



Scale: 5" / 100'
Measured Depth Log

Well Name State Seventy Holes K-O-3HNB

Location NWNE Sec. 3 T4N R62W

State CO

County Weld

Country USA

Rig Number 128

API Number 05-123-37946

Region DJ Basin

Field Wattenberg

Spud Date 10/6/2013

Drilling Completed 10/15/2013

Surface Coordinates 460 FNL x 2404 FEL (Lat: 40.34772, 104.31140)

Bottom Hole Coordinates 470 FSL x 2636 FEL (Lat:40.33546, 104.31158)

Ground Elevation 4551'

K.B. Elevation 4566'

Logged Interval 5900' To 10836'

Total Depth 10836'

Formation Niobrara "B" Chalk

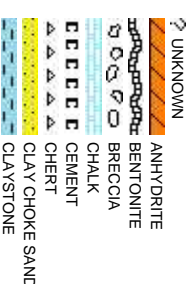
Type of Drilling Fluid H2O, LSND

Company Bonanza Creek

Name Paul McKay

Company Bonanza Creek

Address 410 17th Street
Denver, CO 80202



Operator

Energy Inc.

Geologist

Energy Inc.

, Suite 1500
2022

Rock Types

CONGLOMERATE	MARLSTONE	SHALY SANDSTONE
DOLOMITE	METAMORPHIC	SHALY SILTSTONE
DOLOMITIC LIMESTONE	NO SAMPLE	SILTY SHALE
GRANITE	SALT	SILTSTONE
GYPSUM	SANDSTONE	TUFF
IGNEOUS	SALT-PEPPER SAND	WELDED TUFF
SIDERITE or LIMONITE	SHALE	
LIMESTONE	SHALE COLORED	
	SHALE GRAY	

Accessories

Fossils	GASTROPOD	ARGILLITE GRAIN	HEAVY MINERAL
INOCERAMUS	B BENTONITE	K KAOLIN	ANHYDRITE STRINGER
ALGAE	O OOLITE	BITUMINOUS SUBSTANCE	BENTONITE STRINGER
AMPHIPORA	O OSTRACOD	BRECCIA FRAGMENTS	COAL STRINGER
BELEMNITE	P PELECYPOD	C CALCAREOUS	DOLOMITE STRINGER
BIOCLASTIC	P PELLET	CARBONACEOUS FLAKES	GYPSUM STRINGER
BRACHIOPOD	P PISOLITE	C CHERT	LIMESTONE STRINGER
BRYOZOA	P PLANT REMAINS	C CHERT	MARLSTONE (CALC) STRG
CEPHALOPOD	P PLANT SPORES	C COAL - THIN BEDS	MARLSTONE (DOL) STRG
CORAL	S SCAPHOPOD	D DOLOMITIC	SANDSTONE STRINGER
CRINOID	S STROMATOPOROID	F FELDSPAR	SHALE STRINGER
ECHINOID	F FERRUGINOUS PELLET	F FERRUGINOUS	S SILTY
FISH	Minerals	T TUFFACEOUS	
FORAMINIFERA	A ANHYDRITIC	G GLAUCONITE	
F FOSSIL	A ARGILLACEOUS	G GYPSIFEROUS	Stringer

Other Symbols

Oil Show	P PINPOINT	WIRELINE TESTED - LEFT	E EARTHY
	V VUGGY	WIRELINE TESTED - RT	FX FINELY XLN
		F FAULT	
		FORMATION TOP	GS GRAINSTONE
D DEAD	E EVEN	DRILL STEM TEST	L LITHOGRAPHIC
Q QUESTIONABLE	B BIT	OIL SHOW	MX MICROXLN
S SPOTTED STAINING	C CONNECTION (UP)	MN DEPTH UP	MS MUDSTONE
		MN DEPTH (DOWN)	A ANGULAR
Porosity	C CONNECTION (DOWN)	N NORMAL FAULT	R ROUNDED
	C CONNECTION GAS (LEFT)	O OVERTURNED STRATA	B SUBANG
E EARTHY	T TRIP GAS	R REVERSE FAULT	P SUBUND
F FENESTRAL	T TRIP GAS (LEFT)	C CASING	
		SIDE WALL CORE (LEFT)	Textures
X INTERCRYSTALLINE	D DOWN TIME GAS	SIDE WALL CORE (RIGHT)	P POOR
M MOLDIC	C CORE - LOST	S SLIDE	W WELL
O ORGANIC	C CORE - RECOVERED	S SURVEY	CX CRYPTOXLN
			Sorting
			M MODERATE

ROP
ROF
GAMMA

Bit #: 5
Type: HE04JMRSV
Size: 8.75
Depth In: 5,684 '
Jets: 3/20
S/N: 1376486

Total Gas & Chromatograph

GAS
C1
C2
C3
C4

Depth Labels

% Lith

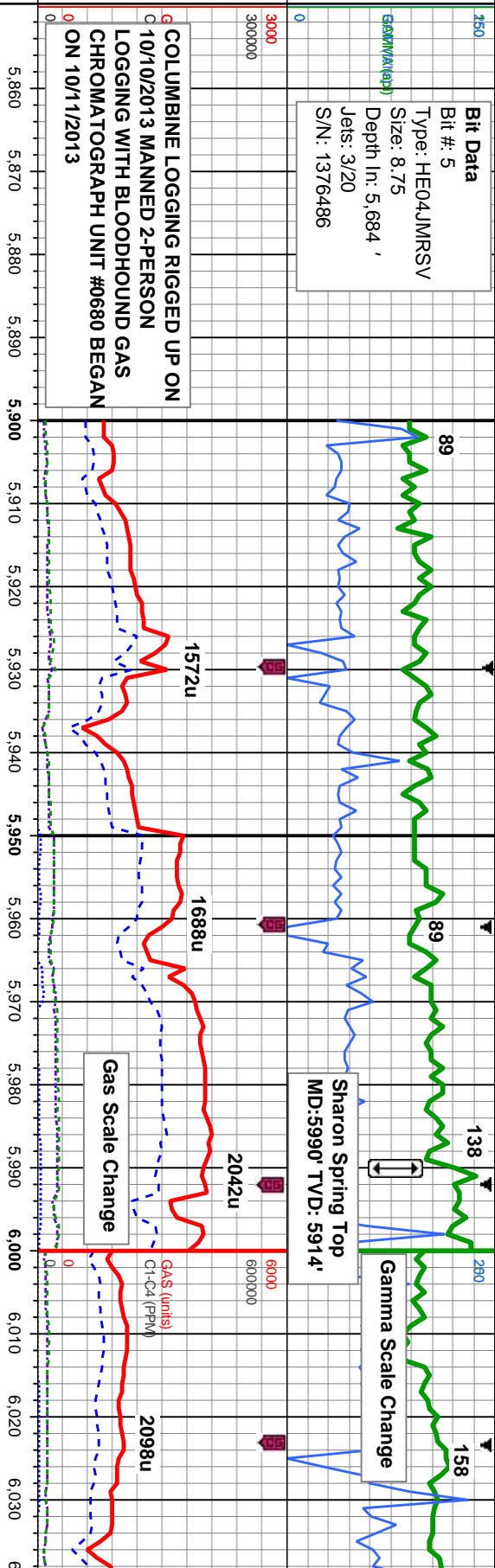
Well Bore

TVD

Oil Show

EGMFTST

Images



MD: 5,910 '
TVD: 5,847.48 '
Inclination: 30.2 °
Azimuth: 176 °
VS: -351.1 '

MD: 5,942 '
TVD: 5,874.76 '
Inclination: 32.8 °
Azimuth: 174.1 °
VS: -334.46 '

MD: 5,973 '
TVD: 5,900.32 '
Inclination: 36.1 °
Azimuth: 174.9 °
VS: -317.03 '

MD: 6,004 '
TVD: 5,924.78 '
Inclination: 39.7 °
Azimuth: 177.8 °
VS: -298.05 '

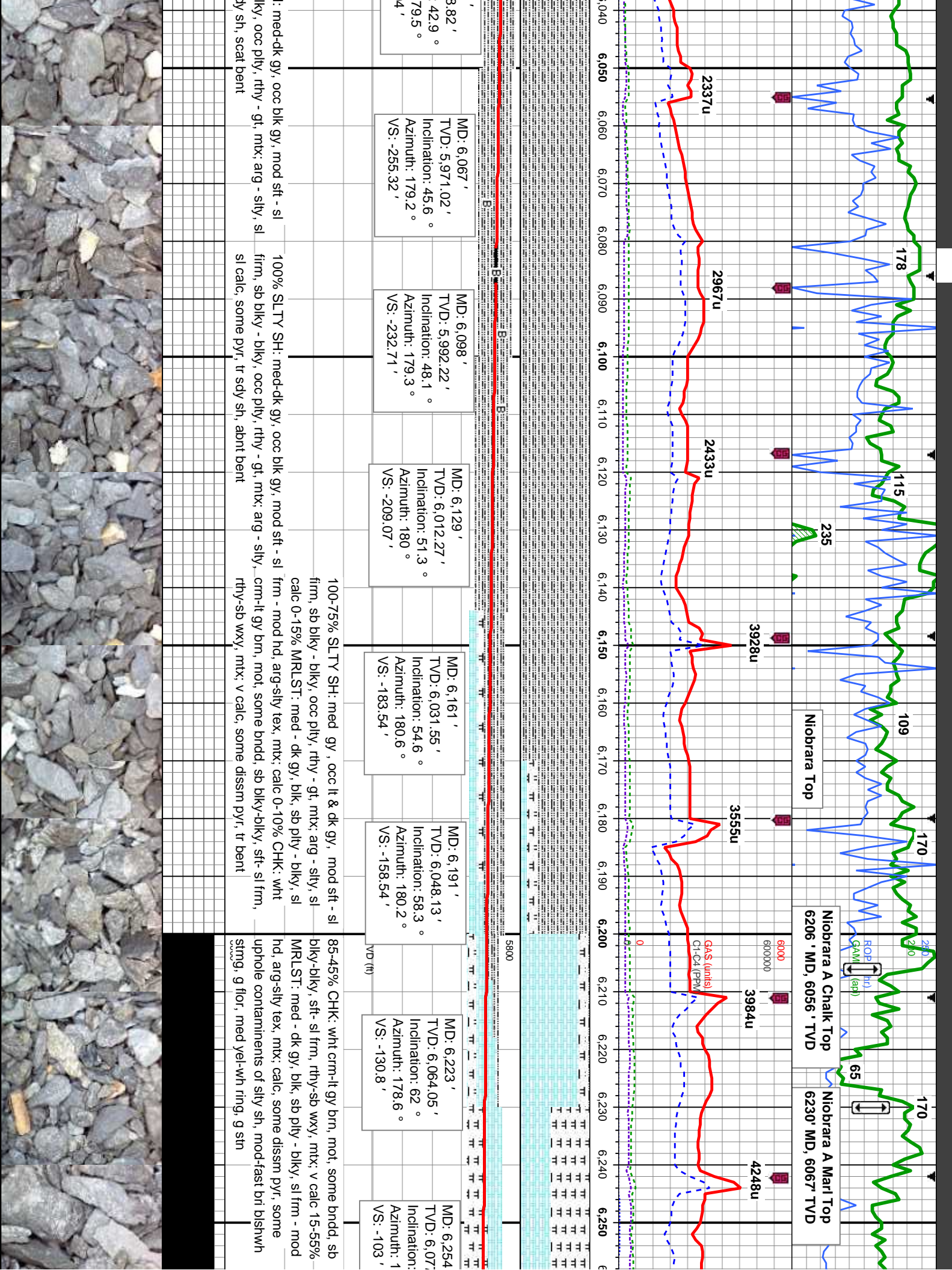
MD: 6,036 '
TVD: 5,946.78 '
Inclination: 41.1 °
Azimuth: 178.1 °
VS: -276.9 '

95% SLTY SH: med-dk gy, occ very dk gy, mod sft - sl firm, sb blkly - blkly, occ plty, rthy - gt, mx; arg - slty, sl calc, tr pyr, occ sdy sh 5% SHY SS: of wh - dk gy, occ s&p, vt-f gr, sb ang - sb rd, mod srt, mod hd - hd, sb blkly - blkly, mics, tr pyr, sl calc, tr glauc incl, tr SS

100% SLTY SH: med-dk gy, occ blk gy, mod sft - sl firm, sb blkly - blkly, occ plty, rthy - gt, mt; arg - slty, sl calc, tr pyr, occ sdy sh

100% SLTY SH: med-dk gy, occ blk gy, mod sft - sl firm, sb blkly - blkly, occ plty, rthy - gt, mt; arg - slty, sl calc, tr pyr, tr ss





ROP (ft)
GAM (api)

Niobrara A Chalk Top
6206' MD, 6056' TVD

Niobrara A Marl Top
6230' MD, 6067' TVD

6000
600000

GAS (units)
Cl-C4 (PPM)

2337u

2967u

2433u

3928u

3555u

3984u

4248u

178

115

235

109

170

65

170

MD: 6.067'
TVD: 5.971.02'
Inclination: 45.6°
Azimuth: 179.2°
VS: -255.32'

