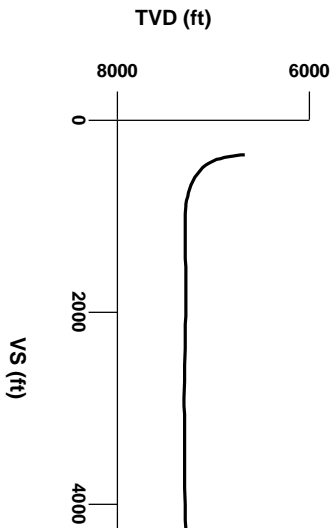


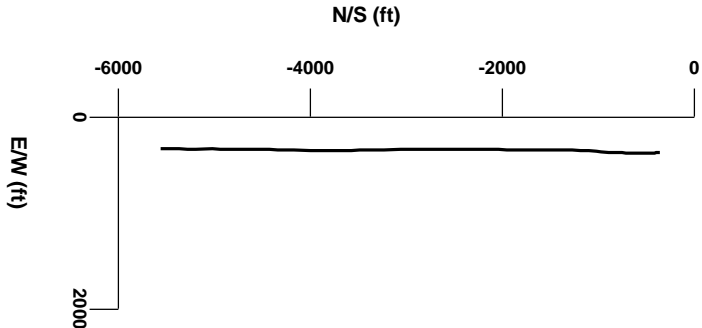
LOG created using LPLOT VH Version 3.0, July 27, 2013, Copyright (C) 1999-2009 Pason Systems Corp.

**OPERATOR:** ANADARKO PETROLEUM INC.  
**WELL:** RATTLER 36N-3HZ  
**LOCATION:** SESW 34 T3N R66W 6 PM  
**COUNTY:** WELD  
**STATE:** CO  
**SPOT:** 364 FSL, 2266' FWL  
**ELEVATION:** GL 4991' / KB 5008'  
**FIELD:** WATTENBERG - 90750  
**SPUD DATE:** 7/20/2013  
**TD DATE:** 7/27/2013  
**DATES LOGGED:** 7/21/2013 - 7/27/2013  
**DEPTHS LOGGED:** 6735' - 12353'  
**LOGGERS:** RIKKI WITHERSPOON, ROBERT DAVIS  
**DRILLING FLUID:** FW LSND  
**DRILLING RIG:** XTREME 8  
**API:** 05-123-36603  
**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

Bentonite

Chalk

Marl

Silty Shale

MODIFIERS

B    Bentonite

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

DEPTH (FEET)

6690

6700

10

20

30

40

50

60

70

80

90

6800

10

ROP

0

MIN/FT

5

0

5

LOGGING

LITHOLOGY

WT 9.3 IN / 9.5 OUT

VIS 35 IN / 37 OUT

102

50

API

250

Survey

MD 6764'

INC 4.33°

AZM 182.96°

TVD 6719.26'

Survey

MD 6807'

INC 6.19°

AZM 175.32°

TVD 6762.07'

Logging Began

13:27 hrs 7/21/2013

at 6735' MD

Columbine Logging Two Man

Rigged Up 0723hrs 7/21/2013

With Bloodhound Unit # 0787

Survey

MD 6721'

INC 1.20°

AZM 190.02°

TVD 6676.31'

Begin in Sussex Formation

TVD

ft

6500

GAMMA RAY

50

API

250

7800

ft

6500

Oil Shows

TFG

7800

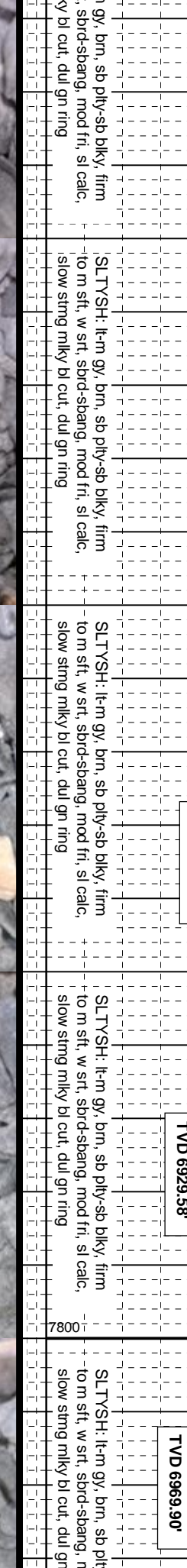
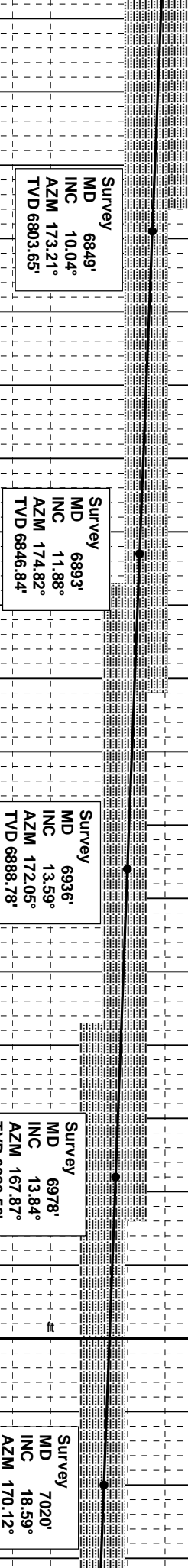
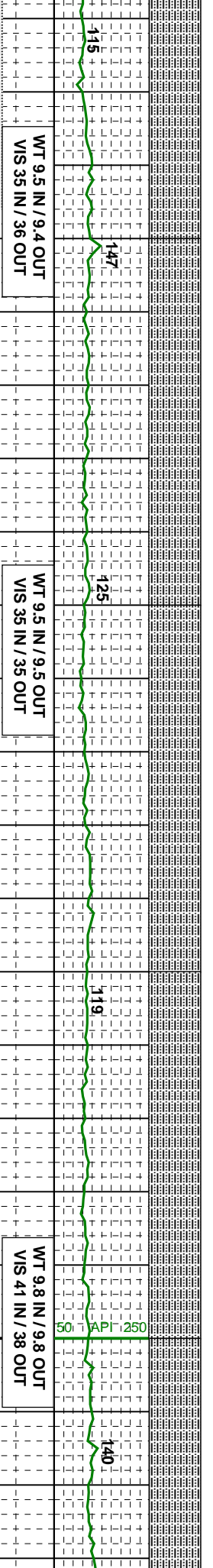
ft

6500

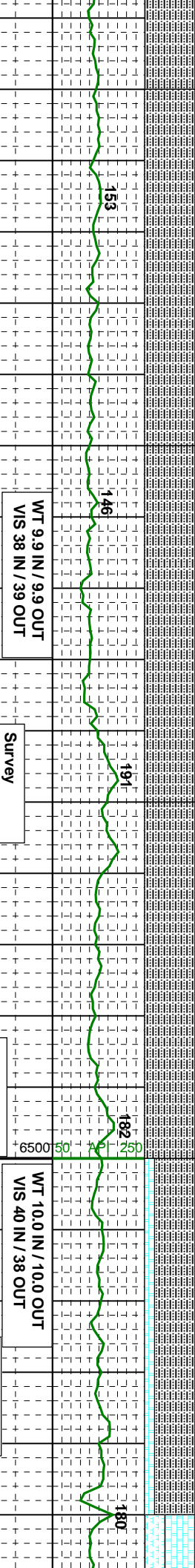
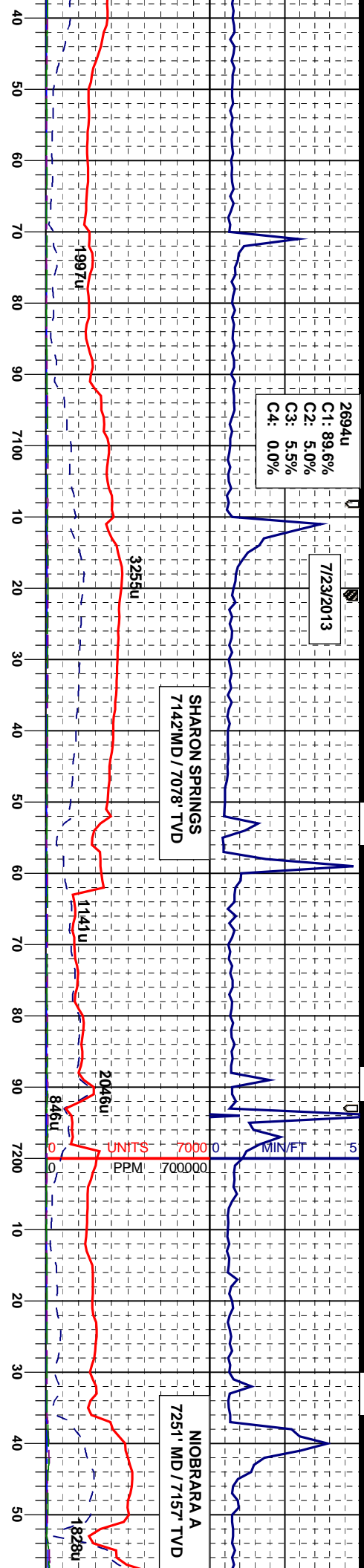
None, Slight trace, Trace, Fair, Moderate, Good, and Excellent. The descriptor used is based on the logger's observations and best judgement of brilliance, color and longevity of the cut.

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

Sample Photos







Survey  
MD 7062'  
INC 24.51°  
AZM 173.60°  
TVD 7008.95'

Survey  
MD 7105'  
INC 30.85°  
AZM 176.54°  
TVD 7047.01'

Survey  
MD 7148'  
INC 36.66°  
AZM 178.81°  
TVD 7082.74'

Survey  
MD 7191'  
INC 42.55°  
AZM 180.34°  
TVD 7115.84'

Survey  
MD 7233'  
INC 48.51°  
AZM 180.67°  
TVD 7145.25'

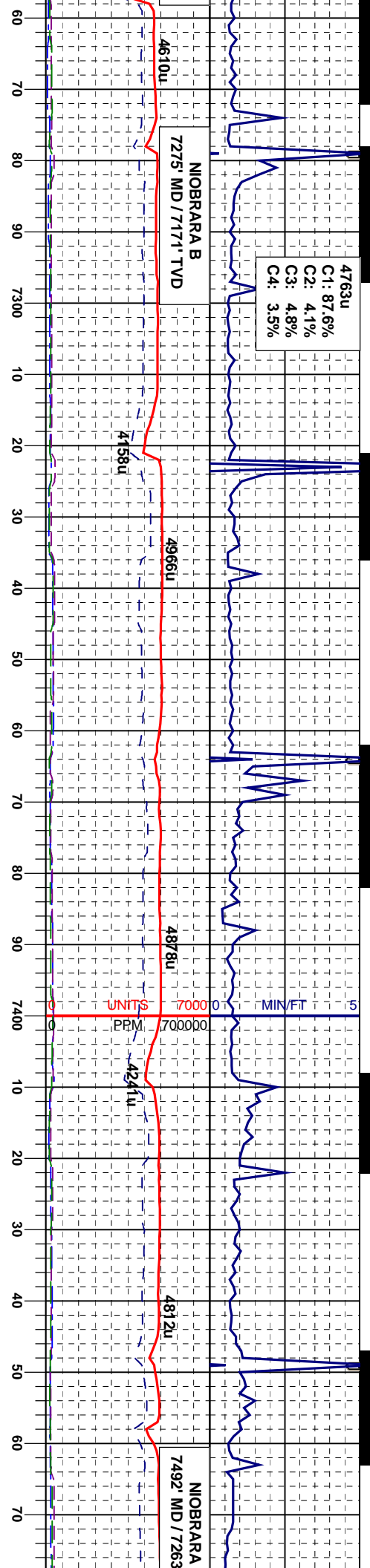
SLT YSH: lt-m gy, brn, sb ply-sb blkly, firm to m sft, w srt, sbnd-sbang, mod fr, sl calc, slow sting milky bl cut, dul gn ring

