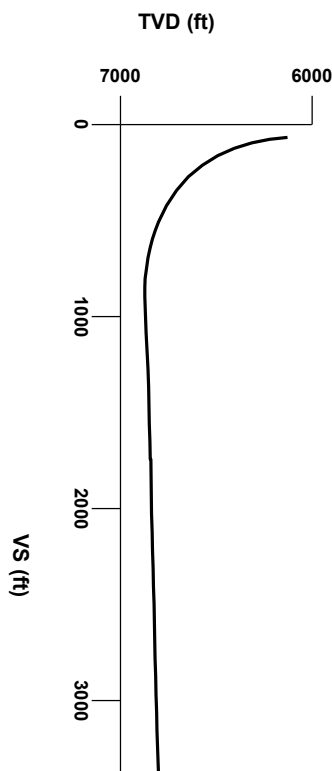


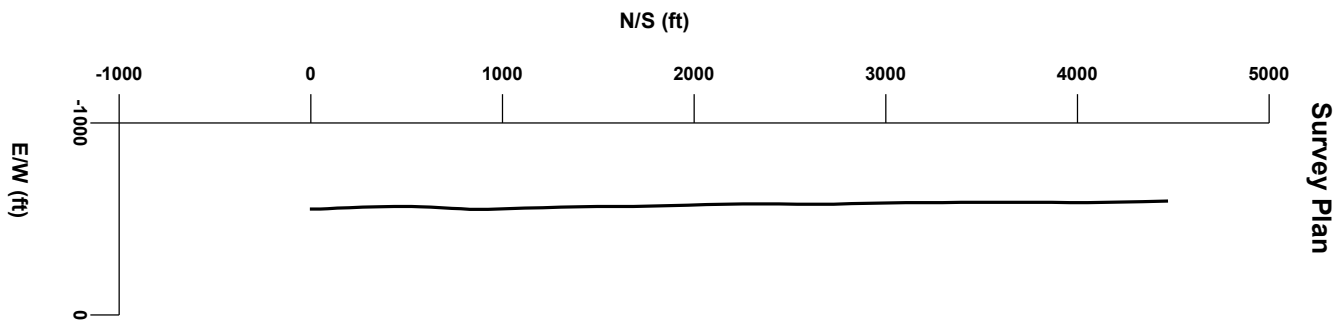
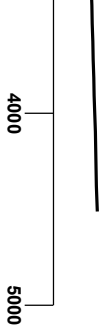


LOG created using Lplot VH Version 3.0, May 02, 2013, Copyright (C) 1999-2009 Pason Systems Corp.

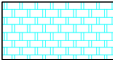
**OPERATOR:** NOBLE ENERGY INC.  
**WELL:** SAUER F33-78-1HN  
**LOCATION:** SESW SEC 33 T5N R65W  
**COUNTY:** WELD  
**STATE:** COLORADO  
**SPOT:** 238' FSL, 1,542' FWL  
**ELEVATION:** 4,671' GL, 4,684' KB  
**FIELD:** WATTENBERG  
**SPUD DATE:** 04/24/2013  
**TD DATE:** 05/02/2013  
**DATES LOGGED:** 04/25/2013 - 05/02/2013  
**DEPTHS LOGGED:** 618' - 11,122'  
**LOGGERS:** KYLE KNIGHT, NATHAN MURPHY  
**DRILLING FLUID:** FW, LSND  
**DRILLING RIG:** ENSIGN 121  
**API:** 05-123-35635  
**LOG TYPE:** Horizontal  
**SCALE:** 1:240 (5 inches per 100 feet)  
**REMARKS:** Wellsite Geological Services Provided By Columbine Logging Inc.  
LAT, LONG: 40.34913/-104.67233



Survey Elevation



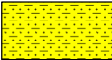
LITHOLOGIES



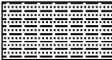
Chalk



Marl



Shaly Sandstone



Silty Shale

ENGINEERING SYMBOLS



Bit Change



Casing



Casing



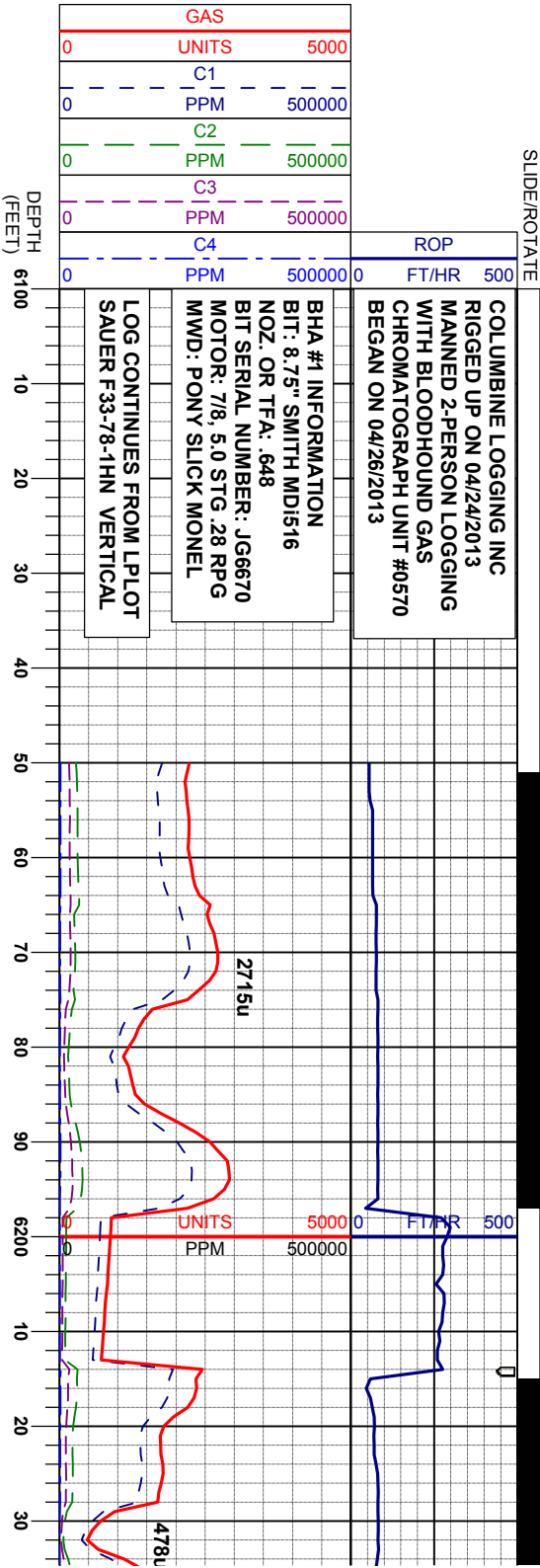
Connection



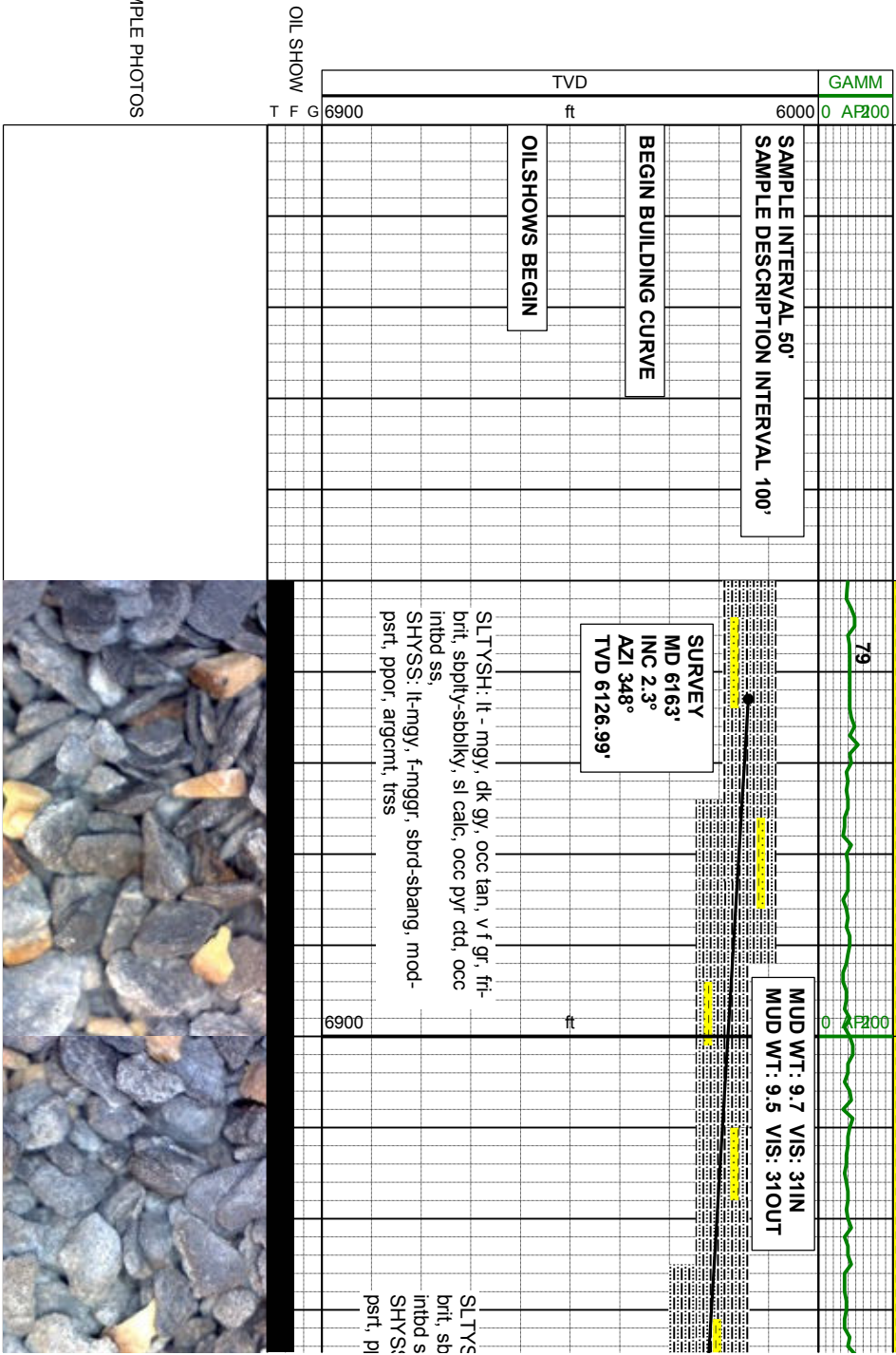
Connection Gas



Midnight Depth



CUTTINGS  
LITHOLOGY



04/27/2013

3156u

04/27/2013  
04:00  
MW: 10.7  
FV: 36  
PV: 9  
YP: 14  
PH: 10  
GELS: 4/13

04/27/2013  
15:00  
MW: 10.5  
FV: 33  
PV: 8  
YP: 13  
PH: 10  
GELS: 4/13

5000 RPM  
500000

2753u

MUD WT: 10.3 VIS: 32 IN  
MUD WT: 10.0 VIS: 32 OUT

SURVEY  
MD 6258'  
INC 8.7°  
AZI 356.8°  
TVD 6221.51'

SURVEY  
MD 6352'  
INC 14.2°  
AZI 1.2°  
TVD 6313.60'

SH: lt - mgy, dk gy, occ tan, v f gr, fri-  
ppty-sbbkly, sl calc, occ pyr ctd, occ

S:  
lt-mgy, f-mgr, sbtd-sbang, mod-  
por, argcmnt, trss

SLTSH: lt - mgy, dk gy, occ tan, v f gr, fri-  
brit, sppty-sbbkly, sl calc, occ pyr ctd  
SHYSS: lt-mgy, f-mgr, sbtd-sbang, mod-  
pstr, ppor, argcmnt, vtr cin wh ss

