



Scale: 5" / 100'  
Measured Depth Log

Well Name    Arellano K-10-9HN

Location    Sec 10 T5N R65W

State    Colorado

County    Weld

Country    United States

Rig Number    Frontier (Utah) 8

API Number    05-123-41106

AFE #    41106

Region    DJ Basin

Field    Wattenberg

Spud Date    3/25/2015

Drilling Completed    5/8/2015

Surface Coordinates    N 40.411044 W 104.641058

Ground Elevation    4616'

K.B. Elevation    4640'

Logged Interval    6000' To    14037'

Total Depth    14037'

Formation    Niobrara

Type of Drilling Fluid    FWLSND

## Operator

Company    Bayswater Exploration & Production, LLC.

Address    730 17th St.  
Denver, CO 80202

## Geologist

Name    Mark E. Brown

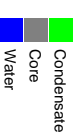
Company    Bayswater Exploration & Production, LLC.  
Address    730 17th St.  
Denver, CO 80202

## Other

Robert Davis    Wellsite Geologist  
Ben Katka    Wellsite Geologist

Columbine Logging Computer    148  
Bloodhound Unit    298

## Zone Color Coding



Rock Types

UNKNOWN	COAL	MARLSTONE	SHALY SANDSTONE
ANHYDRITE	CONGLOMERATE	METAMORPHIC	SHALY SILTSTONE
BENTONITE	DOLOMITE	NO SAMPLE	SILTY SHALE
BRECCIA	DOLOMITIC LIMESTONE	SALT	SILTSTONE
CHALK	GRANITE	SANDSTONE	TILL
CEMENT	GYPSUM	SALT-PEPPER SANC	TUFF
CHERT	IGNEOUS	SHALE	WELDED TUFF
CLAY CHOKE SANC	SIDERITE or LIMONITE	SHALE COLORED	
CLAYSTONE	LIMESTONE	SHALE GRAY	

Accessories

GASTROPOD	ARGILLITE GRAIN	HEAVY MINERAL	
INOCERAMUS	B BENTONITE	K KAOLIN	
ALGAE	BITUMENOUS SUBSTANCE	M MARCASITE	ANHYDRITE STRINGER
AMPHIPORA	BRECCIA FRAGMENTS	M MARLSTONE	BENTONITE STRINGER
BELEMNITE	C CALCAREOUS	M MICACEOUS	COAL STRINGER
BIOCLASTIC	P PELLET	M MINERAL CRYSTALS	DOLOMITE STRINGER
BRACHIOPOD	P PISOLITE	N NODULES	GYPSUM STRINGER
BRYOZOA	P PLANT REMAINS	P PHOSPHATE PELLETS	LIMESTONE STRINGER
CEPHALOPOD	C COAL - THIN BEDS	P PYRITE	MARLSTONE (GALC) STRG
CORAL	D DOLOMITIC	S SALT CAST	MARLSTONE (DOL) STRG
CRINOID	S STROMATOPOROID	S SANDY	SANDSTONE STRINGER
ECHINOID	F FERRUGINOUS PELLET	S SIDERITE	SHALE STRINGER
FISH			
FORAMINIFERA	A ANHYDRITIC	S SILICEOUS	SILTSTONE STRINGER
F FOSSIL	A ARGILLACEOUS	S SILTY	
		T TUFFACEOUS	

Oil Show

P PINPOINT
V VUGGY





































Engineering

D DEAD
E EVEN
Q QUESTIONABLE
B BIT
S SPOTTED STAINING
C CONNECTION (UP)

Porosity

C CONNECTION (DOWN)	C CONNECTION GAS
E EARTHY	C CONNECTION GAS (LEFT)
F FENESTRAL	T TRIP GAS
F FRACTURE	T TRIP GAS (LEFT)
I INTERCRYSTALLINE	D DOWN TIME GAS
I INTEROOLITIC	D DOWN TIME GAS (LEFT)
M MOLDIC	C CORE - LOST
O ORGANIC	C CORE - RECOVERED

## Other Symbols

	DST INTERVAL		WIRELINE TESTED - LEFT		E EARTHY
	FAULT		WIRELINE TESTED - RT		FX FINELYXLN
	FORMATION TOP		DRILL STEM TEST		BS GRAINSTONE
	GAS SHOW		MINDEPTH MN DEPTH		L LITHOGRAPHIC
	OIL SHOW				MX MICROXLN
	MINDEPTH UP				MS MUDSTONE
Rounding					
	MINDEPTH (DOWN)		A ANGULAR		PS PACKSTONE
	NORMAL FAULT		R ROUNDED		WS WACKSTONE
	OVERTURNED STRATA		B SUBANG		
	REVERSE FAULT		N SUBRND		
Sorting					
	CASING				M MODERATE
Textures					
	SIDEWALL CORE (LEFT)				P POOR
	SIDEWALL CORE (RIGHT)		BS BOUNDSTONE		W WELL
	SLIDE		C CHALKY		
	SURVEY		CX CRYPTOXLN		

ROP  
ROP

Total Gas & Chromatograph

GAS  
C1  
C2  
C3  
C4

COLUMBINE LOGGING RIGGED  
UP ON 5/1/2015 MANNED  
2-PERSON LOGGING WITH  
BLOODHOUND GAS  
CHROMATOGRAPH #0298

Depth Labels

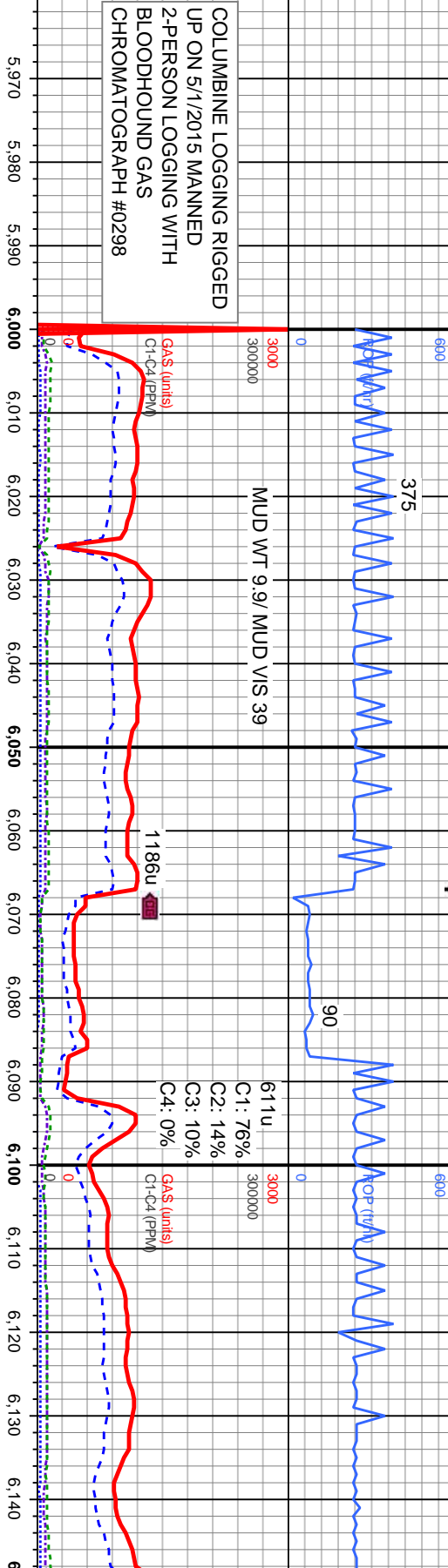
% Lith

Gamma  
GAMMA

Well Bore  
TVD

Oil Show

Images



BEGIN LOGGING F/ 6000' MD  
@ 03:45 HRS ON 5/2/2015

Bit Data  
Bit #: 2  
Type: TD306S  
Size: 8.75"

Depth In: 800'  
Depth Out: 7,302'  
Hours: 31.6 hrs  
Avg Ft/Hr: 205.76 'hr  
Jets: 6x14  
S/N: 7045157

MD: 6,017'  
TVD: 5,949.34'  
Inclination: 2.9°  
Azimuth: 20.6°  
VS: -134'

SHY SLTST: lt-med gy, silt-vf gr, sl frm-hd, sb pily-sb blk, gt tex, arg cnt, sh incl, non calc, SLTY SH: med-dk gy, silt-nic gr, sl frm, sb pily-pily, rthy-sb rthy tex, mot lp, non calc, mod difse, v sl stmg, wh/lt-bl cut.

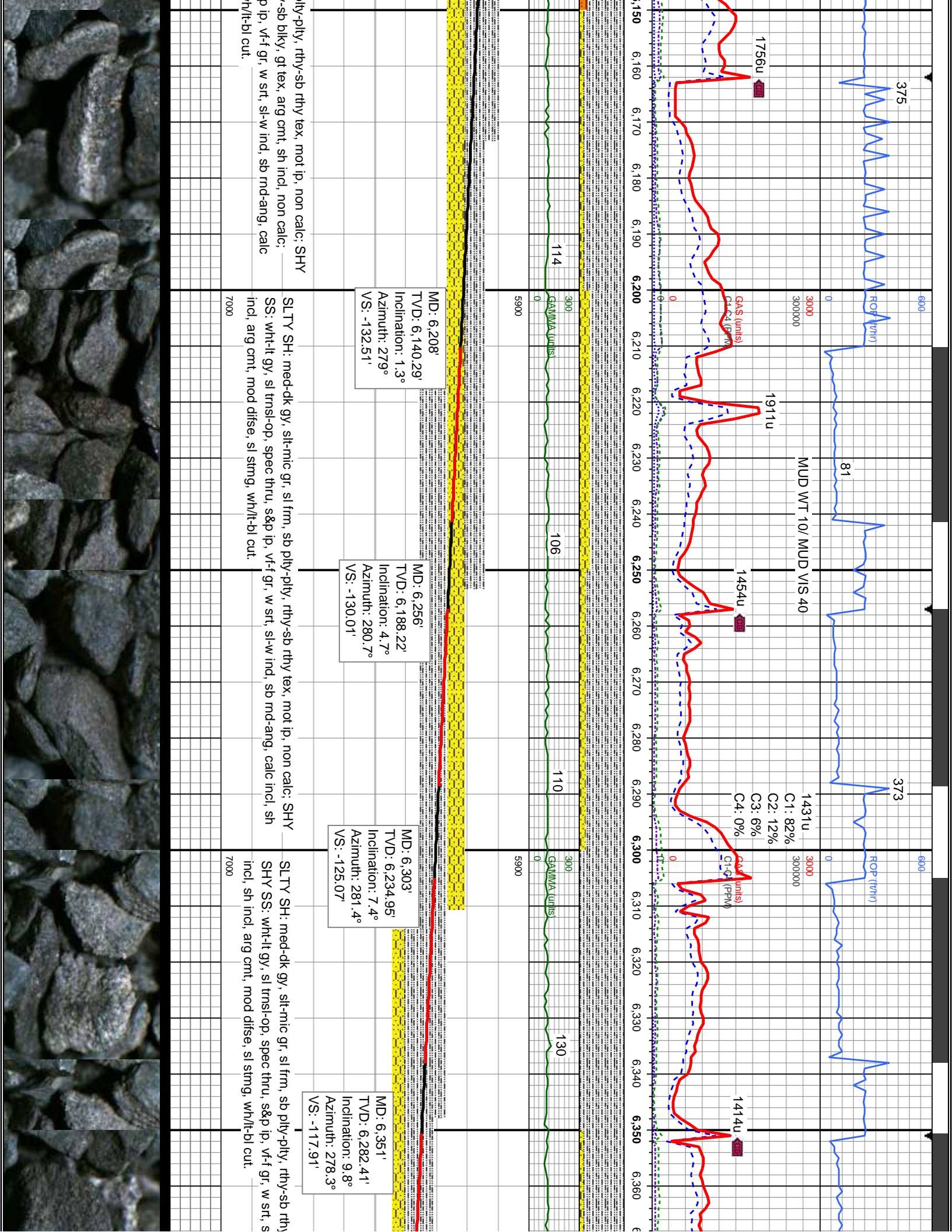
MD: 6,113'  
TVD: 6,045.3'  
Inclination: 0.6°  
Azimuth: 273.5°  
VS: -134.1'