SLT YSH: lt-m gy, brn, sb ply-sb blkly, firm to m sft, w srt, sbnd-sbang, mod fr, sl calc, tr bent, slow sting milky bl cut, dul gn ring

SLT YSH: lt-m gy, brn, sb ply-sb blkly, firm to m sft, w srt, sbnd-sbang, mod fr, sl calc, tr bent, slow sting milky bl cut, dul gn ring

SLT YSH: m-dk gy, brn, ply-sb blkly, firm to m sft, w srt, sbnd-sbang, mod fr; CHK: lt gy -brn, blkly-sply, sft-firm, sbnd-sbang, mod -fr, calc, tr bent, slow sting milky bl cut, dul bl ring

CHK: spbt calc: sbbl: mtx, bl cu



WT 10.0 IN / 10.0 OUT  
VIS 40 IN / 39 OUT

Survey  
MD 7276'  
INC 54.33°  
AZM 180.71°  
TVD 7172.06'

WT 10.0 IN / 10.0 OUT  
VIS 40 IN / 40 OUT

Survey  
MD 7318'  
INC 59.23°  
AZM 181.76°  
TVD 7194.77'

WT 10.0 IN / 10.0 OUT  
VIS 40 IN / 41 OUT

Survey  
MD 7361'  
INC 63.37°  
AZM 181.86°  
TVD 7215.42'

WT 10.1 IN / 10.0 OUT  
VIS 40 IN / 40 OUT

Survey  
MD 7446'  
INC 70.55°  
AZM 181.80°  
TVD 7248.62'

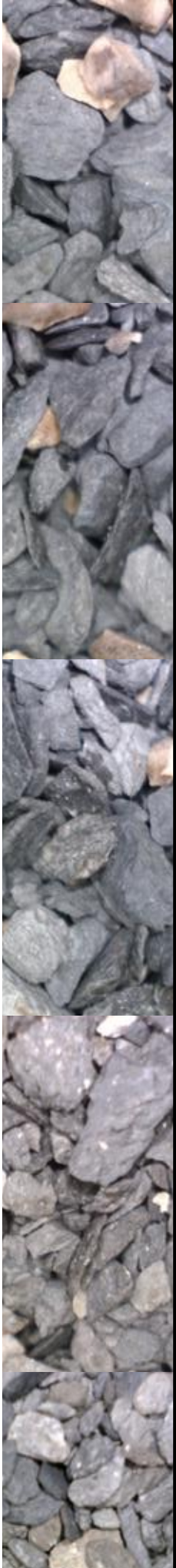
It - m gy, brn, mot, biky - sbbiky, occ  
y, brit - mod firm, chky - sbwxy, mt, v  
MR.L: m - dk gy, brn, occ gybrn, biky -  
gy, sme sbbiky, sft - firm, rthy - grty,  
m arg - silty, mod calc, slow string mlky  
t, dul bl ring

CHK: It - m gy, brn, mot, biky - sbbiky, occ  
sbbiky, brit - mod firm, chky - sbwxy, mt, v  
calc: MR.L: m - dk gy, brn, occ gybrn, biky -  
sbbiky, sme sbbiky, sft - firm, rthy - grty,  
mt, m arg - silty, mod calc, slow string mlky  
bl cut, dul bl ring

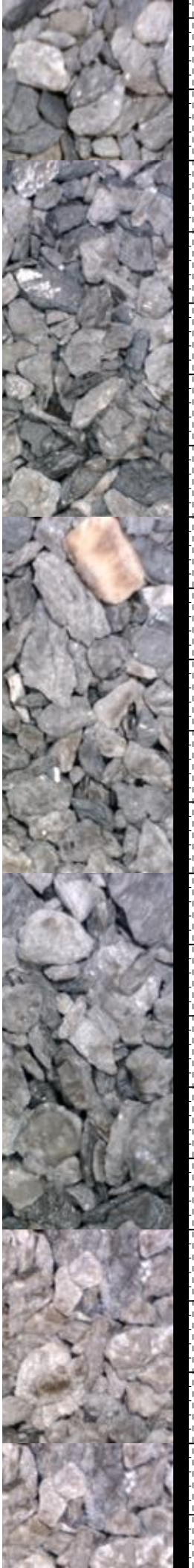
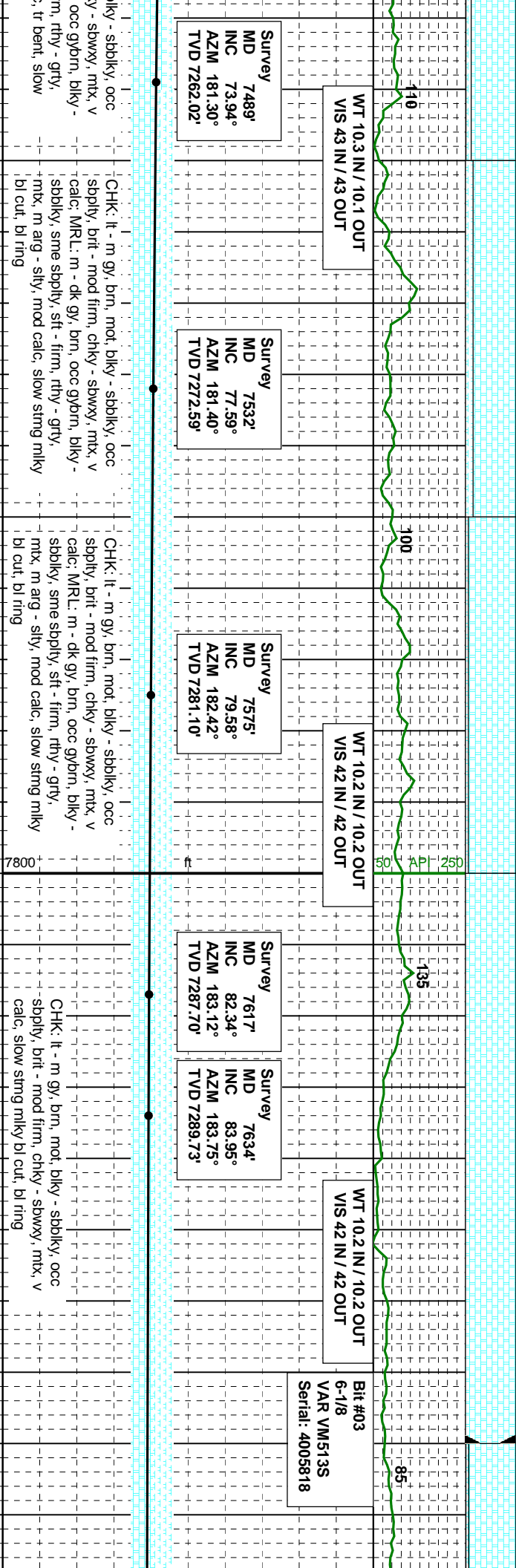
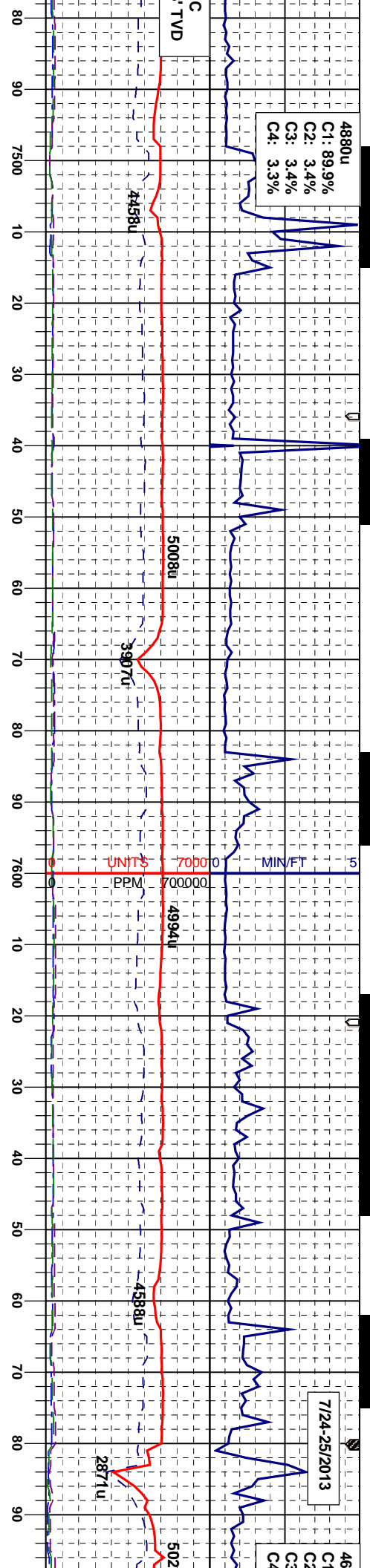
CHK: It - m gy, brn, mot, biky - sbbiky, occ  
sbbiky, brit - mod firm, chky - sbwxy, mt, v  
calc: MR.L: m - dk gy, brn, occ gybrn, biky -  
sbbiky, sme sbbiky, sft - firm, rthy - grty,  
mt, m arg - silty, mod calc, tr bent, slow  
string mlky bl cut, dul bl ring

CHK: It - m gy, brn, mot, biky - sbbiky, occ  
sbbiky, brit - mod firm, chky - sbwxy, mt, v  
calc: MR.L: m - dk gy, brn, occ gybrn, biky -  
sbbiky, sme sbbiky, sft - firm, rthy - grty,  
mt, m arg - silty, mod calc, tr bent, slow  
string mlky bl cut, bl ring

CHK: It - m gy, brn, mot, biky - sbbiky, occ  
sbbiky, brit - mod firm, chky - sbwxy, mt, v  
calc: MR.L: m - dk gy, brn, occ gybrn, biky -  
sbbiky, sme sbbiky, sft - firm, rthy - grty,  
mt, m arg - silty, mod calc, tr bent, slow  
string mlky bl cut, bl ring

