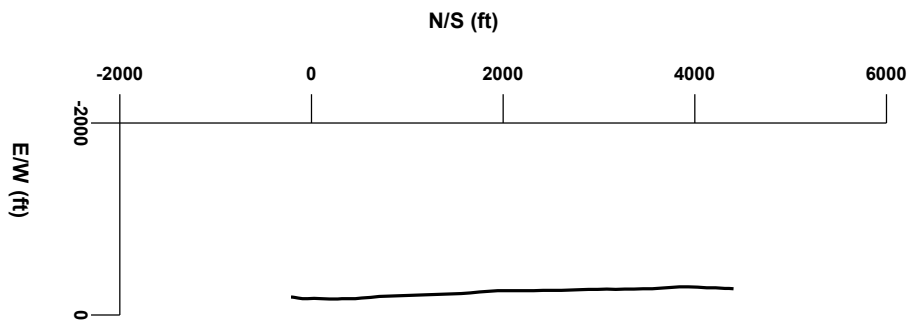
**OPERATOR:** NOBLE ENERGY INC.  
**WELL:** TIMBRO FEDERAL LD18-74HN  
**LOCATION:** SWSE SEC 18, T9N, R58W  
**COUNTY:** WELD  
**STATE:** COLORADO  
**SPOT:** 250' FSL, 1800' FWL  
**ELEVATION:** GR 4,887' KB 4,917'  
**FIELD:** WILDCAT  
**SPUD DATE:** 02/19/2013  
**TD DATE:** 02/26/2013  
**DATES LOGGED:** 02/22/2013 - 02/26/2013  
**DEPTHS LOGGED:** 5161' MD - 10271' MD  
**LOGGERS:** LAURA KELLOGG, ANDREA ZUIDEMA  
**DRILLING FLUID:** LSND  
**DRILLING RIG:** H&P 326  
**API:** 05-123-36263  
**LOG TYPE:** HORIZONTAL  
**SCALE:** 1:240 (5 inches per 100 feet)  
**REMARKS:** WELLSITE GEOLOGICAL SERVICES  
 PROVIDED BY COLUMBINE LOGGING INC.



Survey Elevation

6000

Survey Plan



LITHOLOGIES

Chalk

Marl

Silty Shale

ENGINEERING SYMBOLS

Casing

Casing

Connection

Connection Gas

Midnight Depth

Oil To Surface

GAS

0

UNITS

3000

C1

0

PPM

300000

C2

0

PPM

300000

C3

0

PPM

300000

C4

0

PPM

300000

DEPTH (FEET)

5100

10

20

30

40

50

60

70

80

90

5200

10

20

30

40

50

ROP

0

FT/HR

1000

BHA BIT:

STC 8.75", Mdl516

Serial #: JG6864

Jets: 5x14

02/23/2013

BEGAN DRILLING CURVE

@ 02:12 AM 02/23/2013

121u

C1: 93.2%

C2: 3.0%

C3: 3.2%

C4: 0.6%

1274u

③

UNITS

3000

0

PPM

300000

FT/HR

1000

COLUMBINE LOGGING INC.

RIGGED UP ON 02/19/2013

MANNED 2-PERSON LOGGING

WITH BLOODHOUND GAS

CHROMATOGRAPH UNIT #0298

COLUMBINE BEGAN LOGGING

ON 02/19/2013

CUTTINGS LITHOLOGY

7000

5000

30

CPS

200

GAMMA RAY

MD

INC

AZM

TVD

5181'

0.7°

69.6°

5156.57'

93

5000

30

CPS

200

ft

7000

ft

Oil Shows

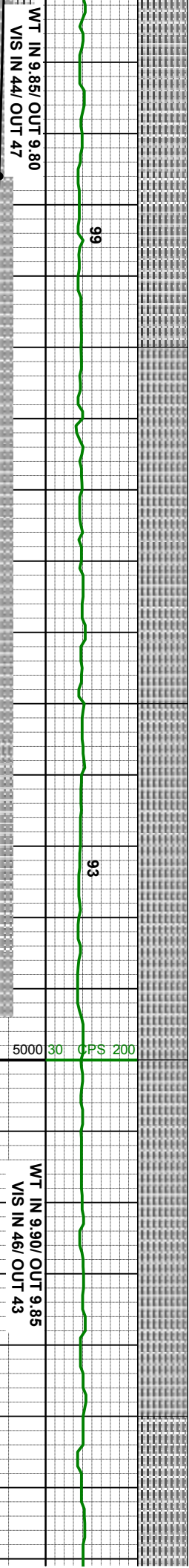
Acetone was used as the cutting agent with the dimple filled to the rim

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.

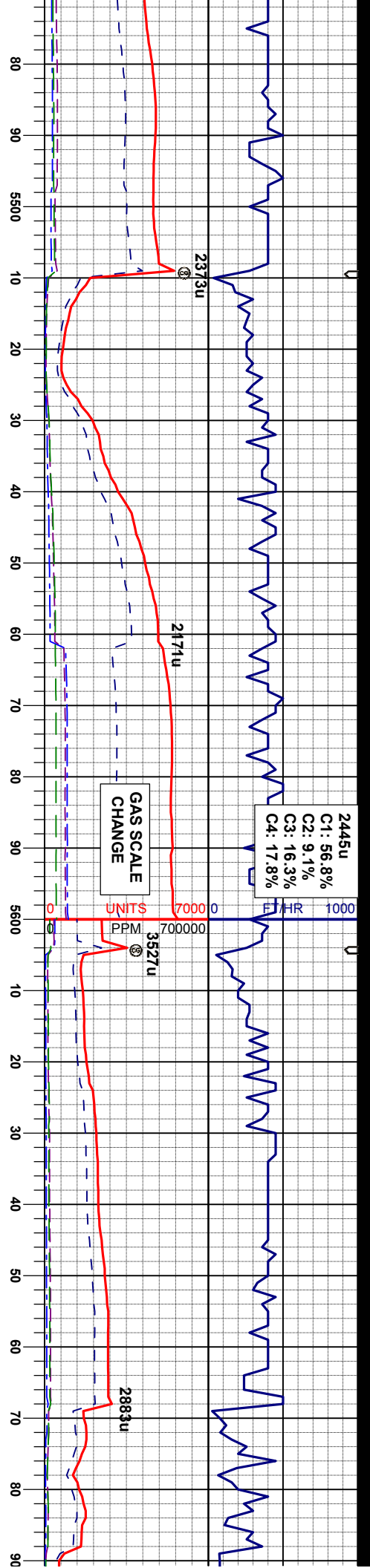
SLT YSH: m - lt gy-crmbn, occ dk gy, sft - mod firm, sbblky - sbply, occ fos frag, noncalc

SLT YSH: m - lt gy-crmbn, occ dk gy, sft - mod firm, sbblky - sbply, occ fos frag, noncalc

SAMPLE PHOTOS







2445u  
C1: 56.8%  
C2: 9.1%  
C3: 16.3%  
C4: 17.8%

GAS SCALE  
CHANGE

PPM

WT IN 9.95/ OUT 9.95  
VIS IN 44/ OUT 47

MD 5561'  
INC 26.4°  
AZM 12.3°  
TVD 5526.04'

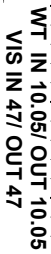
MD 5656'  
INC 33.9°  
AZM 4.7°  
TVD 5608.15'

SLTYSH: m - lt gy-crmbm, occ dk gy, sft - mod firm, sbbly - sbply, tr fos frag, noncalc

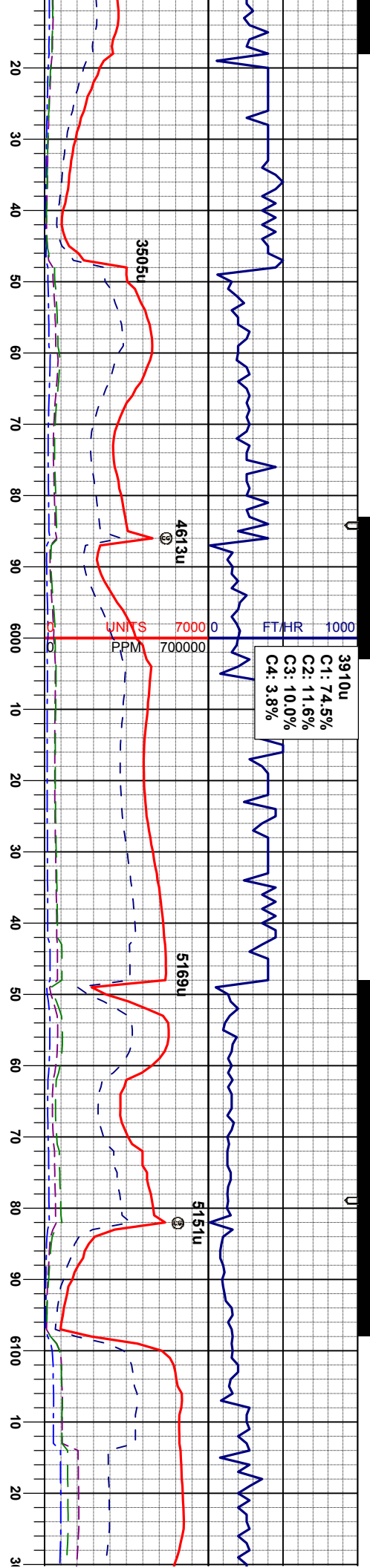
SLTYSH: m - lt gy-crmbm, occ dk gy, sft - mod firm, sbbly - sbply, tr fos frag, noncalc

SLTYSH: m - lt gy-crmbm, occ dk gy, sft - mod firm, sbbly - sbply, tr fos frag, noncalc









