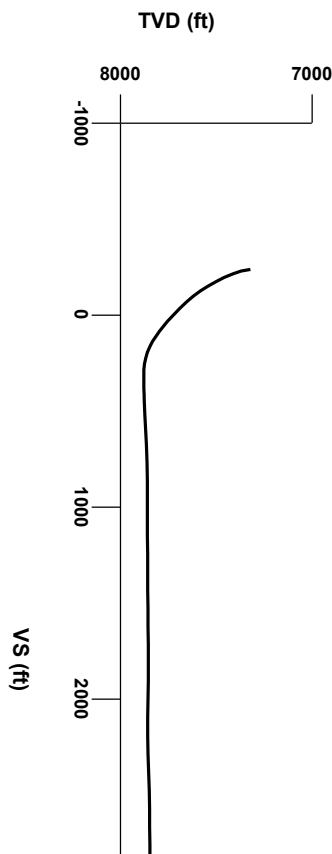


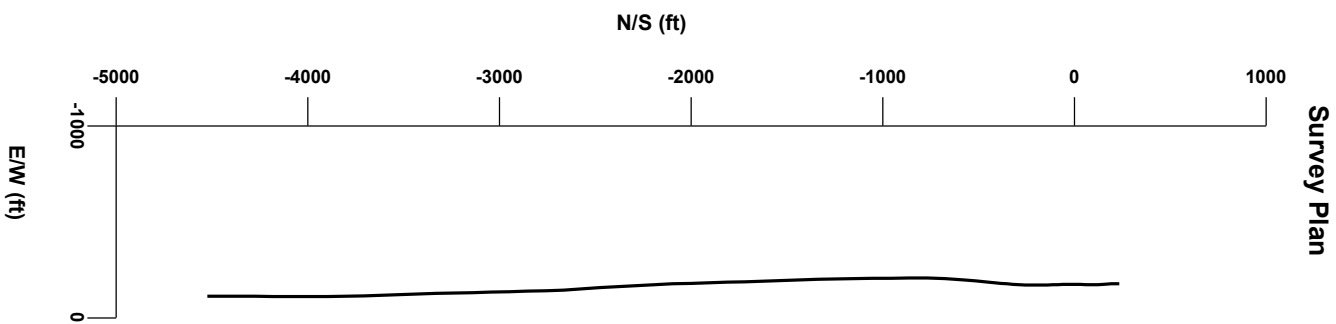
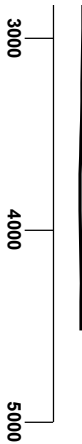


LOG created using LPLOT VH Version 3.0, July 02, 2013, Copyright (C) 1999-2009 Pason Systems Corp.

**OPERATOR:** ANADARKO PETROLEUM CORPORATION  
**WELL:** JELTS 15C-19HZ  
**LOCATION:** SEC 19 T1N R67W  
**COUNTY:** WELD  
**STATE:** COLORADO  
**SPOT:** 275' FNL 1,858' FEL  
**ELEVATION:** 5,147' GR 5,160' KB  
**FIELD:** WATTENBERG  
**SPUD DATE:** 06/21/2013  
**TD DATE:** 07/01/13  
**DATES LOGGED:** 06/23/2013 - 07/01/13  
**DEPTHS LOGGED:** 7,300' - 12,390'  
**LOGGERS:** LACEY LITTLE, STEFANIE PIPIS  
**DRILLING FLUID:** FW LSND  
**DRILLING RIG:** ENSIGN 145  
**API:** 05-123-36567-00  
**LOG TYPE:** HORIZONTAL  
**SCALE:** 1:240 (5 inches per 100 feet)  
**REMARKS:** Wellsite Geological Services Provided By Columbine Logging Inc.



Survey Elevation





Chalk

Sandstone

Limestone

Shaly Sandstone

Marl

Silty Shale

ENGINEERING SYMBOLS

Casing

Connection Gas

Casing

Midnight Depth

Connection

ROTATE/SLIDE

1

DEPTH (FEET)

7300

7400

ROP

MIN/FT

1

GAS

UNITS

6000

C1

PPM

600000

C2

PPM

600000

C3

PPM

600000

C4

PPM

600000

Oil Shows Every 100'

2847u

C1: 71%

C2: 18%

C3: 11%

C4: 0%

2881u

Sample description placed every 50' with two 25' intervals included

UNITS

PPM

600000

CUTTINGS LITHOLOGY

MD 7341'

INC 6.76°

AZM 182.34°

TVD 7319.99'

MD 7391'

INC 14.07°

AZM 182.01°

TVD 7369.17'

TVD

ft

7200

8400

GAMMA RAY

API

220

COLUMBIANE LOGGING 06/23/2013

MANNED 2-PERSON LOGGING

WITH BLOODHOUND GAS

CHROMATOGRAPH UNIT #0598

BIT 8.75

SMITH SD1611

6 X 15 JETS

DEPTH IN: 914'

100% SLTY SH: lt gy - gy, mod sft- firm, sbbkly - sbbply, non calc, tr ss; O SHW: fnt wh, fast strng, tr str, tr o

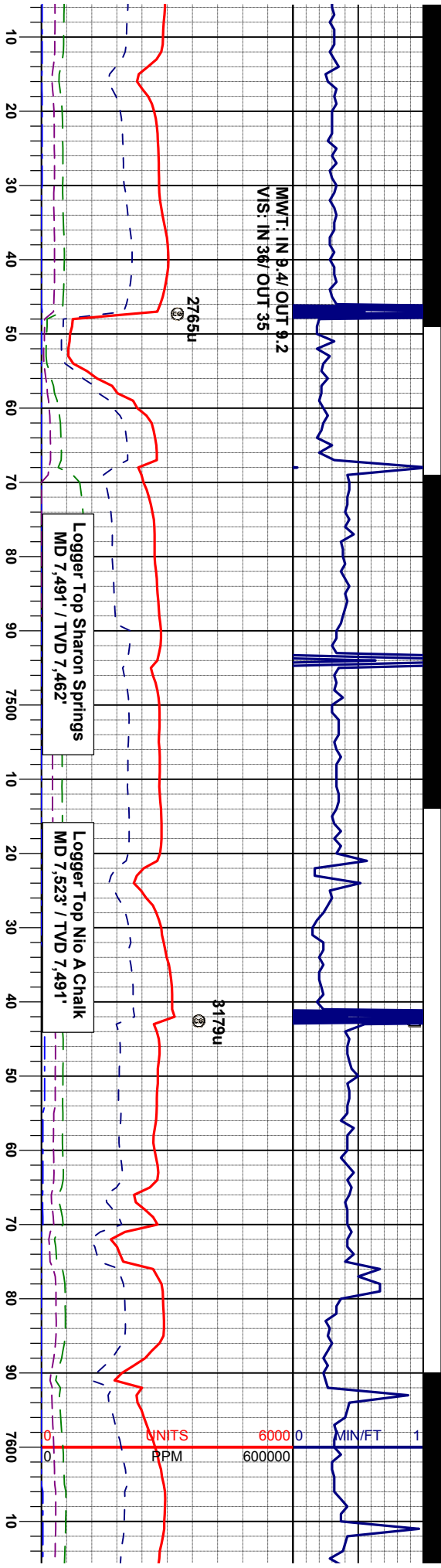
100% SLTY SH: lt gy - gy, mod sft- firm, sbbkly - sbbply, non calc, tr ss; O SHW: fnt wh, fast strng, tr str, tr o

1

si

fr

SAMPLE PHOTOS



MD 7438'  
INC 21.65°  
AZM 179.55°  
TVD 7413.87'

MD 7486'  
INC 24.89°  
AZM 179.12°  
TVD 7457.96'

MD 7533'  
INC 28.05°  
AZM 174.63°  
TVD 7500.03'

MD 7581'  
INC 31.21°  
AZM 176.09°  
TVD 7541.75'

00% SLTY SH: lt gy - gy, mod sft-firm, blkly - sbply, non calc, tr bent; O SHW: lt wh, fast stmg, mod sln, mod o

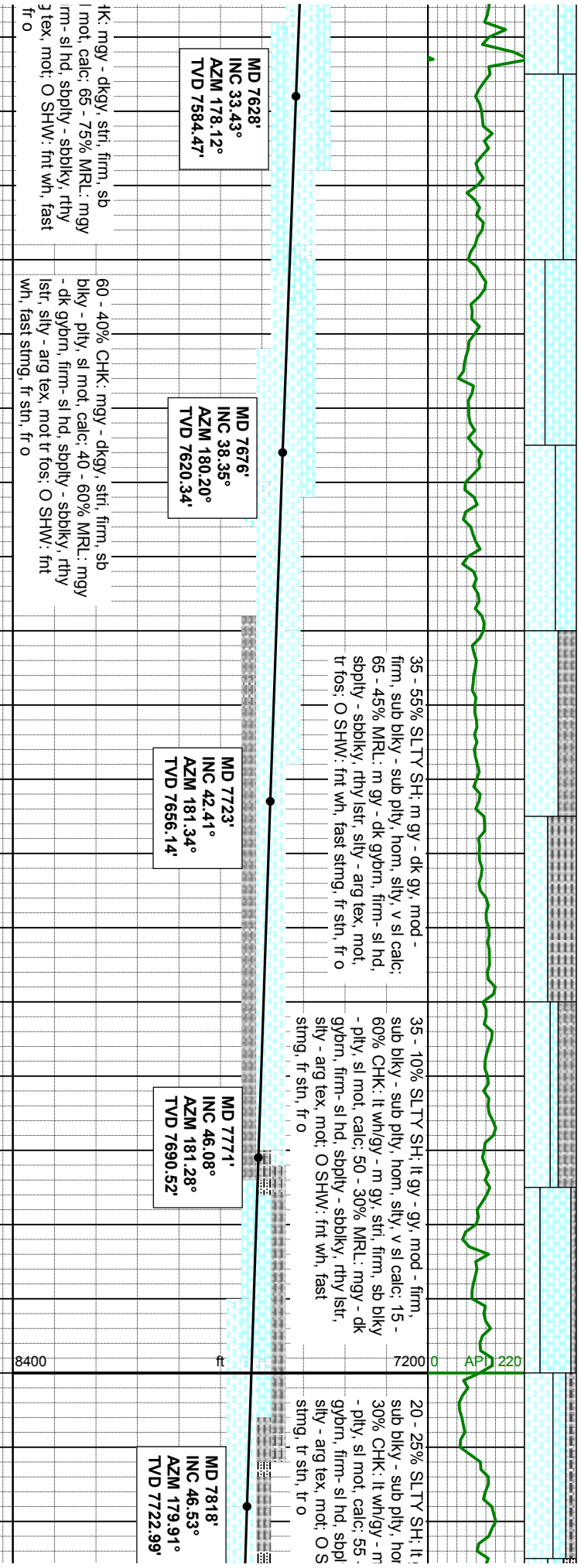
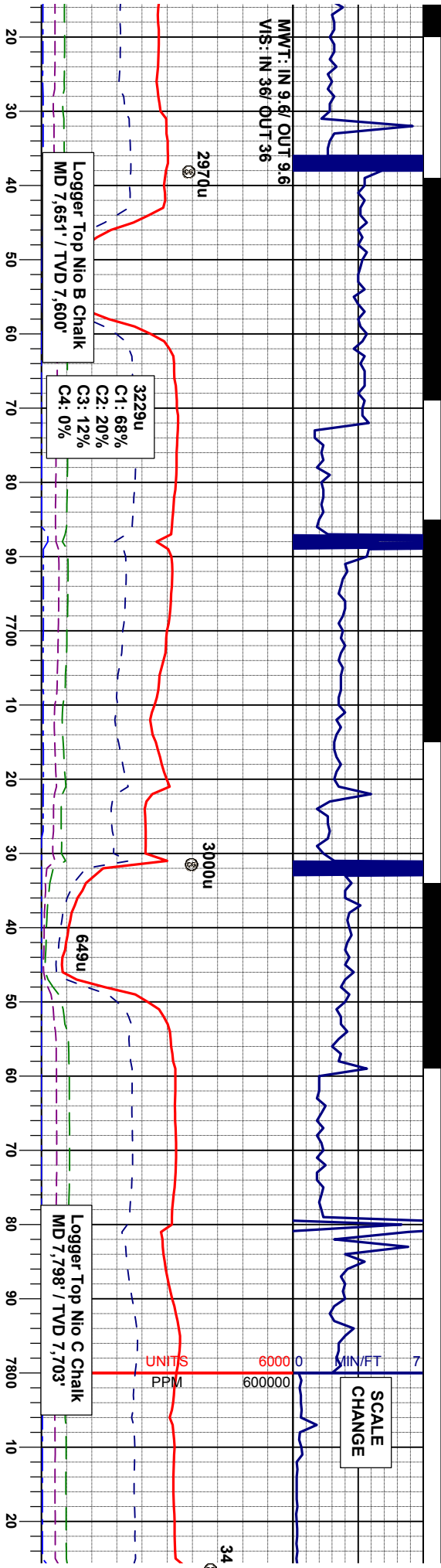
100% SLTY SH: lt gy - gy, mod sft-firm, sbply - sbply, non calc, tr bent, tr chk; O SHW: fnt wh, fast stmg, mod sln, mod o

