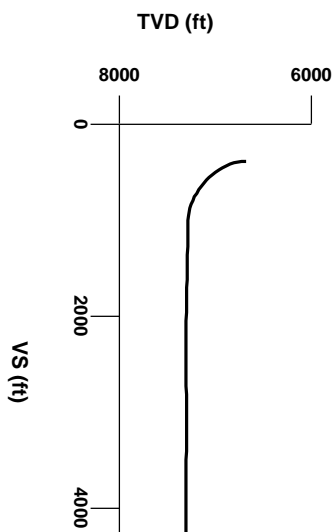


LOG created using LPLOT VH Version 3.0, July 17, 2013, Copyright (C) 1999-2009 Pason Systems Corp.

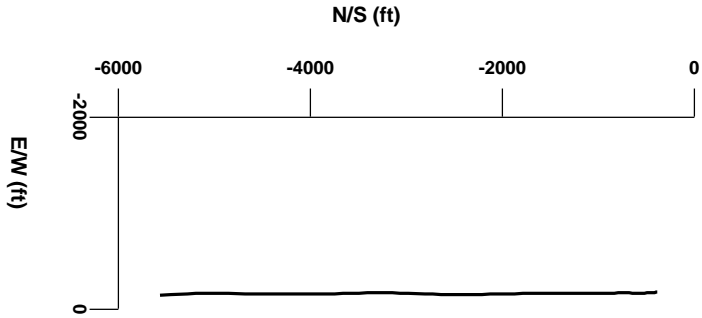
OPERATOR: ANADARKO PETROLEUM INC.
WELL: RATTLER 14N-3HZ
LOCATION: SESW 34 T3N R66W 6 PM
COUNTY: WELD
STATE: CO
SPOT: 364 FSL, 2236' FWL
ELEVATION: GL 4991' / KB 5008'
FIELD: WATTENBERG - 90750
SPUD DATE: 7/11/2013
TD DATE: 7/17/2013
DATES LOGGED: 7/12/2013 - 7/17/2013
DEPTHS LOGGED: 6727' - 12287'
LOGGERS: RIKKI WITHERSPOON, MOHAMMED ALMUBARAK
DRILLING FLUID: FW LSND
DRILLING RIG: XTREME 8
API: 05-123-36605
LOG TYPE: HORIZONTAL
SCALE: 1:240 (5 inches per 100 feet)
REMARKS: WELLSITE GEOLOGICAL SERVICES PROVIDED BY COLUMBINE LOGGING INC.

 LOGGING BEGAN AT KOP



Survey Elevation

Survey Plan



6000

Chalk

Marl

Silty Shale

ENGINEERING SYMBOLS

Casing

Casing

Connection

Midnight Depth

Normal Fault

GAS

0

UNITS

7000

C1

0

PPM

700000

C2

0

PPM

700000

C3

0

PPM

700000

C4

0

PPM

700000

ROP

0

MIN/FT

5

DEPTH (FEET)

6680

90

6700

10

20

30

40

50

60

70

80

90

6800

10

20

3300u

317u

4177u

1064u

WT 9.8 / VIS 36

WT 10.0 / VIS 36

TVD

ft

6500

GAMMA RAY

50

API

250

Logging Began

0740 hrs 7/13/2013

at 6727' MD

Bit #01

8-3/4

SMITH SDI611 MPX

Serial: JG9699

Survey

MD 6638'

INC 0.53°

AZM 294.38°

TVD 6600.79'

Begin in Sussex Formation

Survey

MD 6723'

INC 0.43°

AZM 235.15°

TVD 6685.81'

Survey

MD 6765'

INC 4.42°

AZM 173.14°

TVD 6727.75'

Survey

MD 6808'

INC 9.25°

AZM 175.37°

TVD 6770.43'

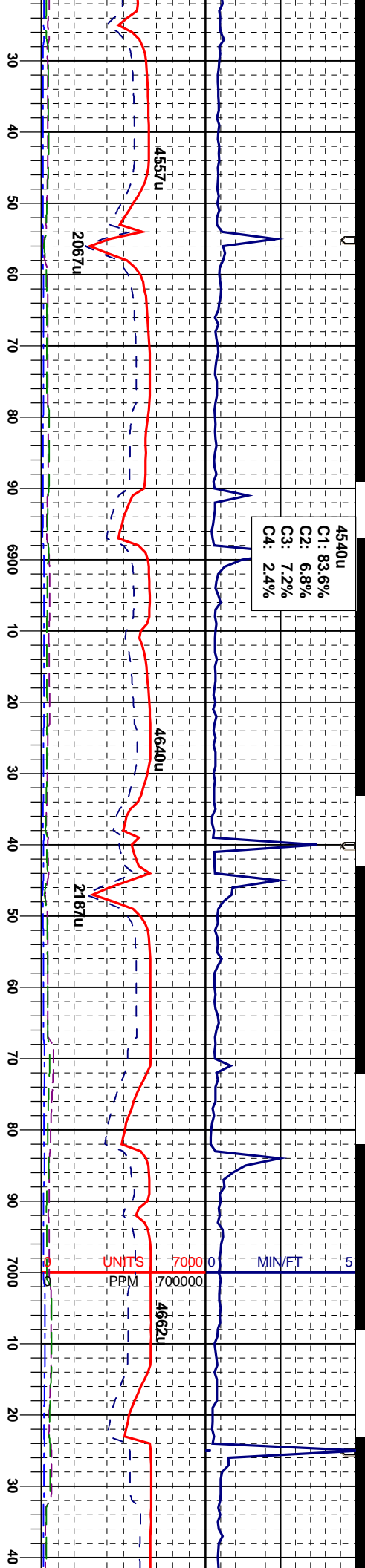
SLTSH: lt-m gy, brn, sb ply-sb blk, firm to m sft, w srt, sbnd-sbng, mod ftr, sl calc, slow string milky bl cut, dul bl ring

SLTSH: lt-m gy, to m sft, w srt, sbnd-sbng, mod ftr, sl calc, slow string milky bl

Oil Shows

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

SAMPLE PHOTOS



WT 10.0 / VIS 40

Survey
MD 6851'
INC 14.89°
AZM 172.73°
TVD 6812.46'

Survey
MD 6893'
INC 20.77°
AZM 174.38°
TVD 6852.43'

Survey
MD 6936'
INC 25.73°
AZM 179.53°
TVD 6891.93'

Survey
MD 6978'
INC 29.53°
AZM 177.48°
TVD 6929.13'

Survey
MD 7021'
INC 34.02°
AZM 175.35°
TVD 6965.68'

SLTYSH: lt-m gy, brn, sb ply-sb blk, firm
to m sft, w srt, sbtd-sbang, mod fri, sl calc,
slow sting milky bl cut, bl ring

SLTYSH: lt-m gy, brn, sb ply-sb blk, firm
to m sft, w srt, sbtd-sbang, mod fri, sl calc,
slow sting milky bl cut, bl ring

SLTYSH: lt-m gy, brn, sb ply-sb blk, firm
to m sft, w srt, sbtd-sbang, mod fri, sl calc,
slow sting milky bl cut, dul bl ring

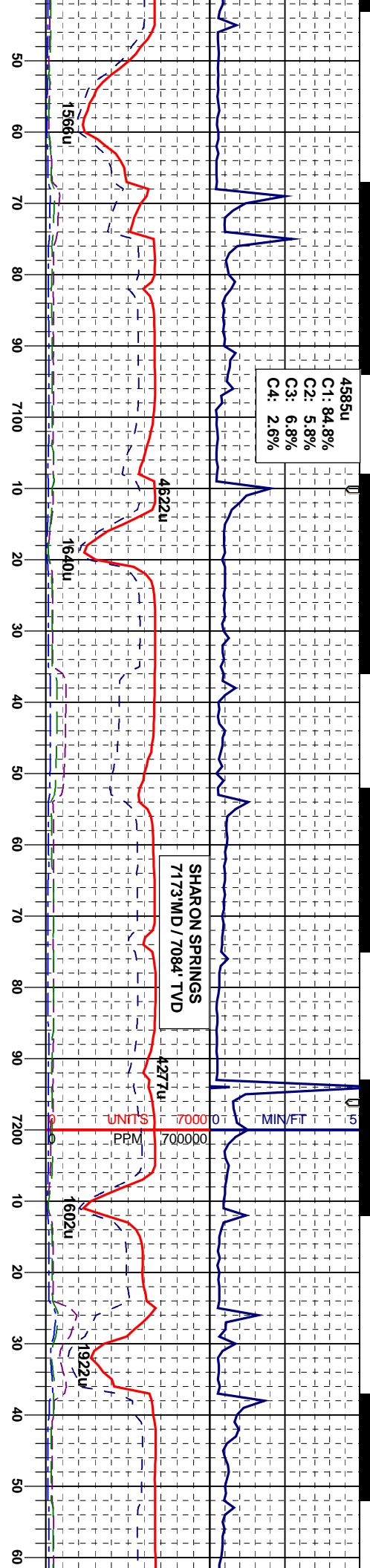
SLTYSH: lt-m gy, brn, sb ply-sb blk, firm
to m sft, w srt, sbtd-sbang, mod fri, sl calc,
tr pyr, slow sting milky bl cut, dul bl ring

SLTYSH: lt-m gy, brn, sb ply-sb blk, firm
to m sft, w srt, sbtd-sbang, mod fri, sl ca
slow sting milky bl cut, bl ring



4585u
C1: 84.8%
C2: 5.8%
C3: 6.8%
C4: 2.6%

SHARON SPRINGS
7173' MD / 7084' TVD



WT 10.0 / VIS 40

WT 10.0 / VIS 40

Survey
MD 7064'
INC 35.74°
AZM 176.96°
TVD 7000.95'

Survey
MD 7106'
INC 38.98°
AZM 177.66°
TVD 7034.33'

Survey
MD 7149'
INC 43.41°
AZM 179.13°
TVD 7066.68'

Survey
MD 7192'
INC 47.35°
AZM 180.06°
TVD 7096.88'

Survey
MD 7234'
INC 49.66°
AZM 180.82°
TVD 7124.70'

SLTYSH: lt-m gy, brn, sb ply-sb blk, firm
to m sft, w srt, sbtd-sbang, mod fri, sl calc,
tr bent, slow string milky bl cut, bl ring

