



Scale: 5" / 100'
Measured Depth Log

Well Name Carlson F-15-16HN

Location NENE SEC 15 T5N R65W 1056 FNL 309 FEL

State Colorado **County** Weld

Country United States **Rig Number** Frontier (Utah) 8

API Number 05-123-41716 **AFE #** 2014WELDF15.16HN_1

Region DJ Basin **Field** Wattenberg

Spud Date 7/15/2015 **Drilling Completed** 8/22/2015

Surface Coordinates N 40.403696 W 104.641077

Ground Elevation 4621' **K.B. Elevation** 4643'

Logged Interval 6000' To 14691' **Total Depth** 14691'

Formation Niobrara

Type of Drilling Fluid LSND

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

Brad Wilson Senior Wellsite Geologist

Columbine Logging Computer 148

Bloodhound Unit 298

Zone Color Coding

Oil

Note

Error

Condensate

Core

Water

Gas

Pressure

Seal

Rock Types

UNKNOWN

ANHYDRITE

BENTONITE

BRECCIA

CHALK

CEMENT

CHERT

CLAY CHOKE SANC

CLAYSTONE

COAL

CONGLOMERATE

DOLOMITE

DOLOMITIC LIMESTONE

GRANITE

GYPSUM

IGNEOUS

SIDERITE or LIMONITE

LIMESTONE

MARLSTONE

METAMORPHIC

NO SAMPLE

SANDSTONE

SALT-PEPPER SANC

SHALE

SHALE COLORED

SHALE GRAY

SHALY SANDSTONE

SHALY SILTSTONE

SILTY SHALE

SILTSTONE

TILL

TUFF

WELDED TUFF

Accessories

GASTROPOD

INOCERAMUS

OOLITE

OSTRACOD

PELECYPOD

PELLET

PISOLUTE

PLANT REMAINS

PLANT SPORES

SCAPHOPOD

STROMATOPOROID

ECHINOID

FISH

FORAMINIFERA

FOSSIL

ARGILLITE GRAIN

B BENTONITE

BITUMENOUS SUBSTANCE

BRECCIA FRAGMENTS

CALCAREOUS

CARBONACEOUS FLAKES

CHTDK

CHTLT

COAL - THIN BEDS

DOLOMITIC

+ FELDSPAR

FERRUGINOUS PELLET

FERRUGINOUS

GLAUCONITE

GYPSIFEROUS

H HEAVY MINERAL

K KAOLIN

M MARCASITE

TT MARLSTONE

MICACEOUS

MINERAL CRYSTALS

N NODULES

PHOSPHATE PELLETS

P PYRITE

SALT CAST

SANDY

S SIDERITE

S SUCCEOUS

SILTY

TUFFACEOUS

Fossils

Stringer

Oil Show

P PINPOINT

V VUGGY

Engineering

D DEAD

E EVEN

Q QUESTIONABLE

BIT

S SPOTTED STAINING

A CONNECTION (UP)

Porosity

V CONNECTION (DOWN)

CONNECTION GAS (LEFT)

F FENESTRAL

TRIP GAS

F FRACTURE

TRIP GAS (LEFT)

X INTERCRYSTALLINE

D DOWN TIME GAS

I INTEROOLITIC

D DOWN TIME GAS (LEFT)




































