

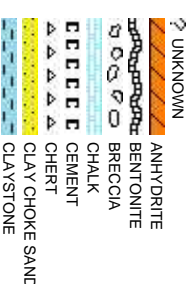


Scale: 5" / 100'
Measured Depth Log

Well Name	Guttersen State DD17-79HN(HORZ)		
Location	SEC 33 17-3N 63W		
State	Colorado	County	Weld
Country	USA		
API Number	05-123-38012-0000	Rig Number	H&P #322
Region	DJ BASIN	Field	WATTENBERG
Spud Date	Dec. 17, 2013	Drilling Completed	Dec. 24, 2013
Surface Coordinates	LAT: 40.21887°N LONG: 104.48210°W		
Bottom Hole Coordinates	LAT: 40.23252°N LONG: 104.47092°W		
Ground Elevation	4820'	K.B. Elevation	4843'
Logged Interval	1000'	To	11559'
Formation	NOIBRARARA C CHALK		
Type of Drilling Fluid	MUD;WATER;POLY		

Company NOBLE ENERGY

Name TERRY ACOMBE
Company COLUMBINE LOGGING
Address 2385 S. LIPAN
DENVER, CO 80219
(303) 289-7764



Operator

Geologist

BE:MIKE GREENE
OGGING INC.

ST
ORADO 80223

Rock Types

CONGLOMERATE	MARLSTONE	SHALY SANDSTONE
DOLomite	METAMORPHIC	SHALY SILTSTONE
DOLomite Limestone	NO SAMPLE	SILTY SHALE
GRANITE	SALT	SILTSTONE
GYPSUM	SANDSTONE	TILL
IGNEOUS	SALT-PEPPER SANt	TUFF
SIDERITE or LIMONITE	SHALE	WELDED TUFF
LIMESTONE	SHALE COLORED	
	SHALE GRAY	

Accessories

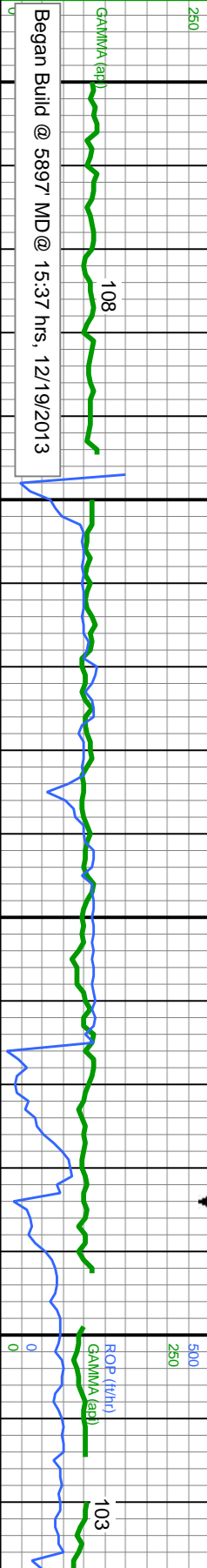
Fossils	GASTROPOD	ARGILLITE GRAIN	HEAVY MINERAL
INOCERAMUS	B BENTONITE	K KAOLIN	ANHYDRITE STRINGER
ALGAE	O OOLITE	BIT BITUMENOUS SUBSTANCE	B BENTONITE STRINGER
AMPHIPORA	O OSTRACOD	B BRECCIA FRAGMENTS	COAL STRINGER
BELEMNITE	P PELECYPOD	C CALCAREOUS	DOLOMITE STRINGER
BIOCLASTIC	P PELLET	C CARBONACEOUS FLAKES	G GYPSUM STRINGER
BRACHIOPOD	P PISOLITE	CHT CHERT	LIMESTONE STRINGER
BRYOZOA	P PLANT REMAINS	CHT 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 STROMATOPOROID	F FELDSPAR	SHALE STRINGER
E ECHINOID	F FERRUGINOUS PELLET	F FERRUGINOUS	S SILTY
F FISH	Minerals	T TUFFACEOUS	
FORAMINIFERA	A ANHYDRITIC	G GLAUCONITE	
F FOSSIL	A ARGILLACEOUS	G GYPSIFEROUS	Stringer