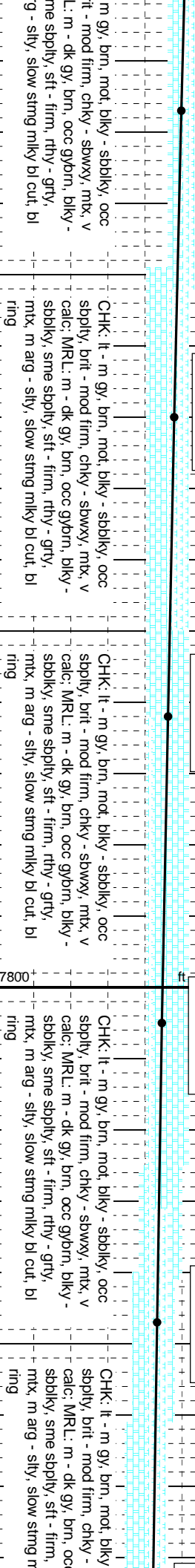
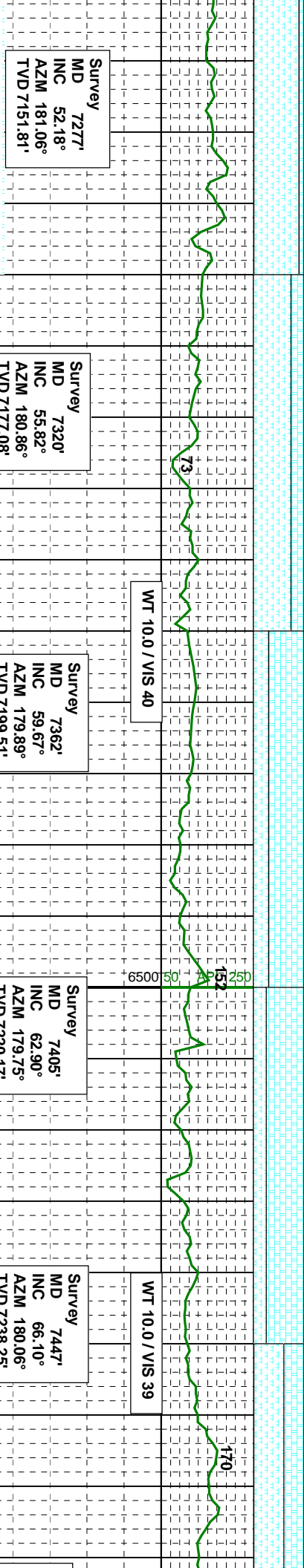
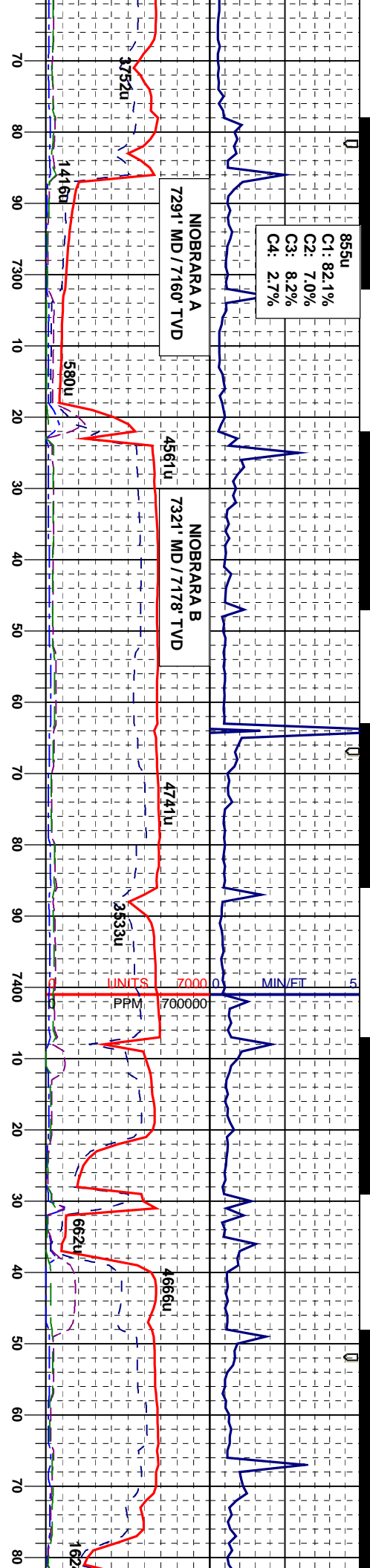
SLTYSH: lt-m gy, brn, sb ply-sb blk, firm
to m sft, w srt, sbtd-sbang, mod fri, sl calc,
tr bent, slow string milky bl cut, dul bl ring

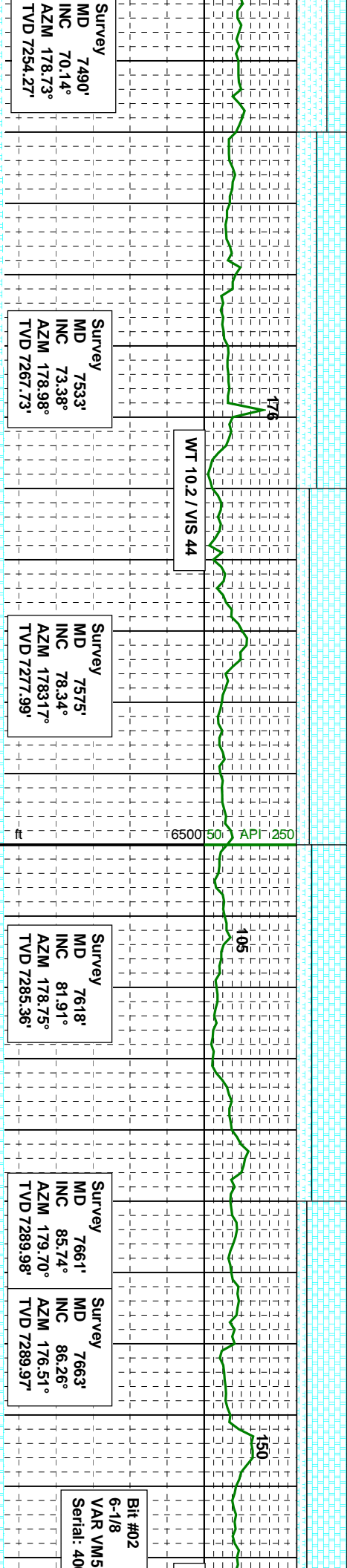
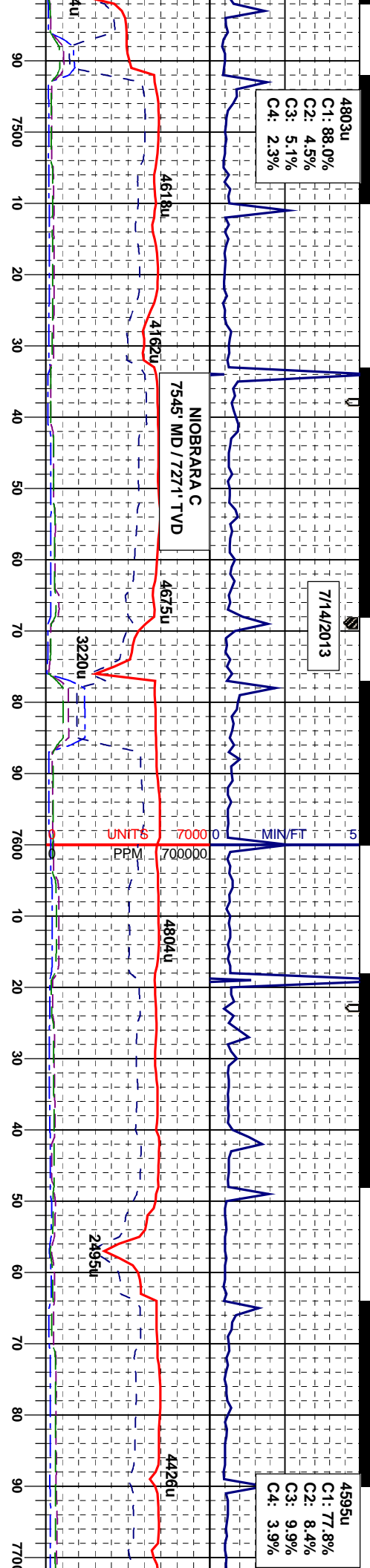
SLTYSH: lt-m gy, brn, sb ply-sb blk, firm
to m sft, w srt, sbtd-sbang, mod fri, sl calc,
tr bent, slow string milky bl cut, dul bl ring

MRL: m - dk gy, brn, occ gybrn, blk -
sbbkly, sme sbbkly, sft - firm, rthy - gty,
mx, m ang - sily, mod calc, SLTY: SH: m
gy-dk gy, sbply-sbbkly, sft-firm, slow string
milky bl cut, bl ring

CHK: lt -
sbply, br
calc; MR
sbbkly, s
mx, m an
ring







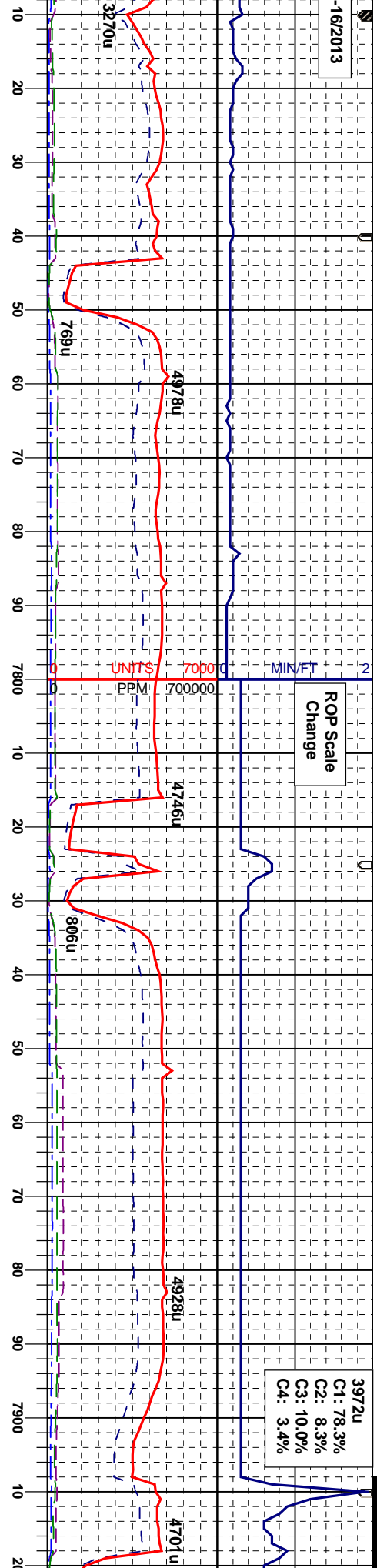
- sbbkly, occ
- spswxy, mtz, v
- c gybrn, biky -
- sbbkly - grty,
- mtz, m arg - silty, slow sting mlky bl cut, bl
ring

- CHK: lt - m gy, brn, mod, biky - sbbkly, occ
- sbbkly, brit - mod firm, chky - spswxy, mtz, v
- calc: MRL: m - dk gy, brn, occ gybrn, biky -
- sbbkly, sme sbbkly, sft - firm, rthy - grty,
- mtz, m arg - silty, slow sting mlky bl cut, bl
ring

- CHK: lt - m gy, brn, mod, biky - sbbkly, occ
- sbbkly, brit - mod firm, chky - spswxy, mtz, v
- calc: MRL: m - dk gy, brn, occ gybrn, biky -
- sbbkly, sme sbbkly, sft - firm, rthy - grty,
- mtz, m arg - silty, slow sting mlky bl cut, bl
ring



7/15-16/2013



C1: 78.3%
C2: 8.3%
C3: 10.0%
C4: 3.4%

WT 10.1 / VIS 35

Survey
MD 7727'
INC 89.22°
AZM 180.04°
TVD 7292.62'