MD: 6.098'
TVD: 5.992.22'
Inclination: 48.1°
Azimuth: 179.3°
VS: -232.71'

MD: 6.129'
TVD: 6.012.27'
Inclination: 51.3°
Azimuth: 180°
VS: -209.07'

MD: 6.161'
TVD: 6.031.55'
Inclination: 54.6°
Azimuth: 180.6°
VS: -183.54'

MD: 6.191'
TVD: 6.048.13'
Inclination: 58.3°
Azimuth: 180.2°
VS: -158.54'

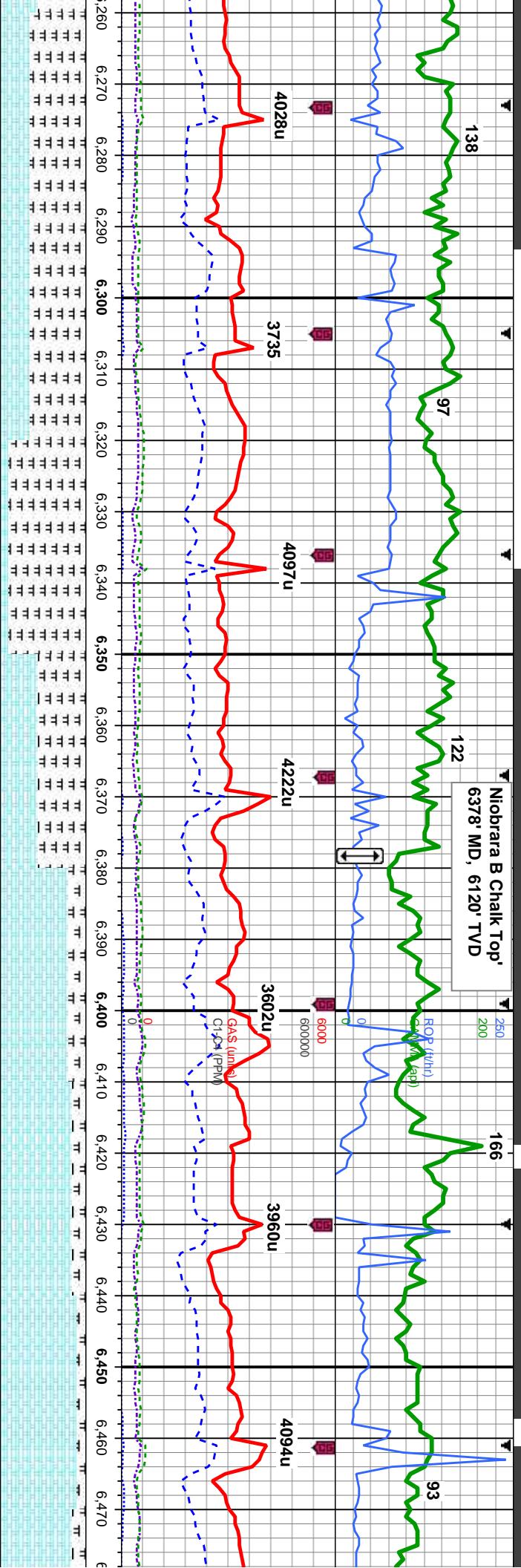
MD: 6.223'
TVD: 6.064.05'
Inclination: 62°
Azimuth: 178.6°
VS: -130.8'

MD: 6.254'
TVD: 6.071.02'
Inclination: 62°
Azimuth: 178.6°
VS: -103'

med-dk gy, occ blk gy, mod sft - sl
dk gy, occ ply, rthy - gt, mtx, arg - silty, sl
100% SLTY SH: med-dk gy, occ blk gy, mod sft - sl
firm, sb blk - blk, occ ply, rthy - gt, mtx, arg - silty, sl
calc, some pyr, tr sdy sh, abnt bent

100-75% SLTY SH: med gy, occ lt & dk gy, mod sft - sl
firm, sb blk - blk, occ ply, rthy - gt, mtx, arg - silty, sl
calc 0-15% MRLST: med - dk gy, blk, sb ply - blk, sl
frm - mod hd, arg-sily tex, mtx; calc 0-10% CHK: wht
crm-lt gy brn, mot, some bndd, sb blk-biky, sft-si frm,
rthy-sb wxy, mtx; v calc, some diss pyr, tr bent

85-45% CHK: wht crm-lt gy brn, mot, some bndd, sb
blk-biky, sft-si frm, rthy-sb wxy, mtx; v calc 15-55%
MRLST: med - dk gy, blk, sb ply - blk, sl frm - mod
hd, arg-sily tex, mtx; calc, some diss pyr, some
uphole contaminants of silty sh, mod-fast brt blshwh
stmg, g flor, med yel-wh ring, g stn

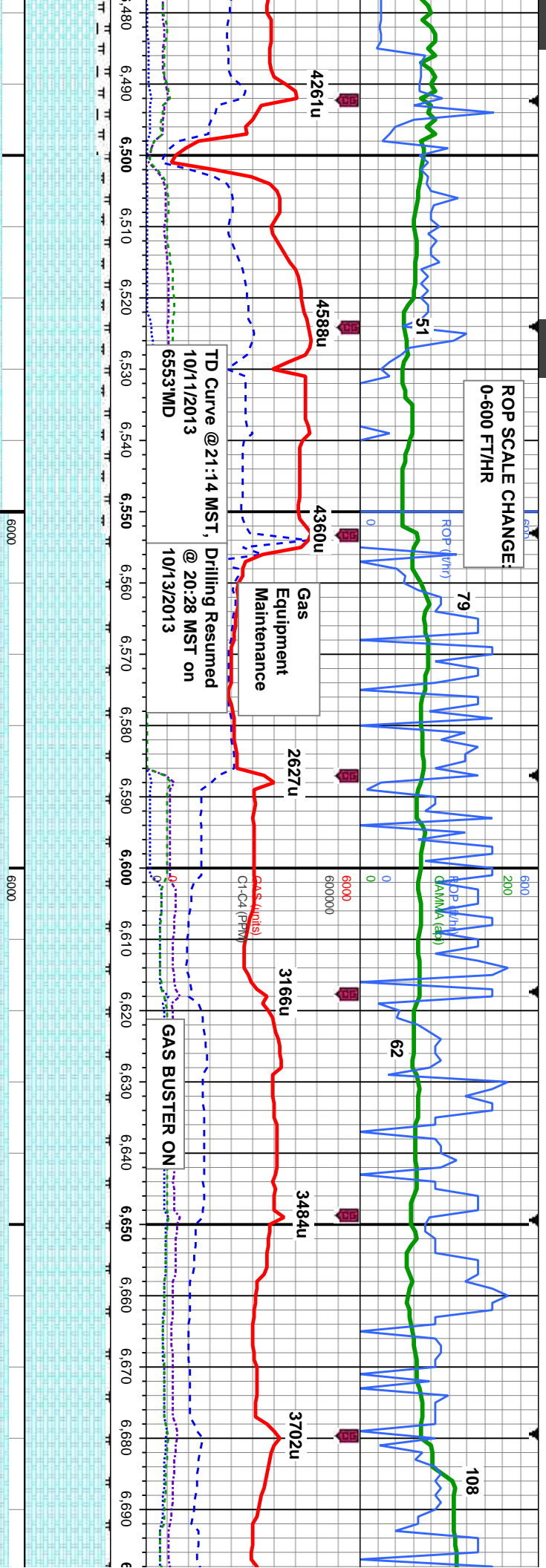


MD: 6,285 ' TVD: 6,089.62 ' Inclination: 68.9 ° Azimuth: 175.8 ° VS: -74.48 '	MD: 6,317 ' TVD: 6,101.01 ' Inclination: 69.4 ° Azimuth: 175.8 ° VS: -44.68 '	MD: 6,348 ' TVD: 6,111.46 ' Inclination: 71.2 ° Azimuth: 176 ° VS: -15.6 '	MD: 6,379 ' TVD: 6,120.63 ' Inclination: 74.4 ° Azimuth: 175.3 ° VS: 13.9 '	MD: 6,411 ' TVD: 6,128.07 ' Inclination: 78.7 ° Azimuth: 175.1 ° VS: 44.88 '	MD: 6,442 ' TVD: 6,132.97 ' Inclination: 83.1 ° Azimuth: 175.5 ° VS: 75.35 '	MD: 6,473 ' TVD: 6,135. Inclination: 8 Azimuth: 17 VS: 106.09 '
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65% MRLST: med - dk gy, blk, sb pily - blk, sl frm - mod hd, arg-sily tex, mtx; calc 35% CHK: wht crm-it gy brn, mot, some bnnd, sb blk-biky, sft- sl frm, rthy-sb wxy, mtx; v calc, some dissm pyr, tr bent, mod-slw bishwh stmg, no flor, med yel ring, g stn	90-55% MRLST: med - dk gy, blk, sb pily - blk, sl frm - mod hd, arg-sily tex, mtx; calc 10-45% CHK: wht crm-it gy brn, mot, some bnnd, sb blk-biky, sft- sl frm, rthy-sb wxy, mtx; v calc, tr bent, mod-fast bishwh stmg, tr flor, med gn-wh ring, mod sin, g od	80-85% CHK: wht crm-it gy brn, mot, some bnnd, sb blk-biky, sft- sl frm, rthy-sb wxy, mtx; v calc 20-15% MRLST: med - dk gy, blk, sb pily - blk, sl frm - mod hd, arg-sily tex, mtx; calc, uphole contaminants of shy ss, mod-slw bishwh stmg, tr flor, med-thk yel-wh pitch ring, g stn, g od	90-85% CHK: wht crm-it gy brn, oc some bnnd, sb blk-biky, sft- sl frm calc 10-15% MRLST: med - dk gy, brn - mod hd, arg-sily tex, mtx; calc imbd pyr, fast bishwh stmg, tr flor, ring, g stn, g od
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ROP SCALE CHANGE:
0-600 FT/HR



TVD SCALE CHANGE

MD: 6,503 '
TVD: 6,137.09 '
Inclination: 88.3 °
Azimuth: 175.8 °
VS: 135.95 '

MD: 6,565 '
TVD: 6,137.85 '
Inclination: 90.3 °
Azimuth: 176.7 °
VS: 197.76 '

MD: 6,596 '
TVD: 6,137.66 '
Inclination: 90.4 °
Azimuth: 175.6 °
VS: 228.67 '

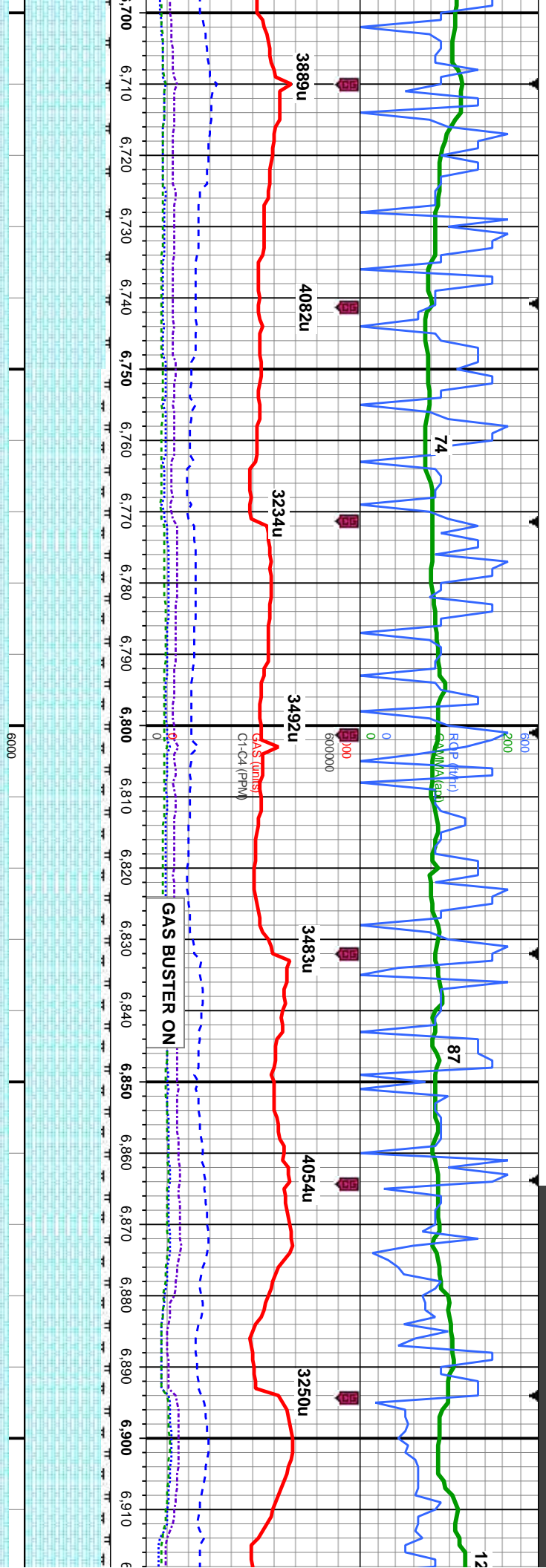
MD: 6,627 '
TVD: 6,137.58 '
Inclination: 89.9 °
Azimuth: 175.8 °
VS: 259.55 '