Other Symbols

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

Slide/Rotate

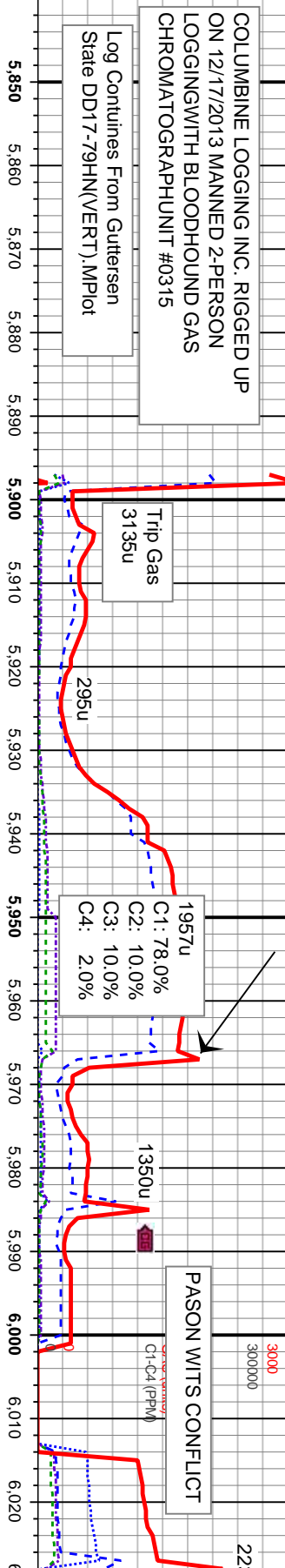
ROP
ROF
GAMMA



Total Gas & Chromatograph

GAS
C1
C2
C3
C4

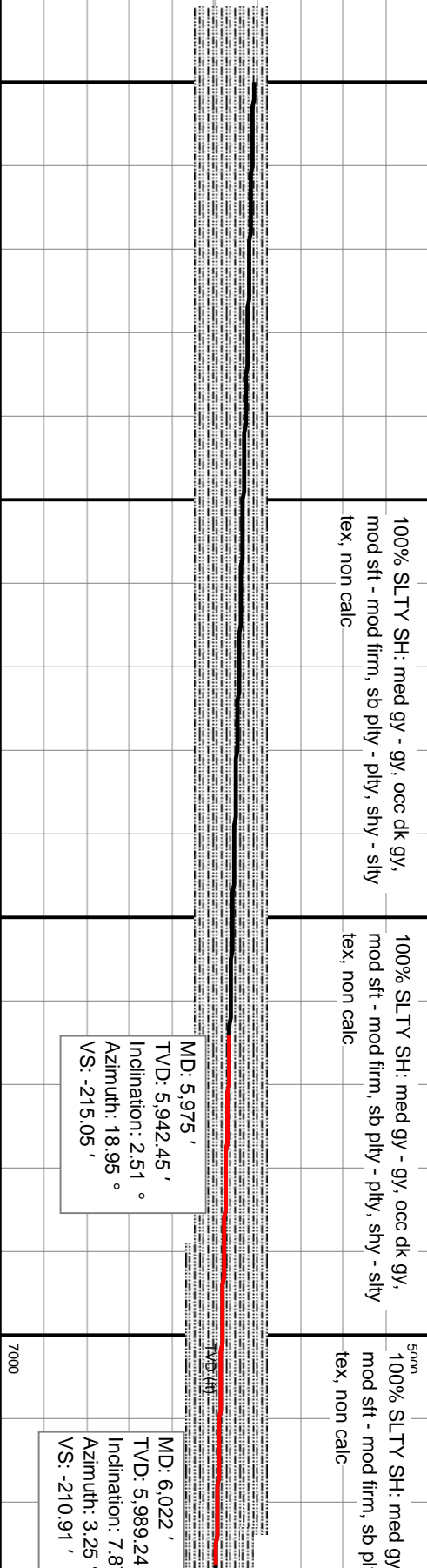
Depth Labels



% Lith

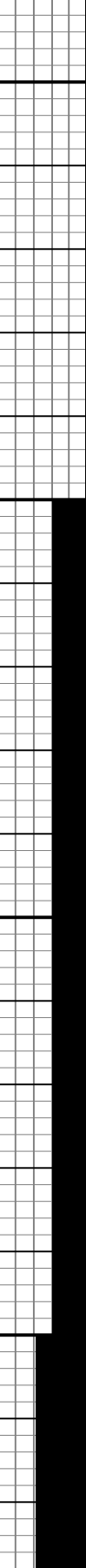


Well Bore
TVD



Oil Show

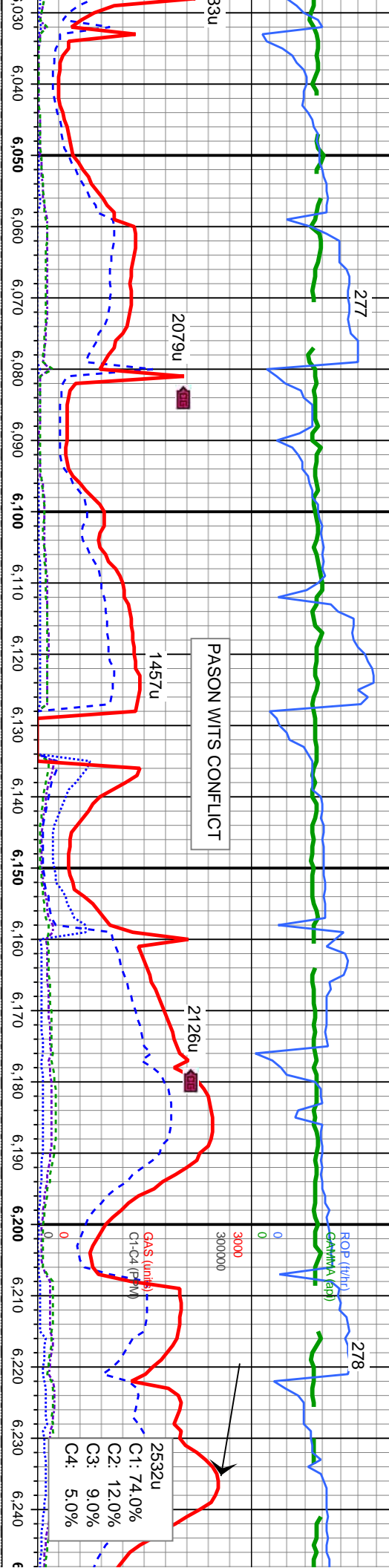
TR
FM
GE



Images



MUD WT 9.5 VIS 36



PASON WITS CONFLICT

2079u

1457u

2126u

2532u

- gy, occ dk gy, mod sft - mod firm, sb pily - pily, shy - silty tex, non calc

100% SLTY SH: med gy - gy, occ dk gy, mod sft - mod firm, sb pily - pily, shy - silty tex, non calc

95% SLTY SH: med gy - gy, occ dk gy, mod sft - mod firm, sb pily - pily, shy - silty tex, non calc

