



Scale: 5" / 100'  
Measured Depth Log

Well Name     Wirkner-Vance 34N-1HZ

Location     SWSW SEC 36, T3N, R67W

State     COLORADO

Country     WELD

API Number     05-123-37884-0000

Region     DJ BASIN

Spud Date     11/29/2013

Surface Coordinates     336' FSL & 859' FWL

Bottom Hole Coordinates     460' FSL & 270 FWL

Ground Elevation     4822'

K.B. Elevation     4835'

Logged Interval     6596'     To     12771'

Total Depth     12771'

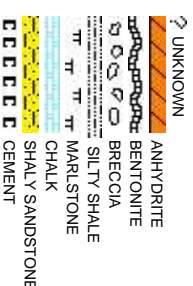
Formation     NIOBRARA B BENCH

Type of Drilling Fluid     FW LSND FOR BUILD SECTION & SBM OR FW LSND FOR LATERAL

County     WELD  
Rig Number     ENSIGN 138  
Field     WATTENBERG

Company     Anadarko  
Address     Granite Tower  
                 1099 18th St, S  
                 Denver, CO 802

Name     Zach Uber & W  
Company     Columbine Logg  
Address     410 17th Street  
                 Denver, CO 802



Operator

Suite #1800  
202

Geologist

Winter Jacks  
Mining, Inc.  
, Suite 1500  
202

Rock Types

	CHERT		IGNEOUS		SHALE COLORED
	CLAY CHOKE SAND		SIDERITE or LIMONITE		SHALE GRAY
	CLAYSTONE		LIMESTONE		SHALY SILTSTONE
	COAL		METAMORPHIC		SILTSTONE
	CONGLOMERATE		NO SAMPLE		TILL
	DOLOMITE		SALT		TUFF
	DOLOMITIC LIMESTONE		SANDSTONE		WELDED TUFF
	GRANITE		SALT-PEPPER SAND		
	GYPSUM		SHALE		

Accessories

	GASTROPOD		ARGILLITE GRAIN		HEAVY MINERAL		ANHYDRITE STRINGER
	INOCERAMUS		B BENTONITE		KAOLIN		BENTONITE STRINGER
	ALGAE		O OOLITE		MARLSTONE		COAL STRINGER
	AMPHIPORA		O OSTRACOD		BITUMENOUS SUBSTANCE		DOLOMITE STRINGER
	BELEMNITE		P PELECYPOD		BRECCIA FRAGMENTS		MICACEOUS
	BIOCLASTIC		P PELLET		CALCAREOUS		MINERAL CRYSTALS
	BRACHIOPOD		P PISOLUTE		CARBONACEOUS FLAKES		NODULES
	BRYOZOA		P PLANT REMAINS		CHERT		PHOSPHATE PELLETS
	CERPHALOPOD		P PLANT SPORES		COAL - THIN BEDS		P PYRITE
	CORAL		S SCAPHOPOD		DOLOMITIC		SALT CAST
	CRINOID		S STROMATOPOROID		FELDSPAR		SANDY
	ECHINOID		F FERRUGINOUS PELLET		FERRUGINOUS		SILTY
	FISH		Minerals		TUFFACEOUS		
	FORAMINIFERA		ANHYDRITIC		GLAUCONITE		
	F FOSSIL		ARGILLACEOUS		GYPSIFEROUS		Stringer

Other Symbols

	P PINPOINT		WIRELINE TESTED - LEFT		E EARTHY
	V VUGGY		WIRELINE TESTED - RT		FX FINELYXLN
	D DEAD		FORMATION TOP		GS GRAINSTONE
	E EVEN		GAS SHOW		L LITHOGRAPHIC
	Q QUESTIONABLE		OIL SHOW		MX MICROXLN
	BIT		Rounding		MS MUDSTONE
	S SPOTTED STAINING		CONNECTION (UP)		
	C CONNECTION (DOWN)				
	Porosity		NORMAL FAULT		A ANGULAR
	E EARTHY		OVERTURNED STRATA		R ROUNDED
	F FENESTRAL		REVERSE FAULT		S SUBANG
	F FRACTURE		CASING		S SUBRAND
	X INTERCRYSTALLINE		SIDEWALL CORE (LEFT)		Textures
	O INTEROOLITIC		DOWN TIME GAS		B BOUNDSTONE
	M MOLDIC		DOWN TIME GAS (LEFT)		S SILT
	O ORGANIC		CORE - LOST		SIDEWALL CORE (RIGHT)
			CORE - RECOVERED		S SILT
			SURVEY		CX CRYPTOXLN
			Sorting		P POOR
			M MODERATE		W WELL



Slide/Rotate

GAMMA SCALE:  
50 - 300 API

ROP  
ROF  
GAMMA

ROP SCALE:  
0 - 200 FT/HR

TOTAL GAS SCALE:  
0 - 4500 UNITS

GAS  
C1  
C2  
C3  
C4

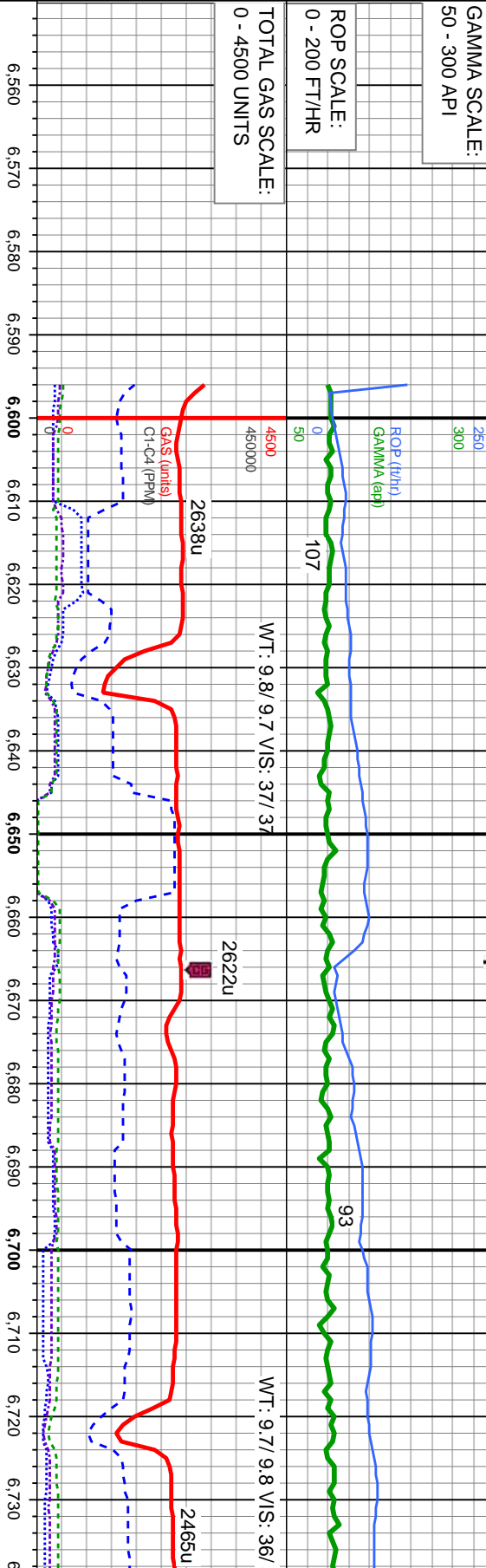
Depth Labels

% Lith

Well Bore  
TVD

Oil Show

Images



KOP: 6596' MD  
100' SAMPLE INTERVALS

Bit Data  
Type: Smith / SDI 611  
Size: 8.75  
Jets: 3x14/3x16

COLUMBINE LOGGING RIGGED UP ON  
11/30/2013 USING MANNED  
TWO-PERSON LOGGING WITH  
BLOOHOUND GAS CHROMATOGRAPH  
UNIT #0561 HZ BEGAN ON 11/30/2013 @  
16:25 HRS MST

MD: 6,605'  
TVD: 6,502.46'  
Inclination: 1.8 °  
Azimuth: 175.7 °  
VS: -684.94'

TVD (ft)

100% SLTY SH:lt-gy gy/blk , sb pty-sb blk, frm, rthy lstr, arg-sily, non calc, no flor, tr  
SS

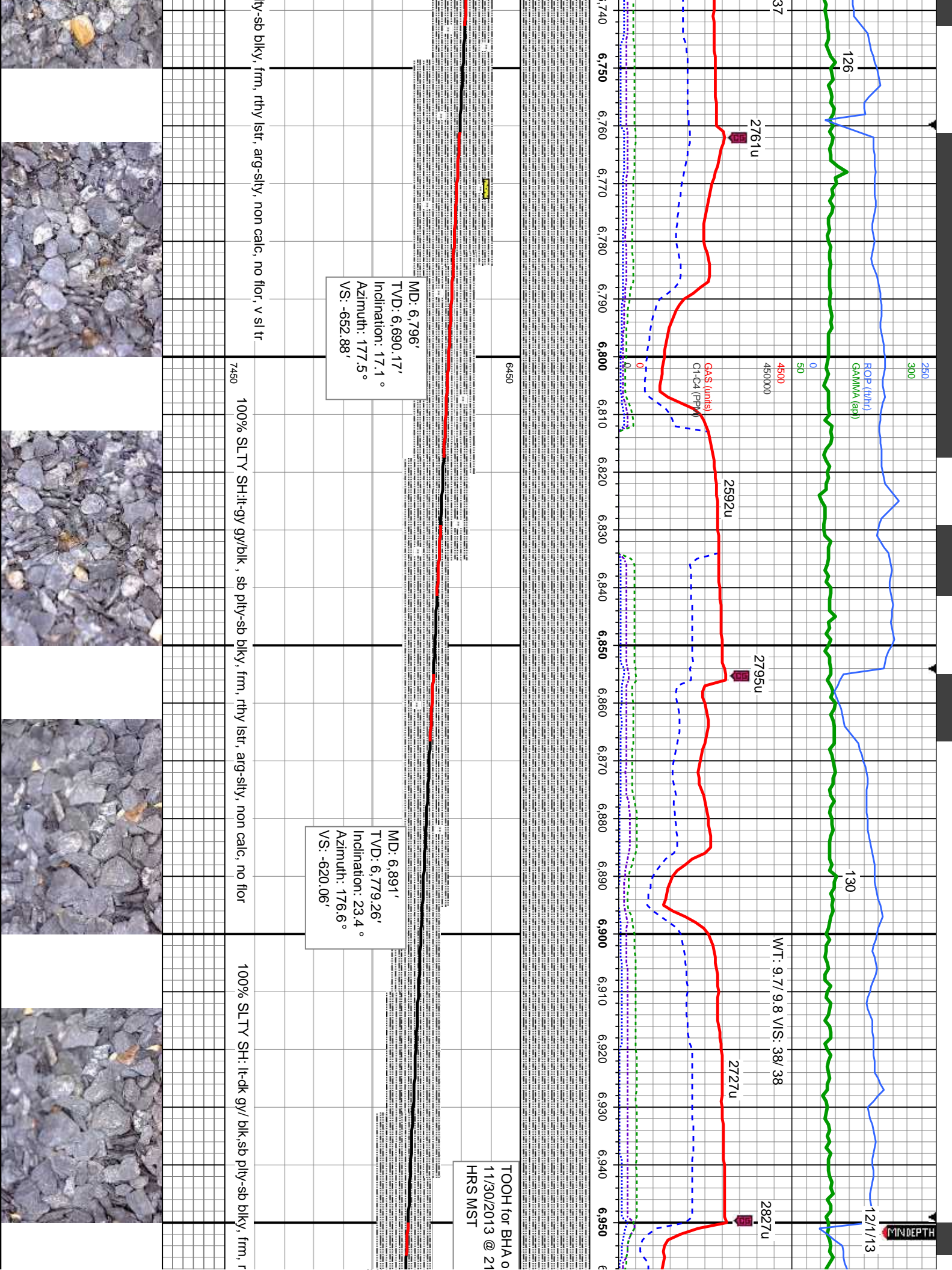
MD: 6,700'  
TVD: 6,596.89'  
Inclination: 9.9 °  
Azimuth: 178.3 °  
VS: -675.27'

100% SLTY SH:lt-gy gy/blk , sb pty-sb blk, frm, rthy lstr, arg-sily, non calc, no flor, tr  
SS

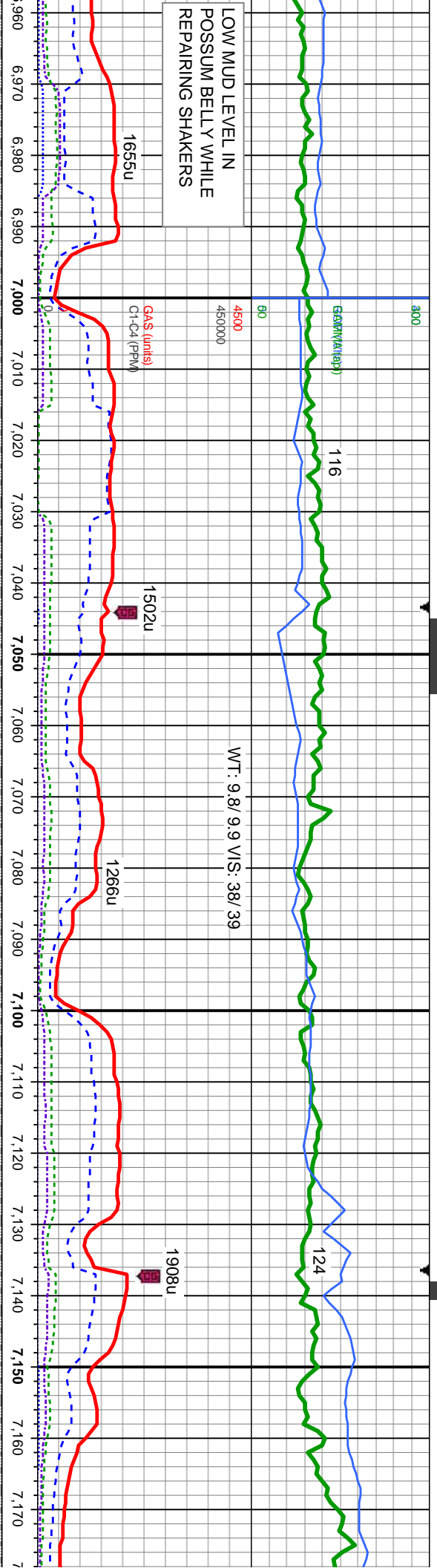
EGMTST







LOW MUD LEVEL IN  
POSSUM BELLY WHILE  
REPAIRING SHAKERS



MD: 6,987'  
TVD: 6,864.26'  
Inclination: 32.7°  
Azimuth: 179.5°  
VS: -565.57'

