



Scale: 5" / 100'  
Measured Depth Log

Well Name    Seventy Holes T-P-5HNB

Location    SESE 5 T4N 62W

State    Colorado

Country    USA

API Number    05-123-37579

Region    DJ Basin

Spud Date    9/12/2013

Surface Coordinates    485' FSL 799' FEL (Lat: 40.33534, 104.34291)

Bottom Hole Coordinates    470' FNL 1312' FEL (Lat: 40.34769, 104.34556)

County    Weld

Rig Number    Ensign 128

Field    Wattenberg

Drilling Completed    9/22/2013

Ground Elevation	4531'	K.B. Elevation	4546'
Logged Interval	5850'	To	10952'
		Total Depth	10952'

Formation    Niobrara B-Chalk

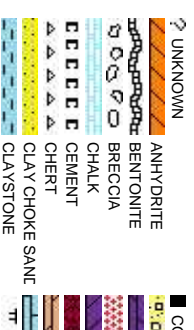
Type of Drilling Fluid    H2O, LSND

Company    Bonanza Creek

Name    Paul McKay

Company    Bonanza Creek

Address    410 17th Street  
Denver, CO 80202



# Operator

Energy Inc.

# Geologist

Energy Inc.

Suite 1500  
202

## Rock Types

DAL	SHALY SILTSTONE
CONGLOMERATE	SILTY SHALE
DOLOMITE	SILTSTONE
GRANITE	TILL
GYPSUM	TUFF
IGNEOUS	WELDED TUFF
SIDERITE or LIMONITE	
LIMESTONE	
MARLSTONE	
SHALE GRAY	
SHALY SANDSTONE	

## Accessories

[illegible]

## Other Symbols

<b>Oil Show</b>	MOLDIC	FAULT	WIRELINE TESTED - LEFT	<b>E</b> EARTHY
ORGANIC	FORMATION TOP	WIRELINE TESTED - RT	<b>FX</b> FINELYXLYN	
DEAD	GAS SHOW		<b>GS</b> GRAINSTONE	
EVEN	VUGGY	MIN DEPTH	<b>Rounding</b>	<b>L</b> LITHOGRAPHIC
QUESTIONABLE	NORMAL FAULT	ANGULAR		<b>MX</b> MICROLYN
SPOTTED STAINING	OIL SHOW	ROUNDED		<b>MS</b> MUDSTONE
<b>Porosity</b>	BIT	OVERTURNED STRATA	SUBANG	<b>PS</b> PACKSTONE
EARTHY	CONNECTION (LEFT)	REVERSE FAULT	SUBRAND	<b>WS</b> WACKESTONE
FENESTRAL	CONNECTION (RIGHT)	SIDEWALL CORE (LEFT)		
FRACTURE	CONNECTION GAS	SIDEWALL CORE (RIGHT)	<b>Textures</b>	
INTERCRYSTALLINE	CORE - LOST	SLIDE	<b>BS</b> BOUNDSTONE	<b>Sorting</b>
INTEROOLITIC	CORE - RECOVERED	SURVEY	CHALKY	<b>M</b> MODERATE
	DST INTERVAL	TRIP GAS	CRYPTOXLYN	<b>P</b> POOR
				<b>W</b> WELL

Slide/Rotate

ROP  
ROF  
GAMMA

Bit Data  
Bit #: 3  
Type: HE04JMRSV  
Size: 8.75  
Depth In: 5659' ,  
Hours: 1 hrs  
Jets: 3/20  
S/N: 1376483

Total Gas & Chromatograph

GAS  
C1  
C2  
C3  
C4  
CO2

COLUMBINE LOGGING  
RIGGED UP ON 09/17/2013  
MANNED 2-PERSON  
LOGGING WITH  
BLOODHOUND GAS  
CHROMATOGRAPH UNIT  
#0680 BEGAN ON 09/18/2013

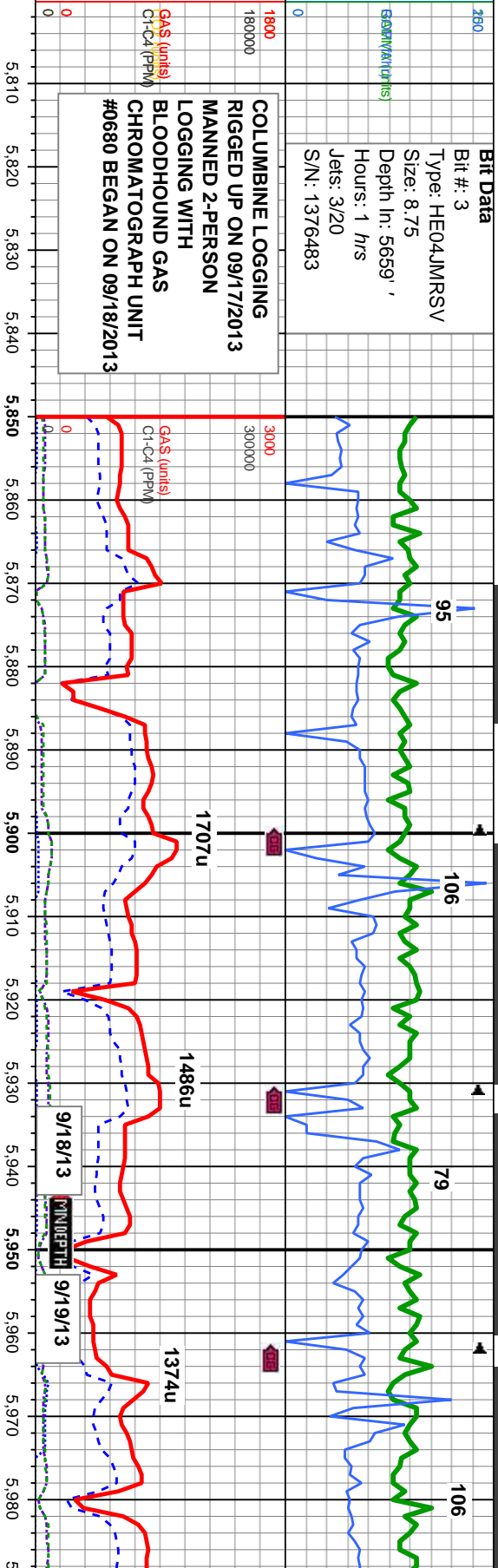
Depth Labels

% Lith

Well Bore  
TVD

Oil Show

Images



5000

5,810 5,820 5,830 5,840 5,850 5,860 5,870 5,880 5,890 5,900 5,910 5,920 5,930 5,940 5,950 5,960 5,970 5,980

5800

MD: 5,879' TVD: 5,821.66' Inclination: 20.2° Azimuth: 354.4° VS: -330.88'

MD: 5,911' TVD: 5,851.47' Inclination: 22.6° Azimuth: 354.6° VS: -318.19'

MD: 5,942' TVD: 5,879.74' Inclination: 25.9° Azimuth: 356° VS: -305.51'

MD: 5,973' TVD: 5,907.25' Inclination: 28.9° Azimuth: 355.3° VS: -291.29'

TVD (ft)

TVD (ft)

80-75% SLTY SH: medgy, occ lt gy - dk gy, mod sft - sl firm, sb blkly - blkly, occ plty, rthy - gt, mix; arg - silty, sl calc, 20-25% SHY SS: off wh - med gy, occ s&p, vf-f gr, sb ang - sb rd, mod srt, mod hd - hd, sb blkly - blkly, mics, sl calc, occ SS

85% SLTY SH: med gy, occ very dk gy, mod sft - sl firm, sb blkly - blkly, occ plty, rthy - gt, mix; arg - silty, calc, tr pyr, occ sdy sh 15% SHY SS: off wh - dk gy, occ s&p, vf-f gr, sb ang - sb rd, mod srt, mod hd - hd, sb blkly - blkly, mics, tr pyr, sl calc, tr SS

85-80% SLTY S sl firm, sb blkly - sl calc, tr pyr, oc dk gy, occ s&p, hd - hd, sb blkly

