

# COLUMBINE LOGGING

Scale: 5" / 100'  
Measured Depth Log

**Well Name** State North Platte K-O-36HC

**Location** NWNW Sec 36, T5N, R63W

**State** Colorado

**Country** USA

**API Number** 05-123-37669

**Region** DJ Basin

**Spud Date** 8/13/2013

**Surface Coordinates** 350' FNL x 520' FWL

**County** Weld

**Rig Number** Ensign 128

**Field** Wattenberg

**Ground Elevation** 4543'

**Logged Interval** 6300'

**Formation** Codell Sandstone

**Type of Drilling Fluid** H2O, LSND

**K.B. Elevation** 4558'

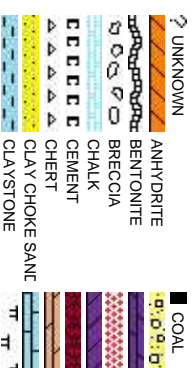
**Company** Bonanza Creek Energy

**Name** Paul McKay

**Company** Bonanza Creek Energy

**Address** 410 17th Street, Suite 100  
Denver, CO 80202

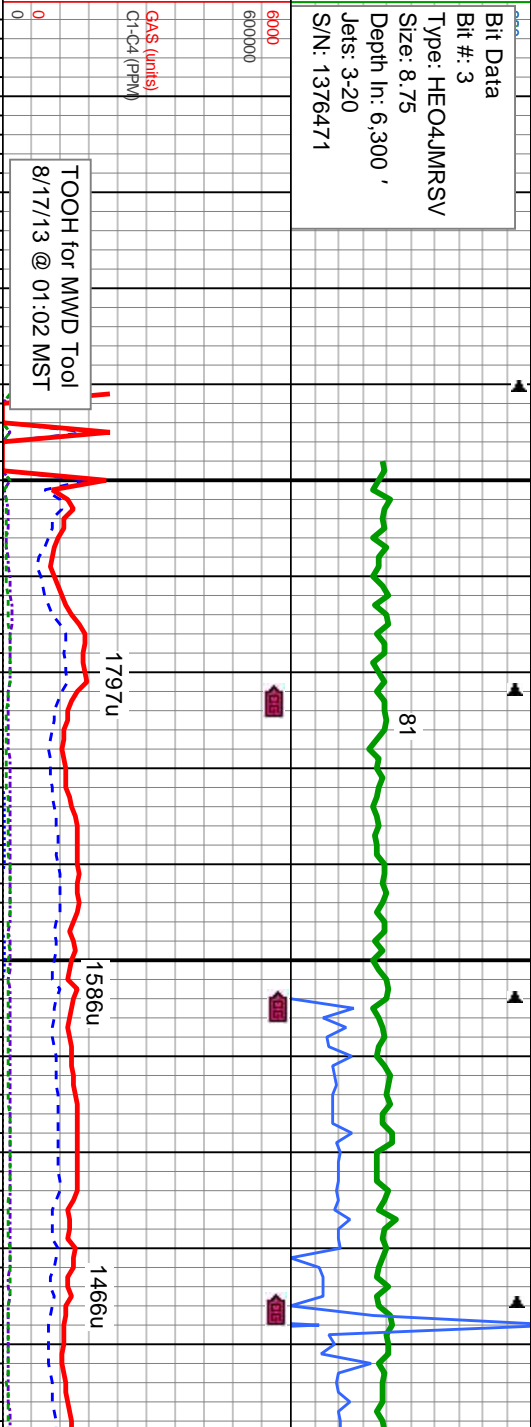
Wellsite Geologists



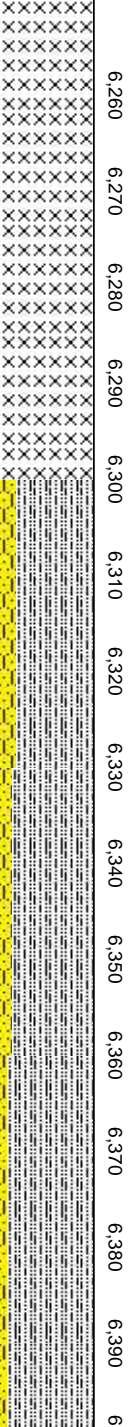


**Bit Data**  
 Bit #: 3  
 Type: HEO4JMRSV  
 Size: 8.75  
 Depth In: 6,300'  
 Jets: 3-20  
 S/N: 1376471

**ROP**  
 ROF  
 GAMMA



**Depth Labels**



COLUMBINE LOGGING RIGGED UP ON  
 08/16/2013 MANNED 2-PERSON  
 LOGGING WITH BLOODHOUND GAS  
 CHROMATOGRAPH UNIT #0608 BEGAN  
 ON 08/17/2013

MD: 6,301'  
 TVD: 5,801.64'  
 Inclination: 2.2°  
 Azimuth: 181.2°  
 VS: 559.49'