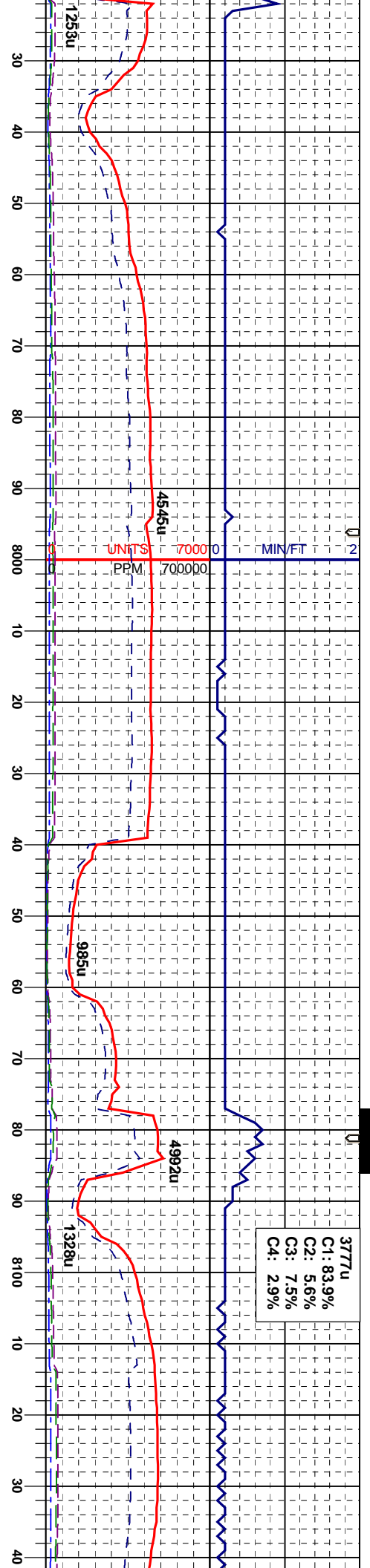
Survey
MD 7770'
INC 89.93°
AZM 179.78°
TVD 7292.94'

WT 10.0 / VIS 38

Survey
MD 7855'
INC 90.55°
AZM 179.76°
TVD 7292.59'

CHK: It - m gy, brn, mot, blk - sbblky, occ
sblpy, brt - mod firm, chky - sbwxy, mtx, v
calc; MRL: m - dk gy, brn, occ gy/brn, blk -
sblky, sme sblpy, sft - firm, rthy - grty,
mtx, slow string mky bl cut, bl ring

CHK: It - m gy, brn, mot, blk - sbblky, occ
sblpy, brt - mod firm, chky - sbwxy, mtx, v
calc; MRL: m - dk gy, brn, occ gy/brn, blk -
sblky, sme sblpy, sft - firm, rthy - grty,
mtx, slow string mky bl cut, bl ring



Survey
MD 7940'
INC 89.23°
AZM 180.23°
TVD 7292.62'

Survey
MD 8025'
INC 89.97°
AZM 180.85°
TVD 7293.21'

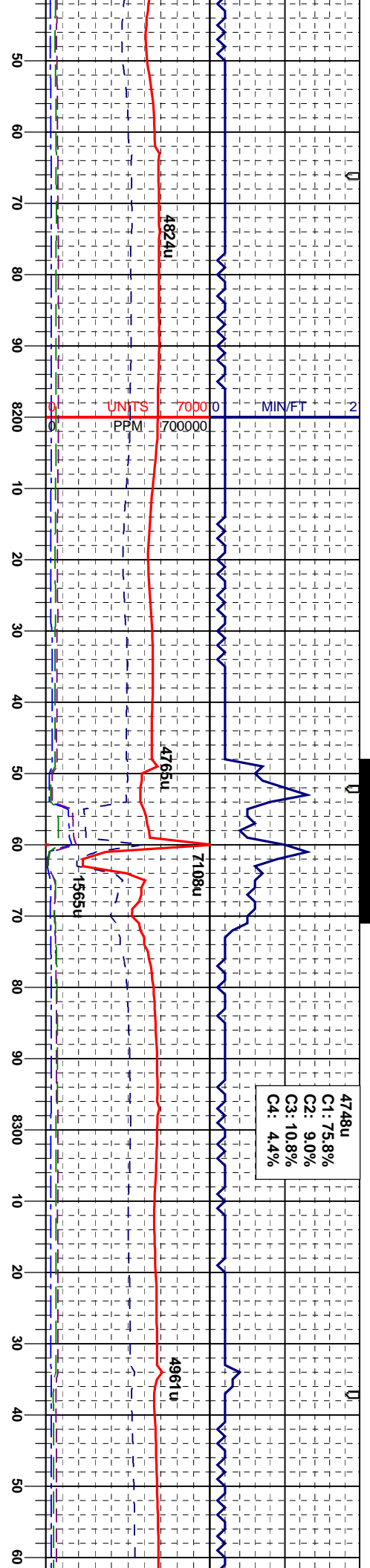
Survey
MD 8111'
INC 88.79°
AZM 179.32°
TVD 7294.14'

CHK: It - m gy, brn, mod, biky - sbblky, occ
sblpy, brt - mod firm, chky - sbwxy, mtx, v
calc; MRL: m - dk gy, brn, occ gybrn, biky -
sblky, sme sblpy, sft - firm, rty - gfty,
mtx, sting mky bl cut, bl ring

CHK: It - m gy, brn, mod, biky - sbblky, occ
sblpy, brt - mod firm, chky - sbwxy, mtx, v
calc, slow sting mky bl cut, bl ring

CHK: It - m gy
sblpy, brt - m
calc, slow stm



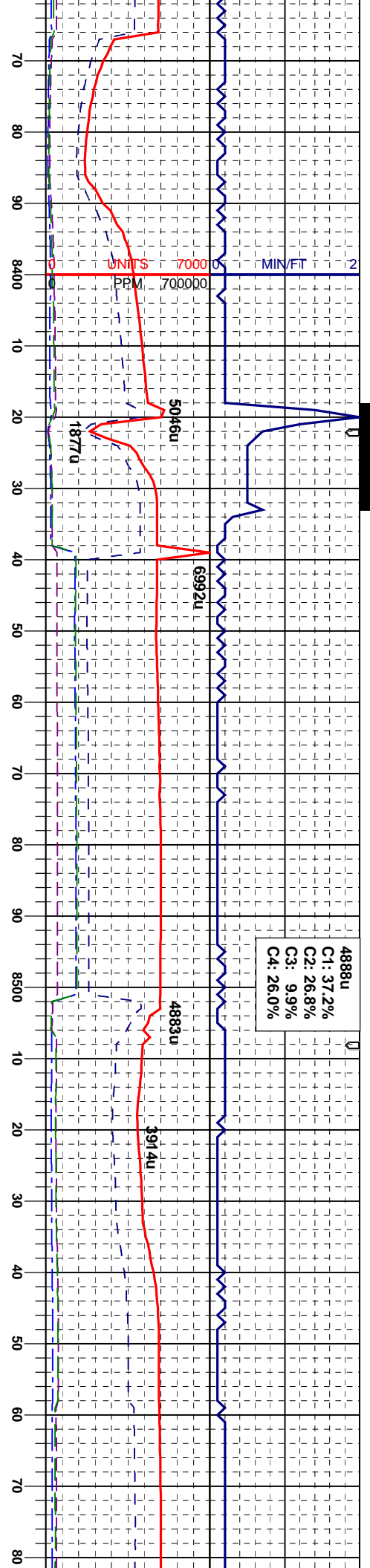


Survey
MD 8196'
INC 90.12°
AZM 181.09°
TVD 7294.95

Survey
MD 8281'
INC 87.48°
AZM 179.56°
TVD 7296.73

g mky bl cut, bl ring
mod firm, chky - sbwxy, mtz, v
brn, mot, blk - sbblky, occ
g mky bl cut, bl ring
calc, slow string mky bl cut, bl ring
CHK: It - m gy, brn, mot, blk - sbblky, occ
-sbply, brt - mod firm, chky - sbwxy, mtz, v
CHK: It - m gy, brn, mot, blk - sbblky, occ
-sbply, brt - mod firm, chky - sbwxy, mtz, v
calc, string mky bl cut, bri bl ring





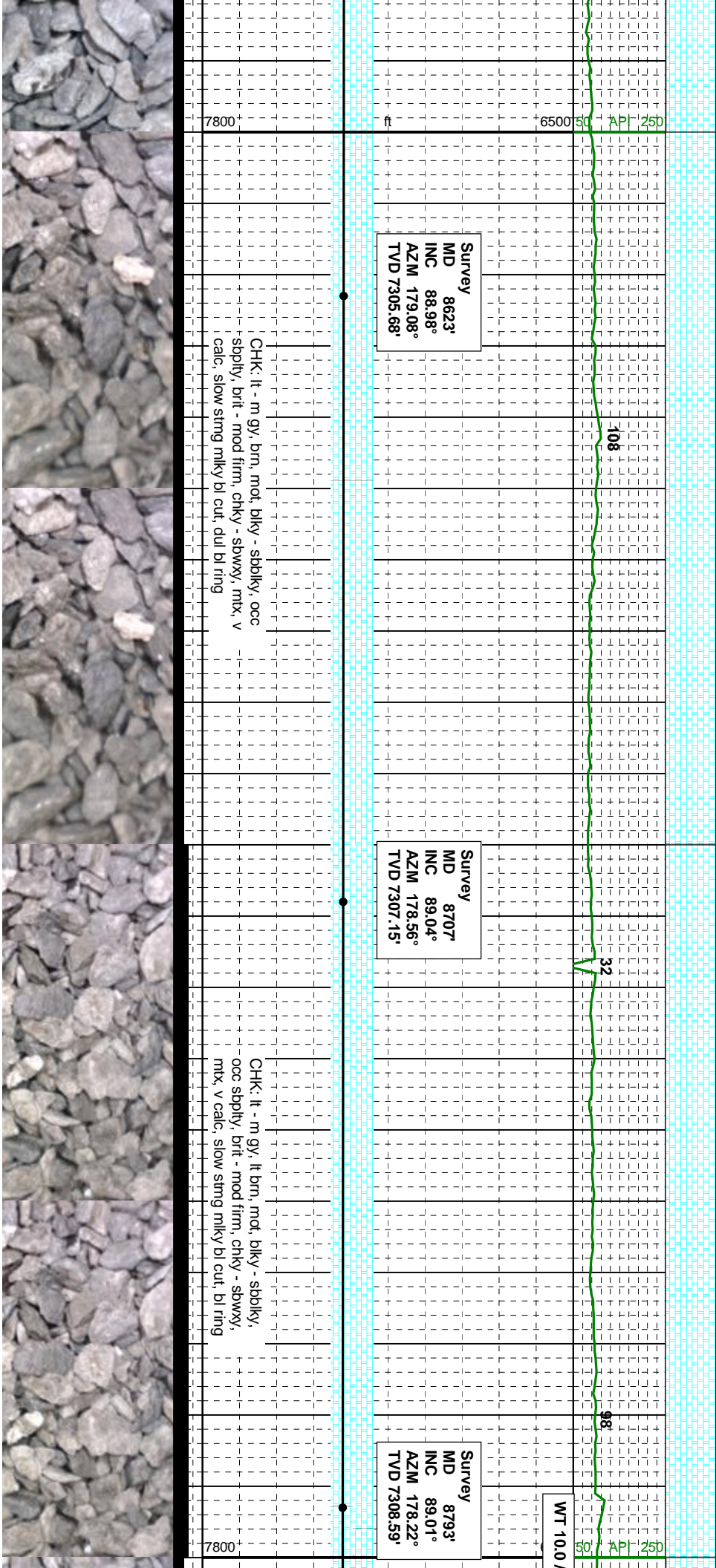
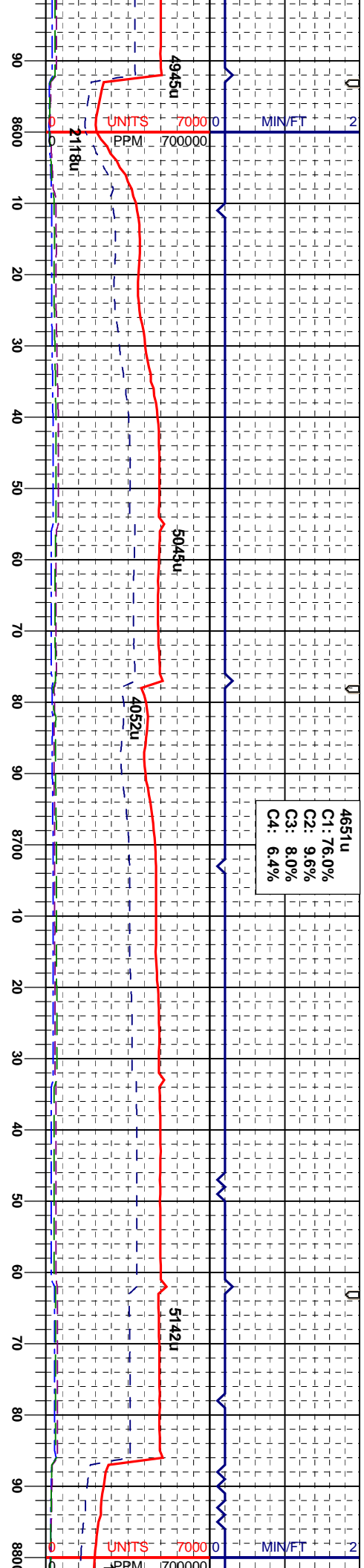
Survey
ID 8367'
INC 87.44°
AZM 179.43°
TVD 7300.54'

