



Scale: 5" / 100'
Measured Depth Log

Well Name	Heartland C30-79HN		
Location	SESE SEC25 T4N R65W		
State	COLORADO	County	WELD
Country	USA	Rig Number	PRECISION 828
API Number	05-123-39556	AFE #	200367
Region	DENVER-JULESBURG BASIN	Field	WATTENBERG
Spud Date	8/9/2014	Drilling Completed	8/21/2014
Surface Coordinates	282' FSL, 343' FEL	Lat/Long:	40.27673/-104.60356
Ground Elevation	4844'	K.B. Elevation	4860'
Logged Interval	6300'	To	16659'
		Total Depth	16659'
Formation	PIERRE(TEEPEE BUTTES, SHARON SPRINGS), NIOBRARA (SMOKY HILL A,B, & C LAYERS)		
Type of Drilling Fluid	LSND		

Company NOBLE ENERGY INC.
Address 1625 Broadway
Denver, CO 80202

Name MELANIE PETERSON
Company NOBLE ENERGY INC.
Address 1625 Broadway
Denver, CO 80202

WELLSITE GEOLOGISTS: GA

GE
LO

CHALK

TTT MARLSTONE

Operator

Geologist

Other

RY MYERS, LIZ VAN DIEPEN, PAUL KRUGER
OLOGICAL SERVICES PROVIDED BY COLUMBINE LOGGING, INC.
G CONTINUES FROM FILE: Heartland C30-79HN Vert.mplot

Rock Types

SHALY SANDSTONE

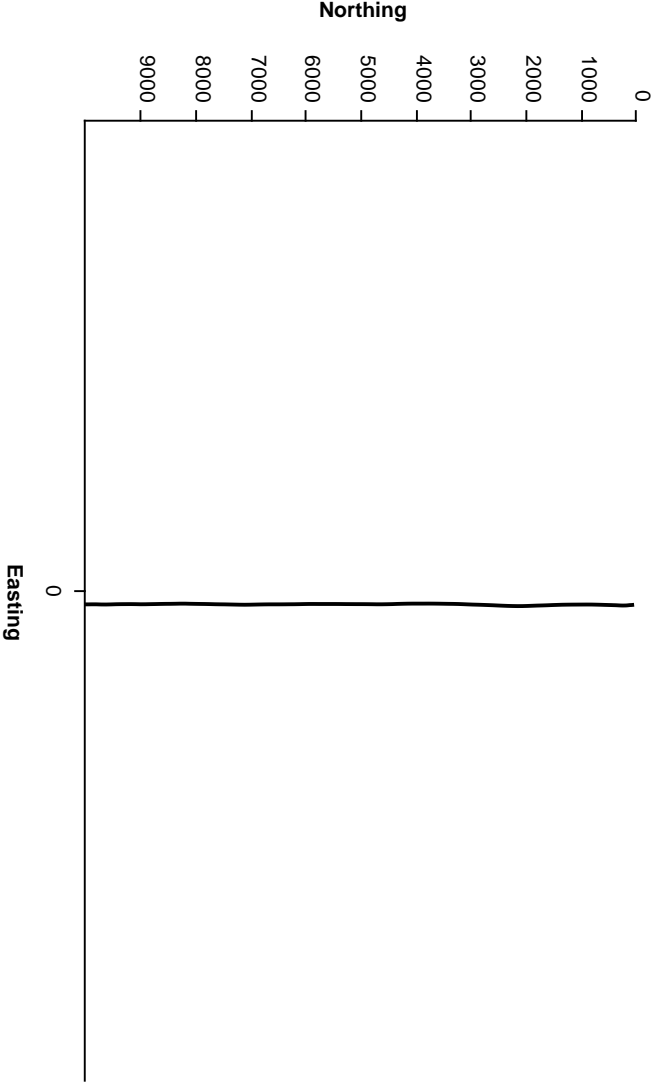
SILTY SHALE

Other Symbols

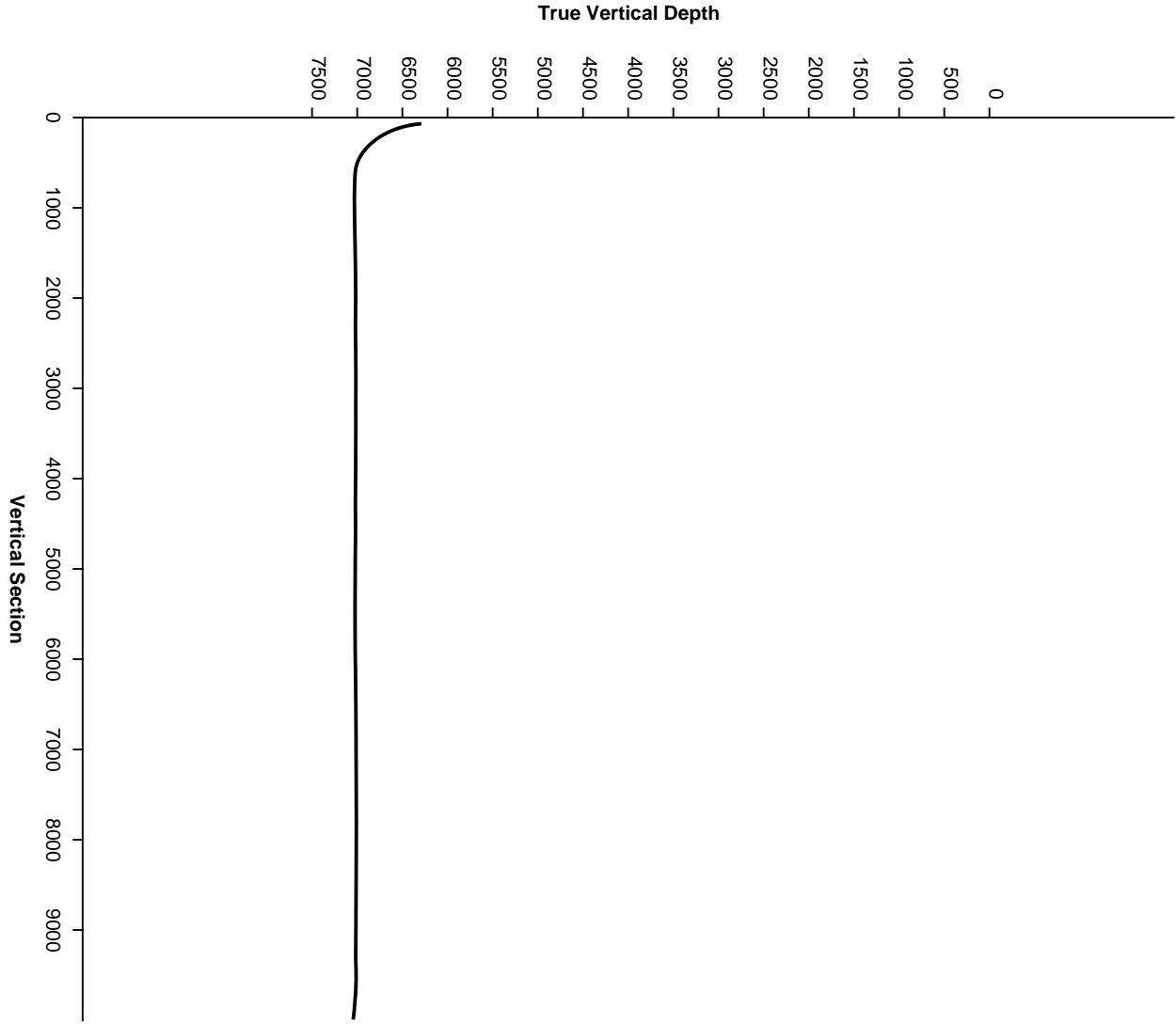
Engineering

- BIT
- CONNECTION (DOWN)
- CONNECTION GAS
- CONNECTION GAS (LEFT)
- TRIP GAS
- NORMAL FAULT
- CASING
- MINDEPTH MAX DEPTH

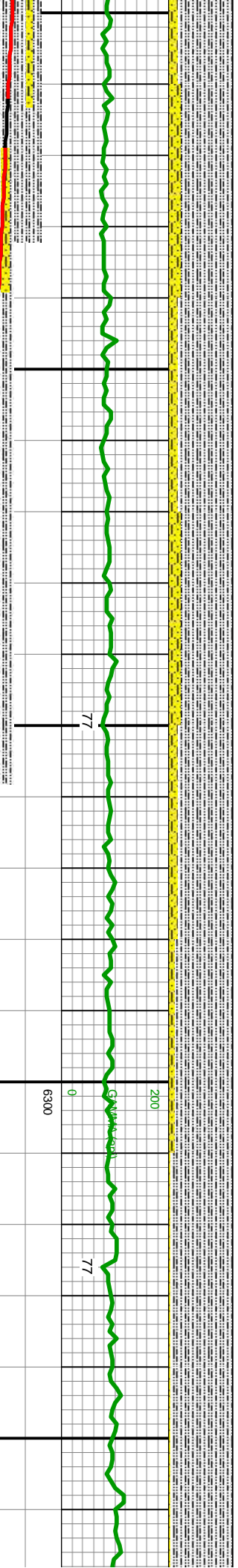
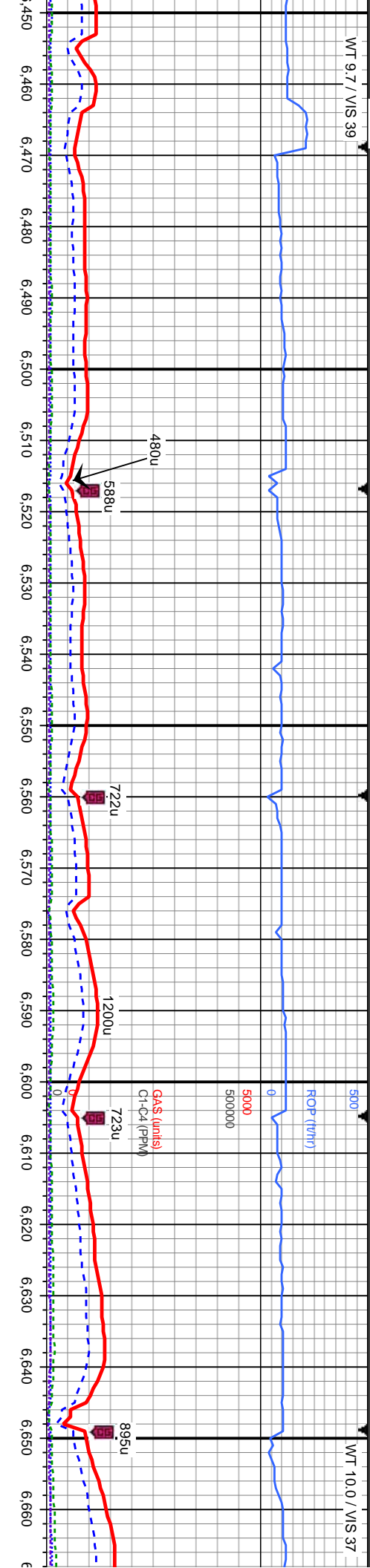
Survey Plan



Survey Elevation



Slide/Rotate			
ROP ROP			
Total Gas & Chromatograph GAS C1 C2 C3 C4			
Depth Labels			
% Lith			
Gamma GAMMA			
Well Bore TVD			
Oil Show			
Images			



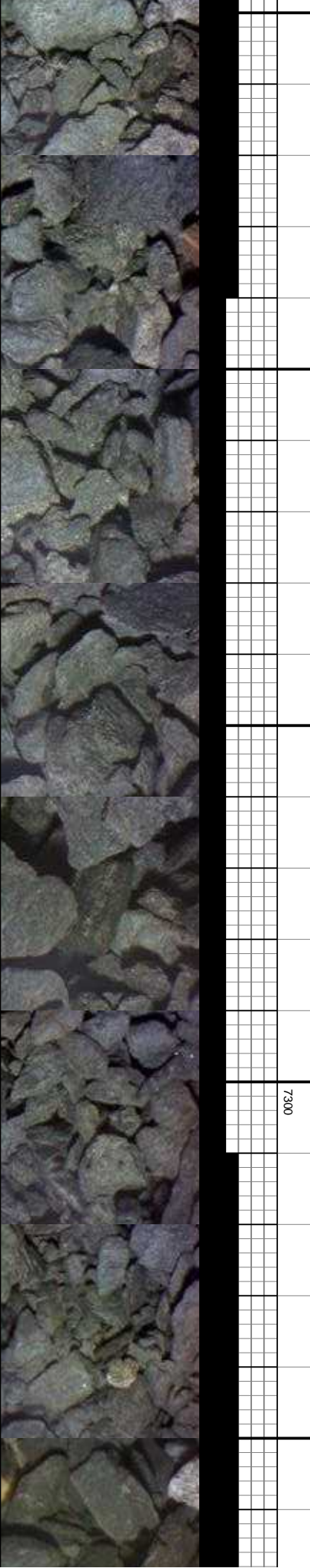
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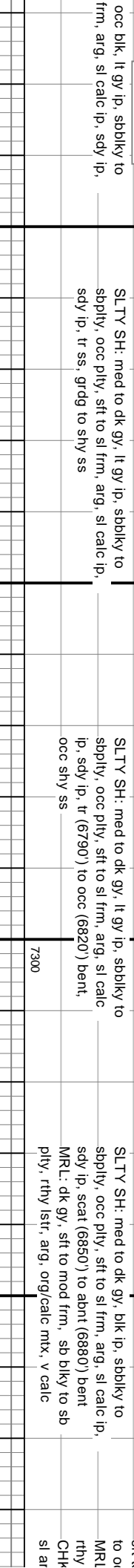
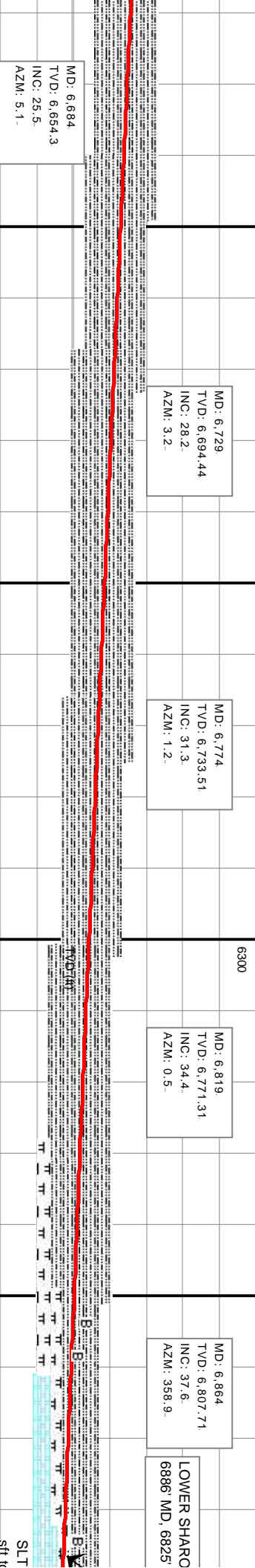
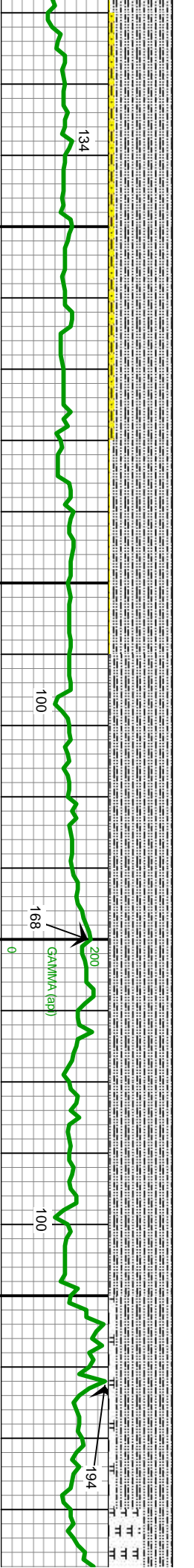
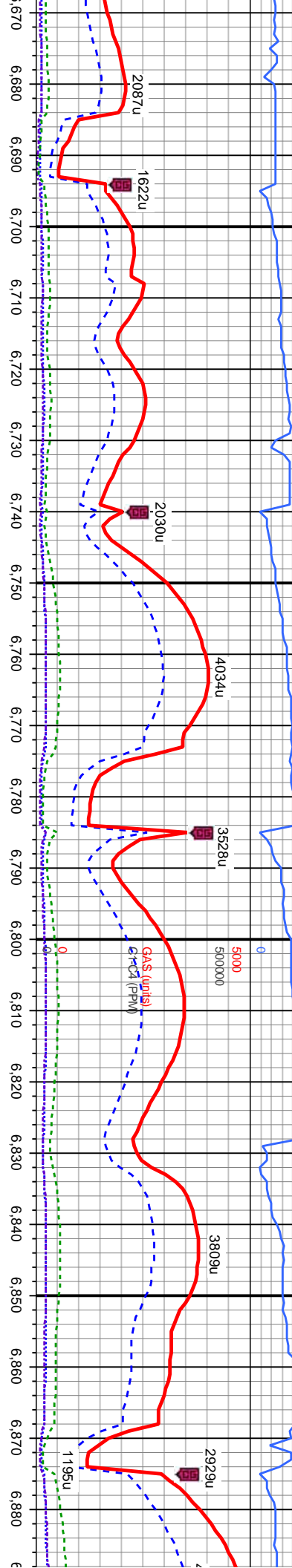
SLTY SH: med to dk gy, sl gybrn ip, sbblky to sbply, sft to sl frm, arg, sl calc ip, sdv ip, rr bent, grdg to SHY SS

