



Scale: 5" / 100'  
Measured Depth Log

Well Name    Antelope A11-U41-33HNC

Location    SWNW SEC33 T5N R62W

State    CO

County    WELD

Country    USA

Rig Number    CADE 26

API Number    05-123-39067-00

Region    DJ BASIN

Field    WATTENBERG

Spud Date    4/28/2014

Surface Coordinates    1471°FNL x 370°FWL (LAT: 40.35939, 104.33694)

Bottom Hole Coordinates    327°FNL x 470°FEL (Lat: 40.36254, 104.32124)PROJECTED

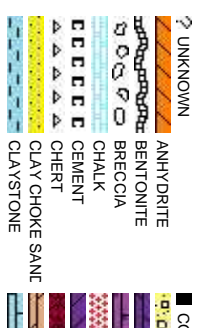
Ground Elevation	4579'	K.B. Elevation	4596'
Logged Interval	6000'	To	10992'
		Total Depth	10992'
Formation	NIOBRARA, B-CHALK		
Type of Drilling Fluid	LSND, H2O		

Company    Bonanza Creek

Name    Paul McKay

Company    Bonanza Creek

Address    410 17th Street  
Denver, CO 802



Operator

Energy Inc.

Geologist

Energy Inc.

, Suite 1500  
202

Rock Types

CONGLOMERATE	MARLSTONE	SHALY SANDSTONE
DOLomite	METAMORPHIC	SHALY SILTSTONE
DOLomite 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

<b>Fossils</b>	GASTROPOD	ARGILLITE GRAIN	HEAVY MINERAL
INOCERAMUS	B BENTONITE	K KAOLIN	ANHYDRITE STRINGER
ALGAE	O OOLITE	BITUMENOUS 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	S PLANT SPORES	C COAL - THIN BEDS	MARLSTONE (DOL) STRG
C CORAL	S SCAPHOPOD	D DOLOMITIC	SANDSTONE STRINGER
C CRINOID	S STROMATOPOROD	F FELDSPAR	SHALE STRINGER
E ECHINOID	F FERRUGINOUS PELLET	F FERRUGINOUS	SILTSTONE STRINGER
F FISH	<b>Minerals</b>	G GLAUCONITE	
FORAMINIFERA	A ANHYDRITIC	G GYPSIFEROUS	<b>Stringer</b>
F FOSSIL	A ARGILLACEOUS		

Other Symbols

<b>Oil Show</b>	P PINPOINT	DST INTERVAL	WIRELINE TESTED - LEFT	E EARTHY
V VUGGY	F FAULT	WIRELINE TESTED - RT	F FINELY XLN	
D DEAD	F FORMATION TOP	D DRILL STEM TEST	G GRAINSTONE	
E EVEN	G GAS SHOW	MN DEPTH	L LITHOGRAPHIC	
Q QUESTIONABLE	B BIT	O OIL SHOW	M MICRO XLN	
S SPOTTED STAINING	C CONNECTION (UP)	<b>Rounding</b>	M MUDSTONE	
	C CONNECTION (DOWN)	A ANGULAR	P PACKSTONE	
<b>Porosity</b>	C CONNECTION GAS	N NORMAL FAULT	W WACKESTONE	
E EARTHY	C CONNECTION GAS (LEFT)	O OVERTURNED STRATA		
F FENESTRAL	T TRIP GAS	R REVERSE FAULT	S SUBSAND	
F FRACTURE	T TRIP GAS (LEFT)	C CASING		
I INTERCRYSTALLINE	D DOWN TIME GAS	S SIDEWALL CORE (LEFT)	<b>Textures</b>	
I INTERCRYSTALLINE	D DOWN TIME GAS (LEFT)	S SIDEWALL CORE (RIGHT)	P POOR	
M MOLDIC	C CORE - LOST	S SLIDE	W WELL	
O ORGANIC	C CORE - RECOVERED	S SURVEY	C CRYPTOXLN	

**ROP**  
ROF  
GAMMA

**Bit Data**  
Bit #: 3  
Type: HEO4JMRSV  
Size: 8.75  
Depth In: 5,980'  
Depth Out: 6,840'  
Jets: 3 x 2  
S/N: 187670

Total Gas & Chromatograph

**GAS**  
C1  
C2  
C3  
C4

COLUMBINE LOGGING RIGGED UP ON  
5/1/2014 MANNED 2-PERSON LOGGING  
WITH BL OODHOUND GAS  
CHROMATOGRAPH UNIT #0603 BEGAN  
ON 5/1/2014, 15:35 MST at 6000' MD

Depth Labels

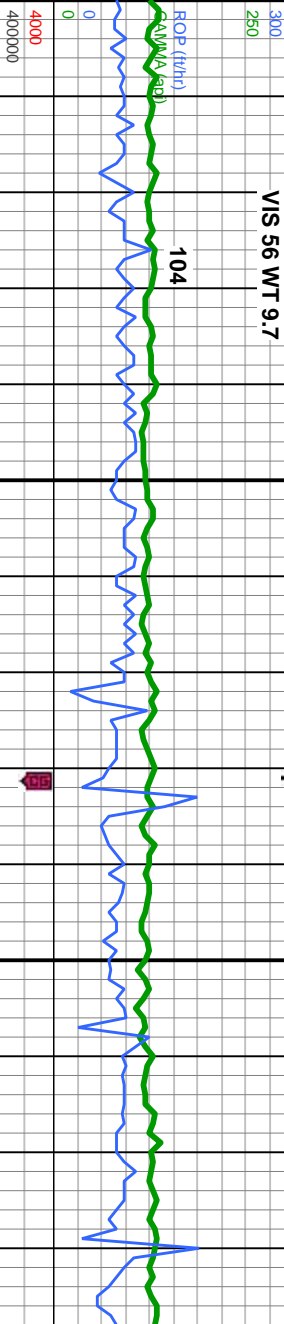
% Lith

Well Bore  
TVD

Oil Show

EMFST

Images



MD: 6,017'  
Inclination: 5.43 °  
Azimuth: 67.94 °  
TVD: 5,827.32'  
VS: -45.25'

MD: 6,064'  
Inclination: 12.37 °  
Azimuth: 83.6 °  
TVD: 5,873.73'  
VS: -38.05'

MD: 6,112'  
Inclination: 17.02 °  
Azimuth: 87.62 °  
TVD: 5,920.15'  
VS: -26.09'

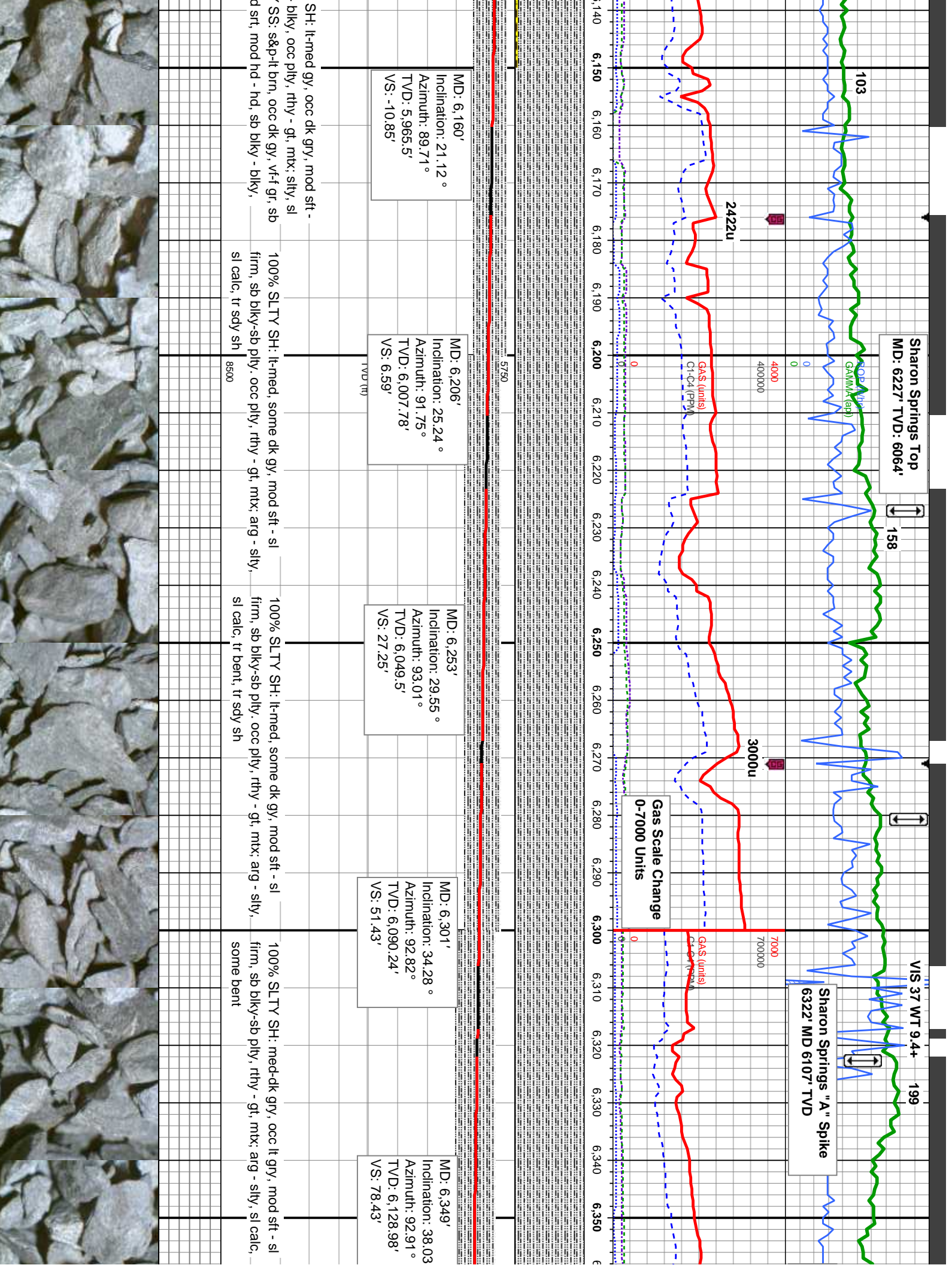
90-95% SLTY SH: lt-med gy, mod sft - sl firm, sb blkly - blkly, occ ply, rthy - gt, mtx, silty, sl calc, 10-5% SHY SS: s&p-lt brn, occ dk gy, vt-f gr, sb ang - sb rd, mod srt, mod hd - hd, sb blkly - blkly, mics, sl calc