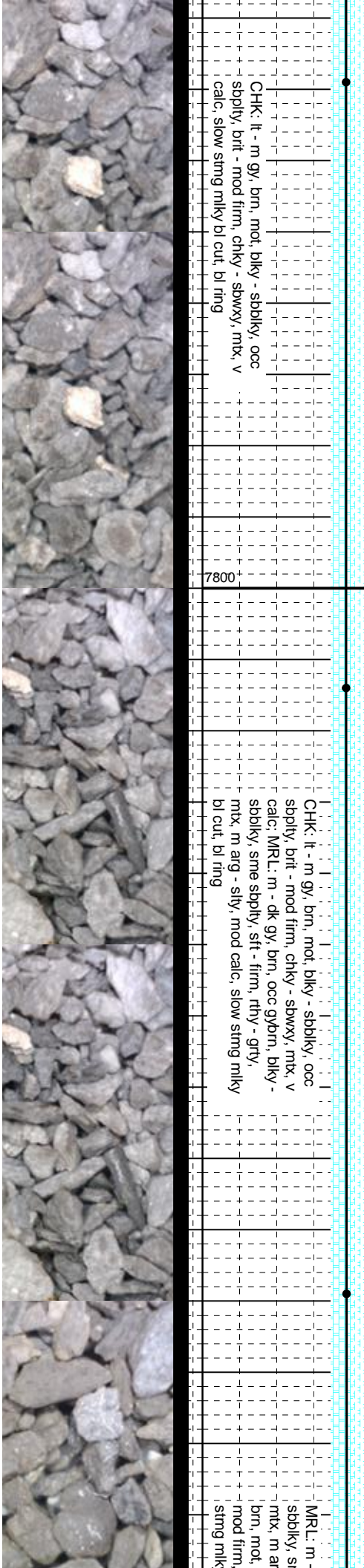
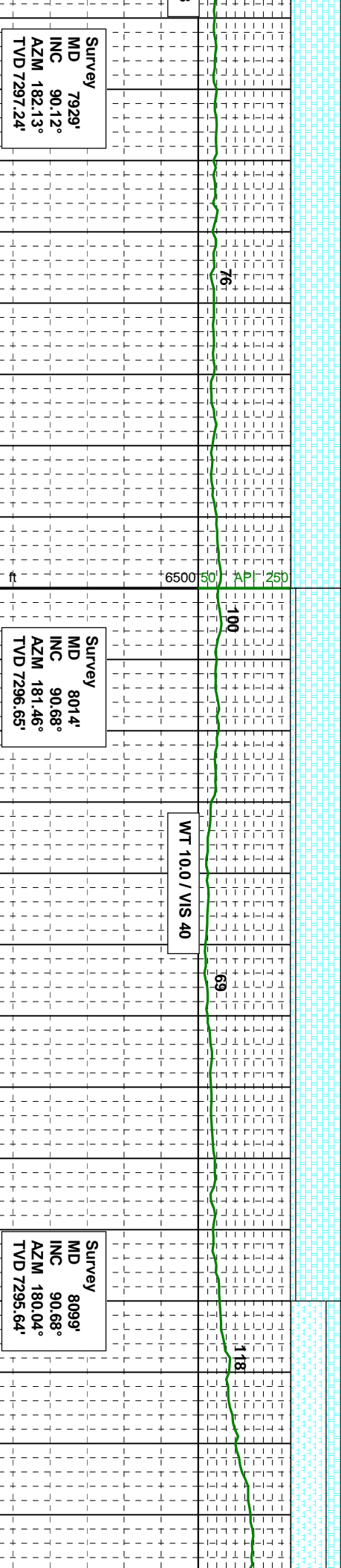
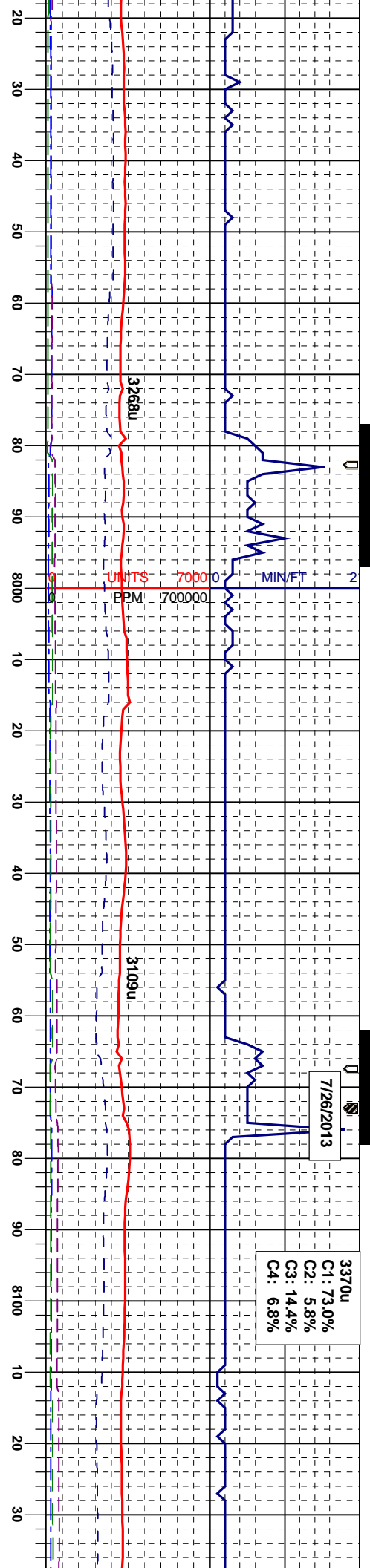




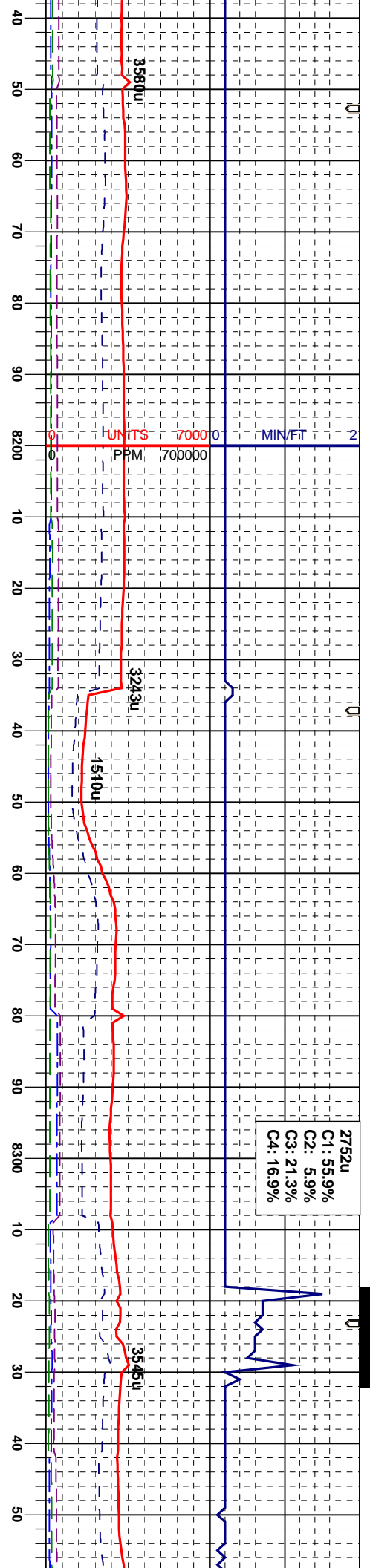




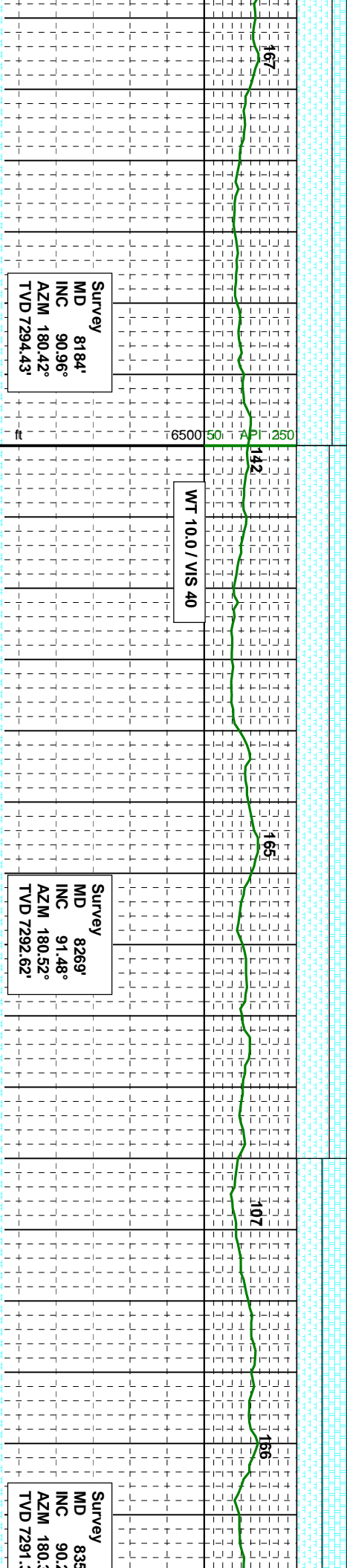








2752u  
C1: 55.9%  
C2: 5.9%  
C3: 21.3%  
C4: 16.9%



Survey  
MD 8184'  
INC 90.96°  
AZM 180.42°  
TVD 7294.43'

WT 10.0 / VIS 40

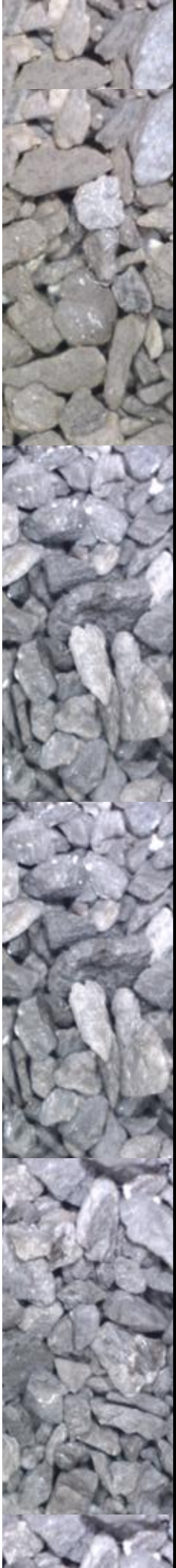
Survey  
MD 8269'  
INC 91.48°  
AZM 180.52°  
TVD 7292.62'

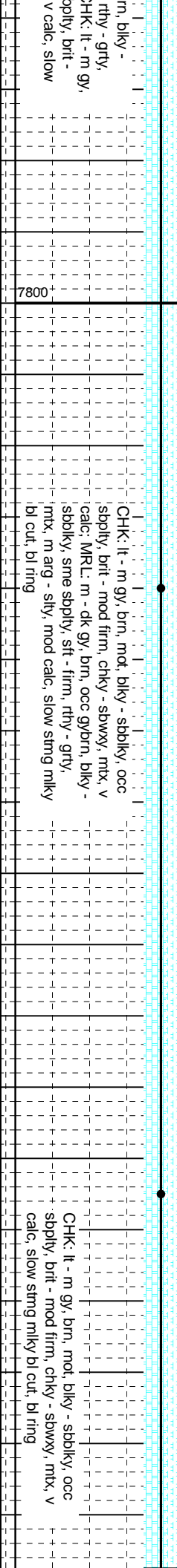
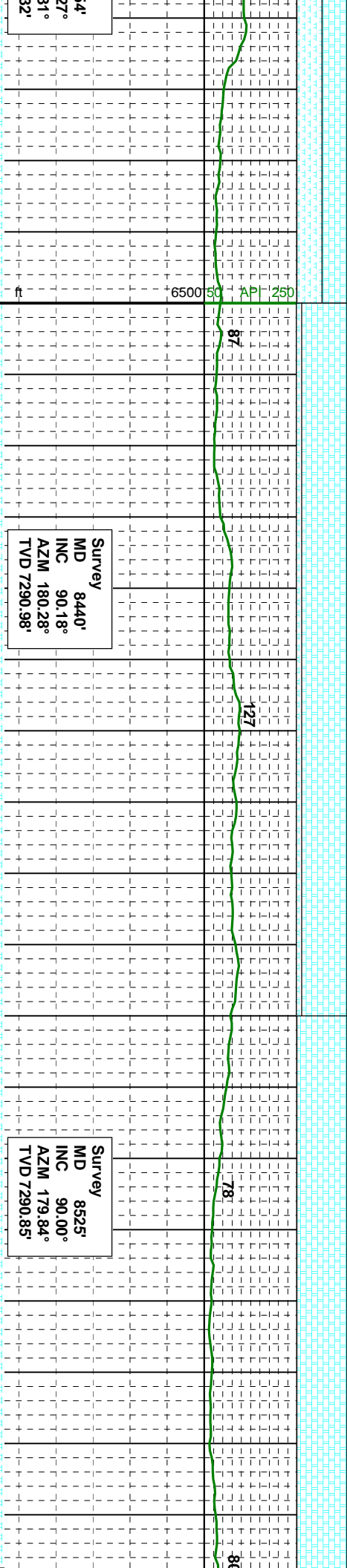
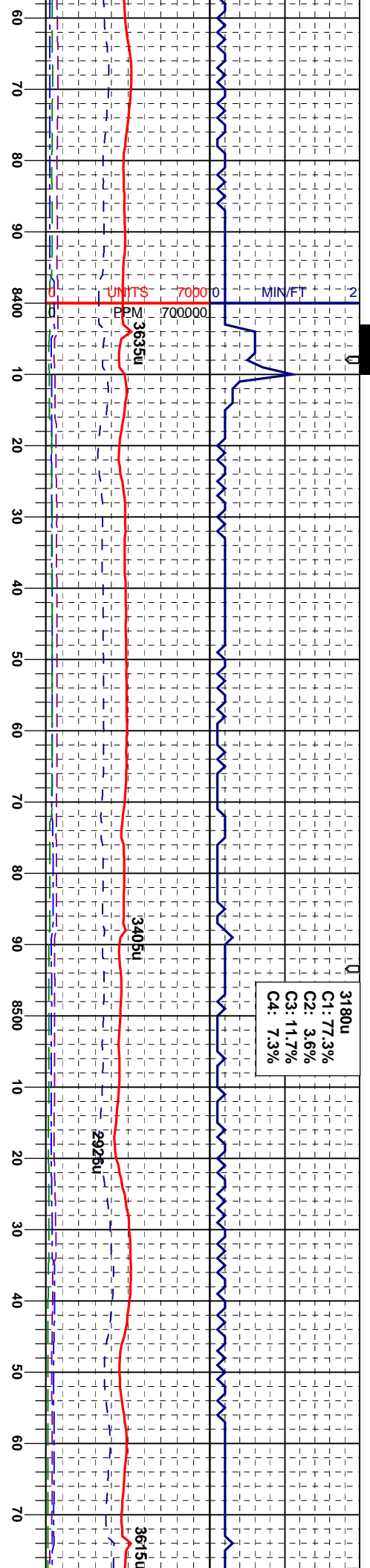
Survey  
MD 8355'  
INC 90.2°  
AZM 180.3°  
TVD 7291.1'

dk gy, brn, occ gybrn, biky -  
me spbly, sft - firm, rthy - grty,  
g - silty, mod calc; CHK: lt - m gy,  
biky - sbbiky, occ spbly, brit -  
chky - sbwxy, mtx, v calc, slow  
y bl cut, bl ring