5% SHY SS: wh-op occ s&p, v f-f gr, sb rd-sb ang, p-mod srt, fri, mod por, grdg - ss

95% SLTY SH: med gy - gy, occ dk gy, mod sft - mod firm, sb pily - pily, shy - silty tex, non calc

5% SHY SS: wh-op occ s&p, v f-f gr, sb rd-sb ang, p-mod srt, fri, mod por, grdg - ss

100% SLTY SH: med gy - gy, occ dk gy, mod sft - mod firm, sb pily - pily, shy - silty tex, non calc

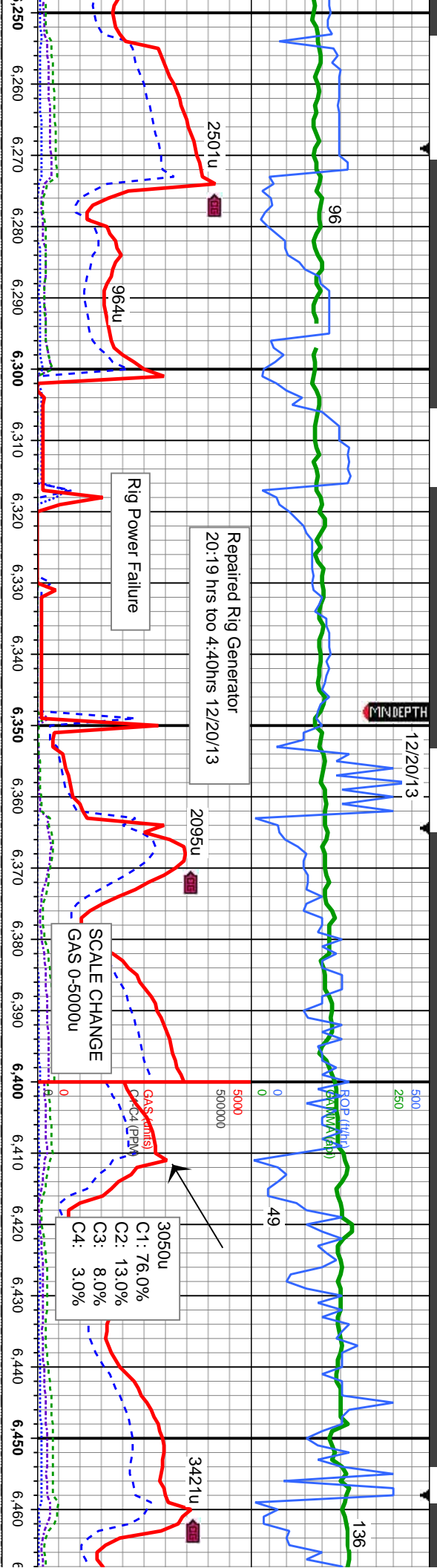
MD: 6,070 '
TVD: 6,036.61 '
Inclination: 10.75 °
Azimuth: 2.85 °
VS: -203.21 '

MD: 6,117 '
TVD: 6,082.5 '
Inclination: 14.13 °
Azimuth: 359.81 °
VS: -193.13 '

MD: 6,164 '
TVD: 6,127.73 '
Inclination: 17.35 °
Azimuth: 356.01 °
VS: -180.4 '

MD: 6,212 '
TVD: 6,173.05 '
Inclination: 21.1 °
Azimuth: 359.45 °
VS: -164.62 '





100% SLTY SH: med gy - gy, occ dk gy,
mod sft - mod firm, sb ply - ply, shv - slty
tex, non calc

100% SLTY SH: med gy - gy, occ dk gy,
mod sft - mod firm, sb ply - ply, shv - slty
tex, non calc, no bent

100% SLTY SH: med gy - gy, occ dk gy,
mod sft - mod firm, sb ply - ply, shv - slty
tex, non calc, no bent

100% SLTY SH: med gy - gy, occ dk gy,
mod sft - mod firm, sb ply - ply, shv - slty
tex, non calc, no bent

100% SLTY SH: med gy - gy, occ dk gy,
mod sft - mod firm, sb ply - ply, shv - slty
tex, non calc, no bent

MD: 6,306 '
TVD: 6,259.43 '
Inclination: 24.97 °
Azimuth: 2.44 °
VS: -127.78 '

MD: 6,353 '
TVD: 6,301.26 '
Inclination: 29.23 °
Azimuth: 3.61 °
VS: -106.55 '

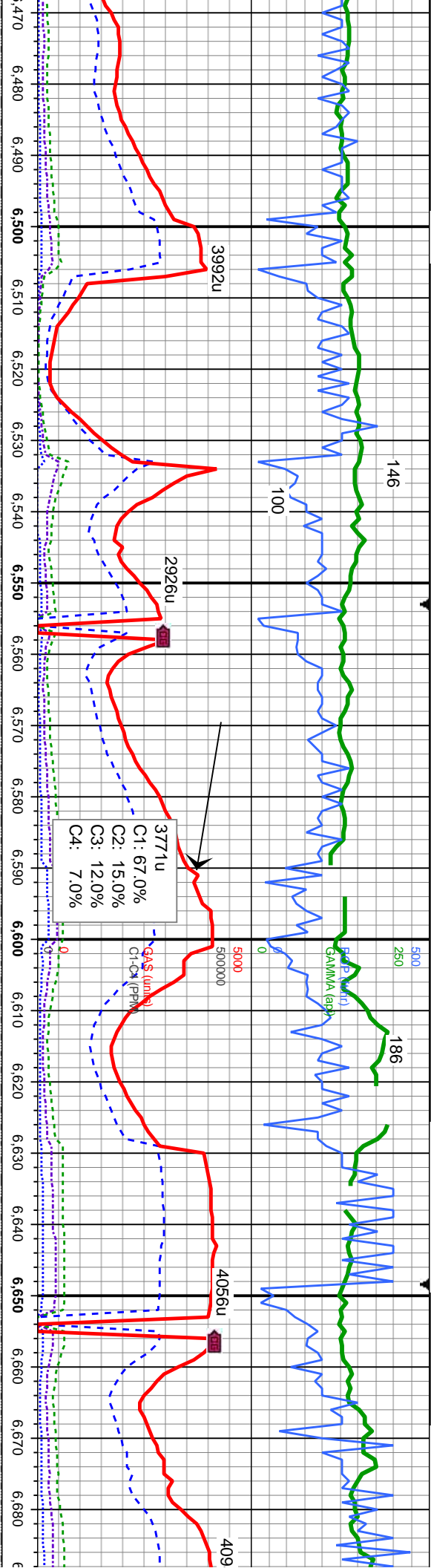
MD: 6,401 '
TVD: 6,342.21 '
Inclination: 33.61 °
Azimuth: 3.71 °
VS: -81.77 '

