



Scale: 5" / 100'  
Measured Depth Log

**Well Name** Seltzer LD 09-378HN

**Location** SECTION 4, T1S, R67W

**State** COLORADO

**Country** UNITED STATES

**API Number** 05001101960000

**Geographic Region** DJ BASIN

**County** ADAMS

**Rig Number** PD 460

**AFE #** 20DC0274

**Field** WATTENBERG

**Ground Elevation** 5140'

**K.B. Elevation** 5160'

**Logged Interval** 6000' MD To 18404' MD

**Total Depth** 18404' MD

**Formation** NIOBRARA C CHALK

**Type of Drilling Fluid** OIL BASED MUD

### Operator

**Company** Great Western Operating Company, LLC

**Address** 1001 17th Street, Suite 2000  
Denver, CO 80202



### Geologist

**Name** JOEY LUCE, TRACY LAWSON, TIM BRIGHT

**Company** TERRA GUIDANCE, LLC

**Address** 67 W FLOYD AVE  
STE 105  
ENGLEWOOD, CO 80110



## Other

MUDLOG START DATE 07/02/2021

MUDLOG END DATE 07/07/2021

## Rock Types

 Chalk  
 Silty Shale  
 Silty Siltstone  
 BENTONITE

## Other Symbols

### Engineering

-  BIT
-  CONNECTION (RIGHT)
-  CONNECTION GAS
-  FAULT
-  MINDEPTH MIN DEPTH

Onsite Geological Services provided by  
Terra **Guidance**

Loggers on Location: 07/02/2021

Logging Depth Reached:

12:24 MT, 07/02/2021

Bloodhound Unit: #5933

Sample Collection/Description Interval:

Curve 50'

Tangen/Lateral 100'

ROP SCALE (FT/HR): 0-1000  
GAMMA SCALE (API): 0-300

GAS SCALE: 0-2000U

Total Gas & Chromatograph

- GAS ———
- C1 ———
- C2 ———
- C3 ———
- C4 ———
- CO2 ———

Depth

5.960 5.970 5.980 5.990 6.000

6.010 6.020 6.030 6.040 6.050 6.060 6.070 6.080 6.090 6.100

6.110 6.120 6.130

6.140

Images



% Lithology

TVD SCALE: 5500' - 8500'

Well Bore  
TVD ———

Bit #: 1  
Size: 8.5"  
Make: SMITH  
Model: NS16 PDC NEW  
Jets: 3x11,4x11  
S/N: JV3431  
Depth In: 2.039'

6599

TVD (ft)

6599

TVD (ft)

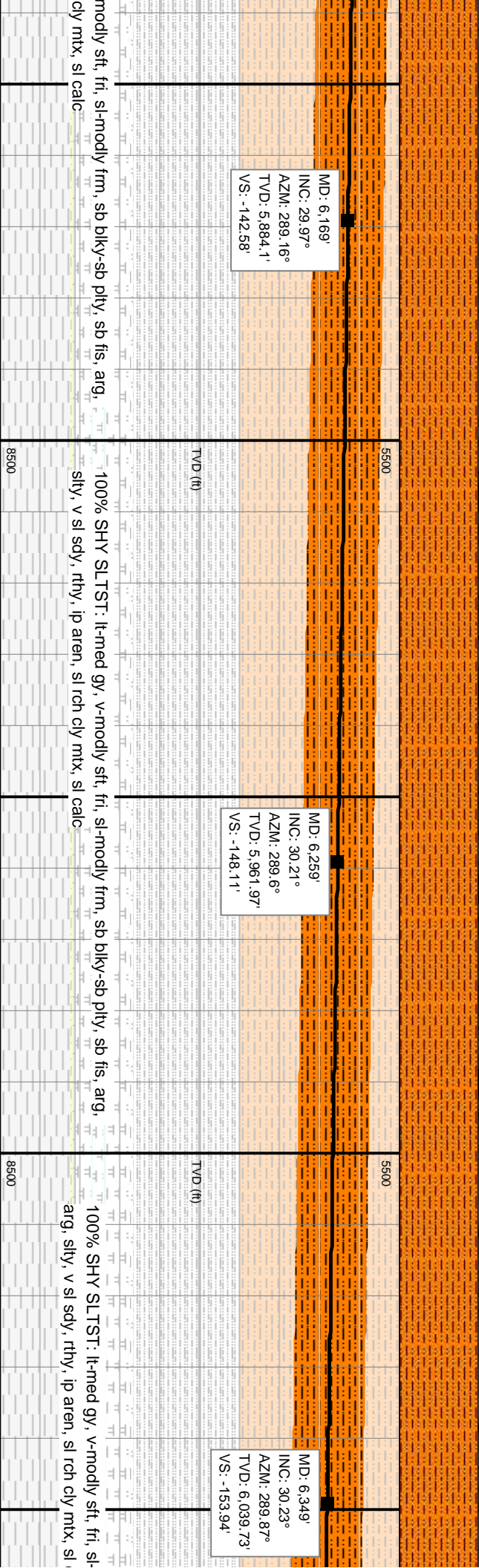
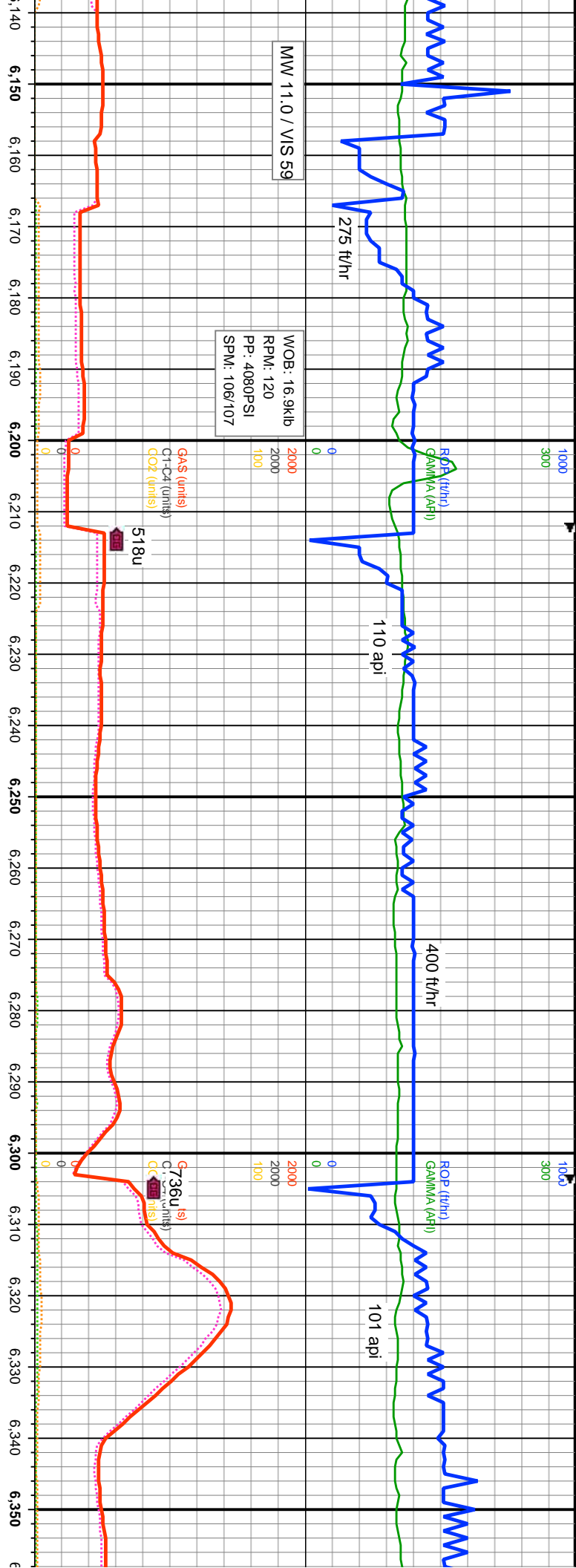
MD: 6.080'  
INC: 30.12°  
AZM: 289.5°  
TVD: 5.807.06'  
VS: -137.15°

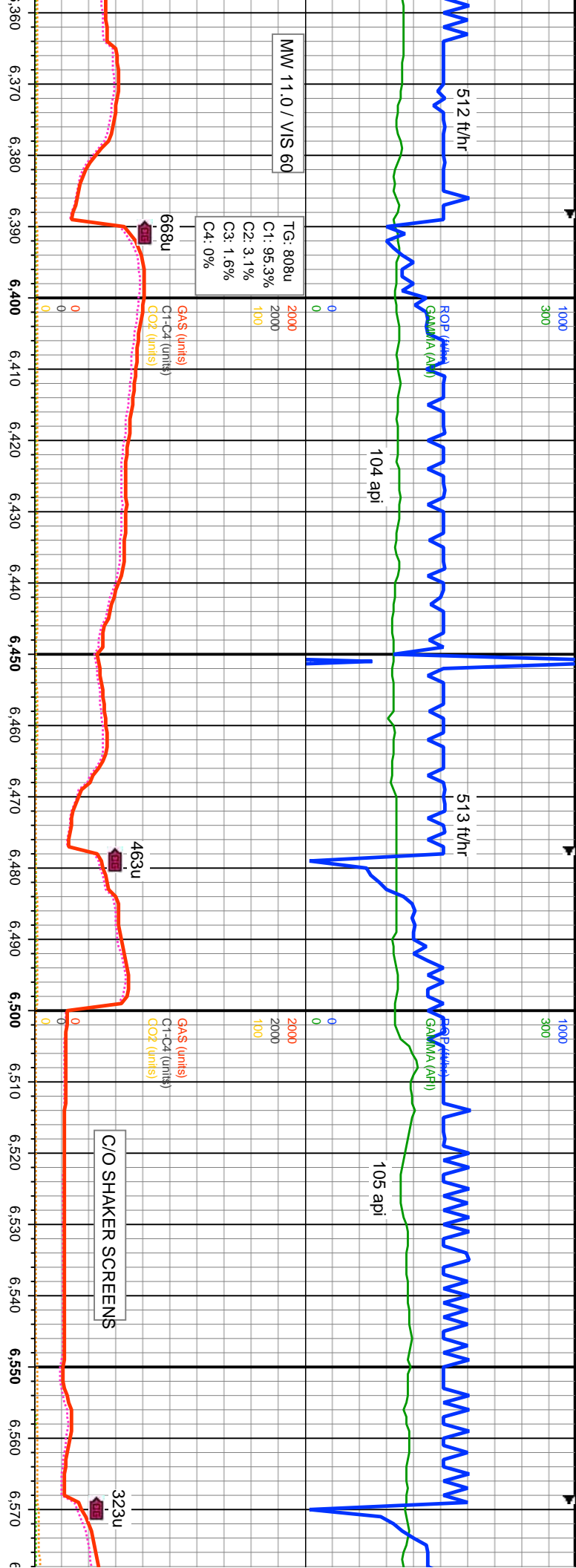
100% SHY SLTST: lt-med gy, v-modly sft, fri, sl-modly frm, sb blk-ly-sb pty, sb fis, arg, sily, v sl sdy, rthy, ip aren, sl rch cly mix, sl calc

100% SHY SLTST: lt-med gy, v-sily, v sl sdy, rthy, ip aren, sl rch

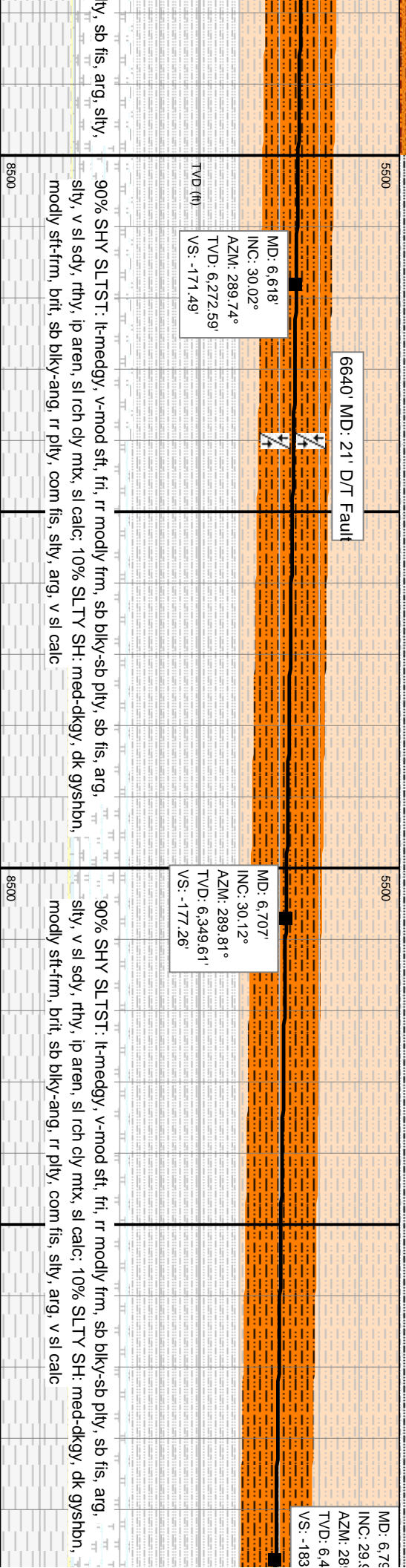
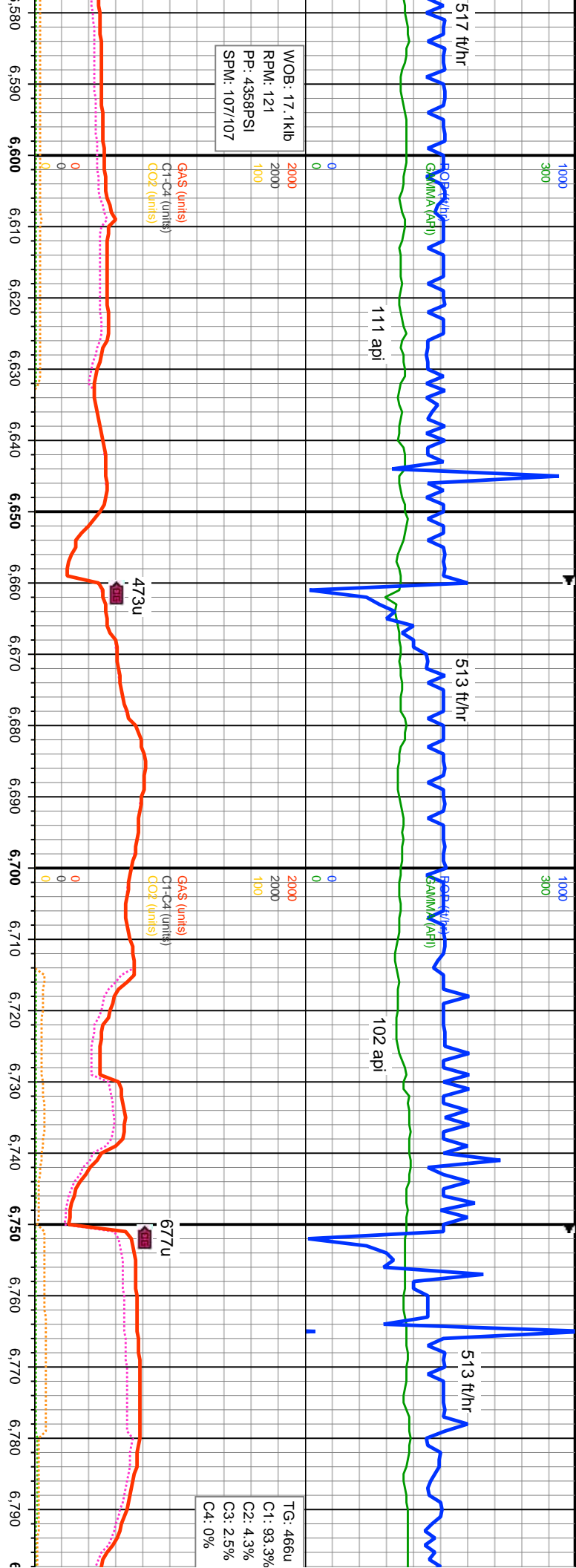
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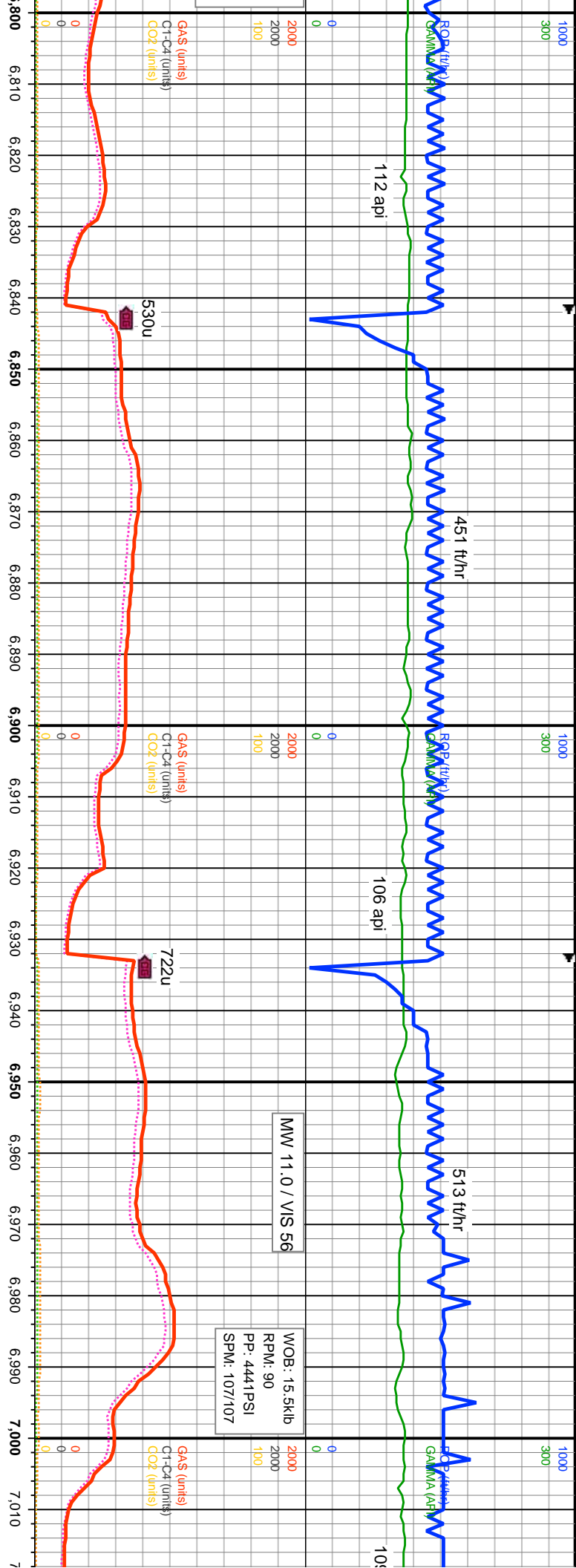
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6360	6370	6380	6390	6400	6410	6420	6430	6440	6450	6460	6470	6480	6490	6500	6510	6520	6530	6540	6550	6560	6570
<p>100% SHY SLTST: lt-med gy, v-modly sft, fri, si-modly frm, sb blkly-sb pily, sb fis, arg, silty, v sl sdy, rthy, ip aren, sl rch cly mtx, sl calc</p>																					
<p>MD: 6.438' INC: 30.21° AZMI: 289.78° TVD: 6,116.64' VS: -159.78'</p>											<p>MD: 6.528' INC: 29.8° AZMI: 289.9° TVD: 6,194.57' VS: -165.65'</p>										
<p>100% SHY SLTST: lt-med gy, v-modly sft, fri, si-modly frm, sb blkly-sb pily, sb fis, arg, silty, v sl sdy, rthy, ip aren, sl rch cly mtx, sl calc</p>											<p>100% SHY SLTST: lt-med gy, v-modly sft, fri, si-modly frm, sb blkly-sb pily, sb fis, arg, silty, v sl sdy, rthy, ip aren, sl rch cly mtx, sl calc</p>										
<p>5500</p>											<p>5500</p>										
<p>8500</p>											<p>8500</p>										





7'-  
3.7°  
227.52'  
.08'

MD: 6.887'  
INC: 30.11°  
AZM: 289.69°  
TVD: 6.505.43'  
VS: -188.84'

5500

MD: 6.976'  
INC: 29.72°  
AZM: 289.86°  
TVD: 6.582.57'  
VS: -194.59'

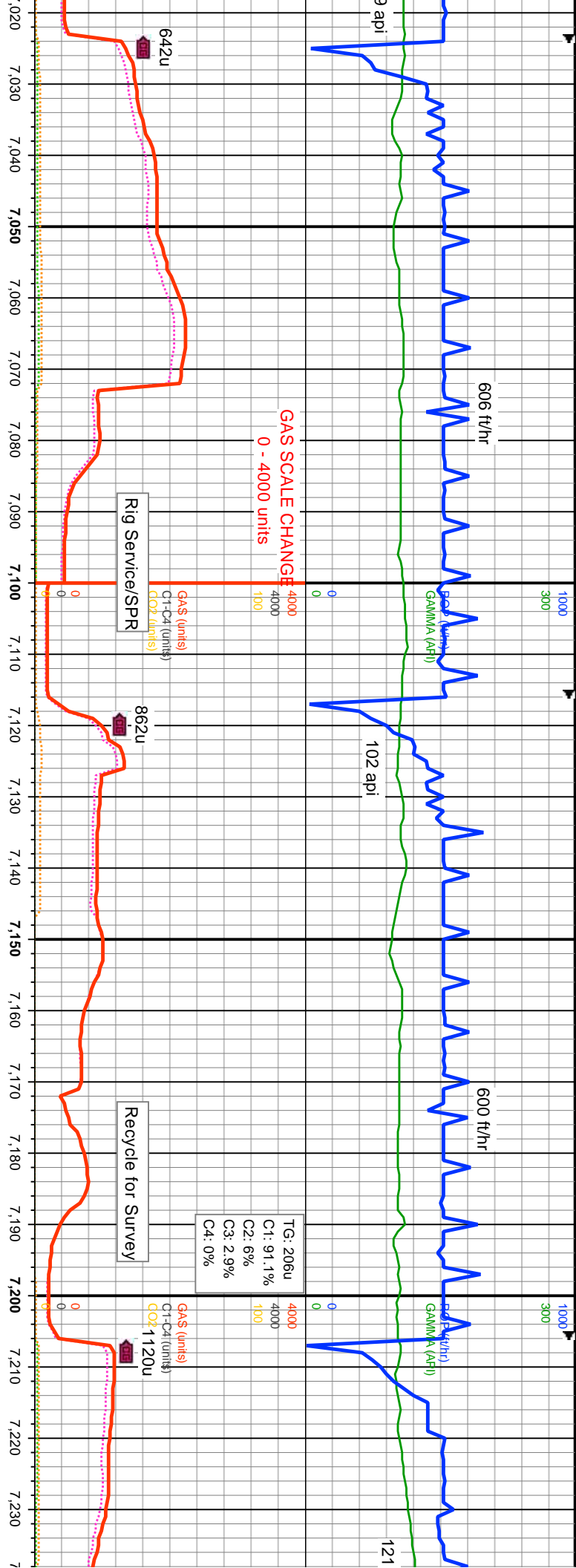
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75% SHY SLTST: li-medgy, v-mod sft, fri, rr mod frm, sb blk-y-sb pty, sb fis, arg, slty, v sl  
sdy, rthy, ip aren, sl rch cly mtx, sl calc: 25% SLTY SH: med-dkgy, dk gys/hbn, mod  
stf-frm, brit, sb blk-y-ang, rr pty, con fis, slty, arg, v sl calc

60% SHY SLTST: li-medgy, v-mod sft, fri, rr mod frm, sb blk-y-sb pty, sb fis, arg, slty, v sl  
sdy, rthy, ip aren, sl rch cly mtx, sl calc: 40% SLTY SH: med-dkgy, dk gys/hbn, mod  
stf-frm, brit, sb blk-y-ang, rr pty, con fis, slty, arg, v sl calc

50% SLTY S  
slty, arg, v sl  
pty, sb fis, ar

Depth (ft)	ROP (ft/hr)	GAMMA (API)	C1-C4 (units)	CO2 (units)
800	112	112	0	0
810	112	112	0	0
820	112	112	0	0
830	112	112	0	0
840	112	112	0	0
850	112	112	0	0
860	112	112	0	0
870	112	112	0	0
880	112	112	0	0
890	112	112	0	0
900	112	112	0	0
910	112	112	0	0
920	112	112	0	0
930	112	112	0	0
940	112	112	0	0
950	112	112	0	0
960	112	112	0	0
970	112	112	0	0
980	112	112	0	0
990	112	112	0	0
1000	112	112	0	0



MD: 7.066'  
 INC: 29.78°  
 AZM: 289.44°  
 TVD: 6,680.71'  
 VS: -200.27'

MD: 7.156'  
 INC: 29.86°  
 AZM: 290.19°  
 TVD: 6,738.79'  
 VS: -206.09'

TVD (ft)

TVD (ft)

calc: 50% SHY SLTST: lt-medgy, v-modly sft, fri, rr modly frm, sb blk-y-sb  
 g, stly, v sl sdy, rthy, ip aren, sl rch cly mtx, sl calc

65% SLTY SH: med-dkgy, dk gysbhn, modly sft-frm, brit, sb blk-y-ang, rr plty, com fis, stly, arg, v sl calc: 35% SHY SLTST: lt-medgy, v-modly sft, fri, rr modly frm, sb blk-y-sb  
 plty, sb fis, arg, stly, v sl sdy, rthy, ip aren, sl rch cly mtx, sl calc

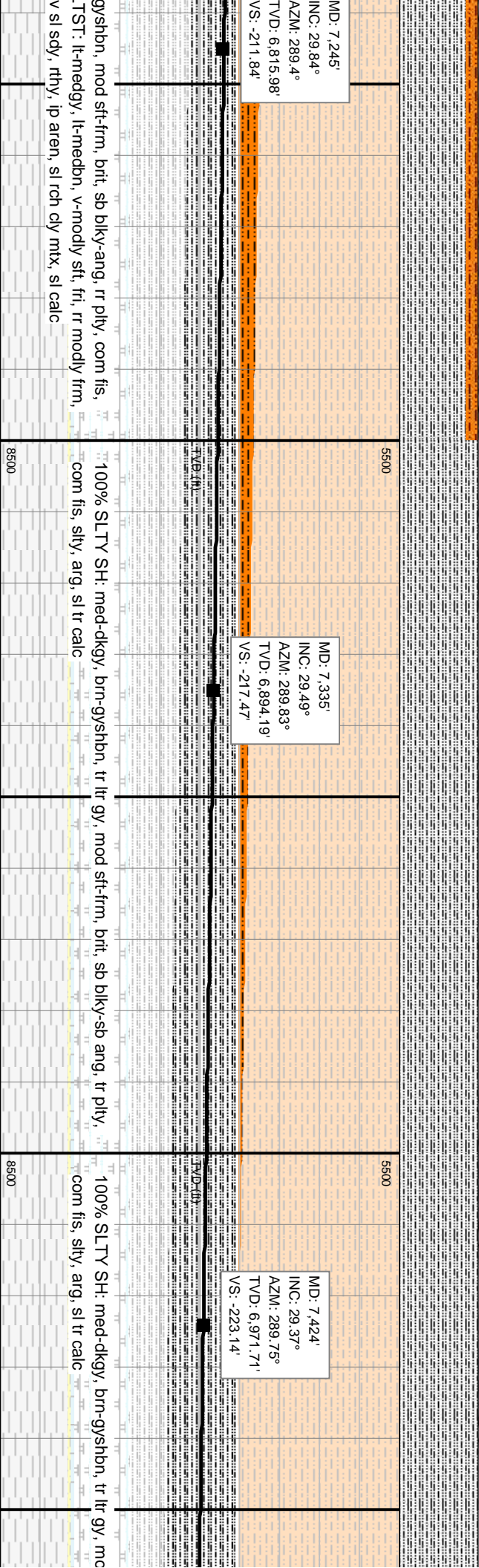
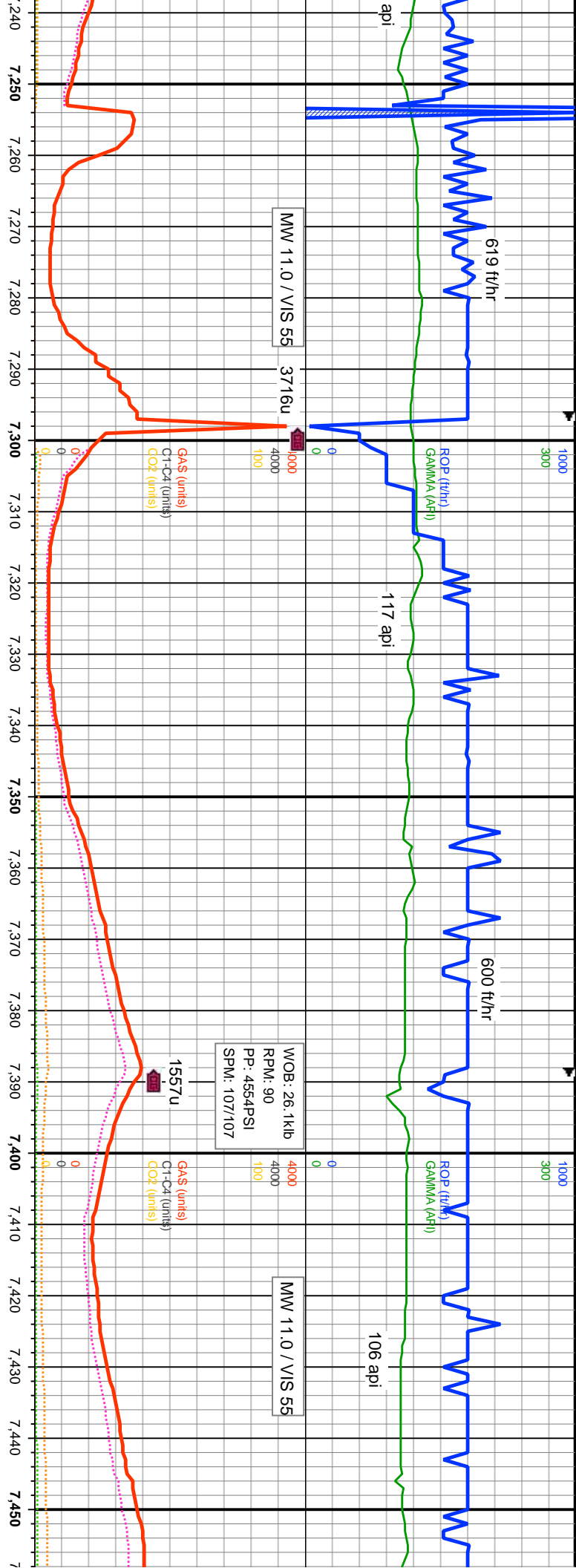
85% SLTY SH: med-dkgy, brn-sltly, arg, v sl calc: 15% SHY SLTST: lt-medgy, v-modly sft, fri, rr modly frm, sb blk-y-sb  
 plty, sb blk-y-sb plty, sb fis, arg, stly,