M MOLDIC

O ORGANIC

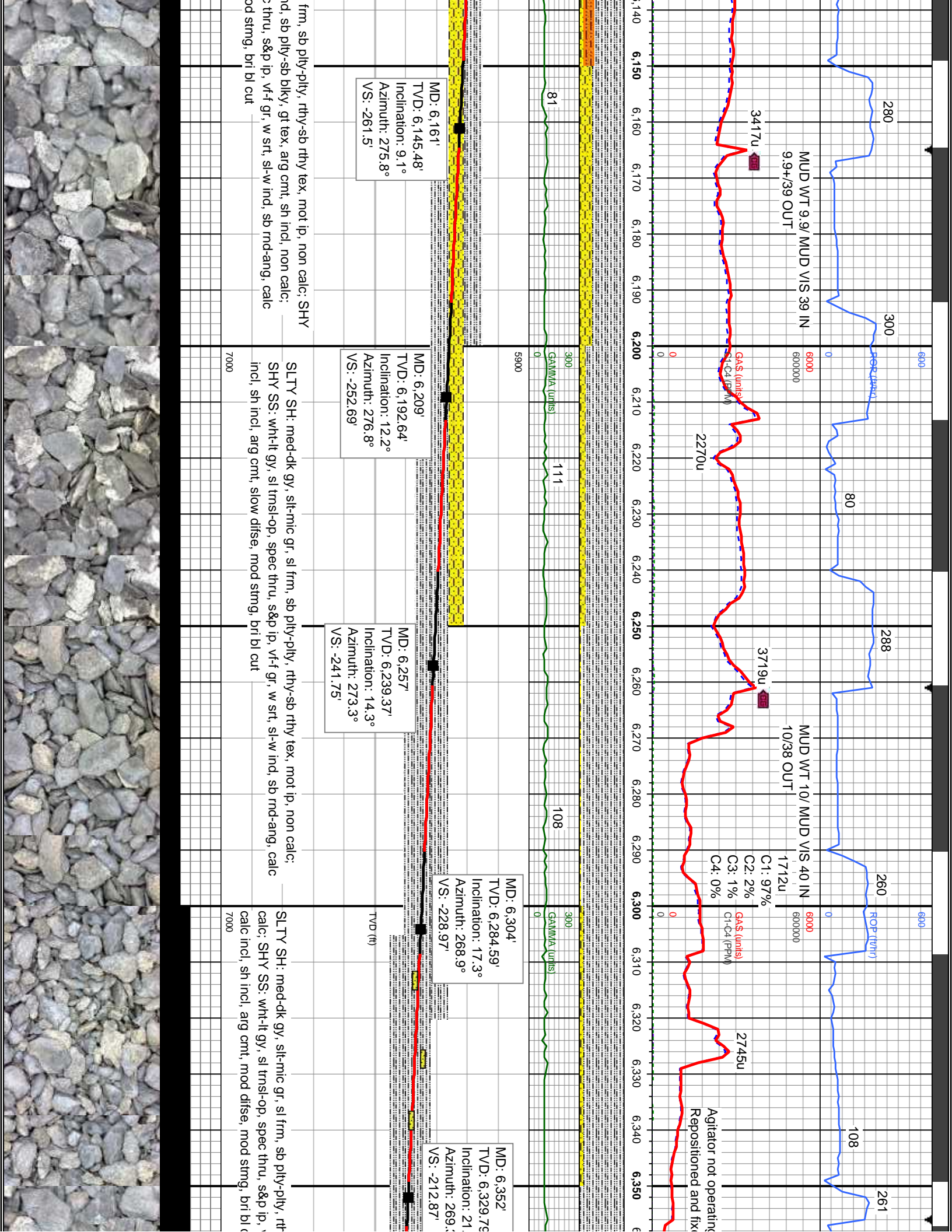
L CORE - LOST

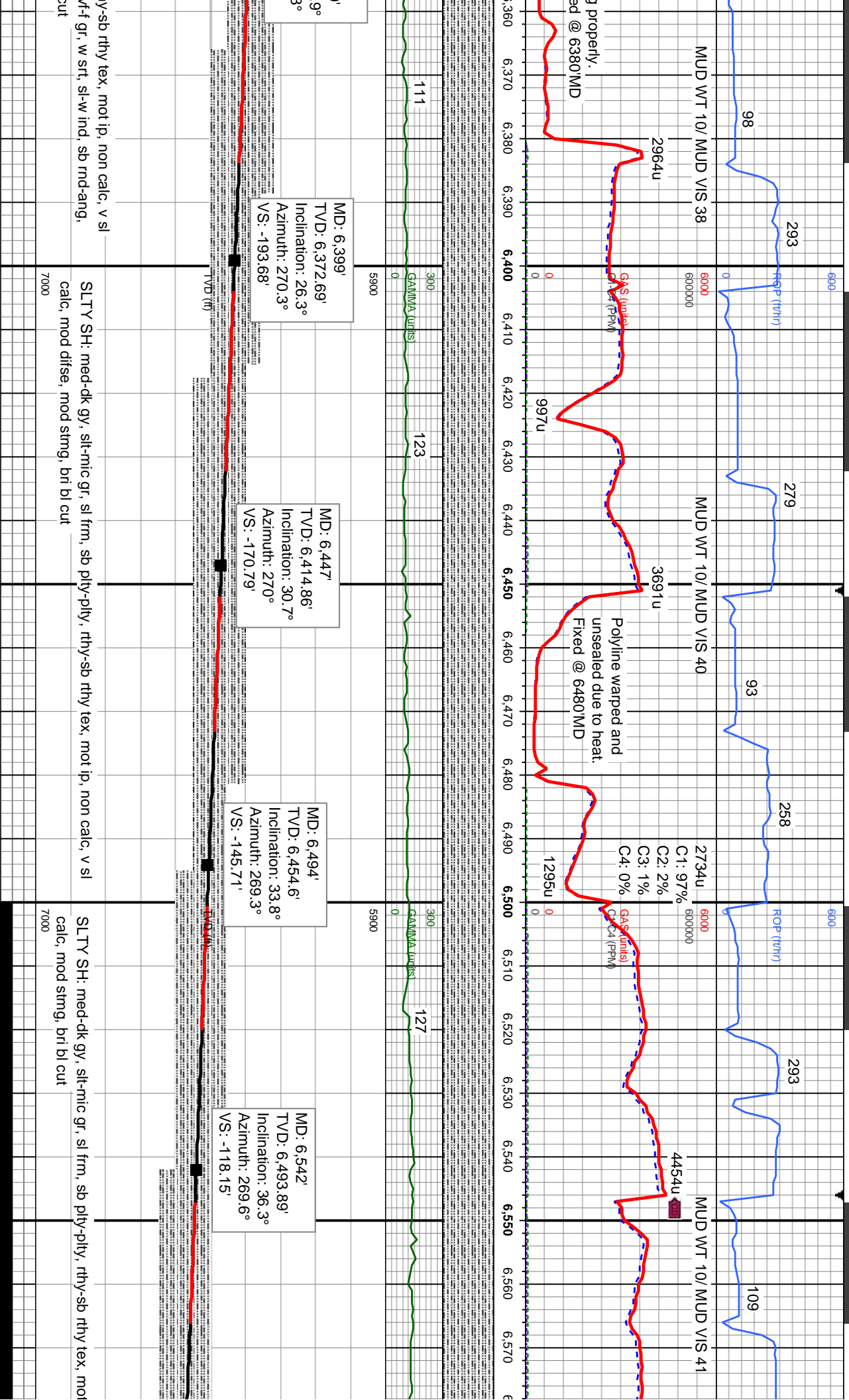
R CORE - RECOVERED

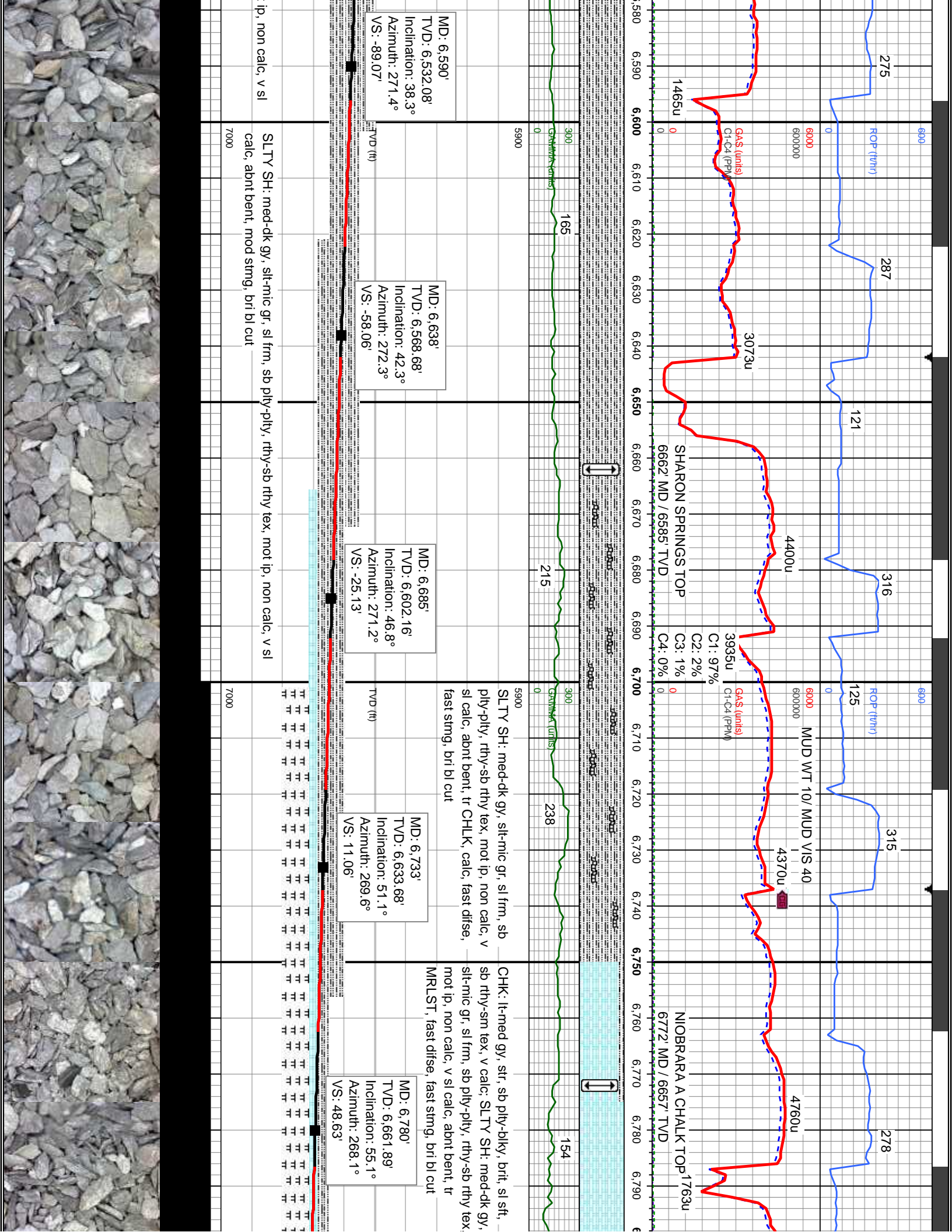
Other Symbols

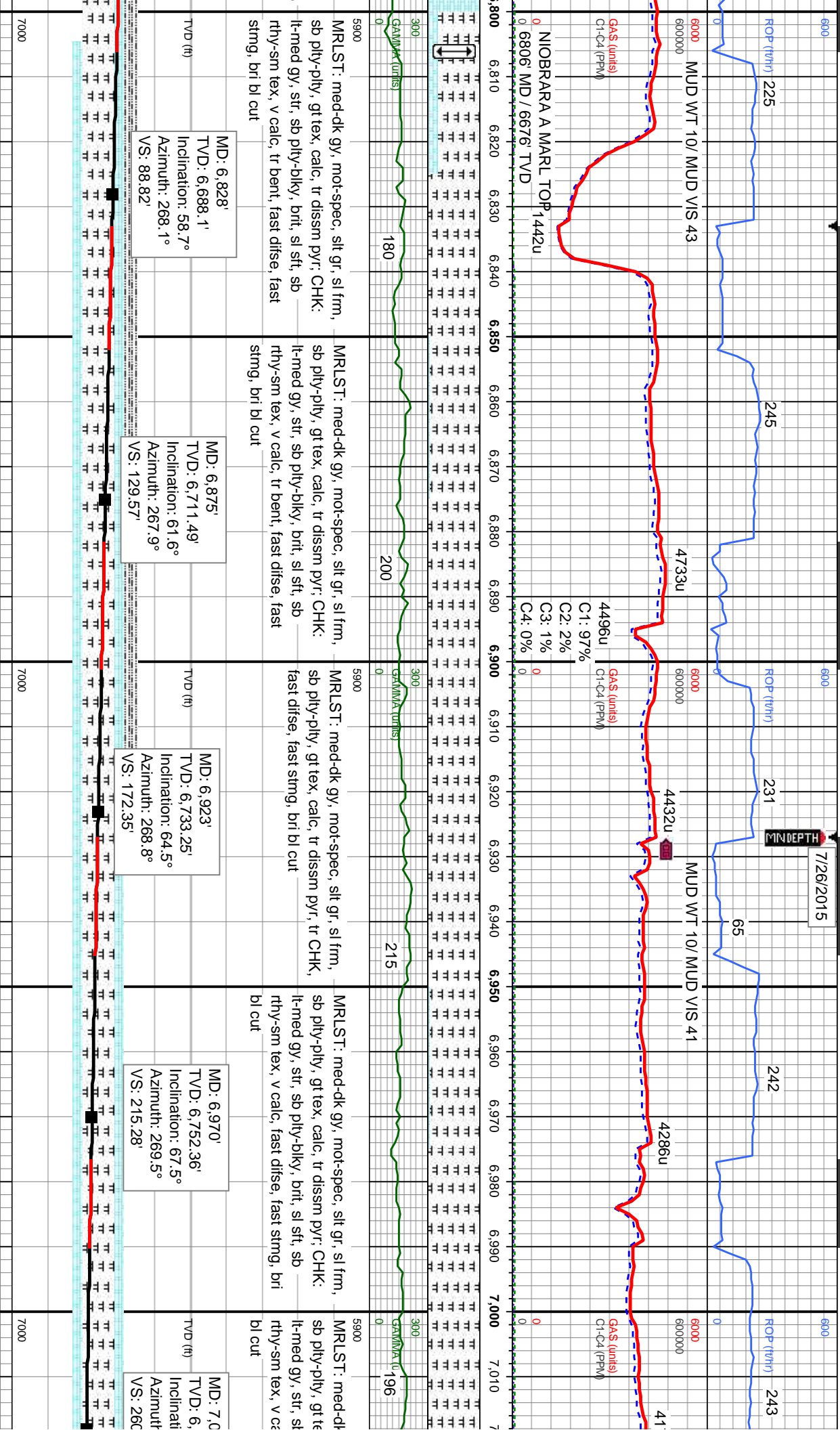
	DST INTERVAL		WIRELINE TESTED - LEFT		E EARTHY
	FAULT		WIRELINE TESTED - RT		FX FINELYXLN
	FORMATION TOP		DRILL STEM TEST		BS GRAINSTONE
	GAS SHOW		MINDEPTH MN DEPTH		L LITHOGRAPHIC
	OIL SHOW				MX MICROXLN
	MINDEPTH UP				MS MUDSTONE
Rounding					
	MINDEPTH (DOWN)		A ANGULAR		PS PACKSTONE
	NORMAL FAULT		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		

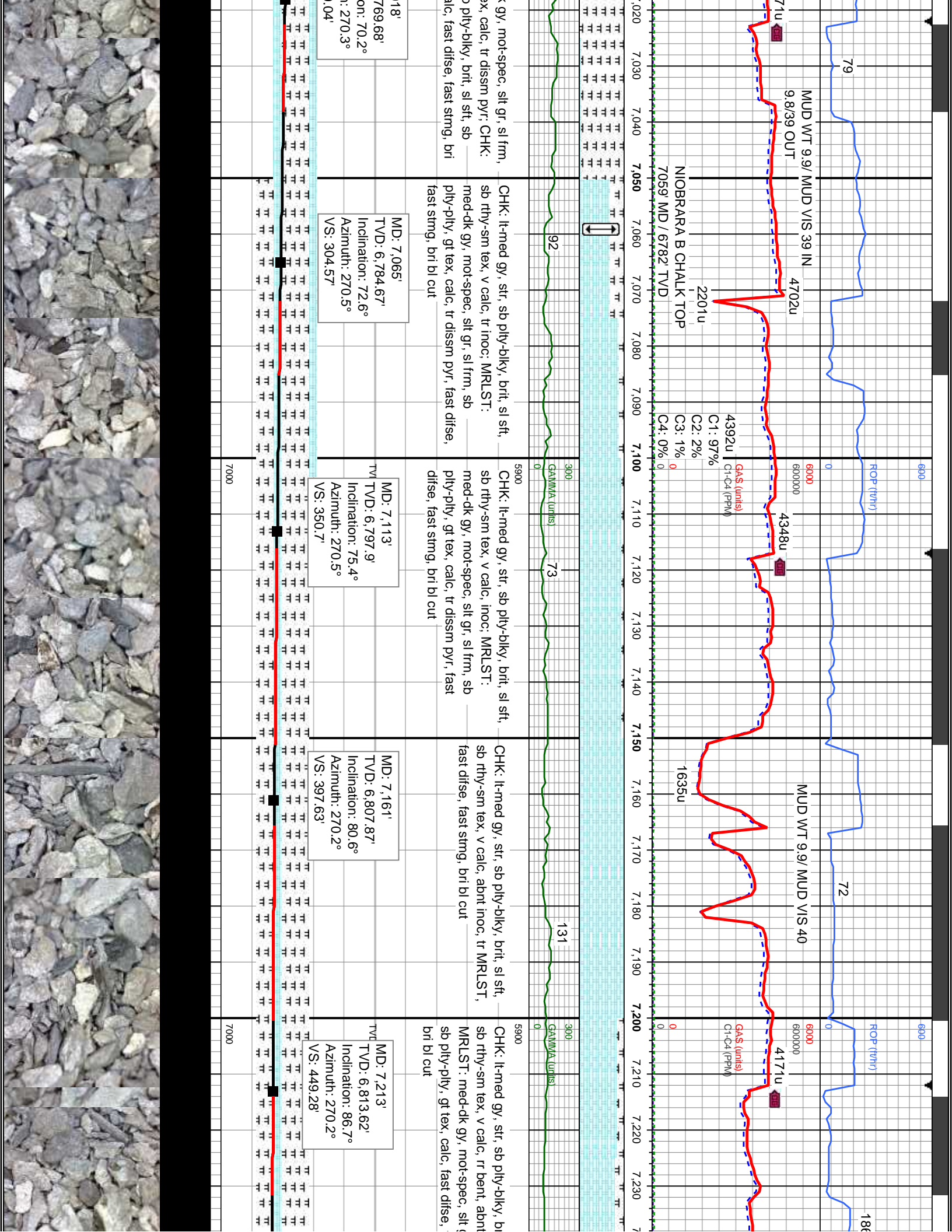
Slide/Rotate		ROP		Total Gas & Chromatograph		Depth Labels		% Lith		Gamma		Well Bore		Oil Show		Images	
		ROP (ft/hr)		GAS (unit) C1: --- C2: --- C3: --- C4: ---						GAMMA (units)		TV D					
		6900		6900		5.960				300		TV D					
		600000		600000		5.970				GAMMA (units)		TV D					
		0		0		5.980				0		TV D					
		315		3546u		5.990				111		TV D					
		94		4010u		6.000				127		TV D					
		324		2804u		6.010				0		TV D					
				C1: 70% C2: 15% C3: 12% C4: 3%		6.020				5900		TV D					
				2012u		6.030						TV D					
						6.040						TV D					
						6.050						TV D					
						6.060						TV D					
						6.070						TV D					
						6.080						TV D					
						6.090						TV D					
						6.100						TV D					
						6.110						TV D					
						6.120						TV D					
						6.130						TV D					
						6						TV D					











MINDEPTH

7/27/2015 - 8/20/2015

366

6900

Landed Curve @ 7266' MD
7/26/2015 @ 05:58 hrs MST

5210u

GAS SCALE CHANGE

3080u

Began Drilling Lateral @
09:09 hrs MST 8/20/2015

MUD WT 9.2+ MUD VIS 41 IN
8.9+/41 OUT

72

238

2717u

4993u

4250u

GAS (units)
Cl-C4 (PPM)

GAS (units)
Cl-C4 (PPM)

7,240 7,250 7,260 7,270 7,280 7,290 7,300 7,310 7,320 7,330 7,340 7,350 7,360 7,370 7,380 7,390 7,400 7,410 7,420 7,430 7,440 7,450

89

150

300

GAMMA (units)

166

300

GAMMA (units)

165

MRLST: med-dk gy, mot-spec, silt gr, sl frm,
sb pily-pily, gt tex, calc, tr dissim pyr; CHK:
lt-med gy, str, sb pily-biky, brit, sl sft, sb
rthy-sm tex, v calc, tr bent, tr inoc, slow difse,
mod stmg, fnt yel/off-wh cut.

TVD SCALE CHANGE

TVD (ft)

VS: 502.24'

Inclination: 89.6°

Azimuth: 270.2°

MD: 7.266'

TVD: 6,815.33'

Inclination: 89.6°

Azimuth: 270.2°

VS: 502.24'

Inclination: 89.6°

Azimuth: 270.2°

MD: 7.266'

TVD: 6,815.33'

Inclination: 89.6°

Azimuth: 270.2°

VS: 502.24'

Inclination: 89.6°

Azimuth: 270.2°

MD: 7.266'

TVD: 6,815.33'

Inclination: 89.6°

Azimuth: 270.2°

Bit Data
Bit #: 3
Type: K516M-E3-Z
Size: 6.12
Depth In: 7.266'
Depth Out: 14.691'
Hours: 39.5 hrs
Avg Ft/Hr: 187.97 '/hr
Jets: 3x16 - 2x16
S/N: A213648

MRLST: med-dk gy, mot-spec, silt gr, sl frm,
sb pily-pily, gt tex, calc, tr dissim pyr; CHK:
lt-med gy, str, sb pily-biky, brit, sl sft, sb
rthy-sm tex, v calc, tr bent, inoc, slow difse,
mod stmg, fnt yel/off-wh cut.

MRLST: med-dk gy, mot-spec, silt gr, sl frm,
sb pily-pily, gt tex, calc, tr dissim pyr; CHK:
lt-med gy, str, sb pily-biky, brit, sl sft, sb
rthy-sm tex, v calc, tr bent, inoc, slow difse,
mod stmg, fnt yel/off-wh cut.

MRLST: med-dk gy, mot-spec, silt gr, sl frm,
sb pily-pily, gt tex, calc, tr dissim pyr; CHK:
lt-med gy, str, sb pily-biky, brit, sl sft, sb
rthy-sm tex, v calc, tr bent, inoc, slow difse,
mod stmg, fnt yel/off-wh cut.

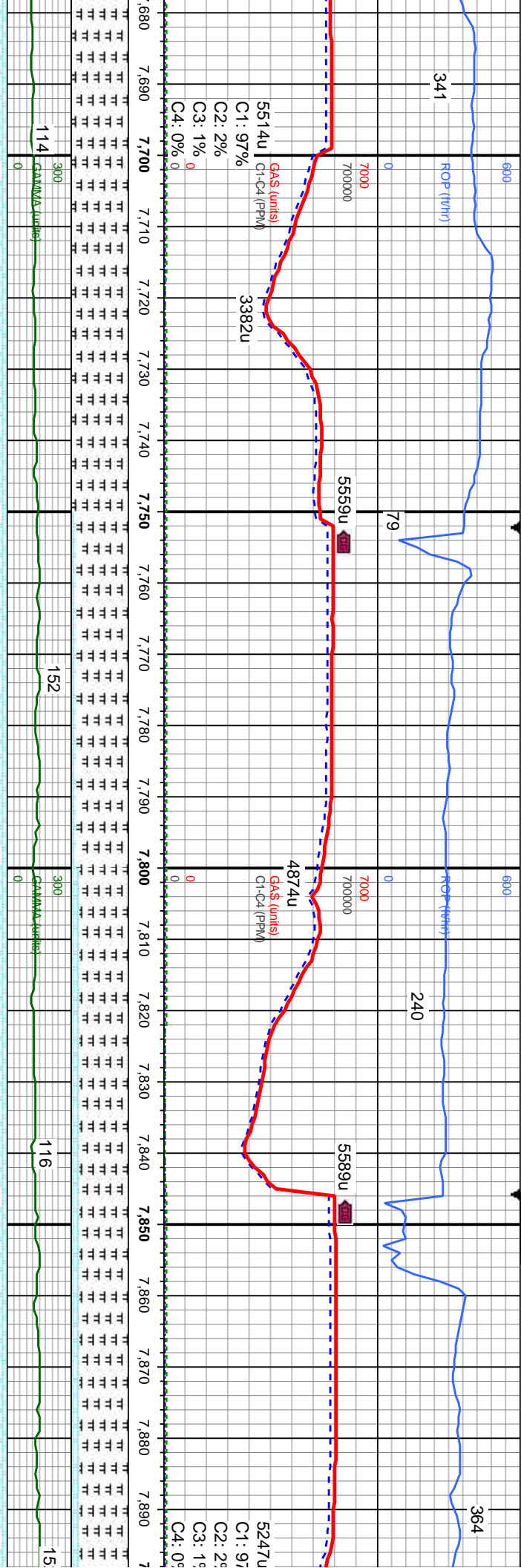
MRLST: med-dk gy, mot-spec, silt gr, sl frm,
sb pily-pily, gt tex, calc, tr dissim pyr; CHK:
lt-med gy, str, sb pily-biky, brit, sl sft, sb
rthy-sm tex, v calc, tr bent, inoc, slow difse,
mod stmg, fnt yel/off-wh cut.

6900

6900

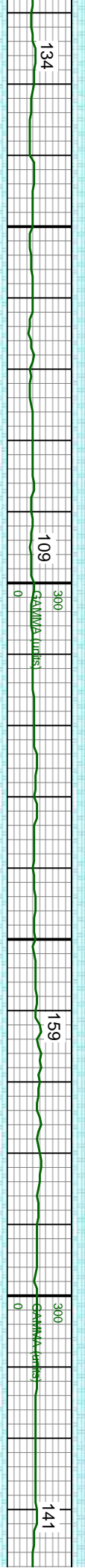
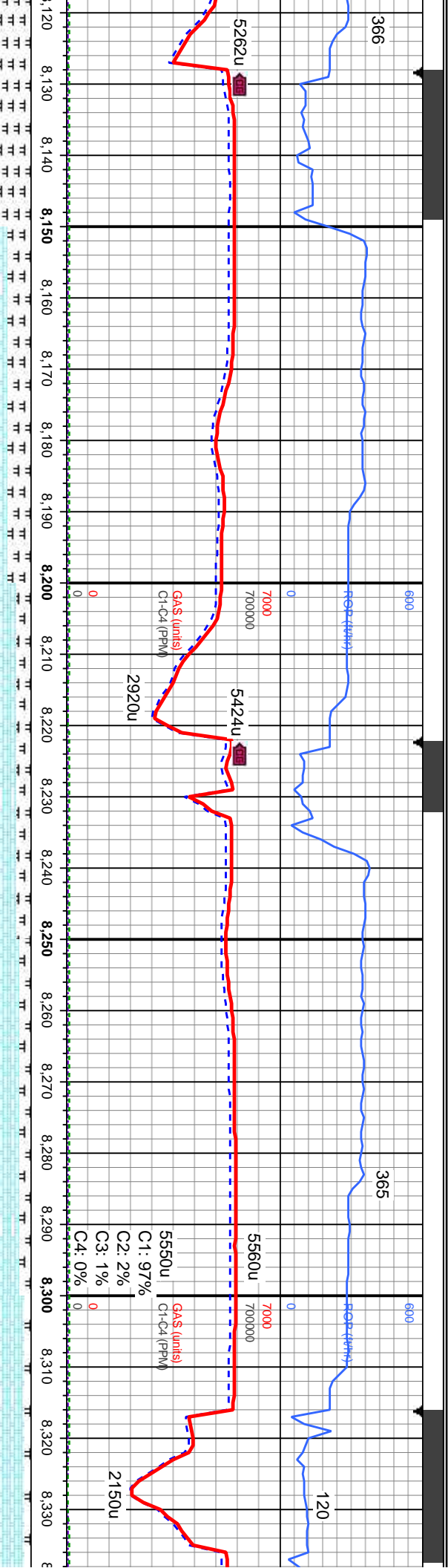
6900