MD: 6,448 '
TVD: 6,380.84 '
Inclination: 35.83 °
Azimuth: 1.24 °
VS: -55.19 '

MD: 6,259 '
TVD: 6,216.55 '
Inclination: 23.37 °
Azimuth: 1.66 °
VS: -146.9 '

7000





100% SLTY SH: med gy - gy, occ dk gy, mod sft - mod firm, sb pty - pty, shy - stly
tex, non calc, no bent

100% SLTY SH: med gy - gy, occ dk gy, mod sft - mod firm, sb pty - pty, shy - stly
tex, non calc, abnt bent

100% SLTY SH: med gy - gy, occ dk gy, mod sft - mod firm, sb pty - pty, shy - stly
tex, non calc, abnt bent

100% SLTY SH: med gy - gy, occ dk gy, mod sft - mod firm, sb pty - pty, shy - stly
tex, non calc, abnt bent

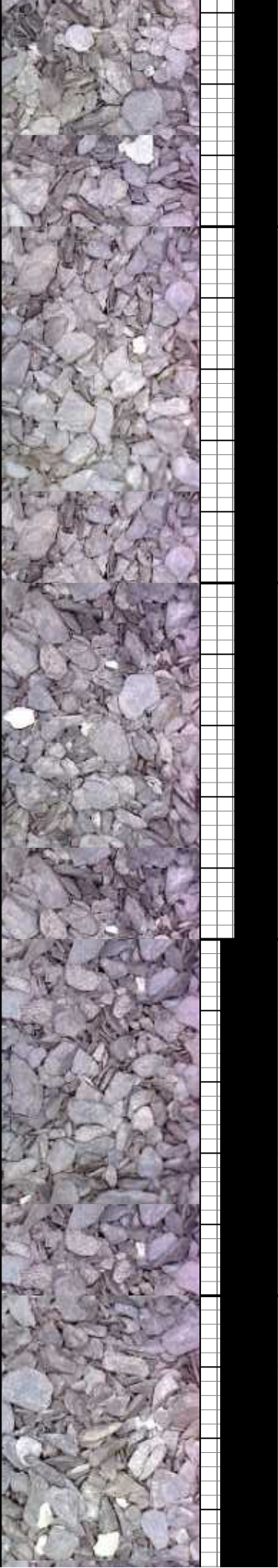
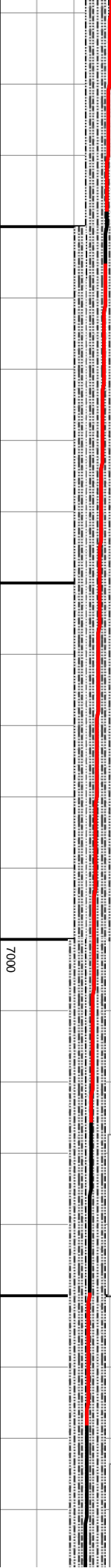
MD: 6,496 '
TVD: 6,418.52 '
Inclination: 40.71 °
Azimuth: 357.41 °
VS: -25.53 '

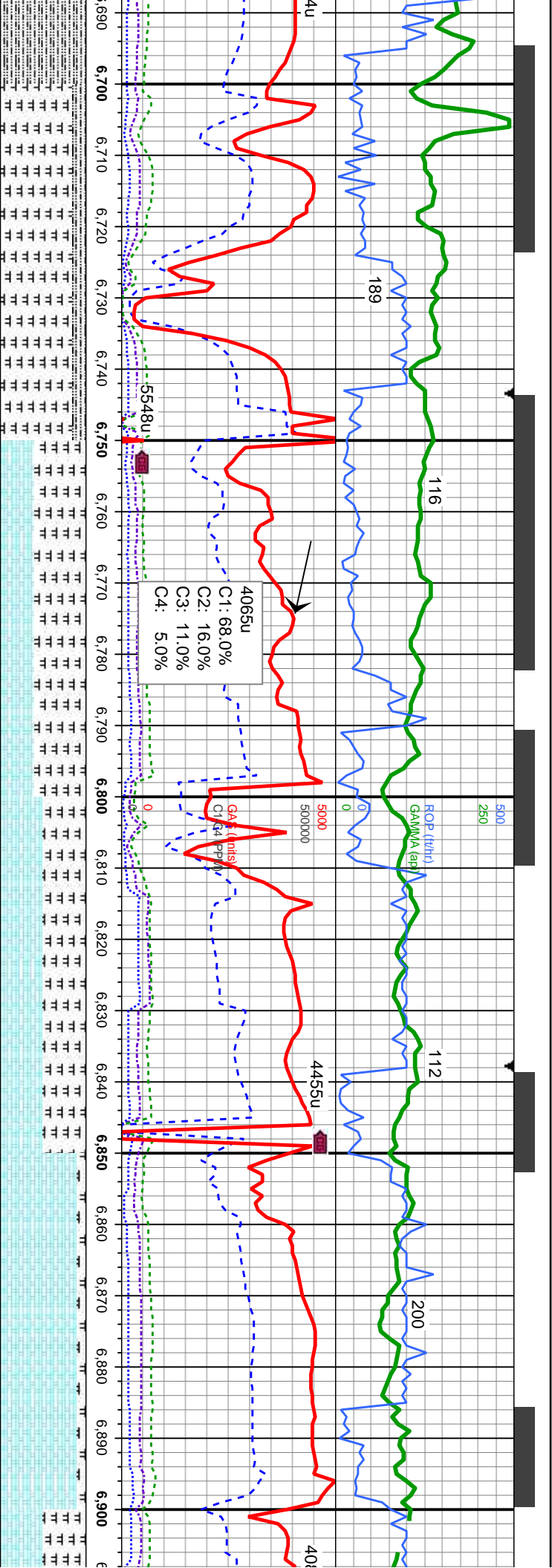
MD: 6,543 '
TVD: 6,452.48 '
Inclination: 46.7 °
Azimuth: 356.73 °
VS: 6.92 '