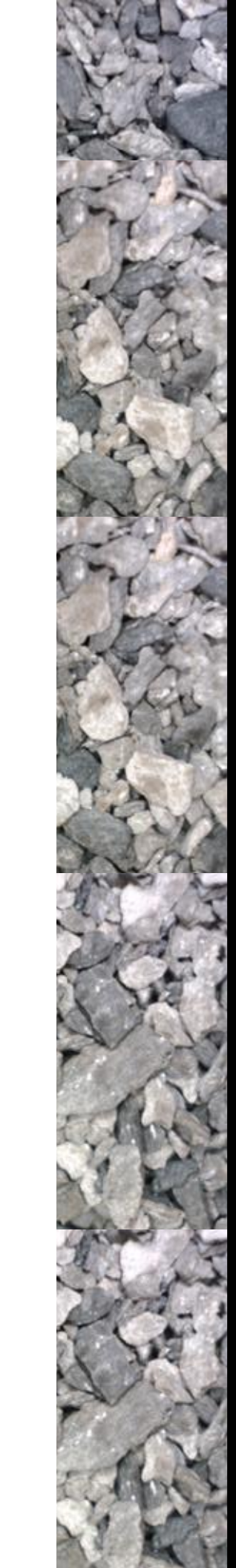
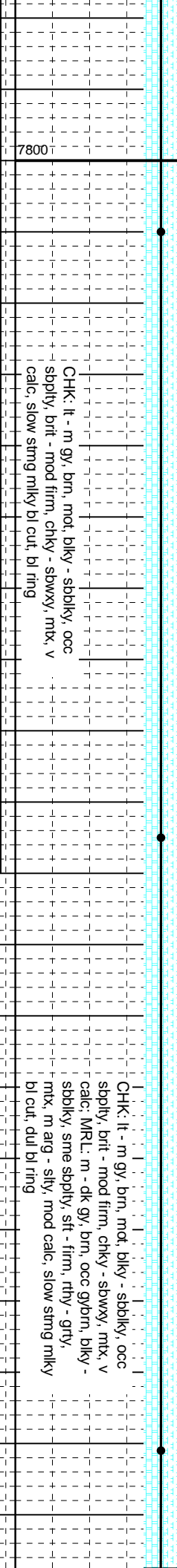
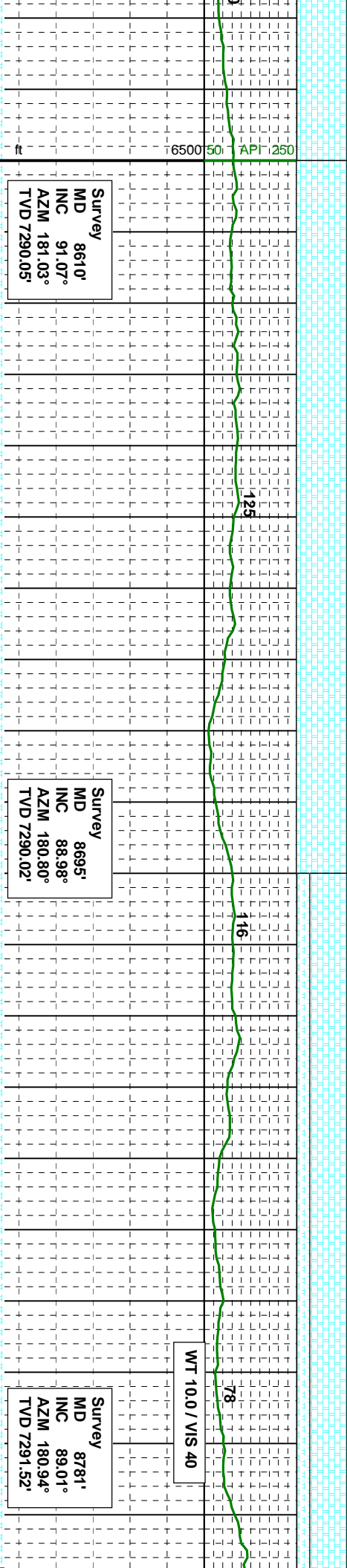
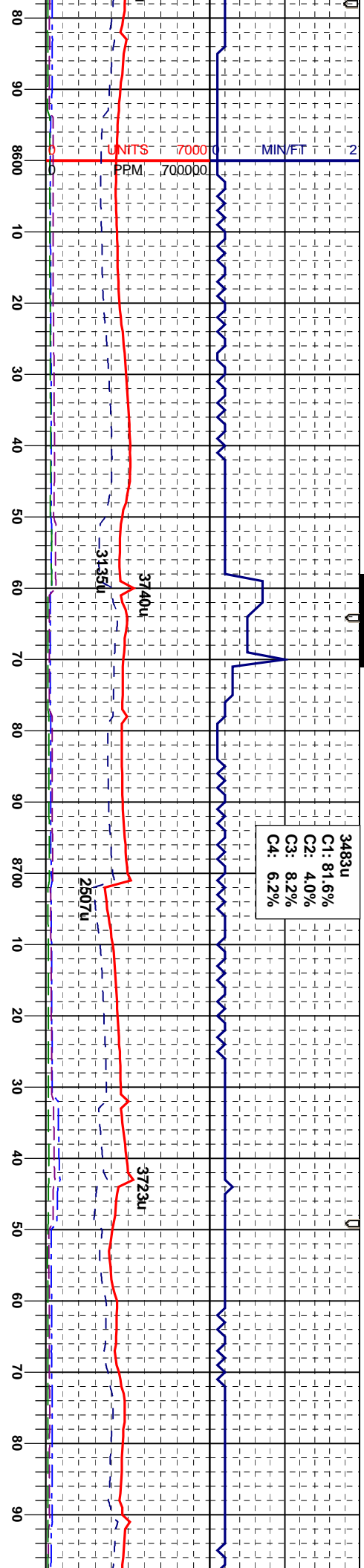
MRL: m - dk gy, brn, occ gybrn, biky -  
spbiky, sme spbly, sft - firm, rthy - grty,  
mtx, m arg - silty, mod calc; CHK: lt - m gy,  
brn, mod, biky - sbbiky, occ spbly, brit -  
mod firm, chky - sbwxy, mtx, v calc, slow  
string mlky bl cut, bl ring

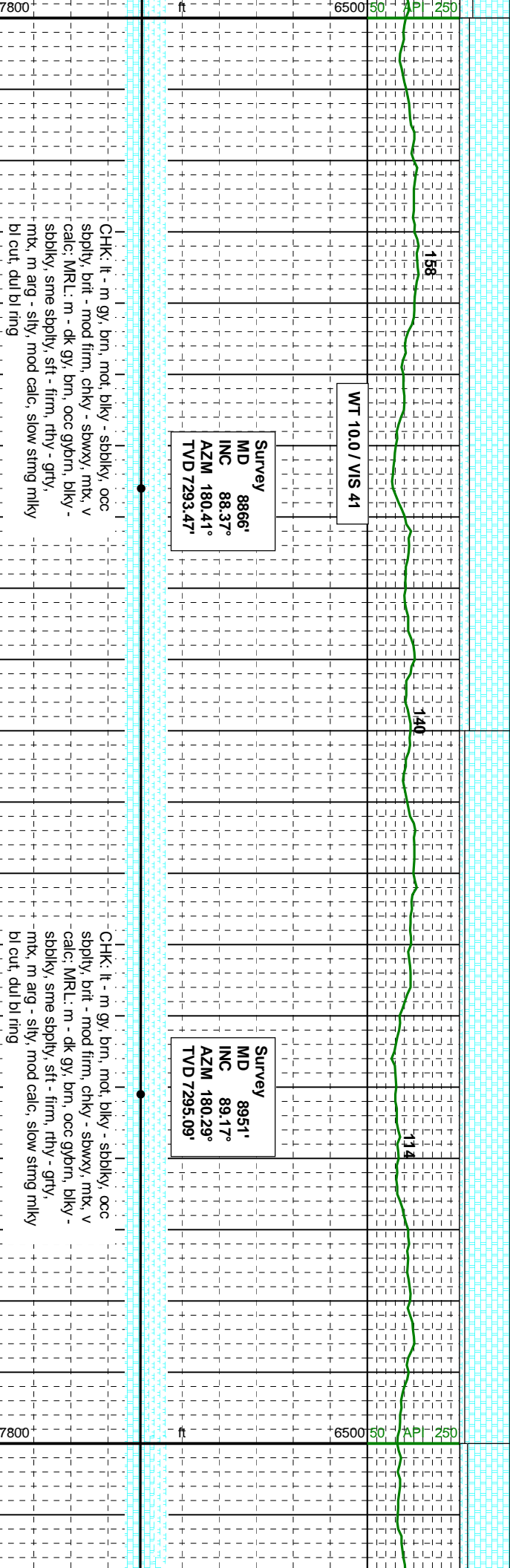
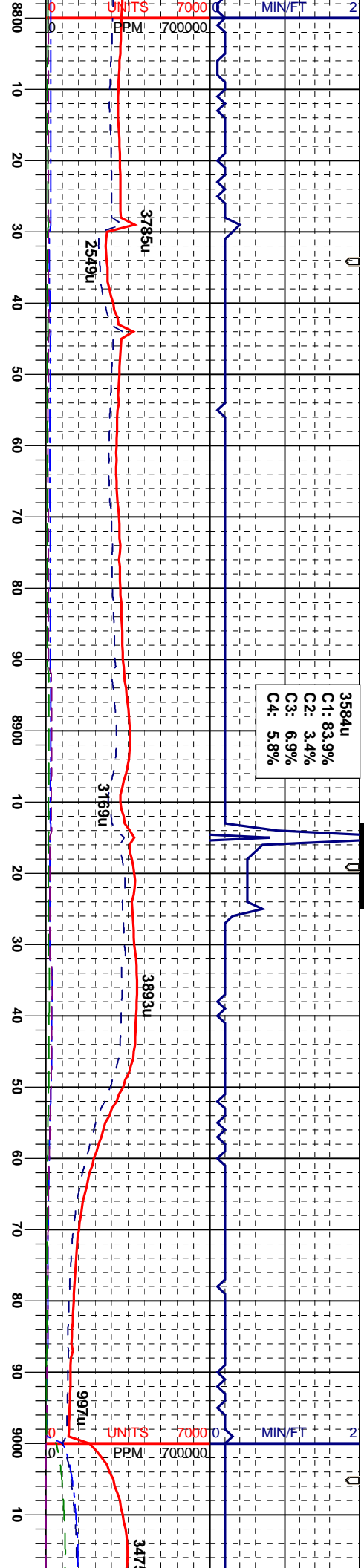
MRL: m - dk gy, brn, occ gyb  
spbiky, sme spbly, sft - firm,  
mtx, m arg - silty, mod calc; C  
brn, mod, biky - sbbiky, occ si  
mod firm, chky - sbwxy, mtx,  
string mlky bl cut, bl ring