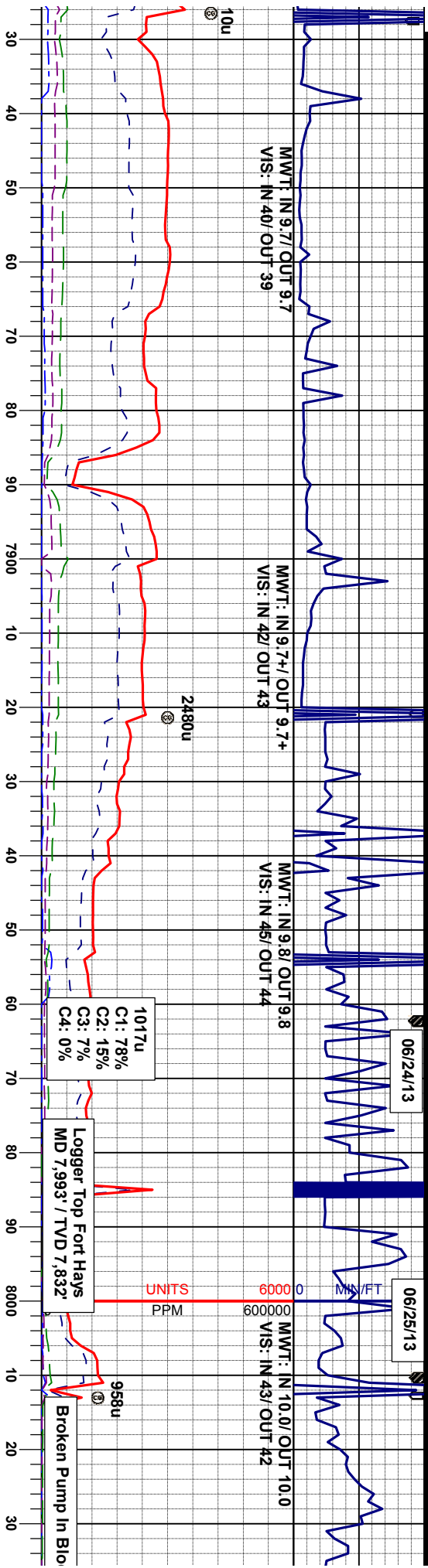
65 - 20% SLTY SH: lt gy - gy, med sft-firm, sub blkly - sub pily, hom, silty, v sl calc; 35 - 60% CHK: mgv - dkgy, str, firm, sb blkly - pily, sl mot, calc; 0 - 20% MRL: mgv - dk gybrn, firm - sl hd, sbply - sbply, rthy lstr, silty - arg tex; O SHW: fnt yel/wh, fast stmg, sl tr sln, sl tr o

65 - 60% CHK: mgv - dkgy, str, firm, sb blkly - pily, sl mot, calc; 35 - 40% MRL: mgv - dk gybrn, firm - sl hd, sbply - sbply, rthy lstr, silty - arg tex, mot; O SHW: fnt yel/wh, fast stmg, sl tr sln, sl tr o

35 - 25% Ch blkly - pily, sl - dk gybrn, f lstr, silty - arg stmg, fr sln,







gy - gy, mod - firm, firm, v calc, v f gr mtx: 25 - 10% MRL: mgy - dk gybm, firm - sl hd, sbply - sbply, rthy lstr, sily - arg tex, mot, 40 - 25% SLTY SH; It gy - gy, mod - firm, sub bly - sub ply, hom, sily, v sl calc, tr calc; O SHW: fnt wh, fast sting, tr sin, tr o

30 - 65% LS: offwh, crm / gy, sbply, mod - firm, v calc, v f gr mtx: 30 - 10% MRL: mgy - dk gybm, firm - sl hd, sbply - sbply, rthy lstr, sily - arg tex, mot, 40 - 25% SLTY SH; It gy - gy, mod - firm, sub bly - sub ply, hom, sily, v sl calc, tr calc; O SHW: fnt wh, fast sting, tr sin, tr o

75 - 85% LS: offwh, crm / gy, sbply, mod - firm, v calc, v f gr mtx: 25 - 15% SLTY SH; It gy - gy, mod - firm, sub bly - sub ply, hom, sily, v sl calc, tr calc; O SHW: fnt orng / wh, fast sting, sl tr sin, sl tr o

85 - 75% LS: offwh, crm / gy, sbply, mod - firm, v calc, v f gr mtx: 15 - 25% SLTY SH; It gy - gy, mod - firm, sub bly - sub ply, hom, sily, v sl calc, tr calc; O SHW: fnt orng / wh, fast sting, sl tr sin, sl tr o

85 - 45% LS: offwh, crm / gy, sbply, mod - firm, v calc, v f gr mtx: 15 - 25% SLTY SH; It gy - gy, mod - firm, sub bly - sub ply, hom, sily, v sl calc, tr calc; O - 30% SS: mod - firm, mod fti, mod rd, v f - srt mtx sin, sl tr o

MD 7865'  
INC 47.95°  
AZM 179.99°  
TVD 7754.90'

MD 7897'  
INC 50.72°  
AZM 178.81°  
TVD 7775.75'

BIT 8.75  
BAKER GX-03  
3 X 20 JETS  
DEPTH IN: 7893'

MD 7929'  
INC 53.24°  
AZM 178.72°  
TVD 7795.46'

MD 7961'  
INC 55.18°  
AZM 177.48°  
TVD 7814.17'

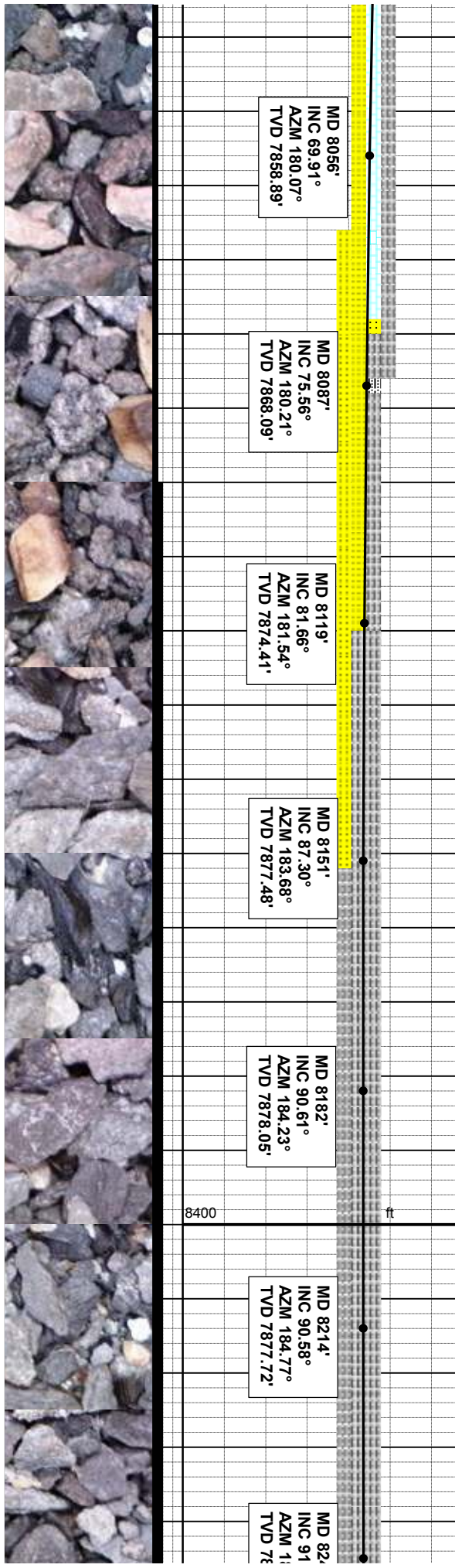
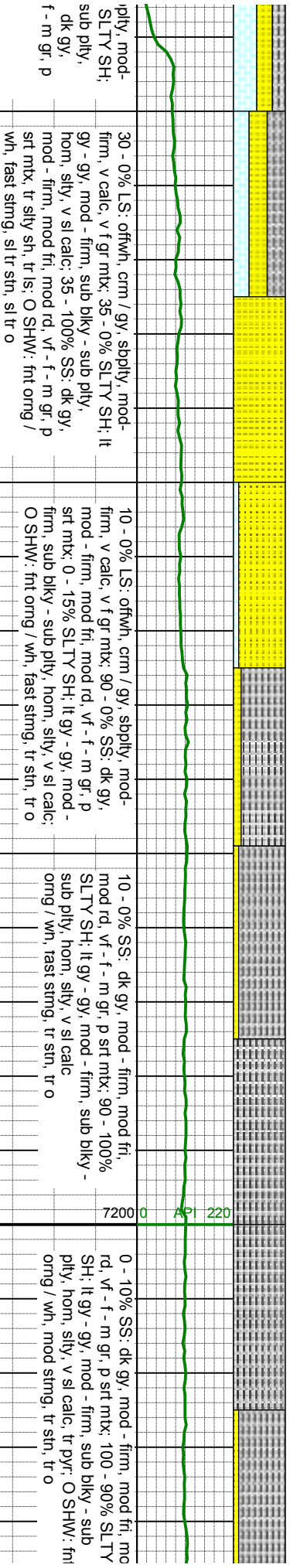
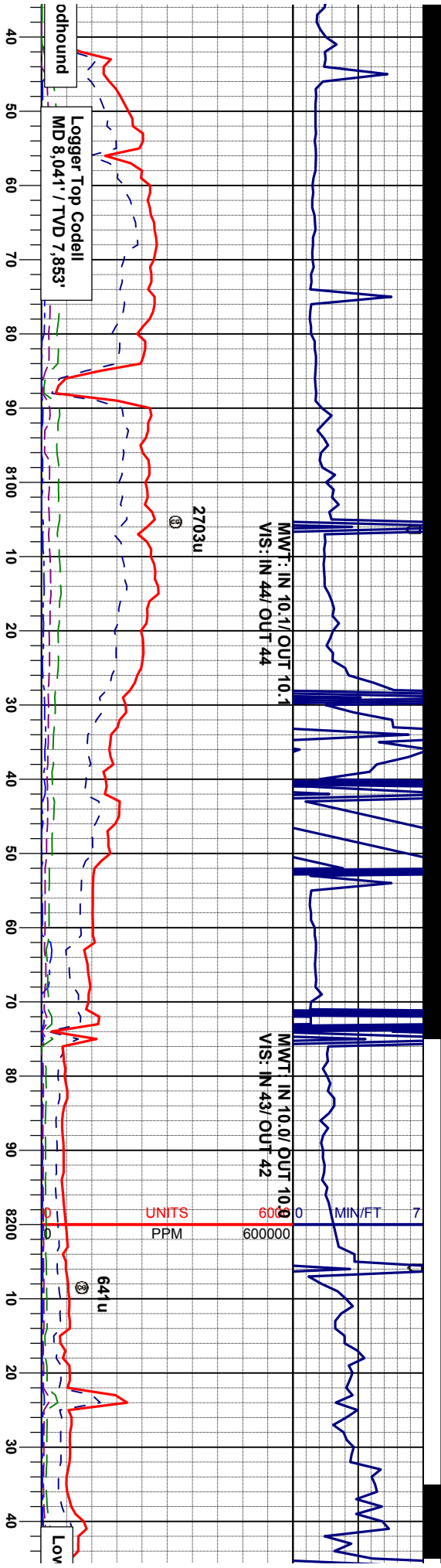
MD 7993'  
INC 58.84°  
AZM 177.67°  
TVD 7831.59'