95% SLTY SH: lt-med gy, mod sft - sl firm, sb blkly - blkly, occ ply, rthy - gt, mtx, silty, sl calc, 5% SHY SS: s&p-lt brn, occ dk gy, vt-f gr, sb ang - sb rd, mod srt, mod hd - hd, sb blkly - blkly, mics, sl calc

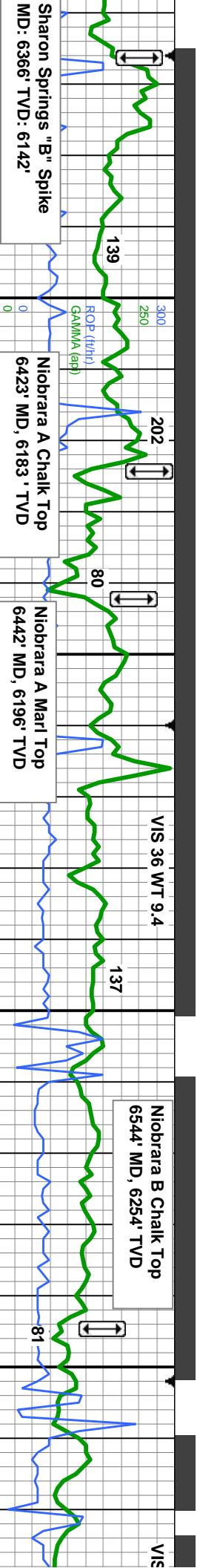
95-100% SLTY sl firm, sb blkly - calc, 5-0% SHY ang - sb rd, mod mics, sl calc







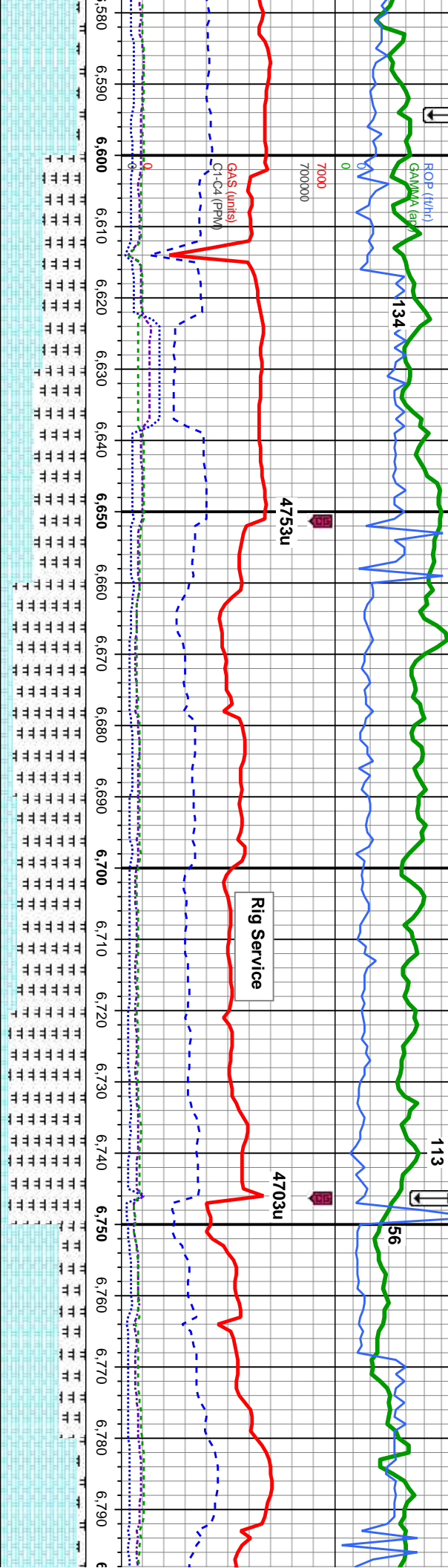






35 WT 9.3

Niobrara B Marl Top  
6595' MD, 6277' TVD



VIS 36 WT 9.3

Niobrara C Chalk Top  
6746' MD, 6326' TVD

ID: 6,586'  
Inclination: 64.55 °  
Azimuth: 89.5 °  
TVD: 6,273.48'  
VS: 255.96'

MD: 6,633'  
Inclination: 66.8 °  
Azimuth: 88.51 °  
TVD: 6,292.84'  
VS: 297.56'

MD: 6,681'  
Inclination: 70.58 °  
Azimuth: 88.57 °  
TVD: 6,310.28'  
VS: 341.09'

MD: 6,728'  
Inclination: 78.43 °  
Azimuth: 88.39 °  
TVD: 6,322.82'  
VS: 385.15'

MD: 6,776'  
Inclination: 83.95 °  
Azimuth: 87.22 °  
TVD: 6,330.17'  
VS: 431.44'

50-60%: MRLST: med-dk gy, blk, sb pty-biky, sl frm-mod hd, arg-sily tex, mt; calc, 50-40% CHK: lt gy, wht-crm, mot, sb pty-biky, sft-si frm, rthy-sb wxy, scat bent, fr od, fast mod wh bl, even mod thn frt wh-yel, mod yel brn

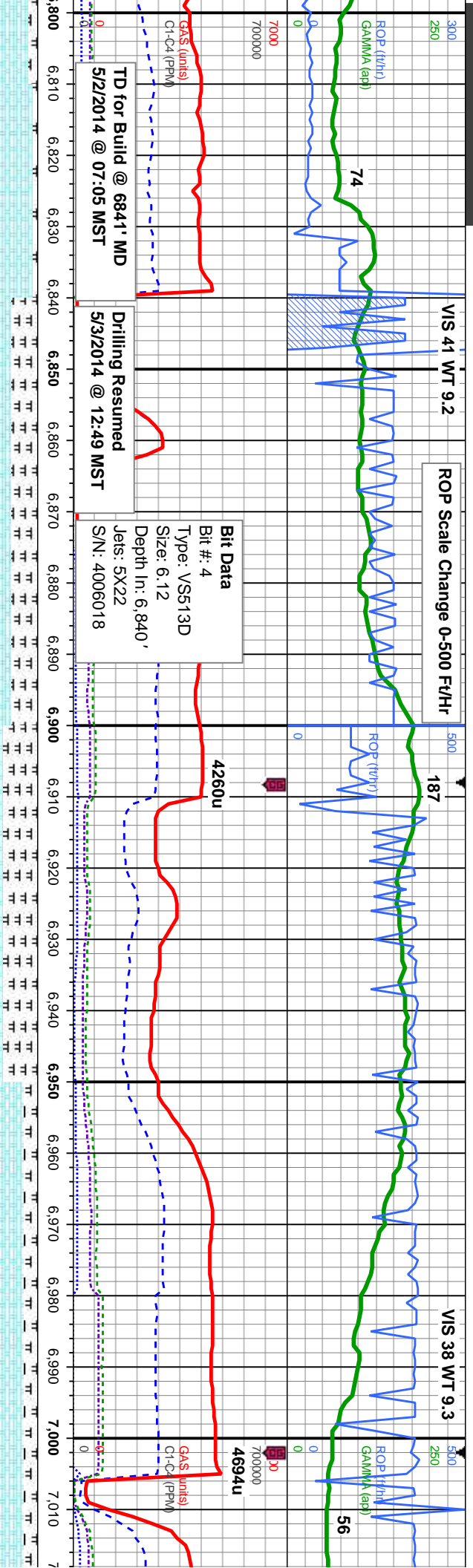
85-80%: MRLST: med-dk gy, blk, sb pty-biky, sl frm-mod hd, arg-sily tex, mt; calc, 15-20% CHK: lt gy, wht-crm, mot, sb pty-biky, sft-si frm, rthy-sb wxy, tr bent, occ uphole contaminants, fr od, fast mod wh bl, even mod thn yel-amb, mod yel brn

90-30%: MRLST: med-dk gy, blk, sb pty-biky, sl frm-mod hd, arg-sily tex, 10-70% CHK: lt gy, wht-crm, mot, sb pty-biky, sft-si frm, rthy-sb wxy, occ imbd cal, occ uphole contaminants, mod chk flr, fr od, fast mod wh bl, even mod thk bri wh-yel, mod yel brn

90-95% CHK: lt frm, rthy-sb wxy pty-biky, sl frm-abnt uphole con mod wh bl, ever







**PROJECTION TO BIT**  
MD: 6840'  
INC: 88.46  
AZI: 88.01  
TVD: 6339.2'  
VS: 493.82

**Bit Data**  
Bit #: 4  
Type: VSS13D  
Size: 6.12  
Depth In: 6,840'  
Jets: 5X22  
S/N: 4006018

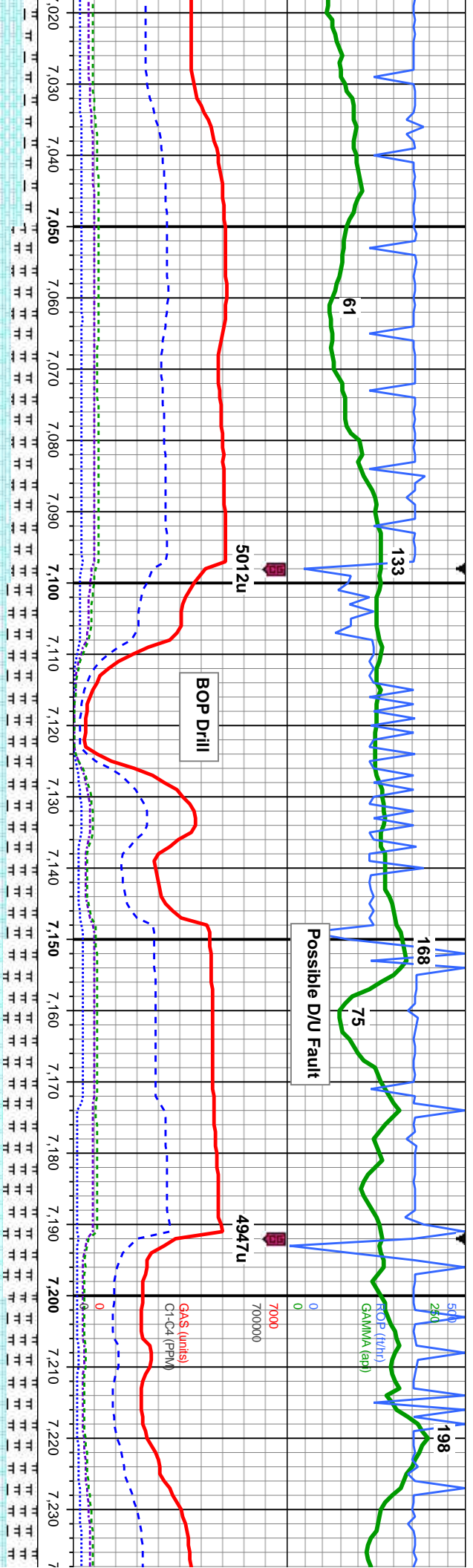
MD: 6,924'  
Inclination: 89.66 °  
Azimuth: 86.38 °  
TVD: 6,338.42'  
VS: 576.18'