WT IN 10.45/ OUT 10.45  
VIS IN 46/ OUT 46

SHARON SPRINGS  
MARKER BED @  
6002' MD/ 5837'TVD

WT IN 10.60/ OUT 10.60  
VIS IN 53/ OUT 53

NIOBRARA TOP @  
6064'MD/ 5864'TVD

NIO A CHALK @  
6084'MD/ 5872'TVD

MD 5941'  
INC 58.2°  
AZM 2.4°  
TVD 5808.16'

MD 6036'  
INC 64.4°  
AZM 1.4°  
TVD 5853.77'

MD  
INC  
AZM  
TVD

m - lt-gy-crmbn, occ dk gy, sft -  
n, sbblky - sbply, noncalc

SLTYSH: m - lt-gy-crmbn, occ dk gy, sft -  
mod firm, sbblky - sbply, noncalc

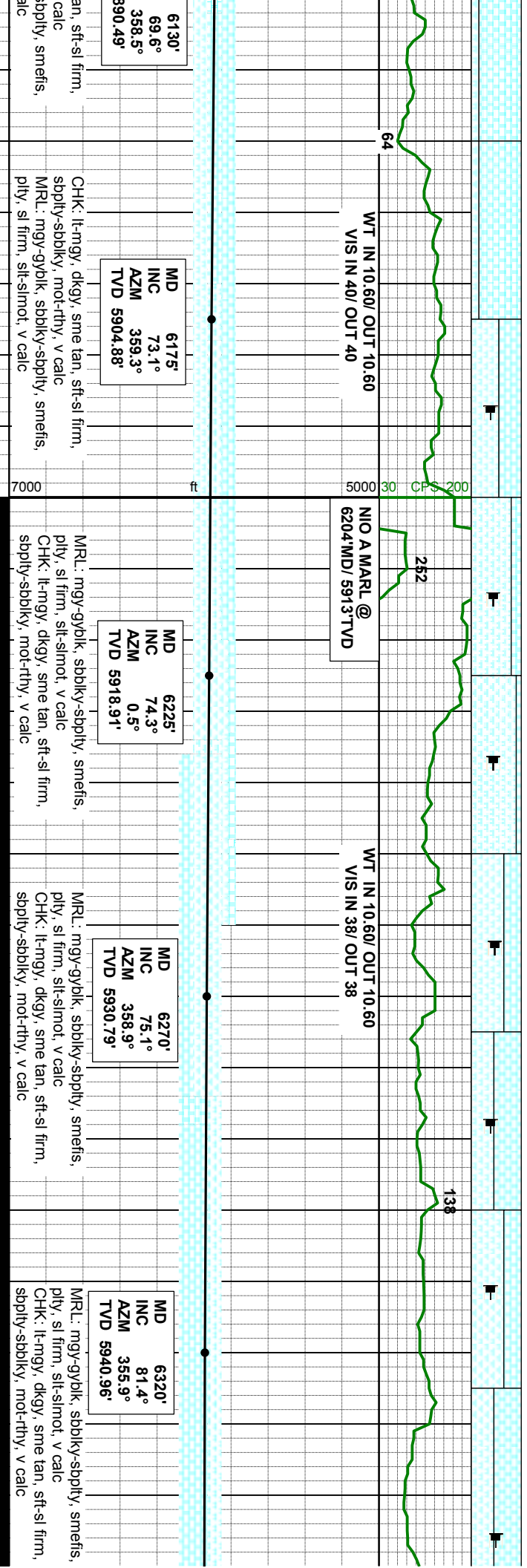
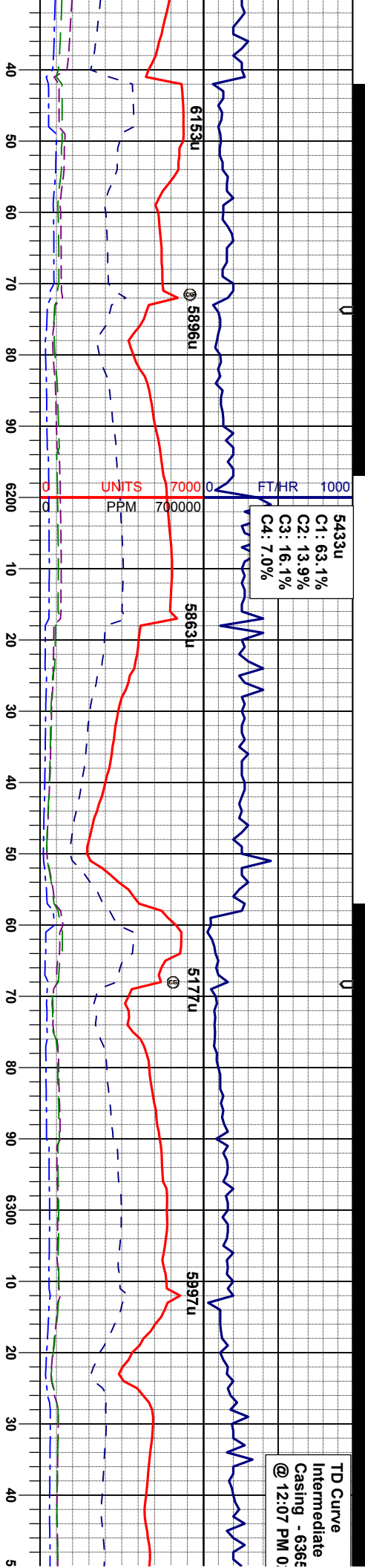
SLTYSH: m - lt-gy-crmbn, occ dk gy, sft -  
mod firm, sbblky - sbply, abnt bent,  
noncalc

SLTYSH: m - lt-gy-brn, occ dk gy, sft - mod  
firm, sbblky - sbply, rthy-gt mtk, tr pyr, abnt  
bent, tr fos, sl calc  
CHK: lt-ngy, dkgy, sme tan, sft-sl firm,  
sbply-sbblky, mot-rthy, v calc  
MRU: mgy-gyblk, sbblky-sbply, smeifs,  
ply, sl firm, sft-slmot, v calc

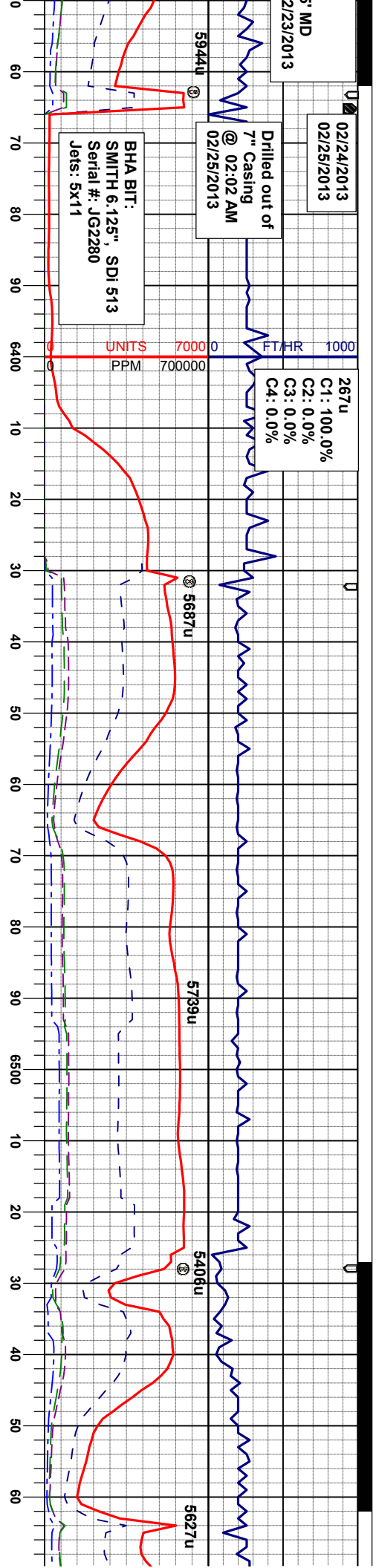
CHK: lt-ngy, dkgy, sme tan, sft-sl firm,  
sbply-sbblky, mot-rthy, v calc  
MRU: mgy-gyblk, sbblky-sbply, smeifs,  
ply, sl firm, sft-slmot, v calc











MD 6385'  
INC 86.3°  
AZM 355.7°  
TVD 5947.93'

WT IN 10.30/ OUT 10.25  
VIS IN 43/ OUT 37

MD 6480'  
INC 85.9°  
AZM 353.8°  
TVD 5945.39'