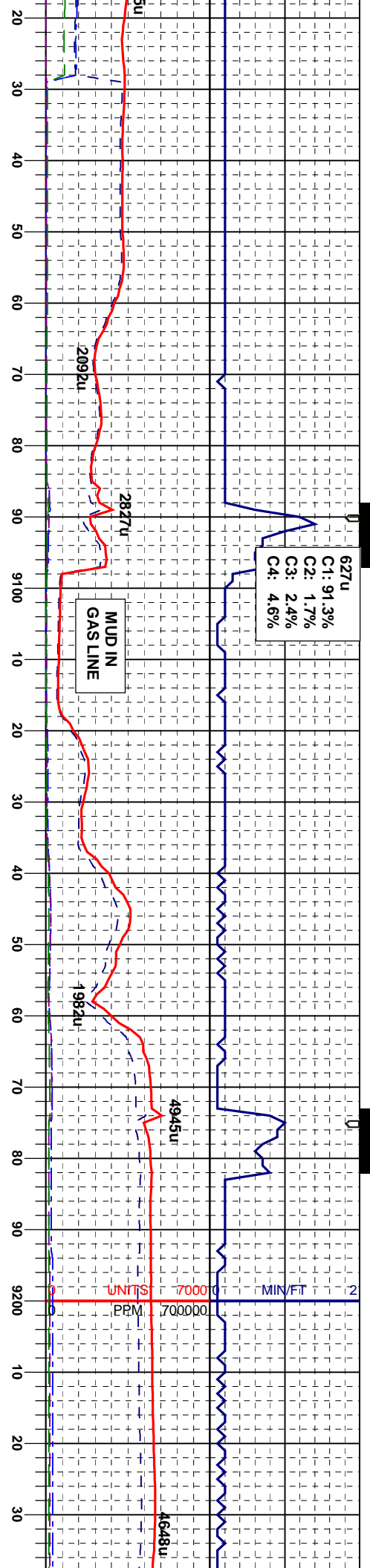












Survey  
MD 9036'  
INC 88.77°  
AZM 180.20°  
TVD 7296.82'

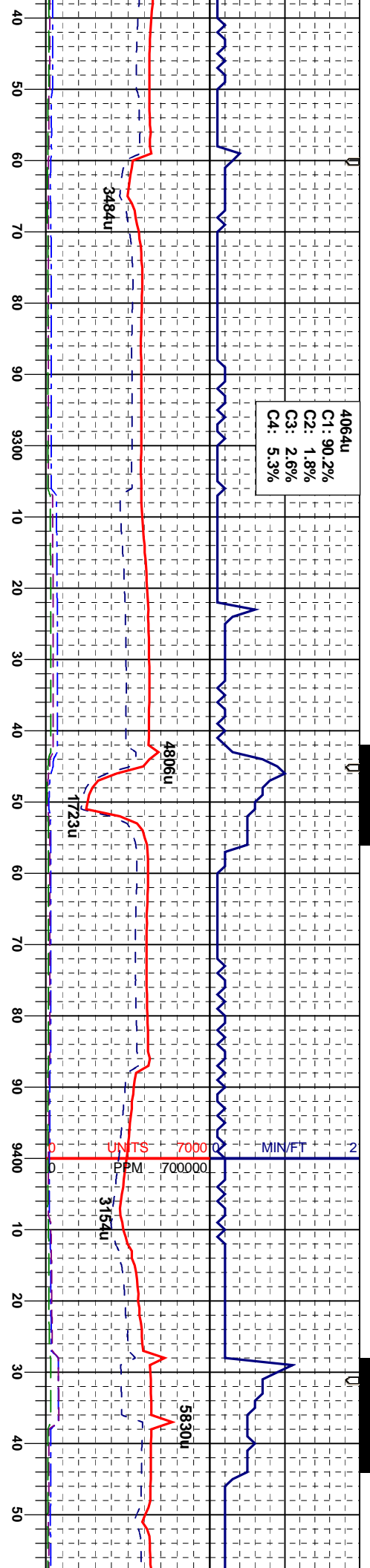
Survey  
MD 9121'  
INC 88.77°  
AZM 179.97°  
TVD 7298.64'

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

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

CHK: It -  
sbply, br  
calc, slow





Survey  
MD 9292'  
INC 88.52°  
AZM 180.13°  
TVD 7302.69'

Survey  
MD 9377'  
INC 88.83°  
AZM 180.55°  
TVD 7304.65'

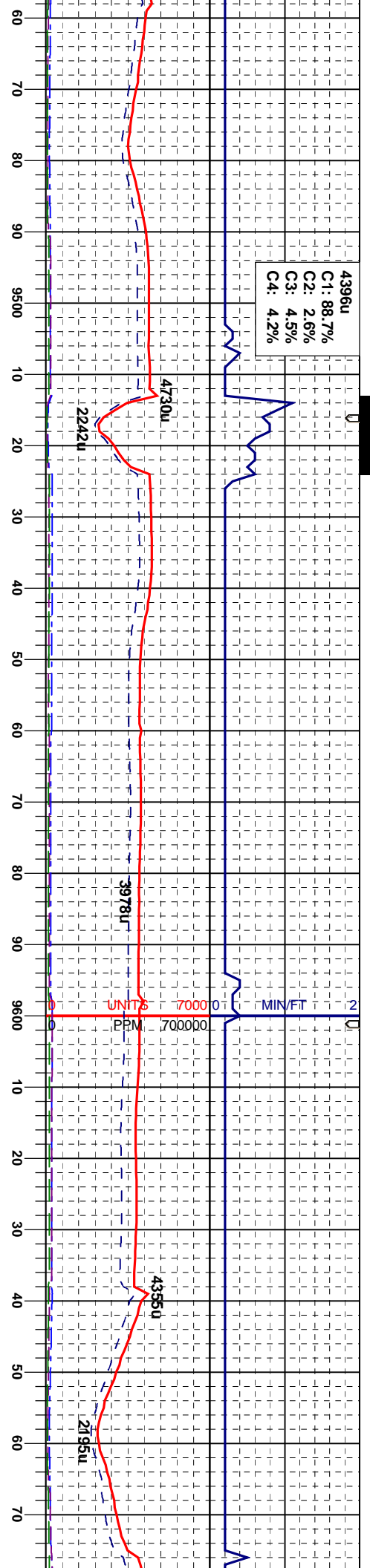
Survey  
MD 9377'  
INC 88.83°  
AZM 180.55°  
TVD 7304.65'

m gy, brn, mot, blk - sbbly, occ  
it - mod firm, chky - sbwxy, mtx, v  
v string mlky bl cut, dul bl ring

CHK: It - m gy, brn, mot, blk - sbbly, occ  
sbbly, brt - mod firm, chky - sbwxy, mtx, v  
calc, slow string mlky bl cut, dul bl ring

CHK: It - m gy, brn, mot, blk - sbbly, occ  
sbbly, brt - mod firm, chky - sbwxy, mtx, v  
calc, slow string mlky bl cut, dul bl ring





Survey  
D 9463'  
C 89.78°  
ZM 179.85°  
VD 7305.70'

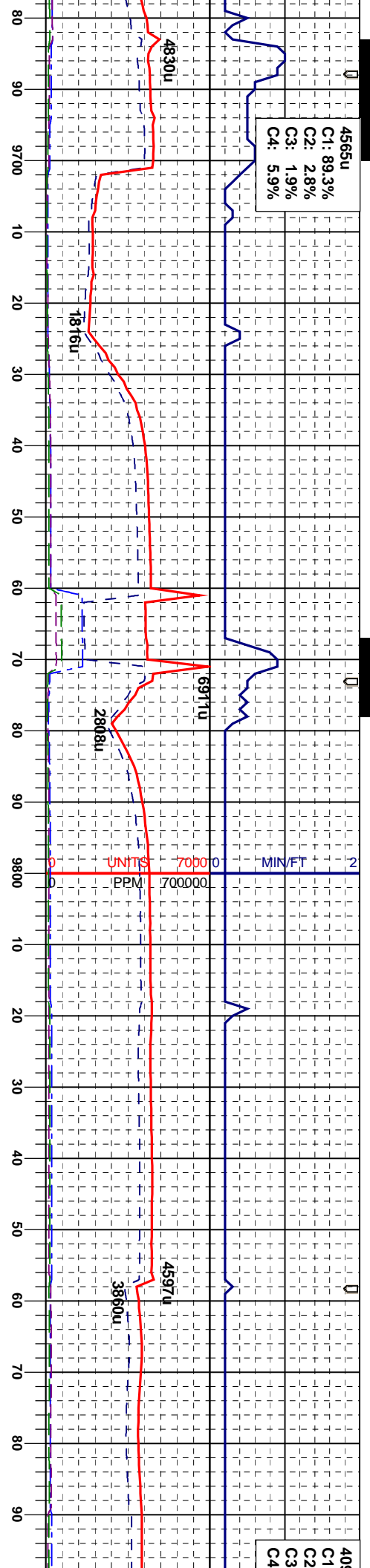
WT 10.2 / VIS 41

Survey  
MD 9633'  
INC 89.26°  
AZM 179.47°  
TVD 7307.12'

CHK: It - m gy, brn, mot, blk - sbbly, occ  
sbbly, brit - mod firm, chky - slowy, mt, v  
calc: MRL: m - dk gy, brn, occ gy/brn, blk -  
sbbly, sme sbbly, sft - firm, rthy - gty,  
mt, m arg - sly, mod calc, tr inoc, tr bent,  
slow string mky bl cut, dul bl ring

CHK: It - m gy, brn, mot, blk - sbbly, occ  
sbbly, brit - mod firm, chky - slowy, mt, v  
calc: MRL: m - dk gy, brn, occ gy/brn, blk -  
sbbly, sme sbbly, sft - firm, rthy - gty,  
mt, m arg - sly, mod calc, tr inoc, tr bent,  
slow string mky bl cut, dul bl ring



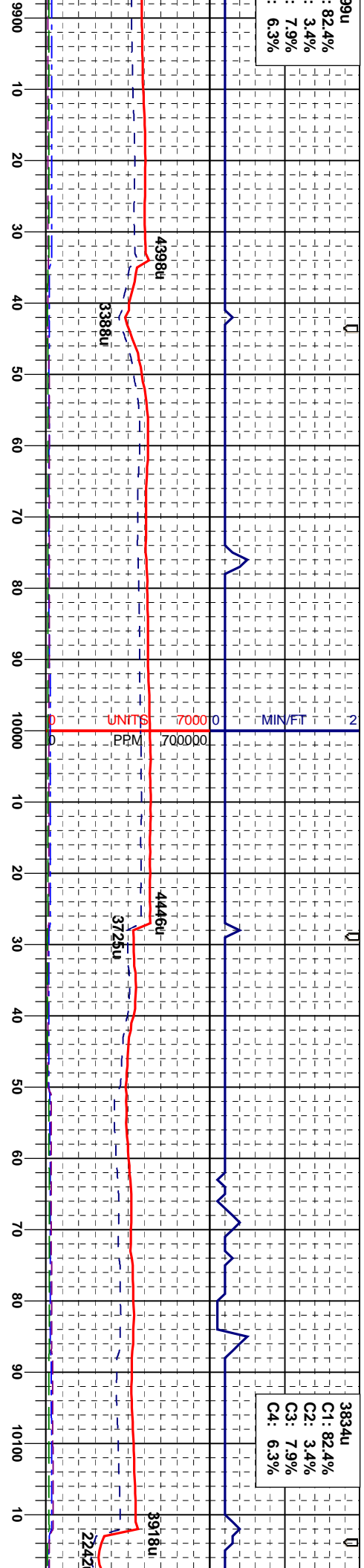


Survey  
MD 9718'  
INC 90.59°  
AZM 179.40°  
TVD 7307.23'

