



Scale: 5" / 100'  
Measured Depth Log

Well Name Pronghorn K-O-10HNC

Location NWNW SEC 10 T5N R61W

State COLORADO

Country USA

API Number 05-123-36583-00

County WELD

Rig Number 128

Field WILDCAT

Spud Date 4/28/2013

Drilling Completed 5/8/2013

Surface Coordinates 350 FNL X 1272 FWL, 40.42207, 104.20007

Bottom Hole Coordinates 470 FSL X 2642 FWL, 40.40966, 104.19479

Ground Elevation 4,713

K.B. Elevation 4,728

Logged Interval 5,900 To 11,084

Total Depth 10,084

Formation NIOBRARA B-CHALK

Type of Drilling Fluid H2O, LSND

Company Bonanza Creek

Address 410 17th Street  
Denver, CO 80202

Name Paul McKay

Company Bonanza Creek

Address 410 17th Street  
Denver, CO 80202

Wellsite Geologists

Kevin G. Wedge  
David B. Wellsite

Operator

Energy Inc.  
Suite 1500  
202

Geologist

Energy Inc.  
Suite 1500  
202

Other

eraghty  
Howland  
books  
Geological Services Provided By Columbine Logging Inc.

Rock Types

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

Accessories

	F FOSSIL		ARGILLACEOUS		GLAUCONITE		TUFFACEOUS
	GASTROPD		ARGILLITE GRAIN		GYPSIFEROUS		ANHYDRITE STRINGER
	ALGAE		OOLITE		HEAVY MINERAL		BENTONITE STRINGER
	AMPHIPORA		BITUMENOUS SUBSTANCE		INOCERAMUS		COAL STRINGER
	BELEMNITE		BRECCIA FRAGMENTS		KAOLIN		DOLOMITE STRINGER
	BIOCLASTIC		CALCAREOUS		MARLSTONE		GYPSUM STRINGER
	BRACHIOPOD		CARBONACEOUS FLAKES		NODULES		LIMESTONE STRINGER
	BRYOZOA		CHERT		PHOSPHATE PELLETS		MARLSTONE (CALC)
	CEPHALOPD		COAL - THIN BEDS		PYRITE		MARLSTONE (DOL)
	CORAL		DOLOMITIC		SALT CAST		SANDSTONE STRINGER
	CRINOID		FELDSPAR		SANDY		
	ECHINOID		FERRUGINOUS PELLETT		SILTY		SHALE STRINGER
	FISH		ANHYDRITIC				SILTSTONE STRINGER
	FORAMINIFERA						

Other Symbols

	FAULT		WIRELINE TESTED - LEFT		E EARTHY
	FORMATION TOP		WIRELINE TESTED - RT		FX FINELYXLN
	GAS SHOW				GS GRAINSTONE
	MIN DEPTH				L LITHOGRAPHIC
Rounding					
	NORMAL FAULT		A ANGULAR		MX MICROXLN
	OIL SHOW		R ROUNDED		MS MUDSTONE
	OVERTURNED STRATA		S SUBANG		PS PACKSTONE
	REVERSE FAULT		S SUBRND		WS WACKESTONE
	SIDEWALL CORE (LEFT)				
	SIDEWALL CORE (RIGHT)				
Textures					
	BS BOUNDSTONE				
	C CHALKY				
	CX CRYPTOXLN				
Sorting					
	M MODERATE				
	P POOR				
	W WELL				

Oil Show					
	M MOLDIC				
	O ORGANIC				
	P PINPOINT				
	V VUGGY				
	EVEN				
	QUESTIONABLE				
	SPOTTED STAINING				
Engineering					
	BIT				
	CONNECTION (LEFT)				
	CONNECTION (RIGHT)				
	CONNECTION GAS				
	CORE - LOST				
	CORE - RECOVERED				
	DST INTERVAL				
	SLIDE				
	SURVEY				
	TRIP GAS				
Porosity					
	E EARTHY				
	FENESTRAL				
	F FRACTURE				
	INTERCRYSTALLINE				
	INTEROOLITIC				

Slide/Rotate

Bit Data

Bit #: 3  
Type: HE04JMRSV  
Size: 8.75  
Depth In: 5,866 '  
Jets: 3/20  
S/N: 1335611

ROP  
ROF  
GAMMA

Total Gas & Chromatograph

GAS  
C1  
C2  
C3  
C4  
CO2

COLUMBINE LOGGING  
RIGGED UP ON  
05/01/2013 MANNED  
2-PERSON LOGGING  
WITH BLOODHOUND GAS  
CHROMATOGRAPH UNIT  
#0312 BEGAN ON  
05/01/2013

Depth Labels

% Lith

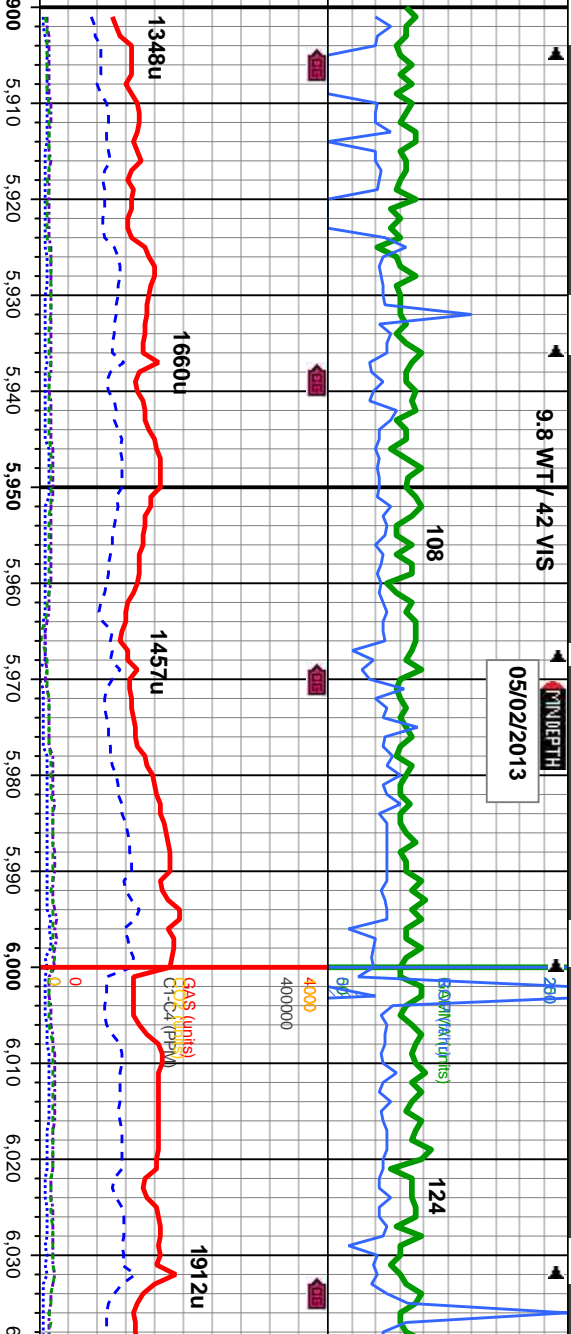
Well Bore  
TVD

Oil Show

Images

9.8 WT/ 42 VIS

MINDEPTH  
05/02/2013



5300

MD: 5,917 '  
TVD: 5,705.33 '  
Inclination: 4.5 °  
Azimuth: 166.3 °  
VS: 85.26 '

MD: 5,949 '  
TVD: 5,737.14 '  
Inclination: 7.7 °  
Azimuth: 176.4 °  
VS: 88.59 '

MD: 5,981 '  
TVD: 5,768.7 '  
Inclination: 11.3 °  
Azimuth: 185.1 °  
VS: 93.55 '

MD: 6,012 '  
TVD: 5,798.91 '  
Inclination: 14.5 °  
Azimuth: 188.7 °  
VS: 99.81 '

MD: 6,012 '  
TVD: 5,798.91 '  
Inclination: 14.5 °  
Azimuth: 188.7 °  
VS: 99.81 '

80% SLTY SH: medgy - dkgy , mod sft - sl  
firm, sb blkly - blkly, sb plty - plty, rthy - gt, mtx;  
arg - stly, non calc  
20% SHY SS: lt gy - wh, med gy, med - lt gy,  
sft - mod frm, sb blkly - sb plty

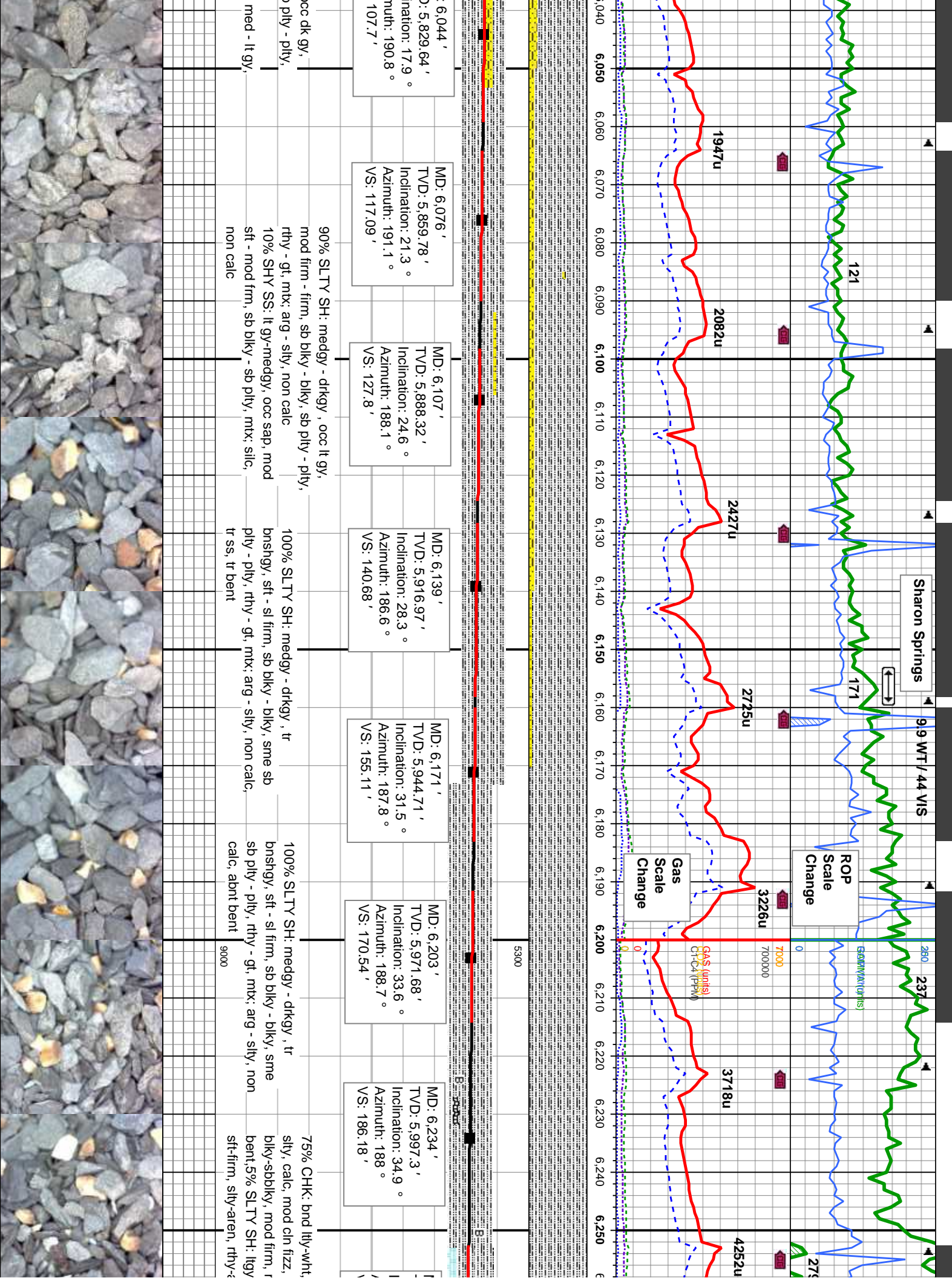
75% SLTY SH: medgy - dkgy , mod sft - sl  
firm, sb blkly - blkly, sb plty - plty, rthy - gt, mtx;  
arg - stly, non calc  
25% SHY SS: lt gy - wh, med gy, med - lt gy, sft  
- mod frm, sb blkly - sb plty, sl c gr, tr lam pyr