WT IN 10.35/ OUT 10.30  
VIS IN 40/ OUT 38

NIO B CHALK @  
6498 MD/5955 TVD

MD  
INC  
AZM  
TVD

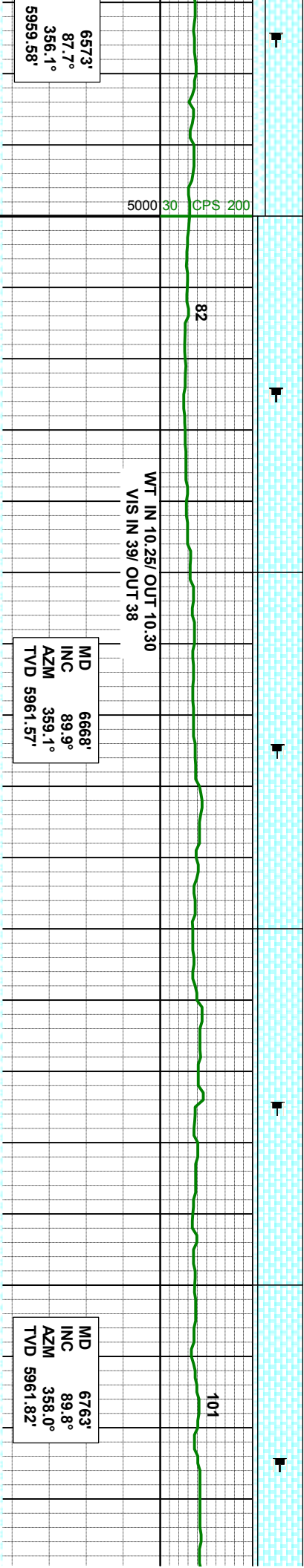
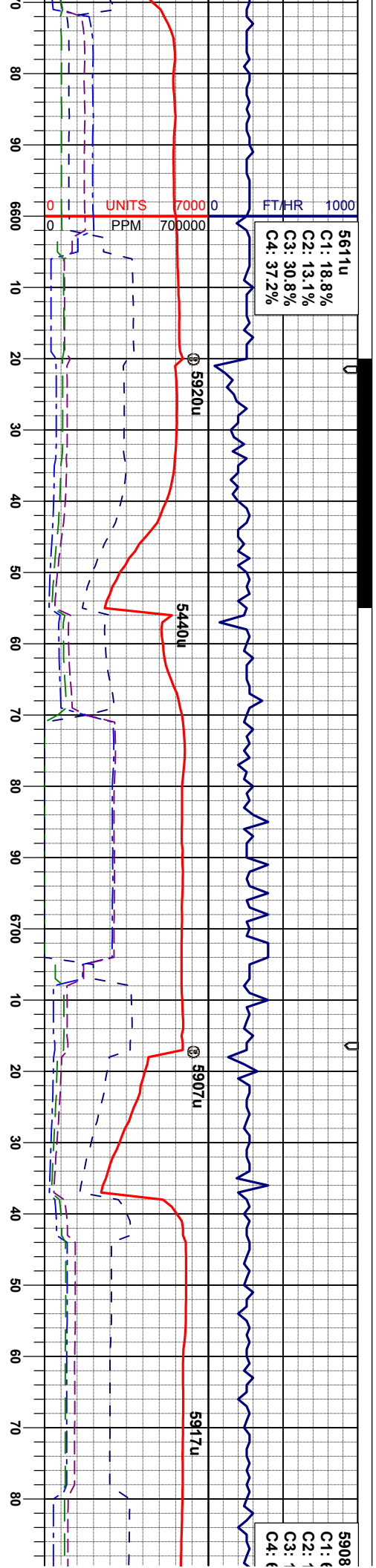
MRL: mgy-gyblk, sbblky-sbply, smefis,  
ply, sl firm, slt-mot, v calc  
CHK: lt-mgy, dkgy, sme tan, sft-sl firm,  
sbply-sbblky, mot-rthy, v calc

MRL: mgy-gyblk, sbblky-sbply, smefis,  
ply, sl firm, slt-mot, v calc  
CHK: lt-mgy, dkgy, sme tan, sft-sl firm,  
sbply-sbblky, mot-rthy, v calc

MRL: mgy-gyblk, sbblky-sbply, smefis,  
ply, sl firm, slt-mot, v calc  
CHK: lt-mgy, dkgy, sme tan, sft-sl firm,  
sbply-sbblky, mot-rthy, v calc

CHK: lt-mgy, dkgy, sme tan, sft-sl firm,  
sbply-sbblky, mot-rthy, v calc  
MRL: mgy-gyblk, sbblky-sbply, smefis,  
ply, sl firm, slt-mot, v calc

CHK: lt-mgy, dkgy, sme tan, sft-sl firm,  
sbply-sbblky, mot-rthy, v calc  
MRL: mgy-gyblk, sbblky-sbply, smefis,  
ply, sl firm, slt-mot, v calc



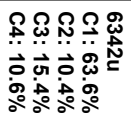
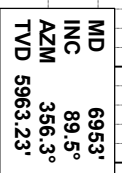
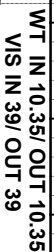
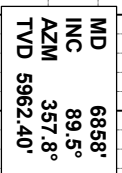
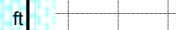
CHK: lt-mgy, dkgy, sme tan, sft-si firm, sbply-sbblky, mot-rthy, v calc  
MRL: mgy-gyblk, sbblky-sbply, smeifs, pily, si firm, sft-mot, v calc

CHK: lt-mgy, dkgy, sme tan, sft-si firm, sbply-sbblky, mot-rthy, tr fos frag, v calc  
MRL: mgy-gyblk, sbblky-sbply, smeifs, pily, si firm, sft-mot, v calc

CHK: lt-mgy, dkgy, sme tan, sft-si firm, sbply-sbblky, mot-rthy, tr fos frag, v calc  
MRL: mgy-gyblk, sbblky-sbply, smeifs, pily, si firm, sft-mot, v calc







CHK: lt-mgy, dkgy, sme tan, sft-sl firm, sblpty-sbblky, mot-rthy, tr fos frag, v calc MRL: mgy-gyblk, sbblky-sblpty, smefis, plty, sl firm, slt-mot, v calc

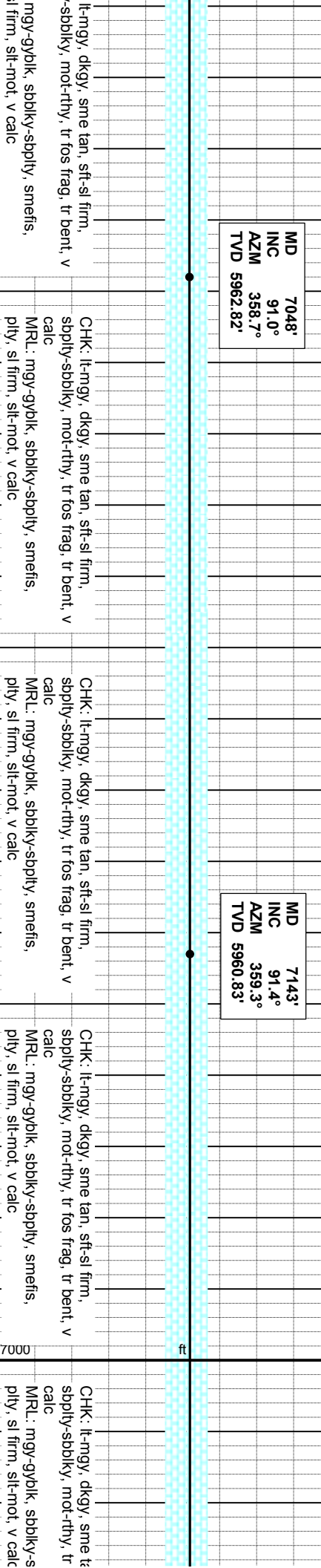
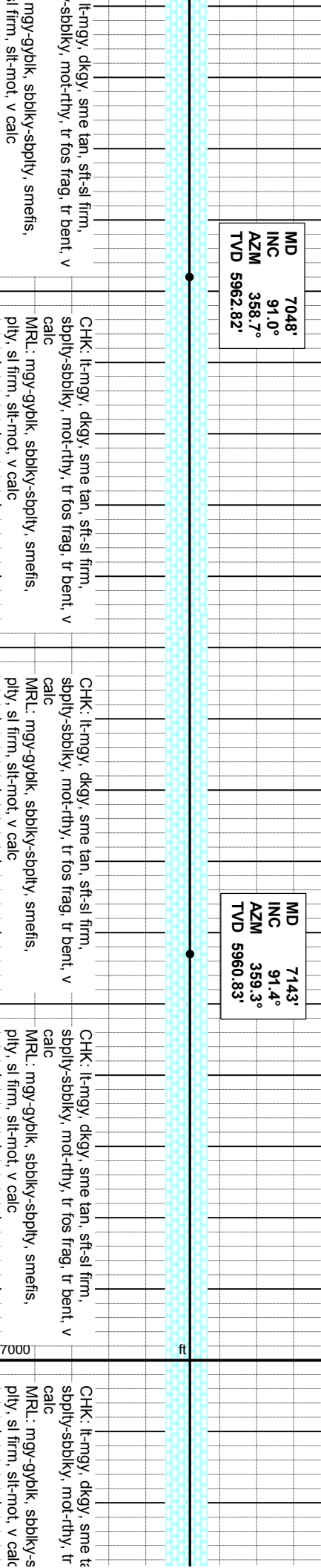
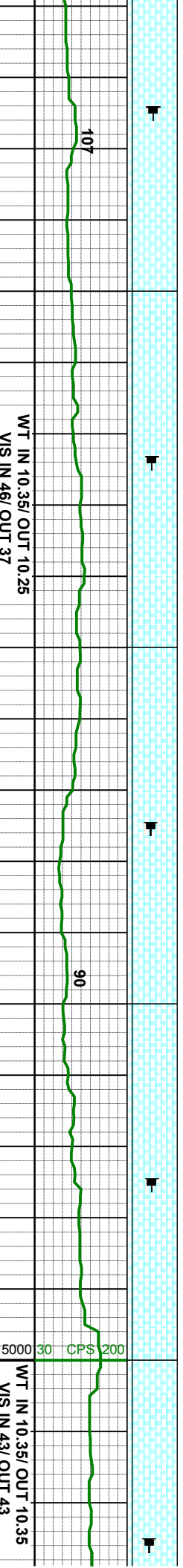
CHK: It-mgy, dkgy, sme tan, sft-sl firm,  
sbply-sbblky, mot-rthy, tr fos frag, v calc  
MRL: mgy-gyblk, sbply-sbply, smefls,  
ply, sl firm, slt-mot, v calc

CHK: lt-mgy, dkgy, sme tan, sft-sl firm,  
sbply-sbbkly, mot-rthy, tr fos frag, v calc  
MR: mgy-gyblk, sbkly-sbply, smefs,  
ply, sl firm, sft-mot, v calc

