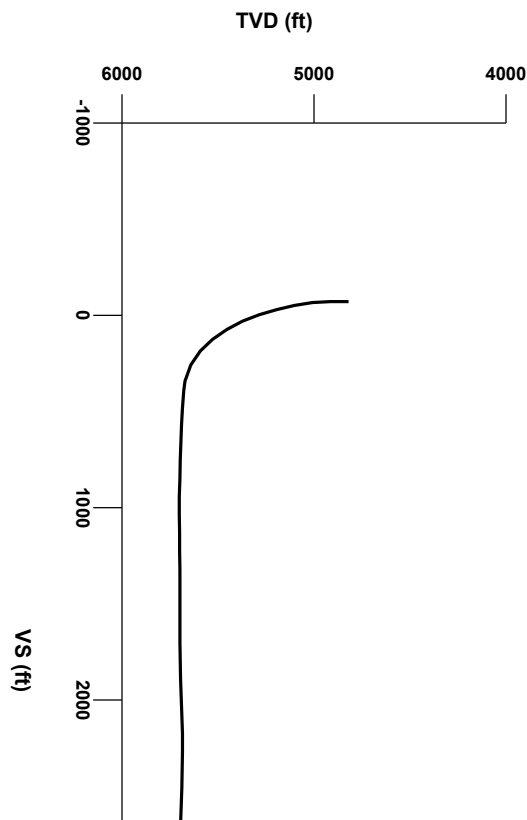




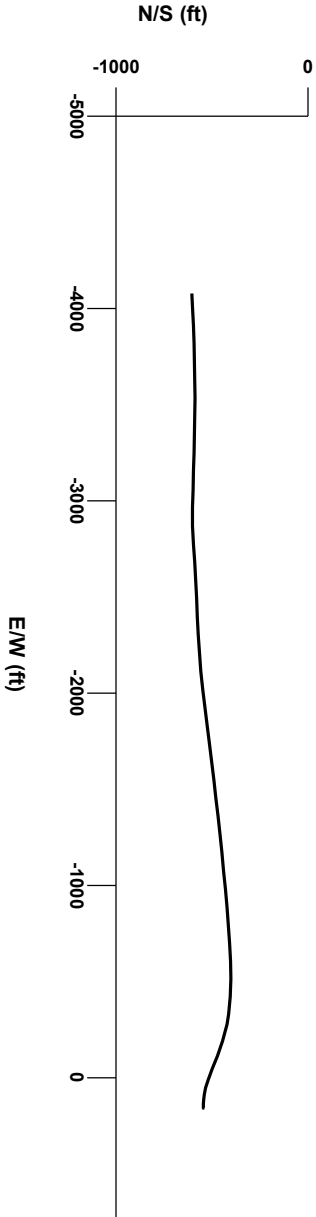
LOG created using LPLOT VH Version 3.0, November 02, 2013, Copyright (C) 1999-2009 Pason Systems Corp.

**OPERATOR:** NOBLE ENERGY INC  
**WELL:** ROHN STATE LD09-66-1HN  
**LOCATION:** SENE SEC 9 T9N R58W  
**COUNTY:** WELD  
**STATE:** COLORADO  
**SPOT:** 1763' FNL; 480 FEL'  
**ELEVATION:** 4727' GR; 4751' KB  
**FIELD:** WILDCAT  
**SPUD DATE:** 10/24/2013  
**TD DATE:** 11/2/2013  
**DATES LOGGED:** 10/27/2013 - 11/2/2013  
**DEPTHS LOGGED:** 4982' - 9729' MD  
**LOGGERS:** WEDGE HOWLAND, CONOR PESICKA  
**DRILLING FLUID:** LSND  
**DRILLING RIG:** H&P 273  
**API:** 05-123-37540  
**LOG TYPE:** HORIZONTAL  
**SCALE:** 1:240 (5 inches per 100 feet)  
**REMARKS:** WELLSITE GEOLOGIC SERVICES  
PROVIDED BY COLUMBINE LOGGING INC.



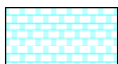
Survey Elevation

Survey Plan



1000

## LITHOLOGIES



## Chalk



Marl



## Sandstone



### Shaly Sandstone



Silty Shale

## MODIFIERS

II

Marlstone Calcareous

## ENGINEERING SYMBOLS



## Casing



## Casing



## Connection



Connection Gas



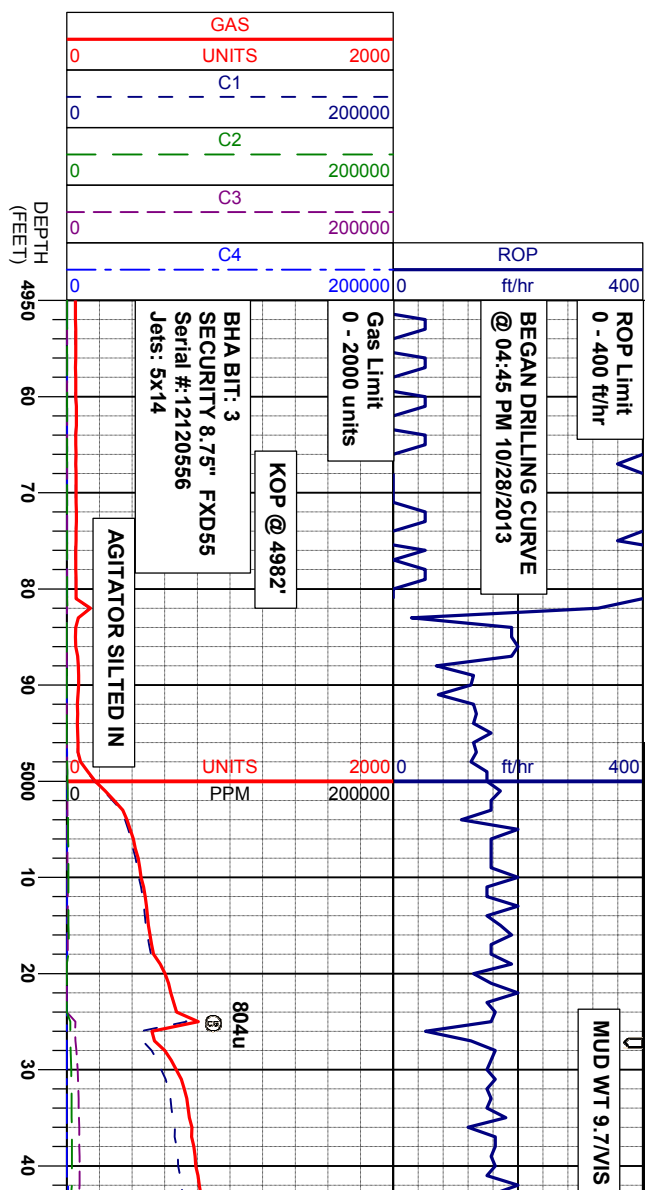
Arrow



## Midnight Depth

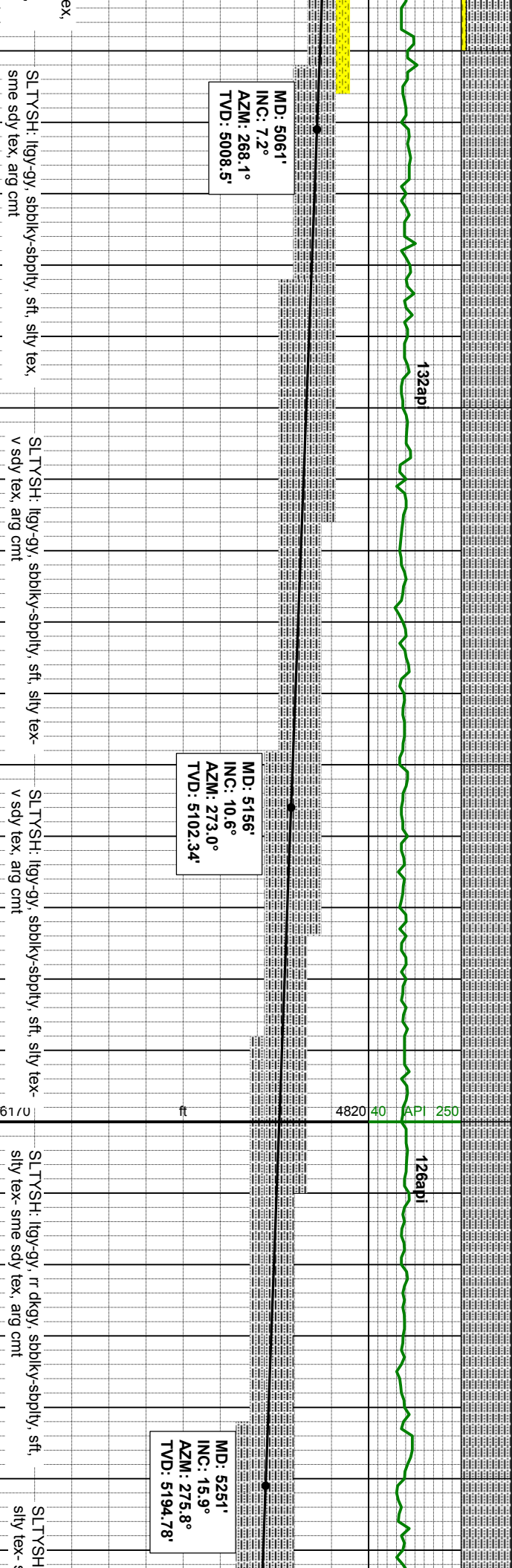


Arrow

[illegible]

## SAMPLE PHOTOS

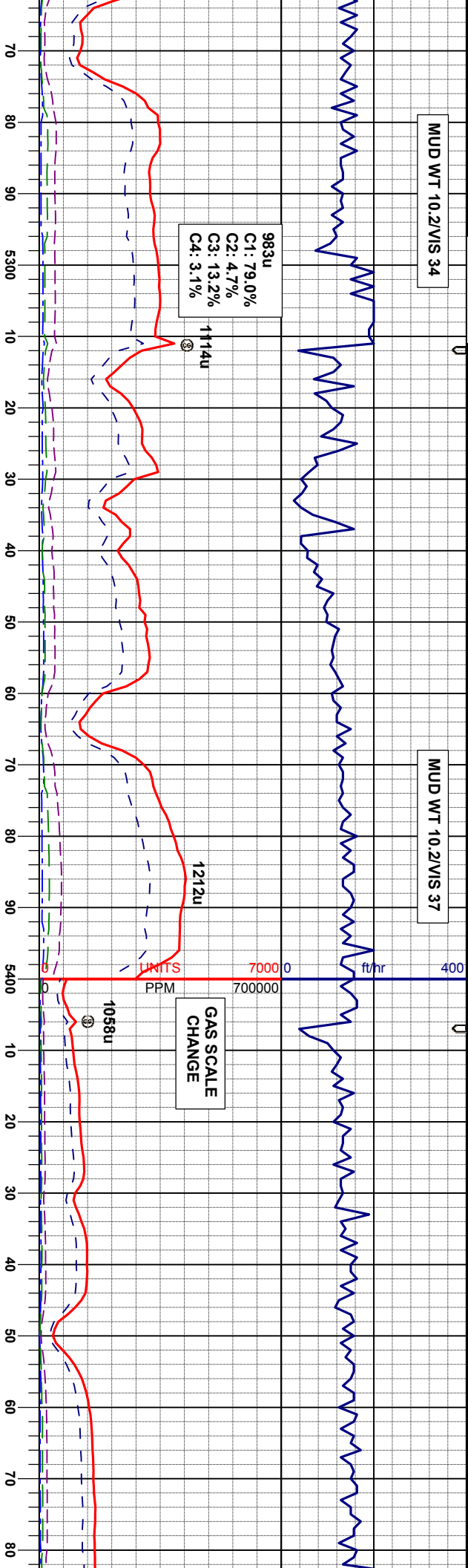
COLUMBINE LOGGING  
RIGGED UP ON 10/27/13  
MANNED 2-PERSON LOGGING  
WITH BLOODHOUND GAS  
CHROMATOGRAPH UNIT #0540  
BUILD BEGAN ON  
10/28/2013 @ 16:43 MST