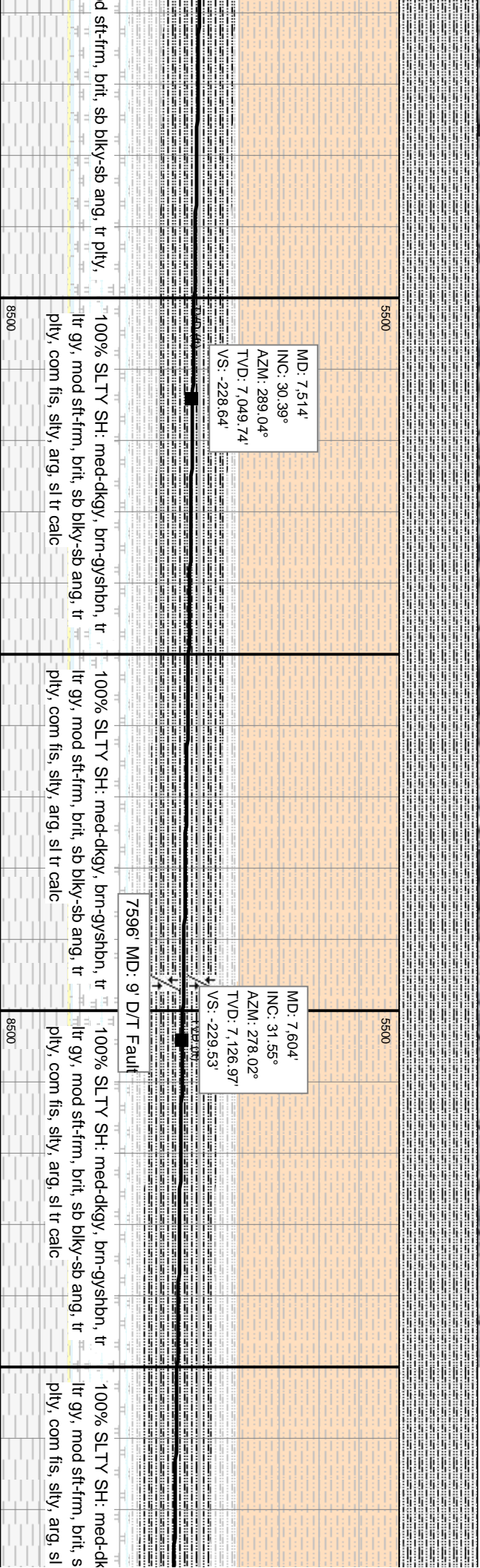
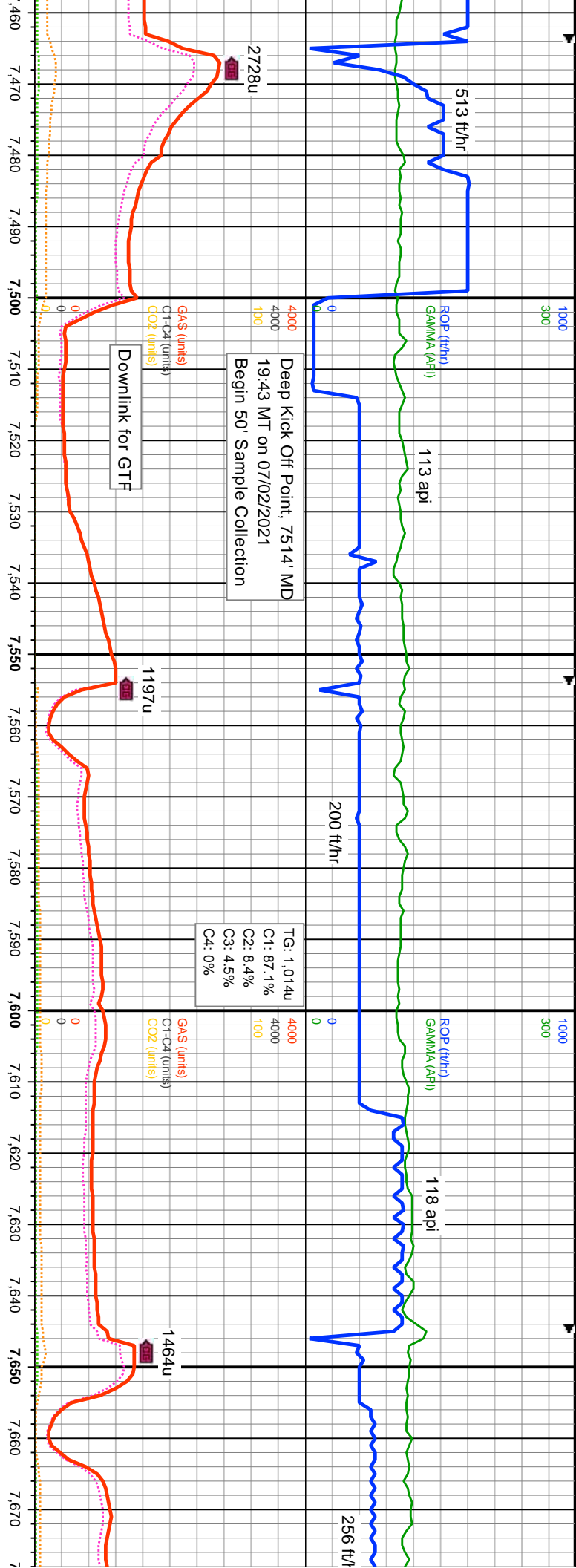
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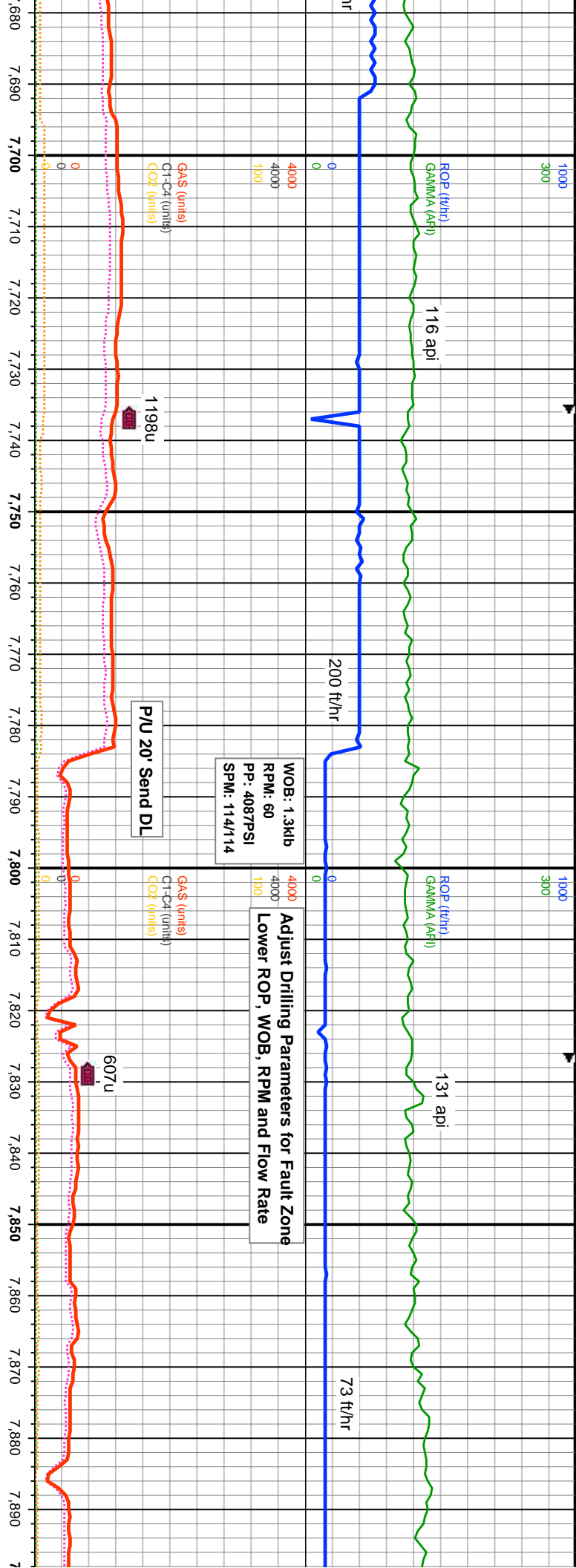
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5500

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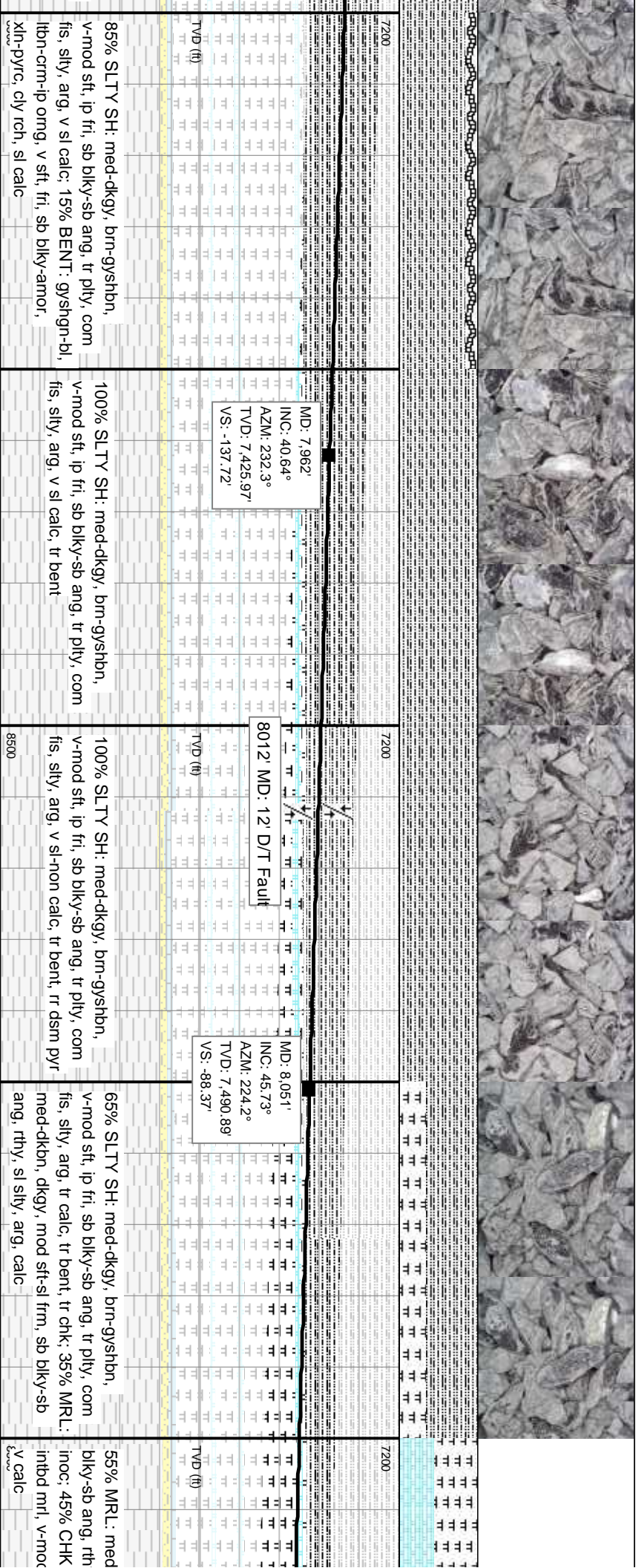
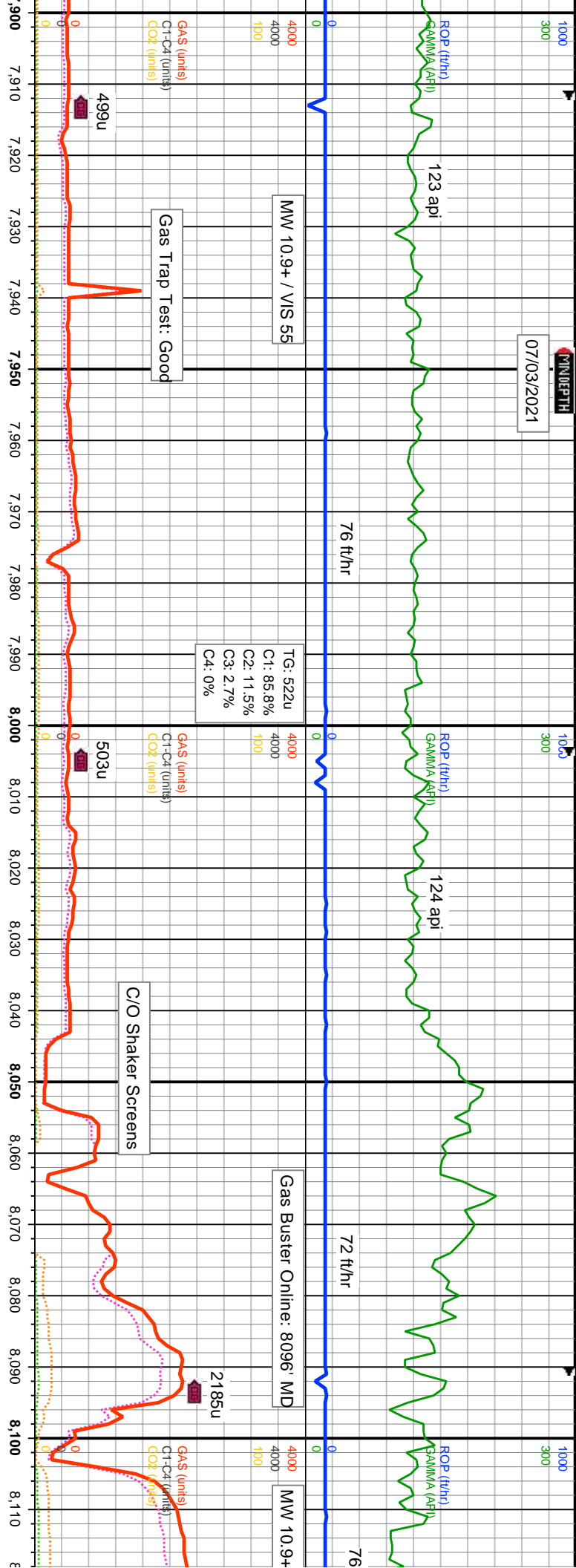


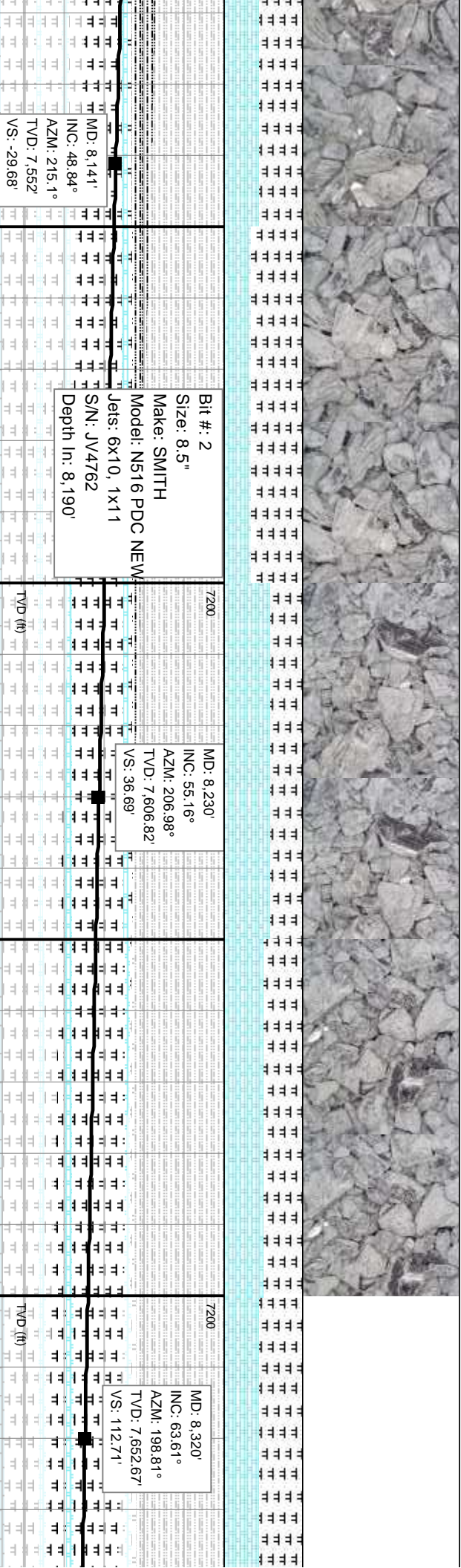
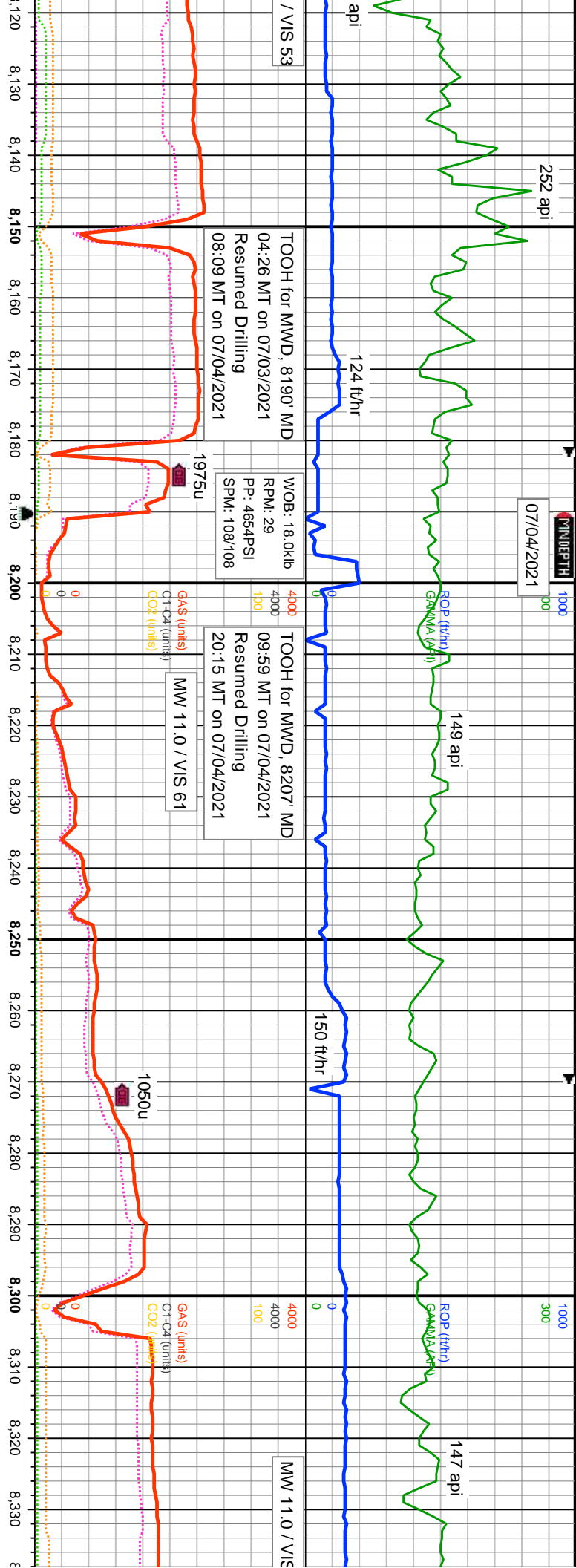


MD: 7.693'	INC: 31.06°	AZM: 266.5°	TVD: 7.203.08'	VS: -221.5'
100% SLTY SH: med-dkgy, brn-gyshbn, tr b biky-sb ang, tr	100% SLTY SH: med-dkgy, brn-gyshbn, tr ltr gy, v-mod sft, brt, sb biky-sb ang, tr pily, com fis, sily, arg, sl tr calc, r ds m pyr	100% SLTY SH: med-dkgy, brn-gyshbn, tr ltr gy, v-mod sft, brt, sb biky-sb ang, tr pily, com fis, sily, arg, v sl calc	100% SLTY SH: med-dkgy, brn-gyshbn, tr ltr gy, v-mod sft, brt, sb biky-sb ang, tr pily, com fis, sily, arg, v sl calc	100% SLTY SH: med-dkgy, brn-gyshbn, tr ltr gy, v-mod sft, brt, sb biky-sb ang, tr pily, com fis, sily, arg, v sl calc

MD: 7.783'	INC: 31.34°	AZM: 254.11°	TVD: 7.280.15'	VS: -204.07'
100% SLTY SH: med-dkgy, brn-gyshbn, tr b biky-sb ang, tr	100% SLTY SH: med-dkgy, brn-gyshbn, tr ltr gy, v-mod sft, brt, sb biky-sb ang, tr pily, com fis, sily, arg, v sl calc	100% SLTY SH: med-dkgy, brn-gyshbn, tr ltr gy, v-mod sft, brt, sb biky-sb ang, tr pily, com fis, sily, arg, v sl calc	100% SLTY SH: med-dkgy, brn-gyshbn, tr ltr gy, v-mod sft, brt, sb biky-sb ang, tr pily, com fis, sily, arg, v sl calc	100% SLTY SH: med-dkgy, brn-gyshbn, tr ltr gy, v-mod sft, brt, sb biky-sb ang, tr pily, com fis, sily, arg, v sl calc

MD: 7.872'	INC: 34.86°	AZM: 242.43°	TVD: 7.354.77'	VS: -176.76'
100% SLTY SH: med-dkgy, brn-gyshbn, tr b biky-sb ang, tr	100% SLTY SH: med-dkgy, brn-gyshbn, tr ltr gy, v-mod sft, brt, sb biky-sb ang, tr pily, com fis, sily, arg, v sl calc	100% SLTY SH: med-dkgy, brn-gyshbn, tr ltr gy, v-mod sft, brt, sb biky-sb ang, tr pily, com fis, sily, arg, v sl calc	100% SLTY SH: med-dkgy, brn-gyshbn, tr ltr gy, v-mod sft, brt, sb biky-sb ang, tr pily, com fis, sily, arg, v sl calc	100% SLTY SH: med-dkgy, brn-gyshbn, tr ltr gy, v-mod sft, brt, sb biky-sb ang, tr pily, com fis, sily, arg, v sl calc





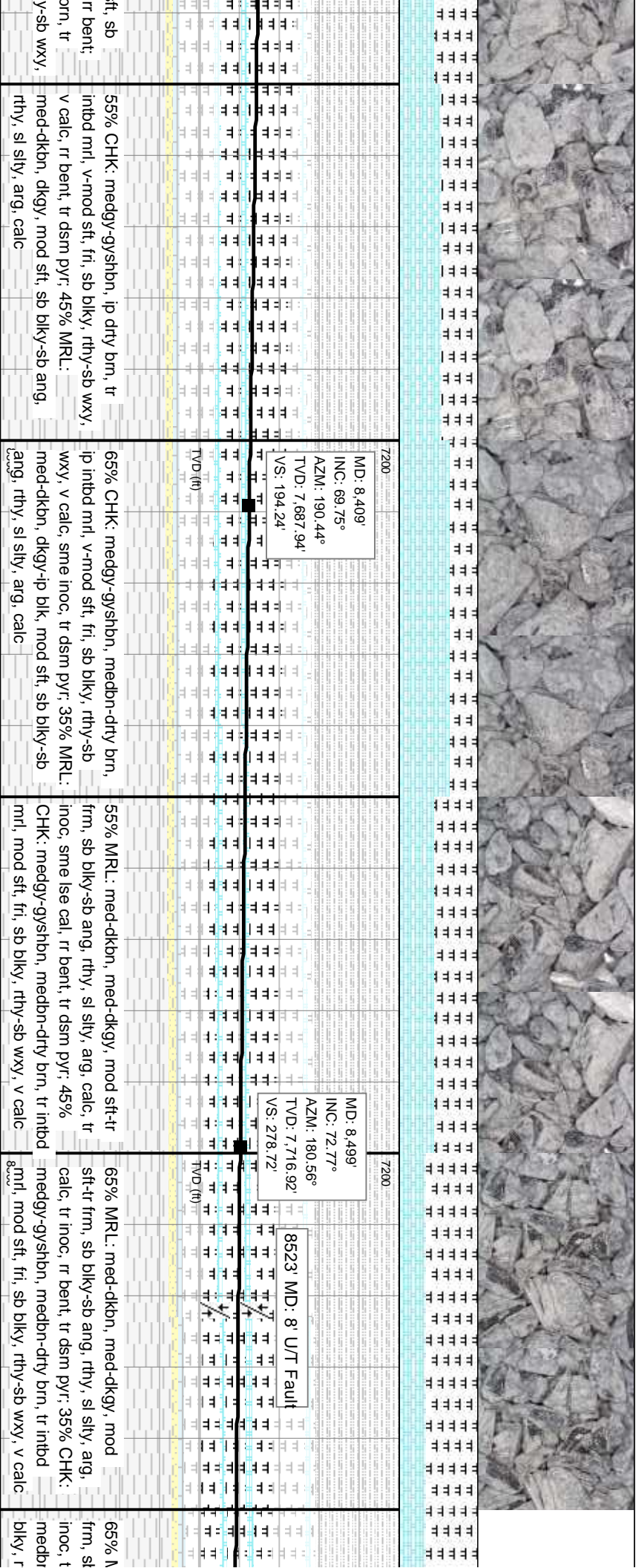
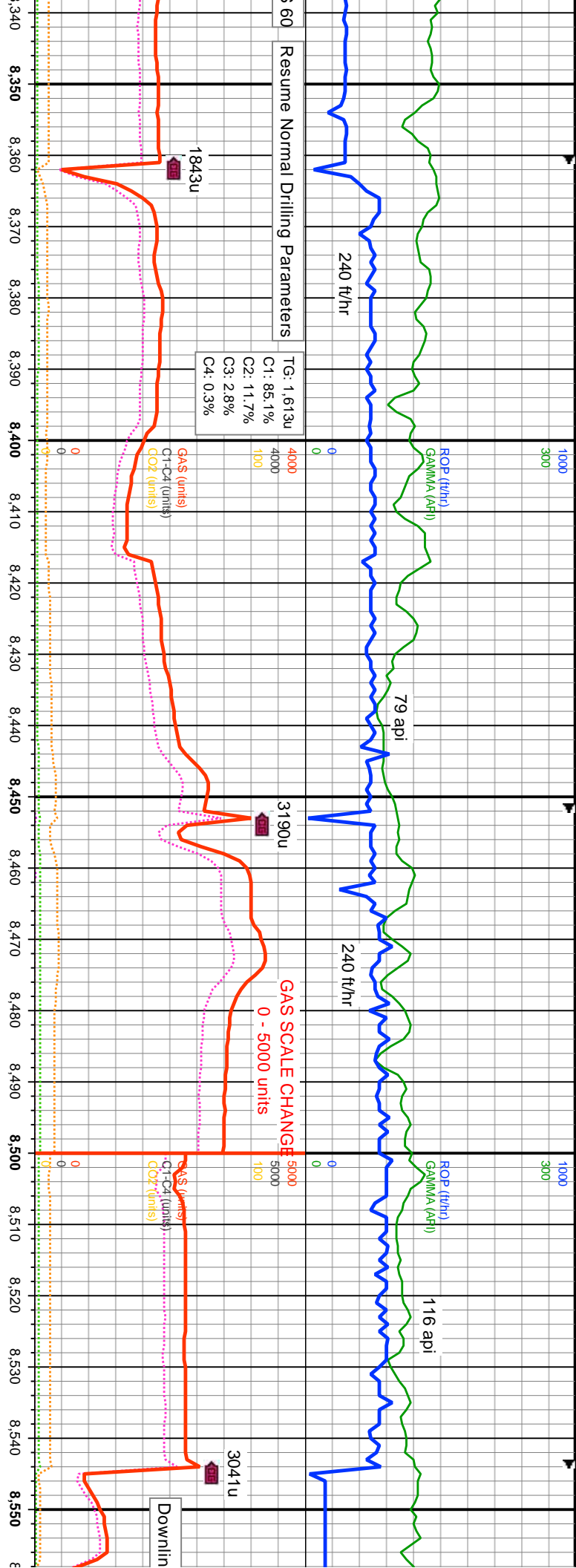
Depth (ft)	MD (ft)	INC (°)	AZM (°)	TVS (ft)	VS (ft)
8120	8,141'	48.84°	215.1°	7.552'	-29.68'
8150	8,230'	55.16°	206.98°	7.60682'	36.69'
8300	8,320'	63.61°	198.81°	7.652.67'	112.71'

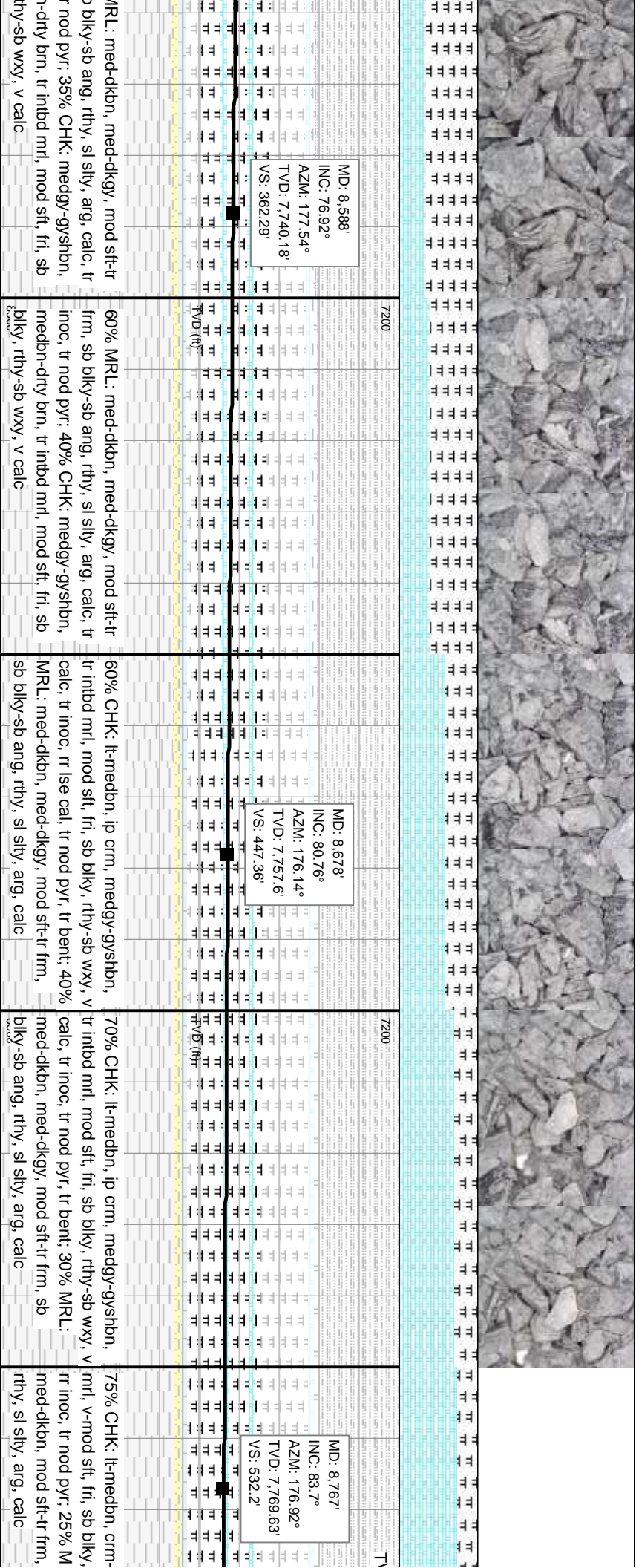
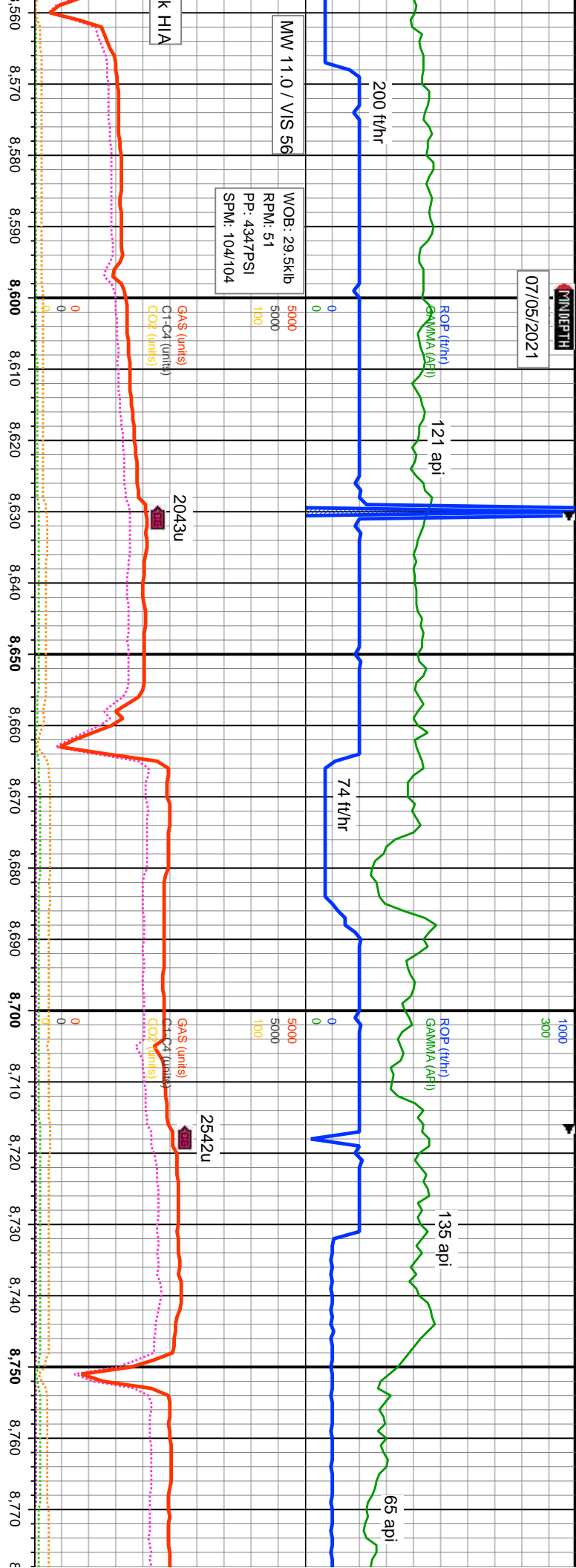
65% MRL: med-dkbn, dkggy, mod sft, sb blkly-sb ang, rthy, sl stly, arg, calc, tr bent, r dsn pyr, r inoc: 35% CHK: lt-medgy, gysbhn, sme intbd mrl, v-mod sft-fri, sb blkly, rthy-sb wxy, v calc

60% CHK: lt-medbn, medgy-gysbhn, r intbd mrl, v-mod sft, fri, sb blkly, rthy-sb wxy, v calc, tr bent: 40% MRL: med-dkbn, dkggy, mod sft, sb blkly-sb ang, rthy, sl stly, arg, calc

50% CHK: lt-medbn, medgy-gysbhn, r intbd mrl, v-mod sft, fri, sb blkly, rthy-sb wxy, v calc, tr bent: 50% MRL: med-dkbn, dkggy, mod sft, sb blkly-sb ang, rthy, sl stly, arg, calc

55% MRL: med-dkbn, dkggy, mod s blkly-sb ang, rthy, sl stly, arg, calc, 45% CHK: medgy-gysbhn, lp dtry, intbd mrl, v-mod sft, fri, sb blkly, rthy-sb wxy, v calc





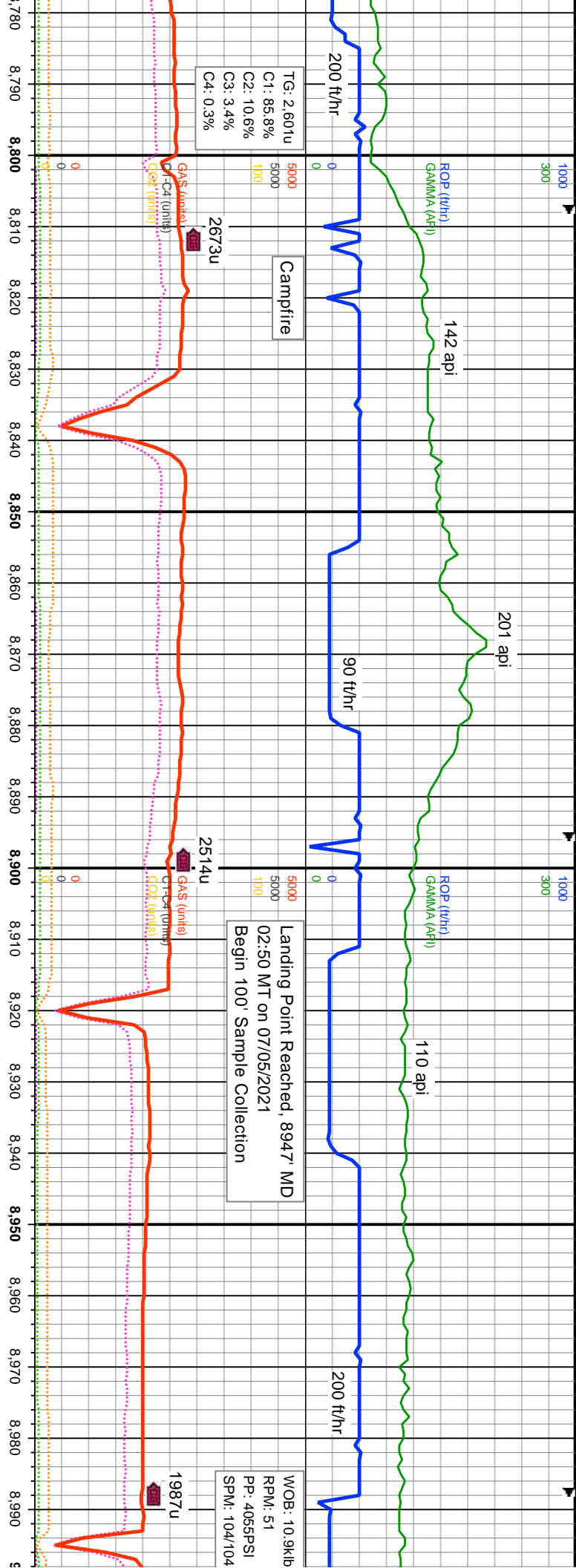
MRL: med-dkbn, med-dkgy, mod sft-tr  
 blyk-sb ang, rthy, sl sly, arg, calc, tr  
 tr nod pyr; 35% CHK; medgy-gyshbn,  
 -dty brn, tr inbd mli, mod sft, fri, sb  
 rthy-sb wxy, v calc