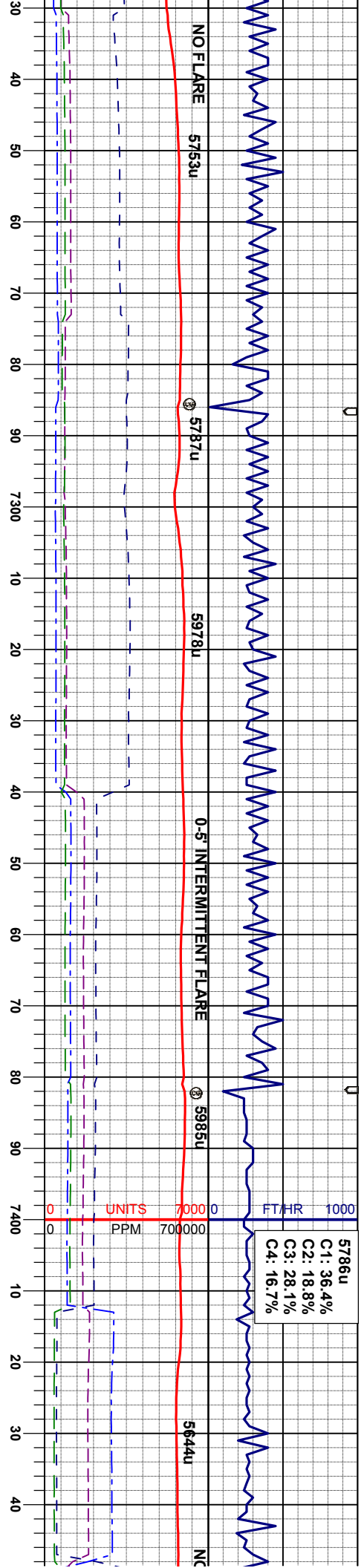
CHK: lt-mgy, dkgý, sme tan, sft-sl firm,  
sbplyt-sbblky, mot-tthý, tr fos frag, v calc  
MRL: mgy-gyblk, sbplyt-sbplyt, smefis,  
plyt, sl firm, sft-mot, v calc

CHK:  
sbply  
calc  
MRL:  
ply, s









MD 7238'  
INC 89.2°  
AZM 357.8°  
TVD 5960.33'

MD 7333'  
INC 89.4°  
AZM 358.0°  
TVD 5961.49'

MD 7428'  
INC 89.8°  
AZM 356.6°  
TVD 5962.15'

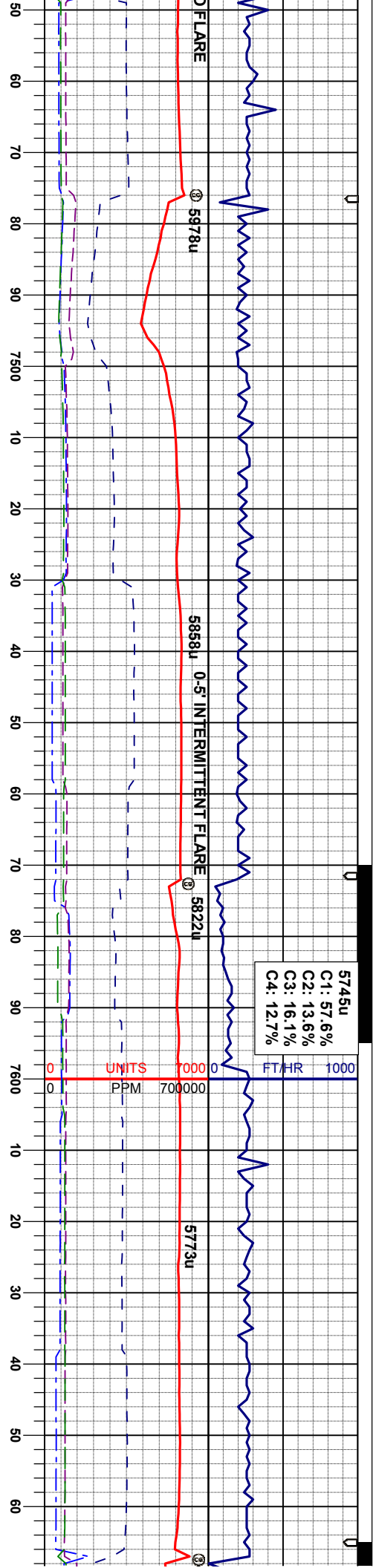
an, sft-si firm, fos frag, tr bent, v  
CHK: lt-mgy, dkgy, sme tan, sft-si firm, sbply-sbdky, mot-rthy, tr fos frag, tr bent, v calc  
MRL: mgy-gyblk, sbdky-sbply, smeifs, pthy, sl firm, silt-mot, v calc

CHK: lt-mgy, dkgy, sme tan, sft-si firm, sbply-sbdky, mot-rthy, tr fos frag, v calc  
MRL: mgy-gyblk, sbdky-sbply, smeifs, pthy, sl firm, silt-mot, v calc

CHK: lt-mgy, dkgy, sme tan, sft-si firm, sbply-sbdky, mot-rthy, tr fos frag, v calc  
MRL: mgy-gyblk, sbdky-sbply, smeifs, pthy, sl firm, silt-mot, v calc

CHK: lt-mgy, dkgy, sme tan, sft-si firm, sbply-sbdky, mot-rthy, tr fos frag, v calc  
MRL: mgy-gyblk, sbdky-sbply, smeifs, pthy, sl firm, silt-mot, v calc





MD 7523'  
INC 89.8°  
AZM 354.3°  
TVD 5962.49'

WT IN 10.45/ OUT 10.45  
VIS IN 39/ OUT 39

MD 7618'  
INC 89.8°  
AZM 356.3°  
TVD 5962.82'

CHK: lt-mgy, dkgy, sme tan, sft-sl firm,  
sbply-sbblky, mot-rthy, tr fos frag, v calc  
MRL: mgy-gyblk, sbblky-sbply, smefis,  
ply, sl firm, slt-not, v calc

CHK: lt-mgy, dkgy, sme tan, sft-sl firm,  
sbply-sbblky, mot-rthy, tr fos frag, v calc  
MRL: mgy-gyblk, sbblky-sbply, smefis,  
ply, sl firm, slt-not, v calc

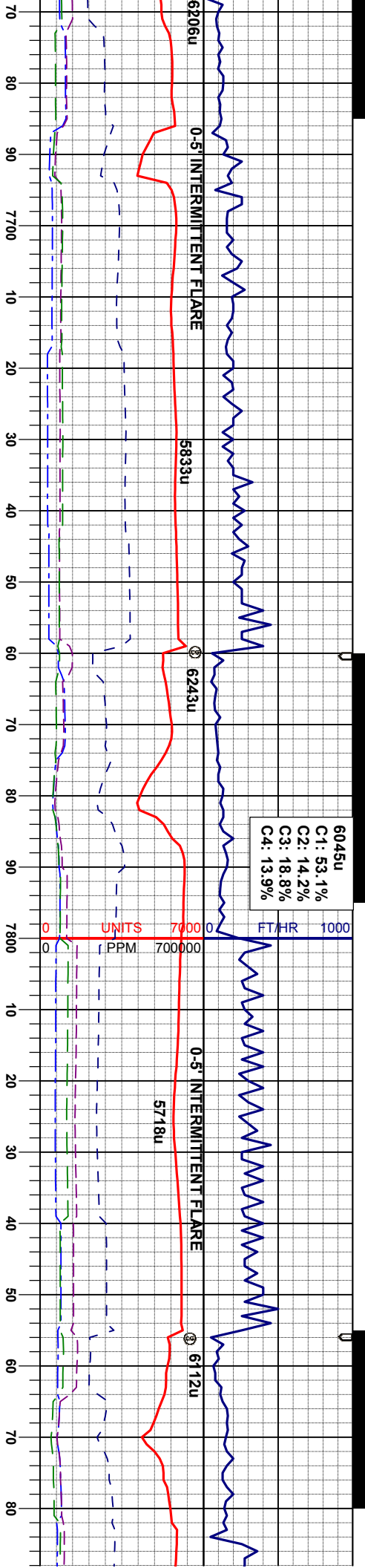
CHK: lt-mgy, dkgy, sme tan, sft-sl firm,  
sbply-sbblky, mot-rthy, tr fos frag, v calc  
MRL: mgy-gyblk, sbblky-sbply, smefis,  
ply, sl firm, slt-not, v calc

CHK: lt-mgy, dkgy, sme tan, sft-sl firm,  
sbply-sbblky, mot-rthy, tr fos frag, v calc  
MRL: mgy-gyblk, sbblky-sbply, smefis,  
ply, sl firm, slt-not, v calc

CHK: lt-mgy, dkgy, sme tan, sft-sl firm,  
sbply-sbblky, mot-rthy, tr fos frag, v calc  
MRL: mgy-gyblk, sbblky-sbply, smefis,  
ply, sl firm, slt-not, v calc







MD 77'13'  
INC 89.8°  
AZM 354.9°  
TVD 5963.15'

WT IN 10.40/ OUT 10.30  
VIS IN 39/ OUT 39

MD 7808'  
INC 90.0°  
AZM 357.3°  
TVD 5963.31'

WT IN 10.40/ OUT 10.30  
VIS IN 39/ OUT 38

kg, sme tan, sft-si firm,  
mot-rthy, tr fos frag, v calc  
ilk, sbblky-sbply, smeifs,  
-mot, v calc