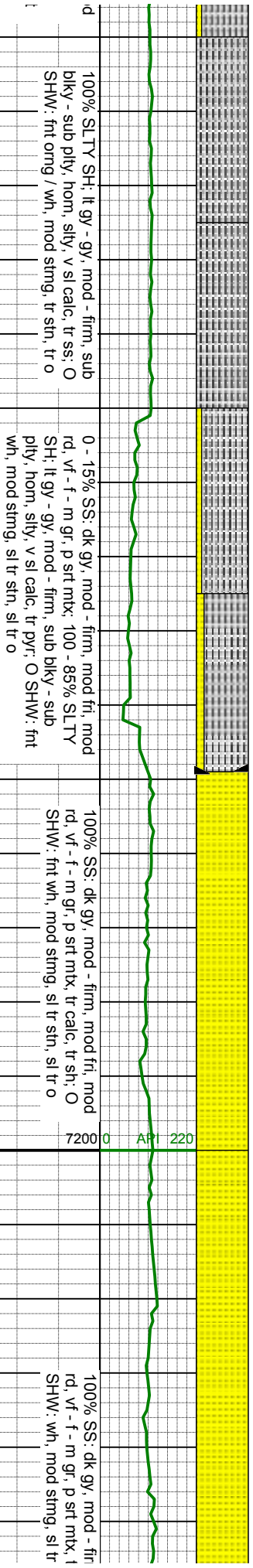
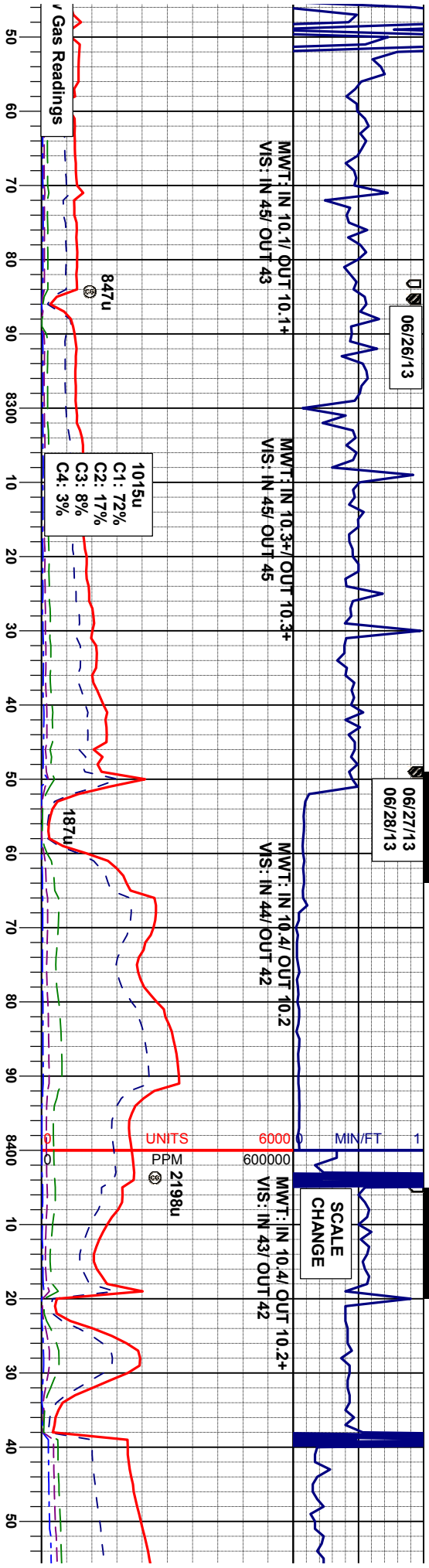
MD 8024'  
INC 64.09°  
AZM 178.78°  
TVD 7846.39'

8400

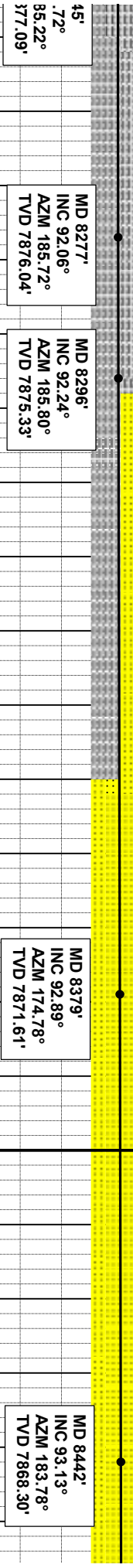
ft

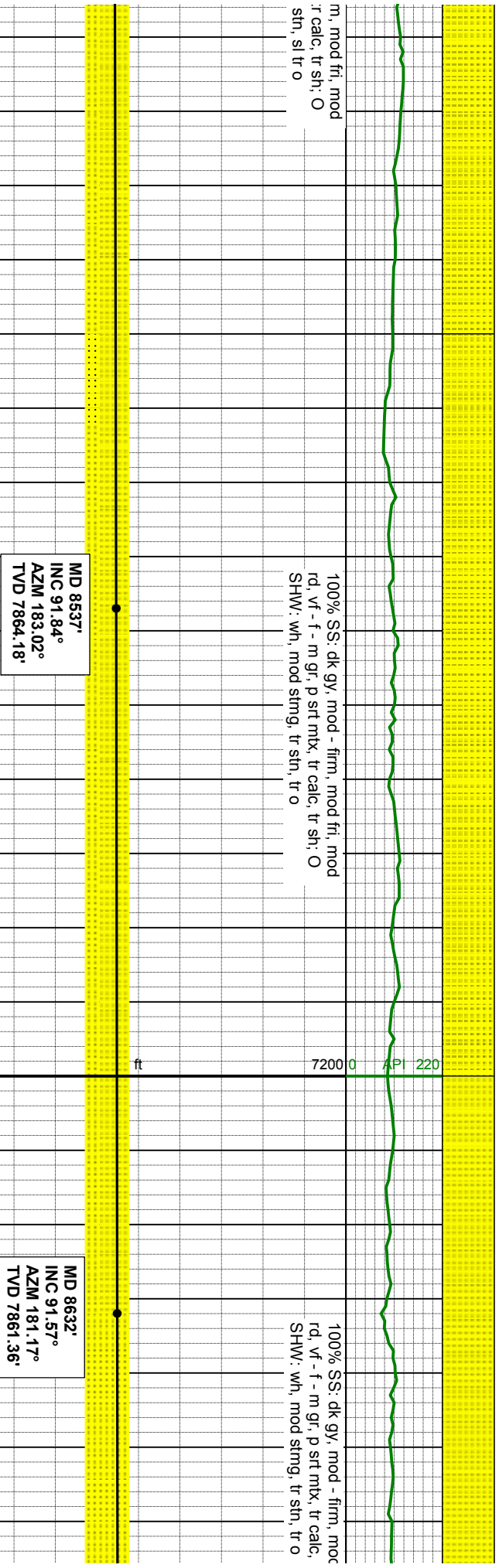
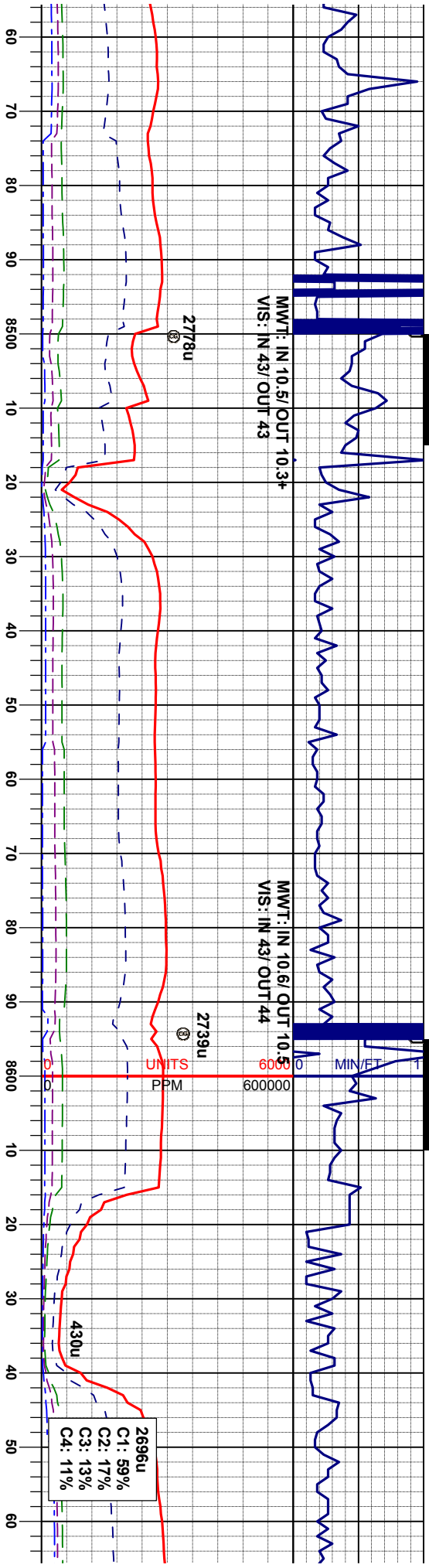