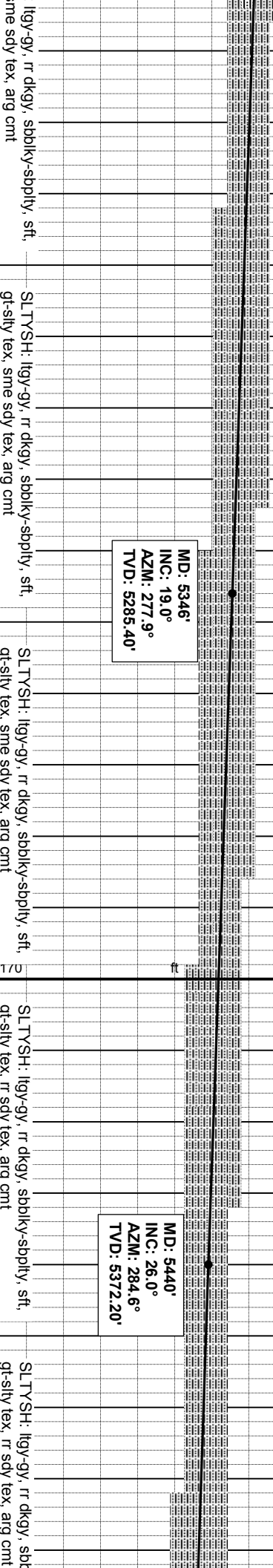
MUD WT 10.2/VIS 34

MUD WT 10.2/VIS 37



135api

142api



SLT YSH: lly-gy, r dkgy, sbblky-sbply, sft, gt-sily tex, sme sdy tex, arg cnt

SLT YSH: lly-gy, r dkgy, sbblky-sbply, sft, gt-sily tex, sme sdy tex, arg cnt

SLT YSH: lly-gy, r dkgy, sbblky-sbply, sft, gt-sily tex, r sdy tex, arg cnt

SLT YSH: lly-gy, r dkgy, sbblky-sbply, sft, gt-sily tex, r sdy tex, arg cnt

MD: 5346'  
INC: 19.0°  
AZM: 277.9°  
TVD: 5285.40'

MD: 5440'  
INC: 26.0°  
AZM: 284.6°  
TVD: 5372.20'





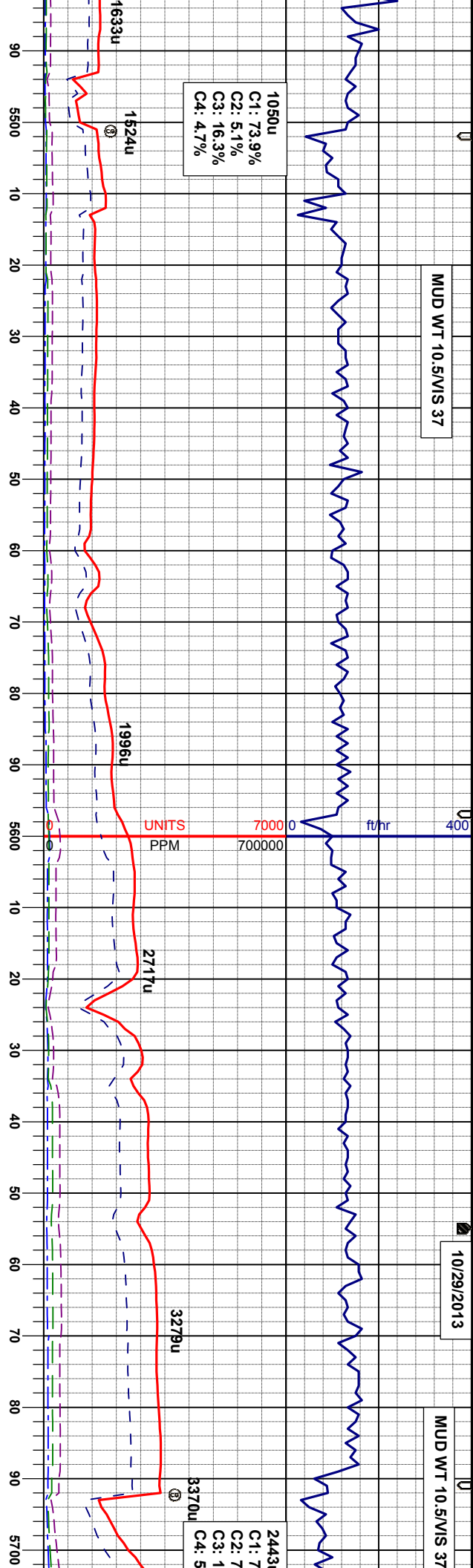
MUD WT 10.5/VIS 37

10/29/2013

MUD WT 10.5/VIS 37

1050u  
C1: 73.9%  
C2: 5.1%  
C3: 16.3%  
C4: 4.7%

2443  
C1: 7  
C2: 7  
C3: 1  
C4: 5



1384pi

2033api

352api

MD: 5630'  
INC: 42.9°  
AZM: 292.0°  
TVD: 5529.03'

SHARON SPRINGS  
MARKER BED @  
5676' MD/ 5559'TVD

NIOBRARA TOP @  
5688' MD/ 5568'TVD

MD: 5535'  
INC: 33.7°  
AZM: 289.2°  
TVD: 5454.55'

SL.TY.SH: lgy-gy, rr dkg, sbblky-sbply, sft, gt-sily tex, rr sdy tex, arg cnt

SL.TY.SH: lgy-gy, rr dkg, sbblky-sbply, sft, gt-sily tex, rr sdy tex, arg cnt

SL.TY.SH: gy-dkg, sme lgy, sbblky-sbply, sft, gt-sily tex, arg cnt

SL.TY.SH: gy-dkg, sme lgy, sbblky-sbply, sft, gt-sily tex, arg cnt, sme bent

MRL: dkg-gybm, sbblky-sbply, sft, mot-sily tex, v calc, tr bent

CHK: lgy-gy, sbblky, sft-smwt firm, mot tex, v mny, v calc

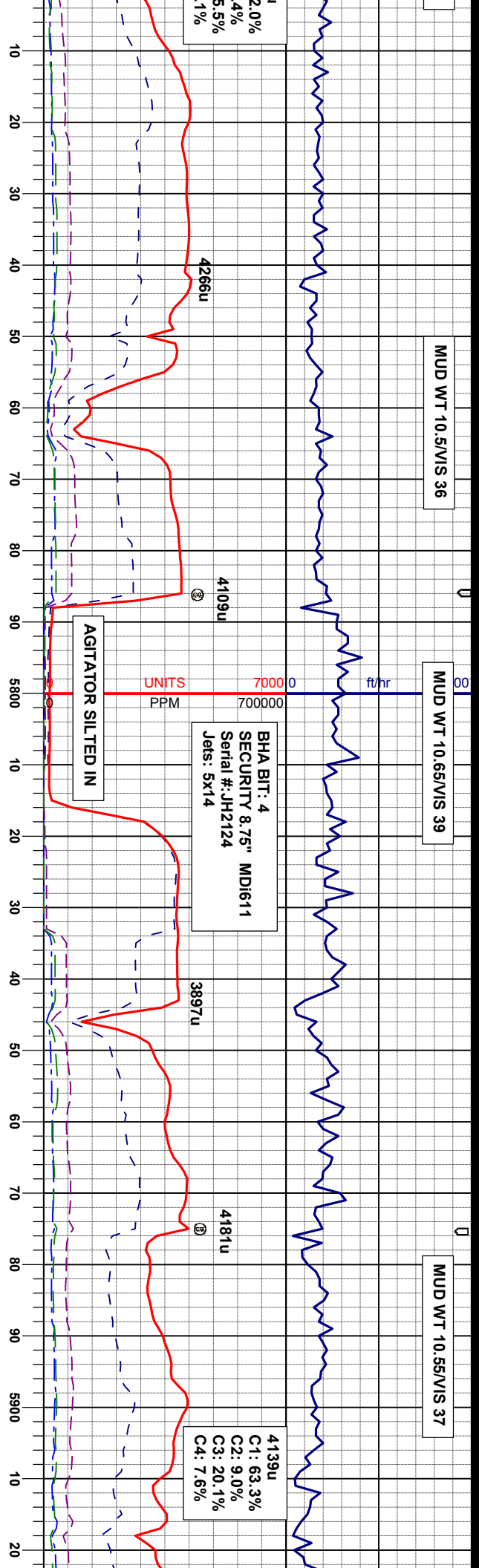




MUD WT 10.5/VIS 36

MUD WT 10.65/VIS 39

MUD WT 10.55/VIS 37



BHA BIT: 4  
SECURITY 8.75" MDI611  
Serial #: JH2124  
Jets: 5x14

4139u  
C1: 63.3%  
C2: 9.0%  
C3: 20.1%  
C4: 7.6%

NIO A CHALK @  
5710'MD/ 5583'TVD

NIO A MARL @  
5784'MD/ 5623'TVD

MD: 5725'  
INC: 52.8°  
AZM: 291.4°  
TVD: 5592.70'

MD: 5822'  
INC: 64.6°  
AZM: 287.6°  
TVD: 5643.02'

MD: 5917'  
INC: 79.2°  
AZM: 281.1°  
TVD: 5672.2°

MRL: dkgy-gybrn, sbbky-sbply, sft, mot-sily tex, v calc, tr bent  
CHK: llyg-crm, sme wh, sbbky, sft-smwt firm, mot-wxy tex, v calc

MRL: dkgy-gybrn, sbbky-sbply, sft, mot-sily tex, v calc, tr bent  
CHK: llyg-crm, sme wh, sbbky, sft-smwt firm, mot-wxy tex, v calc

MRL: dkgy-gybrn, sbbky-sbply, sft, mot-sily tex, v calc, tr bent  
CHK: llyg-crm, sme wh, sbbky, sft-smwt firm, mot-wxy tex, v calc

MRL: dkgy-gybrn, sbbky-sbply, sft, mot-sily tex, v calc, tr bent  
CHK: llyg-crm, sme wh, sbbky, sft-smwt firm, mot-wxy tex, v calc

MRL: dkgy-gybrn, n mot-sily tex, v calc, tr bent  
CHK: llyg-crm, sme wh, sbbky, sft-smwt firm, mot-wxy tex, v calc