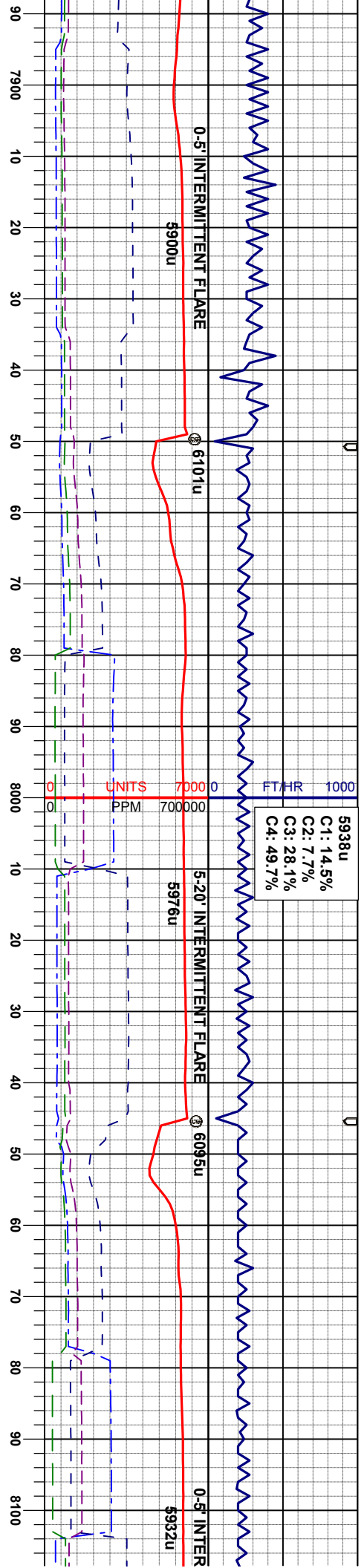
CHK: lt-mgy, dkgy, sme tan, sft-si firm,  
sbply-sbblky, mot-rthy, tr fos frag, v calc  
MRL: mgy-gyblk, sbblky-sbply, smeifs,  
ply, si firm, silt-mot, v calc

CHK: lt-mgy, dkgy, sme tan, sft-si firm,  
sbply-sbblky, mot-rthy, tr fos frag, v calc  
MRL: mgy-gyblk, sbblky-sbply, smeifs,  
ply, si firm, silt-mot, v calc

CHK: lt-mgy, dkgy, sme tan, sft-si firm,  
sbply-sbblky, mot-rthy, tr fos frag, v calc  
MRL: mgy-gyblk, sbblky-sbply, smeifs,  
ply, si firm, silt-mot, v calc

CHK: lt-mgy, dkgy, sme tan, sft-si firm,  
sbply-sbblky, mot-rthy, tr fos frag, v calc  
MRL: mgy-gyblk, sbblky-sbply, sm  
ply, si firm, silt-mot, v calc





MD 7903'  
INC 88.7°  
AZM 0.5°  
TVD 5964.39'

WT IN 10.40/ OUT 10.40  
VIS IN 37/ OUT 36

MD 7998'  
INC 89.6°  
AZM 360.0°  
TVD 5965.80'

WT IN 10.40/ OUT 10.40  
VIS IN 39/ OUT 42

MD 8093'  
INC 89.3°  
AZM 360.0°  
TVD 5966.71'

CHK: lt-mgy, dkgy, sme tan, sft-si firm,  
sbply-sbbkly, mot-rthy, tr fos frag, v calc  
MR.L: mgy-gyblk, sbbkly-sbply, smeifs,  
ply, si firm, sft-mot, v calc

CHK: lt-mgy, dkgy, sme tan, sft-si firm,  
sbply-sbbkly, mot-rthy, tr fos frag, v calc  
MR.L: mgy-gyblk, sbbkly-sbply, smeifs,  
ply, si firm, sft-mot, v calc

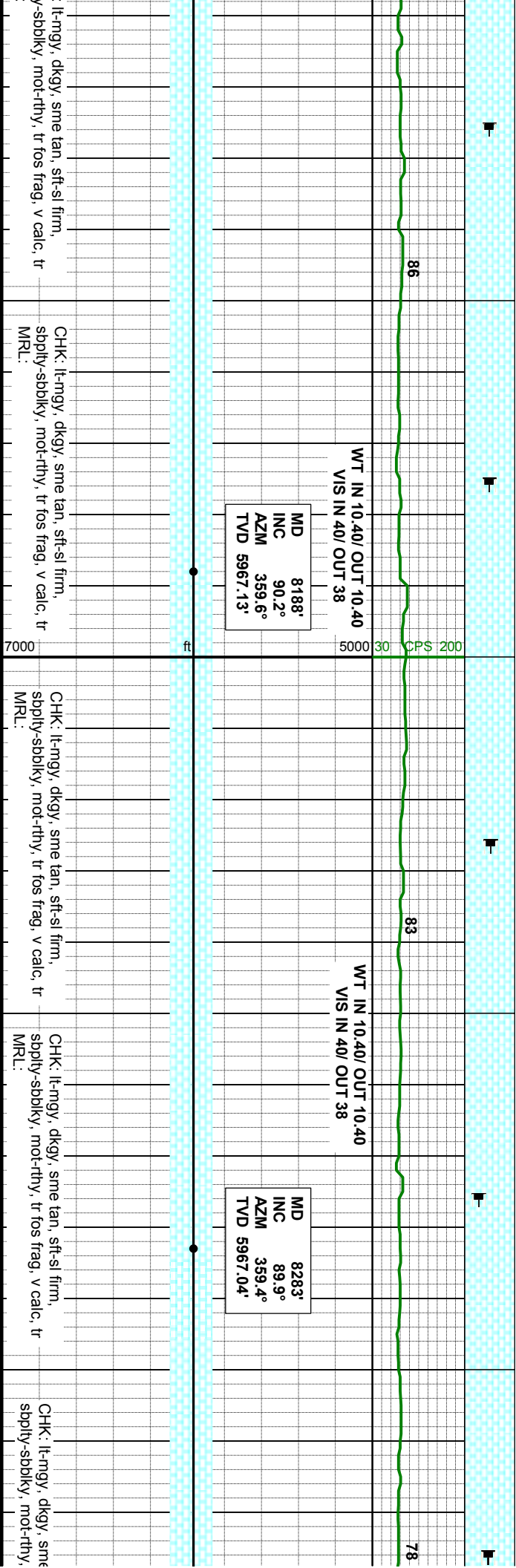
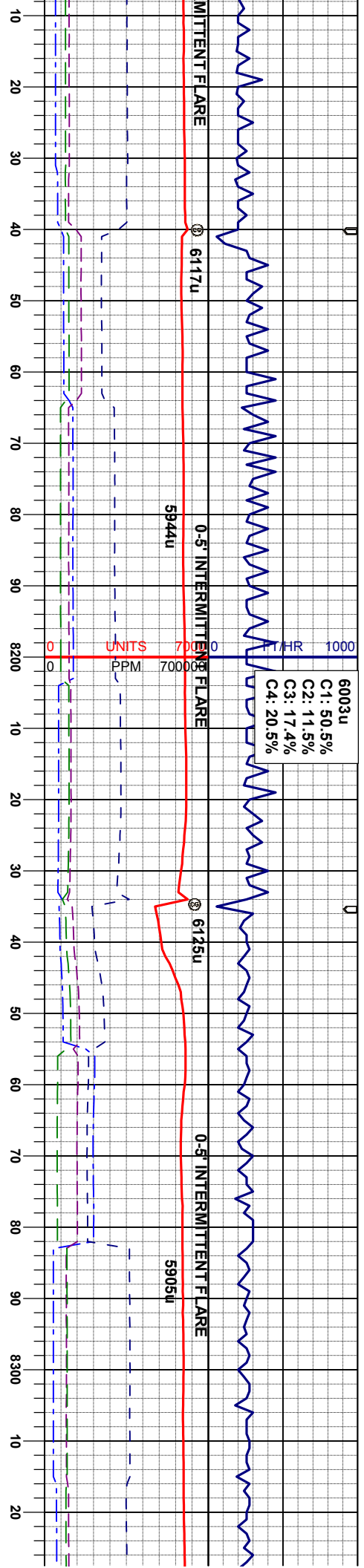
CHK: lt-mgy, dkgy, sme tan, sft-si firm,  
sbply-sbbkly, mot-rthy, tr fos frag, v calc, tr  
MR.L:

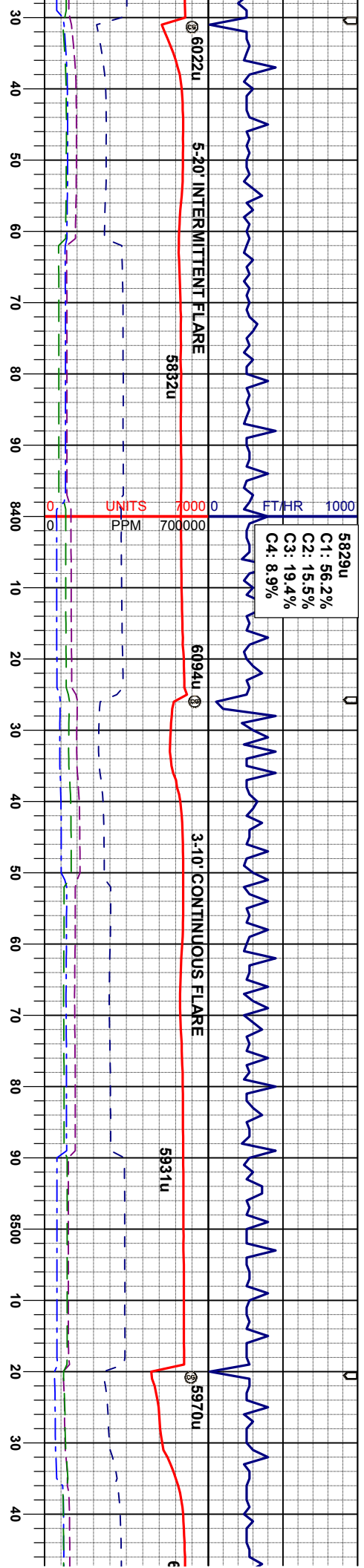
CHK: lt-mgy, dkgy, sme tan, sft-si firm,  
sbply-sbbkly, mot-rthy, tr fos frag, v calc, tr  
MR.L:

CHK:  
sbply-sbbkly  
MR.L:









WT IN 10.40/ OUT 10.40  
VIS IN 42/ OUT 41

MD	8378'
INC	89.7°
AZM	359.6°
TVD	5967.38'

MD	8473'
INC	89.9°
AZM	358.5°
TVD	5967.71'