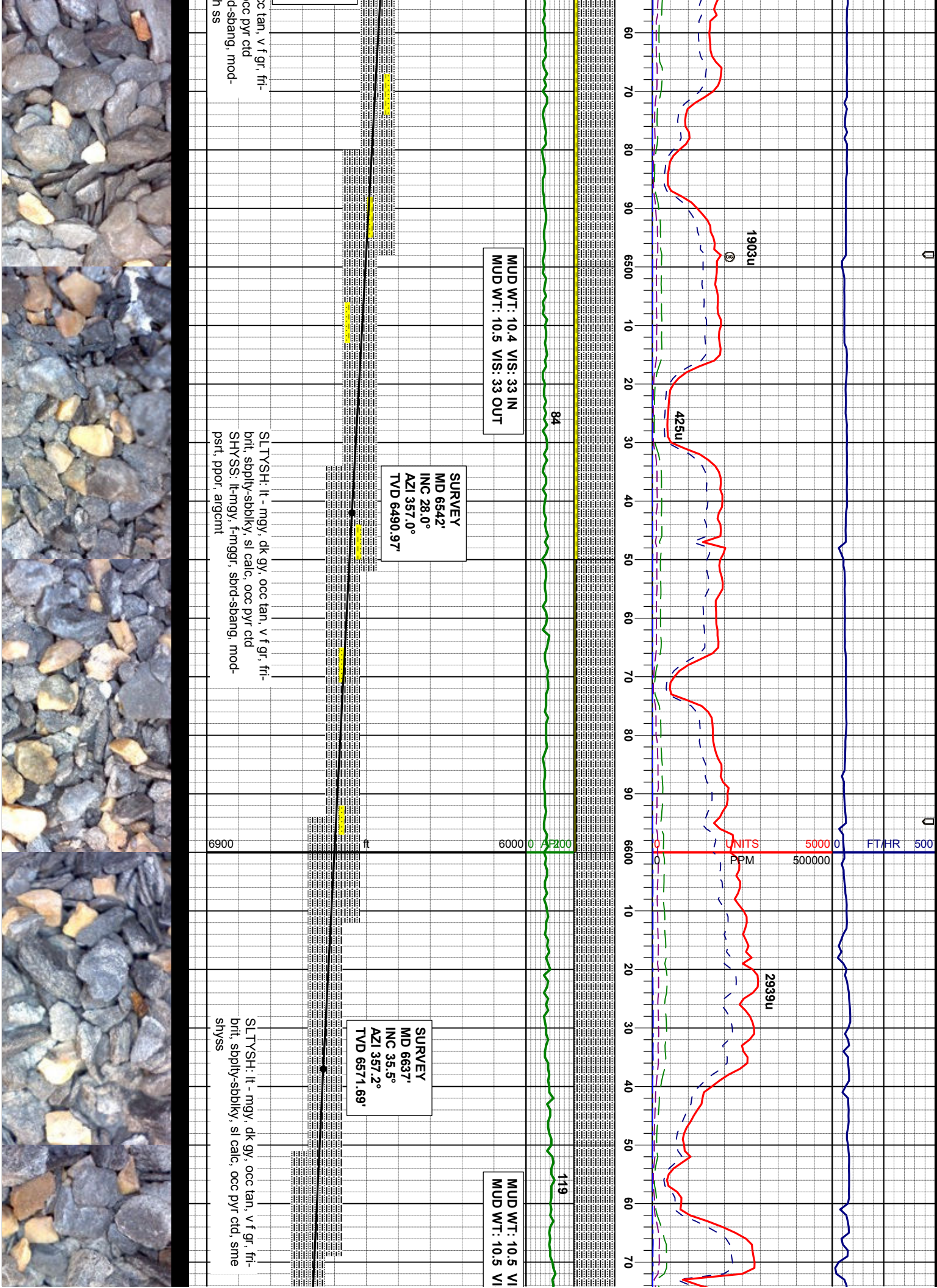
6900 ft 6000 0 AP200

SURVEY  
MD 6447'  
INC 20.2°  
AZI 359.8°  
TVD 6404.31'

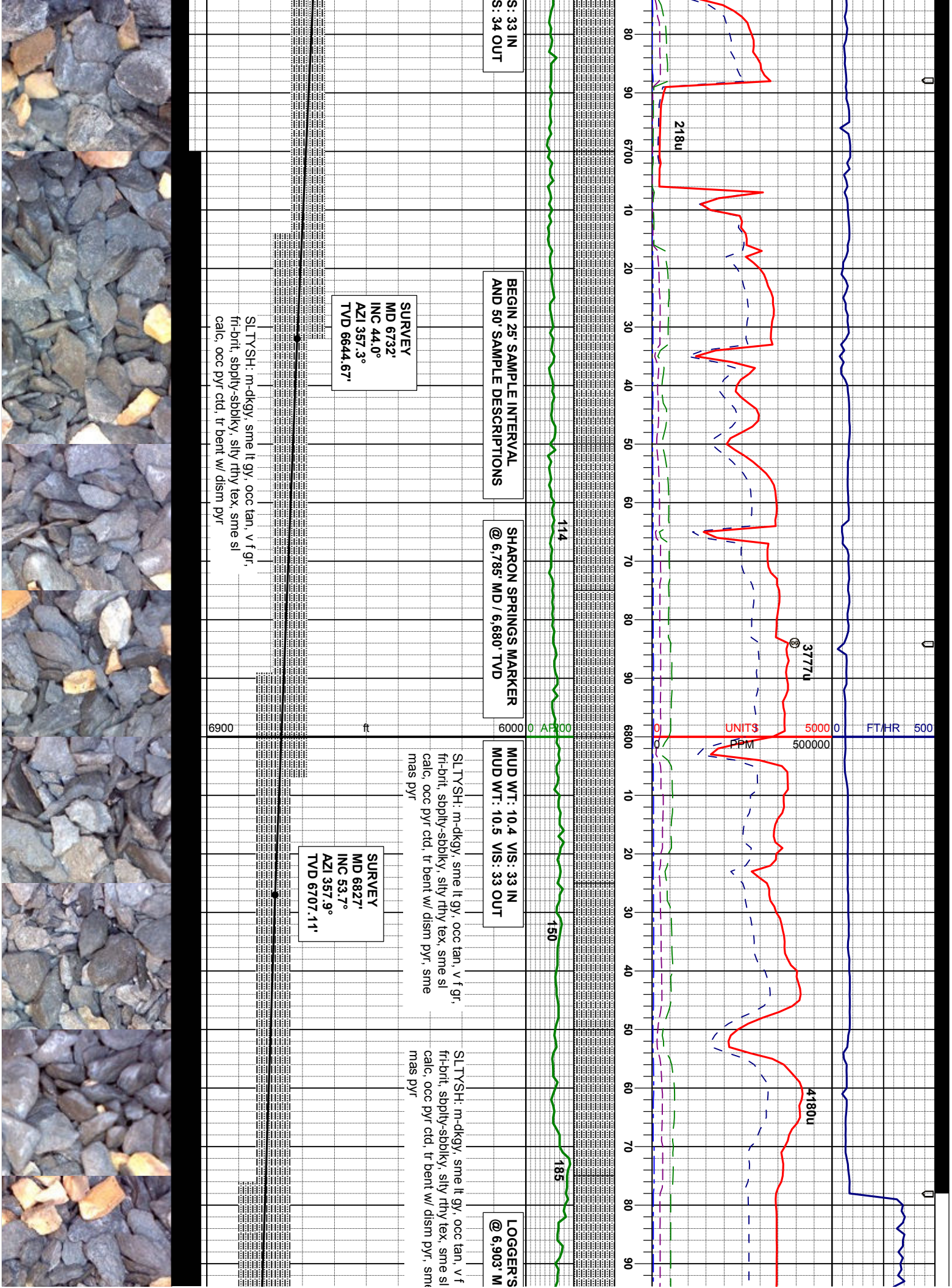
SLTSH: lt - mgy, dk gy, oc  
brit, sppty-sbbkly, sl calc, o  
SHYSS: lt-mgy, f-mgr, sbtd-  
pstr, ppor, argcmnt, vtr cin wh



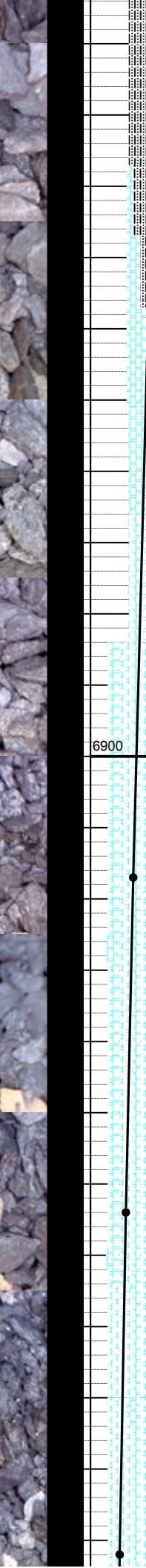
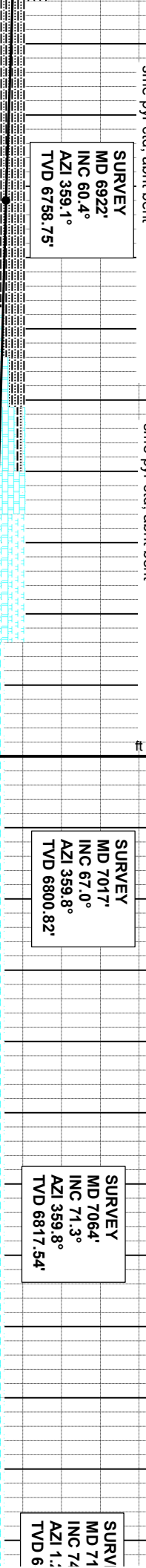
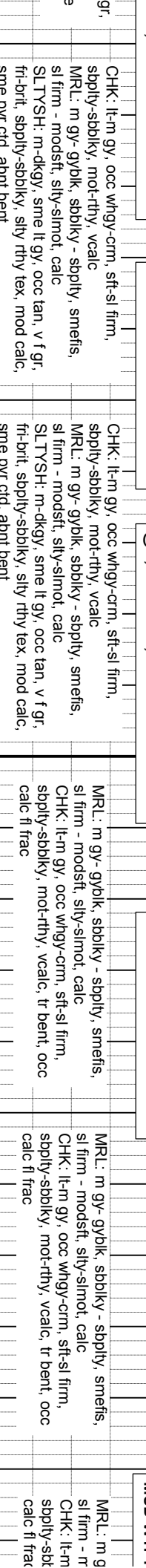
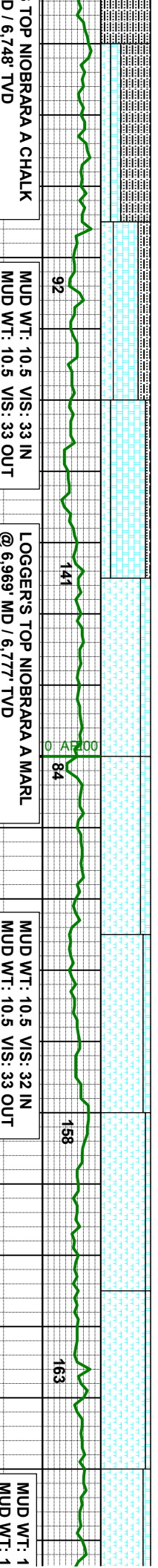
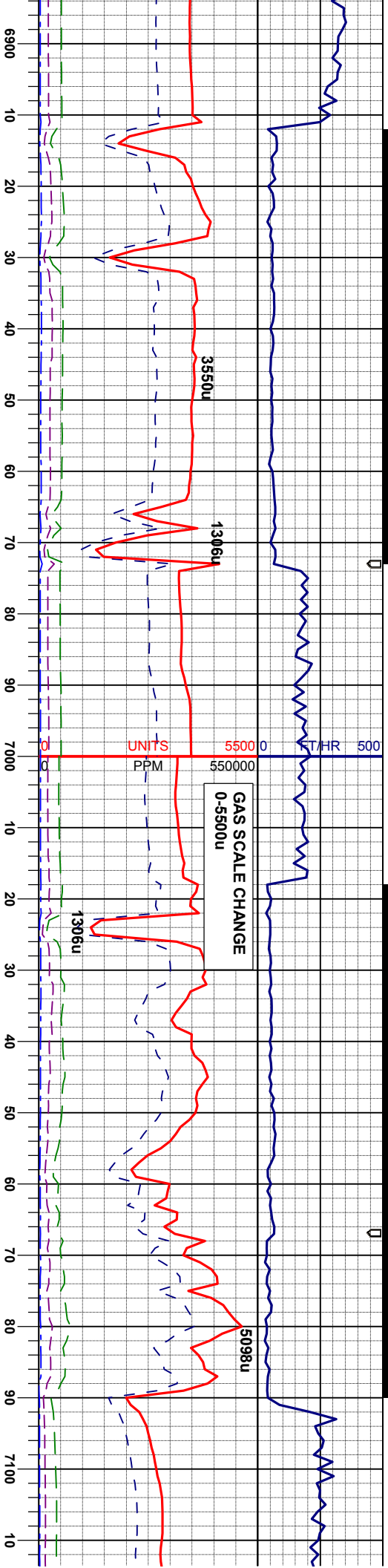