MD: 7,000'  
Inclination: 89.66 °  
Azimuth: 86.38 °  
TVD: 6,338.42'  
VS: 576.18'

gy, wht-crm, mot, sb ply-blky, sft-si 10-5%: MRLST: med-dk gy, blk, sb mod hd, arg-sily tex, occ imbd cal, taninants, mod chk flor, g oc; fast mod thk bri wh-yel, mod yel brn	70% CHK: lt gy, wht-crm, mot, sb ply-blky, sft-si frm, rthy-sb wxy, 30%: MRLST: med-dk gy, blk, sb ply-blky, si frm-mod hd, arg-sily tex, mtb; calc, occ imbd cal, scat cnt; fast sting wh bl, even mod thk bri wh-yel, mod yel brn	60% CHK: med-dk gy, occ wht-crm, mot, sb ply-blky, sft-si frm, rthy-sb wxy, abnt cal incl, 40%: MRLST: med-dk gy, blk, sb ply-blky, si frm-mod hd, arg-sily tex, occ imbd cal, tr bent, scat cnt; mod-fast sting wh bl, even mod thk mod wh-yel, mod thk yel brn	85% CHK: lt gy, wht-crm, mot, sb ply-blky, sft-si frm, rthy-sb wxy, abnt cal incl, 15%: MRLST: med-dk gy, blk, sb ply-blky, si frm-mod hd, arg-sily tex, mtb; calc, occ imbd cal, tr bent, scat cnt; mod-fast sting wh bl, even mod thk mod wh-yel, mod thk yel brn	85% CHK: lt gy, wht-crm, mot, sb ply-blky, sft-si frm, rthy-sb wxy, abnt cal incl, 15%: MRLST: med-dk gy, blk, sb ply-blky, si frm-mod hd, arg-sily tex, mtb; calc, occ imbd cal, tr bent, scat cnt; mod-fast sting wh bl, even mod thk mod wh-yel, mod thk yel brn
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on: 89.26 °  
i: 86.04 °  
3339.31'

wh-crm, mot, sb pty-biky,  
b wxy, abnt cal incl, 15%:  
gy, blk, sb pty-biky, sl  
sily tex, occ imbd cal, tr  
sting wh bl, even mod  
mod thk yel brn

70% CHK: med - dk gy, occ wh-crm, mot, sb  
pty-biky, sft-si frm, rthy-sb wxy, some cal  
incl, 30%: MRLST: med-dk gy, blk, sb  
pty-biky, sl frm-mod hd, arg-sily tex, mx;  
calc, occ imbd cal, occ inoc fos frags, fast  
sting wh bl, even mod thk mod wh-yel, mod  
thk yel brn

MD: 7,114'  
Inclination: 90.31 °  
Azimuth: 88.06 °  
TVD: 6,339.67'  
VS: 762.46'

65% CHK: med - dk gy, occ wh-crm, mot, sb  
pty-biky, sft-si frm, rthy-sb wxy, some cal  
incl, 35%: MRLST: med-dk gy, blk, sb  
pty-biky, sl frm-mod hd, arg-sily tex, occ  
imbd cal, occ inoc fos frags, mod-fast sting  
wh bl, even mod thk mod wh-yel, tr yel brn

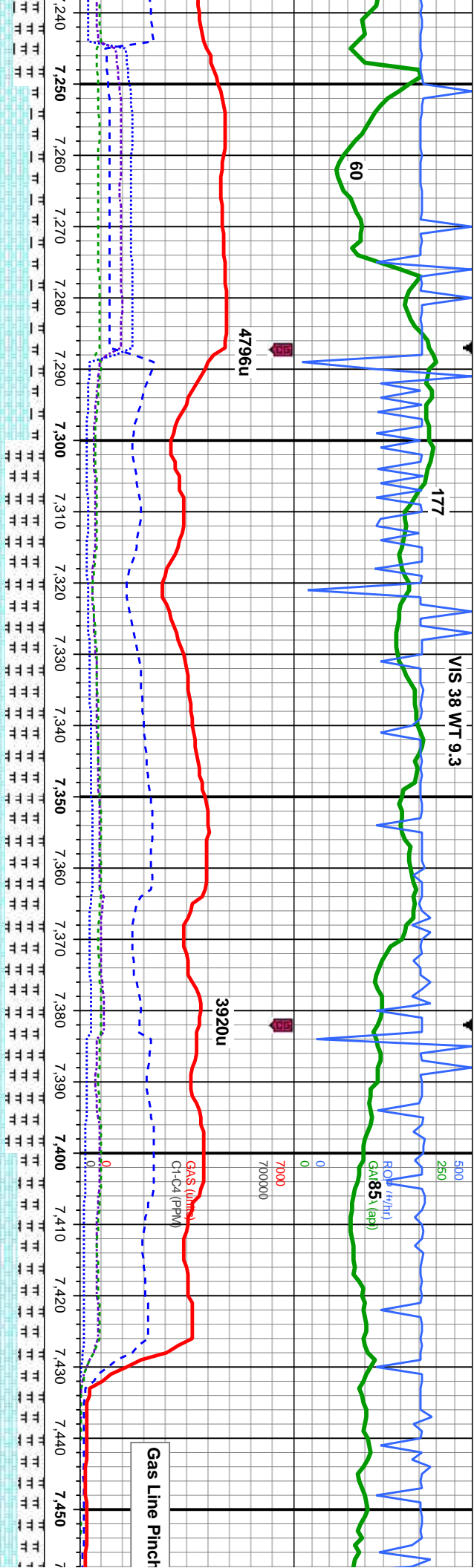
60% CHK: med - dk gy, occ wh-crm, mot, sb  
pty-biky, sft-si frm, rthy-sb wxy, some cal  
incl, 40%: MRLST: med-dk gy, blk, sb  
pty-biky, sl frm-mod hd, arg-sily tex, mx;  
calc, occ imbd cal, occ inoc fos frags;  
mod-fast sting wh bl, even mod thk mod  
wh-yel, tr yel brn

MD: 7,209'  
Inclination: 89.78 °  
Azimuth: 89.16 °  
TVD: 6,339.59'  
VS: 854.91'

60% CHK: med - dk gy, occ wh-crm  
pty-biky, sft-si frm, rthy-sb wxy, sor  
40%: MRLST: med-dk gy, blk, sb pty-  
frm-mod hd, arg-sily tex, occ imbd c  
inoc fos frags, fast sting wh bl, even  
bri yel-amb, thk yel brn







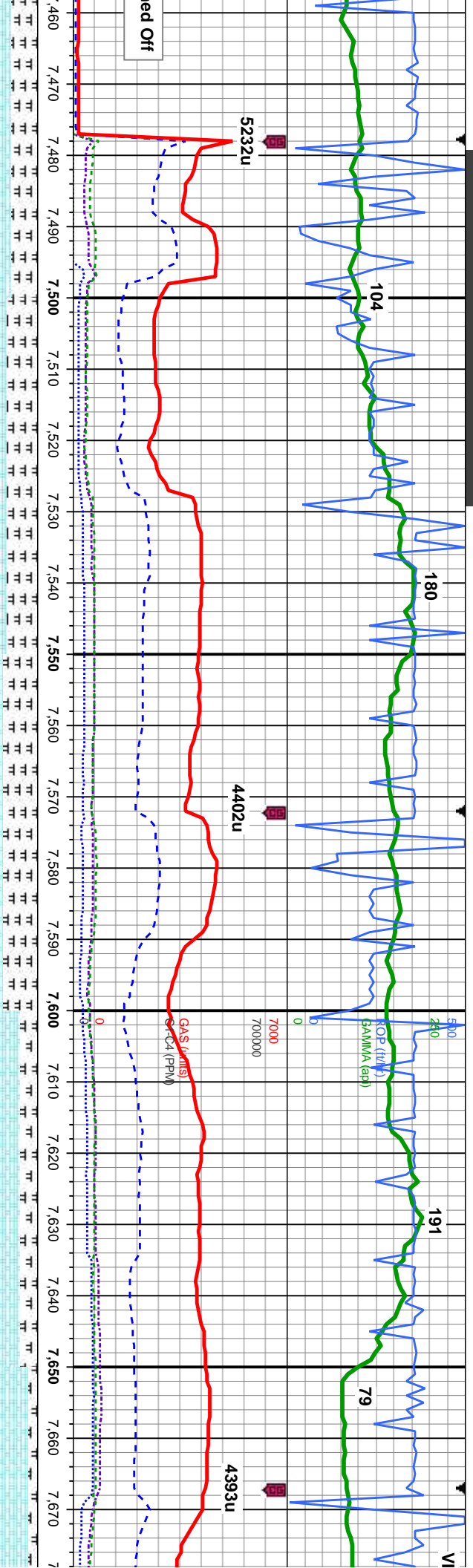
MD: 7,304'  
Inclination: 91.23 °  
Azimuth: 90.71 °  
TVD: 6,338.76'  
VS: 946.82'