6000

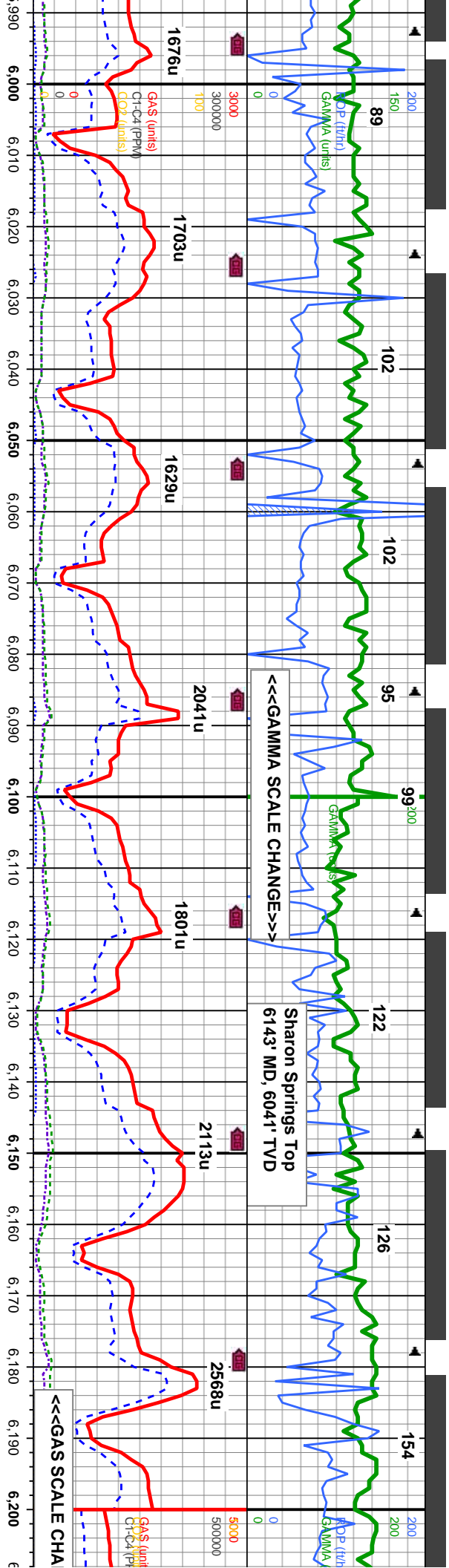
TR  
P  
FR  
G  
E

Oil Show

Images

Images





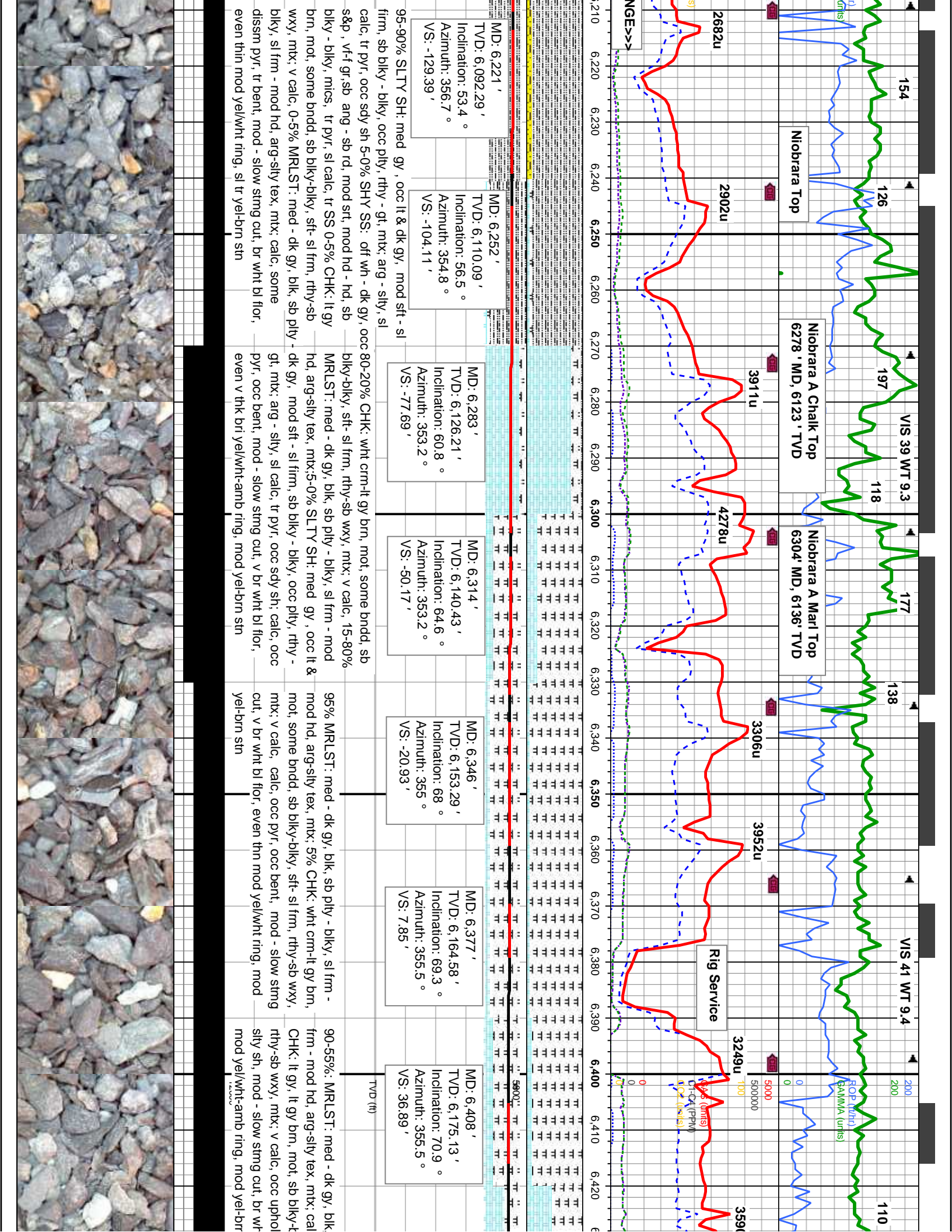
MD: 6.002 ' TVD: 5.932.2 ' Inclination: 32.4 ° Azimuth: 355.3 ° VS: -276.56 '	MD: 6.034 ' TVD: 5.958.8 ' Inclination: 35.1 ° Azimuth: 354.6 ° VS: -258.83 '	MD: 6.064 ' TVD: 5.982.84 ' Inclination: 38.4 ° Azimuth: 354.1 ° VS: -240.92 '	MD: 6.096 ' TVD: 6.007.46 ' Inclination: 41 ° Azimuth: 354.1 ° VS: -220.52 '	MD: 6.127 ' TVD: 6.030.29 ' Inclination: 44.1 ° Azimuth: 354.4 ° VS: -199.6 '	MD: 6.158 ' TVD: 6.051.98 ' Inclination: 47.1 ° Azimuth: 355.7 ° VS: -177.52 '	MD: 6.190 ' TVD: 6.073.12 ' Inclination: 50.2 ° Azimuth: 356.6 ° VS: -153.61 '
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Hi: med gy, occ very dk gy, mod sft - 85-90% SLTY SH: lt gy-med gy, occ dk gy, mod sft - 95% SLTY SH: med gy, occ dk gy, mod sft - sl firm, firm, sb blkly - blkly, occ pily, rthy - gt, mt; arg - slty, sl calc, tr pyr, occ sdy sh 5% SHY SS: off wh - dk gy, occ s&p, v-f gr-sb ang - sb rd, mod srt, mod hd - hd, sb blkly - blkly, mics, v tr pyr, sl calc, tr SS

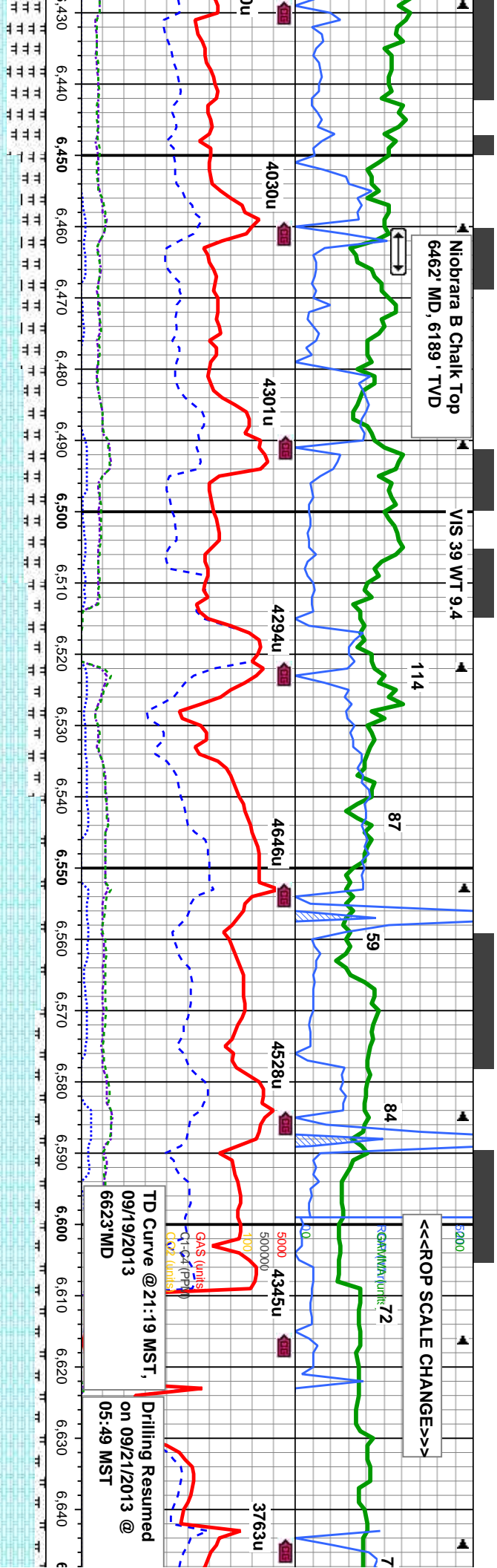
blkly, med gy, occ pily, rthy - gt, mt; arg - slty, sl calc, tr pyr, occ sdy sh 15-20% SHY SS: off wh - dk gy, occ s&p, v-f gr-sb ang - sb rd, mod srt, mod hd - hd, sb blkly - blkly, mics, v tr pyr, sl calc, tr SS











MD: 6.439 ' TVD: 6,184.29 ' Inclination: 74.7 ° Azimuth: 355.3 ° VS: 66.4 '	MD: 6.471 ' TVD: 6,191.79 ' Inclination: 78.2 ° Azimuth: 354.8 ° VS: 97.42 '	MD: 6.502 ' TVD: 6,197.28 ' Inclination: 81.4 ° Azimuth: 354.6 ° VS: 127.85 '	MD: 6.533 ' TVD: 6,201.43 ' Inclination: 83.2 ° Azimuth: 354.6 ° VS: 158.49 '	MD: 6.564 ' TVD: 6,204.46 ' Inclination: 85.6 ° Azimuth: 354.8 ° VS: 189.27 '	MD: 6.573 ' TVD: 6,205.07 ' Inclination: 86.6 ° Azimuth: 355 ° VS: 198.22 '	MD: 6.622 ' TVD: 6,206.52 ' Inclination: 90 ° Azimuth: 356 ° VS: 247.02 '
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sb pily - blkly, sl c, tr pyr 10-45% blkly, sft- sl frm, e contaminants of it bl flr, even thk

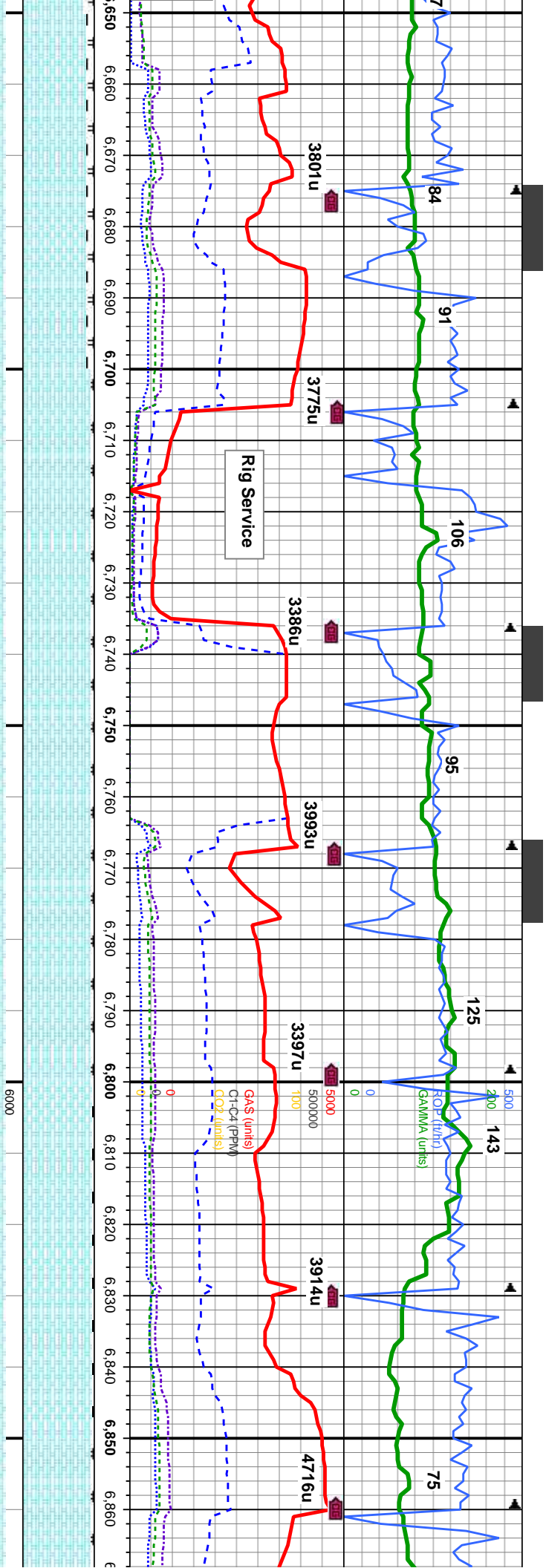
65-70% CHK: lt gy, lt gy brn, mot, sb blkly-blky, sft- sl frm, rthy-sb wxy, mtx: v calc, occ uphole contaminants of silty sh and sh ss, tr bent 35-30% MRLST: med - dk gy, blk, sb pily - blkly, sl frm - mod hd, arg-sily tex, occ bndd, mtx: calc, tr pyr, mod - slow sting cut, br wht bl flr, even thk mod yel/wht-amb ring, mod yel-brn stn

93-75% CHK: lt gy, lt gy brn, mot, sb blkly-blky, sft- sl frm, rthy-sb wxy, mot, mtx: v calc, occ uphole contaminants of silty sh 7-25% MRLST: med - dk gy, blk, sb pily - blkly, sl frm - mod hd, arg-sily tex, occ sl bndd, mtx: calc, tr pyr, occ rex cal, mod - slow sting cut, br wht bl flr, even thk mod yel/wht-amb ring, mod yel-brn stn

85-90% CHK: lt gy- med gy, occ dk gy wxy, mot, mtx: v calc, 15-10%: MRLST mod hd, arg-sily tex, occ bndd, mtx: m sting cut, br wht bl flr, even thk mod y