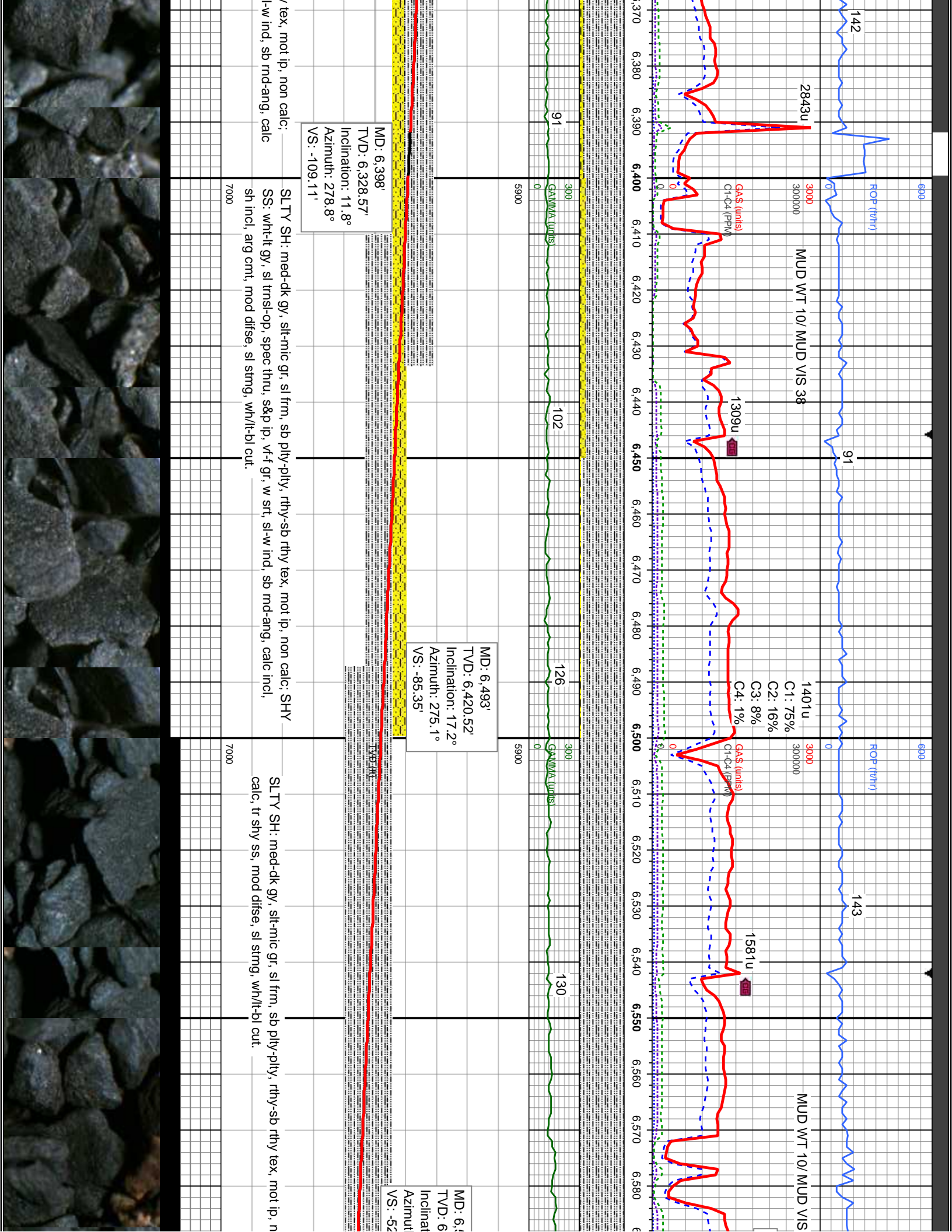
SLTY SH: med-dk gy, silt-nic gr, sl frm, sb p  
SLTST: lt-med gy, silt-vf gr, sl frm-hd, sb pily  
SHY SS: wht-lt gy, sl frnsi-op, spec thru, s&l  
incl, sh incl, arg cnt, mod difse, v sl stmg, w