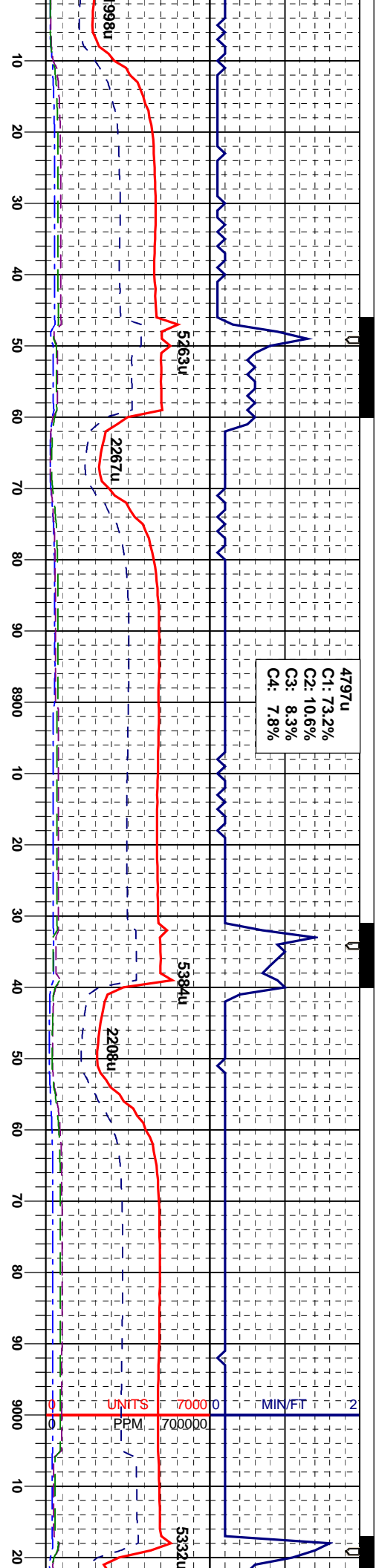
Survey
MD 8452'
INC 89.14°
AZM 179.25°
TVD 7303.08'

Survey
MD 8537'
INC 89.20°
AZM 179.04°
TVD 7304.31'

CHALK: light to medium gray, brown, mottled, blocky to sub blocky, occasional subplaty, brittle to moderate firm, chalky to sub waxy, matrix, v calc, slow string milky bl cut, dul bl ring







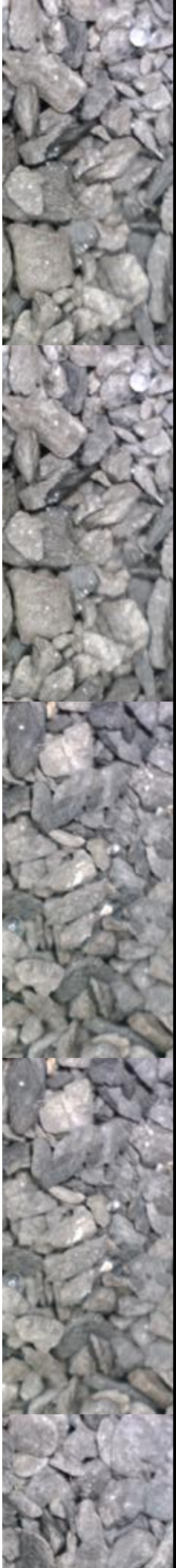
VIS 38

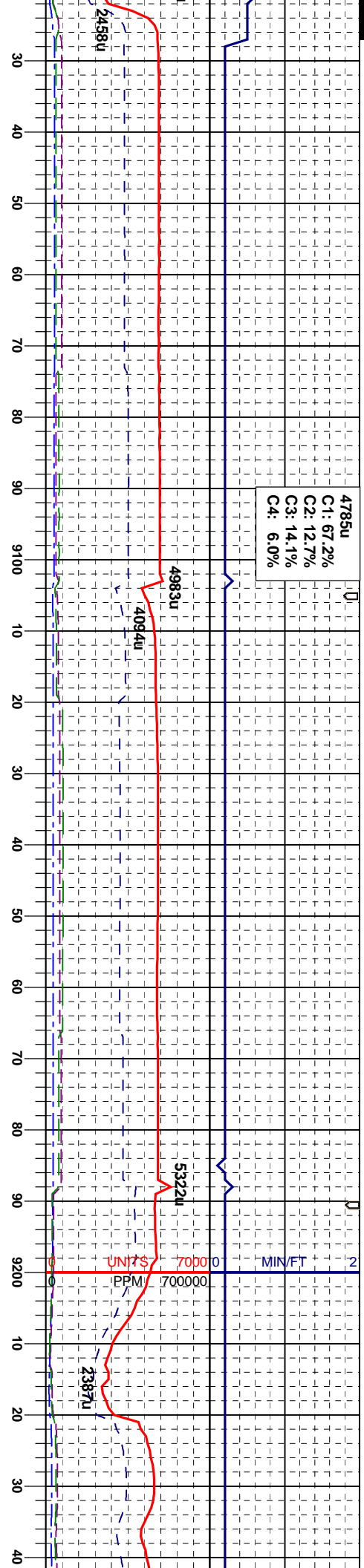
Survey
MD 8878'
INC 90.83°
AZM 179.61°
TVD 7308.71'

Survey
MD 8964'
INC 89.35°
AZM 178.86°
TVD 7305.58'

CHK: lt - m gy, lt brn, mot, blk, sbbly, occ sbply, brit - mod firm, chky - sbwxy, mtx, v calc, slow sting milky bl cut, dul bl ring

CHK: lt - m gy, brn, mot, blk, sbbly, occ sbply, brit - mod firm, chky - sbwxy, mtx, v calc, sting milky bl cut, bl ring





Survey
MD 9049'
INC 90.31°
AZM 181.30°
TVD 7308.83'

Survey
MD 9134'
INC 89.85°
AZM 180.30°
TVD 7308.71'

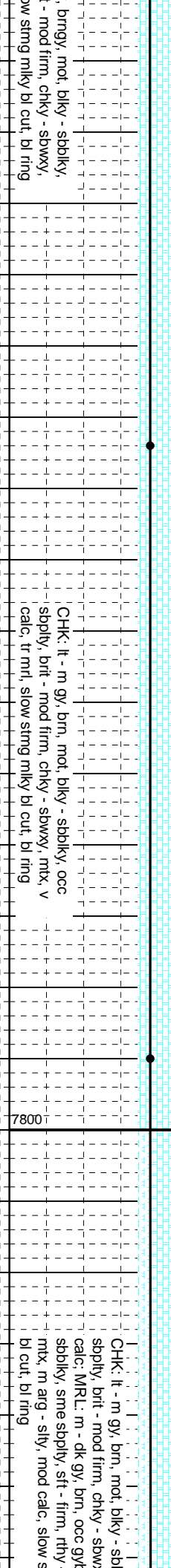
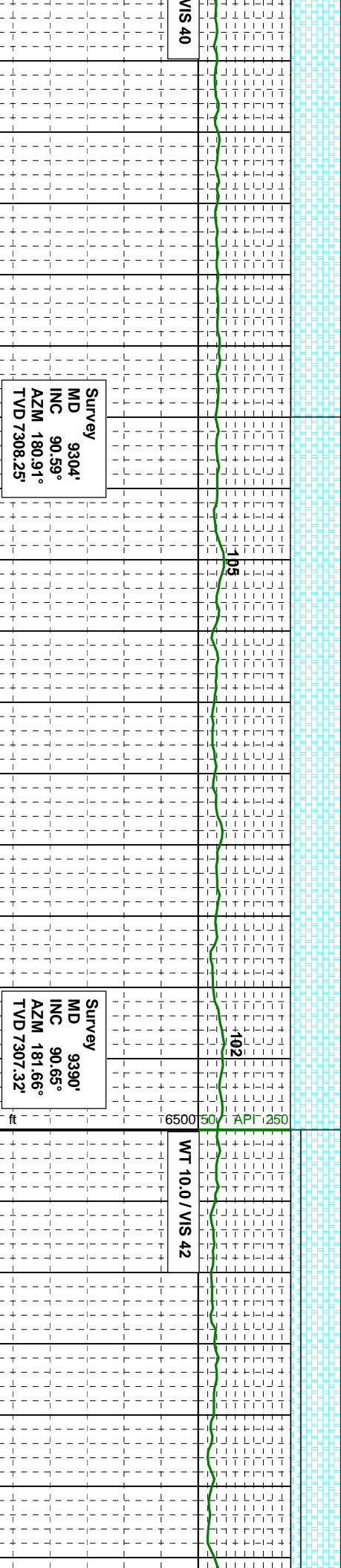
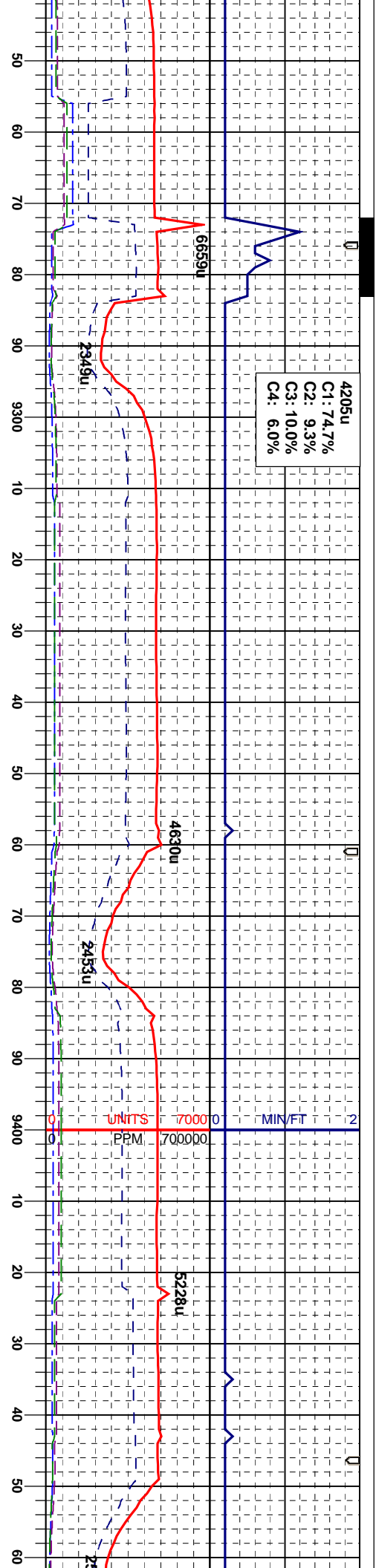
Survey
MD 9219'
INC 90.09°
AZM 179.49°
TVD 7308.75'