MUD WT 10.6/VIS 37

10/30/2013  
10/31/2013

MUD WT 9.8/VIS 33

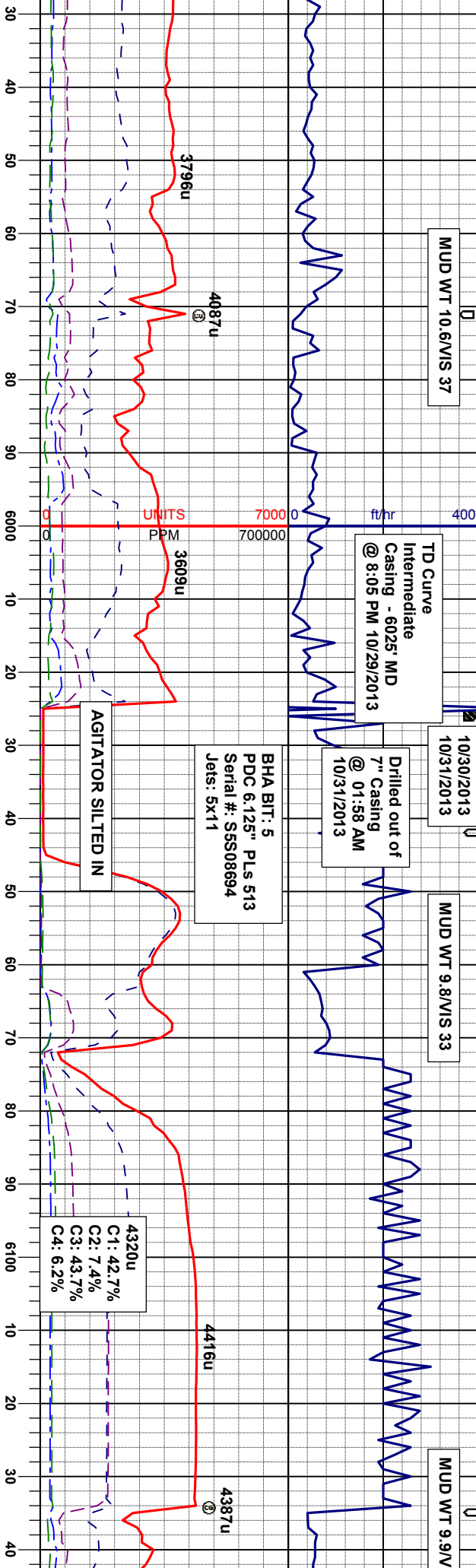
MUD WT 9.9/V

TD Curve  
Intermediate  
Casing - 6025' MD  
@ 8:05 PM 10/29/2013

Drilled out of  
7" Casing  
@ 01:58 AM  
10/31/2013

BHA BIT: 5  
PDC 6.125" PLS 513  
Serial #: S5S08694  
Jets: 5x11

4320u  
C1: 42.7%  
C2: 7.4%  
C3: 43.7%  
C4: 6.2%



3796u

4087u

UNITS 70000  
PPM 3609u

AGITATOR SILTED IN

4416u

4387u

153api

NIO B CHALK @  
IndtMD/ IndtTVD  
Indeterminable  
Prog - 5684' TVD

MD: 5970'  
INC: 85.4°  
AZM: 278.6°  
TVD: 5679.58'

4820 40 API 250

97api

150api

86api

74api

MD: 6063'  
INC: 86.3°  
AZM: 272.5°  
TVD: 5686.32'

sm, sbblky-sbply, sft, tr bent  
CHK: lly-crm, sbblky, sft-smwt firm, mot-  
wxy tex, v calc  
MRL: dkgy-gybrn, sbblky-sbply, sft, mot-  
sily tex, v calc, tr bent

CHK: lly-crm, sbblky, sft-smwt firm, mot-  
wxy tex, v calc  
MRL: dkgy-gybrn, sbblky-sbply, sft, mot-  
sily tex, v calc, tr bent

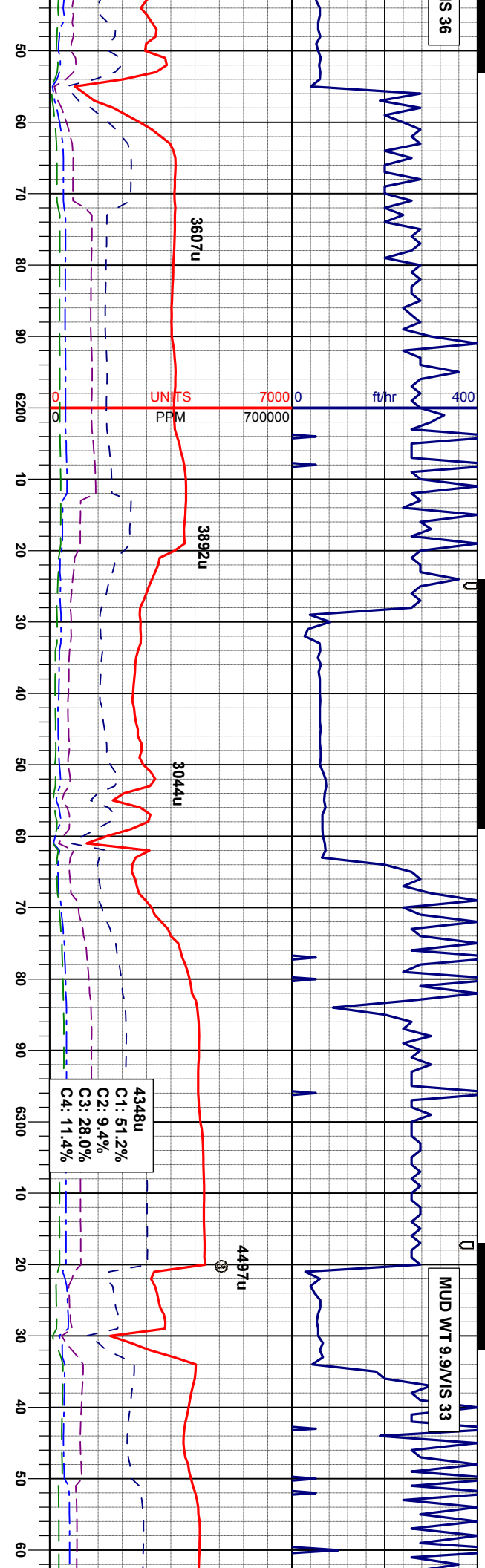
CHK: lly-crm, sbblky, sft-smwt firm, mot-  
wxy tex, v calc  
MRL: dkgy-gybrn, sbblky-sbply, sft, mot-  
sily tex, smwt chky, v calc

CHK: lly-crm, sbblky, sft-smwt firm, mot-  
wxy tex, v calc  
MRL: dkgy-gybrn, sbblky-sbply, sft, mot-  
sily tex, smwt chky, v calc

6170

TT TT





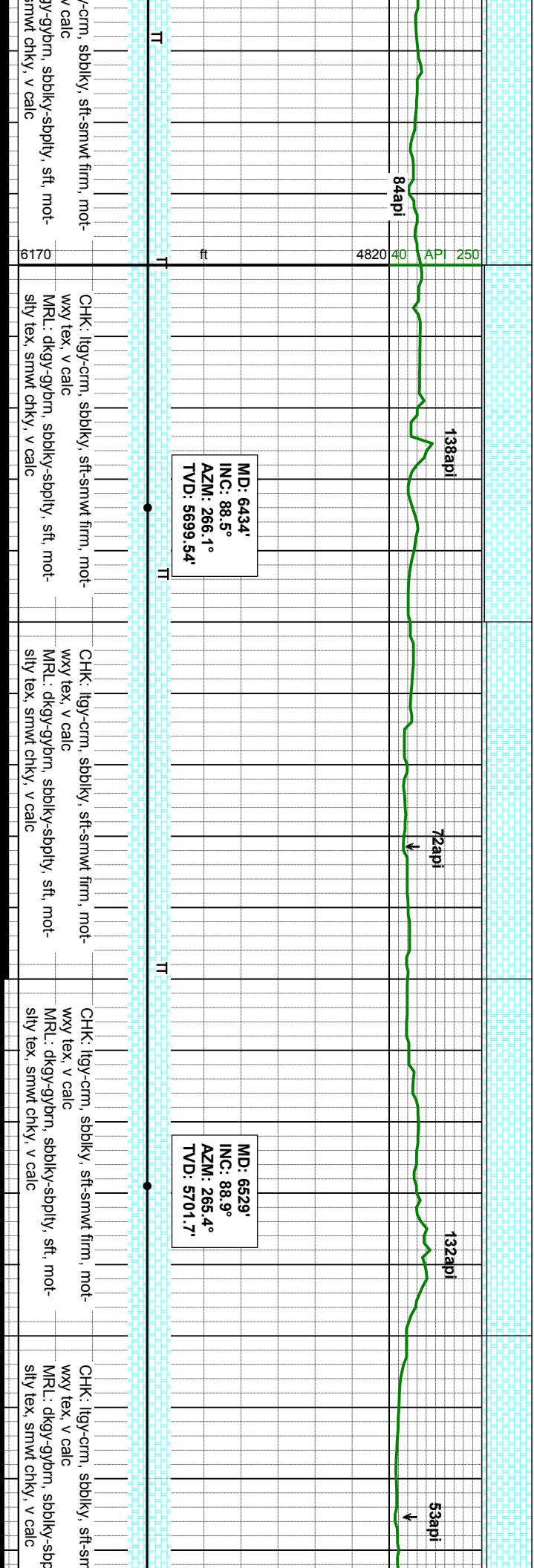
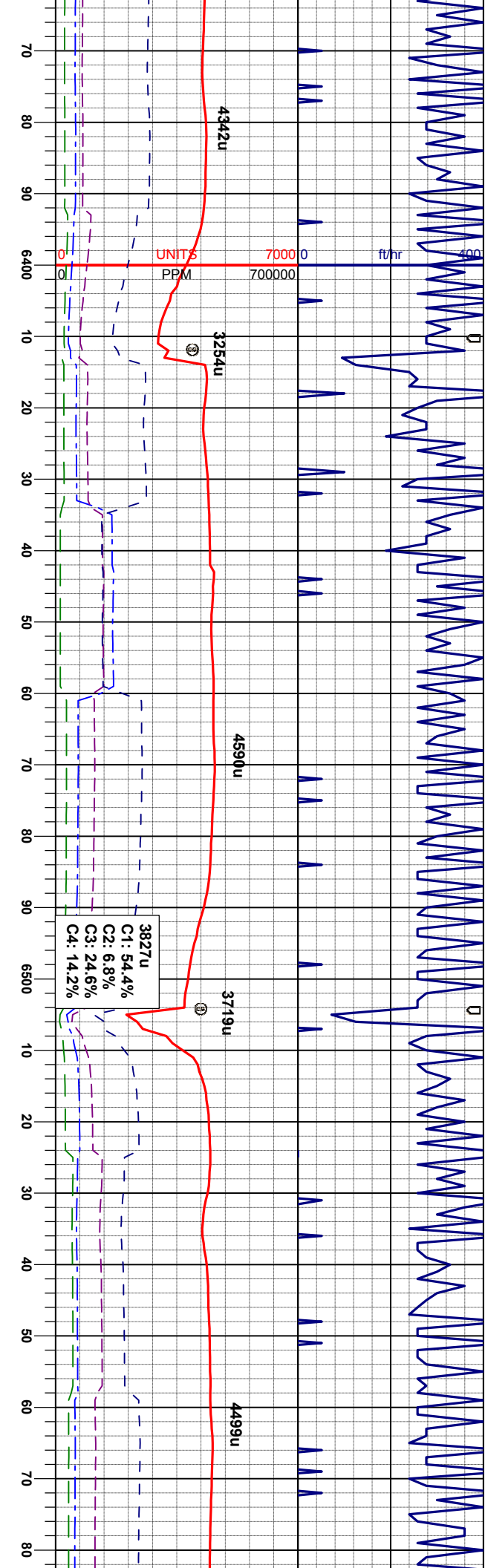
MD: 6154'  
INC: 87.7°  
AZM: 270.4°  
TVD: 5691.08'