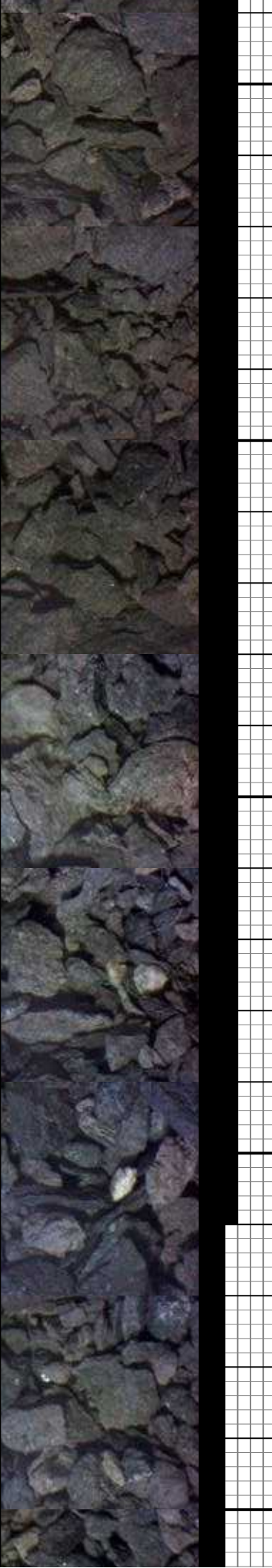
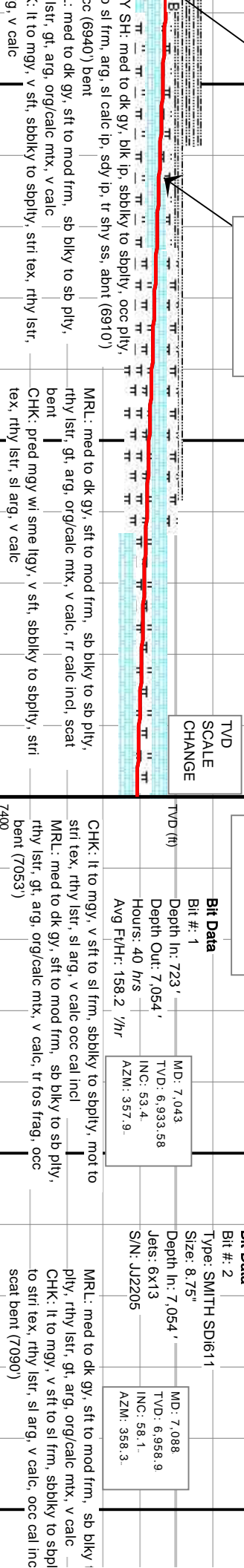
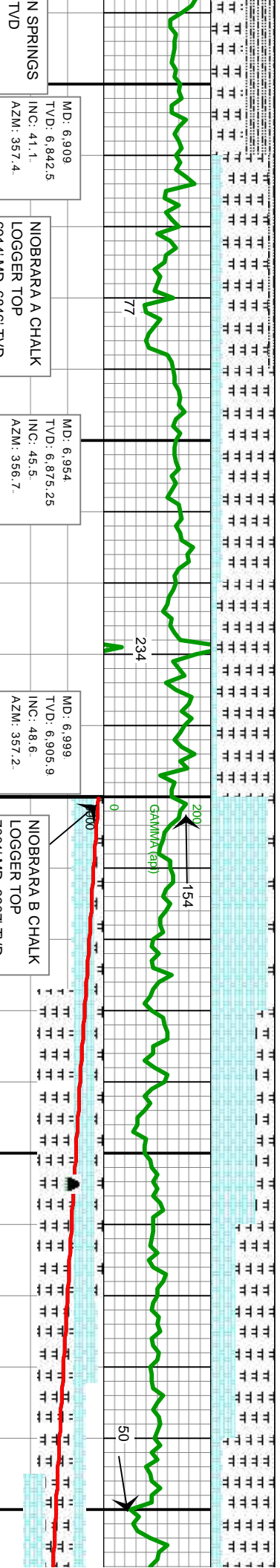
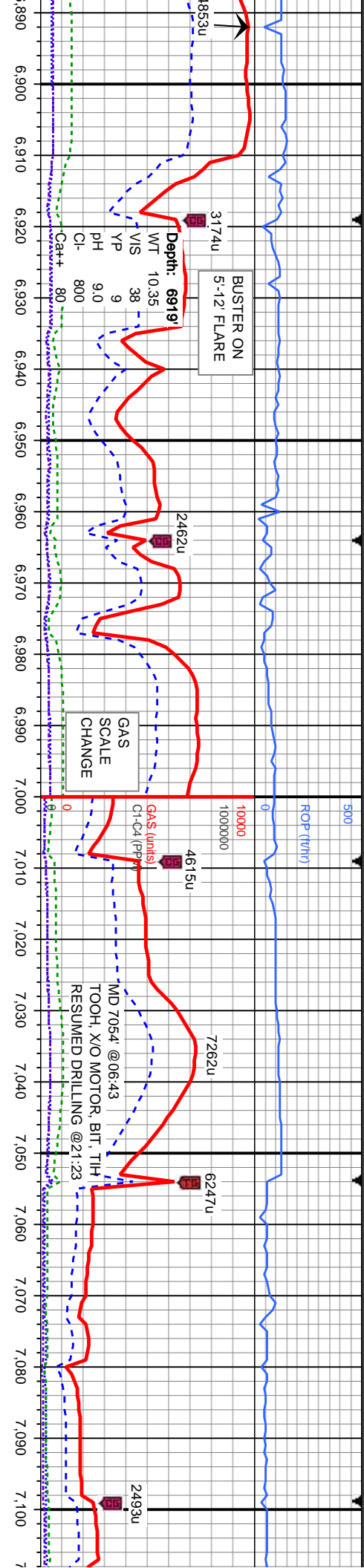
SLTY SH: med to dk gy, occ blk, sl gybrn ip, sbblky to sbply, sft to sl frm, arg, sl calc ip, sdv ip, grdg to shy ss

SLTY SH: med to dk gy, occ blk, sl gybrn ip, sbblky to sbply, sft to sl frm, arg, sl calc ip, sdv ip, grdg to shy ss

SLTY SH: med to dk gy, occ blk, sl gybrn ip, sbply, occ pily, sft to sl tr ss, grdg to shy ss







WT 10.5 / VIS 38

MINDEPTH 8/13/14

MINDEPTH 8/14/14 8/15/14

3-5' FLARE

5-10' FLARE

TD CASING POINT
MD 7304' @03:40
CASING SET @ MD 7294'
DRILLED OUT @03:47, 8/15/14

3056u
3278u

2776u

1585u
1000000
1000000
GA\$ (units)
C1-C4 (PPM)

2685u

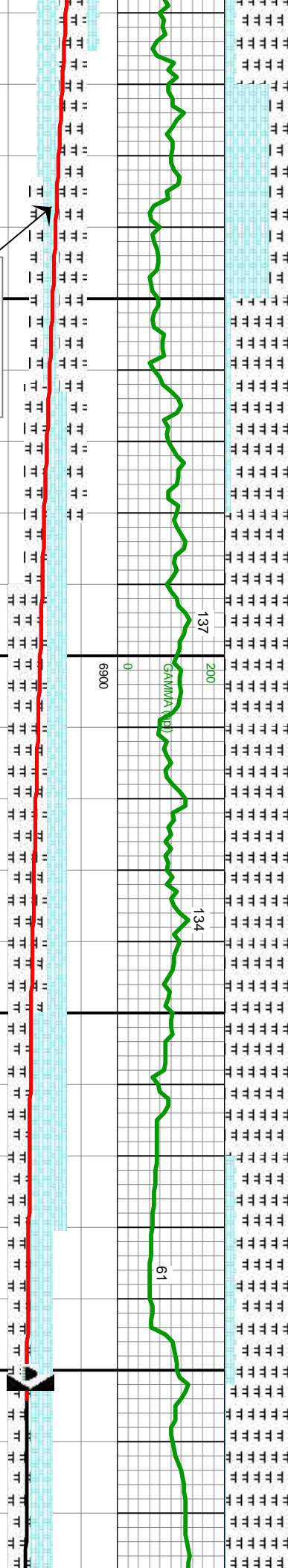
1697u

Depth: 7270'
WT 10.65
VIS 37
YP 9
pH 8.6
Cl- 700
Ca++ 80
2968u

3218u

232u

7,110 7,120 7,130 7,140 7,150 7,160 7,170 7,180 7,190 7,200 7,210 7,220 7,230 7,240 7,250 7,260 7,270 7,280 7,290 7,300 7,310 7,320



MD: 7,133
TVD: 6,980.75
INC: 63.8
AZM: 358.6

MD: 7,178
TVD: 6,998.39
INC: 70.1
AZM: 358.2

MD: 7,223
TVD: 7,011.39
INC: 76.4
AZM: 358.5

MD: 7,249
TVD: 7,016.69
INC: 80.1
AZM: 358.4

Bit Data
Bit #: 2
Depth In: 7,054'
Depth Out: 7,304'
Hours: 7 hrs
Avg Ft/Hr: 35.7' /hr

MD: 7,306
TVD: 7,023.22
INC: 86.73
AZM: 358.1

Bit Data
Bit #: 3
Type: SMITH
Size: 6.125"
Depth In: 7,304'
Depth Out: 7,304'
Jets: 5X12"
S/N: J44840

CHK: It to mgy, v sft to sl frm, sbblky to sbply, mot
to stri tex, rthy lstr, sl arg, v calc, occ cal incl
MRL: med to dk gy, sft to mod frm, sb blky to sb
ply, rthy lstr, gt, arg, org/calc mix, v calc, tr bent

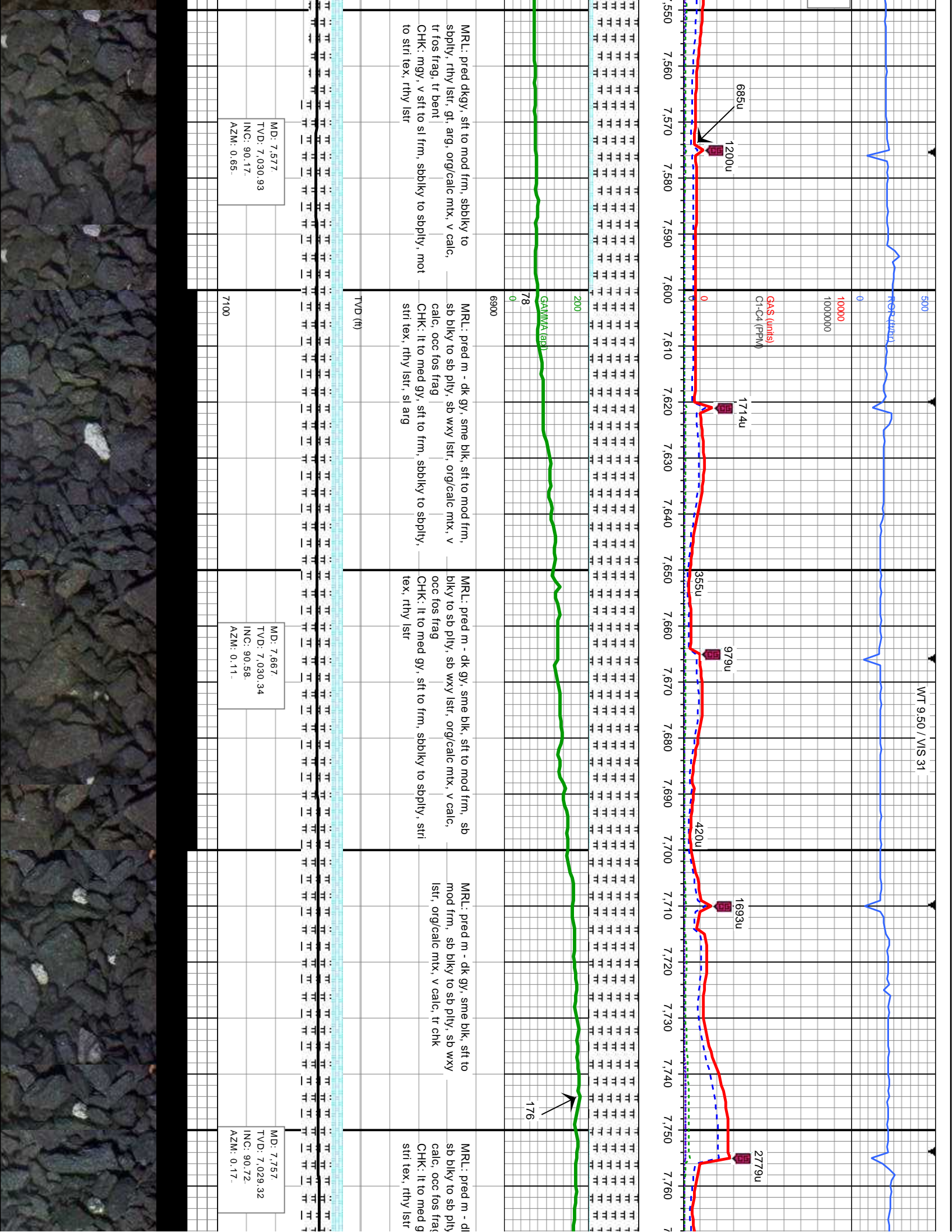
MRL: med to dk gy, sme blk, sft to mod frm,
sb blky to sb ply, rthy lstr, gt, arg, org/calc
mix, v calc, tr cal

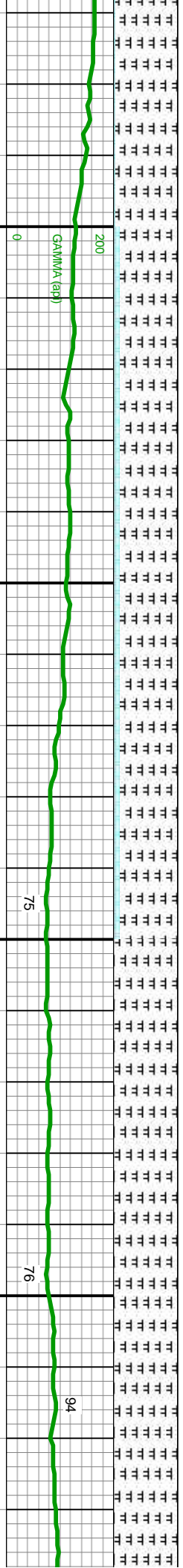
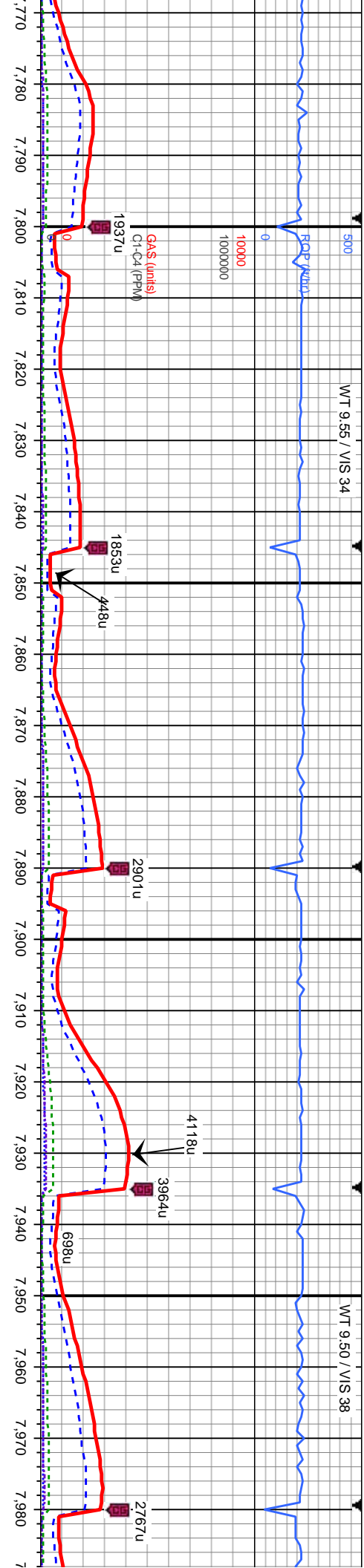
MRL: pred dkgy, sft to mod frm, sbblky to sbply, rthy
lstr, gt, arg, org/calc mix, v calc, tr los frag, tr bent
CHK: mgy, v sft to sl frm, sbblky to sbply, mot to stri
tex, rthy lstr, sl arg, v calc

MRL: pred dkgy, sft to mod frm, sbblky to sbply, rthy
lstr, gt, arg, org/calc mix, v calc, tr los frag, tr bent
CHK: mgy, v sft to sl frm, sbblky to sbply, mot to stri
tex, rthy lstr, sl arg, v calc

7400







k gy, sme blk, sft to mod frm, sb bly to sb ply, sb wxy lstr, org/calc mx, v

MRLL: pred m - dk gy, sme blk, sft to mod frm, sb bly to sb ply, sb wxy lstr, org/calc mx, v calc

CHK: It to med gy, sft to frm, sbly to sbply, stri tex, rthy lstr

MRLL: pred m - dk gy, sme blk, sft to mod frm, sb bly to sb ply, sb wxy lstr, org/calc mx, v calc, occ fos frag

CHK: It to med gy, sft to frm, sbly to sbply, stri tex, rthy lstr, sl arg

MRLL: pred m - dk gy, sme blk, sft to mod frm, sb bly to sb ply, sb wxy lstr, org/calc mx, v calc, occ fos frag, tr chk