MD: 7,399'  
Inclination: 91.85 °  
Azimuth: 90.61 °  
TVD: 6,336.2'  
VS: 1,038.39'

l, mot, sb	85% CHK: lt-med gry, wht-crm, mot, sb	55% CHK: med - dk gy, occ crm, mot, sb	55% CHK: med - dk gy, occ crm, mot, sb	70% CHK: med - dk gy, occ crm, mot, sb	70% C
cal incl,	ply-biky, sft-si frm, rthy-sb wxy, some cal	ply-biky, sft-si frm, rthy-sb wxy, some cal incl,	ply-biky, sft-si frm, rthy-sb wxy, some cal incl,	ply-biky, sft-si frm, rthy-sb wxy, some cal	ply-bik
y-biky, sl	incl, 15%: MRLST: med-dk gy, blk, sb	45%: MRLST: med-dk gy, blk, sb ply-biky, sl	45%: MRLST: med-dk gy, blk, sb ply-biky, sl	incl, 30%: MRLST: med-dk gy, blk, sb	incl, 30
cal, occ	ply-biky, sl frm-mod hd, arg-sily tex, tr imbd	frm-mod hd, arg-sily tex, occ imbd cal, occ	frm-mod hd, arg-sily tex, mt; calc, occ imbd	ply-biky, sl frm-mod hd, arg-sily tex, mt;	ply-bik
mod thk	cal, occ inoc fos, g chk flr, g od: fast stmg	inoc fos, fast stmg wh bl, even mod thk bri	cal, occ inoc fos frags, fast stmg wh bl, even	calc, occ imbd cal: fast stmg wh bl, even	calc, o
	wh bl, even mod thk bri yel-amb, thk yel brn	wh-yel, thk yel brn	mod thk bri wh-yel, thk yel brn	mod thk bri wh-yel, thk yel brn	even m







MD: 7,494'  
Inclination: 92.83 °  
Azimuth: 91.06 °  
TVD: 6,332.32'  
VS: 1,129.84'

HK: med - dk gy, occ crm, mot, sb y, sft-si frm, rthy-sb wxy, some cal %; MRLST: med-dk gy, blk, sb y, si frm-mod hd, arg-sily tex, mtx; occ lse & imbd cal; fast string wh bl, mod thk bri wh-yei, thk yel brn	65% CHK: med - dk gy, occ crm, mot, sb ply-blky, sft-si frm, rthy-sb wxy, some cal incl, 35%: MRLST: med-dk gy, blk, sb ply-blky, si frm-mod hd, arg-sily tex, mtx; calc, occ lse & imbd cal; fast string wh bl, even mod thk bri wh-yei, thk yel brn	60% CHK: med - dk gy, occ crm, mot, sb ply-blky, sft-si frm, rthy-sb wxy, some cal incl, 40%: MRLST: med-dk gy, blk, sb ply-blky, si frm-mod hd, arg-sily tex, mtx; calc, occ lse & imbd cal; fast string wh bl, even mod thk bri wh-yei, thk yel brn	80% CHK: lt-med gy, crm, mot, sb ply-blky, sft-si frm, rthy-sb wxy, 20%: MRLST: med-dk gy, blk, sb ply-blky, si frm-mod hd, arg-sily tex, mtx; calc, tr inoc fos, g chk flor, mod od; fast string wh bl, even thk bri wh-yei, v thk yel brn	90% CHK: lt-med gy, crm, sft-si frm, rthy-sb wxy, 10% gy, blk, sb ply-blky, si frm tex, mtx; calc, tr inoc fos, g fast string wh bl, even thk t brn
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MD: 7,589'  
Inclination: 90.89 °  
Azimuth: 90.47 °  
TVD: 6,329.24'  
VS: 1,221.35'

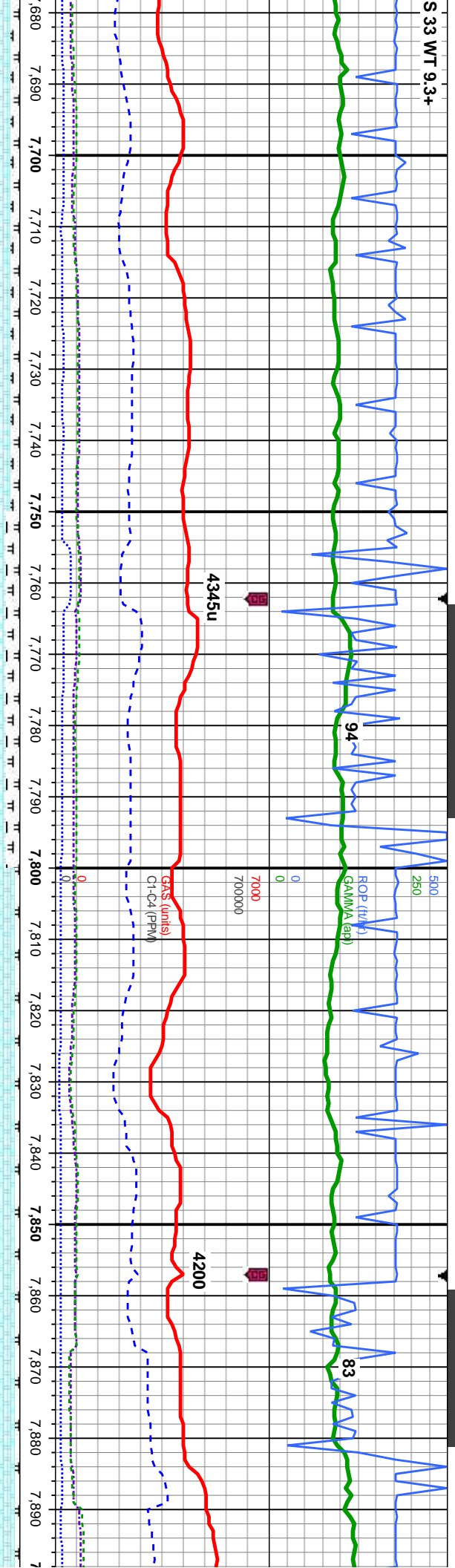
V/D (ft)

MD  
Incl  
Azi  
TVD  
VS





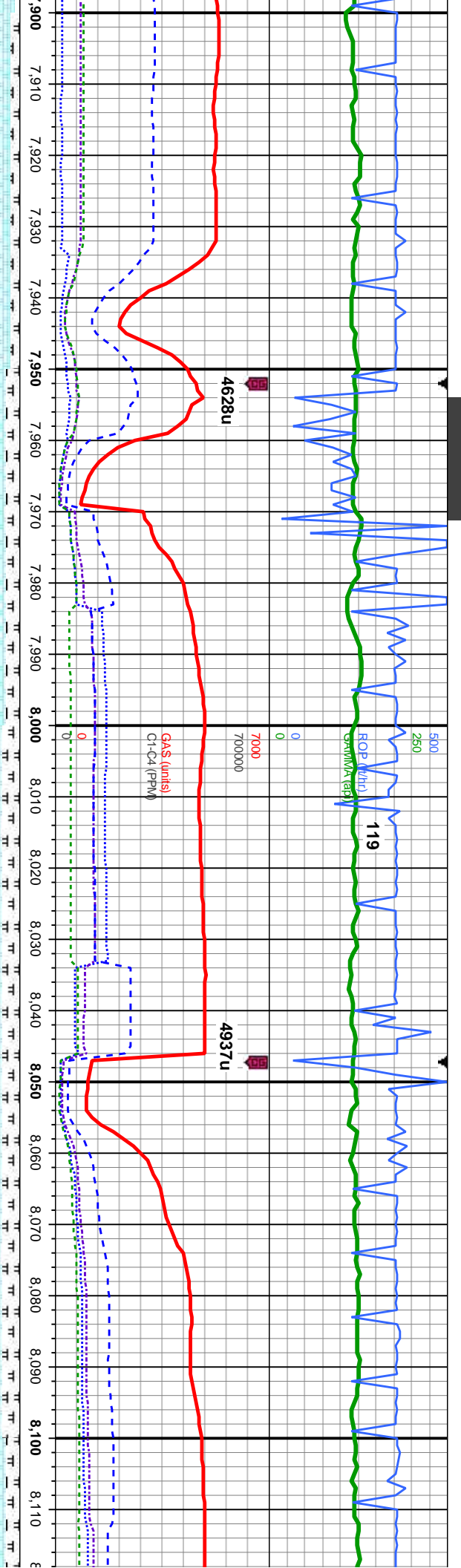
S 33 WT 9.3+



MD: 7,683' Inclination: 90.55° Azimuth: 90.02° TVD: 6,328.06' VS: 1,312.16'

90% CHK: lt-med gy, crm, mot, sb pty-biky, sft-si frm, rthy-sb wxy, 10%: MRLST: med-dk gy, blk, sb pty-biky, si frm-mod hd, arg-sily tex, mtx, calc, tr inoc fos, g chk flor, mod od; fast stmg wh bl, even thk bri wh-yel, v thk yel brn