MD: 6247'  
INC: 87.7°  
AZM: 267.9°  
TVD: 5694.81'

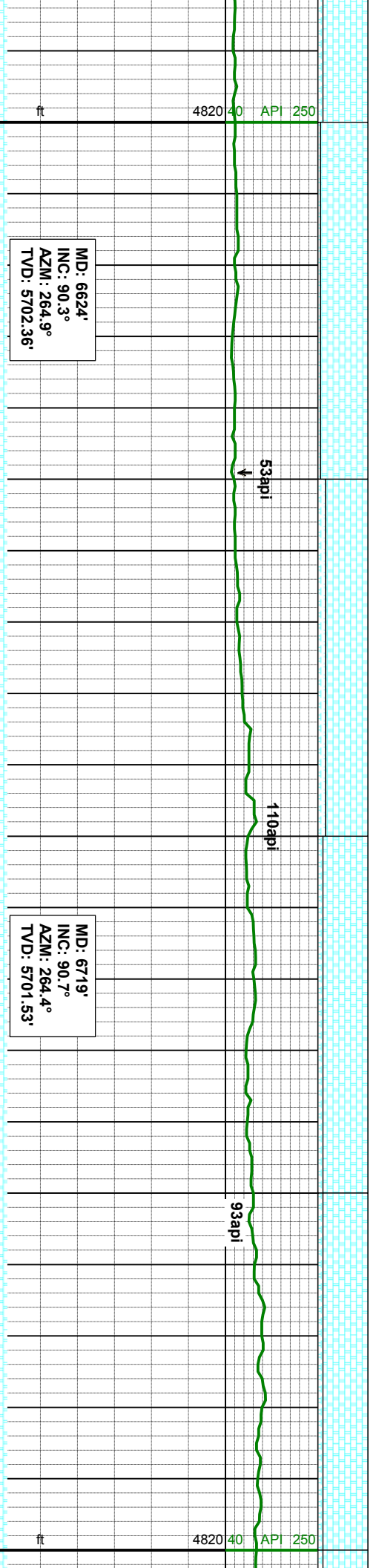
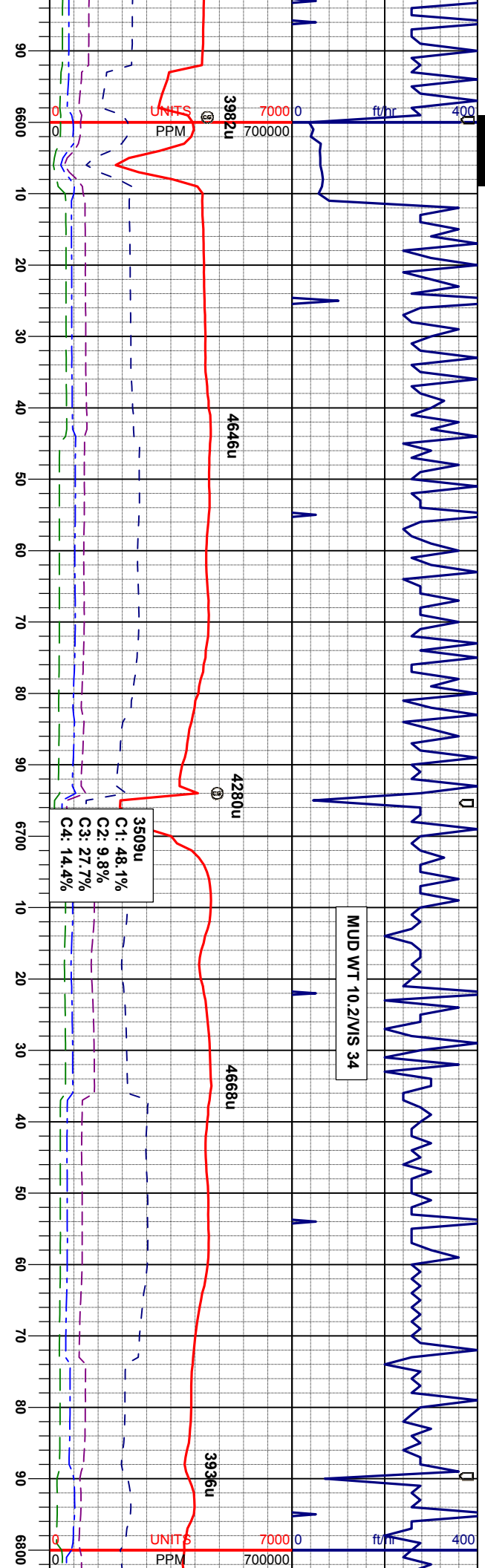
MD: 6340'  
INC: 89.0°  
AZM: 266.1°  
TVD: 5697.49'

CHK: llyg-crm, sbblky, sft-smwt firm, mot- wxy tex, v calc MRL: dkgv-gybrn, sbblky-sbply, sft, mot- sily tex, smwt chky, v calc	CHK: llyg-crm, sbblky, sft-smwt firm, mot- wxy tex, v calc MRL: dkgv-gybrn, sbblky-sbply, sft, mot- sily tex, smwt chky, v calc	CHK: llyg-crm, sbblky, sft-smwt firm, mot- wxy tex, v calc MRL: dkgv-gybrn, sbblky-sbply, sft, mot- sily tex, smwt chky, v calc	CHK: llyg-crm, sbblky, sft-smwt firm, mot- wxy tex, v calc MRL: dkgv-gybrn, sbblky-sbply, sft, mot- sily tex, smwt chky, v calc
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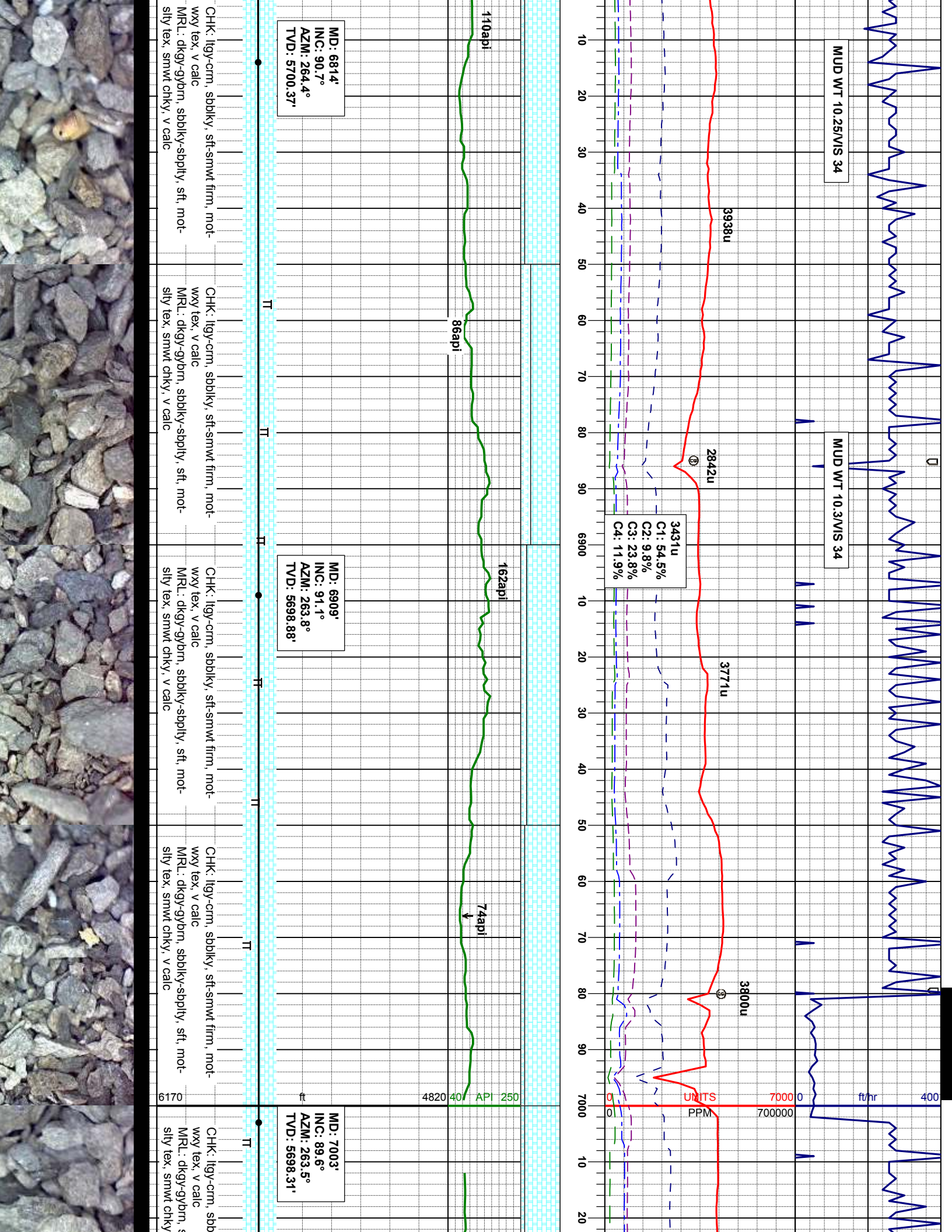




