



Scale: 5" / 100'  
Measured Depth Log

Well Name Romero PC G10\_79HN Horizontal

Location Sec 3, T4N, R65W

State COLORADO

Country USA

API Number 05-123-34018

Region DJ Basin

Spud Date 3/20/2014

Surface Coordinates 40° 20' 32.496 N

104° 39' 27.900 W

Sec 3, T4N, R65W

Bottom Hole Coordinates Sec 10, T4N, R65W  
75' FWL, 1855' FSL

Ground Elevation 4,670.0

Logged Interval 6,115' To 12,992'

Formation Niobrara

Type of Drilling Fluid Water based LSND

County WELD

Rig Number H&P #326

AFE # 133212

Field Wattenberg

Drilling Completed 3/30/2014

K.B. Elevation 4700'

Total Depth 12,992'

Company Noble Energy Inc

Name Terry Acomb, N  
Company Columbine Logging



Operator

Geologist

Michael Rooks

jing

Rock Types

	CONGLOMERATE		METAMORPHIC
	DOLomite		NOSAMPLE
	GRANITE		SANDSTONE
	GYPSUM		SALT-PEPPER SAND
	IGNEOUS		SHALE
	SIDERITE or LIMONITE		SHALE COLORED
	LIMESTONE		SHALE GRAY
	MARLSTONE		SHALY SANDSTONE
			SHALY SILTSTONE
			SILTY SHALE
			SILTSTONE
			TUFF
			WELDED TUFF

Accessories

Fossils		Stringer	
F FOSSIL	GASTROPOD	ARGILLITE GRAIN	TUFFACEOUS
OOLITE	AMPHIPORA	BENTONITE	GYPSIFEROUS
OSTRACOD	BELEMNITE	BITUMENOUS SUBSTANCE	HEAVY MINERAL
PELECYPOD	BIOCLASTIC	BRECCIA FRAGMENTS	INOCERAMUS
PISOLITE	BRACHIOPOD	CALCAREOUS	KAOLIN
PLANT REMAINS	PISOLITE	CARBONACEOUS FLAKES	MARLSTONE
PLANT SPORES	CEPHALOPOD	CHITL	MINERAL CRYSTALS
SCAPHOPOD	CORAL	COAL - THIN BEDS	NODULES
STROMATOPOROÏD	CRINOID	DOLOMITIC	PHOSPHATE PELLETS
	ECHINOID	FELDSPAR	PYRITE
			SALT CAST
			SANDY

Other Symbols

<b>Oil Show</b>	<b>O</b> ORGANIC		GAS SHOW	<b>MX</b> MICROXLN
<b>P</b> PINPOINT			MN DEPTH	<b>MS</b> MUDSTONE
<b>D</b> DEAD			NORMAL FAULT	<b>R</b> ROUNDED
<b>●</b> EVEN			OIL SHOW	<b>B</b> SUBANG
<b>○</b> QUESTIONABLE			OVERTURNED STRATA	<b>PS</b> PACKSTONE
	SPOTTED STAINING		REVERSE FAULT	<b>WS</b> WACKESTONE
	BIT		SIDEWALL CORE (LEFT)	
	CONNECTION (DOWN)		SIDEWALL CORE (RIGHT)	
<b>Porosity</b>	<b>P</b> CONNECTION (RIGHT)		SLIDE	<b>Textures</b>
<b>E</b> EARTHY			SURVEY	<b>BS</b> BOUNDSTONE
<b>F</b> FRACTURE			TRIP GAS	<b>P</b> POOR
<b>X</b> INTERCRYSTALLINE			WIRELINE TESTED - LEFT	<b>C</b> CHALKY
<b>◇</b> INTEROOLITIC			WIRELINE TESTED - RT	<b>CX</b> CRYPTOXLN
<b>✓</b> MOLDIC			FORMATION TOP	<b>E</b> EARTHY
				<b>FX</b> FINELYXLN
				<b>GS</b> GRAINSTONE
				<b>L</b> LITHOGRAPHIC
				<b>Sorting</b>
				<b>M</b> MODERATE
				<b>W</b> WELL
				<b>???</b>

Rounding

Slide/Rotate

ROP

ROF

Total Gas & Chromatograph

GAS

C1

C2

C3

C4

COLUMBINE LOGGING INC.  
RIGGED UP ON 03/20/2014  
MANNED 2-PERSON LOGGING  
WITH BLOODHOUND GAS  
CHROMATOGRAPH UNIT #0544

Depth Labels

% Lith

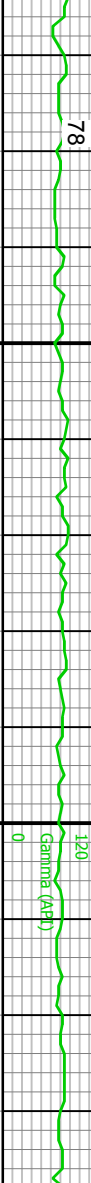
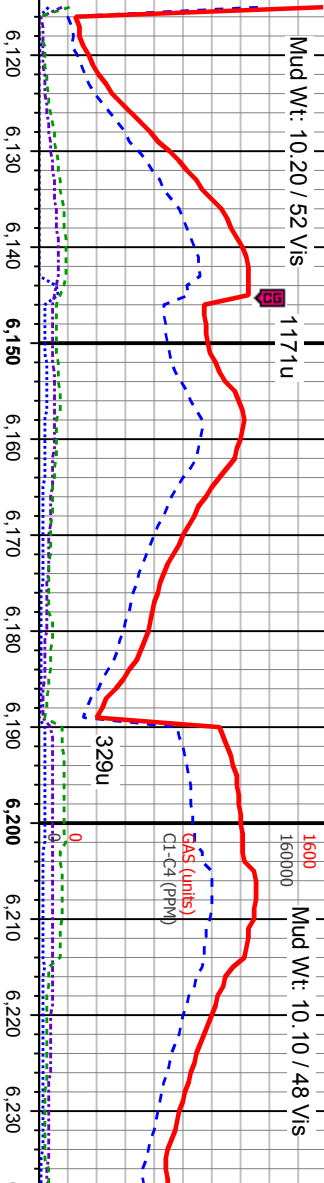
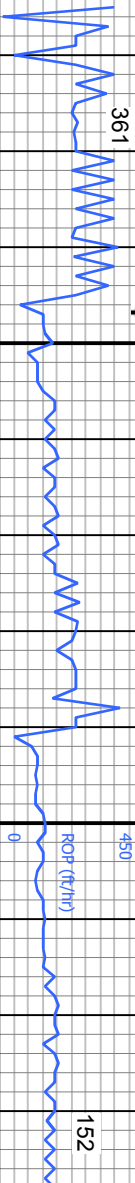
Gamma

Gamma

Well Bore  
TV

Oil Show

Images



50' Sample Interval @ 6200'

Bit Data  
Bit #: 2  
Type: SEC MMD 55M  
Size: 8.75"  
Depth In: 6115"  
Jets: 5x14  
S/N: 12401252

MD: 6,192'  
TVD: 6,189.74'  
Inclination: 3.4 °  
Azimuth: 158.2 °  
VS: -8.98'

TVD (ft)

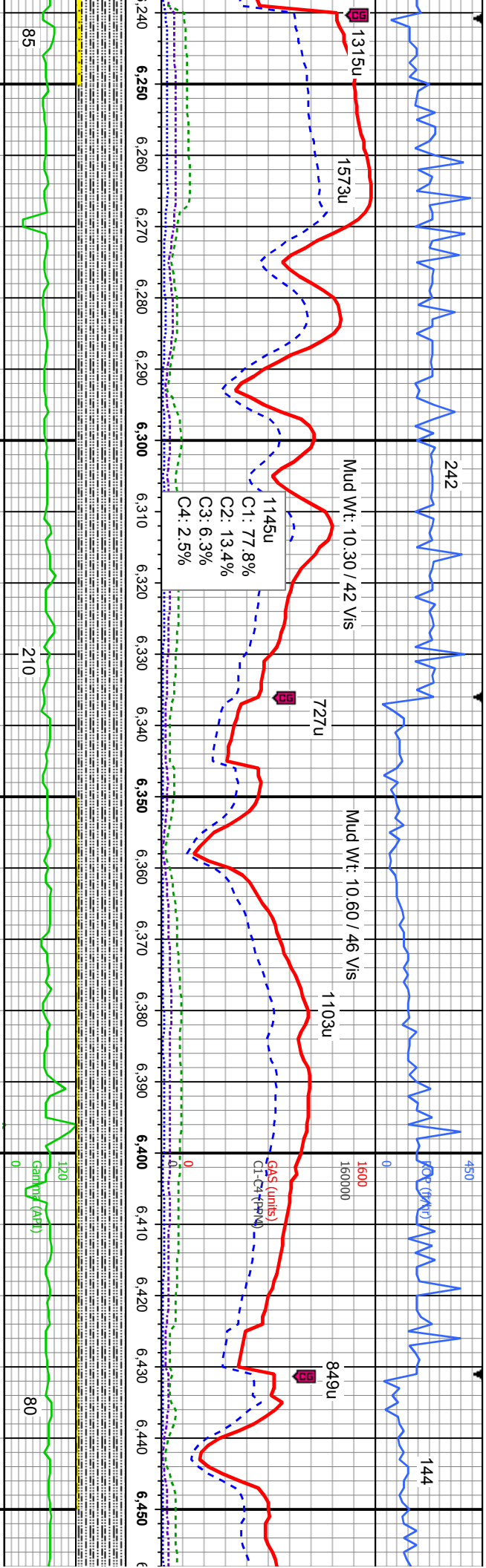
SLTY SH: med - dk gy, dk gy, mod frm - frm,  
sb blk - sb pily, arg cnt, grity - sily tex, SHY  
SS: lt gy-gybrn, vf gr, sb ang-sb rnd, mod w  
srtd, frm-brt, fri, sme intbdd, wi ss, sl calc

SLTY SH: med - dk gy, dk gy, mod  
sb blk - sb pily, arg cnt, grity - sily  
SS: lt gy-gybrn, vf gr, sb ang-sb rnd  
srtd, frm-brt, fri, sme intbdd, wi ss

20  
40  
60  
80

7000





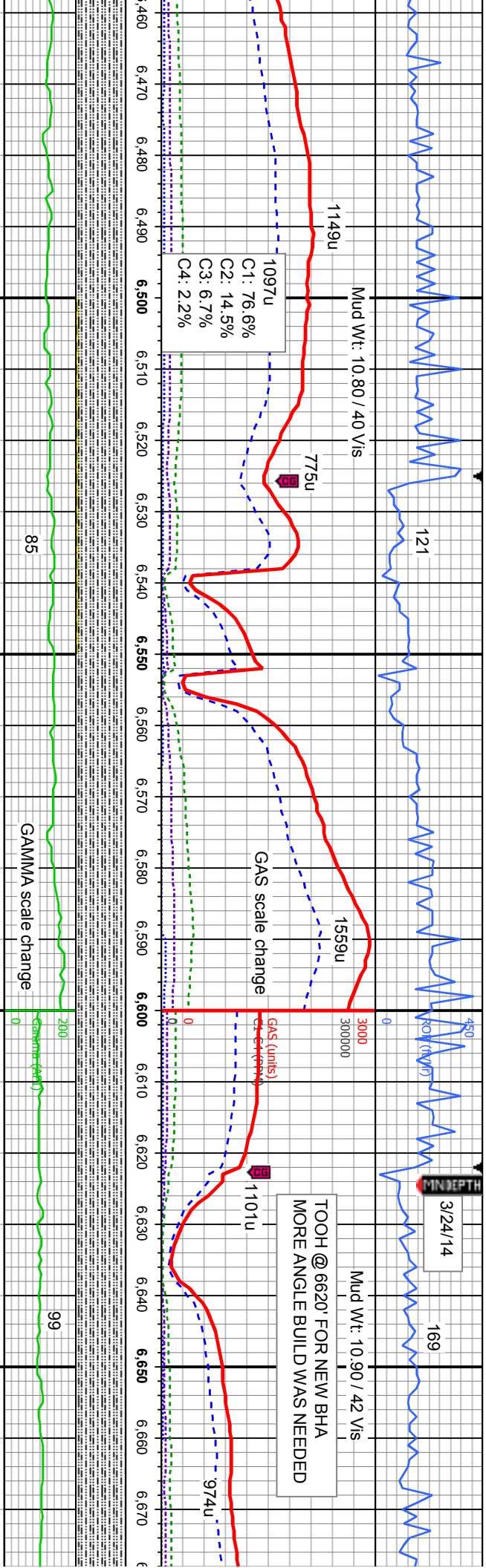
MD: 6,287'  
TVD: 6,284, 16'  
Inclination: 9.2 °  
Azimuth: 194.4 °  
VS: 1.01'