MD: 6,657 '
TVD: 6,137.63 '
Inclination: 89.9 °
Azimuth: 175.5 °
VS: 289.44 '

MD: 6,688 '
TVD: 6,137.93 '
Inclination: 89 °
Azimuth: 174.9 °
VS: 320.29 '

90% CHK: wht crm-it gy brn, mot, some bndd, sb blkly-blky, sft-si frm, rthy-sb wxy, mtx; v calc 10% MRLST: med - dk gy, blk, sb ply - blkly, si frm - mod hd, arg-sily tex, mtx; calc, inoc fos, rexl cal, imbd pyr, fast blshwh stmng, tr flor, med-thk wh sp ring, g stn, fr od	95% CHK: wht crm-it gy brn, occ med gy, mot, some bndd, sb blkly-blky, sft-si frm, rthy-sb wxy, mtx; v calc 5% MRLST: med - dk gy, blk, sb ply - blkly, si frm - mod hd, arg-sily tex, mtx; calc, inoc fos, rexl cal, imbd pyr, mod-fast blshwh stmng, no flor, med fnt gn-yel sp ring, mod stn, g od	95% CHK: wht crm-it gy brn, med gy ip, mot, some bndd, sb blkly-blky, sft-si frm, rthy-sb wxy, mtx; v calc 5% MRLST: med - dk gy, blk, sb ply - blkly, si frm - mod hd, arg-sily tex, mtx; calc, inoc fos, rexl cal, imbd pyr, mod-fast blshwh stmng, no flor, med fnt gn-wh sp ring, mod stn, g od
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MD: 6,719 '
TVD: 6,138.39 '
Inclination: 89.3 °
Azimuth: 174.9 °
VS: 351.14 '

MD: 6,750 '
TVD: 6,138.71 '
Inclination: 89.5 °
Azimuth: 174.9 °
VS: 381.98 '

MD: 6,780 '
TVD: 6,138.84 '
Inclination: 90 °
Azimuth: 174.1 °
VS: 411.81 '

MD: 6,811 '
TVD: 6,138.76 '
Inclination: 90.3 °
Azimuth: 173.9 °
VS: 442.6 '

MD: 6,841 '
TVD: 6,138.55 '
Inclination: 90.5 °
Azimuth: 172.8 °
VS: 472.35 '

MD: 6,872 '
TVD: 6,138.36 '
Inclination: 90.2 °
Azimuth: 172.5 °
VS: 503.05 '

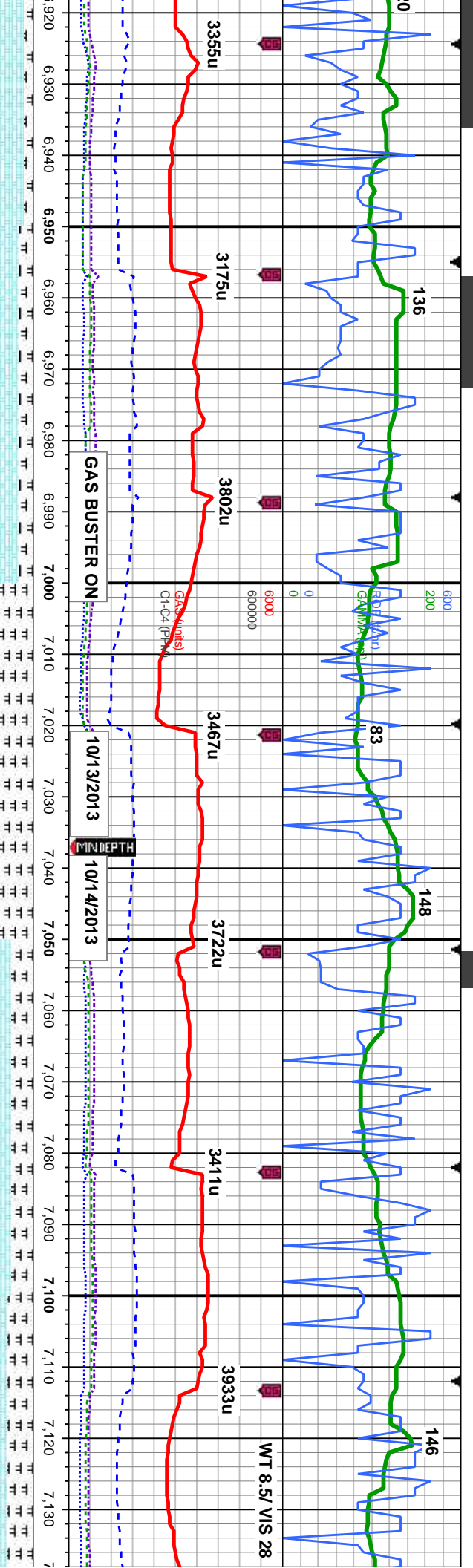
MD: 6,903 '
TVD: 6,138.66 '
Inclination: 88.7 °
Azimuth: 173.7 °
VS: 533.78 '

95-90% CHK: wht crm-lt gy brn, occ med gy, mot, some brndd, sb blk-y-blky, sft- sl frm, rthy-sb wxy, mt; v calc 5-10% MRLST: med - dk gy, blk, sb ply - blk, sl frm - mod hd, arg-sly tex, mt; calc, inoc fos, rex cal, imbd pyr, mod-fast blshw stmg, no flor, med frt gn-yel sp ring, g stn, g od

90% CHK: wht crm-lt gy brn, occ med gy, mot, some brndd, sb blk-y-blky, sft- sl frm, rthy-sb wxy, mt; v calc 10% MRLST: med - dk gy, blk, sb ply - blk, sl frm - mod hd, arg-sly tex, mt; calc, inoc fos, rex cal, imbd pyr, slw bl stmg, no flor, thn gn ring, fr stn, fr od

90-85% CHK: frm, rthy-sb wxy, mt; v calc 10% MRLST: med - dk gy, blk, sb ply - blk, sl frm - mod hd, arg-sly tex, mt; calc, inoc fos, rex cal, imbd pyr, slw bl stmg, no flor, thn gn ring, fr stn, fr od





MD: 6,935 '
TVD: 6,139.55 '
Inclination: 88.1 °
Azimuth: 175.6 °
VS: 565.59 '

MD: 6,966 '
TVD: 6,140.55 '
Inclination: 88.2 °
Azimuth: 175.1 °
VS: 596.44 '

MD: 6,997 '
TVD: 6,141.61 '
Inclination: 87.9 °
Azimuth: 177.6 °
VS: 627.34 '

MD: 7,028 '
TVD: 6,142.72 '
Inclination: 88 °
Azimuth: 177.4 °
VS: 658.27 '

MD: 7,058 '
TVD: 6,143.63 '
Inclination: 88.5 °
Azimuth: 177.6 °
VS: 688.21 '

MD: 7,089 '
TVD: 6,144.44 '
Inclination: 88.5 °
Azimuth: 177.9 °
VS: 719.16 '

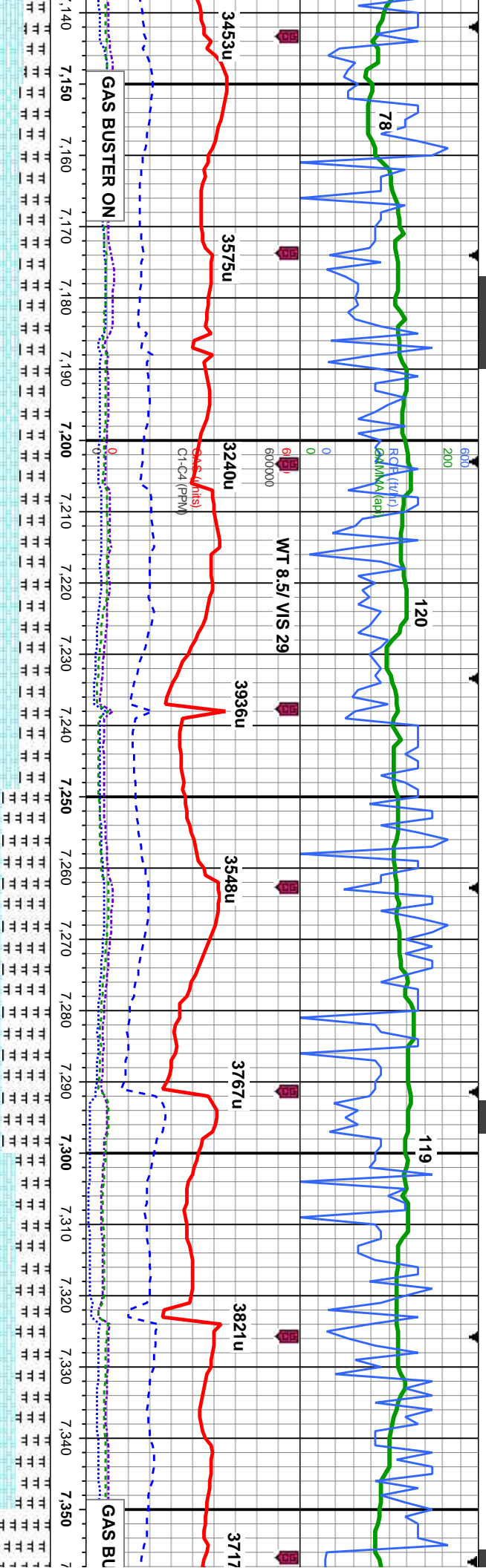
MD: 7,120 '
TVD: 6,145.28 '
Inclination: 88.4 °
Azimuth: 178.5 °
VS: 750.12 '

med-lt gy brn, med gy, occ wh-cm, mot, some brnd, sb blk-y-biky, sft-sl
xy, mtx; v calc 10-15% MRLST: med - dk gy, blk, sb ply - biky, sl frm - mod
x, mtx; calc, inoc fos, rexl cal, imbd pyr, mod-slw bishwh sting, tr flor, thn
ng, mod stn, fr od

60-75% CHK: med-lt gy brn, med gy, mot, some brnd, sb blk-y-biky, sft-sl frm, rthy-sb
wxy, mtx; v calc 40-25% MRLST: med - dk gy, blk, sb ply - biky, sl frm - mod hd, arg-slt
tex, mtx; calc, inoc fos, rexl cal, imbd pyr, mod-slw bishwh sting, scat flor, med thk frt
gn-yel sp ring, fr stn, fr od

70-65% CHK: med-lt gy brn, med
wxy, mtx; v calc 30-35% MRLST:
tex, mtx; calc, inoc fos, rexl cal, ir
uneven, bri wht yel amber ring, m





MD: 7,151 '
TVD: 6,145.96 '
Inclination: 89.1 °
Azimuth: 177.8 °
VS: 781.09 '

MD: 7,181 '
TVD: 6,146.22 '
Inclination: 89.9 °
Azimuth: 177.8 °
VS: 811.05 '

MD: 7,212 '
TVD: 6,146.06 '
Inclination: 90.7 °
Azimuth: 177.8 °
VS: 842.01 '

MD: 7,242 '
TVD: 6,145.8 '
Inclination: 90.3 °
Azimuth: 176.5 °
VS: 871.95 '

MD: 7,273 '
TVD: 6,145.72 '
Inclination: 90 °
Azimuth: 175.5 °
VS: 902.85 '

MD: 7,305 '
TVD: 6,145.44 '
Inclination: 91 °
Azimuth: 176.3 °
VS: 934.74 '

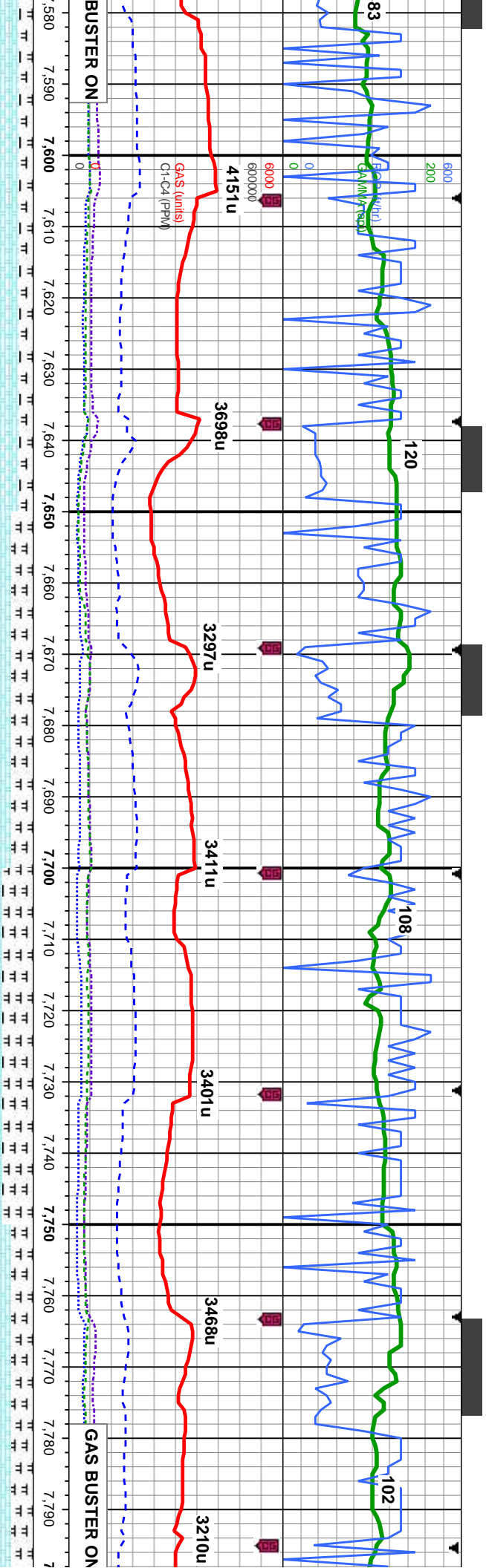
MD: 7,336 '
TVD: 6,144.76 '
Inclination: 91.5 °
Azimuth: 176.2 °
VS: 965.64 '

gy, mot, some bndd, sb blkly-blky, sft- sl frm, rthy-sb
med - dk gy, blk, sb ply - blkly, sl frm - mod hd, arg-sily
bndd pyr, tr scat bent, fast string cut, bri wht bl flor, thk
d yel brn stain