60% MRL: med-dkbn, med-dkgy, mod sft-tr  
 frm, sb blyk-sb ang, rthy, sl sly, arg, calc, tr  
 inoc, tr nod pyr; 40% CHK; medgy-gyshbn,  
 medn-dty brn, tr inbd mli, mod sft, fri, sb  
 blyk, rthy-sb wxy, v calc

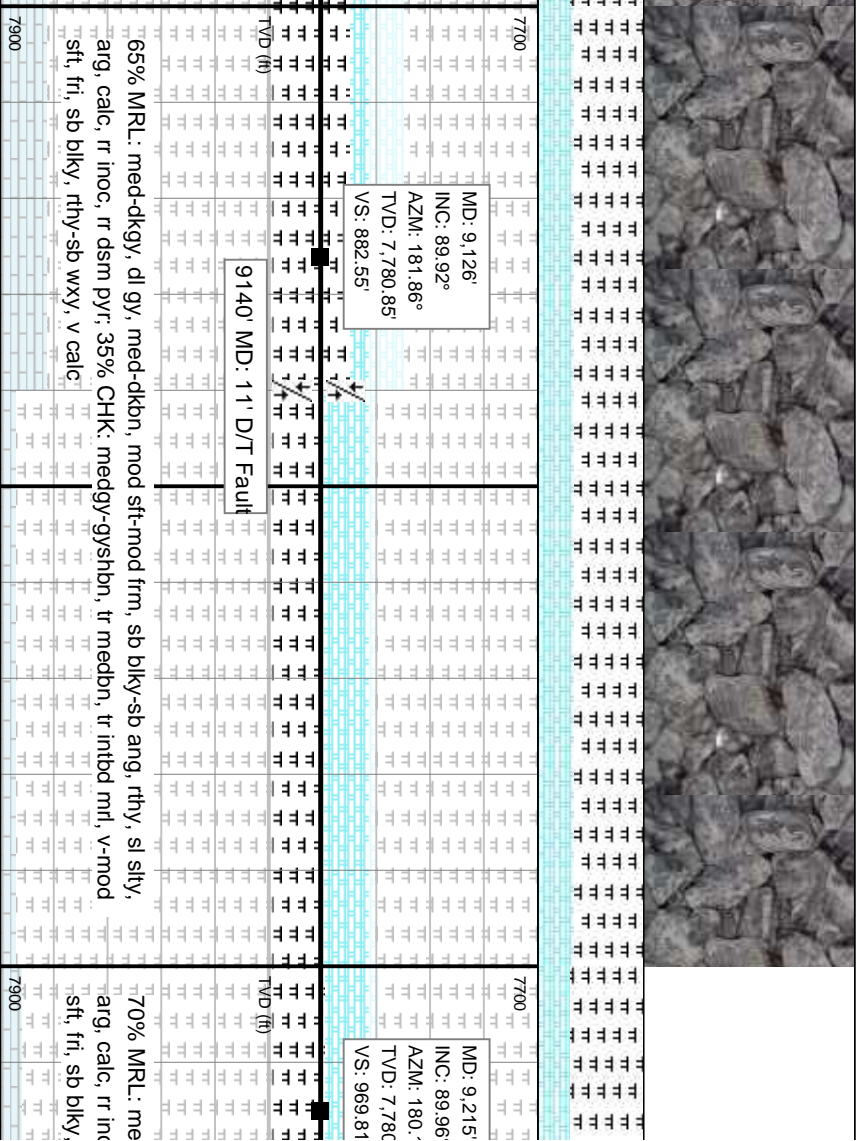
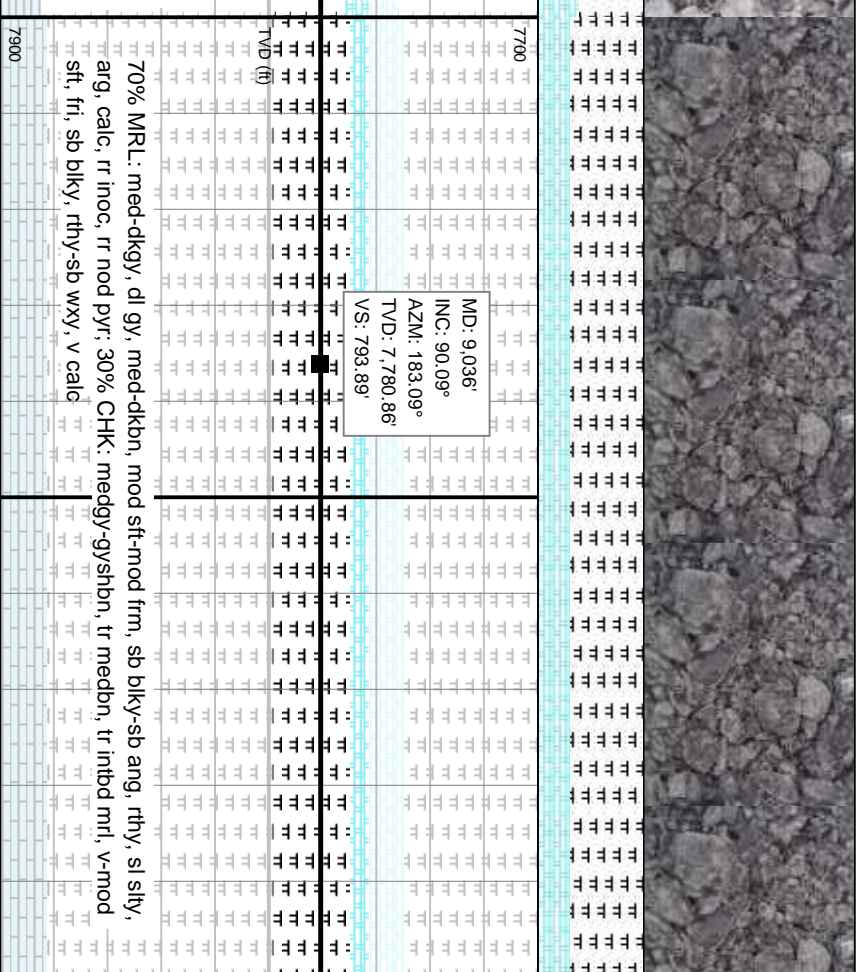
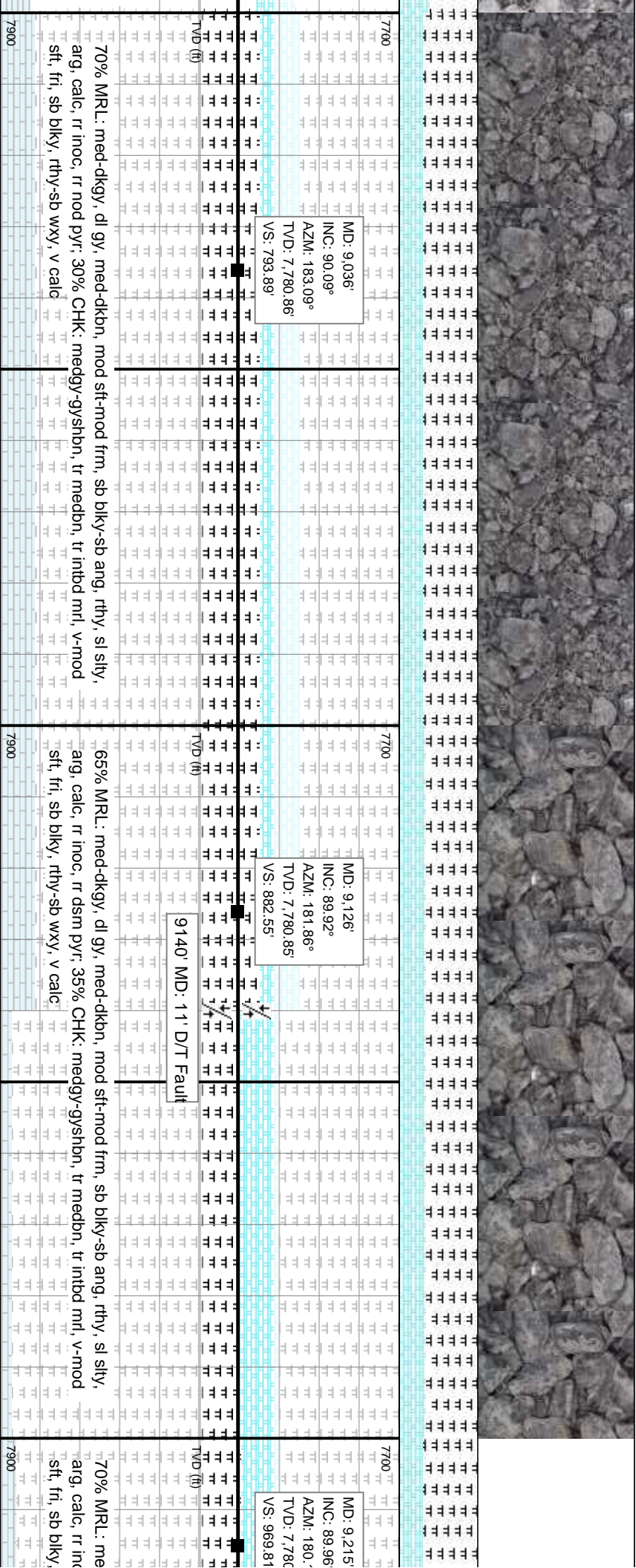
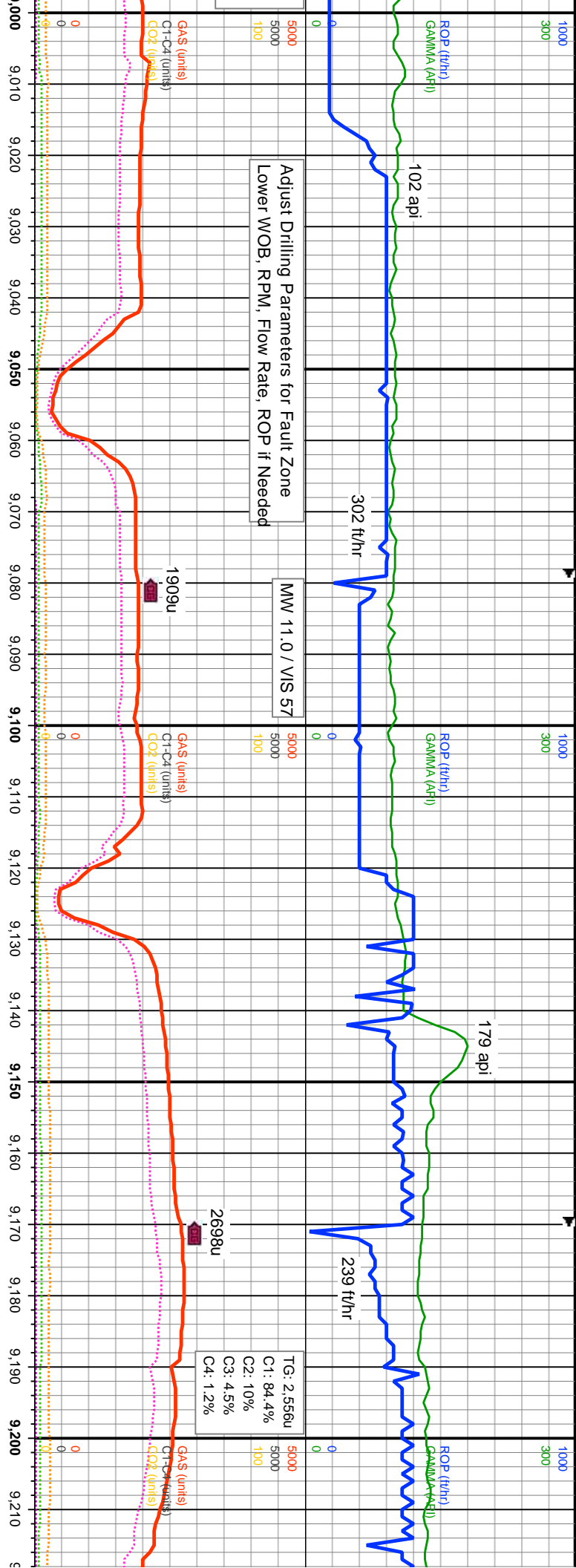
60% CHK: lt-medn, ip crm, medgy-gyshbn,  
 tr inbd mli, mod sft, fri, sb blyk, rthy-sb wxy, v  
 calc, tr inoc, rr ise cal, tr nod pyr, tr bent; 40%  
 MRL: med-dkbn, med-dkgy, mod sft-tr frm,  
 sb blyk-sb ang, rthy, sl sly, arg, calc

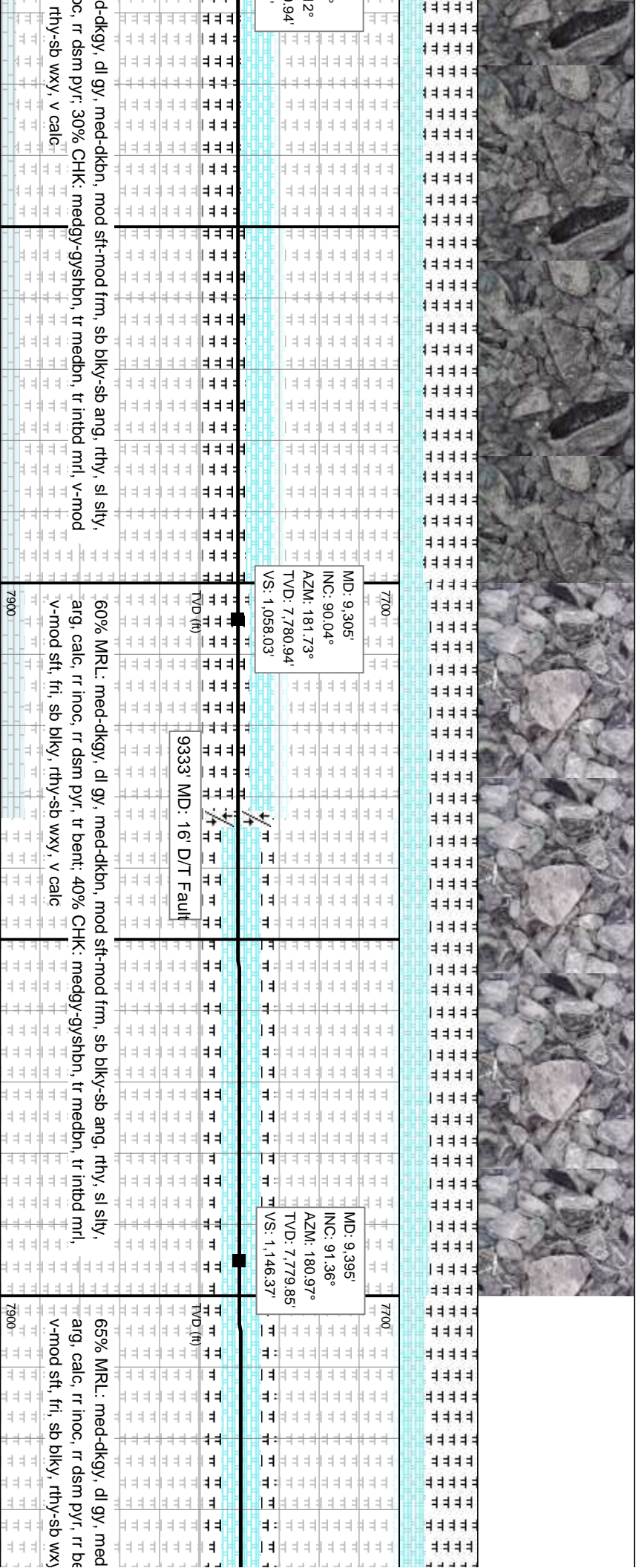
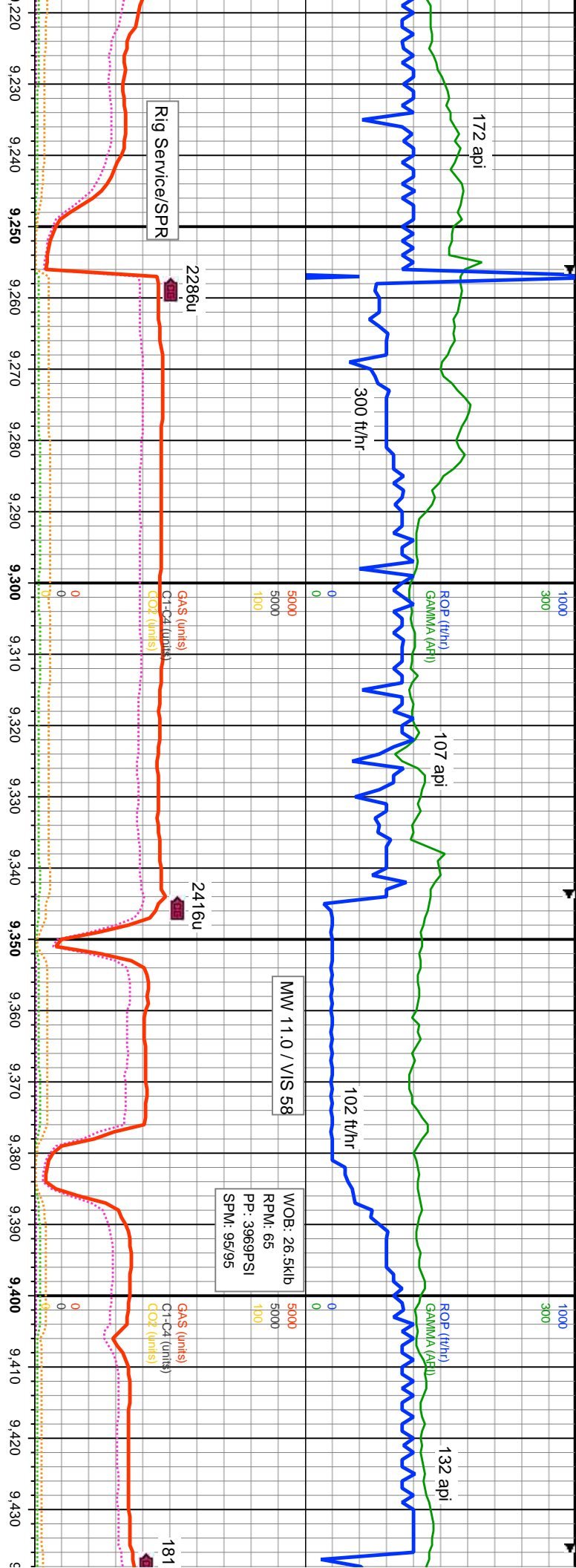
70% CHK: lt-medn, ip crm, medgy-gyshbn,  
 tr inbd mli, mod sft, fri, sb blyk, rthy-sb wxy, v  
 calc, tr inoc, tr nod pyr, tr bent; 30% MRL:  
 med-dkbn, med-dkgy, mod sft-tr frm, sb  
 blyk-sb ang, rthy, sl sly, arg, calc

75% CHK: lt-medn, crm-  
 mli, v-mod sft, fri, sb blyk,  
 tr inoc, tr nod pyr; 25% MRL:  
 med-dkbn, mod sft-tr frm,  
 rthy, sl sly, arg, calc



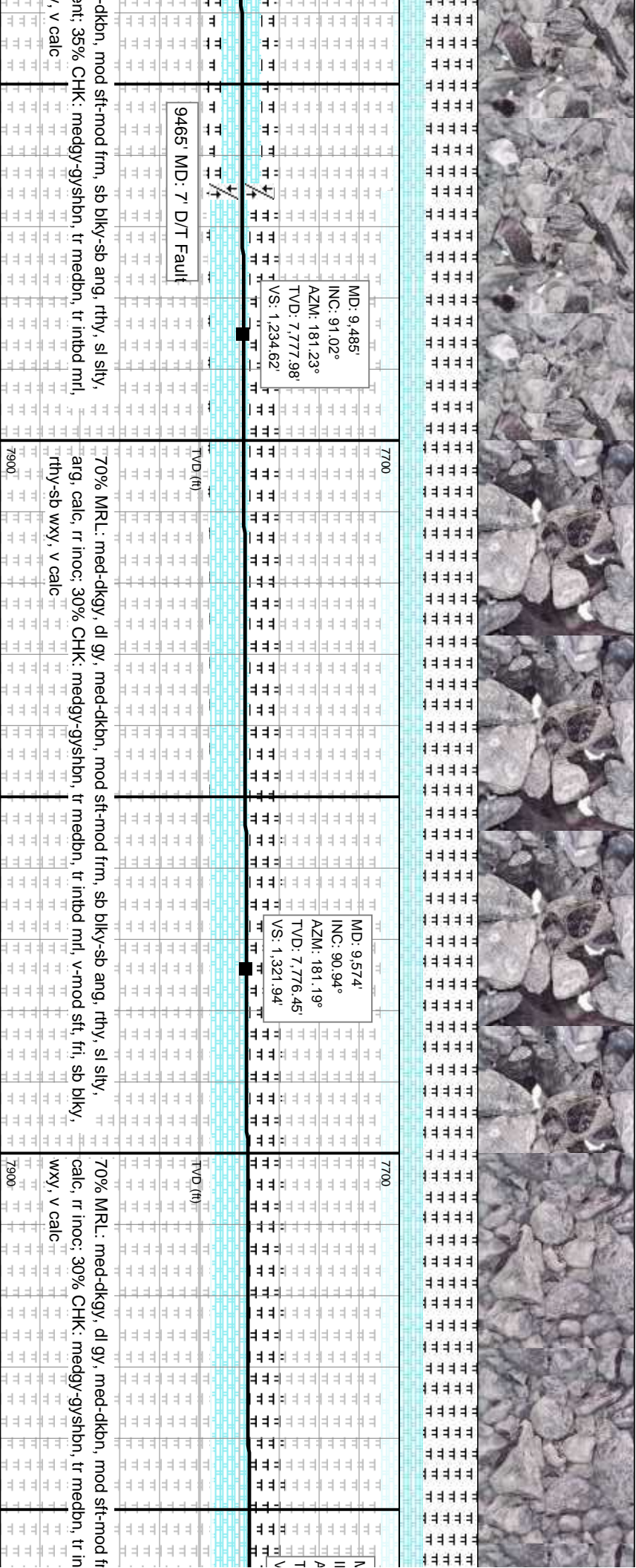
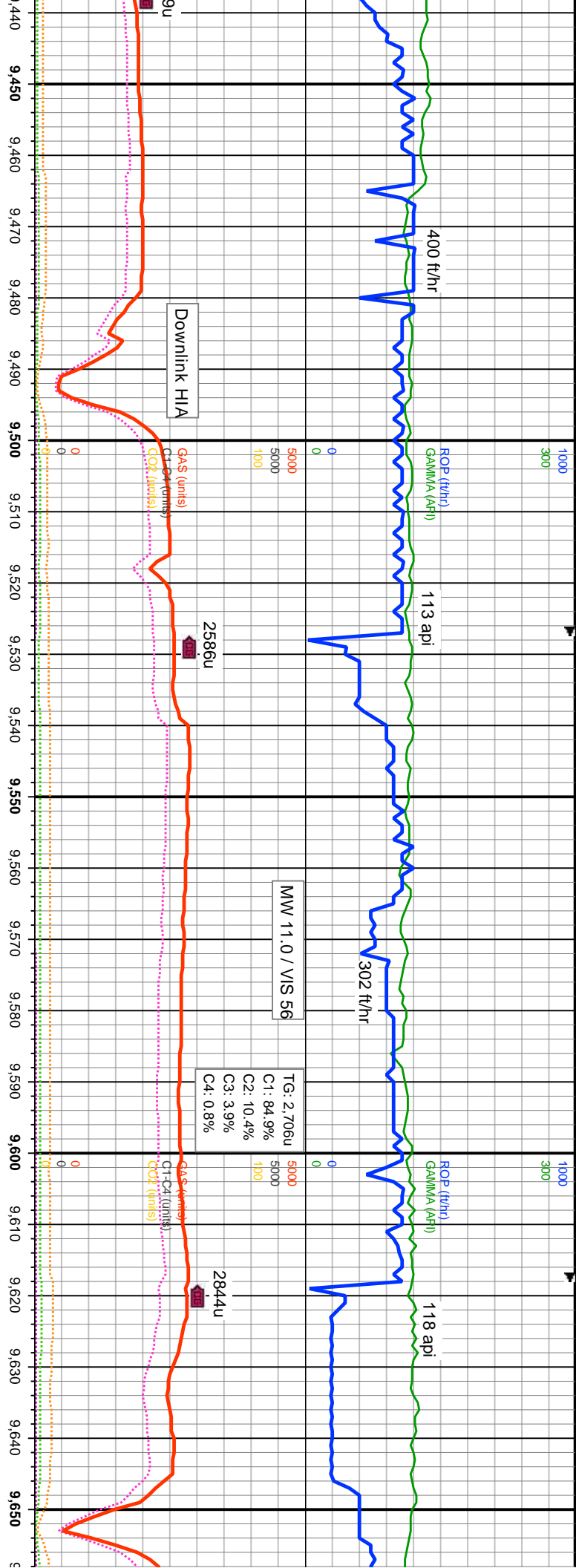
MD SCALE CHANGE	7700' - 7900'	7700'	7700'	7700'	7700'
bf, ip gy, rr inbtd					
rthy-sb wxy, v calc,					
RL: med-dkgy,					
sb blkysb ang,					
55% CHK: medbn-gyshbn, medgy, occ crm,					
tr inbtd mri, v-mod sft, fri, sb blkysb ang, rthy-sb					
wxy, v calc, tr inoc, tr nod pyr, rr bent: 45%					
MRL: med-dkgy, med-dkbn, mod sft-tr frm,					
sb blkysb ang, rthy, sl stly, arg, calc					
MD: 8.857'					
INC: 86.41°					
AZM: 178.62°					
TVD: 7,777.39'					
VS: 618.97'					
60% MRL: med-dkgy, med-dkbn, mod					
sft-mod frm, sb blkysb ang, rthy, sl stly, arg,					
calc, rr inoc, tr nod pyr, tr bent: 40% CHK:					
medbn-gyshbn, medgy, occ crm, tr inbtd mri,					
v-mod sft, fri, sb blkysb wxy, v calc					
MD: 8.947'					
INC: 89.54°					
AZM: 179.66°					
TVD: 7,780.57'					
VS: 706.52'					
60% MRL: med-dkgy, dl gy, med-dkbn, mod					
sft-mod frm, sb blkysb ang, rthy, sl stly, arg,					
calc, rr inoc, tr nod pyr, 40% CHK:					
medgy-gyshbn, tr medbn, tr inbtd mri, v-mod					
sft, fri, sb blkysb wxy, v calc					

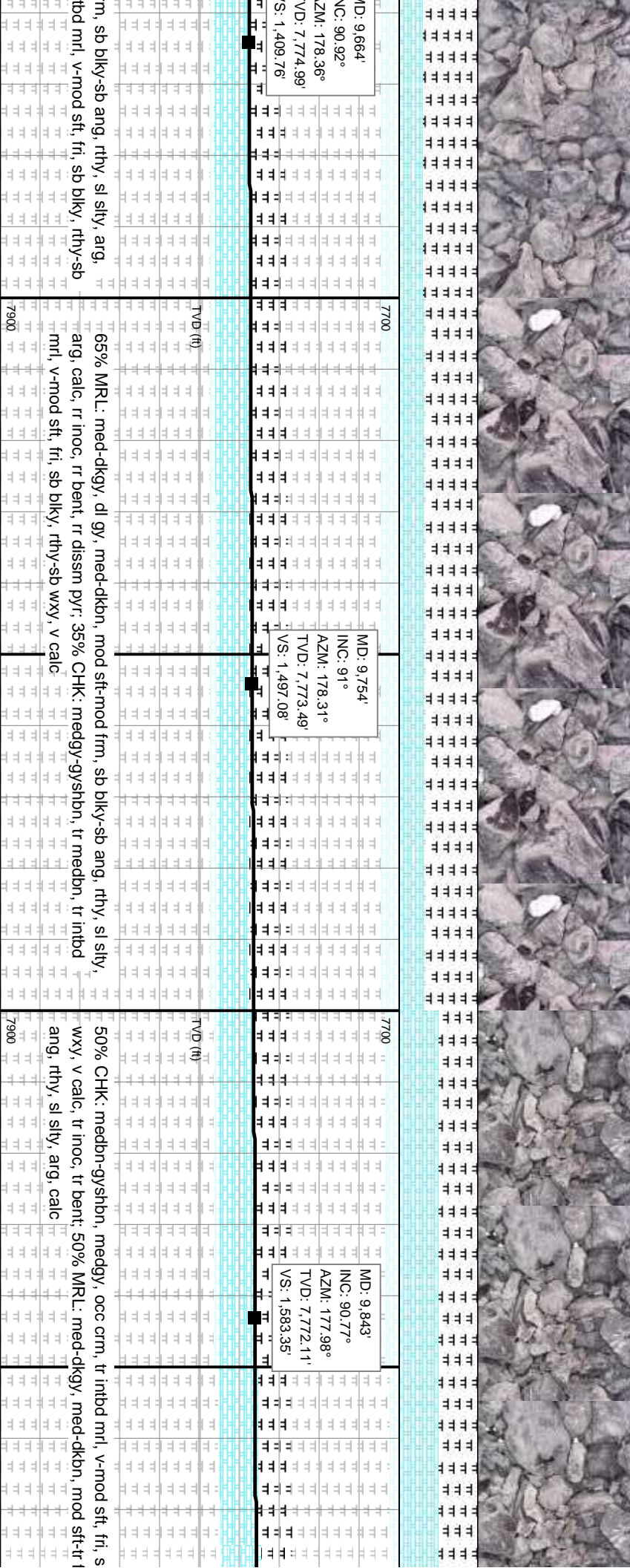
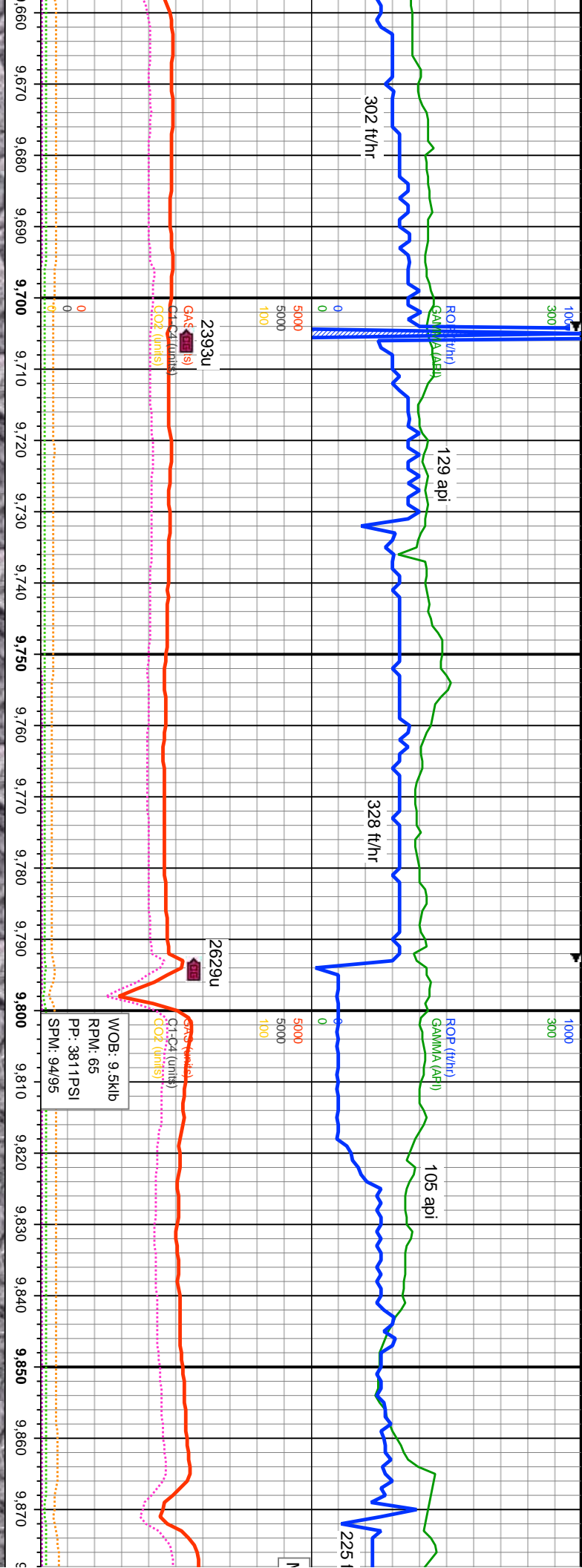




60% MRL: med-dkgy, dl gy, med-dkbn, mod sft-mod frm, sb blk-y-sb ang, rthy, sl sily, arg, calc, rr inoc, rr dsrn pyr, tr bent, 40% CHK: medgy-gyshbn, tr medbn, tr intbd mrl, v-mod sft, fri, sb blk-y, rthy-sb wxy, v calc

65% MRL: med-dkgy, dl gy, med arg, calc, rr inoc, rr dsrn pyr, rr v-mod sft, fri, sb blk-y, rthy-sb wxy