MD: 6,382'  
TVD: 6,377, 78'  
Inclination: 10.5 °  
Azimuth: 213.9 °  
VS: 15.67'

frm - frm, v tex, SHY d, mod w , sl calc	SLTY SH: med - dk gy, dk gy, mod frm - frm, sb blkly - sb plty, arg cnt, grtly - silty tex, tr shy ss, sl calc	SLTY SH: med - dk gy, dk gy, mod frm - frm, sb blkly - sb plty, arg cnt, grtly - silty tex, tr shy ss, sl calc	SLTY SH: med - dk gy, dk gy, mod frm - frm, sb blkly - sb plty, arg cnt, grtly - silty tex, SHY SS: lt gy-gybrn, vf gr, sb ang-sb rnd, mod w srtd, frm-brt, fri, sme intbdd, wi ss, sl calc	SLTY SH: med - dk gy, dk gy, mod frm - frm, sb blkly - sb plty, arg cnt, grtly - silty tex, SHY SS: lt gy-gybrn, vf gr, sb ang-sb rnd, mod w srtd, frm-brt, fri, sme intbdd, wi ss, sl calc
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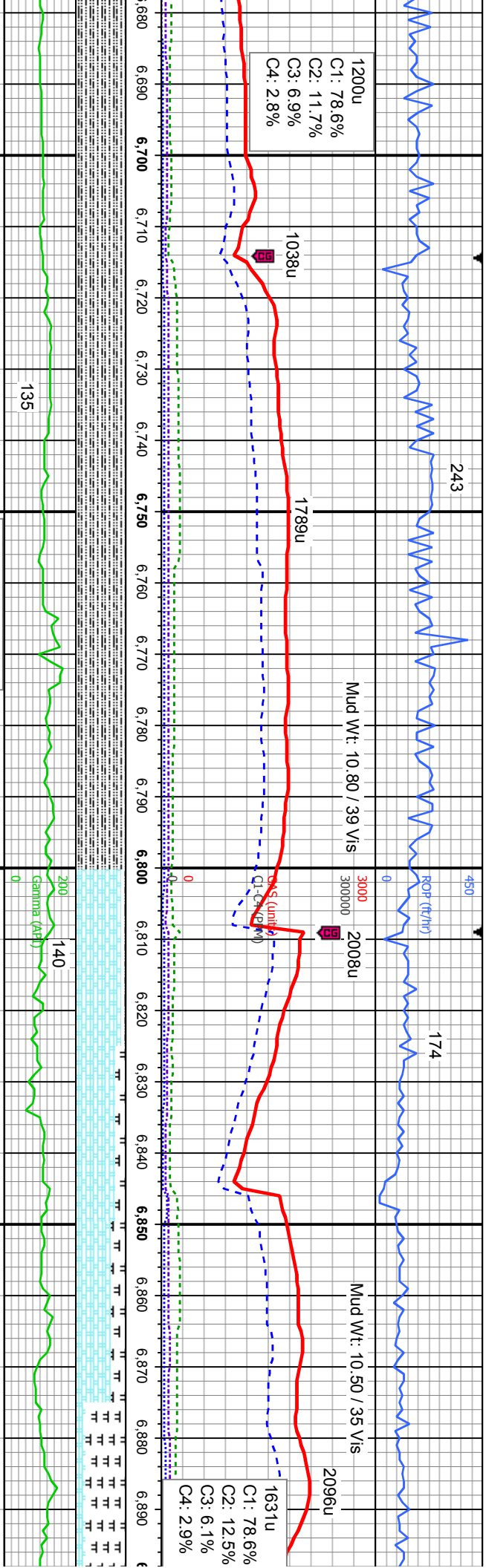






SH: med - dk gy, dk gy, mod frm - frm, sb blkly - sb plty, arg cnt, gritty - silty tex, tr	SLTY SH: med - dk gy, dk gy, mod frm - frm, sb blkly - sb plty, arg cnt, gritty - silty tex, SHY	SLTY SH: med - dk gy, dk gy, mod frm - frm, sb blkly - sb plty, arg cnt, gritty - silty tex, tr	SLTY SH: med - dk gy, dk gy, mod frm - frm, sb blkly - sb plty, arg cnt, gritty - silty tex, tr	SLTY SH: med - dk gy, dk gy, mod frm - frm, sb blkly - sb plty, arg cnt, gritty - silty tex, tr
- sb plty, arg cnt, gritty - silty tex, tr	SS: lt gy-gybrn, vf gr, sb ang-sb rnd, mod w	SLTST	SLTY SH: med - dk gy, dk gy, mod frm - frm, sb blkly - sb plty, arg cnt, gritty - silty tex, tr	SLTY SH: med - dk gy, dk gy, mod frm - frm, sb blkly - sb plty, arg cnt, gritty - silty tex, tr
	srd, frm-brit, fri, sme inbddd, wi ss, sl calc			

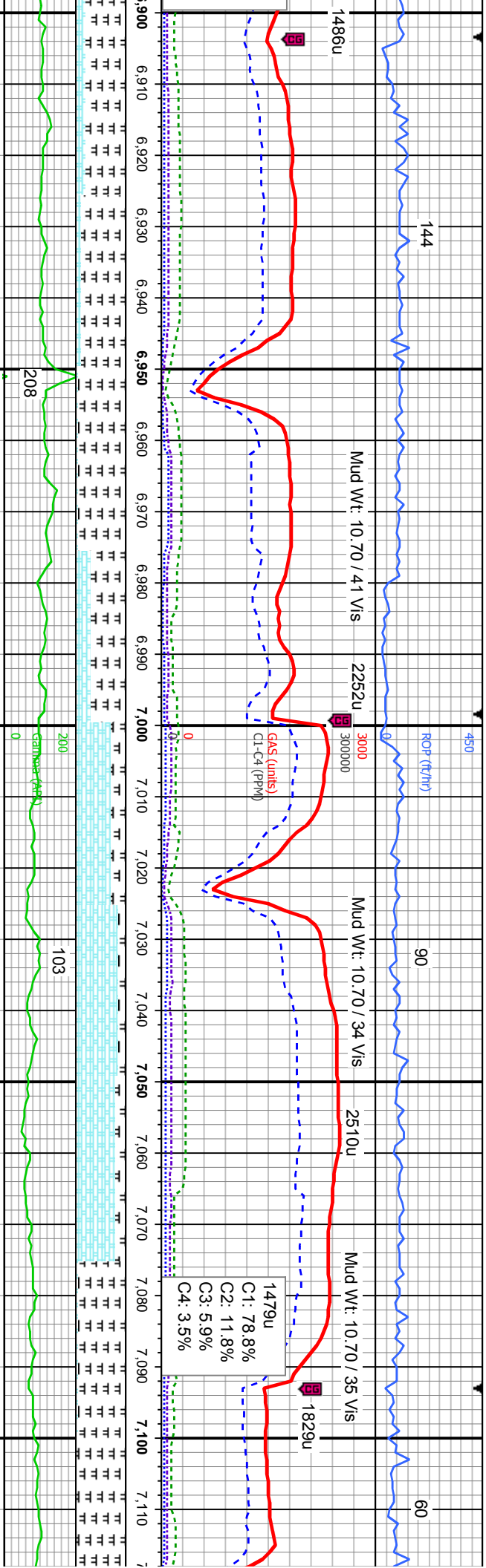




243		174	
1200u		2096u	
C1: 78.6%		C1: 78.6%	
C2: 11.7%		C2: 12.5%	
C3: 6.9%		C3: 6.1%	
C4: 2.8%		C4: 2.9%	
1038u		1631u	
1789u		2008u	
Mud Wt: 10.80 / 39 Vis		Mud Wt: 10.50 / 35 Vis	
Shar. Spr. 6765' MD		MD: 6,854'	
6724' TVD		TVD: 6,786.79'	
TVD scale change		Inclination: 49.9 °	
Nio Top 6790' MD		Azimuth: 195.1 °	
6742' TVD		VS: 213.65'	
MD: 6,760'		Nio A Chk 6814' MD	
TVD: 6,720.49'		6759' TVD	
Inclination: 40.4 °		Nio A Marl 6834' MD	
Azimuth: 205.3 °		6772.69' TVD	
VS: 150.81'		TVD (ft)	
SLTY SH: med - dk gy, dk gy, mod frm - frm, sb blkly - sb ply, arg cnt, gritty - silty tex		CHK: It gy - off wh crm, sme mot gy bm, sft - mod frm, sb ply - sb blkly, sb wxy - rthy tex, v calc, MRLST: medgy brn, blkly - sb ply, sb fls, mod frm, rthy tex; SLTY SH: med - dk gy, dk gy, mod frm - frm, sb blkly - sb ply, arg cnt, gritty - silty tex, occ bent.	
SLTY SH: med - dk gy, dk gy, mod frm - frm, sb blkly - sb ply, arg cnt, gritty - silty tex		CHK: It - med gy, sme mot gy bm, sft - mod frm, sb ply - sb blkly, sb wxy - rthy tex, v calc, MRLST: medgy brn, blkly - sb ply, sb fls, mod frm, rthy tex, occ bent	







MD: 6,949'  
TVD: 6,840.79'  
Inclination: 60.8 °  
Azimuth: 186.5 °  
VS: 290.48'

Nio B Chk 6995' MD  
6859' TVD

MD: 7,044'  
TVD: 6,878.63'  
Inclination: 72.2 °  
Azimuth: 181.7 °  
VS: 377.3'

Nio B Marl 7088' MD  
6888' TVD

MRST: medgy brn, blkly - sb ply, sb fis,  
mod frm, rthy tex; CHK: lt - med gy, sme mot  
gy brn, sft - mod frm, sb ply - sb blkly, sb wxy  
- rthy tex, v calc, occ bent

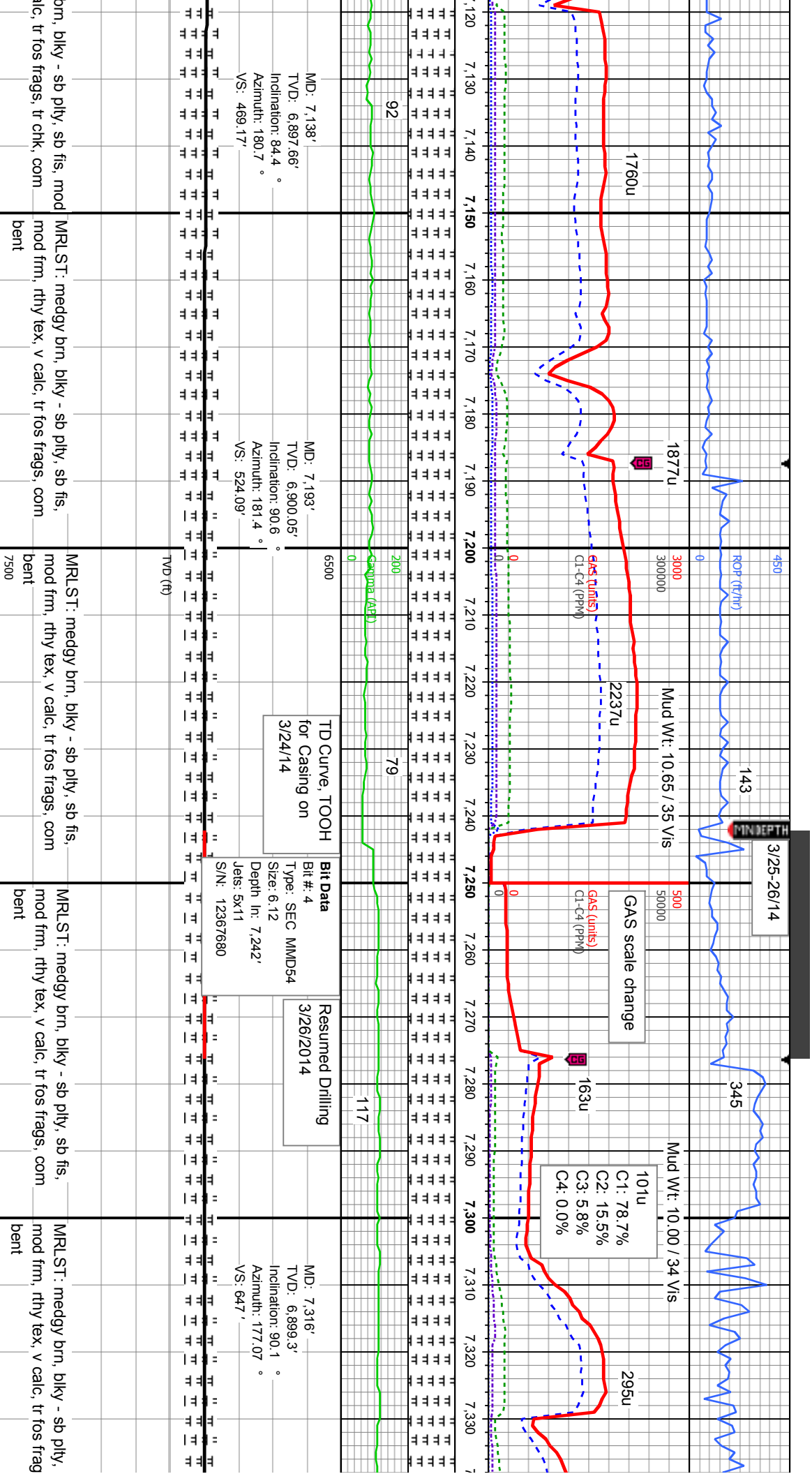
MRST: medgy brn, blkly - sb ply, sb fis,  
mod frm, rthy tex; CHK: lt - med gy, sme mot  
gy brn, sft - mod frm, sb ply - sb blkly, sb wxy  
- rthy tex, v calc, tr bent

CHK: lt - med gy, sme mot gy brn, sft - mod  
frm, sb ply - sb blkly, sb wxy - rthy tex, v calc;  
MRST: medgy brn, blkly - sb ply, sb fis,  
mod frm, rthy tex, tr fos frags