MD: 6,591 '
TVD: 6,483.19 '
Inclination: 53.68 °
Azimuth: 358.59 °
VS: 43.75 '

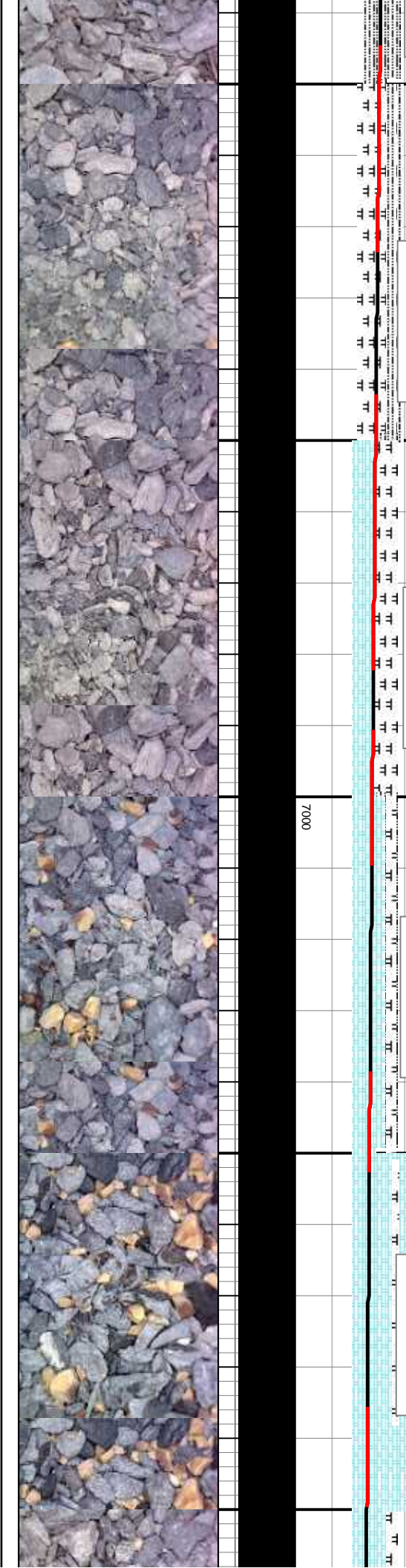
MD: 6,638 '
TVD: 6,509.44 '
Inclination: 58.39 °
Azimuth: 358.94 °
VS: 82.66 '

MD: 6,686 '
TVD: 6,533.5 '
Inclination: 6 '
Azimuth: 359 '
VS: 124.06 '