6900



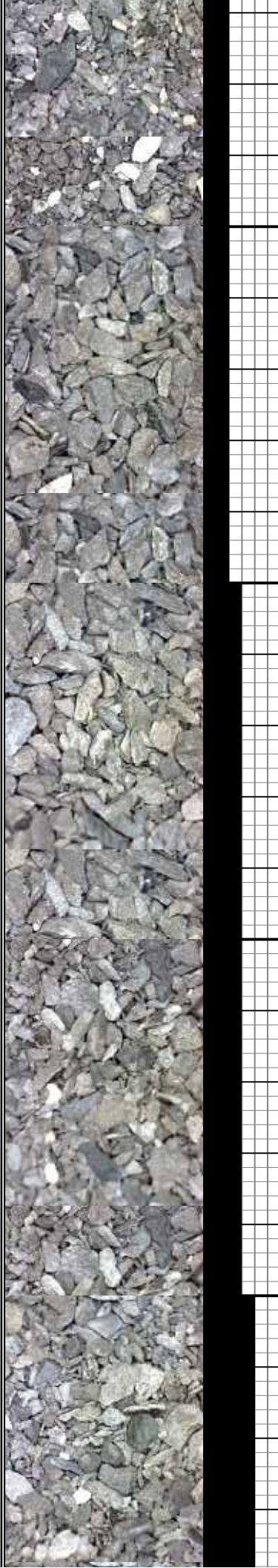
spec, slt gr, sl frm, diss pyr, tr bent, mod sting, fnt	MRLST: med-dk gy, mot-spec, slt gr, sl frm, sb ply-pty, gt tex, calc, tr diss pyr, tr bent, inoc, tr CHK, slow difse, mod sting, fnt yel/off-wh cut.	MRLST: med-dk gy, mot-spec, slt gr, sl frm, sb ply-pty, gt tex, calc, tr diss pyr: CHK: lt-med gy, str, sb ply-biky, brit, sl sft, sb rthy-sm tex, v calc, rr bent, slow difse, mod sting, fnt yel/off-wh cut.	MRLST: med-dk gy, mot-spec, slt gr, sl frm, sb ply-pty, gt tex, calc, tr diss pyr: CHK: lt-med gy, str, sb ply-biky, brit, sl sft, sb rthy-sm tex, v calc, rr bent, inoc, slow difse, mod sting, mod bri yel/off-wh cut.	MRLST: med-dk gy, mot-spec, slt gr, sl frm, sb ply-pty, gt tex, calc, tr diss pyr: CHK: lt-med gy, str, sb ply-biky, brit, sl sft, sb rthy-sm tex, v calc, rr bent, inoc, slow difse, mod sting, mod bri yel/off-wh cut.
6900	6900	6900	6900	6900

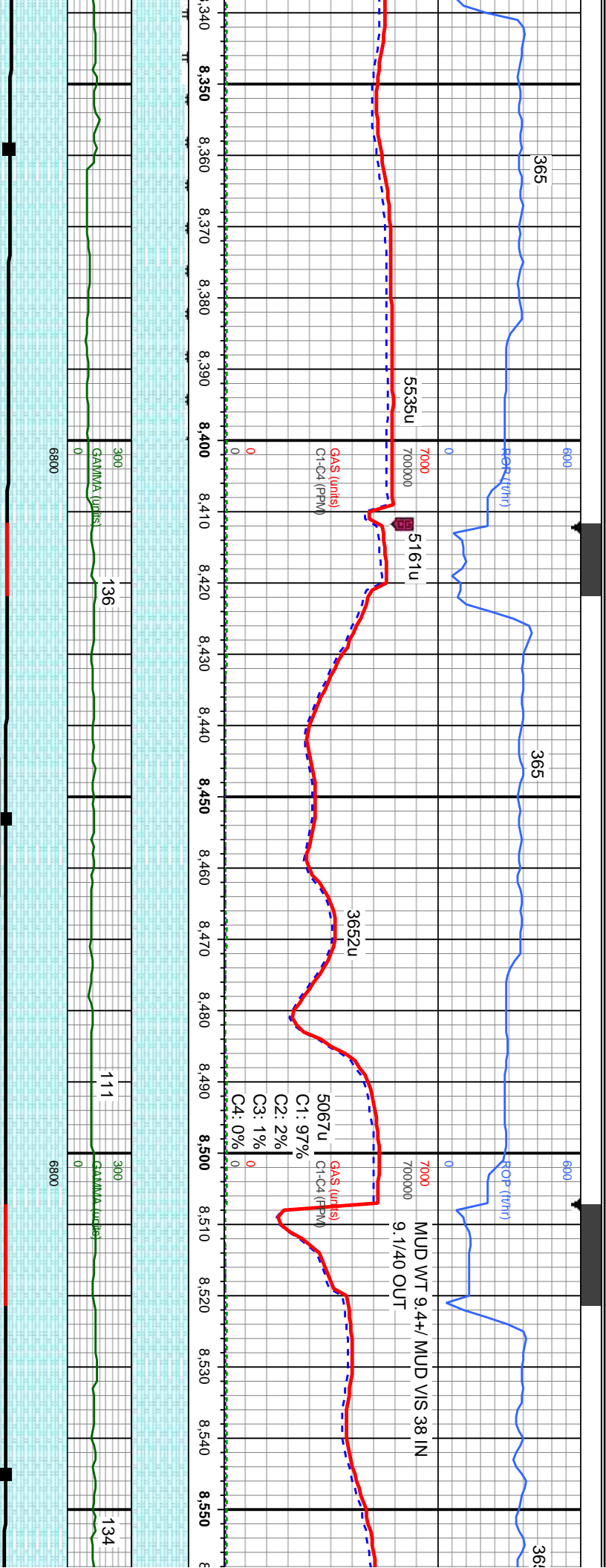




MD: 8,171'	MD: 8,265'	MD: 8,265'
TVD: 6,811.35'	TVD: 6,812.82'	TVD: 6,812.82'
Inclination: 89.3°	Inclination: 88.9°	Inclination: 88.9°
Azimuth: 267.4°	Azimuth: 268.6°	Azimuth: 268.6°
VS: 1,406.71'	VS: 1,500.67'	VS: 1,500.67'

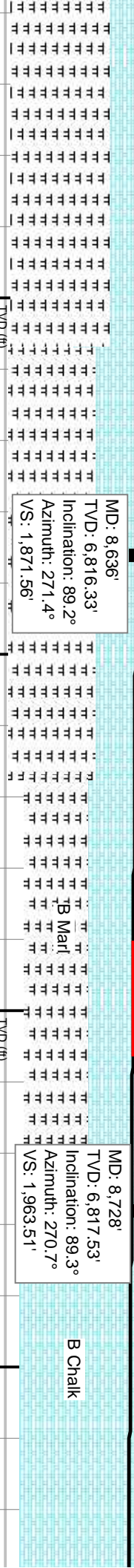
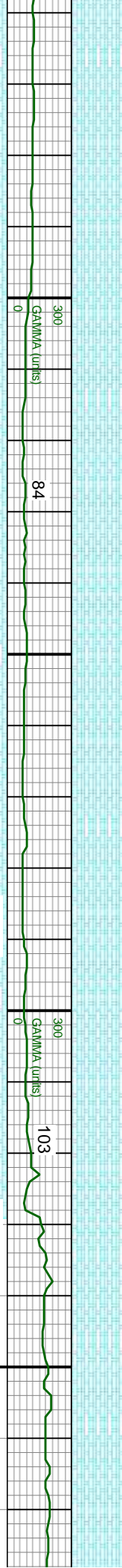
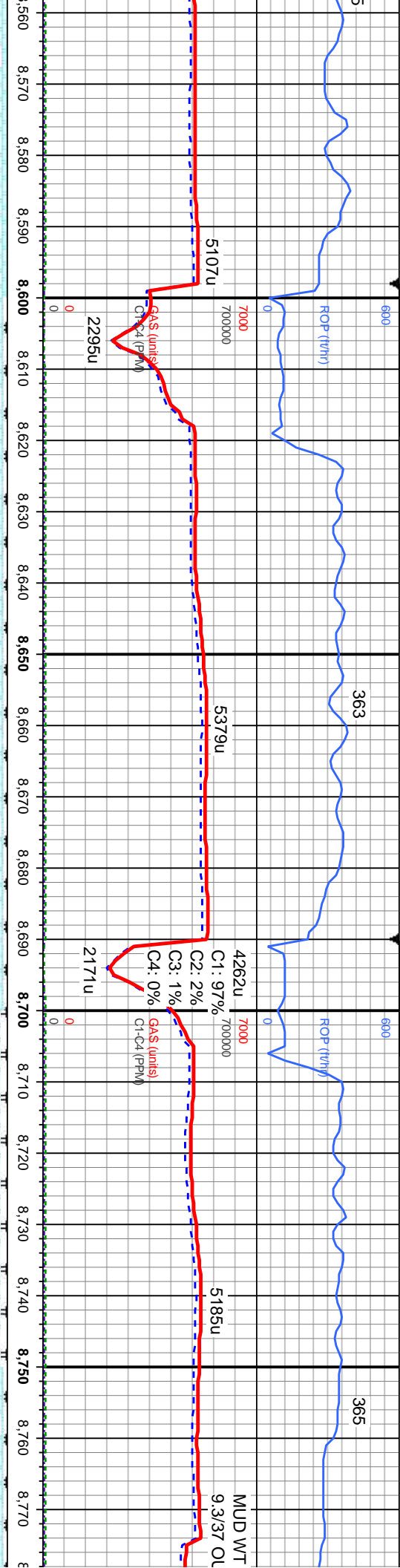
CHK: lt-med gy, str, sb pty-blky, brit, sl sft, sb rthy-sm tex, v calc, rr bent, abnt inoc; MRLST: med-dk gy, mot-spec, slt gr, sl frm, sb pty-pty, gt tex, calc, slow difse, mod stmg, frt yell/off-wh cut.	CHK: lt-med gy, str, sb pty-blky, brit, sl sft, sb rthy-sm tex, v calc, rr bent, abnt inoc; MRLST: med-dk gy, mot-spec, slt gr, sl frm, sb pty-pty, gt tex, calc, slow difse, mod stmg, mod bri yell/off-wh cut.	CHK: lt-med gy, str, sb pty-blky, brit, sl sft, sb rthy-sm tex, v calc, rr bent, abnt inoc; MRLST: med-dk gy, mot-spec, slt gr, sl frm, sb pty-pty, gt tex, calc, slow difse, mod stmg, mod bri yell/off-wh cut.
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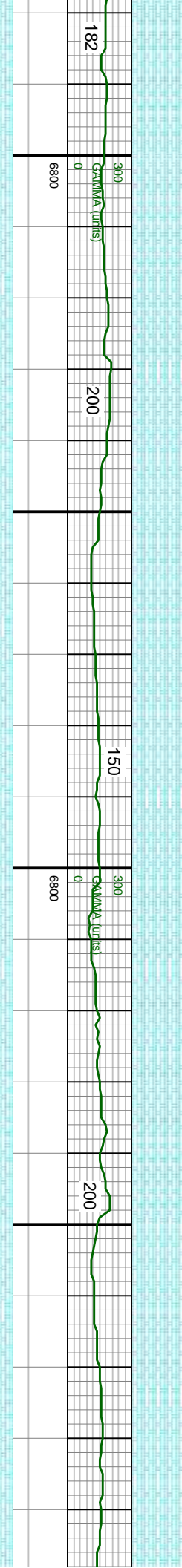
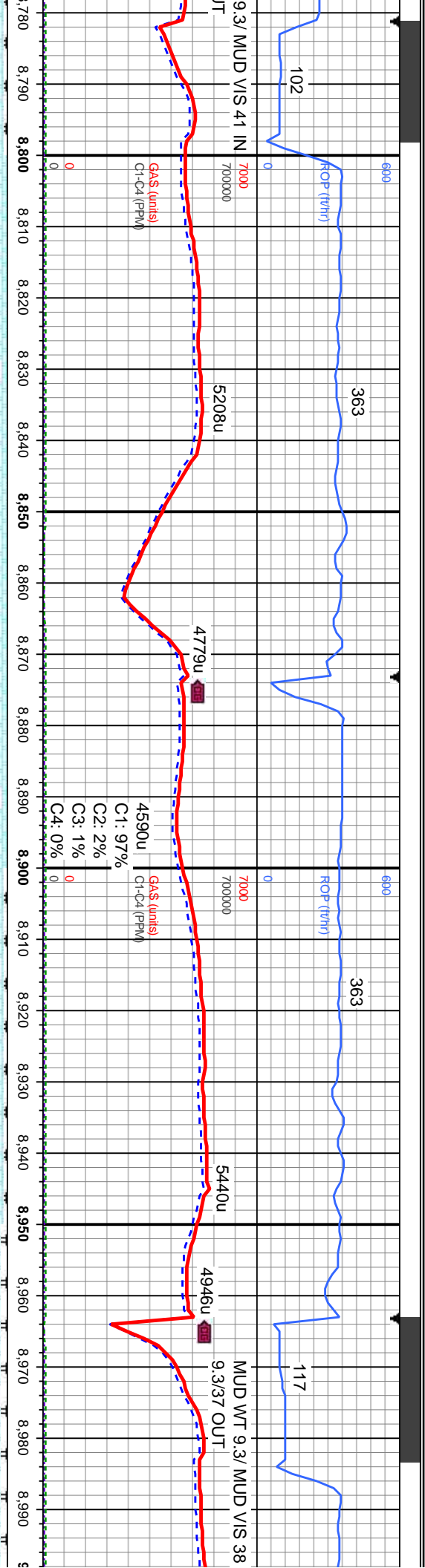
MD: 8,359' TVD: 6,814.55' Inclination: 89° Azimuth: 271.4° VS: 1,594.64'		TVD (ft)	MD: 8,453' TVD: 6,815.61' Inclination: 89.7° Azimuth: 270.7° VS: 1,688.59'		TVD (ft)	MD: 8,545' TVD: 6,815.77' Inclination: 90.1° Azimuth: 269.5° VS: 1,780.58'		TVD (ft)
it, sl sft, inoc;	CHK: lt-med gy, str, sb pty-blky, brit, sl sft, sb rthy-sm tex, v calc, rr bent, abnt inoc;		it, sl sft, inoc;	CHK: lt-med gy, str, sb pty-blky, brit, sl sft, sb rthy-sm tex, v calc, rr bent, occ inoc, tr		it, sl sft, inoc;	CHK: lt-med gy, str, sb pty-blky, brit, sl sft, sb rthy-sm tex, v calc, rr bent, occ inoc, tr	
sl	MRLST: med-dk gy, mot-spec, slt gr, sl		sl	MRLST: mod fast difse, mod fast stmg, bri lt-bl/wh		sl	MRLST: mod fast difse, mod fast stmg, bri lt-bl/wh	
frn, sb pty-pty, gf tex, calc, mod difse, mod stmg, bri lt-bl/wh cut.		6900	frn, sb pty-pty, gf tex, calc, mod difse, mod stmg, bri lt-bl/wh cut.		6900	frn, sb pty-pty, gf tex, calc, mod difse, mod stmg, bri lt-bl/wh cut.		6900