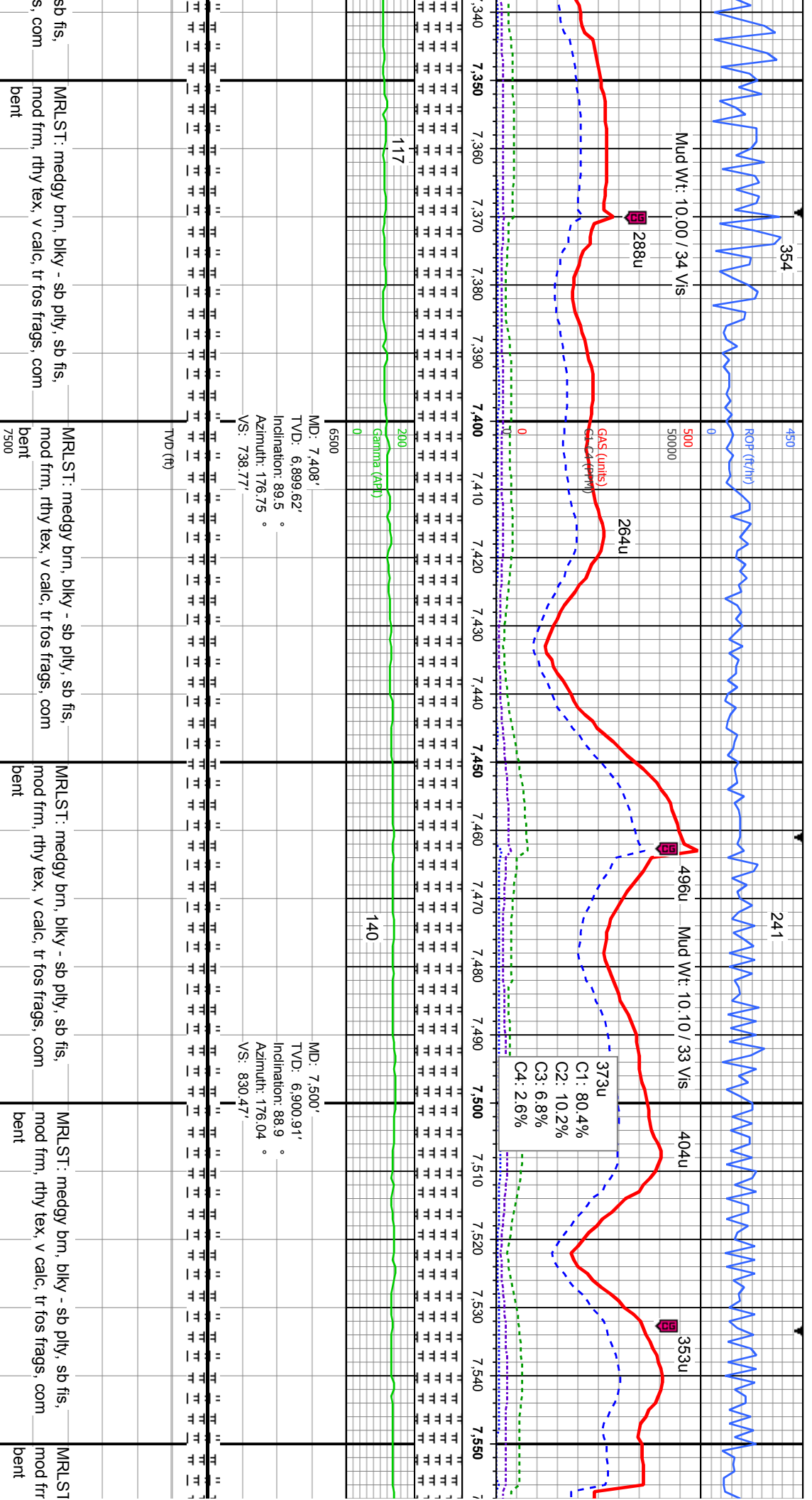
CHK: lt - med gy, sme mot gy brn, sft - mod  
frm, sb ply - sb blkly, sb wxy - rthy tex, v calc;  
MRST: medgy brn, blkly - sb ply, sb fis,  
mod frm, rthy tex, tr fos frags, com bent

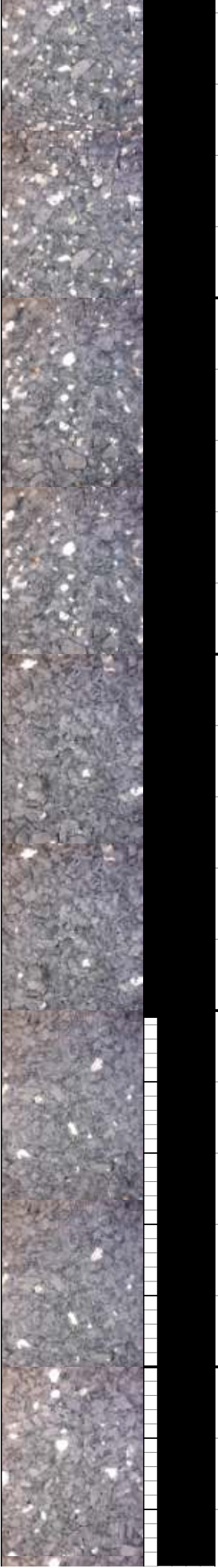
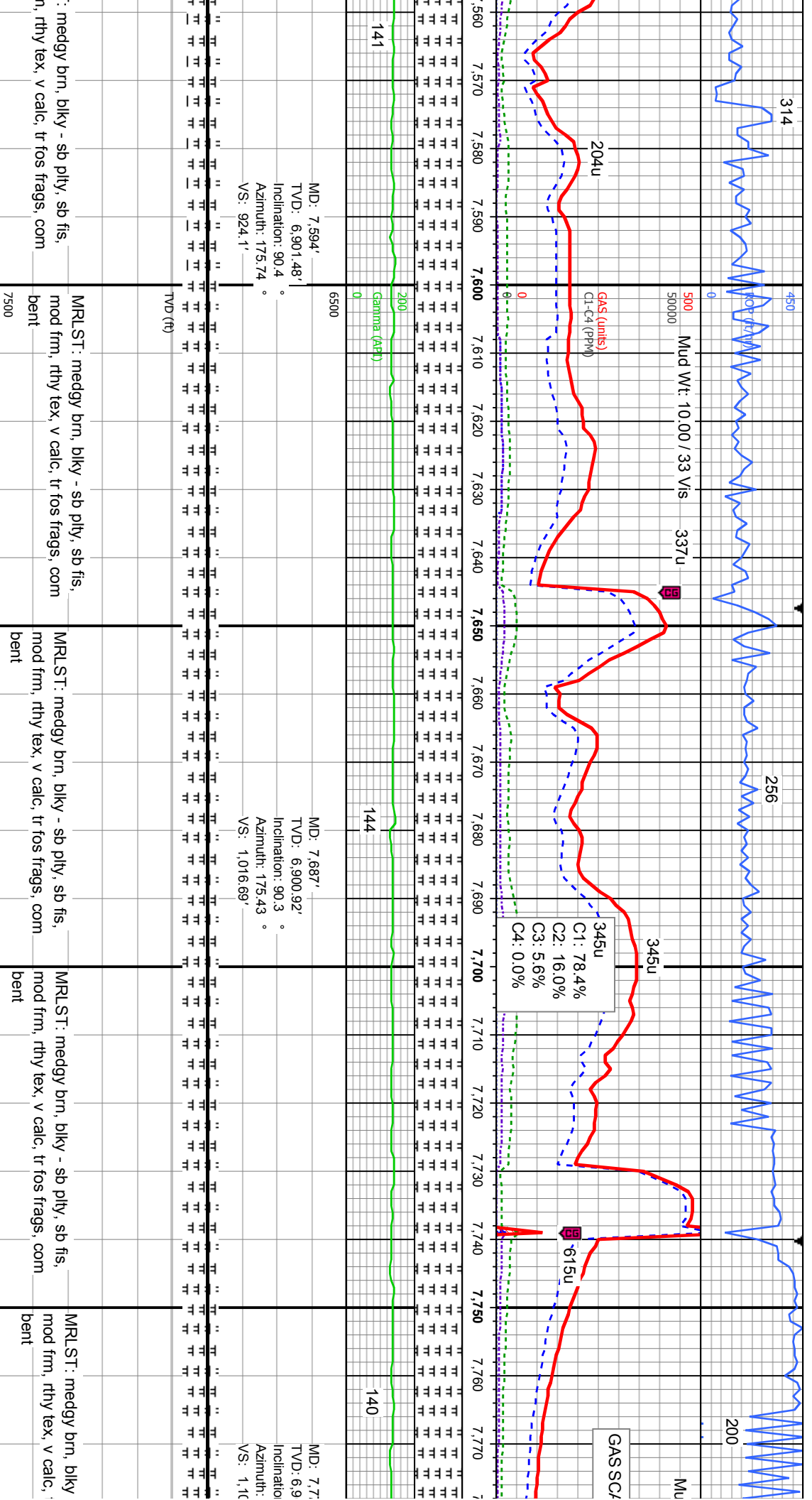
MRST: medgy  
frm, rthy tex, v c  
bent

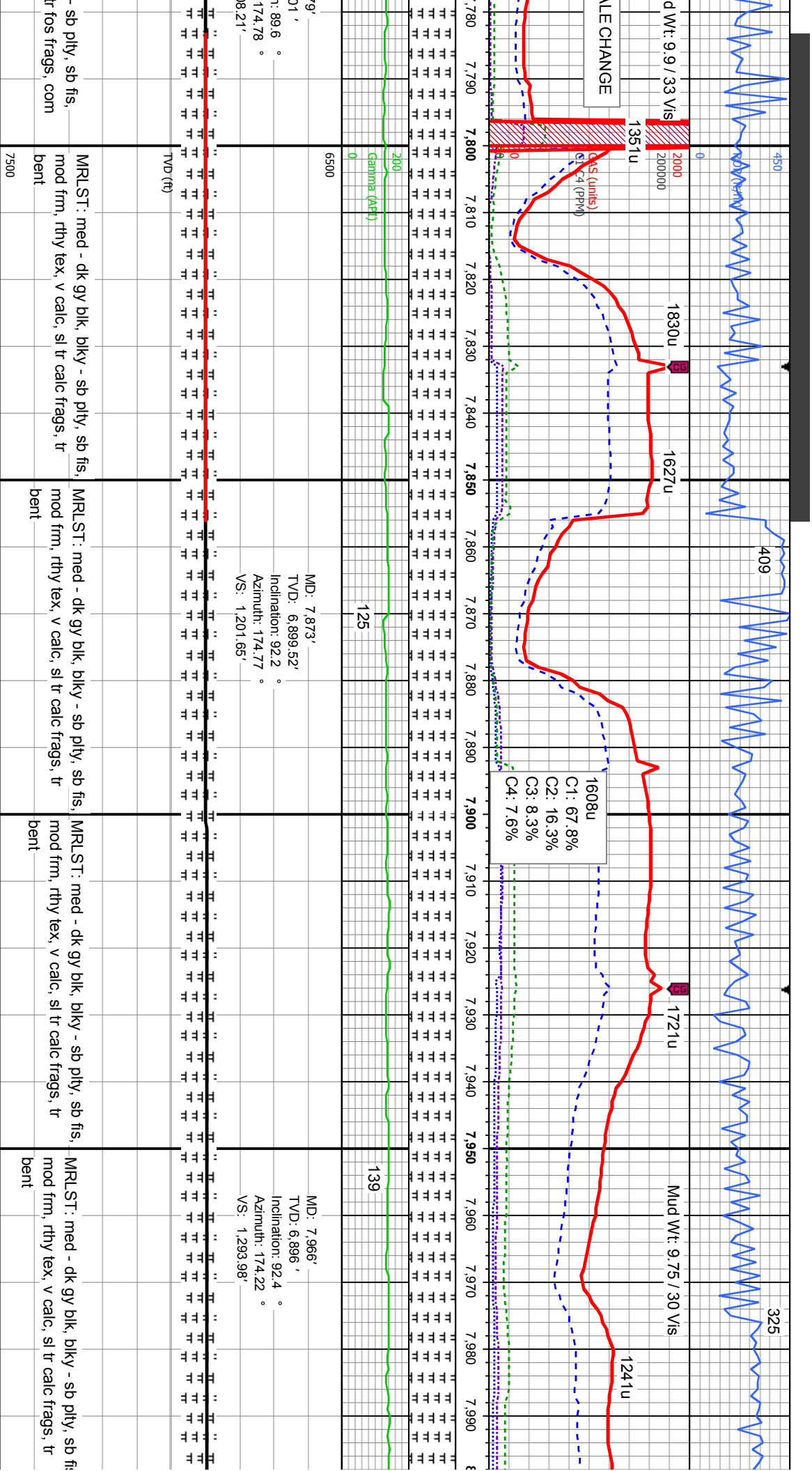












- sb pity, sb fis,  
-r fos frags, com

[illegible]

MRSLST: med - dk gy blk, biky - sb ply, sb fis  
mod frm, rthy tex, v calc, sl tr calc frags, tr  
bent

MLST: med - dk gy blk, blyk - sb ply, sb fis,  
mod frm, rthy tex, v calc, sl tr calc frags, tr  
bent