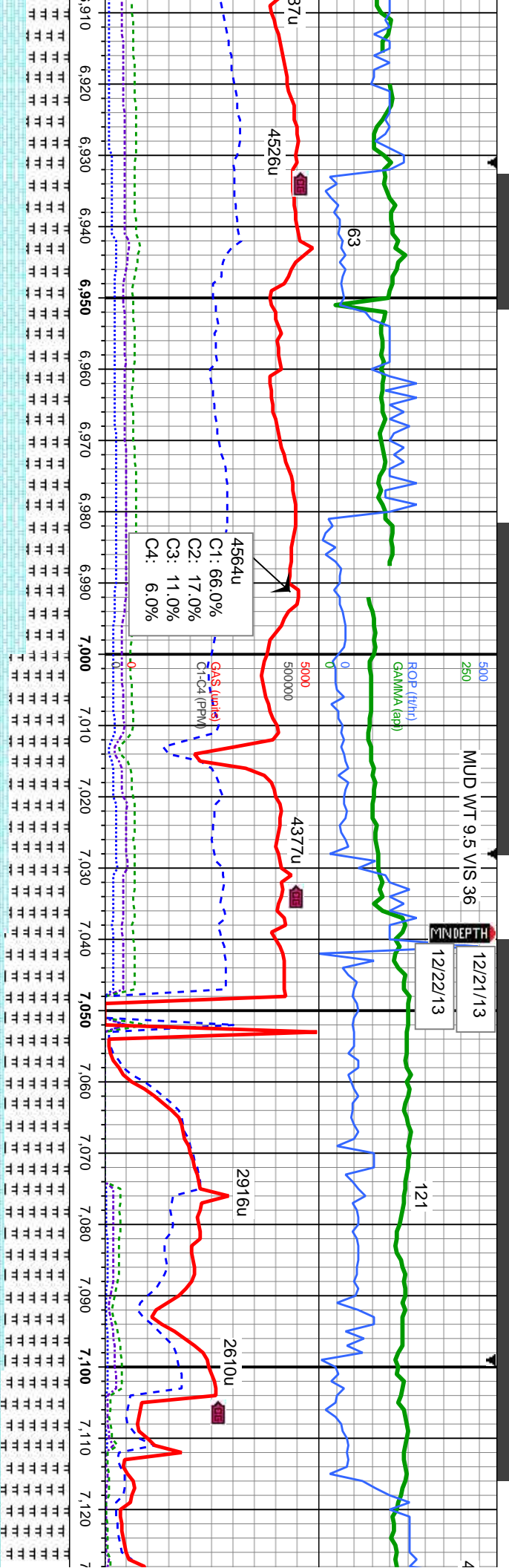


dk gy, sly - sly	85% MRL: m - dkgy, mod sft-sl firm, sbblky-sbply, rthy-sly tex, mostly mot, sl vit lstr, v calc	60% MRL: m - dkgy, mod sft-sl firm, sbblky-sbply, rthy-sly tex, mostly mot, sl vit lstr, v calc	50% CHK: lt gy - brn, sft, occ mod firm, sb bly - sb ply, sl wxy - rthy tex, occy sl lam, v vit lstr, v calc	90% CHK: lt gy - brn, sft, occ mod firm, sb bly - sb ply, sl wxy - rthy tex, occy sl lam, v vit lstr, v calc	50% C bly - sbply, 50% N sbply vit lstr
1.26 °	15% SLTY SH: med gy - gy, occ dk gy, mod sft - mod firm, sb ply - ply, shy - sly tex, non calc	40% CHK: lt gy - brn, sft, occ mod firm, sb bly - sb ply, sl wxy - rthy tex, occy sl lam, v calc	50% MRL: m - dkgy, mod sft-sl firm, sbblky-sbply, rthy-sly tex, mostly mot, sl vit lstr, v calc	10% MRL: m - dkgy, mod sft-sl firm, sbblky-sbply, rthy-sly tex, mostly mot, sl vit lstr, v calc	
.98 °	MD: 6.733 ' TVD: 6.554.99 ' Inclination: 64.52 ° Azimuth: 359.53 ° VS: 165.79 ' 7000	MD: 6.781 ' TVD: 6.573.71 ' Inclination: 69.54 ° Azimuth: 358.37 ° VS: 209.9 ' 7000	MD: 6.828 ' TVD: 6.589.14 ' Inclination: 72.14 ° Azimuth: 358.74 ° VS: 254.24 ' 7000	MD: 6.876 ' TVD: 6.603.19 ' Inclination: 73.81 ° Azimuth: 358.78 ° VS: 300.07 ' 7000	



MUD WT 9.5 VIS 36

12/21/13
12/22/13
MINDEPTH



HK: lt gy - brn, sft, occ mod firm, sb sb ply, sl wxy - rthy tex, occly sl lam MRL: m - dkgy, mod sft-sl firm, -sbply, rthy-sily tex, mostly mot, sl v calc	50% CHK: lt gy - brn, sft, occ mod firm, sb blky - sb ply, sl wxy - rthy tex, occly sl lam, v ca 50% MRL: m - dkgy, mod sft-sl firm, sbbly-sbply, rthy-sily tex, mostly mot, sl vit lstr, v calc	5-70% MRL: m - dkgy, mod sft-sl firm, sbbly-sbply, rthy-sily tex, mostly mot, sl vit lstr, v calc, abnt imbd mic fos 30% CHK: med gy - gybrn, sl sft, occ mod firm, sb blky, sl wxy - rthy tex, occly sl lam; lower B chk/upper B marl contact zone	75% MRL: m - dkgy, mod sft-sl firm, sbbly-sbply, rthy-sily tex, mostly mot, vit lstr, v calc 25% CHK: med gy - gybrn, sl sft, occ mod firm, sb blky, sl wxy - rthy tex, occly sl lam	80% MRL: m - dkgy, mod sbbly-sbply, rthy-sily te lstr, v calc 20% CHK: med gy - gybr firm, sb blky, sl wxy - rthy
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MD: 6,923 '
TVD: 6,615.62 '
Inclination: 75.5 °
Azimuth: 358.68 °
VS: 345.33 '

MD: 6,982 '
TVD: 6,628.68 '
Inclination: 78.93 °
Azimuth: 359.31 °
VS: 402.77 '