MD: 6,333'  
 TVD: 5,833.58'  
 Inclination: 4.5°  
 Azimuth: 180.5°  
 VS: 561.17'

MD: 6,364'  
 TVD: 5,864.38'  
 Inclination: 8.4°  
 Azimuth: 181.9°  
 VS: 564.3'

MD: 6,396'  
 TVD: 5,895.85'  
 Inclination: 12.4°  
 Azimuth: 187.7°  
 VS: 569.29'

MD: 6,428'  
 TVD: 5,926.93'  
 Inclination: 15°  
 Azimuth: 191.5°  
 VS: 575.52'

**Well Bore**  
 TVD

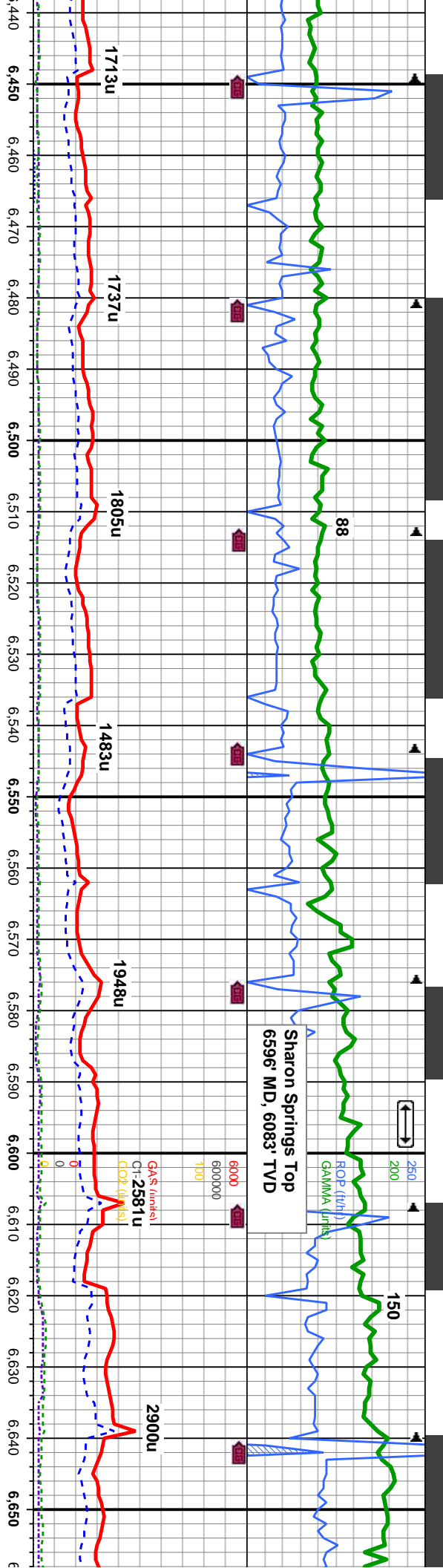
8000	80-85% SLTY SH: itgy - medgy, occ dk gy, mod sft - sl firm, sb blkly - blkly, occ plty, rthy - gt, mtx; arg - slty, sl calc, 20-15% SHY SS: off wh - itgy, occ s&p, mod hd - hd, sb blkly - blkly, vt-f gr, mics, tr glauc, sl-mod calc, occ SS	8000
8000	90% SLTY SH: itgy - medgy, occ dk gy, mod sft - sl firm, sb blkly - blkly, occ plty, rthy - gt, mtx; arg - slty, sl calc, 10% SHY SS: off wh - itgy, occ s&p, mod hd - hd, sb blkly - blkly, vt-f gr, mics, tr glauc, sl-mod calc, occ SS	8000
8000	95% SLTY SH: firm, sb blkly - blkly, occ plty, rthy - gt, mtx; arg - slty, sl calc, 10% SHY calc, 10% SHY hd, sb blkly - blkly	8000

**Oil Show**



**Images**





MD: 6.459 '  
 TVD: 5,956.72 '  
 Inclination: 17.1 °  
 Azimuth: 190.7 °  
 VS: 582.47 '

MD: 6.491 '  
 TVD: 5,987.11 '  
 Inclination: 19.4 °  
 Azimuth: 190.5 °  
 VS: 590.64 '

MD: 6.523 '  
 TVD: 6,016.98 '  
 Inclination: 22.6 °  
 Azimuth: 189.6 °  
 VS: 600.05 '

MD: 6.555 '  
 TVD: 6,046.26 '  
 Inclination: 25 °  
 Azimuth: 187.8 °  
 VS: 610.82 '

MD: 6.587 '  
 TVD: 6,075.09 '  
 Inclination: 26.4 °  
 Azimuth: 187.3 °  
 VS: 622.55 '

MD: 6.619 '  
 TVD: 6,103.64 '  
 Inclination: 188.4 °  
 Azimuth: 27.3 °  
 VS: 634.72 '