65-45% CHK: med-lt gy brn, med gy, mot, some bndd, sb blkly-blky, sft- sl frm, rthy-sb
wxy, mtx: v calc 35-55% MRLST: med - dk gy, blk, sb ply - blkly, sl frm - mod hd, arg-sily
tex, mtx: calc, inoc fos, rex cal, imbd pyr, scat bent, fast string cut, bri wht bl flor, thk
even, bri wht yel amb ring, thk yel brn stain

60-35% CHK: med-lt gy brn, med gy, mot, some bndd
wxy, mtx: v calc 40-65% MRLST: med - dk gy, blk, sl
tex, mtx: calc, inoc fos, rex cal, imbd pyr, tr scat bent
even, bri wht yel amb ring, mod yel brn stain



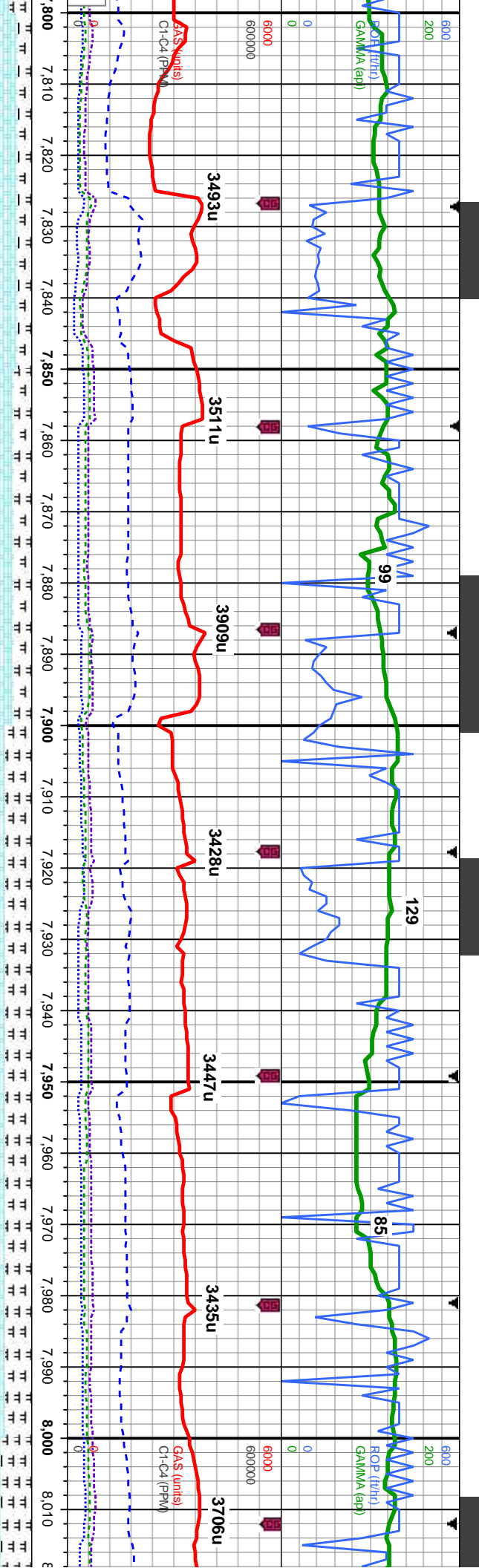


MD: 7,586 ' VD: 6,138.56 ' Inclination: 90 ° Azimuth: 175.5 ° VS: 1,214.78 ' TVD (ft)	MD: 7,618 ' TVD: 6,138.51 ' Inclination: 90.2 ° Azimuth: 175.1 ° VS: 1,246.65 ' TVD (ft)	MD: 7,649 ' TVD: 6,138.51 ' Inclination: 89.8 ° Azimuth: 175.6 ° VS: 1,277.51 ' TVD (ft)	MD: 7,680 ' TVD: 6,138.75 ' Inclination: 89.3 ° Azimuth: 176.7 ° VS: 1,308.42 ' TVD (ft)	MD: 7,712 ' TVD: 6,138.95 ' Inclination: 90 ° Azimuth: 177.8 ° VS: 1,340.36 ' TVD (ft)	MD: 7,743 ' TVD: 6,138.7 ' Inclination: 90.9 ° Azimuth: 177.9 ° VS: 1,371.32 ' TVD (ft)	MD: 7,774 ' TVD: 6,138.32 ' Inclination: 90.5 ° Azimuth: 177.9 ° VS: 1,402.28 ' TVD (ft)
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85-75% CHK: med-lt gy brn, med-dk gy, wh-crm lp, mot, some bnnd, sb blk-y-bkly, sft-si frm, rthy-sb wxy, abnt imbd calc xls, mtb; v calc 15-25% MRLST; med - dk gy, blk, sb ply - bkly, si frm - mod hd, arg-sily tex, mtb; calc, inoc fos, rexl cal, imbd pyr, imbd calc xls, scat-tr bent, mod sting cut, bri wht bl flor, thk even, bri wht yel amber ring, tr yel brn stain

65-75% CHK: med-lt gy brn, med-dk gy, mot, some bnnd, sb blk-y-bkly, sft-si frm, rthy-sb wxy, mtb; v calc 35-25% MRLST; med - dk gy, blk, sb ply - bkly, si frm - mod hd, arg-sily tex, mtb; calc, inoc fos, rexl cal, imbd calc xls, some bent, slow sting cut, bri wht bl flor, thk even, mod wht yel amb ring, tr yel brn stain





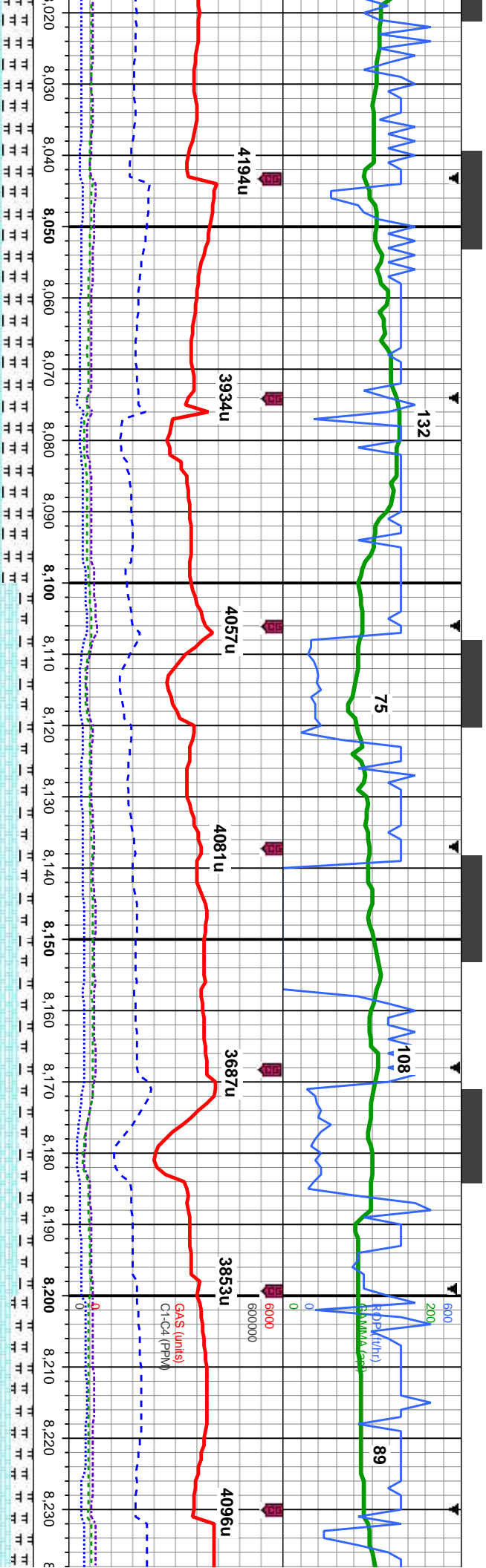
MD: 7,805 ' VD: 6,138 ' Inclination: 90.7 ° Azimuth: 177.9 ° VS: 1,433.25 '	MD: 7,834 ' TVD: 6,137.75 ' Inclination: 90.3 ° Azimuth: 177.8 ° VS: 1,462.21 '	MD: 7,866 ' TVD: 6,137.38 ' Inclination: 91 ° Azimuth: 177.8 ° VS: 1,494.17 '	MD: 7,897 ' TVD: 6,136.98 ' Inclination: 90.5 ° Azimuth: 177.9 ° VS: 1,525.13 '	MD: 7,928 ' TVD: 6,137.09 ' Inclination: 89.1 ° Azimuth: 178.3 ° VS: 1,556.1 '	MD: 7,960 ' TVD: 6,137.62 ' Inclination: 89 ° Azimuth: 178.3 ° VS: 1,588.07 '	MD: 7,991 ' TVD: 6,138.08 ' Inclination: 89.3 ° Azimuth: 178.3 ° VS: 1,619.04 '
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85-80% CHK: med-lt gy brn, med-dk gy, mot, some bndd, sb blk-y-biky, sft- sl frm, rthy-sb wxy, mtx; v calc 15-20% MRLST: med - dk gy, blk, sb ply - biky, sl frm - mod hd, arg-sily tex, mtx; calc, inoc foss, tr rexl cal, imbd calc xls, scatt - tr bent, mod - fast string cut, bri wnt bl flor, mod thk uneven, mod yel amb ring, mod yel brn stain

70% CHK: med-lt gy brn, med-dk gy, mot, some bndd, sb blk-y-biky, sft- sl frm, rthy-sb wxy, mtx; v calc 30% MRLST: med - dk gy, blk, sb ply - biky, sl frm - mod hd, arg-sily tex, mtx; calc, inoc foss, tr rexl cal, imbd calc xls, scatt - tr bent, fr od, flor, mod - fast string cut, bri wnt bl flor, mod thn even, mod wnt yel amb ring, sl tr yel brn stain

65% CHK: med mtx; v calc 35% calc, inoc foss, t wnt yel amb ring





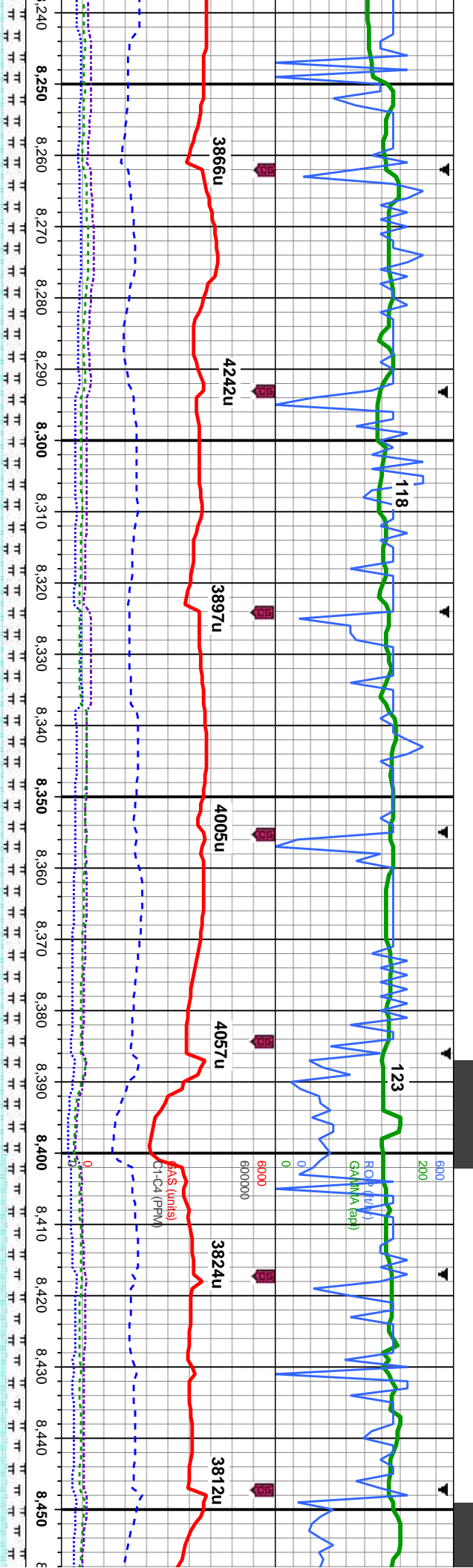
MD: 8,022' TVD: 6,138.21' Inclination: 90.2° Azimuth: 178.6° VS: 1,650.01'	MD: 8,053' TVD: 6,137.81' Inclination: 91.3° Azimuth: 178.1° VS: 1,680.99'	MD: 8,085' TVD: 6,136.83' Inclination: 92.2° Azimuth: 178.3° VS: 1,712.94'	MD: 8,116' TVD: 6,135.75' Inclination: 91.8° Azimuth: 178.1° VS: 1,743.9'	MD: 8,147' TVD: 6,135.26' Inclination: 90° Azimuth: 178.1° VS: 1,774.86'	MD: 8,178' TVD: 6,135.56' Inclination: 88.9° Azimuth: 177.9° VS: 1,805.83'	MD: 8,209' TVD: 6,136.21' Inclination: 88.7° Azimuth: 177.6° VS: 1,836.78'
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gy brn, med-dk gy, mot, some bnnd, sb blk-y-biky, sft- sl frm, rthy-sb wxy, MRLST: med - dk gy, blk, sb ply - biky, sl frm - mod hd, arg-sily tex, mt; r text cal, imbd calc xls, sl flor, mod sting cut, bri wnt bl flor, thk even, bri j, tr yel brn stain