CHK: lt-mgy, dkgy, sme tan, sft-sl firm, sbply-sbblky, mot-rthy, tr fos frag, v calc, tr

MRL:

CHK: lt-mgy, dkgy, sme tan - olv, sft-sl firm, sbply-sbblky, mot-rthy, tr fos frag, v calc, tr

MRL:

CHK: lt-mgy, dkgy, sme tan - olv, sft-sl firm, sbply-sbblky, mot-rthy, tr fos frag, v calc, occ MRL:

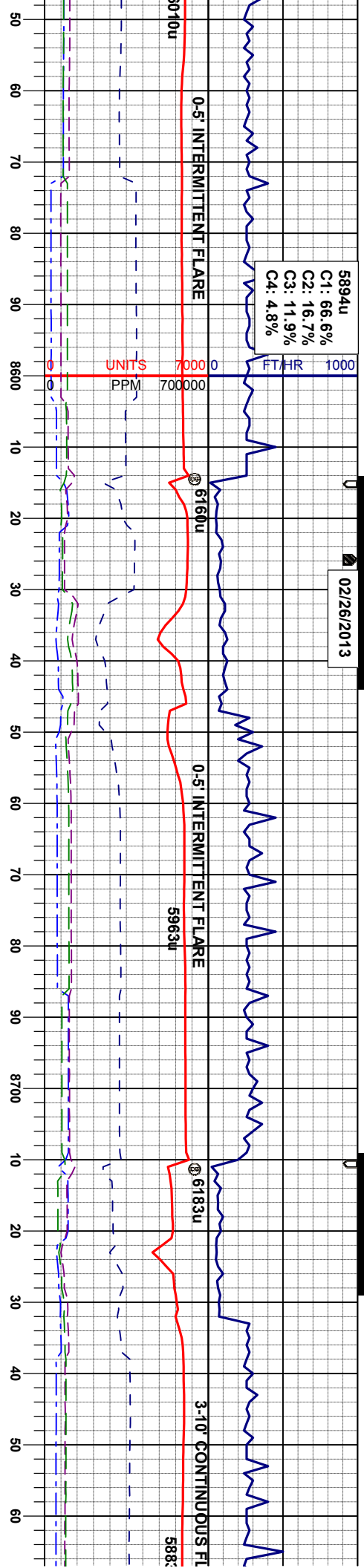
CHK: lt-mgy, dkgy, sme tan - olv, sft-sl firm, sbply-sbblky, mot-rthy, tr fos frag, v calc, occ MRL:





02/26/2013

5894u  
C1: 66.6%  
C2: 16.7%  
C3: 11.9%  
C4: 4.8%



MD 8567'  
INC 89.9°  
AZM 357.0°  
TVD 5967.87'

MD 8662'  
INC 90.7°  
AZM 359.3°  
TVD 5967.37'

MD 8757'  
INC 89.8°  
AZM 359.6°  
TVD 5966.96'

CHK: lt-mgy, dkgy, sme tan - olv, sft-sl firm, sbply-sbblky, mot-rthy, tr fos frag, v calc, occ MRL:

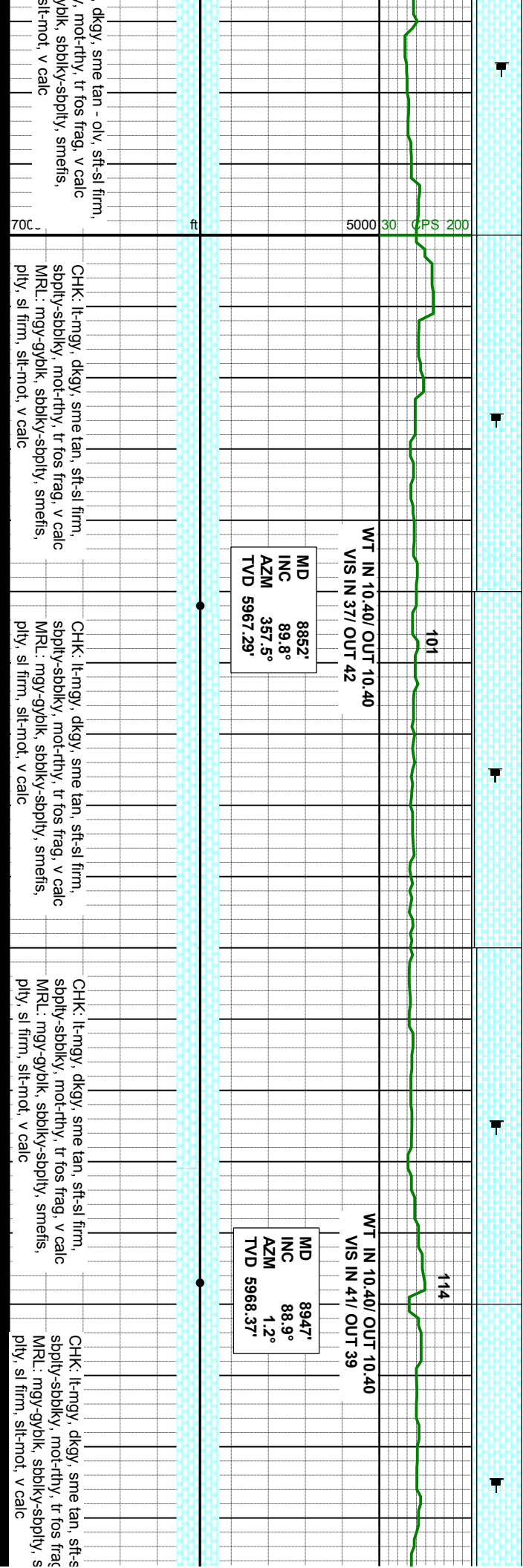
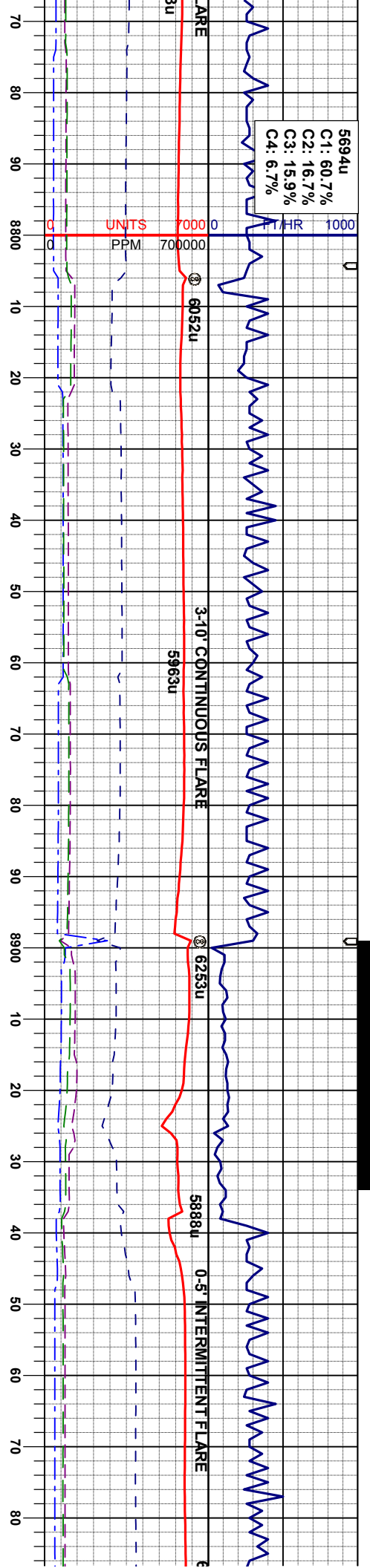
CHK: lt-mgy, dkgy, sme tan - olv, sft-sl firm, sbply-sbblky, mot-rthy, tr fos frag, v calc, occ MRL:

CHK: lt-mgy, dkgy, sme tan - olv, sft-sl firm, sbply-sbblky, mot-rthy, tr fos frag, v calc MRL: mgy-gyblk, sbblky-sbply, smefts, ply, sl firm, silt-mot, v calc

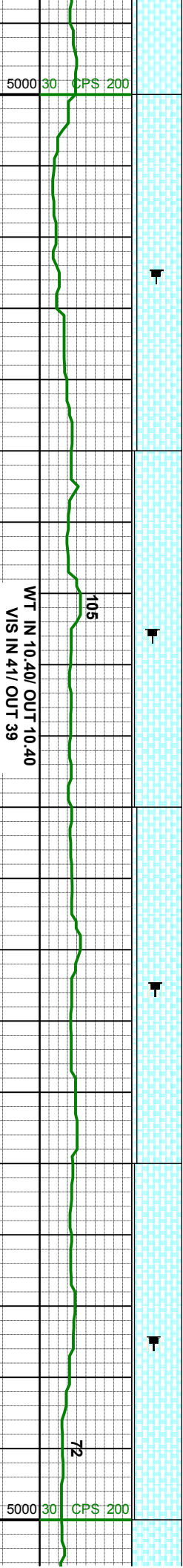
CHK: lt-mgy, dkgy, sme tan - olv, sft-sl firm, sbply-sbblky, mot-rthy, tr fos frag, v calc MRL: mgy-gyblk, sbblky-sbply, smefts, ply, sl firm, silt-mot, v calc