E  
G  
M  
F  
T  
S

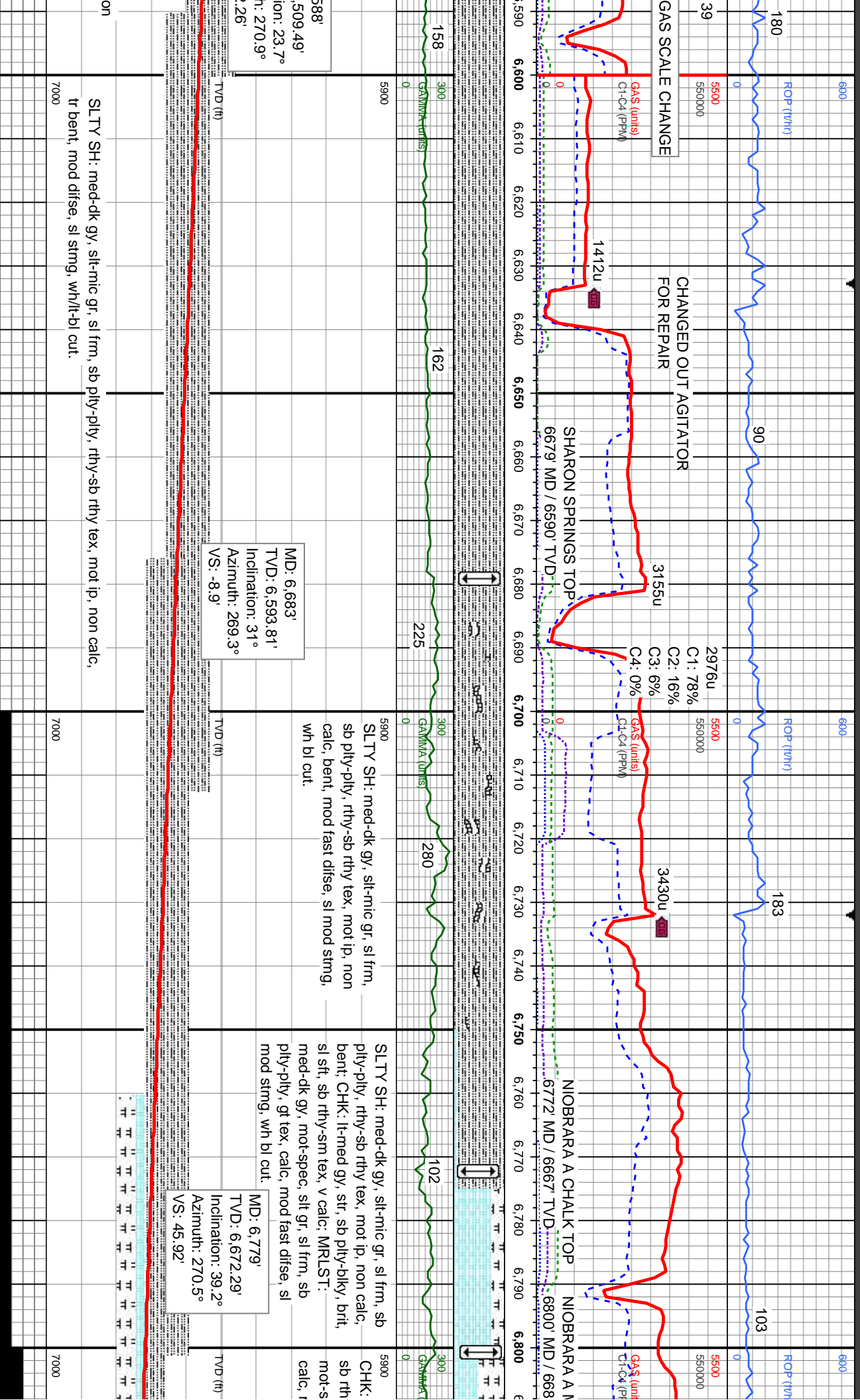


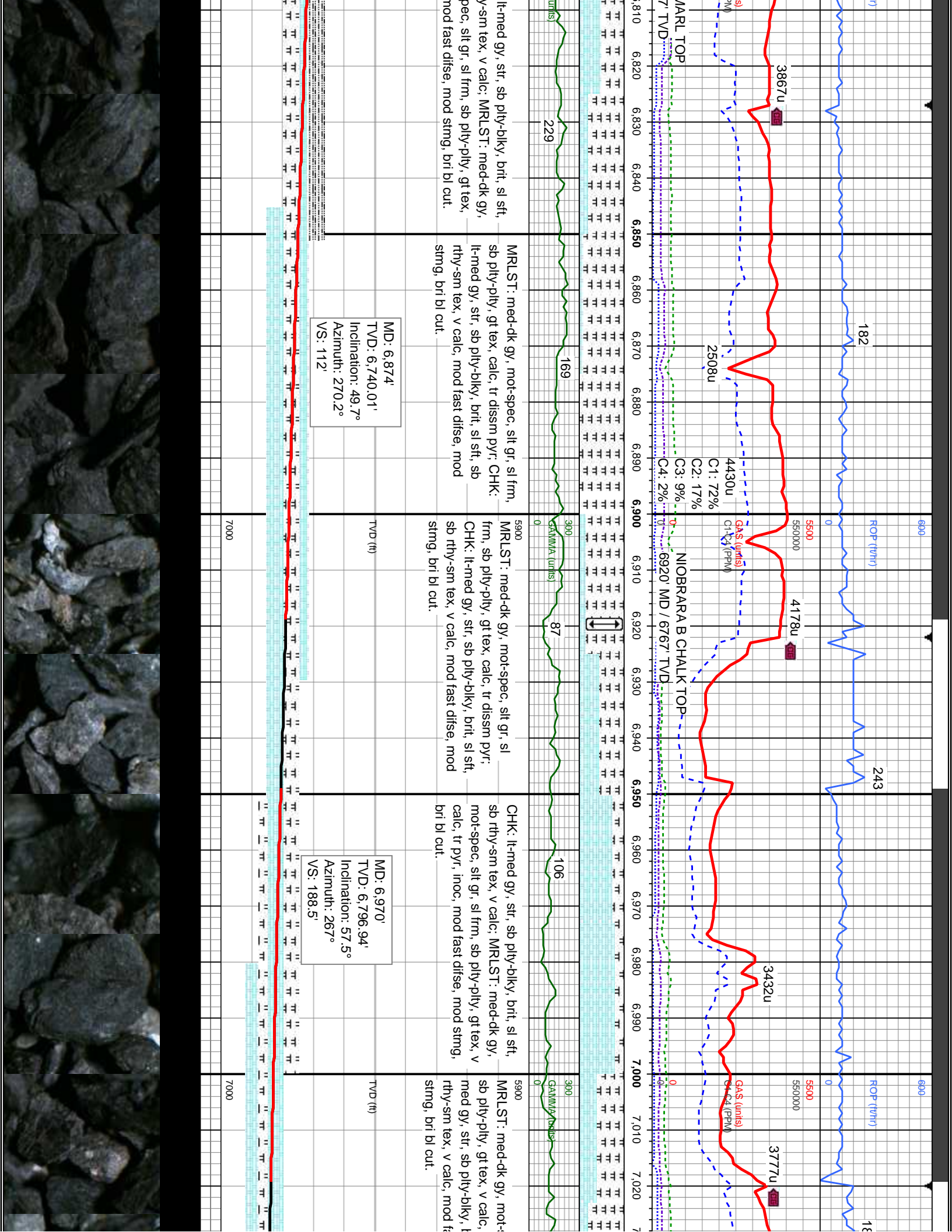




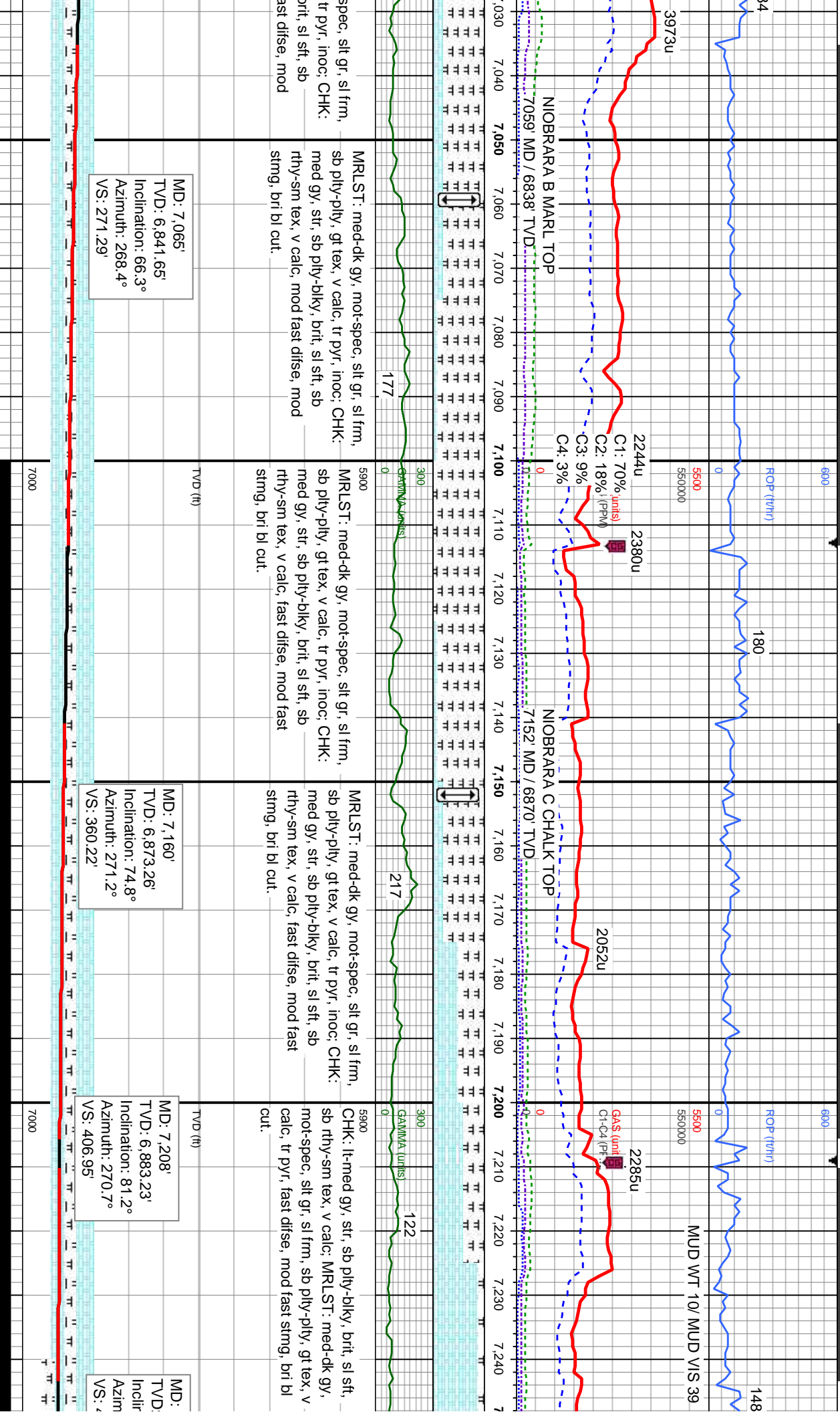












5/3/2015 - 5/4/2015

MINDEPTH

TOP (TWH)

ROP (TWH)

244

181

143

MUD WT 9.2 / MUD VIS 39

MUD WT 9.3 / MUD VIS 40

TD Curve 7302' MD @  
19:25 hrs MST 5/2/2015

2754u

682u

C1: 67%

C2: 12%

C3: 13%

C4: 9%

Resumed Drilling Lateral @  
13:39 hrs MST 5/4/2015

1970u

550000

2020u

GAS (units)  
C1-C4 (PPM)

GAS (units)  
C1-C4 (PPM)

54

75

62

CHK: lt-med gy, str, sb pty-blky, brit, sl sft, sb rthy-sm tex, v calc; MRLST: med-dk gy, mot-spec, silt gr, sl frm, sb pty-pty, gt tex, v calc, tr pyr, fast difse, mod fast sting, bri bl cut.

CHK: lt-med gy, str, sb pty-blky, brit, sl sft, sb rthy-sm tex, v calc, tr MRLST, tr cmt, v slow difse, no sting, dul bl cut.

CHK: lt-med gy, str, sb pty-blky, brit, sl sft, sb rthy-sm tex, v calc, tr MRLST, tr cmt, v slow difse, no sting, dul bl cut.

CHK: lt-med gy, str, sb pty-blky, brit, sl sft, sb rthy-sm tex, v calc, v slow difse, no sting, dul bl cut.

CHK: lt-med gy, str, sb pty-blky, brit, sl sft, sb rthy-sm tex, v calc, v slow difse, no sting, dul bl cut.

7,252'

6,888.44'

Inclination: 85.2°

uth: 269.8°

VS: 150.39'

TVD (ft)

MD: 7,311'  
TVD: 6,891.68'  
Inclination: 88.5°  
Azimuth: 269.8°  
VS: 508.93'

Bit Data

Bit #: 3

Type: KH1516M-C

Size: 6.125"

Depth In: 7,302'

Jets: 5X16

S/N: A205389

TVD (ft)

MD: 7,405'  
TVD: 6,892.91'  
Inclination: 90°  
Azimuth: 272°  
VS: 602.5'

7000

7000

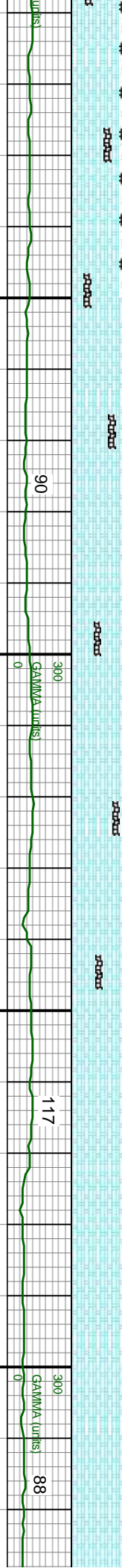
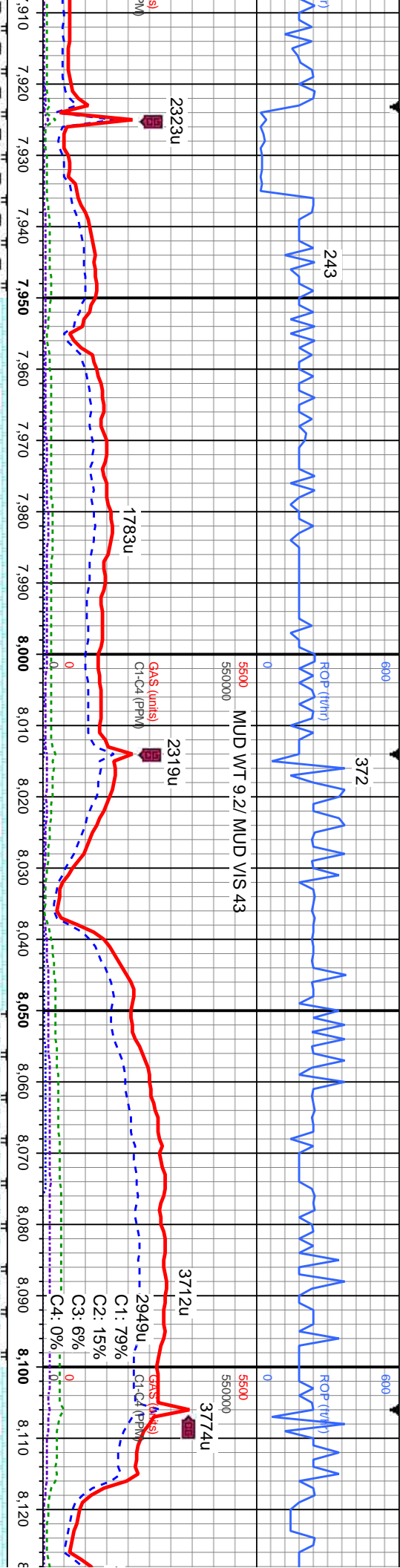












It-med gy, str, sb pty-blky, brit, sl sft, sb rthy-sm tex, v calc, occly lt brn wi rr blk silt sz grs, silty tex, brit, blkly, md - sb md, mod calc, MRLST: med-dk gy, mot-spec, silt gr, sl frm, sb pty-pty, gt tex, v calc, tr pyr, abnt bent, slow difse, slow ol cut.

CHK: It-med gy, str, sb pty-blky, brit, sl sft, sb rthy-sm tex, v calc, occly lt brn wi rr blk silt sz grs, silty tex, brit, blkly, md - sb md, mod calc, occ bent, mod difse, mod string, lt-bl cut.

CHK: It-med gy, str, sb pty-blky, brit, sl sft, sb rthy-sm tex, v calc, occly lt brn wi rr blk silt sz grs, silty tex, brit, blkly, md - sb md, mod calc, MRLST: med-dk gy, mot-spec, silt gr, sl frm, sb pty-pty, gt tex, v calc, tr pyr, abnt bent, slow difse, slow ol cut.

MD: 7,960'  
TVD: 6,889.22'  
Inclination: 91.3°  
Azimuth: 270.2°  
VS: 1,155.08'

MD: 8,052'  
TVD: 6,886.97'  
Inclination: 91.5°  
Azimuth: 270°  
VS: 1,246.53'

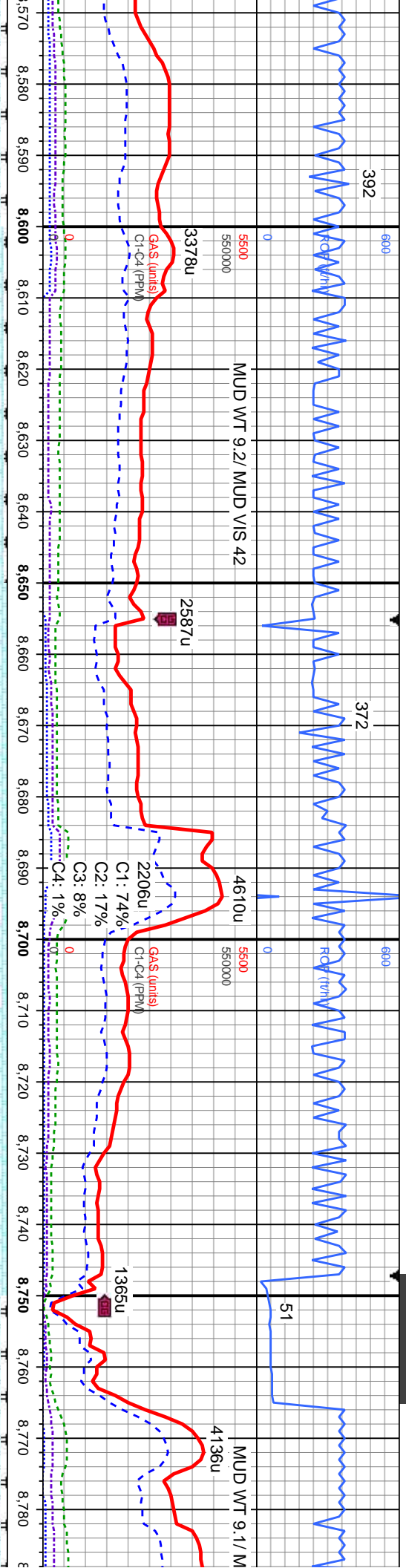












str, sb pily-blky, brit, sl sft, v calc, oocly lt brn wi rr blk  
x, brit, blk, rnd - sb rnd,  
ST: med-dk gy, mot-spec,  
pily-pily, gt tex, v calc, tr pyr,  
difse, v slow stmg, v dul bl

CHK: lt-med gy, str, sb pily-blky, brit, sl sft,  
sb rthy-sm tex, v cal; MRLST: med-dk gy,  
mot-spec, slt gr, sl frm, sb pily-pily, gt tex, v  
calc, tr py, mod difse, mod stmg, lt-bl cut.