MD: 7,081'  
TVD: 6,936.14'  
Inclination: 47.2°  
Azimuth: 182°  
VS: -505.39'

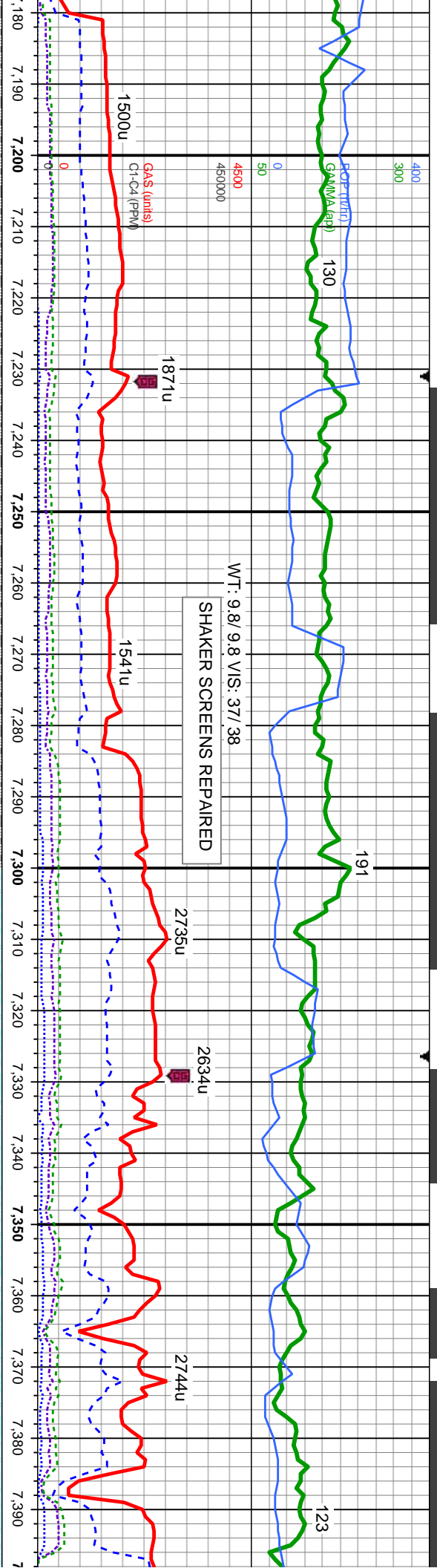
MD: 7,128'  
TVD: 6,966.56'  
Inclination: 52.1°  
Azimuth: 182.8°  
VS: -469.63'

SHARON SPRINGS TR  
7166' MD/ 6990' TVD  
MD: 7,175'  
TVD: 6,995'  
Inclination:  
Azimuth: 182°  
VS: -432.74'

thy-sb wxy, mtx; arg-sily, non calc  
100% SLTY SH: lt-dk gy/ blk, sb pily-sb blk, frm, rthy-sb wxy, mtx; arg-sily, non calc  
100% SLTY SH: lt-dk gy/ blk, sb pily-sb blk, frm, rthy-sb wxy, mtx; arg-sily, non calc  
100% SLTY SH: lt-dk gy/ blk, sb pily-sb blk, frm, rthy-sb wxy, mtx; arg-sily, non calc

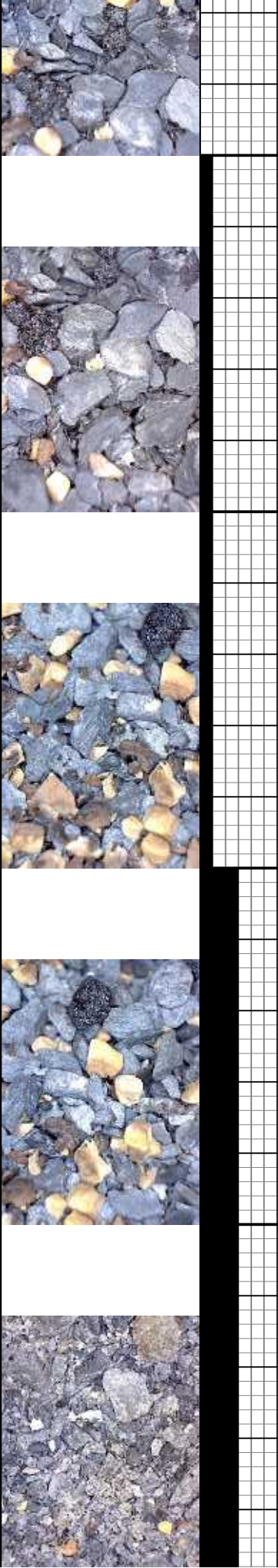


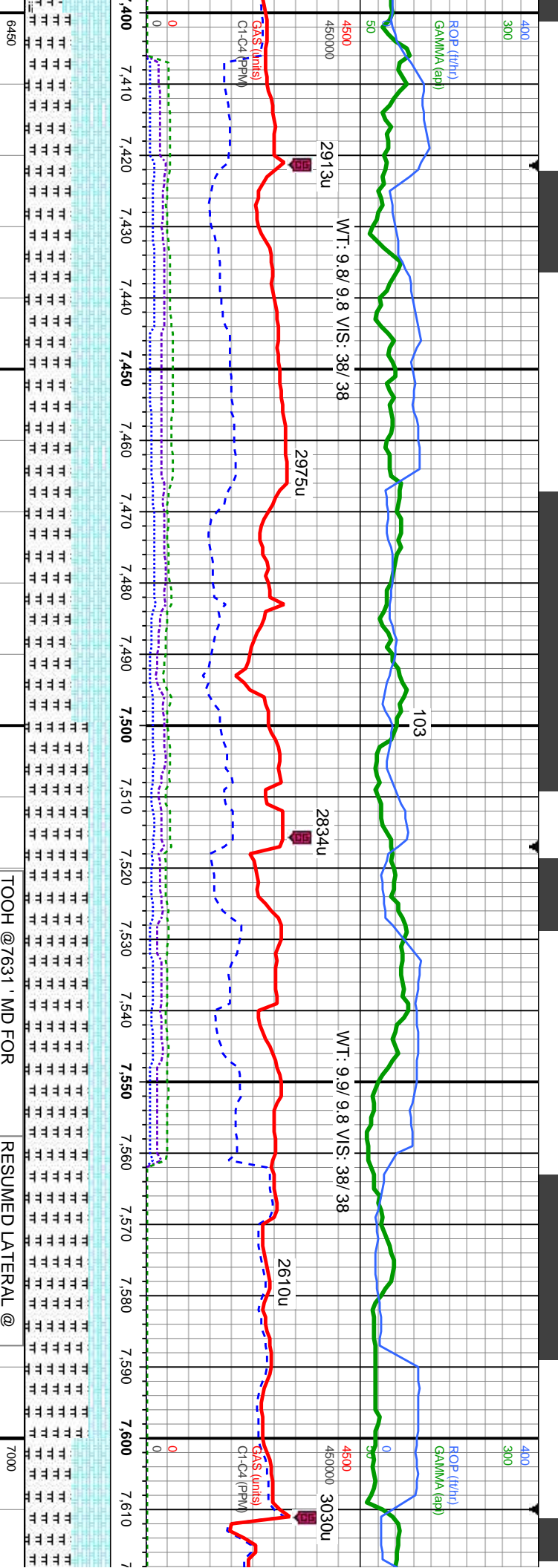




DP:	6450	MD: 7.222'	TVD: 7.024.88'	Inclination: 51.5 °	Azimuth: 182.3 °	VS: -395.99'
		MD: 7.270'	TVD: 7.053.02'	Inclination: 56.7 °	Azimuth: 182 °	VS: -357.16'
		MD: 7.317'	TVD: 7.077.15'	Inclination: 61.5 °	Azimuth: 181 °	VS: -316.86'
		MD: 7.366'	TVD: 7.099.08'	Inclination: 65.3 °	Azimuth: 180.9 °	VS: -273.07'

100% SLTY SH: lt-dk gy/ blk,sb ply-sb blk, frm, rthy-sb wxy, mtx; arg-sily, abnt bent, non calc; OIL SHOW: thn yel-gn cut, no min flr, no sn





MD: 7,413' TVD: 7,117.07' Inclination: 69.7° Azimuth: 179.8° VS: -229.66'

MD: 7,461' TVD: 7,131.29' Inclination: 75.8° Azimuth: 179.7° VS: -183.84'

MD: 7,508' TVD: 7,140.7' Inclination: 81.1° Azimuth: 180.5° VS: -137.81'

MD: 7,555' TVD: 7,146.67' Inclination: 84.3° Azimuth: 180.3° VS: -91.2'

MD: 7,573' TVD: 7,148.15' Inclination: 86.3° Azimuth: 180° VS: -73.26'

55% MRLST: med gry-brn, sb ply-sb blkly, brit-frn, mot, rthy-ckly, tr bent, mtx; calc; calc; 45% CHK: lt-med gy, tr wh, sb blkly-sb ply, frn-occ brit, rthy tex, mtx; calc; OIL SHOW: com yel - omg mnrl flor, fast dfse, mod smng, gn-bl mky cut, sl gn stn, no od

7450 no od

7450



TOOH @7631' MD FOR INTERMEDIATE CASING @ 06:36 HRS MST ON 12/3/13

<<TVD SCALE CHANGE>>

55% MRLST: calic CHK: med gry-bl cut, fast df



300

<<ROP SCALE CHANGE>>

GAS (M/SEC)

60

4500

450000

GAS (units)  
CL (PPM)

2842u

2893u

3020u

2089u

WT: 9.5/ 9.4 VIS: 35/ 34

107

106

7,620 7,630 7,640 7,650 7,660 7,670 7,680 7,690 7,700 7,710 7,720 7,730 7,740 7,750 7,760 7,770 7,780 7,790 7,800 7,810 7,820 7,830

7000

**Bit Data**  
Type: Varel/ VM513D  
Size: 6.12  
Jets: 5x16

MD: 7,693'  
TVD: 7,152.23'  
Inclination: 89.8 °  
Azimuth: 178 °  
VS: 46.63'

MD: 7,788'  
TVD: 7,151.98'  
Inclination: 90.5 °  
Azimuth: 177.6 °  
VS: 141.58'

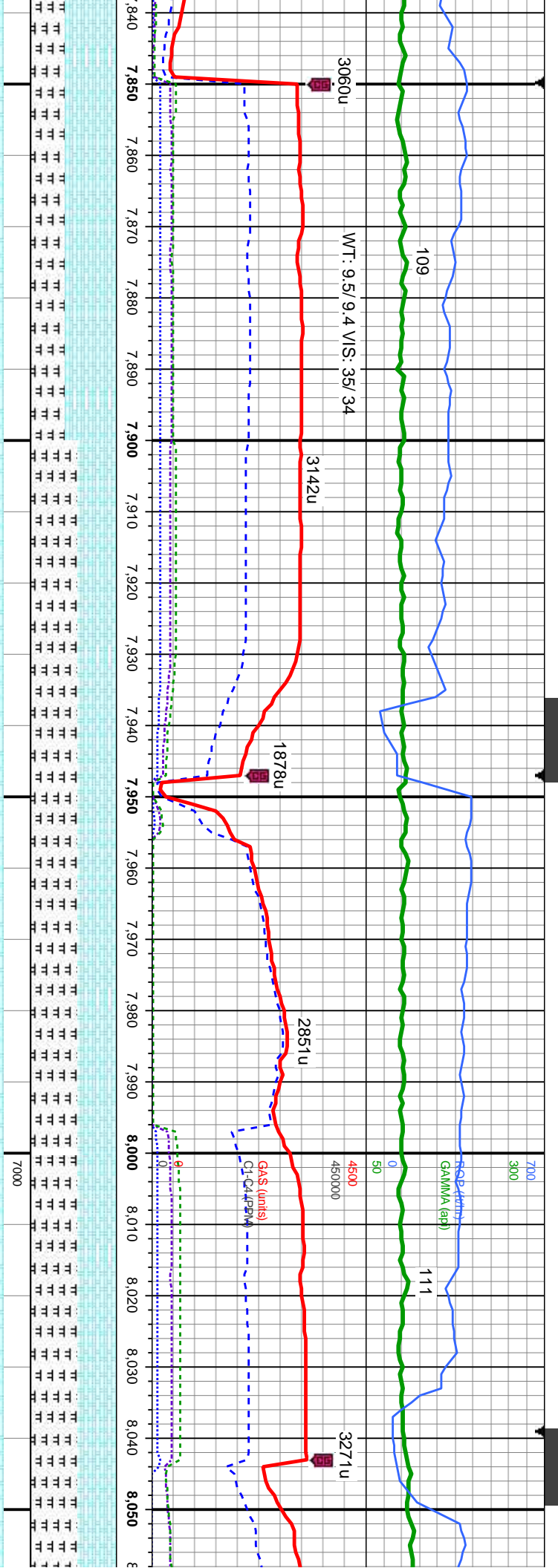
TVD (ft)

ST: med gry-brn, sb ply-sb blkly,brit-frn, mot, rthy-ckky, tr wh inoc fos, mix;  
lt-med gy, tr wh, sb blkly-sb ply, frm-occ brit, rthy tex, mtx;calc; 45% MRLST;  
sb ply-sb blkly,brit-frn, mot, rthy-ckky, mtx; calc; OIL SHOW: bl-gn sting  
se, tr-mod yel min flor, solid gn resd stn, no od

65% MRLST: med gry-brn, sb ply-sb blkly,brit-frn, mot, rthy-ckky, tr wh inoc fos, mtx;  
calc; 35% MRLST: med gry-brn, sb ply-sb blkly,brit-frn, mot, rthy-ckky, mtx; calc CHK:  
lt-med gy, tr wh, sb blkly-sb ply, frm-occ brit, rthy tex, mtx;calc; OIL SHOW: tr yel mnrl  
flor, fast dfise, mod sting, gn cut, sl gn stn, no od