04/28/2013

04/29/2013

04/30/2013

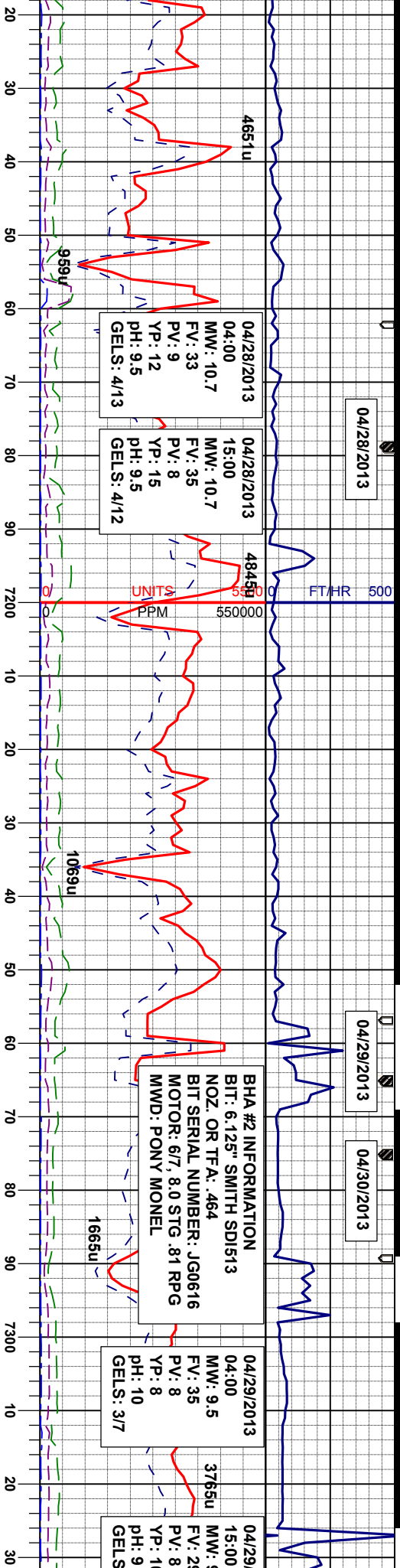
04/28/2013  
04:00  
MW: 10.7  
FV: 33  
PV: 9  
YP: 12  
PH: 9.5  
GELS: 4/13

04/28/2013  
15:00  
MW: 10.7  
FV: 35  
PV: 8  
YP: 15  
PH: 9.5  
GELS: 4/12

BHA #2 INFORMATION  
BIT: 6.125" SMITH SD1513  
NOZ. OR TFA: .464  
BIT SERIAL NUMBER: JG0616  
MOTOR: 6/7, 8.0 STG .81 RPG  
MWD: PONY MONEL

04/29/2013  
04:00  
MW: 9.5  
FV: 35  
PV: 8  
YP: 8  
PH: 10  
GELS: 3/7

04/29/2013  
15:00  
MW: 9.8  
FV: 29  
PV: 8  
YP: 10  
PH: 9  
GELS: .



0.5 VIS: 32 IN  
0.5 VIS: 33 OUT

GAMMA SCALE CHANGE  
0-300

CURVE LANDED @ 7.265' MD  
@ 05:35 MST 04/28/2013

RESUME DRILLING  
@ 23:45 MST 04/29/2013

MUD W  
MUD V

Y- gybik, sbblky - sbply, smeifs,  
modstf, slty-slmot, calc  
gy, occ whgy-crm, stf-sl firm,  
sbply, mot-rthy, vcalc, tr bent, occ

MRL: m gy- gybik, sbblky - sbply, smeifs,  
sl firm - modstf, slty-slmot, calc  
CHK: lt-m gy, occ whgy-crm, stf-sl firm,  
sbply-sbblky, mot-rthy, vcalc, tr bent, occ  
calc fl frac

MRL: m gy- gybik, sbblky - sbply, smeifs,  
sl firm - modstf, slty-slmot, calc  
CHK: lt-m gy, occ whgy-crm, stf-sl firm,  
sbply-sbblky, mot-rthy, vcalc, tr bent, occ  
calc fl frac

MRL  
sl fir  
CHK  
sbply  
calc

EY  
12'  
INC 1.1°  
AZI 2°  
TVD 831.82'

SURVEY  
MD 7159'  
INC 77.0°  
AZI 1.9°  
TVD 6843.54'

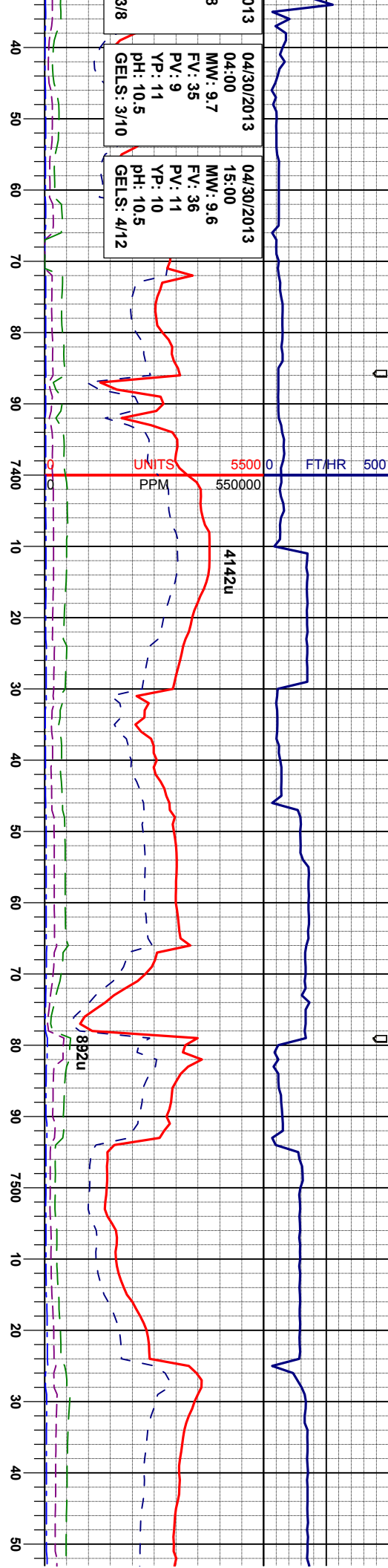
SURVEY  
MD 7215'  
INC 79.1°  
AZI 3.1°  
TVD 6855.14'

SURVEY  
MD 7326'  
INC 85.3°  
AZI 3.3°  
TVD 6870.19'

6900 ft







04/30/2013 04:00  
MW: 9.7  
FV: 35  
PV: 9  
YP: 11  
pH: 10.5  
GELS: 3/10

04/30/2013 15:00  
MW: 9.6  
FV: 36  
PV: 11  
YP: 10  
pH: 10.5  
GELS: 4/12

VT: 9.7 VIS: 31 IN  
VT: 9.8 VIS: 31 OUT

SURVEY  
MD 7373'  
INC 88.3°  
AZI 2.2°  
TVD 6872.82'

SURVEY  
MD 7421'  
INC 91.5°  
AZI 2.1°  
TVD 6872.90'

SURVEY  
MD 7516'  
INC 92.5°  
AZI 358.4°  
TVD 6869.59'

MRL: m gy- gyblk, sbbky - sbply, smefts,  
m - modstf, sily-slmot, calc  
CHK: lt-m gy, occ whgy-crm, sft-sl firm,  
sbbky-sbbky, mot-rthy, vcalc, tr bent, occ  
fl frac

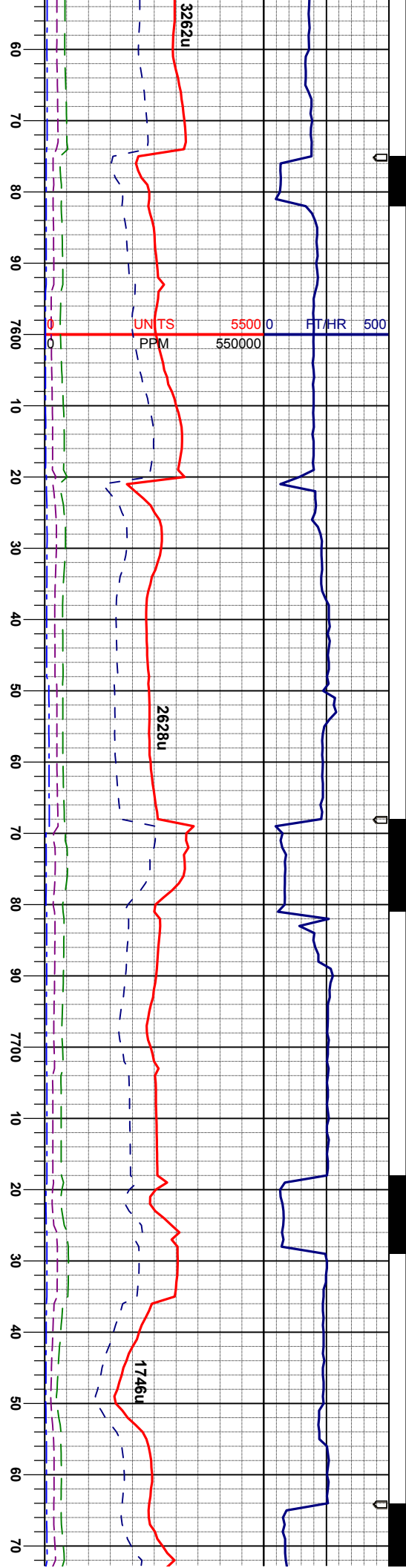
MRL: m gy- gyblk, sbbky - sbply, smefts,  
si firm - modstf, sily-slmot, calc  
CHK: lt-m gy, occ whgy-crm, sft-sl firm,  
sbbky-sbbky, mot-rthy, vcalc, tr bent, occ  
calc fl frac

MUD WT: 9.5 VIS: 35 IN  
MUD WT: 9.6 VIS: 33 OUT

MRL: m gy- gyblk, sbbky  
si firm - modstf, sily-slmot  
CHK: lt-m gy, occ whgy-c  
sbbky-sbbky, mot-rthy, v  
calc fl frac