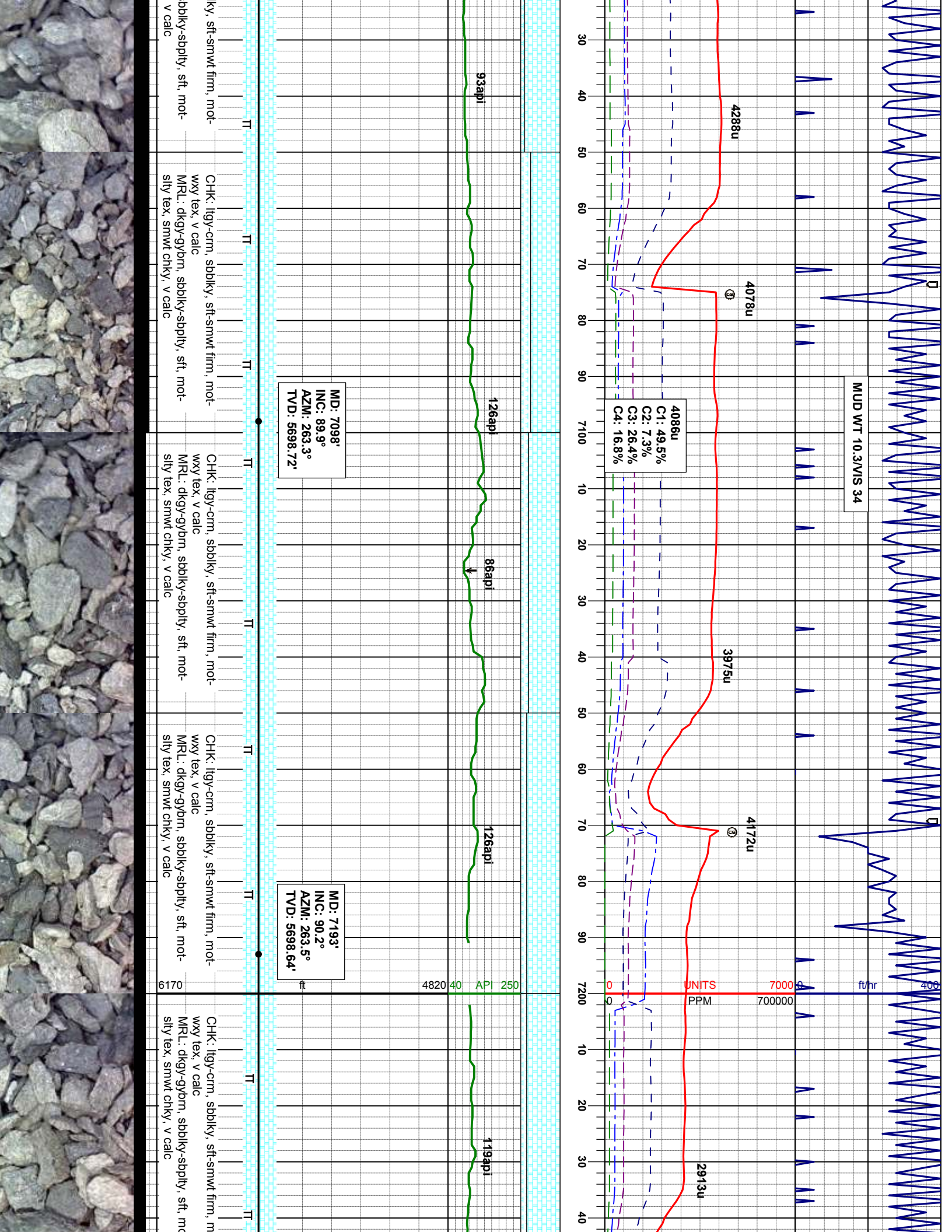


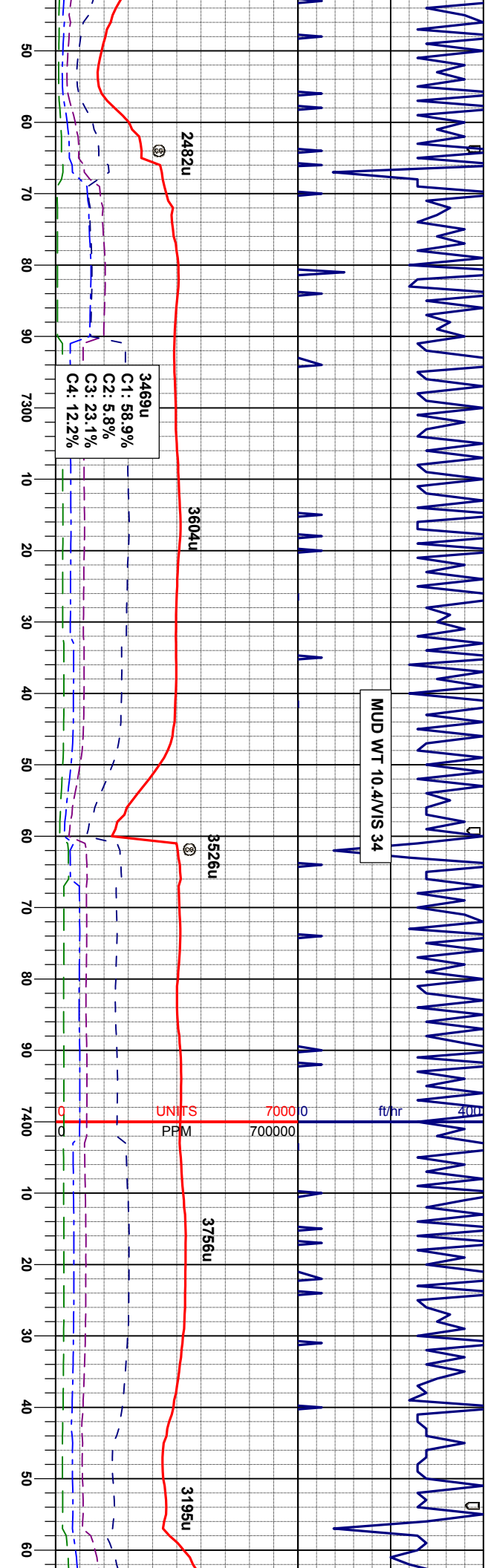
wt firm, mot-	CHK: lgy-crm, sbblky, sft-smwt firm, mot- wxy tex, v calc	CHK: lgy-crm, sbblky, sft-smwt firm, mot- wxy tex, v calc	CHK: lgy-crm, sbblky, sft-smwt firm, mot- wxy tex, v calc
lty, sft, mot-	MR.L: dkgy-gybrn, sbblky-sbply, sft, mot- sily tex, smwt chky, v calc	MR.L: dkgy-gybrn, sbblky-sbply, sft, mot- sily tex, smwt chky, v calc	MR.L: dkgy-gybrn, sbblky-sbply, sft, mot- sily tex, smwt chky, v calc











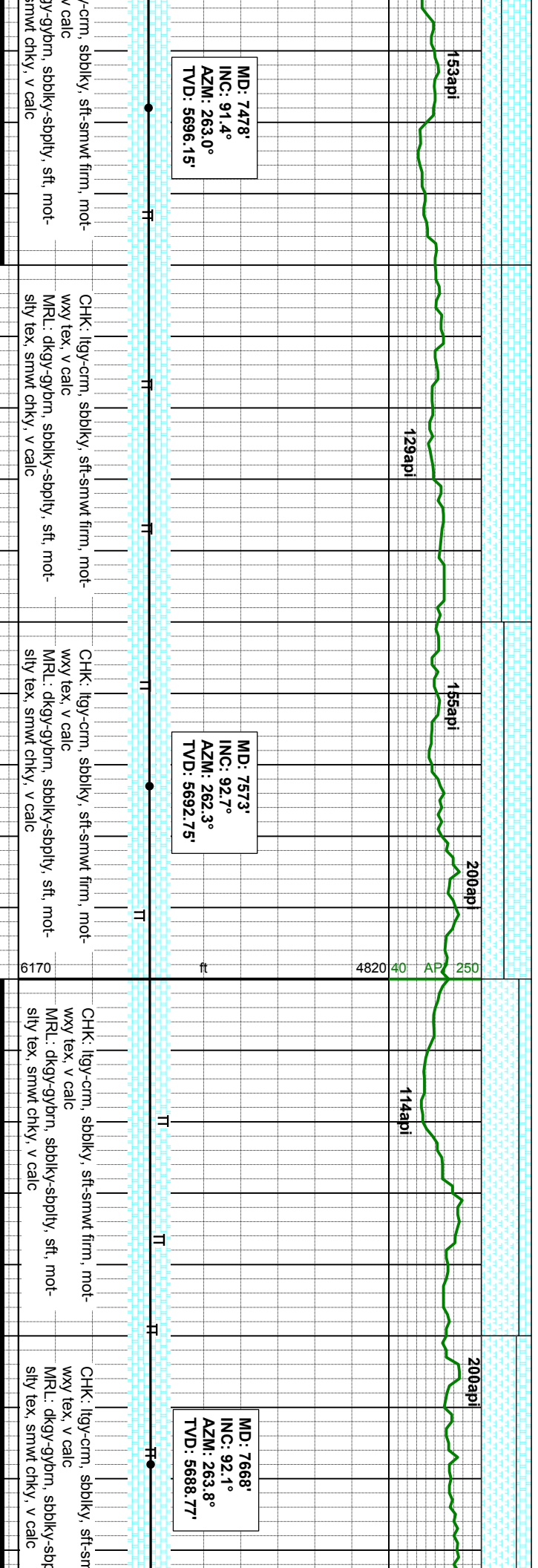
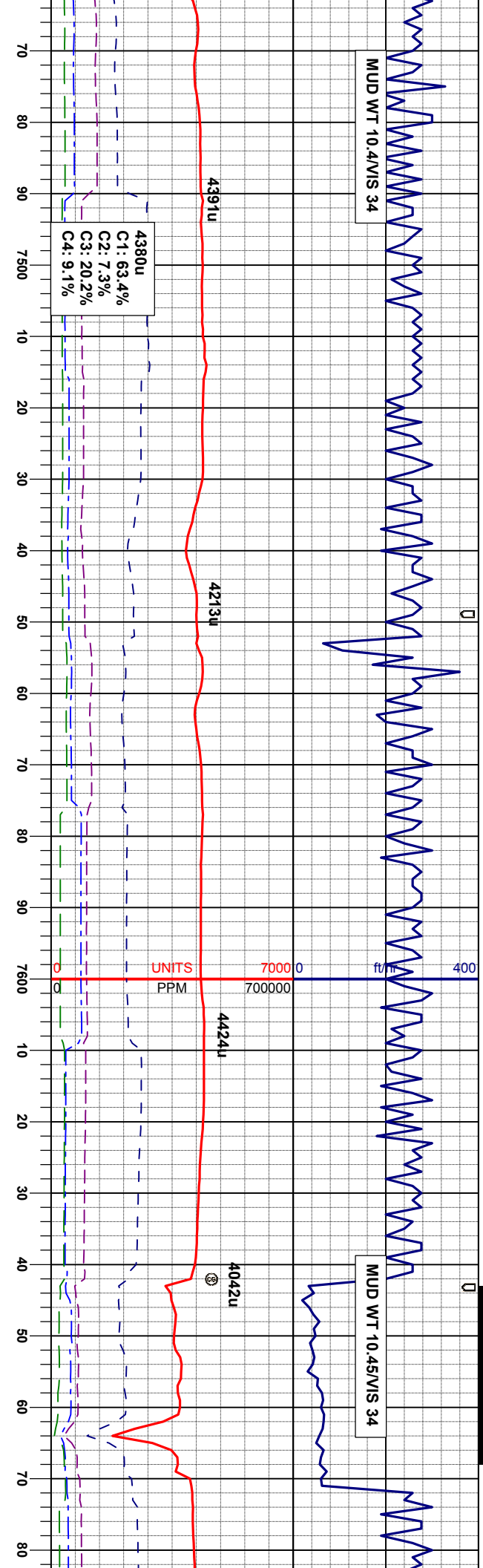
MD: 7288'  
INC: 89.8°  
AZM: 262.8°  
TVD: 5698.64'

MD: 7363'  
INC: 90.9°  
AZM: 263.1°  
TVD: 5698.06'

CHK: lgy-crm, sbbiky, sft-smwt firm, mot- wy tex, v calc	CHK: lgy-crm, sbbiky, sft-smwt firm, mot- wy tex, v calc	CHK: lgy-crm, sbbiky, sft-smwt firm, mot- wy tex, v calc	CHK: lgy-crm, sbbiky, sft-smwt firm, mot- wy tex, v calc
MRL: dkgy-gybrn, sbbiky-sbply, sft, mot- sily tex, smwt chky, v calc	MRL: dkgy-gybrn, sbbiky-sbply, sft, mot- sily tex, smwt chky, v calc	MRL: dkgy-gybrn, sbbiky-sbply, sft, mot- sily tex, smwt chky, v calc	MRL: dkgy-gybrn, sbbiky-sbply, sft, mot- sily tex, smwt chky, v calc