90% SLTY SH: medgy - dkgy , c  
mod sft - sl firm, sb blkly - blkly, sb plty - plty, rthy - gt, mtx; arg - stly, non calc  
10% SHY SS: lt gy - wh, med gy, sft - mod frm, sb blkly - sb plty

TR  
P  
FR  
G  
E







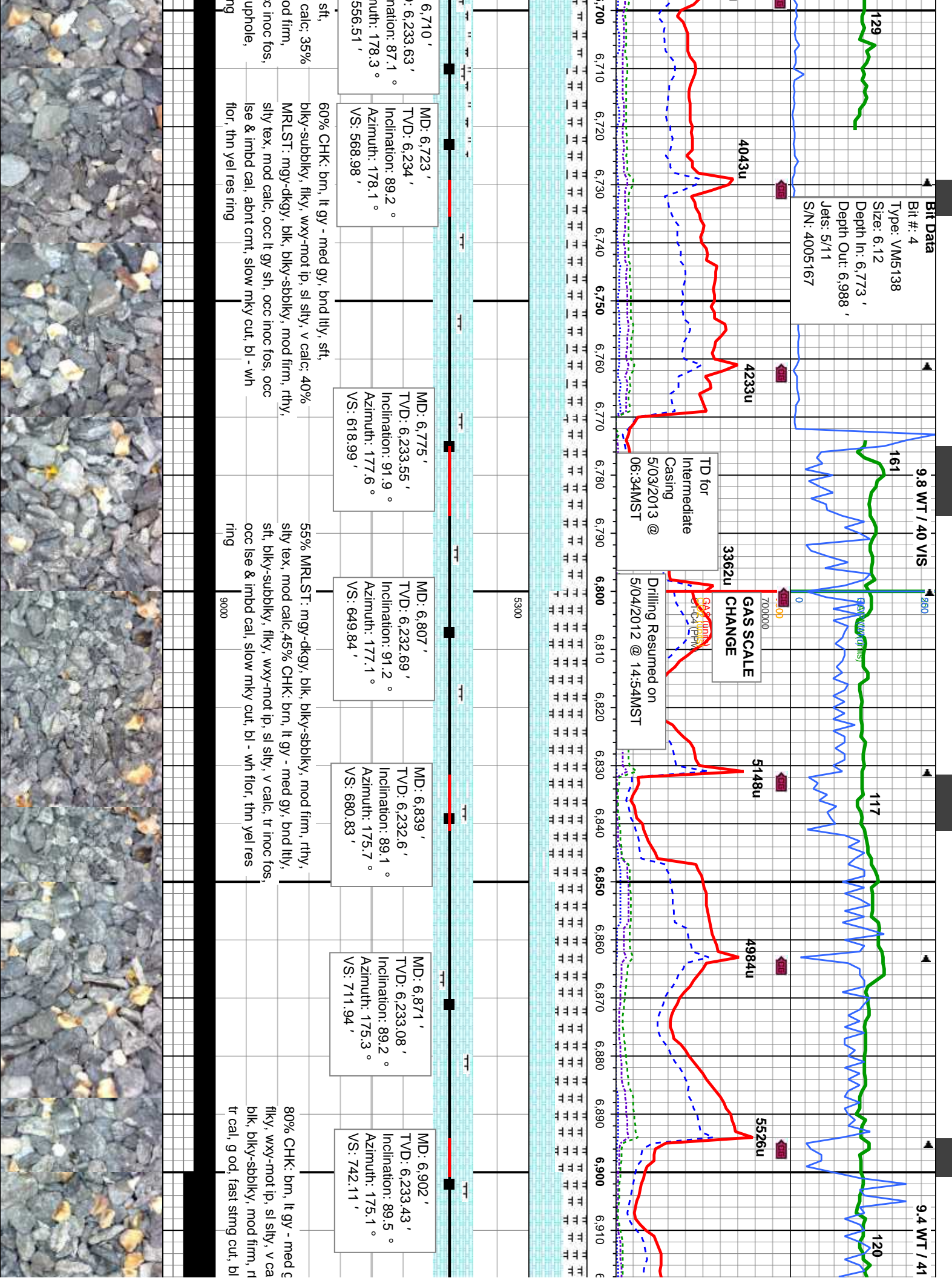




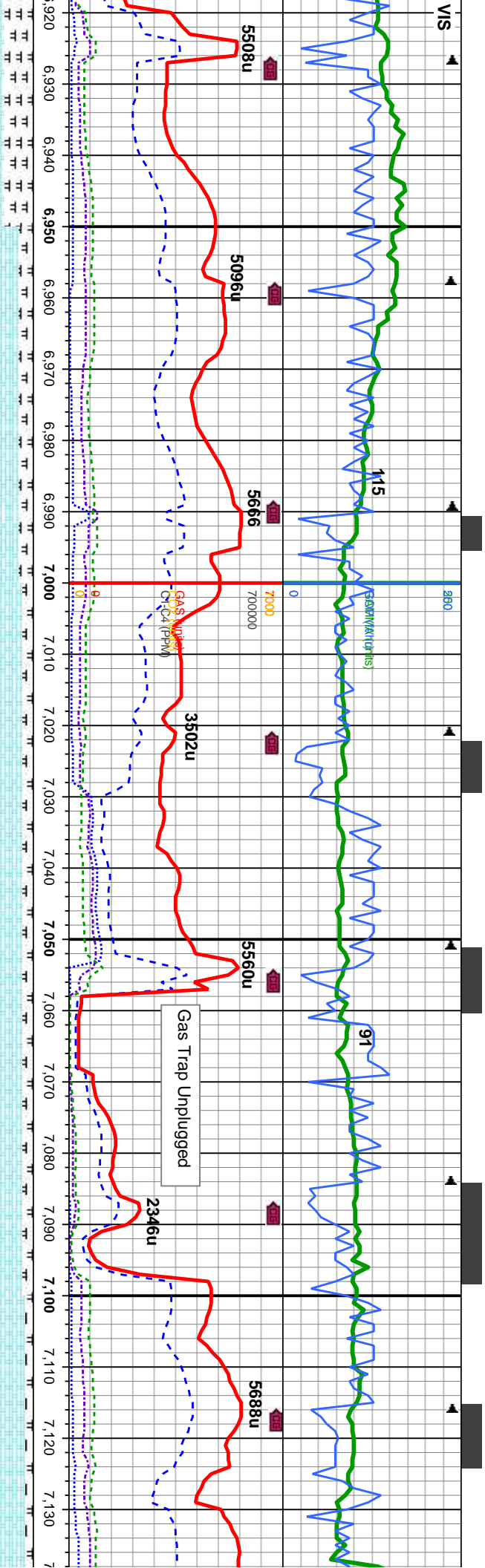












MD: 6,933 '  
TVD: 6,233.75 '  
Inclination: 89.3 °  
Azimuth: 174.8 °  
VS: 772.32 '

MD: 6,965 '  
TVD: 6,234.2 '  
Inclination: 89.1 °  
Azimuth: 174.1 °  
VS: 803.56 '

MD: 6,996 '  
TVD: 6,234.63 '  
Inclination: 89.3 °  
Azimuth: 174.2 °  
VS: 833.86 '

MD: 7,028 '  
TVD: 6,235.02 '  
Inclination: 89.3 °  
Azimuth: 173.9 °  
VS: 865.15 '

MD: 7,060 '  
TVD: 6,235.27 '  
Inclination: 89.8 °  
Azimuth: 173.7 °  
VS: 896.47 '

MD: 7,092 '  
TVD: 6,235.19 '  
Inclination: 90.5 °  
Azimuth: 173 °  
VS: 927.85 '

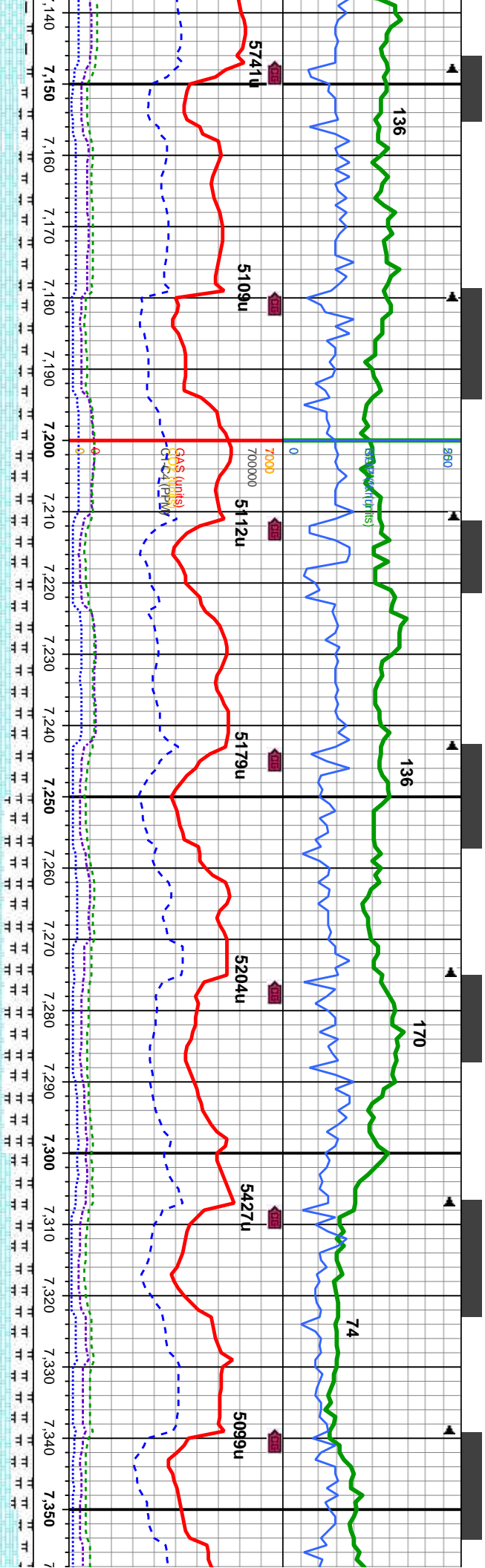
MD: 7,124 '  
TVD: 6,234.97 '  
Inclination: 90.3 °  
Azimuth: 173.2 °  
VS: 959.24 '