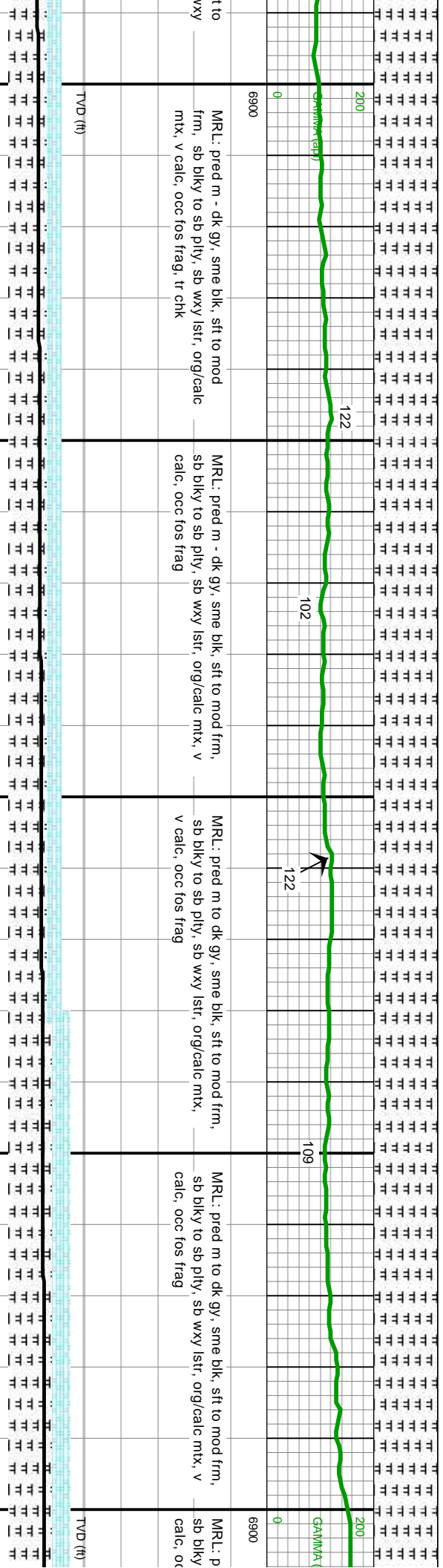
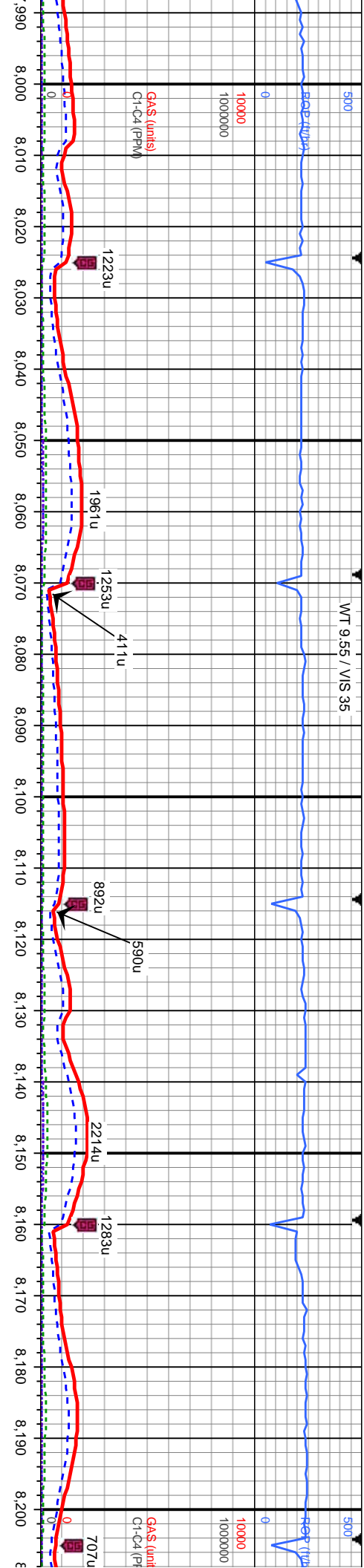
MRLL: pred m - dk gy, sme blk, sft to mod frm, sb bly to sb ply, sb wxy lstr, org/calc mx, v calc, tr chk

TVD (ft)

MD: 7.847
TVD: 7.028.02
INC: 90.93
AZM: 0.31-

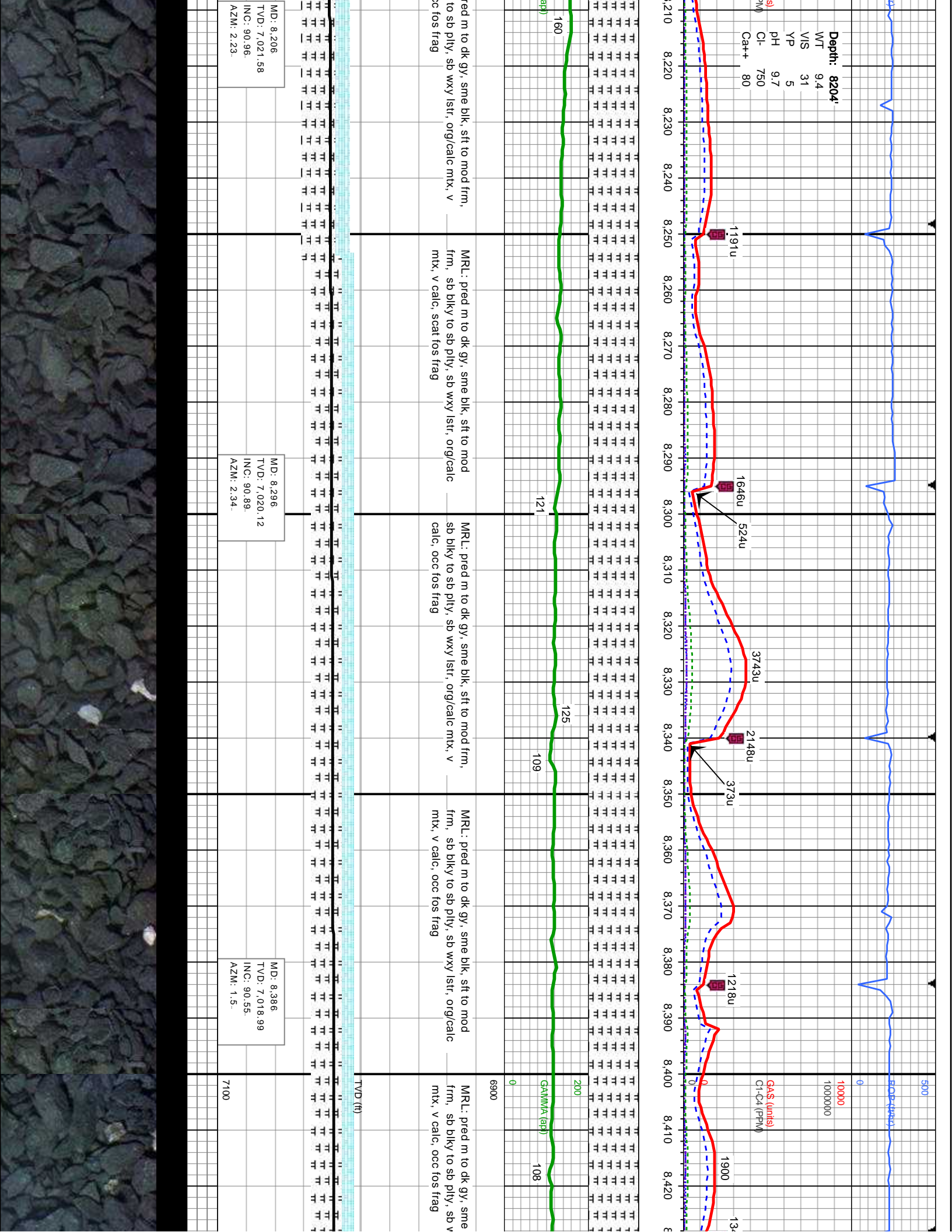
MD: 7.937
TVD: 7.026.4
INC: 91.14
AZM: 0.95

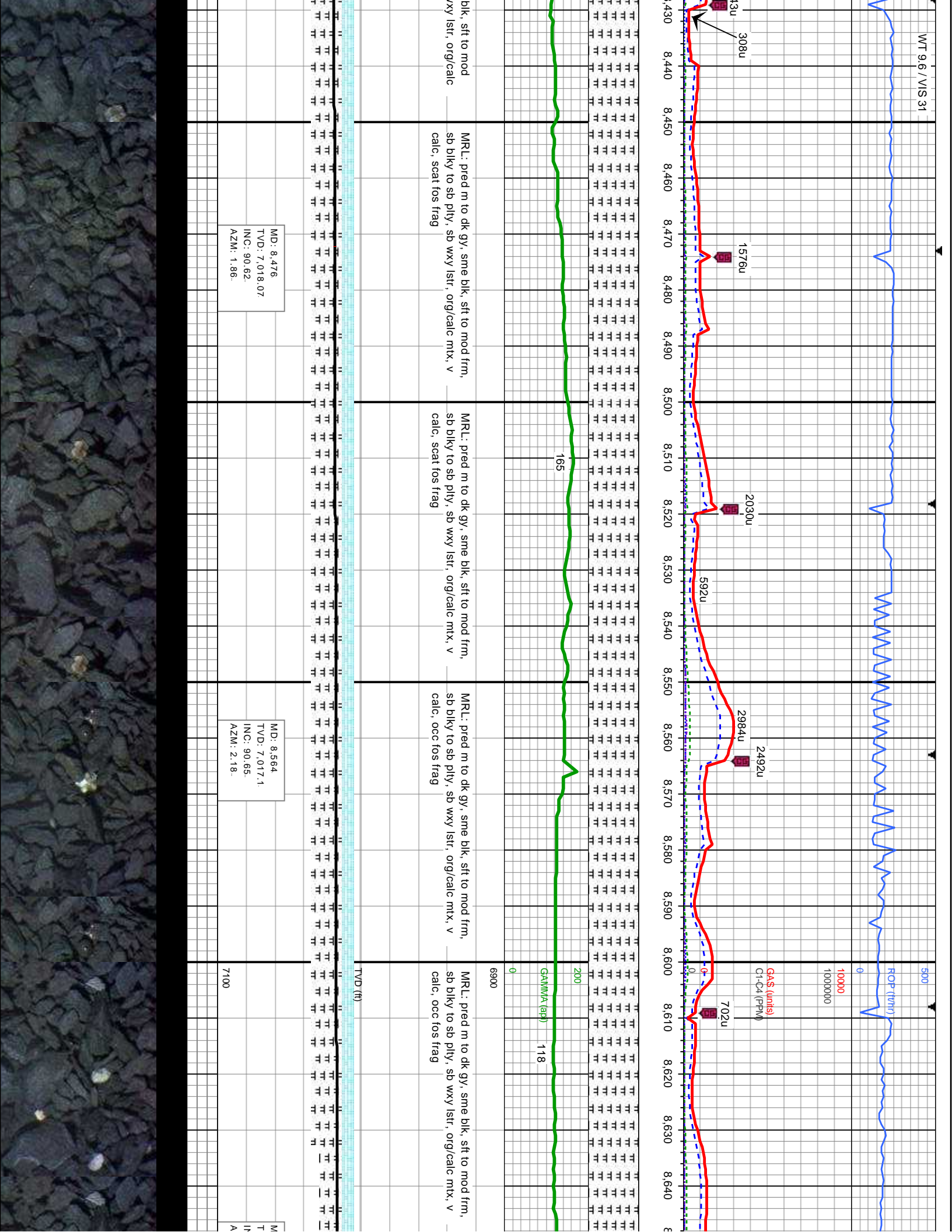
7100

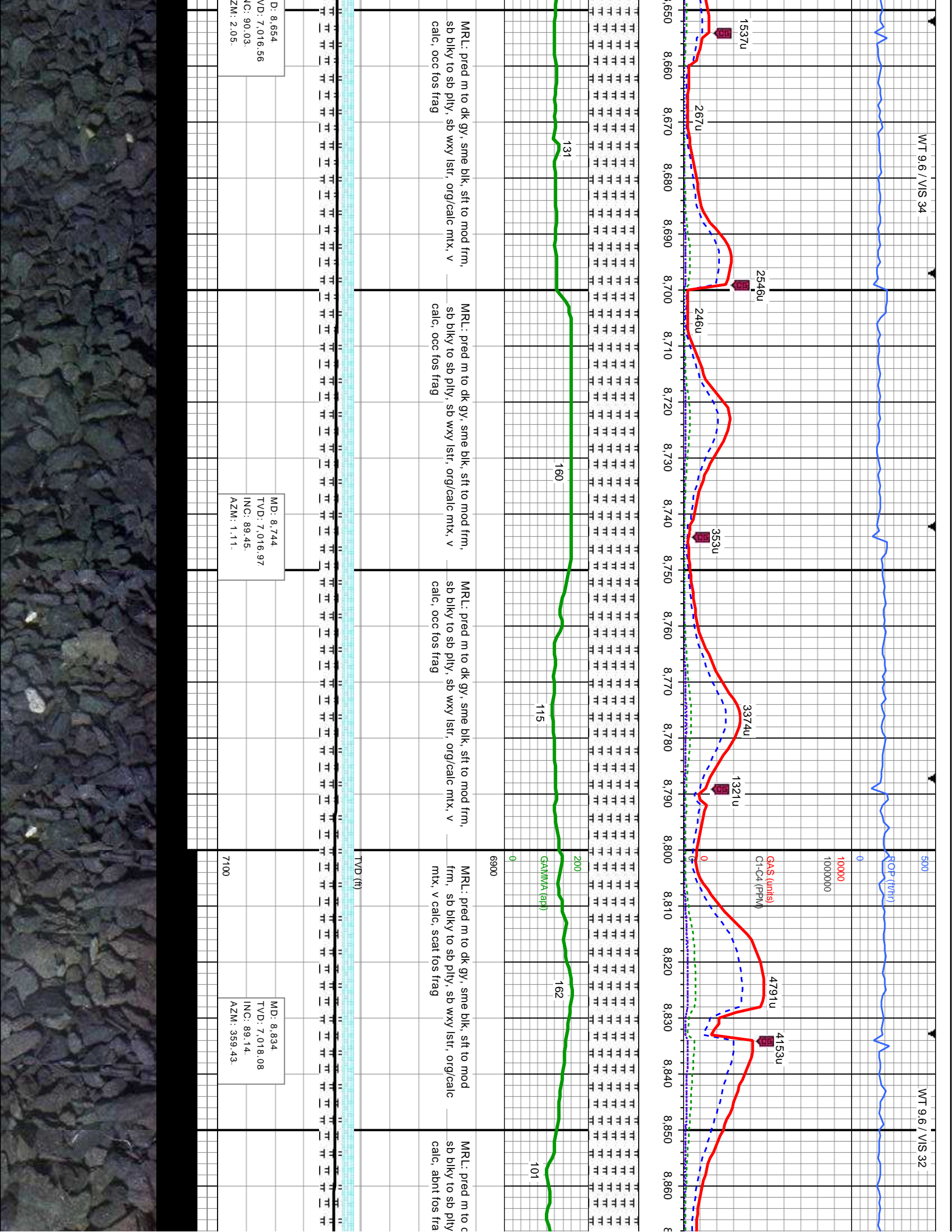


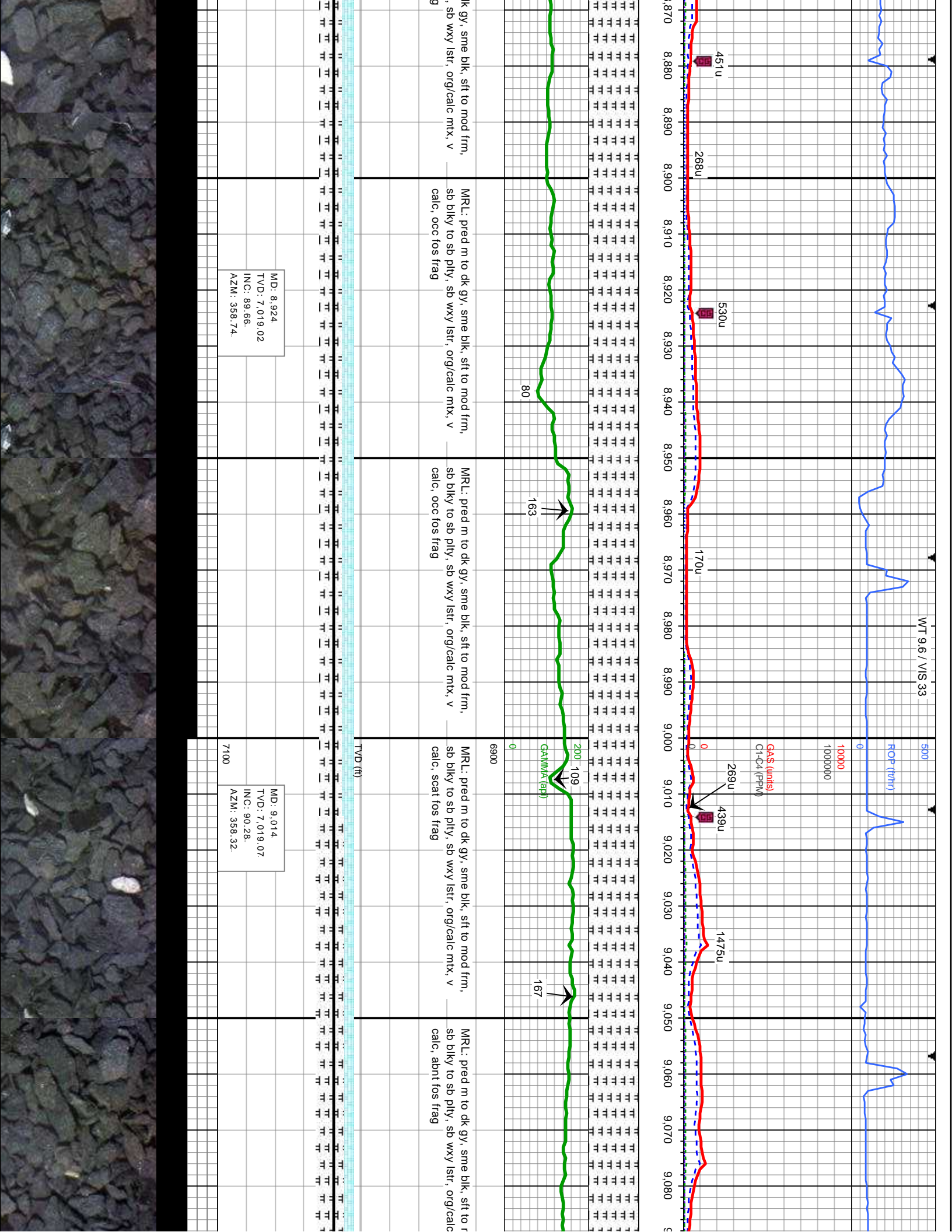
MD: 8.027 TVD: 7,024.77 INC: 90.93 AZM: 1.27	
MD: 8.117 TVD: 7,023.18 INC: 91.1 AZM: 1.99	