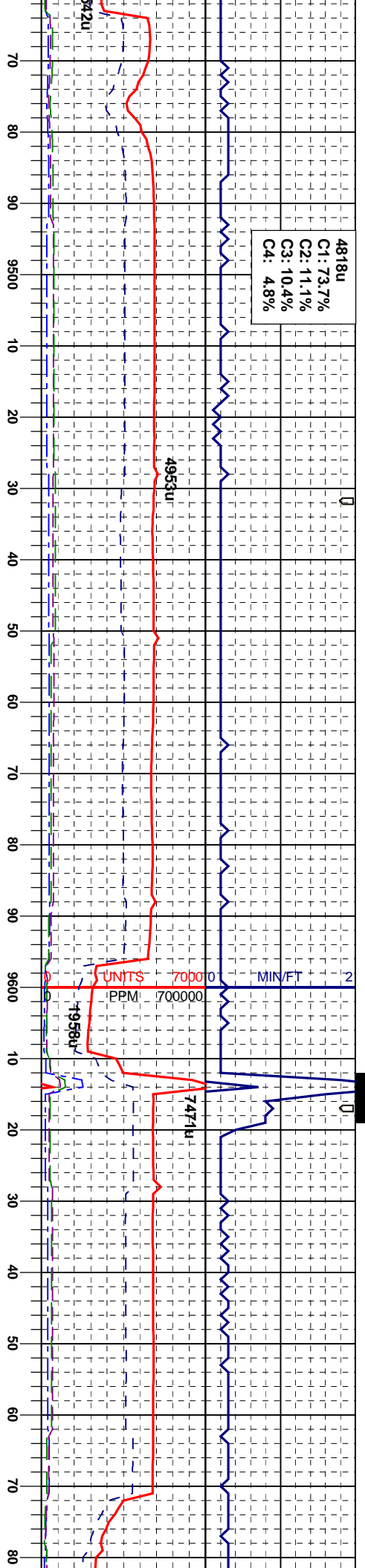
CHK: It - m gy, brn, mod, blk - sbbly, occ
sbply, brit - mod firm, chky - sbwvy, mix, v
calc, slow string mlky bl cut, bl ring

CHK: It - m gy, brn, mod, blk - sbbly, occ
sbply, brit - mod firm, chky - sbwvy, mix, v
calc, it marl, slow string mlky bl cut, bl ring

CHK: It - m gy
occ sbply, brit
mix, v calc, slc







Survey
MD 9475'
INC 90.74°
AZM 181.65°
TVD 7306.29'

blky, occ
y, mty, v
-rn, bly -
-grty,
-sting mly

CHK: It - m gy, brn, mod, bly - sbblky, occ
sblpy, brt - mod firm, chky - sbwxy, mty, v
calc: MRL: m - dk gy, brn, occ gybrn, bly -
sbblky, sme sblpy, st - firm, rty - grty,
-mty, m ay - stly, mod calc, slow sting mly
bl cut, bl ring

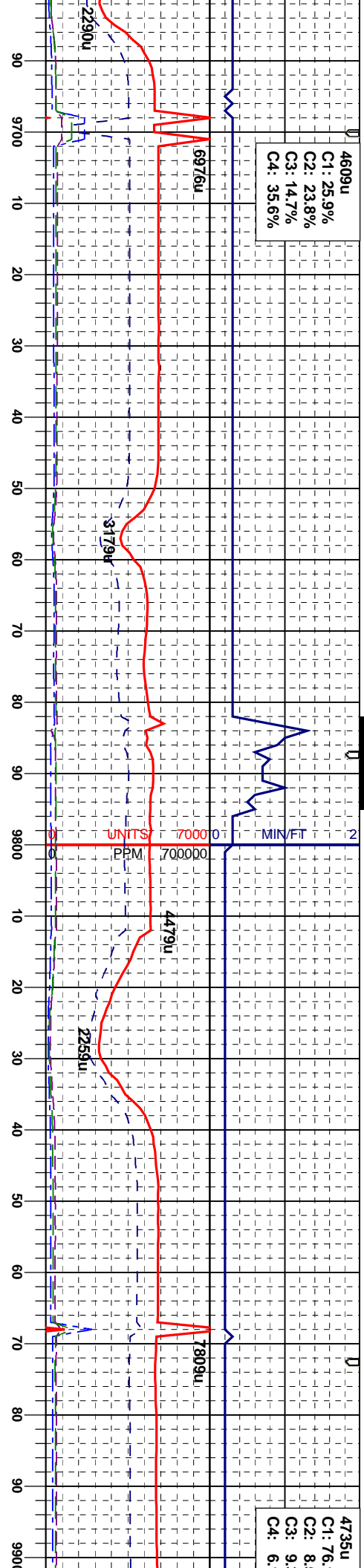
7800 6500 50 PI 250

WT 10.0 / VIS 42

Survey
MD 9645'
INC 90.52°
AZM 182.61°
TVD 7304.42'

CHK: It - m gy, brn, mod, bly - sbblky, occ
sblpy, brt - mod firm, chky - sbwxy, mty, v
calc: MRL: m - dk gy, brn, occ gybrn, bly -
sbblky, sme sblpy, st - firm, rty - grty,
-mty, m ay - stly, mod calc, slow sting mly
bl cut, bl ring





Survey
MD 9731'
INC 90.4°
AZM 182.18°
TVD 7303.73'

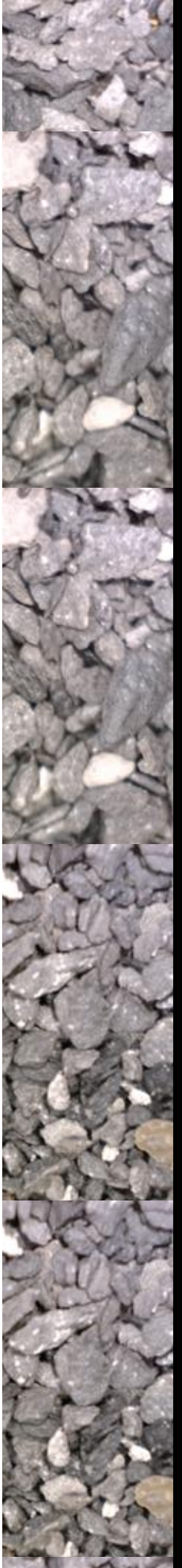
Survey
MD 9816'
INC 89.91°
AZM 180.70°
TVD 7303.5'