Y, bnd lly, sft, blkly-subblky, c, 20% MRLST: mgy-dkgy, h, arg-aren tex, tr inoc fos, - wh bri flor, thn yel res ring

85% CHK: brn, lt gy - med gy, bnd lly, sft, blkly-subblky, flky, wxy-mot ip, sl slty, v calc: 15% MRLST: mgy-dkgy, blk, blkly-sbblky, mod firm, rthy, arg-aren tex, tr inoc fos, tr cal, g od, v fast sting cut, bl - wh bri flor, mod yel res ring

90% CHK: brn, med - lt gy, lt gy - med gy, bnd lly, sft, blkly-subblky, flky, wxy-mot ip, sl slty, v calc: 10% MRLST: mgy-dkgy, blk, blkly-sbblky, mod firm, rthy, arg-aren fos, mod g od, v fast sting cut, bl - wh bri flor, mod yel res ring





MD: 7,155 '  
TVD: 6,234.48 '  
Inclination: 91.5 °  
Azimuth: 173.2 °  
VS: 989.65 '

MD: 7,187 '  
TVD: 6,233.45 '  
Inclination: 92.2 °  
Azimuth: 173.9 °  
VS: 1,020.98 '

MD: 7,219 '  
TVD: 6,232.05 '  
Inclination: 92.8 °  
Azimuth: 174.8 °  
VS: 1,052.21 '

MD: 7,251 '  
TVD: 6,230.4 '  
Inclination: 93.1 °  
Azimuth: 175.5 °  
VS: 1,083.32 '

MD: 7,282 '  
TVD: 6,228.86 '  
Inclination: 92.6 °  
Azimuth: 176.2 °  
VS: 1,113.38 '

MD: 7,314 '  
TVD: 6,227.52 '  
Inclination: 92.2 °  
Azimuth: 176.5 °  
VS: 1,144.35 '

MD: 7,346 '  
TVD: 6,226.32 '  
Inclination: 92.1 °  
Azimuth: 178.3 °  
VS: 1,175.18 '

60% CHK: brn, lt gy - med gy, bnd ltly, sft, blkly-subblkly, flky, wxy-mot ip, sl silty, v calc; 40% MRLST: mgy-dkgly, blk, blkly-sbblkly, mod firm, rthy, arg-aren tex, fast stmg cut, bl - wh bri flor, thn yel res ring

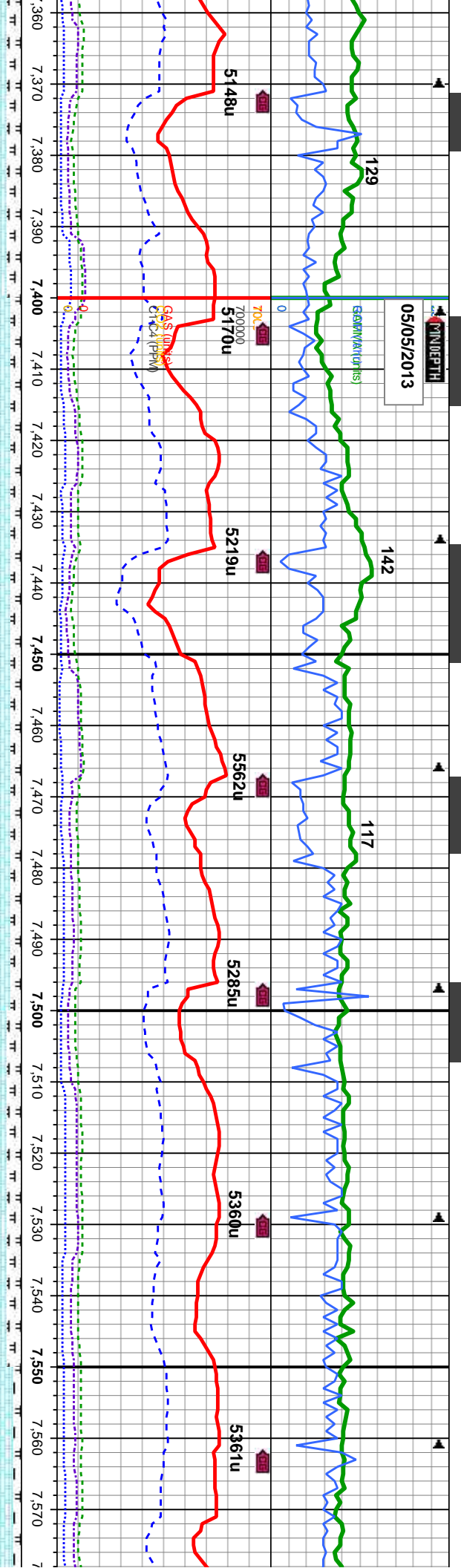
80% CHK: lt gy - med gy, bnd ltly, sft, blkly-subblkly, flky, wxy-mot ip, sl silty, v calc; 20% MRLST: mgy-dkgly, blk, blkly-sbblkly, mod firm, rthy, arg-aren tex, tr inoc fos, tr uncons cal, mod g od, fast stmg cut, bl - wh bri flor, thn yel res ring





05/05/2013  
MINDEPTH

63MM(MINUS)



MD: 7.378 '  
TVD: 6,225.32 '  
Inclination: 91.5 °  
Azimuth: 177.8 °  
VS: 1,205.91 '

MD: 7.409 '  
TVD: 6,224.53 '  
Inclination: 91.4 °  
Azimuth: 178.5 °  
VS: 1,235.68 '

MD: 7.441 '  
TVD: 6,223.89 '  
Inclination: 90.9 °  
Azimuth: 179.7 °  
VS: 1,266.25 '

MD: 7.473 '  
TVD: 6,223.64 '  
Inclination: 90 °  
Azimuth: 180.8 °  
VS: 1,296.64 '

MD: 7.505 '  
TVD: 6,223.81 '  
Inclination: 89.4 °  
Azimuth: 181.3 °  
VS: 1,326.88 '

MD: 7.537 '  
TVD: 6,224.09 '  
Inclination: 89.6 °  
Azimuth: 182.7 °  
VS: 1,356.95 '

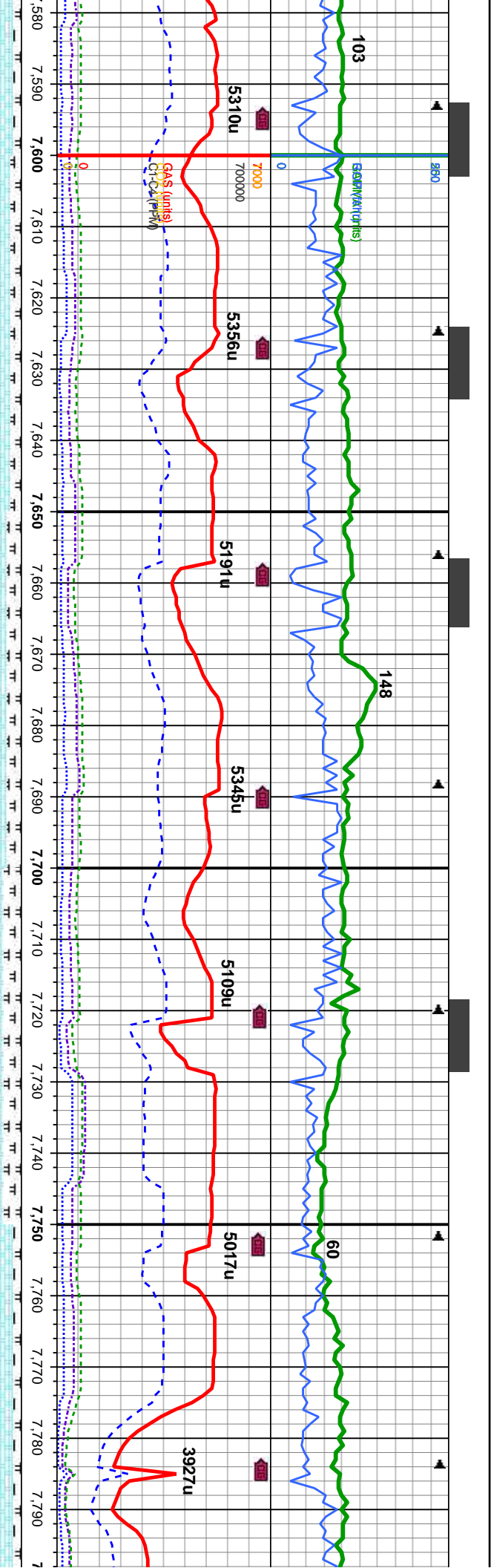
MD: 7.569 '  
TVD: 6,224.25 '  
Inclination: 89.8 °  
Azimuth: 183 °  
VS: 1,386.85 '

85% CHK: lt gy - med gy, bnd lily, sft, blkly-subblkly, flky, wxy-mot ip, sl silty, v calc, 15% MRLST: mgy-dkgy, blk, blkly-sbbkly, mod firm, rthy, arg-aren tex, tr inoc fos, g od, fast string cut, bl - wh bri flor, thn yel res ring

80% CHK: lt gy - med gy, bnd lily, sft, blkly-subblkly, flky, wxy-mot ip, sl silty, v calc, 20% MRLST: mgy-dkgy, blk, blkly-sbbkly, mod firm, rthy, arg-aren tex, tr inoc fos, tr uncons cal, mod g od, v fast string cut, bl - wh bri flor, mod yel res ring



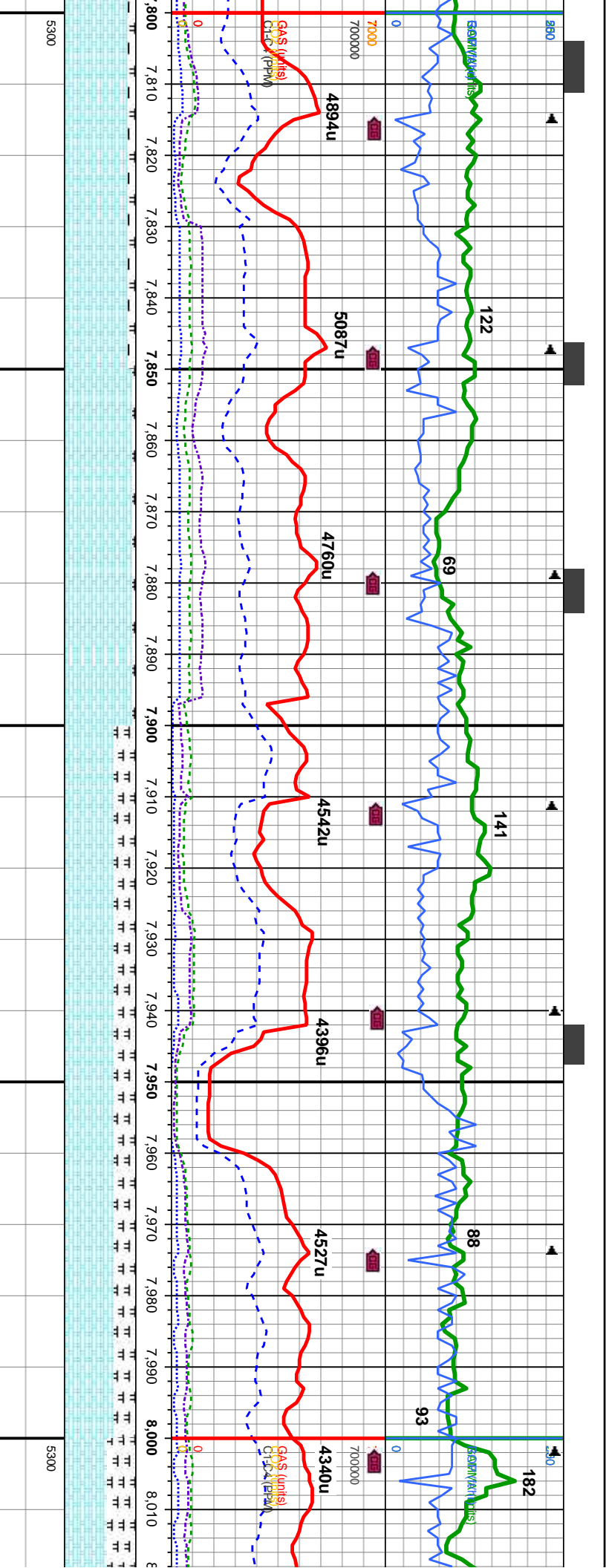




5300							







MD: 7,823 '  
TVD: 6,227.08 '  
Inclination: 89.8 °  
Azimuth: 182.5 °  
VS: 1,626.47 '