85% CHK: med-lt gy brn, med-dk gy, mot, some bnnd, sb blk-y-biky, sft- sl frm, rthy-sb wxy, mt; v calc 15% MRLST: med - dk gy, blk, sb ply - biky, sl frm - mod hd, arg-sily tex, mt; calc, inoc foss, scatt rex cal, imbd calc, fr od, flor, fst sting cut, bri wnt bl flor, thk even, bri wnt yel amb ring, mod yel brn stain

75% CHK: med gy brn, med-dk gy mt; v calc 25% MRLST: med - dk calc, inoc foss, scatt - abnt rex cal thn even, fnt wnt yel amb ring, sl tr

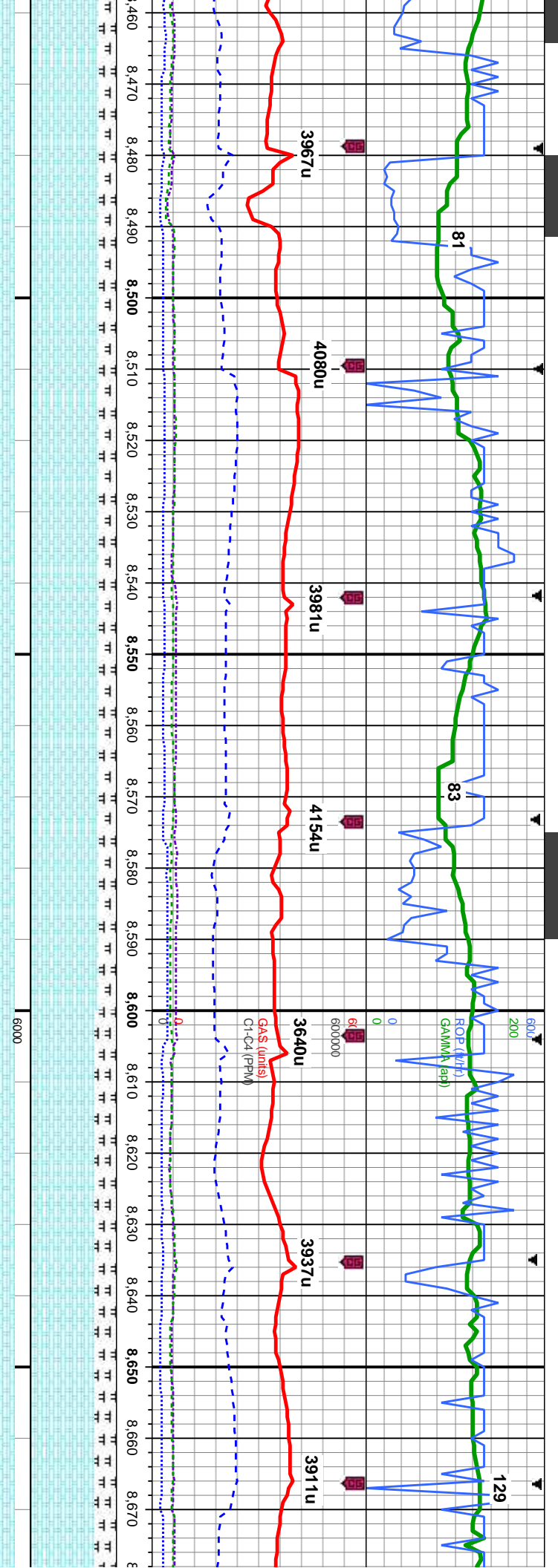




MD: 8,241' TVD: 6,136.9' Inclination: 88.8° Azimuth: 177.2° VS: 1,868.72'	MD: 8,271' TVD: 6,137.53' Inclination: 88.8° Azimuth: 176.7° VS: 1,898.65'	MD: 8,303' TVD: 6,137.87' Inclination: 90° Azimuth: 177.6° VS: 1,930.59'	MD: 8,334' TVD: 6,137.73' Inclination: 90.5° Azimuth: 178.8° VS: 1,961.56'	MD: 8,365' TVD: 6,137.54' Inclination: 90.2° Azimuth: 177.1° VS: 1,992.52'	MD: 8,396' TVD: 6,137.57' Inclination: 89.7° Azimuth: 175.6° VS: 2,022.44'	MD: 8,426' TVD: 6,137.79' Inclination: 89.5° Azimuth: 174.4° VS: 2,053.29'	MD: 8,450' TVD: 6,137.79' Inclination: 89.5° Azimuth: 174.4° VS: 2,083.29'
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mot, some bnnd, sb blk-alky, sft- sl frm, rthy-sb wxy, gy, blk, sb ply - blk, sl frm - mod hd, arg-sily tex, mt; imbd calc, fr od, flor, mod sting cut, bri wnt bi flor, mod yel brn stain	75% CHK: med gy brn, med-dk gy, mot, some bnnd, sb blk-alky, sft- sl frm, rthy-sb wxy, mt; v calc 25% MRLST: med - dk gy, blk, sb ply - blk, sl frm - mod hd, arg-sily tex, mt; calc, inoc foss, scatt - abnt rexl cal, imbd calc, mod-fast bri blshwn string, tr flor, thn gn-yel pitch ring, mod stn, fr od	80% CHK: med gy brn, med-dk gy, mot, some bnnd, mt; v calc 20% MRLST: med - dk gy, blk, sb ply - blk, calc, inoc foss, scatt - abnt rexl cal, imbd calc, mod-fast pitch ring, fr stn, g od
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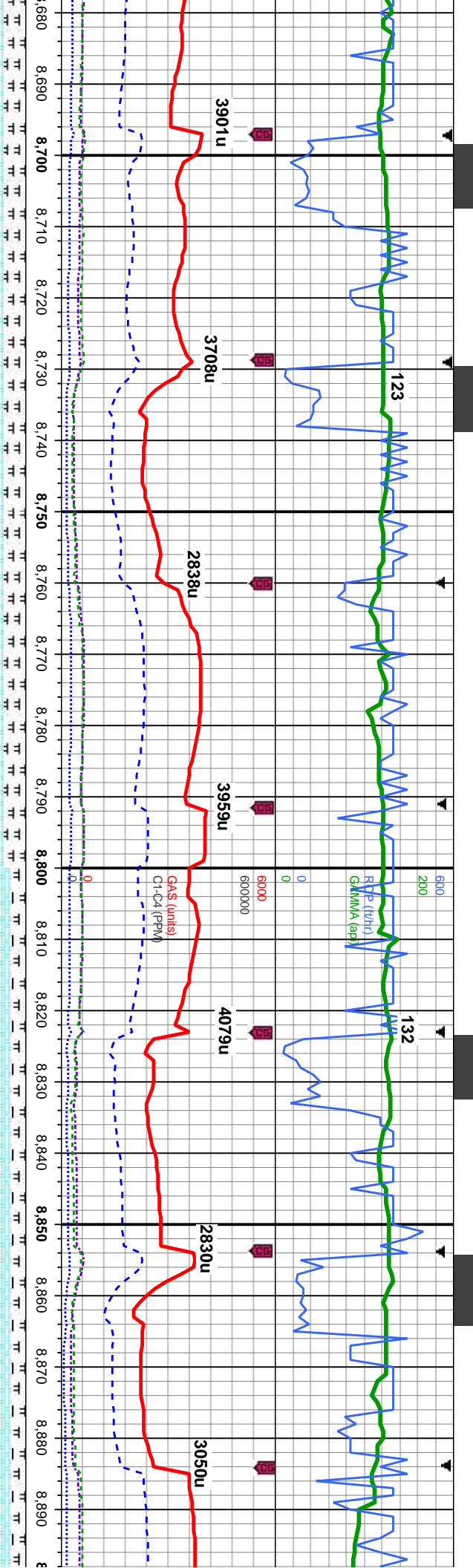




MD: 8,489 ' TVD: 6,139.18 ' Inclination: 88.2 ° Azimuth: 176.5 ° VS: 2,115.98 '	MD: 8,520 ' TVD: 6,140.26 ' Inclination: 87.8 ° Azimuth: 176.2 ° VS: 2,146.87 '	MD: 8,552 ' TVD: 6,141.46 ' Inclination: 87.9 ° Azimuth: 176.2 ° VS: 2,178.76 '	MD: 8,563 ' TVD: 6,142.52 ' Inclination: 88.2 ° Azimuth: 176.5 ° VS: 2,209.65 '	MD: 8,614 ' TVD: 6,143.3 ' Inclination: 88.9 ° Azimuth: 177 ° VS: 2,240.57 '	MD: 8,645 ' TVD: 6,143.98 ' Inclination: 88.6 ° Azimuth: 176.5 ° VS: 2,271.49 '	MD: 8,676 ' TVD: 6,144 ' Inclination: 88.6 ° Azimuth: 176.5 ° VS: 2,302.0 '
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80% CHK: med gy brn, med-dk gy, mot, some bnnd, sb blk-y-bkly, sft- sl frm, rthy-sb wxy, mx; v calc 20% MRLST: med - dk gy, blk, sb ply - bkly, sl frm - mod hd, arg-sily tex, mtx; calc, inoc foss, abnt rexl cal, imbd calc,scatt bent, mod-fast bri blshwh stmg, tr flor, thn frt yel-wh ring, tr stn, fr od	75% CHK: med gy brn, med-dk gy, mot, some bnnd, sb blk-y-bkly, sft- wxy, mx; v calc 25% MRLST: med - dk gy, blk, sb ply - bkly, sl frm - r tex, mtx; calc, tr inoc foss, tr sec cal, occ bent, mod-fast bri blshwh str z50
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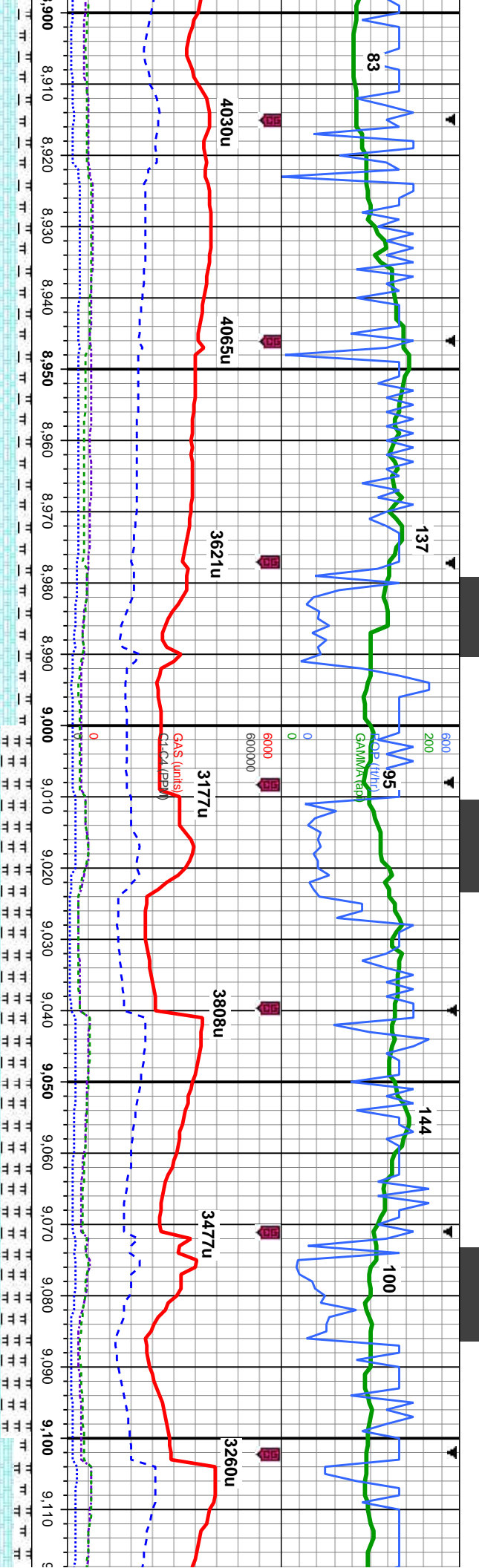