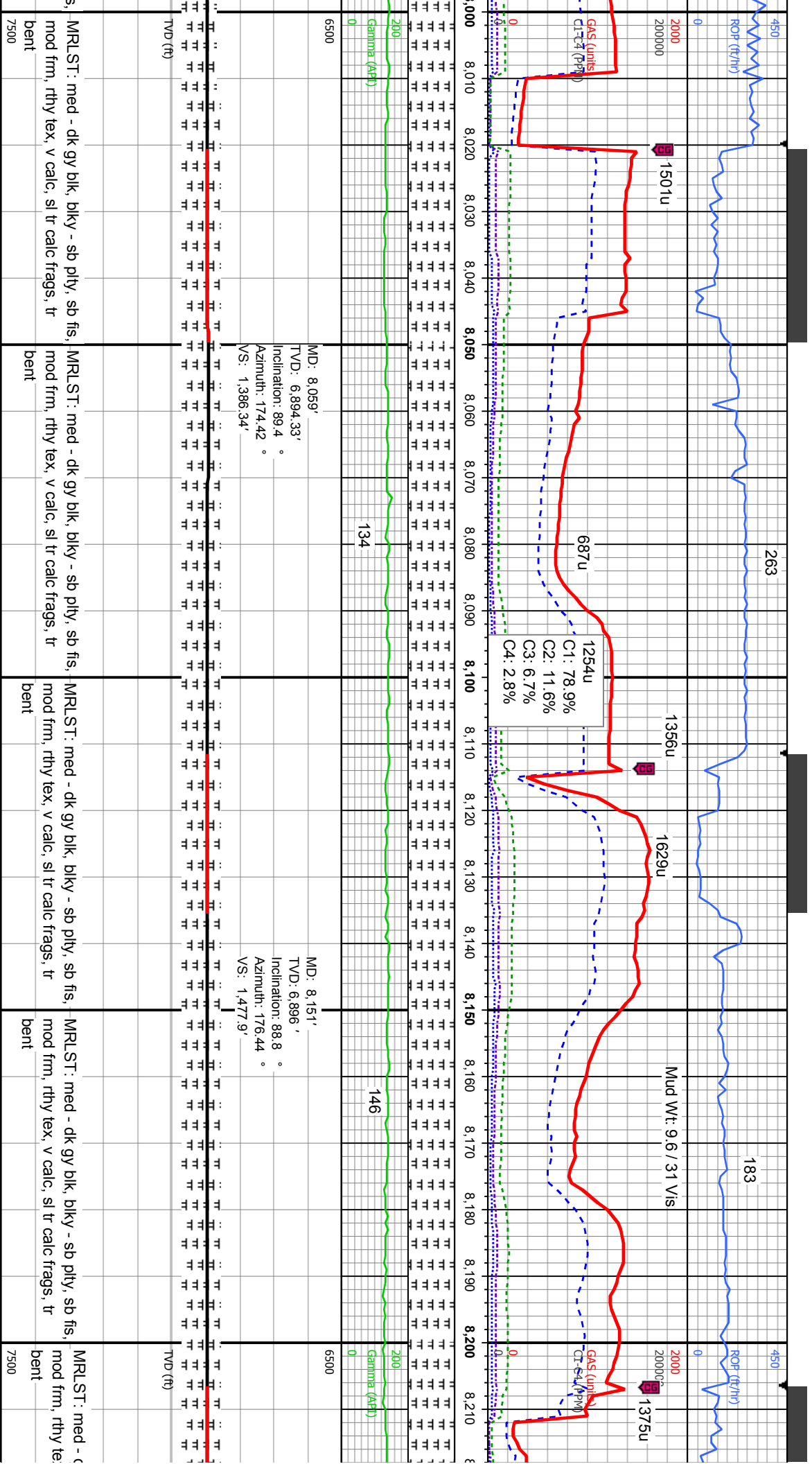
—MRLST: med - dk gy blk, blyk - sb pty, sb fr  
mod frm, rthy tex, v calc, sl tr calc frags, tr  
bent

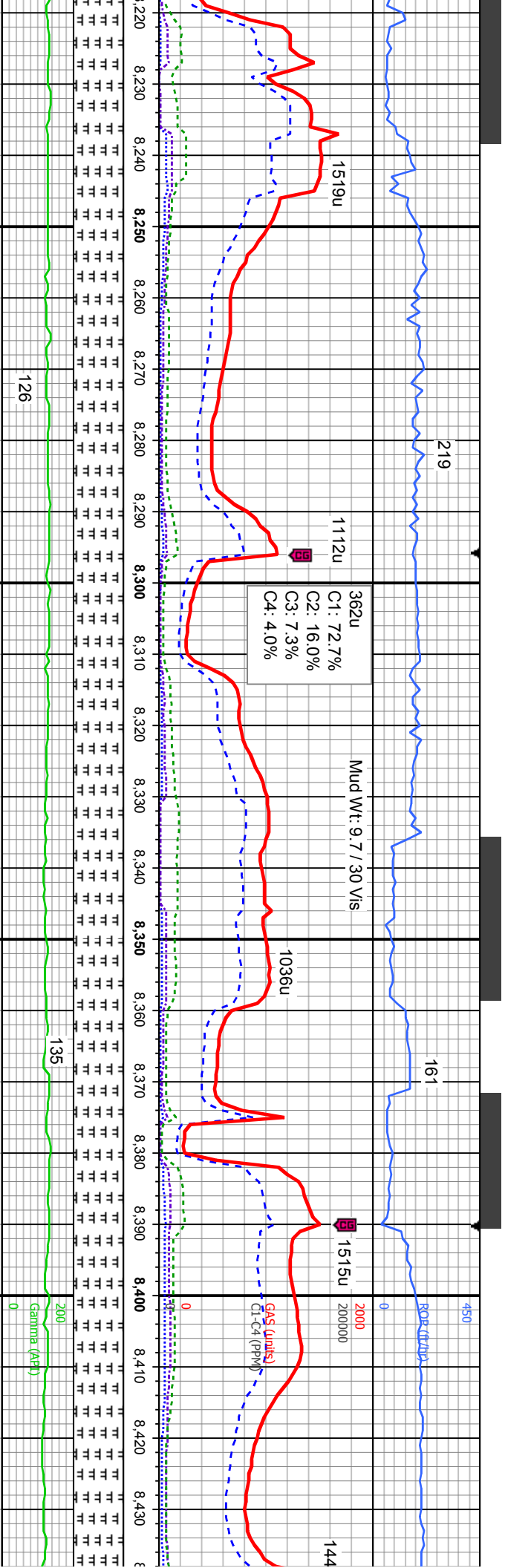
79' —  
01' —  
n: 89.6 °  
174.78 °  
08.21' —

MD: 7,873'  
TVD: 6,899.52'  
Inclination: 92.2 °  
Azimuth: 174.77 °  
VS: 1,201.65'

MD: 7,966'  
TVD: 6,896'  
Inclination: 92.4°  
Azimuth: 174.22°  
VS: 1,293.98'