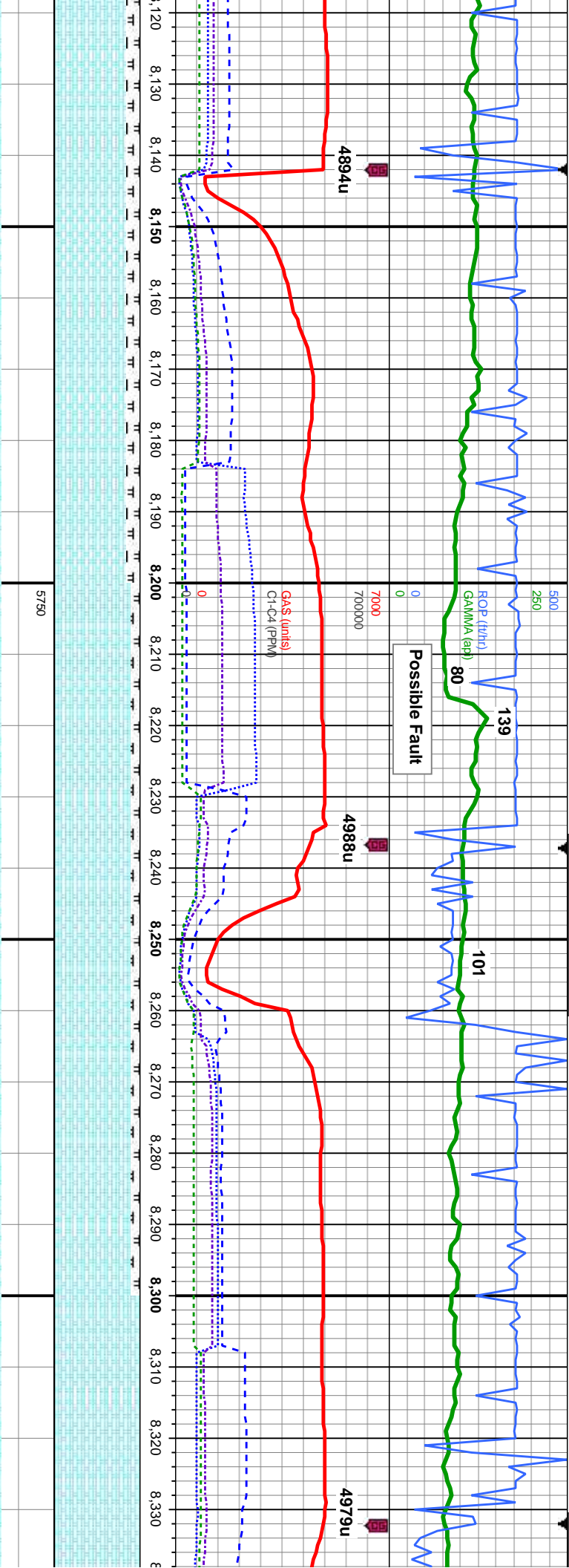




MD: 7,968' Inclination: 89.91 ° Azimuth: 90.93 ° TVD: 6,332.22' VS: 1,587.75'		MD: 8,064' Inclination: 90 ° Azimuth: 90.28 ° TVD: 6,332.3' VS: 1,680.34'	
90% CHK: wht- crn, lt gry, mot, sb pily-blky, sft- sl frm, rthy-sb wxy, 10%: MRLST: med-dk gy, blk, sb pily-blky, sl frm-mod hd, arg-sily tex, mtx; calc, v g chk flor, g od; fast sting wh bl, even thk bri wh-yel, v thk yel brn	85% CHK: med-dk gry, occ lt gry, mot, sb pily-blky, sft- sl frm, rthy-sb wxy, 15%: MRLST: med-dk gy, blk, sb pily-blky, sl frm-mod hd, arg-sily tex, mtx; calc; fast sting wh bl, even thk bri wh-yel, v thk yel brn	80% CHK: med-dk gry, occ lt gry, mot, sb pily-blky, sft- sl frm, rthy-sb wxy, 20%: MRLST: med-dk gy, blk, sb pily-blky, sl frm-mod hd, arg-sily tex, mtx; calc; fast sting wh bl, even thk bri wh-yel, v thk yel brn	80% CHK: med-dk gry, occ lt gry, mot, sb pily-blky, sft- sl frm, rthy-sb wxy, 20%: MRLST: med-dk gy, blk, sb pily-blky, sl frm-mod hd, arg-sily tex, mtx; calc; fast sting wh bl, even thk bri wh-yel, v thk yel brn
TVD (ft)		TVD (ft)	







MD: 8,158'  
Inclination: 90.37 °  
Azimuth: 89.35 °  
TVD: 6,331.99'  
VS: 1,771.34'

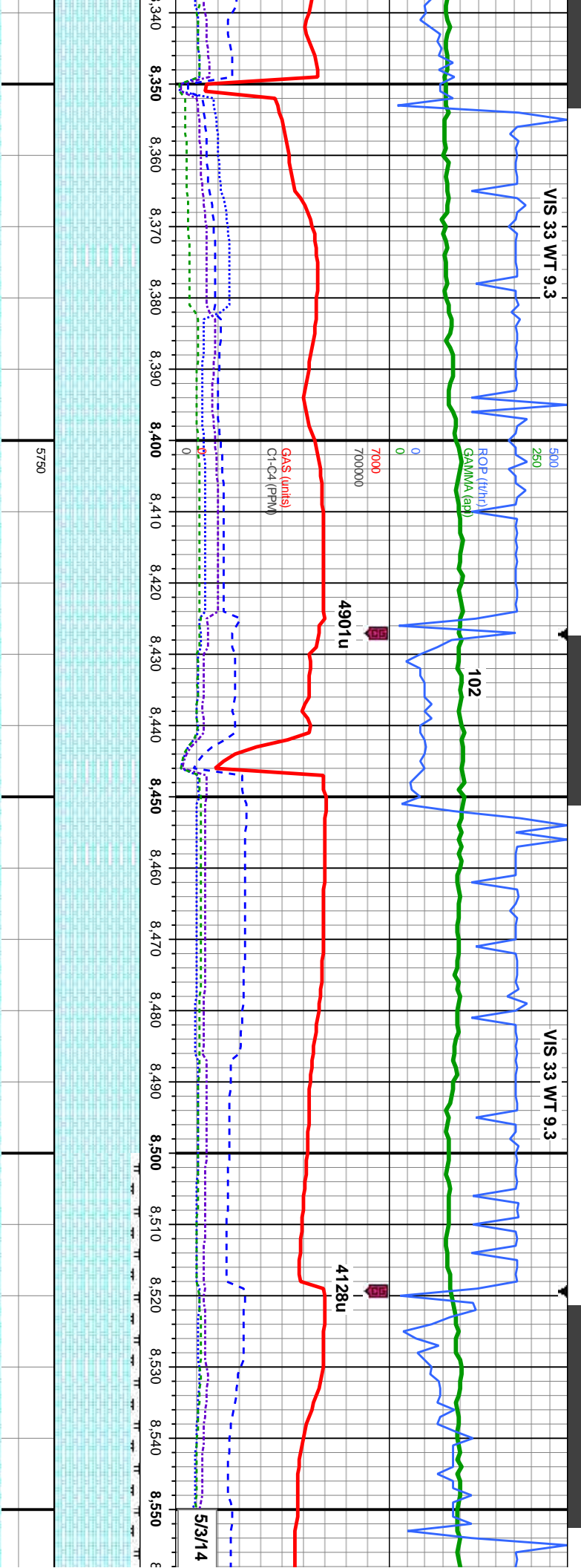
TVD (ft)

MD: 8,253'  
Inclination: 90.28 °  
Azimuth: 89.15 °  
TVD: 6,331.45'  
VS: 1,863.54'

dk gry, occ lt gry, mot, sb	85% CHK: med-dk gry, occ lt gry, mot, sb	90% CHK: lt-med gry, occ dk gry, mot, sb	90% CHK: lt-med gry, occ dk gry, mot, sb
rm, rthy-sb wxy, 15%:	ply-biky, sft- sl frm, rthy-sb wxy, 15%: MRLST:	ply-biky, sft- sl frm, rthy-sb wxy, 10%:	ply-biky, sft- sl frm, rthy-sb wxy, 10%:
gy, blk, sb pty-biky, sl	med-dk gy, blk, sb pty-biky, sl frm-mod hd,	MRLST: med-dk gy, blk, sb pty-biky, sl	MRLST: med-dk gy, blk, sb pty-biky, sl
sily tex, mtx, calc, tr bent,	arg-sily tex, mtx, calc, scat bent; fast stmg wh	frm-mod hd, arg-sily tex, mtx, calc, scat bent,	frm-mod hd, arg-sily tex, mtx, calc, scat bent,
even thk bri wh-yel, mod yel	bl, even thk bri wh-yel, mod yel brn	mod chk flor, g od; fast stmg wh bl, even	mod chk flor, g od; fast stmg wh bl, even
		mod thk bri yel-amb, mod yel brn	mod thk bri yel-amb, mod yel brn





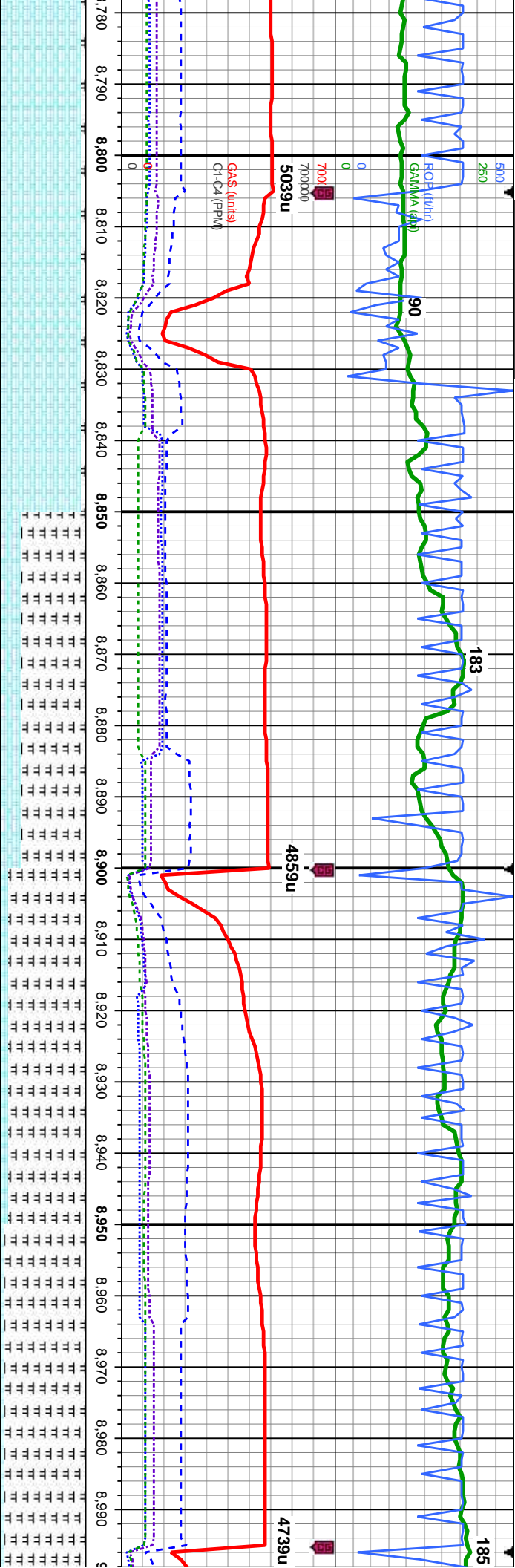


MD: 8,348' Inclination: 90.37 ° Azimuth: 90.3 ° TVD: 6,330.92' VS: 1,955.54'		dk gry, sft- sl flor, g od: thk yel brn	100% CHK: crm, ltgy-gry brn, some dk gry, mot, sb pily-sb blk, mod sft- sl frn, rthy-sb wxy, mt; v calc, g chk flor, g od: fast stmg wh bl, even thk bri wh-yel, thk yel brn
MD: 8,443' Inclination: 90.15 ° Azimuth: 90.27 ° TVD: 6,330.48' VS: 2,047.31'		dk gry, sft- sl flor, g od: thk yel brn	100% CHK: crm, ltgy-gry brn, some dk gry, mot, sb pily-sb blk, mod sft- sl frn, rthy-sb wxy, mt; v calc, g chk flor, g od: fast stmg wh bl, even mod thk bri wh-yel, thk yel brn
MD: 8,538' Inclination: 89.48 ° Azimuth: 91.52 ° TVD: 6,330.79' VS: 2,138.81'		dk gry, sft- sl flor, g od: thk yel brn	90% CHK: lt-med gry, occ dk gry, mot, sb pily-blky, sft- sl frn, rthy-sb wxy, 10% MRLST, med-dk gy, blk, sb pily-blky, sl frn-mod nd, larg-sily tex, mt; calc, occ imbd cal, tr imbd pyr, tr bent, mod chk flor, g od: fast stmg wh bl, even mod thn mod wh-yel, thn yel brn