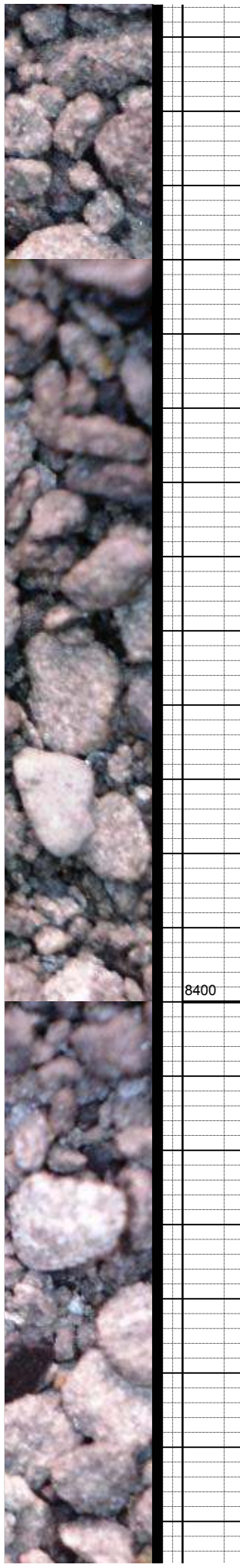
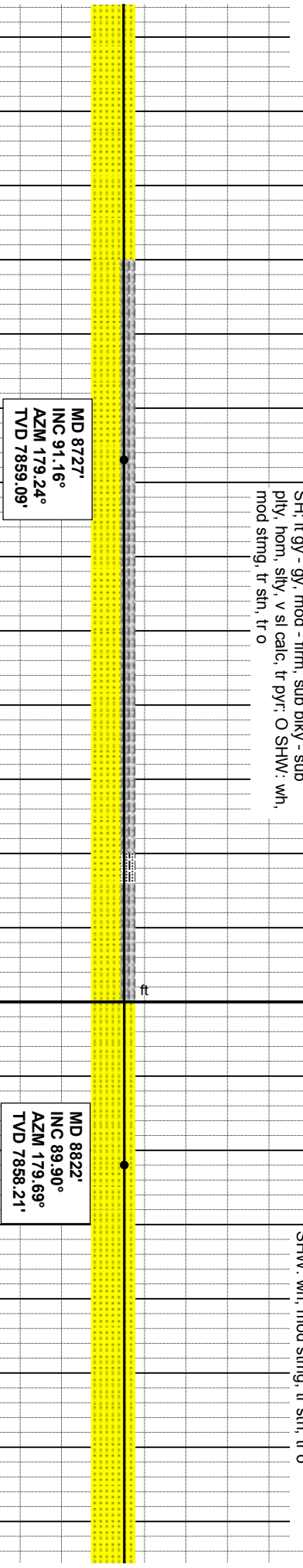
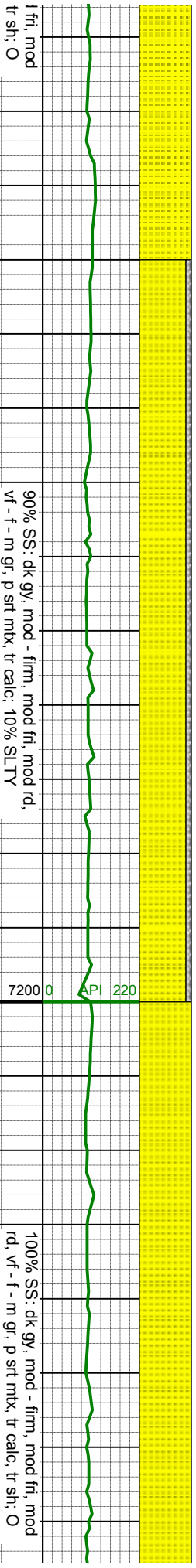
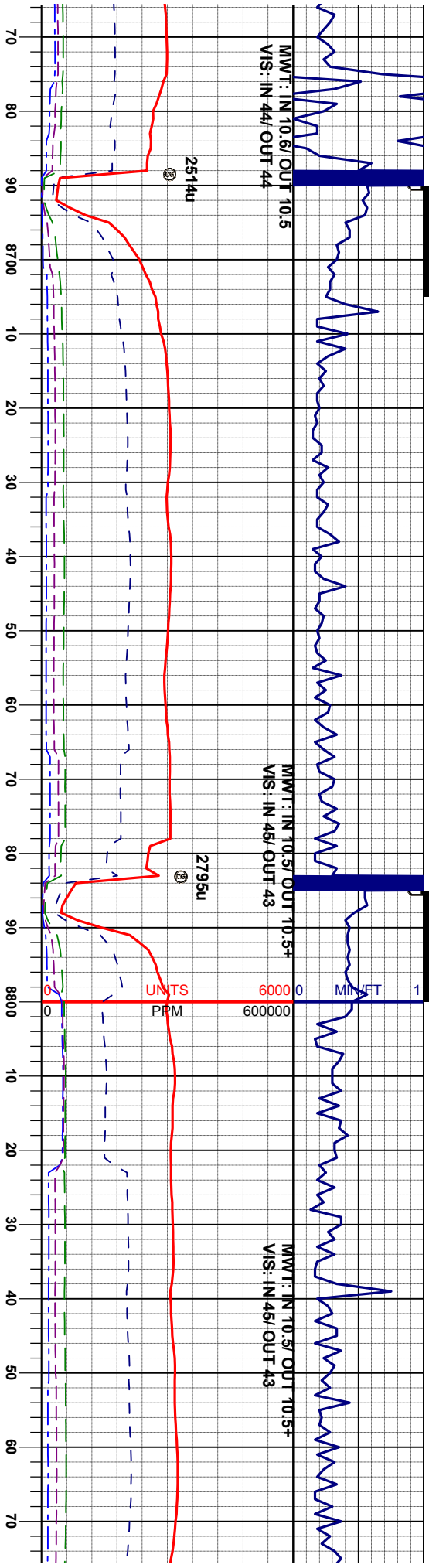


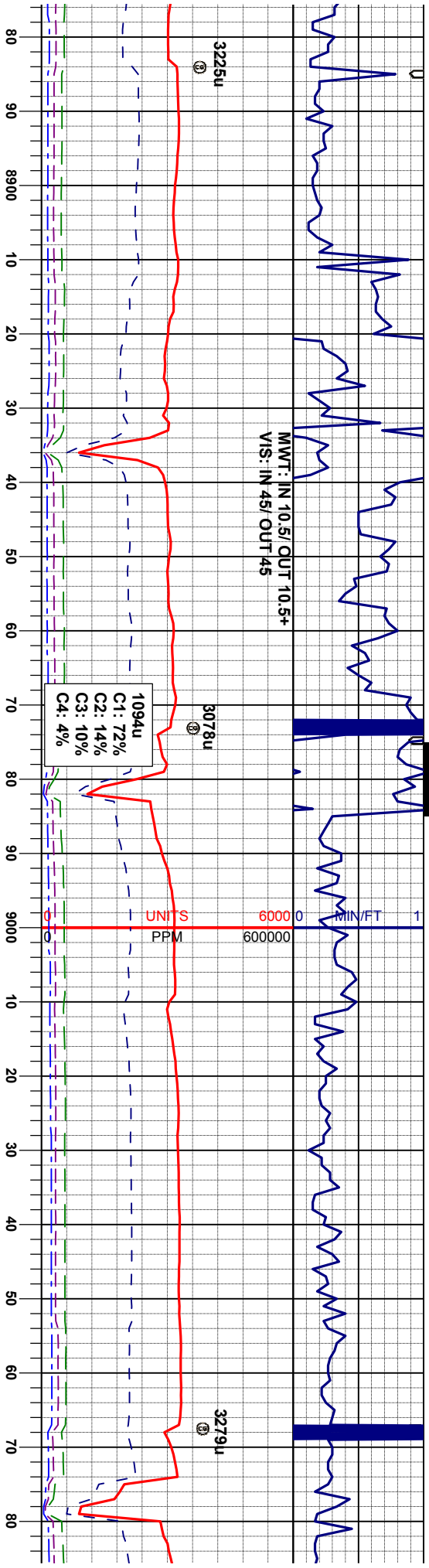


BIT 6.125  
VAREL VM513S  
5 X 18 JETS  
DEPTH IN: 8.349"









MWT: IN 10.5/OUT 10.5+  
VIS: IN 45/OUT 45

1094u  
C1: 72%  
C2: 14%  
C3: 10%  
C4: 4%

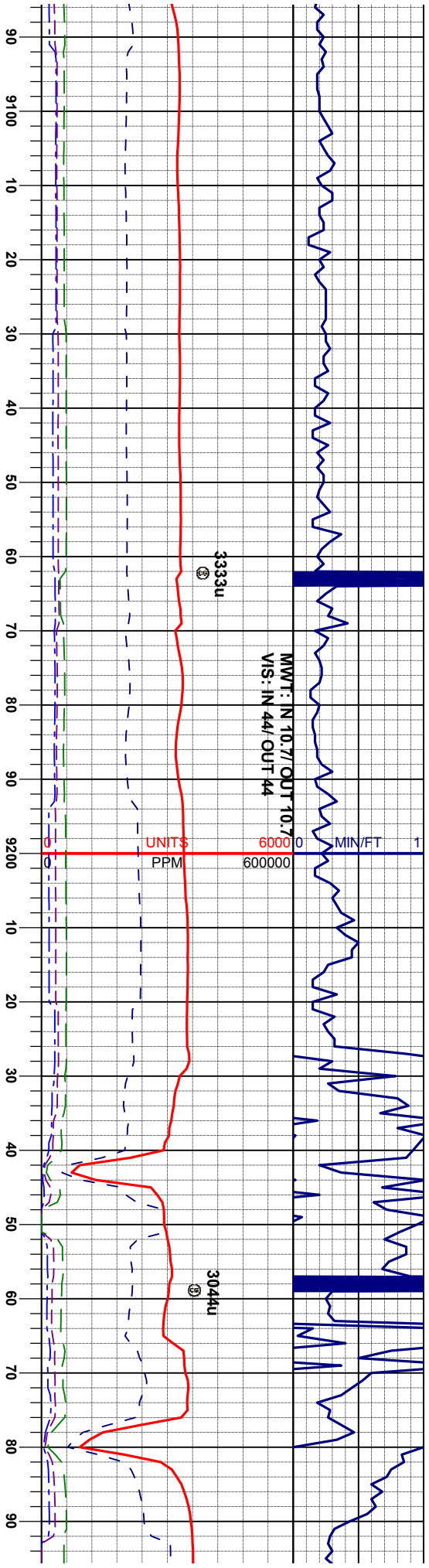
85% SS: dk gy, mod - firm, mod fr, mod rd,  
vf - f - m gr, p srt mtx, tr calc: 15% SLTY  
SH: lt gy - gy, mod - firm, sub blkly - sub  
ply, hom, sily, v sl calc, tr pyr, O SHW: wh,  
mod string, tr stn, tr o

90% SS: dk gy, mod - firm, mod fr, mod rd,  
vf - f - m gr, p srt mtx, tr calc: 10% SLTY  
SH: lt gy - gy, mod - firm, sub blkly - sub  
ply, hom, sily, v sl calc, tr pyr, O SHW: wh,  
mod string, tr stn, tr o

MD 8917'  
INC 89.59°  
AZM 179.79°  
TVD 7858.64'

MD 9012'  
INC 90.40°  
AZM 178.65°  
TVD 7858.65'





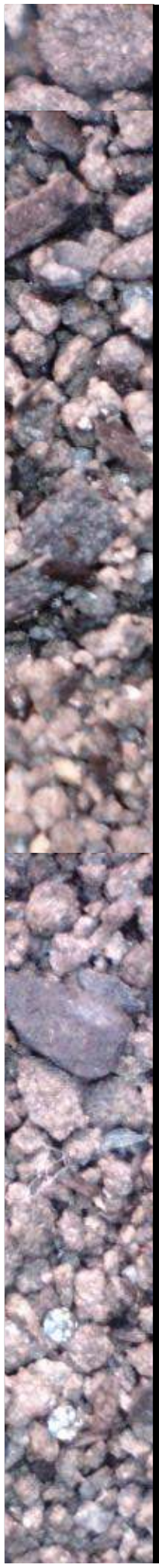
85% SS: dk gy, mod - firm, mod fri, mod rd,  
vf - f - m gr, p srt mtx, tr calc; 15% SLTY  
SH; lt gy - gy, mod - firm, sub blkly - sub  
ply, hom, sily, v sl calc, tr pyr; O SHW: wh,  
mod sting, tr sin, tr o

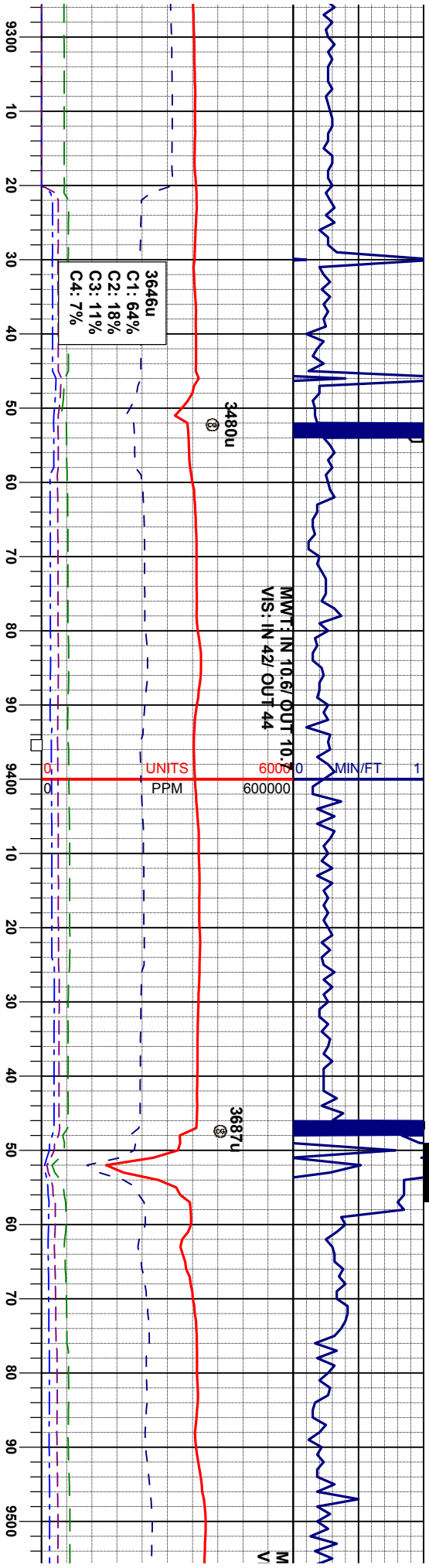
90% SS: dk gy, mod - firm, mod fri, mod rd,  
vf - f - m gr, p srt mtx, tr calc; 10% SLTY  
SH; lt gy - gy, mod - firm, sub blkly - sub  
ply, hom, sily, v sl calc, tr pyr; O SHW: wh,  
mod sting, tr sin, tr o