CHK: lt-med gy, str, sb pily-blky, brit, sl sft,  
sb rthy-sm tex, v calc, mod difse, mod  
stmg, lt-bl cut.

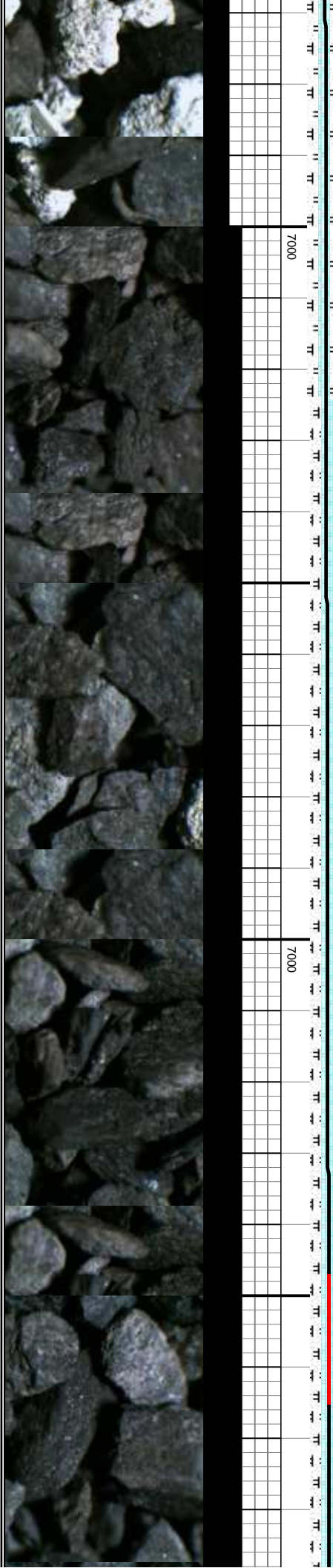
CHK: lt-med gy, str, sb pily-blky, brit, sl sft,  
sb rthy-sm tex, v calc, mod difse, mod  
stmg, lt-bl cut.

CHK: lt-med gy, str, sb pily-blky, b  
sb rthy-sm tex, v cal; MRLST: med  
mot-spec, slt gr, sl frm, sb pily-pily  
calc, tr pyr, mod difse, mod stmg, l

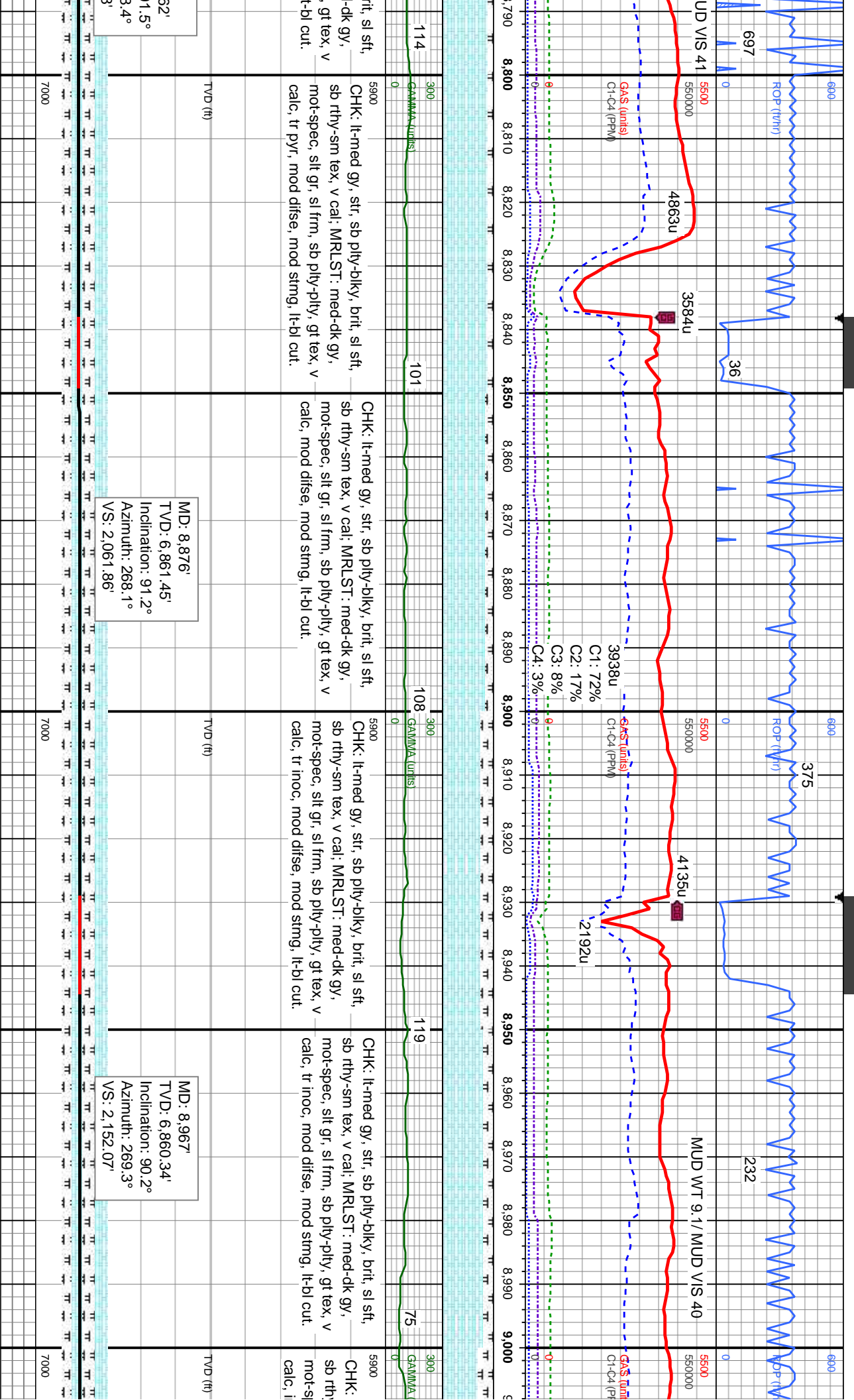
MD: 8,600'  
TVD: 6,872.85'  
Inclination: 92.4°  
Azimuth: 267°  
VS: 1,789.18'

MD: 8,692'  
TVD: 6,867.87'  
Inclination: 93.8°  
Azimuth: 267.2°  
VS: 1,879.88'

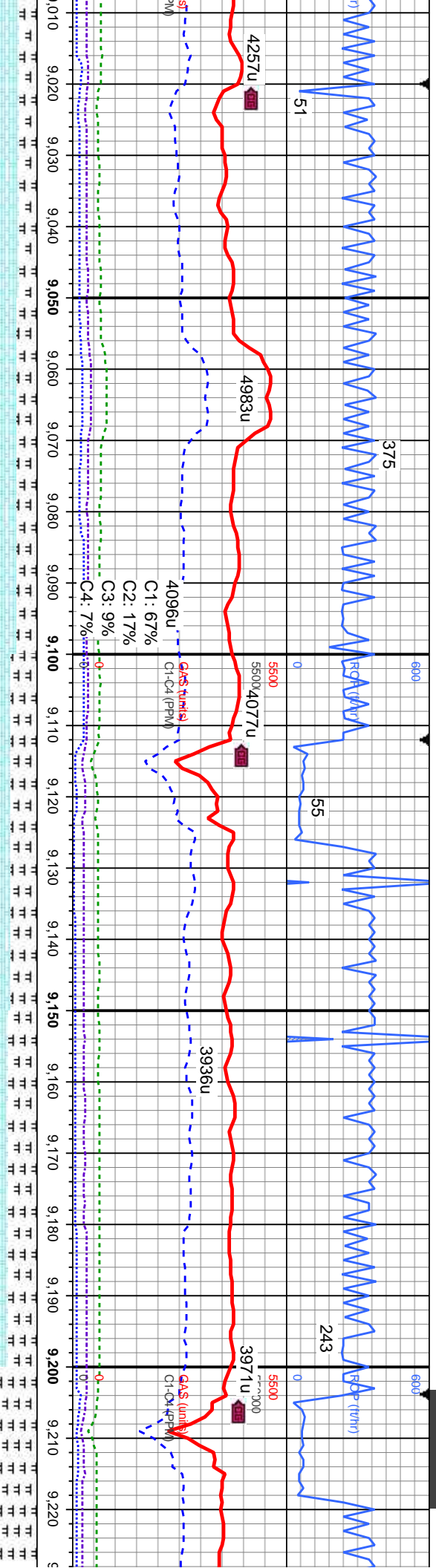
MD: 8,784'  
TVD: 6,863.6'  
Inclination: 93.8°  
Azimuth: 267.2°  
VS: 1,970.78'











It-med gy, str, sb pily-blky, brit, sl sft, sb rthy-sm tex, v cal; MRLST: med-dk gy, mot-spec, slt gr, sl frm, sb pily-pily, gt tex, v calc, inoc, mod difse, mod stmg, lt-bl cut.

CHK: It-med gy, str, sb pily-blky, brit, sl sft, sb rthy-sm tex, v cal; MRLST: med-dk gy, mot-spec, slt gr, sl frm, sb pily-pily, gt tex, v calc, inoc, mod difse, mod stmg, lt-bl cut.

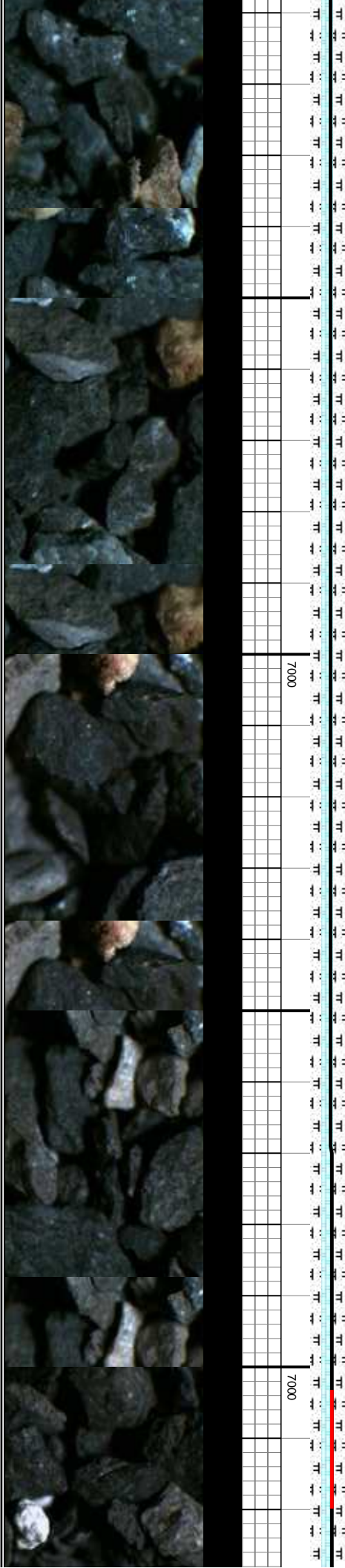
CHK: It-med gy, str, sb pily-blky, brit, sl sft, sb rthy-sm tex, v cal; MRLST: med-dk gy, mot-spec, slt gr, sl frm, sb pily-pily, gt tex, v calc, inoc, mod difse, mod stmg, lt-bl cut.

MRLST: med-dk gy, mot-spec, slt gr, sl frm, sb pily-pily, gt tex, v calc, tr pyr, inoc, CHK: It-med gy, str, sb pily-blky, brit, sl sft, sb rthy-sm tex, v calc, rr bent, mod difse, mod stmg, lt-bl cut.