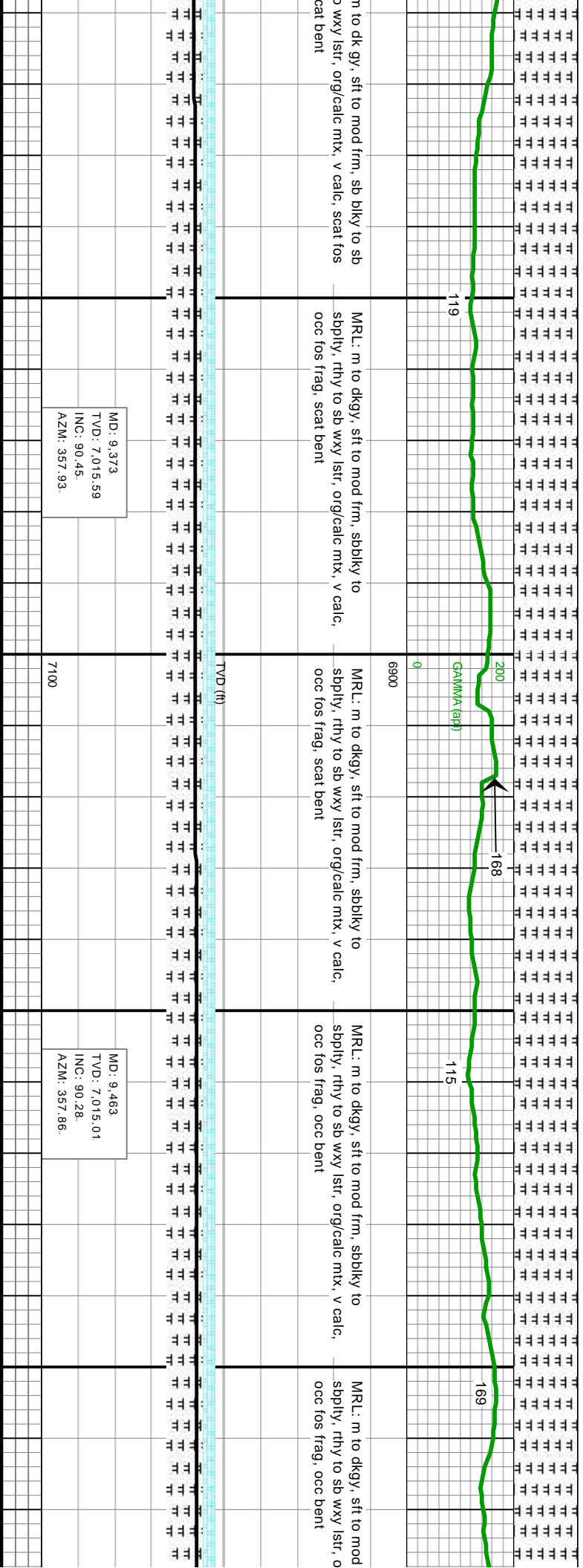
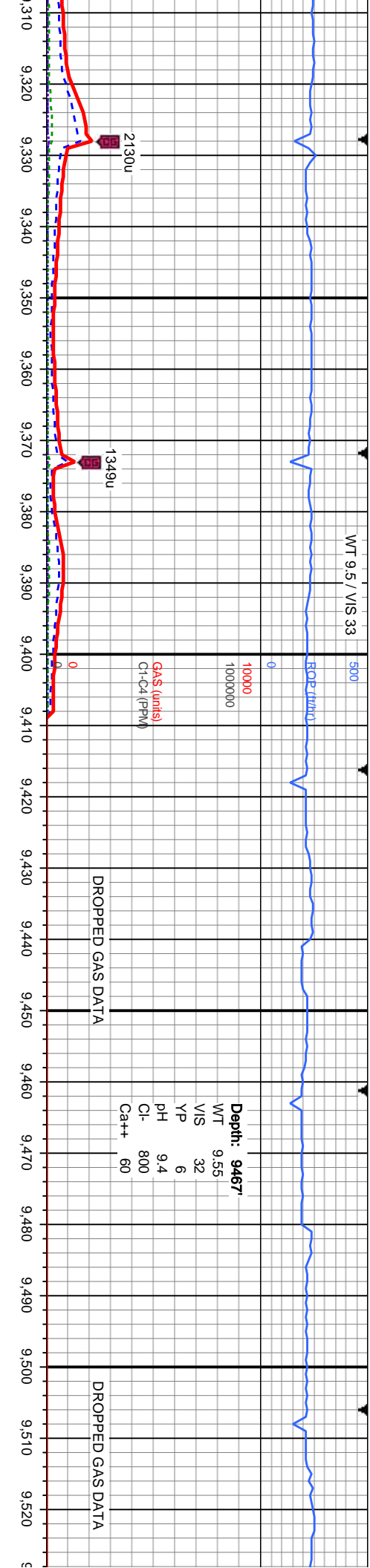


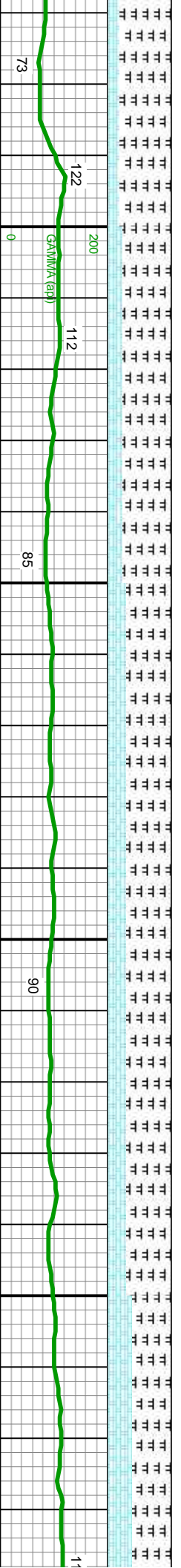
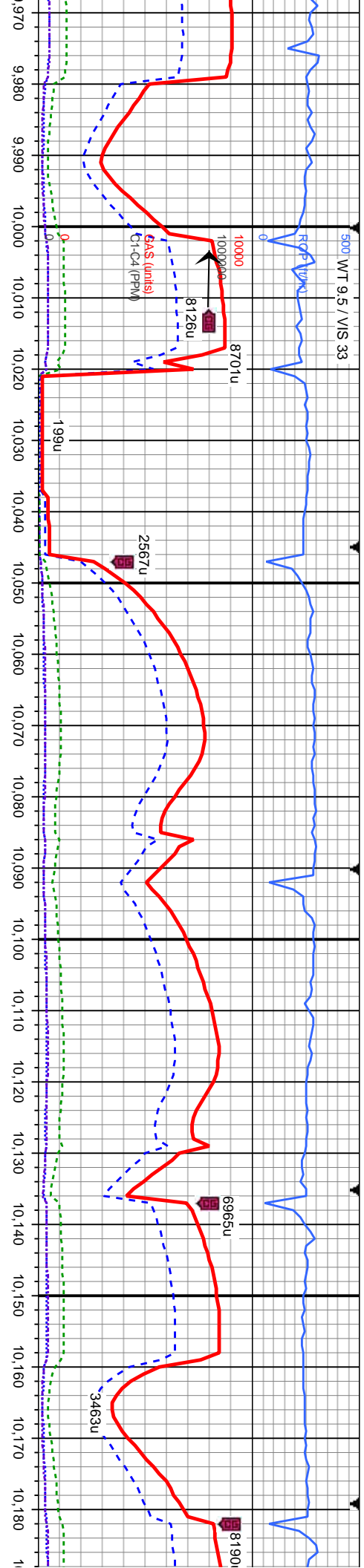








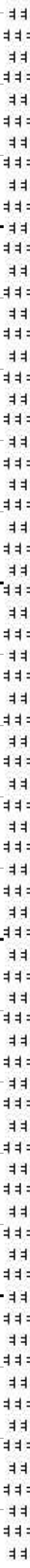




<p>shift to mod frm, sbblky to wxy lstr, org/calc mtx, v calc, rly to sb wxy lstr, org/calc mtx, v calc, r cal</p> <p>CHK: pred mgy, sme lly, sft to sl frm, sbblky to sbply, mot to stri tex, rthy lstr, v calc, occ cal incl</p>	<p>MR: m to dgy, sft to mod frm, sbblky to sbply, rthy to sb wxy lstr, org/calc mtx, v calc, r cal</p> <p>CHK: pred mgy, sme lly, sft to sl frm, sbblky to sbply, mot to stri tex, rthy lstr, v calc, occ cal incl</p>	<p>MR: m to dgy, sft to mod frm, sbblky to sbply, rthy to sb wxy lstr, org/calc mtx, v calc, r cal</p> <p>CHK: It to mgy, sft to sl frm, sbblky to sbply, mot to stri tex, rthy lstr, v calc, occ cal incl</p>	<p>MR: m to dgy, sft to mod frm, sbblky to sbply, rthy to sb wxy lstr, org/calc mtx, v calc, r cal</p> <p>CHK: It to mgy, sft to sl frm, sbblky to sbply, mot to stri tex, rthy lstr, v calc, occ cal incl</p>
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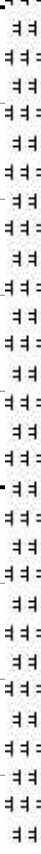


MD: 10,002
TVD: 7,015.37
INC: 90.1
AZM: 359.08



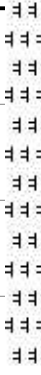
<p>MRL: m to dkgxy, sft to mod frm, sbbkly to spbly, rthly to sb wxy lstr, org/calc mtk, v calc, occ cal incl, tr fos frag</p> <p>CHK: il to mgy, sft to sl frm, sbbkly to spbly, mot to stri tex, rthly lstr, v calc, occ cal incl</p>	<p>MRL: m to dkgxy, sft to mod frm, sbbkly rthly to sb wxy lstr, org/calc mtk, v calc, occ cal incl, tr fos frag, sl tr bent</p> <p>CHK: il to mgy, sft to sl frm, sbbkly to s to stri tex, rthly lstr, v calc, occ cal incl</p>
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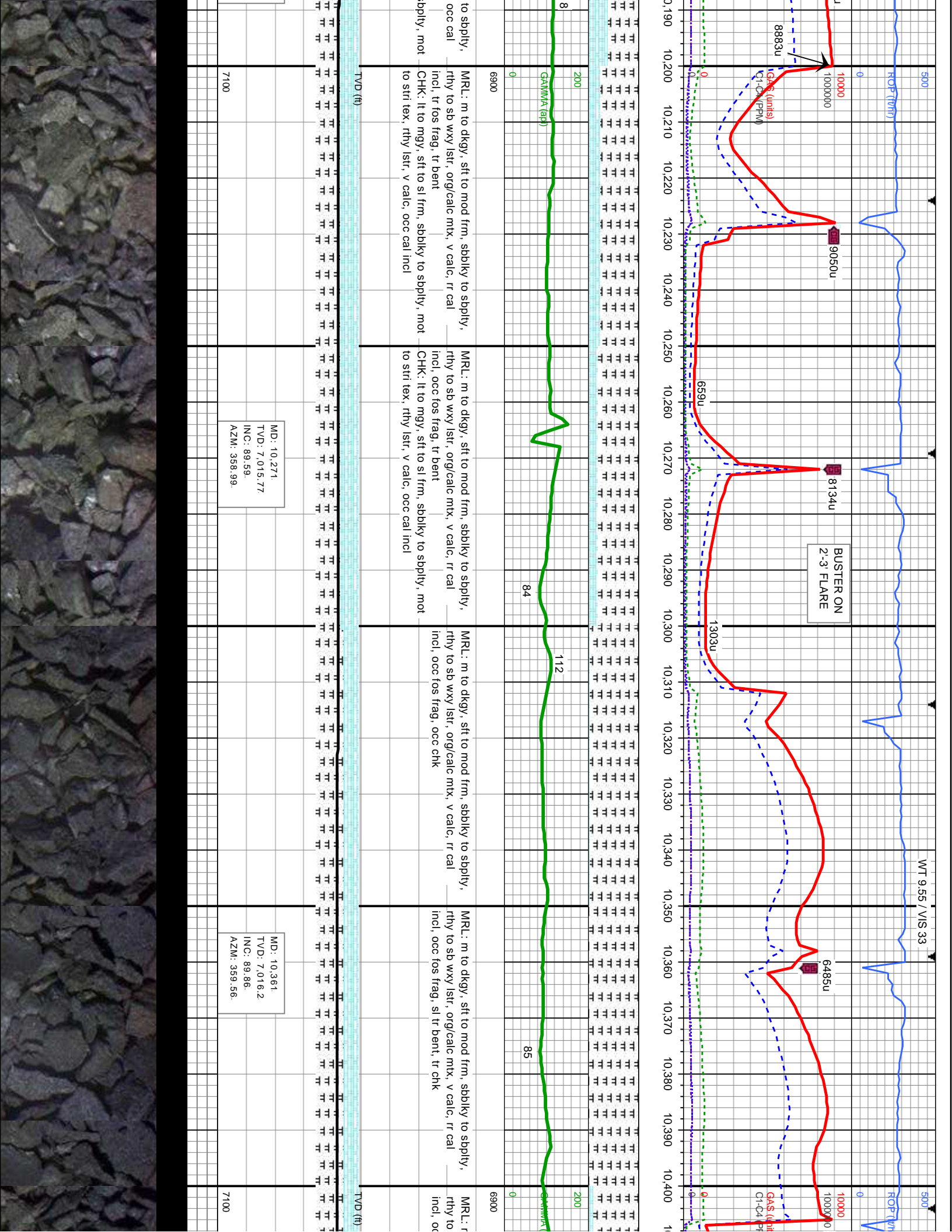
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INC: 90.24
AZM: 359.43