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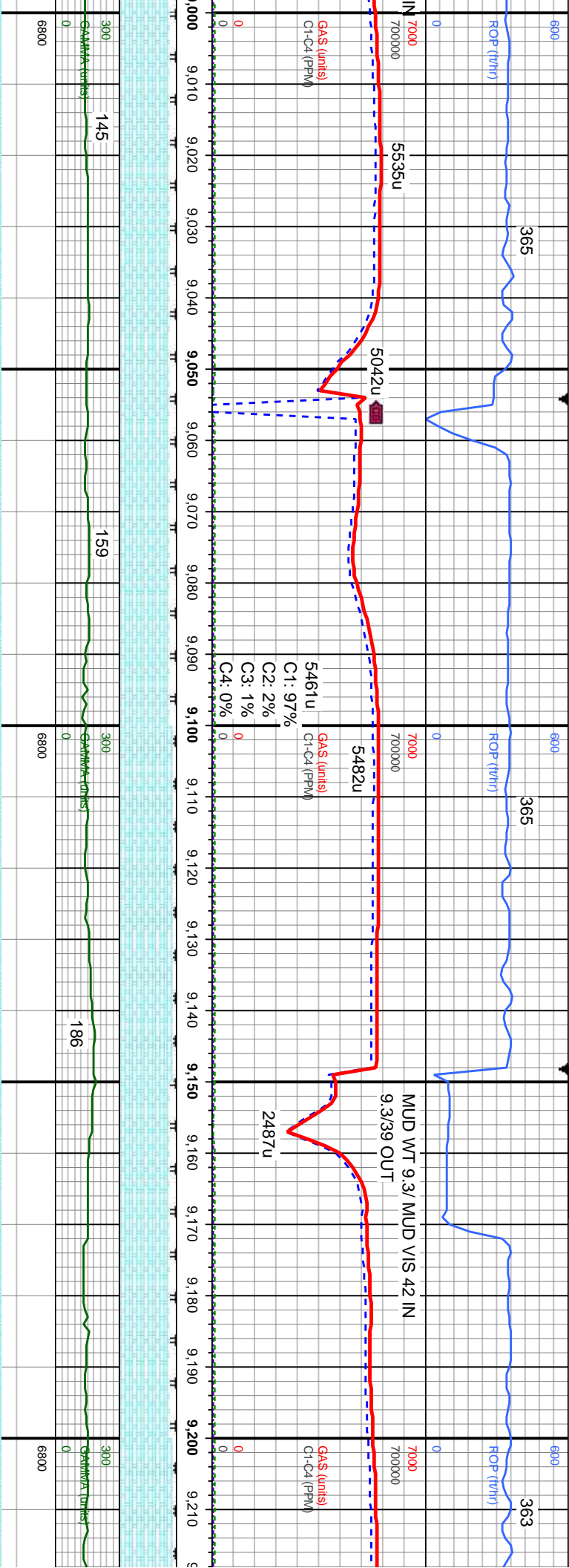


MD: 8,819'
TVD: 6,818.88'
Inclination: 89°
Azimuth: 269.5°
VS: 2.054.49'

MD: 8,911'
TVD: 6,820.01'
Inclination: 89.6°
Azimuth: 268.2°
VS: 2.146.48'

MD
TVD
Incl
Azim
VS

CHK: lt-med gy, str, sb pily-biky, brit, sl sft, sb rthy-sm tex, v calc; tr MRLST, mod fast difse, mod fast stmg, bri lt-bl/wh cut.	CHK: lt-med gy, str, sb pily-biky, brit, sl sft, sb rthy-sm tex, v calc; tr MRLST, mod fast difse, mod fast stmg, bri lt-bl/wh cut.	CHK: lt-med gy, str, sb pily-biky, brit, sl sft, sb rthy-sm tex, v calc; MRLST: med-dk gy, mot-spec, silt gr, sl frm, sb pily-pily, gt tex, calc, mod fast difse, mod fast stmg, bri lt-bl/wh cut.	CHK: lt-med gy, str, sb pily-biky, brit, sl sft, sb rthy-sm tex, v calc; MRLST: med-dk gy, mot-spec, silt gr, sl frm, sb pily-pily, gt tex, calc, mod fast difse, mod fast stmg, bri lt-bl/wh cut.
TVD (ft)	TVD (ft)	TVD (ft)	TVD (ft)
6900	6900	6900	6900



MD: 6,821.84'
TVD: 6,821.84'
Inclination: 88.1°
Azimuth: 269.8°
VS: 2,237.45'

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

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

MD: 9,094'
TVD: 6,823.28'
Inclination: 90.1°
Azimuth: 268.1°
VS: 2,329.43' (ft)

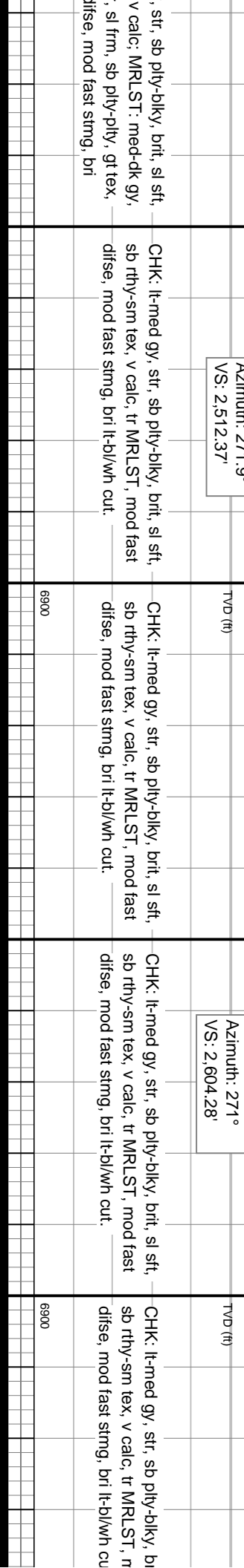
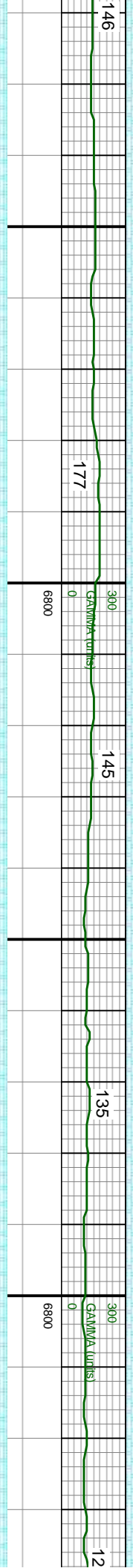
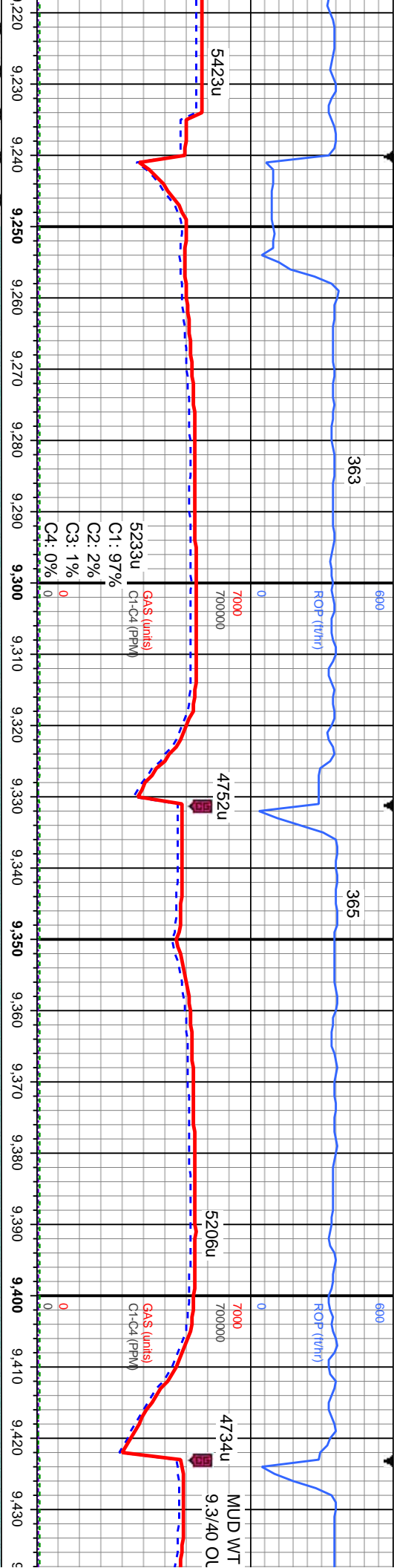
CHK: lt-med gy, str, sb pty-blky, brit, sl sft, sb rthy-sm tex, v calc; MRLST: med-dk gy, mot-spec, slt gr, sl frm, sb pty-pty, gt tex, calc, mod fast difse, mod fast string, bri lt-bl/wh cut.

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

MD: 9,186'
TVD: 6,823.52'
Inclination: 89.6°
Azimuth: 270°
VS: 2,421.43'

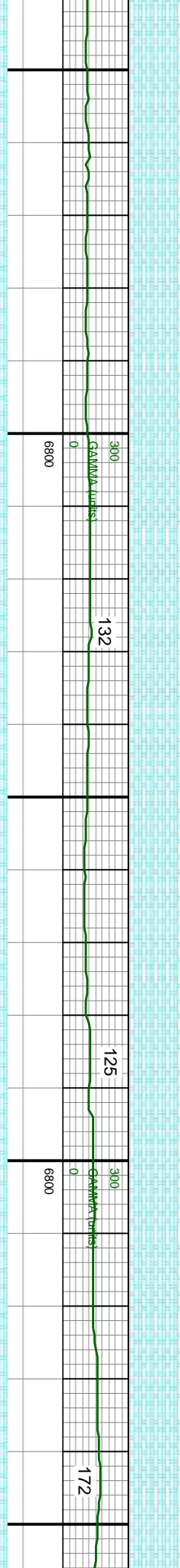
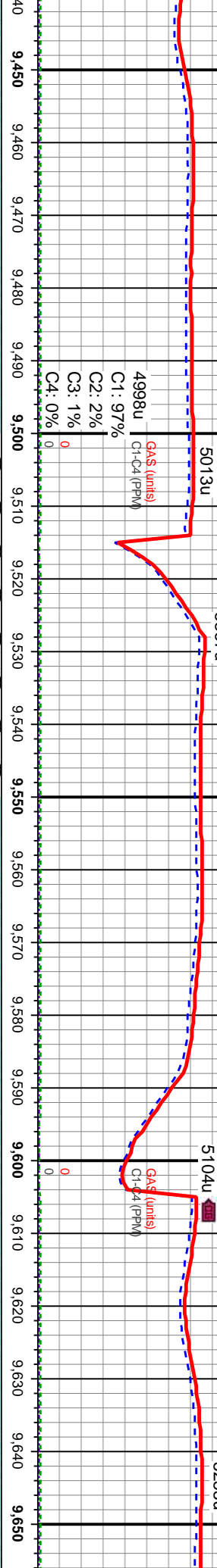
CHK: lt-med gy, str, sb pty-blky, brit, sl sft, sb rthy-sm tex, v calc; MRLST: med-dk gy, mot-spec, slt gr, sl frm, sb pty-pty, gt tex, calc, mod fast difse, mod fast string, bri lt-bl/wh cut.





365 6900 365 365 365

9.3/ MUD VIS 42 IN



MD: 9,460'
TVD: 6,828.87'
Inclination: 89.7°
Azimuth: 269.3°
VS: 2.695.25'

CHK: lt-med gy, str, sb pty-blky, brit, sl sft, sb rthy-sm tex, v calc, tr MRLST, mod fast difse, mod fast stmg, bri lt-bl/wh cut.

MD: 9,551'
TVD: 6,830.38'
Inclination: 88.4°
Azimuth: 269.6°
VS: 2.786.24'

CHK: lt-med gy, str, sb pty-blky, brit, sl sft, sb rthy-sm tex, v calc, tr MRLST, mod fast difse, mod fast stmg, bri lt-bl/wh cut.

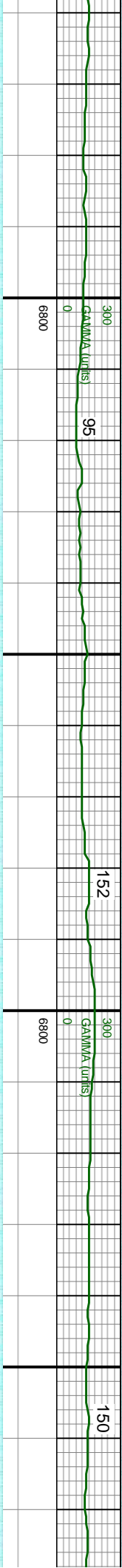
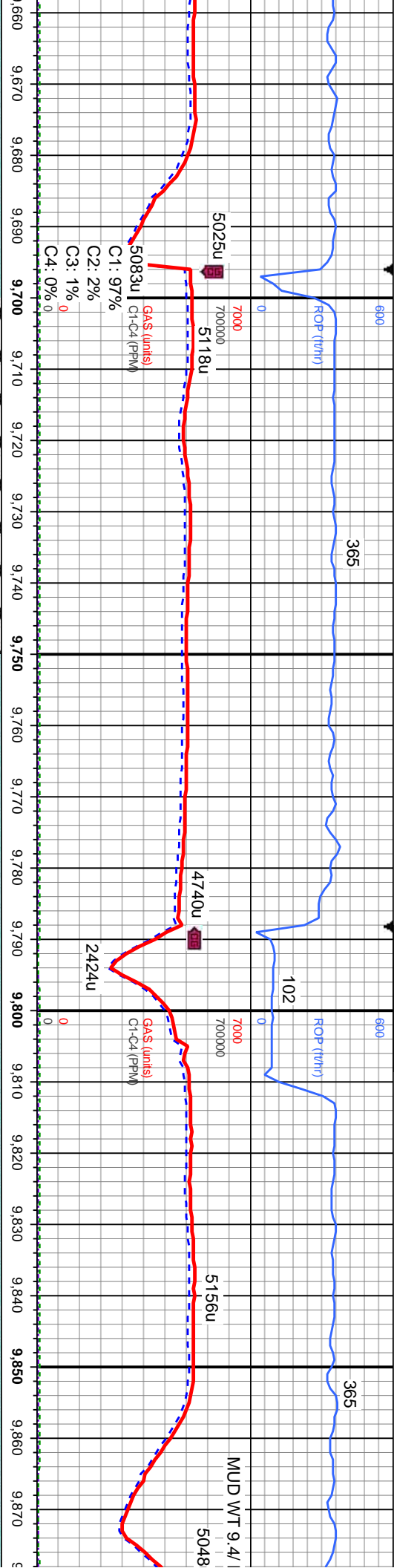
MD: 9,643'
TVD: 6,831.9'
Inclination: 89.7°
Azimuth: 269.5°
VS: 2.878.22'

CHK: lt-med gy, str, sb pty-blky, brit, sl sft, sb rthy-sm tex, v calc, tr MRLST, mod fast difse, mod fast stmg, bri lt-bl/wh cut.