MUD WT: 9.6 VIS: 36 IN  
MUD WT: 9.6 VIS: 37 OUT

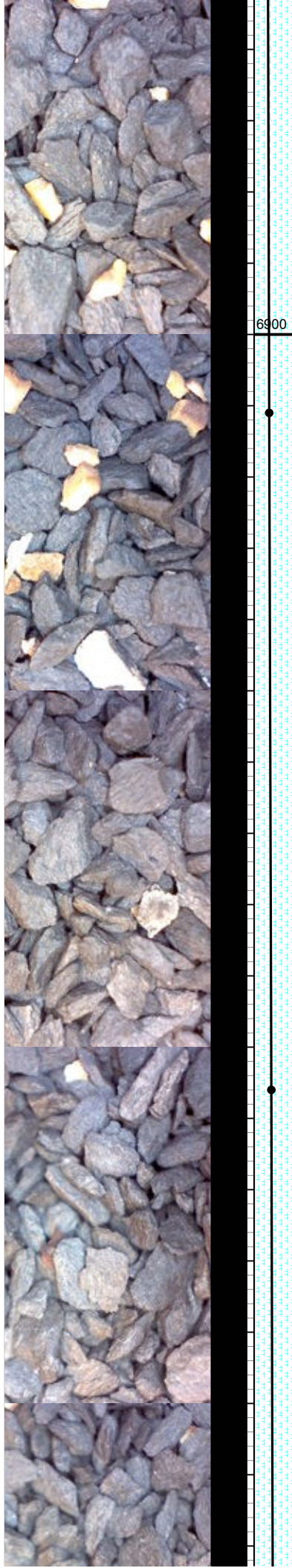
MUD  
MUD

MR: m gy- gyblk, sbblky - sbply, smeifs, sl firm - modst, slty-slmot, calc  
CHK: lt-m gy, occ whgy-crm, sft-sl firm, sbply-sbblky, mot-rthy, vcalc, tr bent, occ calc fl frac

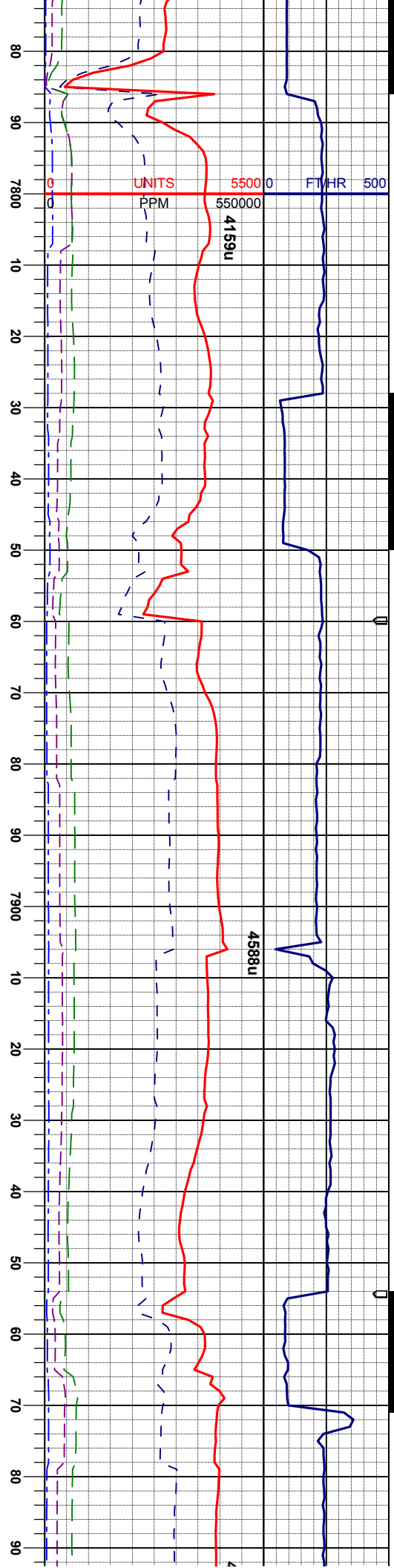
MR: m gy- gyblk, sbblky - sbply, smeifs, sl firm - modst, slty-slmot, calc  
CHK: lt-m gy, occ whgy-crm, sft-sl firm, sbply-sbblky, mot-rthy, vcalc, tr bent, occ calc fl frac

SURVEY  
MD 7611'  
INC 93.0°  
AZI 358.2°  
TVD 6865.03'

SURVEY  
MD 7706'  
INC 93.1°  
AZI 358.2°  
TVD 6869.97'







WT: 9.6 VIS: 34 IN  
WT: 9.6 VIS: 33 OUT

SURVEY  
MD 7801'  
INC 92.1°  
AZI 358.4°  
TVD 6855.66'

MR: m gy- gyblk, sbblky - sbply, smeifs,  
sl firm - modst, silty-slmot, calc  
CHK: lt-m gy, occ whgy-crm, sft-sl firm,  
sbply-sbblky, mot-rthy, vcalc, tr bent, occ  
calc fl frac

SURVEY  
MD 7896'  
INC 91.4°  
AZI 358.9°  
TVD 6852.76'

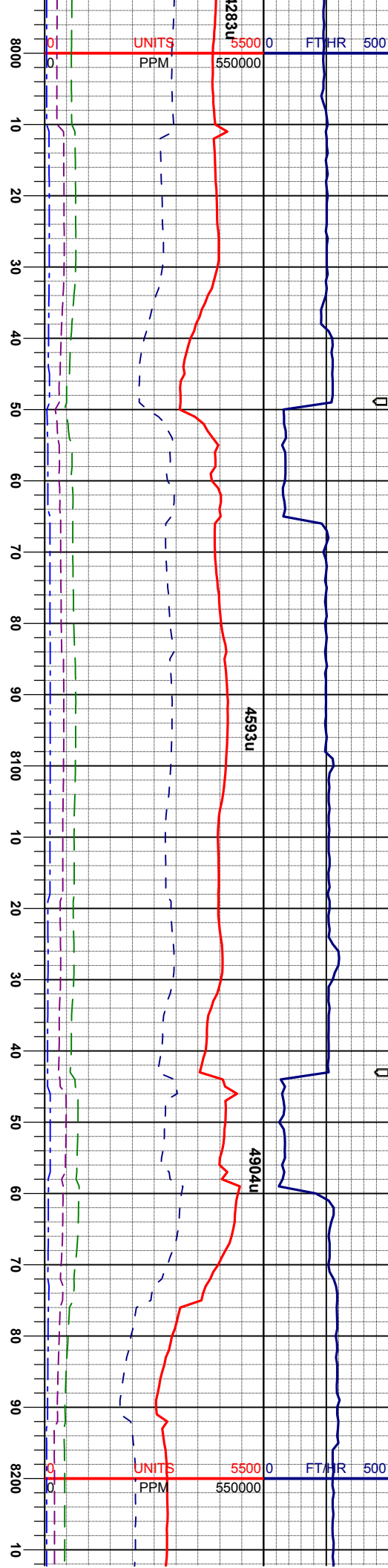
MR: m gy- gyblk, sbblky - sbply, smeifs,  
sl firm - modst, silty-slmot, calc  
CHK: lt-m gy, occ whgy-crm, sft-sl firm,  
sbply-sbblky, mot-rthy, vcalc, tr bent, occ  
calc fl frac