6,652' MD: 6,683' TVD: 6,205.96' Inclination: 90.9° Azimuth: 355.8° VS: 307.77'	6,714' MD: 6,745' TVD: 6,205.47' Inclination: 89.9° Azimuth: 356° VS: 369.51'	6,776' MD: 6,806' TVD: 6,205.84' Inclination: 89.7° Azimuth: 356.6° VS: 430.2'	6,837' MD: 6,867' TVD: 6,205.87' Inclination: 90.2° Azimuth: 356.2° VS: 461.05'	6,898' MD: 6,928' TVD: 6,205.87' Inclination: 90.2° Azimuth: 356.2° VS: 491.05'
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mot, sb blk-y-bkly, sft- sl frm, rthy-sb  
med - dk gy/bkly, sb pty - blkly, sl frm -  
mod g calc, con with cmt, mod - slow  
el/wht-amb ring, mod yel-brn stn

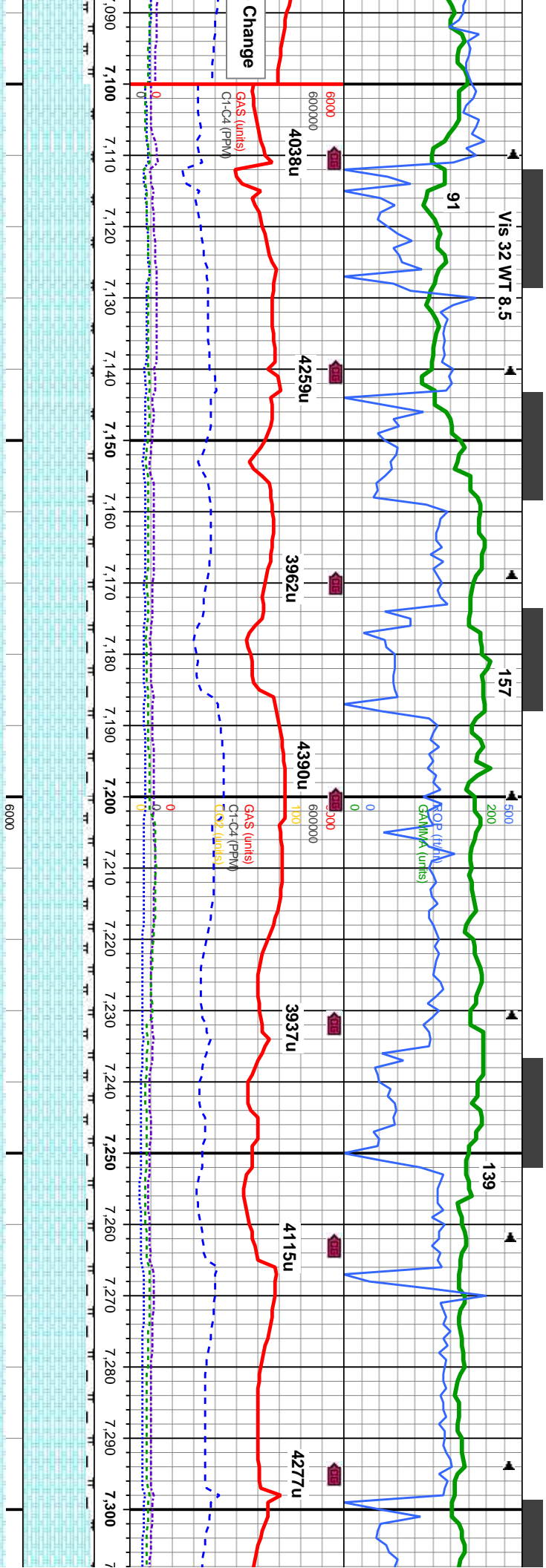
95% CHK: lt gy- med gy, lt brn, occ dk gy, mot, sb blk-y-bkly, sft- sl frm, rthy-sb  
wxy, mot, mtk, v calc, 5%: MRLST: med - dk gy/bkly, sb pty - blkly, sl frm - mod hd,  
arg-sltly tex, occ bndd, mtk: mod g calc, scat inoc fos, mod - slow stmg cut, br  
wht bl flor, even thk mod yel/wht-amb ring, mod yel-brn stn

97-95% CHK: lt gy- med gy, lt brn, mot, sb blk-y-bkly, sft-  
mtk, v calc, 3-5%: MRLST: med - dk gy/bkly, sb pty - blkly,  
tex, occ bndd, mtk: mod g calc, scat inoc fos, v fst stmg  
wht/yw ring, v thk yw-brn stn



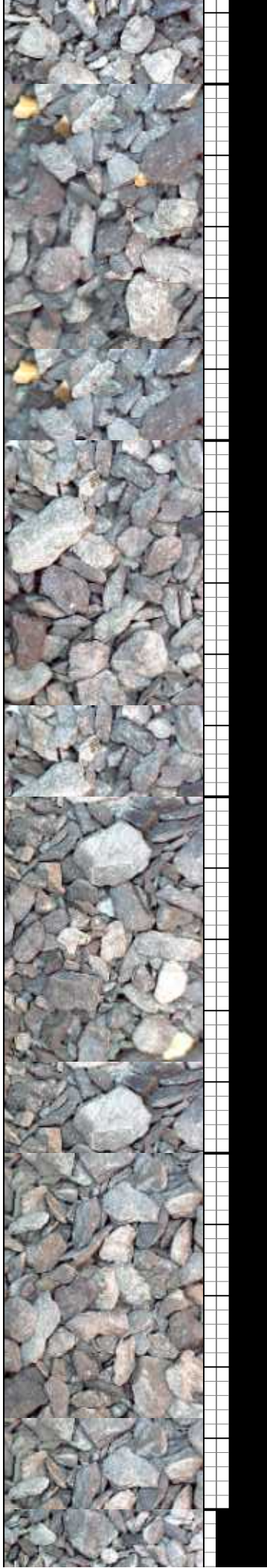




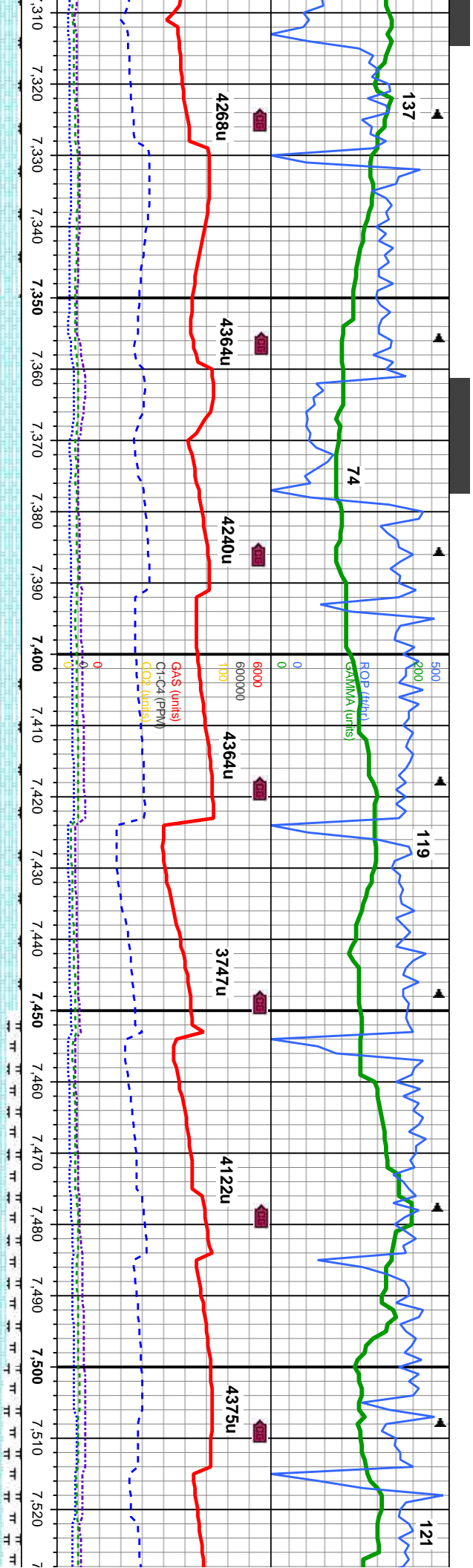


MD: 7,115 ' TVD: 6,202.08 ' Inclination: 91.1 ° Azimuth: 358 ° VS: 737.34 '	MD: 7,147 ' TVD: 6,201.66 ' Inclination: 90.4 ° Azimuth: 357.8 ° VS: 769.08 '	MD: 7,178 ' TVD: 6,201.74 ' Inclination: 89.3 ° Azimuth: 357.4 ° VS: 799.85 '	MD: 7,209 ' TVD: 6,201.96 ' Inclination: 89.9 ° Azimuth: 357.3 ° VS: 830.64 '	MD: 7,240 ' TVD: 6,202.31 ' Inclination: 88.8 ° Azimuth: 357.6 ° VS: 861.42 '	MD: 7,271 ' TVD: 6,202.85 ' Inclination: 89.2 ° Azimuth: 357.4 ° VS: 892.2 '	MD: 7,302 ' TVD: 6,203.3 ' Inclination: 89 ' Azimuth: 358 ' VS: 922.96 '
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95-90% CHK: med gy- lt gy, occ bnnd, sb blk-y-blky, sft- sl frm, rthy-sb wxy, mot, mtk; v calc 5-10% MRLST: dk gy-blk, blk-y-sb blk-y, sl frm - mod hd, arg-sily tex, occ bnnd, occ gritty, mtk; mod calc, occ bent, some imbd and scat cal frags, some flor, g od, mod - slow sting cut, br wht bl flor, even thk mod yel/wht-amb ring, mod yel-brn stn







MD: 7,333 '  
TVD: 6,203.88 '  
Inclination: 88.8 °  
Azimuth: 358 °  
VS: 953.7 '

MD: 7,364 '  
TVD: 6,204.66 '  
Inclination: 88.3 °  
Azimuth: 358.5 °  
VS: 984.42 '

MD: 7,394 '  
TVD: 6,205.45 '  
Inclination: 88.7 °  
Azimuth: 358.7 °  
VS: 1,014.12 '

MD: 7,424 '  
TVD: 6,206.1 '  
Inclination: 88.8 °  
Azimuth: 358.1 °  
VS: 1,043.84 '

MD: 7,455 '  
TVD: 6,206.62 '  
Inclination: 89.3 °  
Azimuth: 358 °  
VS: 1,074.58 '

MD: 7,486 '  
TVD: 6,206.86 '  
Inclination: 89.8 °  
Azimuth: 357.8 °  
VS: 1,105.34 '

MD: 7,517 '  
TVD: 6,206.86 '  
Inclination: 90.2 °  
Azimuth: 357.8 °  
VS: 1,136.1 '