TVD (ft)

TVD (ft)



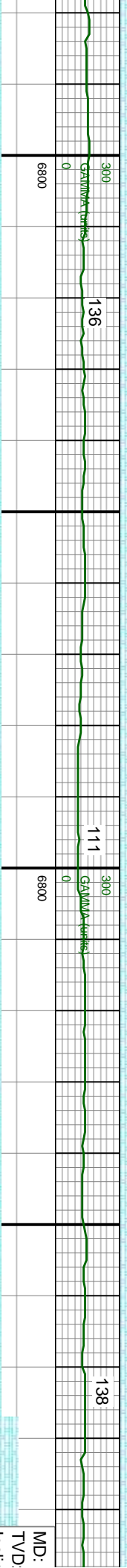
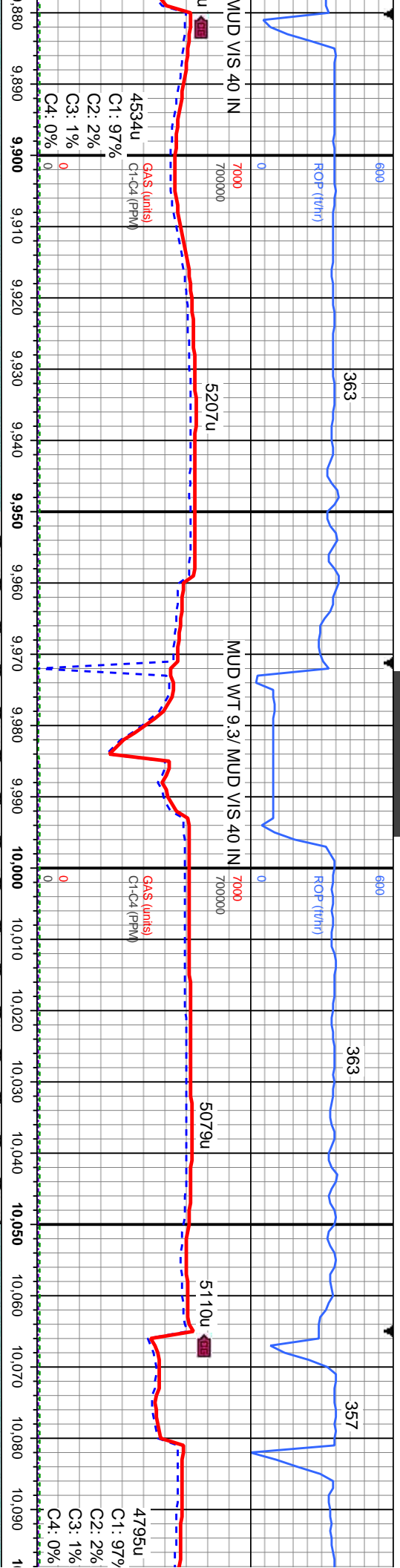


MD: 9,735'
TVD: 6,831.18'
Inclination: 91.2°
Azimuth: 269.5°
VS: 2,970.22'

MD: 9,827'
TVD: 6,830.3'
Inclination: 89.9°
Azimuth: 269.5°
VS: 3,062.21'

It-med gy, str, sb pily-blky, brit, sl sft, sb rthy-sm tex, v calc, tr MRLST,mod bri t bl cut, mod difse, mod bl-yel mod /resd	CHK: It-med gy, str, sb pily-blky, brit, sl sft, sb rthy-sm tex, v calc, MRLST: med-dk gy, mot-spec, slt gr, sl frm, sb pily-pily, gt tex,mod bri mky- It bl cut, mod difse, mod bl-yel mod blochy resd	CHK: It-med gy, str, sb pily-blky, brit, sl sft, sb rthy-sm tex, v calc, tr MRLST,mod bri mky- It bl cut, mod difse, mod bl-yel mod blochy resd	CHK: It-med gy, str, sb pily-blky, brit, sl sft, sb rthy-sm tex, v calc, tr MRLST,mod bri mky- It bl cut, mod difse, mod bl-yel mod blochy resd
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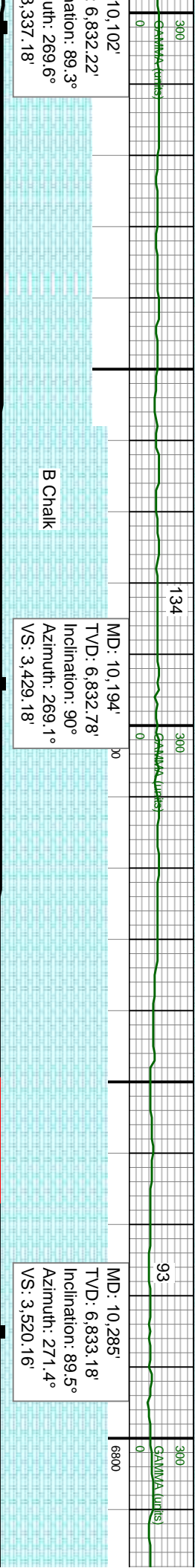
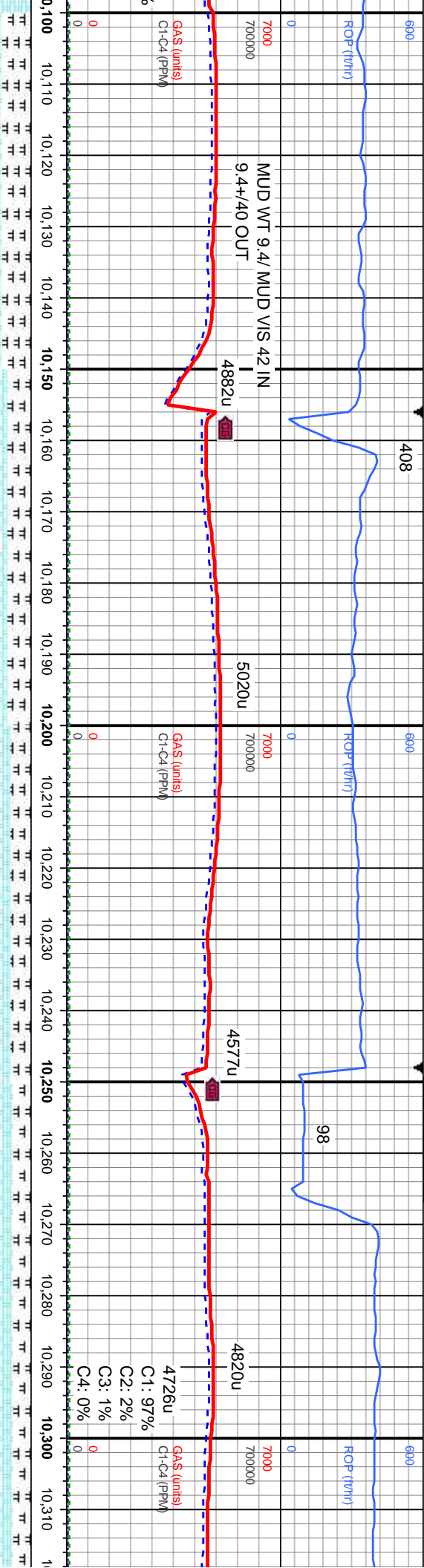


MD: 9,919'
TVD: 6,829.98'
Inclination: 90.5°
Azimuth: 269.3°
VS: 3,154.21'

MD: 10,010'
TVD: 6,830.61'
Inclination: 88.7°
Azimuth: 270.2°
VS: 3,245.2'

ty-biky, brit, sl sft, MRLST;mod bri mod bl-yel mod	CHK: lt-med gy, str, sb pty-biky, brit, sl sft, sb rthy-sm tex, v calc, tr MRLST;mod bri mky- lt bl cut, mod difse, mod bl-yel mod even/sl blochy resd	CHK: lt-med gy, str, sb pty-biky, brit, sl sft, sb rthy-sm tex, v calc; MRLST: med-dk gy, mot-spec, slt gr, sl frm, sb pty-pty, gt tex, calc;mod bri mky- lt bl cut, mod difse, mod bl-yel mod even/sl blochy resd	CHK: lt-med gy, str, sb pty-biky, brit, sl sft, sb rthy-sm tex, v calc; MRLST: med-dk gy, mot-spec, slt gr, sl frm, sb pty-pty, gt tex, calc;mod bri mky- lt bl cut, mod difse, mod bl-yel mod even/sl blochy resd	CHK: lt-med gy, str, sb pty-biky, brit, sl sft, sb rthy-sm tex, v calc, tr MRLST;mod bri mky- lt bl cut, mod difse, mod bl-yel mod even/sl blochy resd
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MD:
TVD:
Inclir
Azim
VS: :



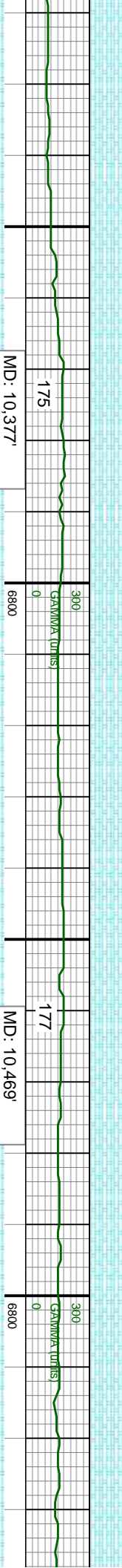
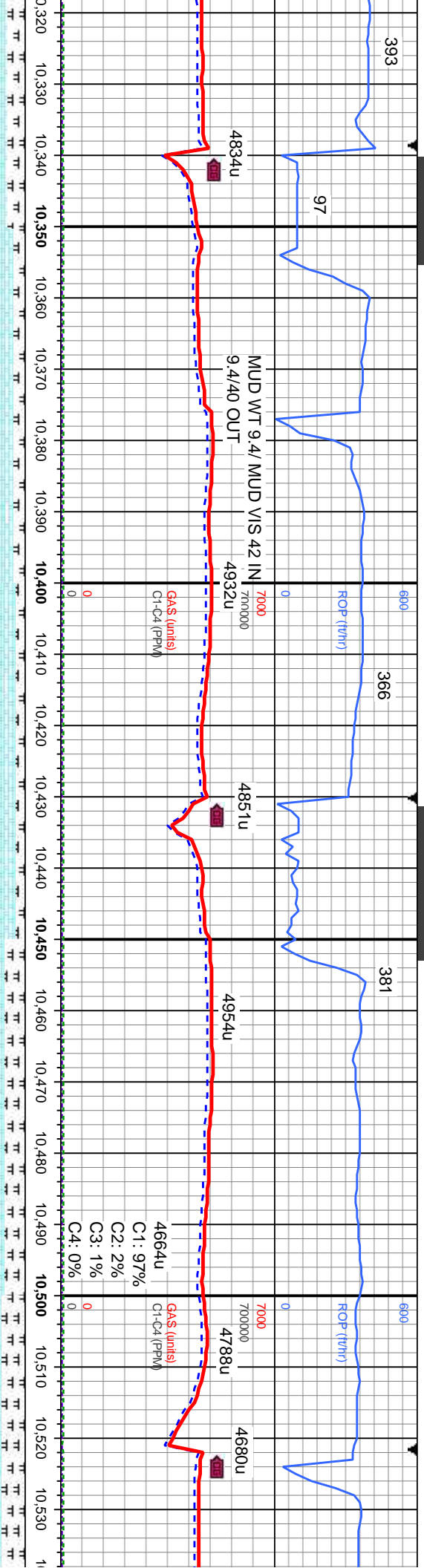
6,832.22'
ation: 89.3°
uth: 269.6°
3,337.18'

B Chalk
MD: 10,194'
TVD: 6,832.78'
Inclination: 90°
Azimuth: 269.1°
VS: 3,429.18'

MD: 10,285'
TVD: 6,833.18'
Inclination: 89.5°
Azimuth: 271.4°
VS: 3,520.16'

TVD (ft)	CHK: med gy- gysbhn occ lt gy, sb	CHK: med gy- gysbhn occ lt gy, sb	CHK: gysbhn -lt gy-brn, sb ply-biky, sl sft	CHK: gysbhn -lt gy-brn, sb ply-biky, sl sft	CHK: gysbhn -lt gy-brn, sb ply-biky, sl sft
	blky-biky, sl frm -brit, sl rthy-sl wxy, v calc;	blky-biky, sl frm -brit, sl rthy-sl wxy, v calc;	-frm, sl rthy-sl wxy v mot, sl lam, v calc;	-frm, sl rthy-sl wxy v mot, sl lam, v calc;	-frm, sl rthy-sl wxy v mot, sl lam, v calc;
	MRLST: med-dk gy, sb blky-biky frm, rthy,	MRLST: med-dk gy, sb blky-biky frm, rthy,	MRLST: med-dk gy, sb ply-biky, frm, rthy,	MRLST: med-dk gy, sb ply-biky, frm, rthy,	MRLST: med-dk gy, sb ply-biky, frm, rthy,
	sl silty tex, occ mot tex, v calc; mod bri mky-	sl silty tex, occ mot tex, v calc; mod bri mky-	sl silty tex, v calc; mod bri mky- lt bl cut,	sl silty tex, v calc; mod bri mky- lt bl cut,	sl silty tex, v calc; mod bri mky- lt bl cut,
	lt bl cut, mod difse, mod bl-yei mod	lt bl cut, mod difse, mod bl-yei mod	mod difse, mod bl-yei mod even/si blochy	mod difse, mod bl-yei mod even/si blochy	mod difse, mod bl-yei mod even/si blochy
	even/si blochy resd	even/si blochy resd	6 _{even} resd	6 _{even} resd	6 _{even} resd



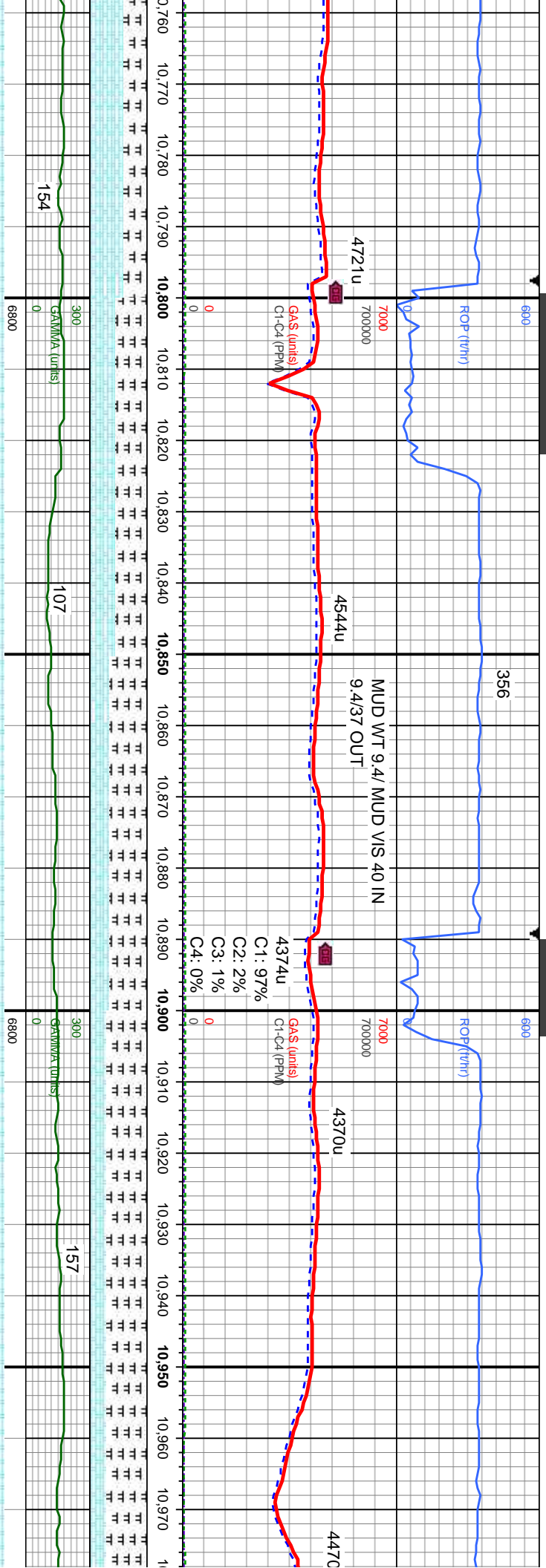


MD: 10,377'
TVD: 6,833.01'
Inclination: 90.7°
Azimuth: 269.5°
VS: 3,612.14'

MD: 10,469'
TVD: 6,833.58'
Inclination: 88.6°
Azimuth: 269.6°
VS: 3,704.13'