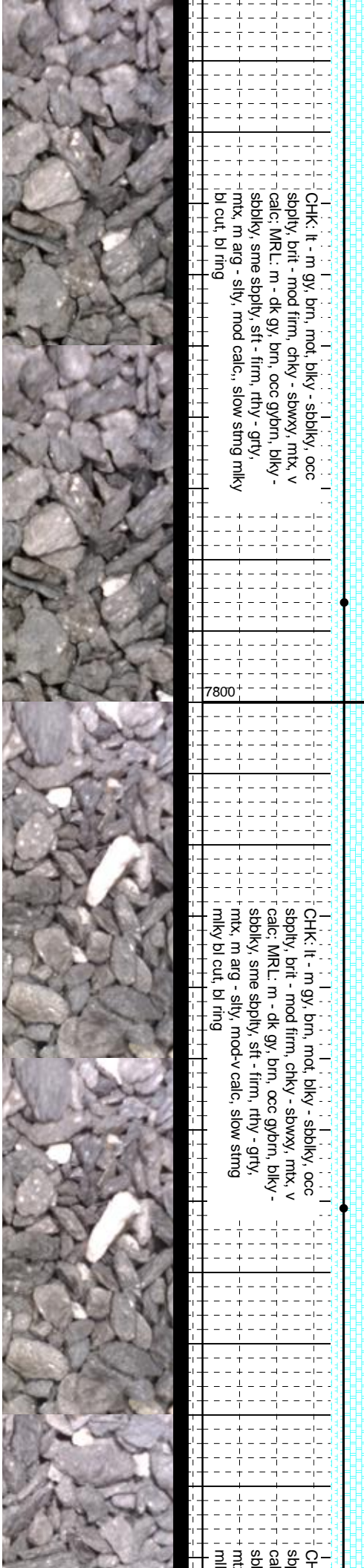
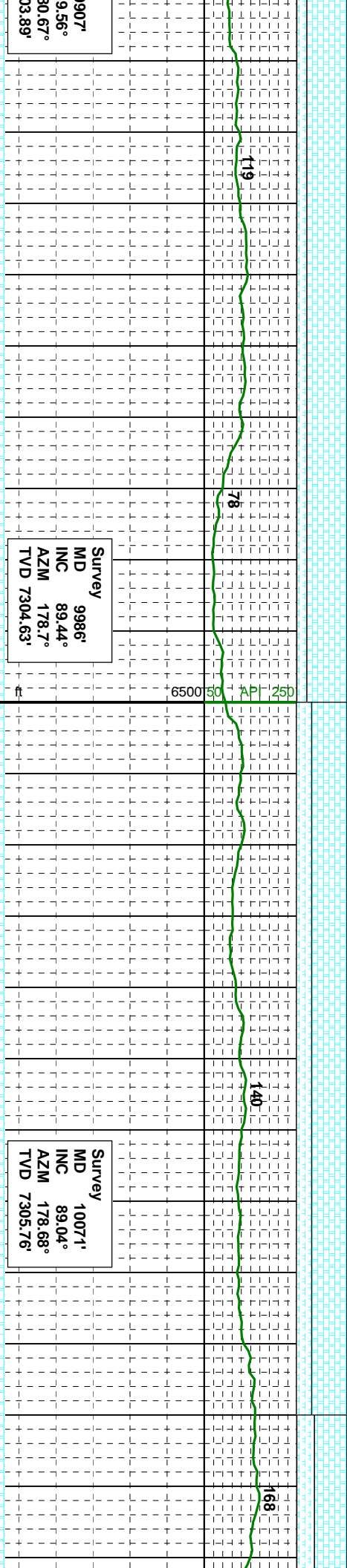
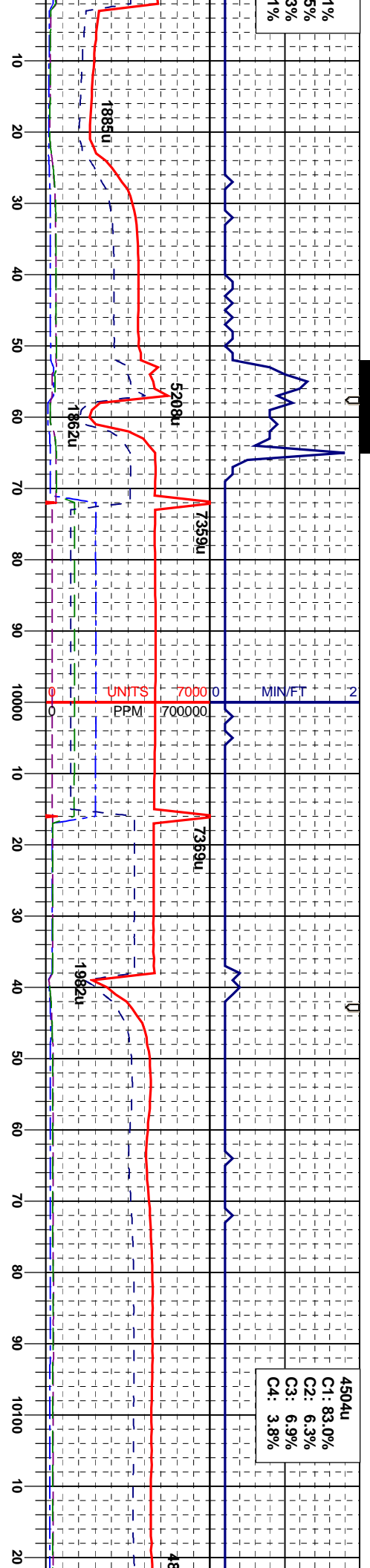
Survey
MD 9
INC 8
AZM 180.70°
TVD 7303.5'

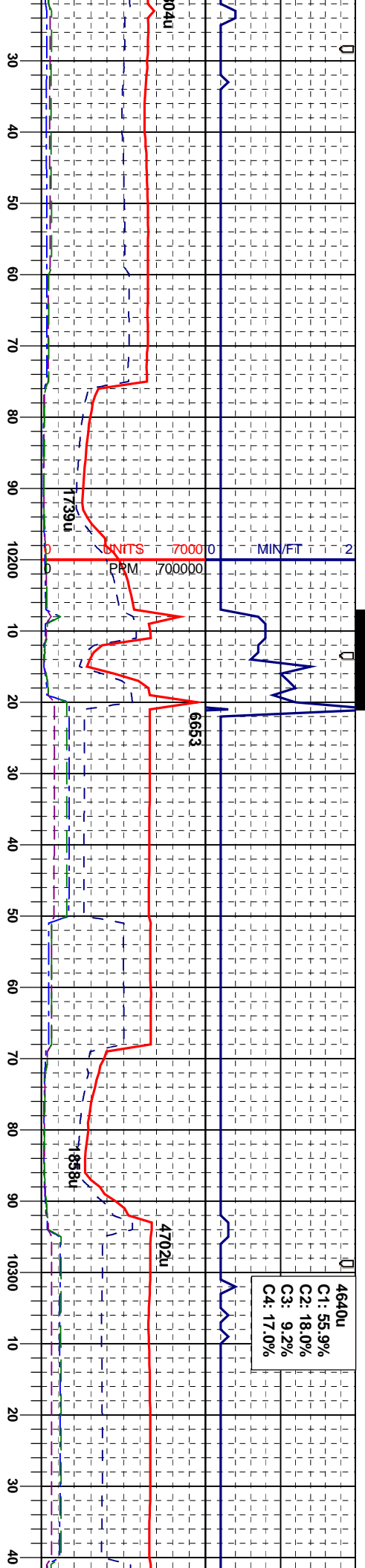
CHK: It - m gy, brn, mot, blk - sbblky, occ
sbply, brit - mod firm, chky - sbwxy, mtx, v
calc: MRL: m - dk gy, brn, occ gybrn, blk -
sbblky, sme sbply, sft - firm, rthy - grty,
mtx, m arg - silty, mod calc, slow string mlky
bl cut, bl ring

CHK: It - m gy, brn, mot, blk - sbblky, occ
sbply, brit - mod firm, chky - sbwxy, mtx, v
calc: MRL: m - dk gy, brn, occ gybrn, blk -
sbblky, sme sbply, sft - firm, rthy - grty,
mtx, m arg - silty, mod calc, slow string mlky
bl cut, bl ring

WT 10.0 / VIS 42







Survey
MD 10157'
INC 89.01°
AZM 177.95°
TVD 7307.22'

Survey
MD 10242'
INC 89.59°
AZM 179.83°
TVD 7308.26'

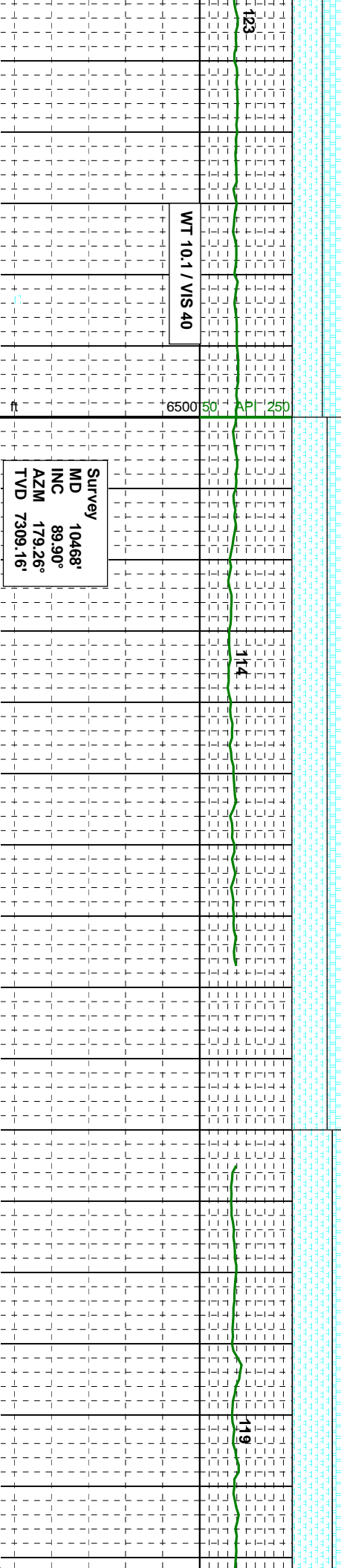
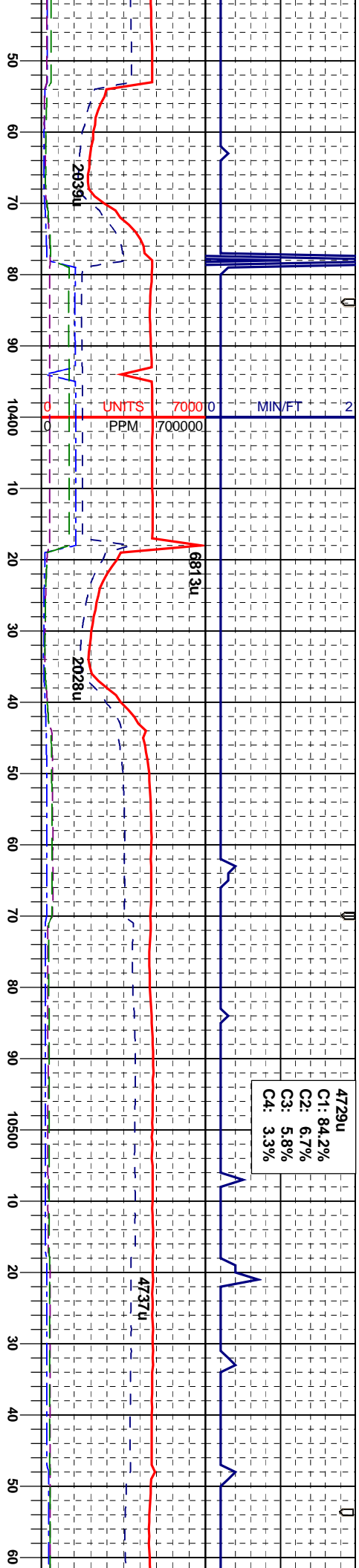
Survey
MD 10327'
INC 89.66°
AZM 179.37°
TVD 7308.82'

CHK: It - m gy, brn, mot, blk, sbbkly, occ
spkly, brit - mod firm, chky - sbwxy, mtx, v
calc: MRL: m - dk gy, brn, occ gybrn, blkly -
sbbkly, sme spkly, sft - firm, rthy - grty,
mtx, m arg - sily, mod-v calc, slow sting
mky bl cut, bl ring

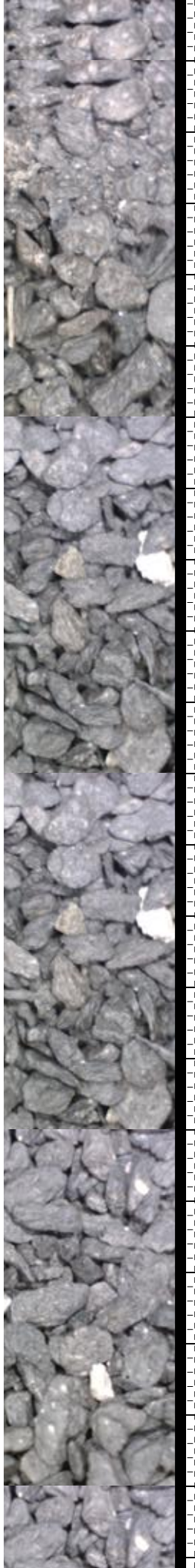
CHK: It - m gy, brn, mot, blk, sbbkly, occ
spkly, brit - mod firm, chky - sbwxy, mtx, v
calc: MRL: m - dk gy, brn, occ gybrn, blkly -
sbbkly, sme spkly, sft - firm, rthy - grty,
mtx, m arg - sily, mod-v calc, slow sting
mky bl cut, dul bl ring