MD: 8,707 ' TVD: 6,145.2 ' Inclination: 89.9 ° Azimuth: 176.3 ° VS: 2,333.29 '	MD: 8,739 ' TVD: 6,144.95 ' Inclination: 91 ° Azimuth: 177.2 ° VS: 2,365.22 '	MD: 8,770 ' TVD: 6,144.49 ' Inclination: 90.7 ° Azimuth: 176.2 ° VS: 2,396.14 '	MD: 8,801 ' TVD: 6,144.32 ' Inclination: 89.9 ° Azimuth: 175.5 ° VS: 2,427.03 '	MD: 8,831 ' TVD: 6,144.22 ' Inclination: 90.5 ° Azimuth: 175.8 ° VS: 2,456.91 '	MD: 8,863 ' TVD: 6,143.66 ' Inclination: 91.5 ° Azimuth: 176.7 ° VS: 2,488.82 '	MD: 8,893 ' TVD: 6,142 ' Inclination: 91.5 ° Azimuth: 176.7 ° VS: 2,518.7 '
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75% CHK: med gy brn, med-dk gy, mot, some bndd, sb blk-y-blky, sft- sl frm, rthy-sb wxy, mxx; v calc 25% MRLST: med - dk gy, blk, sb ply - blk-y, sl frm - mod hd, arg-sily tex, mxx; calc, tr inoc foss, tr sec cal, occ bent, mod-fast brn blshwh stmg, tr flor, med-thk yel-wh ring, g str, fr od

85% CHK: med gy brn, med-dk gy, mot, some bndd, sb blk-y-blky, sft- sl frm, rthy-sb wxy, mxx; v calc 15% MRLST: med - dk gy, blk, sb ply - blk-y, sl frm - mod hd, arg-sily tex, mxx; calc, tr inoc foss, tr sec cal, tr bent, mod-fast gn-wh stmg, scat flor, med-thk yel omg ring, mod str, fr od





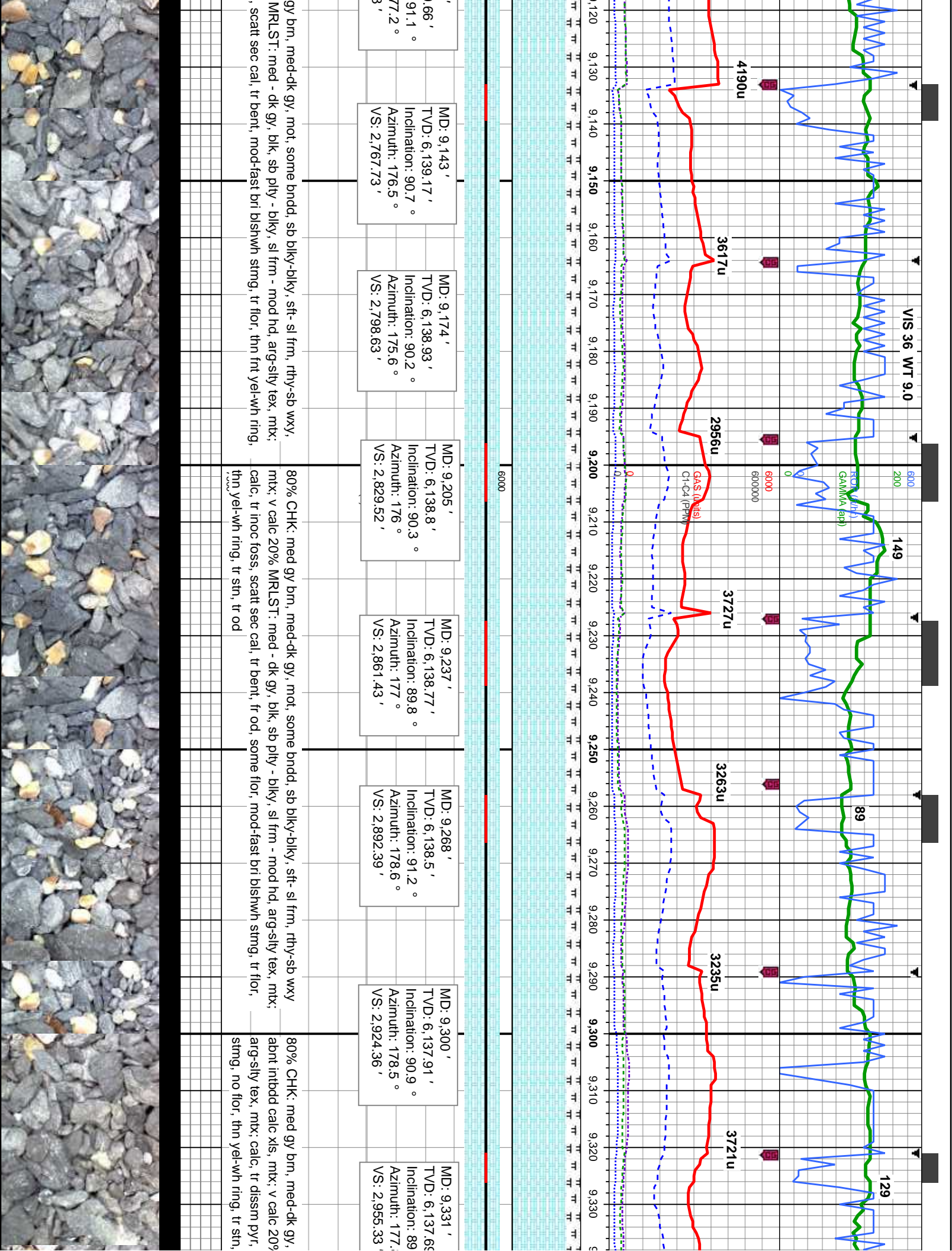
MD: 8,925 ' TVD: 6,141.79 ' Inclination: 92.2 ° Azimuth: 176.5 ° VS: 2,550.62 '	MD: 8,956 ' TVD: 6,140.49 ' Inclination: 92.6 ° Azimuth: 175.8 ° VS: 2,581.5 '	MD: 8,987 ' TVD: 6,139.38 ' Inclination: 91.5 ° Azimuth: 174.8 ° VS: 2,612.34 '	MD: 9,018 ' TVD: 6,139.16 ' Inclination: 89.3 ° Azimuth: 174.8 ° VS: 2,643.18 '	MD: 9,049 ' TVD: 6,139.57 ' Inclination: 89.2 ° Azimuth: 174.6 ° VS: 2,674.01 '	MD: 9,081 ' TVD: 6,139.88 ' Inclination: 89.7 ° Azimuth: 176.2 ° VS: 2,705.87 '	MD: 9,112 ' TVD: 6,139 ' Inclination: ' Azimuth: 1 ' VS: 2,736.8 '
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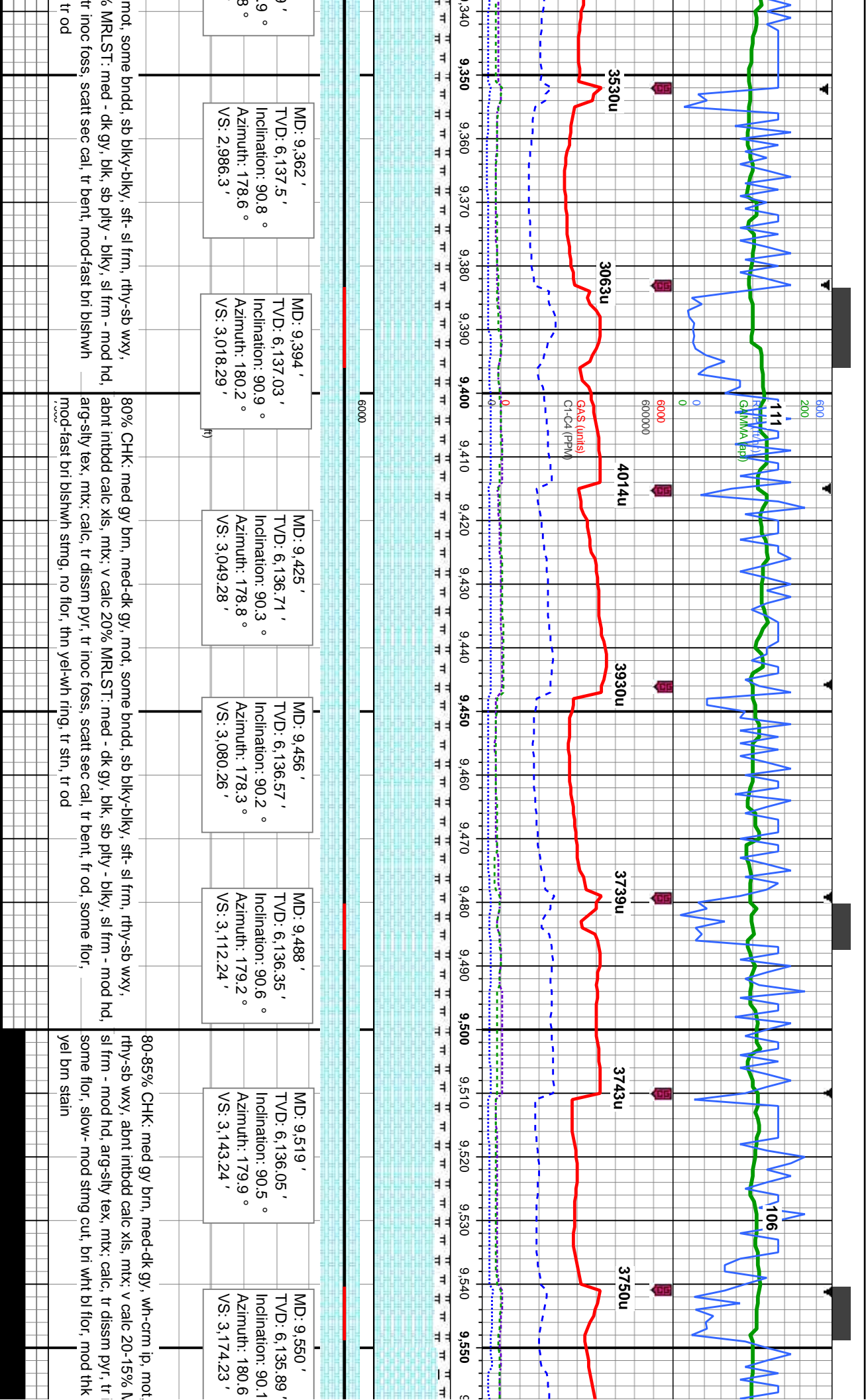
85% CHK: lt - med gy brn, med-dk gy, mot, some bnnd, sb blk-y-biky, sft- sl frm, rthy-sb wxy, mt; v calc 15% MRLST: med - dk gy, blk, sb ply - biky, sl frm - mod hd, arg-sily tex, mt; calc, tr inoc foss, tr sec cal, tr bent, mod-fast gn-wh string, no flor, med-thk yel orng ring, mod stn, fr od

65% CHK: med gy brn, med-dk gy, mot, some bnnd, sb blk-y-biky, sft- sl frm, rthy-sb wxy, mt; v calc 35% MRLST: med - dk gy, blk, sb ply - biky, sl frm - mod hd, arg-sily tex, mt; calc, tr inoc foss, scat sec cal, scat bent, mod-fast bl string, tr flor, med-thn yel orng ring, sft, g od