MD: 7,854 '  
TVD: 6,227.24 '  
Inclination: 89.6 °  
Azimuth: 181.6 °  
VS: 1,655.59 '

MD: 7,886 '  
TVD: 6,227.35 '  
Inclination: 90 °  
Azimuth: 180.9 °  
VS: 1,685.8 '

MD: 7,918 '  
TVD: 6,227.38 '  
Inclination: 89.9 °  
Azimuth: 179.7 °  
VS: 1,716.17 '

MD: 7,949 '  
TVD: 6,227.54 '  
Inclination: 89.5 °  
Azimuth: 179.7 °  
VS: 1,745.7 '

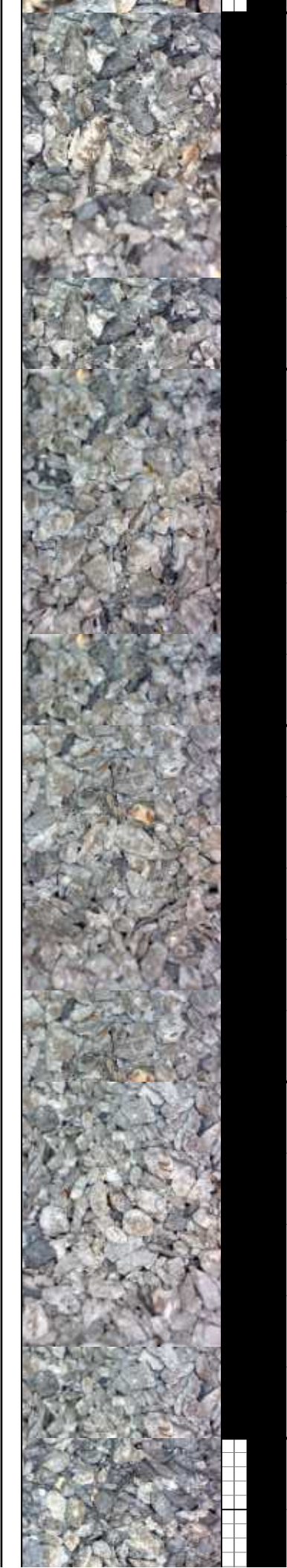
MD: 7,981 '  
TVD: 6,227.74 '  
Inclination: 89.8 °  
Azimuth: 179.7 °  
VS: 1,776.18 '

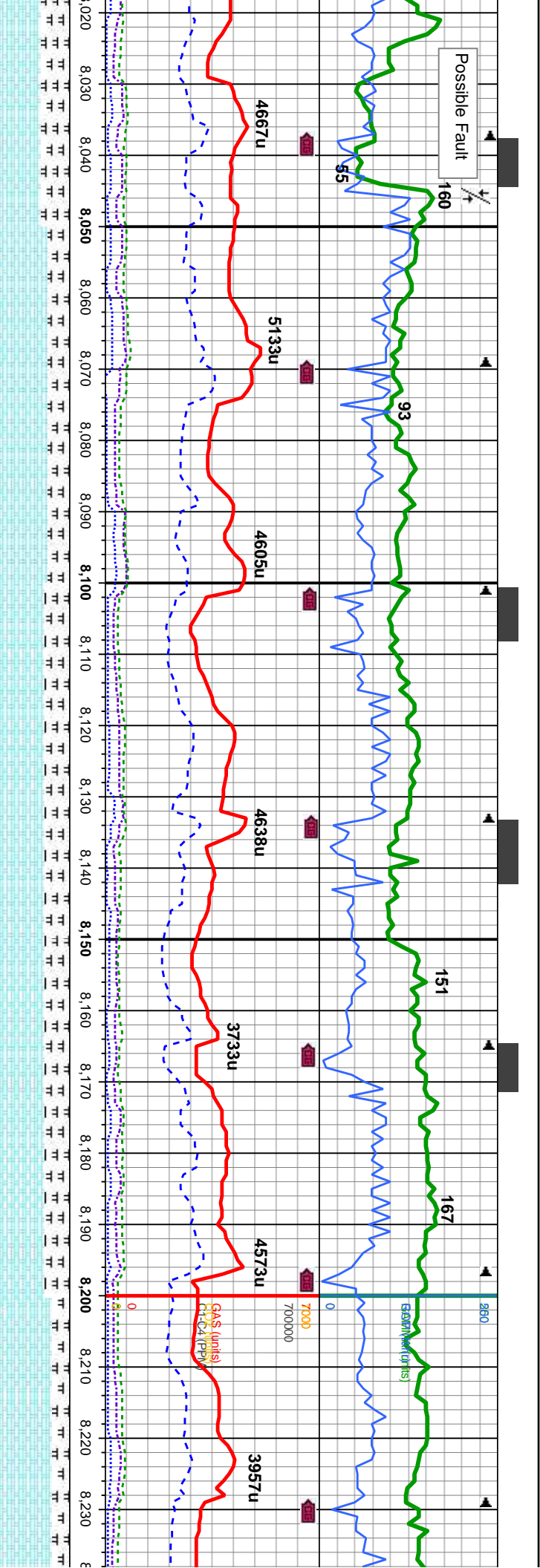
MD: 8,013 '  
TVD: 6,227.7 '  
Inclination: 90 °  
Azimuth: 179 °  
VS: 1,806.66 '

lt-mgy, occ wt & cm, vsft-modsft, sbblky, sl  
v tex, v calc, 5% MRL: mgy-dkgy, sl sft-firm occ  
/- sl fis, rthy sl mot tex, arg, v calc, tr inoc fos, g  
od, v fast stmng cut, bl - wh bri flor, g yel res ring

70% CHK: lt-mgy, occ wt & cm, vsft-modsft, sbblky, sl mot, sl silty  
tex, v calc, 30% MRL: mgy-dkgy, sl sft-firm occ brt, sbblky - sl fis,  
rthy sl mot tex, arg, v calc, tr inoc fos, occ calg chk flor, fr od, v fast  
stmng cut, bl - wh bri flor, g yel res ring

70% CHK: lt-mgy, occ wt & cm, vsft-modsft, sbblky, sl  
v tex, v calc, 30% MRL: mgy-dkgy, sl sft-firm occ  
rthy sl mot tex, arg, v calc, tr inoc fos  
stmng cut, bl - wh bri flor, thn yel res ring





MD: 8.045 ' TVD: 6,227.6 ' Inclination: 90.1 ° Azimuth: 179.3 ° VS: 1,837.18 '	MD: 8.077 ' TVD: 6,227.46 ' Inclination: 90.4 ° Azimuth: 179.7 ° VS: 1,867.69 '	MD: 8.109 ' TVD: 6,227.29 ' Inclination: 90.2 ° Azimuth: 179 ° VS: 1,898.23 '	MD: 8.140 ' TVD: 6,227.23 ' Inclination: 90 ° Azimuth: 178.3 ° VS: 1,927.93 '	MD: 8.172 ' TVD: 6,227.46 ' Inclination: 89.2 ° Azimuth: 177.8 ° VS: 1,958.68 '	MD: 8.204 ' TVD: 6,227.82 ' Inclination: 89.5 ° Azimuth: 178.1 ° VS: 1,989.44 '	MD: 8.236 ' TVD: 6,22 ' Inclination: ' Azimuth: 1 ' VS: 2,020 '
--	---	---	---	---	---	---

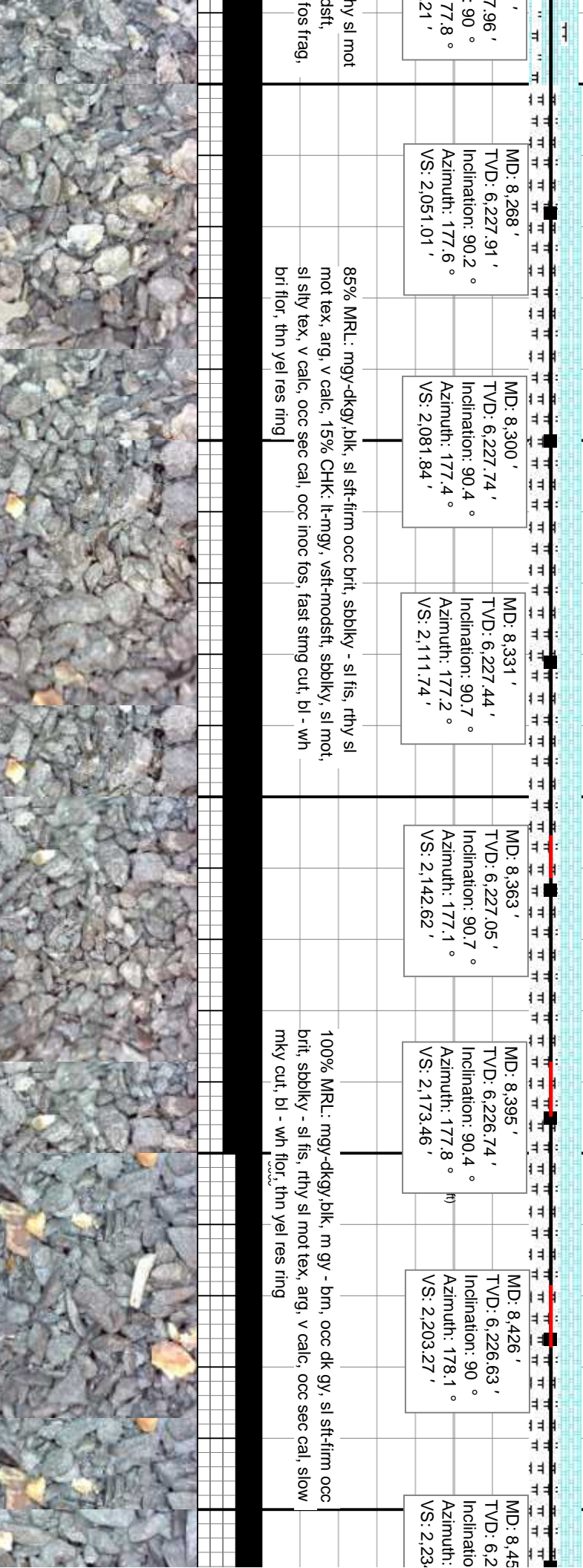
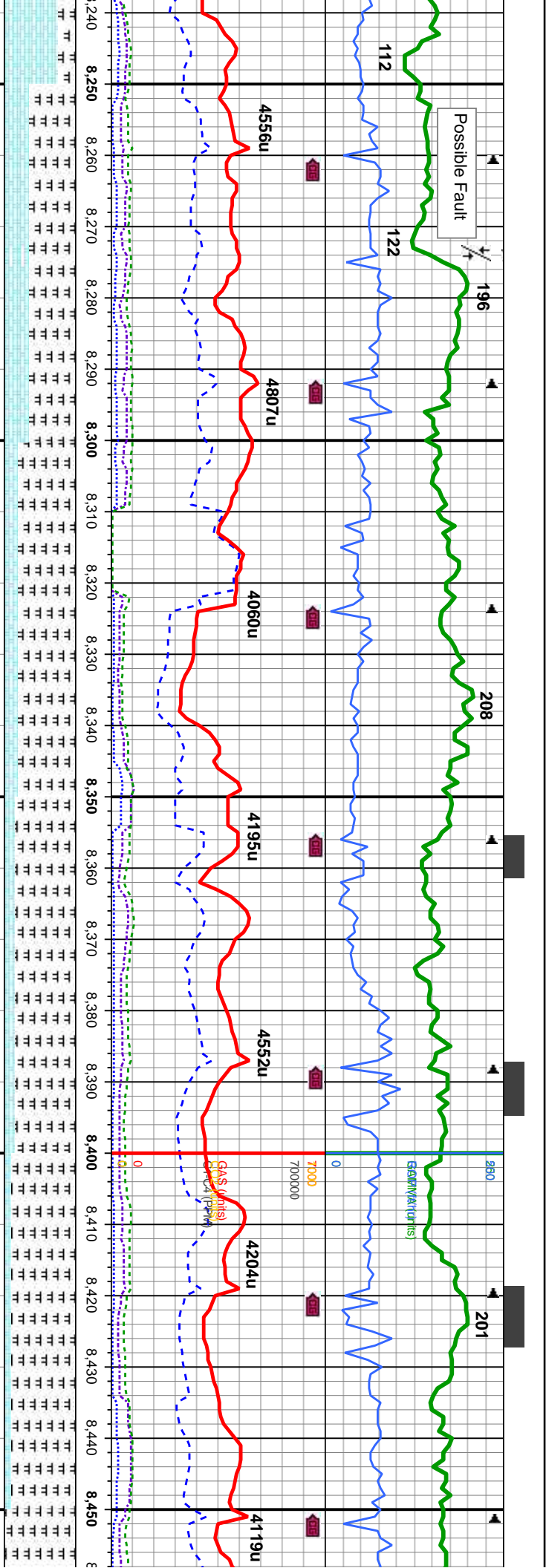
modstf, sbblky, sl mot, sl silty  
ft-firm occ brt, sbblky - sl fis,  
occ cal, g chk flor, fr od, fast  
ng