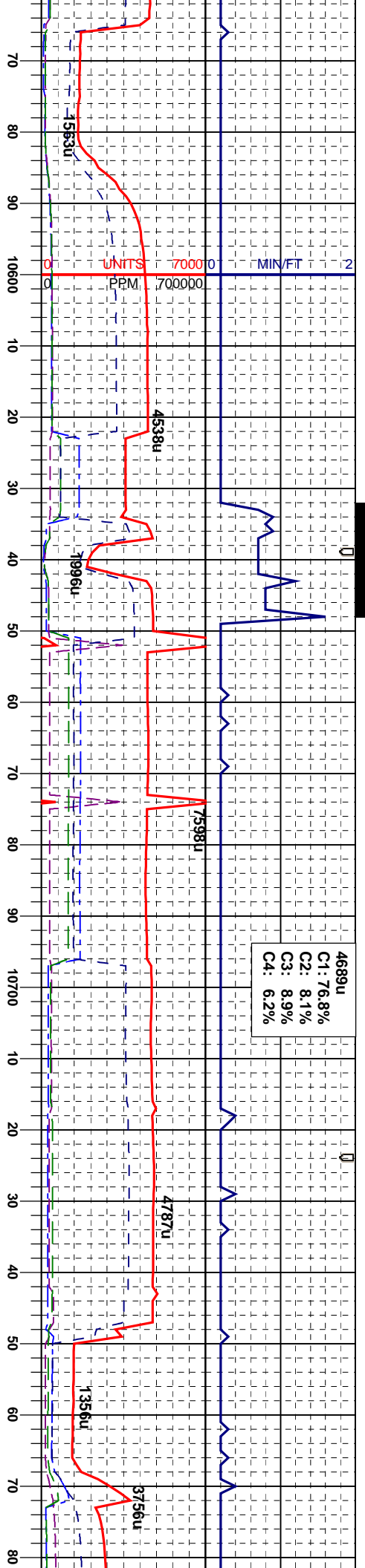
CHK: It - m gy,
spkly, brit - mo
calc: MRL: m -
sbbkly, sme spk
mtx, m arg - sily
mky bl cut, dul





CHK: It - m gy, brn, mot, biky - sbbiky, occ
sbply, brit - mod firm, chky - sbwxy, mtx, v
calc: MRL: m - dk gy, brn, occ gybrn, biky -
sbbiky, sme sbply, sft - firm, rthy - grty,
mtx, m arg - sily, mod-v-calc, slow sting
miky bl cut, dul bl ring



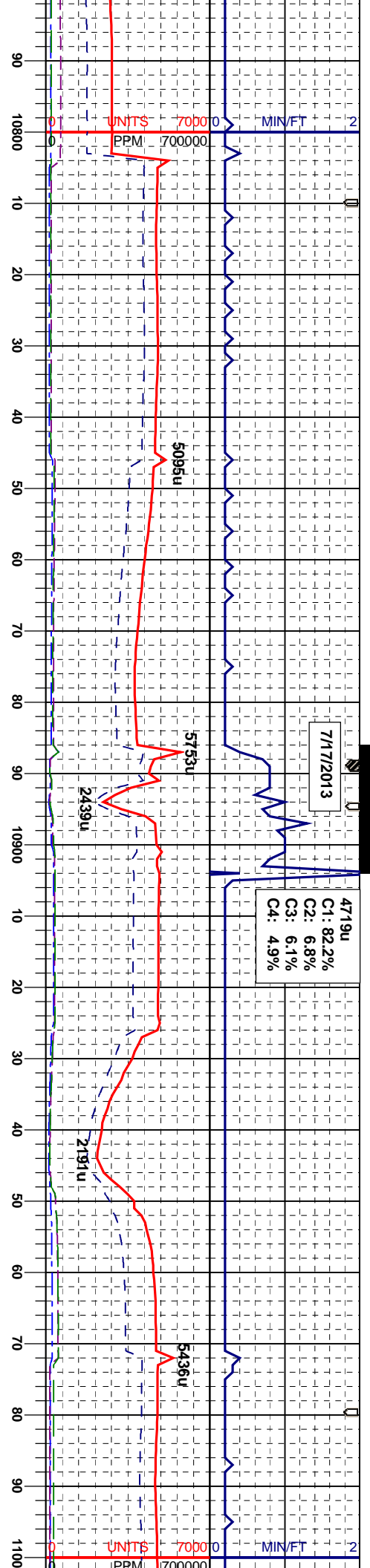


Survey
MD 10583'
INC 89.96°
AZM 178.71°
TVD 7309.36'

Survey
MD 10668'
INC 89.78°
AZM 179.94°
TVD 7309.55'

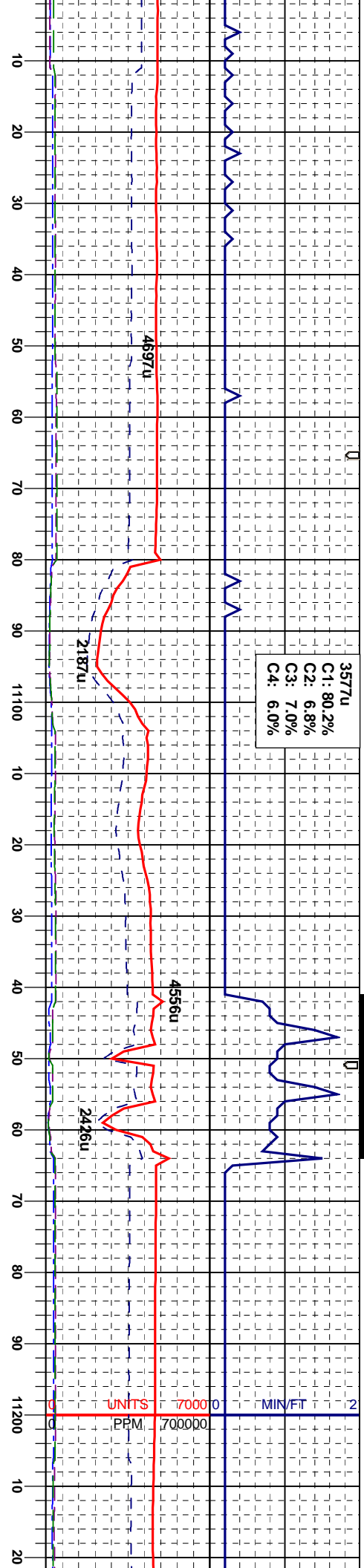
CHK: It - m gy, brn, mot, blk - sbblky, occ
sblpy, brit - mod firm, chky - sbwxy, mtz, v
calc; MRL: m - dk gy, brn, occ gybrn, blk -
sblky, sme sblpy, sft - firm, rty - grty,
mtz, m arg - sily, mod-v calc, slow sting
mlky bl cut, dul bl ring

CHK: It - m gy, brn, mot, blk - sbblky, occ
sblpy, brit - mod firm, chky - sbwxy, mtz, v
calc; MRL: m - dk gy, brn, occ gybrn, blk -
sblky, sme sblpy, sft - firm, rty - grty,
mtz, m arg - sily, mod-v calc, slow sting
mlky bl cut, bl ring



ft		6500	50	API	250
ft		7800			
Survey		MD	10838'	INC	89.81°
		INC	89.81°	AZM	179.44°
		TVD	7310.16'		
CHK: It - m gy, brn, mot, biky - sbblky, occ					
sbply, brit - mod firm, chky - sbwxy, mtx, v					
calc: MRL: m - dk gy, brn, occ gybrn, biky -					
sbblky, sme sbply, sft - firm, rthy - grty,					
mtx, m aig - slty, mod-v calc, slow string					
miky bl cut, bl ring					
WT 10.0 / VIS 40					
Survey		MD	10924'	INC	89.22°
		INC	89.22°	AZM	180.54°
		TVD	7310.89'		
CHK: It - m gy, brn, mot, biky - sbblky, occ					
sbply, brit - mod firm, chky - sbwxy, mtx, v					
calc: MRL: m - dk gy, brn, occ gybrn, biky -					
sbblky, sme sbply, sft - firm, rthy - grty,					
mtx, m aig - slty, mod-v calc, slow string					
miky bl cut, bl ring					
ft		6500	50	API	250
ft		7800			





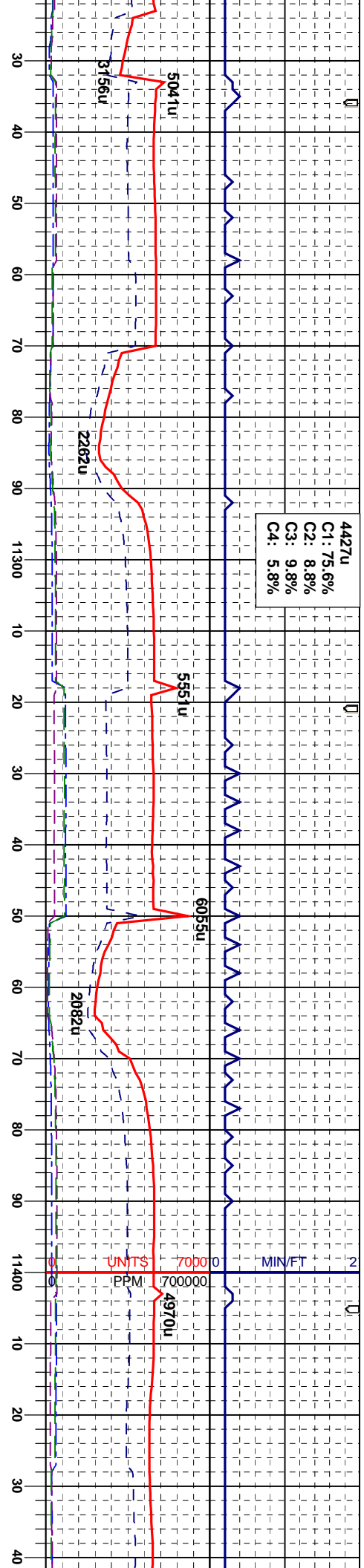
Survey
MD 11009'
INC 89.84°
AZM 179.91°
TVD 7311.59'

CHK: It - m gy, brn, mot, bly - sbbly, occ
sbply, brit - mod firm, chky - sbwxy, mtx, v
calc: MRL: m - dk gy, brn, occ gybrn, bly -
sbbly, sme sbply, sft - firm, rthy - grty,
mtx, m arg - silty, mod-v calc, tr inoc, slow
sting milky bl cut, bl ring

Survey
MD 11179'
INC 89.84°
AZM 181.21°
TVD 7312.06'

CHK: It - m gy, brn, mot, bly - sbbly, occ
sbply, brit - mod firm, chky - sbwxy, mtx, v
calc: MRL: m - dk gy, brn, occ gybrn, bly -
sbbly, sme sbply, sft - firm, rthy - grty,
mtx, m arg - silty, mod-v calc, slow sting
milky bl cut, bl ring