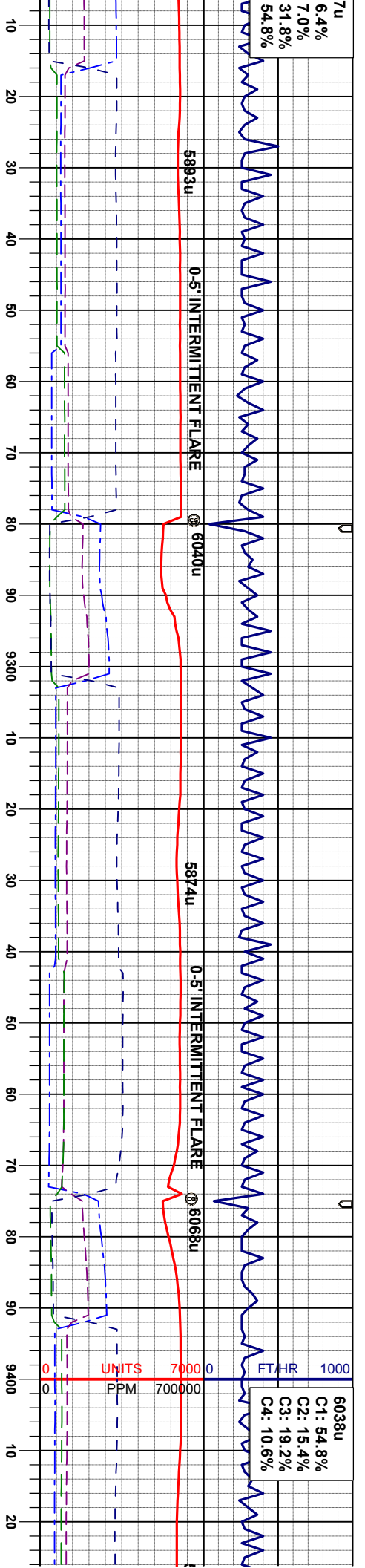
CHK: lt-mgy, sbply-sbblky MRL: mgy-gyblk, sbply, sl firm, s











MD 9232'  
INC 89.5°  
AZM 358.9°  
TVD 5971.35'

WT IN 10.40/ OUT 10.40  
VIS IN 39/ OUT 36

MD 9327'  
INC 89.5°  
AZM 358.9°  
TVD 5972.18'

62

CPS 200

WT IN 10.40/ OUT 10.40  
VIS IN 39/ OUT 39

MD 94.  
INC 89  
AZM 358  
TVD 5973.3

CHK: lt-mgy, dkgv, sme tan, sft-si firm,  
sbply-sbbiky, mot-rthy, tr fos frag, v calc  
MR.L: mgy-gyolk, sbbiky-sbply, smeifs,  
ply, sl firm, sft-mot, v calc

CHK: lt-mgy, dkgv, sme tan, sft-si firm,  
sbply-sbbiky, mot-rthy, tr fos frag, v calc  
MR.L: mgy-gyolk, sbbiky-sbply, smeifs,  
ply, sl firm, sft-mot, v calc

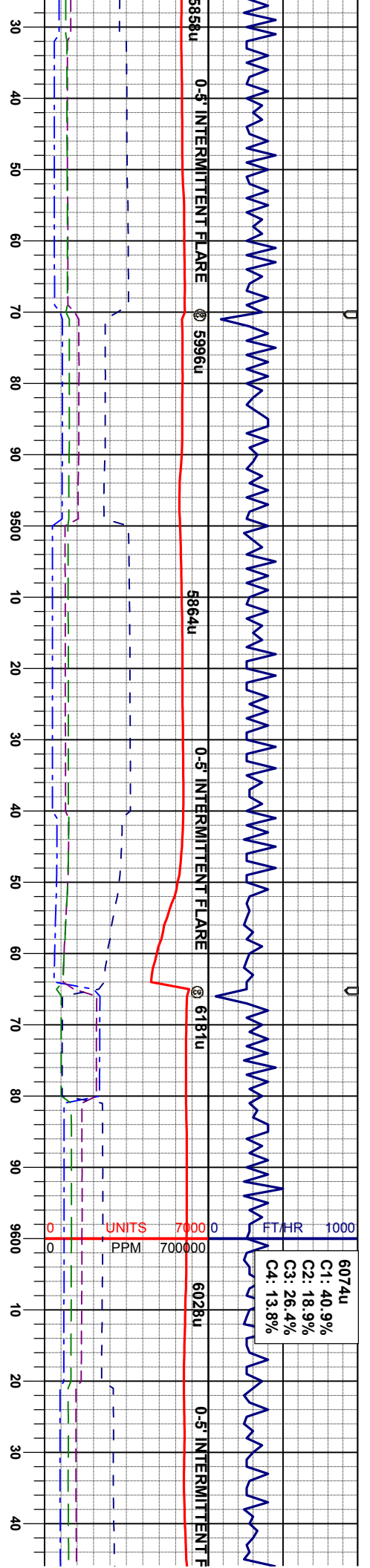
CHK: lt-mgy, dkgv, sme tan, sft-si firm,  
sbply-sbbiky, mot-rthy, tr fos frag, v calc  
MR.L: mgy-gyolk, sbbiky-sbply, smeifs,  
ply, sl firm, sft-mot, v calc

CHK: lt-mgy, dkgv, sme tan, sft-si firm,  
sbply-sbbiky, mot-rthy, tr fos frag, v calc  
MR.L: mgy-gyolk, sbbiky-sbply, smeifs,  
ply, sl firm, sft-mot, v calc

CHK: lt-mgy, dkgv, sm  
sbply-sbbiky, mot-rthy  
MR.L: mgy-gyolk, sbbi  
ply, sl firm, sft-mot, v







6074u  
C1: 40.9%  
C2: 18.9%  
C3: 26.4%  
C4: 13.8%

MD 9517'  
INC 89.4°  
AZM 356.3°  
TVD 5974.59'

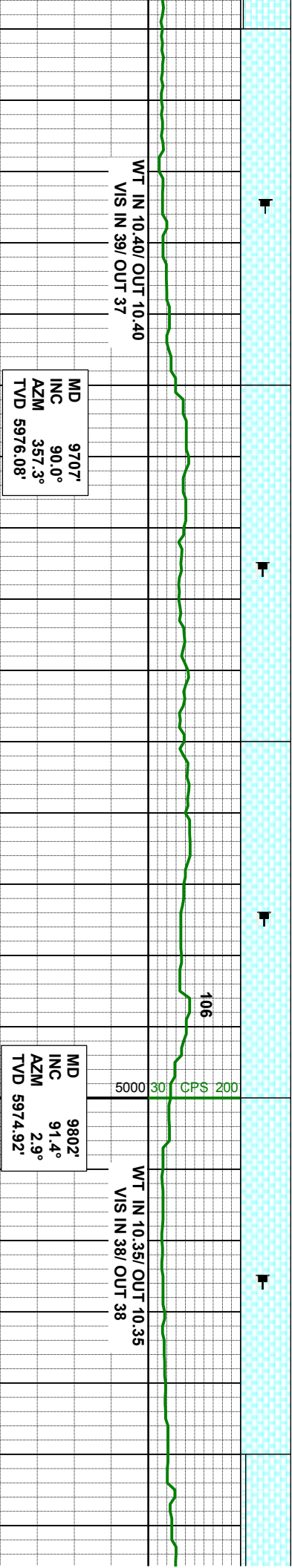
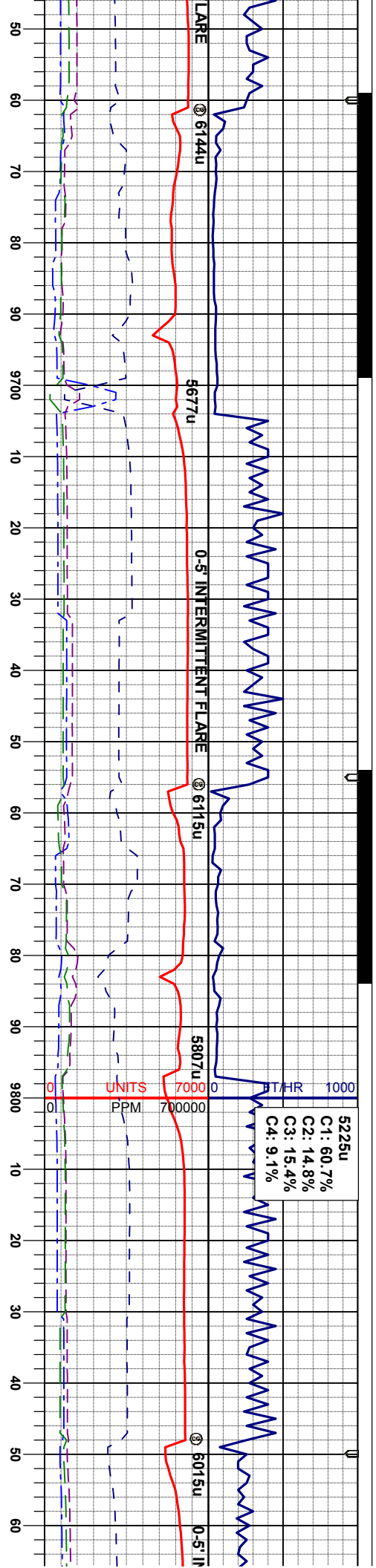
MD 9612'  
INC 89.4°  
AZM 354.5°  
TVD 5975.58'

CHK: lt-mgy, dkgy, sme tan, sft-sl firm, sbply-sbblky, mot-rthy, tr fos frag, v calc  
MRL: mgy-gyblk, sbblky-sbply, smeifs, pily, sl firm, sft-mot, v calc

CHK: lt-mgy, dkgy, sme tan, sft-sl firm, sbply-sbblky, mot-rthy, tr fos frag, v calc  
MRL: mgy-gyblk, sbblky-sbply, smeifs, pily, sl firm, sft-mot, v calc

CHK: lt-mgy, dkgy, sme tan, sft-sl firm, sbply-sbblky, mot-rthy, tr fos frag, v calc  
MRL: mgy-gyblk, sbblky-sbply, smeifs, pily, sl firm, sft-mot, v calc