60% MRLST: med gry-brn, sb  
calc; 40% MRLST: med gry-brn  
lt-med gy, tr wh, sb blkly-sb ply  
flor, fast dfise, mod sting, gn cl





MD: 7,883'  
TVD: 7,151.73'  
Inclination: 89.8 °  
Azimuth: 176.5°  
VS: 236.47'

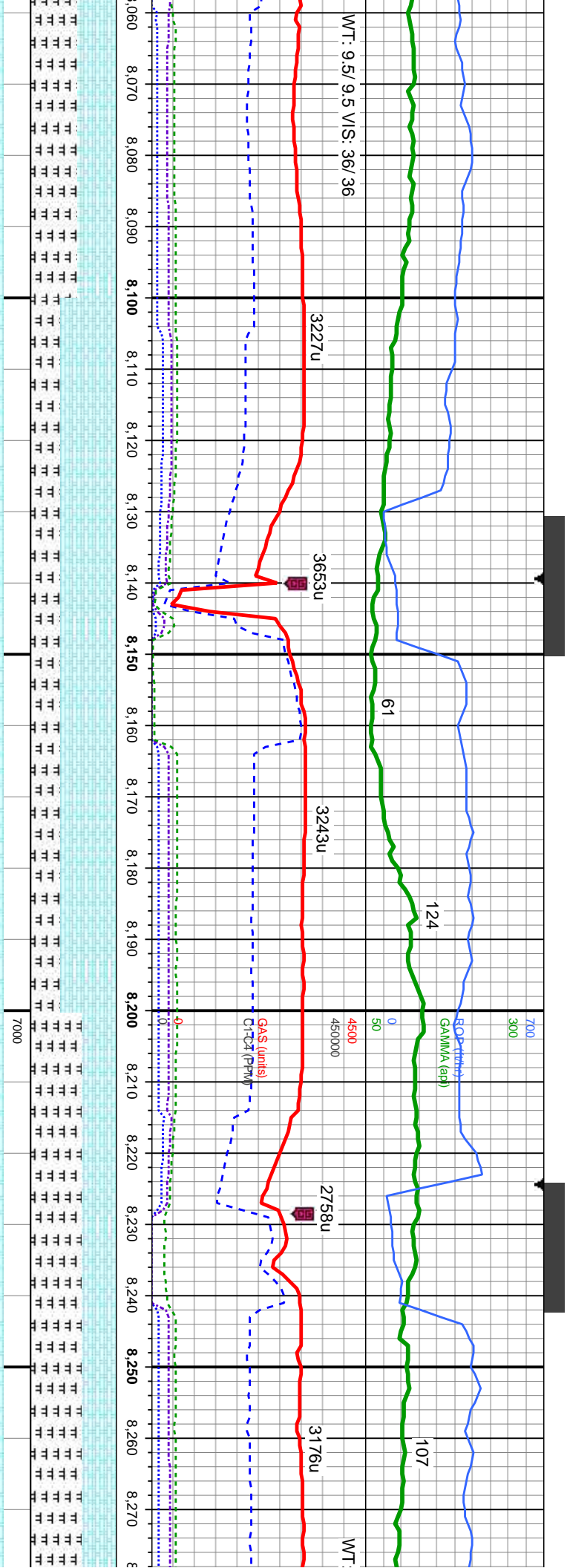
MD: 7,978'  
TVD: 7,152.31'  
Inclination: 89.5 °  
Azimuth: 176.1°  
VS: 331.3'

55% MRLST: dk - med gy, gy brn, mod - sl frm, brit - fri ip, gt tex, sb pily - sb blk, arg - slty mtx, 45% CHK: mot gy brn - lt gy, occ bf, v sft - sl frm, fri, sb blk, rthy - sb wxy tex, arg calc - sl slty mtx, v calc; OIL SHOW: tr yel mntl flr, fast dlse, mod sting, gn cut, sl gn stn, no od

55% MRLST: dk - med gy, gy brn, mod - sl frm, brit - fri ip, gt tex, sb pily - sb blk, arg - slty mtx, 45% CHK: mot gy brn - lt gy, occ bf, v sft - sl frm, fri, sb blk, rthy - sb wxy tex, arg calc - sl slty mtx, v calc; OIL SHOW: mod yel cut, mod gn-yel stn, no od







MD: 8,073'  
TVD: 7,151.9'  
Inclination: 91 °  
Azimuth: 175.9°  
VS: 426.1'

MD: 8,169'  
TVD: 7,149.72'  
Inclination: 91.6 °  
Azimuth: 176.3°  
VS: 521.89'

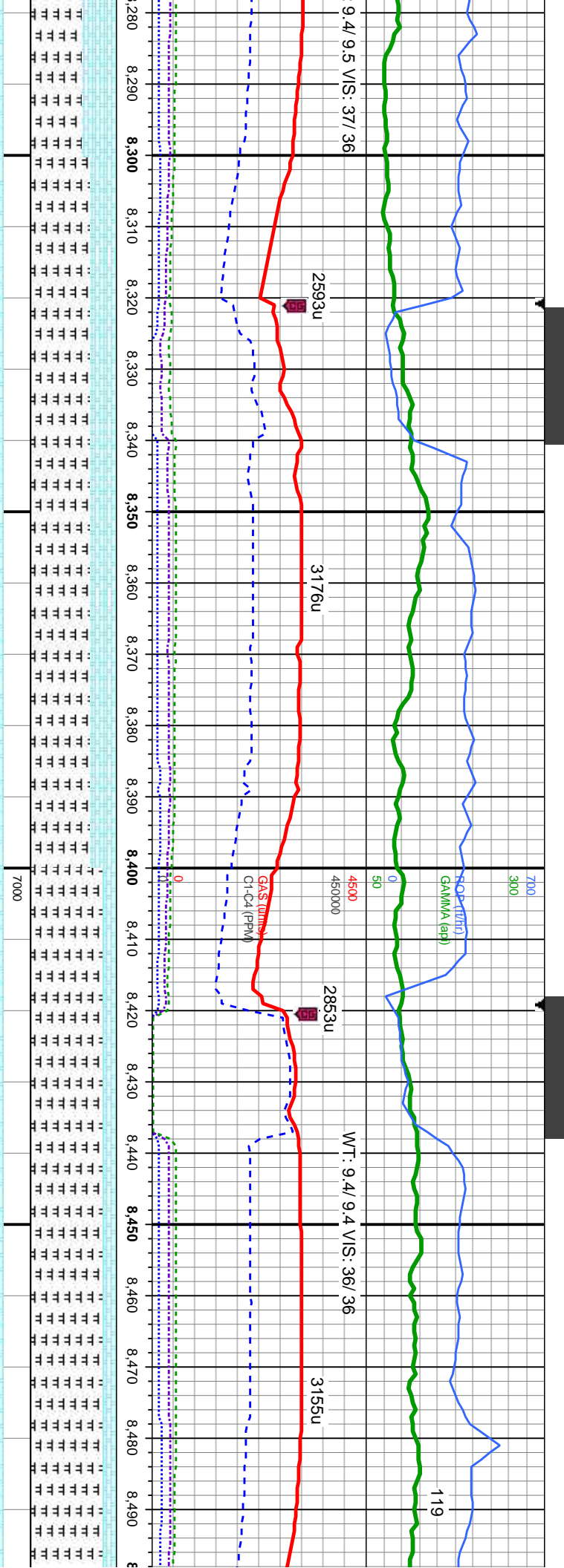
MD: 8,263'  
TVD: 7,146.93'  
Inclination: 91.8 °  
Azimuth: 176.9°  
VS: 615.71'

65% MRLST: dk - med gy, gy brn, mod - sl frm, brit - fri ip, gt tex, sb pily - sb blk, arg - slty mtx, tr wh inoc fos, 35% CHK: mot gy brn - lt gy, occ bf, v sft - sl frm, fri, sb blk, rthy - sb wxy tex, arg calc - sl slty mtx, v calc; OIL SHOW: tr yel mnrl flr, fast dfse, mod sting, gn cut, sl gn stn, no od

60% MRLST: med gry-brn, sb pily-sb blk, brit-frm, mot, rthy-ckky, m CHK: lt-med gy, sme dk gy, sb blk-sb pily, frm-occ brit, rthy tex, mtr yel mnrl flr, fast dfse, mod sting, gn cut, sl gn stn, no od







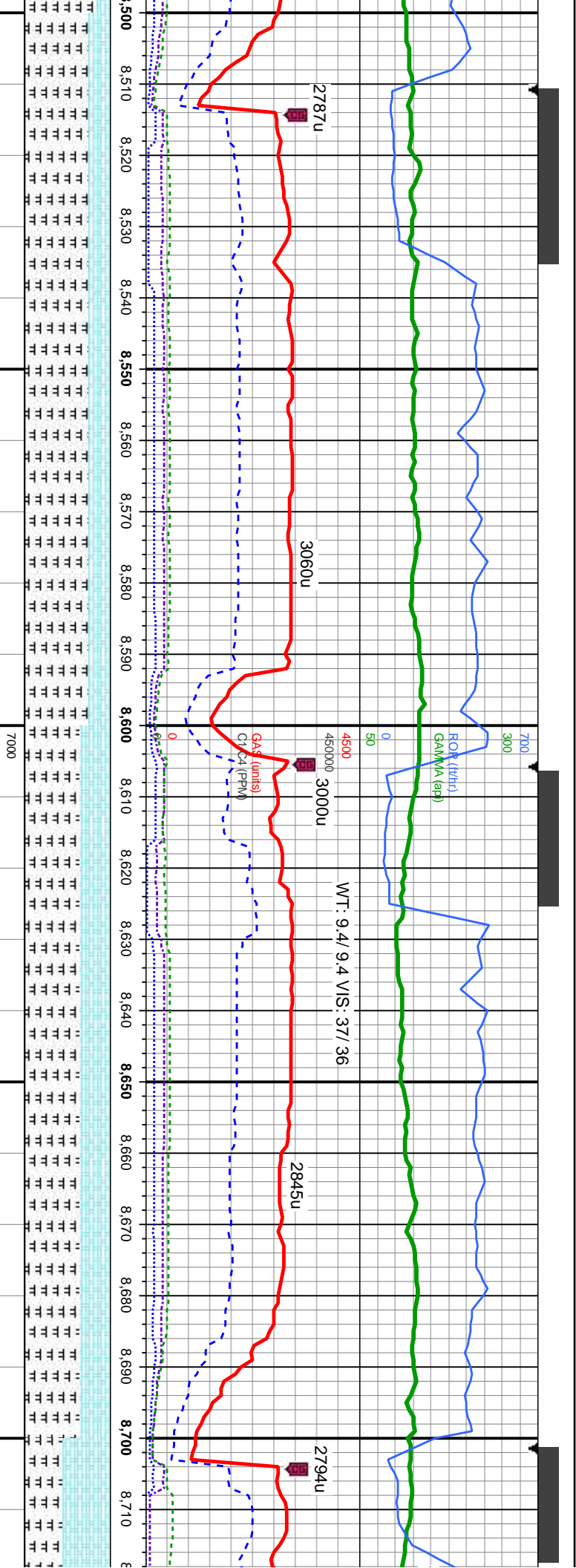
MD: 8,359'  
TVD: 7,143.75'  
Inclination: 92°  
Azimuth: 178.1°  
VS: 711.58'

MD: 8,453'  
TVD: 7,141.37'  
Inclination: 90.9°  
Azimuth: 177.4°  
VS: 805.49'

70% MRLST: med gry-brn, sb pily-sb blk, brt frm, mot, rthy-cky, mix; calc; calc; 30%  
CHK: lt-med gy, tr wh, sb blk-sb pily, frm-occ brt, rthy tex, mix; calc; OIL SHOW: tr yel  
mrt flr, fast difse, mod stmg, gn cut, sl gn stn, no od

85% MRLST: dk - med gy, gry brn, mod - sl frm, brt - fri lp, gt tex, sb pily - sb blk, arg -  
sily mbt; 15% CHK: mot gy brn - lt gy, occ bf, v sft - sl frm, fri, sb blk, rthy - sb wxy tex,  
calc; OIL SHOW: bl-gn stmg cut, fast difse, tr-mod yel min flr, solid gn resd stn, no





MD: 8,549'  
TVD: 7,140.87'  
Inclination: 89.7°  
Azimuth: 177.6°  
VS: 901.42'

MD: 8,644'  
TVD: 7,141.28'  
Inclination: 89.8°  
Azimuth: 179.3°  
VS: 996.39'

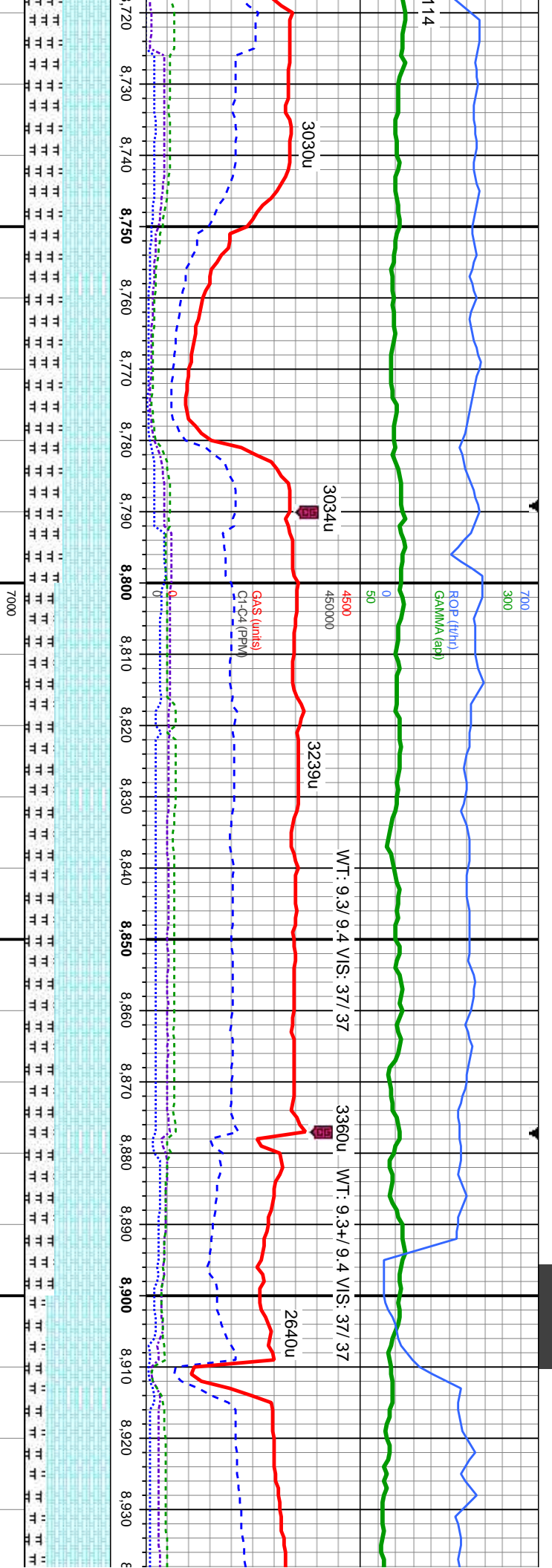
75% MRLST: dk - med gy, gy brn, mod - sl frm, brit - fri ip, gt tex, sb pily - sb blk, arg - silty mxt; 25% CHK: mot gy brn - lt gy, occ bf, v sft - sl frm, fri, sb blk, rthy - sb wxy tex, v calc; OIL SHOW: bl-gn stng cut, fast difse, tr-mod yel min flr, solid gn resd stn, no od