MD: 6.650 '  
 TVD: 6,130.92 '  
 Inclination: 189 °  
 Azimuth: 29.4 °  
 VS: 646.99 '

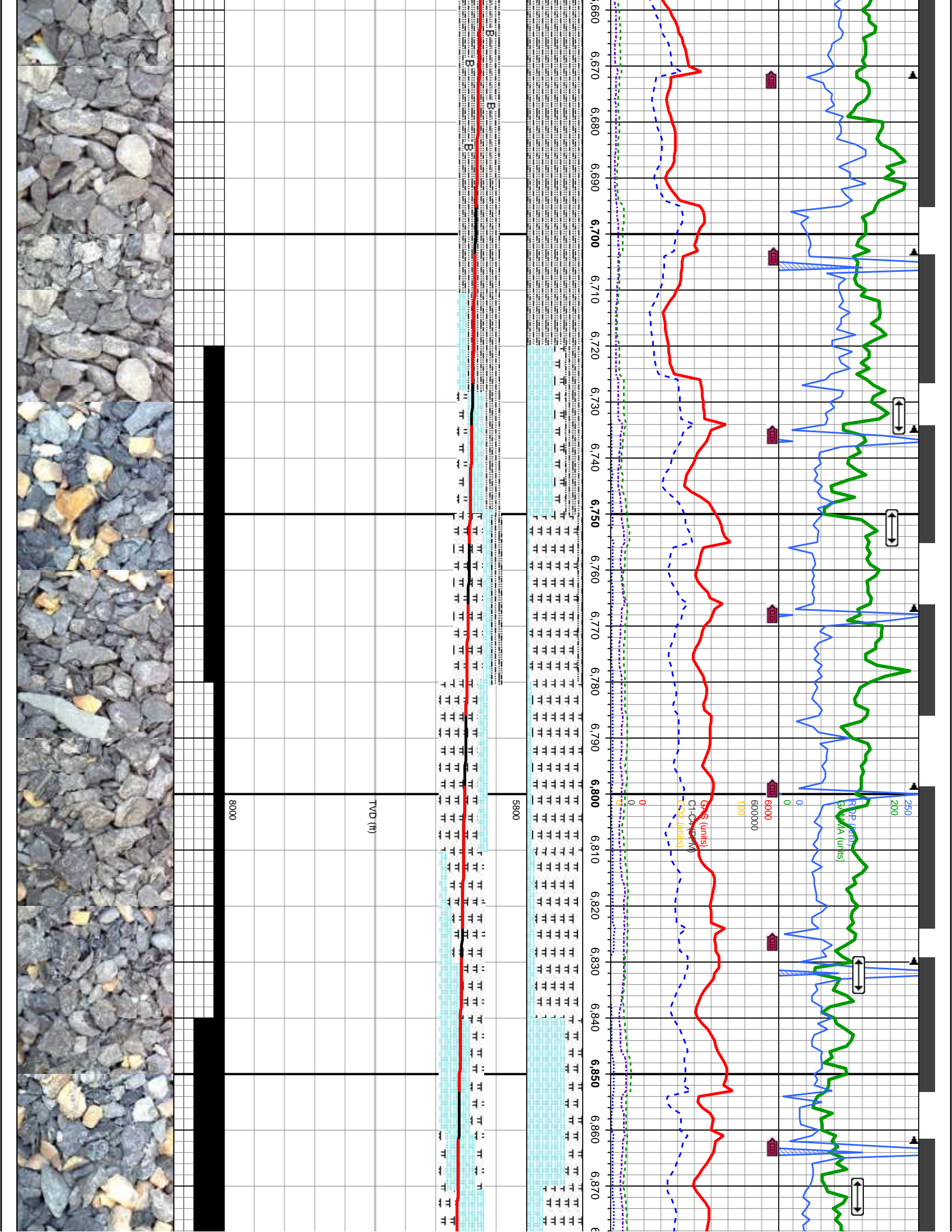
lty - medgy , occ dk gy, mod sft - sl  
 ky, occ ply, rhy - gt, mtx: arg - slty, sl  
 SS, off wh - lgy, occ s&p , mod hd -  
 y, v-f gr, sl-mod calc