80% CHK: med mt; v calc 20% calc, tr inoc foss tr stn, tr od



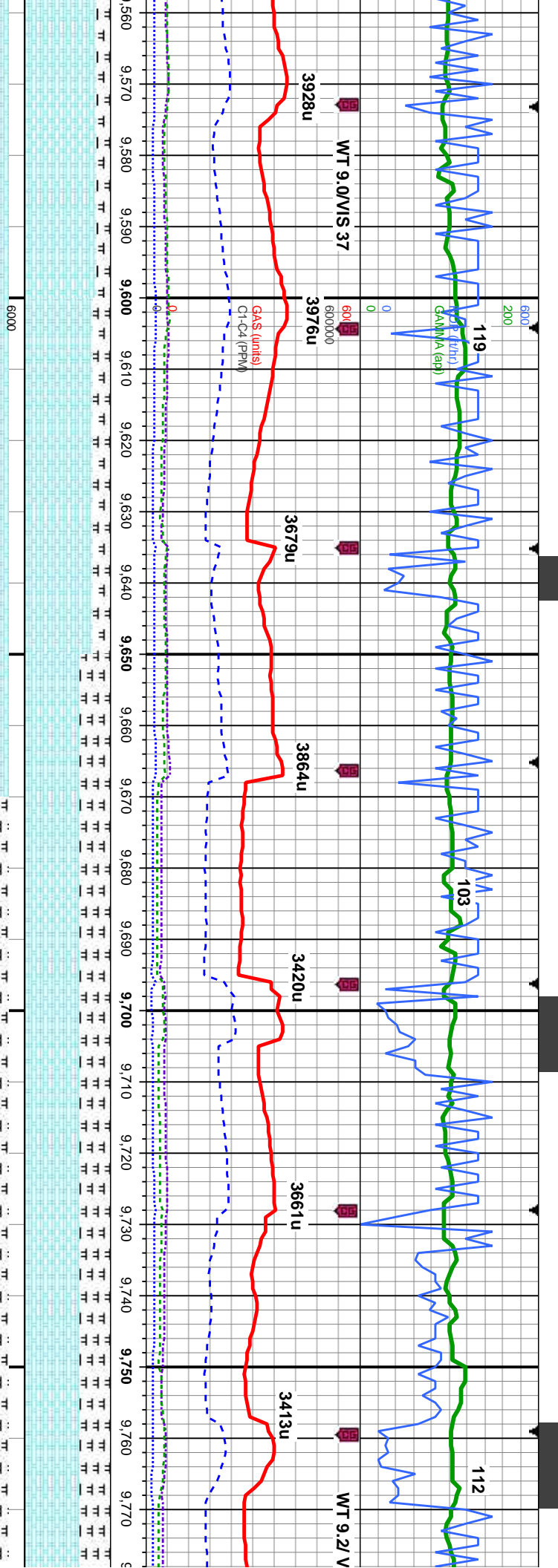




mot, some brndd, sb blkly-blky, sft-sl frm, rthy-sb wxy, 80% CHK: med gy brn, med-dk gy, mot, some brndd, sb blkly-blky, sft-sl frm, rthy-sb wxy, abnt inbddd calc xls, mtix: v calc 20% MRLST: med - dk gy, blk, sb ply - blkly, sl frm - mod hd, arg-sily tex, mtix: calc, tr dissim pyr, tr inoc foss, scatt sec cal, tr bent, fr od, some flor, mod-fast brt bishwh string, no flor, thin yel-wh ring, tr stn, tr od

tr inoc foss, scatt sec cal, tr bent, mod-fast brt bishwh string, no flor, thin yel-wh ring, tr stn, tr od





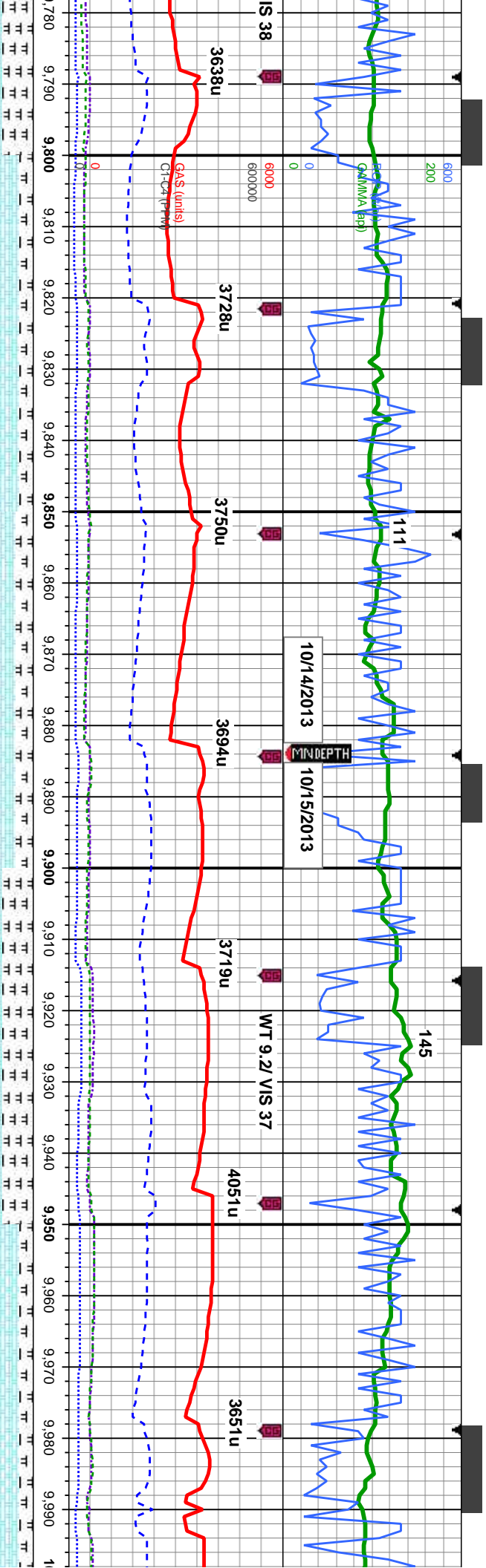
MD: 9,582 ' TVD: 6,135.64 ' Inclination: 90.8 ° Azimuth: 181.1 ° VS: 3,206.23 '	MD: 9,613 ' TVD: 6,135.34 ' Inclination: 90.3 ° Azimuth: 180.7 ° VS: 3,237.23 '	MD: 9,644 ' TVD: 6,135.09 ' Inclination: 90.6 ° Azimuth: 180.9 ° VS: 3,268.23 '	MD: 9,676 ' TVD: 6,134.76 ' Inclination: 90.6 ° Azimuth: 181.1 ° VS: 3,300.23 '	MD: 9,707 ' TVD: 6,134.54 ' Inclination: 90.2 ° Azimuth: 180.7 ° VS: 3,331.23 '	MD: 9,738 ' TVD: 6,134.3 ' Inclination: 90.7 ° Azimuth: 180.9 ° VS: 3,362.23 '	MD: 9,770 ' TVD: 6,134.05 ' Inclination: 90.2 ° Azimuth: 180.4 ° VS: 3,394.22 '
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some bndd, sb blk-y-bkly, sft-si frm, MRLST: med - dk gy, blk, sb ply - bkly, inoc foss, scat sec cal, tr bent, fr od, even, mod wht yel amb ring, mod stain

80-65% CHK: med gy brn, med-dk gy, wh-crm ip, mot, some bndd, sb blk-y-bkly, sft-si frm, rthy-sb wxy, abnt inbddd calc xls, mtix, v calc 20-35% MRLST: med - dk gy, blk, sb ply - bkly, si frm - mod hd, arg-sily tex, mtix, calc, tr diss pyr, tr inoc foss, scat sec cal, tr bent, fr od, some flor, slow sting cut, mod wht bl flor, mod thk even, mod wht yel amb ring, tr yel brn stain

65% CHK: med gy brn, med-dk gy, wh-crm ip, mot, some bndd, sb blk-y-bkly, rthy-sb wxy, abnt inbddd calc xls, mtix, v calc 35% MRLST: med - dk gy, frm - mod hd, arg-sily tex, mtix, calc, tr diss pyr, tr inoc foss, scat sec some flor, slow sting cut, mod wht bl flor, mod thn even, frt wht yel amb stain

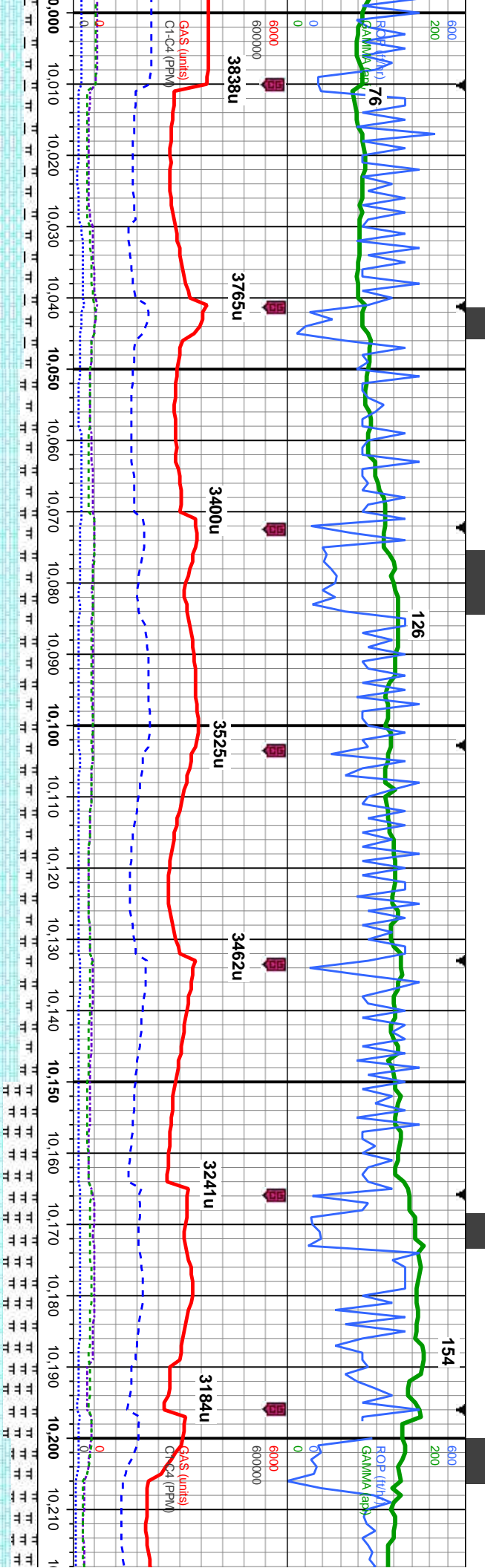




MD: 9,801 ' TVD: 6,133.86 ' Inclination: 90.5 ° Azimuth: 180.2 ° VS: 3,425.22 '	MD: 9,832 ' TVD: 6,133.72 ' Inclination: 90 ° Azimuth: 178.3 ° VS: 3,456.21 '	MD: 9,864 ' TVD: 6,133.67 ' Inclination: 90.2 ° Azimuth: 178.5 ° VS: 3,488.19 '	MD: 9,895 ' TVD: 6,133.72 ' Inclination: 89.6 ° Azimuth: 177.9 ° VS: 3,519.16 '	MD: 9,927 ' TVD: 6,133.86 ' Inclination: 89.9 ° Azimuth: 177 ° VS: 3,551.11 '	MD: 9,958 ' TVD: 6,133.89 ' Inclination: 90 ° Azimuth: 176.5 ° VS: 3,582.04 '	MD: 9,989 ' TVD: 6,134 ' Inclination: 89.6 ° Azimuth: 176.2 ° VS: 3,612.95 '
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85-80% CHK: med gy bm, med-dk gy, wh-crm, mot, some bndd, sb blk-y-bkly, sft-si frm, rthy-sb wxy, abnt intbdd calc xls, mtz; v calc 15-20% MRLST: med - dk gy, blk, sb ply - blkly, sl frm - mod hd, arg-sily tex, mtz; calc, tr dissim pyr, tr inoc foss, scatt sec cal, tr bent, fr od, some flor, slow simg cut, mod wht bl flor, mod thk even, fnt wht yel amb ring, mod yel bn stain	65-85% CHK: med gy bm, med-dk gy, wh-crm, mot, some bndd, sb blk-y-bkly, sft-si frm, rthy-sb wxy, abnt intbdd calc xls, mtz; v calc 35-15% MRLST: med - dk gy, blk, sb ply - blkly, sl frm - mod hd, arg-sily tex, mtz; calc, tr dissim pyr, tr inoc foss, scatt sec cal, tr bent, fr od, some flor, slow simg/ mky cut, mod- bri wht bl flor, mod thk even, mod wht yel amb ring, mod yel bn stain
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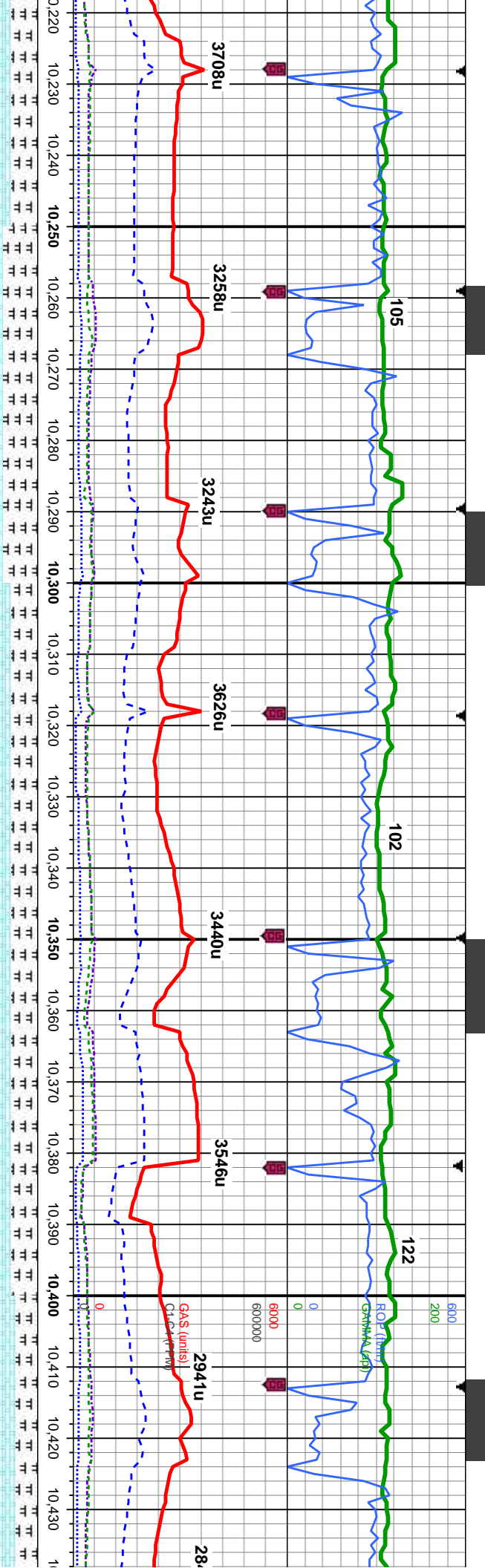