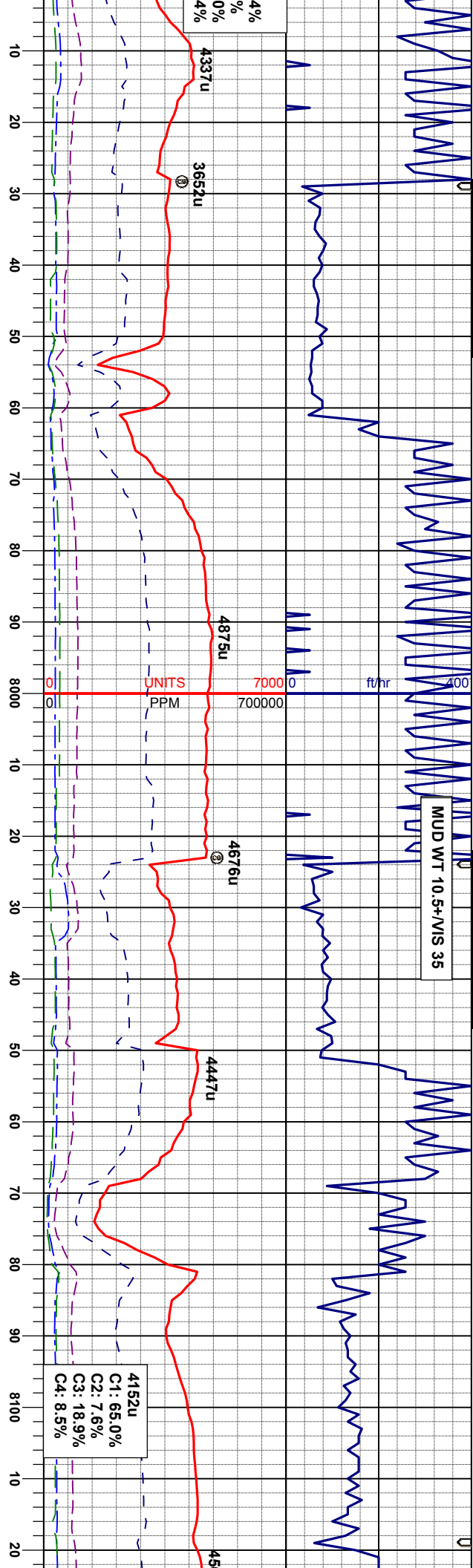








MUD WT 10.5+/MIS 35



MD: 7952'  
INC: 89.2°  
AZM: 266.8°  
TVD: 5687.19'

MD: 8047'  
INC: 88.7°  
AZM: 267.9°  
TVD: 5688.93'

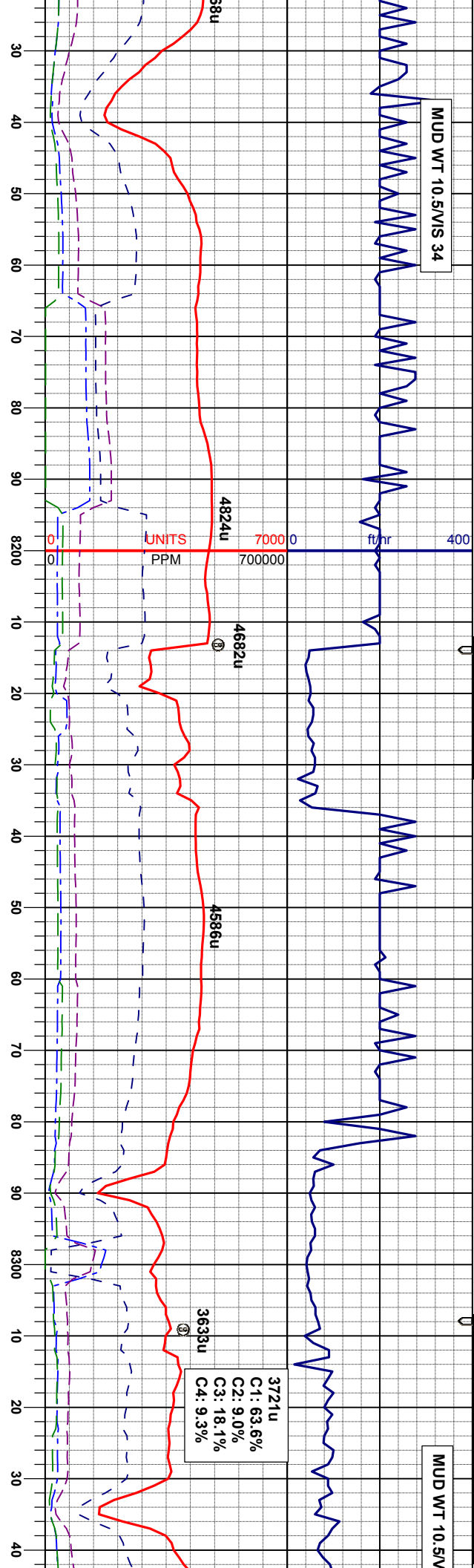
Depth (ft)	Log Description
4337u	MR.L: dkgy-gybrn, sbblky-sbply, sft, mot-sily tex, v calc
3652u	CHK: llyg-crm, sbblky, sft-smwt firm, mot tex, tr wxy tex, v mrlly, v calc
4875u	MR.L: dkgy-gybrn, sbblky-sbply, sft, mot-sily tex, v calc, tr bent, sme w/ pyr, tr fos frag
4676u	CHK: llyg-crm, sbblky, sft-smwt firm, mot-bnd tex, v mrlly, v calc
4447u	MR.L: dkgy-gybrn, sbblky-sbply, sft, mot-sily tex, v calc, tr bent, tr fos frag
4152u	CHK: llyg-crm, sbblky, sft-smwt firm, mot-bnd tex, v mrlly, v calc
45	MR.L: dkgy-gybrn, sbblky-sbply, sft, mot-sily tex, v calc, tr bent, tr fos frag





MUD WT 10.5/VIS 34

MUD WT 10.5V



MD: 8142'  
INC: 88.0°  
AZM: 267.4°  
TVD: 5691.66'

MD: 8237'  
INC: 87.4°  
AZM: 267.2°  
TVD: 5695.48'

MD: 8332'  
INC: 88.7°  
AZM: 265.8°  
TVD: 5698.71'

CHK: lgy-crm, sme gy, sbdky, sft-smwt  
firm, msm, mot-bnd tex, v mry, v calc  
MR.L: dkgy-gybrn, sbdky-sply, sft, mot-  
sily tex, v calc, tr bent, tr fos frag

CHK: lgy-crm, sme gy, sbdky, sft-smwt  
firm, msm, mot-bnd tex, v mry, v calc  
MR.L: dkgy-gybrn, sbdky-sply, sft, mot-  
sily tex, v calc, tr bent, tr w/ pyr, tr fos frag

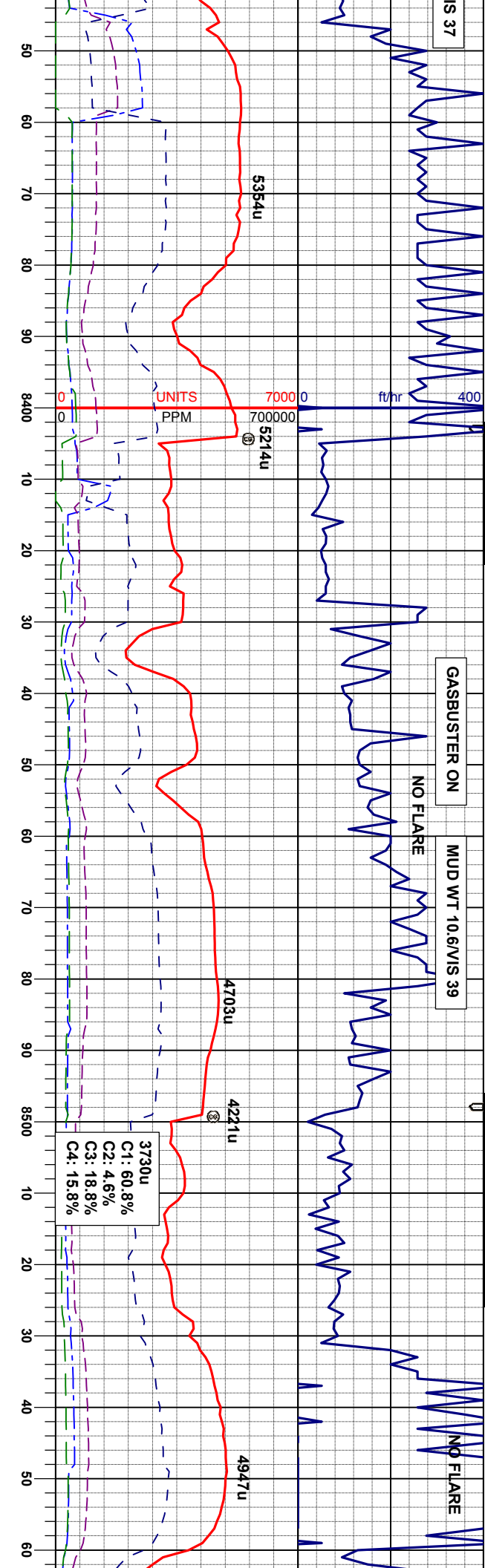
CHK: lgy-crm, sme gy, sbdky, sft-smwt  
firm, msm, mot-bnd tex, v mry, v calc  
MR.L: dkgy-gybrn, sbdky-sply, sft, mot-  
sily tex, v calc, tr bent, tr fos frag



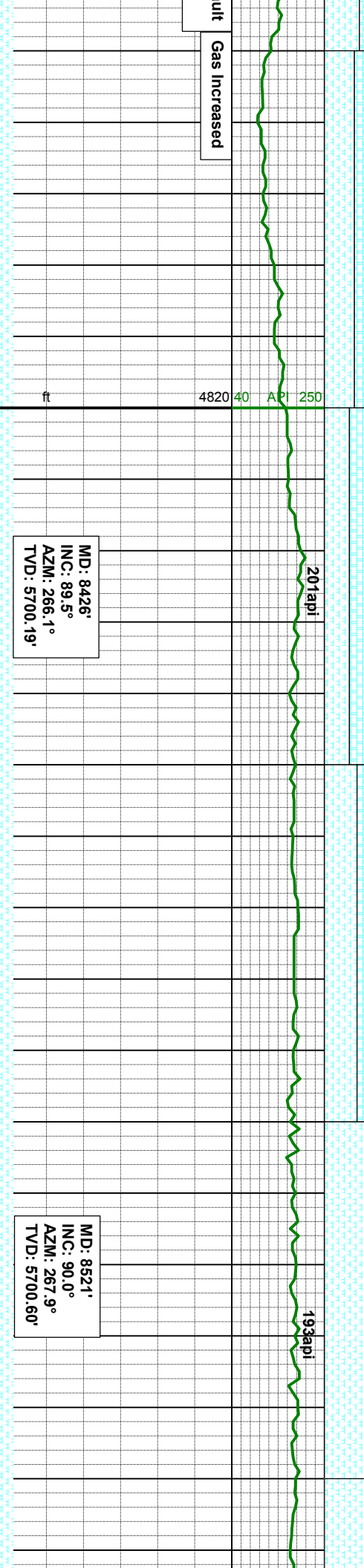
GASBUSTER ON

MUD WT 10.6/VIS 39

NO FLARE



Gas Increased



MD: 8426'  
INC: 89.5°  
AZM: 266.1°  
TVD: 5700.19'

MD: 8521'  
INC: 90.0°  
AZM: 267.9°  
TVD: 5700.60'

CHK: lgy-crm, sme gy, sbblky, sft-smwt  
firm, msm, mot-bnd tex, v mrlly, v calc  
MRL: dkgy-gybrn, sbblky-sbply, sft, mot-  
sily tex, v calc, tr bent, tr fos frag, tr pyr

CHK: lgy-crm, sme gy, sbblky, sft-smwt  
firm, msm, mot-bnd tex, v mrlly, v calc  
MRL: dkgy-gybrn, sbblky-sbply, sft, mot-  
sily tex, v calc, tr bent, tr fos frag

MRL: dkgy-gybrn, sbblky-sbply, sft, mot-  
sily tex, v calc, tr bent, tr fos frag