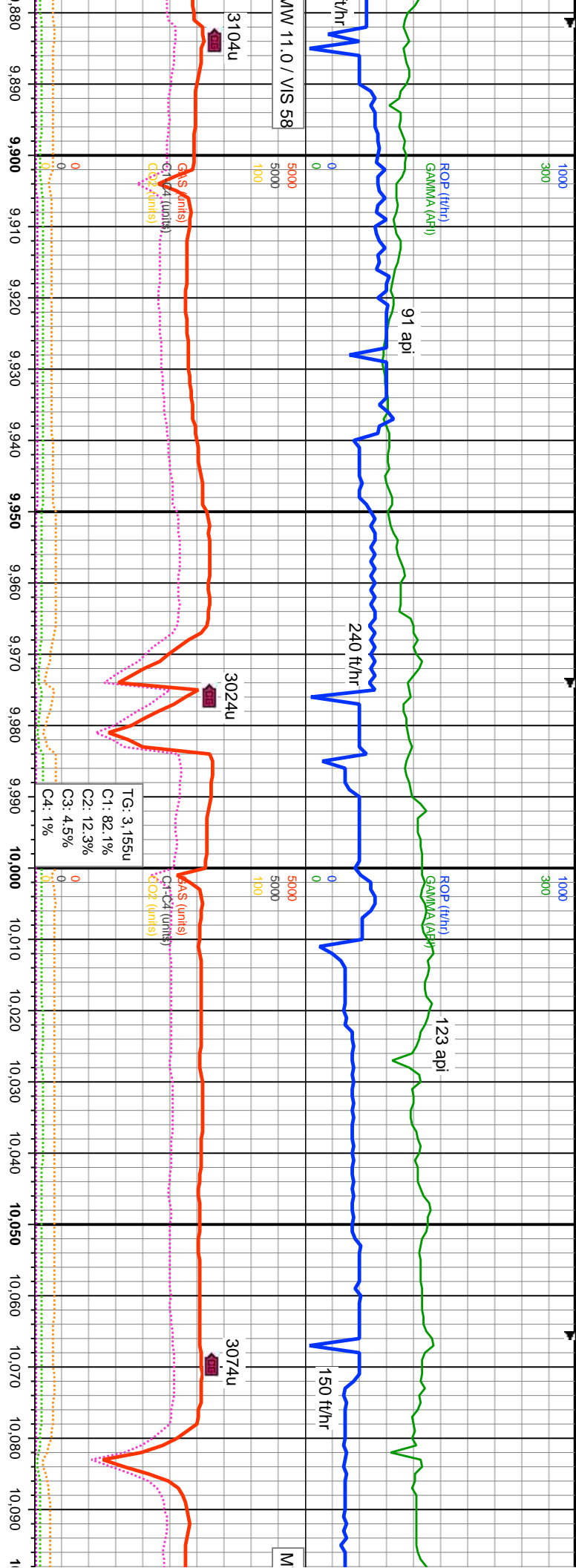


ID: 9.664'  
 NC: 90.92°  
 ZM: 178.36°  
 VDM: 7.774.99'  
 VVD: 7.774.99'  
 S: 1.409.76'

MD: 9.754'  
 INC: 91°  
 AZM: 178.31°  
 TVD: 7.773.49'  
 VS: 1.497.08'

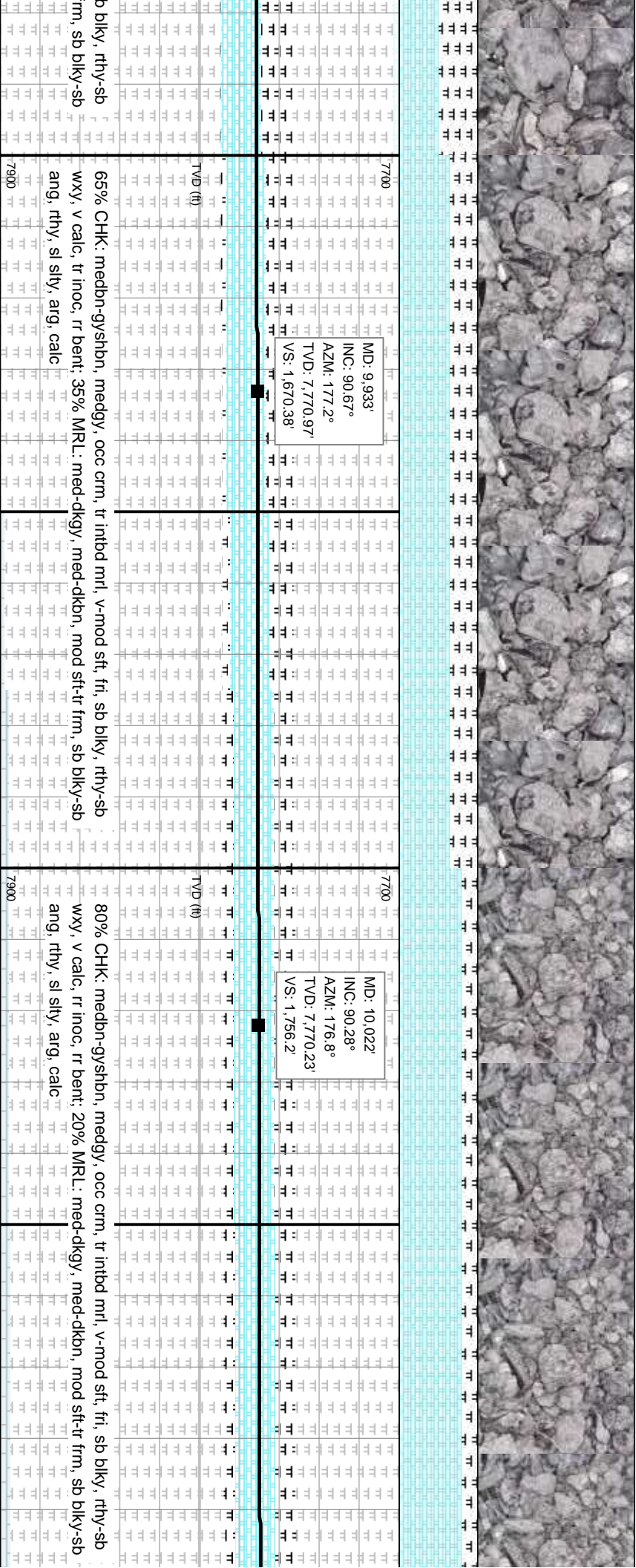
MD: 9.843'  
 INC: 90.77°  
 AZM: 177.98°  
 TVD: 7.772.11'  
 VS: 1.583.35'

sb blkly-sb ang, rthy, sl slty, arg,  
 mrl, v-mod sft, fri, sb blkly, rthy-sb  
 65% MRL: med-dkgy, dl gy, med-dkbn, mod sft-mod frm, sb blkly-sb ang, rthy, sl slty,  
 arg, calc, rr inoc, rr bent, rr diss pyr, 35% CHK: medgy-gyshbn, tr medbn, tr inbd  
 mrl, v-mod sft, fri, sb blkly, rthy-sb wxy, v calc  
 50% CHK: medbn-gyshbn, medgy, occ crm, tr inbd mrl, v-mod sft, fri, s  
 wxy, v calc, tr inoc, tr bent: 50% MRL: med-dkgy, med-dkbn, mod sft-tr f  
 ang, rthy, sl slty, arg, calc



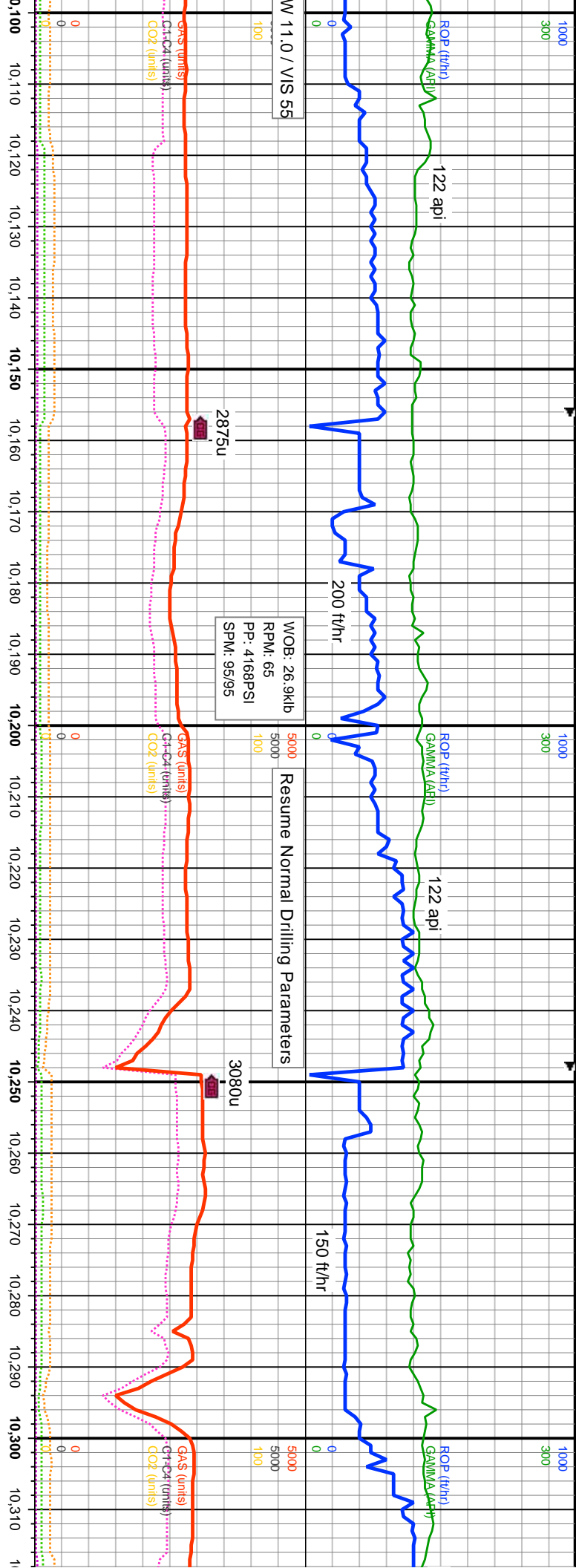
MD: 9.933'
INC: 90.67°
AZM: 177.2°
TVD: 7.770.97'
VS: 1.670.38'

MD: 10.022'
INC: 90.28°
AZM: 176.8°
TVD: 7.770.23'
VS: 1.756.2'



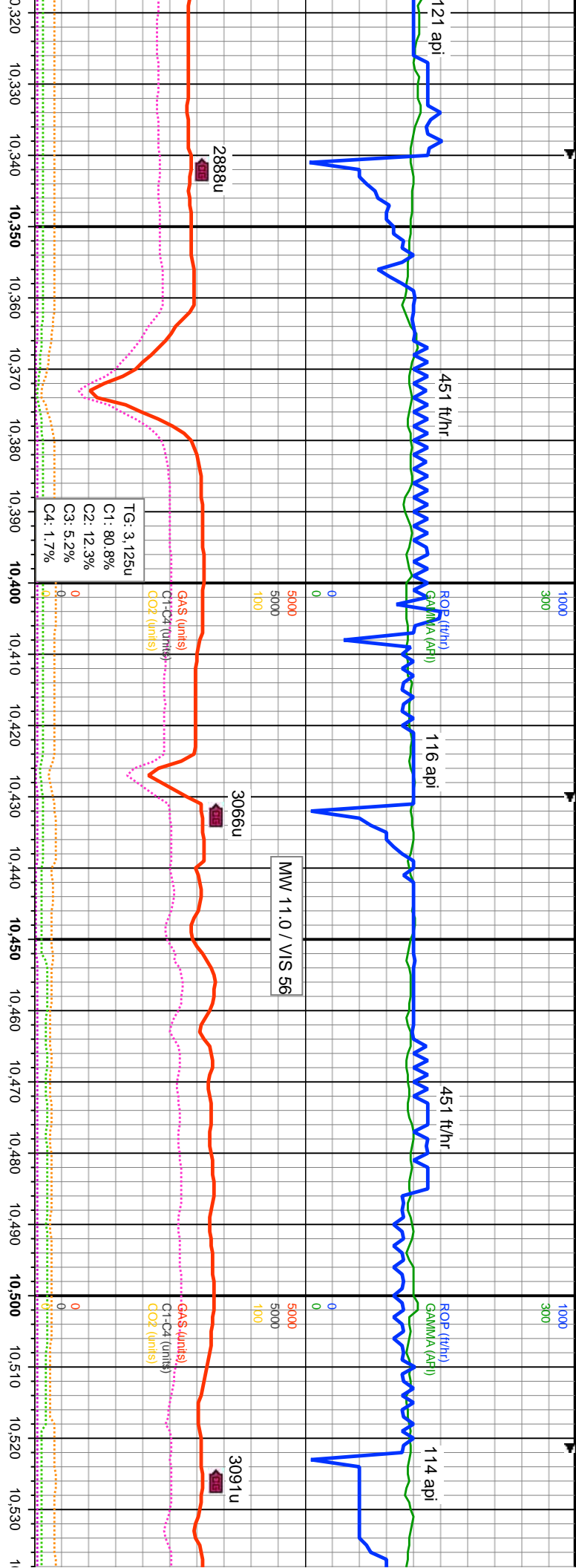
65% CHK: medbn-gyshbn, medgy, occ crm, tr intbd mrl, v-mod sft, fri, sb blkly, rthy-sb  
 wxy, v calc, tr inoc, rr bent: 35% MRL: med-dkgy, med-dkbn, mod st-tr frm, sb blkly-sb  
 ang, rthy, sl slty, atg, calc

80% CHK: medbn-gyshbn, medgy, occ crm, tr intbd mrl, v-mod sft, fri, sb blkly, rthy-sb  
 wxy, v calc, tr inoc, rr bent: 20% MRL: med-dkgy, med-dkbn, mod st-tr frm, sb blkly-sb  
 ang, rthy, sl slty, atg, calc



7700	MD: 10.112°	MD: 10.202°	MD: 10.291°	7700
	INC: 90.69°	INC: 90.77°	INC: 90.5°	
	AZM: 179.41°	AZM: 181.26°	AZM: 183.17°	
	TVD: 7,769.47'	TVD: 7,768.33'	TVD: 7,767.34'	
	VS: 1,843.43'	VS: 1,931.45'	VS: 2,019.05'	

7900	85% CHK: medbn-gyshbn, medgy, occ crm, tr intbd mrl, v-mod sft, fri, sb blkly, rthy-sb wxy, v calc, rr inoc, rr bent: 15% MRL: med-dkgy, med-dkbn, mod sft-tr frm, sb blkly-sb ang, rthy, sl slty, arg, calc	7900	70% CHK: medbn-gyshbn, medgy, occ crm, tr intbd mrl, v-mod sft, fri, sb blkly, rthy-sb wxy, v calc, rr inoc, rr bent: 30% MRL: med-dkgy, med-dkbn, mod sft-tr frm, sb blkly-sb ang, rthy, sl slty, arg, calc	7900	75% CHK: medbn-gyshbn, medgy, occ crm, tr intbd mrl, v-mod sft, fri, sb blkly, rthy-sb wxy, v calc, rr inoc, rr bent: 15% MRL: med-dkgy, med-dkbn, mod sft-tr frm, sb blkly-sb ang, rthy, sl slty, arg, calc
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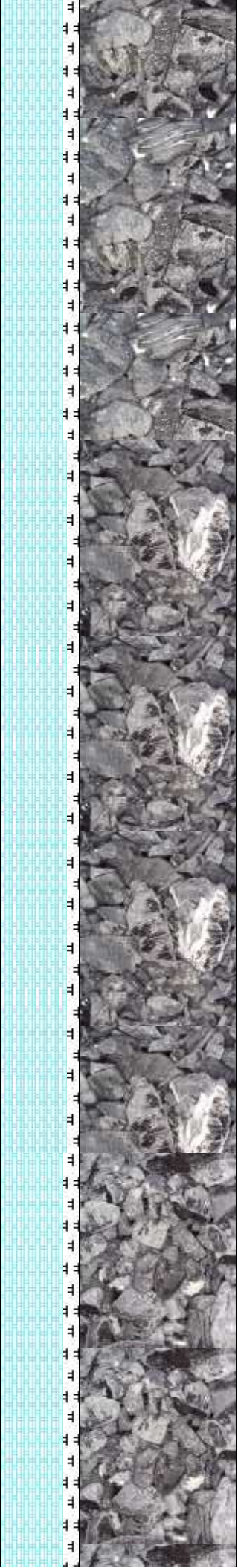
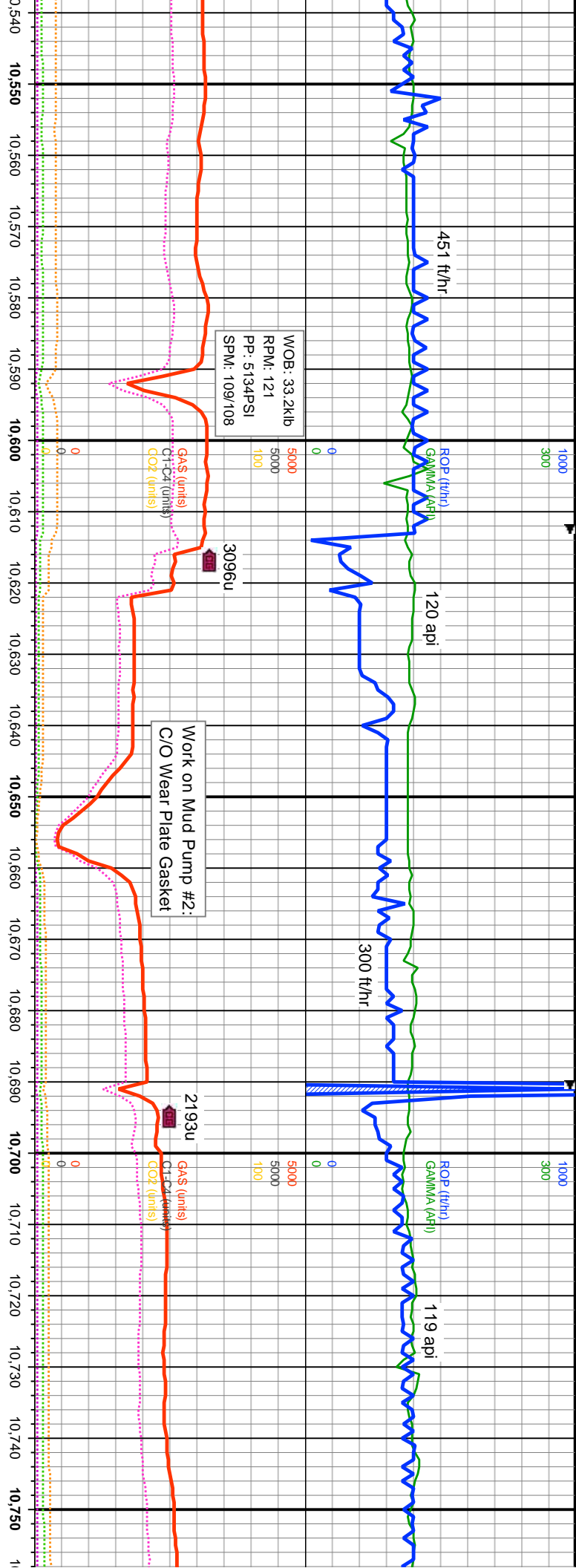
MD: 10.381'  
 INC: 90.04°  
 AZM: 177.33°  
 TVD: 7.766.92  
 VS: 2.107.01'

MD: 10.471'  
 INC: 89.89°  
 AZM: 181.83°  
 TVD: 7.766.98  
 VS: 2.194.77'

Time	ROP (ft/hr)	GAMMA (API)	GAS (units)	C1-C4 (units)	CO2 (units)
10:320	121	451	2888	3.125	0
10:350	116	3066	3091	3.125	0
10:400	114	3091	3091	3.125	0
10:450	114	3091	3091	3.125	0
10:500	114	3091	3091	3.125	0
10:530	114	3091	3091	3.125	0

80% CHK: medbn-gyshbn, medgy, occ crm, tr inbtd mrl, v-modly sft, fri, sb blkly, rthy-sb  
 wxy, v calc, rr inoc, rr bent: 20%, MRL: med-dkgy, med-dkbn, mod sft-tr fm, sb blkly-sb  
 ang, rthy, sl slty, arg, calc

80% CHK: medbn-gyshbn, medgy, occ crm, tr inbtd mrl, v-modly sft, fri, sb blkly, rthy-sb  
 wxy, v calc, rr inoc, rr bent: 25% MRL: med-dkgy, med-dkbn, modly sft-tr  
 ang, rthy, sl slty, arg, calc



MD: 10.560'  
 INC: 89.77°  
 AZM: 183.79°  
 TVD: 7.767.25'  
 VS: 2.282.54'

MD: 10.650'  
 INC: 89.83°  
 AZM: 181.71°  
 TVD: 7.767.56'  
 VS: 2.371.27'

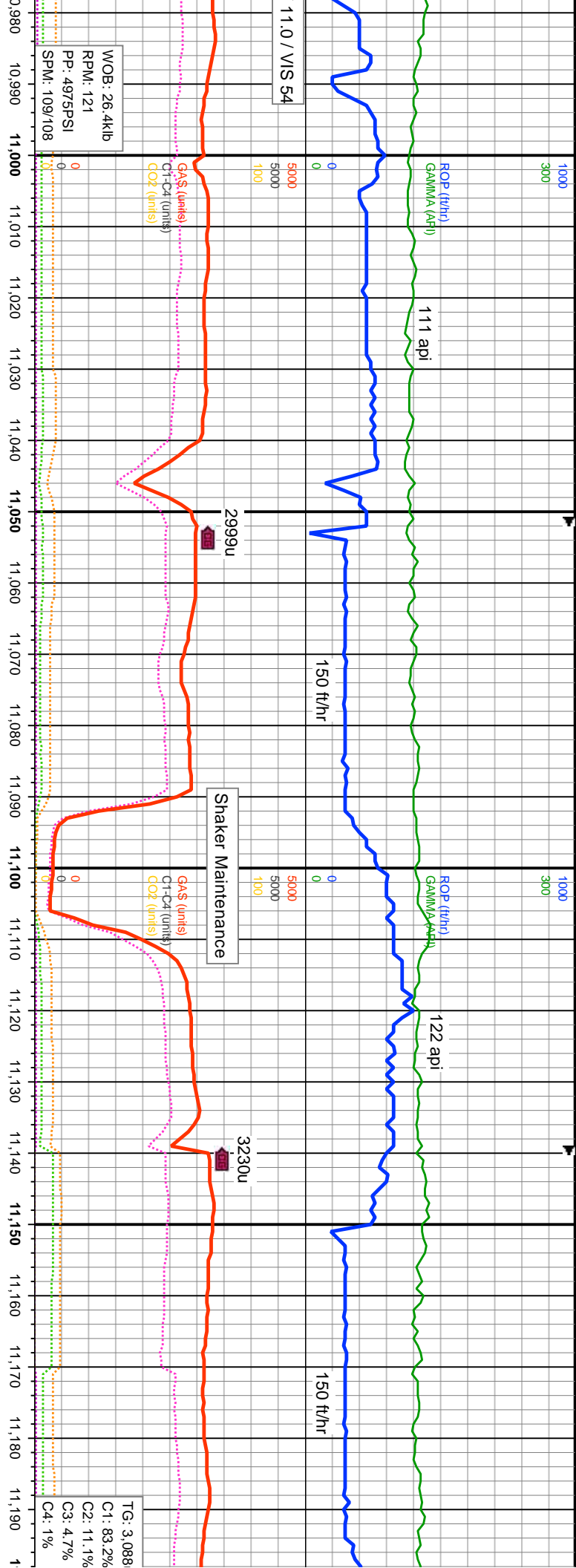
MD: 10.740'  
 INC: 90.16°  
 AZM: 181.8°  
 TVD: 7.767.56'  
 VS: 2.459.74'

Time	ROP (ft/hr)	GAMMA API	GAs (units)	C1-C4 (units)	CO2 (units)	Notes
10:540	~450	~120	~3000	~100	~100	
10:550	~450	~120	~3000	~100	~100	
10:560	~450	~120	~3000	~100	~100	
10:570	~450	~120	~3000	~100	~100	
10:580	~450	~120	~3000	~100	~100	
10:585	~450	~120	~3000	~100	~100	WOB: 33.2klb RPM: 121 PP: 5134PSI SPM: 109/108
10:590	~450	~120	~3000	~100	~100	
10:600	~450	~120	~3000	~100	~100	
10:610	~450	~120	~3000	~100	~100	
10:620	~450	~120	~3000	~100	~100	3096u
10:630	~450	~120	~3000	~100	~100	
10:640	~450	~120	~3000	~100	~100	Work on Mud Pump #2: C/O Wear Plate Gasket
10:650	~450	~120	~3000	~100	~100	
10:660	~450	~120	~3000	~100	~100	
10:670	~450	~120	~3000	~100	~100	
10:680	~450	~120	~3000	~100	~100	
10:690	~450	~120	~3000	~100	~100	2193u
10:700	~450	~120	~3000	~100	~100	
10:710	~450	~120	~3000	~100	~100	
10:720	~450	~120	~3000	~100	~100	
10:730	~450	~120	~3000	~100	~100	
10:740	~450	~120	~3000	~100	~100	
10:750	~450	~120	~3000	~100	~100	

85% CHK: medbn-gyshbn, medgy, occ crm, tr intbd ml, v-mod sft, fri, sb blkly, rthy-sb wxy, v calc, tr inoc, rr bent; 15% MRL: med-dkgy, med-dkbn, mod sft-tr frm, sb blkly-sb ang, rthy, sl slty, arg, calc

80% CHK: medbn-gyshbn, medgy, occ crm, tr intbd ml, v-mod sft, fri, sb blkly, wxy, v calc, tr inoc, rr bent; 20% MRL: med-dkgy, med-dkbn, mod sft-tr frm, sb blkly-sb ang, rthy, sl slty, arg, calc





MD: 11,009'  
 INC: 90.27°  
 AZM: 180.41°  
 TVD: 7,766.09'  
 VS: 2,723.76'

MD: 11,099'  
 INC: 90.05°  
 AZM: 181.77°  
 TVD: 7,765.84'  
 VS: 2,812.02'

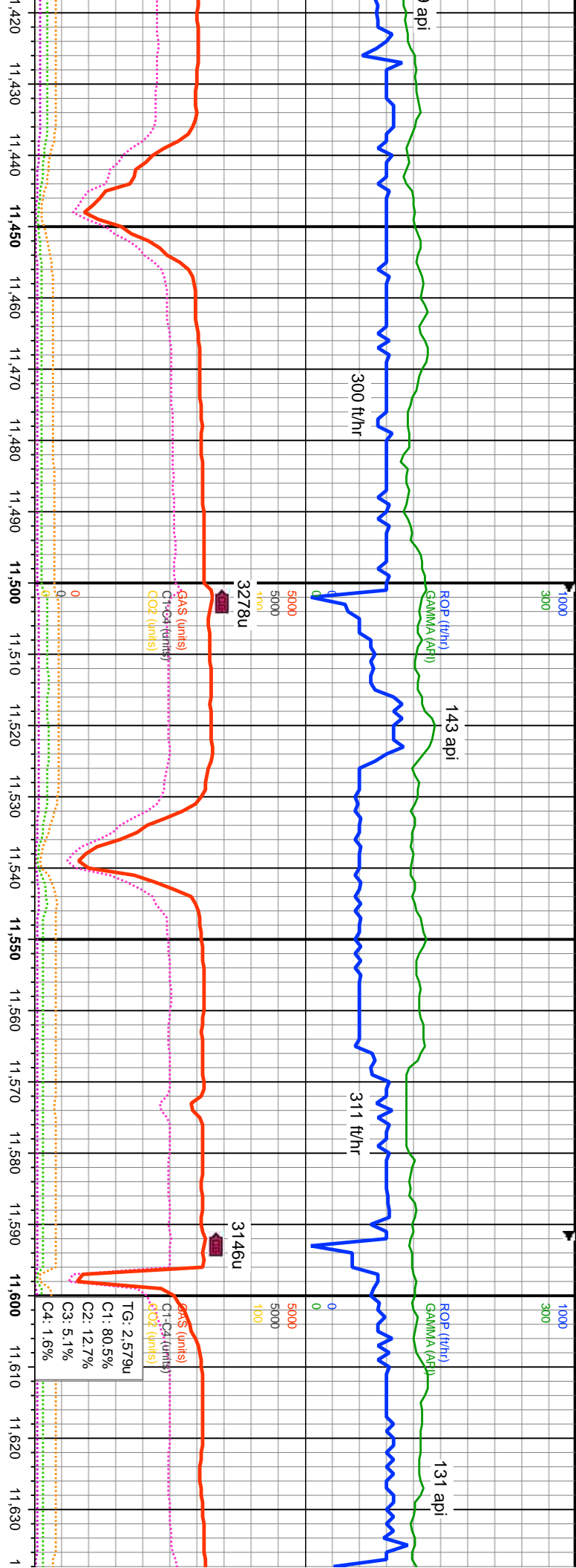
MD: 11,188'  
 INC: 89.99°  
 AZM: 180.25°  
 TVD: 7,765.81'  
 VS: 2,899.29'

Time	ROP (ft/hr)	GAMMA (API)	11.0 / VIS 54	SPM: 109/108
10,980	~500	~450	~500	~100
10,990	~500	~450	~500	~100
11,000	~500	~450	~500	~100
11,010	~500	~450	~500	~100
11,020	~500	~450	~500	~100
11,030	~500	~450	~500	~100
11,040	~500	~450	~500	~100
11,050	~500	~450	~500	~100
11,060	~500	~450	~500	~100
11,070	~500	~450	~500	~100
11,080	~500	~450	~500	~100
11,090	~500	~450	~500	~100
11,100	~500	~450	~500	~100
11,110	~500	~450	~500	~100
11,120	~500	~450	~500	~100
11,130	~500	~450	~500	~100
11,140	~500	~450	~500	~100
11,150	~500	~450	~500	~100
11,160	~500	~450	~500	~100
11,170	~500	~450	~500	~100
11,180	~500	~450	~500	~100
11,190	~500	~450	~500	~100
1	~500	~450	~500	~100

85% CHK: medbn-gyshbn, medgy, occ crm, tr inbd mrl, v-mod sft, fri, sb blk, rthy-sb wxy, v calc, tr inoc, rr bent; 15% MRL: med-dkgy, med-dkbn, mod sft-tr frm, sb blk, rthy, sl sly, arg, calc

75% CHK: medbn-gyshbn, medgy, tr inbd mrl, v-mod sft, fri, sb blk, rthy-sb wxy, v calc, tr inoc, tr dsrm pyr; 25% MRL: med-dkgy, med-dkbn, mod sft-frm, sb blk, rthy, sl sly, arg, calc





MD: 11,457  
 INC: 88.81°  
 AZM: 174.7°  
 TVD: 7,769.76'  
 VS: 3,160.8'

MD: 11,546  
 INC: 89.1°  
 AZM: 176.71°  
 TVD: 7,771.38'  
 VS: 3,246.06'

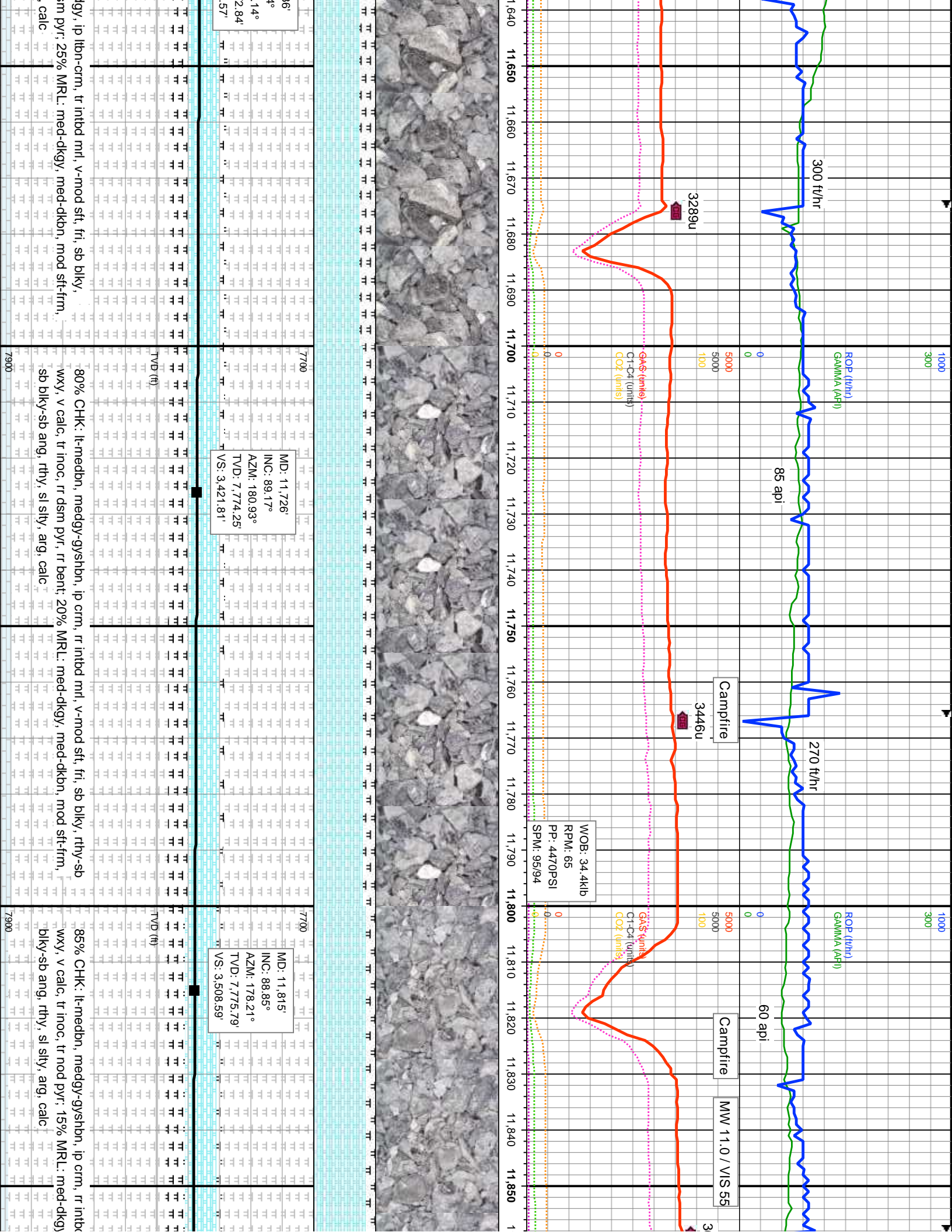
MD: 11,633  
 INC: 89.0°  
 AZM: 181°  
 TVD: 7,777'  
 VS: 3,333'