65% MRLST: dk - med gy, gy brn, mod - sl frm, brit - fri ip, gt tex, sb pily - sb blk, arg - silty mxt; 35% CHK: mot gy brn - lt gy, occ bf, v sft - sl frm, sb blk, rthy - sb wxy tex, v calc; OIL SHOW: bl-gn stng cut, mod difse, tr yel min flr, solid gn resd stn, no od

55% CHK: m MRLST: dk - mxt; OIL SH







MD: 8,739'  
TVD: 7,141.53'  
Inclination: 89.9 °  
Azimuth: 180.1 °  
VS: 1,091.39'

MD: 8,835'  
TVD: 7,140.78'  
Inclination: 91 °  
Azimuth: 178.9 °  
VS: 1,187.38'

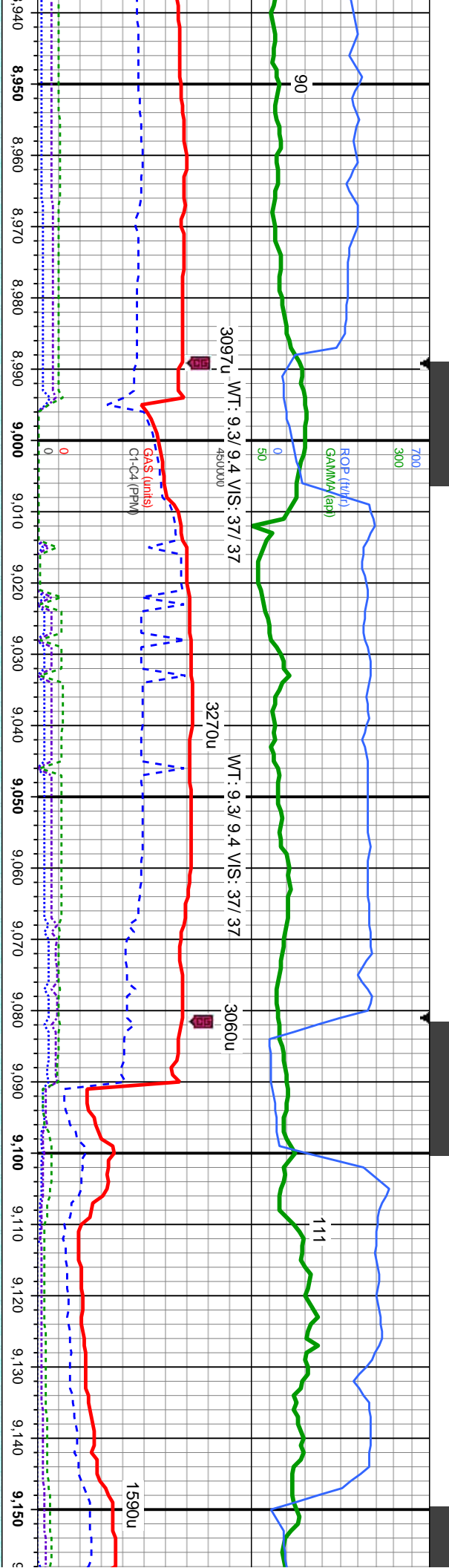
MD: 8,929'  
TVD: 7,139.71'  
Inclination: 90.3 °  
Azimuth: 178.5 °  
VS: 1,281.36'

65% CHK: mot gy brn - lt gy, v sft - sl frm, fri, sb blk, rthy - sb wxy tex, v calc; 45%  
MRLST: dk - med gy, gy brn, mod - sl frm, brit - fri ip, gt tex, sb pily - sb blk, arg - slty  
mx; OIL SHOW: br-gn stmg cut, mod difse, tr yel min flor, solid gn resd stn, no od

75% CHK: mot gy brn - lt gy, v sft  
MRLST: dk - med gy, gy brn, mod  
mx, tr cal; OIL SHOW: br-gn stmg  
od

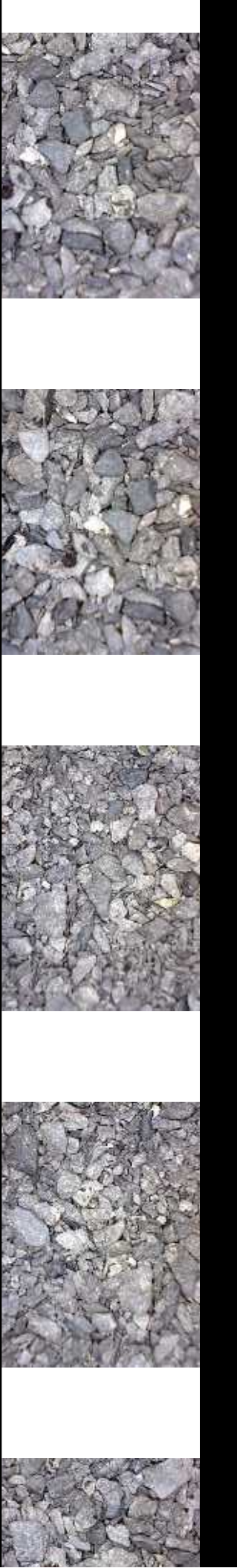
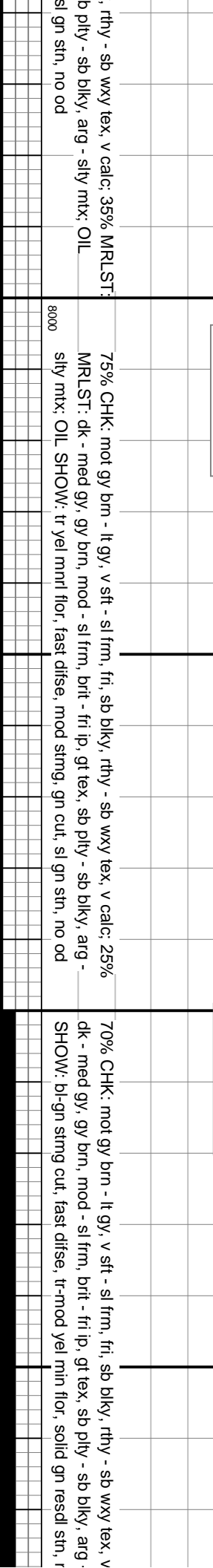
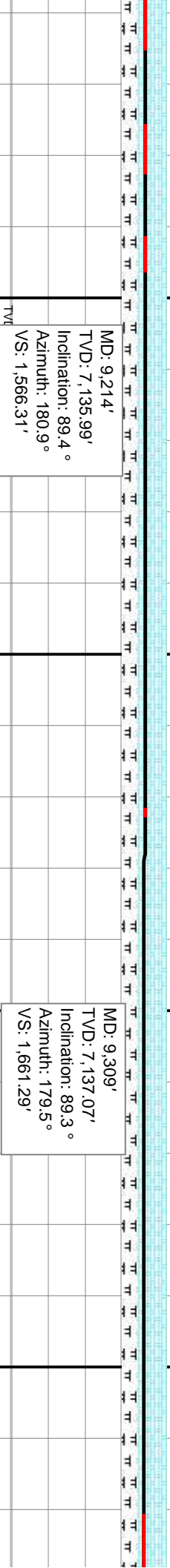
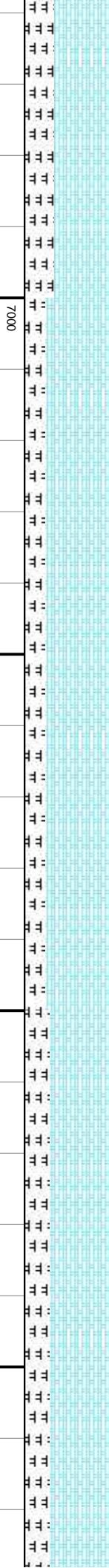
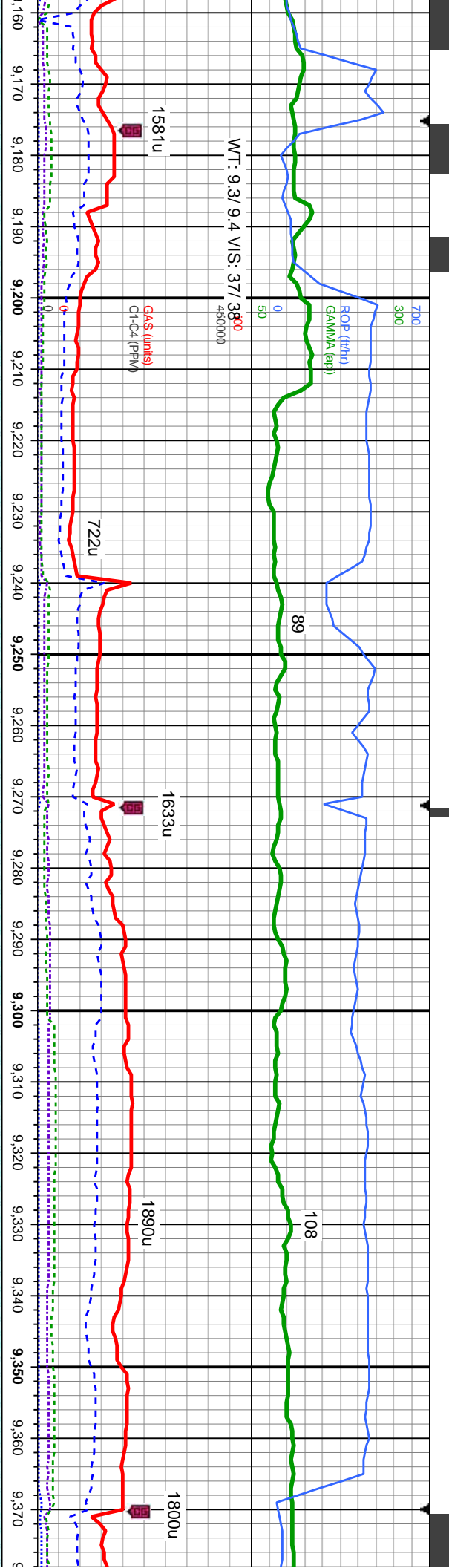




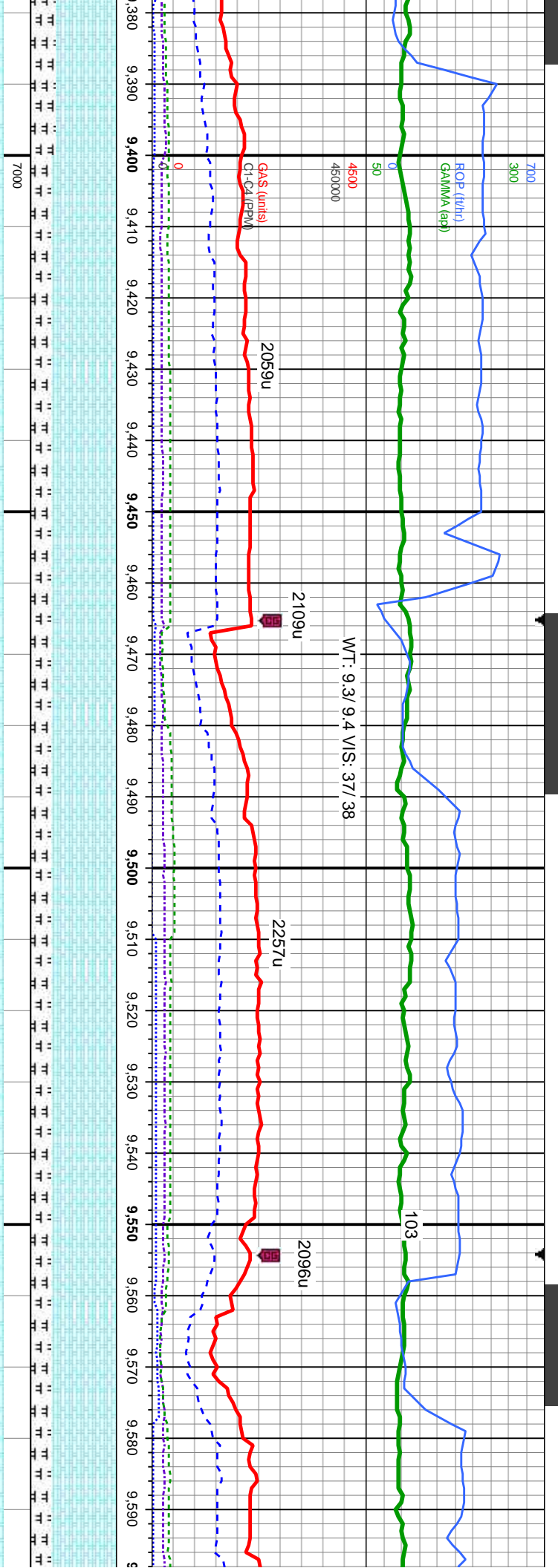


<p>- sl frm, fri, sb blkly, rthy - sb wxy tex, v calc: 25%</p> <p>- sl frm, brit - fri ip, gt tex, sb ply - sb blkly, arg - silty</p> <p>g cut, mod difse, tr yel min flor, solid gn resdi str, no</p>	<p>MD: 9,023'</p> <p>TVD: 7,138.4'</p> <p>Inclination: 91.3°</p> <p>Azimuth: 179.3°</p> <p>VS: 1,375.34'</p>	<p>75% CHK: mot gy brn - lt gy, v sft - sl frm, fri, sb blkly, rthy - sb wxy tex, v calc: 25%</p> <p>MRLST: dk - med gy, gy brn, mod - sl frm, brit - fri ip, gt tex, sb ply - sb blkly, arg - silty</p> <p>mtx, tr cal: OIL SHOW: tr yel mnrl flor, fast difse, mod sting, gn cut, sl gn str, no od</p>
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MD: 9,405'  
TVD: 7,138.49'  
Inclination: 89 °  
Azimuth: 180.3°  
VS: 1,757.28'