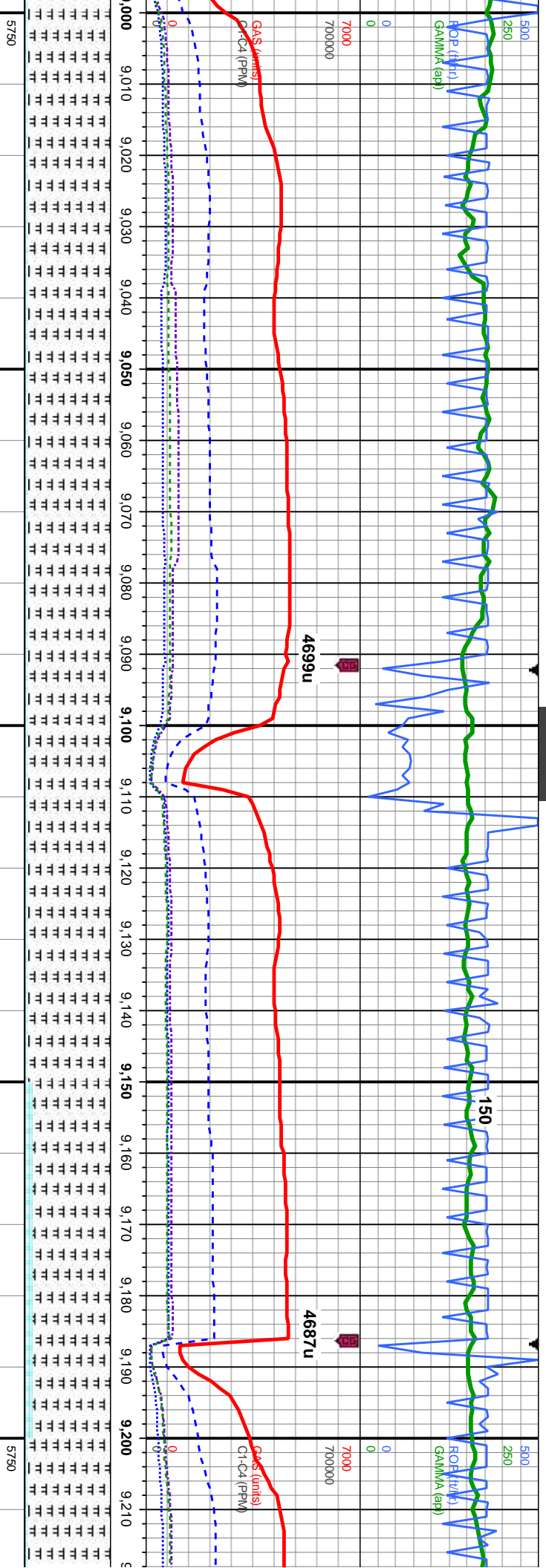




5750		MD: 8.823' Inclination: 89.57° Azimuth: 91.15° TVD: 6,332.46' VS: 2,412.52'	
dk gry and lt	95% CHK: lt-med gry, occ dk gry and lt	75%: MRLST: med-dk gy, blk, sb pty-blky, sl	90%: MRLST: med-dk gy, blk, sb pty-blky, sl
sft- sl frm, rthy-sb	brn-cm, mot, sb pty-blky, sft- sl frm, rthy-sb	frm-mod hd, arg-sily tex, mt; calc 25% CHK:	frm-mod hd, arg-sily tex, mt; calc 10% CHK:
gy, blk, sb	wxy, 5%: MRLST: med-dk gy, blk, sb pty-blky,	med gry, occ dk gry, mot, sb pty-blky, sft- sl	med gry, occ dk gry, mot, sb pty-blky, sft- sl
arg-sily tex, mt;	sl frm-mod hd, arg-sily tex, mt; calc, tr ls &	frm, rthy-sb wxy, tr cal frags, tr bent, fr oc;	frm, rthy-sb wxy, tr cal frags, tr bent, fr oc;
k flr, g od;	limbd cal, g chk flr, g od: mod sting wh bl,	mod sting wh bl, even mod thk bri wh-yel,	mod sting wh bl, even mod thn bri wh-yel,
mod thk bri	even mod thk bri wh-yel, thk yel brn	thk yel brn	mod yel brn
8500			







MD: 9,014'  
Inclination: 89.48 °  
Azimuth: 90.3°  
TVD: 6,334.02'  
VS: 2,596.56'

95%: MRLST: med-dk gy, blk, sb pily-blky, sl  
frm-mod hd, arg-sily tex, mtx; calc 5% CHK:  
med gry, occ dk gry, mot, sb pily-blky, sft- sl  
frm, rthy-sb wxy, tr cal frags, tr bent, fr od;  
slow-mod sting wh bl, even mod thn bri  
wh-yel, mod yel brn

95%: MRLST: med-dk gy, blk, sb pily-blky, sl  
frm-mod hd, arg-sily tex, mtx; calc 5% CHK:  
med gry, occ dk gry, mot, sb pily-blky, sft- sl  
frm, rthy-sb wxy, fr od; slow-mod sting wh bl,  
even mod thn bri wh-yel, mod yel brn;  
slow-mod sting wh bl, even mod thn bri  
wh-yel, mod yel brn

MD: 9,109'  
Inclination: 90.06 °  
Azimuth: 90.96°  
TVD: 6,334.4'  
VS: 2,688.18'

95%: MRLST: med-dk gy, blk, sb pily-blky, sl  
frm-mod hd, arg-sily tex, mtx; calc 5% CHK:  
med gry, occ dk gry, mot, sb pily-blky, sft- sl  
frm, rthy-sb wxy, fr od; slow-mod sting wh bl,  
even thn fnt yel-amb, thn yel brn

90%: MRLST: med-dk gy, blk, sb pily-blky, sl  
frm-mod hd, arg-sily tex, mtx; calc 10% CHK:  
med gry, occ dk gry, mot, sb pily-blky, sft- sl  
frm, rthy-sb wxy, fr od; slow-mod sting wh bl,  
even thn fnt yel-amb, thn yel brn

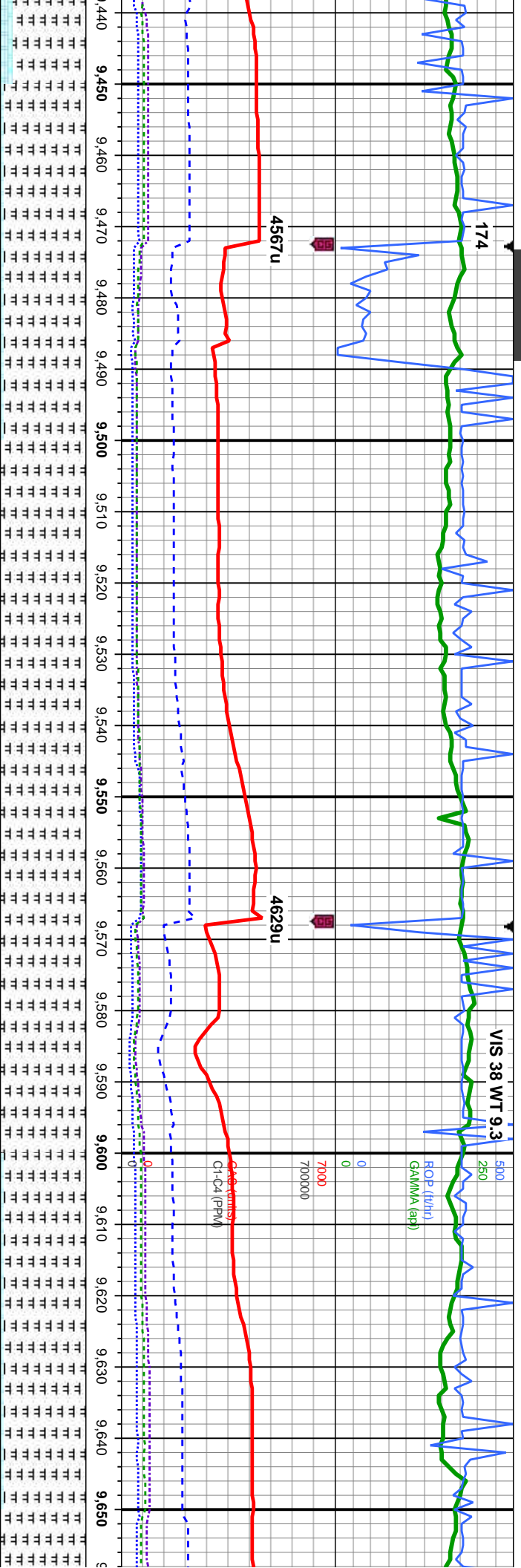
MD: 9,204'  
Inclination: 90.34 °  
Azimuth: 90.12°  
TVD: 6,334.07'  
VS: 2,779.83'

95%: MRLST: med-dk gy, blk, sb pily-blky, sl  
frm-mod hd, arg-sily tex, mtx; calc 5% CHK:  
med gry, occ dk gry, mot, sb pily-blky, sft- sl  
frm, rthy-sb wxy, fr od; slow-mod sting wh bl,  
even mod thn bri