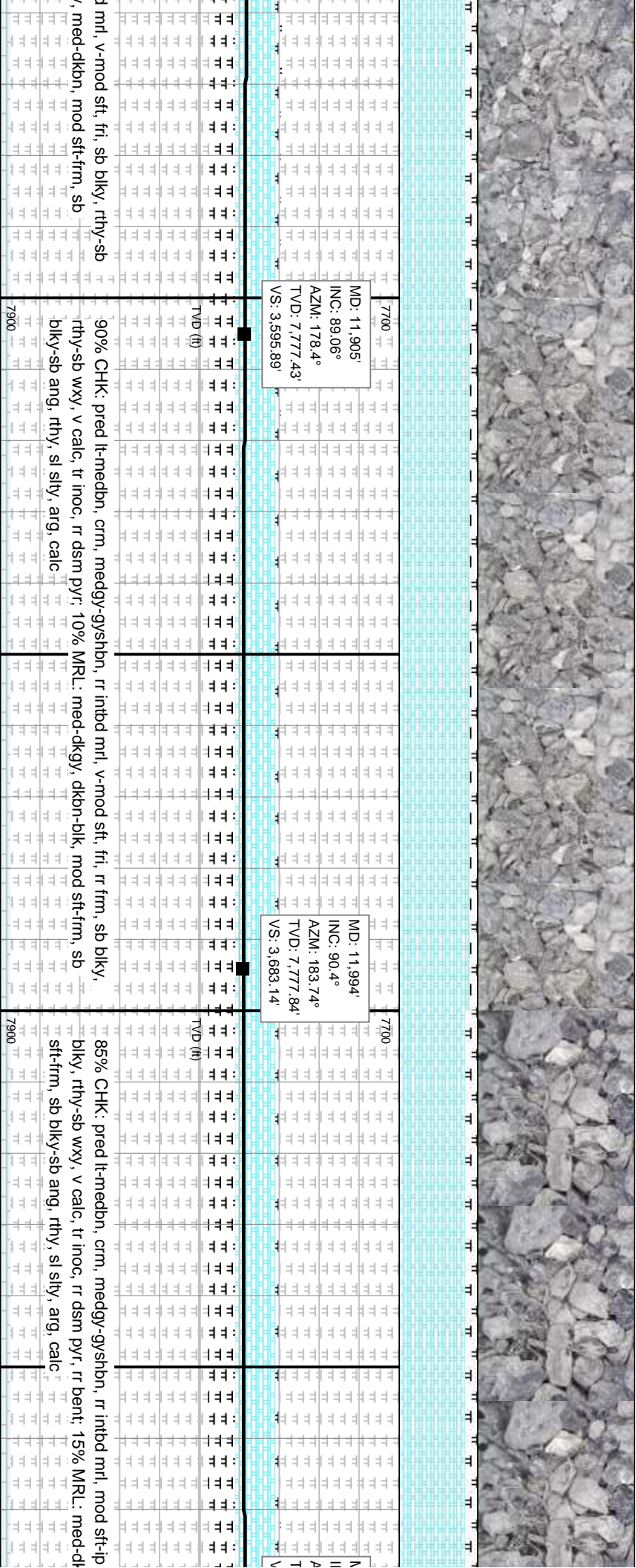
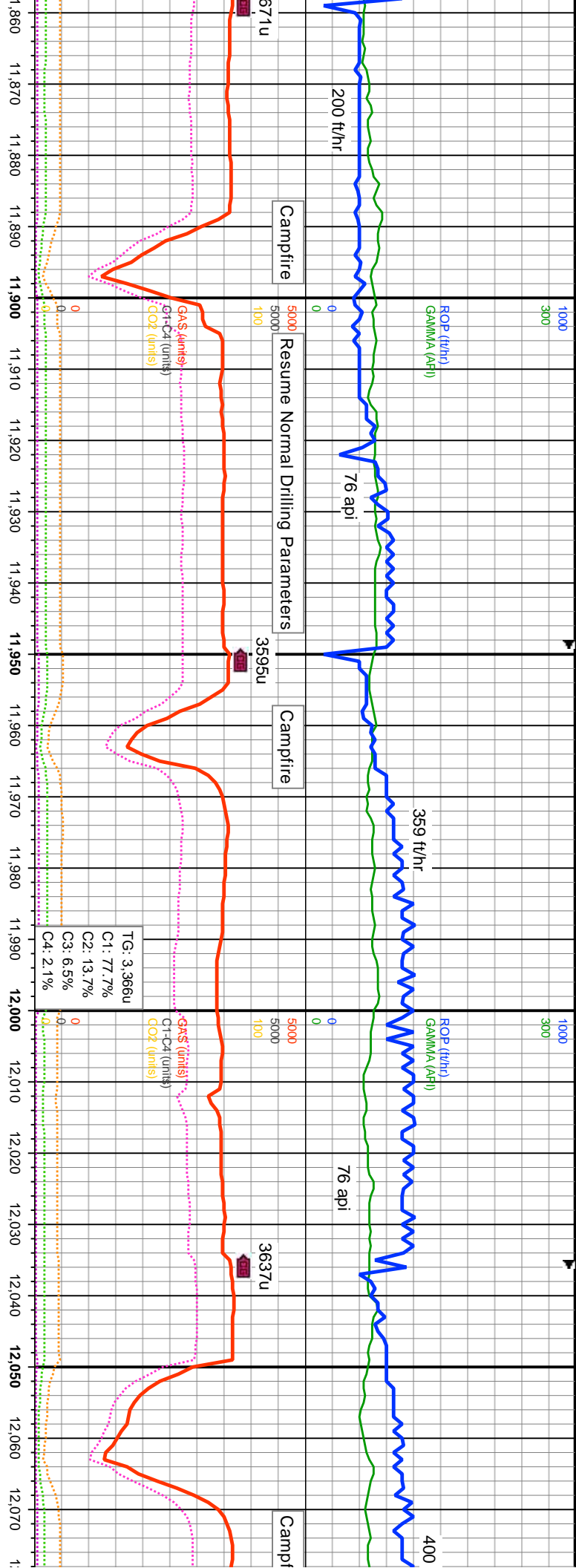
Depth (ft)	ROP (ft/hr)	GAMA (API)	GAS (units)	C1-C4 (units)	CO2 (units)	Notes
11,420	300	143	0	0	0	
11,430	300	143	0	0	0	
11,440	300	143	0	0	0	
11,450	300	143	5000	5000	5000	Peak GAS, C1-C4, CO2
11,460	300	143	0	0	0	
11,470	300	143	0	0	0	
11,480	300	143	0	0	0	
11,490	300	143	0	0	0	
11,500	300	143	0	0	0	
11,510	300	143	0	0	0	
11,520	300	143	0	0	0	
11,530	300	143	0	0	0	
11,540	300	143	5000	5000	5000	Peak GAS, C1-C4, CO2
11,550	300	143	0	0	0	
11,560	300	143	0	0	0	
11,570	300	143	0	0	0	
11,580	300	143	0	0	0	
11,590	300	143	0	0	0	
11,595	300	143	5000	5000	5000	Peak GAS, C1-C4, CO2
11,600	300	143	0	0	0	
11,610	300	143	0	0	0	
11,620	300	143	0	0	0	
11,630	300	143	0	0	0	

edbn-gyshbn, medgy, ip lbn-crm, tr inbd mrl, v-mod sft, fri, sb blk, rthy-sb wxy, v calc, tr inoc, tr nod pyr, seat bent: 40% MRL, med-dkgy, med-dkbn, mod vsb ang, rthy, sl sily, arg, calc

70% CHK: medbn-gyshbn, medgy, ip lbn-crm, tr inbd mrl, v-mod sft, fri, sb blk, rthy-sb wxy, v calc, tr inoc, tr nod pyr, rr bent: 30% MRL, med-dkgy, med-dkbn, mod sft-fm, sb blk-sb ang, rthy, sl sily, arg, calc

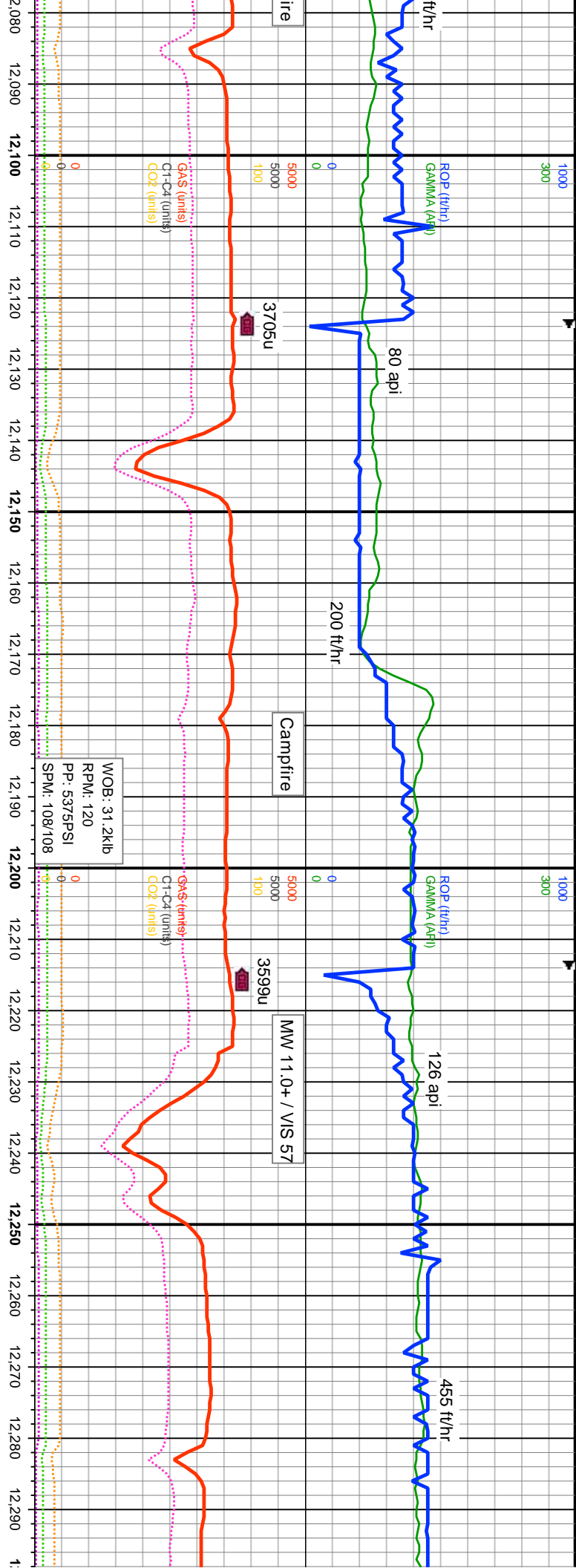
75% CHK: medbn-gyshbn, medgy, ip lbn-crm, tr inbd mrl, v-mod sft, fri, sb blk, rthy-sb wxy, v calc, tr inoc, tr ds sb blk-sb ang, rthy, sl sily, arg





90% CHK: pred lt-medbn, crm, medgy-gyshbn, rr inbd mrl, v-mod sft, fri, rr frm, sb blkly, rthy-sb wxy, v calc, tr inoc, rr dsu pyr, 10% MRL: med-dkgy, dkb-n-blk, mod sft-frm, sb blkly-sb ang, rthy, sl sily, arg, calc

85% CHK: pred lt-medbn, crm, medgy-gyshbn, rr inbd mrl, mod sft-ip blkly, rthy-sb wxy, v calc, tr inoc, rr dsu pyr, rr bent, 15% MRL: med-dkgy, dkb-n-blk, mod sft-frm, sb blkly-sb ang, rthy, sl sily, arg, calc



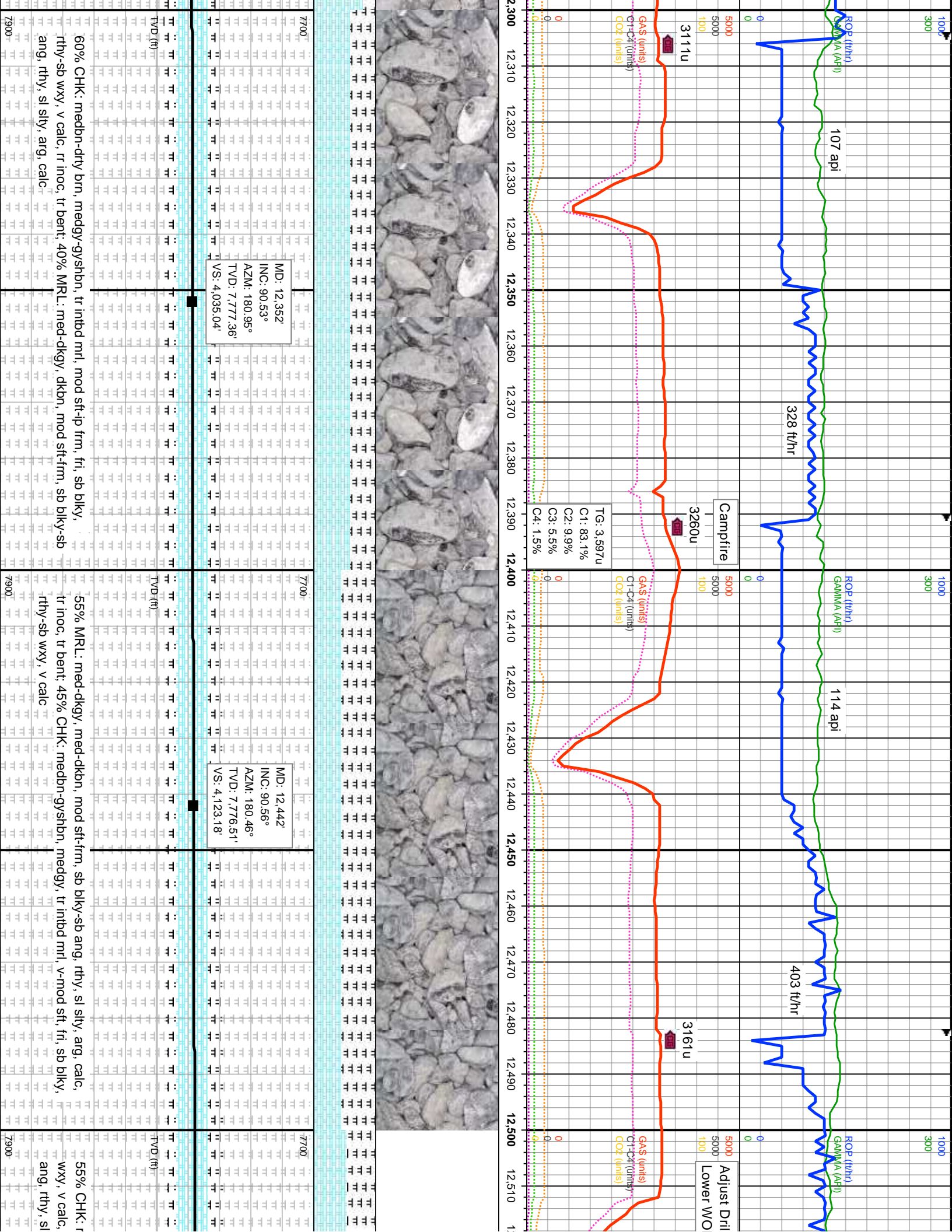
ID: 12.084  
 NC: 90.11°  
 ZM: 181.36°  
 VD: 7.777.44'  
 S.S: 3.771.82

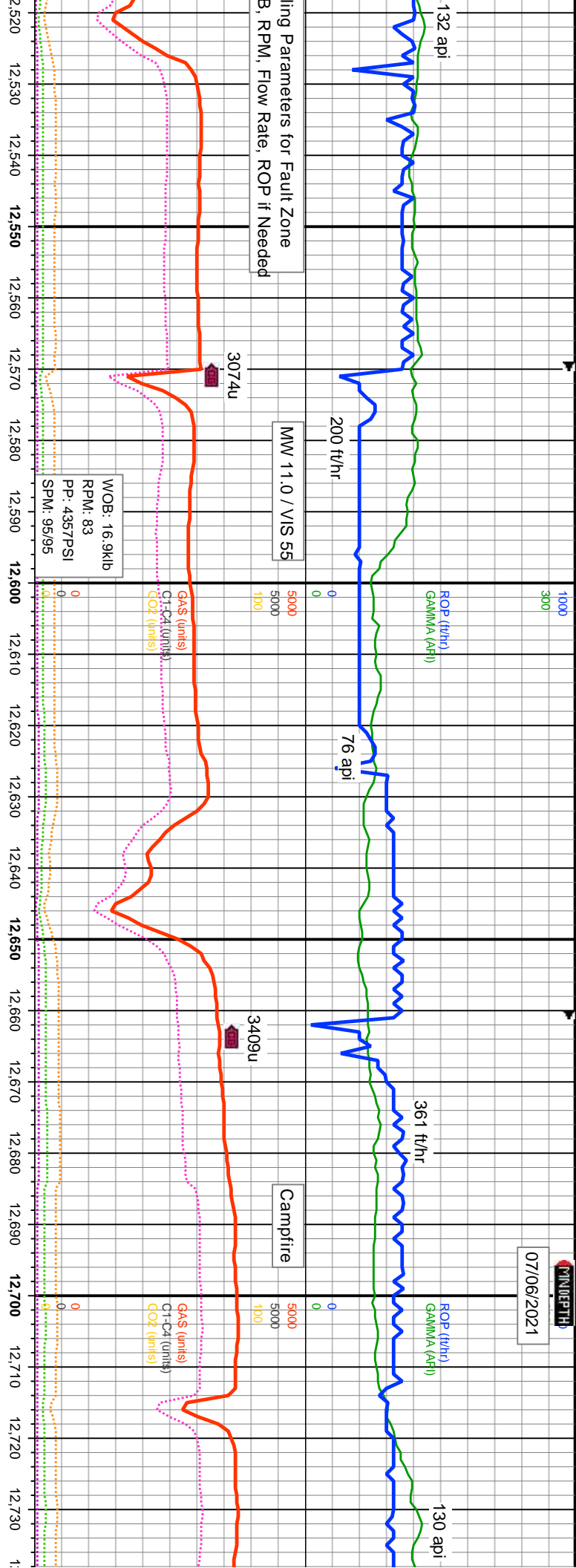
MD: 12.173'  
 INC: 89.93°  
 AZM: 182.93°  
 TVD: 7.777.41'  
 VS: 3.859.41'

MD: 12.263'  
 INC: 89.8°  
 AZM: 180.5°  
 TVD: 7.777.62'  
 VS: 3.947.86'

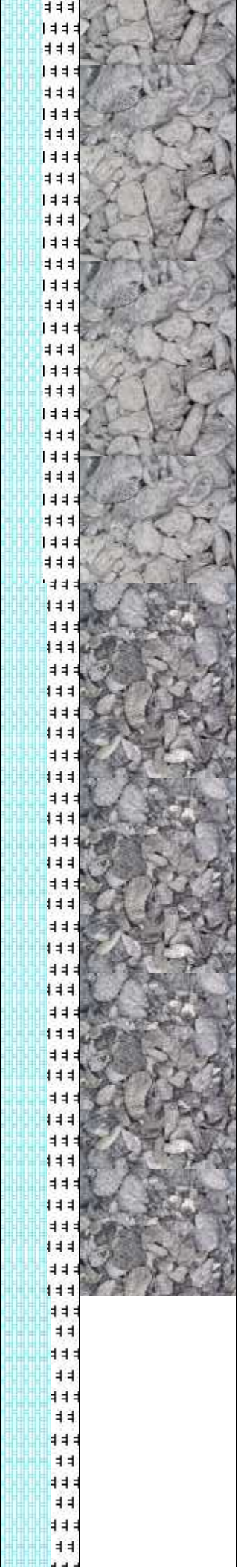
12178' MD: 6' D/T Fault

fm, fri, sb  
 ggy, dkbn, mod  
 80% CHK: pred lt-medbn, crn, medgy-gyshbn, rr inbd mri, mod sft-ip frm, fri, sb  
 blk, rthy-sb wxy, v calc, rr inoc, tr bent: 20% MRL: med-dkgy, dkbn, mod sft-frm, sb  
 blk-sb ang, rthy, sl stly, arg, calc  
 80% CHK: pred lt-medbn, crn, medgy-gyshbn, rr inbd mri, mod sft-ip frm, fri, sb  
 blk, rthy-sb wxy, v calc, rr inoc, tr nod pyr, tr bent: 20% MRL: med-dkgy, dkbn, mod  
 sft-frm, sb blk-sb ang, rthy, sl stly, arg, calc

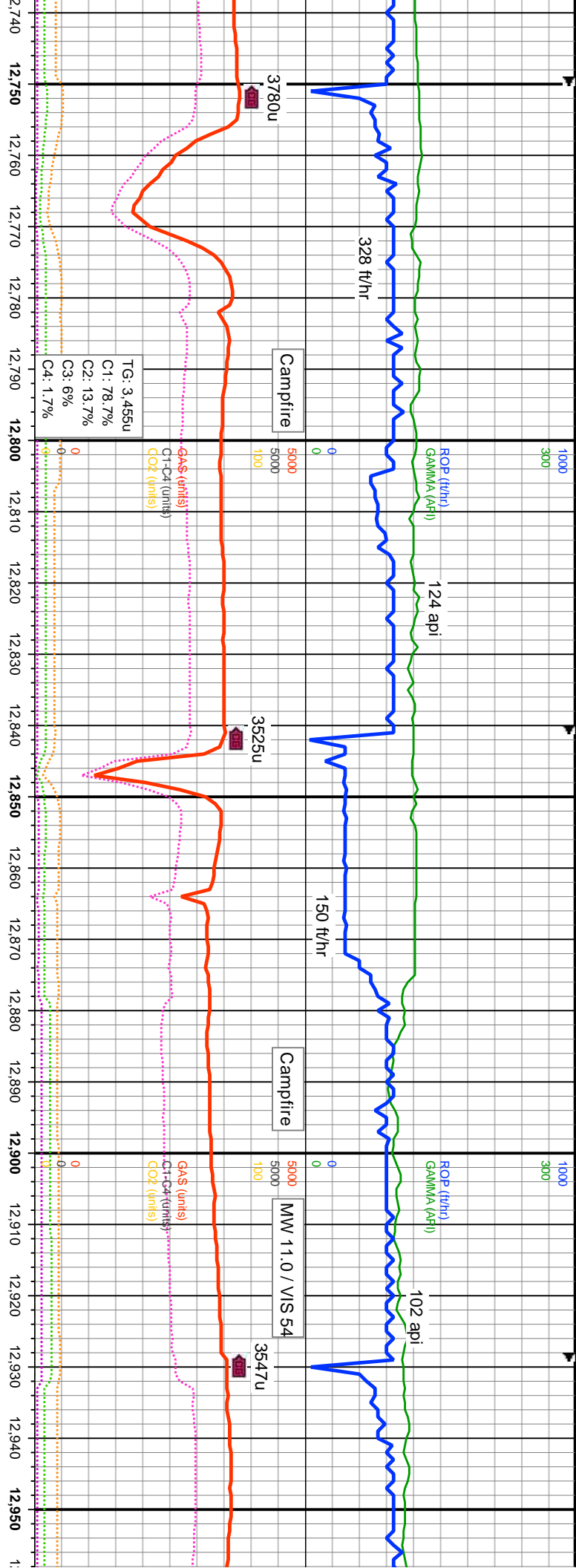




Drilling Parameters for Fault Zone  
B, RPM, Flow Rate, ROP if Needed



132 api	200 ft/hr	76 api	361 ft/hr	130 api
ROP (ft/hr)	ROP (ft/hr)	ROP (ft/hr)	ROP (ft/hr)	ROP (ft/hr)
GAMMA (API)	GAMMA (API)	GAMMA (API)	GAMMA (API)	GAMMA (API)
Gas (units)	Gas (units)	Gas (units)	Gas (units)	Gas (units)
C1-C4 (units)	C1-C4 (units)	C1-C4 (units)	C1-C4 (units)	C1-C4 (units)
CO2 (units)	CO2 (units)	CO2 (units)	CO2 (units)	CO2 (units)
MD: 12.531'	MD: 12.621'	MD: 12.710'		
INC: 90.59°	INC: 90.44°	INC: 90.27°		
AZM: 178.33°	AZM: 176.9°	AZM: 175.65°		
TVD: 7.775.62'	TVD: 7.774.8'	TVD: 7.774.25'		
VS: 4.209.91'	VS: 4.296.95'	VS: 4.382.47'		
medbn-gyshbn, medgy, tr lbhn, tr intbd mrl, v-mod sft, fri, sb blkly, rthy-sb	60% CHK: medbn-gyshbn, medgy, tr lbhn, tr intbd mrl, v-mod sft, fri, sb blkly, rthy-sb	65% CHK: med-lbn, medgy-gysl		
tr inoc, tr bent: 45% MRL: med-dkgy, med-dkbn, mod sft-fm, sb blkly-sb	wxy, v calc, tr inoc, tr bent, tr nod pyr, 40% MRL: med-dkgy, med-dkbn, mod sft-fm,	wxy, v calc, tr inoc, tr bent, tr noc		
stly, arg, calc	sb blkly-sb ang, rthy, sl stly, arg, calc	blkly-sb ang, rthy, sl stly, arg, calc		
7900	7900	7900		
TVD (ft)	TVD (ft)	TVD (ft)		
12598 MD: 8' U/T Fault	12724 MD: 11' D/T Fault			



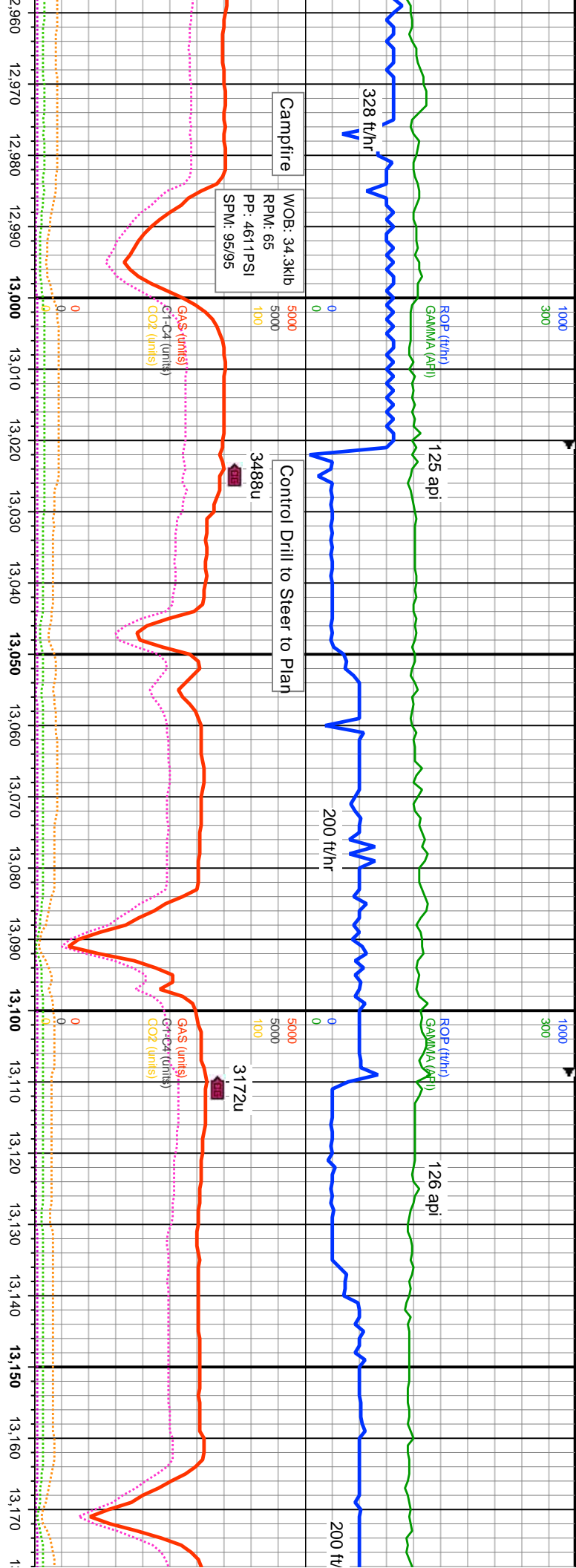
TG: 3.455u  
 C1: 78.7%  
 C2: 13.7%  
 C3: 6%  
 C4: 1.7%

MD: 12.889  
 INC: 90.19°  
 AZM: 175°  
 TVD: 7.773.77'  
 VS: 4.553.8'

Depth (ft)	ROP (ft/hr)	GAMMA (API)	Gas (units)	Notes
12,740	~1000	~300	~0	
12,750	~1000	~300	~0	
12,760	~1000	~300	~0	
12,770	~1000	~300	~0	
12,780	~1000	~300	~0	
12,790	~1000	~300	~0	
12,800	~1000	~300	~0	
12,810	~1000	~300	~0	
12,820	~1000	~300	~0	
12,830	~1000	~300	~0	
12,840	~1000	~300	~0	
12,850	~1000	~300	~0	
12,860	~1000	~300	~0	
12,870	~1000	~300	~0	
12,880	~1000	~300	~0	
12,890	~1000	~300	~0	
12,900	~1000	~300	~0	
12,910	~1000	~300	~0	
12,920	~1000	~300	~0	
12,930	~1000	~300	~0	
12,940	~1000	~300	~0	
12,950	~1000	~300	~0	

65% CHK: med-ibn, medgy-gyshbn, tr crm, rr inbnd mri, v-mod sft, fri, sb blkly, rthy-sb  
 wxy, v calc, tr inoc, tr bent, rr nod pyr, sme inbnd cal: 35% MRL: med-dkgy, med-dkbn, mod stf-frm, sb blkly-sb ang, rthy, sl stly, ang, calc

60% CHK: pred medbn, sme tbn, medgy-gyshbn, r crm, rr inbnd mri, v-mod sft, fri, sb blkly, rthy-sb  
 ip fri, sb blkly-armor, rthy-sb wxy, v calc, tr inoc, tr bent, rr nod pyr, sme inbnd cal: 35% MRL: med-dkgy, med-dkbn, mod stf-frm, sb blkly-sb ang, rthy, sl stly



**Campfire**  
 WOB: 34.3klb  
 RPM: 65  
 PP: 461 PSI  
 SPM: 95/95

**Control Drill to Steer to Plan**

3488u  
 3172u

MD: 12.979'  
 INC: 89.92°  
 AZM: 175.61°  
 TVD: 7.773.68'  
 VS: 4.639.85'

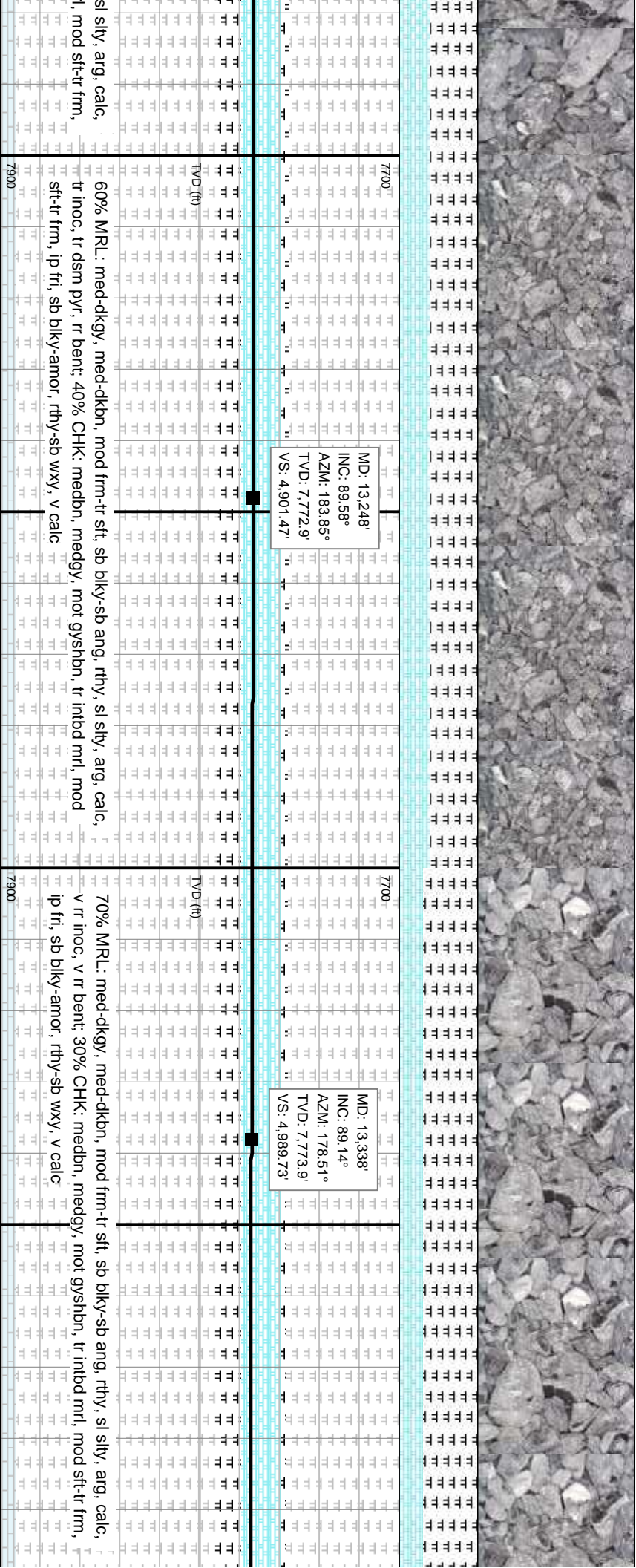
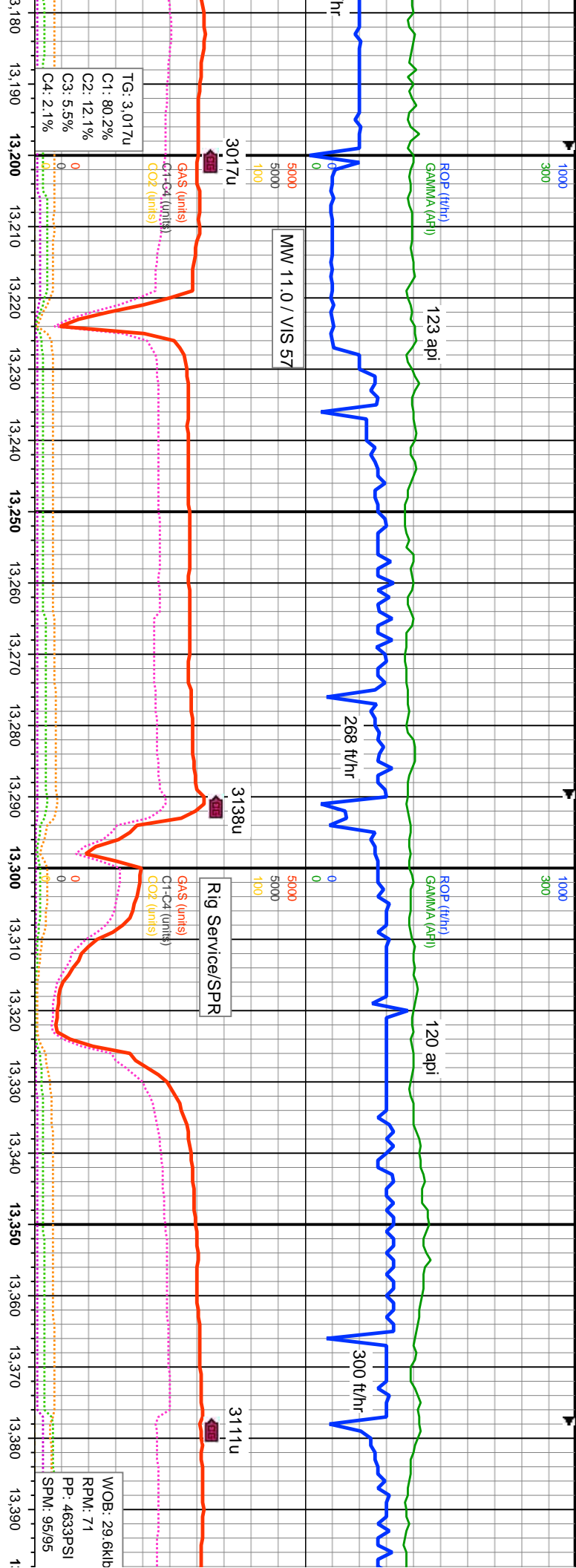
MD: 13.069'  
 INC: 90.17°  
 AZM: 176.46°  
 TVD: 7.773.61'  
 VS: 4.726.23'