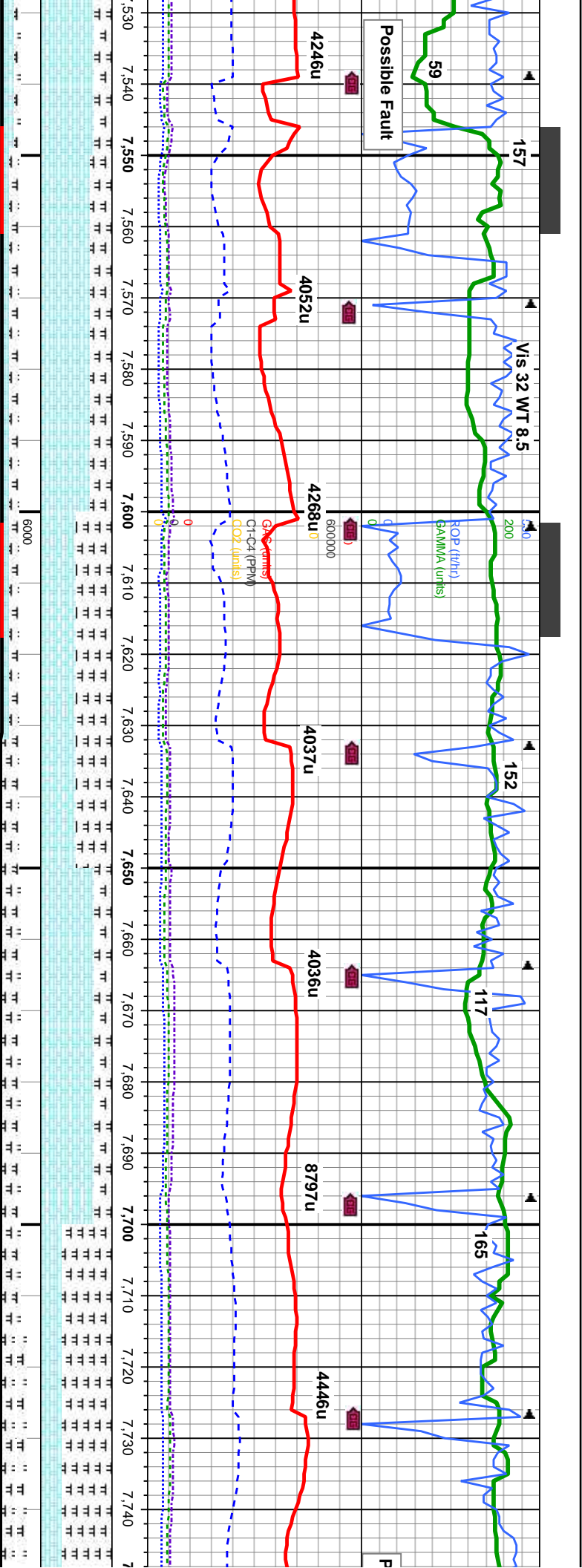
6% CHK: med gy- lt gy, occ bndd, sb blkly-blkly, sft- sl frm, rthy-sb wxy, mot, mtix; v calc  
MRLST: dk gy-blk, blkly-sb blkly, sl frm - mod hd, arg-sily tex, occ bndd, occ grtty,  
mod calc, tr rex cal, some flor, g od, very fst streaming cut, br white blue  
esence, even br thick white/yw ring, very thick ylw-brown stain

95-80% CHK: med gy- lt gy, occ bndd, sb blkly-blkly, sft- sl frm, rthy-sb wxy, mot, mtix; v  
calc 5-15% MRLST: dk gy-blk, blkly-sb blkly, sl frm - mod hd, arg-sily tex, occ bndd, occ  
grtty, mtix: mod calc, tr scat and embdd pyr, g flor, g od, very fst streaming cut, bright  
80% white blue fluorescence, even bright thick white/yw ring, thick ylw-brown stain

95-70% CHK: med gy- lt  
mtix; v calc 5-30% MRLST  
occ grtty, mtix: mod calc  
fluorescence, even bright







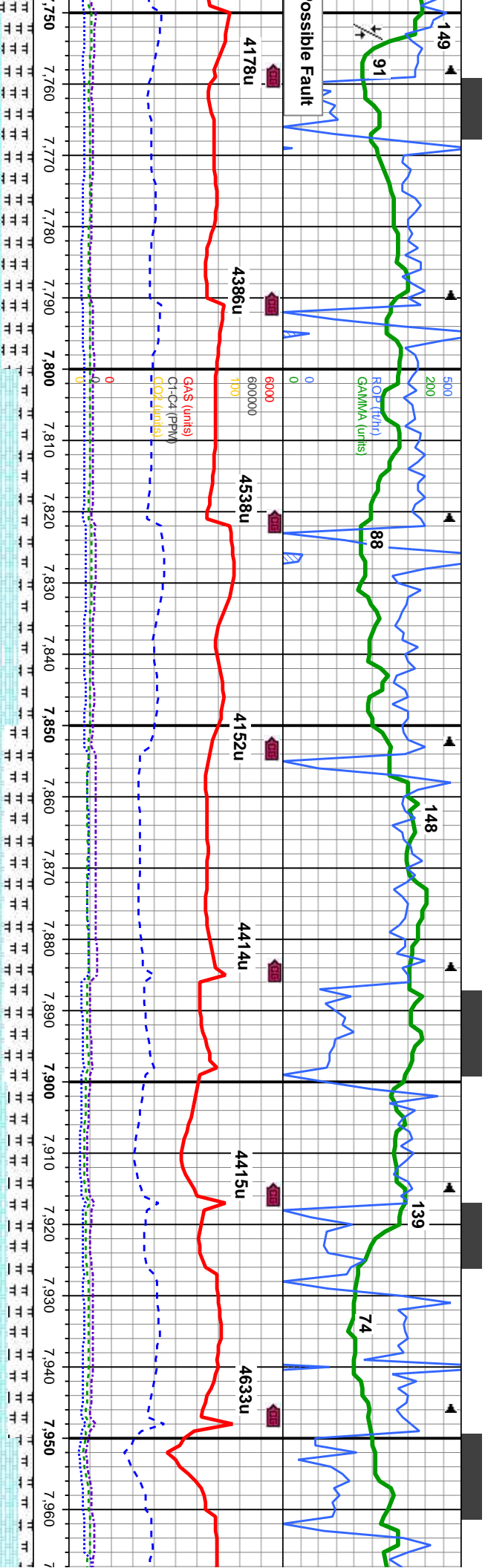
MD: 7,549 ' TVD: 6,206.86 ' Inclination: 89.8 ° Azimuth: 358.3 ° VS: 1,167.83 '	MD: 7,580 ' TVD: 6,206.94 ' Inclination: 89.9 ° Azimuth: 358.3 ° VS: 1,198.56 '	MD: 7,611 ' TVD: 6,207.16 ' Inclination: 89.3 ° Azimuth: 358.8 ° VS: 1,229.27 '	MD: 7,642 ' TVD: 6,207.53 ' Inclination: 89.3 ° Azimuth: 359 ° VS: 1,259.95 '	MD: 7,673 ' TVD: 6,207.86 ' Inclination: 89.5 ° Azimuth: 358.8 ° VS: 1,290.62 '	MD: 7,705 ' TVD: 6,207.97 ' Inclination: 90.1 ° Azimuth: 359 ° VS: 1,322.3 '	MD: 7,736 ' TVD: 6,207.75 ' Inclination: 90.7 ° Azimuth: 358.8 ° VS: 1,352.98 '
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50-75% CHK: med gy- lt brn, occ bndd, sb blk-y-biky, sft- sl frm, rthy-sb wxy, mot, wxy, mot, mtx; v calc 50-25% MRLST: dk gy-blk, blk-y-sb biky, sl frm - mod hd, arg-sly tex, occ bndd, occ grtly, mtx; mod calc, tr pyr, some flor, g od, mod string cut, mod wht bl flor, dull mod yel/wht-amb ring, mod yel-brn sin

70-55% MRLST: dk gy-blk, blk-y-sb biky, occ grtly, mtx; mod calc, 30-45% CHK: blk-y-biky, sft- sl frm, rthy-sb wxy, mot, m cut, mod wht bl flor, dull mod yel/wht-amb







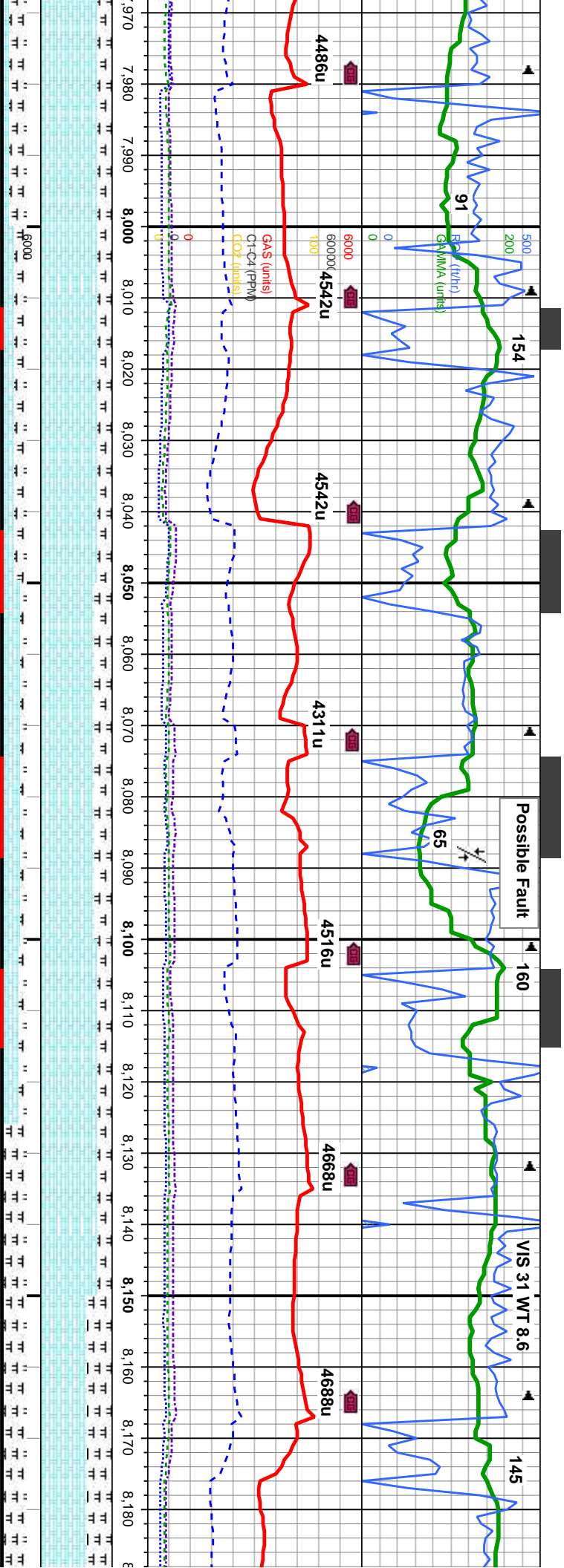
MD: 7,767 ' TVD: 6,207.46 ' Inclination: 90.4 ° Azimuth: 358.5 ° VS: 1,383.68 '	MD: 7,799 ' TVD: 6,207.18 ' Inclination: 90.6 ° Azimuth: 358 ° VS: 1,415.4 '	MD: 7,830 ' TVD: 6,206.72 ' Inclination: 91.1 ° Azimuth: 357.8 ° VS: 1,446.15 '	MD: 7,861 ' TVD: 6,205.91 ' Inclination: 91.9 ° Azimuth: 357.6 ° VS: 1,476.9 '	MD: 7,893 ' TVD: 6,204.96 ' Inclination: 91.5 ° Azimuth: 356.9 ° VS: 1,508.68 '	MD: 7,924 ' TVD: 6,204.34 ' Inclination: 90.8 ° Azimuth: 357.1 ° VS: 1,539.48 '	MD: 7,955 ' TVD: 6,204.12 ' Inclination: 90 ° Azimuth: 357.4 ° VS: 1,570.28 '
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80-60% CHK: med gy- lt gy, occ lt brn, occ bnnd, sb blk- blk, sft- sl frm, rthy-sb wxy, mot, mtx; v calc, 20-40% MRLST: dk gy- blk, blk- sb blk, sl frm - mod hd, arg-sily tex, occ bnnd, occ grity, mtx: mod calc, occ inoc fos, occ sec cal, tr pyr, g chk flr, tr od, mod stmg cut, mod wht bl flr, mod yel/wht-amb ring, mod-thk b ring, mod yel-brn residue

80-65% CHK: med gy- lt gy, occ lt brn, occ bnnd, sb blk- blk, mot, mtx; v calc, 20-35% MRLST: dk gy- blk, blk- sb blk, sl frm bnnd, occ grity, mtx: mod calc, occ inoc fos, occ sec cal, tr pyr stmg cut, mod wht bl flr, mod yel/wht-amb ring, v thk stain