MUD WT: 9.6 VIS: 36 IN  
MUD WT: 9.6 VIS: 35 OUT

SURVEY  
MD 7991'  
INC 91.2°  
AZI 358°  
TVD 685





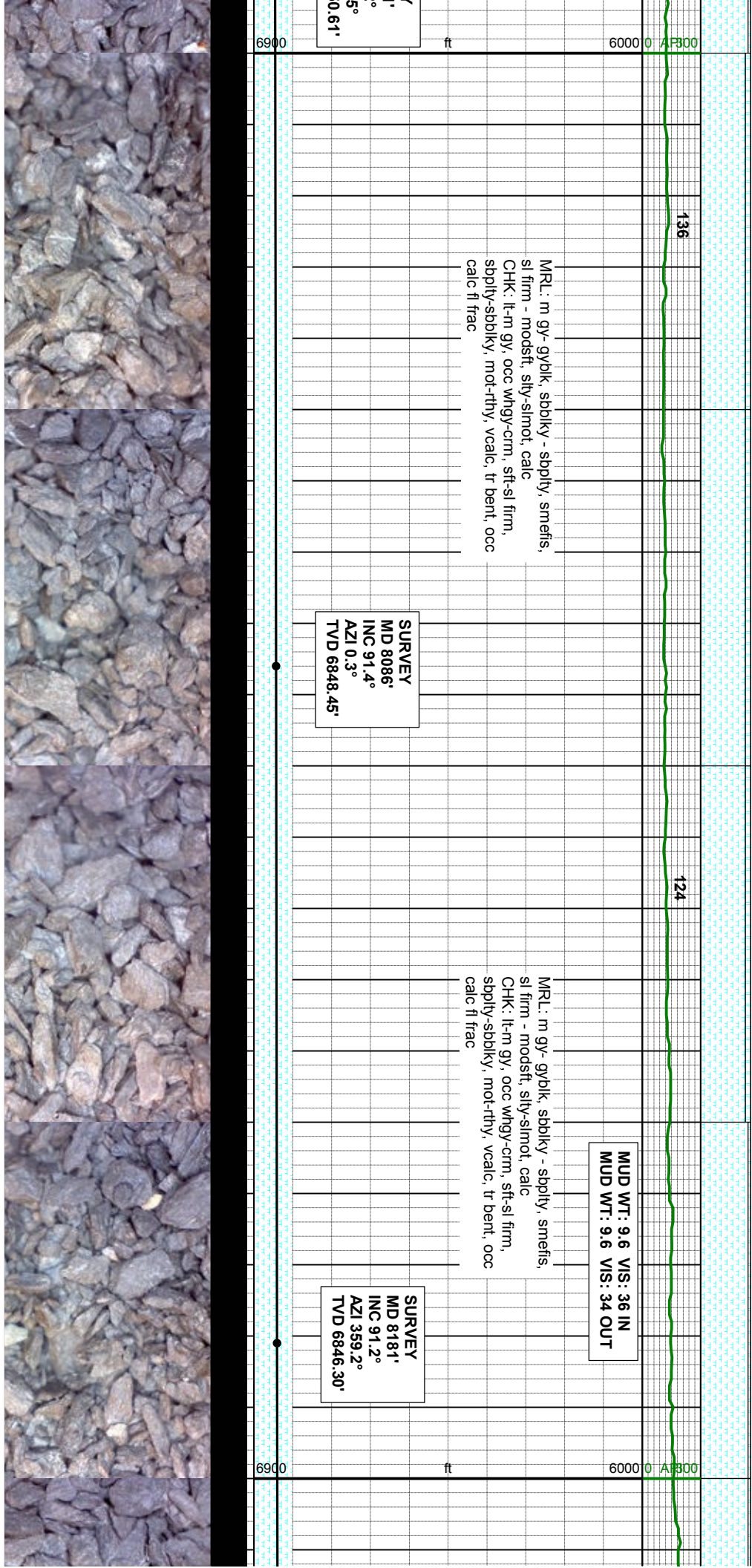


MUD WT: 9.6 VIS: 36 IN  
MUD WT: 9.6 VIS: 34 OUT

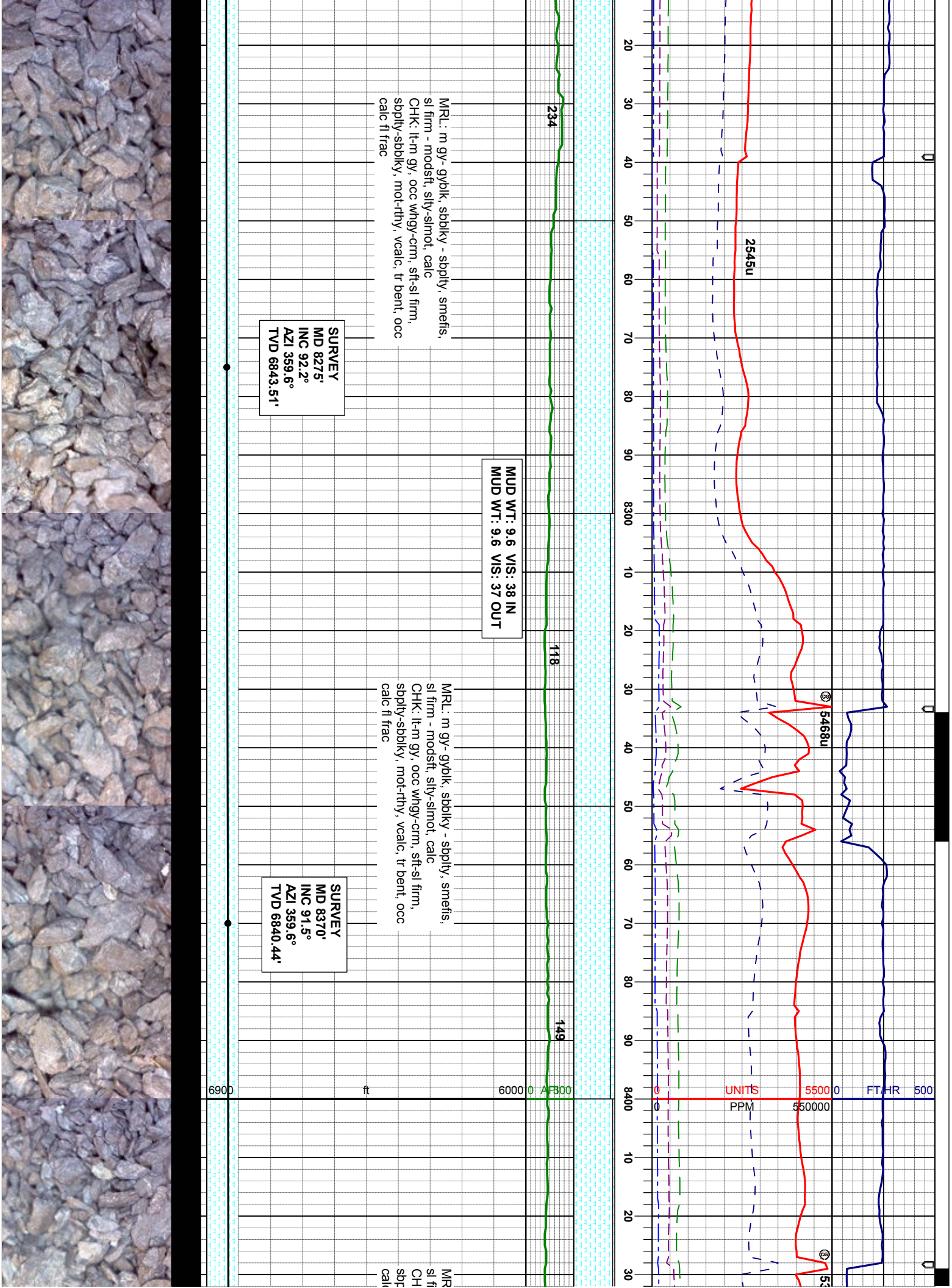
MRL: m gy- gyblk, sbblky - sbply, smefis,  
sl firm - modstf, silty-slmot, calc  
CHK: lt-m gy, occ whgy-crm, sft-sl firm,  
sbply-sbblky, mot-rthy, vcalc, tr bent, occ  
calc fl frac

SURVEY  
MD 8086'  
INC 91.4°  
AZI 0.3°  
TVD 6848.45'

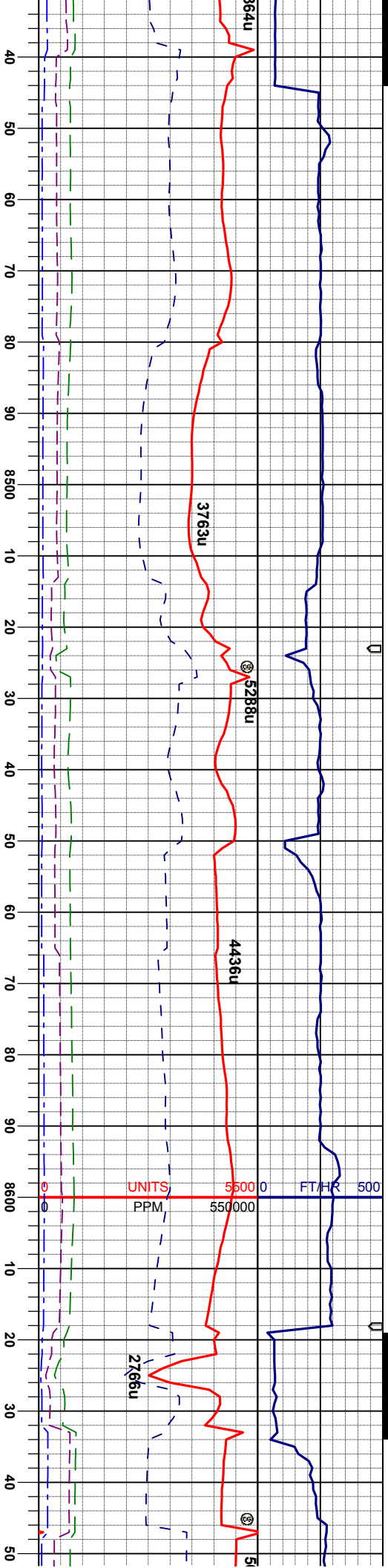
SURVEY  
MD 8181'  
INC 91.2°  
AZI 359.2°  
TVD 6846.30'











LL: m gy-gyolk, sbblky - sbply, smefis,  
firm - modstf, sily-slmot, calc  
llm gy, occ whgy-crm, stf-sl firm,  
sbblky-sbblky, mot-rthy, vealc, t bent, occ  
c fl frac

MRI: m gy- gy/bk, sbbiky - sbply, smefs,  
sl firm - modstf, stly-slmot, calc  
CHK: lt-m gy, occ whyg-crm, stf-sl firm,  
sbbly-sbbiky, mot-rthy, vcalc, tr bent, occ  
calc fl frac

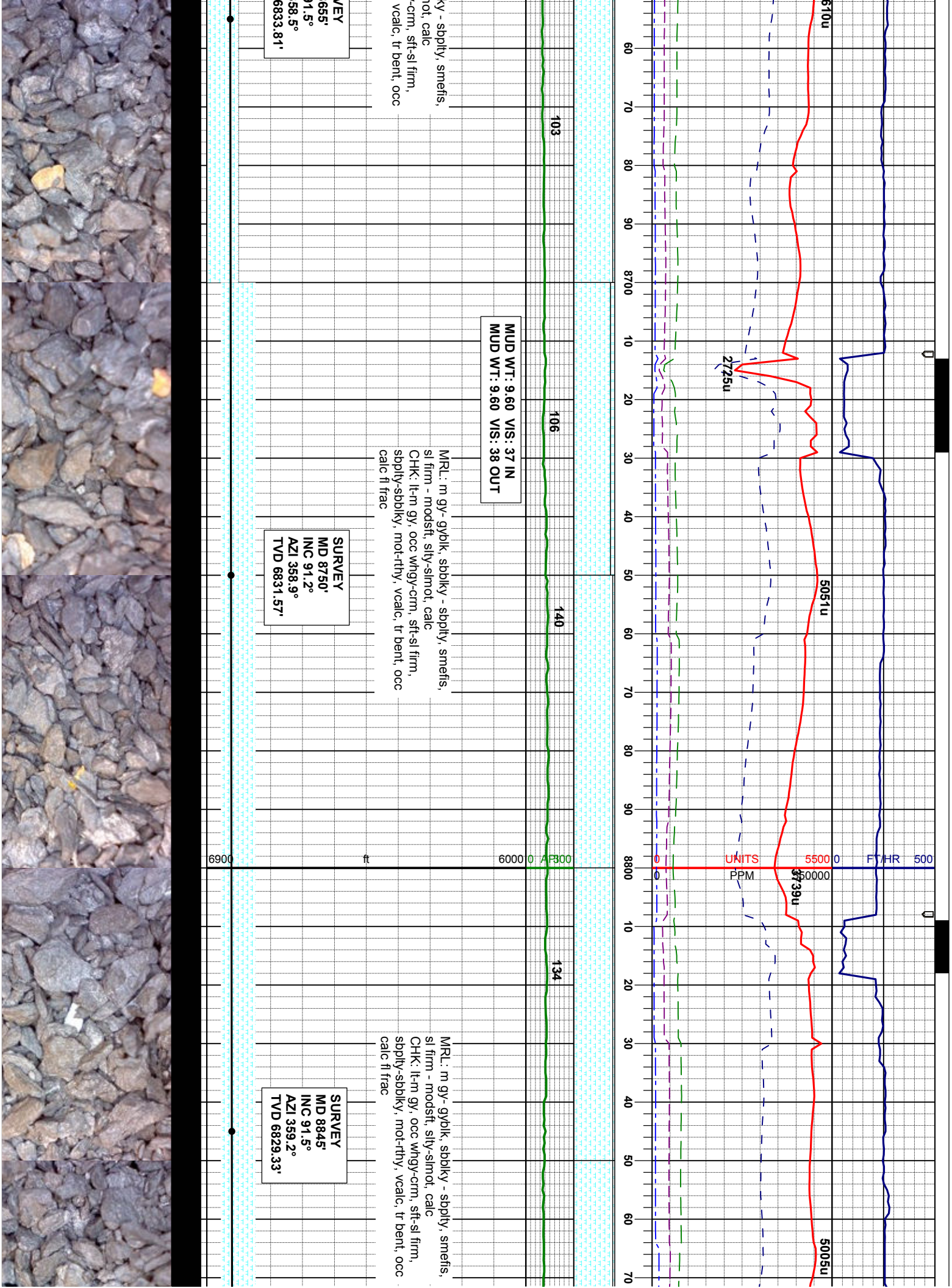
MRL: m gy-gyblk, sbll  
sl firm - modstf, slty-slr  
CHK: lt-m gy, occ whgy  
sbpty-sbblky, mot-rthy,  
calc fl frac

**SURVEY**  
**MD 8465'**  
**INC 90.7°**  
**AZI 358.2°**  
**TVD 6838.62'**

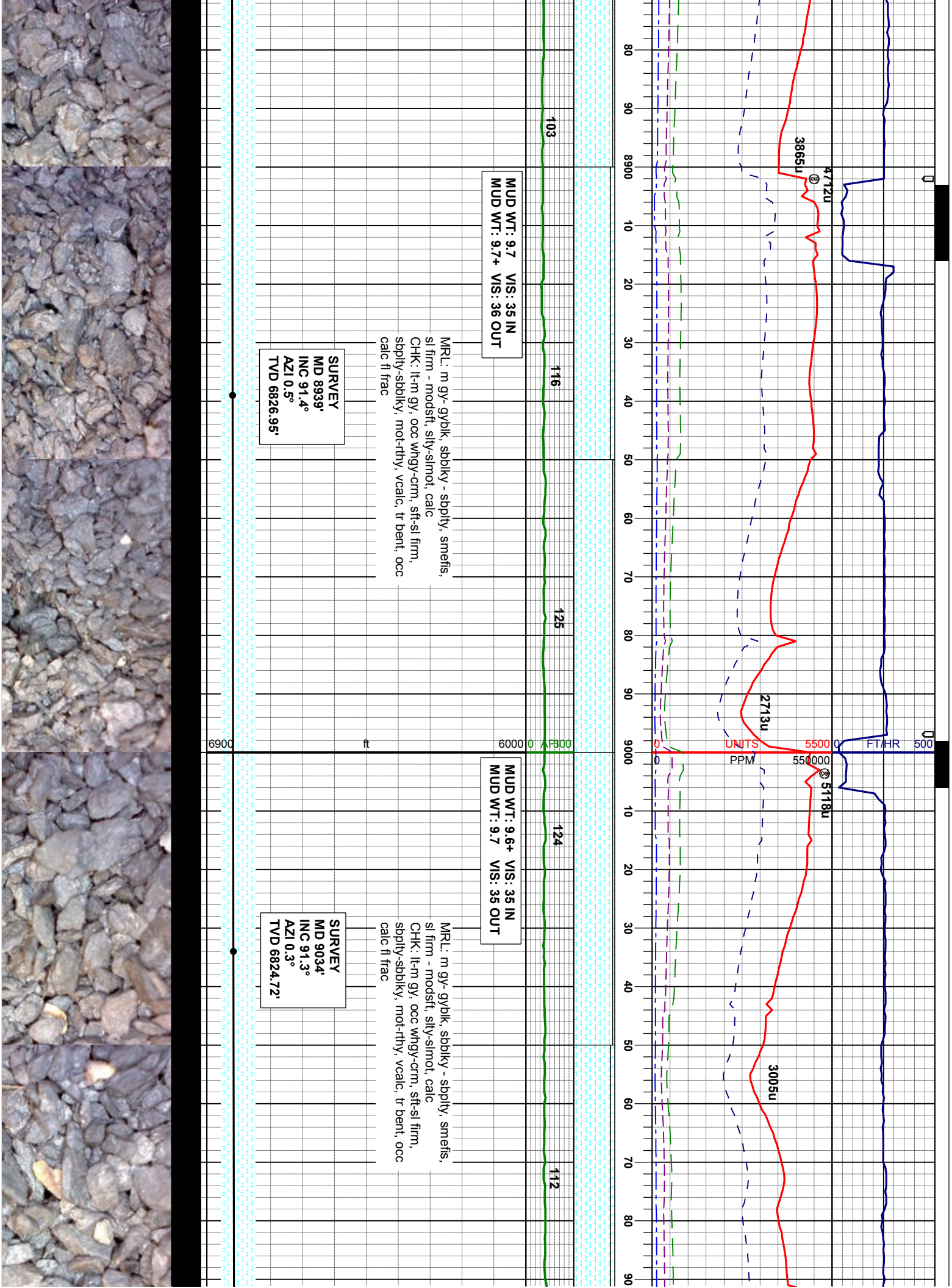
**SURVEY**  
**MD 8560'**  
**INC 91.8°**  
**AZI 358.0°**  
**TVD 6836.54'**