TVD (ft)
TOOH for 7" Casing 7039MD
14:46hrs 12/20/13

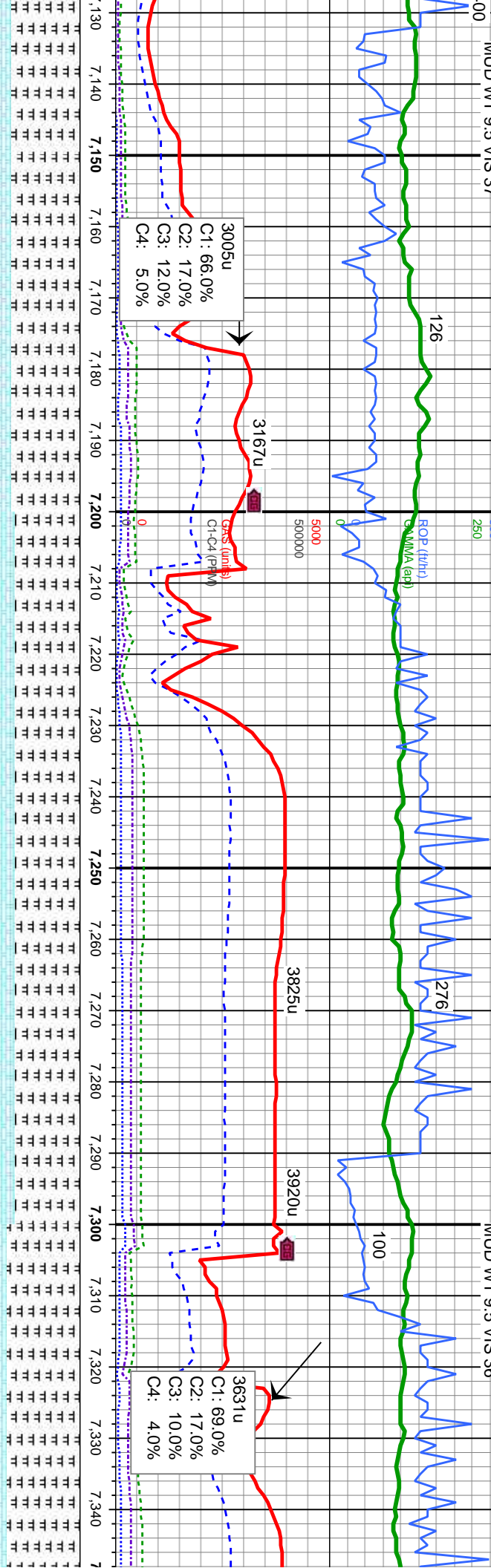
MD: 7,045 '
TVD: 6,638 '
Inclination: 84.04 °
Azimuth: 359.59 °
VS: 464.92 '