CHK: lgy-crm, sme gy, sbblky, sft-smwt  
firm, msm, mot-bnd tex, v mrlly, v calc

MRL: dkgy-gybrn, sbblky-sbply, sft, mot-  
sily tex, v calc, sme bent w/ pyr, tr fos frag

CHK: lgy-gy, sbblky, sft-smwt firm, v msm,  
mot tex, rthy lst, v mrlly, v calc

MRL: dkgy-gybrn, sbblky-sbply, sft, mot-  
sily tex, v calc, sme bent w/ pyr, tr fos frag

CHK: lgy-gy, sbblky, sft-smwt firm, v msm,  
mot tex, rthy lst, v mrlly, v calc





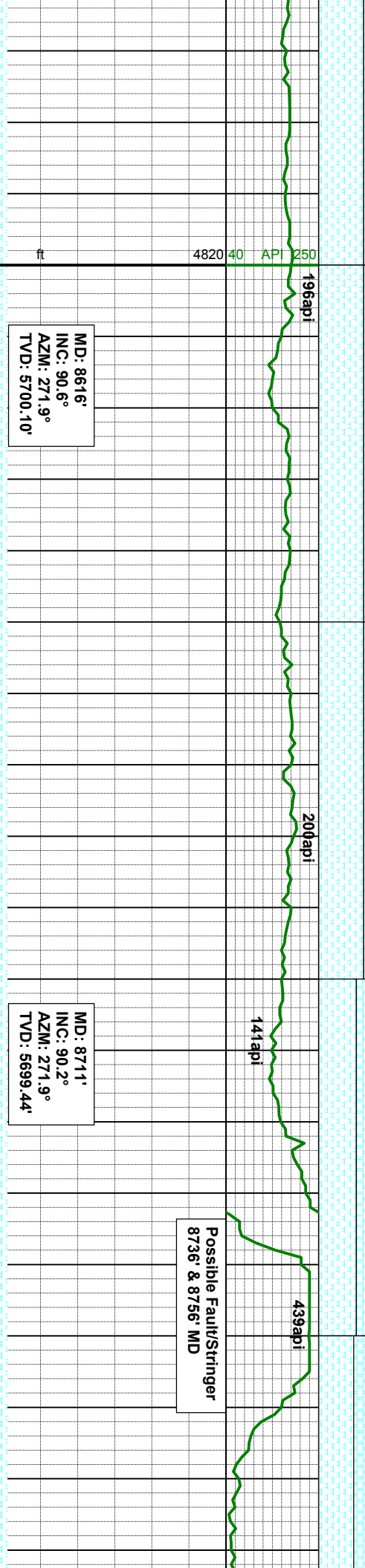
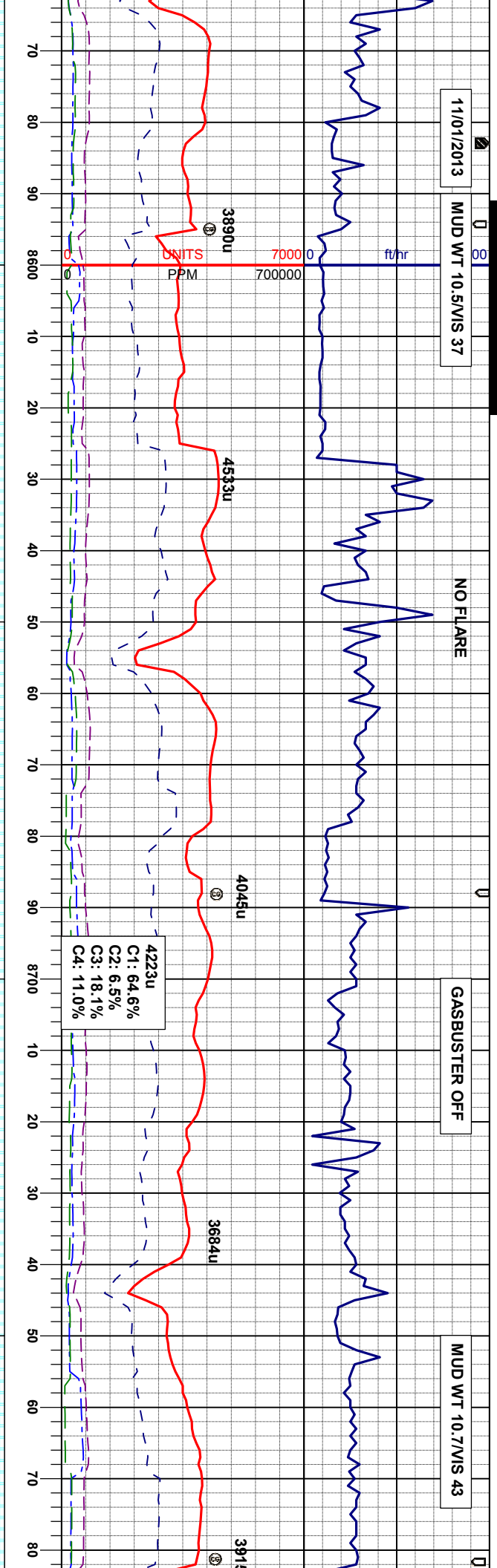
11/01/2013

MUD WT 10.5/VIS 37

NO FLARE

GASBUSTER OFF

MUD WT 10.7/VIS 43



MR.L: dkgy-gybrn, sbblky-sbply, sft, mot-sily tex, v calc, sme bent w/ pyr, tr fos frag  
CHK: llyg-gy, sbblky, sft-smwt firm, v msm, mot tex, rthy lstr, v mly, v calc

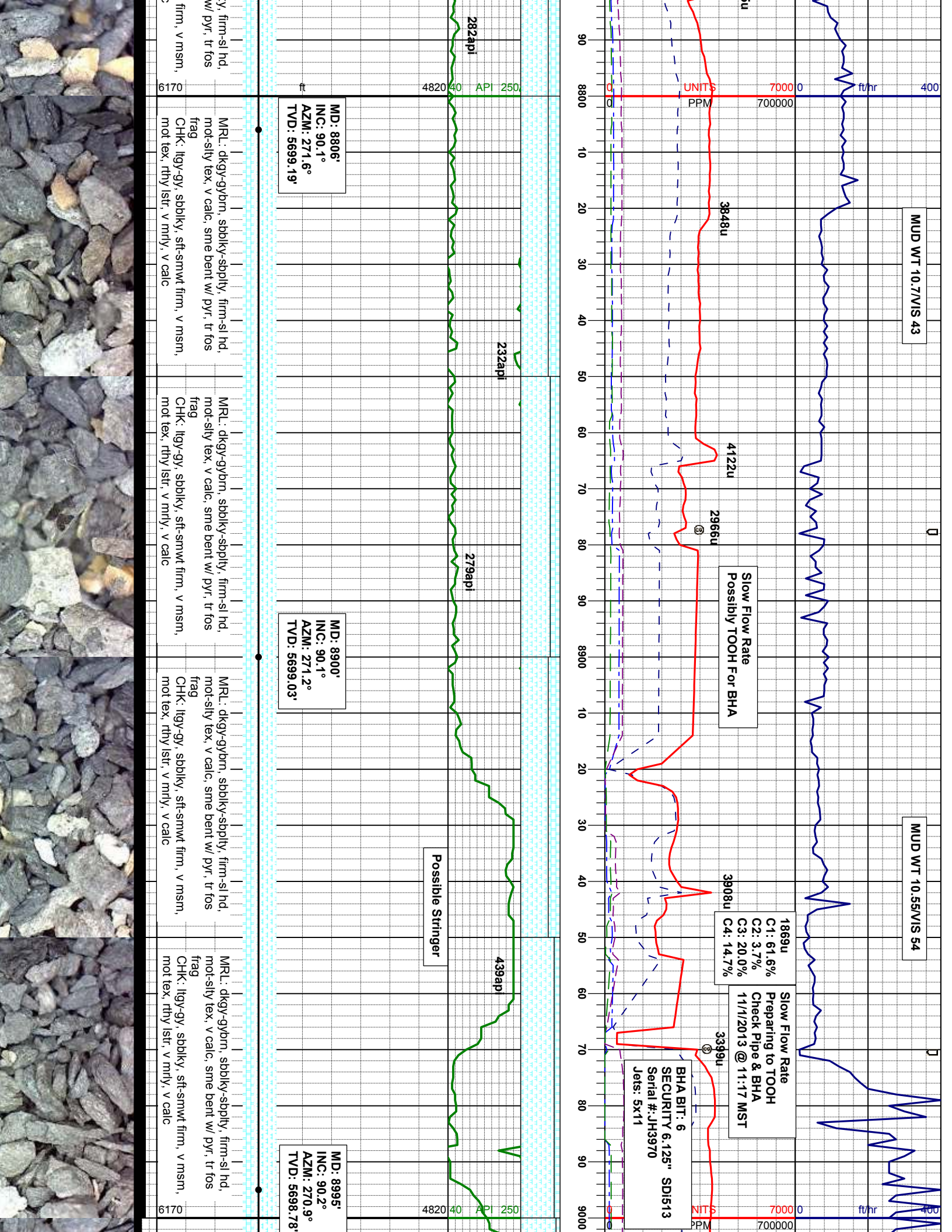
MR.L: dkgy-gybrn, sbblky-sbply, sft, mot-sily tex, v calc, sme bent w/ pyr, tr fos frag  
CHK: llyg-gy, sbblky, sft-smwt firm, v msm, mot tex, rthy lstr, v mly, v calc

MR.L: dkgy-gybrn, sbblky-sbply, firm-sl hd, mot-sily tex, v calc, sme bent w/ pyr, tr fos frag  
CHK: llyg-gy, sbblky, sft-smwt firm, v msm, mot tex, rthy lstr, v mly, v calc

MR.L: dkgy-gybrn, sbblky-sbply, mot-sily tex, v calc, sme bent  
CHK: llyg-gy, sbblky, sft-smwt firm, v msm, mot tex, rthy lstr, v mly, v calc



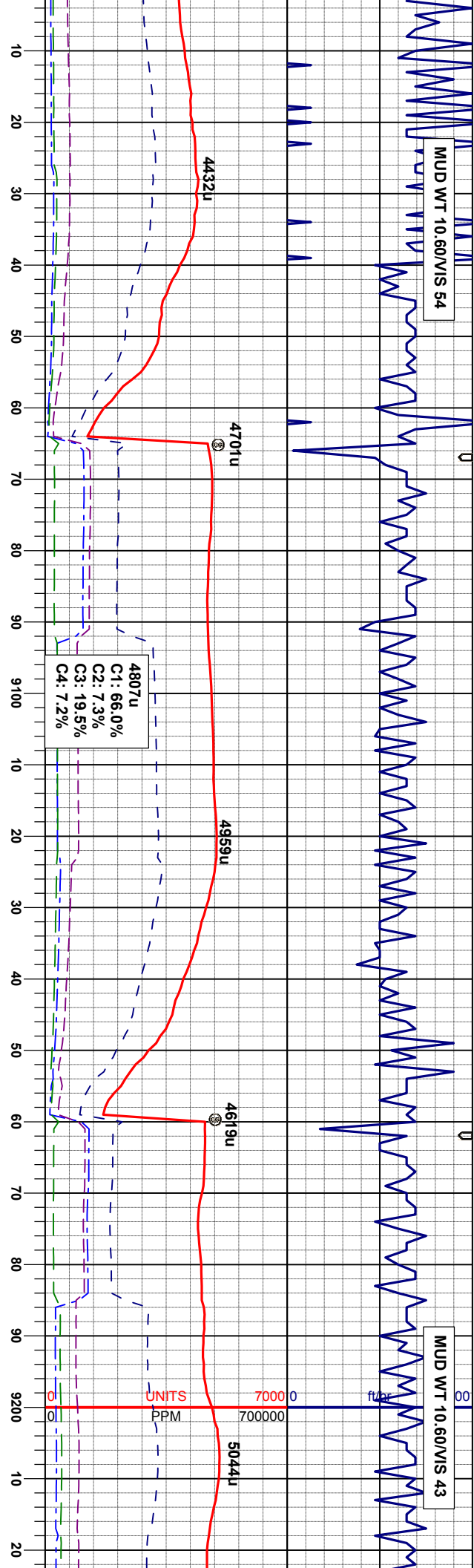






MUD WT 10.60/VIS 54

MUD WT 10.60/VIS 43



Possible Fault  
9042' MD

Possible Fault  
9069' MD

Gas Increased

MD: 9095'  
INC: 90.7°  
AZM: 271.2°  
TVD: 5698.03'