MD: 7,986 ' TVD: 6,204.04 ' Inclination: 90.3 ° Azimuth: 357.4 ° VS: 1,601.07 '	MD: 8,017 ' TVD: 6,203.85 ' Inclination: 90.4 ° Azimuth: 357.4 ° VS: 1,631.85 '	MD: 8,048 ' TVD: 6,203.74 ' Inclination: 90 ° Azimuth: 357.1 ° VS: 1,662.65 '	MD: 8,079 ' TVD: 6,203.9 ' Inclination: 89.4 ° Azimuth: 357.1 ° VS: 1,693.45 '	MD: 8,110 ' TVD: 6,204.25 ' Inclination: 89.3 ° Azimuth: 357.4 ° VS: 1,724.25 '	MD: 8,141 ' TVD: 6,204.55 ' Inclination: 89.6 ° Azimuth: 357.4 ° VS: 1,755.03 '	MD: 8,172 ' TVD: 6,204.85 ' Inclination: 89.3 ° Azimuth: 356.9 ° VS: 1,785.83 '
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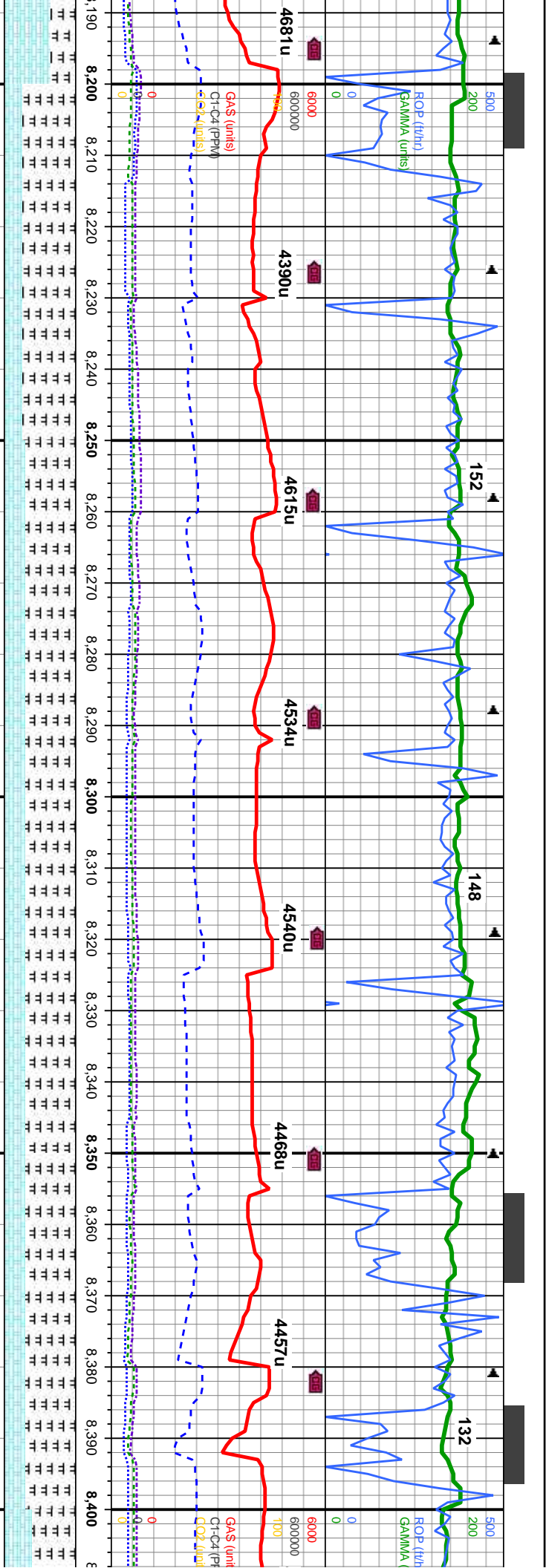
sft- sl frm, rthy-sb wxy,  
- mod hd, arg-sily tex, occ  
g chk flor, tr od, fast

80-75% CHK: med gy- lt gy, occ lt brn, occ sl bnnd, sb blk- blk, sft- sl frm, rthy-sb wxy,  
mot, mtx: v calc 20-25% MRLST: dk gy- blk, blk- sb blk, sl frm - mod hd, arg-sily tex, occ  
bnnd, occ grity, mtx: mod calc, occ sec cal, tr pyr, g chk flor, g od, mod- fast sting cut,  
mod wht bl flor, thin uneven yel/wht-amb ring, sl tr stain

85-65% CHK: med gy- lt gy, occ lt brn, occ sl bnnd, sb blk- blk, sft- sl frm, rthy-s  
mot, mtx: v calc 15-35% MRLST: dk gy- blk, blk- sb blk, sl frm - mod hd, arg-sily  
bnnd, occ grity, mtx: mod calc, occ sec cal, inoc fos, occ bnnd pyr, g chk flor, g o  
fast sting cut, mod wht bl flor, thin uneven yel/wht-amb ring, sl tr stain







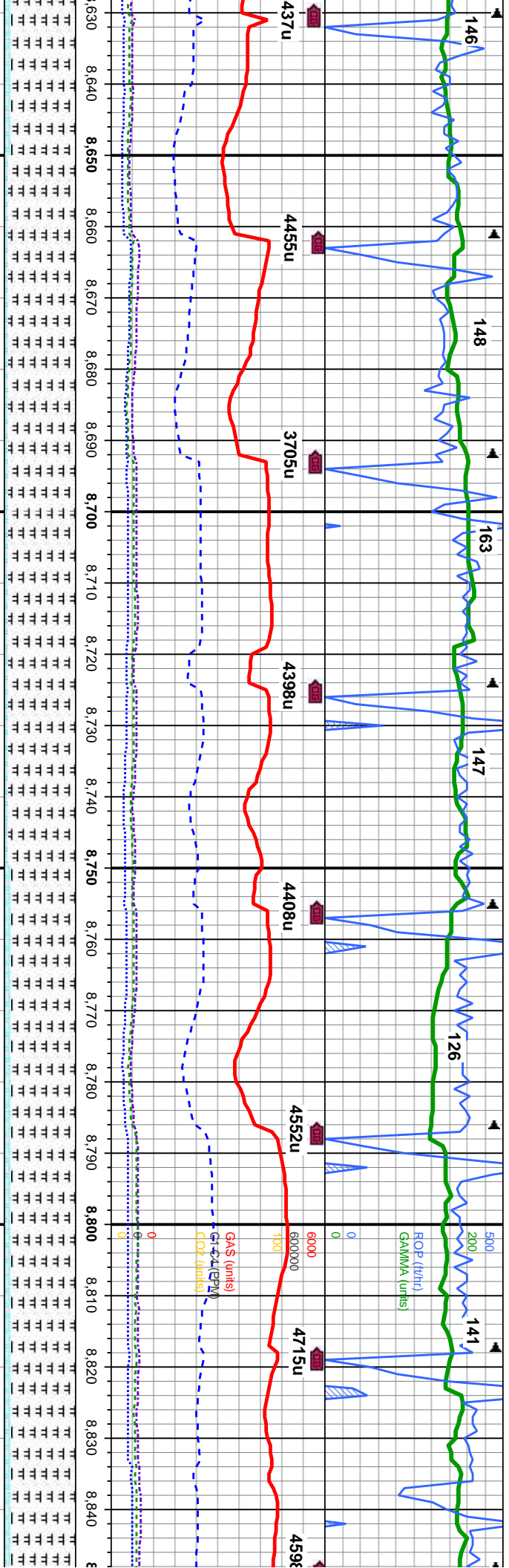
MD: 8,203 ' TVD: 6,205.36 ' Inclination: 88.8 ° Azimuth: 356.9 ° VS: 1,816.65 '	MD: 8,235 ' TVD: 6,205.98 ' Inclination: 89 ° Azimuth: 356.6 ° VS: 1,848.46 '	MD: 8,266 ' TVD: 6,206.44 ' Inclination: 89.3 ° Azimuth: 356.2 ° VS: 1,879.3 '	MD: 8,297 ' TVD: 6,206.68 ' Inclination: 89.8 ° Azimuth: 356.2 ° VS: 1,910.16 '	MD: 8,328 ' TVD: 6,206.6 ' Inclination: 90.5 ° Azimuth: 356.2 ° VS: 1,941.02 '	MD: 8,359 ' TVD: 6,206.27 ' Inclination: 90.7 ° Azimuth: 356.4 ° VS: 1,971.86 '	MD: 8,390 ' TVD: 6,206.03 ' Inclination: 90.2 ° Azimuth: 356.6 ° VS: 2,002.7 '
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b wxy, tex, occ d, mod-	75-70% MRLST: dk gy-blk, blk-y-sb blk-y, sl frm - mod hd, arg-sily tex, occ bnnd, gritty, mtx, mod calc, 25-30% CHK: med gy- lt gy, occ gy bn, sb blk-y-blky, sft- sl frm, rthy-sb wxy, mot, mtx: v calc, occ sec cal, tr inoc fos, tr bent, tr pyr, mod- fast stmg 800c	70% MRLST: dk gy-blk, blk-y-sb blk-y, sl frm - mod hd, arg-sily tex, occ bnnd, gritty, mtx, mod calc 30% CHK: med gy- lt gy, occ gy bn, sb blk-y-blky, sft- sl frm, rthy-sb wxy, mot, mtx: v calc, occ sec cal, tr pyr, slow-mod stmg cut, mod wht bl flor, mod even 800c	60% mtx mot Whit
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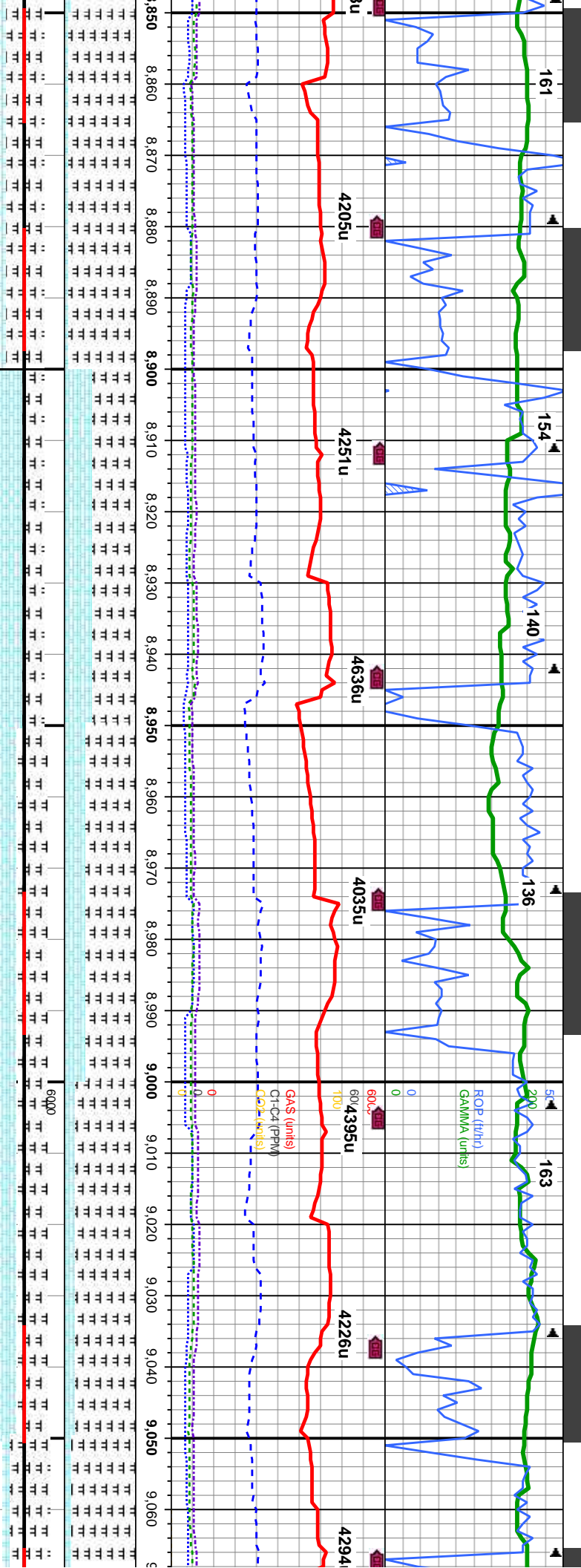
MD: 8.639 ' TVD: 6,208.61 ' Inclination: 88.3 ° Azimuth: 356.6 ° VS: 2,250.29 '	MD: 8.671 ' TVD: 6,209.5 ' Inclination: 88.5 ° Azimuth: 356 ° VS: 2,282.12 '	MD: 8.702 ' TVD: 6,210.26 ' Inclination: 88.7 ° Azimuth: 355.7 ° VS: 2,312.99 '	MD: 8.733 ' TVD: 6,210.88 ' Inclination: 89 ° Azimuth: 355.7 ° VS: 2,343.86 '	MD: 8.764 ' TVD: 6,211.34 ' Inclination: 89.3 ° Azimuth: 355.3 ° VS: 2,374.75 '	MD: 8.795 ' TVD: 6,211.67 ' Inclination: 89.5 ° Azimuth: 355 ° VS: 2,405.65 '	MD: 8.826 ' TVD: 6,211.96 ' Inclination: 89.4 ° Azimuth: 355 ° VS: 2,436.56 '
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95-90% MRLST: dk gy-blk, blk/sb blk, sl frm - mod hd, arg-sily tex, occ grtly, mtx; mod calc 10-5% CHK: med-dk gy, sb blk/sb blk, sft-si frm, rthy-sb wxy, mot, mtx; v calc, tr sec cal, tr pyr, scat bent, mod g chk flr, g od, mod sting cut, mod wnt bl flr, mod even yel/wht-amb ring, mod thk stain