MRLST: med-dk gy, mot-spec, slt gr, sl frm, sb pily-pily, gt tex, v calc, tr pyr, inoc, CHK: It-med gy, str, sb pily-blky, brit, sl sft, sb rthy-sm tex, v calc, rr bent, mod difse, mod stmg, lt-bl cut.

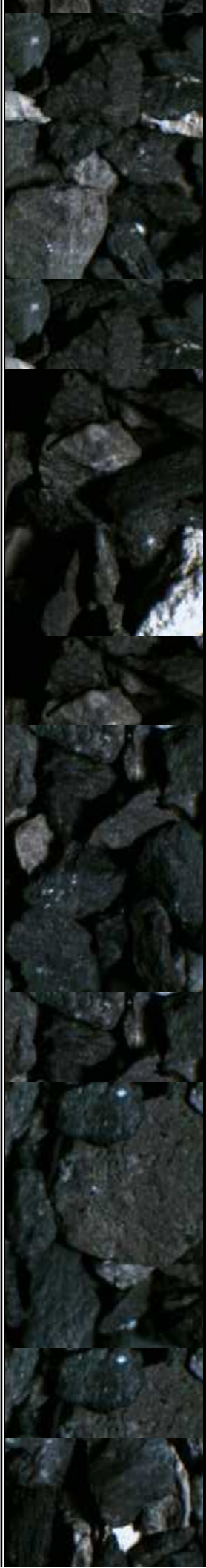
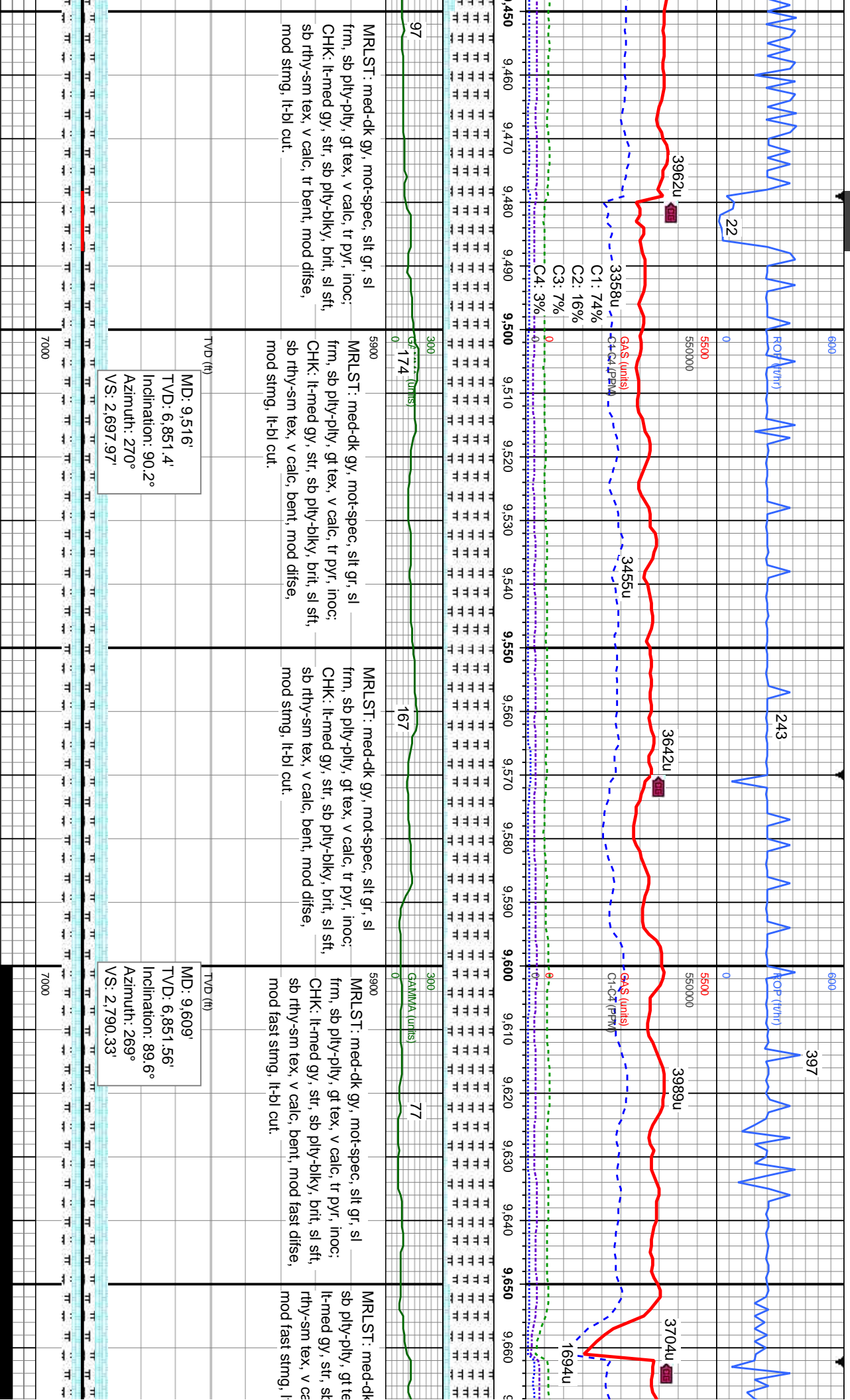
MD: 9,058'  
TVD: 6,860.02'  
Inclination: 90.2°  
Azimuth: 269.1°  
VS: 2,242.38'

MD: 9,150'  
TVD: 6,858.74'  
Inclination: 91.4°  
Azimuth: 269.7°  
VS: 2,333.72'