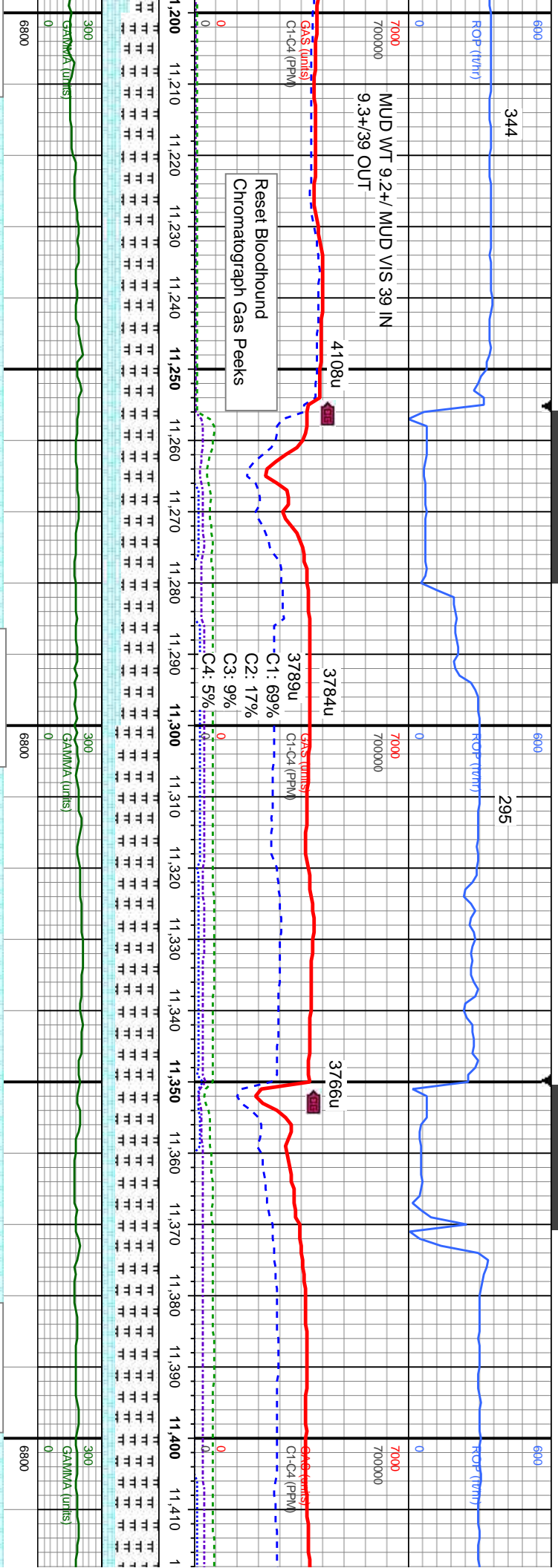
gy-brn, sb ply-blky/sl sft	CHK: gyshbn -lt gy-brn, sb ply-blky/sl sft	CHK: gyshbn -lt gy-brn, sb ply-blky/sl sft	CHK: med gy-gyshbn occ lt gy-brn, sb	CHK: med gy-gyshbn occ lt gy-brn
xy v mot, sl lam, v calc;	-frm, sl rthy-sl wxy v mot, sl lam, v calc;	-frm, sl rthy-sl wxy v mot, sl lam, v calc;	ply-blky/sl sft -frm, sl rthy-sl wxy v mot, sl	ply-blky/sl sft -frm, sl rthy-sl wxy v
k gy/sb ply-blky, frm, rthy,	MRLST: med-dk gy/sb ply-blky, frm, rthy,	MRLST: med-dk gy/sb ply-blky, frm, rthy,	lam, v calc; MRLST: med-dk gy/sb ply-blky,	lam, v calc; MRLST: med-dk gy/sb
c; r fos frags;mod bri mky-	sl silty tex, v calc; r fos frags, r bent;mod	sl silty tex, v calc; r fos frags, r bent;mod	frm, rthy, sl silty tex, v calc; r bent;mod bri	frm, rthy, sl silty tex, v calc; r bent;
resd	mod even/sl blochy resd	mod even/sl blochy resd	mky- lt bl cut, mod difse, mod bl-yei	mky- lt bl cut, mod difse, mod bl-yei
			even/sl blochy resd	even/sl blochy resd





med gy-gyshbn, sb ply-blky, sl frm	med-dk gy, sb ply-blky, frm, rthy, sl	med-dk gy, sb ply-blky, frm, rthy, sl	med-dk gy, sb ply-blky, frm, rthy, sl
sl rthy-sl wxy, mot, v calc; MRLST:	slty tex, v calc; CHK: med gy-gyshbn, sb	slty tex, v calc; CHK: med gy-gyshbn, sb	slty tex, v calc; CHK: med gy-gyshbn, sb
ply-gy, sb ply-blky, frm, rthy, sl slty tex	ply-blky, sl frm -frm, sl rthy-sl wxy, mot, v calc,	ply-blky, sl frm -frm, sl rthy-sl wxy, mot, v calc,	ply-blky, sl frm -frm, sl rthy-sl wxy, mot, v calc,
mod, v calc; r bent; mod bri mky- lt bl cut,	calc, grdg - mrlst; occ bent; mod bri mky- lt bl cut,	calc, grdg - mrlst; occ bent; mod bri mky- lt bl cut,	calc, grdg - mrlst; occ bent; mod bri mky- lt bl cut,
diffse, mod bl-yel mod blochy resd	mod difse, mod bl-yel mod blochy resd	mod difse, mod bl-yel mod blochy resd	mod difse, mod bl-yel mod blochy resd





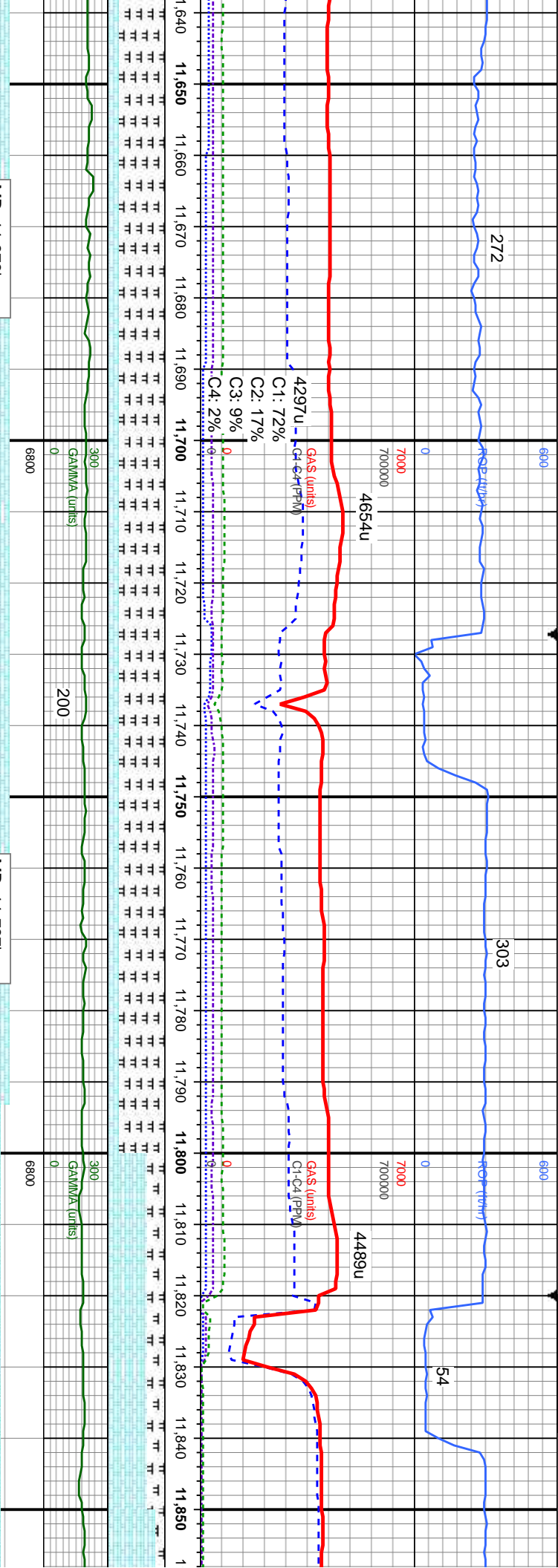
11,202'
6,842.37'
ation: 91.4°
uth: 270.9°
4,436.91'

MD: 11,296'
TVD: 6,841.88'
Inclination: 89.2°
Azimuth: 272.3°
VS: 4,530.83'

MD: 11,390'
TVD: 6,842.53'
Inclination: 90°
Azimuth: 270.2°
VS: 4,624.77'

MRSLT: med-dk gy-blk, sb pty-blky, frm, rthy, sl sily tex, v arg, v calc; CHK: gysbhn occ It brn, sb pty-blky, sl frm -frm, sl rthy-sl wxy, mot, v calc; rr-occ bent;mod bri mky- It bl cut, mod difse, mod bl-yei mod blochy reed	MRSLT: med-dk gy-blk, sb pty-blky, frm, rthy, sl sily tex, v arg, v calc; CHK: gysbhn occ It brn, sb pty-blky, sl frm -frm, sl rthy-sl wxy, mot, v calc; rr-occ bent;mod bri mky- It bl cut, mod difse, mod bl-yei mod blochy reed	MRSLT: med-dk gy-blk, sb pty-blky, frm, rthy, sl sily tex, v arg, v calc; CHK: gysbhn occ It brn, sb pty-blky, sl frm -frm, sl rthy-sl wxy, mot, v calc; rr-occ bent;mod bri mky- It bl cut, mod difse, mod bl-yei mod blochy reed	MRSLT: med-dk gy-blk, sb pty-blky, frm, rthy, sl sily tex, v arg, v calc; CHK: gysbhn occ It brn, sb pty-blky, sl frm -frm, sl rthy-sl wxy, mot, v calc; rr-occ bent;mod bri mky- It bl cut, mod difse, mod bl-yei mod blochy reed
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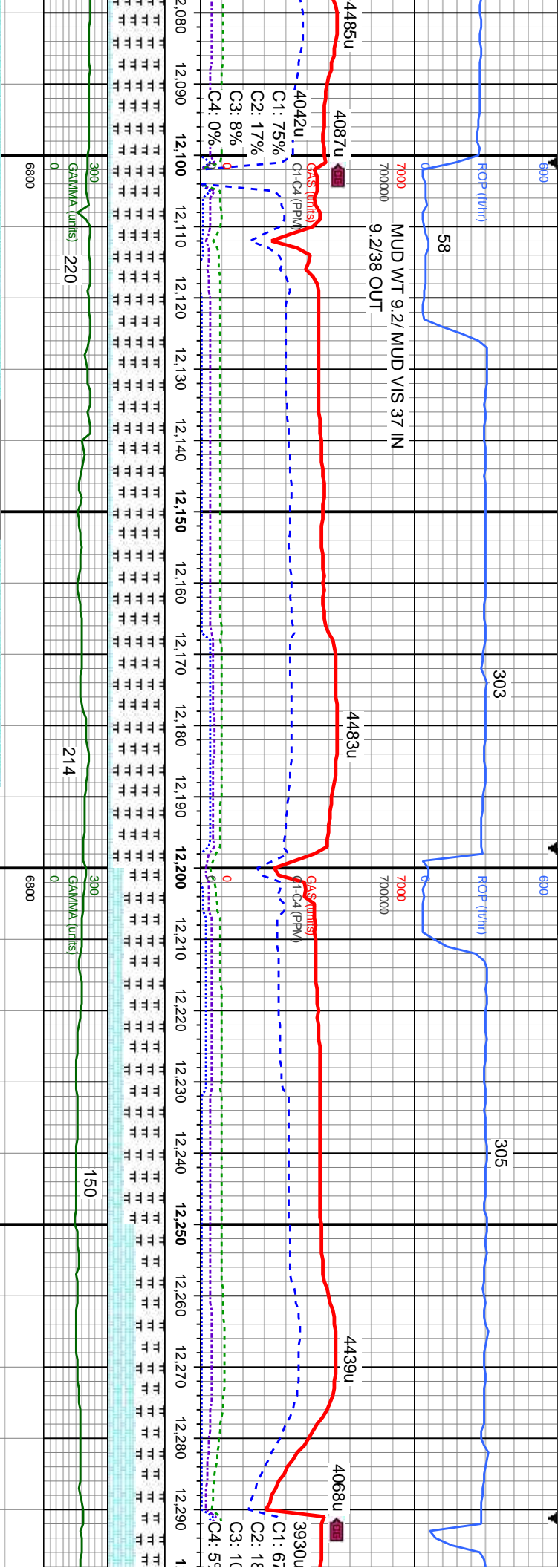


MD: 11,673'
TVD: 6,842.28'
Inclination: 90.3°
Azimuth: 268.8°
VS: 4,907.75'

MD: 11,767'
TVD: 6,842.03'
Inclination: 90°
Azimuth: 269.5°
VS: 5,001.75'

gysbhn	med-dk gy-blk, sb pty-biky, frm, r	gysbhn	med-dk gy-blk, sb pty-biky, frm, r	gysbhn	med-dk gy-blk, sb pty-biky, frm, r	gysbhn	med-dk gy-blk, sb pty-biky, frm, r
rthy-si	med-dk gy-blk, sb pty-biky, frm, r	rthy-si	med-dk gy-blk, sb pty-biky, frm, r	rthy-si	med-dk gy-blk, sb pty-biky, frm, r	rthy-si	med-dk gy-blk, sb pty-biky, frm, r
ky- lt-bl	med-dk gy-blk, sb pty-biky, frm, r	ky- lt-bl	med-dk gy-blk, sb pty-biky, frm, r	ky- lt-bl	med-dk gy-blk, sb pty-biky, frm, r	ky- lt-bl	med-dk gy-blk, sb pty-biky, frm, r
/sl even	med-dk gy-blk, sb pty-biky, frm, r	/sl even	med-dk gy-blk, sb pty-biky, frm, r	/sl even	med-dk gy-blk, sb pty-biky, frm, r	/sl even	med-dk gy-blk, sb pty-biky, frm, r
resd	med-dk gy-blk, sb pty-biky, frm, r	resd	med-dk gy-blk, sb pty-biky, frm, r	resd	med-dk gy-blk, sb pty-biky, frm, r	resd	med-dk gy-blk, sb pty-biky, frm, r



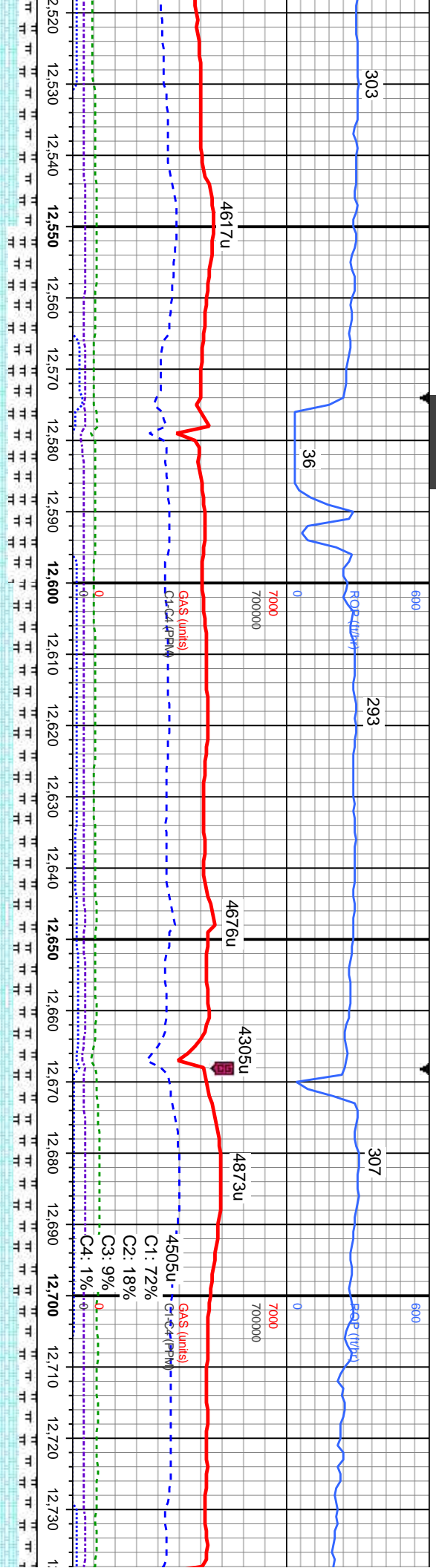


MD: 12,144'
TVD: 6,844.75'
Inclination: 88.1°
Azimuth: 268.1°
VS: 5,378.64'

MD: 12,238'
TVD: 6,847.13'
Inclination: 89°
Azimuth: 269.5°
VS: 5,472.61'

ply-biky frm,	MRLST: med-dk gy-bik, sb ply-biky frm,	MRLST: med-dk gy-bik, sb ply-biky frm,	MRLST: med-dk gy-bik, sb ply-biky frm,
alk: CHK: gysbhn	rthy, sl silty tex, v arg, v calc: CHK: gysbhn	rthy, sl silty tex, v arg, v calc: CHK: gysbhn	rthy, sl silty tex, v arg, v calc: CHK: gysbhn
-frm, sl rthy-sl	occ brn, sb ply-biky, sl frm -frm, sl rthy-sl	occ brn, sb ply-biky, sl frm -frm, sl rthy-sl	occ brn, sb ply-biky, sl frm -frm, sl rthy-sl
mod bri mky- lt bl	wxy, mot, v calc: rr bent; mod bri mky- lt bl	wxy, mot, v calc: rr bent; mod bri mky- lt bl	wxy, mot, v calc: rr bent; mod bri mky- lt bl
v blochy/sl even	cut, mod difse, mod bl-yei v blochy/sl even	cut, mod difse, mod bl-yei v blochy/sl even	cut, mod difse, mod bl-yei v blochy/sl even
resd	resd	resd	resd