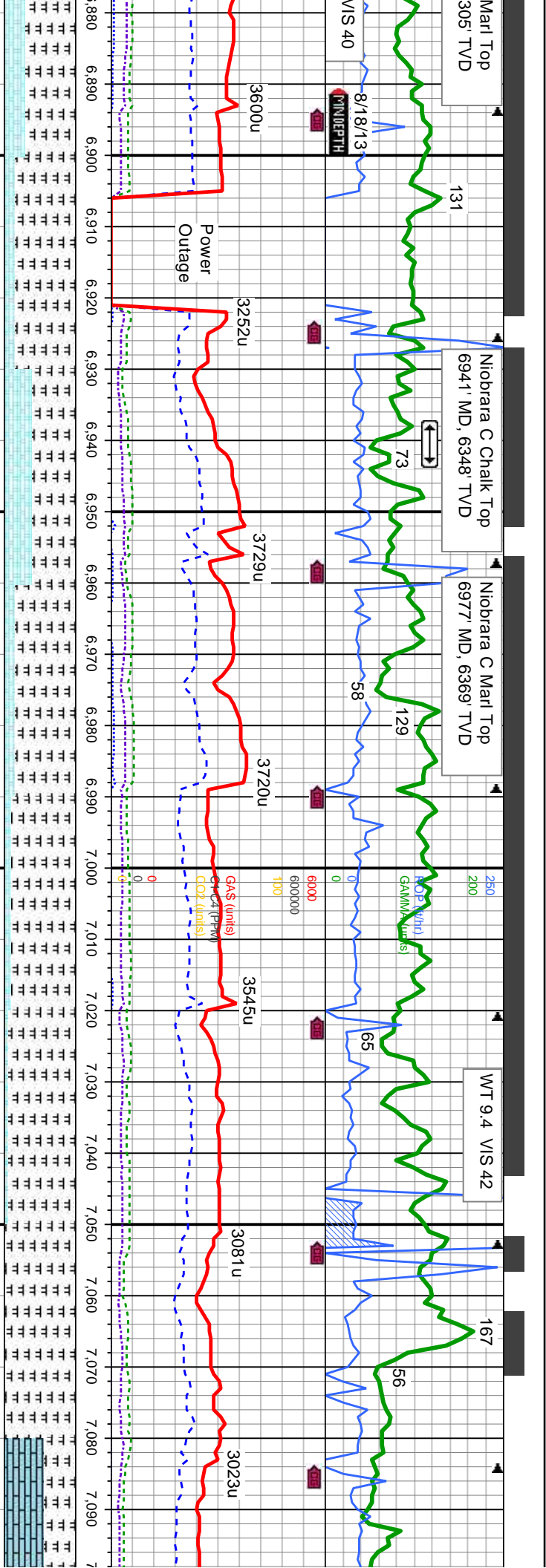
95-100% SLTY SH: lty - medgy , occ dk gy, mod sft  
 - sl firm, sb blk - blk, occ ply, rhy - gt, mtx: arg -  
 slty, sl calc, 5-0% SHY SS: off wh - lgy, occ s&p ,  
 mod hd - hd, sb blk - blk, v-f gr, sl-mod calc, tr pyr,  
 occ shy ss

100% SLTY SH: lty - medgy , occ dk gy, mod sft -  
 sl firm, sb blk - blk, occ ply, rhy - gt, mtx: arg - slty,  
 sl calc, tr pyr, occ shy ss

100% SLTY SH: medgy - dky, occ lgy, occ wh,  
 mod sft - firm, sb ply - blk, occ ply, rhy - gt, mtx:  
 80% arg - slty, sl calc, tr pyr, tr shy ss





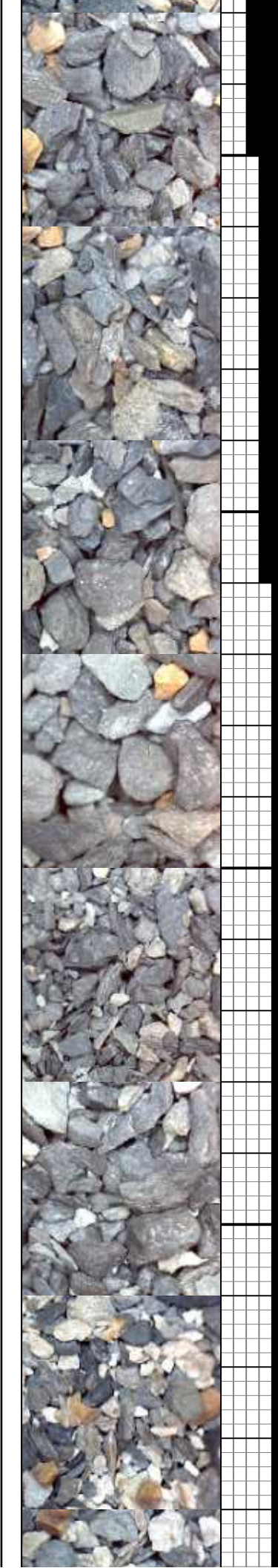


MD (ft)	TVD (ft)	Inclination (°)	Azimuth (°)	VS
6,904	6,326.04	50.2	183.6	783.17
6,936	6,345.76	53.7	182.7	805.43
6,968	6,363.97	56.9	181.5	828.89
6,999	6,380.03	60.7	179.6	852.86
7,031	6,395.05	63.3	176.2	878.92
7,063	6,408.58	66.7	175.5	906.06
7,095	6,421	69.5	173.5	933.69