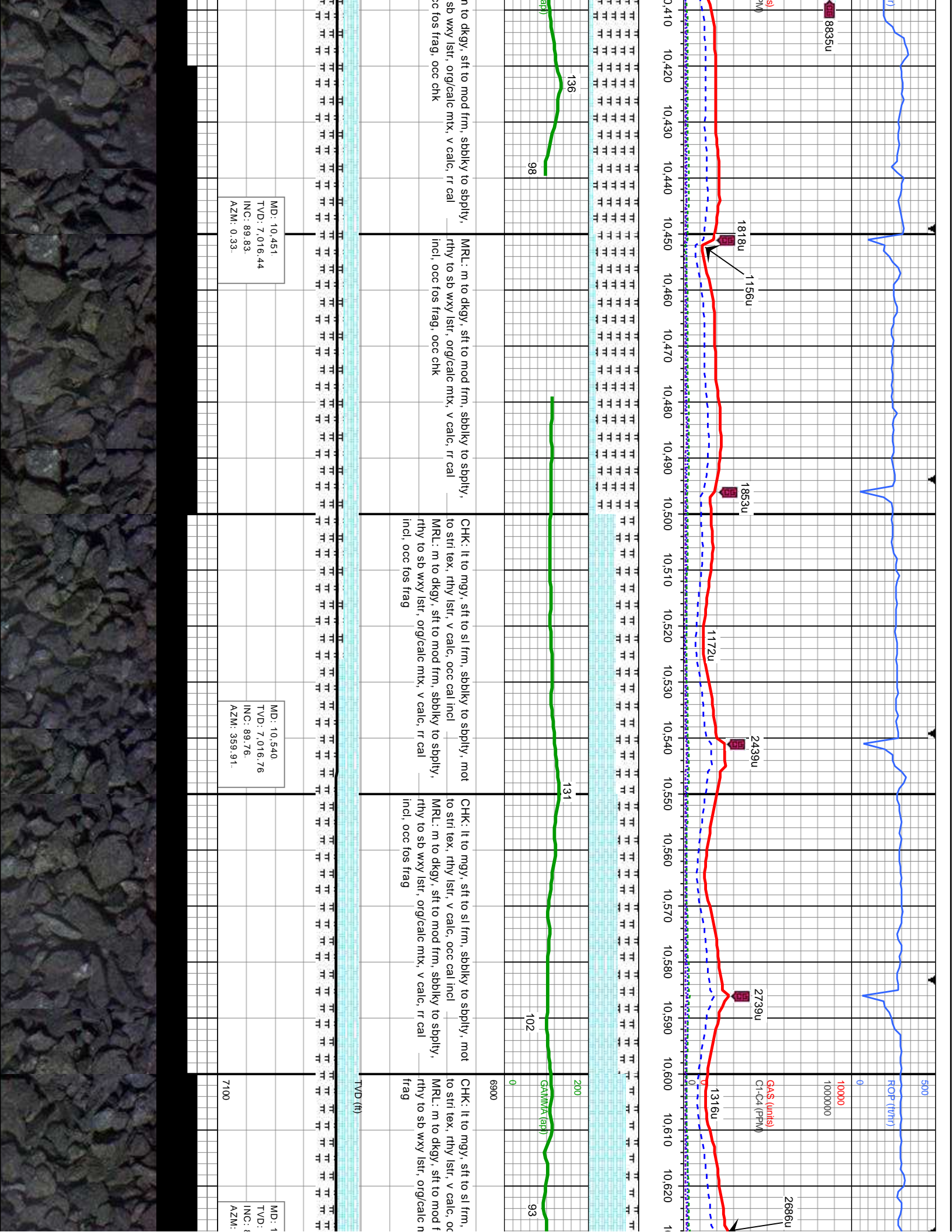


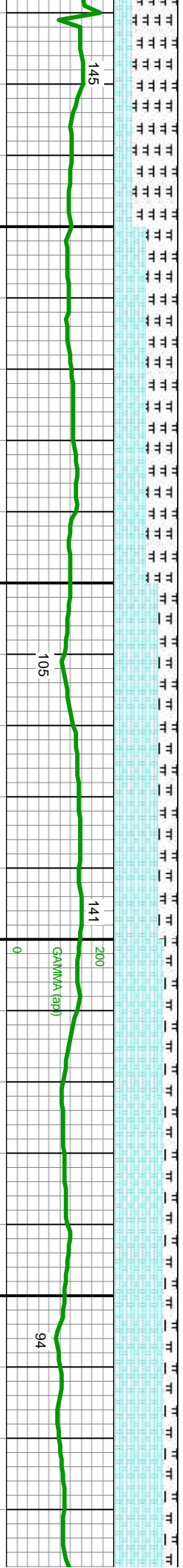
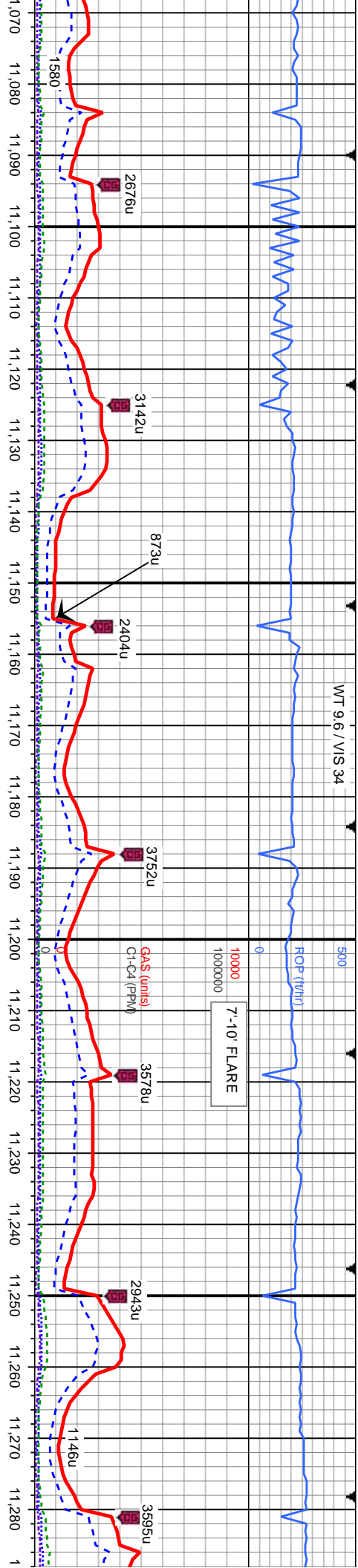
MRL: m to dky, sft to mod frm, sbblky rthy to sb wxy lstr, org/calc mix, v calc, incl, tr fos frag, sl tr bent
CHK: It to mgy, sft to sl frm, sbblky to s to stri tex, wxy lstr, v calc, occ cal incl

MD: 10,181.
TVD: 7,015.18
INC: 89.66
AZM: 358.95







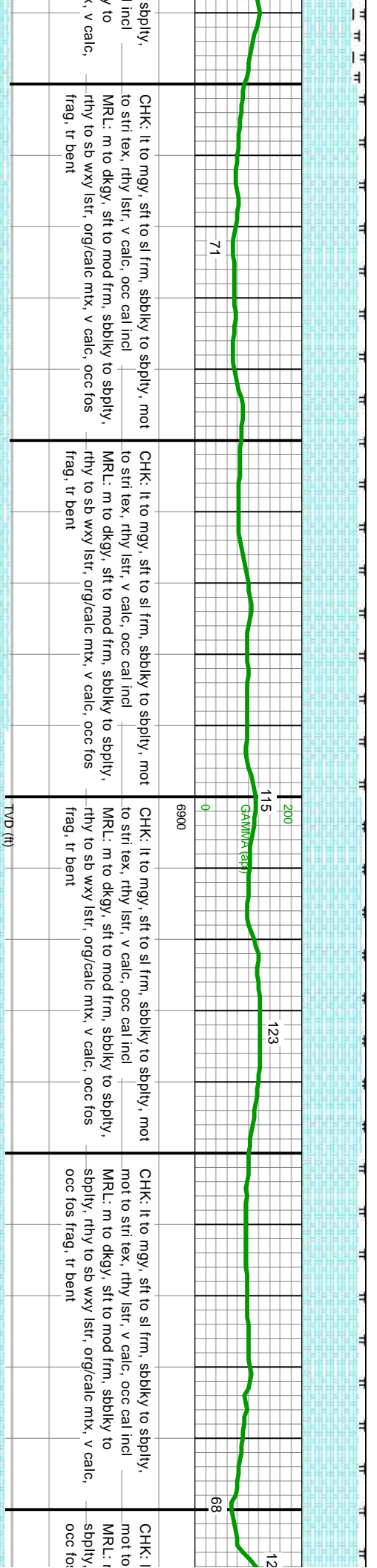
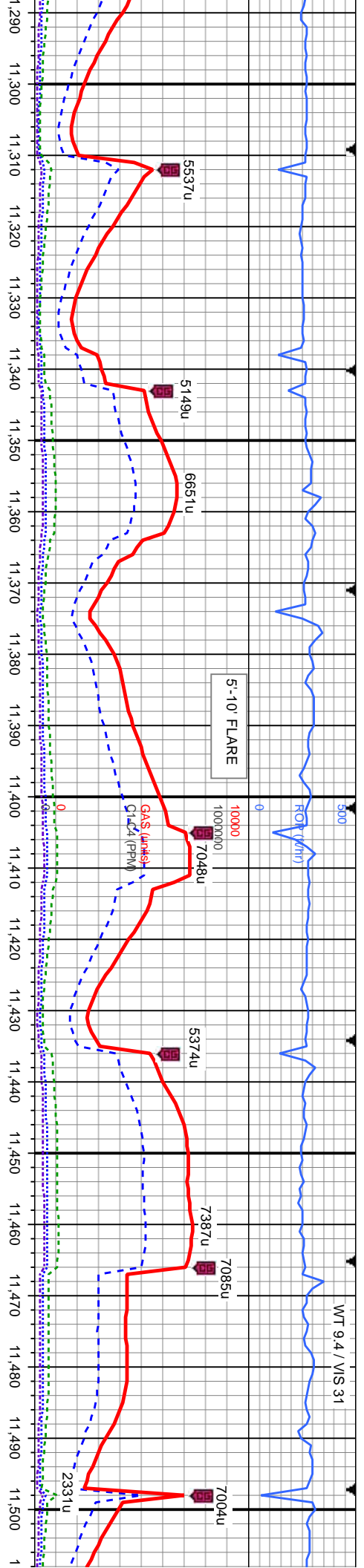


CHK: It to mgy, sft to sl frm, sbblky to sbply, mot to str tex, rthy lstr, v calc, cal incl	CHK: It to mgy, sft to sl frm, sbblky to sbply, mot to str tex, rthy lstr, v calc, cal incl	CHK: It to mgy, sft to sl frm, sbblky to sbply, mot to str tex, rthy lstr, v calc, cal incl
MRL: m to dkg, sft to mod frm, sbblky to sbply, rthy to sb wxy lstr, org/calc mt, v calc, abnt fos frag, scat bent	MRL: m to dkg, sft to mod frm, sbblky to sbply, rthy to sb wxy lstr, org/calc mt, v calc, scat fos frag, occ bent	MRL: m to dkg, sft to mod frm, sbblky to sbply, rthy to sb wxy lstr, org/calc mt, v calc, scat fos frag, occ bent

MD: 11,110
TVD: 7,018.68
INC: 90.34
AZM: 1.72

MD: 11,203
TVD: 7,018.46
INC: 89.93
AZM: 1.13





spbly, incl

CHK: lt to mgy, sft to sl frm, sbbkly to spbly, mot to str tex, rthy lstr, v calc, occ cal incl

MRL: m to dkgy, sft to mod frm, sbbkly to spbly, rthy to sb wxy lstr, org/calc mtz, v calc, occ fos frag, tr bent

spbly, incl

CHK: lt to mgy, sft to sl frm, sbbkly to spbly, mot to str tex, rthy lstr, v calc, occ cal incl

MRL: m to dkgy, sft to mod frm, sbbkly to spbly, rthy to sb wxy lstr, org/calc mtz, v calc, occ fos frag, tr bent

spbly, incl

CHK: lt to mgy, sft to sl frm, sbbkly to spbly, mot to str tex, rthy lstr, v calc, occ cal incl

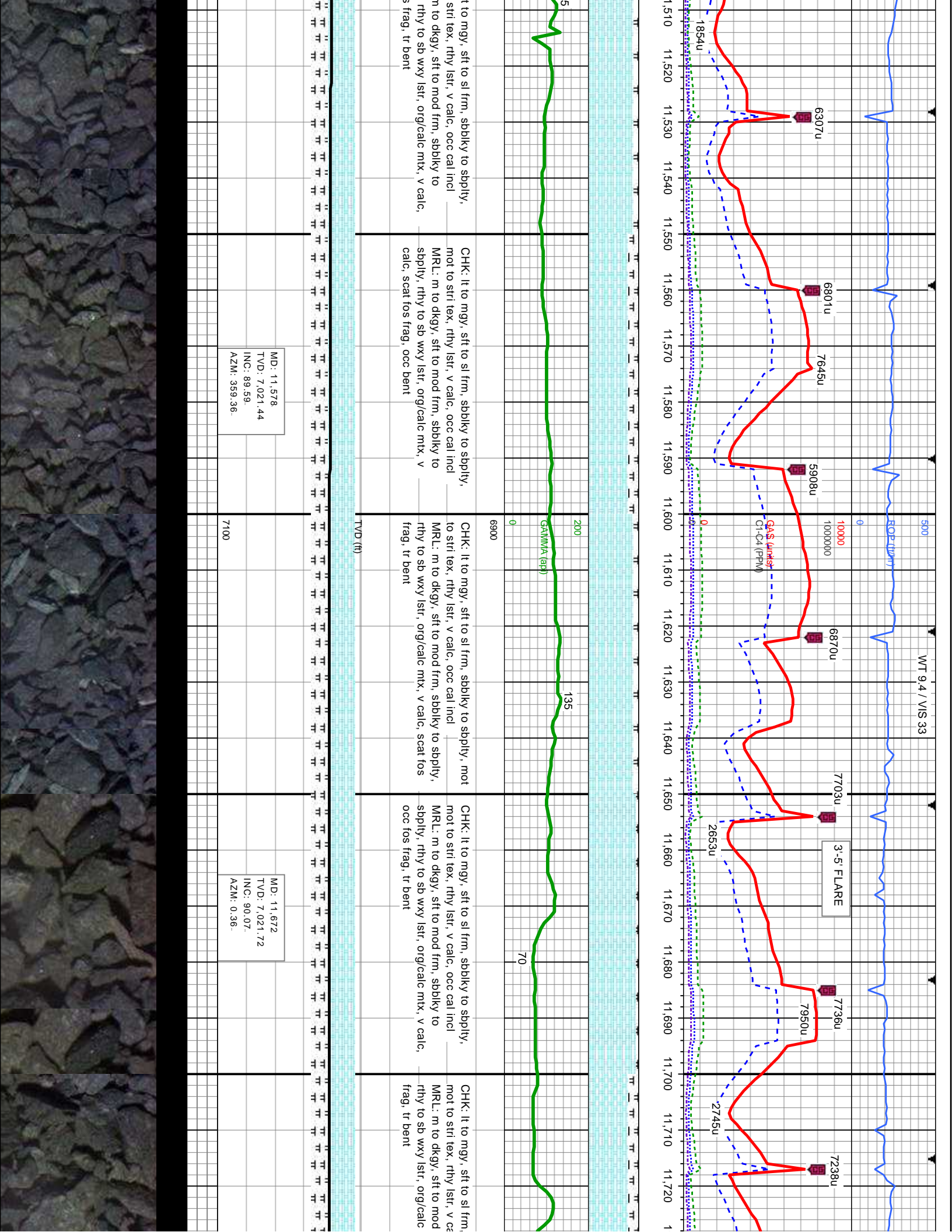
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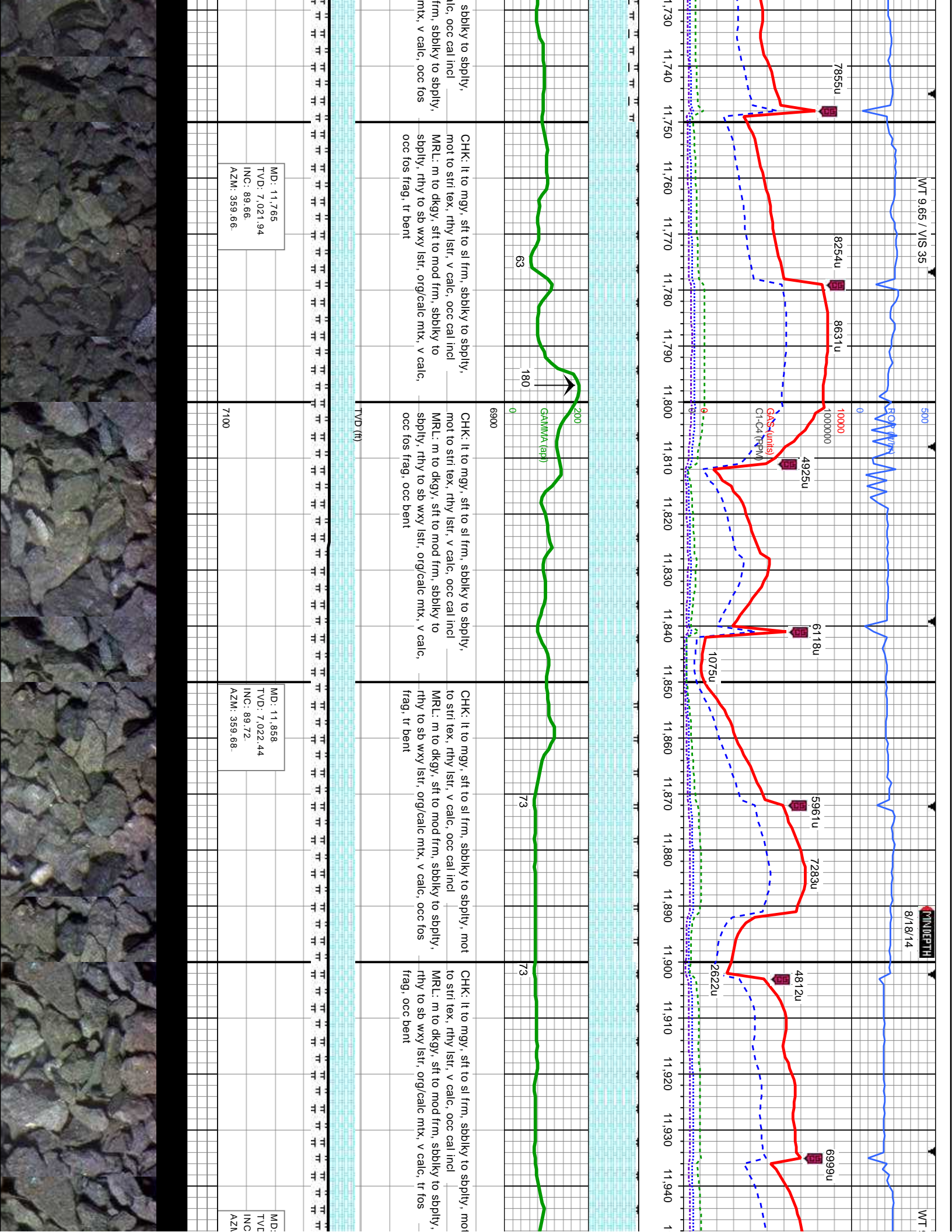
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TVD: 7,018.52
INC: 90.
AZM: 0.46