Survey  
MD 9803'  
INC 91.05°  
AZM 179.67°  
TVD 7306.02'

WT 10.2 / V





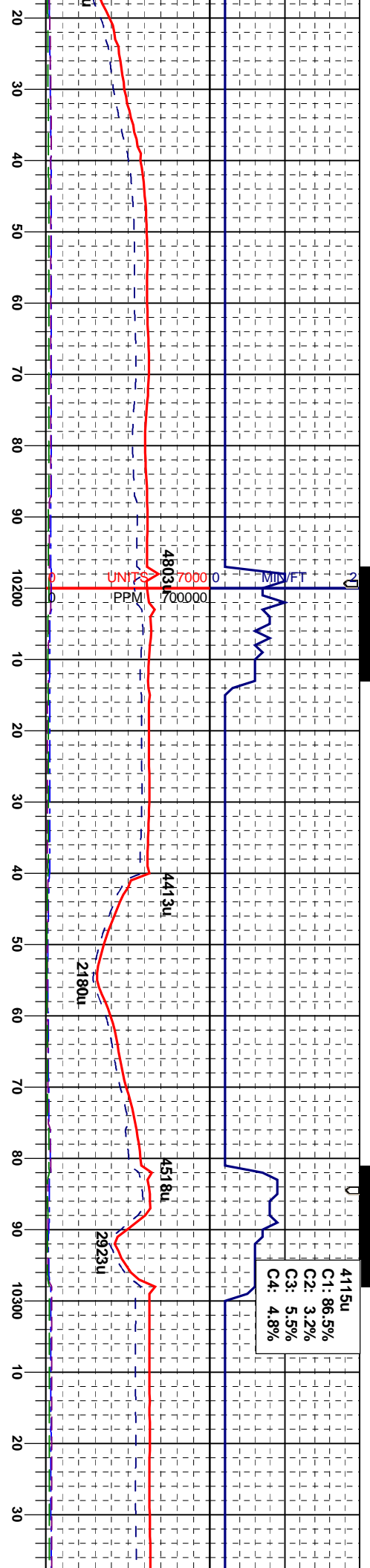
IS 41

Survey  
MD 9974'  
INC 90.92°  
AZM 179.04°  
TVD 7303.08'

MR: m - dk gy, brn, occ gybrn, blkly -  
sbbly, sme sbbly, sft - firm, rthy - grty,  
mtx, m arg - silty, mod calc, tr inoc, tr bent,  
slow string mlky bl cut, dul bl ring

CHK: lt - m gy, brn, mod, blkly - sbbly, occ  
sbbly, brit - mod firm, chky - sbwxy, mtx, v  
calc, MR: m - dk gy, brn, occ gybrn, blkly -  
sbbly, sme sbbly, sft - firm, rthy - grty,  
mtx, m arg - silty, mod calc, tr inoc, bent,  
slow string mlky bl cut, dul bl ring





Survey  
MD 10144'  
INC 88.83°  
AZM 178.74°  
TVD 7303.43'

WT 10.2 / VIS 41

Survey  
MD 10230'  
INC 89.42°  
AZM 178.39°  
TVD 7304.76'

Survey  
MD 10315'  
INC 91.02°  
AZM 179.31°  
TVD 7304.43'

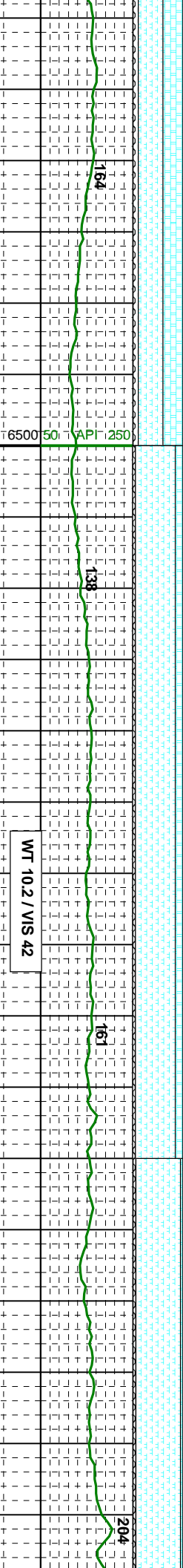
CHK: It - m gy, brn, mod, blkly - sbbkly, occ  
spply, brit - mod firm, chky - sbwxy, mx, v  
calc; MRL: m - dk gy, brn, occ gybrn, blkly -  
sbbkly, sme spply, sft - firm, rthy - grty,  
mx, m arg - silty, mod calc, tr inoc, bent,  
slow string mlky bl cut, dul bl ring

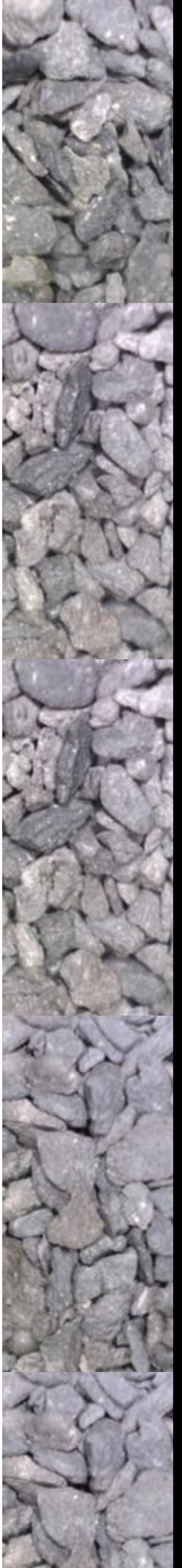
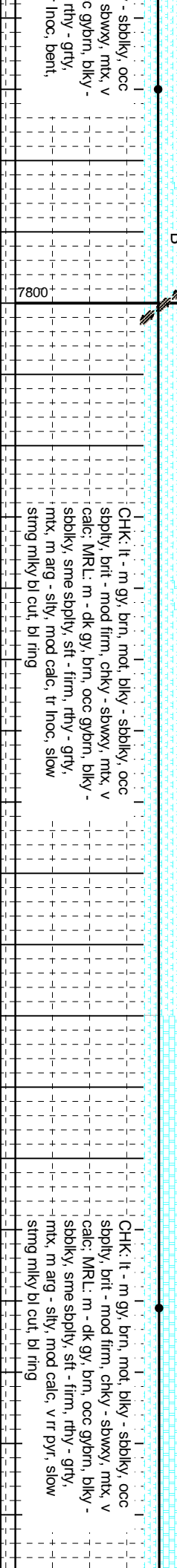
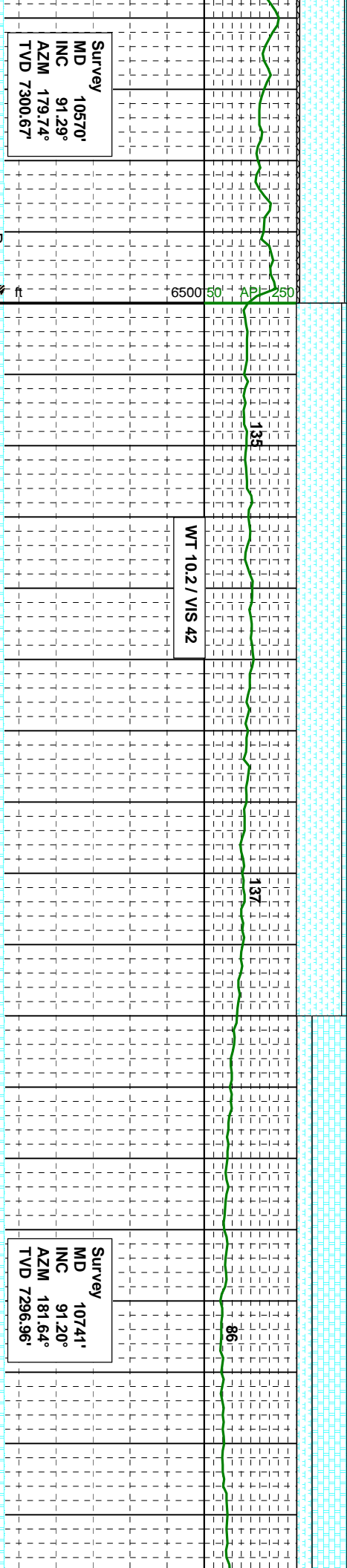
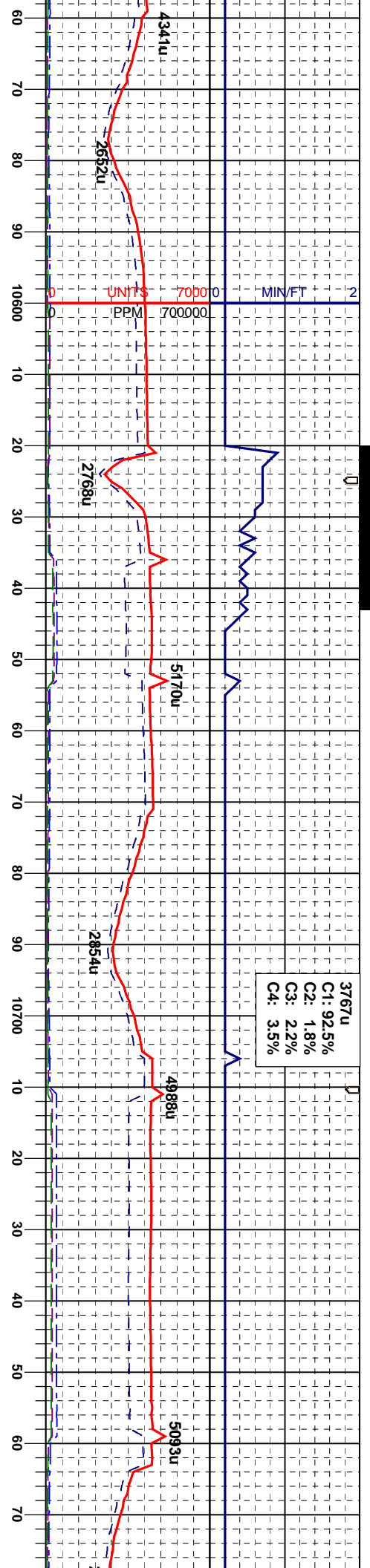
CHK: It - m gy, brn, mod, blkly - sbbkly, occ  
spply, brit - mod firm, chky - sbwxy, mx, v  
calc; MRL: m - dk gy, brn, occ gybrn, blkly -  
sbbkly, sme spply, sft - firm, rthy - grty,  
mx, m arg - silty, mod calc, tr inoc, bent,  
slow string mlky bl cut, dul bl ring