MD 9107'  
INC 90.33°  
AZM 178.46°  
TVD 7858.04'

MD 9201'  
INC 90.21°  
AZM 178.90°  
TVD 7857.60'

MD 925  
INC 90  
AZM 17  
TVD 78





90% SS: dk gy, mod - firm, mod fri, mod rd,  
vf - f - m gr, p srt mtx, tr calc: 10% SLTY  
SH: lt gy - gy, mod - firm, sub bkly - sub  
ply, hom, sily, v sl calc, tr pyr  
mod sting, tr sin, tr o

10% SS: dk gy, mod - firm, mod fri, mod rd,  
vf - f - m gr, p srt mtx, tr calc: 90% LS:  
offwh, crm / gy, sibly, mod - firm, v calc, v f  
gr mtx: tr sh, O SHW: wh, mod sting, tr sin,  
tr o

16'  
49°  
78.07°  
57.02°

MD 9391'  
INC 90.24°  
AZM 178.51°  
TVD 7856.41'

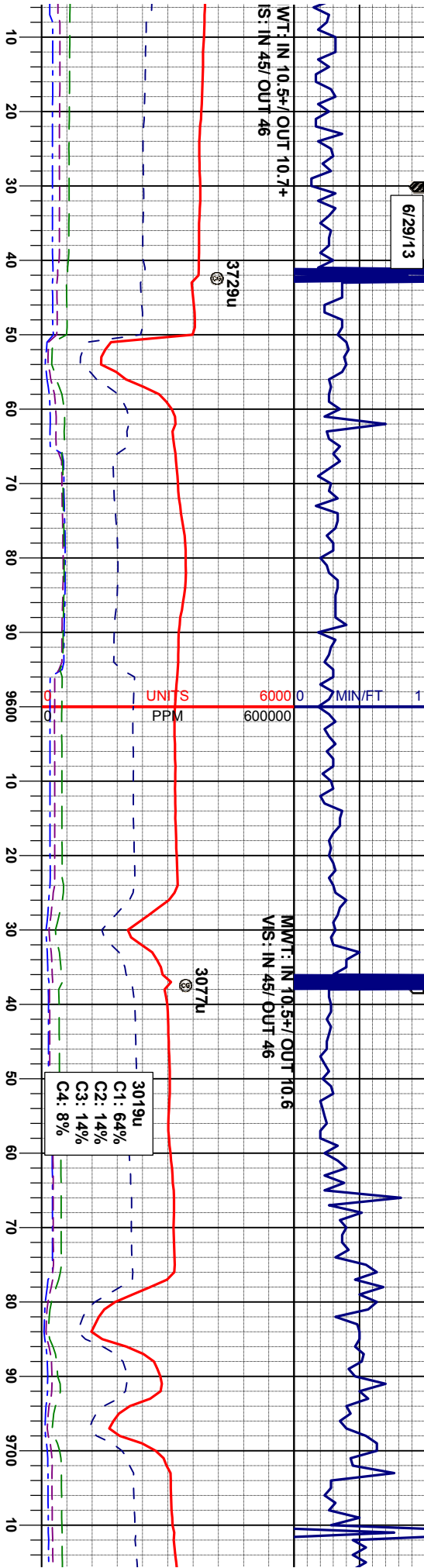
MD 9486'  
INC 90.52°  
AZM 177.53°  
TVD 7855.78'



6/29/13

WT: IN 10.5+/- OUT 10.7+  
IS: IN 45/ OUT 46

MMT: IN 10.5+/- OUT 10.6  
MS: IN 45/ OUT 46



10% SS: dk gy, mod - firm, mod fri, mod rd,  
vf - f - m gr, p srt mtx, tr calc: 30% SLTY  
SH: lt gy - gy, mod - firm, sub blkly - sub  
ply, hom, sily, v sl calc: 60% LS: offwh,  
cm / gy, sbply, mod- firm, v calc, v f gr  
mtx: O SHW: yel / wh, mod stmg, tr stn, tr o

10% SS: dk gy, mod - firm, mod fri, mod rd,  
vf - f - m gr, p srt mtx, tr calc: 25% SLTY  
SH: lt gy - gy, mod - firm, sub blkly - sub  
ply, hom, sily, v sl calc: 65% LS: offwh,  
cm / gy, sbply, mod- firm, v calc, v f gr  
mtx: O SHW: yel / wh, mod stmg, tr stn, tr o

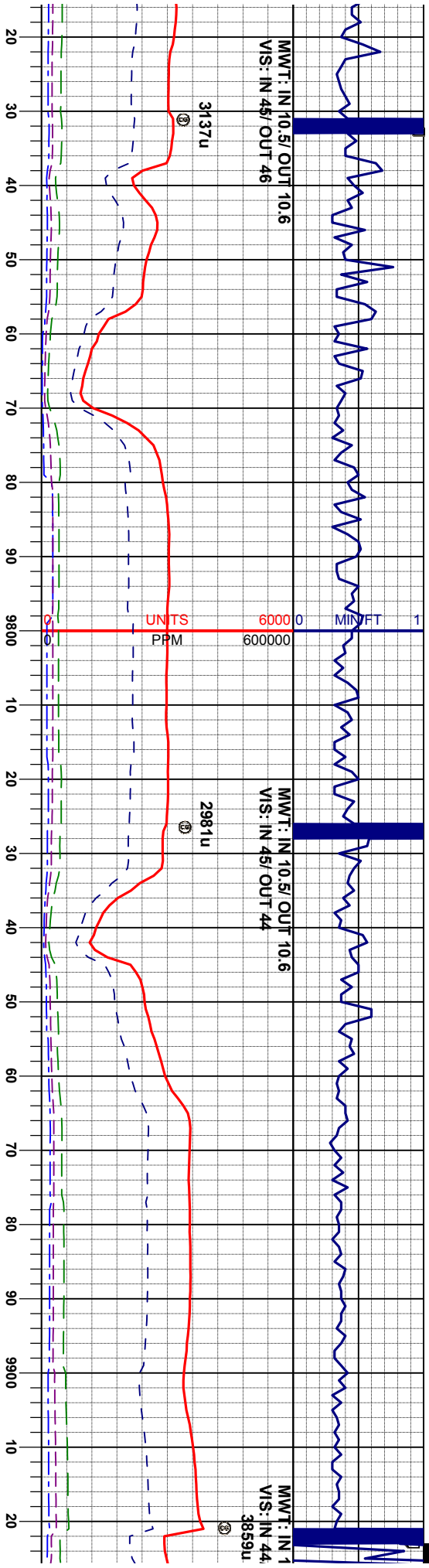
MD 9561'  
INC 90.73°  
AZM 178.12°  
TVD 7854.75'

MD 9676'  
INC 90.46°  
AZM 178.80°  
TVD 7853.76'

8400

ft

7200 0 API 220



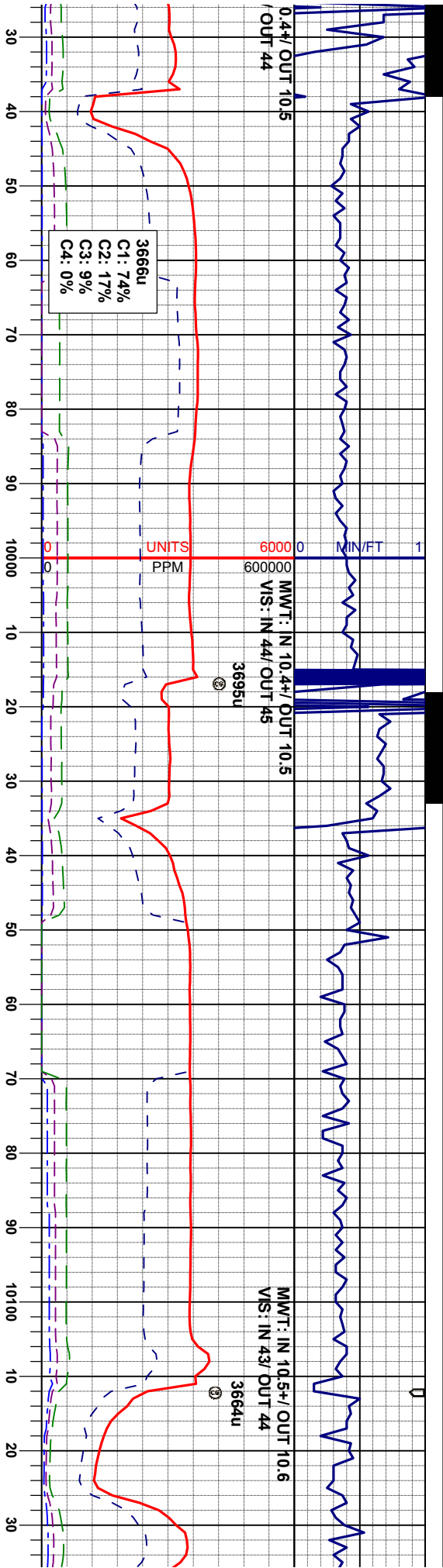
10% SS: dk gy, mod - firm, mod fri, mod rd,  
vf - f - m gr, p srt mtx, tr calc: 20% SLTY  
SH: lt gy - gy, mod - firm, sub blk - sub  
ply, hom, sily, v sl calc: 70% LS: offwh,  
crm / gy, sbply, mod - firm, v calc, v f gr  
mtx, O SHW: fnt orng/ wh, fast string, sl tr  
stin, sl tr o

100% LS: offwh, crm / gy, sbply, mod - firm,  
v calc, v f gr mtx, tr sh, tr ss: O SHW: fnt  
orng/ wh, fast string, sl tr stn, sl tr o

MD 9771'  
INC 89.53°  
AZM 177.94°  
TVD 7853.77'

MD 9866'  
INC 88.34°  
AZM 177.90°  
TVD 7855.53'