85-70%: MRLST: blk, dk gy, dk gy brn, sb pty - blk, occ pty, sl frm - hd, arg-sily tex, mtx; calc 15-30% CHK: It gy, crm-wh, lt brn, mot, strf ip, sb pty-blky, sft - hd, rthy-wxy, mtx; v calc, tr inoc fos frags, tr bent, mod bri wh-lt bl, mod sting cut, mod thk yel-gn ring, tr str, tr od

85-90%: MRLST: blk, dk gy, dk gy brn, sb pty - blk, occ pty, sl frm - hd, arg-sily tex, mtx; calc 15-10% CHK: It gy, crm-wh, lt brn, mot, occ strf, sb pty-blky, sft - mod hd, rthy-wxy, mtx; v calc, tr inoc fos frags, tr bent, mod bri wh-lt bl slow mky cut, thin yel ring, v sl tr str

95-100%: MRLST: blk, dk gy, occ lt - med, sb pty - blk, occ pty, sl frm - hd, arg-sily tex, mtx; calc 5-0% CHK: It gy, crm-wh, lt brn, mot, occ strf, sb pty-blky, sft - mod hd, rthy-wxy, mtx; v calc, tr inoc fos frags, tr bent, tr pyr, tr LS, some uphole con, mod bri wh-lt bl slow-mod mky cut, thin yel ring, v sl tr str

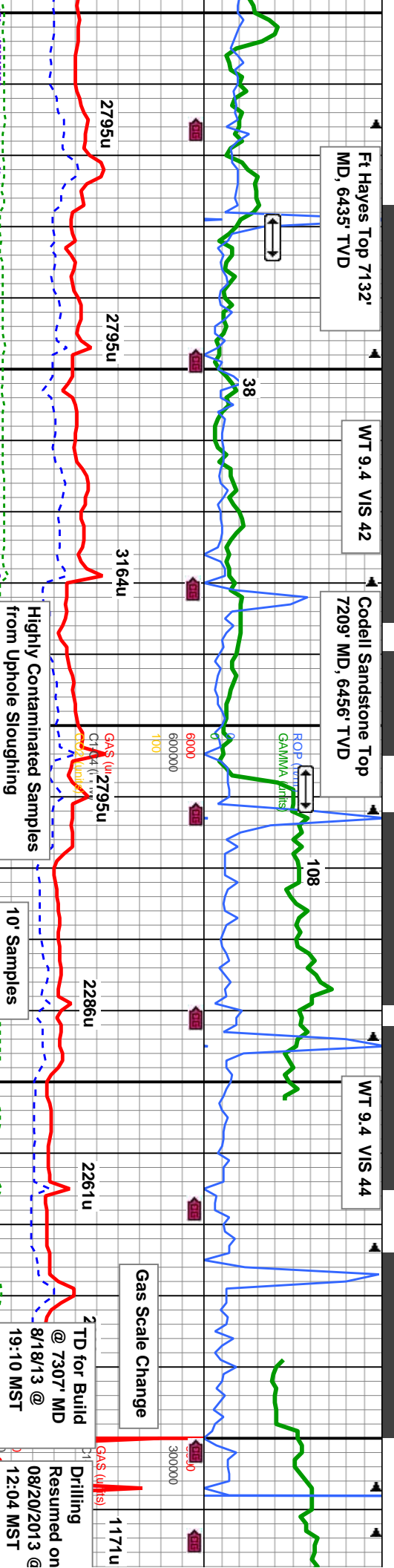


FT Hayes Top 7132'  
MD, 6435' TVD

WT 9.4 VIS 42

Codell Sandstone Top  
7209' MD, 6456' TVD

WT 9.4 VIS 44



MD: 7,127'   
 TVD: 6,433.35'   
 Inclination: 68.0°   
 Azimuth: 175.9°   
 VS: 961.42'

MD: 7,158'   
 TVD: 6,443.82'   
 Inclination: 72.5°   
 Azimuth: 176.8°   
 VS: 988.63'

MD: 7,190'   
 TVD: 6,452.29'   
 Inclination: 76.8°   
 Azimuth: 176.9°   
 VS: 1,017.3'

MD: 7,222'   
 TVD: 6,458.53'   
 Inclination: 80.7°   
 Azimuth: 177.3°   
 VS: 1,046.42'

MD: 7,254'   
 TVD: 6,462.6'   
 Inclination: 84.7°   
 Azimuth: 177.8°   
 VS: 1,075.77'