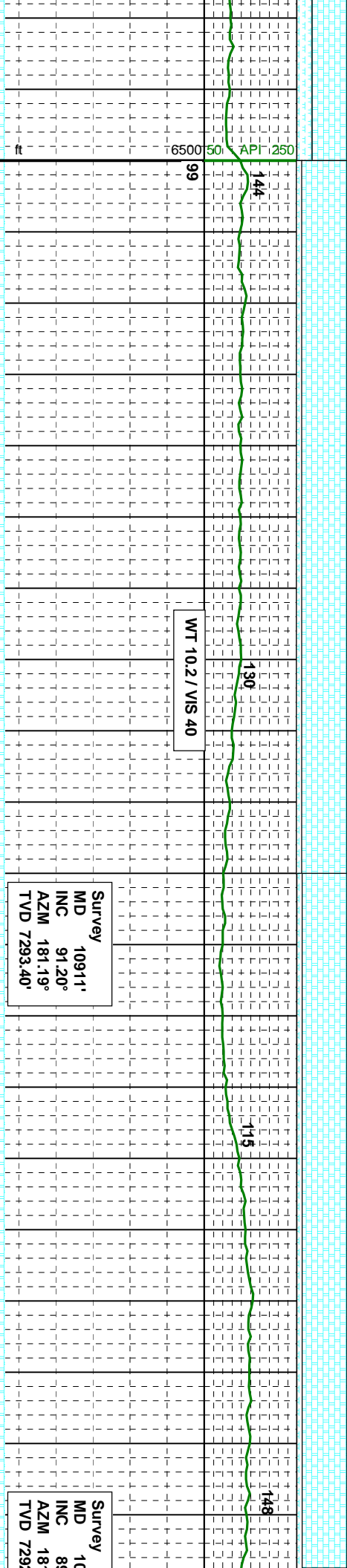
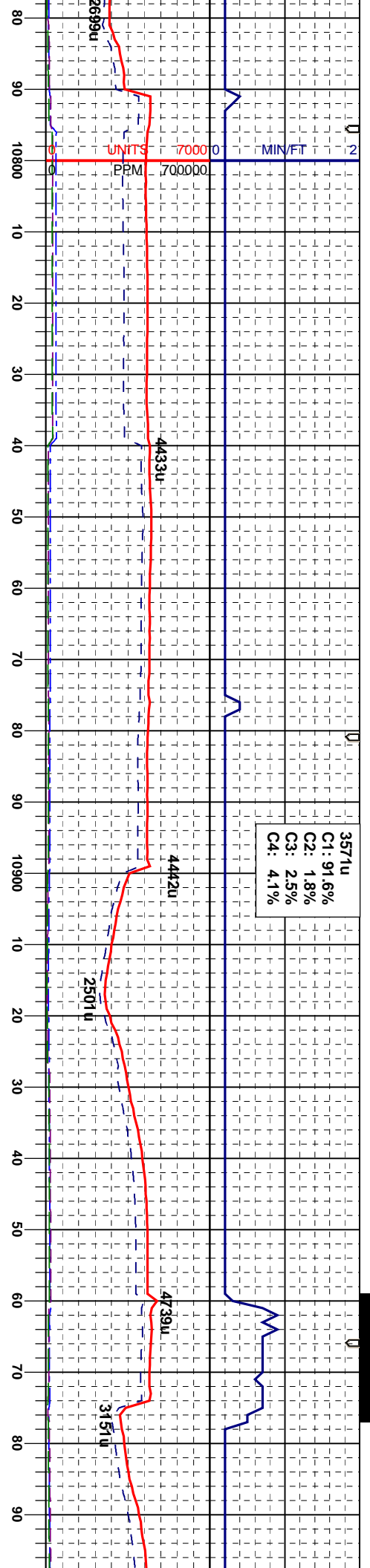
CHK: It - m gy, brn, mod, blkly - sbbkly, occ  
spply, brit - mod firm, chky - sbwxy, mx, v  
calc; MRL: m - dk gy, brn, occ gybrn, blkly -  
sbbkly, sme spply, sft - firm, rthy - grty,  
mx, m arg - silty, mod calc, tr inoc, bent,  
slow string mlky bl cut, dul bl ring









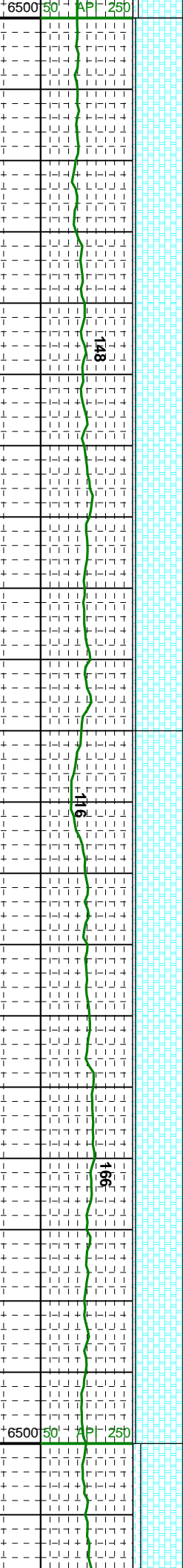


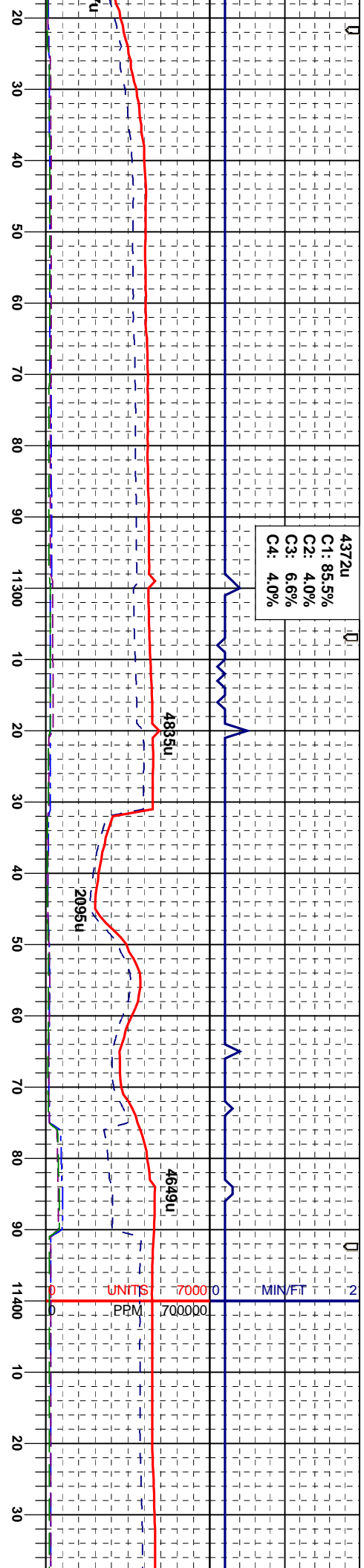
CHK: It - m gy, brn, mot, blk - sbbkly, occ  
sbbkly, brit - mod firm, chky - sbwxy, mtb, v  
calc: MRL: m - dk gy, brn, occ gybrn, blk -  
sbbkly, sme sbbkly, stf - firm, rthy - gtry,  
mtb, m ag - stly, mod calc, v rr pyr, slow  
string mlky bl cut, dul bl ring

CHK: It - m gy, brn, mot, blk - sbbkly, occ  
sbbkly, brit - mod firm, chky - sbwxy, mtb, v  
calc: MRL: m - dk gy, brn, occ gybrn, blk -  
sbbkly, sme sbbkly, stf - firm, rthy - gtry,  
mtb, m ag - stly, mod calc, slow string mlky  
bl cut, bl ring









BAD GAMMA

WT 10.2 / VIS 40

Survey  
MD 11252'  
INC 88.22°  
AZM 180.67°  
TVD 7296.70'

Survey  
MD 11338'  
INC 89.90°  
AZM 180.73°  
TVD 7297.36'

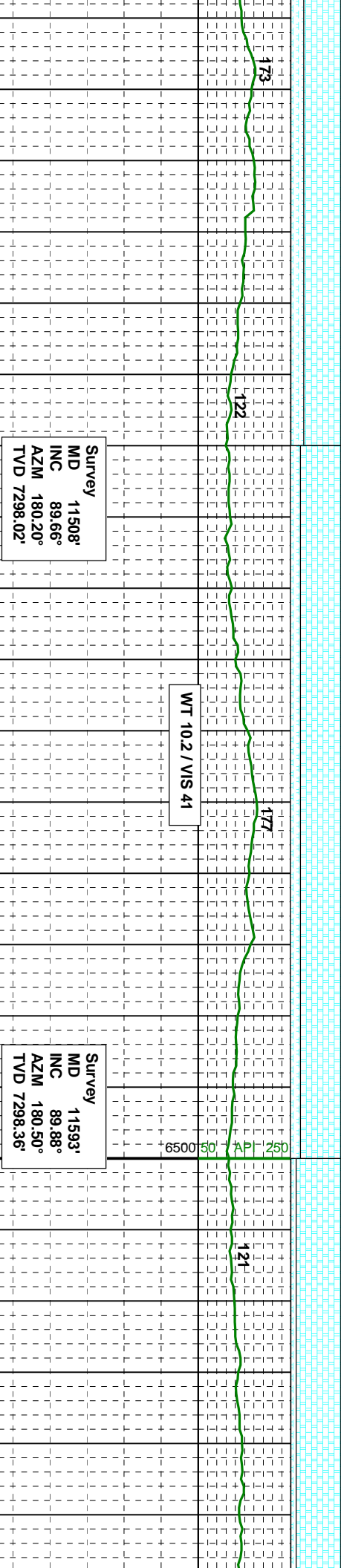
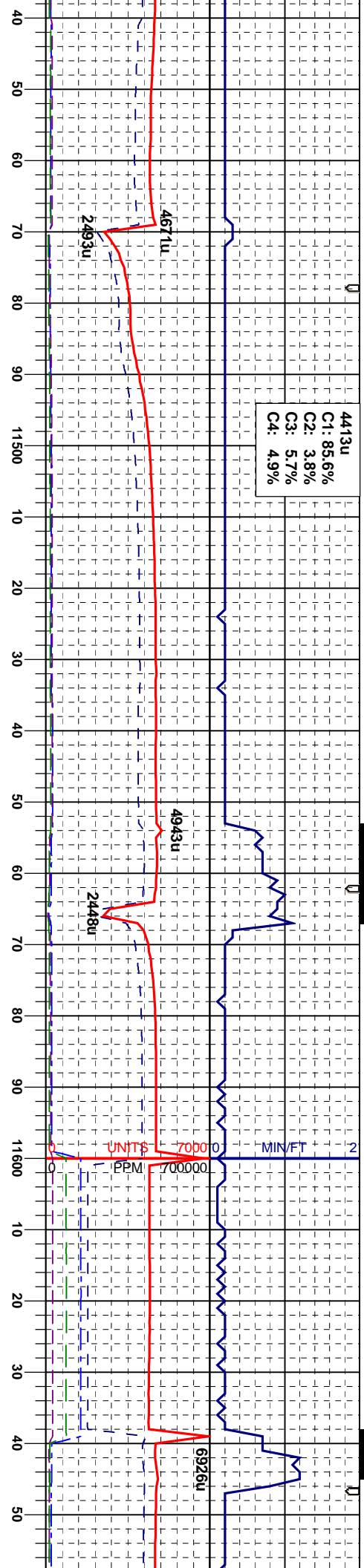
CHK: It - m gy, brn, mot, blk - sbbkly, occ  
sbbly, brt - mod firm, chky - sbwxy, mtk, v  
calc: MRL: m - dk gy, brn, occ gy/brn, blk -  
sbbkly, sme sbbly, stf - firm, rthy - grty,  
mtx, m arg - slty, mod calc, slow string mtky  
bl cut, bl ring

CHK: It - m gy, brn, mot, blk - sbbkly, occ  
sbbly, brt - mod firm, chky - sbwxy, mtk, v  
calc: MRL: m - dk gy, brn, occ gy/brn, blk -  
sbbkly, sme sbbly, stf - firm, rthy - grty,  
mtx, m arg - slty, mod calc, slow string mtky  
bl cut, bl ring