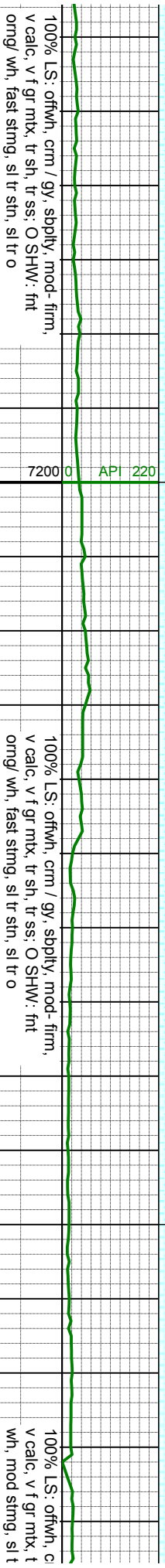
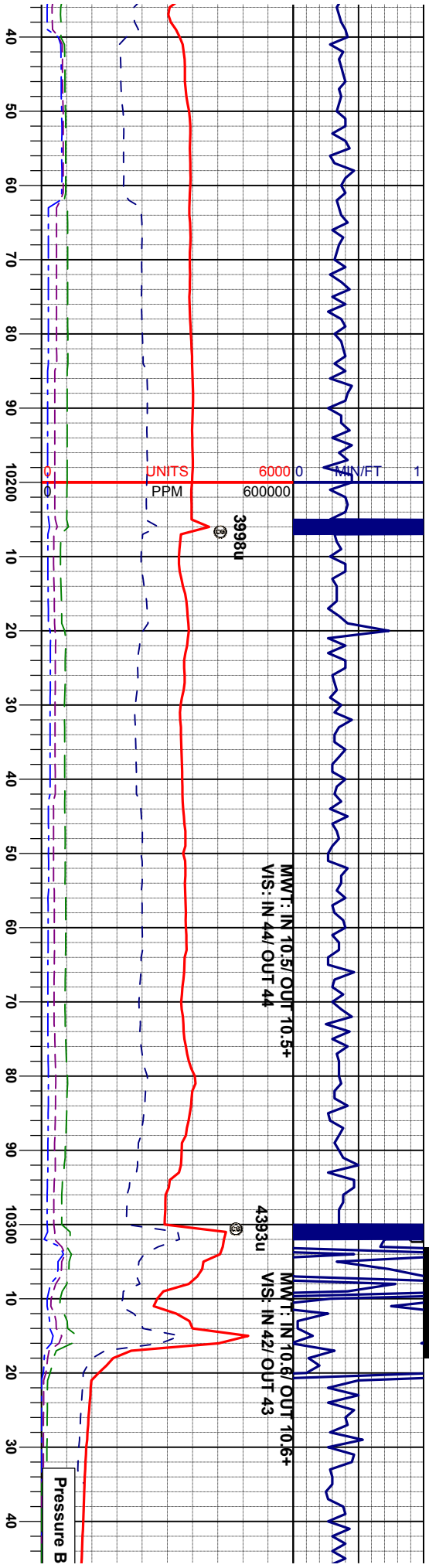
100% LS: offwh, crm / gy, spdly, mod-firm,  
v calc, v f gr mlt, tr sh, tr ss, O SHW: fnt  
omg/ wh, fast stmg, sl tr stn, sl tr o

100% LS: offwh, crm / gy, spdly, mod-firm,  
v calc, v f gr mlt, tr sh, tr ss, O SHW: fnt  
omg/ wh, fast stmg, sl tr stn, sl tr o

MD 9960'  
INC 89.53°  
AZM 179.05°  
TVD 7857.28'

MD 10055'  
INC 90.49°  
AZM 176.26°  
TVD 7857.26'



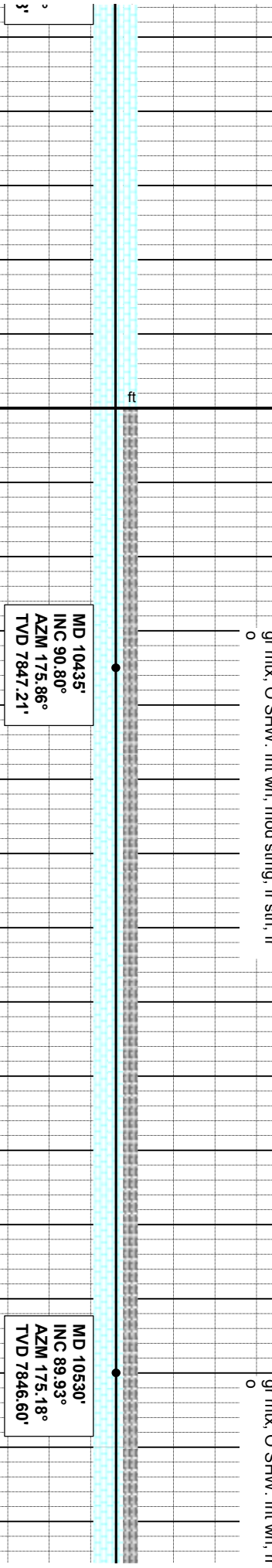
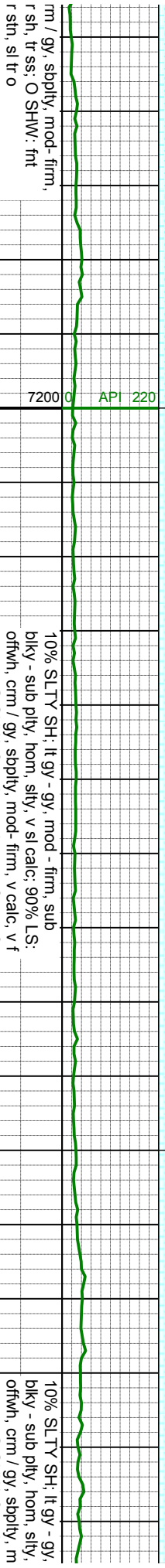
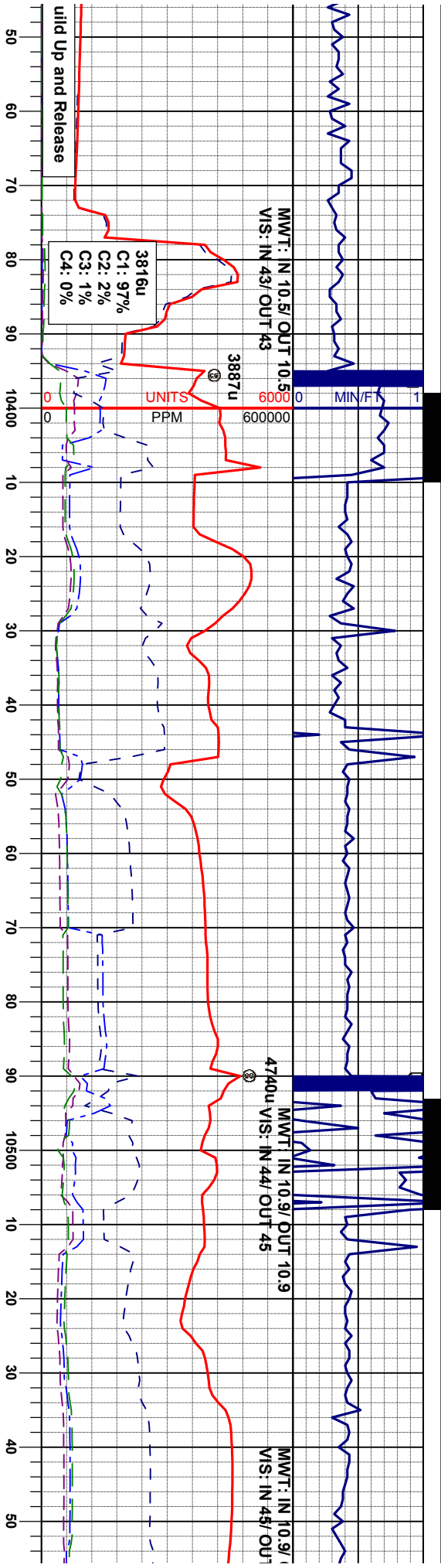


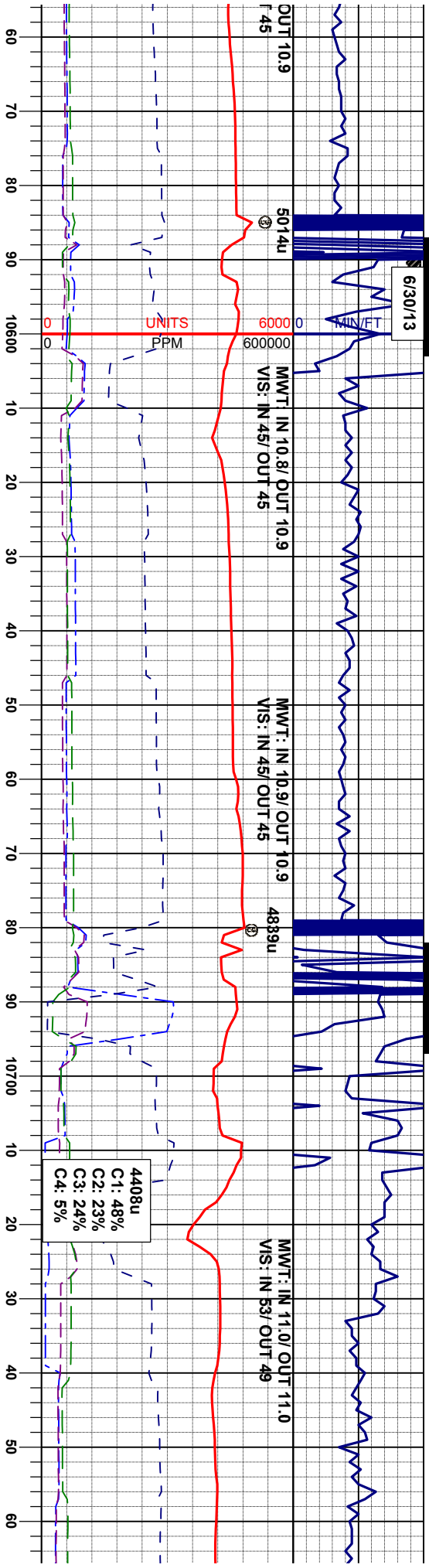
MD 10150'  
INC 91.98°  
AZM 176.88°  
TVD 7855.22'

MD 10245'  
INC 92.22°  
AZM 176.00°  
TVD 7851.74'

MD 10340'  
INC 91.22°  
AZM 177.47°  
TVD 7848.83'







mod - firm, sub  
v sl calc; 90% LS;  
od - firm, v calc, v f  
tod string, tr sin, tr

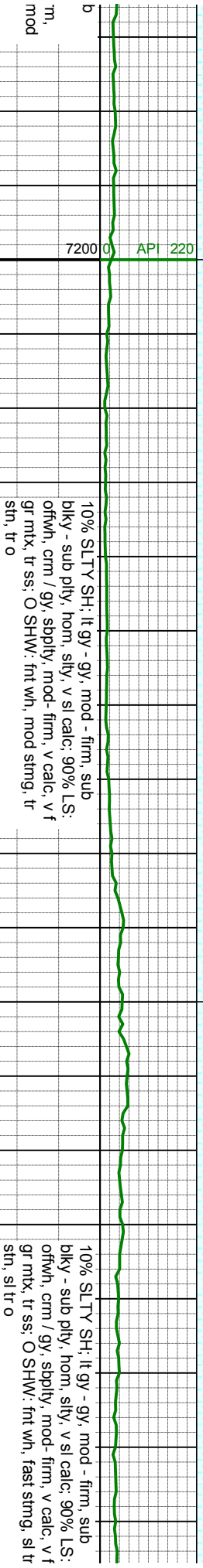
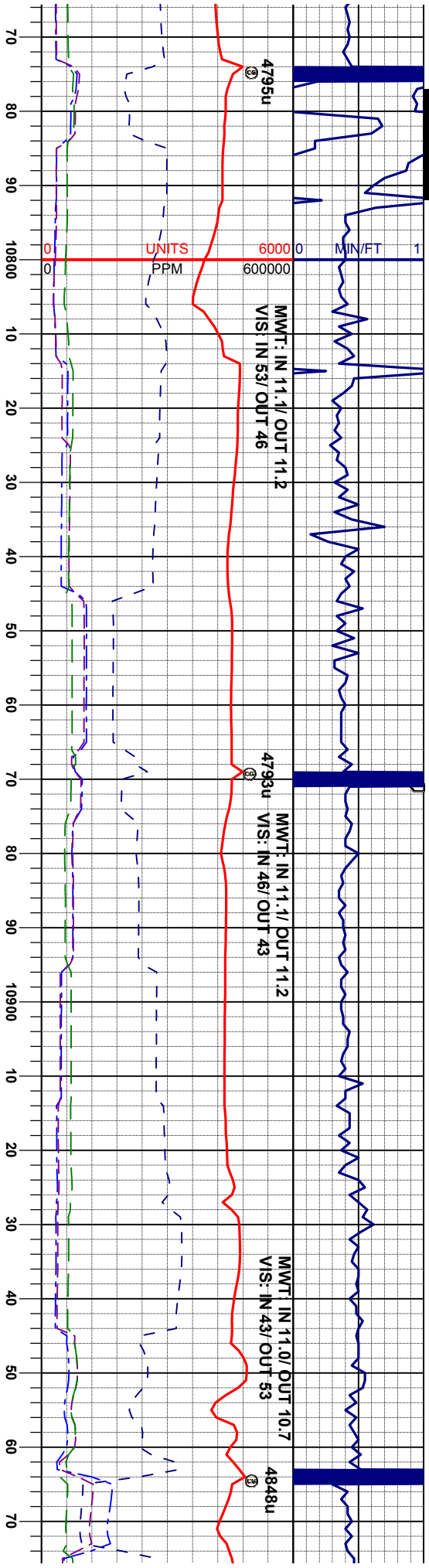
10% SLTY SH: lt gy - gy, mod - firm, sub  
bkly - sub pily, hom, sily, v sl calc; 90% LS;  
offwh, crm / gy, sbply, mod - firm, v calc, v f  
gr mtx, tr ss; O SHW: fnt wh, mod string, tr  
sin, tr o