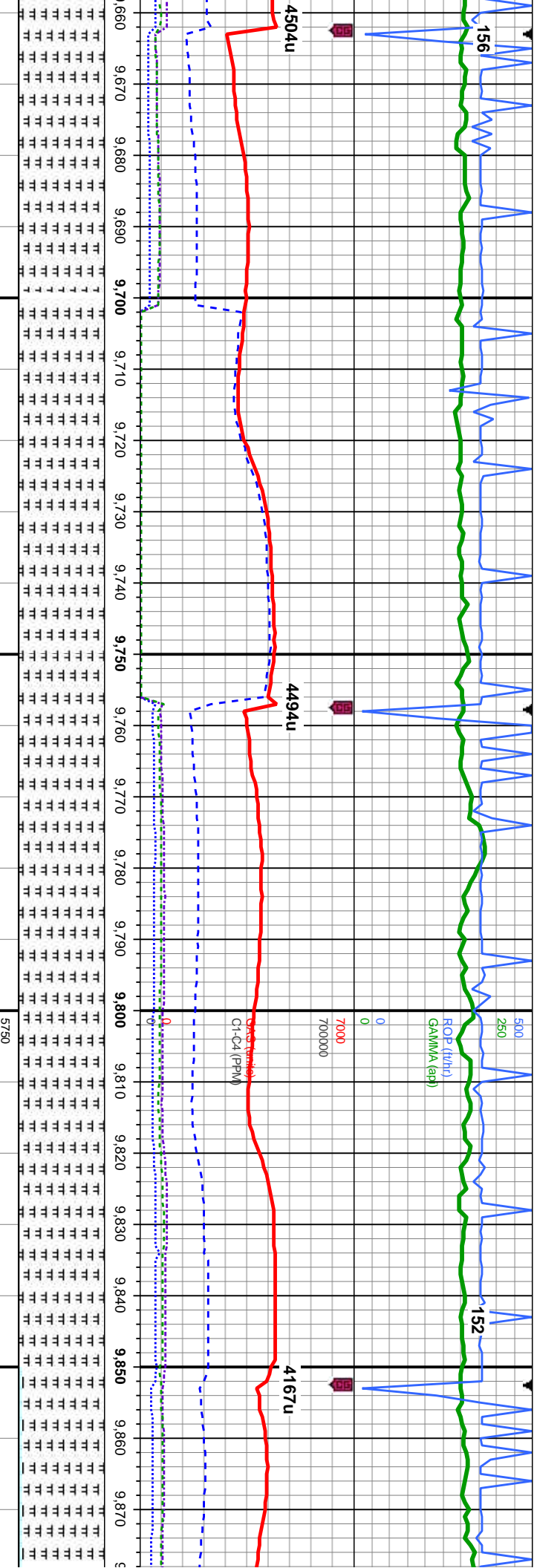


MD: 9,489'  
Inclination: 88.92°  
Azimuth: 90.22°  
TVD: 6,331.61'  
VS: 3,055.01'

MD: 9,585'  
Inclination: 89.42°  
Azimuth: 90.22°  
TVD: 6,333'  
VS: 3,147.76'

ty-blky, sl	95%: MRLST: med-dk gy, blk, sb pily-blky, sl	100%: MRLST: med-dk gy, blk, sb pily-blky, sl	100%: MRLST: med-dk gy, blk, sb pily-blky, sl	95%: MRLST: med-dk gy, blk, sb pily-blky, sl
5% CHK:	frm-mod hd, arg-sily tex, mtx; calc 5% CHK:	sl frm-mod hd, arg-sily tex, mtx; calc fr od,	sl frm-mod hd, arg-sily tex, mtx; calc fr od,	frm-mod hd, arg-sily tex, mtx; calc 5% CHK:
ty, sft- sl	med gry, occ dk gry, mot, sb pily-blky, sft- sl	slow-mod stng dull wh bl, even mod thn	slow-mod stng dull wh bl, even mod thn	med gry, occ dk gry, mot, sb pily-blky, sft- sl
mg wh bl,	frm, rthy-sb wxy, fr od; slow-mod stmg wh bl,	mod wh-yel, thn yel brn sn	mod wh-yel, thn yel brn sn	frm, rthy-sb wxy, fr od; slow-mod stmg wh bl,
mn	even mod thn mod wh-yel, thn yel brn			even mod thn mod wh-yel, thn yel brn





MD: 9,679'  
Inclination: 90.06 °  
Azimuth: 90.1 °  
TVD: 6,333.43'  
VS: 3,238.73'

MD: 9,679'  
Inclination: 90.06 °  
Azimuth: 90.1 °  
TVD: 6,333.43'  
VS: 3,238.73'

MD: 9,774'  
Inclination: 90.52 °  
Azimuth: 89.88 °  
TVD: 6,332.95'  
VS: 3,330.62'

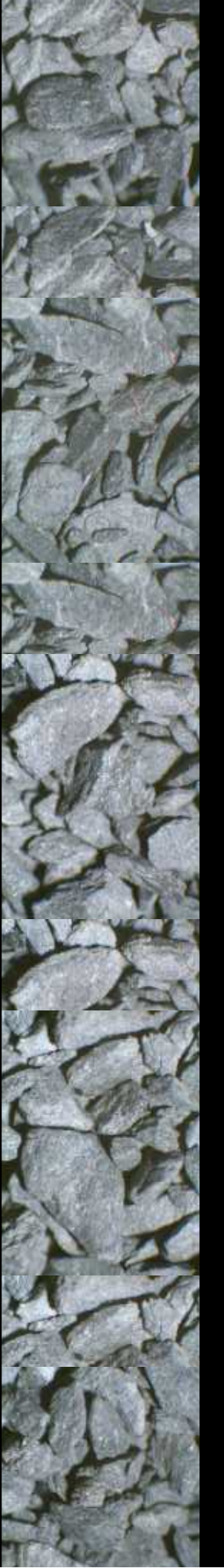
MD: 9,774'  
Inclination: 90.52 °  
Azimuth: 89.88 °  
TVD: 6,332.95'  
VS: 3,330.62'

TVD (ft)

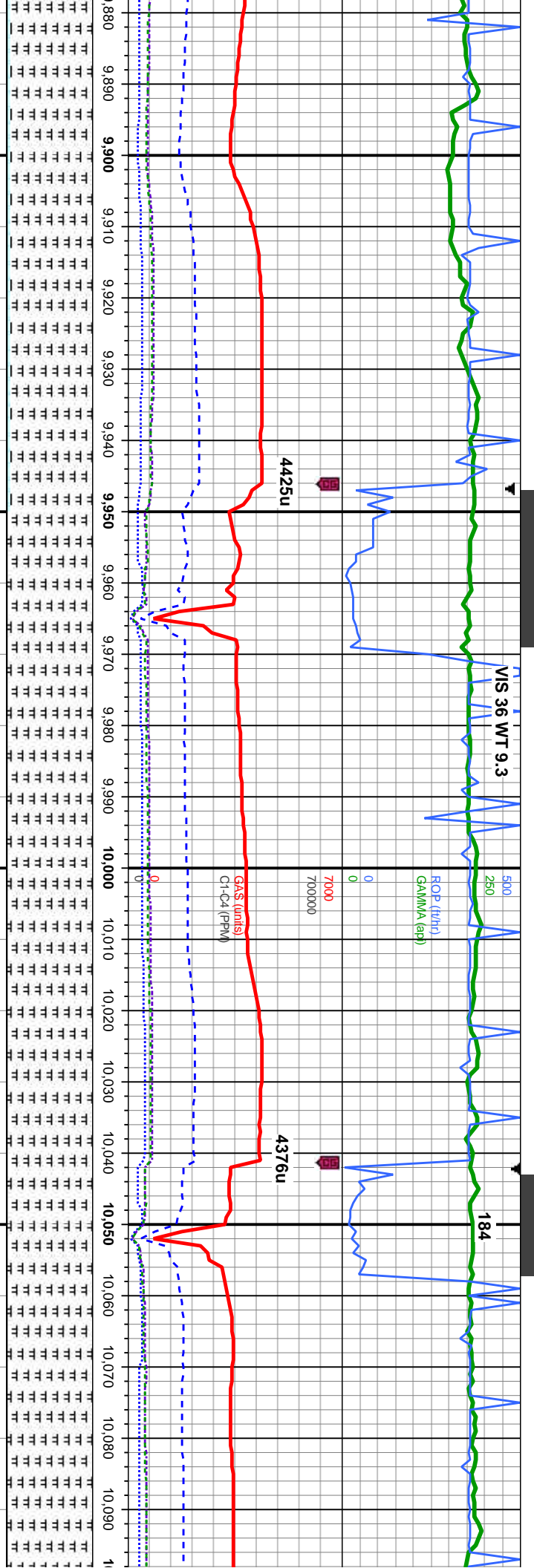
TVD (ft)

MD: 9,869'  
Inclination: 91.01 °  
Azimuth: 89.5 °  
TVD: 6,331.62'  
VS: 3,422.63'

MD: 9,869'  
Inclination: 91.01 °  
Azimuth: 89.5 °  
TVD: 6,331.62'  
VS: 3,422.63'