CHK: It -  
sbbly, b  
calc: MR  
sbbkly, s  
mtx, m a  
bl cut, bl





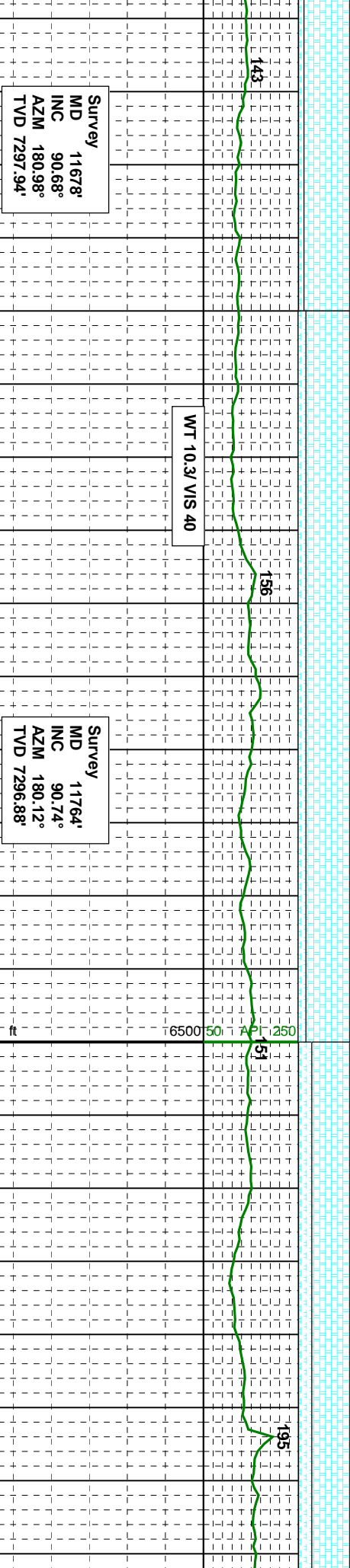
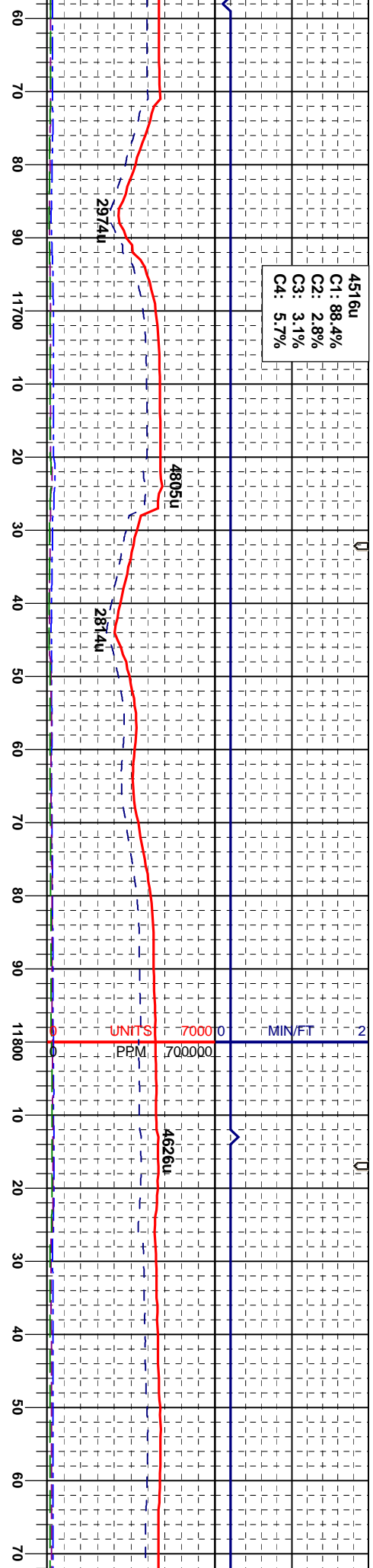


Survey MD 11508' INC 89.66° AZM 180.20° TVD 7298.02'

Survey MD 11593' INC 89.88° AZM 180.50° TVD 7298.36'

CHK: lt - m gy, brn, mod, blk, sbdk, occ  
sply, brit - mod firm, chky - sbwxy, mt, v  
calc: MRL: m - dk gy, brn, occ gybrn, blk  
sbdk, sme sply, sft - firm, rthy - gty,  
mt, m arg - sly, mod calc, stmg mky bl  
cut, bl ring



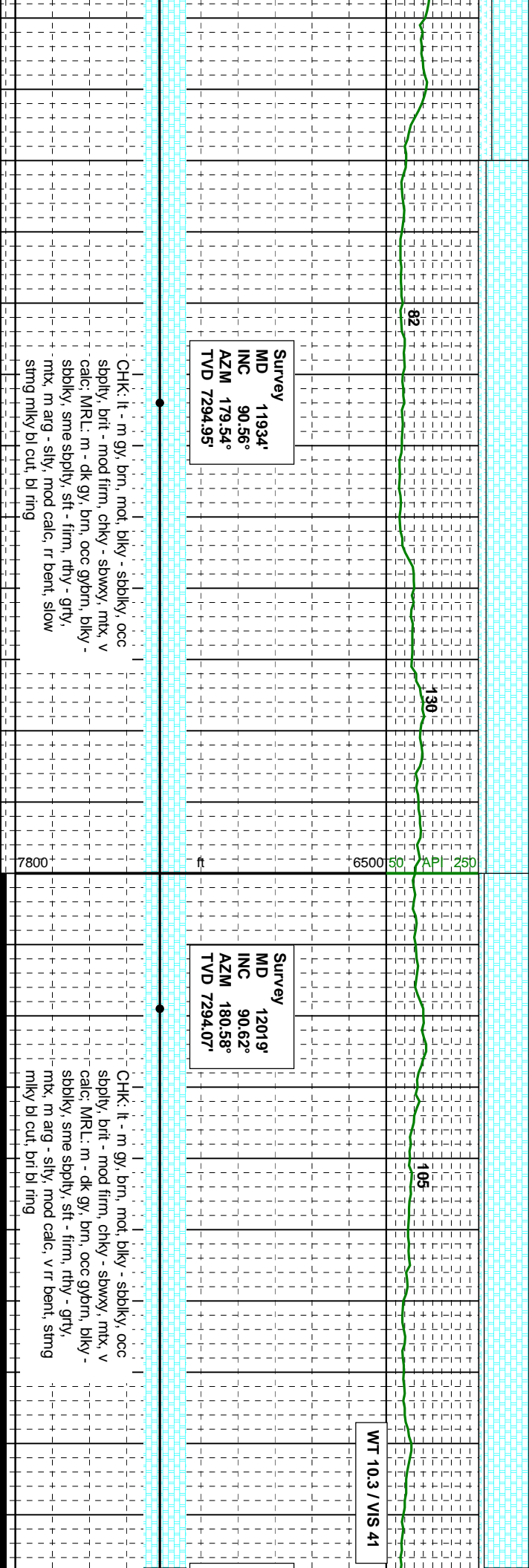
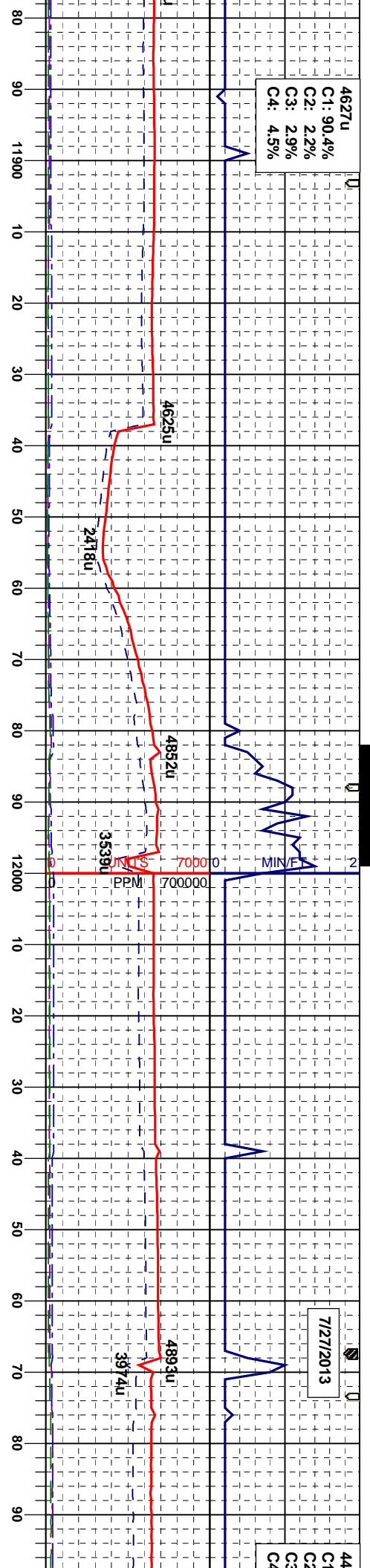


sbbiky, occ  
sbwxy, mtz, v  
gybrn, biky -  
rthy - grty,  
mg mky/ bl

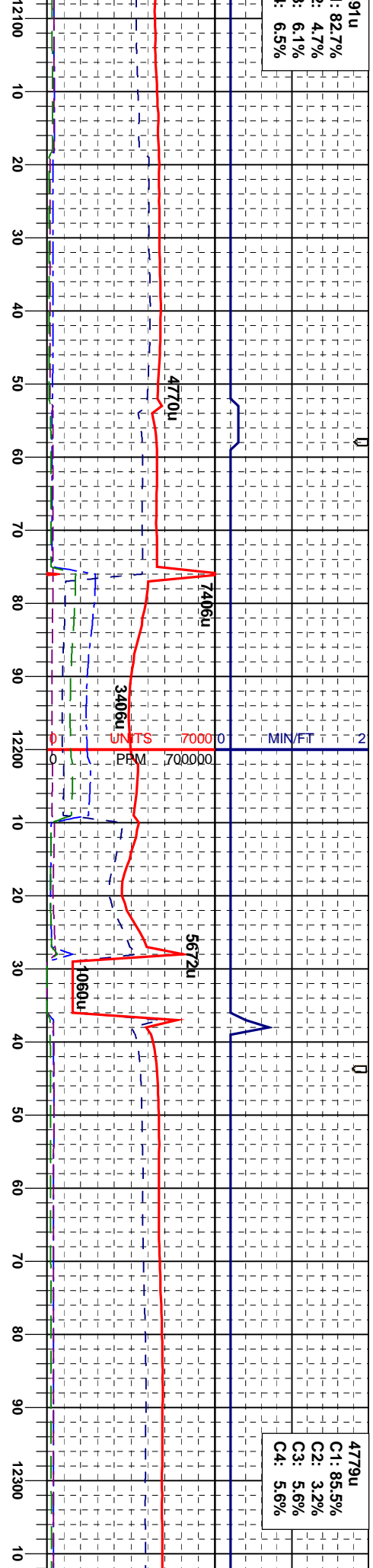
CHK: lt - m gy, brn, mot, biky - sbbiky, occ  
sbbiky, brit - mod firm, chky - sbwxy, mtz, v  
calc: MRL: m - dk gy, brn, occ gybrn, biky -  
sbbiky, sme sbbiky, sft - firm, rthy - grty,  
mtz, m arg - silty, mod calc, slow sting mky  
bl cut, bl ring

CHK: lt - m gy, brn, mot, biky - sbbiky, occ  
sbbiky, brit - mod firm, chky - sbwxy, mtz, v  
calc: MRL: m - dk gy, brn, occ gybrn, biky -  
sbbiky, sme sbbiky, sft - firm, rthy - grty,  
mtz, m arg - silty, mod calc, tr bent, slow  
sting mky bl cut, bl ring









Survey  
MD 12105'  
INC 90.25°  
AZM 180.02°  
TVD 7293.42'

Survey  
MD 12190'  
INC 90.95°  
AZM 180.40°  
TVD 7292.53'

Survey  
MD 12299'  
INC 90.86°  
AZM 179.91°  
TVD 7290.81'

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

CHK: It - m gy, brn, mot, blk, sbblky, occ  
sbply, brt - mod firm, chky - sbwxy, mtx, v  
calc, string mlky bl cut, brt bl ring

CHK: It - m gy, brn, mot, blk, sbblky, occ  
sbply, brt - mod firm, chky - sbwxy, mtx, v  
calc, slow str