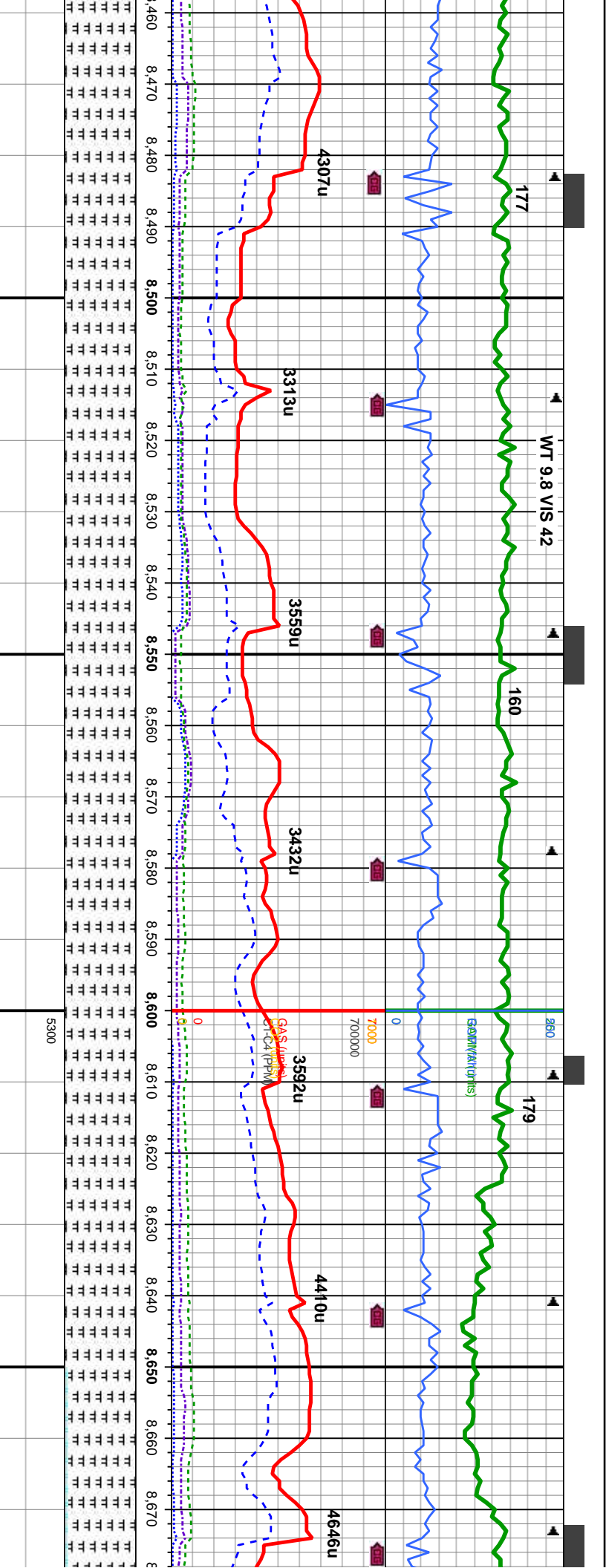
65% CHK: lt-mgy, occ wt & crm, vsft-modstf, sbblky, sl mot,  
sl silty tex, v calc, 35% MRL: mgy-dkgy, sl sft-firm occ brt,  
sbblky - sl fis, rthy sl mot tex, arg, v calc, tr pyr, some imbd  
fos frags & cal, scat bent, g od, v fast stmg cut, bl - wh bri  
flor, mod yel res ring

65% MRL: mgy-dkgy, sl sft-firm occ brt, sbblky - sl fis, r  
tex, arg, v calc, 35% CHK: lt-mgy, occ wt & crm, vsft-mo  
sbblky, sl mot, sl silty tex, v calc, occ sec cal, some imbd  
fast stmg cut, bl - wh bri flor, thn yel res ring









MD: 8,490 '  
TVD: 6,226.63 '  
Inclination: 90.0 °  
Azimuth: 178.1 °  
VS: 2,264.72 '

MD: 8,521 '  
TVD: 6,226.61 '  
Inclination: 90.1 °  
Azimuth: 178.6 °  
VS: 2,294.43 '

MD: 8,553 '  
TVD: 6,226.69 '  
Inclination: 89.6 °  
Azimuth: 179.2 °  
VS: 2,325.04 '

MD: 8,585 '  
TVD: 6,226.89 '  
Inclination: 89.7 °  
Azimuth: 179 °  
VS: 2,355.63 '

MD: 8,617 '  
TVD: 6,226.97 '  
Inclination: 90 °  
Azimuth: 178.6 °  
VS: 2,386.26 '

MD: 8,649 '  
TVD: 6,226.86 '  
Inclination: 90.4 °  
Azimuth: 178.8 °  
VS: 2,416.9 '

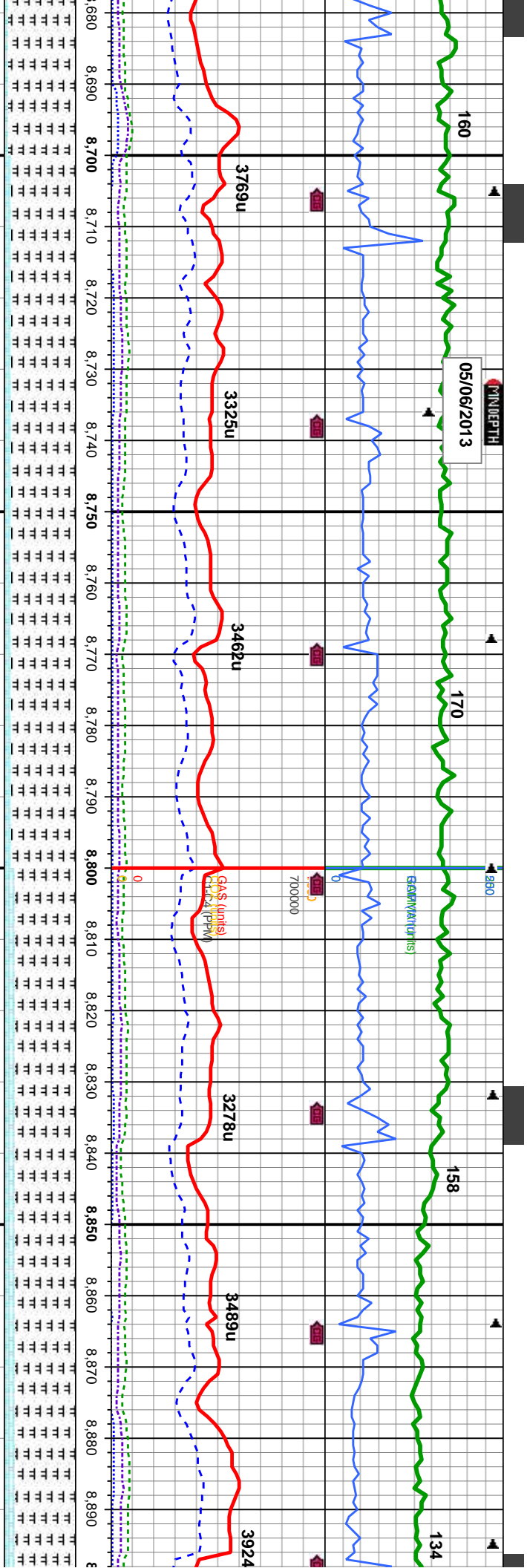
MD: 8,670 '  
TVD: 6,226.86 '  
Inclination: 90.4 °  
Azimuth: 178.8 °  
VS: 2,416.9 '

100% MRL: mgy-dkgy, blk, m gy - brn, occ dk gy, sl sft-firm occ brt, sbblky - sl fis, rthy sl mot tex, arg, v calc, occ sec cal, tr bent, slow mky cut, bl - wh flr, thn yel res ring

100% MRL: dk gy, occ blk, m gy - brn, occ dk gy, sl sft-firm occ brt, sbblky - sl fis, rthy sl mot tex, arg, v calc, occ sec cal, tr chk, fast smg cut, bl - wh bri flr, mod yel even ring