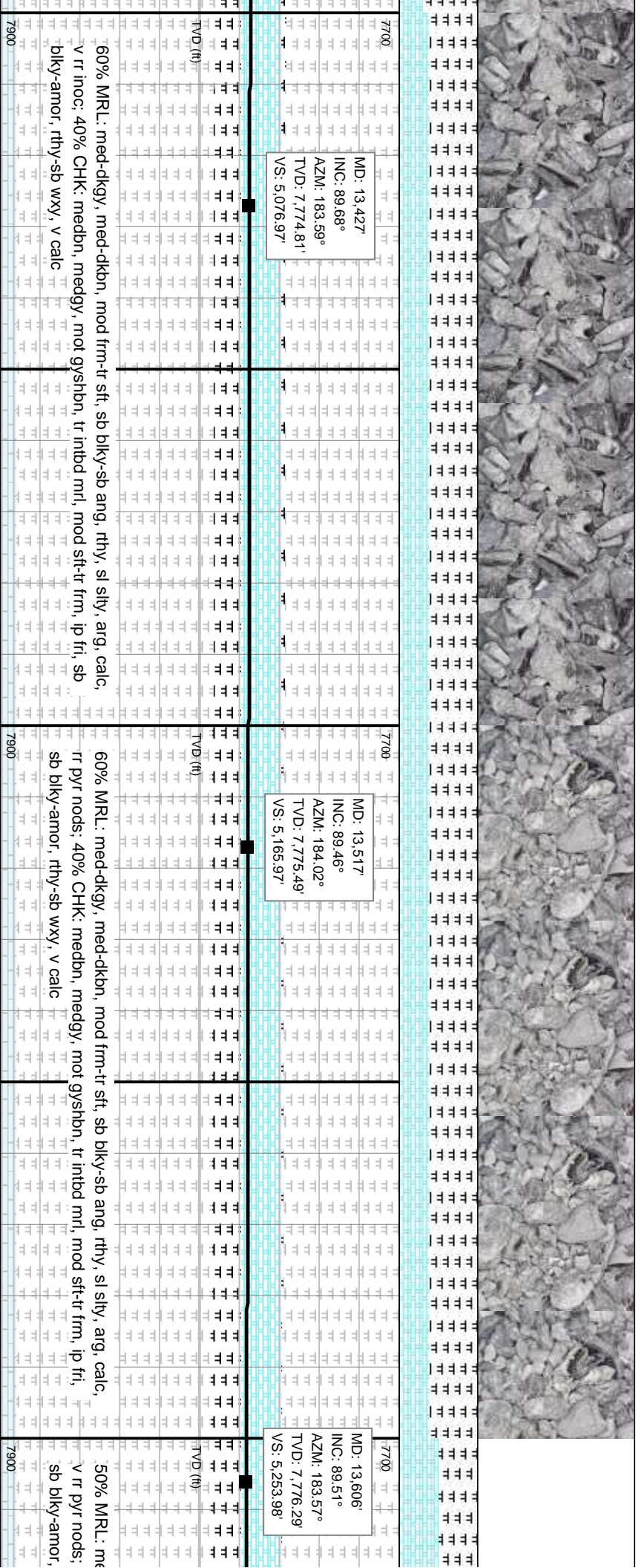
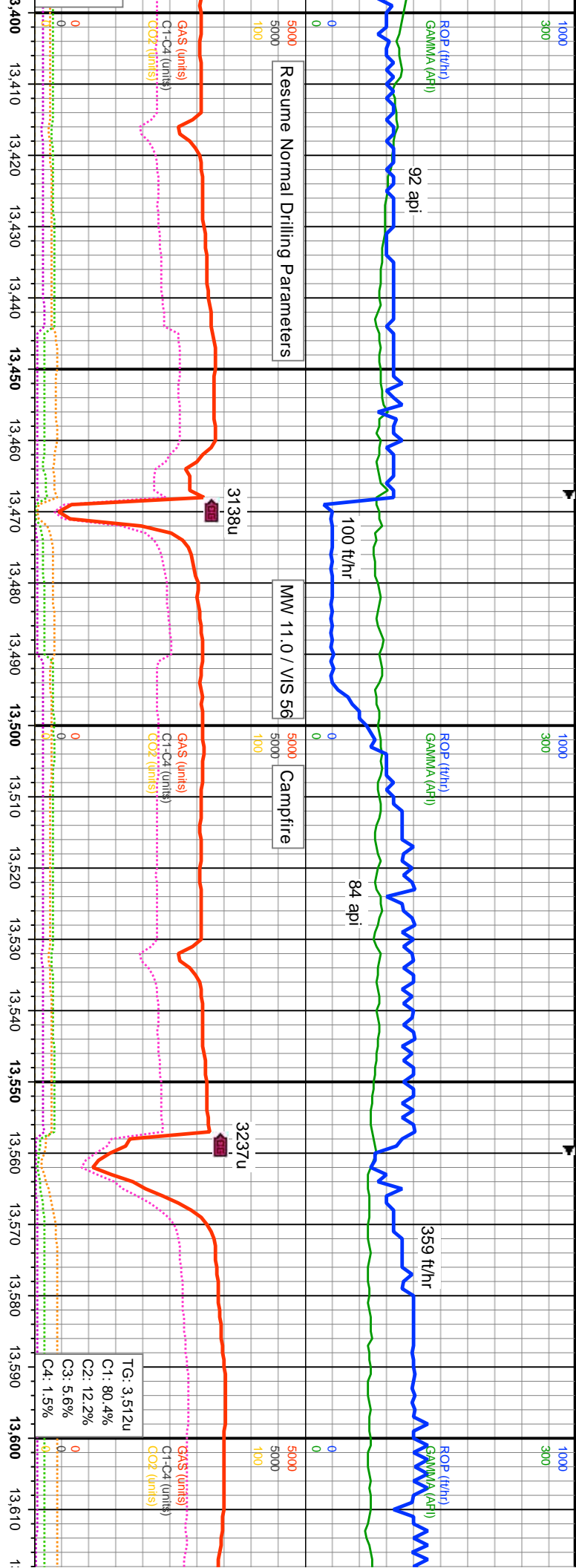
MD: 13.158'  
 INC: 90.58°  
 AZM: 181.35°  
 TVD: 7.773.03'  
 VS: 4.812.77'

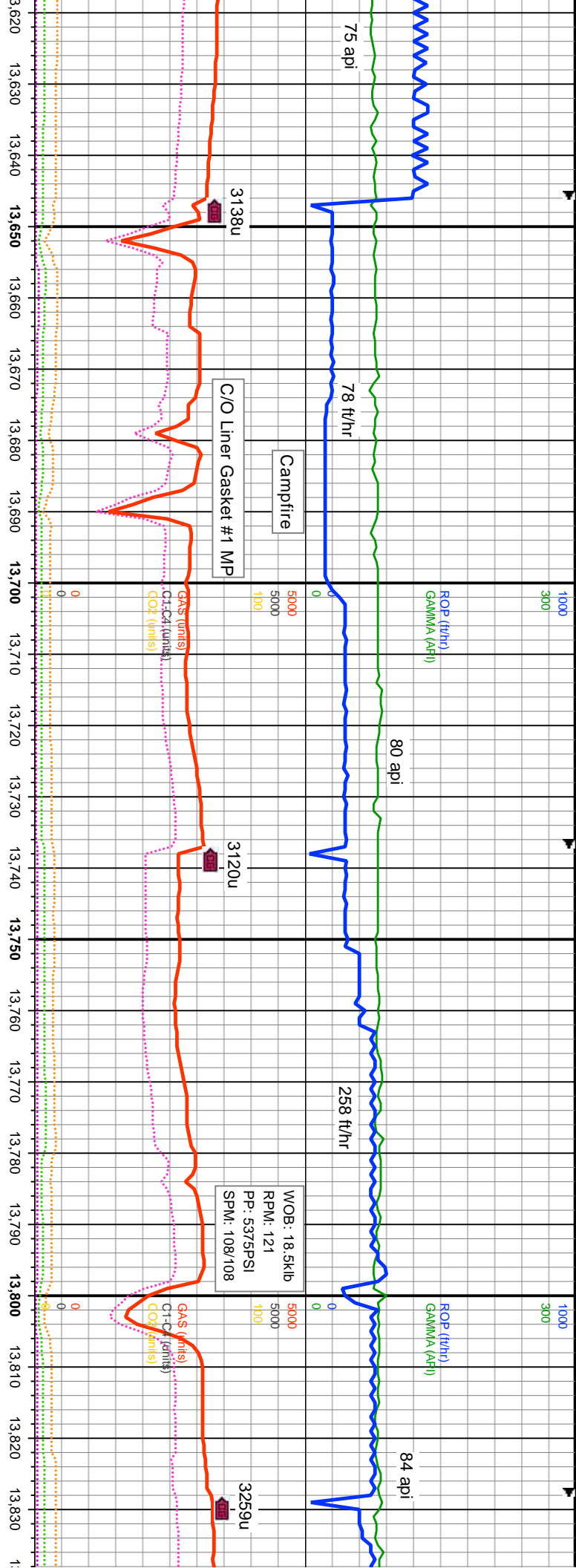
rr cm, tr intbd mrl, mod sft-tr frm,  
 nt, rr dsm pyr: 40% MRL: med-dky,  
 y, arg, calc

50% CHK: medbn, medgy, mot gysbhn, tr intbd mrl, mod sft-tr frm, ip fri, sb blk-y-amor,  
 rthy-sb wxy, v calc, tr inoc, rr bent, tr dsm pyr: 50% MRL: med-dky, med-dkbn, mod  
 frm-tr sft, sb blk-y-sb ang, rthy, sl sily, arg, calc

60% MRL: med-dky, med-dkbn, mod frm-tr sft, sb blk-y-sb ang, rthy,  
 rr inoc, rr dsm pyr: 40% CHK: medbn, medgy, mot gysbhn, tr intbd mrl,  
 ip fri, sb blk-y-amor, rthy-sb wxy, v calc



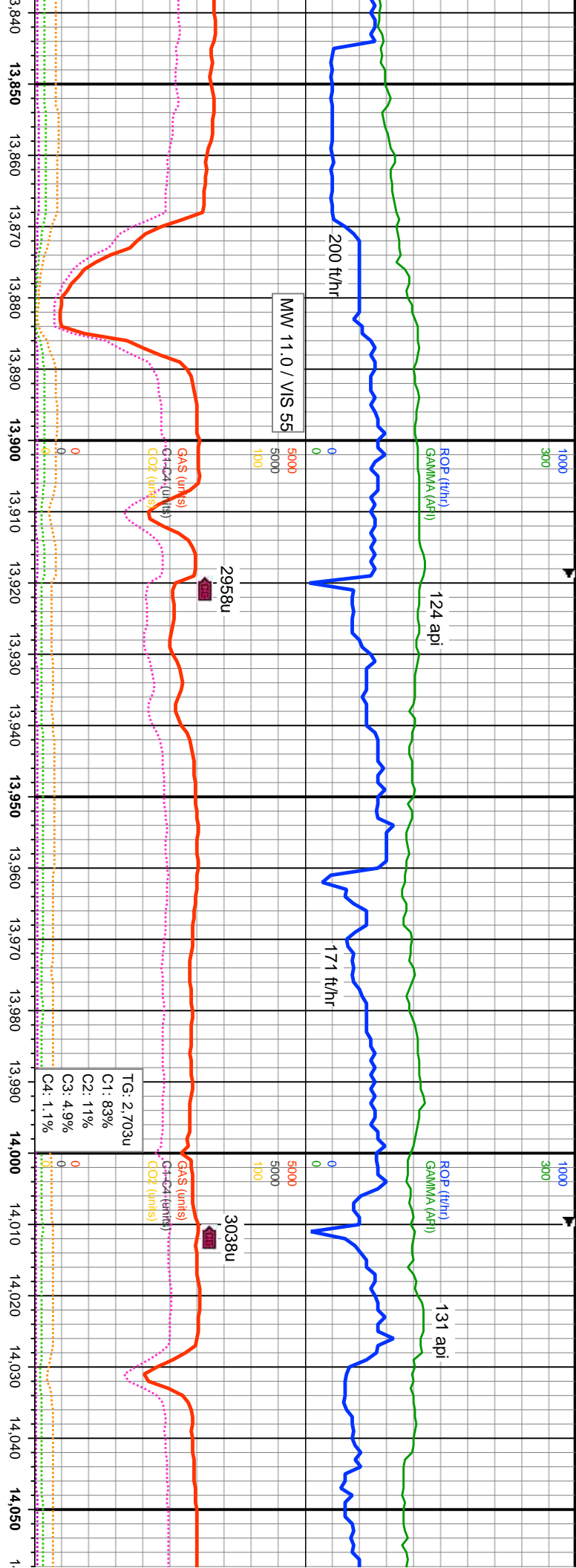




MD: 13.696'  
INC: 89.75°  
AZM: 182.32°  
TVD: 7,776.87'  
VS: 5.342.77'

MD: 13.786'  
INC: 90.08°  
AZM: 181.23°  
TVD: 7,777.01'  
VS: 5.431.24'

50% CHK: medbn, medgy, mot gysbhn, tr intbd mrl, mod stf-tr frm, ip fri, rthy-sb wxy, v calc	65% CHK: medbn, medgy, mot gysbhn, tr intbd mrl, mod stf-tr frm, ip fri, rthy, sl sily, arg, calc, v rr bent	75% CHK: medbn, medgy, mot gysbhn, tr intbd mrl, mod stf-tr frm, ip fri, rthy-sb wxy, v calc: 35% MRL: med-dkgy, med-dkbn, mod frm-tr sft, sb blyk-sb ang, rthy, sl sily, arg, calc, v rr bent
mod-dkgy, med-dkbn, mod frm-tr sft, sb blyk-sb ang, rthy, sl sily, arg, calc	75% CHK: medbn, medgy, mot gysbhn, tr intbd mrl, mod stf-tr frm, ip fri, rthy-sb wxy, v calc	75% CHK: medbn, medgy, mot gysbhn, tr intbd mrl, mod stf-tr frm, ip fri, rthy, sl sily, arg, calc: v rr bent



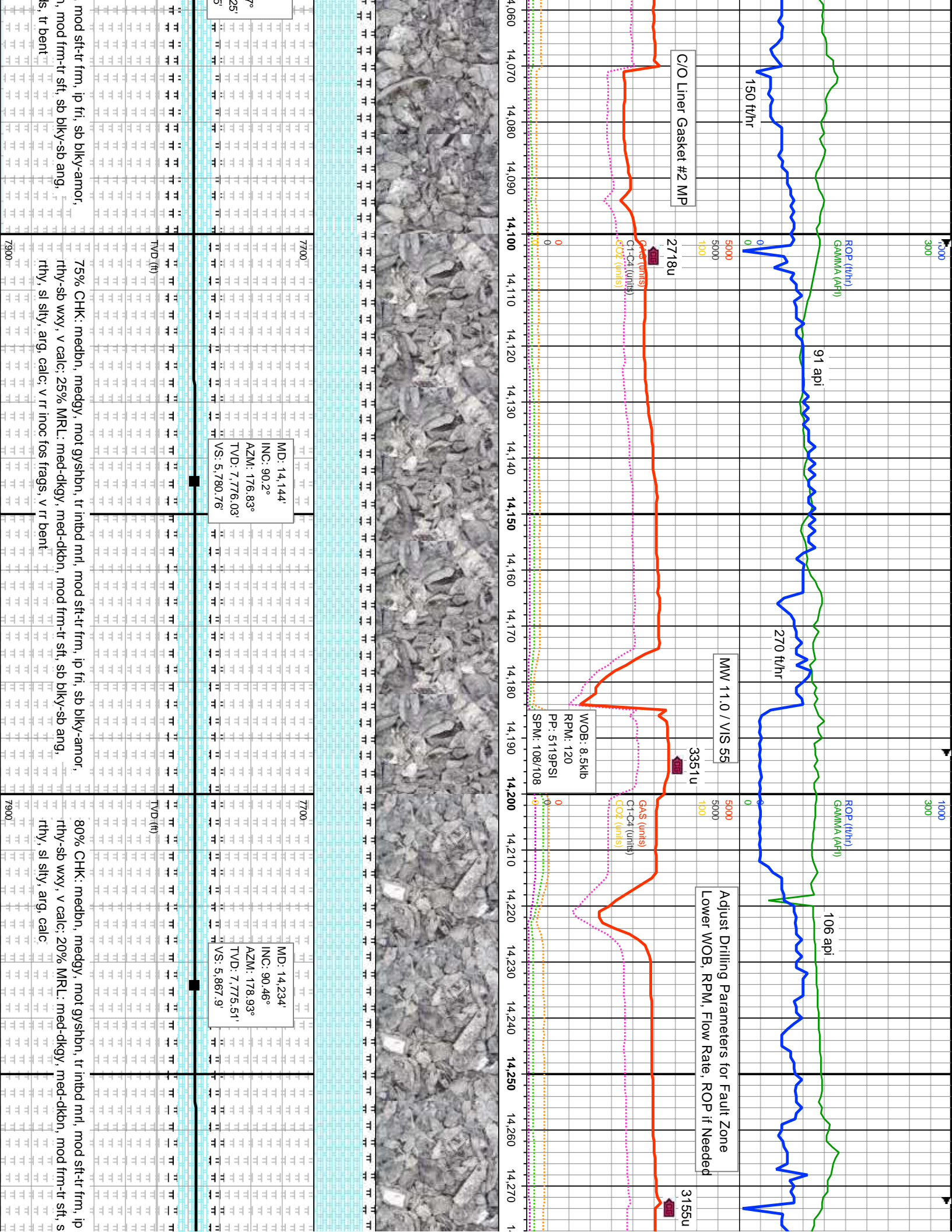
MD: 13,875'  
INC: 90.23°  
AZM: 180.52°  
TVD: 7,776.78'  
VS: 5,518.46'

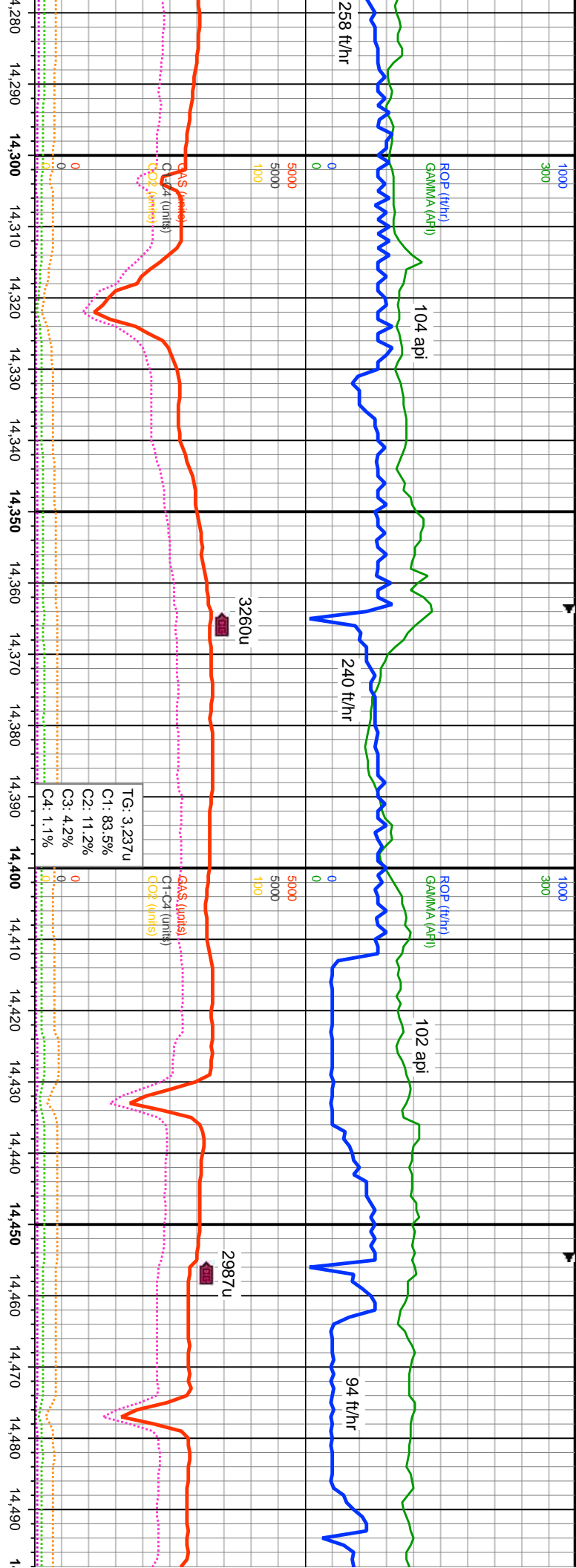
MD: 13,965'  
INC: 90.19°  
AZM: 179.63°  
TVD: 7,776.45'  
VS: 5,606.41'

MD: 14,054'  
INC: 90.08°  
AZM: 180.3°  
TVD: 7,776'  
VS: 5,693.3'

60% CHK: medbn, medgy, mot gysbhn, tr intbd mrl, mod sft-tr frm, ip fri, sb biky-amor, rthy-sb wxy, v calc: 40% MRL: med-dkgy, med-dkbn, mod frm-tr sft, sb biky-sb ang, rthy, sl slty, arg, calc: v rr inoc fos frags

70% CHK: medbn, medgy, mot gysbhn, tr intbd mrl, mod sft-tr frm, ip fri, sb biky-amor, rthy-sb wxy, v calc: 30% MRL: med-dkgy, med-dkbn, mod frm-tr sft, sb biky-sb ang, rthy, sl slty, arg, calc: v rr inoc fos frags, v rr pyr noc





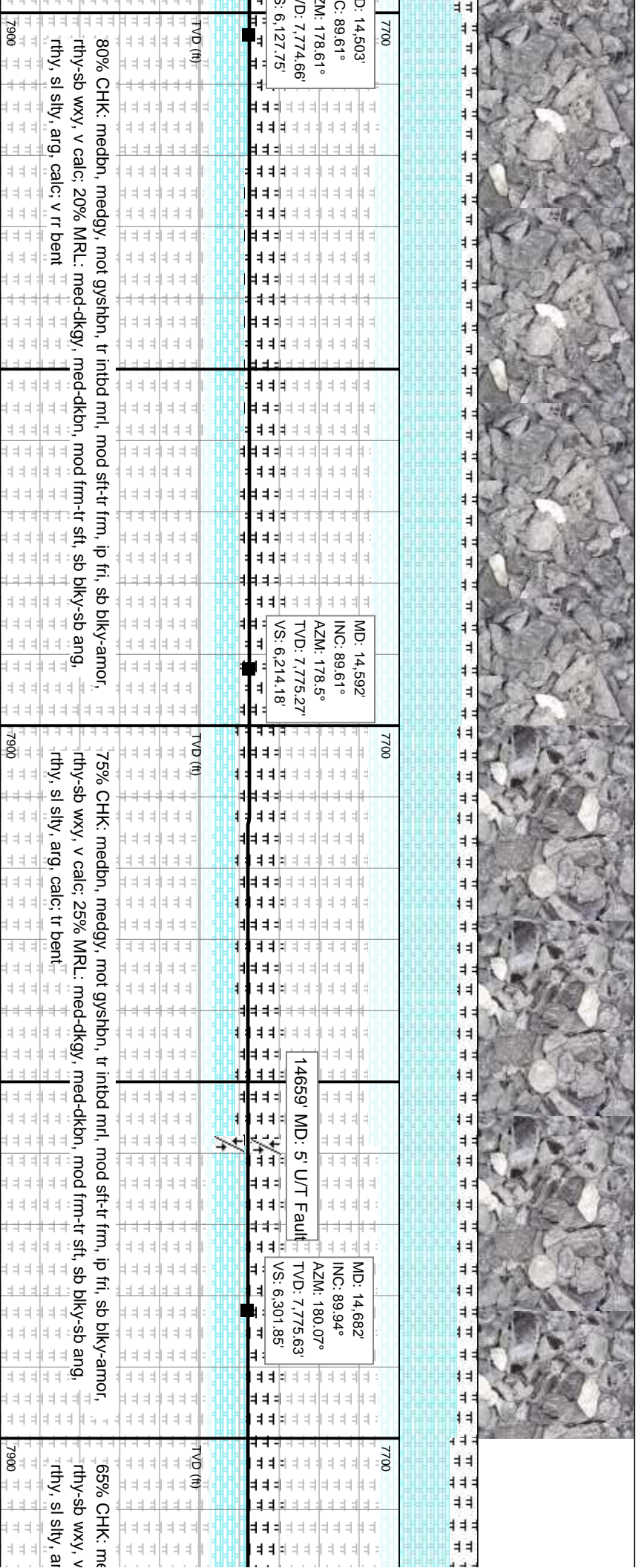
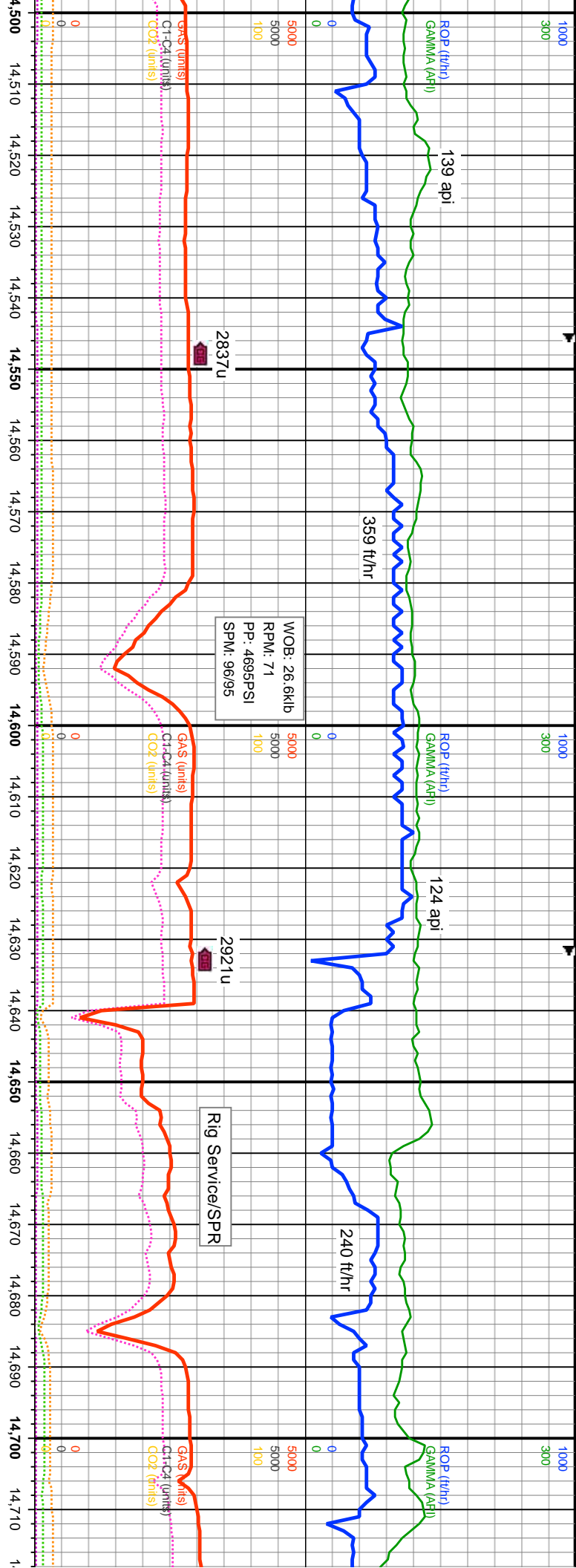
7700	MD: 14.323'	INC: 90.37°	AZM: 177.3°	TVD: 7.77487'	VS: 5.954.17'
TVD (ft)					

7700	MD: 14.413'	INC: 90.15°	AZM: 176.06°	TVD: 7.77446'	VS: 6.040.82'
TVD (ft)					

frn, sb blyk-amor, rthy, sb blyk-ang, rthy, sl slty, arg, calc: rr bent, rr cal

75% CHK: medbn, medgy, mot gysbhn, tr intbd mrl, mod sft-tr frm, ip fri, sb blyk-amor, rthy-sb wxy, v calc: 25% MRL: med-dkgy, med-dkbn, mod frm-tr sft, sb blyk-sb ang, rthy, sl slty, arg, calc: rr bent, rr cal

790% CHK: medbn, medgy, mot gysbhn, tr intbd mrl, mod sft-tr frm, ip fri, sb blyk-amor, rthy-sb wxy, v calc: 30% MRL: med-dkgy, med-dkbn, mod frm-tr sft, sb blyk-sb ang, rthy, sl slty, arg, calc: rr bent, v rr cal, v rr inoc fos frags, v rr pyr nods



D: 14.503'  
 C: 89.61°  
 M: 178.61°  
 D: 7.774.66°  
 S: 6.127.75°

MD: 14.592'  
 INC: 89.61°  
 AZM: 178.5°  
 TVD: 7.775.27°  
 VS: 6.214.18°

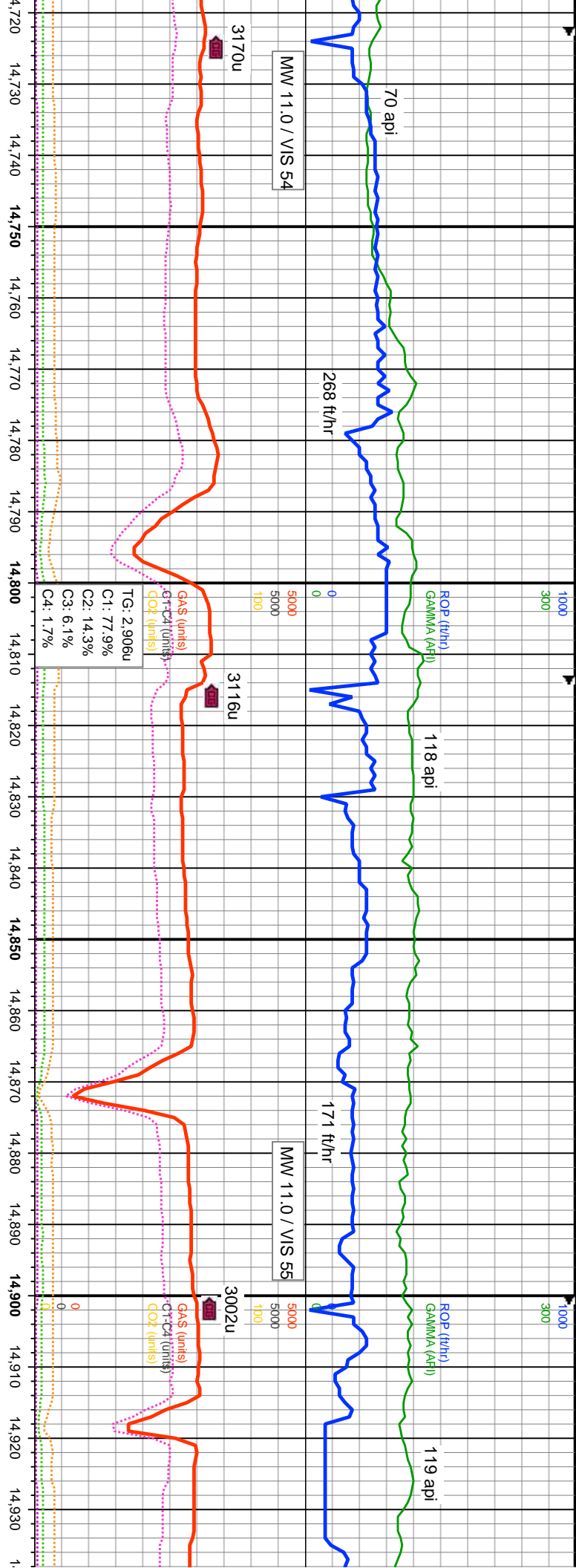
14659 MD: 5' U/T Fault

MD: 14.682'  
 INC: 89.94°  
 AZM: 180.07°  
 TVD: 7.775.63°  
 VS: 6.301.85°

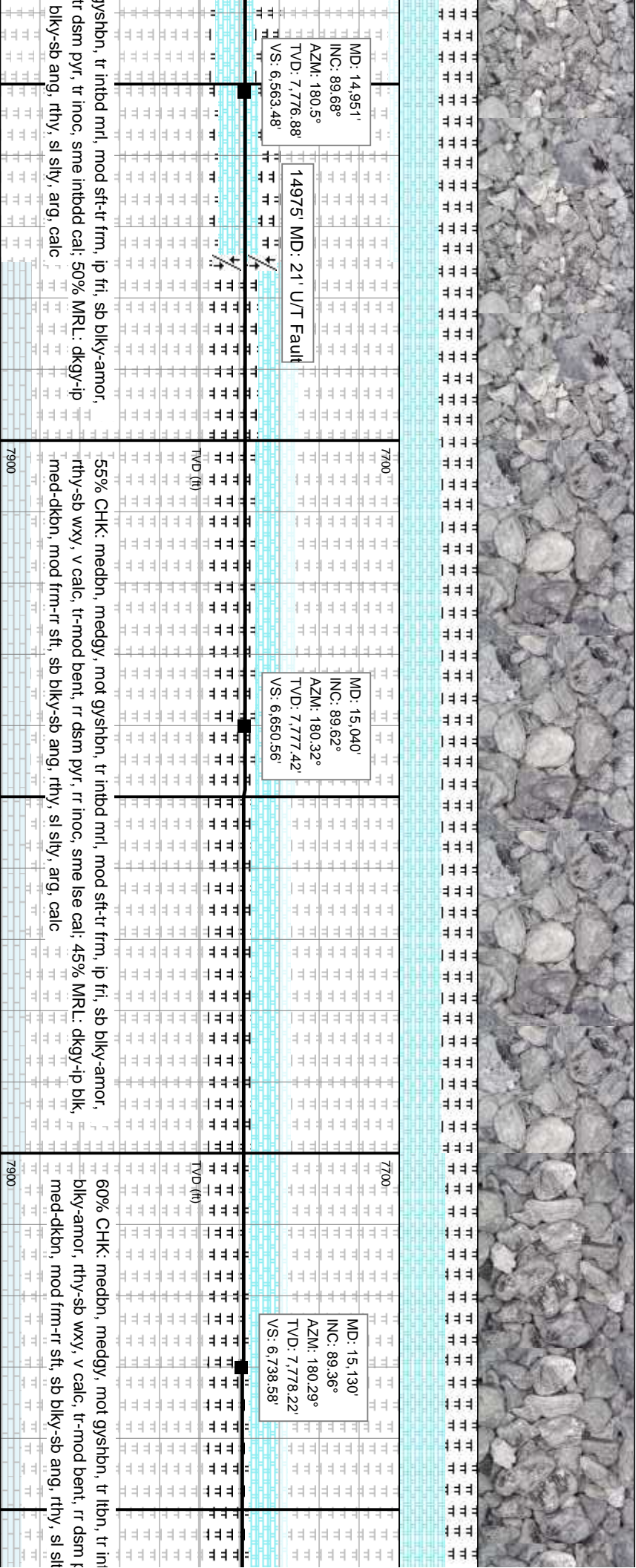
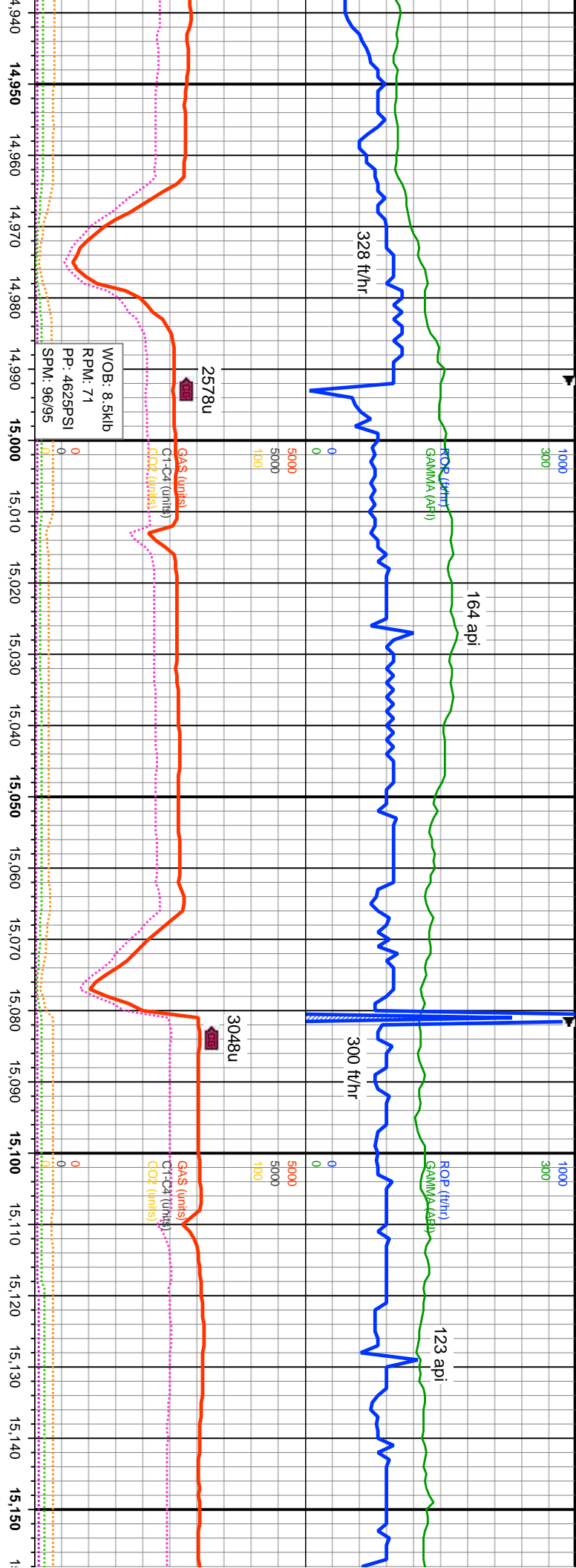
80% CHK: medbn, medgy, mot gysbhn, tr intbd mrl, mod sft-tr frm, ip fri, sb btky-sb amor,  
 rthy-sb wxy, v calc: 20% MRL: med-dkgy, med-dkbn, mod frm-tr sft, sb btky-sb ang,  
 rthy, sl slty, arg, calc: v rr bent