MRL: dkgy-gybrn, sbblky-sbply, firm-sl hd, mot-sily tex, v calc, sme bent w/ pyr, tr fos frag  
CHK: llyg-gy, sbblky, sft-smwt firm, v msm, mot tex, rthy lstr, v mrlly, v calc

MRL: dkgy-gybrn, sbblky-sbply, firm-sl hd, mot-sily tex, v calc, sme bent w/ pyr, tr fos frag  
CHK: llyg-gy, sbblky, sft-smwt firm, v msm, mot tex, rthy lstr, v mrlly, v calc

MRL: dkgy-gybrn, sbblky-sbply, firm-sl hd, mot-sily tex, v calc, sme bent w/ pyr, tr fos frag  
CHK: llyg-gy, sbblky, sft-smwt firm, v msm, mot tex, smwt wxy, rthy lstr, v mrlly, v calc

MRL: dkgy-gybrn, sbblky-sbply, firm-sl hd, mot-sily tex, v calc, sme bent w/ pyr, tr fos frag  
CHK: llyg-gy, sbblky, sft-smwt firm, v msm, mot tex, smwt wxy, rthy lstr, v mrlly, v calc

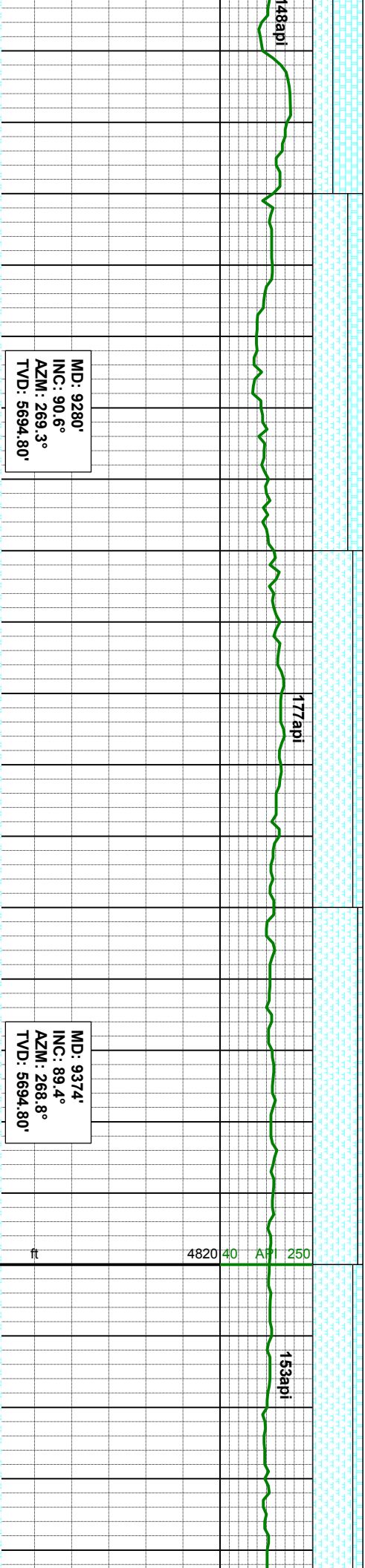
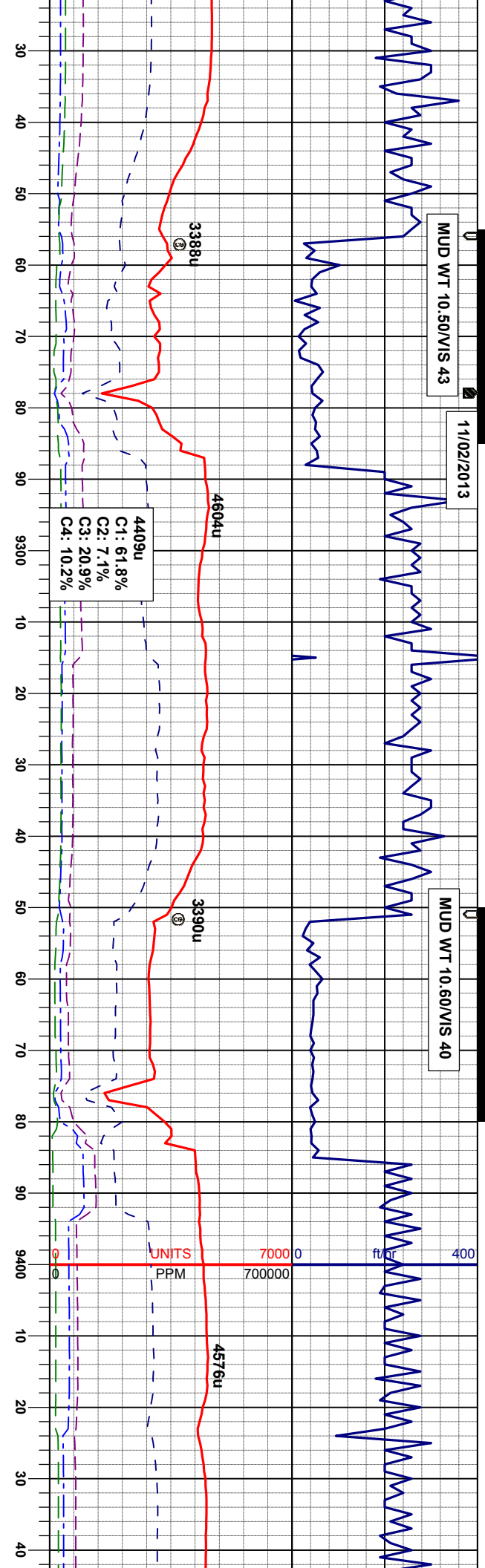




MUD WT 10.50/VIS 43

11/02/2013

MUD WT 10.60/VIS 40



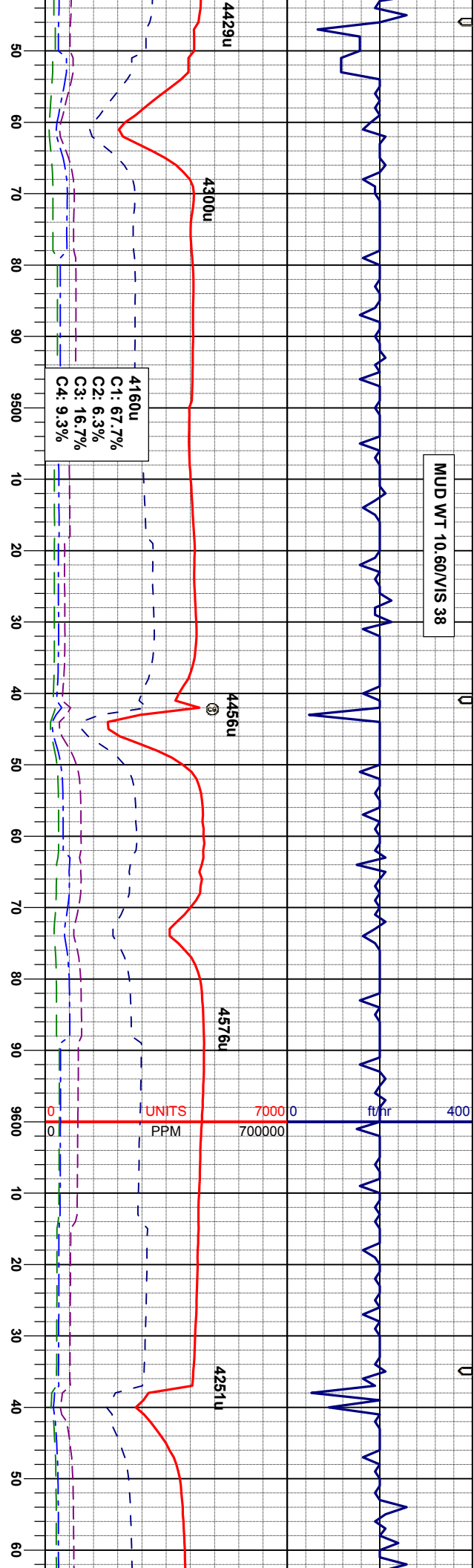
MR.L: dkgy-gybrn, sbblky-sbply, firm-sl hd, mot-rr bnd tex, v calc, sme bent w/ pyr, tr fos frag  
CHK: lly-gy, sbblky, sft-smwt firm, v msm, mot tex, rthy istr, v mfly, v calc

MR.L: dkgy-gybrn, sbblky-sbply, firm-sl hd, mot-rr bnd tex, v calc, sme bent w/ pyr, tr fos frag  
CHK: lly-gy, sbblky, sft-smwt firm, v msm, mot tex, rthy istr, v mfly, v calc

MR.L: dkgy-gybrn, sbblky-sbply, firm-sl hd, mot-rr bnd tex, v calc, sme bent w/ pyr, tr fos frag  
CHK: lly-gy, sbblky, sft-smwt firm, v msm, mot tex, rthy istr, v mfly, v calc



MUD WT 10.60/VIS 38



MD: 9469'  
INC: 89.1°  
AZM: 268.2°  
TVD: 5696.04'

174api

MD: 9564'  
INC: 89.3°  
AZM: 267.7°  
TVD: 5697.37'

170api

167api

MR: dkgy-gybrn, sbblky-sbply, firm-sl hd,  
mot-rr bnd tex, v calc, sme bent w/ pyr, tr  
fos frag  
CHK: llyg-gy, sbblky, sft-smwt firm, v msm,  
mot tex, rthy lstr, v mly, v calc

MR: dkgy-gybrn, sbblky-sbply, firm-sl hd,  
mot-rr bnd tex, v calc, sme bent w/ pyr, tr  
fos frag  
CHK: llyg-gy, sbblky, sft-smwt firm, v msm,  
mot tex, rthy lstr, v mly, v calc

MR: dkgy-gybrn, sbblky-sbply, firm-sl hd,  
mot-rr bnd tex, v calc, sme bent w/ pyr  
CHK: llyg-gy, sbblky, sft-smwt firm, v msm,  
mot tex, rthy lstr, v mly, v calc

MR: dkgy-gybrn, sbblky-sbply, firm-sl hd,  
mot-rr bnd tex, v calc, sme bent w/ pyr  
CHK: llyg-gy, sbblky, sft-smwt firm, v msm,  
mot tex, rthy lstr, v mly, v calc

MD: 9659'  
INC: 89.9°  
AZM: 266°  
TVD: 5699'

MR: dkgy-gybrn, sbblky-sbply, firm-sl hd,  
mot-rr bnd tex, v calc, sme bent w/ pyr  
CHK: llyg-gy, sbblky, sft-smwt firm, v msm,  
mot tex, rthy lstr, v mly, v calc