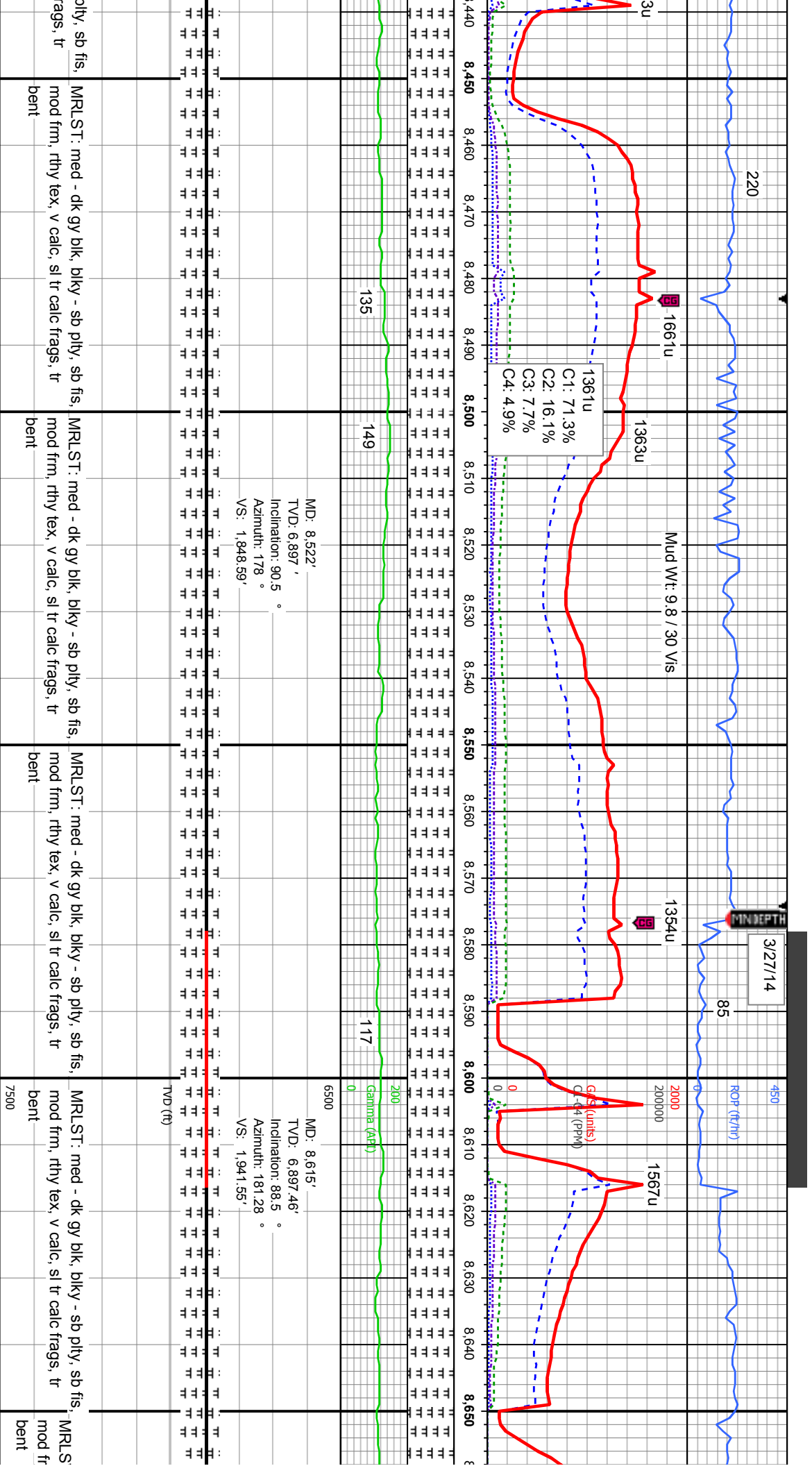




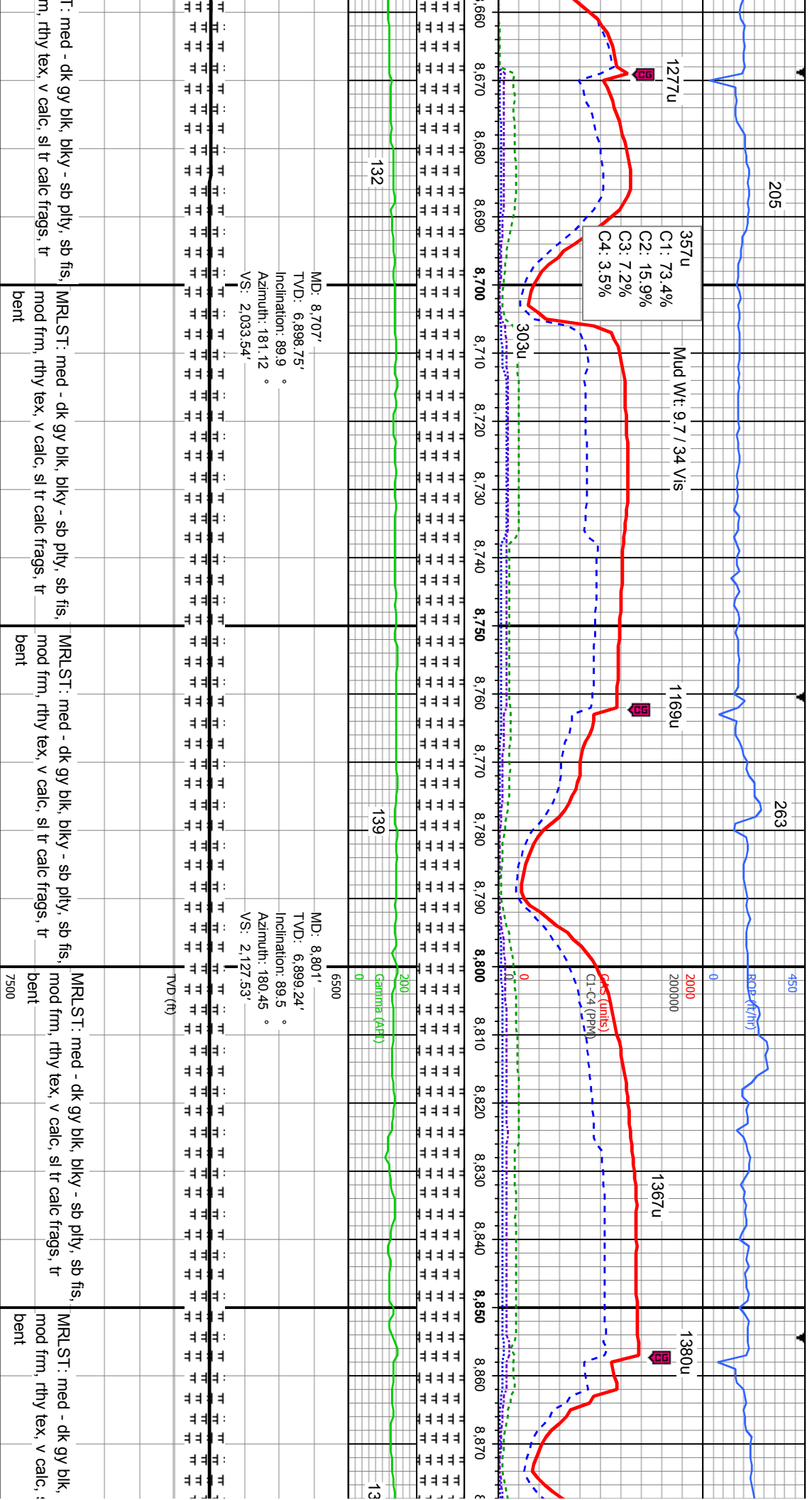


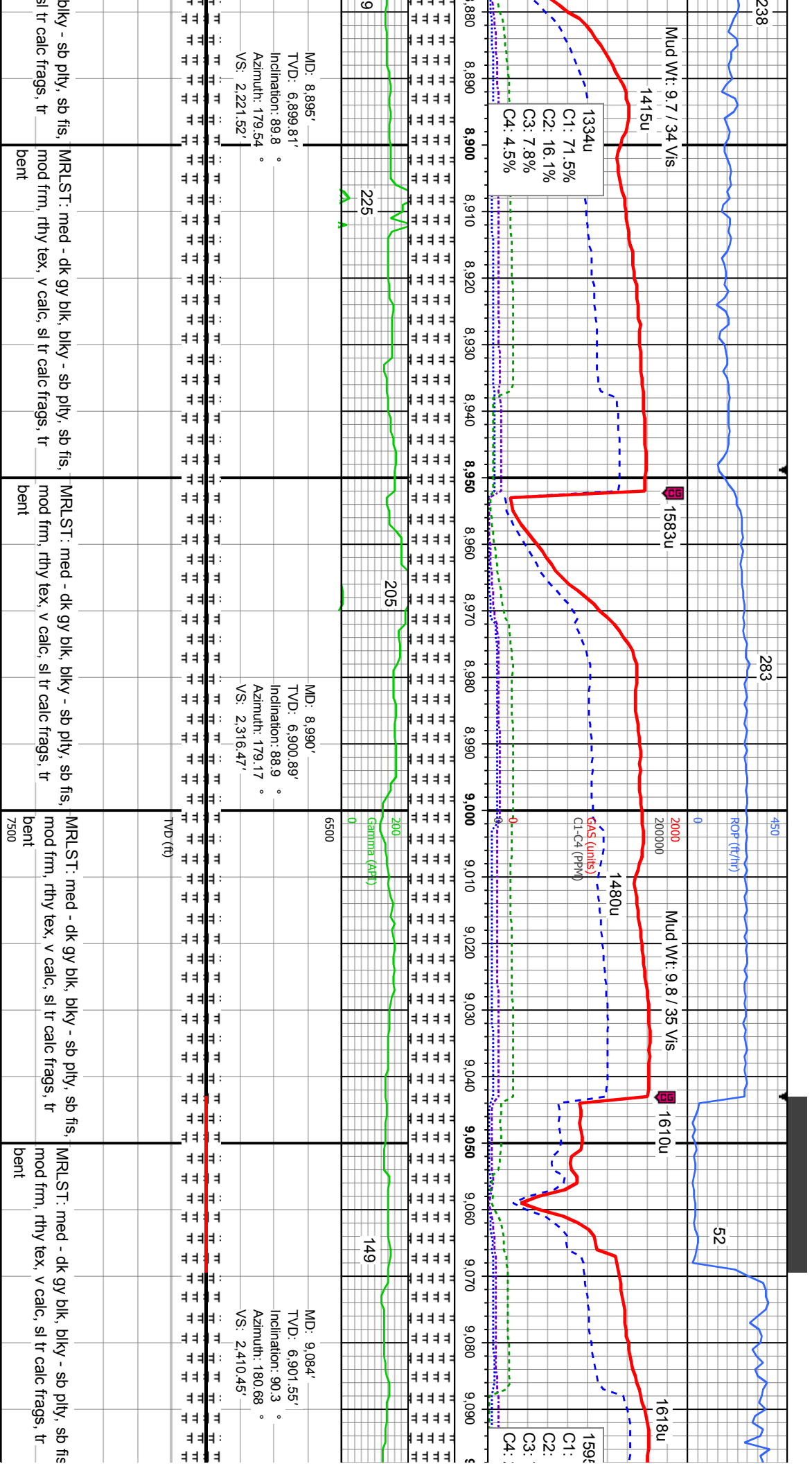
MD: 8.243'		MD: 8.336'		MD: 8.429'	
TVD: 6,897.14'		TVD: 6,898'		TVD: 6,897'	
Inclination: 89.5 °		Inclination: 89.8 °		Inclination: 90.5 °	
Azimuth: 179.81 °		Azimuth: 179.42 °		Azimuth: 178.9 °	
VS: 1,569.76'		VS: 1,662.73'		VS: 1,755.69'	
MR.LST: med - dk gy blk, blkly - sb pily, sb fis, mod frm, rthy tex, v calc, sl tr calc frags, tr bent		MR.LST: med - dk gy blk, blkly - sb pily, sb fis, mod frm, rthy tex, v calc, sl tr calc frags, tr bent		MR.LST: med - dk gy blk, blkly - sb pily, sb fis, mod frm, rthy tex, v calc, sl tr calc frags, tr bent	