75% CHK: medbn, medgy, mot gysbhn, tr intbd mrl, mod sft-tr frm, ip fri, sb btky-sb amor,  
 rthy-sb wxy, v calc: 25% MRL: med-dkgy, med-dkbn, mod frm-tr sft, sb btky-sb ang,  
 rthy, sl slty, arg, calc: tr bent

65% CHK: me  
 rthy-sb wxy, v  
 rthy, sl slty, ar



dbn, medgy, mot gysbhn, tr intbd mrl, mod sft-tr frm, ip fri, sb blyy-amor, calc: 35% MRL: med-dkgy, med-dkbn, mod frm-tr sft, sb blyy-sb ang, g, calc: tr bent	MD: 14,772 INC: 89.78° AZM: 177.97° TVD: 7,778.85' VS: 6,389.42'	7700 TVD (ft)	60% CHK: medbn, medgy, mot gysbhn, tr intbd mrl, mod sft-tr frm, ip fri, sb blyy-amor, rthy-sb wxy, v calc: 40% MRL: med-dkgy, med-dkbn, mod frm-tr sft, sb blyy-sb ang, rthy, sl sily, arg, calc: v rr bent	MD: 14,861' INC: 89.61° AZM: 178.51° TVD: 7,776.32' VS: 6,475.74'	7700 TVD (ft)	50% CHK: medbn, medgy, mot gysbhn, tr intbd mrl, mod sft-tr frm, ip fri, sb blyy-amor, rthy-sb wxy, v calc: 40% MRL: med-dkgy, med-dkbn, mod frm-tr sft, sb blyy-sb ang, blk, med-dkbn, mod frm-tr sft, sb
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MD: 14,951'  
 INC: 89.68°  
 AZM: 180.5°  
 TVD: 7,776.88'  
 VS: 6,563.48'

14975' MD: 21' UT Fault

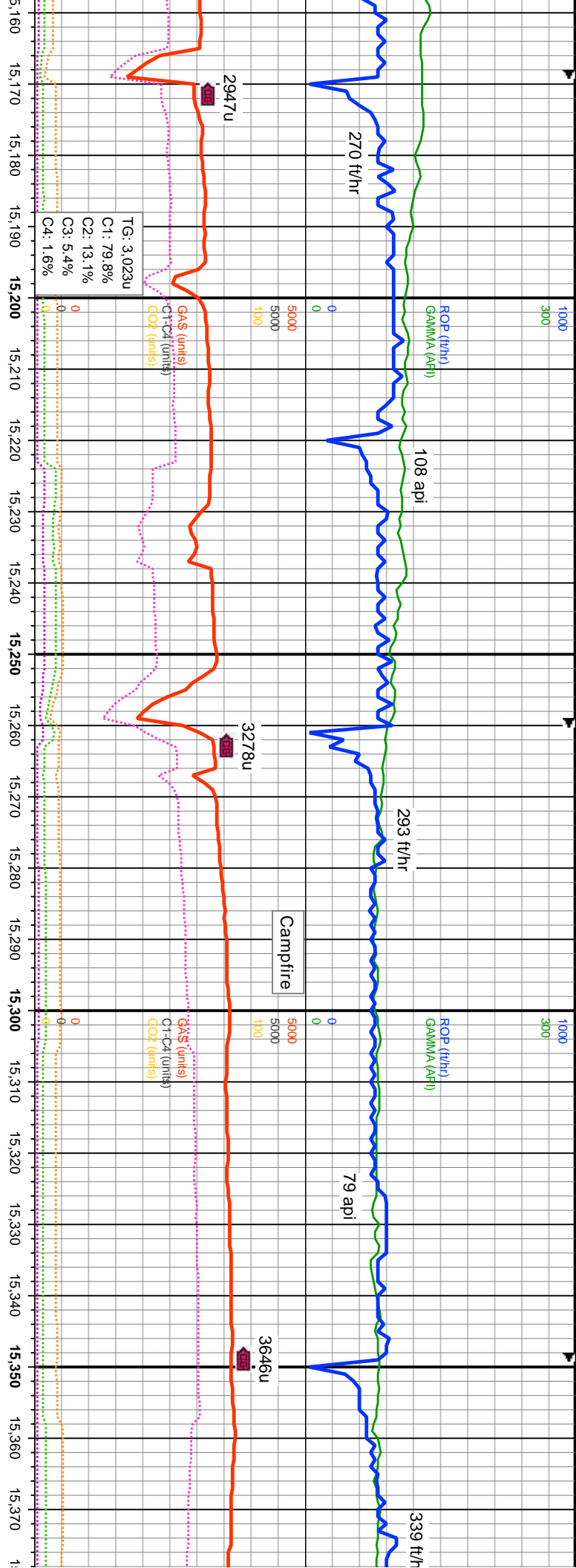
MD: 15,040'  
 INC: 89.62°  
 AZM: 180.32°  
 TVD: 7,777.42'  
 VS: 6,650.56'

MD: 15,130'  
 INC: 89.36°  
 AZM: 180.29°  
 TVD: 7,778.22'  
 VS: 6,738.58'

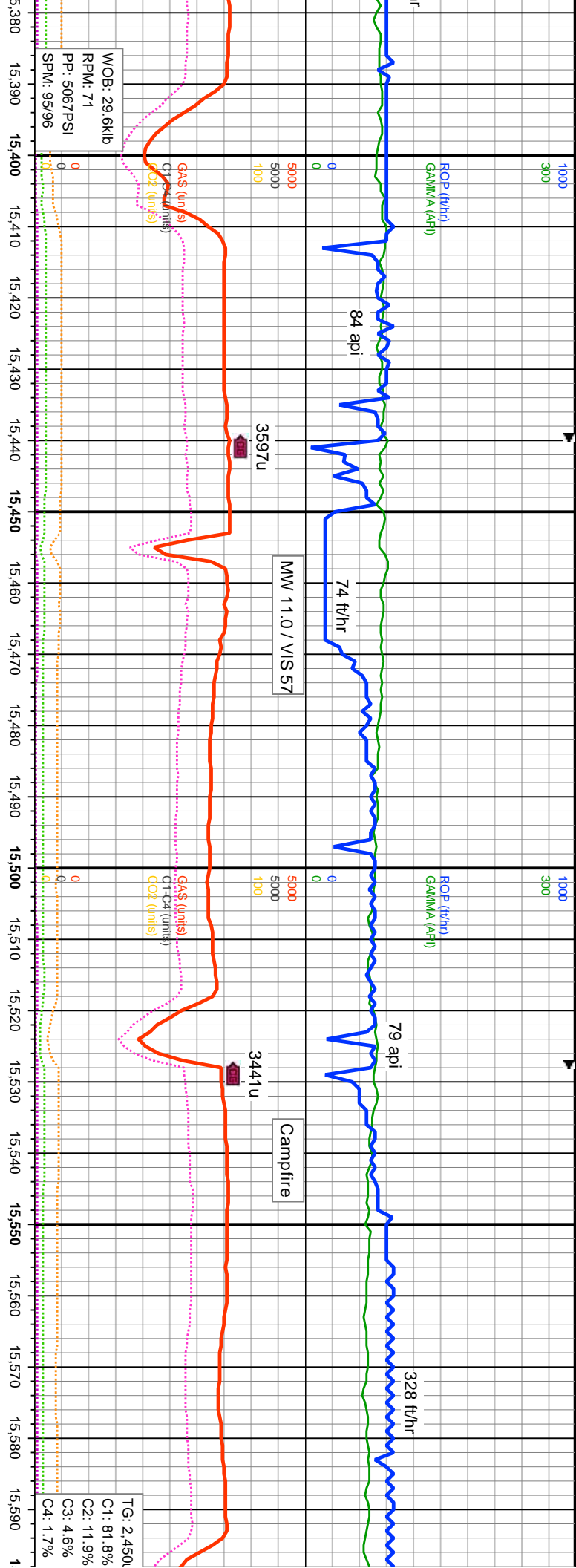
gysbhn, tr intbd mrl, mod sft-tr frm, ip fri, sb blkly-amor, rthy-sb wxy, v calc, tr-mod bent, rr dsm pyr, rr inoc, sme intbdd cal: 50% MRL: dkgy-ip blkly-sb ang, rthy, sl slty, arg, calc

55% CHK: medbn, medgy, mot gysbhn, tr intbd mrl, mod sft-tr frm, ip fri, sb blkly-amor, rthy-sb wxy, v calc, tr-mod bent, rr dsm pyr, rr inoc, sme lse cal: 45% MRL: dkgy-ip blk, med-dkbn, mod frm-rr sft, sb blkly-sb ang, rthy, sl slty, arg, calc

60% CHK: medbn, medgy, mot gysbhn, tr tbn, tr intbd mrl, mod sft-tr frm, ip fri, sb blkly-amor, rthy-sb wxy, v calc, tr-mod bent, rr dsm pyr, rr inoc, sme lse cal: 45% MRL: dkgy-ip blk, med-dkbn, mod frm-rr sft, sb blkly-sb ang, rthy, sl slty, arg, calc



bd mrl, mod sft-tr frm, ip fri, sb	7700	MD: 15.220° INC: 89.33° AZM: 180.62° TVD: 7.779.25' VS: 6.826.64'	50% CHK: medbn, medgy, mot gysbhn, tr lbn, tr intbd mrl, mod sft-tr frm, ip fri, sb blky-amor, rthy-sb wxy, v calc, tr-mod bent, rr dsm pyr, tr inoc: 50% MRL: dkgy-ip blk, med-dkbn, mod frm-rr sft, sb blk-y-sb ang, rthy, sl sily, arg, calc
bd mrl, mod sft-tr frm, ip fri, sb	7900	MD: 15.309° INC: 89.62° AZM: 180.43° TVD: 7.780.07' VS: 6.913.75'	60% CHK: medbn, medgy, mot gysbhn, tr lbn, tr intbd mrl, mod sft-tr frm, ip fri, sb blky-amor, rthy-sb wxy, v calc, tr bent, tr dsm pyr, tr inoc: 40% MRL: dkgy-ip blk, med-dkbn, mod frm-rr sft, sb blk-y-sb ang, rthy, sl sily, arg, calc



MD: 15.399'  
INC: 89.57°  
AZM: 180.68°  
TVD: 7.780.7'  
VS: 7.001.85'

MD: 15.489'  
INC: 90.03°  
AZM: 181.26°  
TVD: 7.781.01'  
VS: 7.090.08'

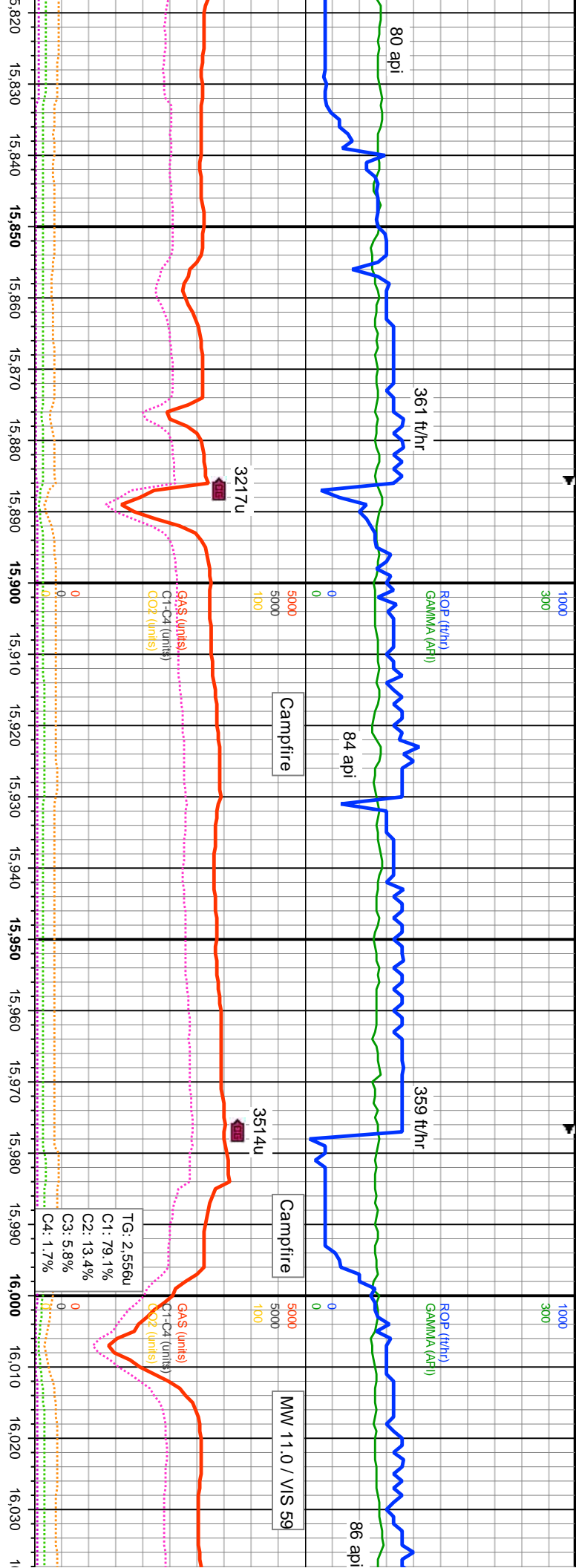
MD: 15.578'  
INC: 90.18°  
AZM: 182.5°  
TVD: 7.780.85'  
VS: 7.177.6'

Depth (ft)	ROP (ft/hr)	GAMMA (API)	GAS (units)	C1-C4 (units)	CO2 (units)	Notes
15.380						
15.390						
15.400						
15.410						
15.420						
15.430						
15.440						
15.450						
15.460						
15.470						
15.480						
15.490						
15.500						
15.510						
15.520						
15.530						
15.540						
15.550						
15.560						
15.570						
15.580						
15.590						
1						

65% CHK: medbn, medgy, mot gysbhn, tr lbn, tr intbd mri, mod st-frm, ip fri, sb  
 bly-armor, rthy-sb wxy, v calc, tr bent, tr dsm pyr, tr inoc: 35% MRL: dky-ip blk,  
 med-dkbn, mod frm-rr sft, sb bly-sb ang, rthy, sl sly, arg, calc

75% CHK: lt-medbn, crm, medgy-gysbhn, rr intbd mri, mod st-ip frm, fri, sb bly,  
 rthy-sb wxy, v calc, tr inoc: 25% MRL: med-dky, dkbn, mod st-frm, sb bly-sb  
 ang, rthy, sl sly, arg, calc



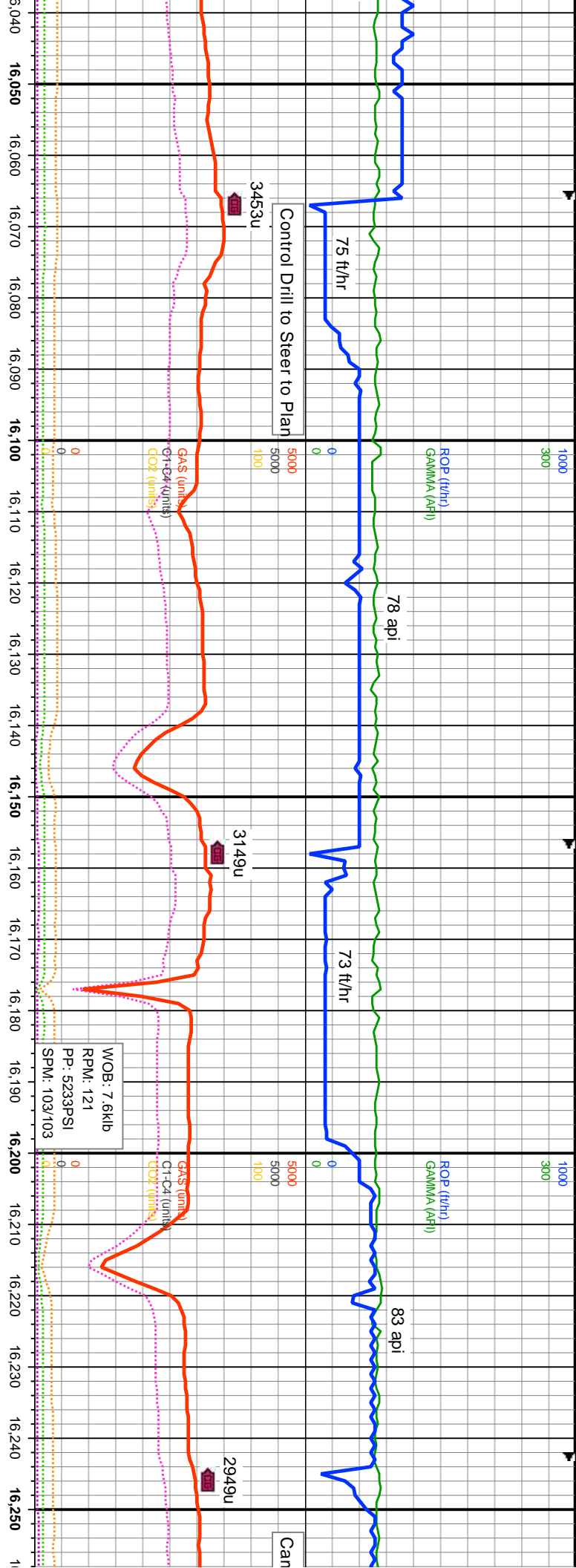


MD: 15.847  
INC: 89.43°  
AZM: 181.7°  
TVD: 7,780.42'  
VS: 7.44235'

MD: 15.936  
INC: 89.5°  
AZM: 183.42°  
TVD: 7,781.25'  
VS: 7.53005'

MD: 16.026  
INC: 89.64°  
AZM: 182.18°  
TVD: 7,781.93'  
VS: 7.6188'

medbn, cm, medgy-gyshbn, rr inbd mrl, v-mod sft, tr frm, fri, sb blk, calc, tr inoc, rr bent, tr nod pyr: 10% MRL: med-dkgy, dkbn, mod sft-frm, g, rthy, sl stly, arg, calc	medbn, cm, medgy-gyshbn, rr inbd mrl, v-mod sft, tr frm, fri, sb blk, rthy-sb wxy, v calc, tr inoc, tr nod pyr: 15% MRL: med-dkgy, dkbn, mod sft-frm, sb blk, ang, rthy, sl stly, arg, calc	80% CHK: lt-medbn, cm, medgy-gyshbn, rr inbd mrl, v-mod sft, tr frm, fri, sb blk, rthy-sb wxy, v calc, tr inoc, tr nod pyr: 15% MRL: med-dkgy, dkbn, mod sft-frm, sb blk, ang, rthy, sl stly, arg, calc
TVD (ft)	TVD (ft)	TVD (ft)
7900	7900	7900



Depth (ft)	ROP (ft/hr)	GAMMA (API)	GAs (um/s)	C1-C4 (um/s)	CO2 (um/s)
7900	75	~200	~5000	~100	~100
7800	75	~200	~5000	~100	~100
7700	75	~200	~5000	~100	~100
7600	75	~200	~5000	~100	~100
7500	75	~200	~5000	~100	~100
7400	75	~200	~5000	~100	~100
7300	75	~200	~5000	~100	~100
7200	75	~200	~5000	~100	~100
7100	75	~200	~5000	~100	~100
7000	75	~200	~5000	~100	~100
6900	75	~200	~5000	~100	~100
6800	75	~200	~5000	~100	~100
6700	75	~200	~5000	~100	~100
6600	75	~200	~5000	~100	~100
6500	75	~200	~5000	~100	~100
6400	75	~200	~5000	~100	~100
6300	75	~200	~5000	~100	~100
6200	75	~200	~5000	~100	~100
6100	75	~200	~5000	~100	~100
6000	75	~200	~5000	~100	~100
5900	75	~200	~5000	~100	~100
5800	75	~200	~5000	~100	~100
5700	75	~200	~5000	~100	~100
5600	75	~200	~5000	~100	~100
5500	75	~200	~5000	~100	~100
5400	75	~200	~5000	~100	~100
5300	75	~200	~5000	~100	~100
5200	75	~200	~5000	~100	~100
5100	75	~200	~5000	~100	~100
5000	75	~200	~5000	~100	~100
4900	75	~200	~5000	~100	~100
4800	75	~200	~5000	~100	~100
4700	75	~200	~5000	~100	~100
4600	75	~200	~5000	~100	~100
4500	75	~200	~5000	~100	~100
4400	75	~200	~5000	~100	~100
4300	75	~200	~5000	~100	~100
4200	75	~200	~5000	~100	~100
4100	75	~200	~5000	~100	~100
4000	75	~200	~5000	~100	~100
3900	75	~200	~5000	~100	~100
3800	75	~200	~5000	~100	~100
3700	75	~200	~5000	~100	~100
3600	75	~200	~5000	~100	~100
3500	75	~200	~5000	~100	~100
3400	75	~200	~5000	~100	~100
3300	75	~200	~5000	~100	~100
3200	75	~200	~5000	~100	~100
3100	75	~200	~5000	~100	~100
3000	75	~200	~5000	~100	~100
2900	75	~200	~5000	~100	~100
2800	75	~200	~5000	~100	~100
2700	75	~200	~5000	~100	~100
2600	75	~200	~5000	~100	~100
2500	75	~200	~5000	~100	~100
2400	75	~200	~5000	~100	~100
2300	75	~200	~5000	~100	~100
2200	75	~200	~5000	~100	~100
2100	75	~200	~5000	~100	~100
2000	75	~200	~5000	~100	~100
1900	75	~200	~5000	~100	~100
1800	75	~200	~5000	~100	~100
1700	75	~200	~5000	~100	~100
1600	75	~200	~5000	~100	~100
1500	75	~200	~5000	~100	~100
1400	75	~200	~5000	~100	~100
1300	75	~200	~5000	~100	~100
1200	75	~200	~5000	~100	~100
1100	75	~200	~5000	~100	~100
1000	75	~200	~5000	~100	~100
900	75	~200	~5000	~100	~100
800	75	~200	~5000	~100	~100
700	75	~200	~5000	~100	~100
600	75	~200	~5000	~100	~100
500	75	~200	~5000	~100	~100
400	75	~200	~5000	~100	~100
300	75	~200	~5000	~100	~100
200	75	~200	~5000	~100	~100
100	75	~200	~5000	~100	~100
0	75	~200	~5000	~100	~100

MD: 16.116°  
 INC: 89.63°  
 AZM: 179.35°  
 TVD: 7.782.5'  
 VS: 7.706.96'

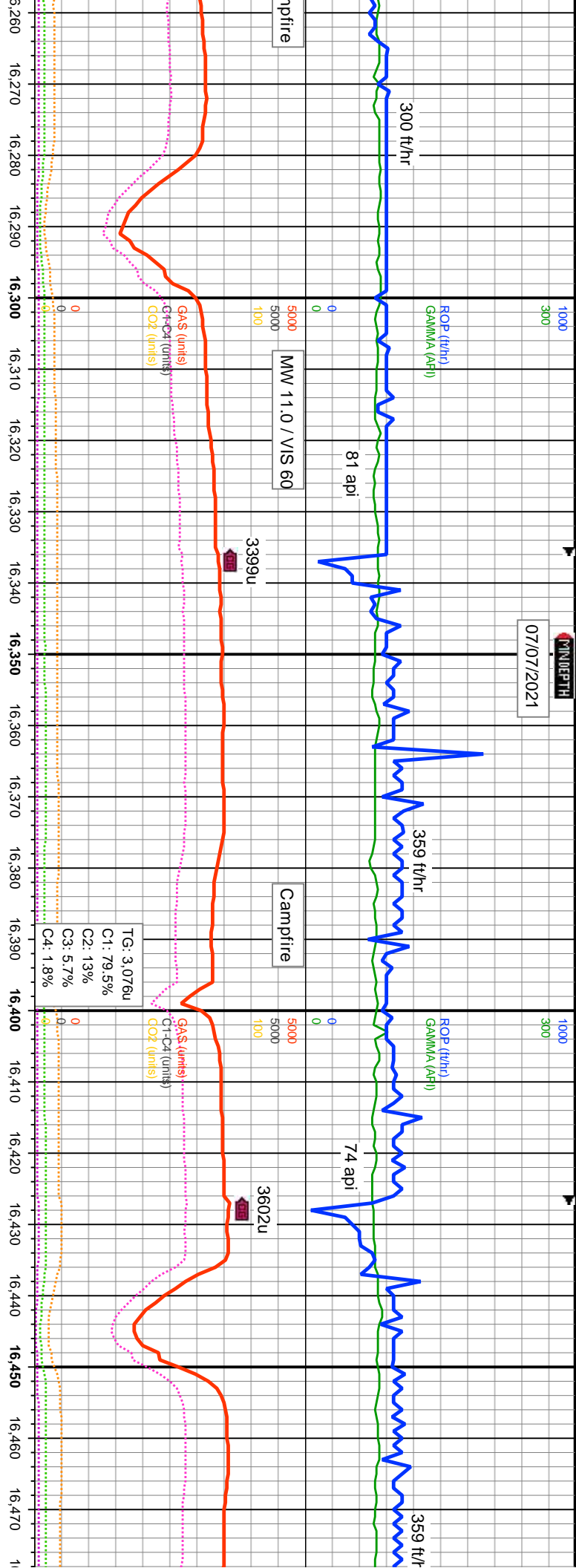
MD: 16.205°  
 INC: 89.86°  
 AZM: 178.03°  
 TVD: 7.782.9'  
 VS: 7.793.44'

v-gyshbn, rr inbtd mri, v-mod sft, tr frm, fti, sb blkly,  
 rthy-sb wxy, v calc, tr inoc, tr nod pyr, rr inbtd cal, 15% MRL: med-dkgy, dkbn, mod sft-frm,  
 sb blkly-sb ang, rthy, sl slty, ang, calc

85% CHK: lt-medbn, cmn, medgy-gyshbn, rr inbtd mri, v-mod sft, tr frm, fti, sb blkly,  
 rthy-sb wxy, v calc, tr inoc, tr nod pyr, rr inbtd cal, 15% MRL: med-dkgy, dkbn, mod sft-frm,  
 sb blkly-sb ang, rthy, sl slty, ang, calc

85% CHK: lt-medbn, cmn, medgy-gyshbn, rr inbtd mri, v-mod sft, tr frm, fti, sb blkly,  
 rthy-sb wxy, v calc, tr inoc, tr nod pyr, rr inbtd cal, 15% MRL: med-dkgy, dkbn, mod sft-frm,  
 sb blkly-sb ang, rthy, sl slty, ang, calc

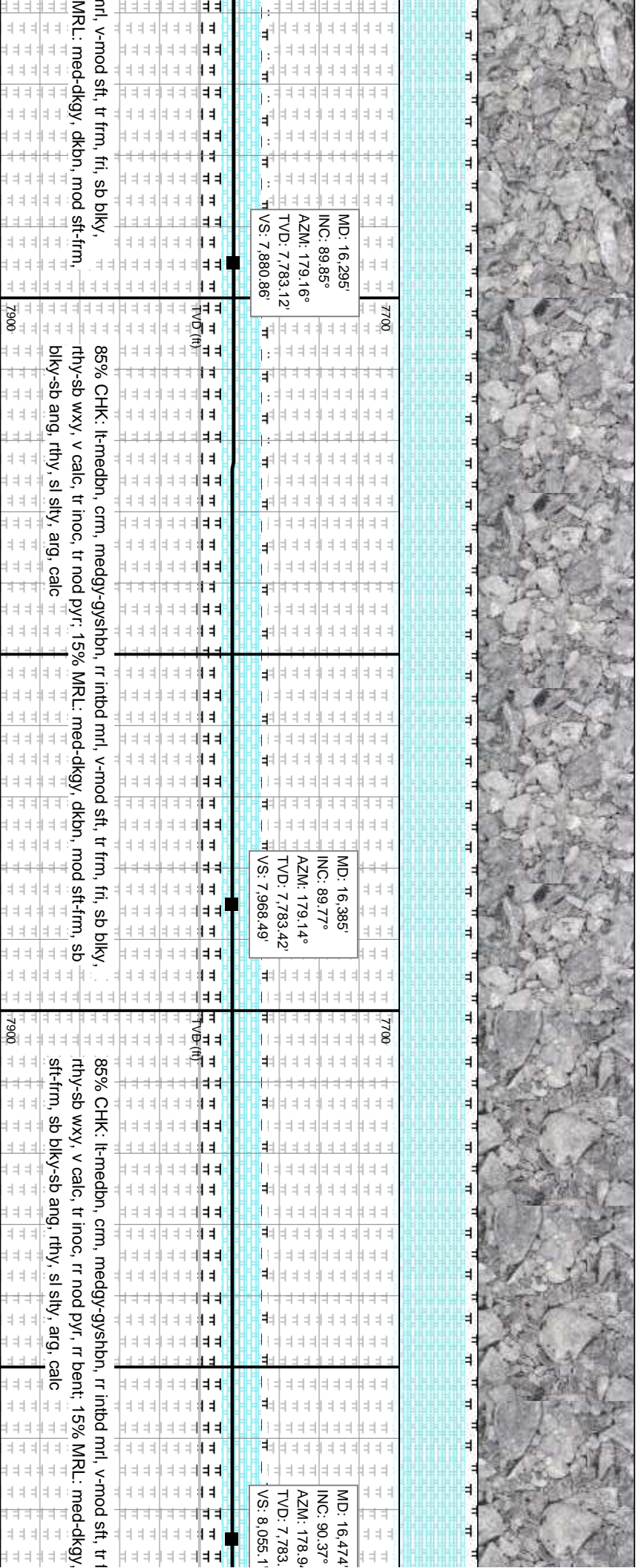
07/07/2021



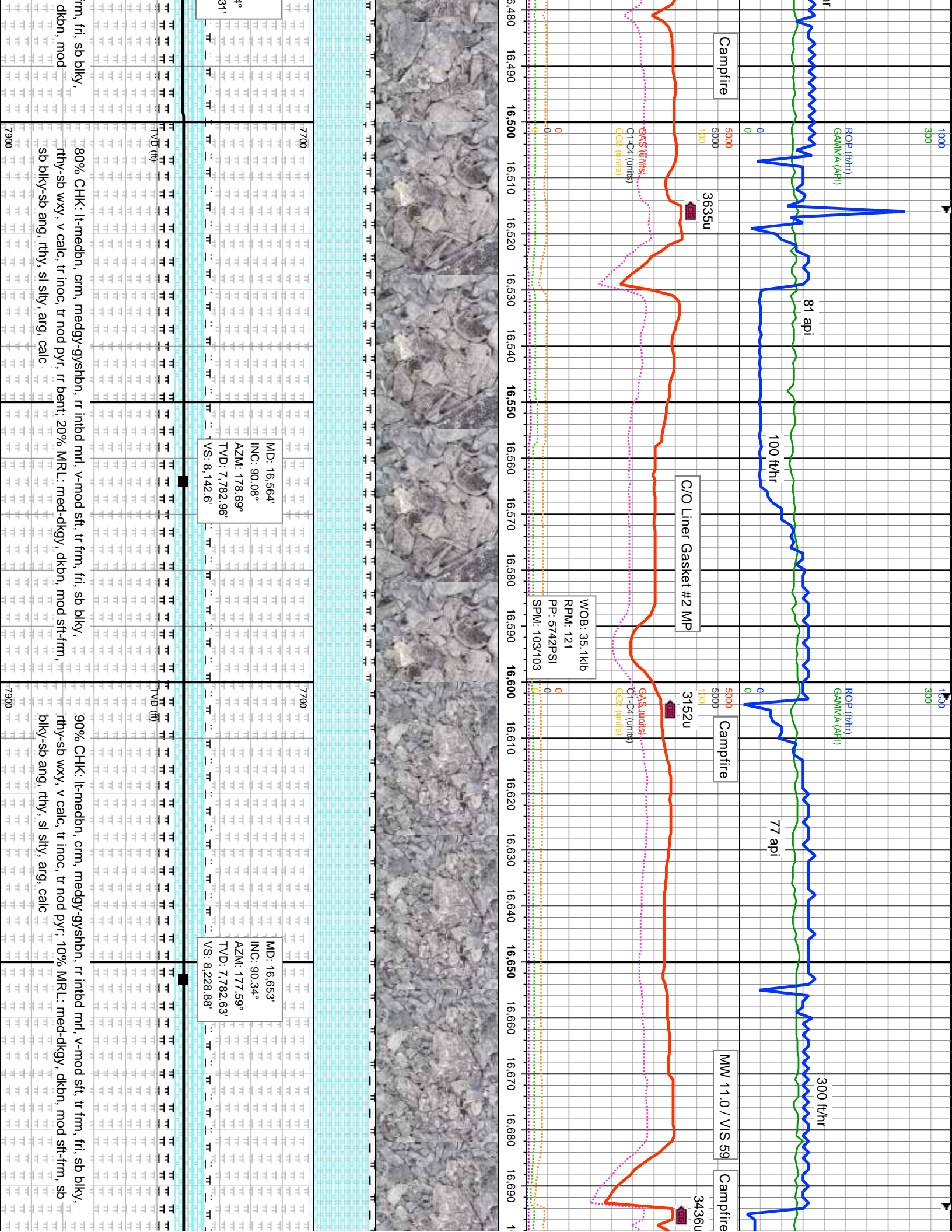
MD: 16,295'  
 INC: 89.85°  
 AZM: 179.16°  
 TVD: 7,783.12'  
 VS: 7,880.86'