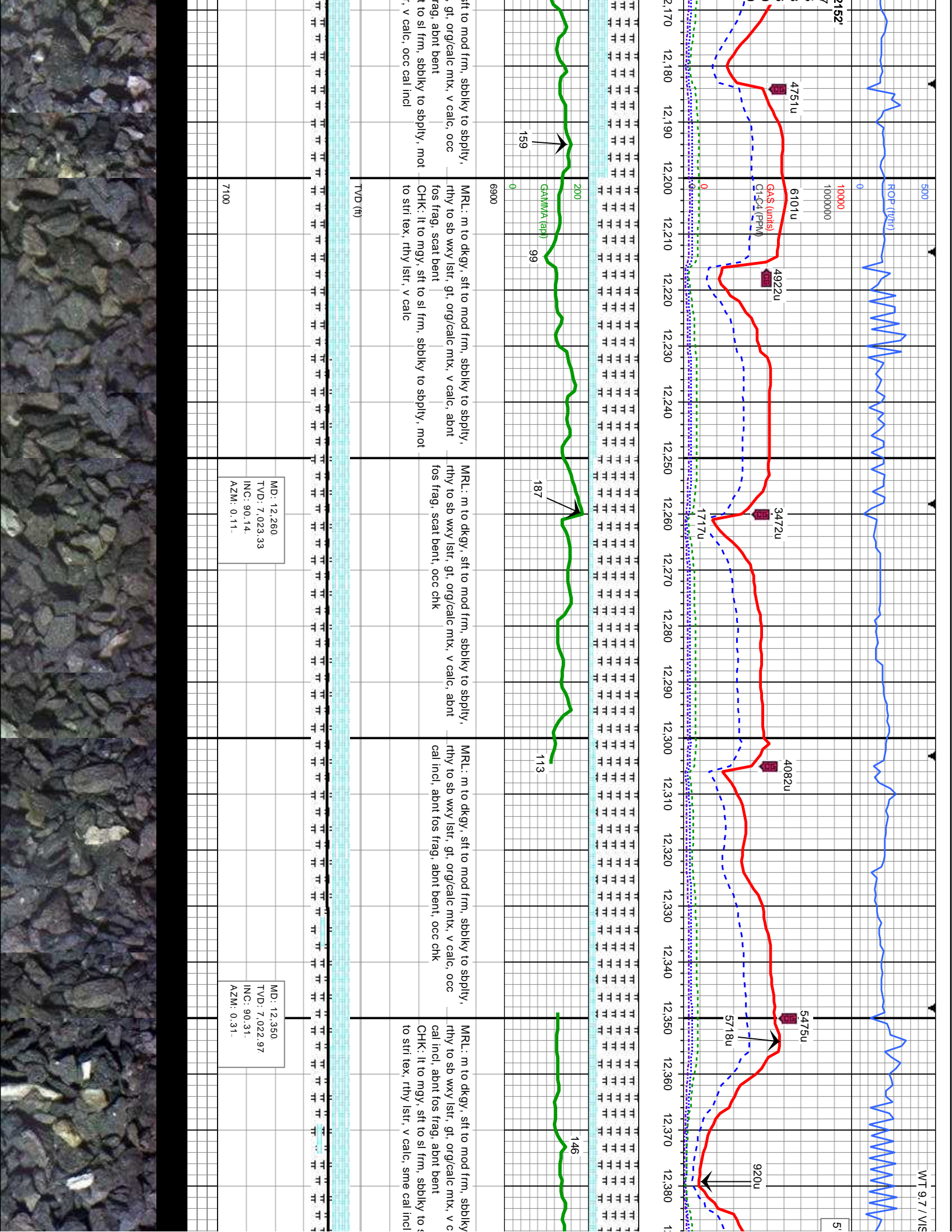
MD: 11,391
TVD: 7,018.89
INC: 89.55.
AZM: 359.4

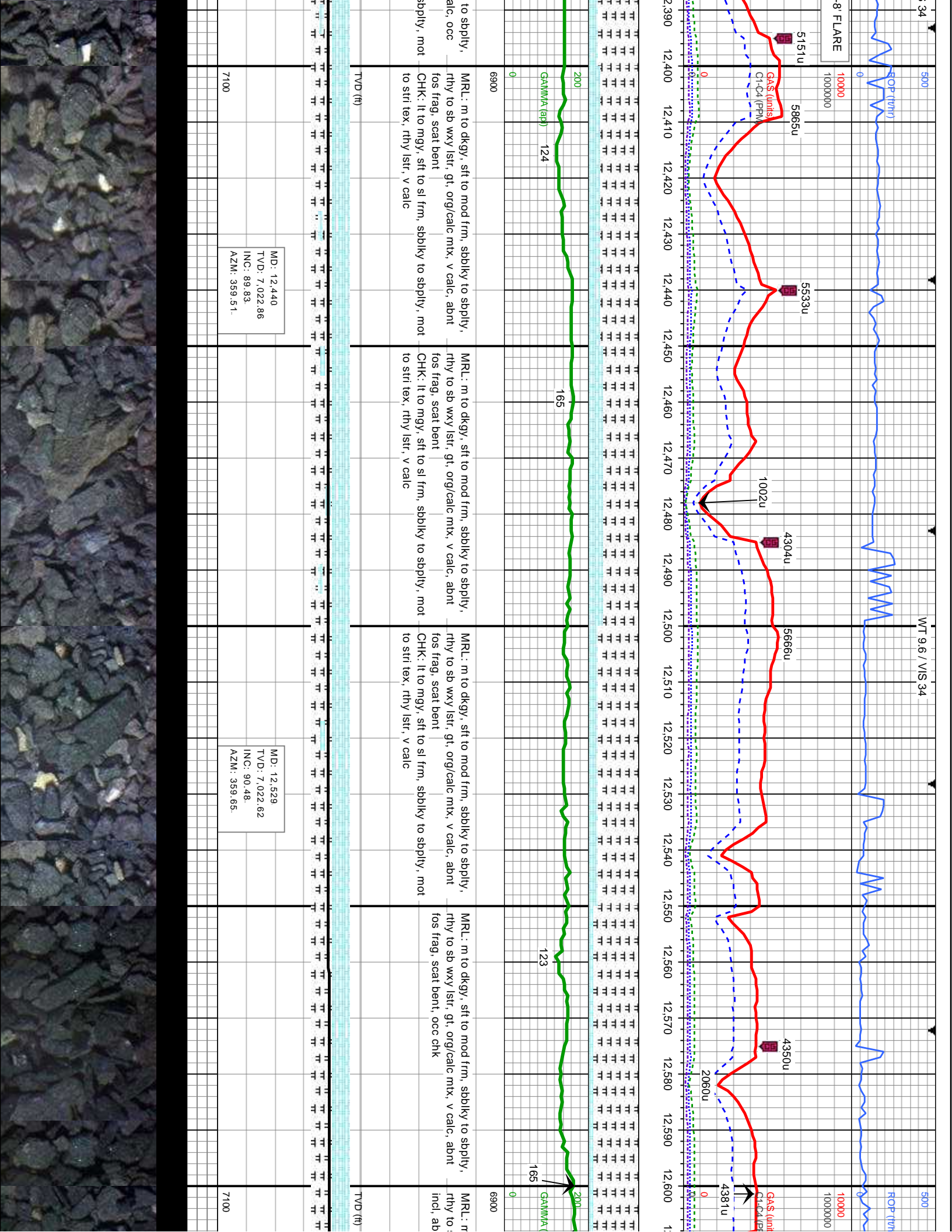
MD: 11,485
TVD: 7,020.19
INC: 88.87.
AZM: 359.17