10% SLTY SH: lt gy - gy, mod - firm, su  
bkly - sub pily, hom, sily, v sl calc;  
90% LS: offwh, crm / gy, sbply, mod - fir  
v calc, v f gr mtx, tr ss; O SHW: fnt wh,  
string, fr sin, fr o

MD 10625'  
INC 90.67°  
AZM 178.81°  
TVD 7846.11'

MD 10720'  
INC 90.40°  
AZM 178.63°  
TVD 7845.22'

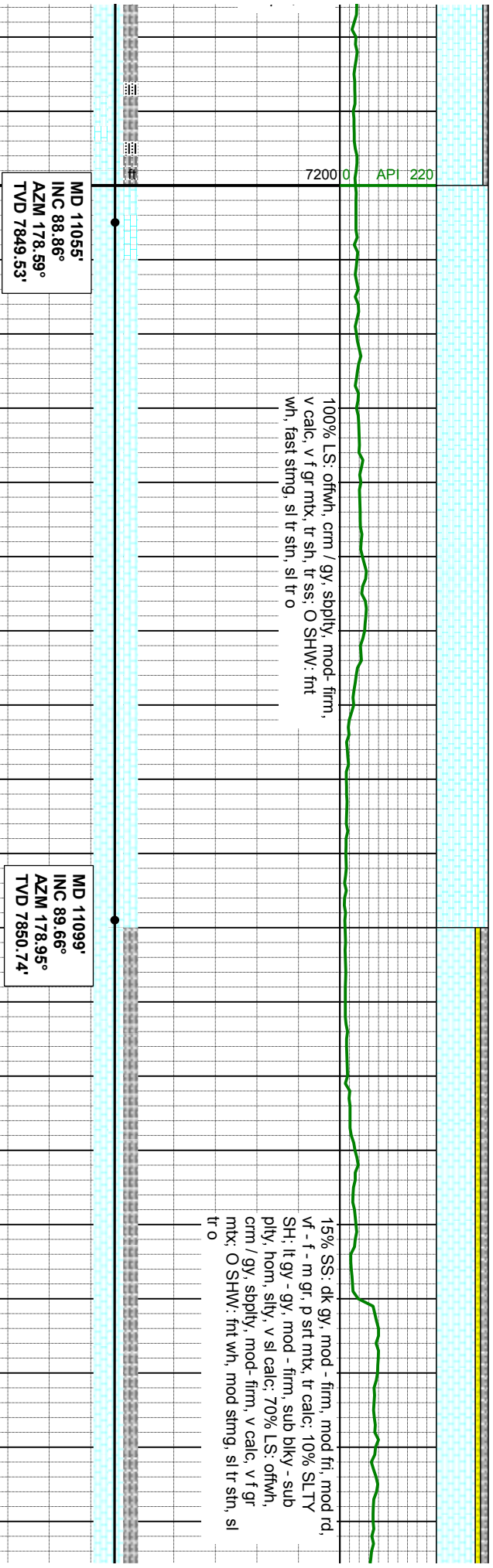
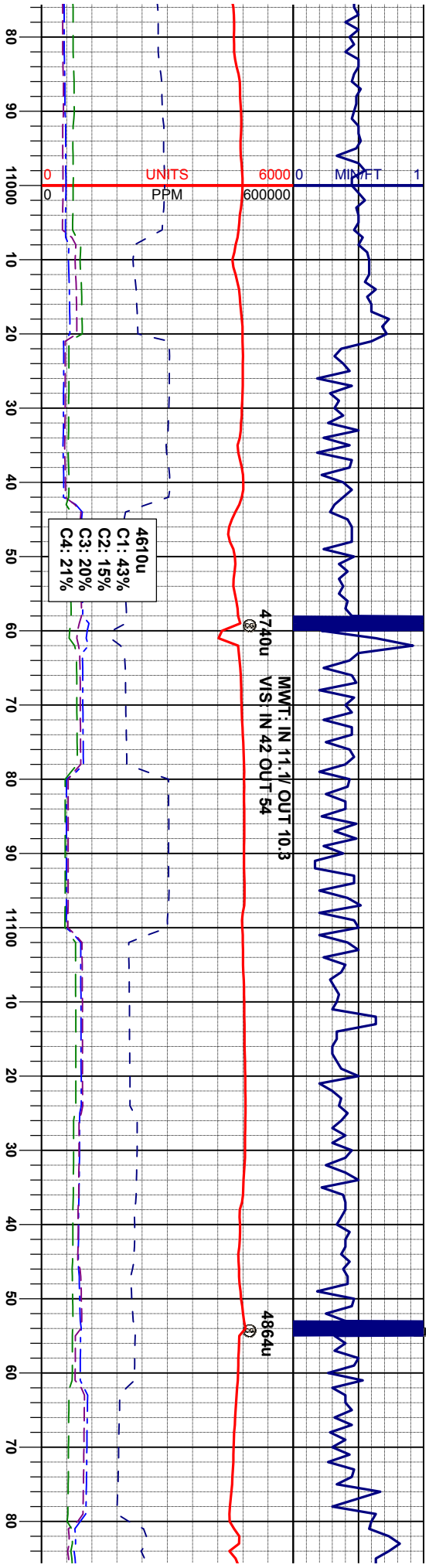




MD 10814'  
INC 88.92°  
AZM 178.47°  
TVD 7845.78'

MD 10910'  
INC 88.86°  
AZM 178.33°  
TVD 7847.64'





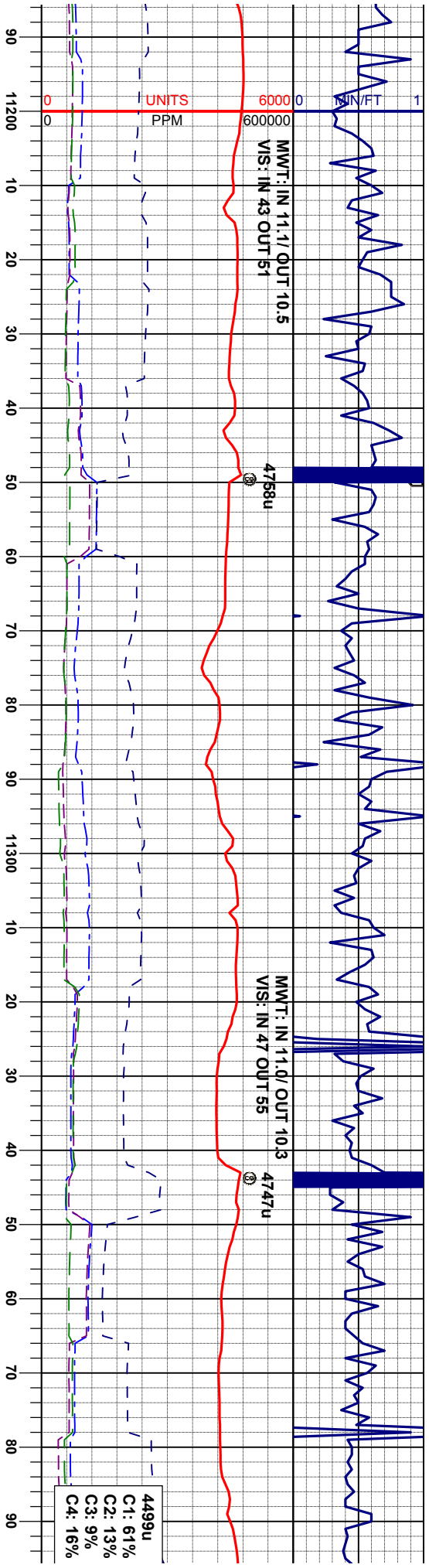
MD 11055'  
INC 88.86°  
AZM 178.59°  
TVD 7849.53'

MD 11099'  
INC 89.66°  
AZM 178.95°  
TVD 7850.74'

100% LS: offwh, cm / gy, sbply, mod-firm,  
v calc, v f gr mtk, tr sh, tr ss; O SHW: fnt  
wh, fast stmg, sl tr stn, sl tr o

15% SS, dk gy, mod - firm, mod fri, mod rd,  
vf - f - m gr, p srt mtk, tr calc: 10% SLTY  
SH: lt gy - gy, mod - firm, sub plty - sub  
ply, hom, slty, v sl calc: 70% LS: offwh,  
cm / gy, sbply, mod-firm, v calc, v f gr  
mtx; O SHW: fnt wh, mod stmg, sl tr stn, sl  
tr o





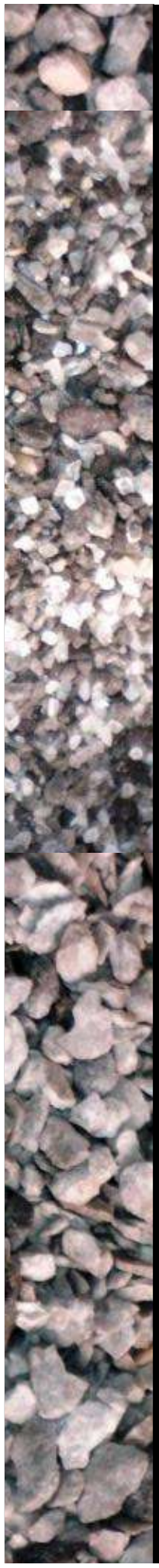
35% SLTY SH: lt gy - gy, mod - firm, sub  
biky - sub pily, hom, silty, v sl calc, 65% LS:  
offwh, crm / gy, sbply, mod - firm, v calc, v f  
gr mtk: O SHW: fnt wh, mod stmg, sl tr sin,  
sl tr o

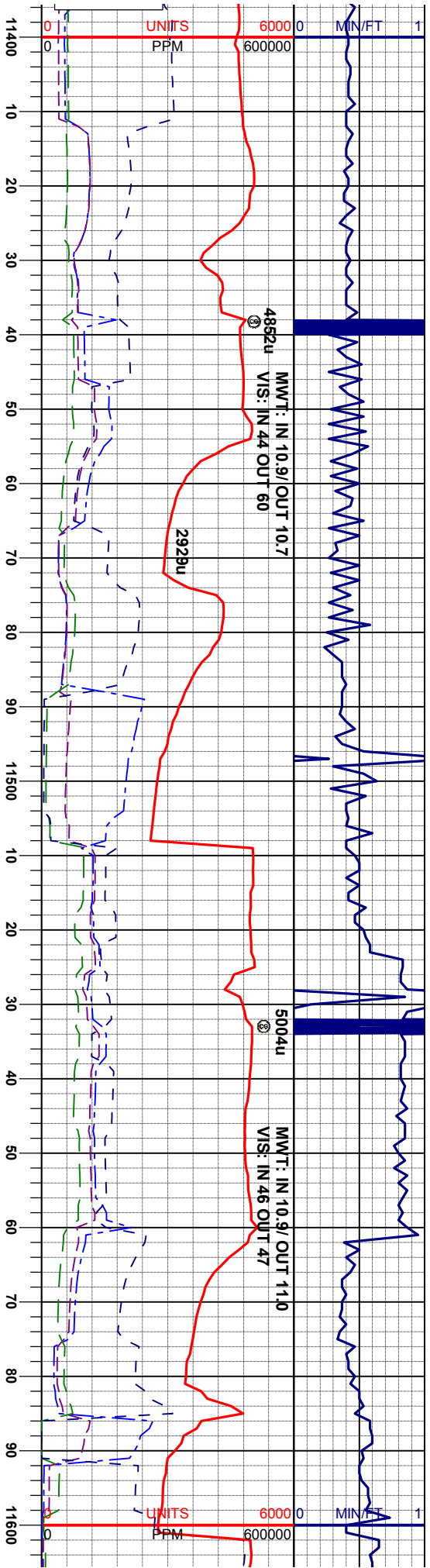
10% SLTY SH: lt gy - gy, mod - firm, sub  
biky - sub pily, hom, silty, v sl calc, 90% LS:  
offwh, crm / gy, sbply, mod - firm, v calc, v f  
gr mtk: O SHW: fnt wh, mod stmg, sl tr sin,  
sl tr o