90-95% MRLST: dk gy-blk, blk/sb blk bndd, grtly, mtx; mod calc 10-5% CH sl frm, rthy-sb wxy, mot, mtx; v calc, tr od, mod sting cut, mod wnt bl flr, mod





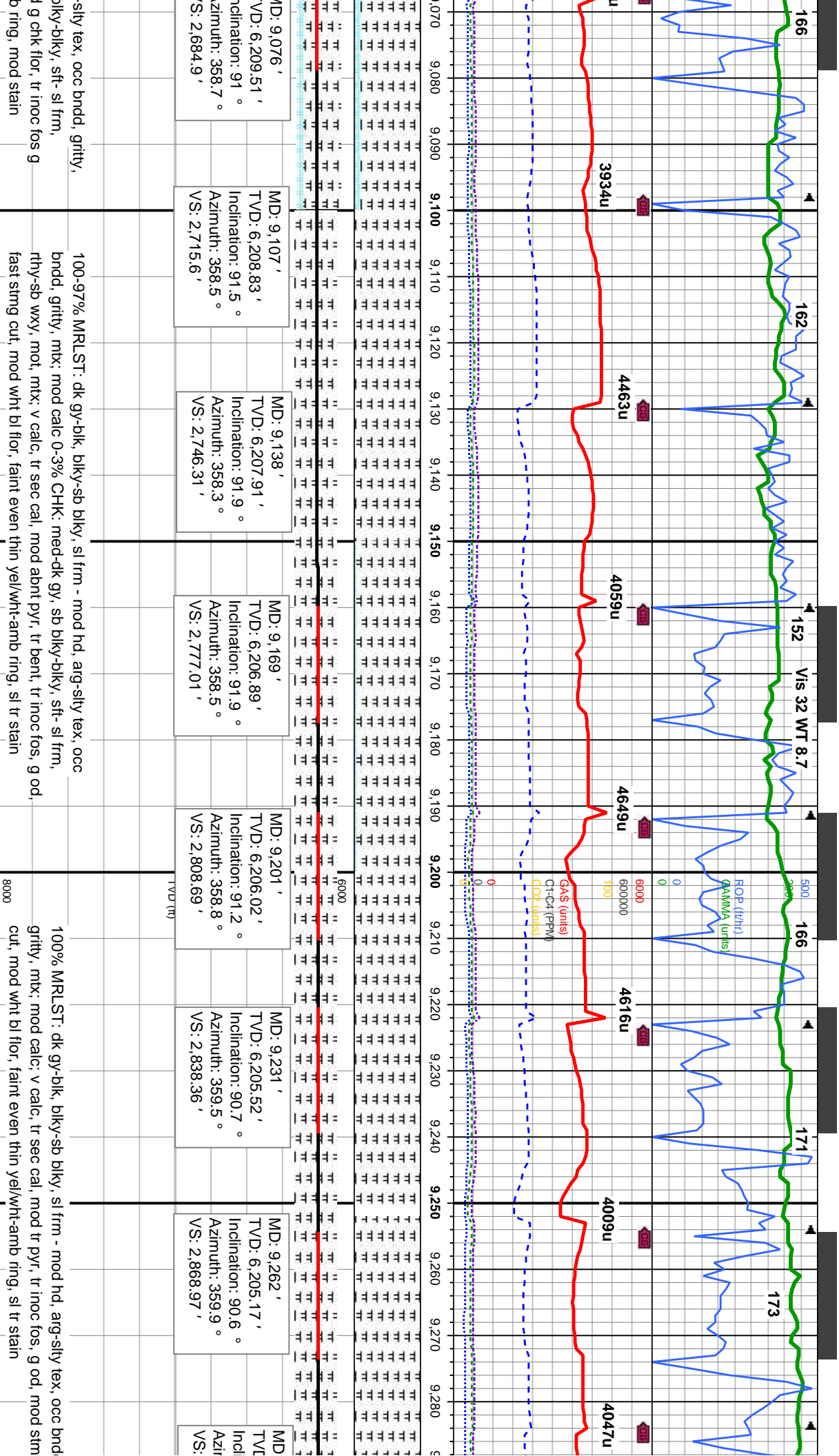


MD: 8,858 ' TVD: 6,212.3 ' Inclination: 89.4 ° Azimuth: 355.5 ° VS: 2,468.46 '	MD: 8,889 ' TVD: 6,212.46 ' Inclination: 90 ° Azimuth: 356.7 ° VS: 2,499.32 '	MD: 8,920 ' TVD: 6,212.46 ' Inclination: 90 ° Azimuth: 356.9 ° VS: 2,530.14 '	MD: 8,951 ' TVD: 6,212.38 ' Inclination: 90.3 ° Azimuth: 356.9 ° VS: 2,560.96 '	MD: 8,982 ' TVD: 6,211.95 ' Inclination: 91.3 ° Azimuth: 357.4 ° VS: 2,591.76 '	MD: 9,013 ' TVD: 6,211.11 ' Inclination: 91.8 ° Azimuth: 358 ° VS: 2,622.52 '	MD: 9,045 ' TVD: 6,210.19 ' Inclination: 91.5 ° Azimuth: 358.7 ° VS: 2,654.22 '
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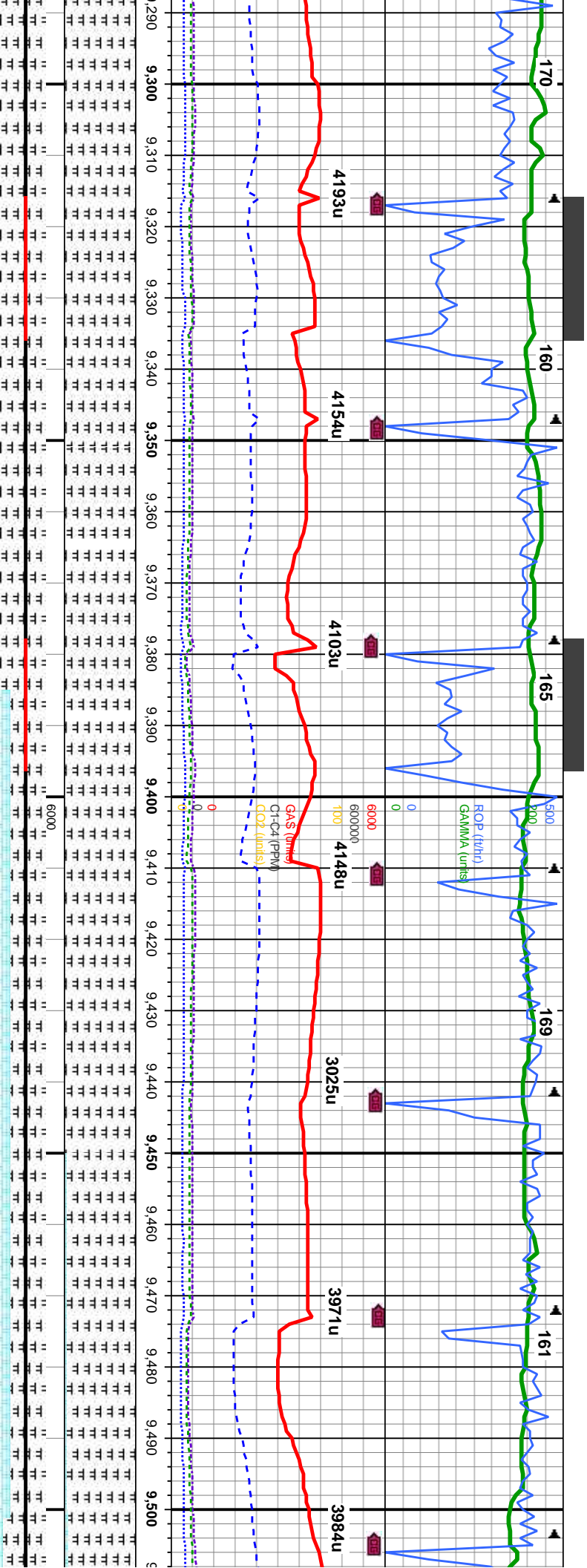
60-70% MRLST: dk gy-blk, blk-y-sb blk-y, sl frm - mod hd, arg-sily tex, occ bndd, gntly, mtx; mod calc 40-30% CHK: lt-dk gy, occ lt-med brn, sb blk-y-blky, sft-si frm, rthy-sb wxy, mot, mtx; v calc, tr sec cal, scat pyr, tr bent, mod g chk flor, tr inoc fos g od, mod-fast stmg cut, mod wht bl flor, thick even yel/wht-amb ring, mod stain

85-90% MRLST: dk gy-blk, blk-y-sb blk-y, sl frm - mod hd, arg-sily tex, occ bndd, gntly, mtx; mod calc 15-10% CHK: med-dk gy, occ lt-med brn, sb blk-y-blky, sft-si frm, rthy-sb wxy, mot, mtx; v calc, tr sec cal, scat pyr, tr bent, mod g chk flor, tr inoc fos g od, mod-fast stmg cut, mod wht bl flor, mod even yel/wht-amb ring, mod stain