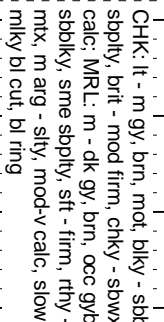
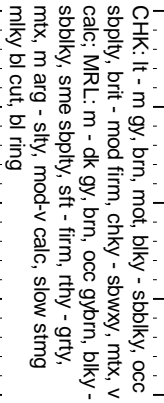
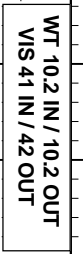


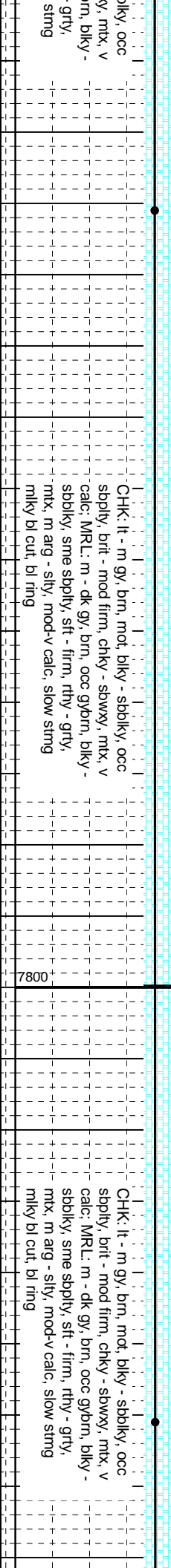
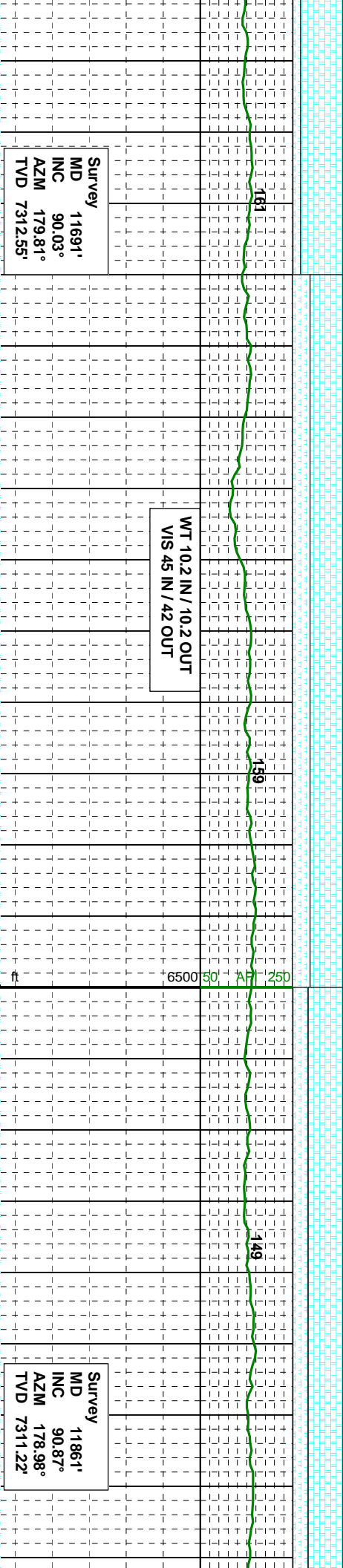
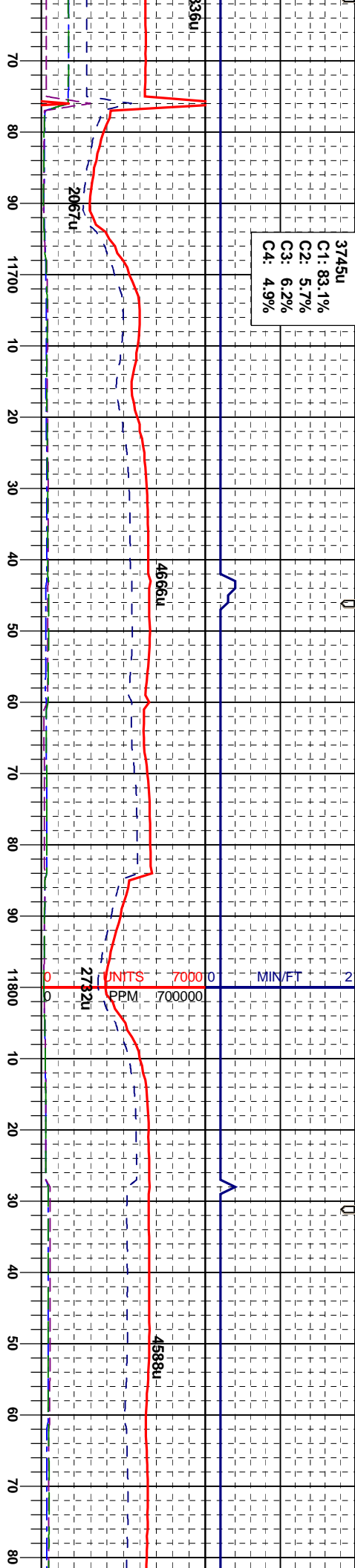


CHK: It - m gy, brn, mot, biky - sbbiky, occ
spbly, brit - mod firm, chky - spwxy, mtx, v
calc: MRL: m - dk gy, brn, occ gybrn, biky -
sbbiky, sme spbly, sft - firm, rthy - grty,
mtx, m arg - silty, mod-v calc, slow string
miky bl cut, bl ring

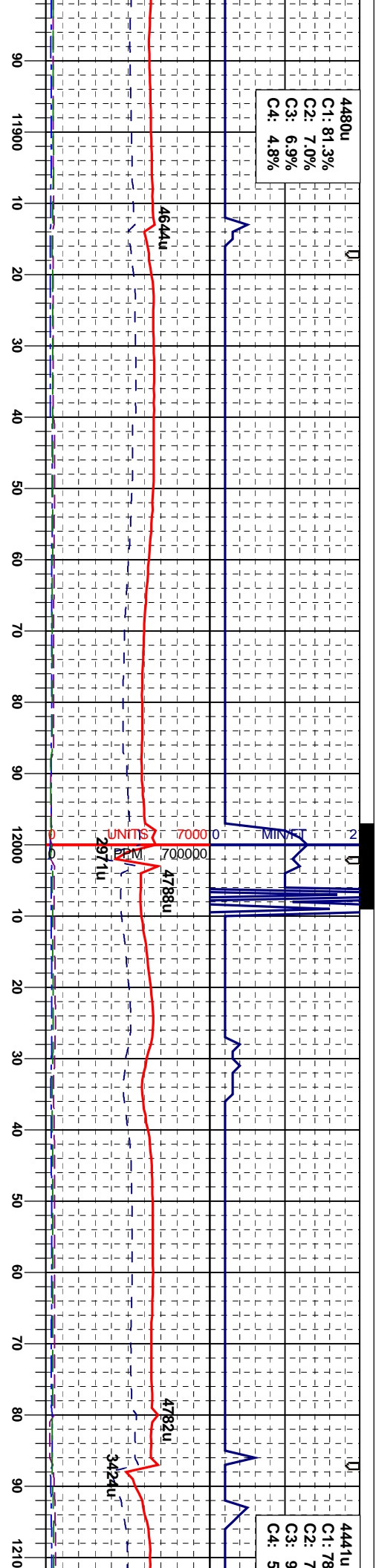
CHK: It - m gy, brn, mot, biky - sbbiky, occ
spbly, brit - mod firm, chky - spwxy, mtx, v
calc, slow string miky bl cut, bl ring

CHK: It - m g
spbly, brit - r
calc: MRL: m
sbbiky, sme s
mtx, m arg - v
miky bl cut, b





4480u
C1: 81.3%
C2: 7.0%
C3: 6.9%
C4: 4.8%



4441u
C1: 78%
C2: 7%
C3: 9%
C4: 5%

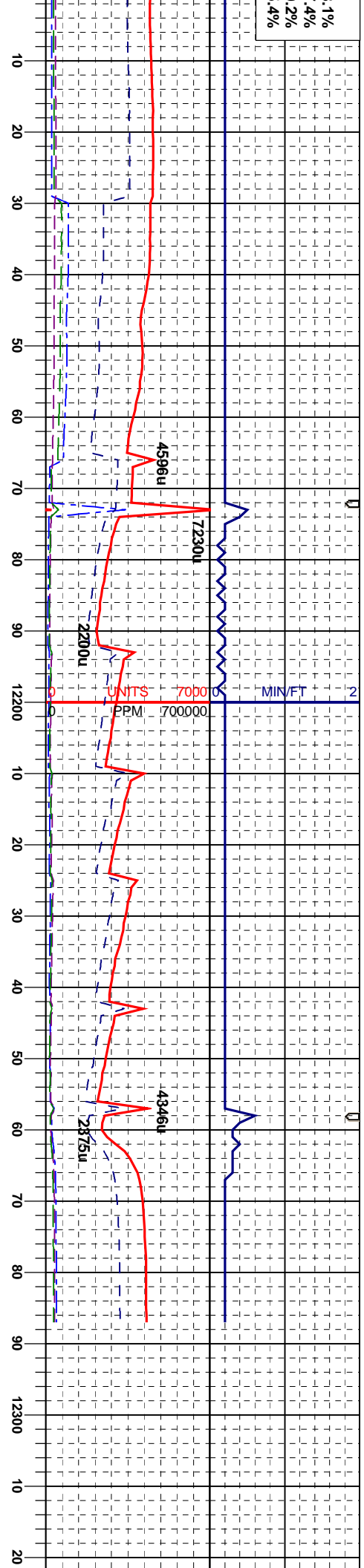
WT 10.2 / VIS 42

Survey
MD 11946'
INC 91.08°
AZM 178.53°
TVD 7309.77'

CHK: lt - m gy, brn, mod, blk - sbblky, brt -
mod firm, chky - sbwxy, mtx, v calc, MRL:
m - dk gy, brn, occ gy/brn, blk - sbblky,
sme sbply, sft - firm, rthy - grty, mtx, m arg
- sily, mod-v calc, sting mlky bl cut, brt bl
ring

CHK: lt - m gy, brn, mod, blk - sbblky, brt -
mod firm, chky - sbwxy, mtx, v calc, MRL:
m - dk gy, brn, occ gy/brn, blk - sbblky,
sme sbply, sft - firm, rthy - grty, mtx, m arg
- sily, mod-v calc, sting mlky bl cut, brt bl
ring





Survey
MD 12117'
INC 88.70°
AZM 176.83°
TVD 7310.10'

CHK: It - m gy, brn, mot, blk - sbblky, brit -
mod firm, chky - sbwvy, mtx, v calc, sting
mlky bl cut, bri bl ring

Survey
MD 12231'
INC 89.20°
AZM 177.50°
TVD 7312.19'

CHK: It - m gy, brn, mot, blk - sbblky, brit -
mod firm, chky - sbwvy, mtx, v calc, sting
mlky bl cut, bri bl ring

PTB
MD 12287'
INC 89.20°
AZM 177.50°
TVD 7312.97'

ANAD
RATTLER
WELL TD'D
ON 7/17/2020
THANK YOU
COLUMBINE