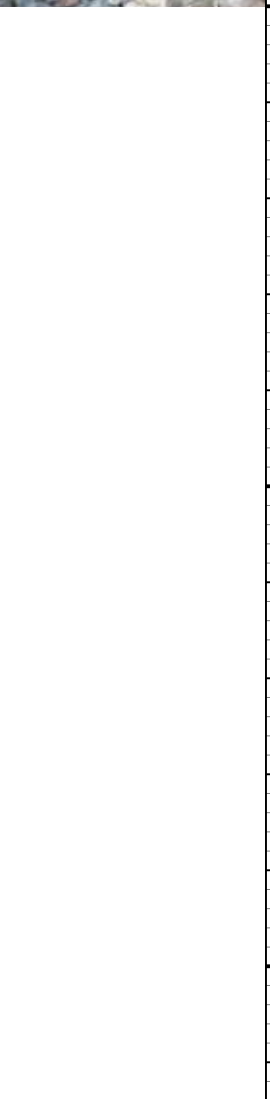
MD: 7,306'   
 TVD: 6,456.09'   
 Inclination: 89.8°   
 Azimuth: 177.8°   
 VS: 1,123.71'

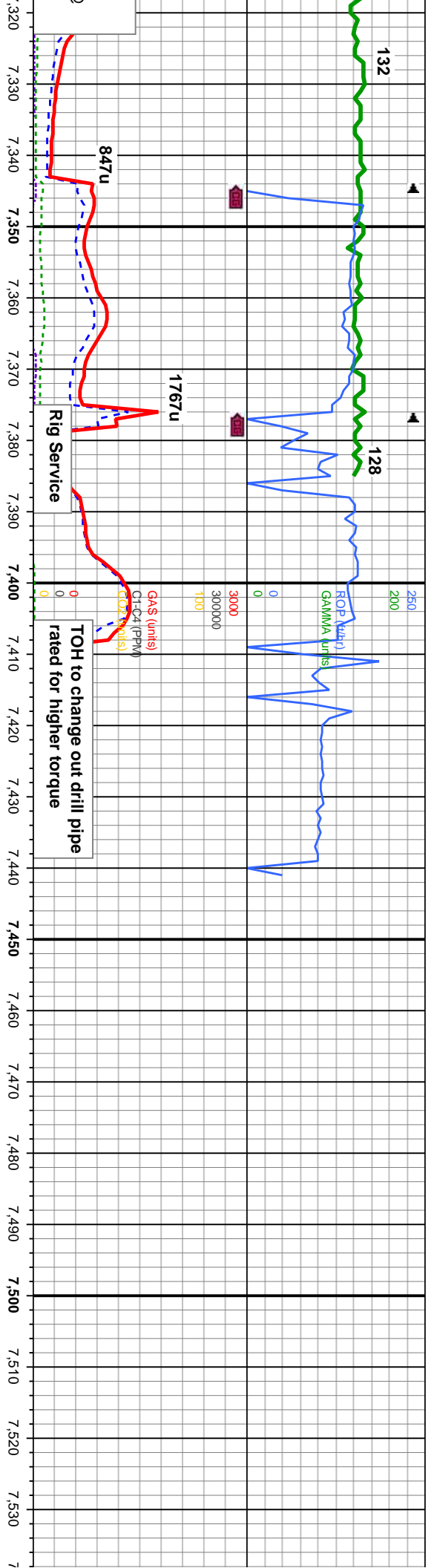
wh, beige, frm-hd, brit, sbply-sb blkly, y tex, mckln, 45-35% MRLST: blk-dk -brit, sb ply-blky, rhy, arg-sily tex, v faint wh-lt bl v slow stmg cut, wh, sl tr stn, tr od

90-100% LMST: wh, beige, frm-hd, brit, sbply-sb blkly, occ ply, sm wxy tex, mckln, 10-0% MRLST: blk-dk gy, sl frm-hd, fri-brit, sb ply-blky, rhy, arg-sily tex, 0-25% SLTST: lt gy, blkly, v sft, wxy, tr pyf, abnt con from uphole: faint wh-lt bl v slow stmg cut, thn uneven yel wh, sl tr stn, tr od

70-60% LMST: wh, beige, frm-hd, brit, sbply-sb blkly, occ ply, sm tex, mckln 25-30% SLTY SH: lt-med gy, blkly, sft-sl frm 5-10% MRLST: med-dk gy, sbply-blky, sl frm-frm, v sl tr ss, abnt con from uphole

80-40% SLTY SH: lt-med gy, blkly, sft-sl frm, 20% LMST: wh, beige, frm-hd, brit, sbply-sb blkly, occ ply, sm tex, mcklnv sl tr ss, abnt con from uphole