MD: 9,499'  
TVD: 7,138.57'  
Inclination: 90.9 °  
Azimuth: 181.1°  
VS: 2.19'

MD: 9,594'  
TVD: 7,137.33'  
Inclination: 90  
Azimuth: 181.  
VS: 0.53'

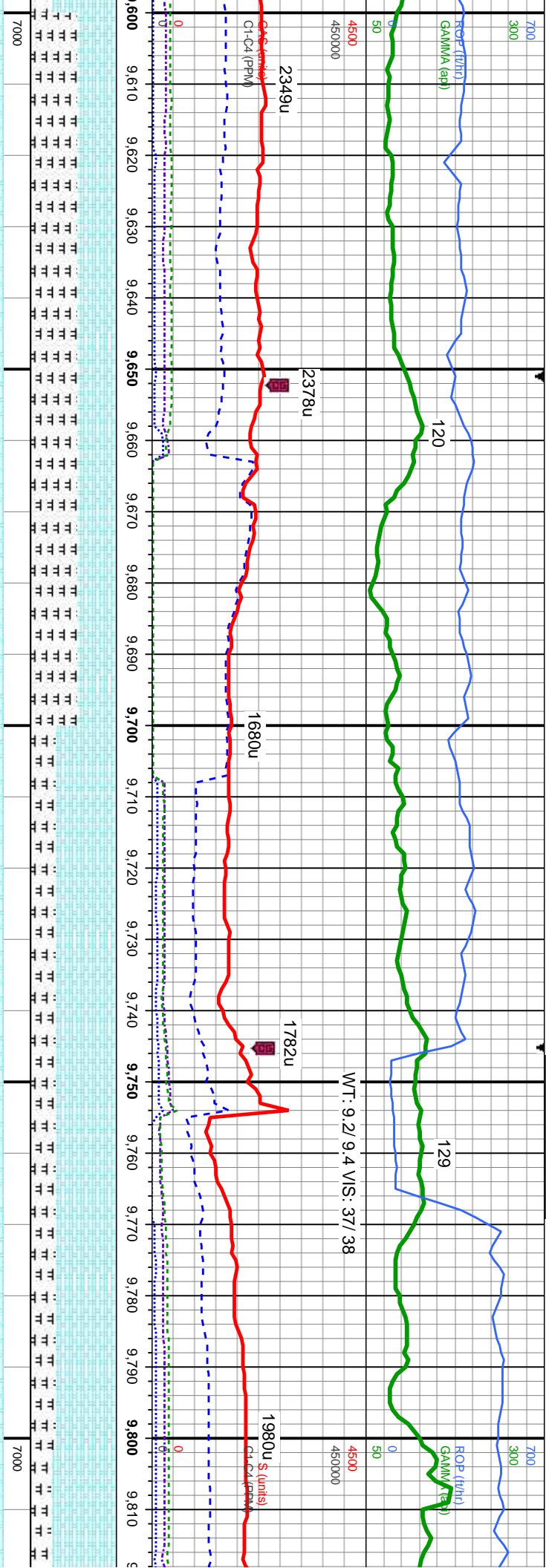
calc; 30% MRLST: sily mt; OIL

75% CHK: mot gy brn - lt gy, v sft - sl frm, fri, sb blk, rthy - sb wxy tex, v calc; 25% MRLST: dk - med gy, gy brn, mod - sl frm, brit - fri lp, gt tex, sb ply - sb blk, arg - sily mt; OIL SHOW: mod dfse, tr yel min flor, bl-wh sting, bl-wh mky cut, mod 80g gn-bl sft, no od

75% CHK: mot gy brn - lt gy, v sft - sl frm, fri, sb blk, rthy - sb wxy tex, v calc; 25% MRLST: dk - med gy, gy brn, mod - sl frm, brit - fri lp, gt tex, sb ply - sb blk, arg - sily mt; OIL SHOW: bl-gn sting cut, fast dfse, tr-mod yel min flor, solid gn resd sft, no od







MD: 9,687'  
TVD: 7,135.22'  
Inclination: 92.6°  
Azimuth: 180.6°  
VS: 1.79'

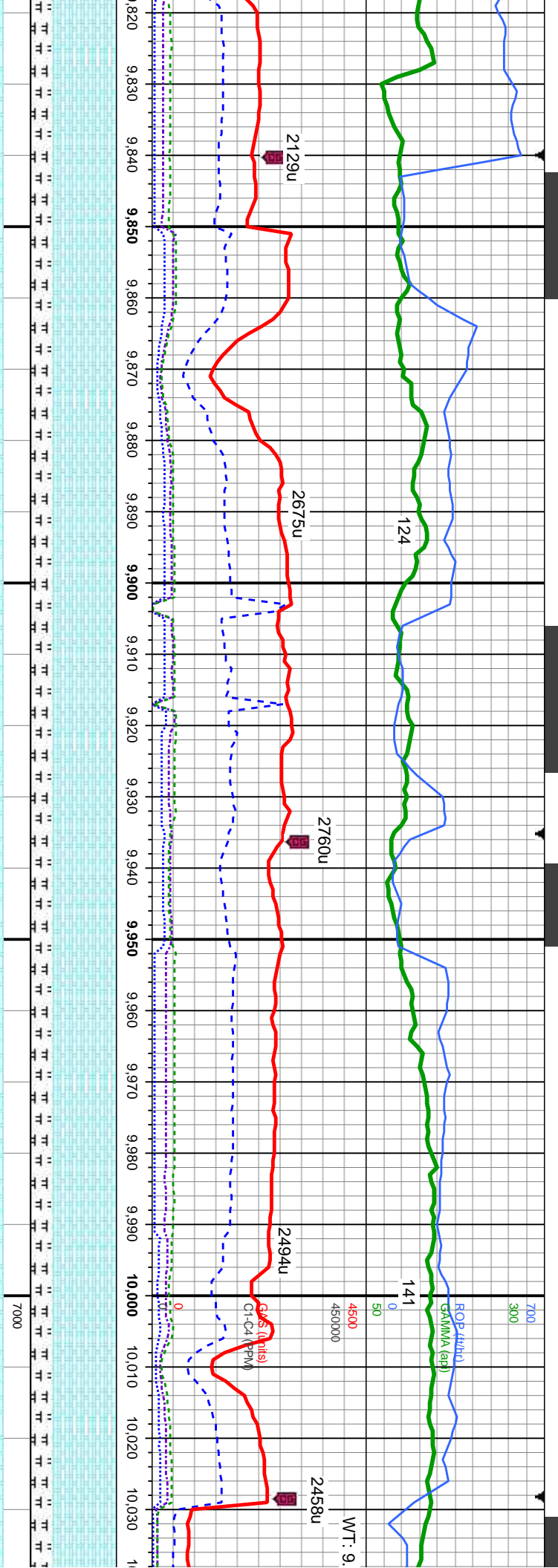
MD: 9,782'  
TVD: 7,131.41'  
Inclination: 92.6°  
Azimuth: 181°  
VS: 2,134.07'

45% CHK: mot gy brn - lt gy, v sft - sl frm, fri, sb blk, rthy - sb wxy tex, v calc: 55%  
MRLST: dk - med gy, gy brn, mod - sl frm, brit - fri lp, gt tex, sb pily - sb blk, arg - sily mt; OIL SHOW: bl-gn sting cut, fast dfse, tr-mod yel min flr, solid gn resl stn, no od

70% CHK: mot gy brn - lt gy, v sft - sl frm, fri, sb blk, rthy - sb wxy tex, v calc: 30% MRLST: dk - med gy, gy brn, mod - sl frm, brit - fri lp, gt tex, sb pily - sb blk, arg - sily mt; OIL SHOW: bl-gn sting cut, fast dfse, tr-mod yel min flr, solid gn resl stn, no od

75% CHK: cal, diss f pily - sb blk flr, solid gn





MD: 9,877'  
TVD: 7,127.76'  
Inclination: 91.8°  
Azimuth: 181.5°  
VS: 2,228.97'

MD: 9,970'  
TVD: 7,126.38'  
Inclination: 89.9°  
Azimuth: 181.6°  
VS: 2,321.9'

mot gy brn - lt gy, v sft - sl frm, fri, sb blk, rthy - sb wxy tex, v calc, mod  
MRLST: dk - med gy, gy brn, mod - sl frm, brit - fri ip, gt tex, sb  
y, arg - silty mtk; OIL SHOW: b-gn string cut, fast difse, tr-mod yel min  
n resd stn, no od

75% CHK: mot gy brn - lt gy, v sft - sl frm, fri, sb blk, rthy - sb wxy tex, v calc; 25%  
MRLST: dk - med gy, gy brn, mod - sl frm, brit - fri ip, gt tex, sb blk, arg - silty  
mtx, tr cal; OIL SHOW: tr yel mnt flr, fast difse, mod string, gn cut, sl gn stn, no od

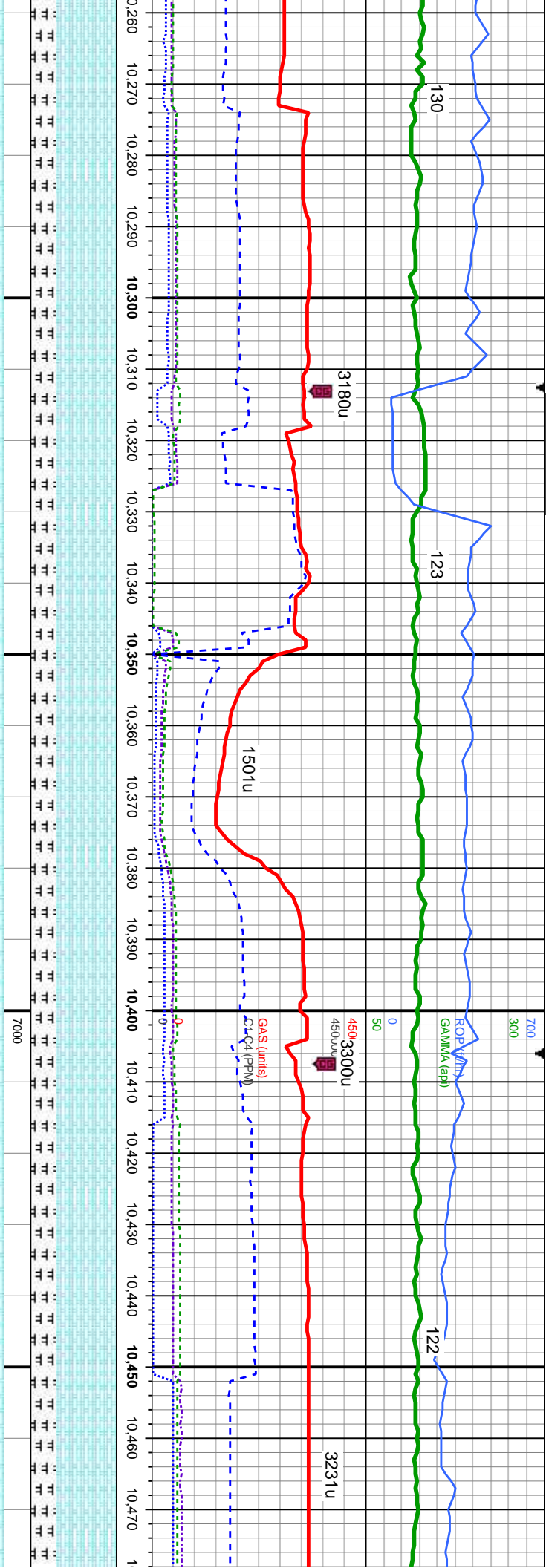
75% CHK: mot gy brn - lt gy, v  
MRLST: dk - med gy, gy brn, n  
mtx, tr cal; OIL SHOW: tr yel n











MD: 10,349'  
TVD: 7,132.65'  
Inclination: 89.3°  
Azimuth: 179.9°  
VS: 2,700.77'

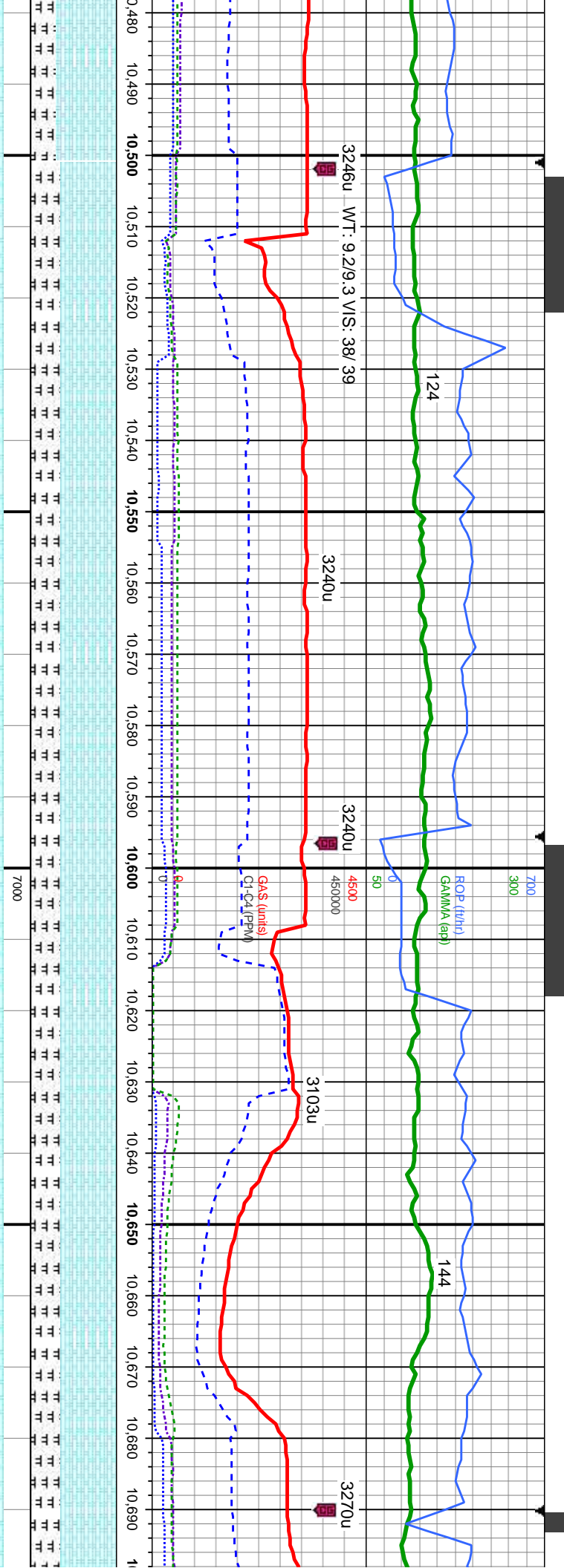
MD: 10,443'  
TVD: 7,133.31'  
Inclination: 89.9°  
Azimuth: 179.7°  
VS: 2,794.77'

blky, rthy - sb wxy tex, v calc; 30%  
ri ip, gt tex, sb pty - sb blky, arg - stly  
flor, fast difse, mod stmg, gn cut, sl