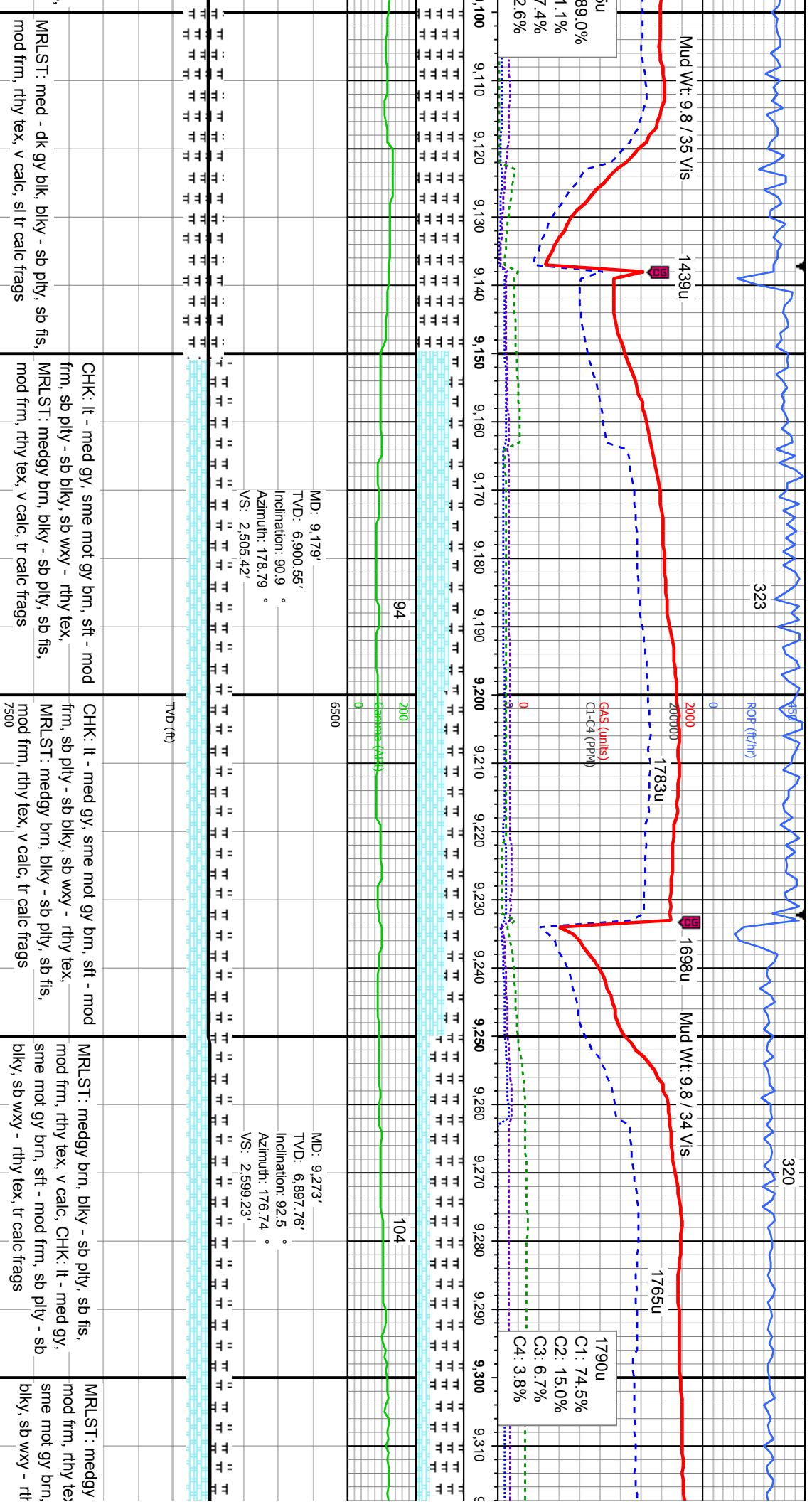




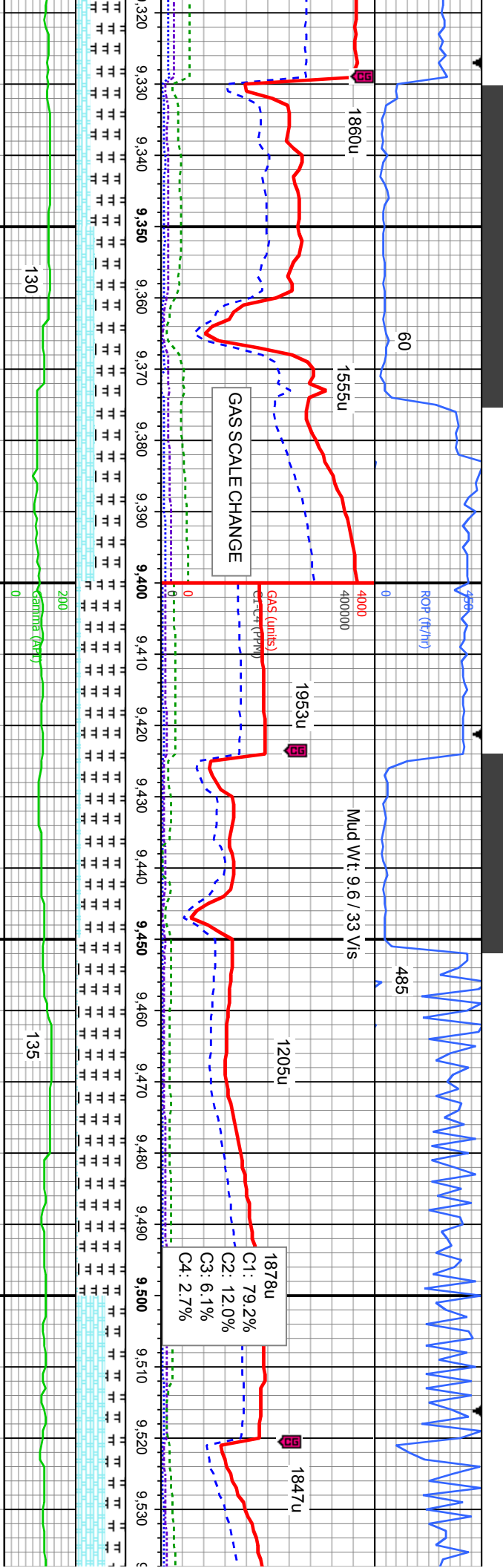




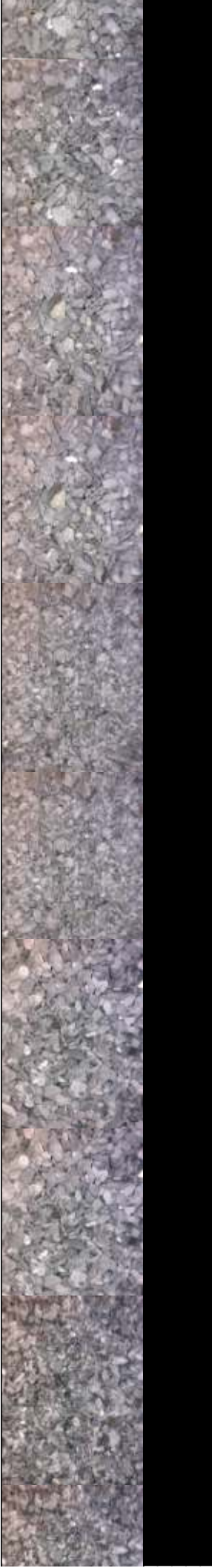


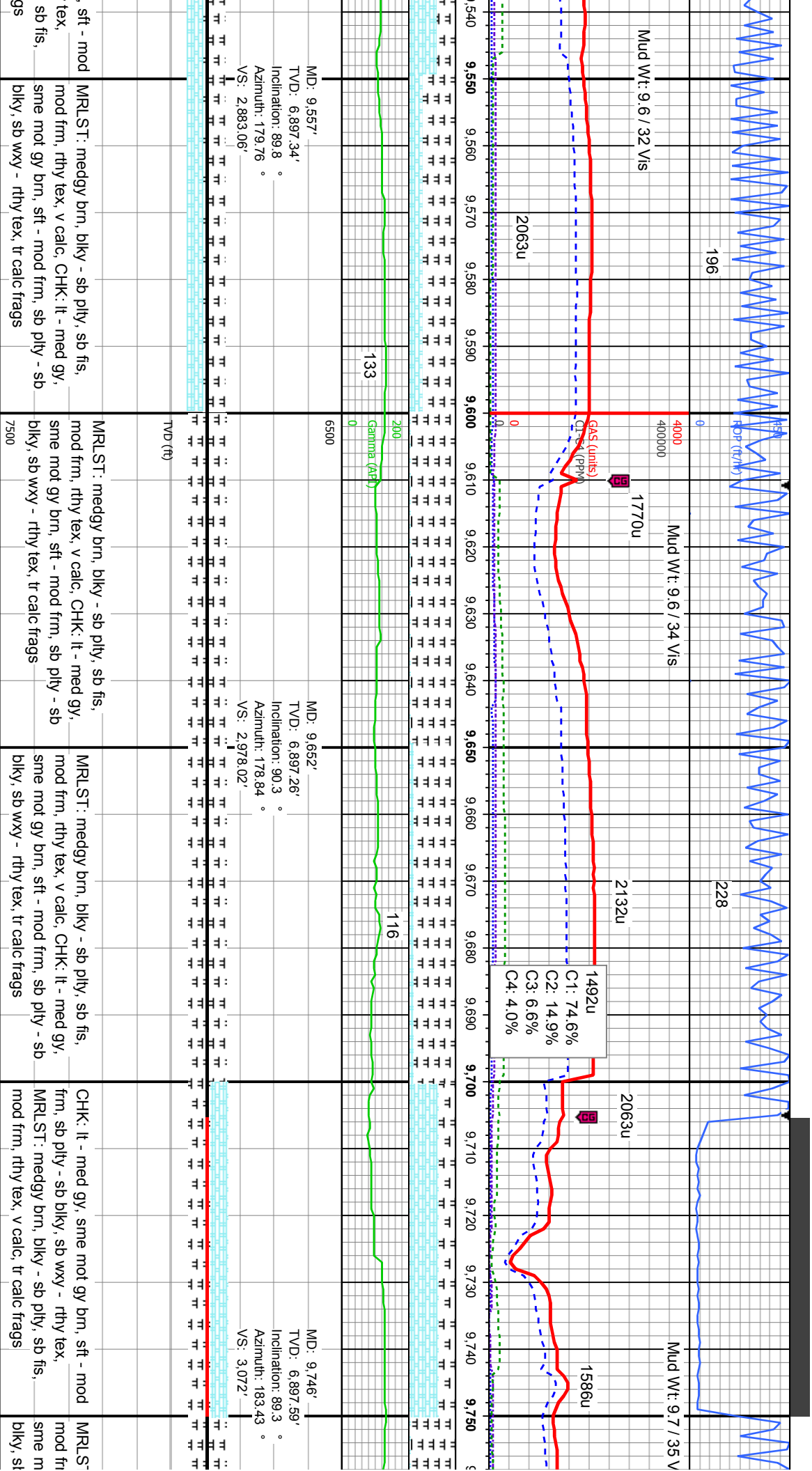


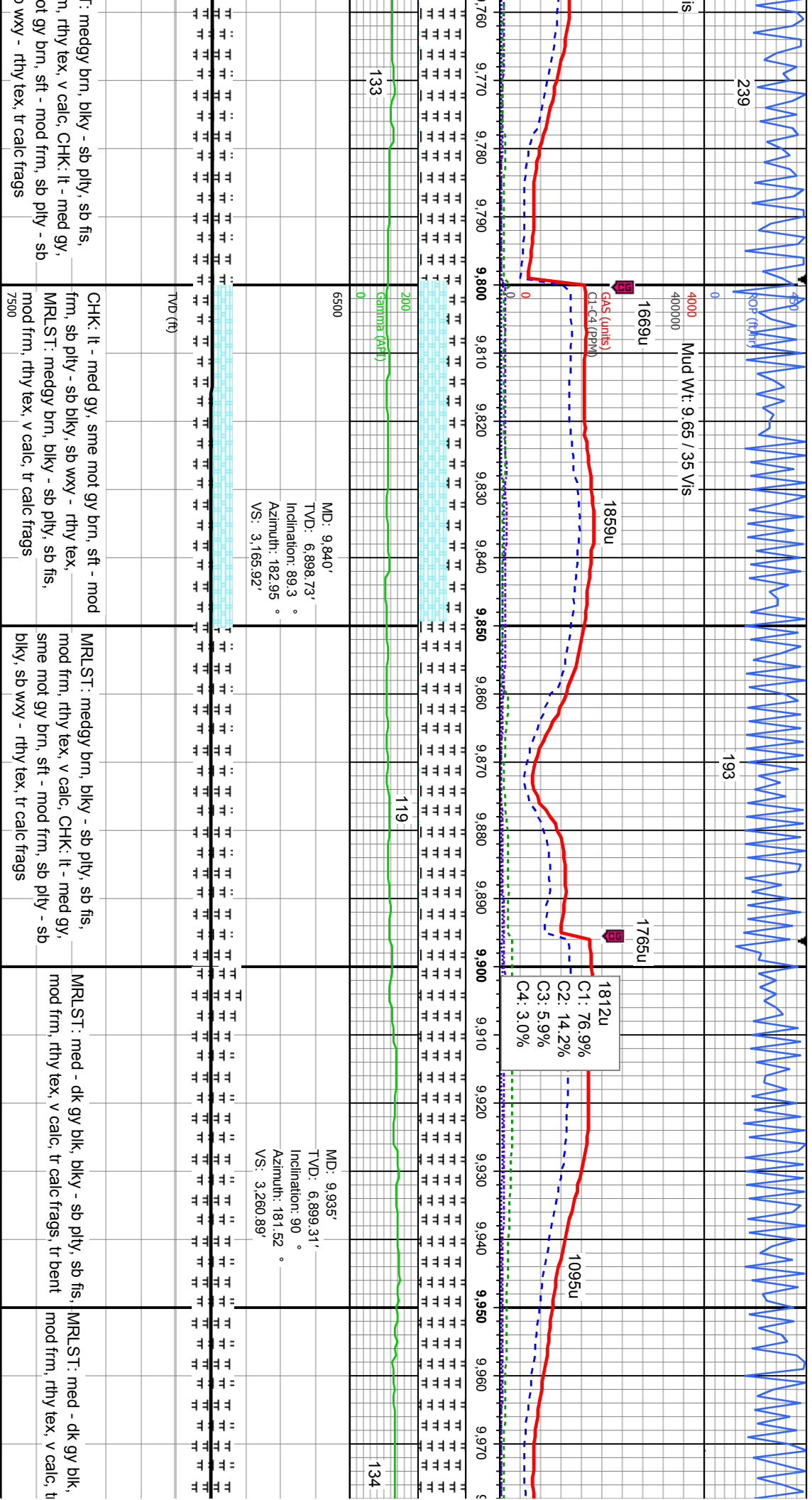




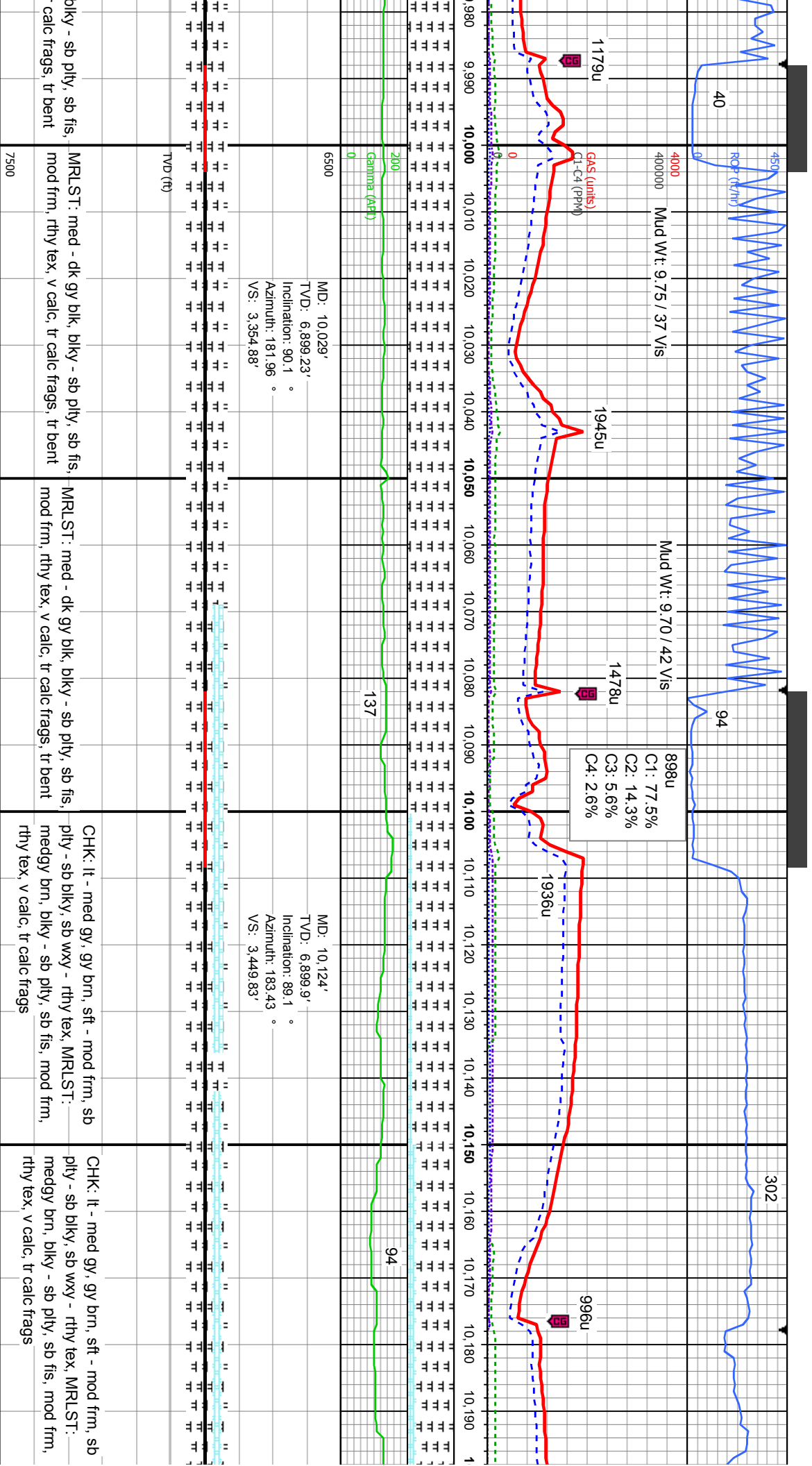
MD: 9.368' TVD: 6,896.1' Inclination: 89.5 ° Azimuth: 179.77 ° VS: 2,694.08'	130	6500	MD: 9.462' TVD: 6,896.84' Inclination: 89.6 ° Azimuth: 182.26 ° VS: 2,788.07'	135	MD: 9.462' TVD: 6,896.84' Inclination: 89.6 ° Azimuth: 182.26 ° VS: 2,788.07'
	200	7500		135	
brn, blkly - sb pily, sb fis, v calc, CHK: lt - med gy, sft - mod frm, sb pily - sb pily tex, tr calc frags	MRLST: medgy brn, blkly - sb pily, sb fis, mod frm, rthy tex, v calc, CHK: lt - med gy, sme mot gy brn, sft - mod frm, sb pily - sb blkly, sb wxy - rthy tex, tr calc frags	TVD (ft)	MRLST: medgy brn, blkly - sb pily, sb fis, mod frm, rthy tex, v calc, CHK: lt - med gy, sme mot gy brn, sft - mod frm, sb pily - sb blkly, sb wxy - rthy tex, tr calc frags	CHK: lt - med gy, sme mot gy brn frm, sb pily - sb blkly, sb wxy - rthy MRLST: medgy brn, blkly - sb pily, mod frm, rthy tex, v calc, tr calc fra	