MD: 8,712 ' TVD: 6,226.95 ' Inclination: 89.1 ° Azimuth: 179.3 ° VS: 2,477.13 '	MD: 8,744 ' TVD: 6,227.5 ' Inclination: 88.9 ° Azimuth: 179.2 ° VS: 2,507.69 '	MD: 8,776 ' TVD: 6,228.09 ' Inclination: 89 ° Azimuth: 179.5 ° VS: 2,538.22 '	MD: 8,807 ' TVD: 6,228.6 ' Inclination: 89.1 ° Azimuth: 179.5 ° VS: 2,567.78 '	MD: 8,839 ' TVD: 6,229.11 ' Inclination: 89.1 ° Azimuth: 178.6 ° VS: 2,598.37 '	MD: 8,871 ' TVD: 6,229.47 ' Inclination: 89.6 ° Azimuth: 179 ° VS: 2,629 '
---	--	---	--	---	--

90% MRL: med gy - lt gy, occ med - dk gy, occ blk, sl sft-firm occ  
brit, sbbkly - sl fis, rthy sl mot tex, arg, v calc, 105% CHK: lt-mgy,  
vsft-modsft, sbbkly, sl mot, sl slty tex, v calc, fast sting cut, bl - wh  
bri flor, mod yel even ring

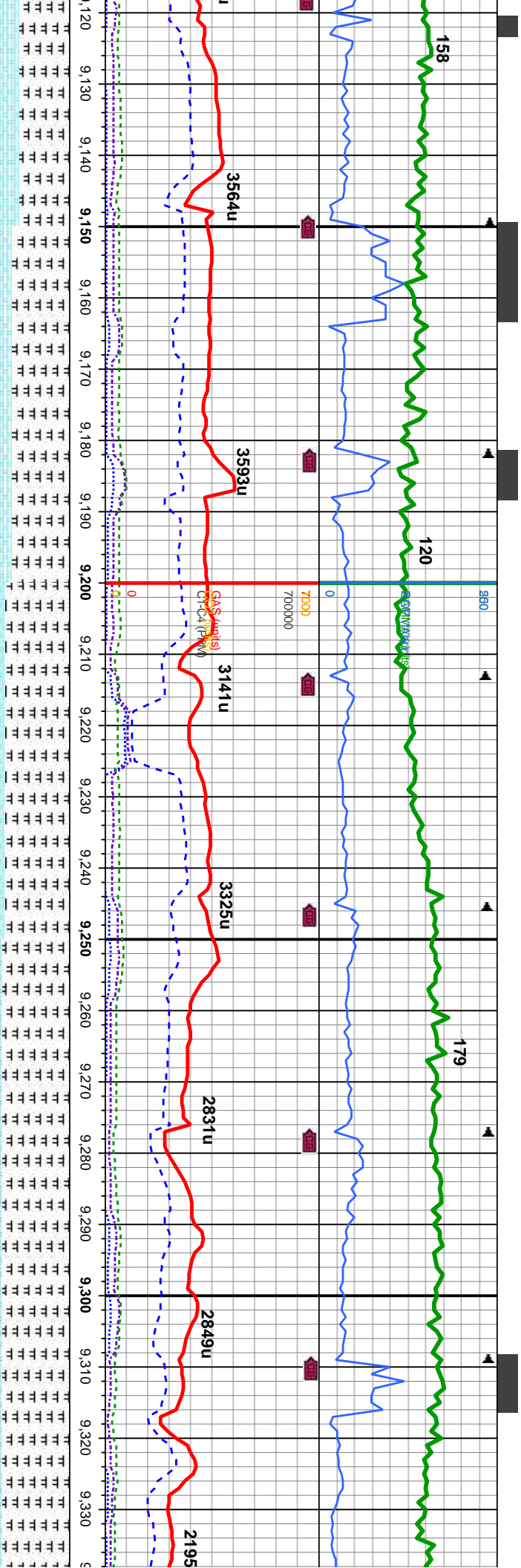
85% MRL: med gy - lt gy - brn, occ med - dk gy, mod sft-firm occ  
brit, sbbkly - sl fis, rthy sl mot tex, arg, v calc, 15% CHK: lt-mgy,  
vsft-modsft, sbbkly, sl mot, sl slty tex, v calc, fast sting cut, bl - wh  
bri flor, mod yel even ring

75% MRL: med gy - lt gy -  
sbbkly - sl fis, rthy sl mot t  
sbbkly, sl mot, sl slty tex, v









MD: 9,125 ' TVD: 6,229.95 ' Inclination: 89.5 ° Azimuth: 177.4 ° VS: 2,873.37 '	MD: 9,157 ' TVD: 6,230.11 ' Inclination: 89.9 ° Azimuth: 178.1 ° VS: 2,904.16 '	MD: 9,189 ' TVD: 6,230.09 ' Inclination: 90.2 ° Azimuth: 178.6 ° VS: 2,934.87 '	MD: 9,221 ' TVD: 6,229.86 ' Inclination: 90.6 ° Azimuth: 178.3 ° VS: 2,965.55 '	MD: 9,253 ' TVD: 6,229.58 ' Inclination: 90.4 ° Azimuth: 178.1 ° VS: 2,996.28 '	MD: 9,284 ' TVD: 6,229.39 ' Inclination: 90.3 ° Azimuth: 178.1 ° VS: 3,026.06 '	MD: 9,316 ' TVD: 6,229.2 ' Inclination: 90.4 ° Azimuth: 178.3 ° VS: 3,056.79 '
---	---	---	---	---	---	--

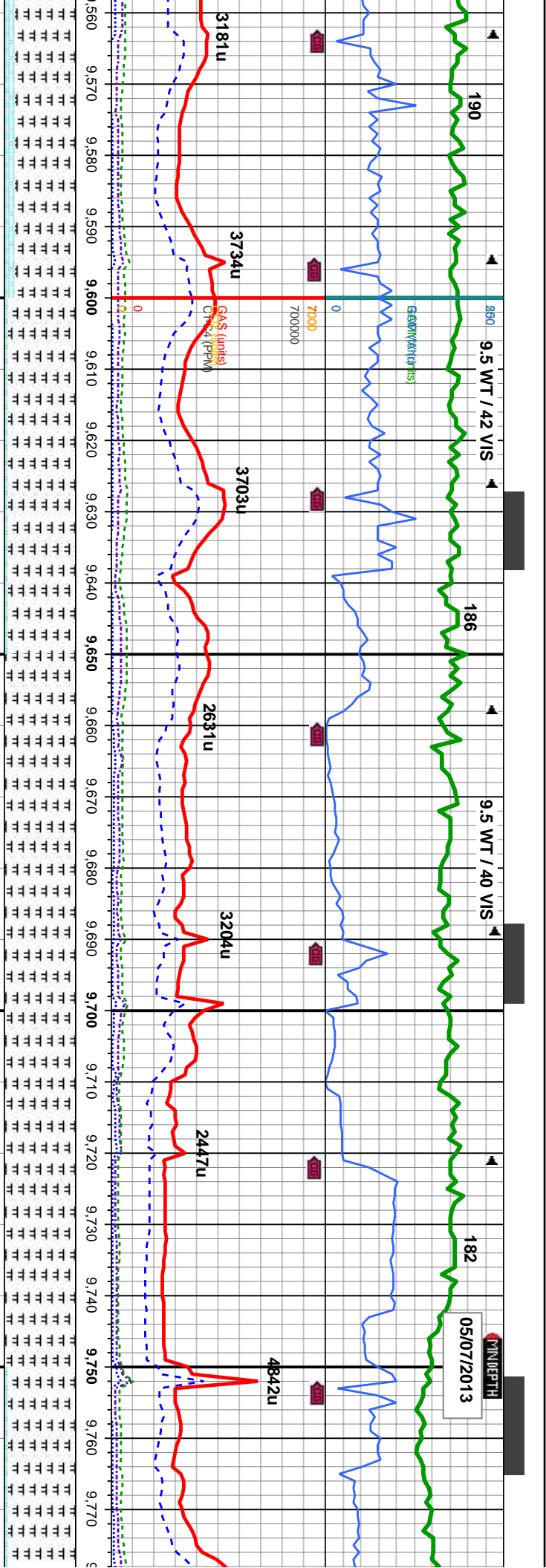
95% MRL: mgy-dkgy, sl sft-firm, occ brit, sbblky - sl fis, rthy sl  
mot tex, arg, 5% CHK: lt-mgy, vsft-modsft, sbblky, sl mot, sl  
sily tex, v calc, tr pyr, tr sec calcite, some inoc fos, fast sting  
cut, bl - wh bri flor, mod yel even ring

85% MRL: mgy-dkgy, blk, sl sft-firm, occ brit, sbblky  
rthy sl mot tex, arg, 15% CHK: lt-mgy, vsft-modsft, s  
mot, sl sily tex, v calc, tr sec calcite, some inoc fos,  
slow mky cut, bl - wh flor, thn yel res ring









MD: 9,570 '  
TVD: 6,230.28 '  
Inclination: 88.5 °  
Azimuth: 178.8 °  
VS: 3,299.48 '

MD: 9,602 '  
TVD: 6,231.12 '  
Inclination: 88.5 °  
Azimuth: 179.5 °  
VS: 3,330.04 '

MD: 9,633 '  
TVD: 6,231.74 '  
Inclination: 89.2 °  
Azimuth: 180 °  
VS: 3,359.55 '

MD: 9,665 '  
TVD: 6,232.38 '  
Inclination: 88.5 °  
Azimuth: 180 °  
VS: 3,389.98 '

MD: 9,697 '  
TVD: 6,233.55 '  
Inclination: 87.3 °  
Azimuth: 179.3 °  
VS: 3,420.45 '

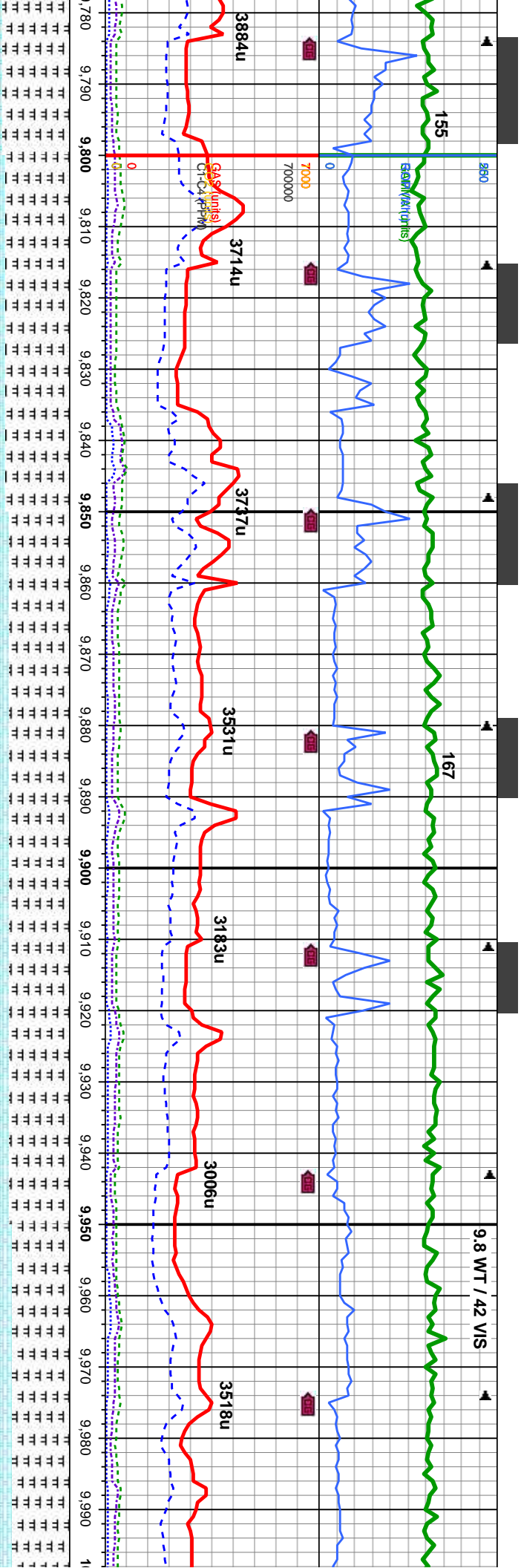
MD: 9,728 '  
TVD: 6,234.99 '  
Inclination: 87.4 °  
Azimuth: 179 °  
VS: 3,450.03 '