12,522'
6,849.03'
ation: 89.3°
uth: 269.6°
5,756.58'

MD: 12,616'
TVD: 6,850.1'
Inclination: 89.4°
Azimuth: 271.9°
VS: 5,850.54'

MD: 12,710'
TVD: 6,851'
Inclination: 89.5°
Azimuth: 271°
VS: 5,944.47'

cc brn, sb pily-blky,sl frm	CHK: gysbhn occ brn, sb pily-blky,sl frm	CHK: gysbhn occ brn, sb pily-blky,sl frm	CHK: gysbhn occ brn, sb pily-blky,sl frm
xy, mot, v calc, tr inoc;	-frm, sl rthy-sl wxy, mot, v calc, tr inoc;	-frm, sl rthy-sl wxy, mot, v calc, tr inoc;	-frm, sl rthy-sl wxy, mot, v calc, tr inoc;
k gy-blk,sb pily-blky,frm,	MRLST: med-dk gy-blk,sb pily-blky,frm,	MRLST: med-dk gy-blk,sb pily-blky,frm,	MRLST: med-dk gy-blk,sb pily-blky,frm,
v arg, v calc, tr bent;mod bri	rthy, sl sily tex, v arg, v calc, tr bent;mod bri	rthy, sl sily tex, v arg, v calc, tr bent;mod bri	rthy, sl sily tex, v arg, v calc, tr bent;mod bri
mod difse, mod bl-yel even	mky- lt bl cut, mod difse, mod bl-yel even	mky- lt bl cut, mod difse, mod bl-yel even	mky- lt bl cut, mod difse, mod bl-yel even
	resd	resd	resd



8/22/2015

MINDEPTH

227

4462u

4643u

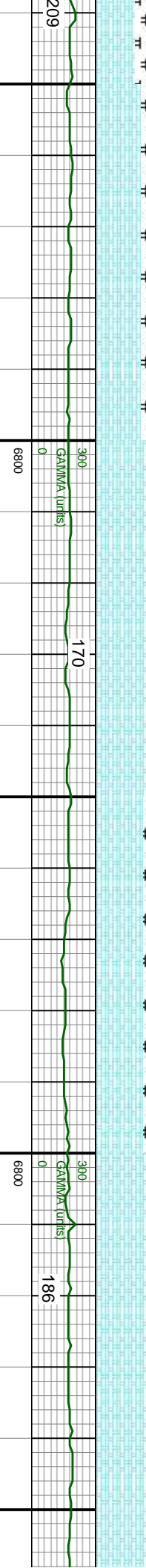
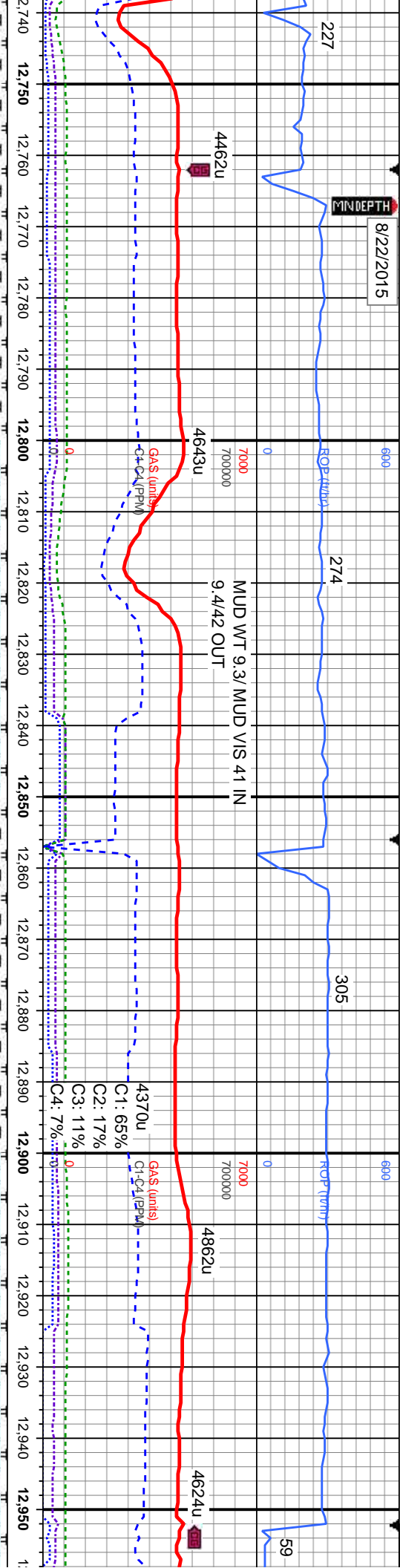
MUD WT 9.3/ MUD VIS 41 IN
9.4/42 OUT

305

4862u

4624u

59

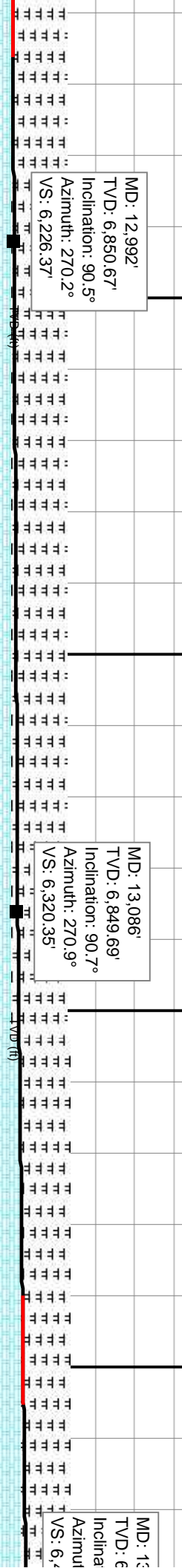
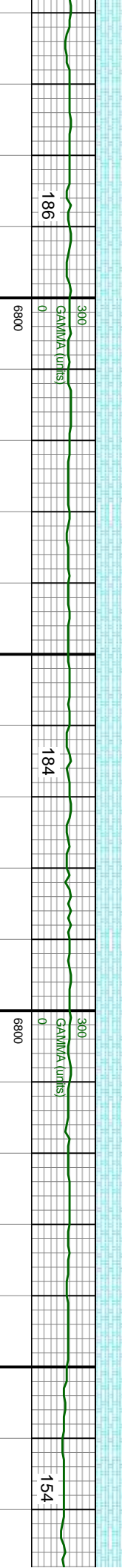
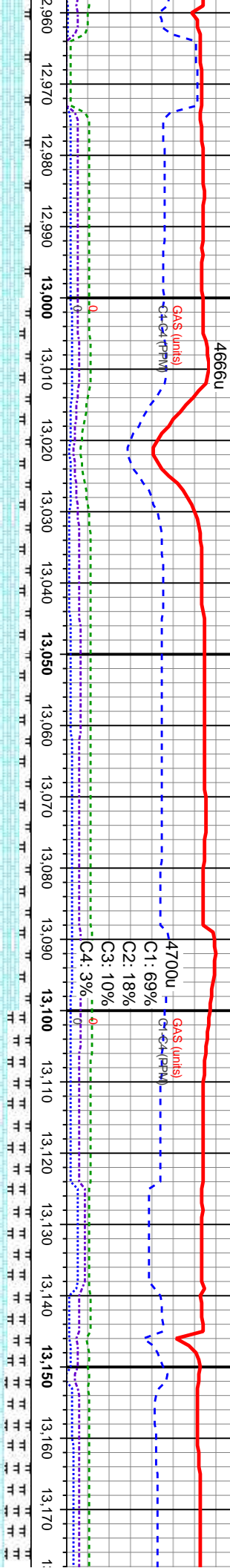
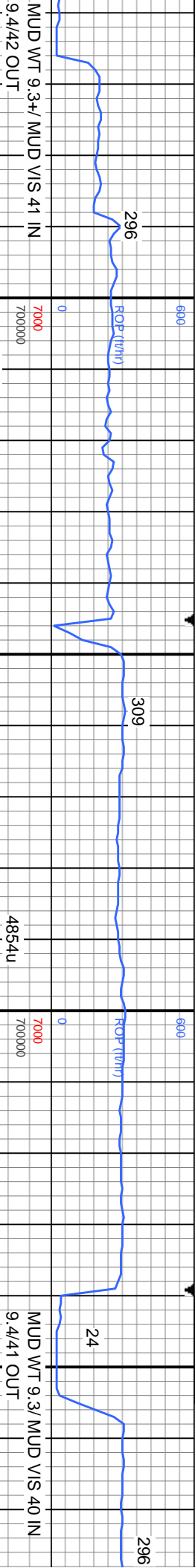


MD: 12,804'
TVD: 6,851.41'
Inclination: 90.0°
Azimuth: 270.7°
VS: 6,038.44'

MD: 12,898'
TVD: 6,851.25'
Inclination: 90.2°
Azimuth: 271.2°
VS: 6,132.4'

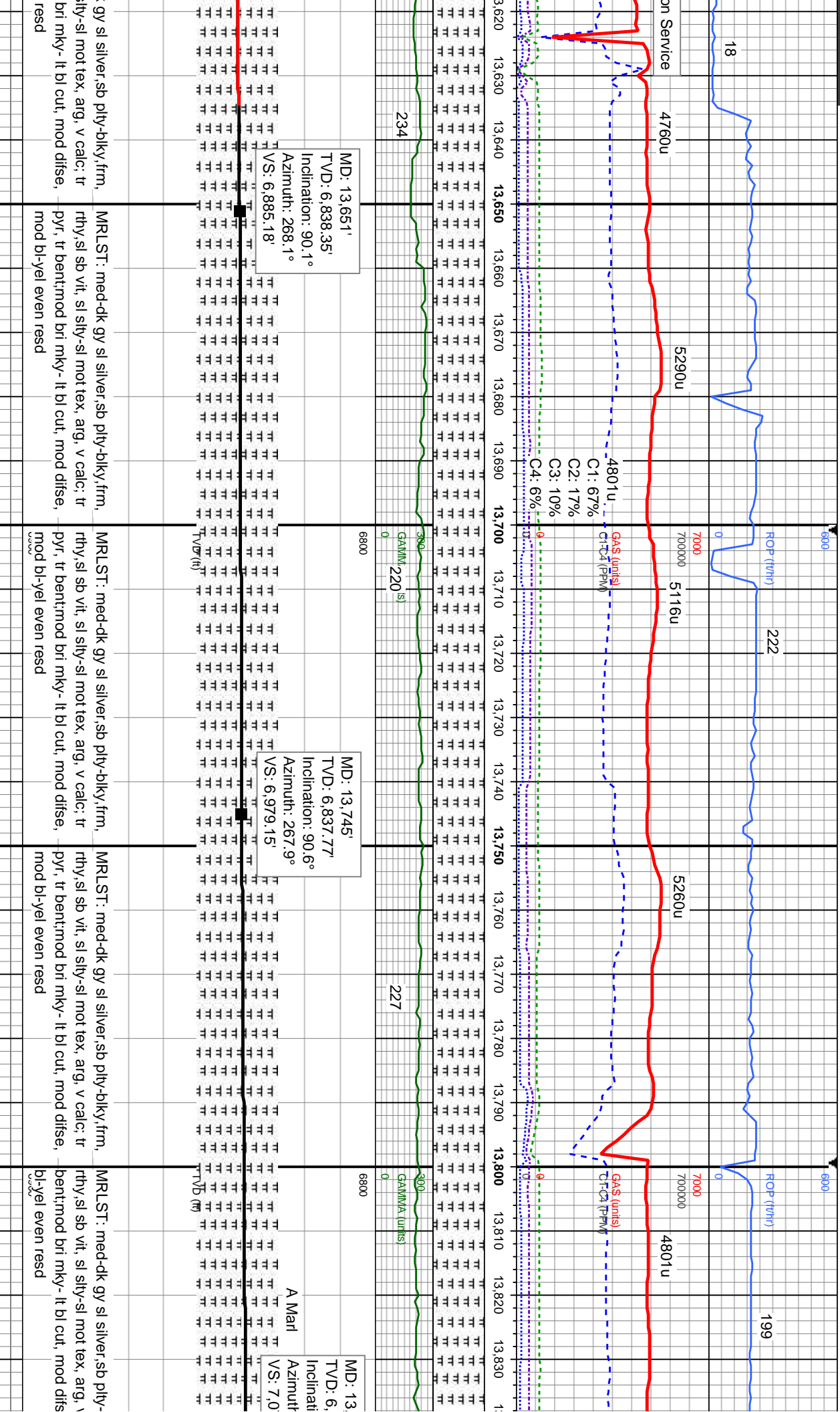
CHK: gysbhn occ brn, sb pty-blky,sl frm	CHK: gysbhn occ brn, sb pty-blky,sl frm	CHK: gysbhn occ brn, sb pty-blky,sl frm	CHK: gysbhn occ brn, sb pty-blky,sl frm
-frm, sl rthy-sl wxy, mot, v calc, tr inoc;	-frm, sl rthy-sl wxy, mot, v calc, tr inoc;	-frm, sl rthy-sl wxy, mot, v calc, tr inoc;	-frm, sl rthy-sl wxy, mot, v calc, tr inoc;
MRLST: med-dk gy-blk,sb pty-blky,frm,	MRLST: med-dk gy-blk,sb pty-blky,frm,	MRLST: med-dk gy-blk,sb pty-blky,frm,	MRLST: med-dk gy-blk,sb pty-blky,frm,
rthy, sl silty tex, v arg, v calc, tr bent;mod bri	rthy, sl silty tex, v arg, v calc, tr bent, tr	rthy, sl silty tex, v arg, v calc, tr bent, tr	rthy, sl silty tex, v arg, v calc, tr bent, tr
mky- lt bl cut, mod difse, mod bl-yel even	pyr;mod bri mky- lt bl cut, mod difse, mod	pyr;mod bri mky- lt bl cut, mod difse, mod	pyr;mod bri mky- lt bl cut, mod difse, mod
resd	bl-yel even resd	bl-yel even resd	bl-yel even resd