**SUR  
MD 8  
INC 9  
AZI 3  
TVD**

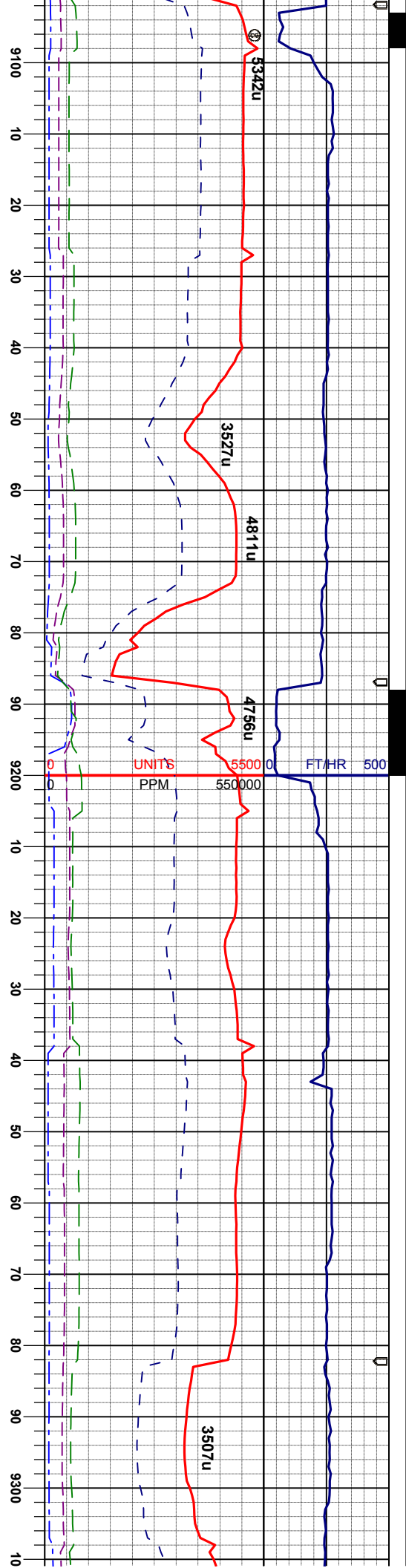












MUD WT: 9.7 VIS: 36 IN  
MUD WT: 9.7 VIS: 35 OUT

MR: m gy- gybk, sbdky - sbply, smefs,  
sl firm - modst, silty-slmot, calc  
CHK: lt-m gy, occ whgy-crm, sft-sl firm,  
sbply-sbdky, mot-rthy, vcalc, tr bent, occ  
calc fl frac

SURVEY  
MD 9129°  
INC 91.5°  
AZI 0.6°  
TVD 6822.39'

6900 ft 6000 0 A 300

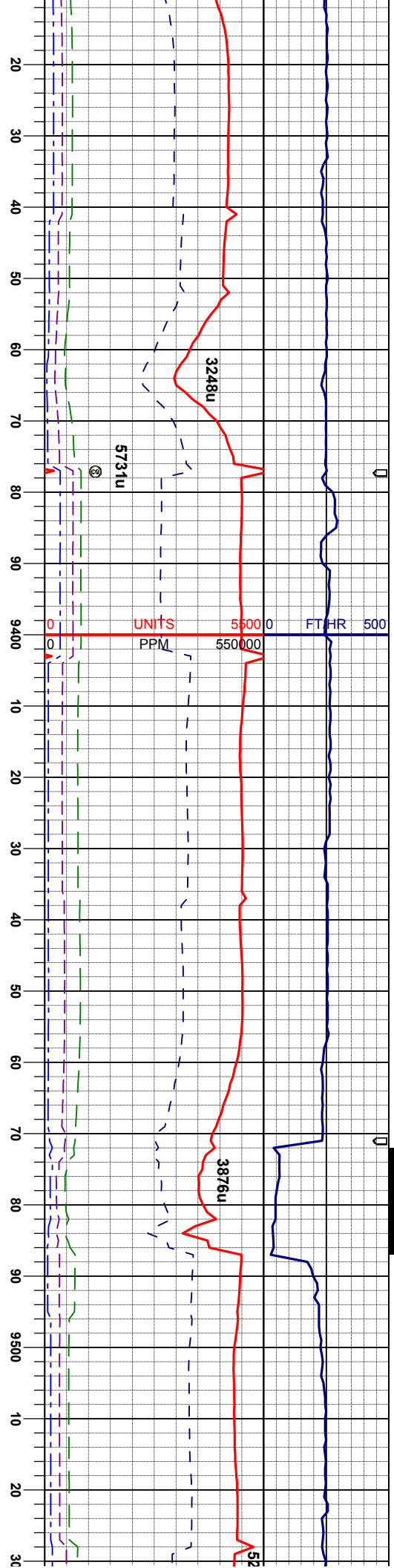
MUD WT  
MUD WT

MR: m gy- gybk, sbdky - sbply, smefs,  
sl firm - modst, silty-slmot, calc  
CHK: lt-m gy, occ whgy-crm, sft-sl firm,  
sbply-sbdky, mot-rthy, vcalc, tr bent, occ  
calc fl frac

SURVEY  
MD 9224°  
INC 90.7°  
AZI 359.9°  
TVD 6820.57'



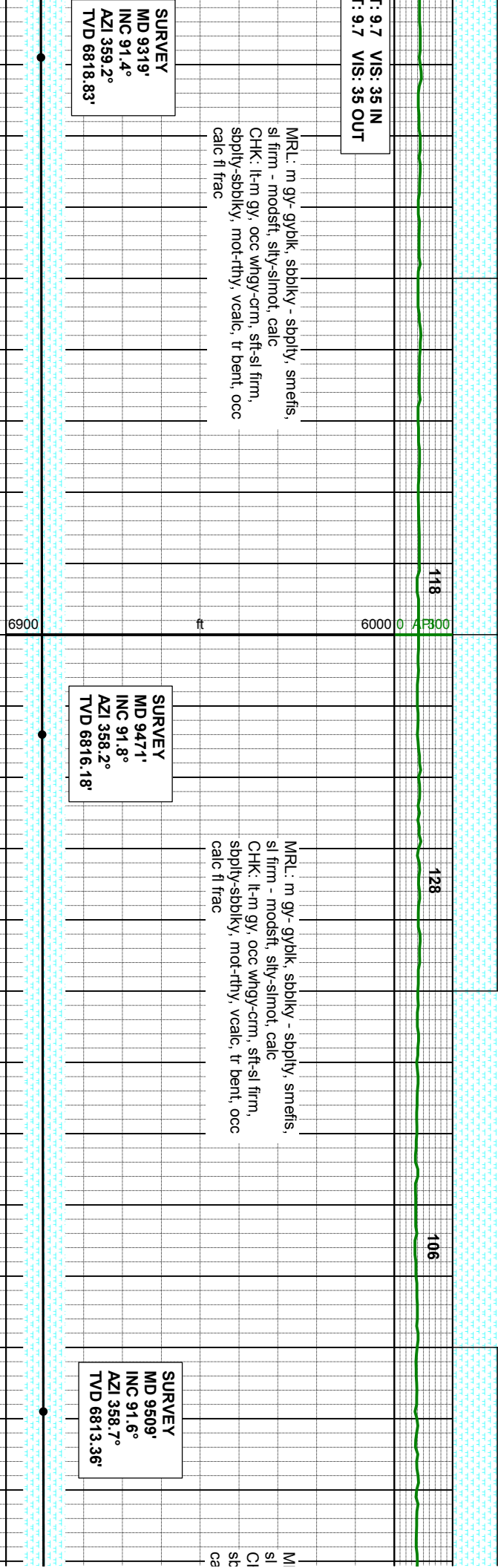




9.7 VIS: 35 IN  
9.7 VIS: 35 OUT

MRL: m gy- gyblk, sbblky - sbply, smets,  
sl firm - modstf, sly-slmot, calc  
CHK: lt-m gy, occ whgy-crm, sft-sl firm,  
sbply-sbblky, mot-rthy, vcalc, tr bent, occ  
calc fl frac

SURVEY  
MD 9319'  
INC 91.4°  
AZI 359.2°  
TVD 6818.83'



MRL: m gy- gyblk, sbblky - sbply, smets,  
sl firm - modstf, sly-slmot, calc  
CHK: lt-m gy, occ whgy-crm, sft-sl firm,  
sbply-sbblky, mot-rthy, vcalc, tr bent, occ  
calc fl frac

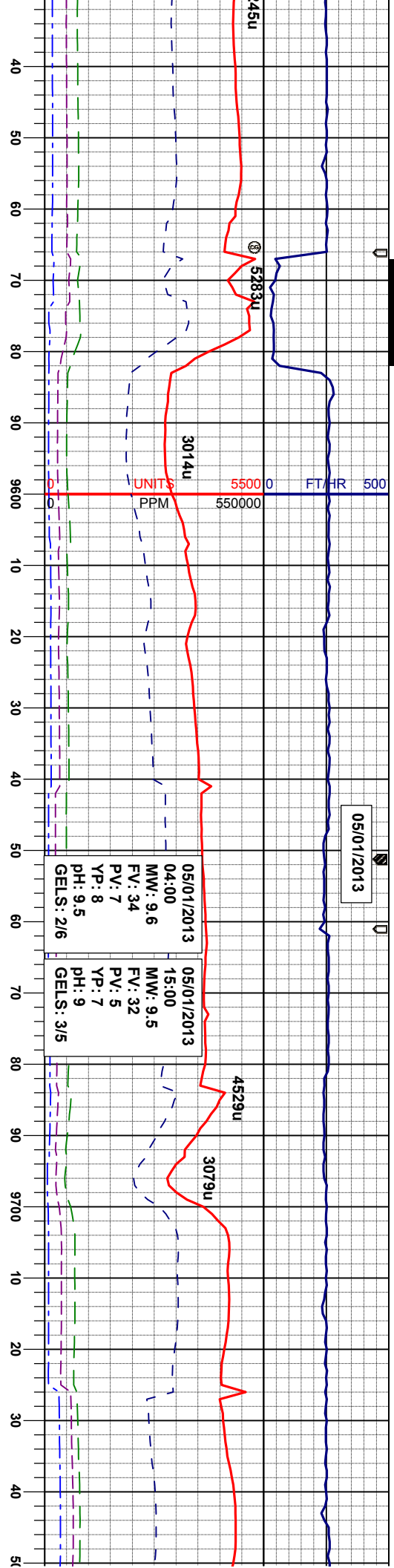
SURVEY  
MD 9471'  
INC 91.8°  
AZI 358.2°  
TVD 6816.18'