MD: 10,021 ' TVD: 6,134.11 ' Inclination: 90 ° Azimuth: 175.6 ° VS: 3,644.84 '	MD: 10,052 ' TVD: 6,134.11 ' Inclination: 90 ° Azimuth: 175.1 ° VS: 3,675.71 '	MD: 10,082 ' TVD: 6,134.47 ' Inclination: 88.6 ° Azimuth: 174.4 ° VS: 3,705.55 '	MD: 10,114 ' TVD: 6,135.26 ' Inclination: 88.6 ° Azimuth: 174.2 ° VS: 3,737.34 '	MD: 10,145 ' TVD: 6,135.99 ' Inclination: 88.7 ° Azimuth: 173.9 ° VS: 3,768.13 '	MD: 10,176 ' TVD: 6,136.74 ' Inclination: 88.5 ° Azimuth: 174.1 ° VS: 3,798.91 '	MD: 10,206 ' TVD: 6,137.53 ' Inclination: 88.5 ° Azimuth: 174.6 ° VS: 3,828.72 '
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85-80% CHK: med gy brn, med-dk gy, mot, some bnnd, sb blk-y-bkly, sft-sl frm, rthy-sb wxy, abnt inbdd calc xls, mt; v calc 15-20% MRLST: med - dk gy, blk, sb ply - blk, sl frm - mod hd, arg-sily tex, mt; calc, tr dissm pyr, scat inoc foss, scat sec cal, tr bent, fr od, some flor, slow stimg cut, mod wht bl flor, mod thk even, mod wht yel amb ring, r~mod yel brn stain

85-60% CHK: med gy brn, med-dk gy, mot, some bnnd, sb blk-y-bkly, sft-sl frm, rthy-sb wxy, abnt inbdd calc xls, mt; v calc 15-40% MRLST: med - dk gy, blk, sb ply - blk, sl frm - mod hd, arg-sily tex, mt; calc, tr dissm pyr, scat inoc foss, scat sec cal, tr bent, fr od, some flor, slow stimg cut, mod - bri wht bl flor, mod thk uneven, mod wht yel ring, tr yel brn stain





MD: 10,237 '
TVD: 6,138.4 '
Inclination: 88.3 °
Azimuth: 174.6 °
VS: 3,859.54 '

MD: 10,267 '
TVD: 6,139.08 '
Inclination: 89.1 °
Azimuth: 174.8 °
VS: 3,889.37 '

MD: 10,298 '
TVD: 6,139.45 '
Inclination: 89.5 °
Azimuth: 175.1 °
VS: 3,920.21 '

MD: 10,329 '
TVD: 6,139.7 '
Inclination: 89.6 °
Azimuth: 175.1 °
VS: 3,951.07 '

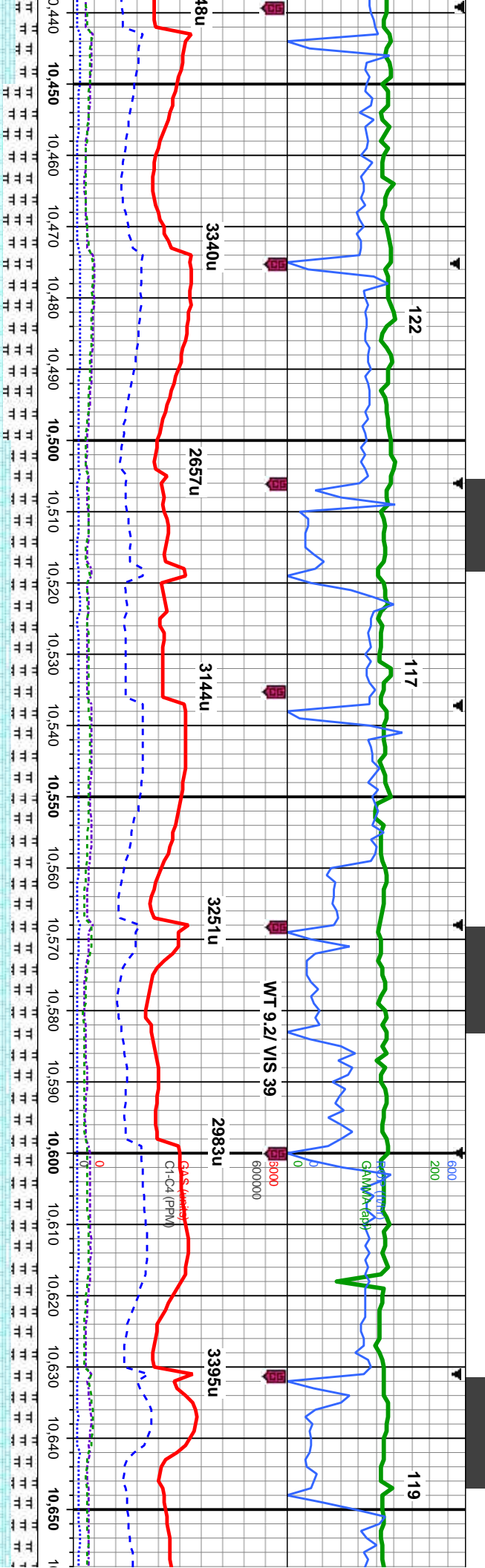
MD: 10,360 '
TVD: 6,139.81 '
Inclination: 90 °
Azimuth: 175.5 °
VS: 3,981.93 '

MD: 10,391 '
TVD: 6,139.7 '
Inclination: 90.4 °
Azimuth: 175.5 °
VS: 4,012.81 '

MD: 10,422 '
TVD: 6,139.24 '
Inclination: 91.3 °
Azimuth: 175.8 °
VS: 4,043.68 '

HK: med-dk gy, occ med gy brn, mot, some bnnd, sb blkv-blky, sft- sl
wxy, abnt intbdd calc xls, mtb; v calc 30-40% MRLST; med - dk gy, blk
rthy-sb wxy, abnt intbdd calc xls, mtb; v calc 30% MRLST; med - dk gy, blk, sb pily - blk, sl frm -
mod hd, arg-sily tex, mtb; calc, tr dissim pyr, occ inoc foss, occ sec cal, tr bent, fr od,
slow-mod string cut, mod wht bl flr, thin-mod even yel/wht-amb ring, tr stain





MD: 10,453 '
TVD: 6,138.43 '
Inclination: 91.7 °
Azimuth: 175.6 °
VS: 4,074.56 '

MD: 10,485 '
TVD: 6,137.39 '
Inclination: 92 °
Azimuth: 175.1 °
VS: 4,106.41 '

MD: 10,516 '
TVD: 6,136.45 '
Inclination: 91.5 °
Azimuth: 175.6 °
VS: 4,137.26 '

MD: 10,547 '
TVD: 6,135.58 '
Inclination: 91.7 °
Azimuth: 176 °
VS: 4,168.14 '

MD: 10,579 '
TVD: 6,134.74 '
Inclination: 91.3 °
Azimuth: 176.7 °
VS: 4,200.04 '

MD: 10,610 '
TVD: 6,133.96 '
Inclination: 91.6 °
Azimuth: 176.3 °
VS: 4,230.95 '

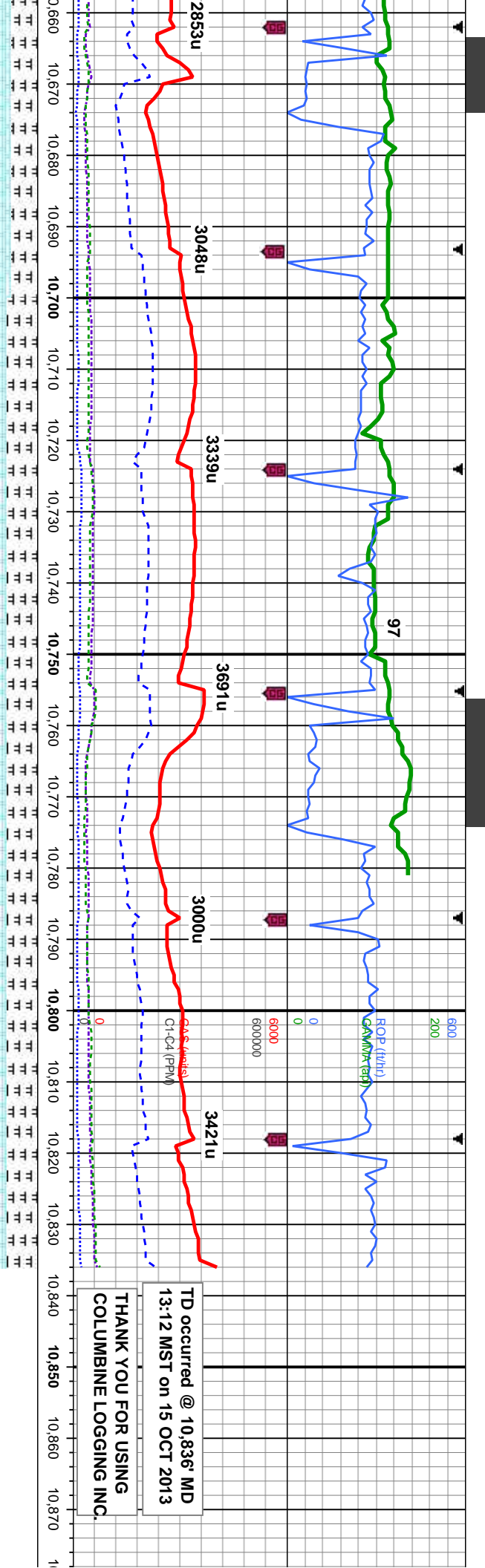
MD: 10,641 '
TVD: 6,133.12 '
Inclination: 91.5 °
Azimuth: 178.3 °
VS: 4,261.88 '

gy brn, mot, some bndd, sb blk-y-biky, sft- sl frm,
mtx: v calc 30-40% MRLST; med - dk gy, blk, sb ply - biky,
aie, tr dissim pyr, occ inoc foss, occ sec cal, tr bent, fr
flor, thin-mod even yell/wht-amb ring, tr stain

70% CHK: med-dk gy, occ med gy brn, mot, some bndd, sb blk-y-biky, sft- sl frm, rthy-sb
wxy, tr inbdd calc xls, mtx: v calc 30% MRLST; med - dk gy, blk, sb ply - biky, sl frm - mod
hcd, arg-sily tex, mtx; calc, tr dissim pyr, tr sec cal, tr bent, fr od, slow-mod sting cut, mod
wht bl flor, thin-mod even yell/wht-amb ring, tr stain

70% CHK: med-dk gy, occ med gy brn, mot, some br
wxy, tr inbdd calc xls, mtx: v calc 30% MRLST; med
hcd, arg-sily tex, mtx; calc, tr dissim pyr, tr sec cal, tr bent
wht bl flor, mod thk even, mod wht yel ring, tr yel brn :





TD occurred @ 10,836' MD
13:12 MST on 15 OCT 2013
THANK YOU FOR USING
COLUMBINE LOGGING INC.

MD: 10,671 ' TVD: 6,132.7 ' Inclination: 90.1 ° Azimuth: 177.9 ° VS: 4,291.85 '	MD: 10,703 ' TVD: 6,132.7 ' Inclination: 89.9 ° Azimuth: 177.6 ° VS: 4,323.81 '	MD: 10,734 ' TVD: 6,132.67 ' Inclination: 90.2 ° Azimuth: 177.2 ° VS: 4,354.76 '	MD: 10,765 ' TVD: 6,132.86 ' Inclination: 89.1 ° Azimuth: 176.7 ° VS: 4,385.69 '	MD: 10,784 ' TVD: 6,133.28 ' Inclination: 88.4 ° Azimuth: 176.3 ° VS: 4,404.64 '
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65% CHK: med-dk gy, occ med gy bn, mot, some bnnd, sb blk-y-bkly, sft- sl frm, rthy-sb wxy, tr intbdd calc
xls, mtx; v calc 35% MRLST: med - dk gy, blk, sb ply - bkly, sl frm - mod hd, arg-sily tex, mtx; calc, tr dssm
pyr, tr inoc foss, occ sec cal, some bent, fr od, slow sting cut, mod - bri wht bl flwr, mod thk even, mod wht
yel ring, tr yel bn stain