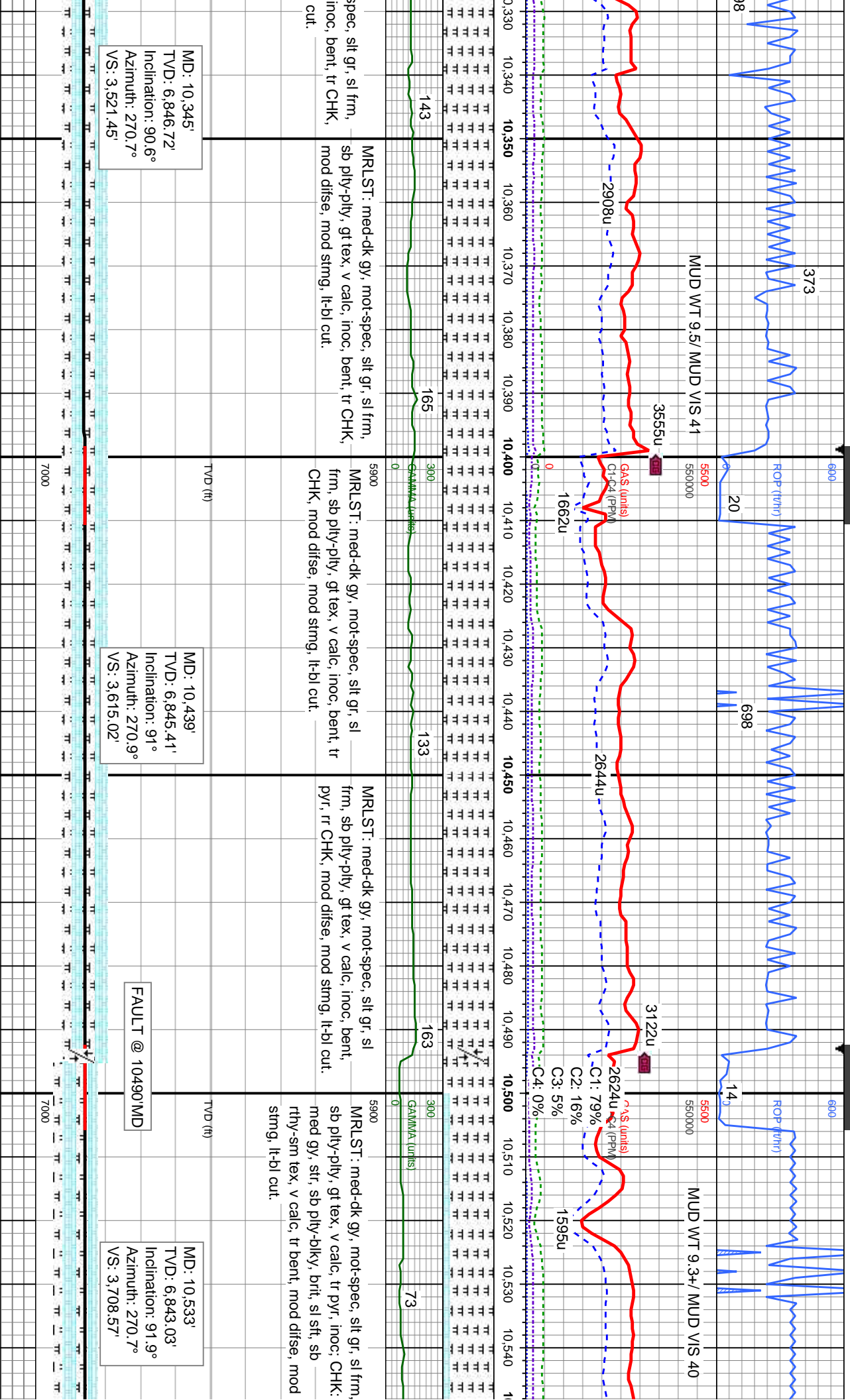






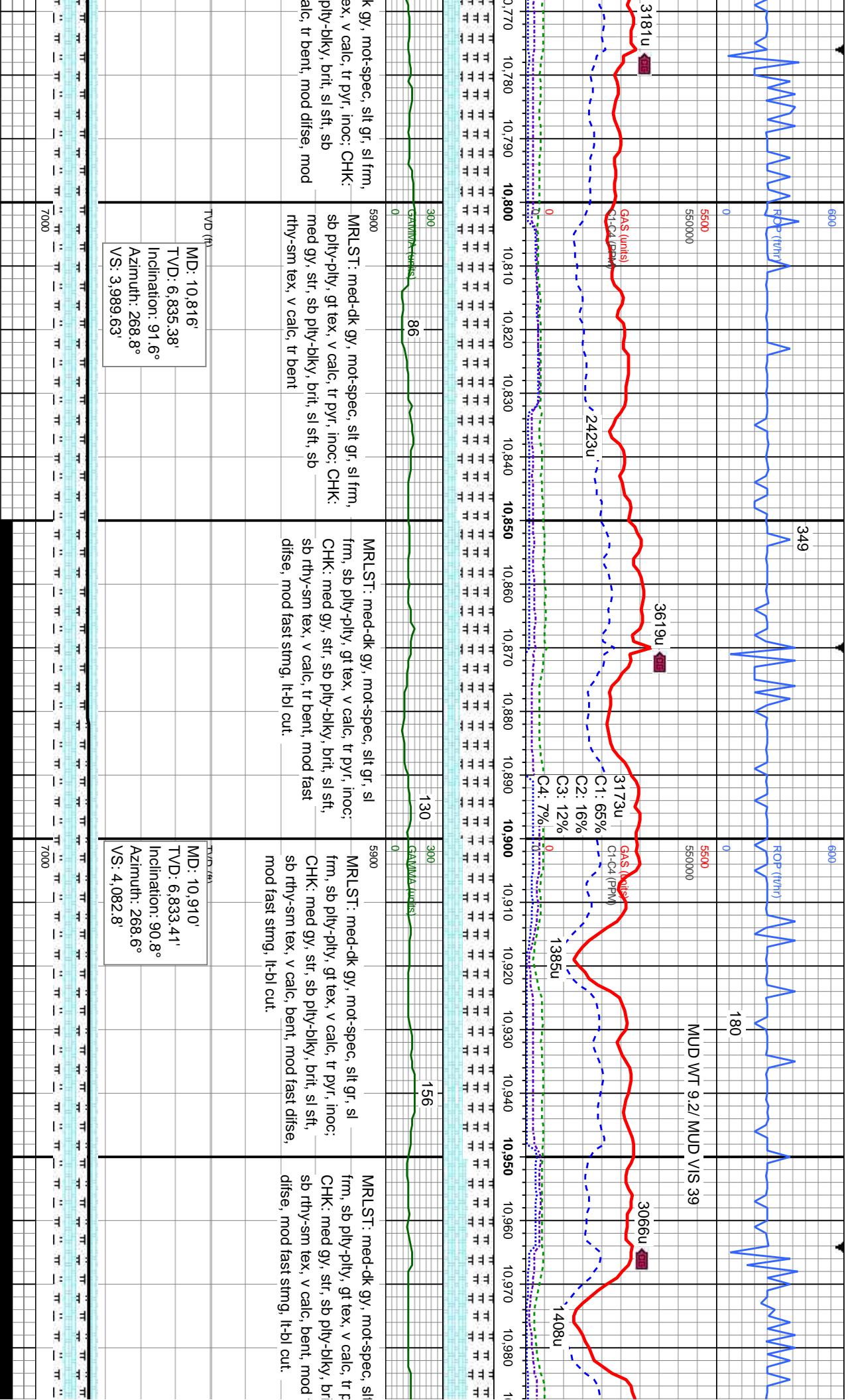




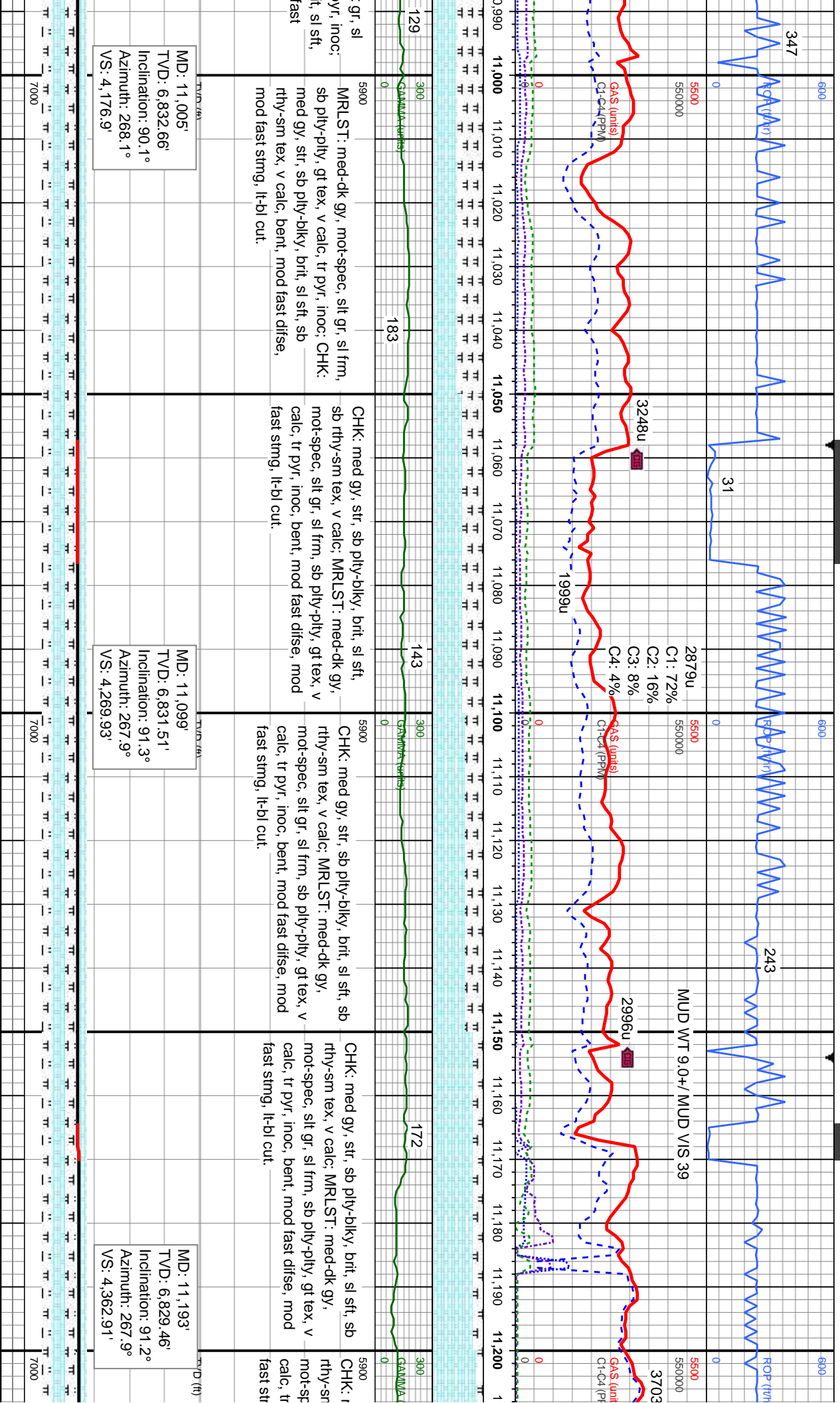


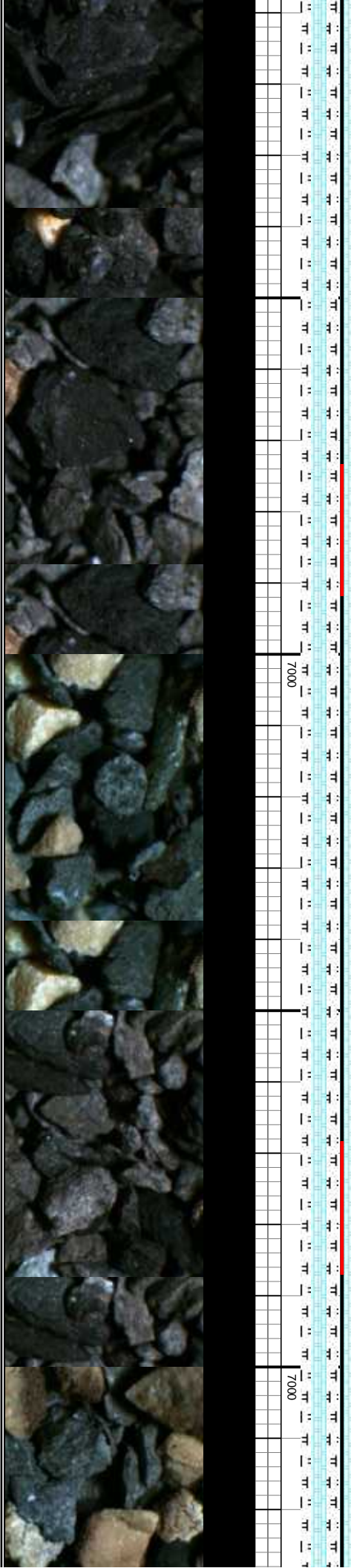
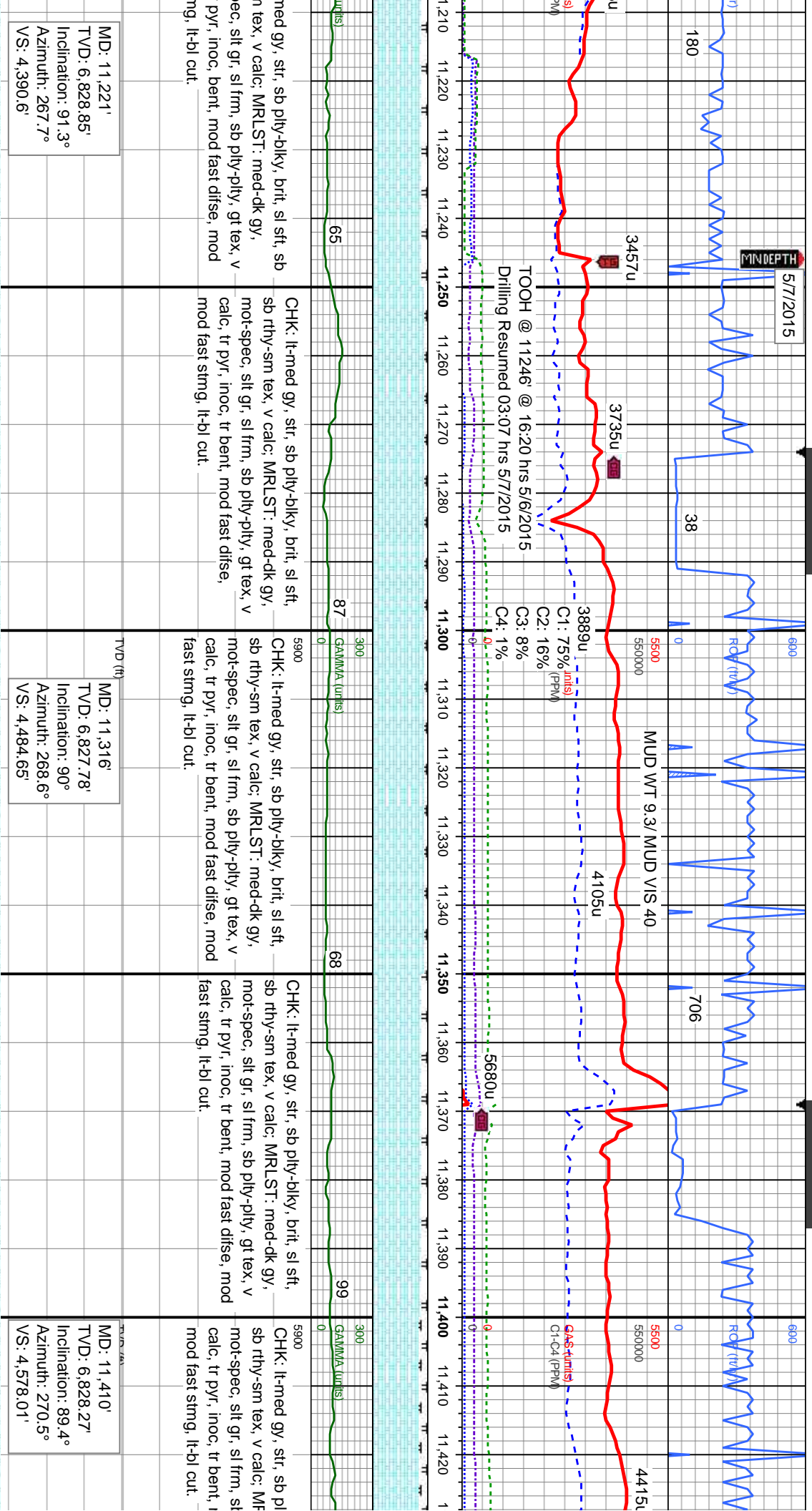