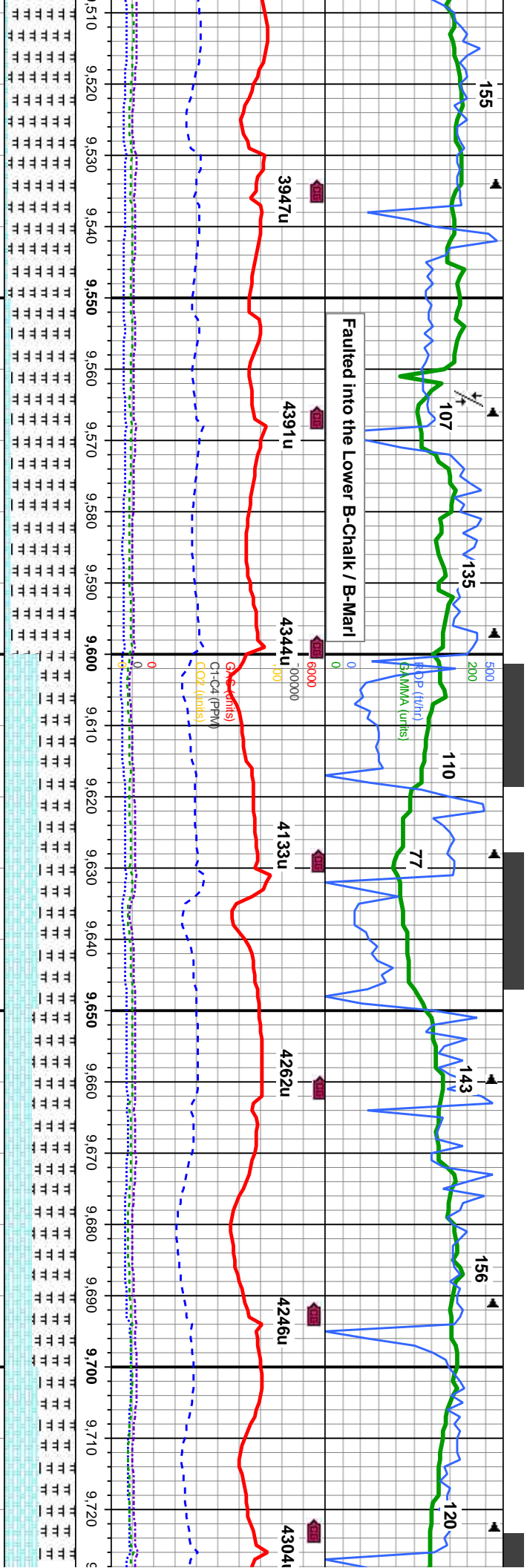


MD: 9,294 ' TVD: 6,204.89 ' Inclination: 90.4 ° Azimuth: 359.4 ° VS: 2,900.58 '	MD: 9,325 ' TVD: 6,204.81 ' Inclination: 89.9 ° Azimuth: 358.8 ° VS: 2,931.24 '	MD: 9,357 ' TVD: 6,204.98 ' Inclination: 89.5 ° Azimuth: 358.3 ° VS: 2,962.94 '	MD: 9,388 ' TVD: 6,205.44 ' Inclination: 88.8 ° Azimuth: 357.1 ° VS: 2,993.71 '	MD: 9,419 ' TVD: 6,206.06 ' Inclination: 88.9 ° Azimuth: 356.7 ° VS: 3,024.52 '	MD: 9,450 ' TVD: 6,206.6 ' Inclination: 89.1 ° Azimuth: 355.8 ° VS: 3,055.37 '	MD: 9,481 ' TVD: 6,206.98 ' Inclination: 89.5 ° Azimuth: 355.7 ° VS: 3,086.24 '	MD: 9,494 ' TVD: 6,207.1 ' Inclination: 89.5 ° Azimuth: 355.7 ° VS: 3,098.24 '
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100% MRLST: dk gy-blk, blk-y-sb blk-y, sl frm - mod hd, arg-sily tex, occ bndd, gritty, mtx; mod calc; v calc, tr sec cal, mod tr pyr, tr inoc fos, g od, fast stmg cut, mod wht bl flor, faint even v thin yel/wht-amb ring, sl tr stain

100-95% MRLST: dk gy-blk, blk-y-sb blk-y, sl frm - mod hd, arg-sily tex, occ bndd, gritty, mtx; mod calc 0-5% CHK: med-dk gy, sb blk-y-blk-y, sft-sl frm, rthy-sb wxy, mot, mtx; v calc, tr sec cal, tr pyr, tr inoc fos, g od, slow stmg-milky cut, mod wht bl flor, faint even thin yel/wht-amb ring, tr stain





A-Marl

B-Marl

MD: 9,513 ' TVD: 6,207.15 ' Inclination: 89.9 ° Azimuth: 355.5 ° VS: 3,118.12 '	MD: 9,544 ' TVD: 6,207.18 ' Inclination: 90 ° Azimuth: 355 ° VS: 3,149.02 '	MD: 9,575 ' TVD: 6,206.99 ' Inclination: 90.7 ° Azimuth: 354.6 ° VS: 3,179.94 '	MD: 9,607 ' TVD: 6,206.74 ' Inclination: 90.2 ° Azimuth: 354.8 ° VS: 3,211.86 '	MD: 9,638 ' TVD: 6,206.87 ' Inclination: 89.3 ° Azimuth: 355.7 ° VS: 3,242.76 '	MD: 9,669 ' TVD: 6,207.11 ' Inclination: 89.8 ° Azimuth: 356.4 ° VS: 3,273.63 '	MD: 9,700 ' TVD: 6,207.11 ' Inclination: 90.2 ° Azimuth: 356.4 ° VS: 3,304.47 '	MD: 9,731 ' TVD: 6,207.11 ' Inclination: 90.2 ° Azimuth: 356.4 ° VS: 3,335.34 '
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95-85% MRLST: dk gy-blk, blk-y-sb blk-y, sl frm - mod hd, arg-silty tex, occ bnnd, gritty, mtx, mod calc 5-15% CHK: med-dk gy, sb blk-y-blk-y, sft- sl frm, rthy-sb wxy, mot, mtx; v calc, tr sec cal, tr pyr, tr bent, tr inoc fos, g od, mod sting cut, mod wht bl flor, mod even thin yel/wht-amb ring, mod stain

50-60% MRLST: dk gy-blk, blk-y-sb blk-y, sl frm - mod hd, arg-silty tex, occ bnnd, gritty, mtx, mod calc 50-40% CHK: med-dk gy, occ lt gy & brn, sb blk-y-blk-y, sft- sl frm, rthy-sb wxy, mot, mtx; v calc, tr sec cal, tr pyr, tr bent, scat inoc fos, g od, mod sting-milky cut, mod wht bl flor, mod even thin yel/wht-amb ring, mod stain

50% MRLST: gritty, mtx; mo wxy, mot, mtx; streaming cut, mod ylw-brown

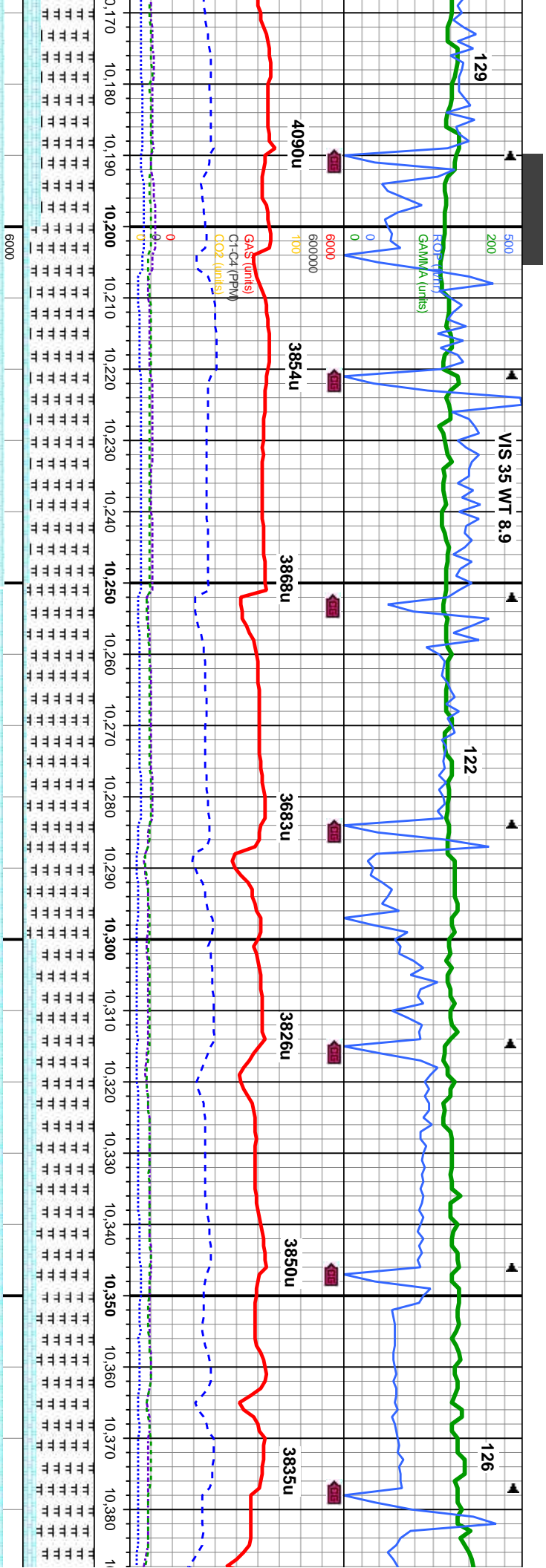










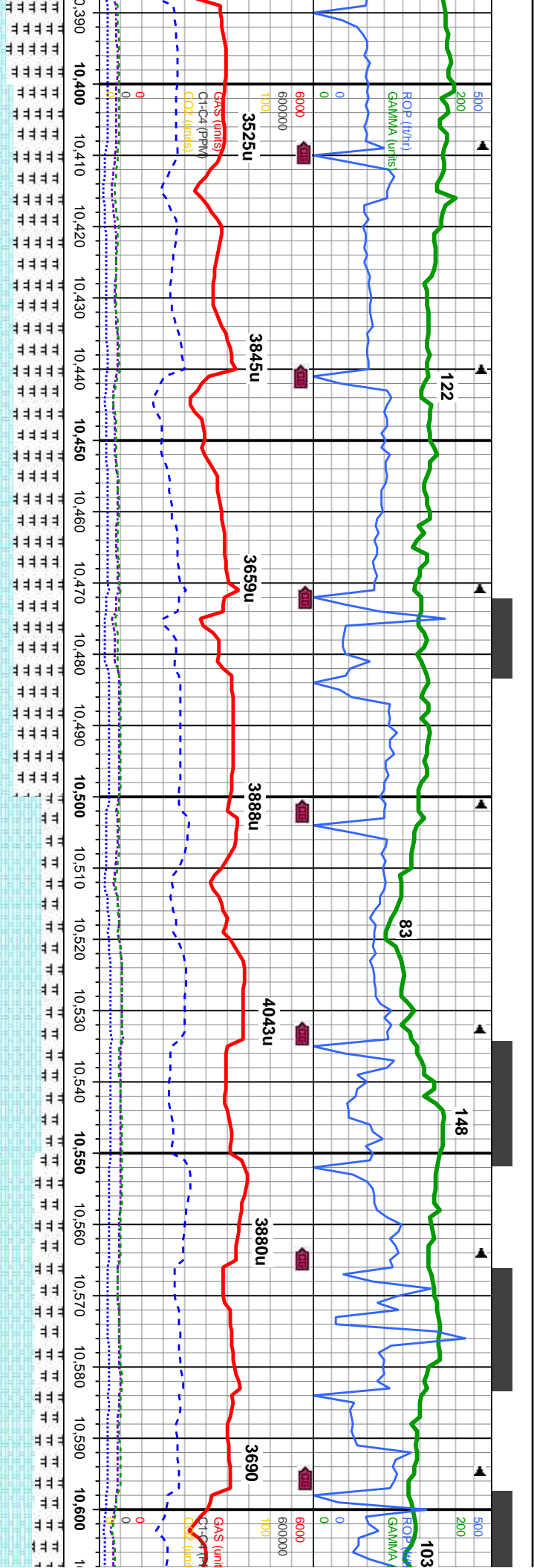


68'	MD: 10,199'	MD: 10,230'	MD: 10,261'	MD: 10,293'	MD: 10,324'	MD: 10,355'	MD: 10,386'
16.17'	TVD: 6,216.17'	TVD: 6,215.79'	TVD: 6,215.22'	TVD: 6,214.91'	TVD: 6,214.94'	TVD: 6,214.88'	TVD: 6,214.88'
n: 89.6°	Inclination: 90.4°	Inclination: 91°	Inclination: 91.1°	Inclination: 90°	Inclination: 89.9°	Inclination: 90.3°	Inclination: 90.3°
356.2°	Azimuth: 356.7°	Azimuth: 356.9°	Azimuth: 356.6°	Azimuth: 356.4°	Azimuth: 356.4°	Azimuth: 356.2°	Azimuth: 356.2°
0.05'	VS: 3,800.89'	VS: 3,831.71'	VS: 3,862.54'	VS: 3,894.37'	VS: 3,925.21'	VS: 3,956.07'	VS: 3,986.07'