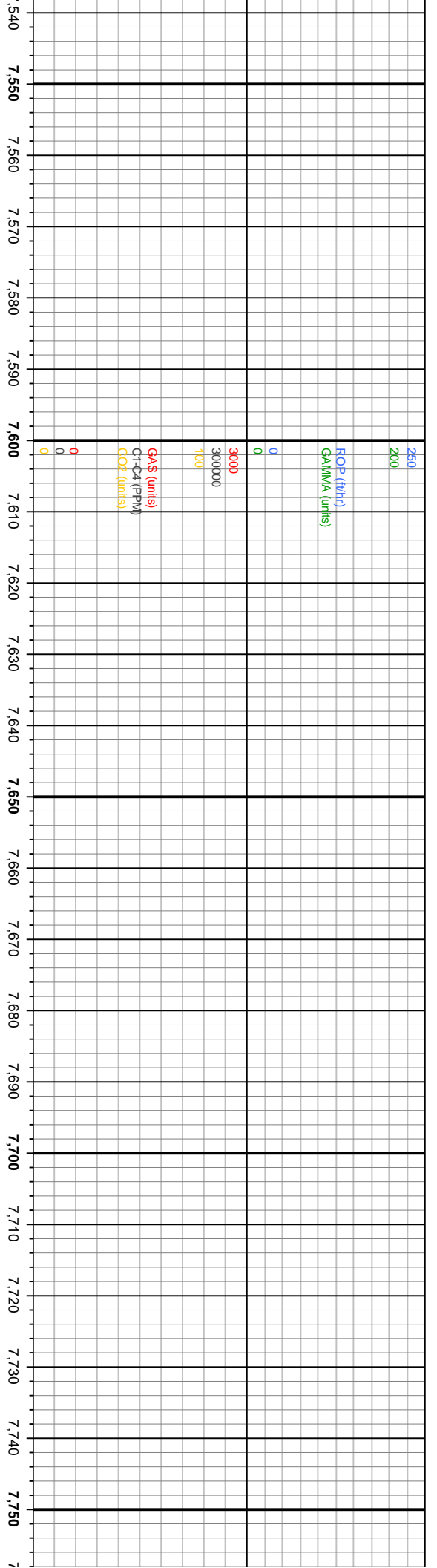




MD: 7,323'	MD: 7,355'	MD: 7,387'
TVD: 6,466.51'	TVD: 6,467.1'	TVD: 6,467.43'
Inclination: 88.8°	Inclination: 89.1°	Inclination: 89.7°
Azimuth: 177.8°	Azimuth: 178°	Azimuth: 178.7°
VS: 1,139.36'	VS: 1,168.88'	VS: 1,198.3'

100% SLTY SH: blk-dkgy, frm- mod frm, sb blk -  
 blk, sbply, occ ply, rhy - gt, mt; arg - slty, v calc, sl  
 tr cnt

6300	8000
TVD (ft)	

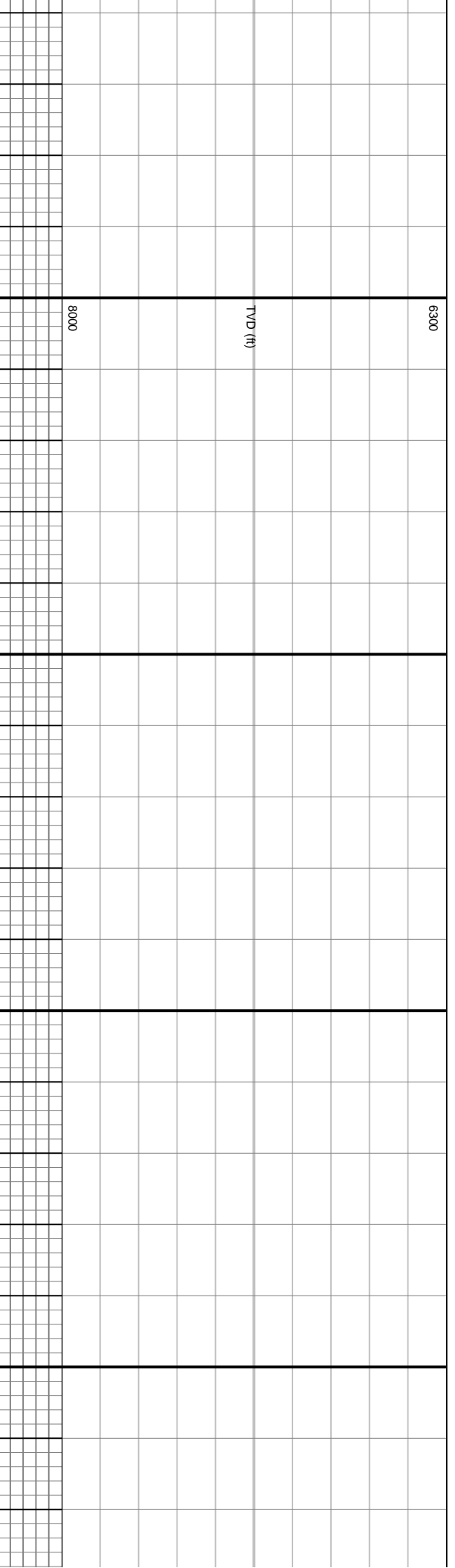
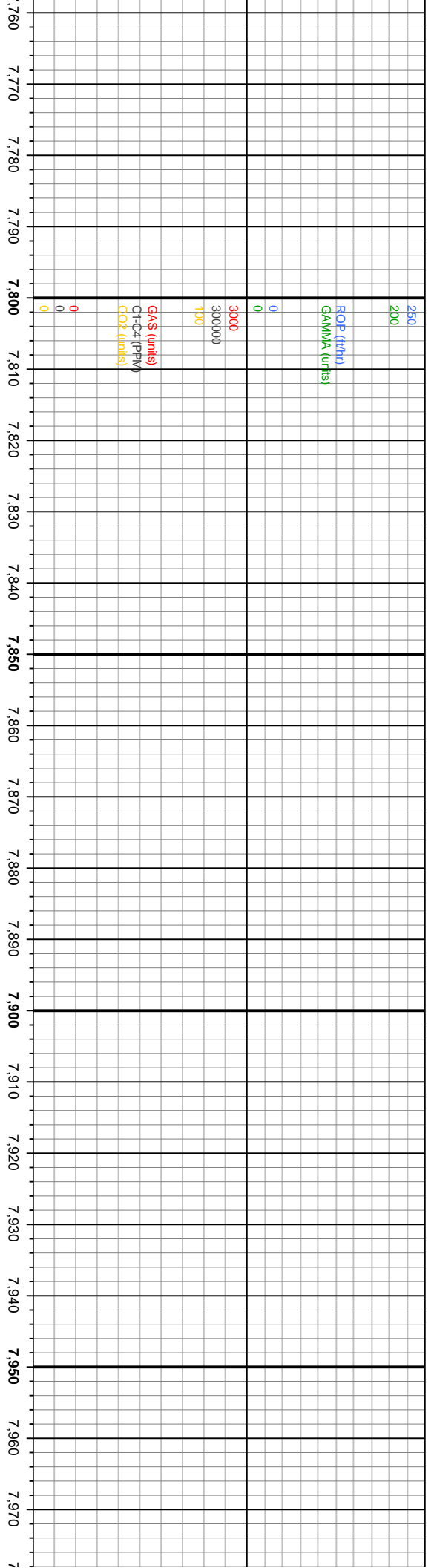