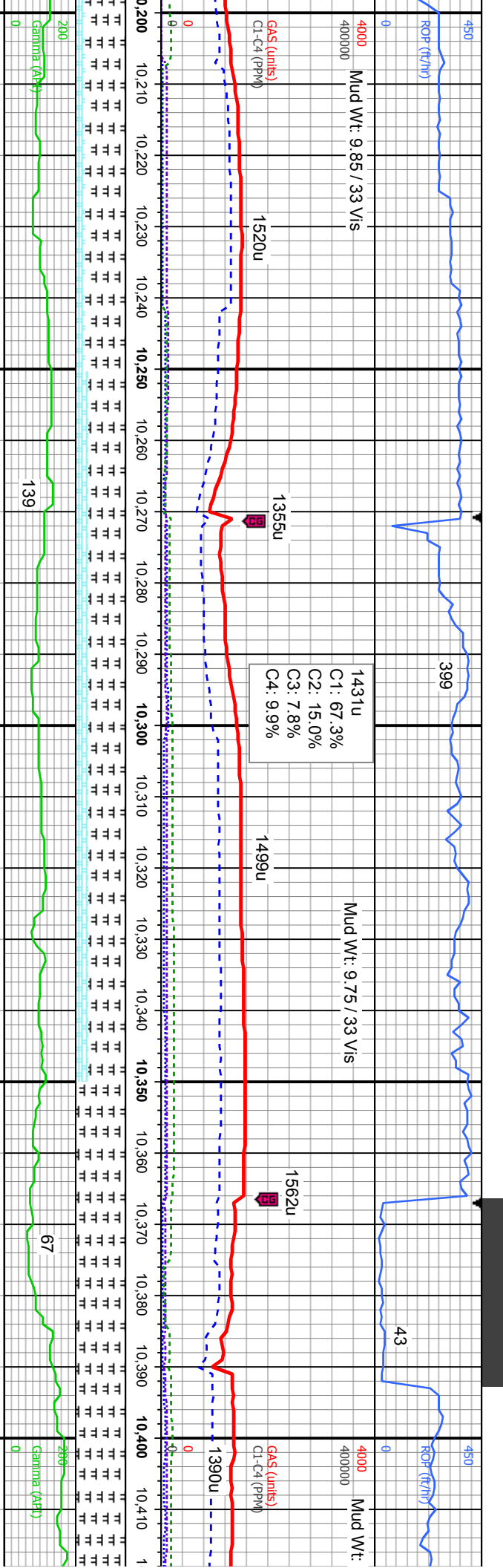






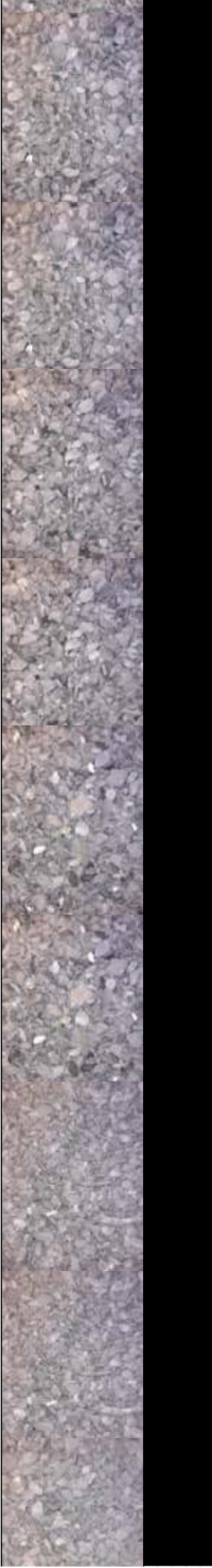


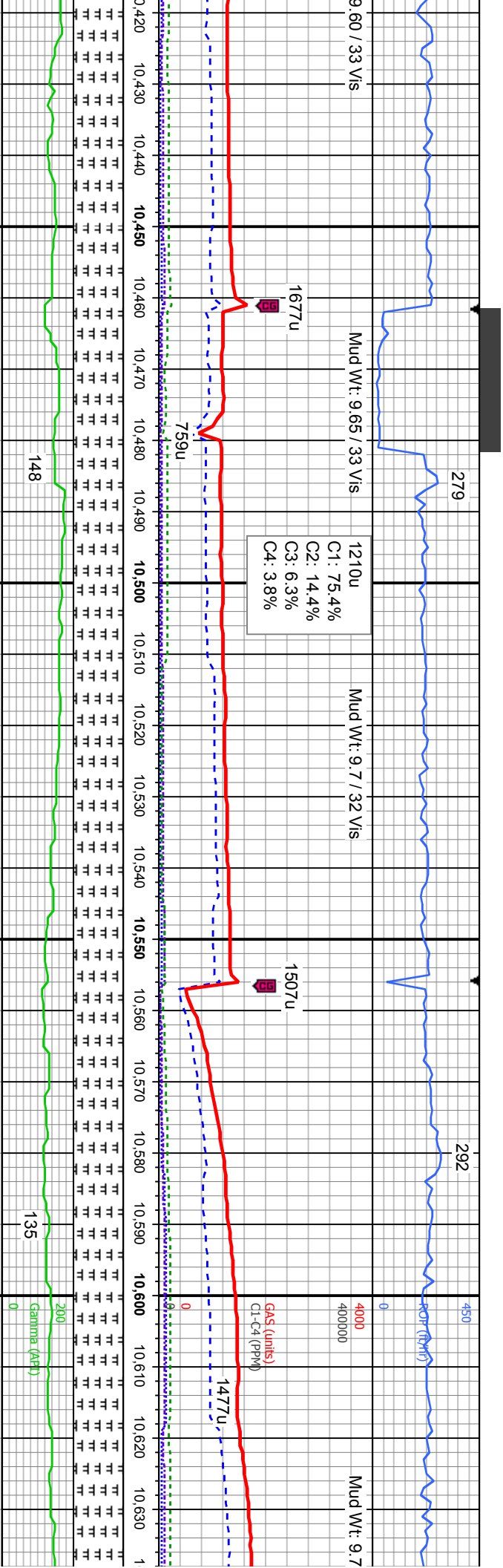




MD: 10,219'	MD: 10,313'	MD: 10,408'
TVD: 6,901.39'	TVD: 6,903.19'	TVD: 6,905.76'
Inclination: 89.1 °	Inclination: 88.7 °	Inclination: 88.2 °
Azimuth: 182.48 °	Azimuth: 181.8 °	Azimuth: 183.93 °
VS: 3,544.76'	VS: 3,638.72'	VS: 3,733.63'

CHK: lt - med gy, gy brn, sft - mod frm, sb pily - sb blk, sb wxy - rthy tex, MRLST: medgy brn, blk, sb pily, sb fis, mod frm, rthy tex, v calc, tr calc frags	CHK: lt - med gy, gy brn, sft - mod frm, sb pily - sb blk, sb wxy - rthy tex, MRLST: medgy brn, blk, sb pily, sb fis, mod frm, rthy tex, v calc, tr calc frags	CHK: lt - med gy, gy brn, sft - mod frm, sb pily - sb blk, sb wxy - rthy tex, MRLST: medgy brn, blk, sb pily, sb fis, mod frm, rthy tex, v calc, tr calc frags	POSSIBLY FULTED FROM B MARL TO A MARL @ 10,380' MD	MRLST: med gy blk, blk, sb pily, sb fis, mod frm, rthy tex, v calc, vit lsfr, sl tr calc frags, tr bent	MRLST: med gy mod frm, rthy tex, v calc, vit lsfr, sl tr calc frags, tr bent
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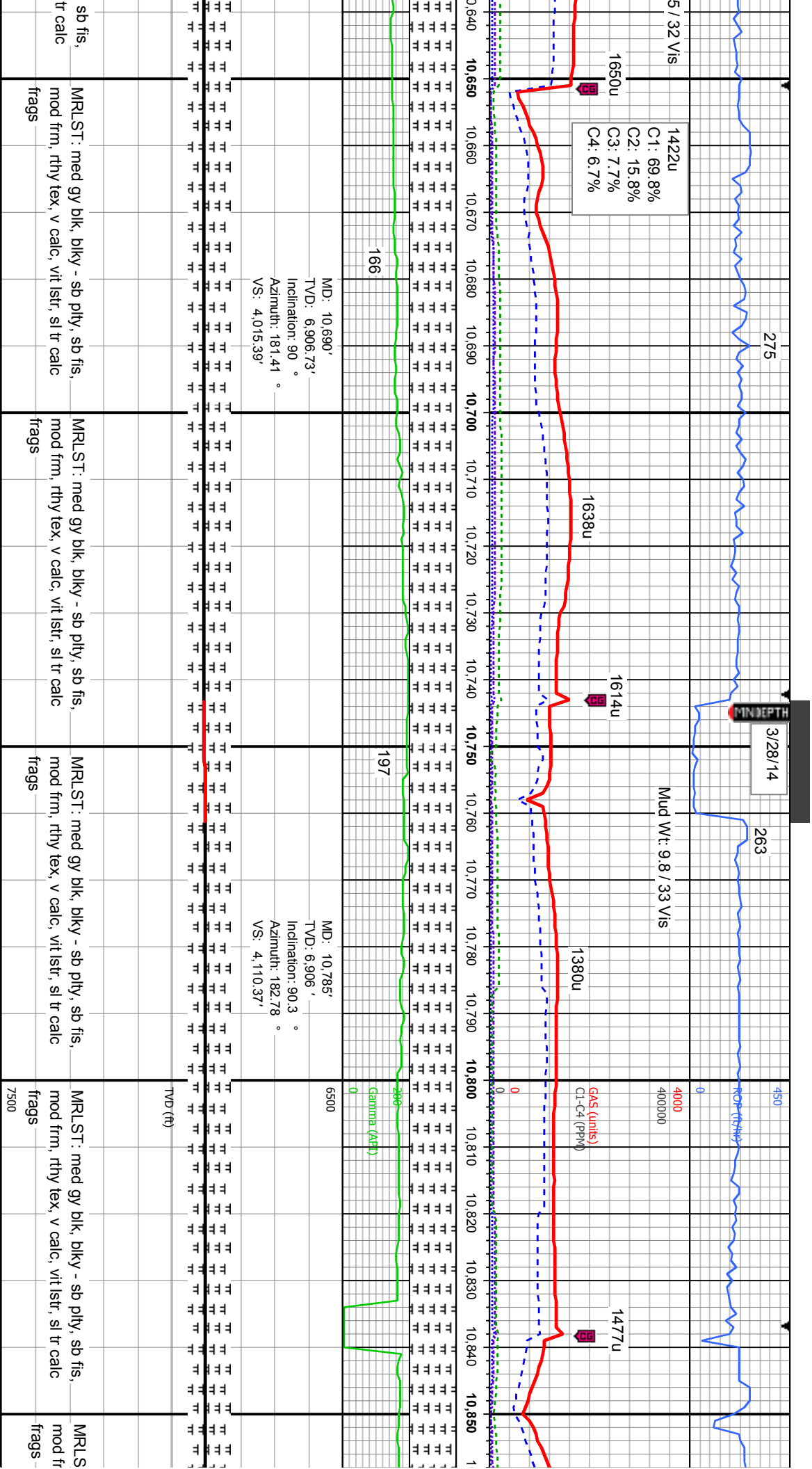
MD: 10,501'  
TVD: 6,906.98'  
Inclination: 90.3 °  
Azimuth: 183.84 °  
VS: 3.826.49'

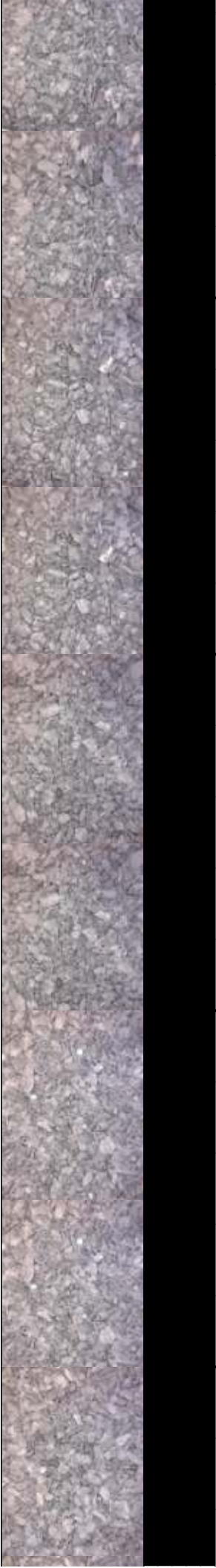
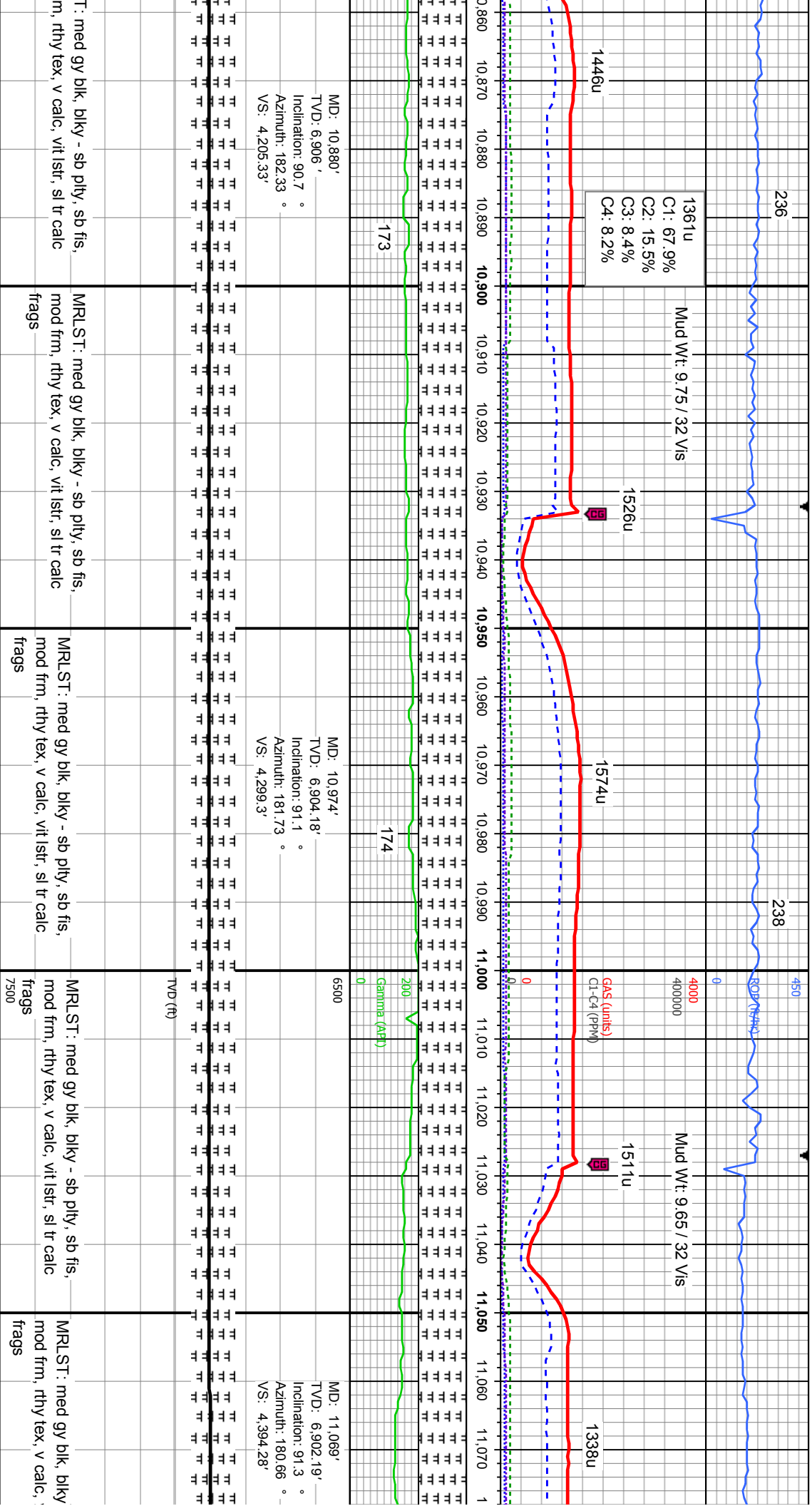
MD: 10,596'  
TVD: 6,906.73'  
Inclination: 90 °  
Azimuth: 182.73 °  
VS: 3.921.41'