MD 11194'  
INC 89.56°  
AZM 178.67°  
TVD 7851.39'

MD 11289'  
INC 88.67°  
AZM 177.94°  
TVD 7852.85'

MD 11384'  
INC 88.21°  
AZM 177.72°  
TVD 7855.44'





10% SLTY SH: lt gy - dk gy, mod - firm, sub  
biky - sub pty, hom, sily, v sl calc: 90% LS:  
offwh, crm / gy, slppty, mod-firm, v calc, v f  
gr mtk: O SHW: fnt wh, mod string, sl tr sin,  
sl tr o

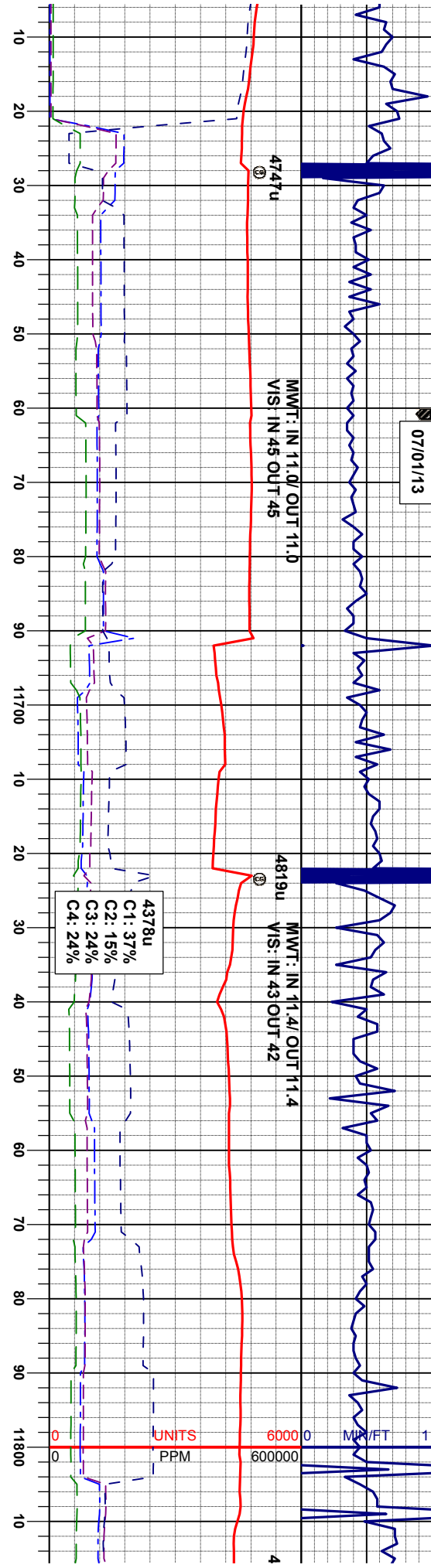
10% SLTY SH: lt gy - dk gy, mod - firm, sub  
biky - sub pty, hom, sily, v sl calc: 90% LS:  
offwh, crm / gy, slppty, mod-firm, v calc, v f  
gr mtk: O SHW: fnt wh, fast string, sl tr sin,  
sl tr o

MD 11479'  
INC 88.61°  
AZM 177.87°  
TVD 7858.08'

MD 11573'  
INC 89.13°  
AZM 178.94°  
TVD 7859.93'



07/01/13



4747u

MMWT: IN 11.0 OUT 11.0  
VIS: IN 45 OUT 45

4819u

MMWT: IN 11.4 OUT 11.4  
VIS: IN 43 OUT 42

4378u  
C1: 37%  
C2: 15%  
C3: 24%  
C4: 24%

10% SLTY SH: lt gy - dk gy, mod - firm, sub  
blky - sub ply, hom, silty, v sl calc; 90% LS;  
offwh, crm / gy, sbply, mod-firm, v calc, v f  
gr mtk; tr pyr; O SHW: fnt wh, fast stmg, tr  
stn, tr o

100% LS: offwh, crm / gy, sbply, mod-firm,  
v calc, v f gr mtk, tr sh, tr ss; O SHW: fnt  
wh, fast stmg, tr stn, tr o

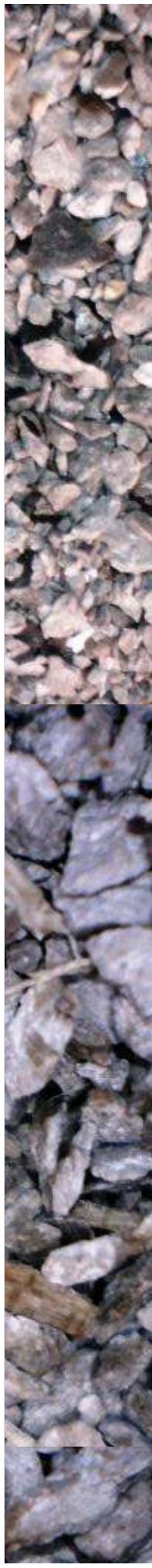
MD 11668'  
INC 89.81°  
AZM 178.86°  
TVD 7860.81'

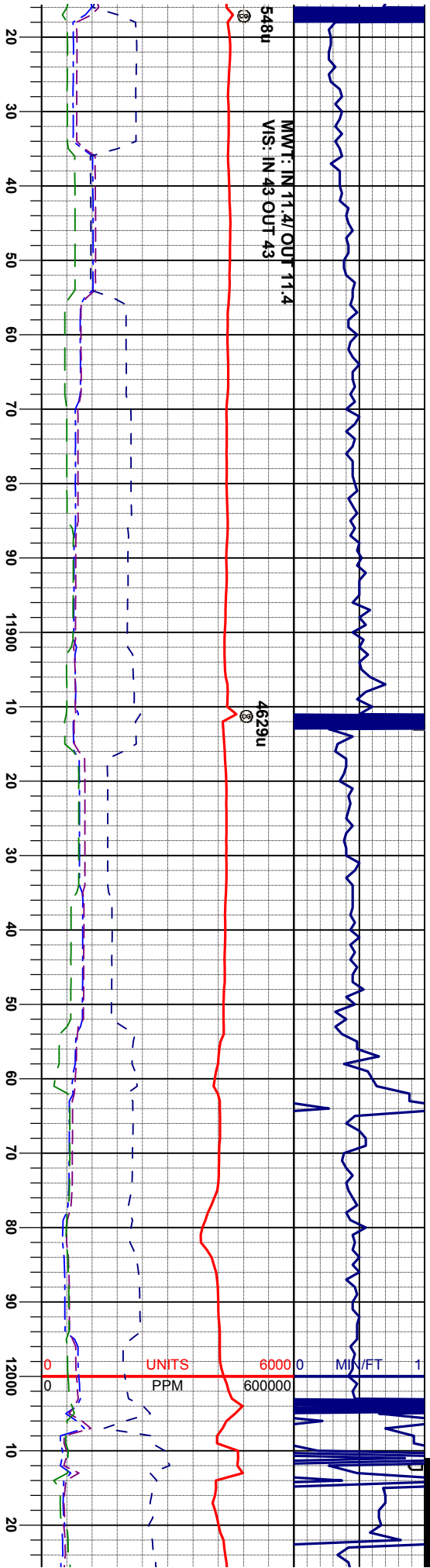
MD 11763'  
INC 91.26°  
AZM 180.25°  
TVD 7859.92'

8400

ft

7200 0 API 220





100% LS: offwh, cm / gy, sbply, mod- firm,  
v calc, v f gr mnx, tr sh, tr ss: O SHW: fnt  
wh, fast sting, tr sin, tr o

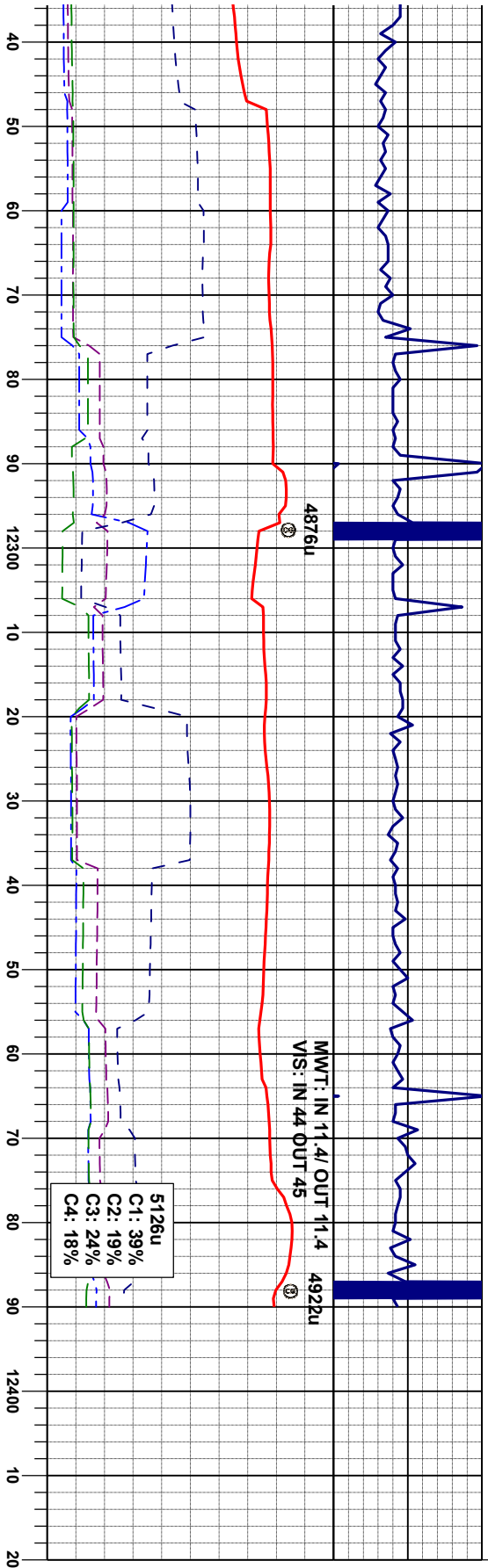
100% LS: offwh, cm / gy, sbply, mod- firm,  
v calc, v f gr mnx, tr sh, tr ss: O SHW: fnt wh, fast  
sting, tr sin, tr o

MD 11858'  
INC 90.52°  
AZM 179.57°  
TVD 7858.45'

MD 11953'  
INC 91.07°  
AZM 179.90°  
TVD 7857.13'







1/2 LS: offwh, crm / gy, spdly, mod- firm, c, v f gr mxx, tr sh; O SHW: fnt wh, fast j, sl tr sh, sl tr o

100% LS: offwh, crm / gy, spdly, mod- firm, v calc, v f gr mxx, tr sh; O SHW: fnt wh, fast slmg, sl tr sh, sl tr o

Thank you for using  
Columbine Logging, Inc.

TD @ MD 12,390'  
on 07/01/2013 @ MST

12238'  
89.41°  
1179.21°  
7855.01'

MD 12332'  
INC 89.66°  
AZM 180.16°  
TVD 7865'

MD 12390'  
INC 89.66°  
AZM 180.16°  
TVD 7856.11'