SURVEY  
MD 9509'  
INC 91.6°  
AZI 358.7°  
TVD 6813.36'





05/01/2013



MUD WT: 9.7 VIS: 35 IN  
MUD WT: 9.7 VIS: 35 OUT

MRL: m gy- gy/bk, sbblky - sbply, smefis,  
firm - modst, slty-slmot, calc  
CHK: lt-m gy, occ whgy-crm, sft-sl firm,  
sbply-sbblky, mot-rthy, vcalc, tr bent, occ  
calc fl frac

SURVEY  
MD 9603'  
INC 91.2°  
AZI 359.6°  
TVD 6811.06'

MUD WT: 9.7 VIS: 35 IN  
MUD WT: 9.7 VIS: 36 OUT

MRL: m gy- gy/bk, sbblky - sbply, smefis,  
sl firm - modst, slty-slmot, calc  
CHK: lt-m gy, occ whgy-crm, sft-sl firm,  
sbply-sbblky, mot-rthy, vcalc, tr bent, occ  
calc fl frac

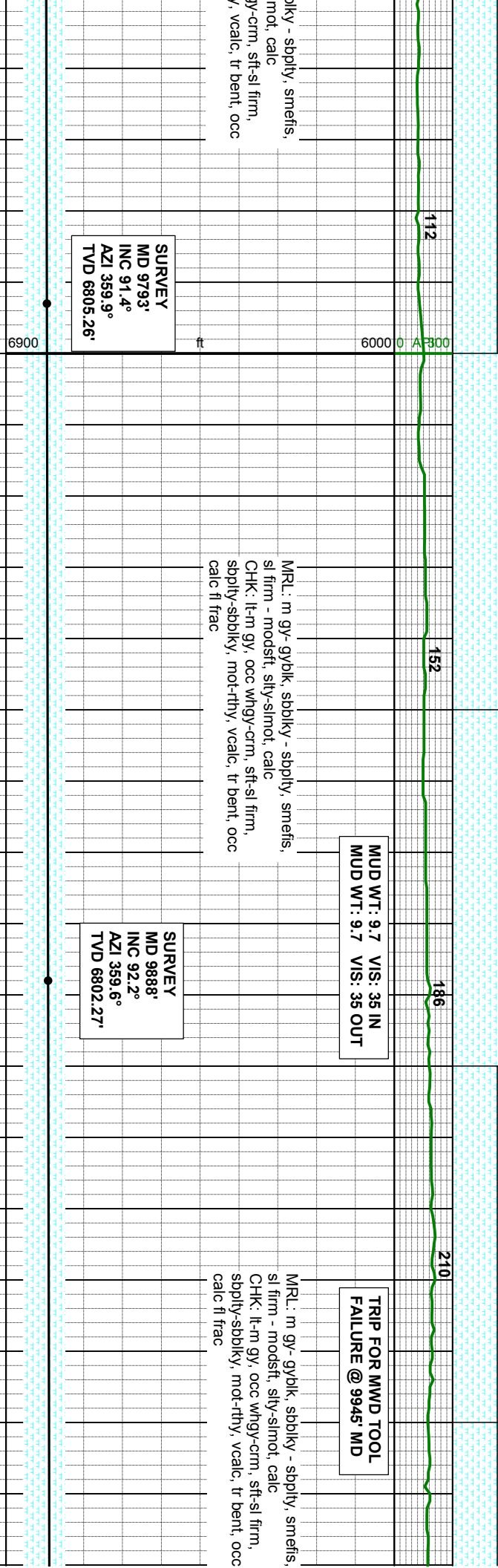
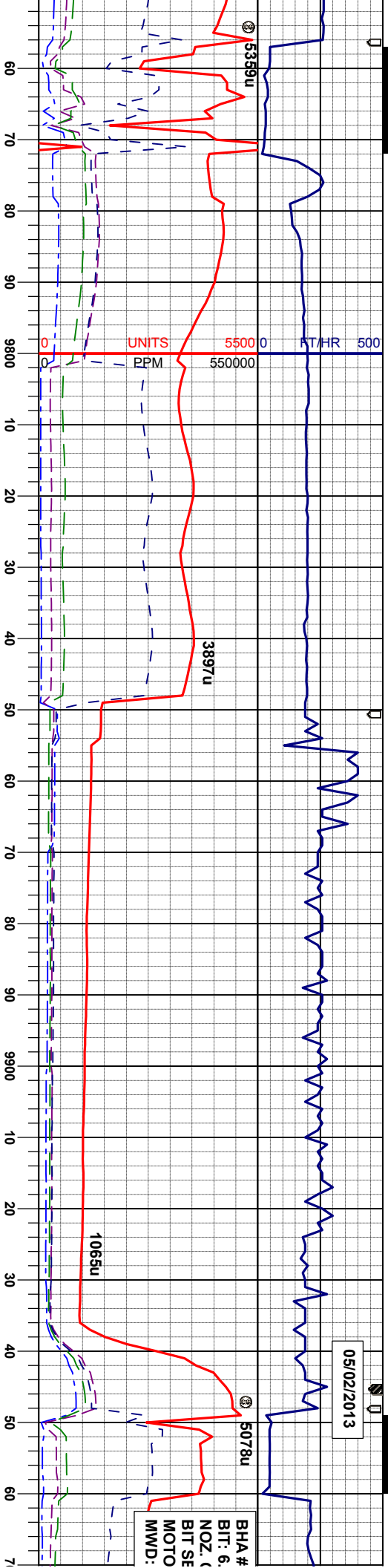
SURVEY  
MD 9698'  
INC 92.2°  
AZI 359.2°  
TVD 6808.24'

MRL: m gy- gy/bk, sbblky - sbply, smefis,  
sl firm - modst, slty-slmot, calc  
CHK: lt-m gy, occ whgy-crm, sft-sl firm,  
sbply-sbblky, mot-rthy, vcalc, tr bent, occ  
calc fl frac





05/02/2013



SURVEY  
MD 9793'  
INC 91.4°  
AZI 359.9°  
TVD 6805.26'

MRL: m gy-gyblk, sbblky - sbply, smeifs,  
sl firm - modstf, sily-slmot, calc  
CHK: lt-m gy, occ whgy-crm, sft-sl firm,  
sbply-sbblky, mot-rthy, vcalc, tr bent, occ  
calc fl frac

SURVEY  
MD 9888'  
INC 92.2°  
AZI 359.6°  
TVD 6802.27'

MRL: m gy-gyblk, sbblky - sbply, smeifs,  
sl firm - modstf, sily-slmot, calc  
CHK: lt-m gy, occ whgy-crm, sft-sl firm,  
sbply-sbblky, mot-rthy, vcalc, tr bent, occ  
calc fl frac





3 INFORMATION  
125" SMITH SD1513  
DR TFA: .464  
SERIAL NUMBER: JG0616  
R: 6/7, 8.0 STG: .81 RPG  
PONY MONEL

55000  
550000  
PPM

FT/HR 500

UNITS

4084u

492u

1090u

4360u

1750u

165

173

142

155

MUD WT: 9.7 VIS: 34 IN  
MUD WT: 9.5 VIS: 34 OUT

MRL: m gy- gyblk, sbdky - sbply, smeifs,  
sl firm - modstf, silty-slmot, calc  
CHK: lt-m gy, occ whgy-crm, sft-sl firm,  
sbply-sbdky, mot-rthy, vcalc, tr bent, occ  
calc fl frac

MRL: m gy- gyblk, sbdky - sbply, smeifs,  
sl firm - modstf, silty-slmot, calc  
CHK: lt-m gy, occ whgy-crm, sft-sl firm,  
sbply-sbdky, mot-rthy, vcalc, tr bent, occ  
calc fl frac

SURVEY  
MD 9983'  
INC 91.4°  
AZI 359.8°  
TVD 6799.29'

SURVEY  
MD 10078'  
INC 91.9°  
AZI 359.6°  
TVD 6796.55'

SURVEY  
MD 10173'  
INC 90.9°  
AZI 359.9°  
TVD 6794.23'

6900

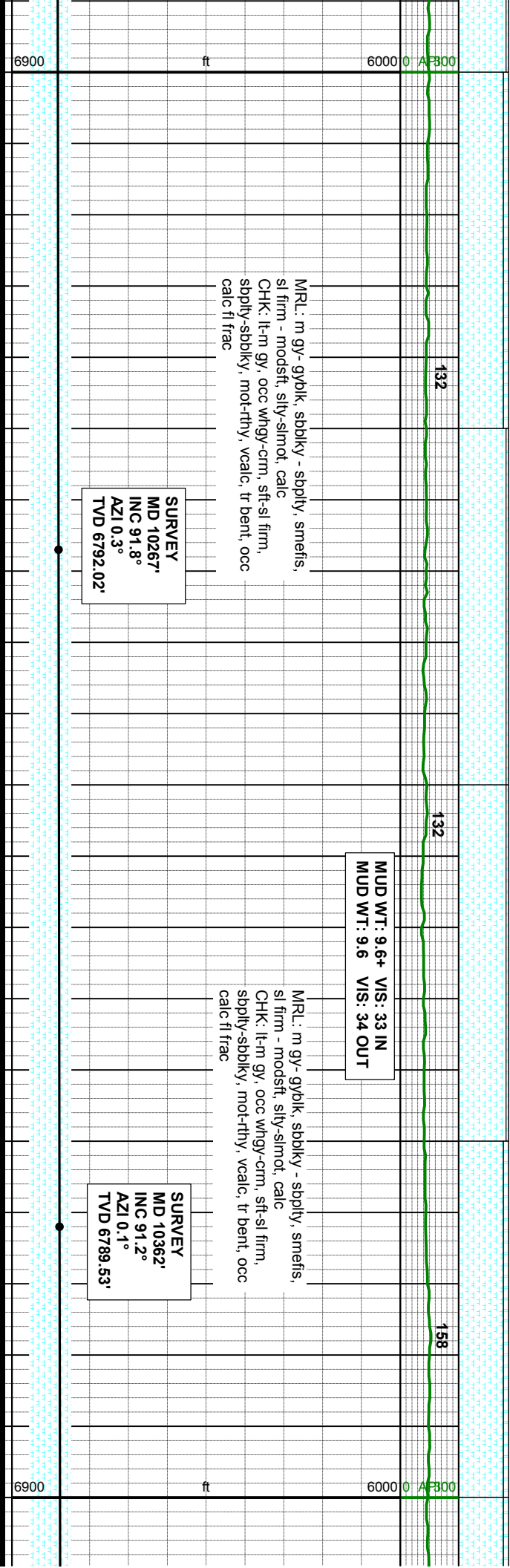
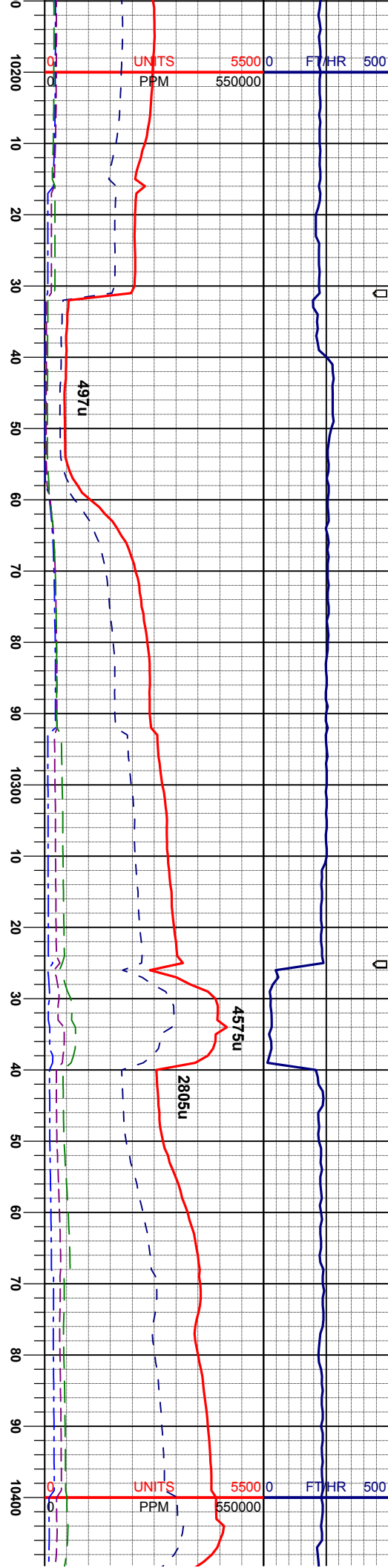
ft