70% CHK: mot gy brn - lt gy, v sft - sl frm, fri, sb blky, rthy - sb wxy tex, v calc; 30%  
MRLST: dk - med gy, gy brn, mod - sl frm, brit - fri ip, gt tex, sb pty - sb blky, arg -  
sily mx, OIL SHOW: bl-gn stmg cut, fast difse, tr-mod yel min flor, solid gn resd  
stn, no od

70% CHK: mot gy brn - lt gy, v sft - sl frm, fri, sb blky, rthy - sb wxy tex  
MRLST: dk - med gy, gy brn, mod - sl frm, brit - fri ip, gt tex, sb pty - sb  
sily mx, abnt cal, dissn pyr; OIL SHOW: bl-gn stmg cut, fast difse, tr-r  
flor, solid gn resd stn, no od





MD: 10,538'  
TVD: 7,133.06'  
Inclination: 90.4 °  
Azimuth: 180.2 °  
VS: 2,889.77'

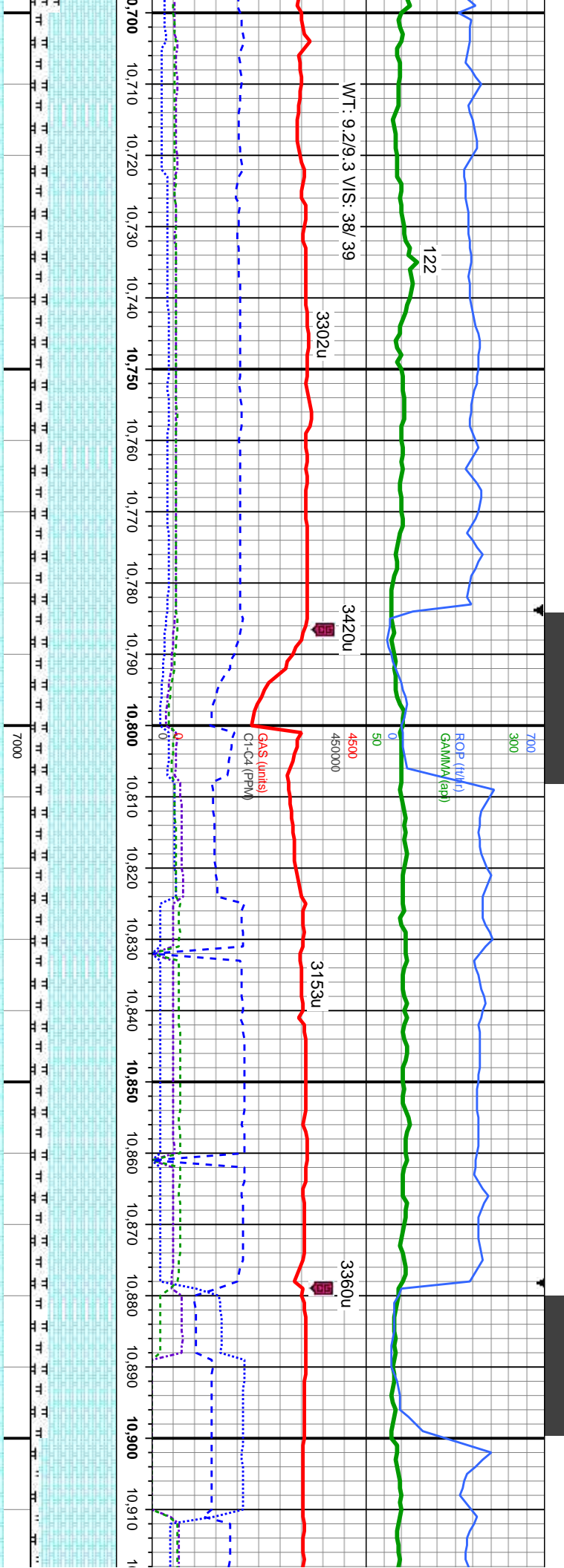
MD: 10,632'  
TVD: 7,133.71'  
Inclination: 88.8 °  
Azimuth: 179.5 °  
VS: 2,983.76'

65% CHK: mot gy brn - lt gy, v sft - sl frm, fri, sb blkly, rthy - sb wxy tex, v calc; 35% MRLST: dk - med gy, gy brn, mod - sl frm, brt - fri ip, gt tex, sb blkly, arg - slty mtx, abnt cal, dissim pyr; OIL SHOW: bl-gn stmg cut, fast difse, tr-mod yel min flor, solid gn resd stn, no od

65% CHK: mot gy brn - lt gy, v sft - sl frm, fri, sb blkly, rthy - sb wxy tex, v calc; 35% MRLST: dk - med gy, gy brn, mod - sl frm, brt - fri ip, gt tex, sb blkly, arg - slty mtx, abnt cal, dissim pyr; OIL SHOW: tr yel mnrl flor, fast difse, mod stmg, gn cut, sl gn stn, no od







MD: 10,727'  
TVD: 7,135.95'  
Inclination: 88.5 °  
Azimuth: 178.7 °  
VS: 3.078.73'

MD: 10,822'  
TVD: 7,137.53'  
Inclination: 89.6 °  
Azimuth: 179.8 °  
VS: 3.173.71'

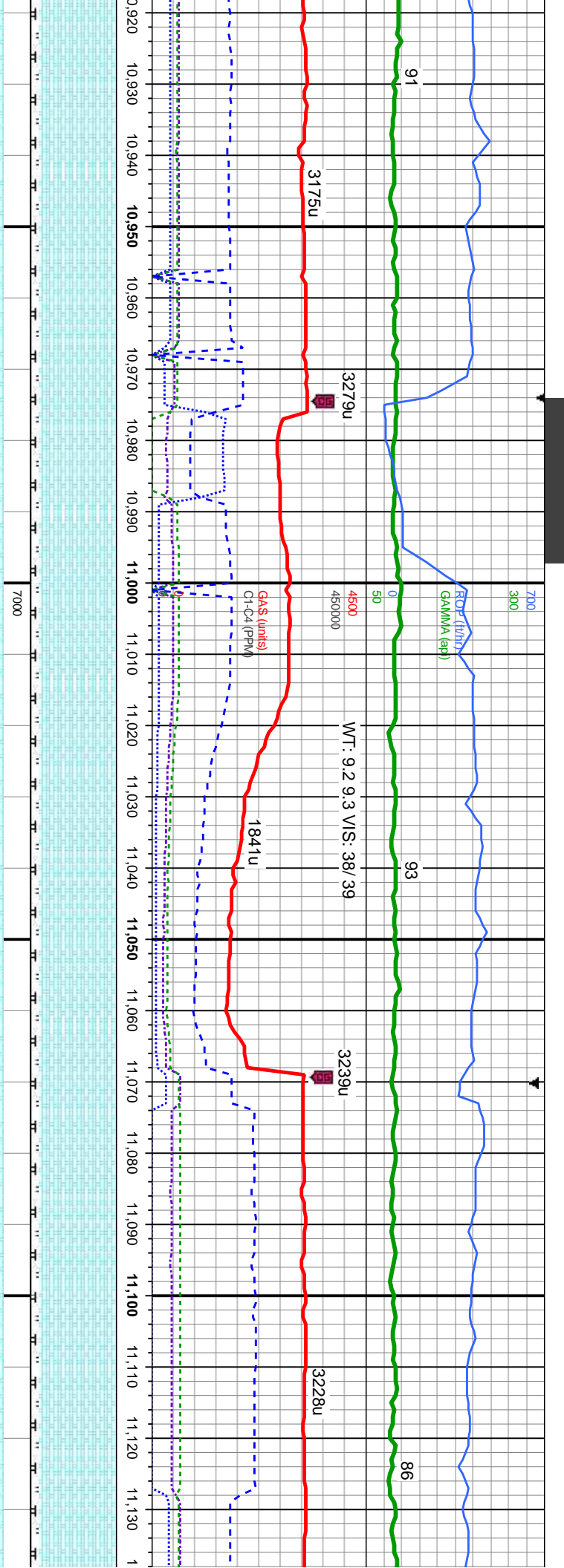
MD: 10,91  
TVD: 7,13  
Inclination:  
Azimuth: 1  
VS: 3.268.

80% CHK: mot gy brn - lt gy, v sft - sl frm, fri, sb blk, rthy - sb wxy tex, v calc, 20%  
MRLST: dk - med gy, gy brn, mod - sl frm, brt - fri ip, gt tex, sb ply - sb blk, arg - slty  
mtx, tr calc: OIL SHOW: tr yel mnrl flr, fast dfse, mod stmg, gn cut, sl gn sin, no od

80% CHK: mot gy brn - lt gy, v sft - sl frm, fri, sb blk, rthy - sb wxy tex, v calc, 20%  
MRLST: dk - med gy, gy brn, mod - sl frm, brt - fri ip, gt tex, sb ply - sb blk, arg - slty  
mtx, tr calc: OIL SHOW: tr yel mnrl flr, fast dfse, mod stmg, gn cut, sl gn sin, no od

90% CHK: mot  
dk - med gy, gy  
OIL SHOW: tr y





3,02'  
89.8 °  
79.9 °  
71'

MD: 11,012'  
TVD: 7,138.36'  
Inclination: 89.8 °  
Azimuth: 181 °  
VS: 3,363.7'

MD: 11,106'  
TVD: 7,138.44'  
Inclination: 90.1 °  
Azimuth: 180.5 °  
VS: 3,457.68'

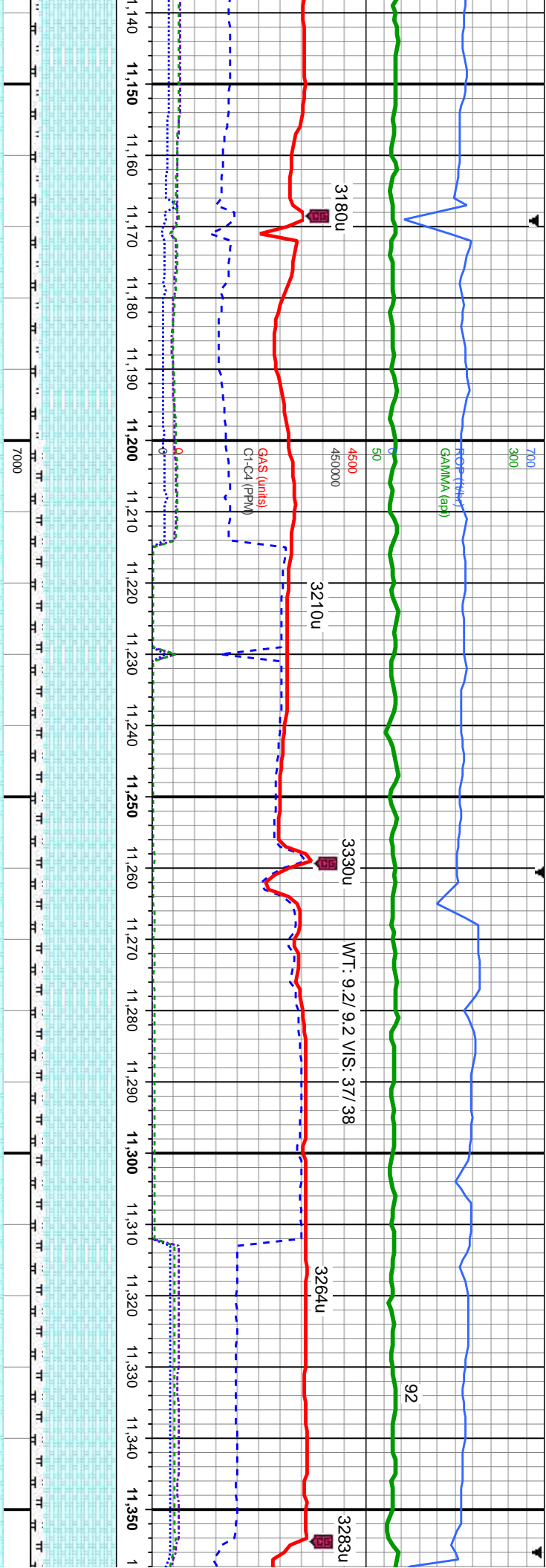
gy brn - lt gy, v sft - sl frm, fri, sb blk, rthy - sb wxy tex, v calc; 10% MRLST: brn, mod - sl frm, brit - fri ip, gt tex, sb ply - sb blk, arg - silty mt, tr calc; el mnt flr, fast difse, mod stng, gn cut, sl gn stn, no od

90% CHK: mot gy brn - lt gy, v sft - sl frm, fri, sb blk, rthy - sb wxy tex, v calc; 10% MRLST: dk - med gy, gy brn, mod - sl frm, brit - fri ip, gt tex, sb ply - sb blk, arg - silty mt, tr calc; OIL SHOW: bl-gn stng cut, fast difse, tr-mod yel min flr, solid gn resd stn, no od