90-95% MRLST: dk gy-blk, blk-y-sb blk-y, sl frm - mod hd, arg-silty tex, occ bnnd, gritty, mtx; mod calc 10-5% CHK: med-dk gy, occ brn, sb blk-y-blk-y, sft-sl frm, rthy-sb wxy, mot, mtx; v calc, tr-mod sec cal incl, tr pyr, abnt-scatt bent, tr inoc tos, mod sting cut, mod wht bl floor, faint even thin yel/wht-amb ring, tr stain

80% MRLST: dk - med gy-blk, blk-y-sb blk-y, sl frm - mod hd, arg-silty tex, occ bnnd, gritty, mtx; mod calc 20% CHK: med-dk gy, occ brn, sb blk-y-blk-y, sft-sl frm, rthy wxy, mot, mtx; v calc, tr-mod sec cal incl, tr pyr, occ scatt sec cal, occ bent, tr inoc fr od, mod sting cut, mod wht bl floor, faint even thin yel/wht-amb ring, tr stain





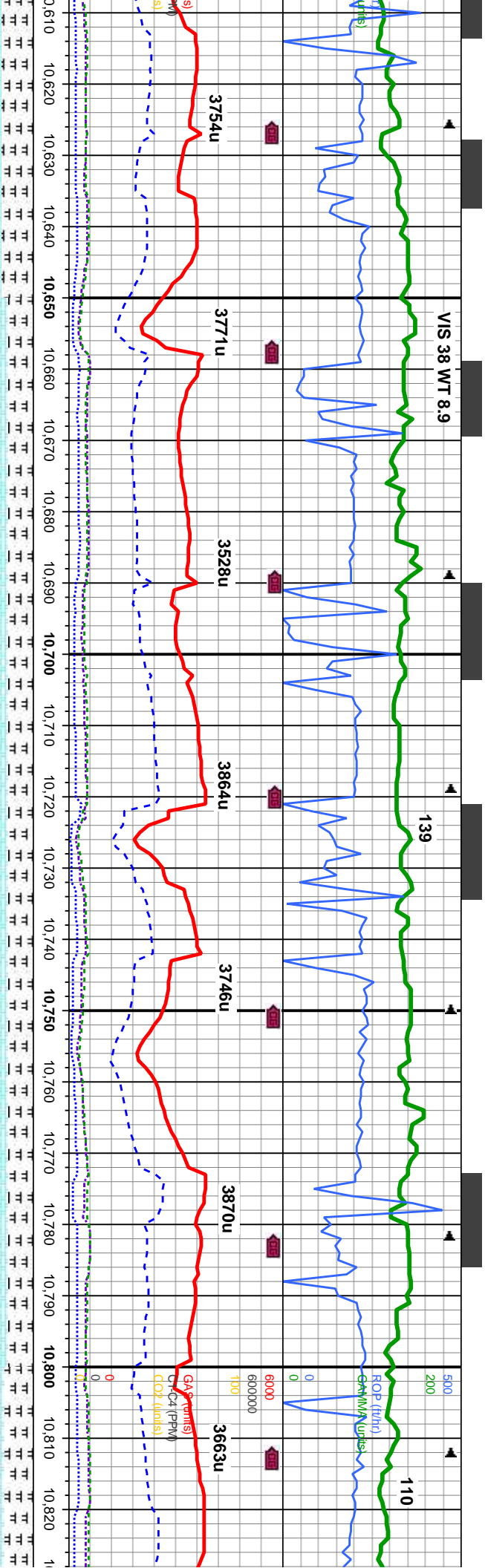
MD: 10,417 ' TVD: 6,213.61 ' Inclination: 91.6 ° Azimuth: 355.8 ° VS: 4,017.76 '	MD: 10,448 ' TVD: 6,212.64 ' Inclination: 92 ° Azimuth: 355.3 ° VS: 4,048.64 '	MD: 10,479 ' TVD: 6,211.64 ' Inclination: 91.7 ° Azimuth: 355.8 ° VS: 4,079.51 '	MD: 10,511 ' TVD: 6,210.74 ' Inclination: 91.5 ° Azimuth: 355.3 ° VS: 4,111.38 '	MD: 10,542 ' TVD: 6,209.99 ' Inclination: 91.3 ° Azimuth: 356 ° VS: 4,142.25 '	MD: 10,572 ' TVD: 6,209.36 ' Inclination: 91.1 ° Azimuth: 356.9 ° VS: 4,172.09 '	MD: 10,602 ' TVD: 6,209.2 ' Inclination: 89 ° Azimuth: 356.2 ° VS: 4,201.94 '
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70% MRLST: dk - med gy-blk, blk-y-sb blk, sl frm - mod hd, arg-sily tex, occ bndd, gritty, mtx; mod calc 30% CHK: med-dk gy, occ brn, sb blk-y-blky, sft- sl frm, rthy-sb wxy, mot, mtx; v calc, tr-mod sec cal incl, tr pyr, scatt- abnt sec cal, occ bent, tr inoc fos, tr od, mod-fast string cut, mod wht bl flor, dull even thin yel/wht-amb ring, sl tr stain

70-60% CHK: med-dk gy, occ brn, sb blk-y-blky, sft- sl frm, rthy-sb wxy, mot, mtx; v calc 30-40% MRLST: dk - med gy-blk, blk-y-sb blk, sl frm - mod hd, arg-sily tex, occ bndd, gritty, mtx; mod calc, tr pyr, scatt- abnt sec cal, occ bent, tr inoc fos, good flor, tr od, fast-mod string cut, mod wht bl flor, mod even thin yel/wht-amb ring, tr stain







MD: 10,635 '  
TVD: 6,209.58 '  
Inclination: 89.2 °  
Azimuth: 355.8 °  
VS: 4,234.79 '

MD: 10,666 '  
TVD: 6,210.01 '  
Inclination: 89.2 °  
Azimuth: 356.4 °  
VS: 4,265.65 '

MD: 10,697 '  
TVD: 6,210.23 '  
Inclination: 90 °  
Azimuth: 357.1 °  
VS: 4,296.47 '

MD: 10,728 '  
TVD: 6,210.06 '  
Inclination: 90.6 °  
Azimuth: 358.3 °  
VS: 4,327.24 '

MD: 10,759 '  
TVD: 6,209.85 '  
Inclination: 90.2 °  
Azimuth: 357.8 °  
VS: 4,357.98 '

MD: 10,790 '  
TVD: 6,209.66 '  
Inclination: 90.5 °  
Azimuth: 358.5 °  
VS: 4,388.72 '

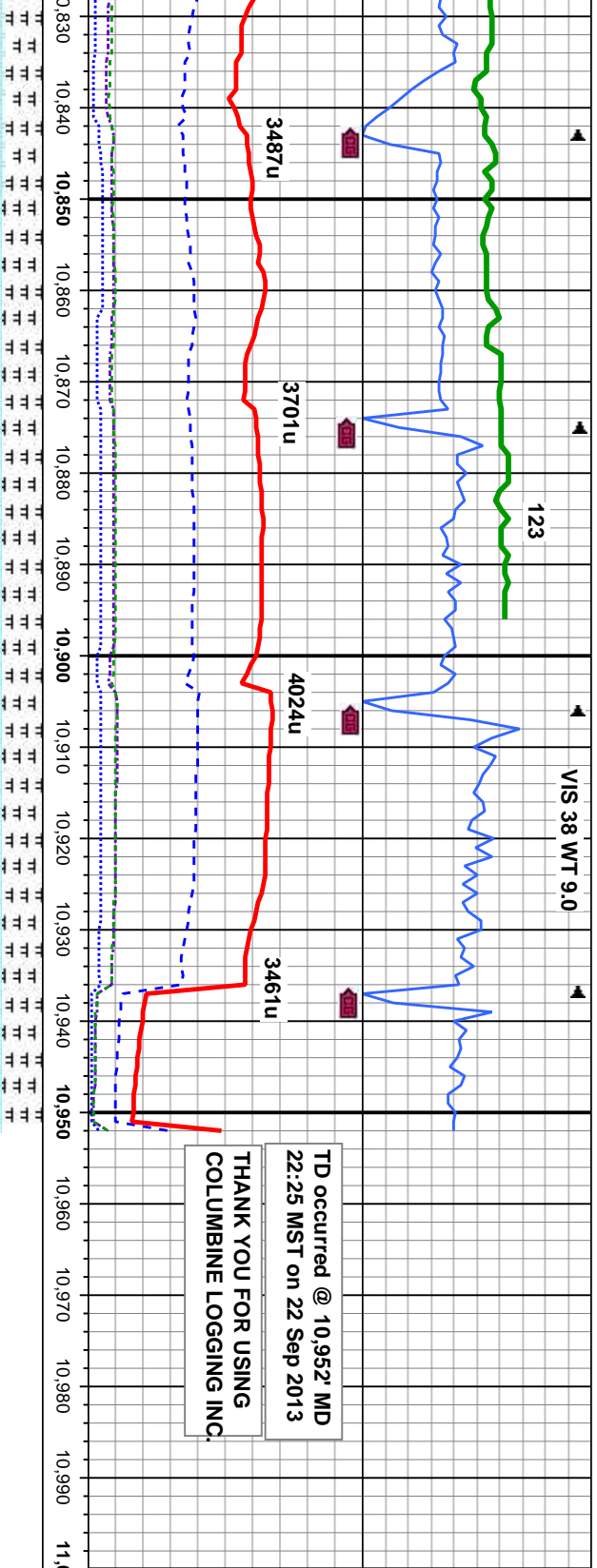
MD: 10,821 '  
TVD: 6,209.39 '  
Inclination: 90.5 °  
Azimuth: 358.3 °  
VS: 4,419.44 '

% CHK: med-dk gy, occ brn, sb blk-y-biky, sft-si frm, rthy-sb wxy, mot, mtx; v calc  
% MRLST: dk - med gy-blk, blk-y-sb biky, si frm - mod hd, arg-sily tex, occ bndd, mtx; mod calc, tr pyr, abnt sec cal, occ bent, tr inoc fos, good flor, fr od, mod stmg  
mod wht bl flor, mod-thick even yel/wht-amb ring, tr stain

65% CHK: med-dk gy, occ brn, sb blk-y-biky, sft-si frm, rthy-sb wxy, mot, mtx; v calc  
35% MRLST: dk - med gy-blk, blk-y-sb biky, si frm - mod hd, arg-sily tex, occ bndd, gritty, mtx; mod calc, tr pyr, abnt sec cal, scatt bent, tr inoc fos, good flor, g od, fast stmg cut, mod wht bl flor, mod-thick even yel/wht-amb ring, tr stain

60-55% CHK: med-dk gy  
calc 40-45% MRLST: dk  
occ bndd, gritty, mtx; mod  
flor, g od, fast stmg cut,





MD: 10,852'	MD: 10,883'	MD: 10,900'
TV/D: 6,209.36'	TV/D: 6,209.47'	TV/D: 6,209.47'
Inclination: 89.6°	Inclination: 90°	Inclination: 90°
Azimuth: 356.7°	Azimuth: 356.9°	Azimuth: 356.9°
VS: 4,450.22'	VS: 4,481.04'	VS: 4,497.94'

55% CHK: med-dk gy, occ brn, sb blk-y-blk, sft-si  
frm, rthy-sb wxy, mot, cal incl, mtx; v calc 45%  
MRLST: dk - med gy-blk, blk-y-sb blk, si frm - mod  
hd, arg-silty tex, occ bnnd, gritty, mtx; mod calc, tr pyr,  
abt sec cal, abnt bent, scatt inoc fos, good chk flor,  
g od, mod string cut, mod wnt bl flor, mod-thick even  
yel/wht-amb ring, mod stain