6000

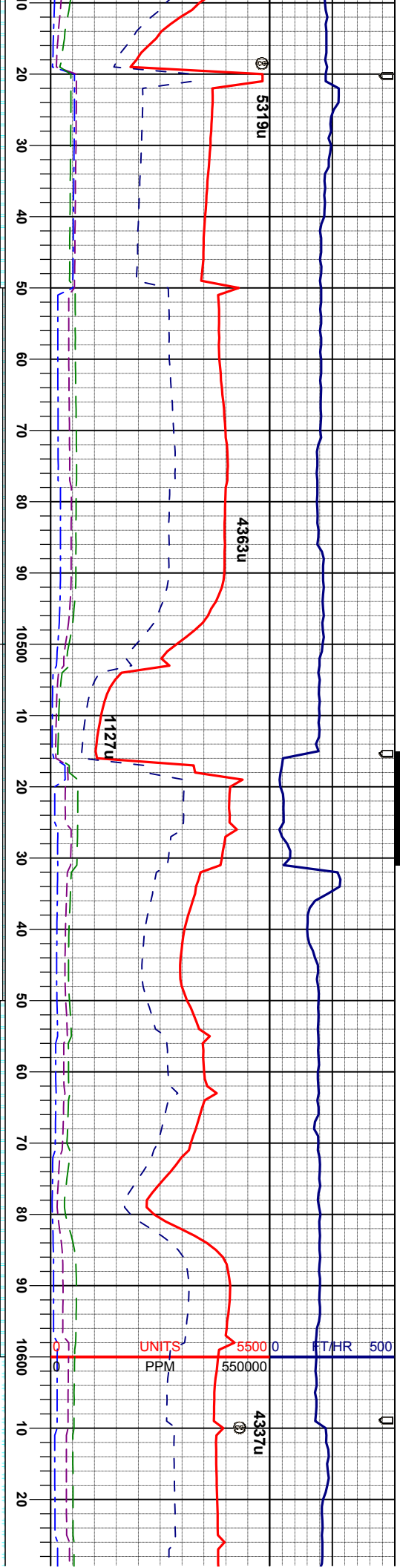
0

AF300









MUD WT: 9.6+ VIS: 32 IN  
MUD WT: 9.6+ VIS: 33 OUT

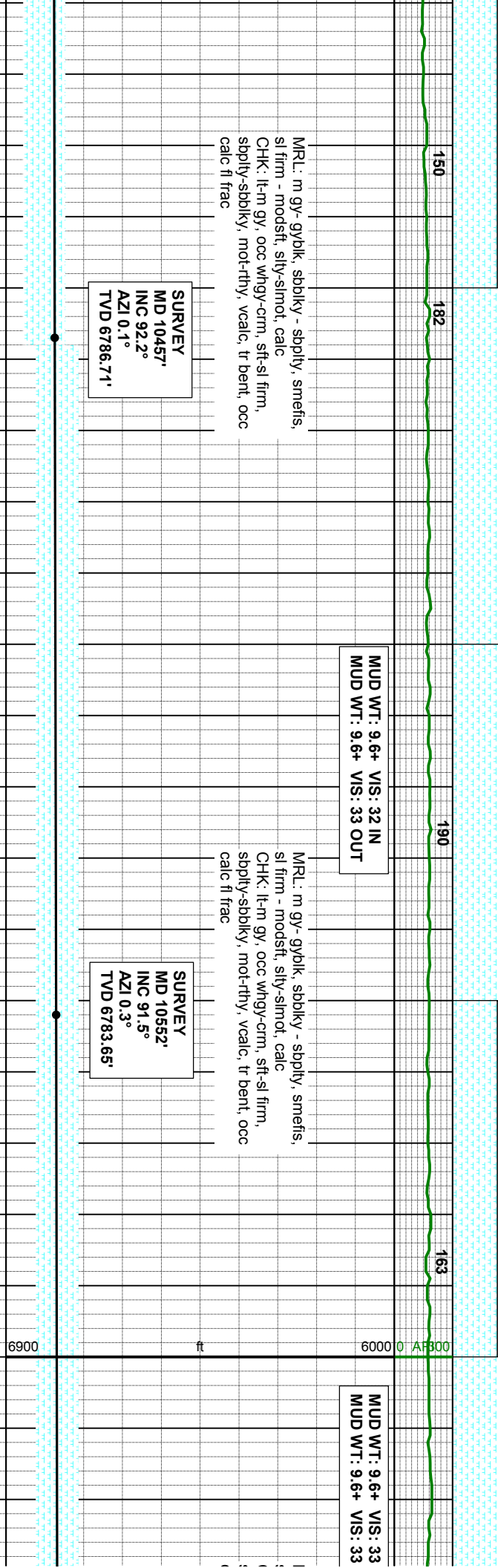
MR: m gy-gybk, sbdky - sbply, smefis,  
sl firm - modst, silty-slmot, calc  
CHK: lt-m gy, occ whgy-crm, sft-sl firm,  
sbply-sbdky, mot-rthy, vcalc, tr bent, occ  
calc fl frac

SURVEY  
MD 10457'  
INC 92.2°  
AZI 0.1°  
TVD 6786.71'

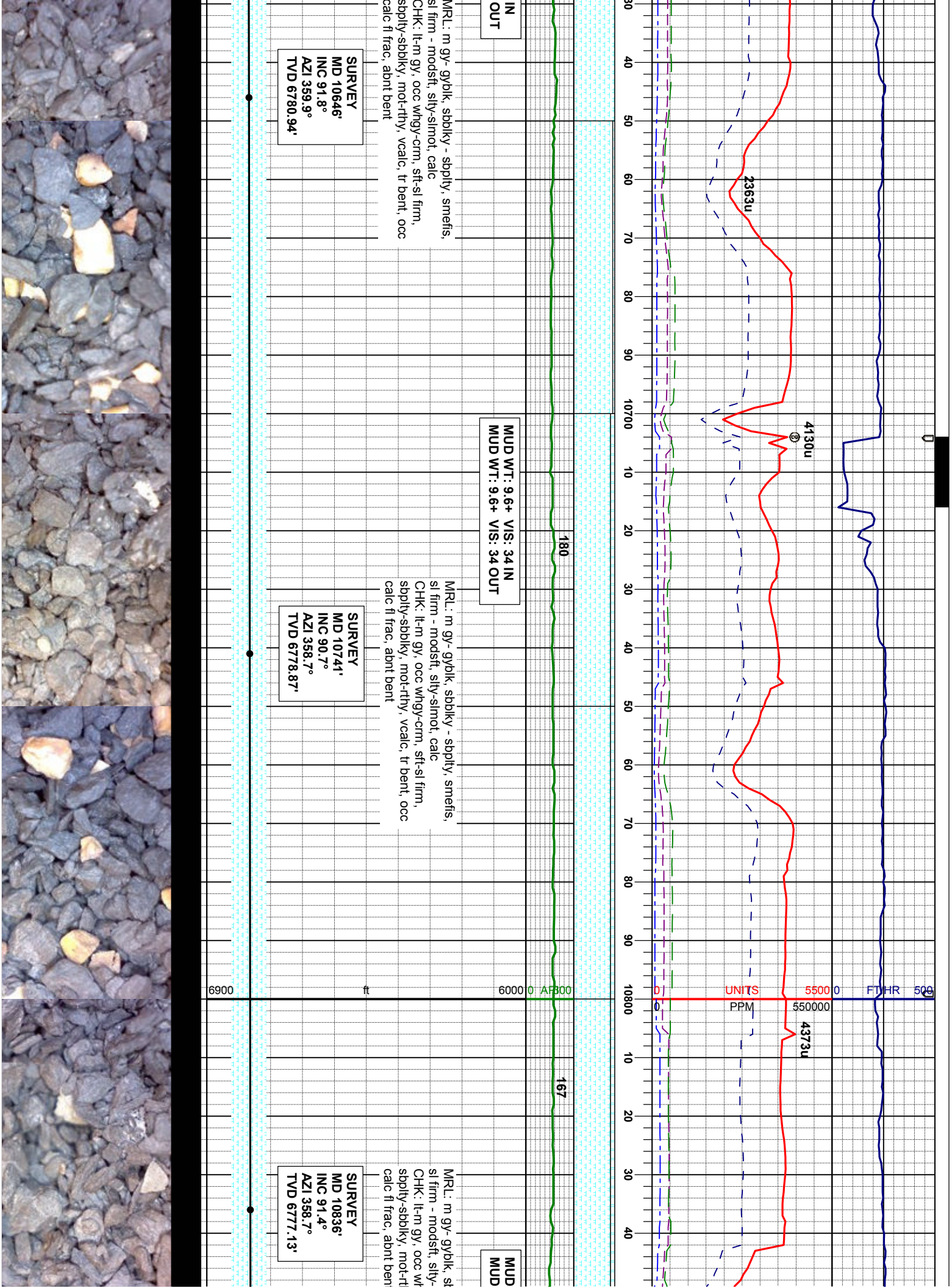
MR: m gy-gybk, sbdky - sbply, smefis,  
sl firm - modst, silty-slmot, calc  
CHK: lt-m gy, occ whgy-crm, sft-sl firm,  
sbply-sbdky, mot-rthy, vcalc, tr bent, occ  
calc fl frac

SURVEY  
MD 10552'  
INC 91.5°  
AZI 0.3°  
TVD 6783.65'

MUD WT: 9.6+ VIS: 33  
MUD WT: 9.6+ VIS: 33

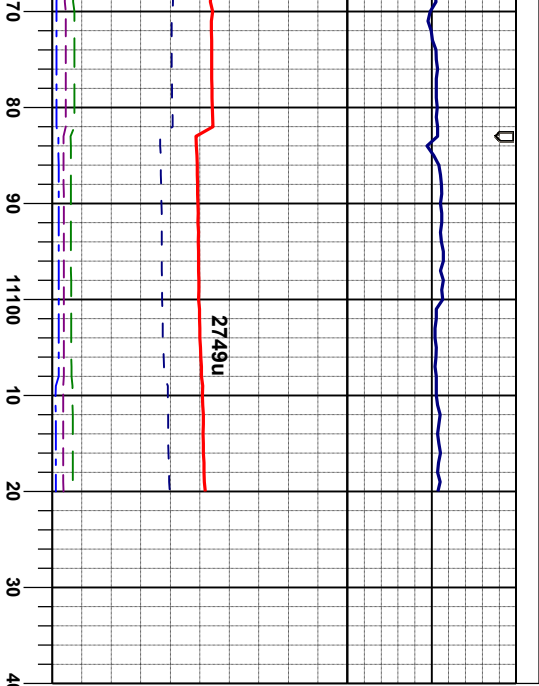












TD REACHED 11,122' MD  
@ 07:08 05/02/2013

THANK YOU FOR USING  
COLUMBINE LOGGING INC.