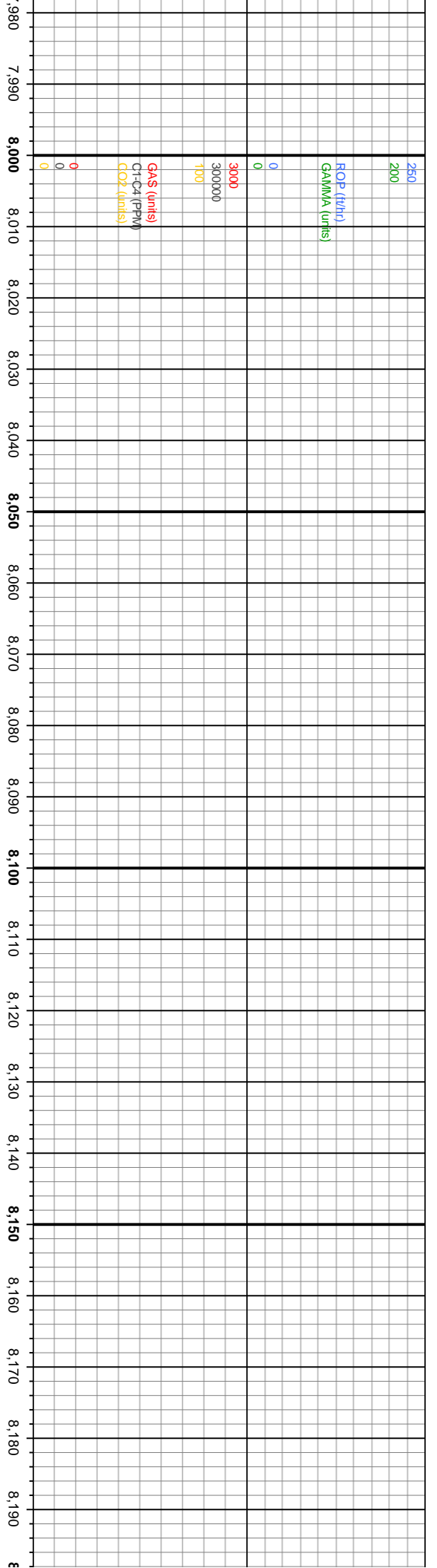
Depth (ft)	ROP (ft/h)	GAMMA (units)	GAS (units)	C1-C4 (PPM)	CO2 (units)
7.540					
7.550					
7.560					
7.570					
7.580					
7.590					
7.600	250	200	3000	300000	100
7.610					
7.620					
7.630					
7.640					
7.650	0	0	0	0	0
7.660					
7.670					
7.680					
7.690					
7.700	0	0	0	0	0
7.710					
7.720					
7.730					
7.740					
7.750	0	0	0	0	0

TVD (ft)

6300

8000





Depth (ft)	ROP (ft/h)	GAMMA (units)	GAS (units)	C1-C4 (PPM)	CO2 (units)
6300					
8000					