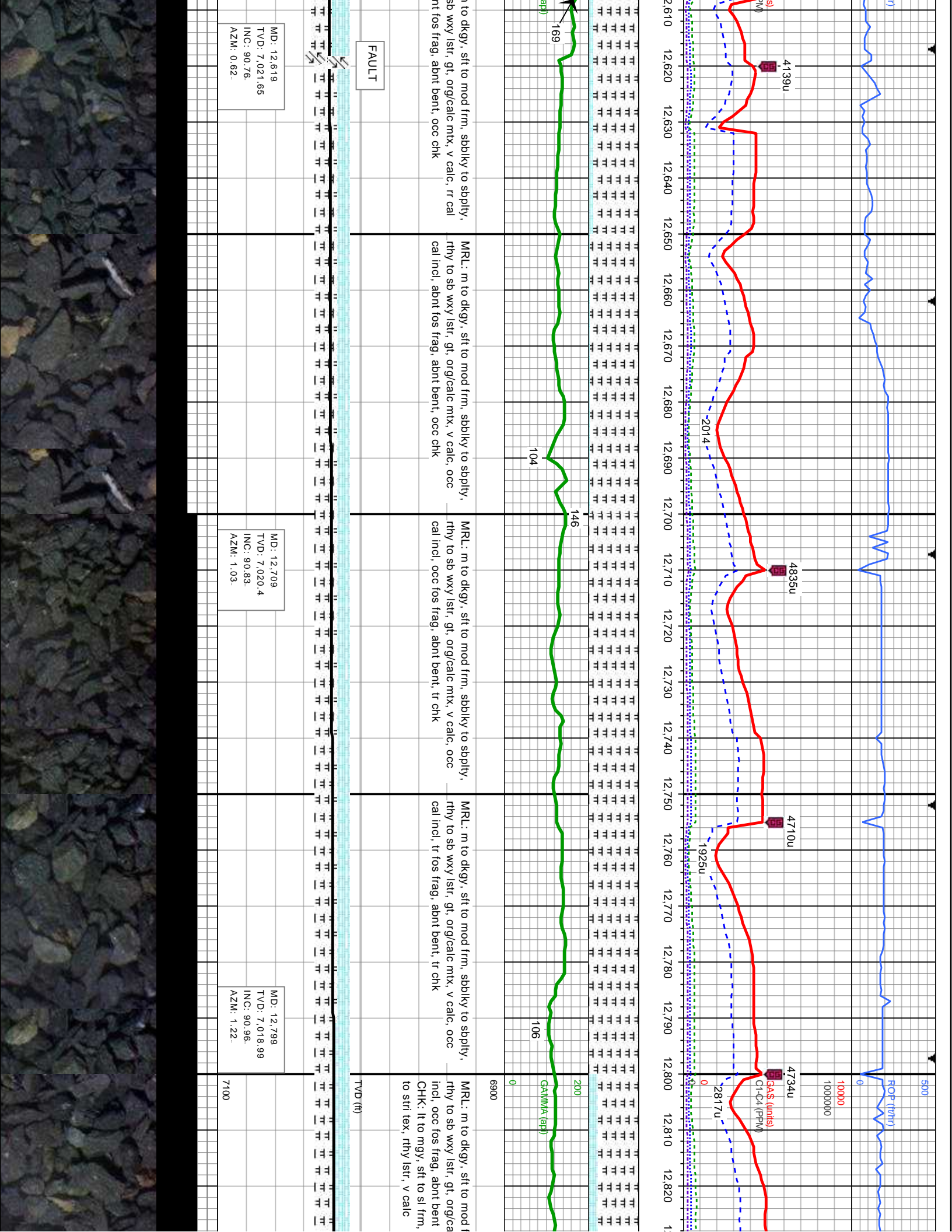


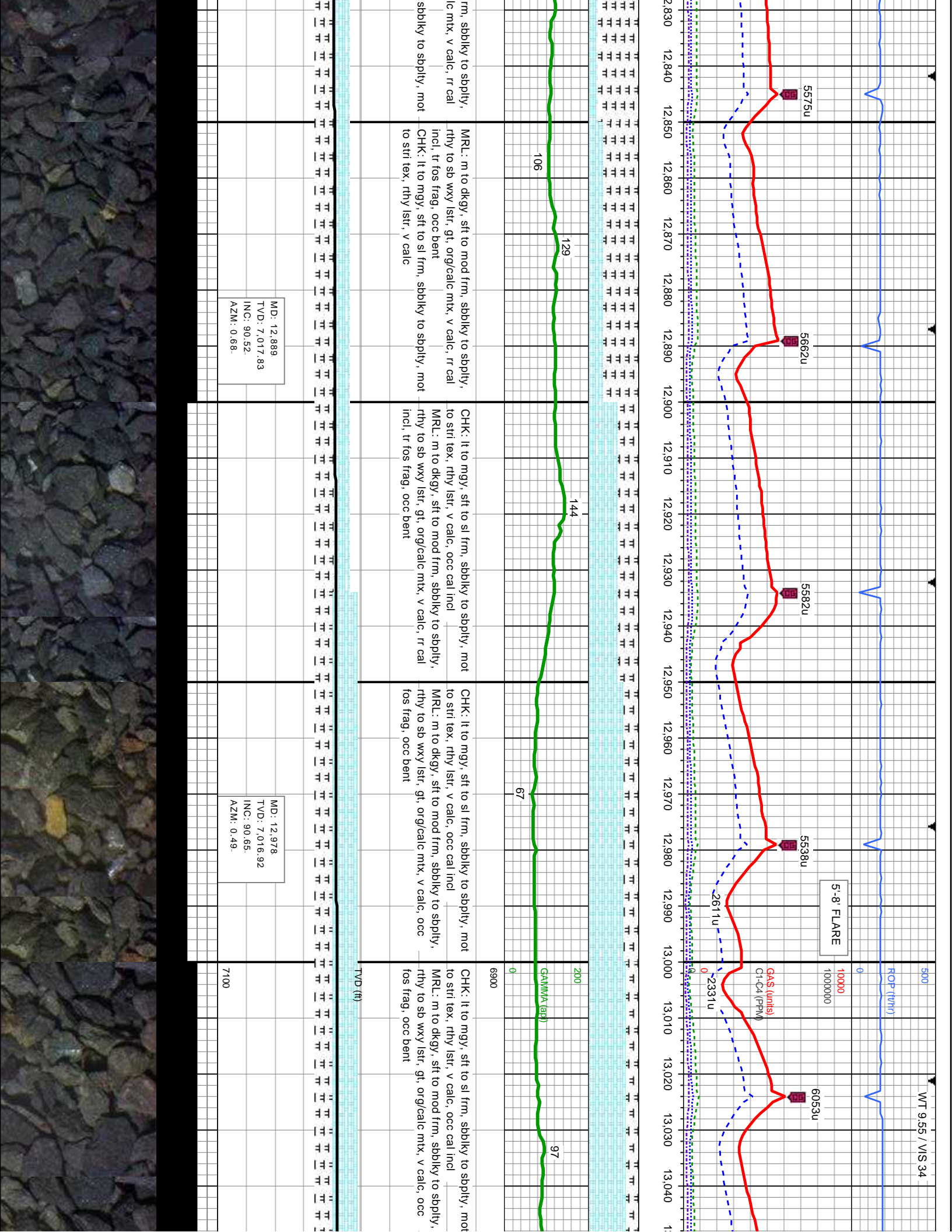


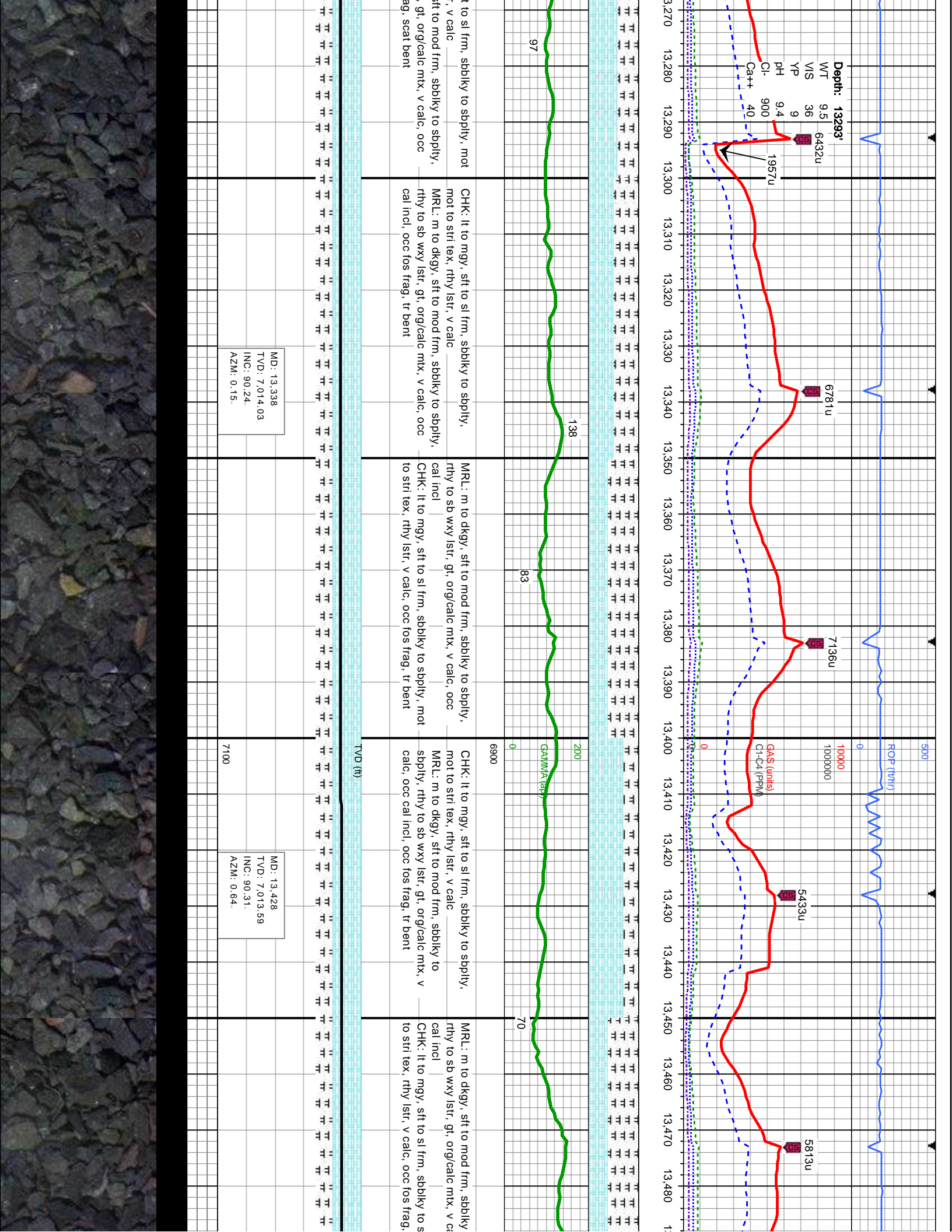


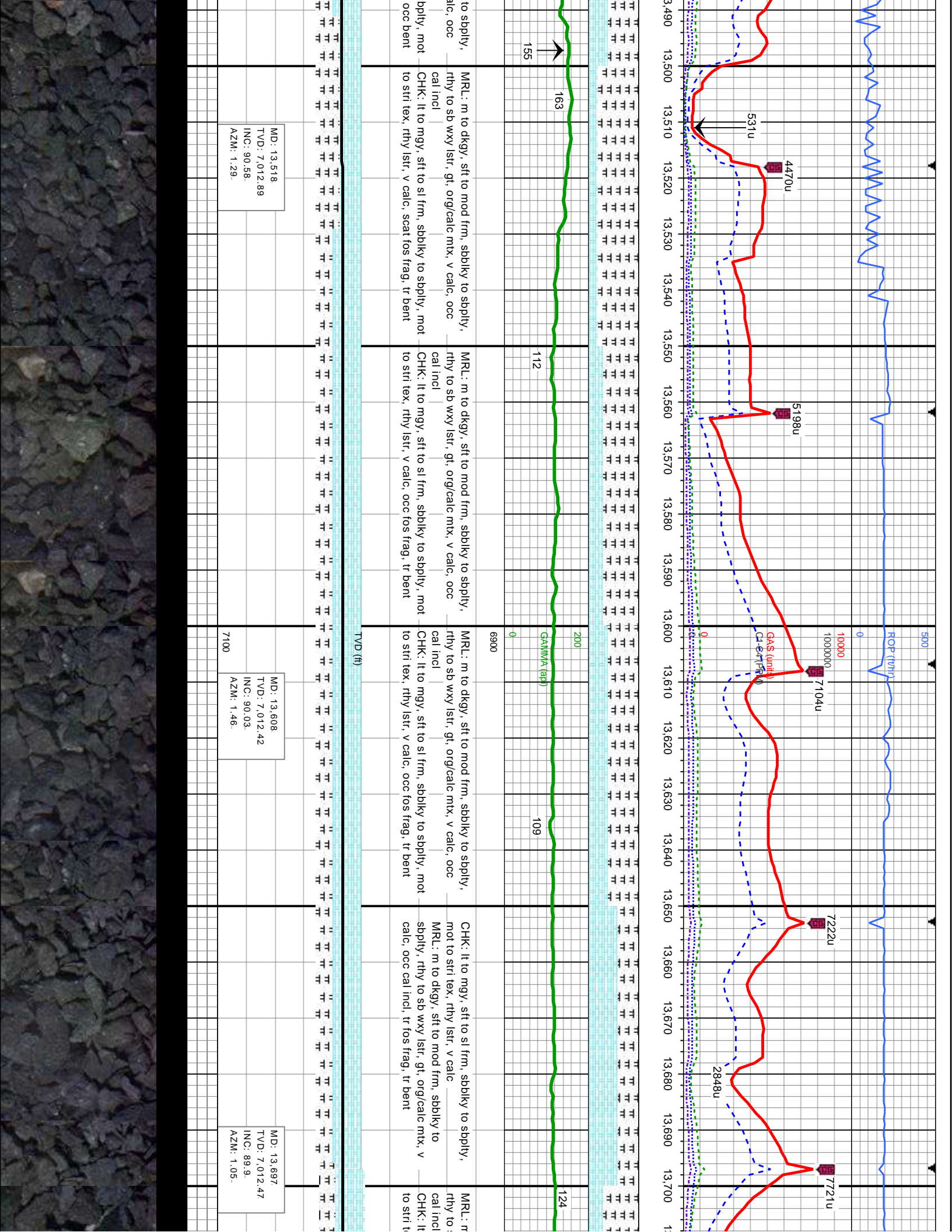


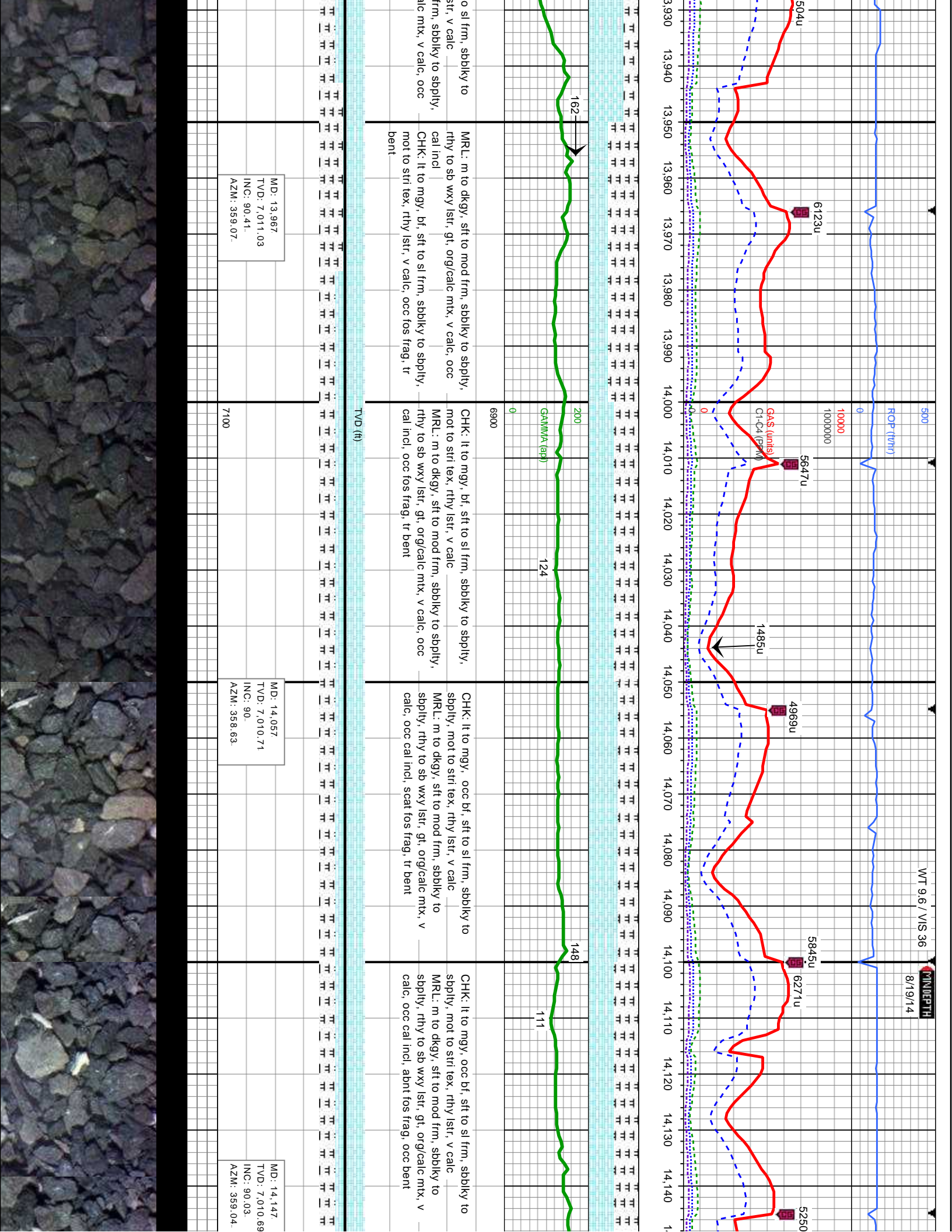


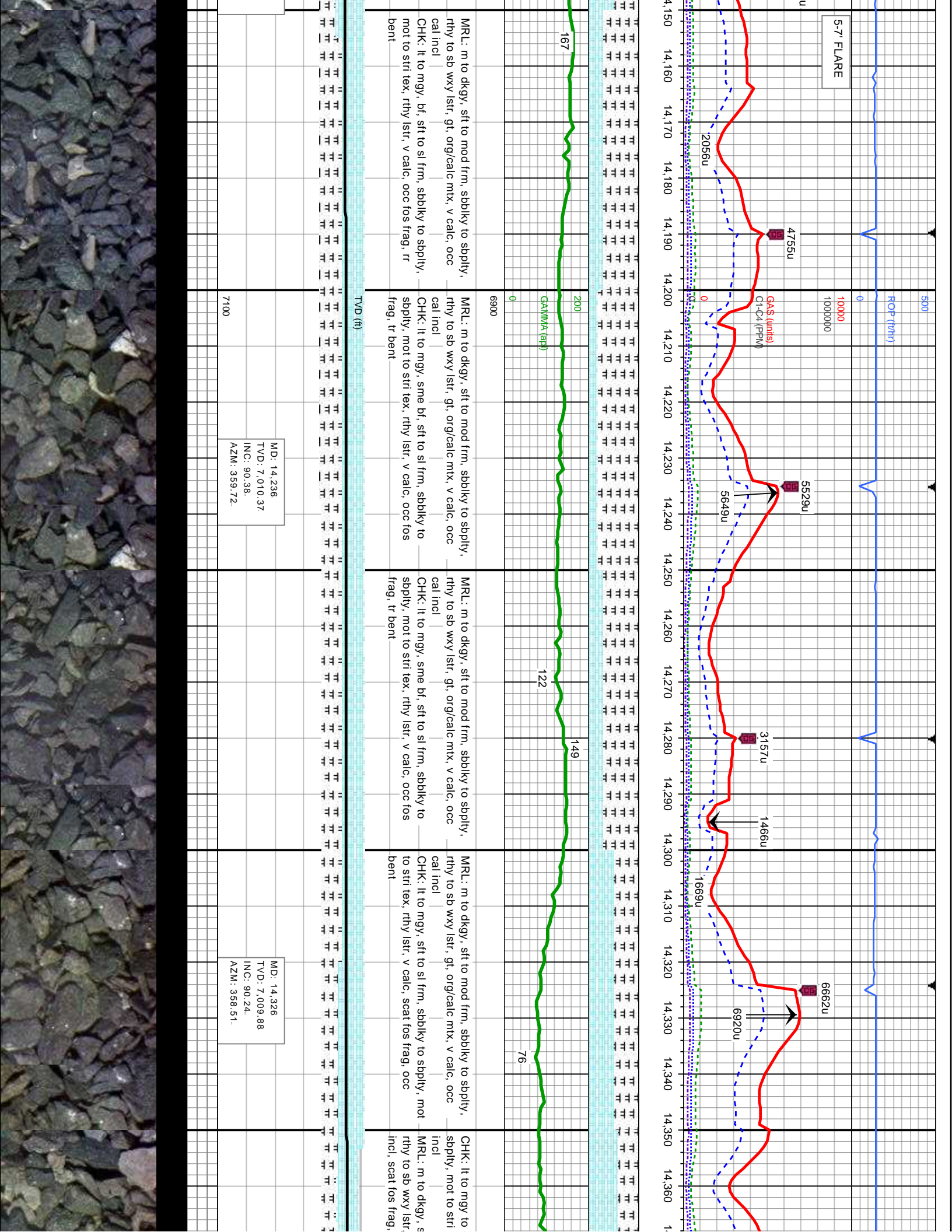


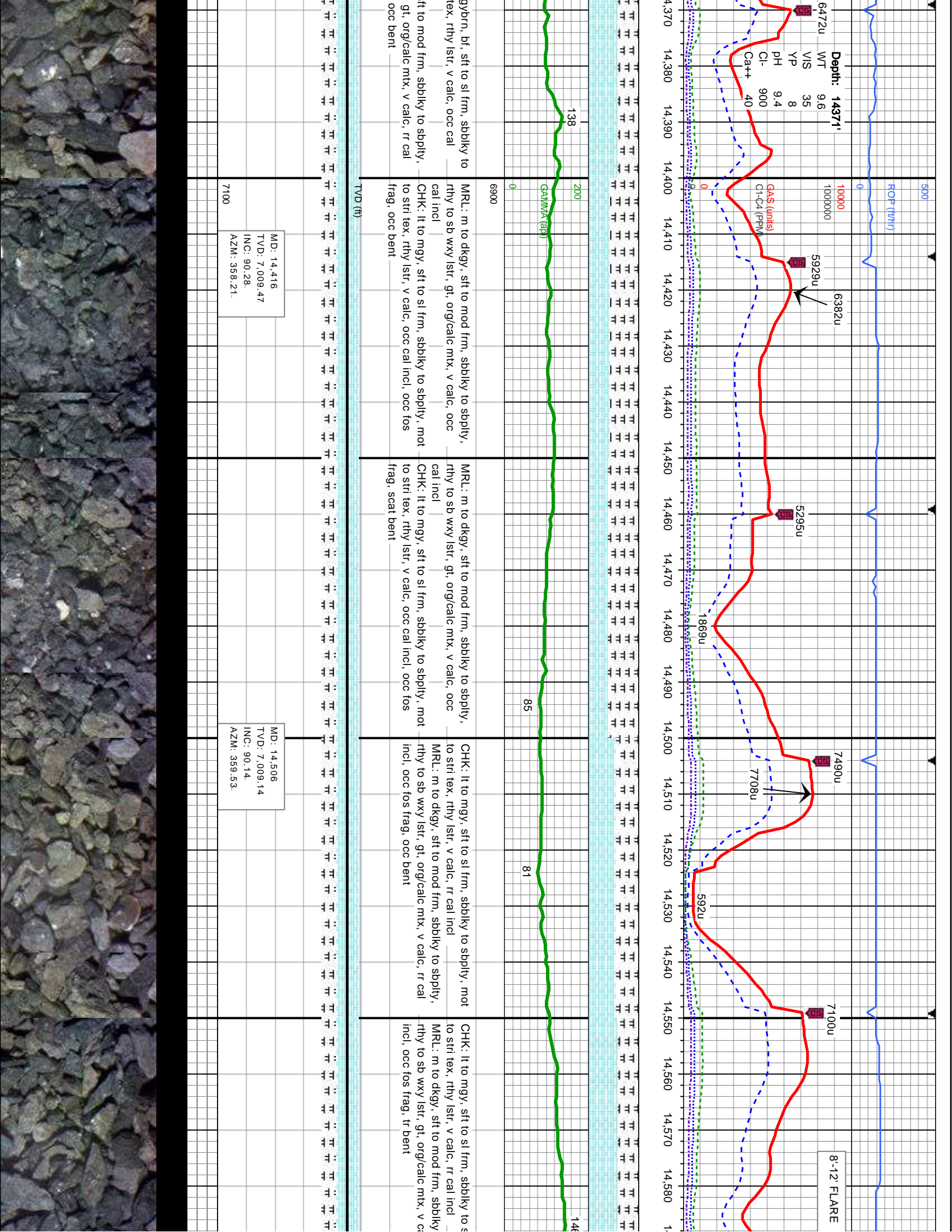


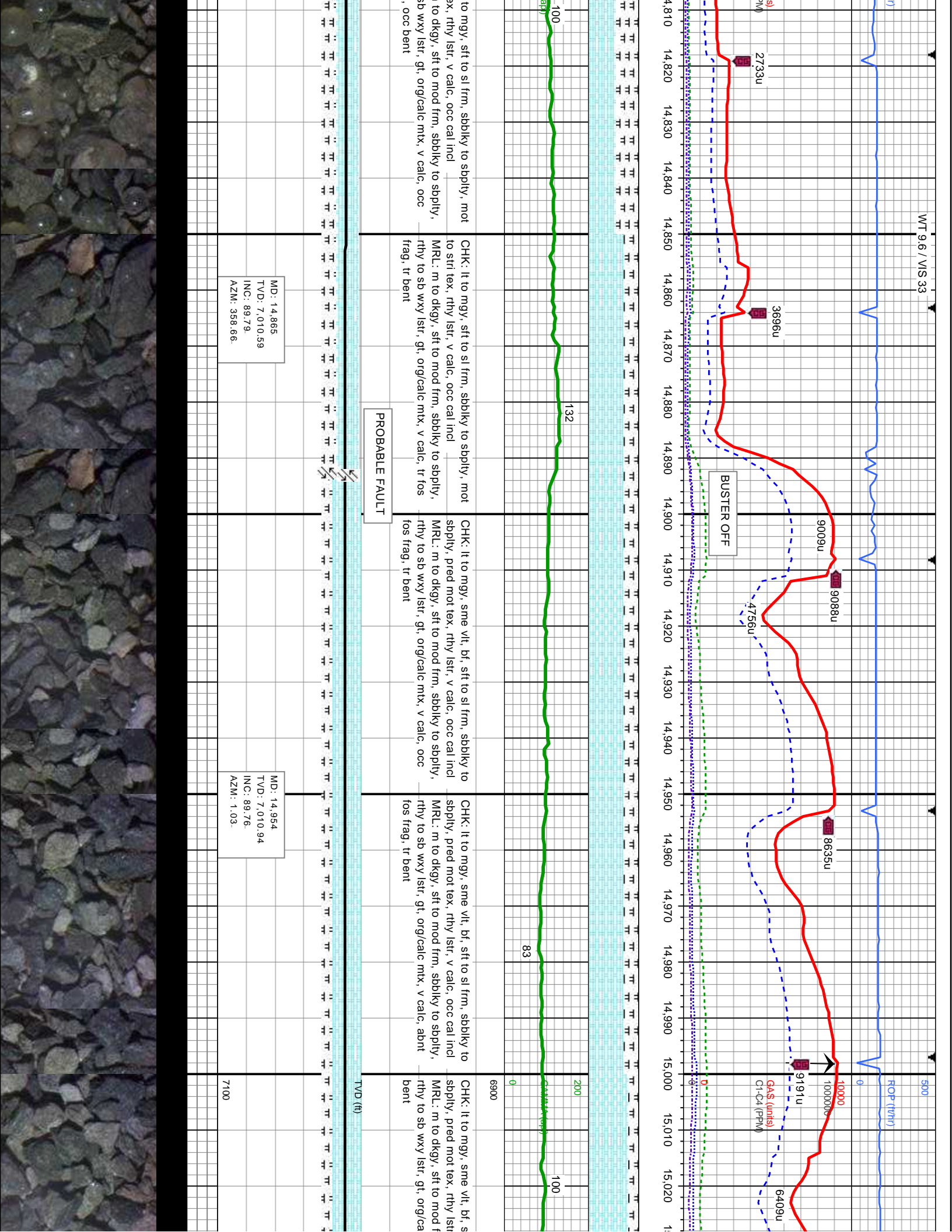


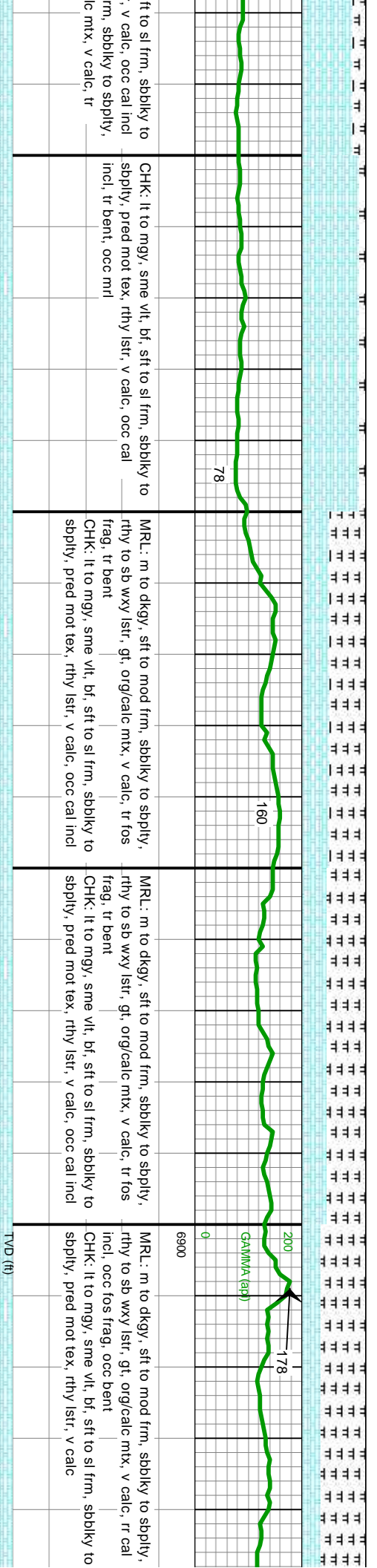
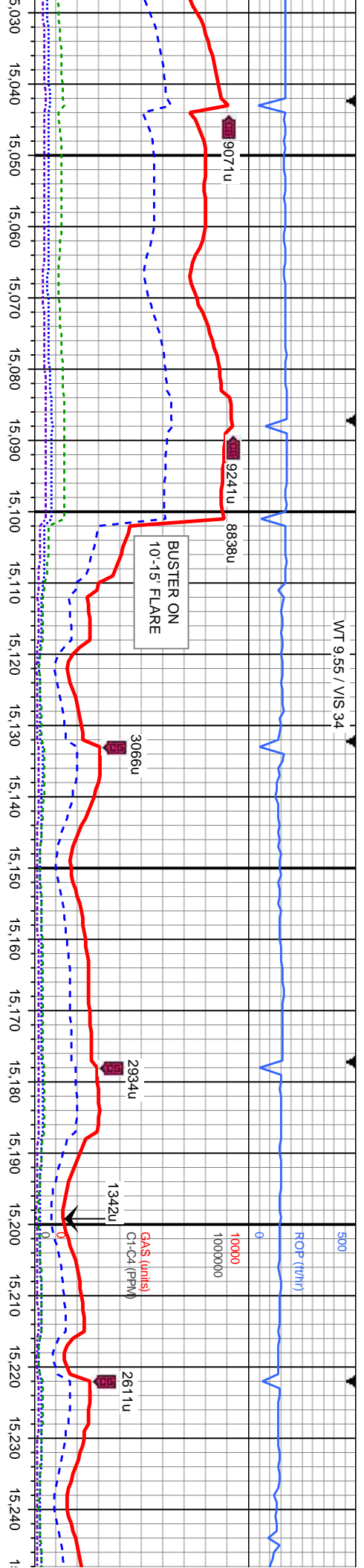




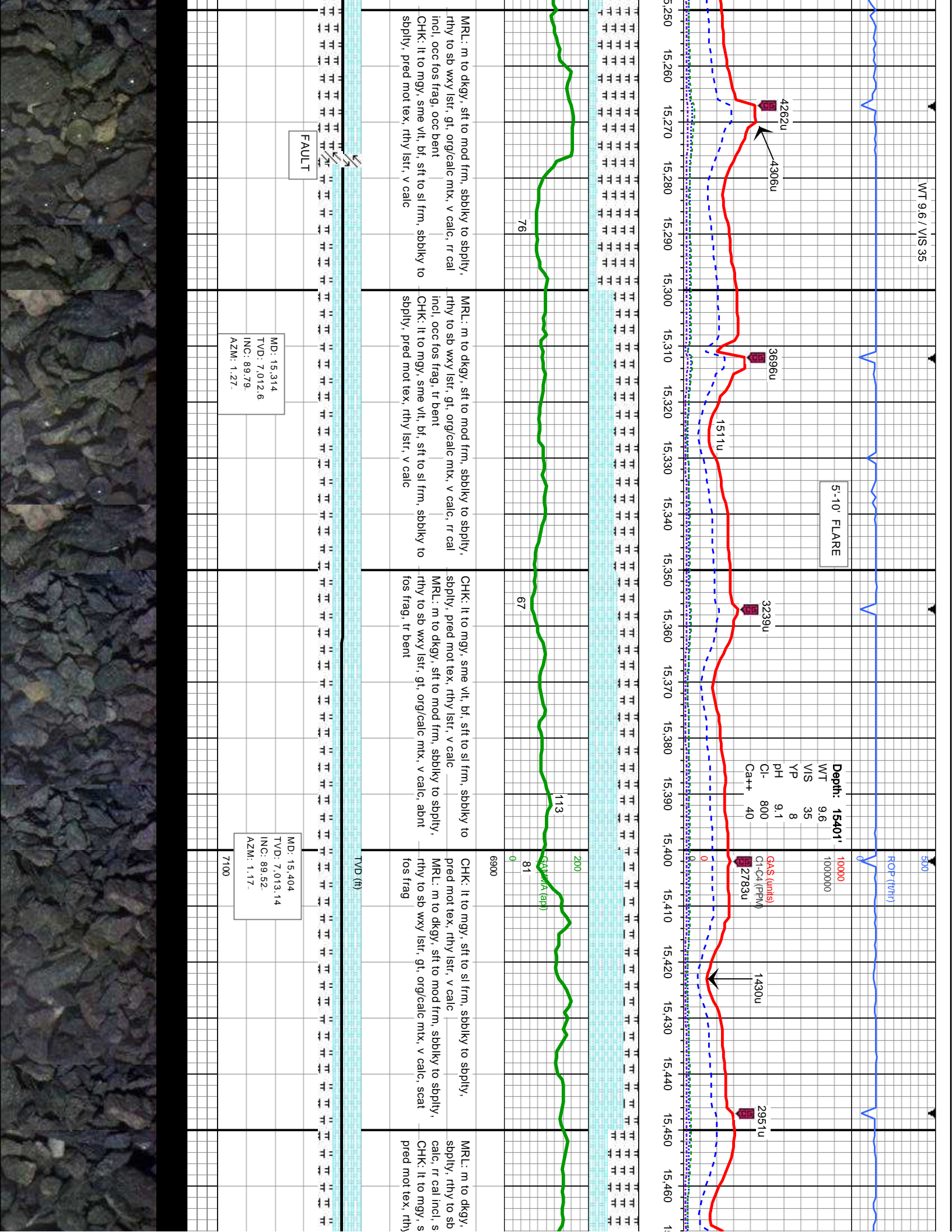


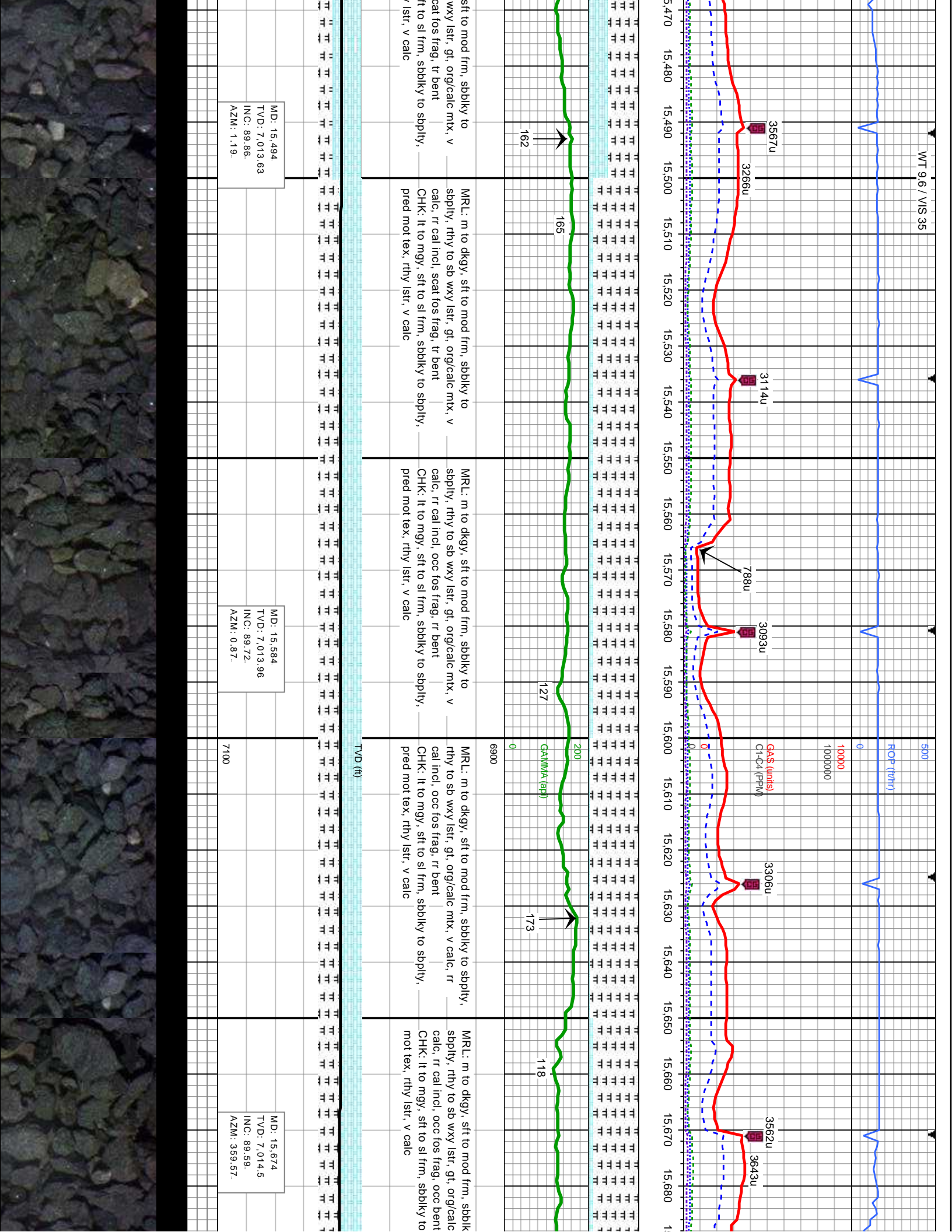


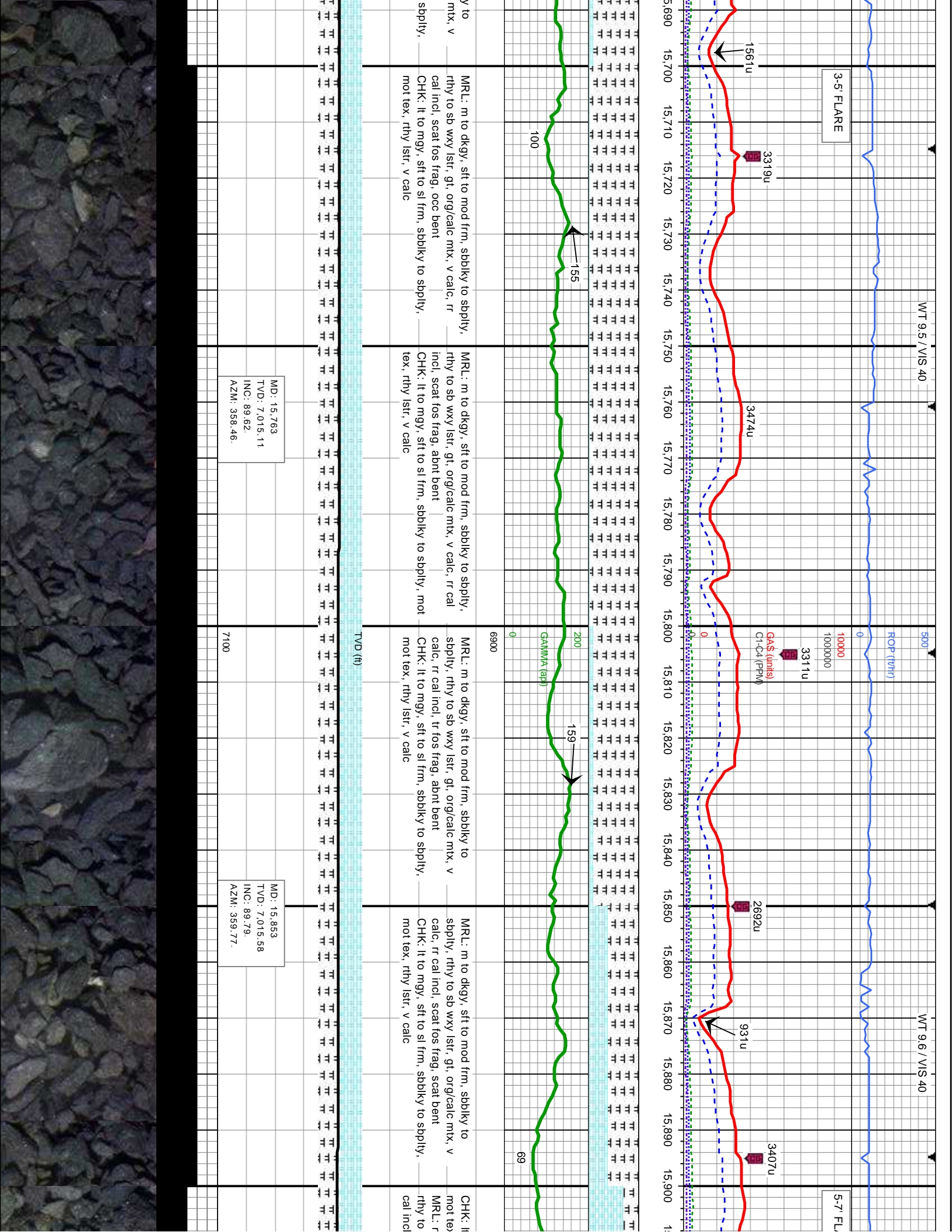




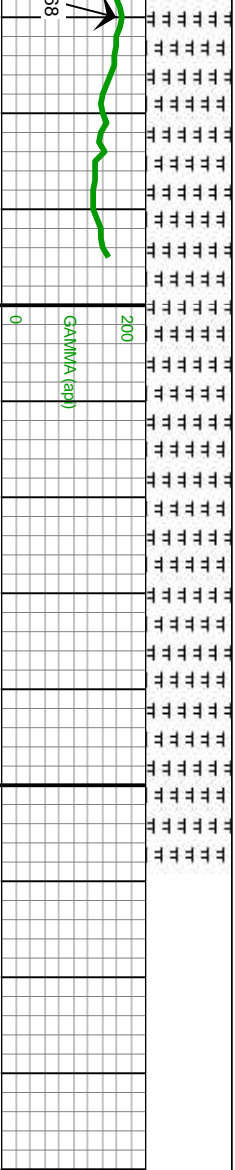