MD: 16,385'  
 INC: 89.77°  
 AZM: 179.14°  
 TVD: 7,783.42'  
 VS: 7,968.49'

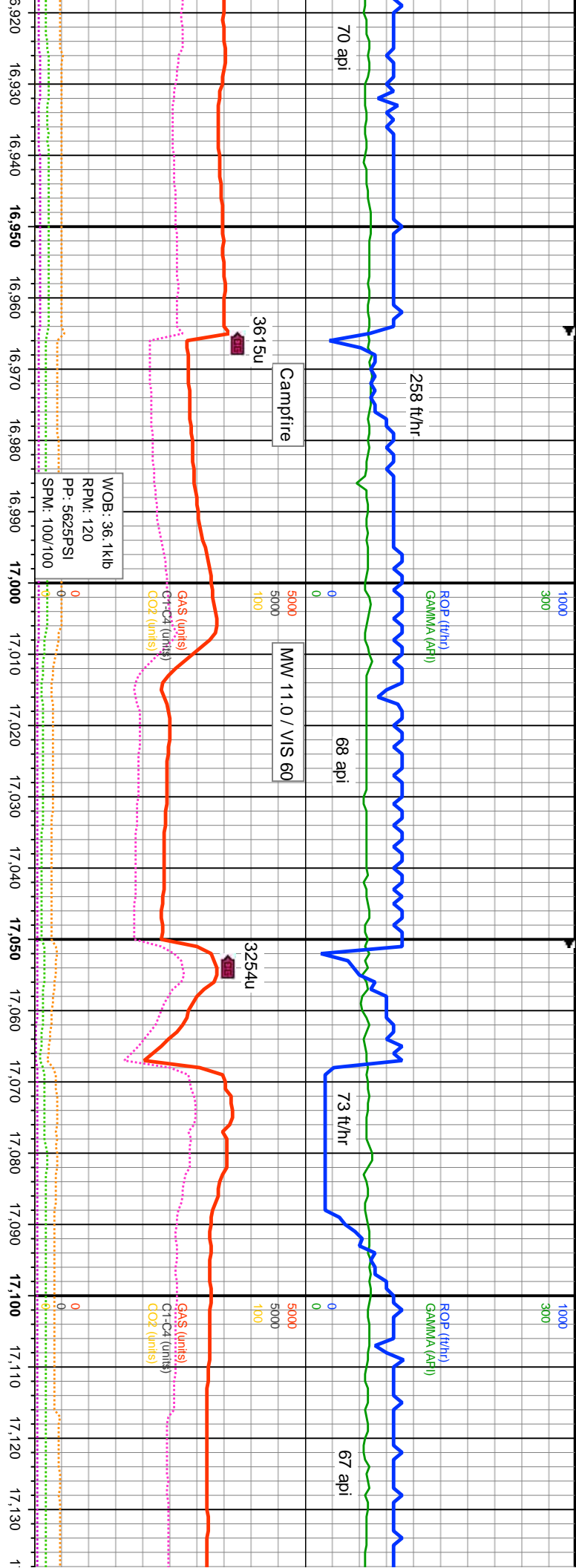
MD: 16,474'  
 INC: 90.37°  
 AZM: 178.9°  
 TVD: 7,783'  
 VS: 8,055.1'



ani, v-mod sft, tr frm, fri, sb blkly,  
 MRL: med-dkgy, dkbn, mod sft-frm,  
 85% CHK: lk-medbn, crm, medgy-gyshbn, rr intbd mrl, v-mod sft, tr frm, fri, sb blkly,  
 rthy-sb wxy, v calc, tr inoc, tr nod pyr, 15% MRL: med-dkgy, dkbn, mod sft-frm, sb  
 blkly-sb ang, rthy, sl slty, arg, calc  
 85% CHK: lk-medbn, crm, medgy-gyshbn, rr intbd mrl, v-mod sft, tr frm, fri, sb blkly,  
 rthy-sb wxy, v calc, tr inoc, rr nod pyr, 15% MRL: med-dkgy, dkbn, mod sft-frm, sb  
 sft-frm, sb blkly-sb ang, rthy, sl slty, arg, calc  
 85% CHK: lk-medbn, crm, medgy-gyshbn, rr intbd mrl, v-mod sft, tr fr f  
 rthy-sb wxy, v calc, tr inoc, rr nod pyr, 15% MRL: med-dkgy,  
 sft-frm, sb blkly-sb ang, rthy, sl slty, arg, calc







D: 16.923'  
 C: 89.39°  
 NM: 180.68°  
 D: 7.78433'  
 S: 8.491.51'

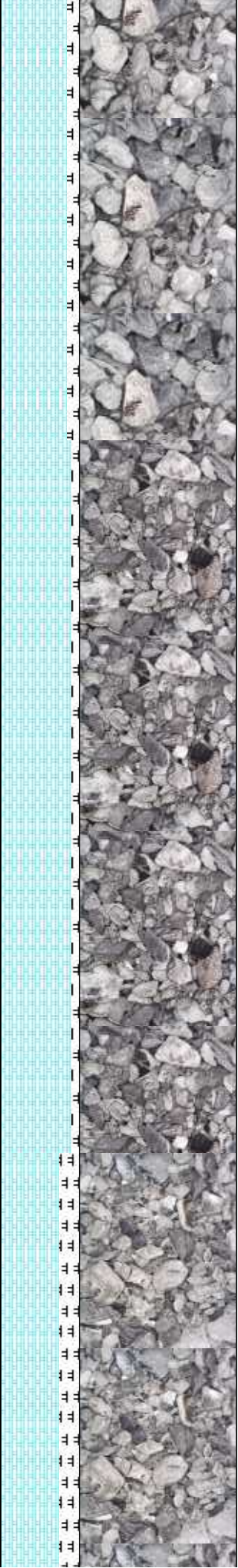
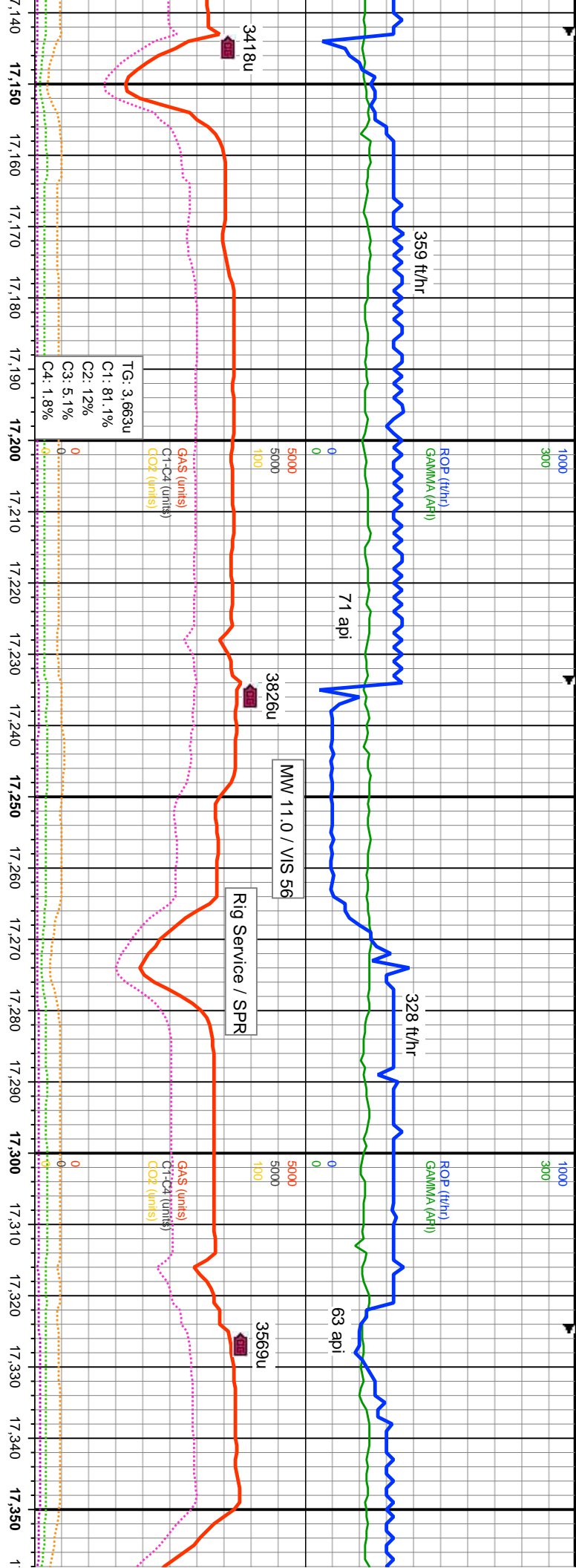
MD: 17.012'  
 INC: 89.44°  
 AZM: 181.89°  
 TVD: 7.78524'  
 VS: 8.578.85'

MD: 17.102'  
 INC: 89.42°  
 AZM: 180.08°  
 TVD: 7.78614'  
 VS: 8.667.08'

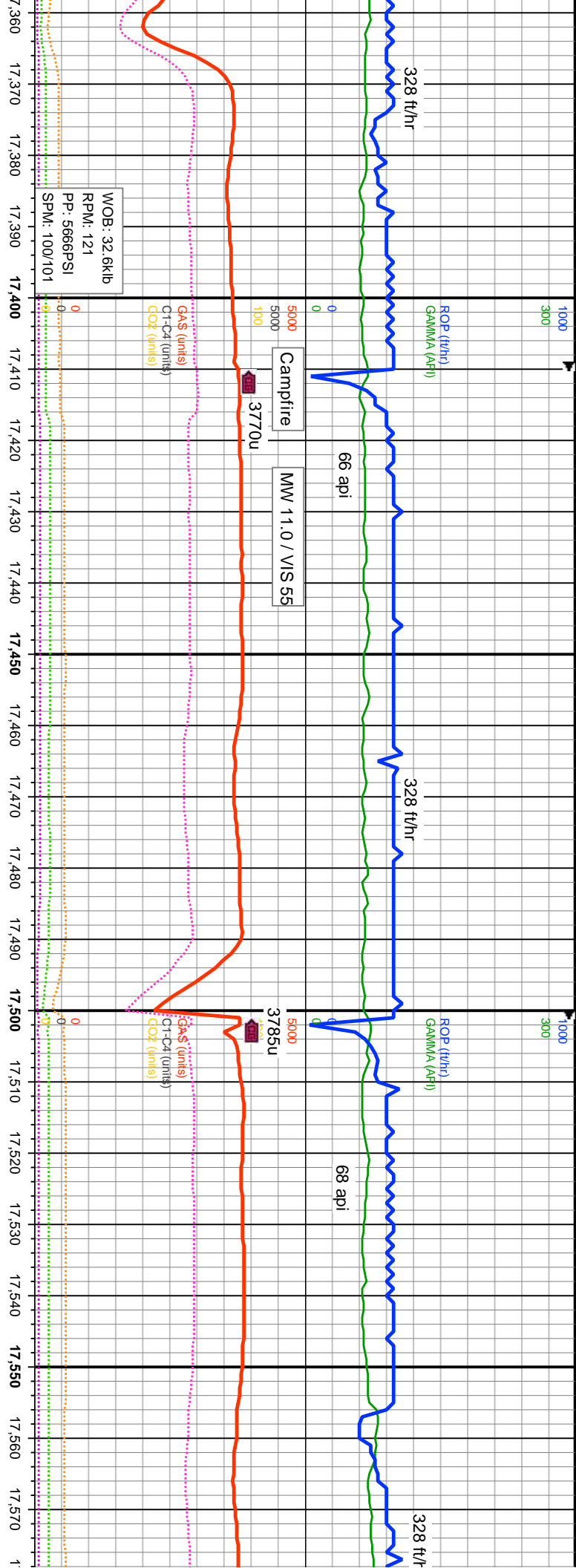
medbn, crm, medgy-gyshbn, tr itr gy, rr inbnd mrl, v-mod sft, tr frm, fri, sb  
 v calc, tr inoc, rr nod pyr: 10% MRL: med-dkgy, dkbn, mod sft-frm, sb  
 thy, sl sily, arg, calc

80% CHK: lt-medbn, crm, medgy-gyshbn, tr itr gy, rr inbnd mrl, v-mod sft, tr frm, fri, sb  
 bkly, rthy-sb wxy, v calc, v rr inoc: 20% MRL: med-dkgy, dkbn, mod sft-frm, sb bkly-sb  
 ang, rthy, sl sily, arg, calc: v rr bent

85% CHK: lt-medbn, crm, medgy-gyshbn, tr itr gy, rr inbnd mrl, v-mod sft, tr frm, fri, sb  
 bkly, rthy-sb wxy, v calc, v rr inoc: 20% MRL: med-dkgy, dkbn, mod sft-frm, sb bkly-sb  
 ang, rthy, sl sily, arg, calc



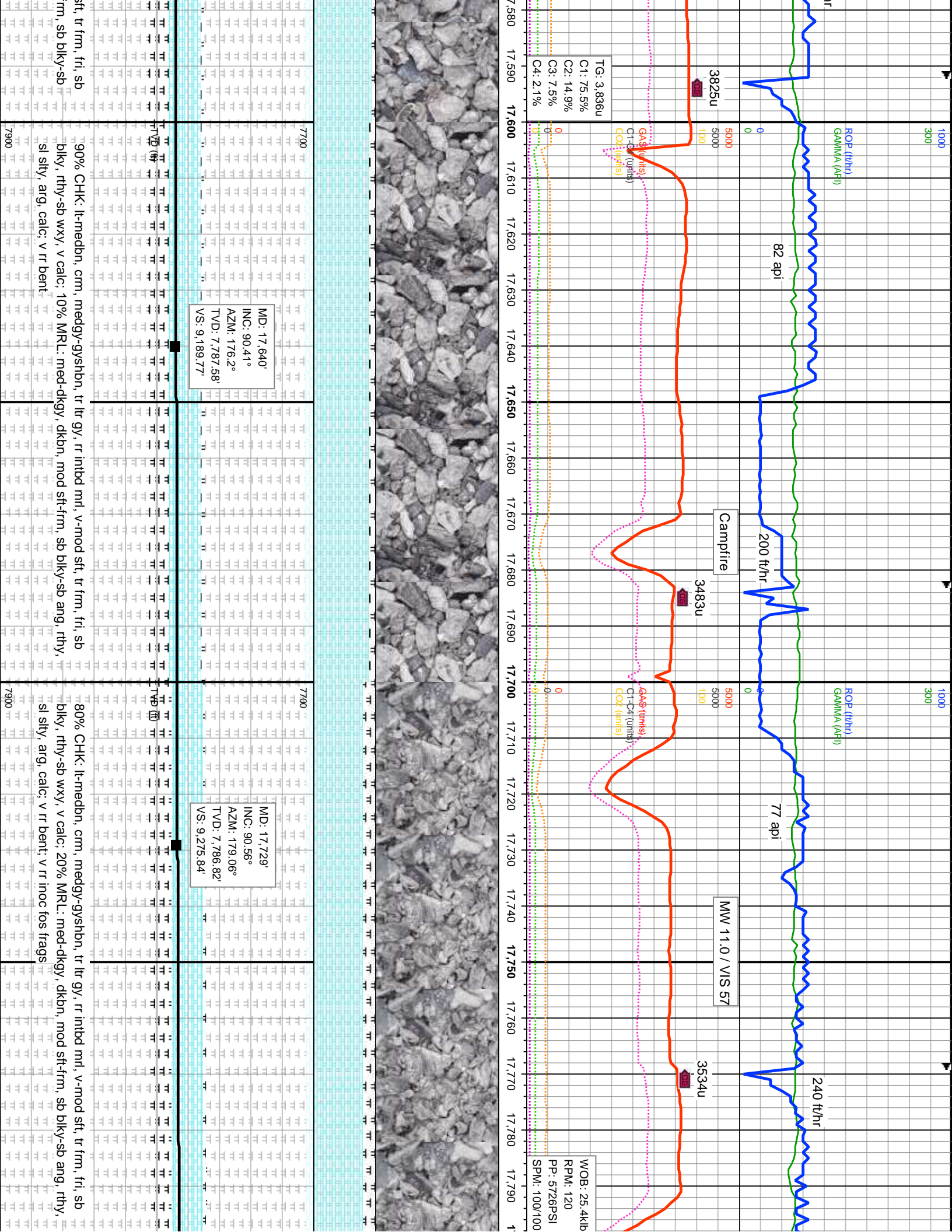
MD: 17.192 INC: 89.47° AZM: 179.17° TVD: 7,787.02' VS: 8,754.87'	90% CHK: lt-medbn, crm, medgy-gyshbn, tr ltr gy, rr inbnd mli, v-mod sft, tr frm, fri, sb blkly, rthy-sb wxy, v calc, v rr inoc: 10% MRL: med-dkgy, dkbn, mod sft-frm, sb blkly-sb ang, rthy, sl stly, arg, calc, v rr bent
MD: 17.281' INC: 90.08° AZM: 178.5° TVD: 7,787.37' VS: 8,841.41'	75% CHK: lt-medbn, crm, medgy-gyshbn, tr ltr gy, rr inbnd mli, v-mod sft, tr frm, fri, sb blkly, rthy-sb wxy, v calc, v rr inoc: 25% MRL: med-dkgy, dkbn, mod sft-frm, sb blkly-sb ang, rthy, sl stly, arg, calc

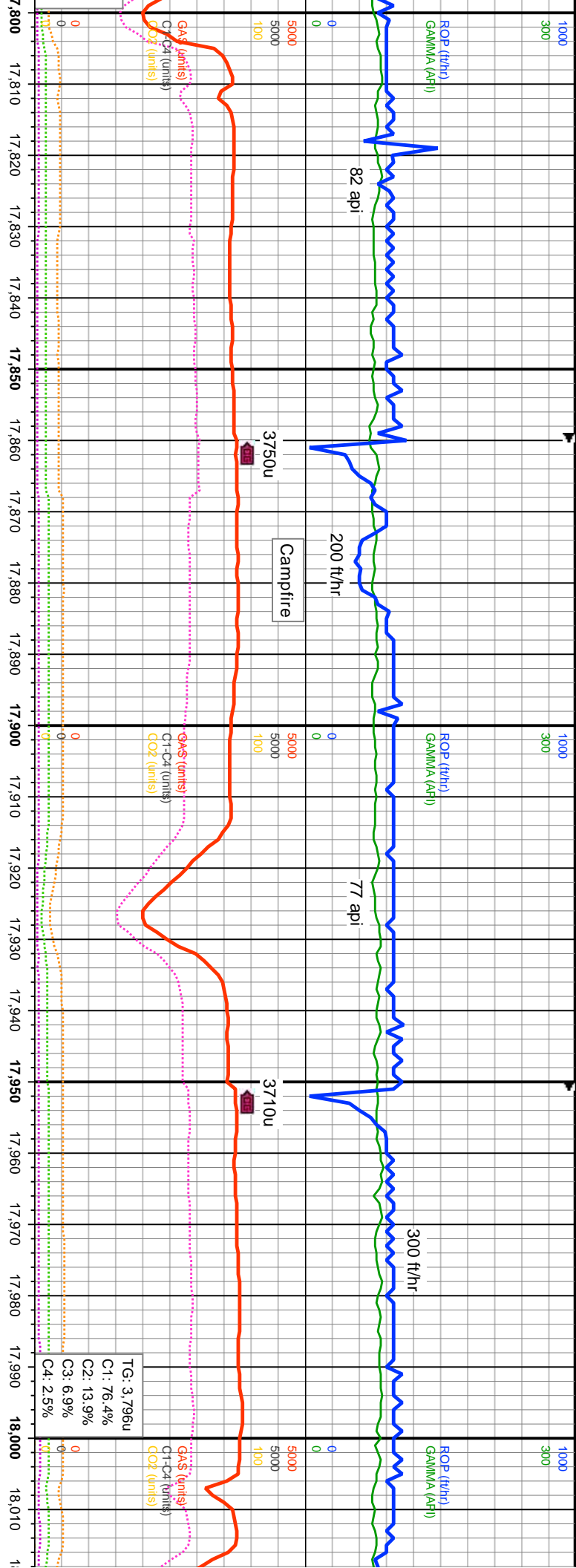


MD: 17,371'	MD: 17,460'	MD: 17,550'
INC: 89.9°	INC: 90.02°	INC: 89.7°
AZM: 178.64°	AZM: 180.62°	AZM: 177.07°
TVD: 7,787.39'	TVD: 7,787.45'	TVD: 7,787.66'
VS: 8,928.82'	VS: 9,015.63'	VS: 9,103.13'

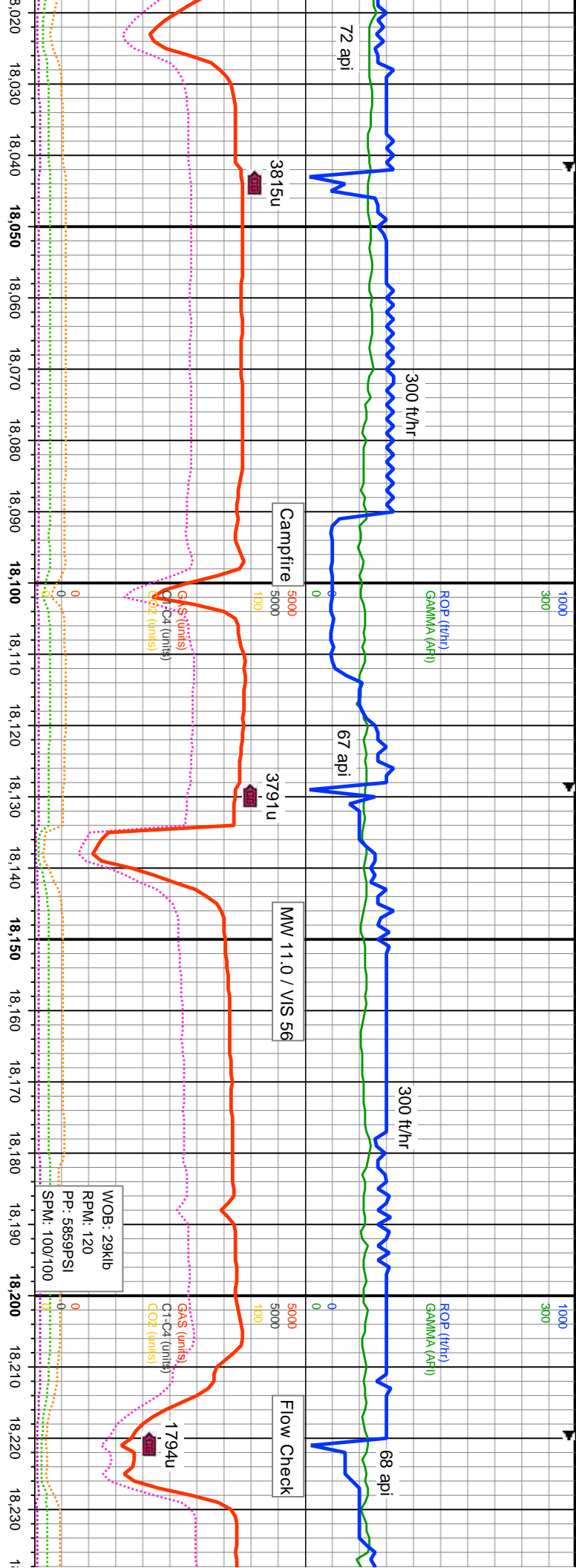
85% CHK: lt-medbn, cfm, medgy-gyshbn, tr ltr gy, rr inbnd mrl, v-mod sft, tr frm, fri, sb  
 bkly, rthy-sb wxy, v calc, v rr inoc: 15% MRL: med-dkgy, dkbn, mod sft-frm, sb bkly-sb  
 ang, rthy, sl sly, arg, calc

95% CHK: lt-medbn, cfm, medgy-gyshbn, tr ltr gy, rr inbnd mrl, v-mod sft-frm, fri, sb  
 bkly, rthy-sb wxy, v calc, v rr inoc: 5% MRL: med-dkgy, dkbn, mod sft-frm, fri, sb  
 ang, rthy, sl sly, arg, calc: v rr bent





Section	Depth (ft)	ROP (ft/hr)	GAMMA (API)	Gas (units)	C1-C4 (units)	CO2 (units)
75% CHK: li-medbn, cm, medgy-gyshbn, tr ltr gy, rr intbd mli, v-mod sft, tr frm, fri, sb bkly, rthy-sb wxy, v calc: 25% MRL: med-dkgy, dkbn, mod sft-frm, sb bkly-sb ang, rthy, sl sily, arg, calc: v rr bent	7700	~500	~50	~5000	~5000	~5000
	7900	~500	~50	~5000	~5000	~5000
70% CHK: li-medbn, cm, medgy-gyshbn, tr ltr gy, rr intbd mli, v-mod sft, tr frm, fri, sb bkly, rthy-sb wxy, v calc: 30% MRL: med-dkgy, dkbn, mod sft-frm, sb bkly-sb ang, rthy, sl sily, arg, calc: v rr bent	7700	~500	~50	~5000	~5000	~5000
	7900	~500	~50	~5000	~5000	~5000
85% CHK: li-medbn, cm, medgy-gyshbn, tr ltr gy, rr intbd mli, v-mod sft, tr frm, fri, sb bkly, rthy-sb wxy, v calc: 35% MRL: med-dkgy, dkbn, mod sft-frm, sb bkly-sb ang, rthy, sl sily, arg, calc: v rr bent	7700	~500	~50	~5000	~5000	~5000
	7900	~500	~50	~5000	~5000	~5000

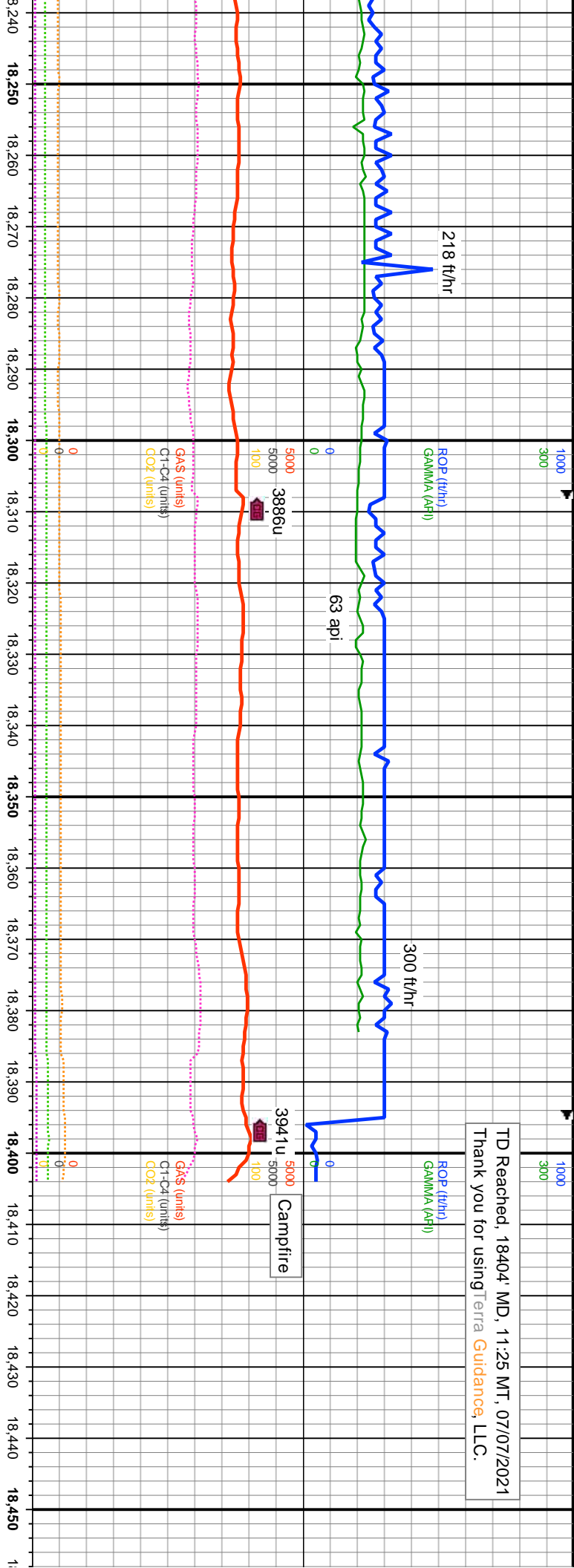


MD: 18.088°  
 INC: 90.22°  
 AZM: 179.81°  
 TVD: 7.783.43'  
 VS: 9.626.15'

MD: 18.178°  
 INC: 89.62°  
 AZM: 180.06°  
 TVD: 7.783.56'  
 VS: 9.714.04'

medbn, cfm, medgy-gyshbn, tr ltr gy, rr intbd mrl, v-mod sft, tr frm, fri, sb wxy, v calc: 15% MRL: med-dkgy, dkbn, mod sft-frm, sb bkly-sb ang, rthy, alg: v rr bent	80% CHK: lt-medbn, cfm, medgy-gyshbn, tr ltr gy, rr intbd mrl, v-mod sft, tr frm, fri, sb bkly, rthy-sb wxy, v calc: 20% MRL: med-dkgy, dkbn, mod sft-frm, sb bkly-sb ang, rthy, sl sily, arg, calc: v rr bent, v rr inoc fos frags	90% CHK: lt-medbn, cfm, medgy-gyshbn, tr ltr gy, rr intbd mrl, v-mod sft, tr frm, fri, sb bkly, rthy-sb wxy, v calc: 10% MRL: med-dkgy, dkbn, mod sft-frm, sb bkly-sb ang, rthy, sl sily, arg, calc: v rr bent
7900	7900	7900

TD Reached, 18404' MD, 11:25 MT, 07/07/2021  
Thank you for using Terra Guidance, LLC.



Projection to Bit

MD: 18,267'  
INC: 89.89°  
AZM: 180.72°  
TVD: 7,783.94'  
VS: 9,801.11'

MD: 18,357'  
INC: 89.61°  
AZM: 181.27°  
TVD: 7,784.33'  
VS: 9,889.35'

MD: 18,364'  
INC: 89.98°  
AZM: 180.55°  
TVD: 7,784.35'  
VS: 9,896.21'

MD: 18,404'  
INC: 89.98°  
AZM: 180.55°  
TVD: 7,784.37'  
VS: 9,935.37'

95% CHK: lt-medbn, ctm, medgy-gyshbn, tr ltr gy, rr inbnd mnl, v-mod sft, tr frm, fri, sb  
biky, rthy-sb wxy, v calc: 5% MRL: med-dkgy, dkbn, mod sft-frm, sb blkly-sb ang, rthy, sl

-gyshbn, tr ltr gy, rr inbnd mnl, v-mod sft, tr frm, fri, sb  
R.L. med-dkgy, dkbn, mod sft-frm, sb blkly-sb ang, rthy,

Time	MD	INC	AZM	TVD	VS
18,240					
18,250					
18,260					
18,270					
18,280					
18,290					
18,300					
18,310					
18,320					
18,330					
18,340					
18,350					
18,360					
18,370					
18,380					
18,390					
18,400					
18,410					
18,420					
18,430					
18,440					
18,450					

Table with 4 columns and 20 rows, containing numerical data and a light blue shaded header row.

18:460 18:470 18:480 18:490 18:

Table with 4 columns and 20 rows, containing numerical data and a light blue shaded header row.