MD: 9,760 '  
TVD: 6,236.24 '  
Inclination: 88.1 °  
Azimuth: 179.3 °  
VS: 3,480.58 '

90% MRL: med - lt gy, mod sft - mod firm, occ brit, sbbiky -  
sl fis, rthy sl mot tex, arg; 10% CHK: lt-mgy, vsft-mosdft,  
sbbiky, sl mot, sl silty tex, v calc, scat bent, slow mky cut, bl -  
wh flor, thn yel res ring

100% MRL: med - lt gy, mod sft - mod firm, occ brit, sbbiky  
- sl fis, rthy sl mot tex, arg, v calc, tr bent, tr chk, slow mky  
cut, bl - wh flor, thn yel res ring





5300

MD: 9,792 '  
TVD: 6,237 '  
Inclination: 89.2 °  
Azimuth: 178.8 °  
VS: 3,511.16 '

MD: 9,823 '  
TVD: 6,237.13 '  
Inclination: 90.3 °  
Azimuth: 178.5 °  
VS: 3,540.86 '

MD: 9,855 '  
TVD: 6,236.66 '  
Inclination: 91.4 °  
Azimuth: 178.1 °  
VS: 3,571.57 '

MD: 9,887 '  
TVD: 6,236.04 '  
Inclination: 90.8 °  
Azimuth: 178.8 °  
VS: 3,602.25 '

MD: 9,918 '  
TVD: 6,235.83 '  
Inclination: 90 °  
Azimuth: 179 °  
VS: 3,631.91 '

MD: 9,950 '  
TVD: 6,235.83 '  
Inclination: 90 °  
Azimuth: 179.2 °  
VS: 3,662.49 '

MD: 9,982 '  
TVD: 6,235.83 '  
Inclination: 90 °  
Azimuth: 179.5 °  
VS: 3,693.03 '

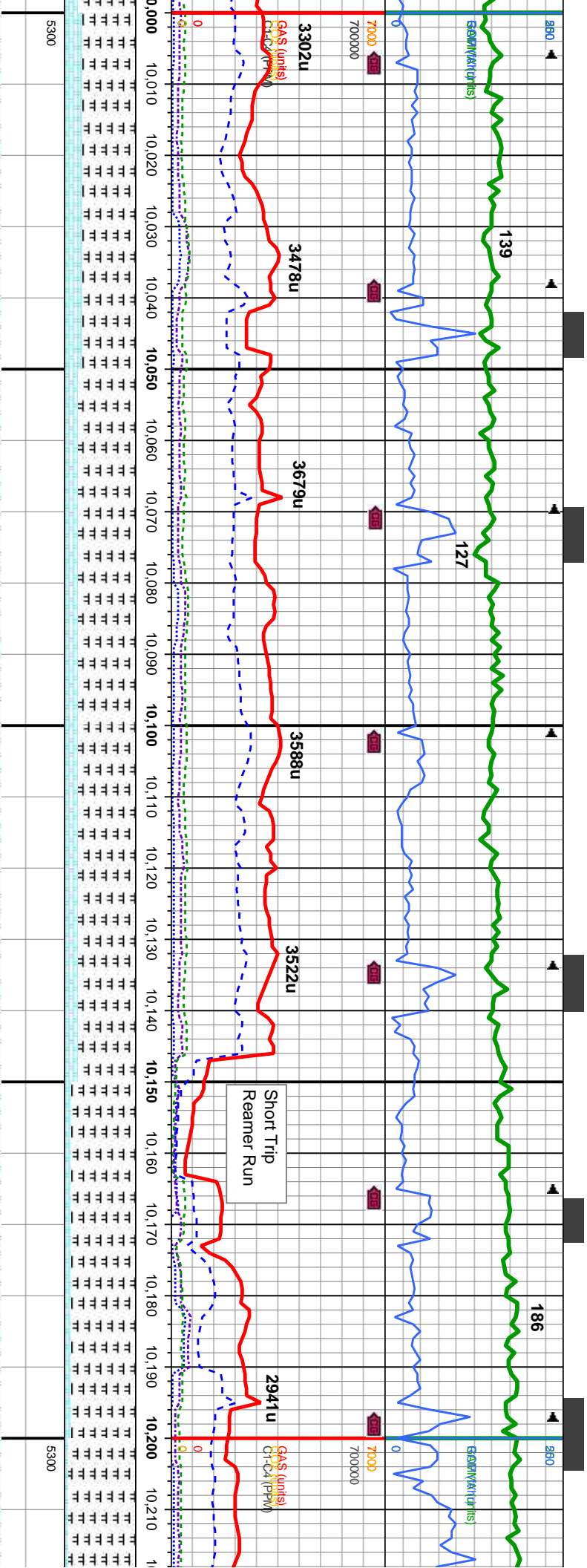
85% MRL: med - dk gy, mod sft - mod firm, occ brit, sbblky - sl  
fis, rthy sl mot tex, arg; 15% CHK: lt-mgy, vsft-modsft, sbblky,  
sl mot, sl silty tex, v calc, tr unconcs cal, tr inoc fos, slow mky  
cut, bl - wh flor, thn yel res ring

80% MRLST: blk - blk gy - dk gy brn, some mot, blk - sb blk, occ  
sb pily, sft - firm, rthy - gt, mt; arg - silty, mod calc, 20% CHK: lgy -  
med gy brn, occ brn, mot, sb blk - sb pily, sme blk, brit - mod firm,  
chky - sbwxy, mt; v calc, tr sec cal, fast sting cut, bl - wh bri flr,  
mod yel even ring

80% MRLS:  
blk, occ sb  
20% CHK: l  
sme blk, bl  
slow sting c

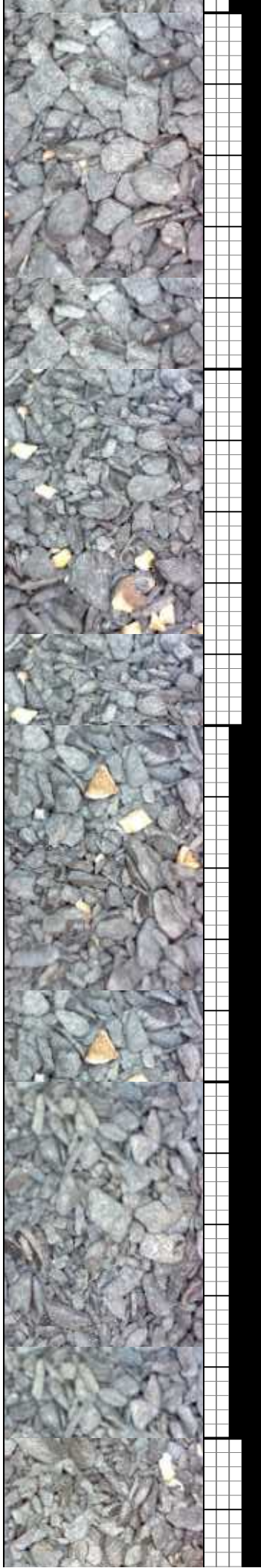


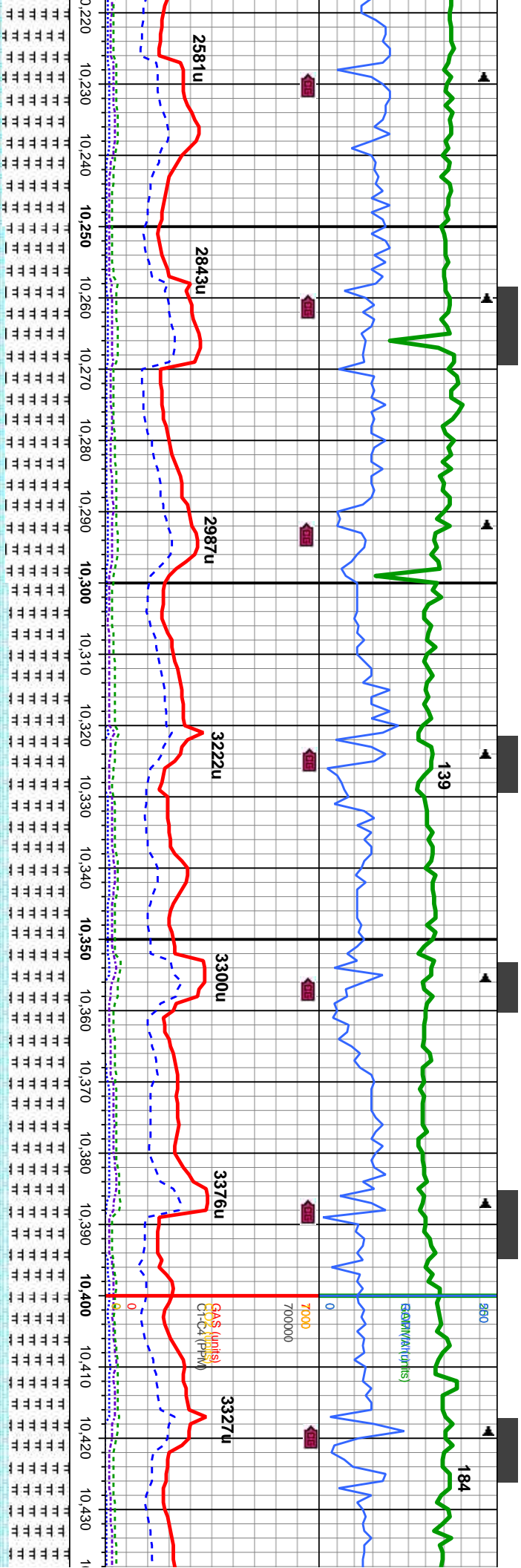




MD: 10,013 ' TVD: 6,235.85 ' Inclination: 89.9 ° Azimuth: 180 ° VS: 3,722.55 '	MD: 10,045 ' TVD: 6,236.13 ' Inclination: 89.1 ° Azimuth: 179 ° VS: 3,753.06 '	MD: 10,077 ' TVD: 6,236.66 ' Inclination: 89 ° Azimuth: 178.6 ° VS: 3,783.69 '	MD: 10,109 ' TVD: 6,237.25 ' Inclination: 88.9 ° Azimuth: 178.6 ° VS: 3,814.35 '	MD: 10,140 ' TVD: 6,237.71 ' Inclination: 89.4 ° Azimuth: 179.5 ° VS: 3,843.98 '	MD: 10,172 ' TVD: 6,237.9 ' Inclination: 89.9 ° Azimuth: 178.8 ° VS: 3,874.55 '	MD: 10,204 ' TVD: 6,238.16 ' Inclination: 89.2 ° Azimuth: 177.8 ° VS: 3,905.26 '
--	--	--	--	--	---	--