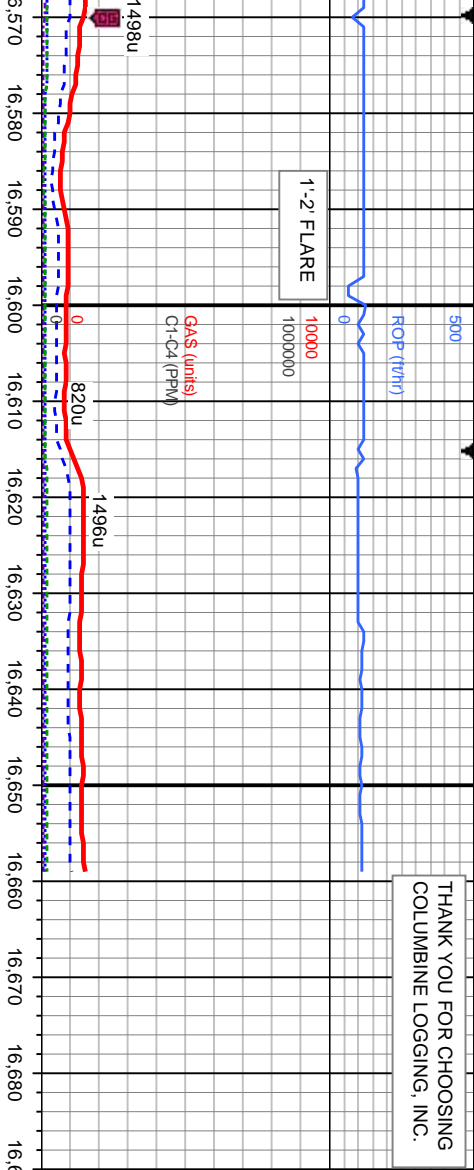
MD: 15.044 TVD: 7.011.3 INC: 89.79. AZM: 1.34.	MD: 15.134 TVD: 7.011.63 INC: 89.79. AZM: 0.42.	MD: 15.224 TVD: 7.012.11 INC: 89.59. AZM: 0.4.
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THANK YOU FOR CHOOSING
COLUMBINE LOGGING, INC.



MR: m to dky, sft to mod frm, sbply to sbply, rthy to
sb wvy lstf, gt, org/calc mtx, v calc, rr cal incl, occ fos
frag, scat bent, tr chk

Bit Data
Bit #: 3
Depth In: 7,304 '
Depth Out: 16,659 '
Avg Ft/Hr: 92.6 '/hr

TVD (ft)

MD: 16,617
TVD: 7,036.76
INC: 82.76
AZM: 0.37

PROJECTION TO BIT

MD: 16,660
TVD: 7,042.18
INC: 82.76
AZM: 0.37