90% CHK: mot gy brn - lt gy, v sft - sl frm, fri, sb blk, rthy - sb wxy tex, v calc; 10% MRLST: dk - med gy, gy brn, mod - sl frm, brit - fri ip, gt tex, sb ply - sb blk, arg - silty mt, tr calc; OIL SHOW: bl-gn stng cut, fast difse, tr-mod yel min flr, solid gn resd stn, no od







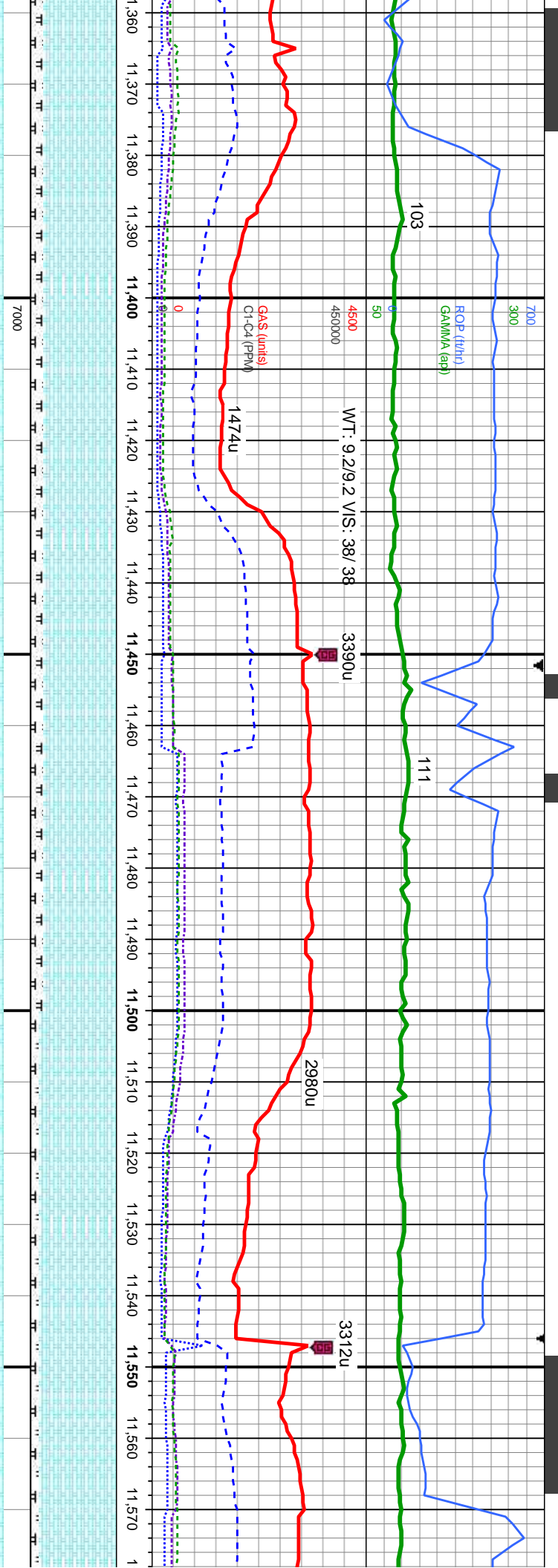
MD: 11,202'  
TVD: 7,138.35'  
Inclination: 90 °  
Azimuth: 180.1 °  
VS: 3,553.68'

MD: 11,298'  
TVD: 7,138.19'  
Inclination: 90.2 °  
Azimuth: 179.9 °  
VS: 3,649.67'

t - sl frm, fri, sb blk, rthy - sb wxy tex, v calc; 10%  
d - sl frm, brit - fri ip, gt tex, sb ply - sb blk, arg - sly  
mg cut, fast dfse, tr-mod yel min flr, solid gn resd

85% CHK: lt-med gy, tr wh, sb blk-sb ply, frm-occ brit, rthy tex, mtx;calc: 15% MRLST:  
med gry-brn, sb ply-sb blk,brit-frm, mot, rthy-ckky, tr bent, mtb; calc; OIL SHOW: bl-gn  
stng cut, fast dfse, tr-mod yel min flr, solid gn resd stn, no od





MD: 11,392'  
TVD: 7,138.11'  
Inclination: 89.9°  
Azimuth: 180.5°  
VS: 3,743.67'

MD: 11,487'  
TVD: 7,138.02'  
Inclination: 90.2°  
Azimuth: 179.8°  
VS: 3,838.67'

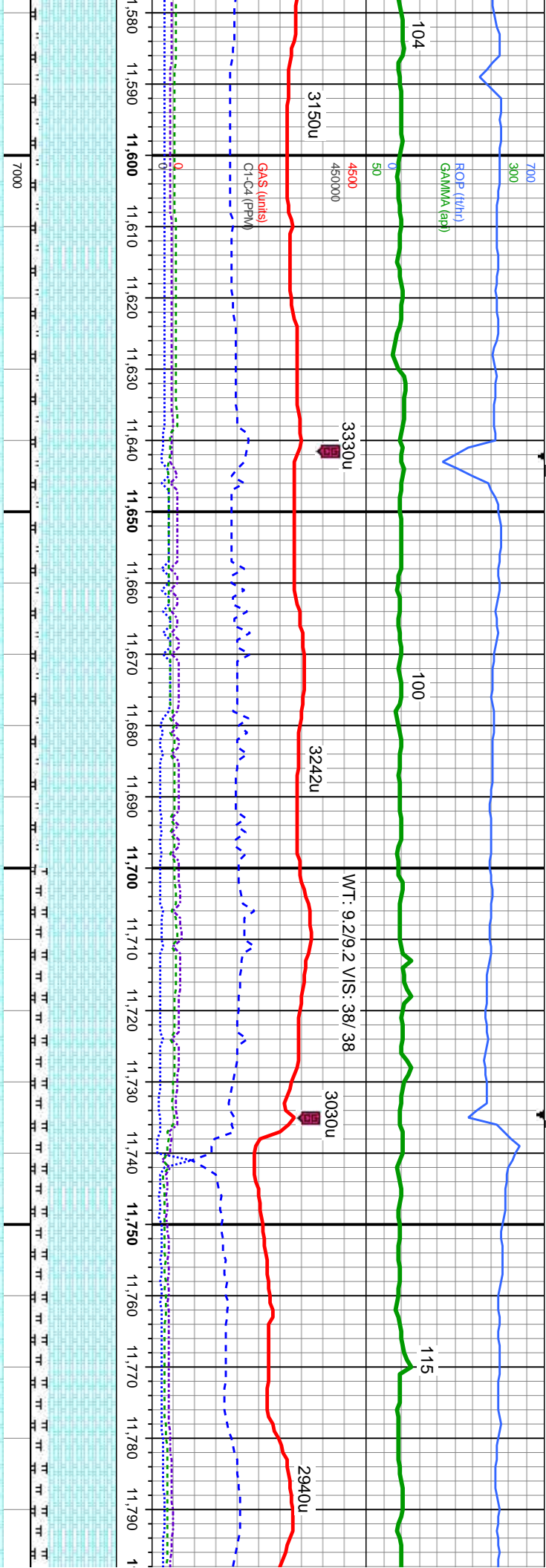
MD: 11,570'  
TVD: 7,138.02'  
Inclination: 90.2°  
Azimuth: 179.8°  
VS: 3,838.67'

rit, rthy tex, mtx;calc: 15% MRLST: 85% CHK: lt-med gy, tr wh, sb blk-y-sb plty, frm-occ brit, rthy tex, mtx;calc: 15% MRLST: med gry-brn, sb plty-sb blk-y, brit-frm, mot, rthy-chky, tr bent, mtx; calc: OIL SHOW: mod difse, tr yel min flor, bl-wh stmg, bl-wh mky cut, mod gn-bl stn, no od

90% CHK: lt-med gy, tr wh, sb blk-y-sb plty, frm-occ brit, rthy tex, mtx;calc: 15% MRLST: med gry-brn, sb plty-sb blk-y, brit-frm, mot, rthy-chky, tr bent, mtx; calc: OIL SHOW: mod difse, tr yel min flor, bl-wh stmg, bl-wh mky cut, mod gn-bl stn, no od







1,582'  
7,137.77'  
ation: 90.1 °  
uth: 181.1 °  
.933.66'

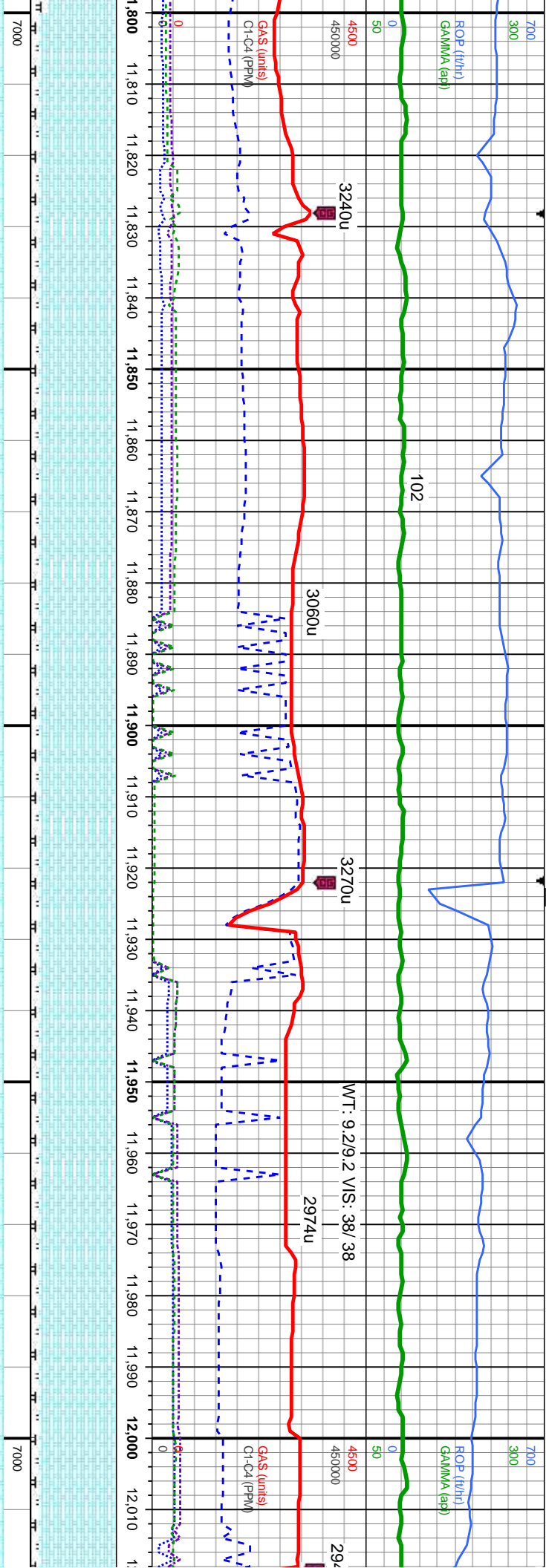
MD: 11,676'  
TVD: 7,137.86'  
Inclination: 89.8 °  
Azimuth: 181.7 °  
VS: 4,027.61'

MD: 11,770'  
TVD: 7,138.1'  
Inclination: 89.9 °  
Azimuth: 182 °  
VS: 4,121.55'

10% MRLST: 90% CHK: lt-med gy, tr wh, sb blk-y-sb pily, frm-occ brit, rthy tex, mtx;calc; 10% MRLST: med gry-brn, sb pily-sb blk-y,brit-frm, mot, rthy-chky, mtx; calc; OIL SHOW: mod difse, tr yel min flor, bl-wh stmg, bl-wh mky cut, mod gn-bl stn, no od

80% CHK: lt-med gy, tr wh, sb blk-y-sb pily, frm-occ brit, rthy tex, mtx;calc; 20% MRLST: med gry-brn, sb pily-sb blk-y,brit-frm, mot, rthy-chky, mtx; calc; OIL SHOW: bl-gn string cut, fast difse, tr-mod yel min flor, solid gn resd stn, no od





MD: 11,865'  
TVD: 7,138.18'  
Inclination: 90 °  
Azimuth: 181.9°  
VS: 4,216.48'

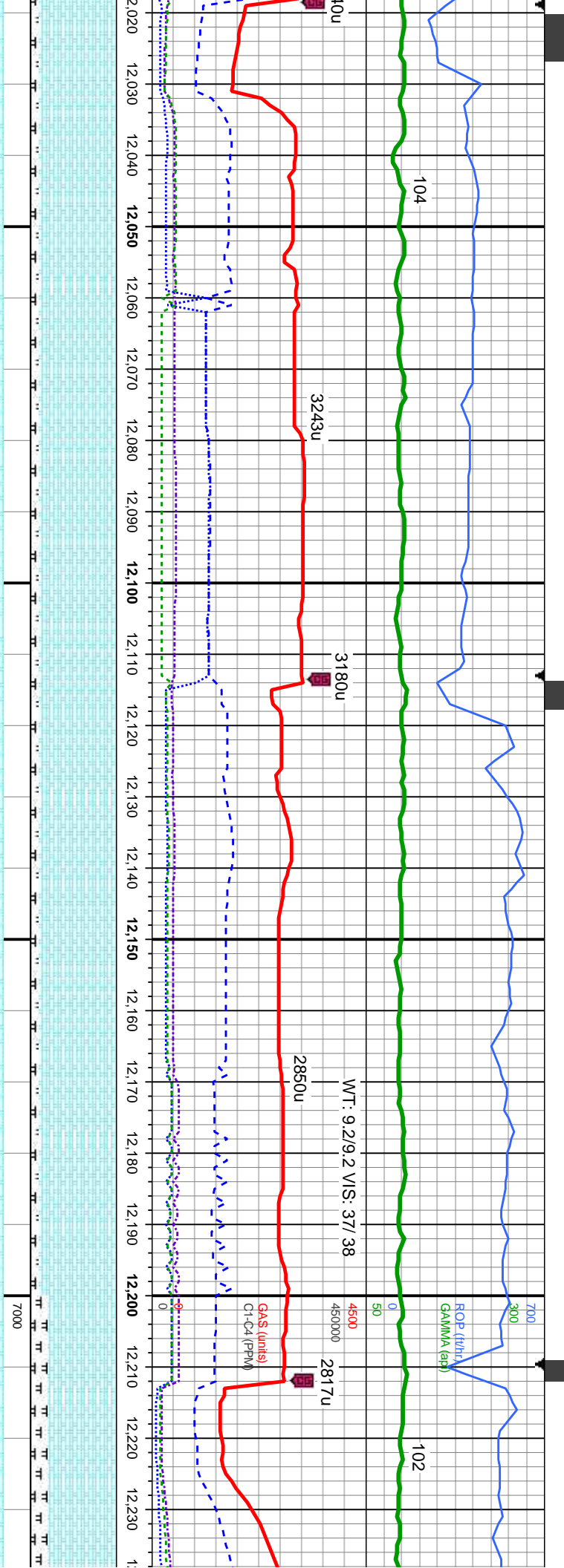
85% CHK: lt-med gy, tr wh, sb blk-y-sb pily, frm-occ brit, rthy tex, mtx;calc: 15% MRLST: med gry-brn, sb pily-sb blk-y,brit-frm, mot, rthy-ckly, mtx; calc: OIL SHOW: mod difse, tr yel min flor, bi-wh stmg, bi-wh mky cut, mod gn-bl stn, no od