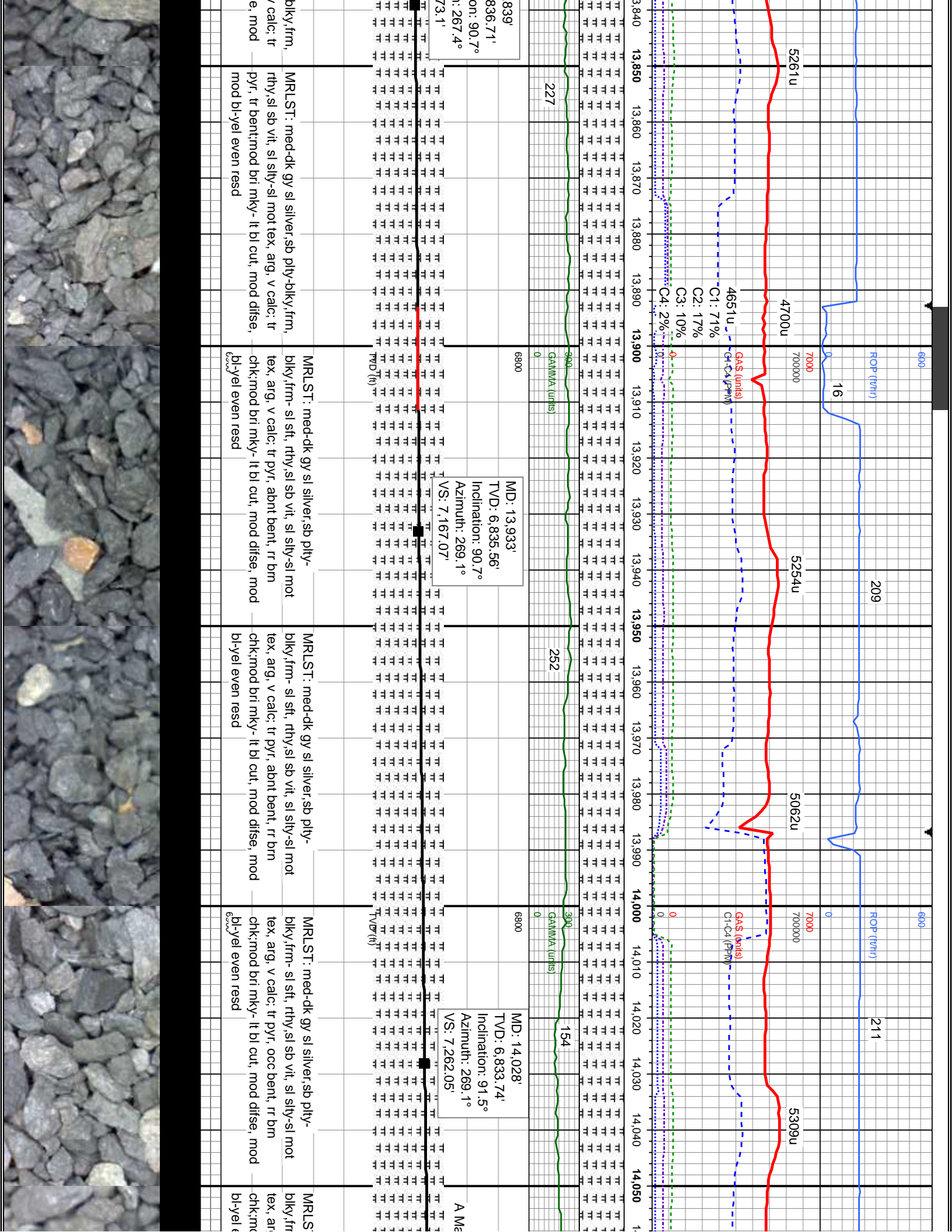


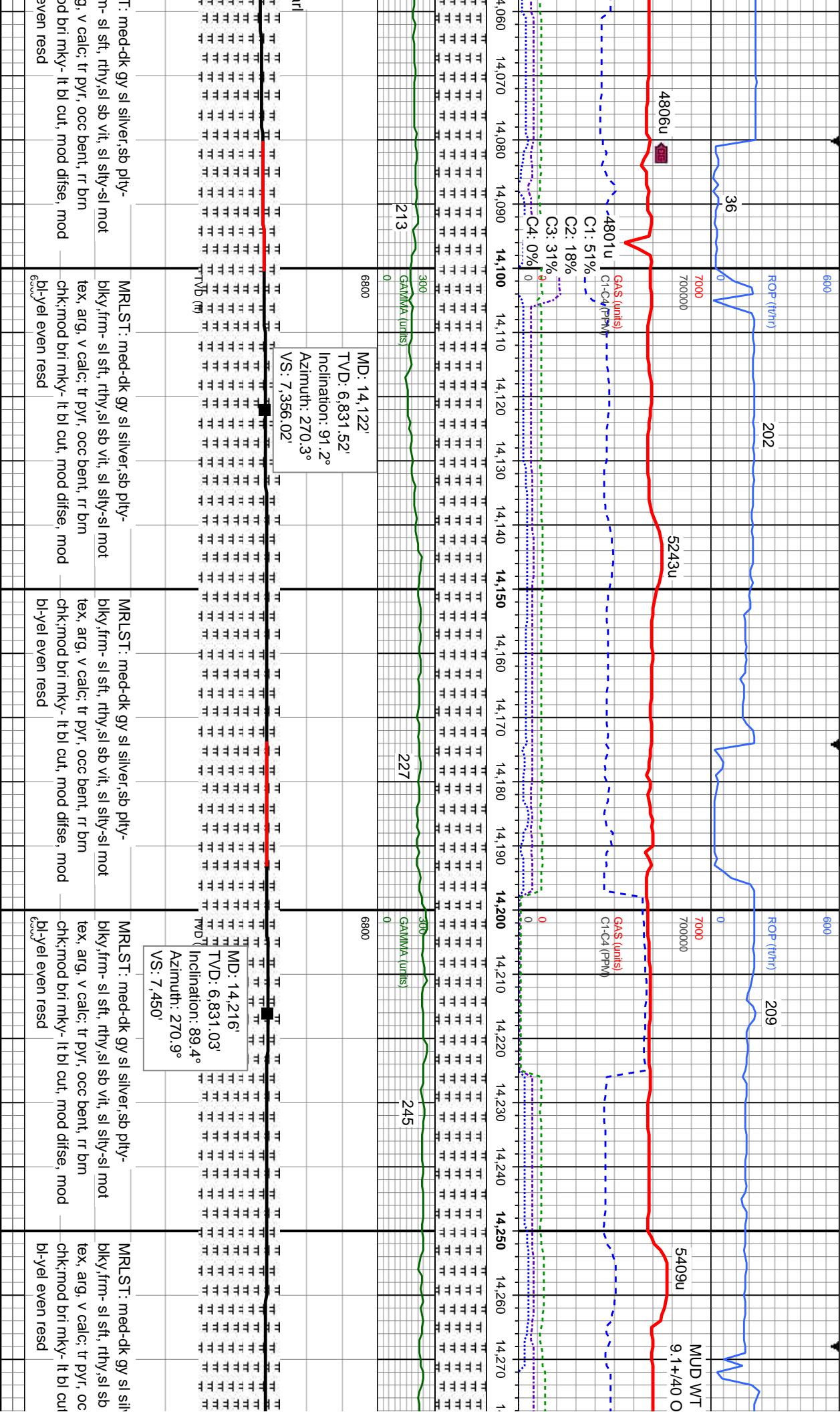


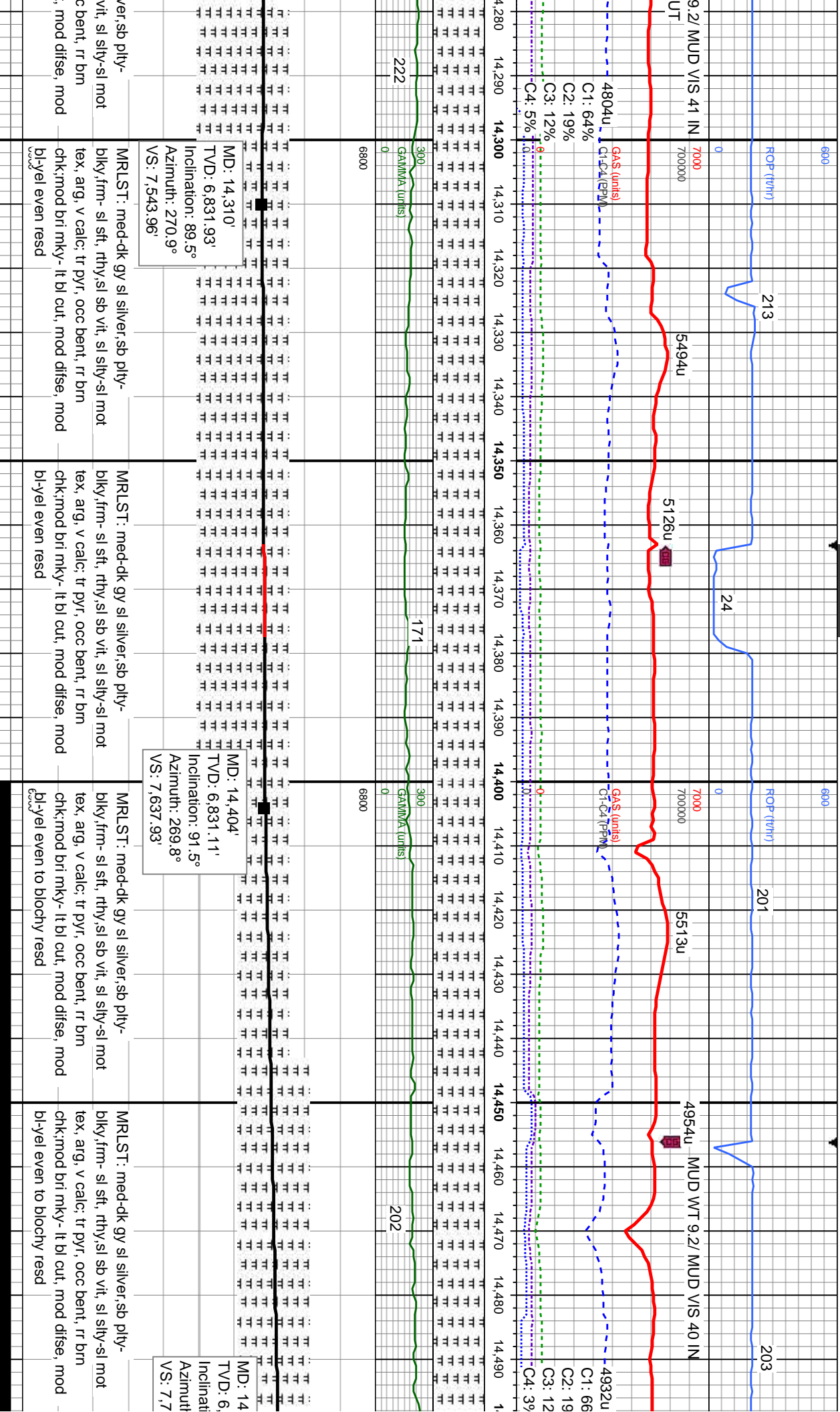
gysbhn occ brn, sb pty-blky,sl frm	CHK: gysbhn occ brn, sb pty-blky,sl frm	CHK: gysbhn occ brn, sb pty-blky,sl frm	CHK: med gy -gysbhn occ brn, sb pty-blky,sl frm	CHK: med gy -gysbhn occ brn, sb pty-blky,sl frm
rthy-sl wxy, mot, v calc, tr inoc;	-frm, sl rthy-sl wxy, mot, v calc, tr inoc;	-frm, sl rthy-sl wxy, mot, v calc, tr inoc;	pty-blky,sl frm -frm, sl rthy-sl wxy, mot, v calc, tr inoc;	pty-blky,sl frm -frm, sl rthy-sl wxy, mot, v calc, tr inoc;
T: med-dk gy-blk,sb pty-blky,frm,	MRLST: med-dk gy-blk,sb pty-blky,frm,	MRLST: med-dk gy-blk,sb pty-blky,frm,	calc, tr inoc; MRLST: med-dk gy-blk,sb pty-blky,frm,	calc, tr inoc; MRLST: med-dk gy-blk,sb pty-blky,frm,
slty tex, v arg, v calc; tr bent, tr	rthy, sl slty tex, v arg, v calc; tr bent, tr	rthy, sl slty tex, v arg, v calc; tr bent, tr	pty-blky,frm, rthy, sl slty tex, v arg, v calc; tr bent;mod bri mky- lt bl cut, mod difse, mod	pty-blky,frm, rthy, sl slty tex, v arg, v calc; tr bent;mod bri mky- lt bl cut, mod difse, mod
nd bri mky- lt bl cut, mod difse, mod	pyr;mod bri mky- lt bl cut, mod difse, mod	pyr;mod bri mky- lt bl cut, mod difse, mod	bl-vel even resd	bl-vel even resd

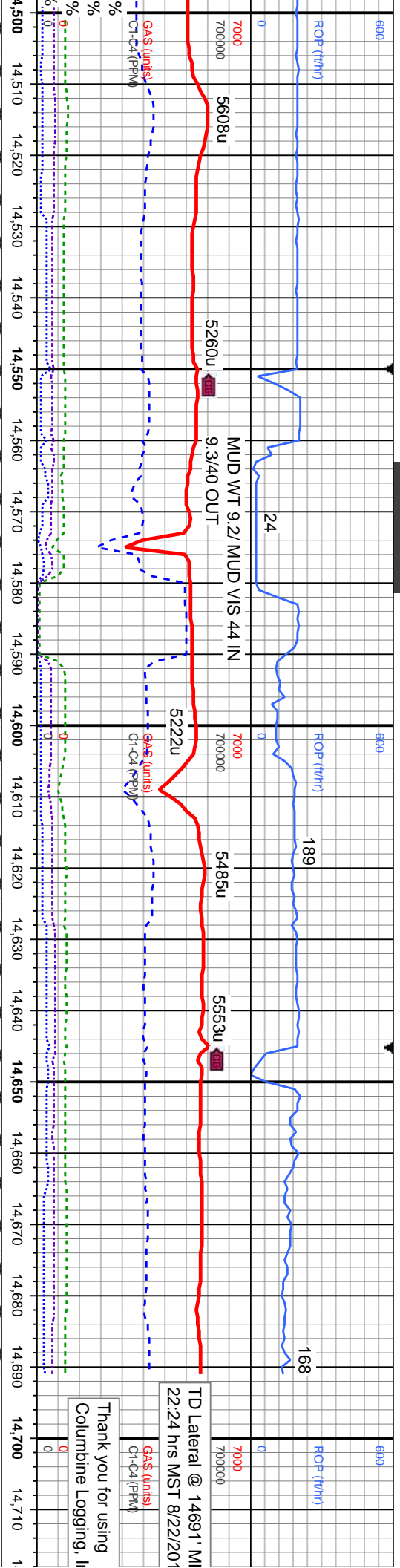






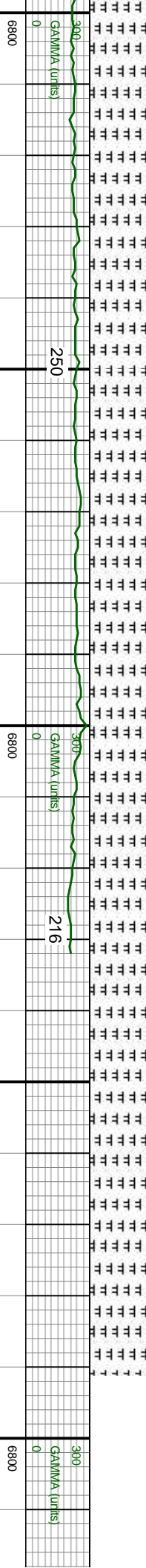






TD Lateral @ 14691' MD
22:24 hrs MST 8/22/201

Thank you for using
Columbine Logging, LLC



499'	MD: 14,593'	MD: 14,636'	MD: 14,691'
827.55'	TVD: 6,824.27'	TVD: 6,823.37'	TVD: 6,822.21'
ON: 92.8°	Inclination: 91.2°	Inclination: 91.2°	Inclination: 91.2°
I: 269.6°	Azimuth: 269.5°	Azimuth: 269.1°	Azimuth: 269.1°
332.86'	VS: 7,826.8'	VS: 7,869.79'	VS: 7,924.78'

MRSLT: med-dk gy sl silver, sb pty- blky, frm- sl sft, rthy, sl sb vit, sl slty- sl mot tex, arg, v calc; tr pyr, abnt bent, tr brn chk; mod bri mky- lt bl cut, mod difse, mod bl- yel even to blochy reed	MRSLT: med-dk gy sl silver, sb pty- blky, frm- sl sft, rthy, sl sb vit, sl slty- sl mot tex, arg, v calc; tr pyr, abnt bent, tr brn chk; mod bri mky- lt bl cut, mod difse, mod bl- yel even to blochy reed	MRSLT: med-dk gy sl silver, sb pty- blky, frm- sl sft, rthy, sl sb vit, sl slty- sl mot tex, arg, v calc; tr pyr, occ bent, tr brn chk; mod bri mky- lt bl cut, mod difse, mod bl- yel even to blochy reed	MRSLT: med-dk gy sl silver, sb pty- blky, frm- sl sft, rthy, sl sb vit, sl slty- sl mot tex, arg, v calc; tr pyr, abnt bent, tr brn chk; mod bri mky- lt bl cut, mod difse, mod bl- yel even to blochy reed
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