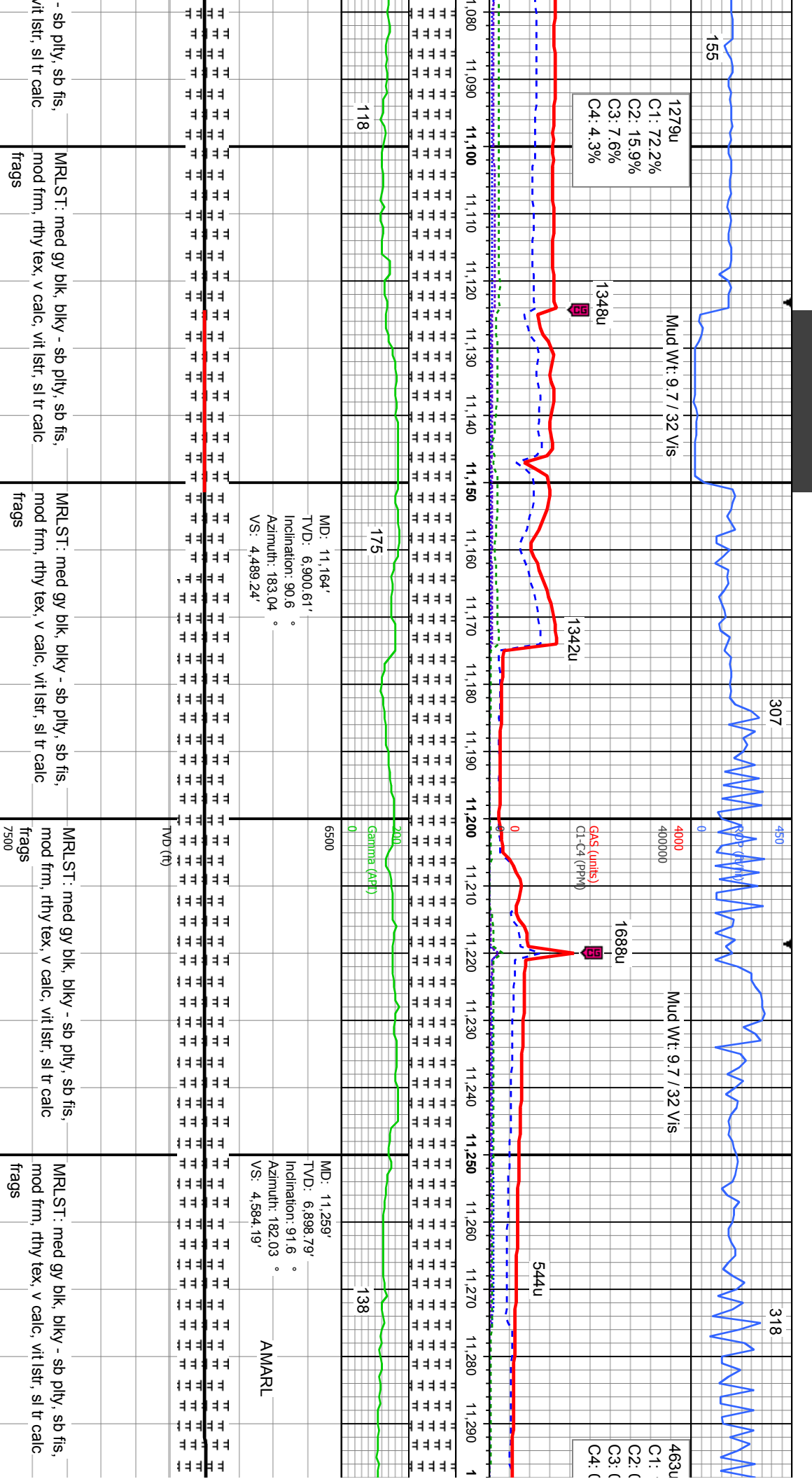
v blk, blkly - sb plty, sb fis, mod frm, rthy tex, v calc, vit lstr, sl tr calc frags, tr bent	MRLST: med gy blk, blkly - sb plty, sb fis, mod frm, rthy tex, v calc, vit lstr, sl tr calc frags, tr bent	MRLST: med gy blk, blkly - sb plty, sb fis, mod frm, rthy tex, v calc, vit lstr, sl tr calc frags, tr bent	MRLST: med gy blk, blkly - sb plty, sb fis, mod frm, rthy tex, v calc, vit lstr, sl tr calc frags, tr bent	TVD (ft)



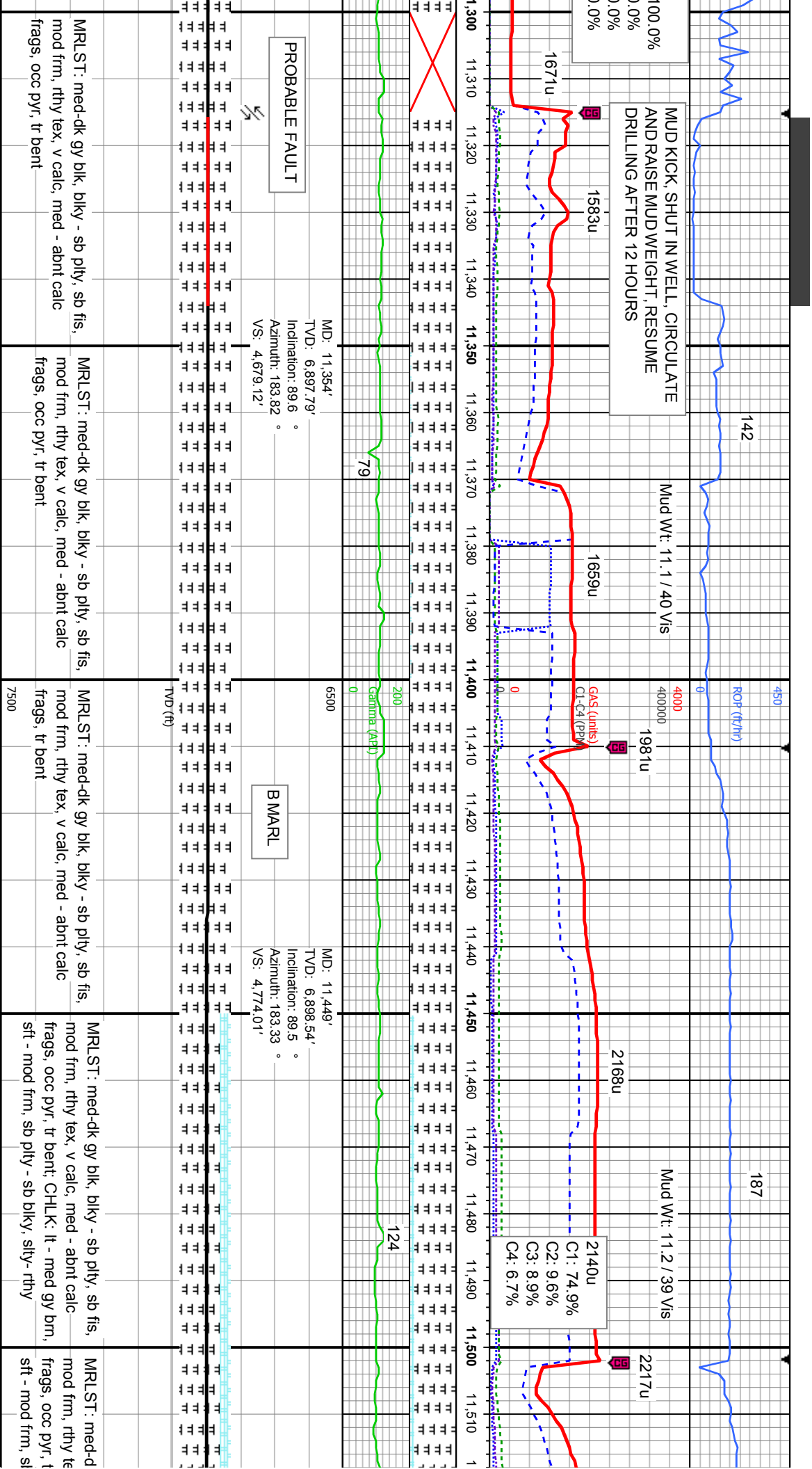




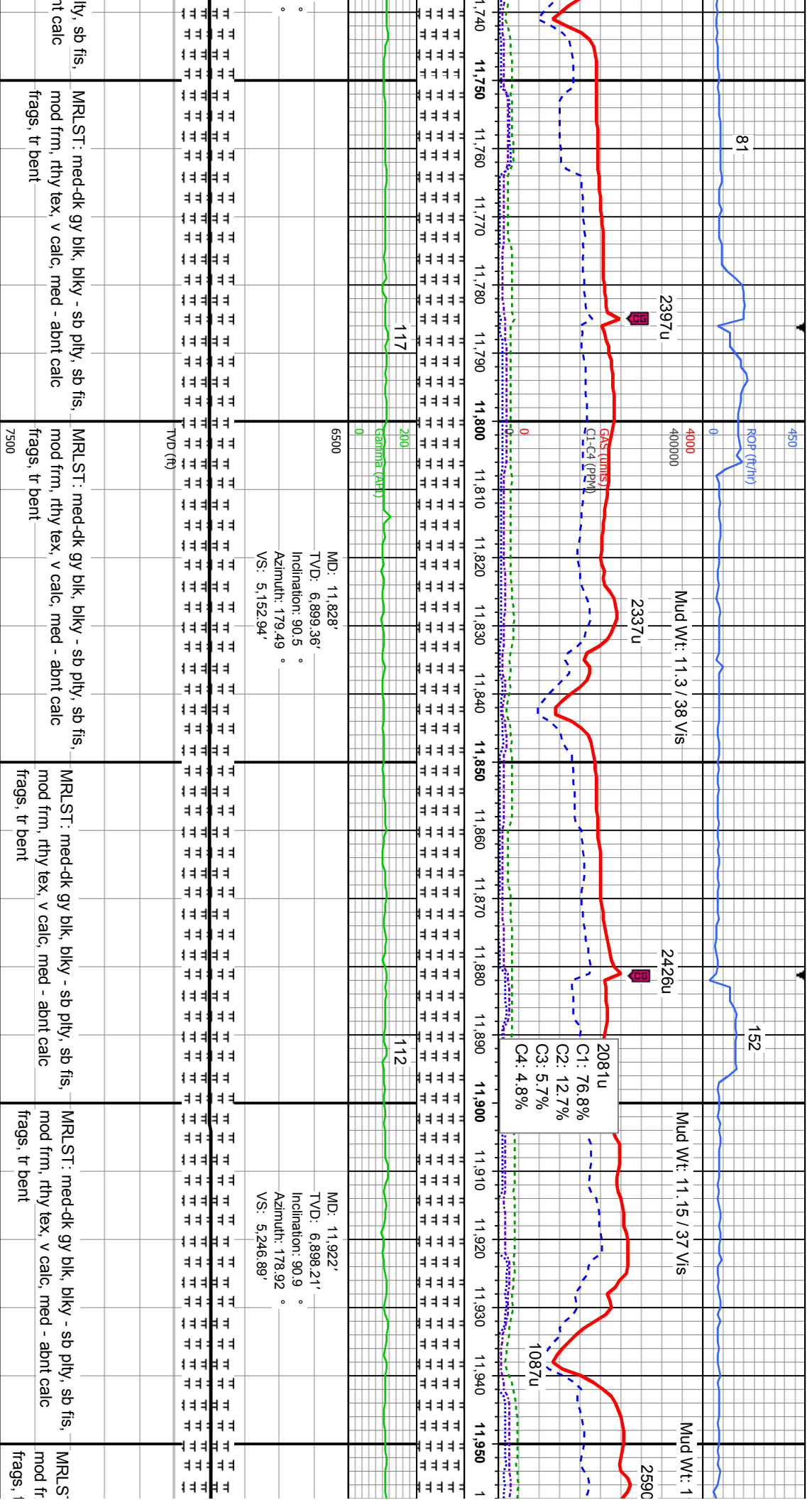




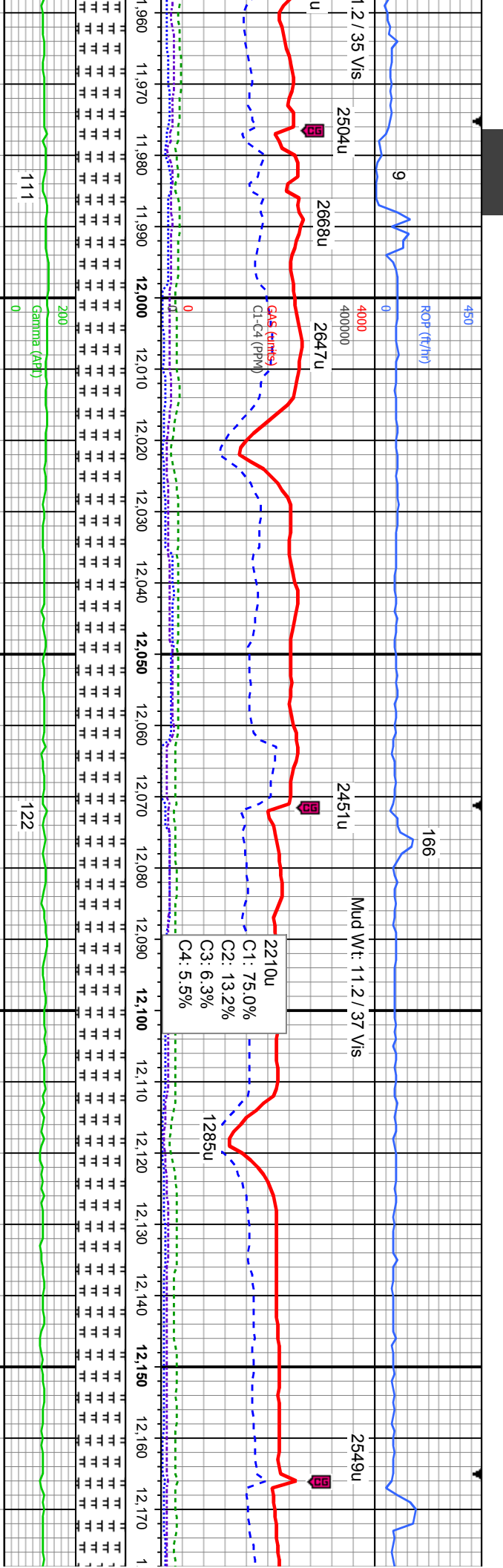












	MD: 12,017' TVD: 6,898.04' Inclination: 89.3 ° Azimuth: 180.18 ° VS: 5,341.85'		MD: 12,112' TVD: 6,898.79' Inclination: 89.8 ° Azimuth: 178.09 ° VS: 5,436.8'	
111	200	122		
Gamma (API)	Gamma (API)	Gamma (API)	Gamma (API)	Gamma (API)
0	0	0	0	0
6500	6500	6500	6500	6500
TVD (ft)	TVD (ft)	TVD (ft)	TVD (ft)	TVD (ft)
MRLST: med-dk gy blk, blkly - sb plty, sb fis, mod frm, rthy tex, v calc, med - abnt calc frags, com bent	MRLST: med-dk gy blk, blkly - sb plty, sb fis, mod frm, rthy tex, v calc, med - abnt calc frags, com bent	MRLST: med-dk gy blk, blkly - sb plty, sb fis, mod frm, rthy tex, v calc, med - abnt calc frags, abnt bent	MRLST: med-dk gy blk, blkly - sb plty, sb fis, mod frm, rthy tex, v calc, med - abnt calc frags, abnt bent	MRLST: med-dk gy blk, blkly - sb plty, sb fis, mod frm, rthy tex, v calc, med - abnt calc frags, abnt bent