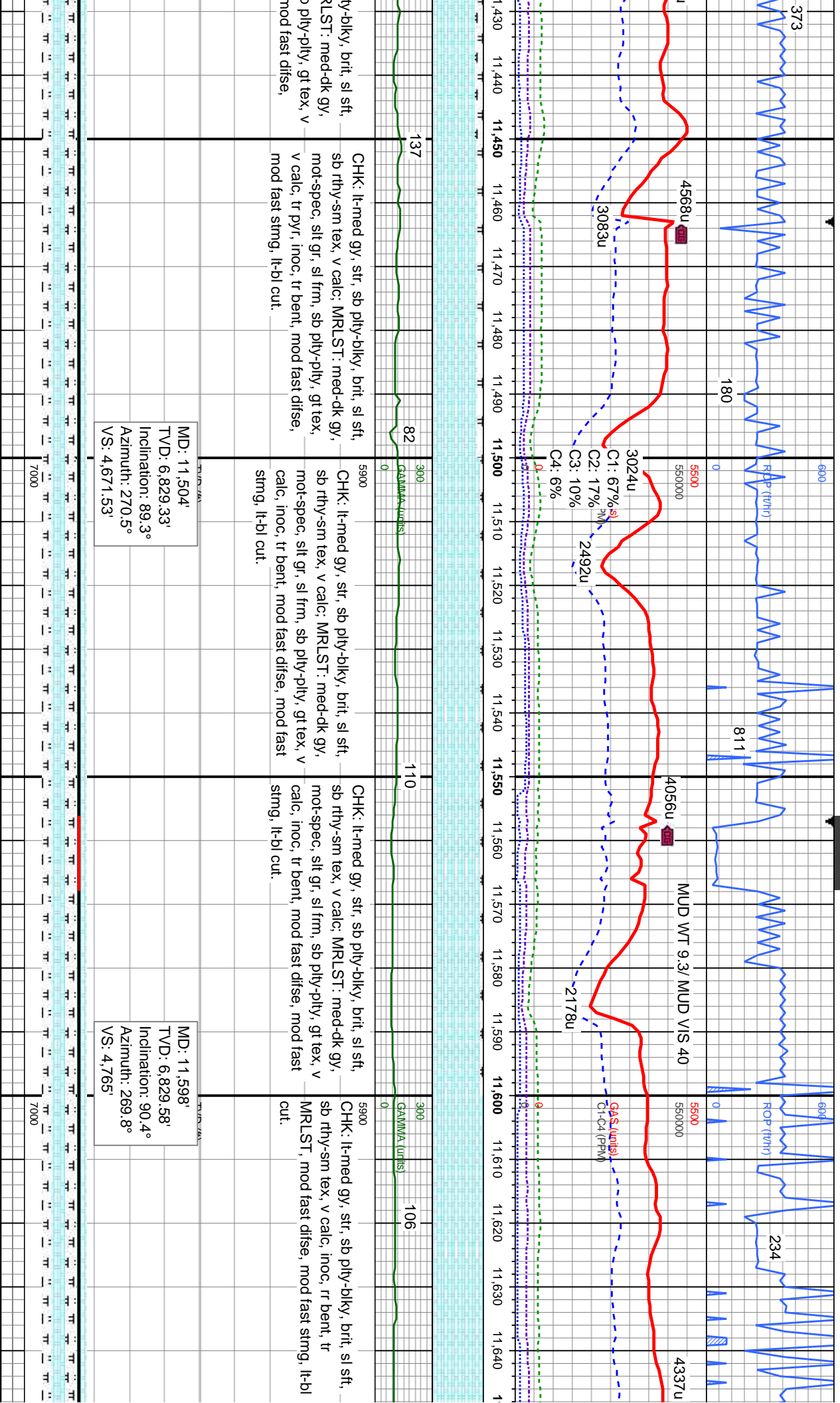


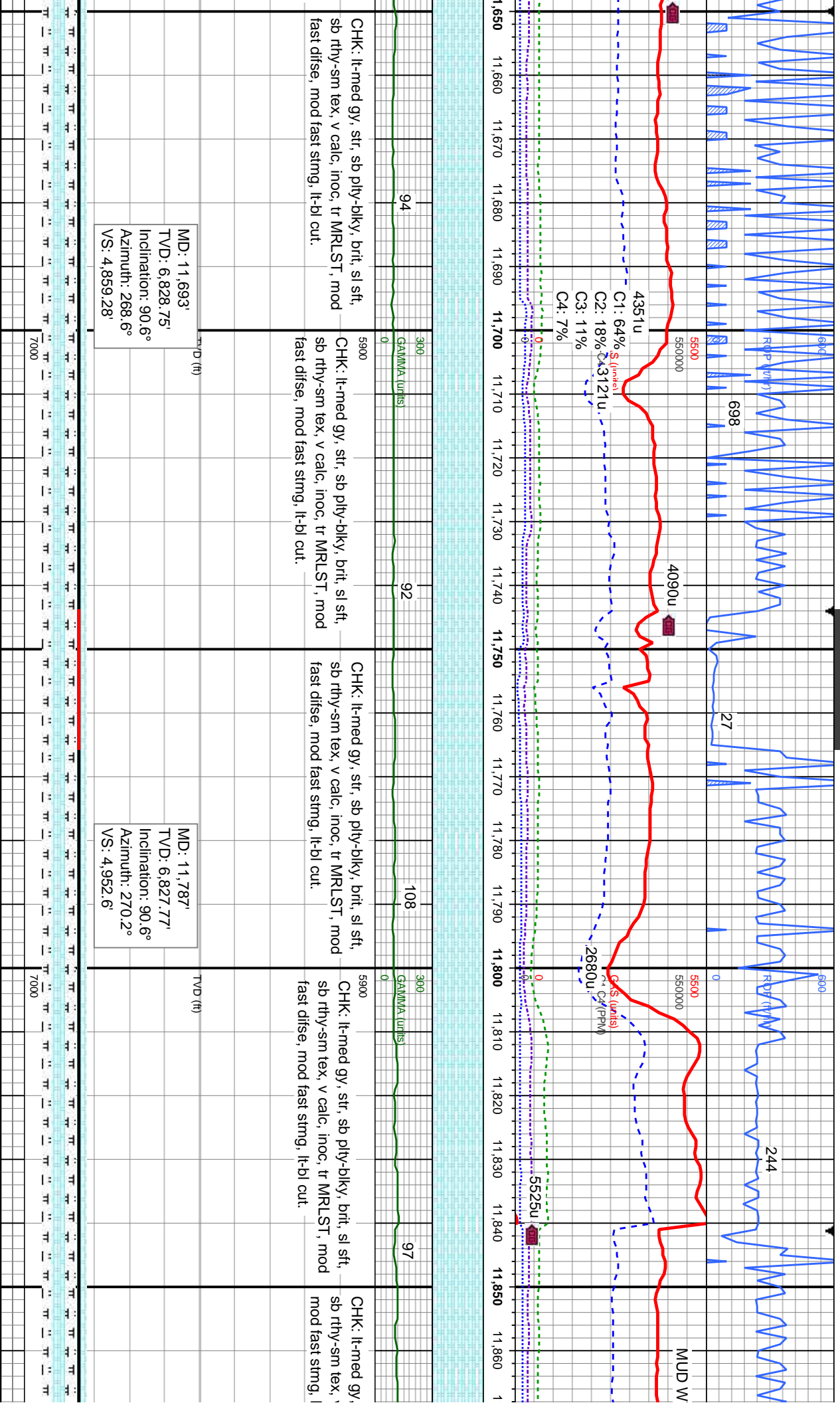






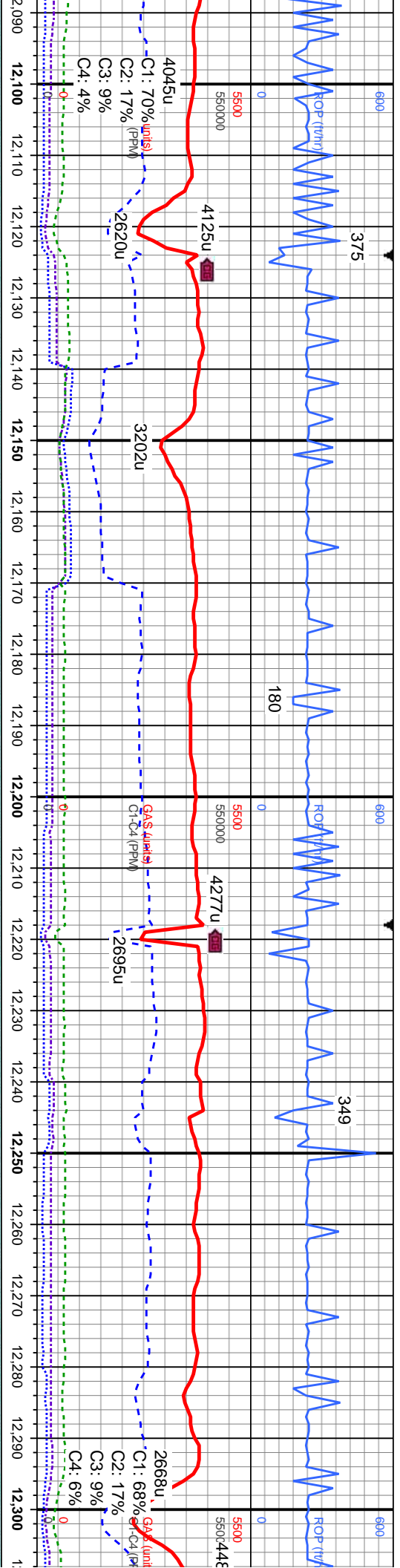








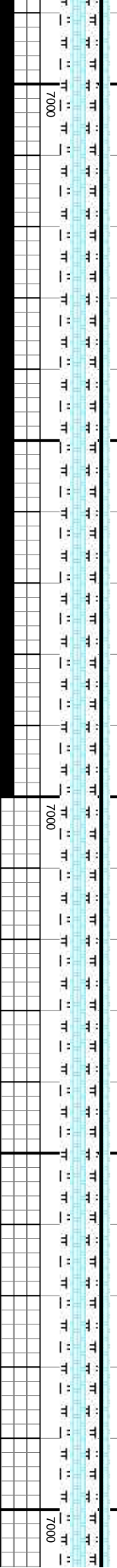




123	300	5900	121	300	5900	119	300	5900	145	300	5900
it: sl sft, tr MRLST bl cut.	CHK: lt-med gy, str, sb ply-blky, brit, sl sft, sb rthy-sm tex, v calc, inoc, tr bent, tr MRLST, mod fast difse, mod fast string, lt-bl cut.	CHK: lt-med gy, str, sb ply-blky, brit, sl sft, sb rthy-sm tex, v calc, inoc, tr bent, tr MRLST, mod fast difse, mod fast string, lt-bl cut.	CHK: lt-med gy, str, sb ply-blky, brit, sl sft, sb rthy-sm tex, v calc, inoc, tr bent, tr MRLST, mod difse, mod string, lt-bl cut.	CHK: lt-med gy, str, sb ply-blky, brit, sl sft, sb rthy-sm tex, v calc, inoc, tr bent, tr MRLST	CHK: lt-med gy, str, sb ply-blky, brit, sl sft, sb rthy-sm tex, v calc, inoc, tr bent, tr MRLST	CHK: lt-med gy, str, sb ply-blky, brit, sl sft, sb rthy-sm tex, v calc, inoc, tr bent, tr MRLST	CHK: lt-med gy, str, sb ply-blky, brit, sl sft, sb rthy-sm tex, v calc, inoc, tr bent, tr MRLST	CHK: lt-med gy, str, sb ply-blky, brit, sl sft, sb rthy-sm tex, v calc, inoc, tr bent, tr MRLST	CHK: lt-med gy, str, sb ply-blky, brit, sl sft, sb rthy-sm tex, v calc, inoc, tr bent, tr MRLST	CHK: lt-med gy, str, sb ply-blky, brit, sl sft, sb rthy-sm tex, v calc, inoc, tr bent, tr MRLST	CHK: lt-med gy, str, sb ply-blky, brit, sl sft, sb rthy-sm tex, v calc, inoc, tr bent, tr MRLST
lt-bl cut.	lt-bl cut.	lt-bl cut.	lt-bl cut.	lt-bl cut.	lt-bl cut.	lt-bl cut.	lt-bl cut.	lt-bl cut.	lt-bl cut.	lt-bl cut.	lt-bl cut.
TVD (ft)	TVD (ft)	TVD (ft)	TVD (ft)	TVD (ft)	TVD (ft)	TVD (ft)	TVD (ft)	TVD (ft)	TVD (ft)	TVD (ft)	TVD (ft)

MD: 12,163'  
TVD: 6,828.02'  
Inclination: 89.1°  
Azimuth: 270.2°  
VS: 5,326.47'

MD: 12,258'  
TVD: 6,829.02'  
Inclination: 89.7°  
Azimuth: 269.5°  
VS: 5,420.87'