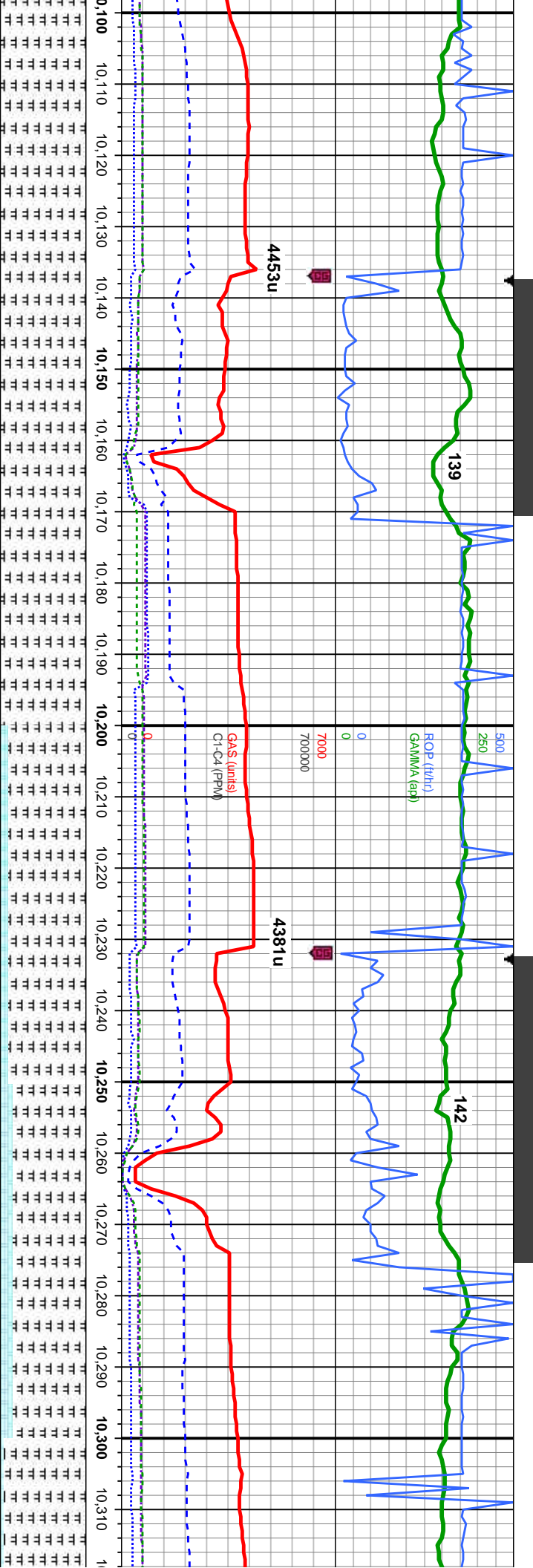






3°		MD: 9,964' Inclination: 90.8° Azimuth: 88.93° TVD: 6,330.06' VS: 3,514.83'		MD: 10,059' Inclination: 91.2° Azimuth: 89.86° TVD: 6,328.41' VS: 3,606.95'	
blk, sb pily-blky, sl	95%: MRLST: med-dk gy, blk, sb pily-blky, sl	frn-mod hd, arg-sily tex, mt; calc 5% CHK:	100%: MRLST: med-dk gy, blk, sb pily-blky,	sl frn-mod hd, arg-sily tex, mt; calc, tr imbd	100%: MRLST: med-dk gy, blk, sb pily-blky,
mt; calc 5% CHK:	frn-mod hd, arg-sily tex, mt; calc 5% CHK:	med gry, occ dk gry, mot, sb pily-blky, sft- sl	sl frn-mod hd, arg-sily tex, mt; calc, tr imbd	cal, fr od, slow-mod sting dull wh bl, even	sl frn-mod hd, arg-sily tex, mt; calc, tr imbd
sb pily-blky, sft- sl	frn, rthy-sb wxy, fr od, slow-mod sting dull	wh bl, even mod thn mod wh-yel, mod yel	cal, fr od, slow-mod sting dull wh bl, even	mod thn mod wh-yel, mod yel brn stn	cal, fr od, slow-mod sting dull wh bl, even
al, fr od, slow-mod					
thn mod wh-yel,	brn stn				





5750

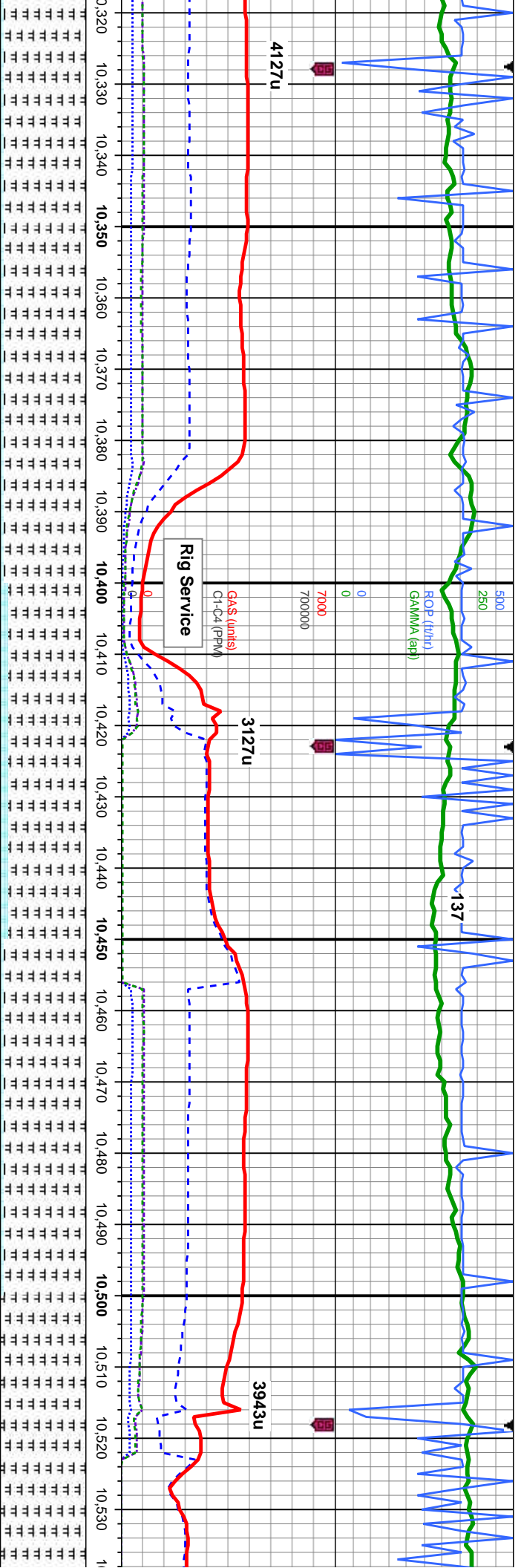
MD: 10,154'  
Inclination: 91.3°  
Azimuth: 90.38°  
TVD: 6,326.33'  
VS: 3,698.77'

MD: 10,249'  
Inclination: 90.43°  
Azimuth: 90.31°  
TVD: 6,324.9'  
VS: 3,790.5'

100%: MRLST: med-dk gy, blk, sb pily-blky, mod sft - mod hd, arg-sily tex, mtx; calc, tr imbd cal, slow string dull wh bl, even mod thn mod wh-yel, thn yel brn stn	100%: MRLST: med-dk gy, blk, sb pily-blky, mod sft - mod hd, arg-sily tex, mtx; calc, tr imbd cal, slow string dull wh bl, even mod thn mod wh-yel, thn yel brn stn	90%: MRLST: med-dk gy, blk, sb pily-blky, sl frm-mod hd, arg-sily tex, mtx; calc 10% CHK: med - dk gry, mot, sb pily-blky, sft-sl frm, rthy-sb wxy, mod sting dull wh bl, even mod thn mod wh-yel, mod brn sin	85%: MRLST: med-dk gy, blk, sb blkly-blky, sl frm-mod hd, arg-sily tex, mtx; calc 15% CHK: med - dk gry, mot, sb pily-blky, sft-sl frm, rthy-sb wxy, mod sting dull wh bl, even mod thn mod wh-yel, mod yel brn sin	95%: MRLST: m frm-mod hd, arg med - dk gry, mc rthy-sb wxy, slow thn mod wh-yel,
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MD: 10,344'  
Inclination: 89.6°  
Azimuth: 89.99°  
TVD: 6,324.87'  
VS: 3,882.33'

med-dk gy, blk, sb pily-blky, sl	95%: MRLST: med-dk gy, blk, sb pily-blky, sl	90%: MRLST: med-dk gy, blk, sb pily-blky, sl	95%: MRLST: med-dk gy, blk, sb pily-blky, sl
sisty tex, mt; calc 5% CHK:	frm-mod hd, arg-sily tex, mt; calc 5% CHK:	frm-mod hd, arg-sily tex, mt; calc 10% CHK:	frm-mod hd, arg-sily tex, mt; calc 5% CHK:
it, sb pily-blky, sft- sl frm,	med - dk gry, mot, sb pily-blky, sft- sl frm,	med - dk gry, mot, sb pily-blky, sft- sl frm,	med - dk gry, mot, sb pily-blky, sft- sl frm,
v sting dull wh bl, even mod	rthy-sb wxy, slow sting dull wh bl, even mod	rthy-sb wxy, even thn mod wh-yei, thn yel brn	rthy-sb wxy, even thn mod wh-yei, thn yel brn
thn yel brn stn	thn mod wh-yei, thn yel brn stn	stn	stn

MD: 10,439'  
Inclination: 89.54°  
Azimuth: 89.59°  
TVD: 6,325.59'  
VS: 3,974.3'

MD: 10,534'  
Inclination: 89.54°  
Azimuth: 89.59°  
TVD: 6,326.1'  
VS: 4,066.4'



VS 38 WT 9.4

SKD  
250  
ROD (Hr)  
GAMMA (api)

7000  
700000

4069u

Gravel (m/s)  
Cl-C4 (PPM)

147

3587u

5750

MD: 10,629'  
Inclination: 90.09°  
Azimuth: 88.82°  
TVD: 6,325.99'  
VS: 4,158.64'

MD: 10,724'  
Inclination: 90.03°  
Azimuth: 88.96°  
TVD: 6,325.89'  
VS: 4,250.98'

100%: MRLST: dk gy - blk, sb pty-blky, mod  
hd - hd, arg-stly tex, mx; calc, tr lse & imbd  
cal, tr bent, slow stimg dull even thn mod  
wh-yel, thn yel brn sin

100%: MRLST: dk gy - blk, sb pty-blky, mod  
hd - hd, arg-stly tex, mx; calc, tr lse & imbd  
cal, tr bent, slow stimg dull even thn mod  
wh-yel, thn yel brn sin

100%: MRLST: dk gy - blk, sb pty-blky, mod  
hd - hd, arg-stly tex, mx; calc, tr lse & imbd  
cal, tr bent, slow stimg dull wh bl, even thn  
dull wh-yel, tr yel brn sin

100%: MRLST: dk gy - blk, sb pty-blky, mod  
hd - hd, arg-stly tex, mx; calc, tr inoc fos,  
slow stimg dull even thn mod wh-yel, thn yel  
brn sin

100%: MRLST: dk gy - blk, sb pty-blky, mod  
hd - hd, arg-stly tex, mx; calc, tr inoc fos,  
slow stimg dull even thn mod wh-yel, thn yel  
brn sin

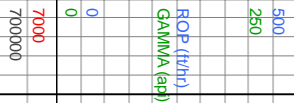
9.94°  
43°  
02'

TVD (ft)



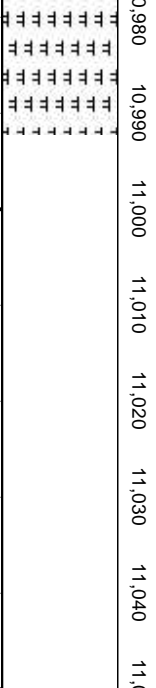






TD Reached @ 10,992' MD  
17:41 MST on 5/4/2014

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COLUMBINE LOGGING INC.

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