90% CHK: lt-med gy, tr wh, sb blk-y-sb pily, frm-occ brit, rthy tex, mtx;calc: 10% MRLST: med gry-brn, sb pily-sb blk-y,brit-frm, mot, rthy-ckly, mtx; calc: OIL SHOW: mod difse, tr yel min flor, bi-wh stmg, bi-wh mky cut, mod gn-bl stn, no od

90% CHK: MRLST: m bi-gn stmg







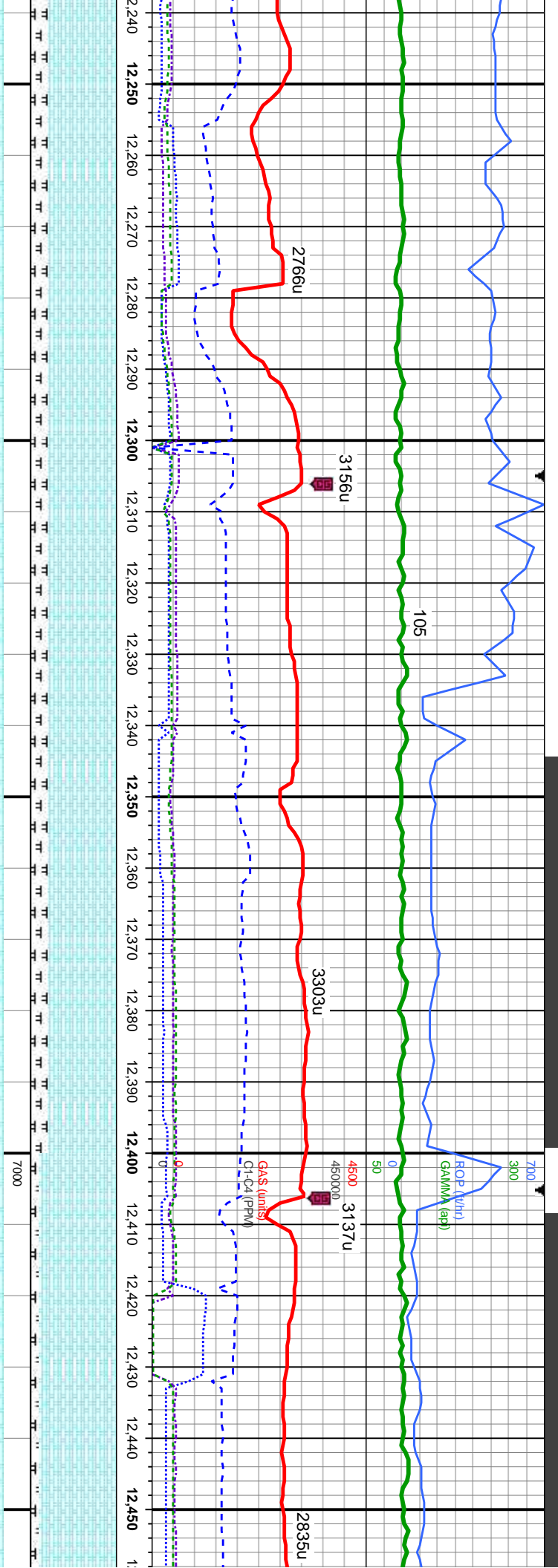
MD: 12,056'  
TVD: 7,138.85'  
Inclination: 89.6°  
Azimuth: 181.9°  
VS: 4,407.33'

lt-med gy, tr wh, sb blkly-sb ply, frm-occ brit, rthy tex, mtx;calc: 10% med gry-brn, sb ply-sb blkly,brit-frm, mot, rthy-chky, mtx; calc: OIL SHOW: cut, fast difse, tr-mod yel min flor, solid gn resdl stn, no od

90% CHK: lt-med gy, tr wh, sb blkly-sb ply, frm-occ brit, rthy tex, mtx;calc: 10% MRLST: med gry-brn, sb ply-sb blkly,brit-frm, mot, rthy-chky, mtx; calc: OIL SHOW: gn sting cut, fast difse, tr-mod yel min flor, solid gn resdl stn, no od

80% CHK: lt-med gy, tr wh, sb blkly-sb ply, frm-occ brit, rthy tex, mtx;calc: 10% MRLST: med gry-brn, sb ply-sb blkly,brit-frm, mot, rthy-chky, mtx; calc: OIL SHOW: gn sting cut, fast difse, tr-mod yel min flor, solid gn resdl stn, no od





MD: 12,247'  
VD: 7,139.52'  
inclination: 90 °  
azimuth: 182.5°  
S: 4.598.15'

MD: 12,436'  
TVD: 7,139.35'  
inclination: 90.1 °  
Azimuth: 182.2°  
VS: 4,786.95'

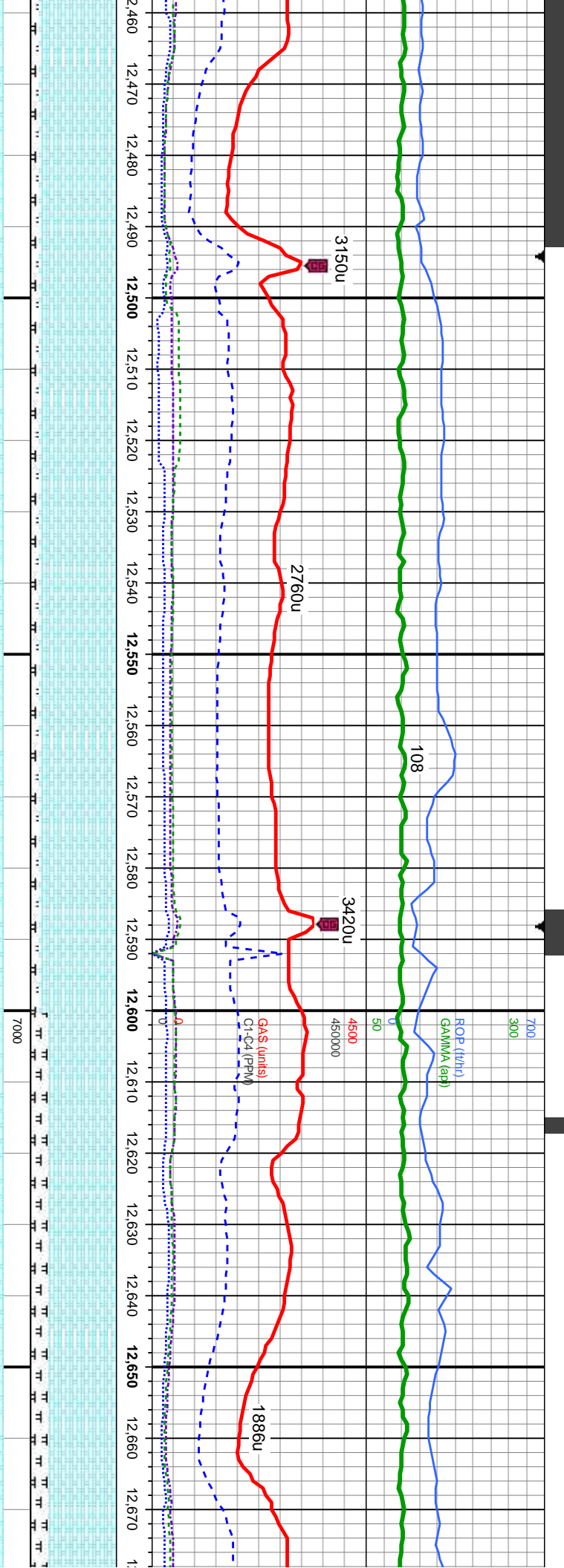
o blkly-sb pily, frm-occ brit, rthy tex, mtx;calc: 20%  
sb blkly, brit-frm, mot, rthy-chky, mtx; calc: OIL SHOW:  
yel min flor, mod yel-gn resdl stn, no od

80% CHK: lt-med gy, tr wh, sb blkly-sb pily, frm-occ brit, rthy tex, mtx;calc: 20% MRLST:  
med gry-brn, sb pily-sb blkly, brit-frm, mot, rthy-chky, mtx; calc: OIL SHOW: mod difse, tr  
yel min flor, bl-wh stng, bl-wh mky cut, mod gn-bl stn, no od

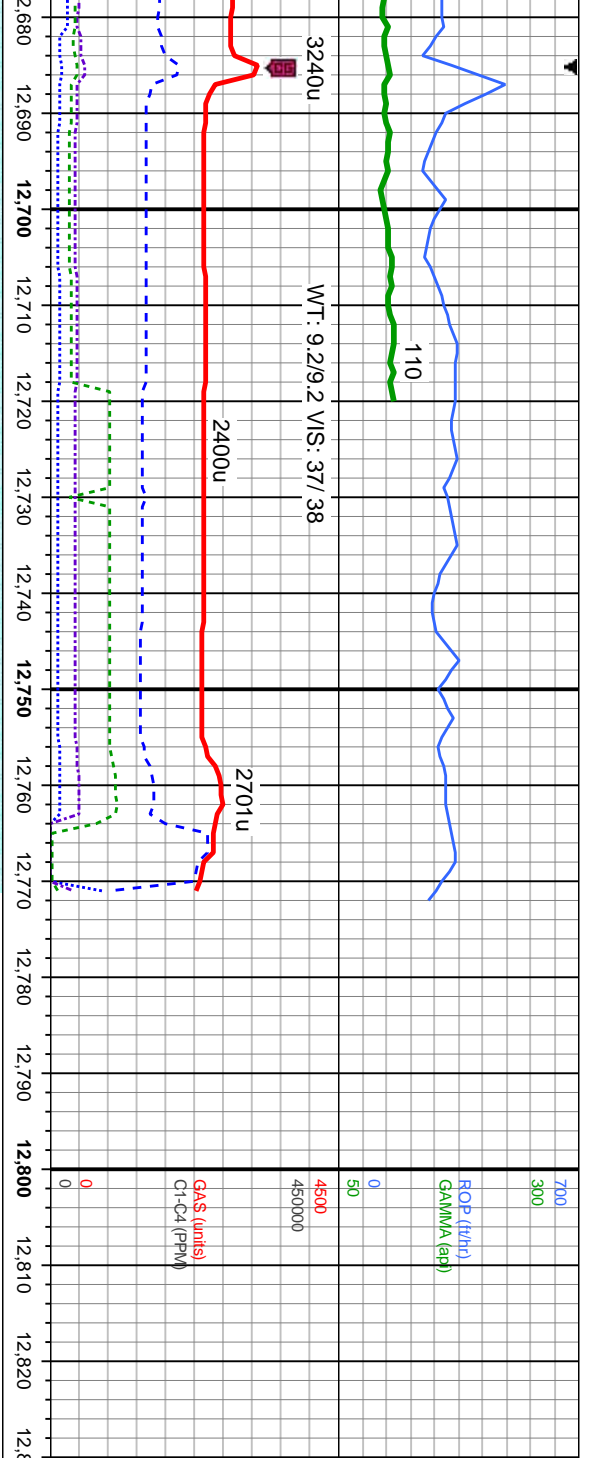
85% CHK: lt-med gy, tr wh, sb blkly-sb pily, frm-o  
med gry-brn, sb pily-sb blkly, brit-frm, mot, rthy-ch  
cut, fast difse, tr-mod yel min flor, solid gn resdl s







cc brit, rthy tex, mtx;calc: 15% MRLST: med gry-brn, sb ply-sb blkyl,brt-frn, mot, rthy-chky, mtx; calc: OIL SHOW: b-l-gn sling cut, fast difse, tr-mod yel min flor, solid gn resdl stn, no od	85% CHK: lt-med gy, tr wh, sb blkyl-sb ply, frm-occ brit, rthy tex, mtx;calc: 15% MRLST: med gry-brn, sb ply-sb blkyl,brt-frn, mot, rthy-chky, mtx; calc: OIL SHOW: b-l-gn sling cut, fast difse, tr-mod yel min flor, solid gn resdl stn, no od	TVD (ft)	80% CHK: lt-med gy, tr wh, sb blkyl-sb ply, frm-occ brit, rthy tex, mtx MRLST: med gry-brn, sb ply-sb blkyl,brt-frn, mot, rthy-chky, mtx; calc: mod difse, tr yel min flor, b-l-wh mky cut, mod gn-bl stn, n



MD: 12,713'  
TVD: 7,138.63'  
Inclination: 90.2°  
Azimuth: 179.5°  
VS: 5,063.87'

PROJECTION TO BIT:  
MD: 12,771'  
TVD: 7,138.4'  
Inclination: 90.2°  
Azimuth: 179.5°

Wirkner-Vance 34N-1HZ Wellbore TD @ 12771'  
MD @ 14:51 HRS MST on 12/4/13

Thank you for using Columbine Logging, Inc.

calc: 20%  
OIL SHOW:  
85% CHK: lt-med gy, tr wh, sb blk-y-sb ply, frm-occ brit, rthy tex, mt-x:calc: 15% MRLST:  
med gry-brn, sb ply-sb blk-y,brit-frm, mot, rthy-CHK, mt-x; calc: OIL SHOW: mod difse, tr  
yel min flor, bl-wh stmg, bl-wh mky cut, mod gn-bl stn, no od