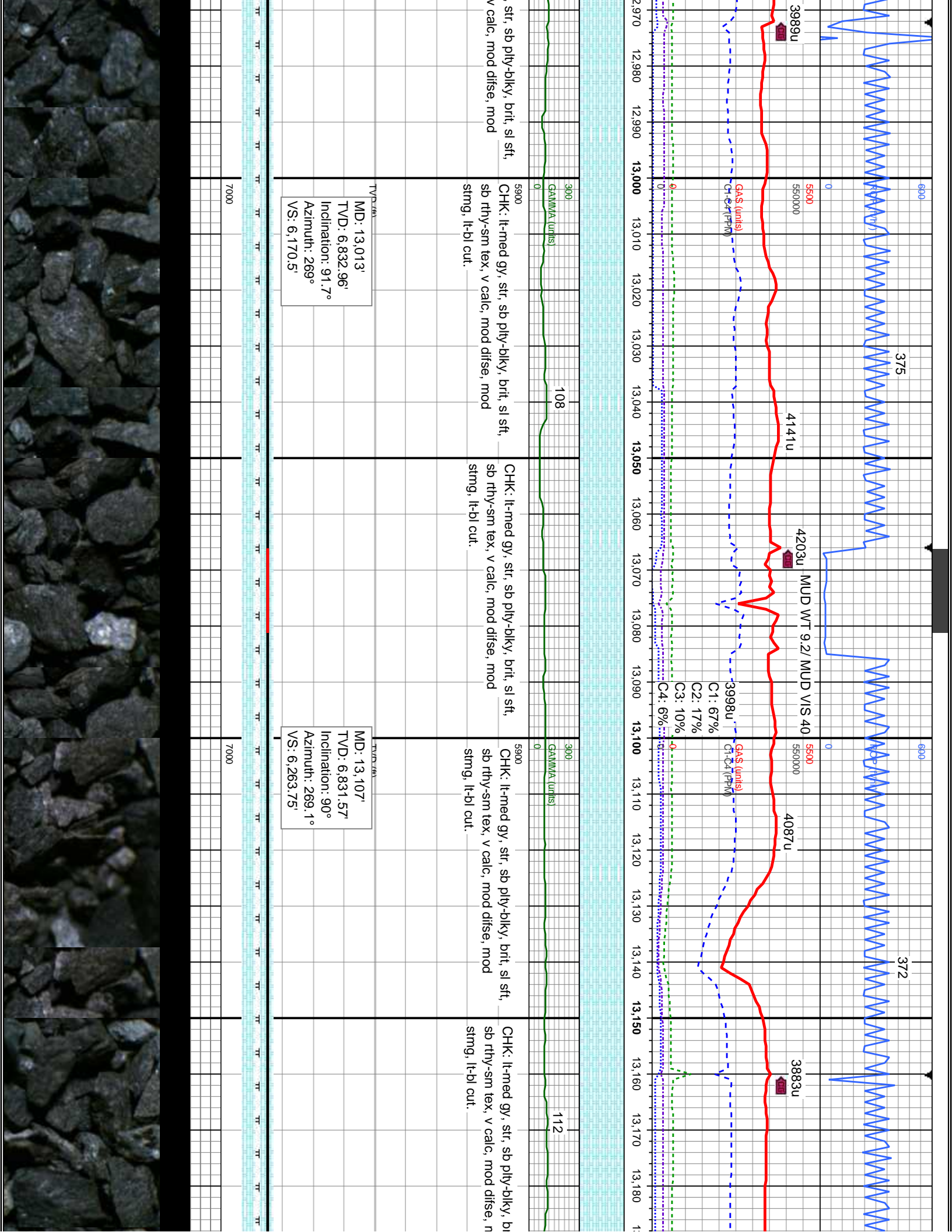




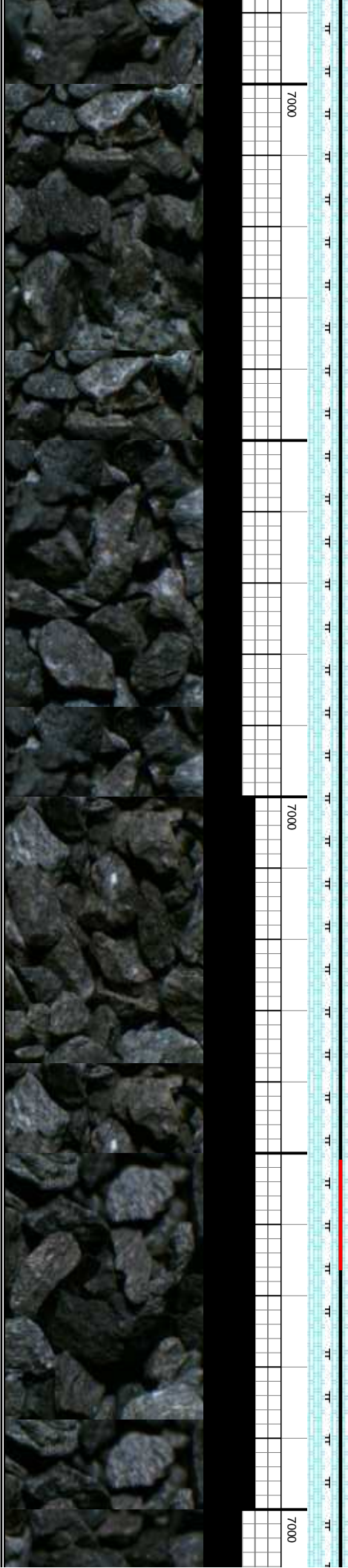
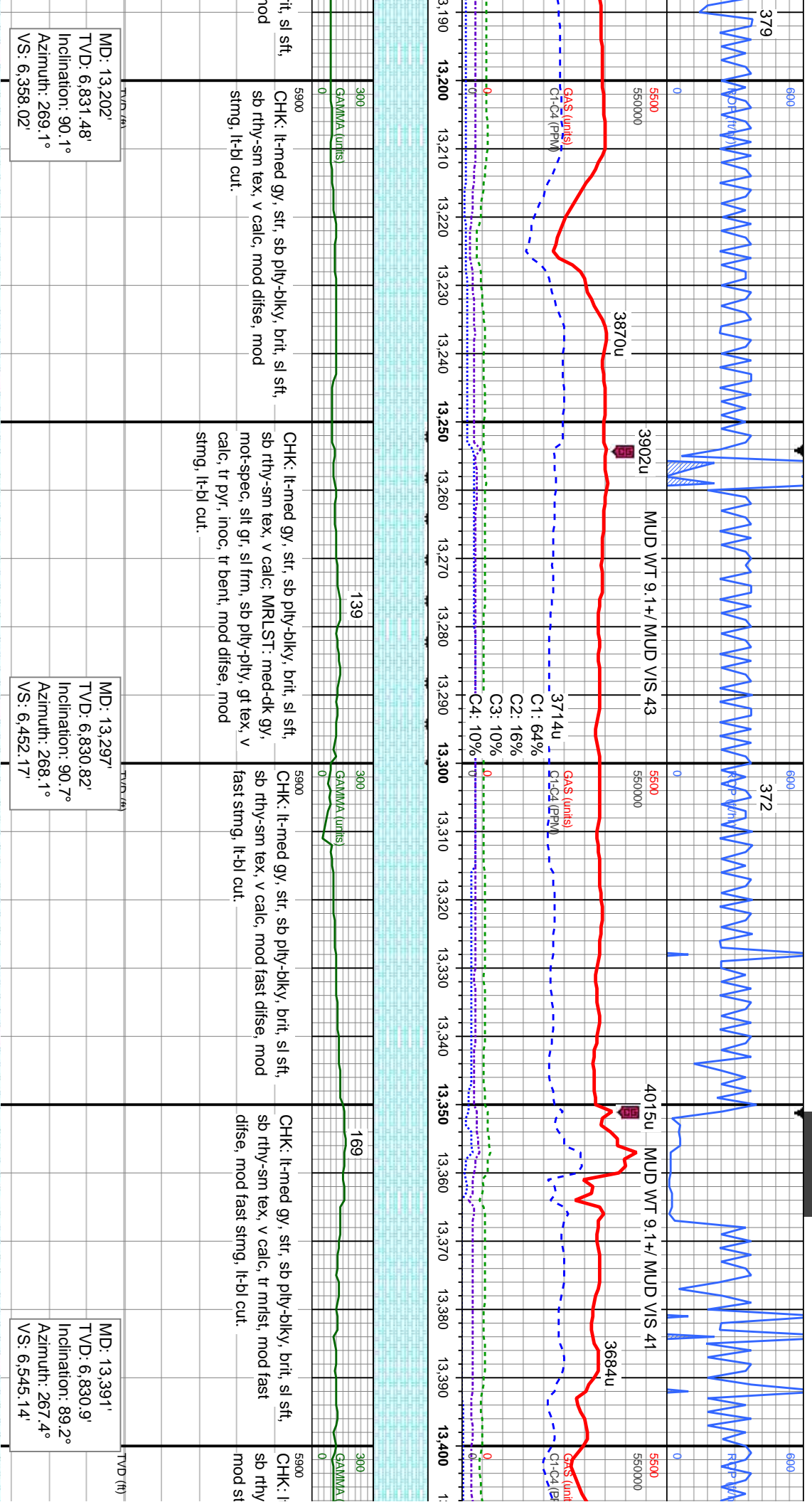












5/8/2015

375

375

372

MINDEPTH

3977u

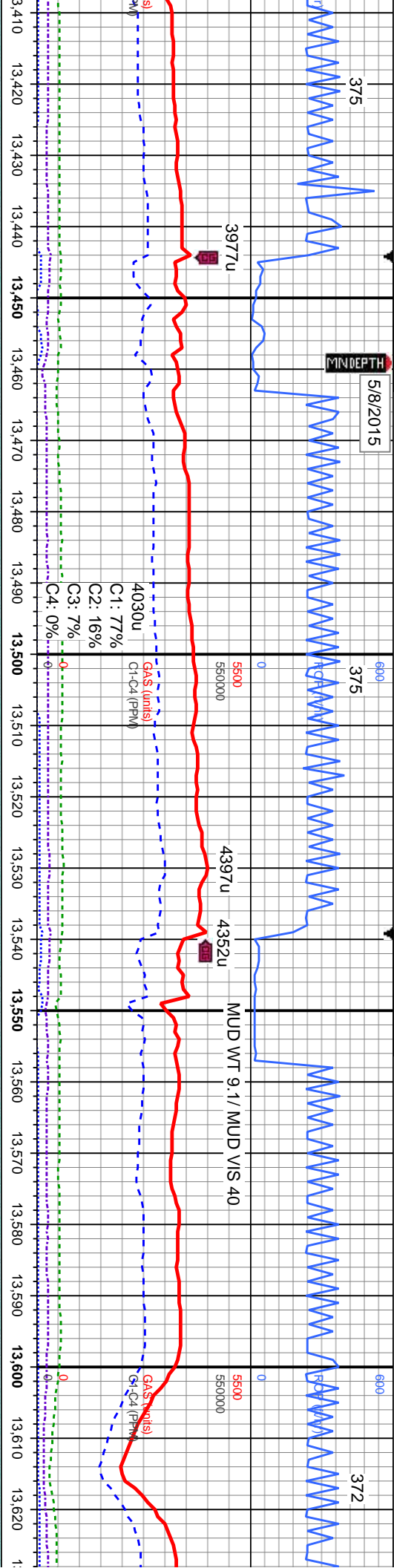
4397u

4352u

MUD WT 9.1/ MUD VIS 40

4030u  
C1: 77%  
C2: 16%  
C3: 7%  
C4: 0%

GA5 (units)  
G1-C4 (PPM)



106

141

119

CHK: lt-med gy, str, sb ply-blky, brit, sl sft, sb rthy-sm tex, v calc, tr mlst, mod difse, mod sting, lt-bl cut.

MD: 13,486'  
TVD: 6,832.73'  
Inclination: 88.6°  
Azimuth: 268.6°  
VS: 6,639.15'

MD: 13,580'  
TVD: 6,834.94'  
Inclination: 88.7°  
Azimuth: 270.7°  
VS: 6,732.49'