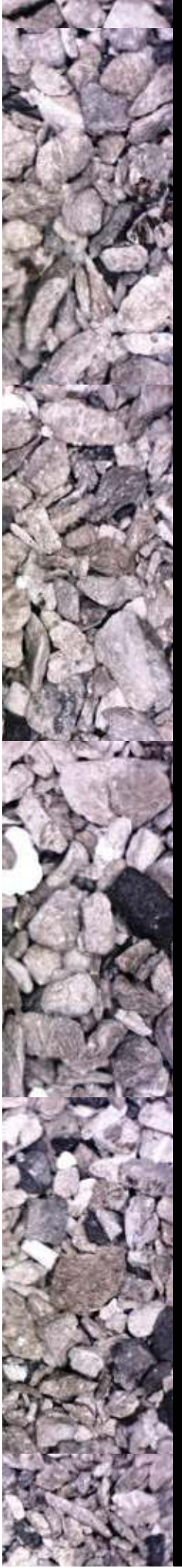


CHK: lt-mgy, dkgy, sme tan, sft-si firm, sbply-sbblk, mot-rthy, tr fos frag, v calc MRL: mgy-gyblk, sbblk-sbply, smets, pty, sl firm, silt-mot, v calc

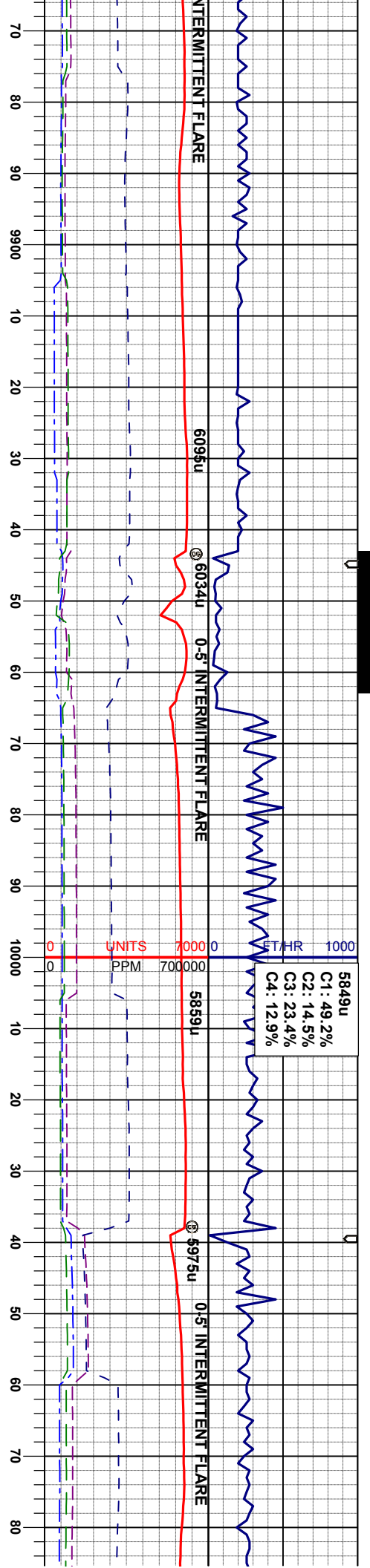
CHK: lt-mgy, dkgy, sme tan, sft-si firm, sbply-sbblk, mot-rthy, tr fos frag, v calc MRL: mgy-gyblk, sbblk-sbply, smets, pty, sl firm, silt-mot, v calc

CHK: lt-mgy, dkgy, sme tan, sft-si firm, sbply-sbblk, mot-rthy, tr fos frag, v calc MRL: mgy-gyblk, sbblk-sbply, smets, pty, sl firm, silt-mot, v calc

CHK: lt-mgy, dkgy, sme tan, sft-si firm, sbply-sbblk, mot-rthy, tr fos frag, v calc MRL: mgy-gyblk, sbblk-sbply, smets, pty, sl firm, silt-mot, v calc







MD 9896'  
INC 91.7°  
AZM 2.2°  
TVD 5972.38'

MD 9991'  
INC 90.4°  
AZM 2.4°  
TVD 5970.64'

MD  
INC  
AZM  
TVD

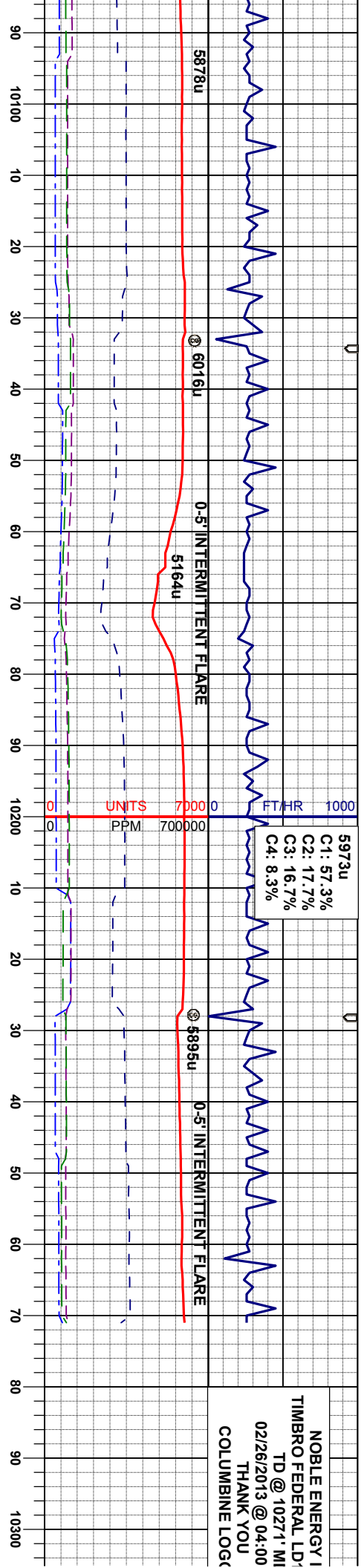
CHK: lt-mgy, dkgy, sme tan, sft-si firm, spty-sbblky, mot-rthy, tr fos frag, v calc MRL: mgy-gyblk, sbblky-spty, smetfs, pty, si firm, slt-mot, v calc

CHK: lt-mgy, dkgy, sme tan, sft-si firm, spty-sbblky, mot-rthy, tr fos frag, v calc MRL: mgy-gyblk, sbblky-spty, smetfs, pty, si firm, slt-mot, v calc

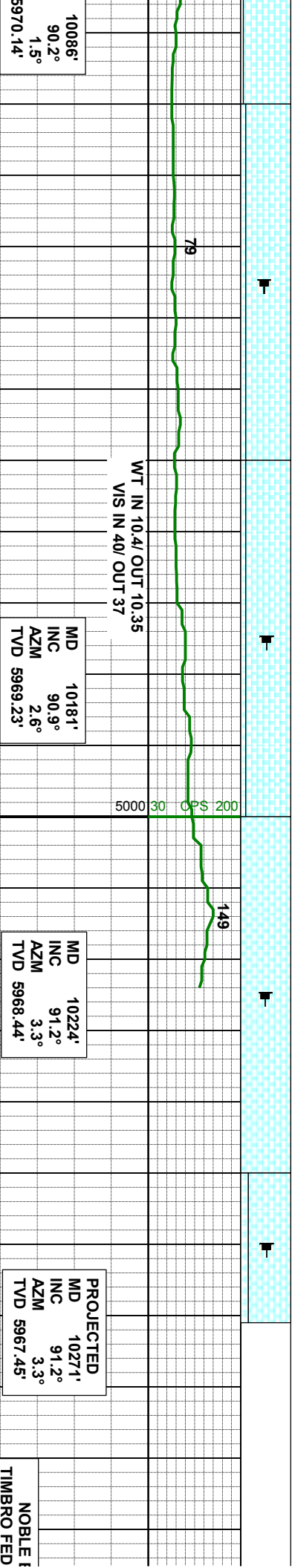
CHK: lt-mgy, dkgy, sme tan, sft-si firm, spty-sbblky, mot-rthy, tr fos frag, v calc MRL: mgy-gyblk, sbblky-spty, smetfs, pty, si firm, slt-mot, v calc

CHK: lt-mgy, dkgy, sme tan, sft-si firm, spty-sbblky, mot-rthy, tr fos frag, v calc MRL: mgy-gyblk, sbblky-spty, smetfs, pty, si firm, slt-mot, v calc





NOBLE ENERGY I  
TIMBRO FEDERAL LD  
TD @ 10271 MI  
02/26/2013 @ 04:00  
THANK YOU  
COLUMBINE LOGG



CHK: lt-mgy, dkgy, sme tan, sft-si firm,  
sbply-sbblky, mot-rthy, tr fos frag, v calc  
MRL: mgy-gyblk, sbblky-sbply, smeifs,  
ply, si firm, silt-mot, v calc

CHK: lt-mgy, dkgy, sme tan, sft-si firm,  
sbply-sbblky, mot-rthy, tr fos frag, v calc  
MRL: mgy-gyblk, sbblky-sbply, smeifs,  
ply, si firm, silt-mot, v calc

CHK: lt-mgy, dkgy, sme tan, sft-si firm,  
sbply-sbblky, mot-rthy, tr fos frag, v calc  
MRL: mgy-gyblk, sbblky-sbply, smeifs,  
ply, si firm, silt-mot, v calc

CHK: lt-mgy, dkgy, sme tan, sft-si firm,  
sbply-sbblky, mot-rthy, tr fos frag, v calc  
MRL: mgy-gyblk, sbblky-sbply, smeifs,  
ply, si firm, silt-mot, v calc

10086'  
90.2°  
1.5°  
5970.14'

MD 10181'  
INC 90.9°  
AZM 2.6°  
TVD 5969.23'

MD 10224'  
INC 91.2°  
AZM 3.3°  
TVD 5968.44'

PROJECTED  
MD 10271'  
INC 91.2°  
AZM 3.3°  
TVD 5967.45'

NOBLE ENERGY I  
TIMBRO FEDERAL LD  
TD @ 10271 MI  
02/26/2013