90% MRLST: blk - blk gy - dk gy brn, some mot, blk y - sb blk y, occ sb pty, sft - firm, rthy - gt, mtk; arg - slty, mod calc, 10% CHK; llyg - med gy brn, mot, sb blk y - sb pty, sme blk y, brit - mod firm, chky - sbwxy, mtk; v calc, tr sec cal, tr inoc fos, fast string cut, bl - wh bri flor, mod yel even ring





MD: 10,236 '  
TVD: 6,238.41 '  
Inclination: 89.9 °  
Azimuth: 178.3 °  
VS: 3,936.01 '

MD: 10,267 '  
TVD: 6,238.14 '  
Inclination: 91.1 °  
Azimuth: 179.3 °  
VS: 3,965.68 '

MD: 10,299 '  
TVD: 6,237.38 '  
Inclination: 91.6 °  
Azimuth: 179.7 °  
VS: 3,996.19 '

MD: 10,331 '  
TVD: 6,236.66 '  
Inclination: 91 °  
Azimuth: 179.3 °  
VS: 4,026.69 '

MD: 10,363 '  
TVD: 6,236.24 '  
Inclination: 90.5 °  
Azimuth: 179.2 °  
VS: 4,057.25 '

MD: 10,395 '  
TVD: 6,235.96 '  
Inclination: 90.5 °  
Azimuth: 179 °  
VS: 4,087.83 '

MD: 10,426 '  
TVD: 6,235.66 '  
Inclination: 90.6 °  
Azimuth: 178.3 °  
VS: 4,117.53 '

mot, blk - sb blk, occ sb  
calc, 10% CHK: lgy - med gy  
mod firm, chky - sbwxy, mt; v  
yel even ring

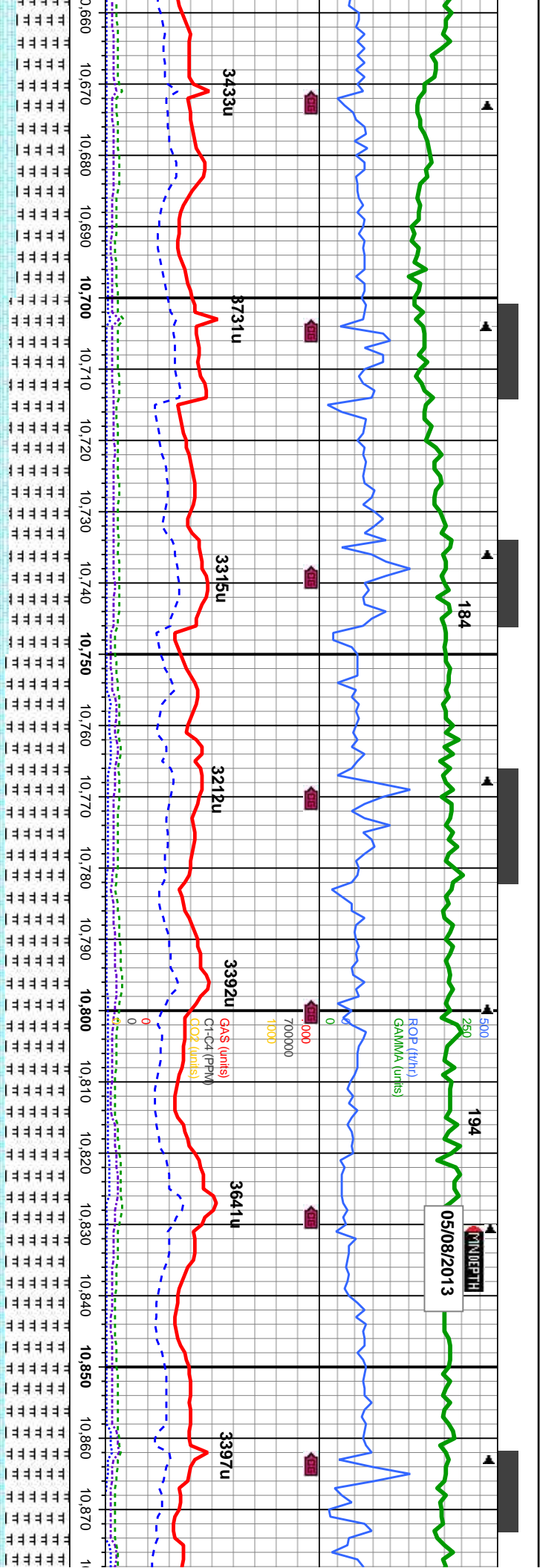
85% MRLST: lgy-medgy, occ blk gy - dk gy brn, some mot, blk -  
sb blk, occ sb ply, sft - firm, rthy - gt, mt; arg - sily, mod calc,  
15% CHK: lgy - med gy brn, mot, sb blk - sb ply, sme blk, brit -  
mod firm, chky - sbwxy, mt; v calc, fast stmg cut, bl - wh bri flr,  
mod yel even ring

85% MRLST: lgy-medgy, occ blk gy - dk gy brn, som  
- sb blk, occ sb ply, sft - firm, rthy - gt, mt; arg - sily  
15% CHK: lgy - med gy brn, mot, sb blk - sb ply, sr  
brit - mod firm, chky - sbwxy, mt; v calc, slow stmg c  
bri flr, tr yel even ring









MD: 10.680 '  
TVD: 6,237.05 '  
Inclination: 88.8 °  
Azimuth: 178.8 °  
VS: 4,361.98 '

MD: 10.712 '  
TVD: 6,237.58 '  
Inclination: 89.3 °  
Azimuth: 178.6 °  
VS: 4,392.63 '

MD: 10.744 '  
TVD: 6,237.74 '  
Inclination: 90.1 °  
Azimuth: 179.2 °  
VS: 4,423.24 '

MD: 10.775 '  
TVD: 6,237.39 '  
Inclination: 91.2 °  
Azimuth: 179.2 °  
VS: 4,452.85 '

MD: 10.807 '  
TVD: 6,236.67 '  
Inclination: 91.4 °  
Azimuth: 179.2 °  
VS: 4,463.41 '

MD: 10.839 '  
TVD: 6,235.86 '  
Inclination: 91.5 °  
Azimuth: 178.8 °  
VS: 4,513.99 '

MD: 10.870 '  
TVD: 6,235.13 '  
Inclination: 91.2 °  
Azimuth: 180 °  
VS: 4,543.56 '

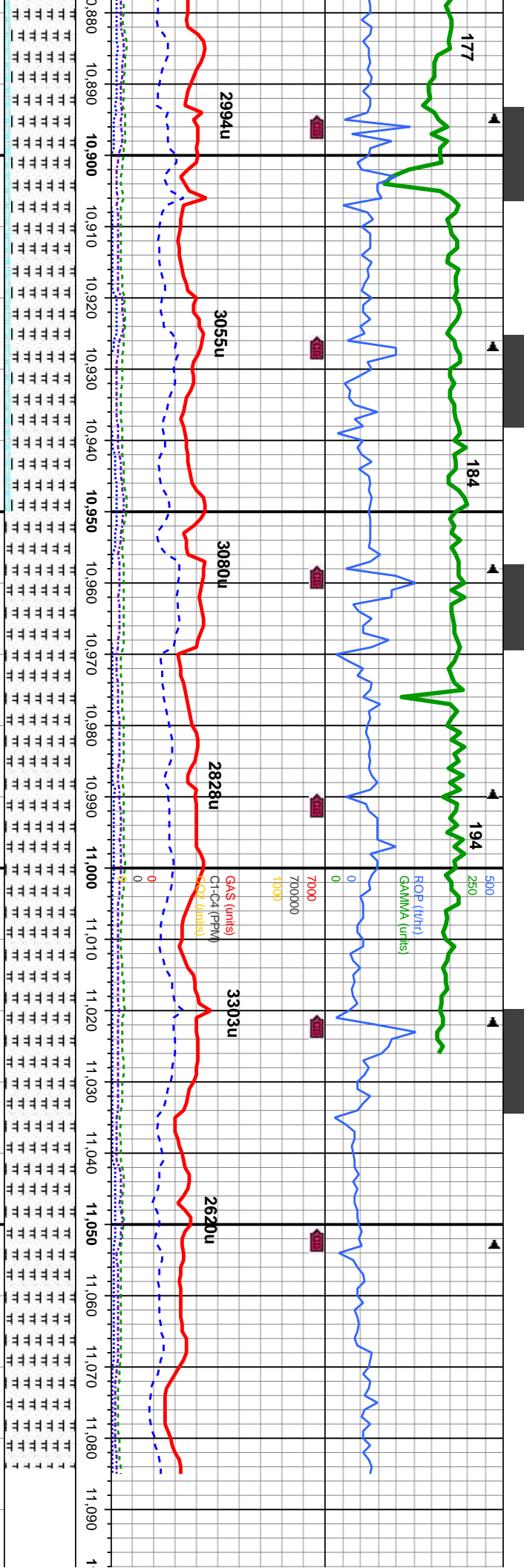
85% MRLST: ltgy-medgy, occ gy - dk gy brn, some mot, blkly - sb blkly, occ sb plty, sft - firm, rthy - gt, mtX; arg - slty, mod calc, 15% CHK: ltgy - med gy brn, mot, sb blkly - sb plty, sme blkly, brit - mod firm, chky - sbwxy, mtX; v calc, tr scat bent, v calc, slow string cut, bl - wh bri flor, tr yel even ring

90% MRLST: ltgy-medgy, occ gy - dk gy brn, some mot, blkly - sb blkly, occ sb plty, sft - firm, rthy - gt, mtX; arg - slty, mod calc, 10% CHK: ltgy - med gy brn, mot, sb blkly - sb plty, sme blkly, brit - mod firm, chky - sbwxy, mtX; v calc, v calc, slow string cut, bl - wh bri flor, tr yel even ring

90%  
occ s  
med  
sbw  
yel e







TD occurred @ 11,084' MD  
04:33 MST ON 5/08/2013

THANK YOU FOR USING  
COLUMBINE LOGGING INC.

MD: 10,902'   
TVD: 6,234.62'   
Inclination: 90.6°   
Azimuth: 179.5°   
VS: 4,574.03'

MD: 10,934'   
TVD: 6,234.57'   
Inclination: 89.6°   
Azimuth: 179.3°   
VS: 4,604.57'

MD: 10,965'   
TVD: 6,234.95'   
Inclination: 89°   
Azimuth: 178.1°   
VS: 4,634.25'

MD: 10,997'   
TVD: 6,235.56'   
Inclination: 88.8°   
Azimuth: 178.3°   
VS: 4,664.97'

MD: 11,029'   
TVD: 6,236.09'   
Inclination: 89.3°   
Azimuth: 177.9°   
VS: 4,695.71'

MMRLST: lgy-medgy, occ gy - dk gy brn, some mot, blk - sb blk, b pty, sft - firm, rthy - gt, mtx; arg - silty, mod calc; 10% CHK: lgy - gy brn, mot, sb blk - sb pty, sme blk, brit - mod firm, chky - y, mtx; v calc, slow mky-mod string cut, bl - wh bri flr, some en ring

100% MRLST: med - dk gy, occ sb pty, sft - firm, rthy - gt, mtx; arg - silty, mod calc, blk - sb blk, occ sb pty, sft - firm, rthy - gt, mtx; arg - silty, mod calc, slow mky-sl string cut, bl - wh bri flr, some yel even ring