7000



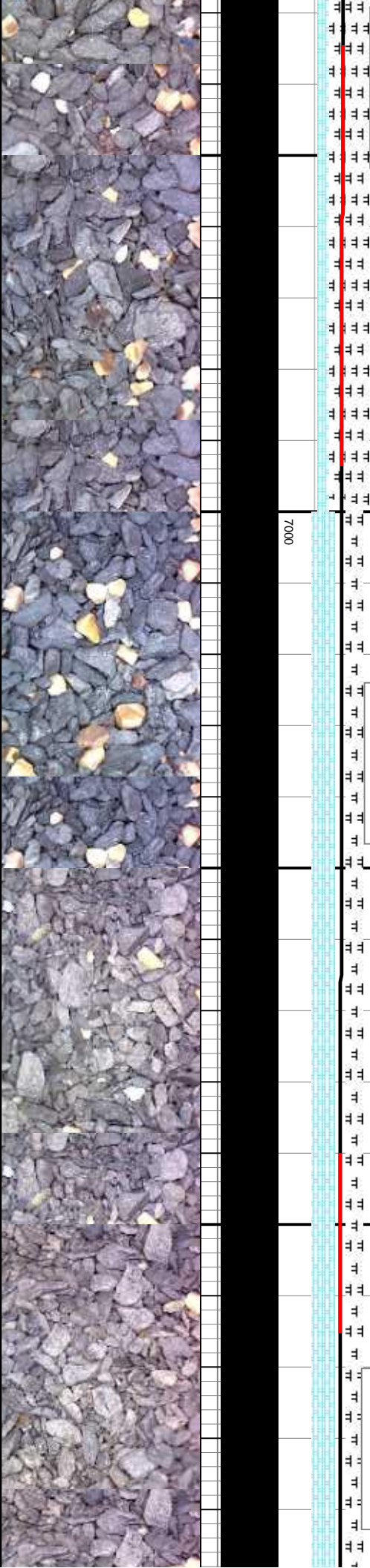
MUD WT 9.5 VIS 37

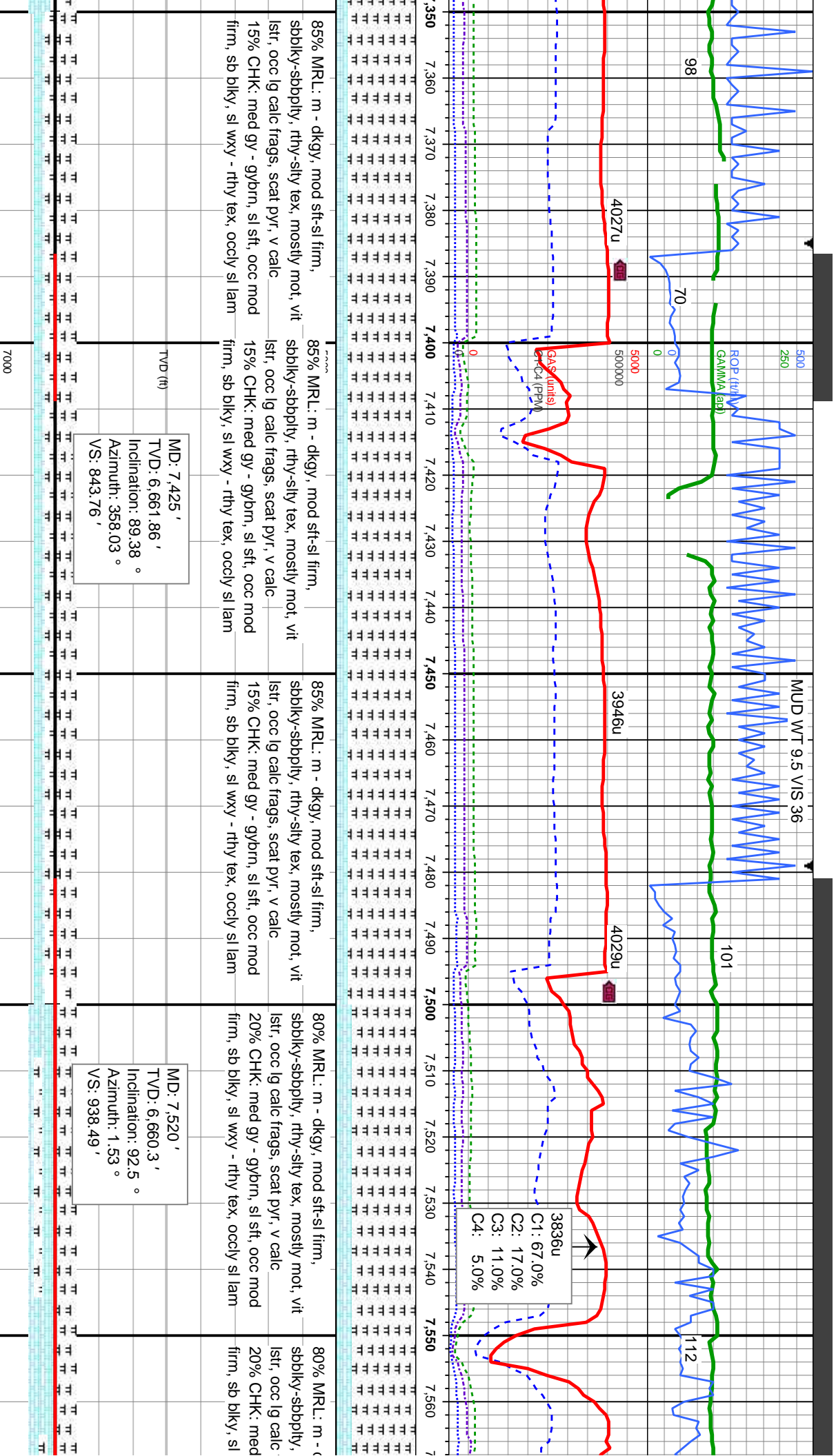
MUD WT 9.5 VIS 36

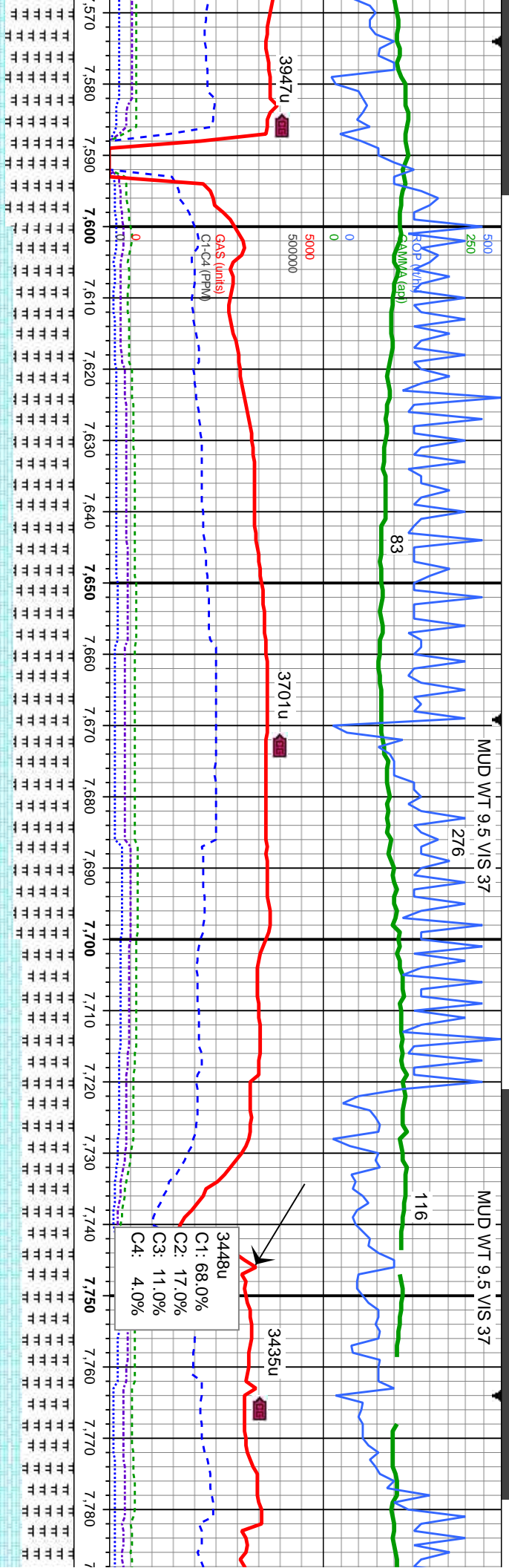


sft-sl firm, s, mostly mot. vit	80% MRL: m - dkgy, mod sft-sl firm, sbbiky-sbbply, rthy-slty tex, mostly mot. vit lsfr, v calc	75% MRL: m - dkgy, mod sft-sl firm, sbbiky-sbbply, rthy-slty tex, mostly mot. vit lsfr, occ lg calc frags, v calc	75% MRL: m - dkgy, mod sft-sl firm, sbbiky-sbbply, rthy-slty tex, mostly mot. vit lsfr, occ lg calc frags, v calc	85% MRL: m - dkgy, mod sft-sl firm, sbbiky-sbbply, rthy-slty tex, mostly mot. vit lsfr, occ lg calc frags, scat pyr, v calc
sl sft, occ mod tex, occy sl lam	20% CHK: med gy - gybrn, sl sft, occ mod firm, sb blkly, sl wxy - rthy tex, occy sl lam	25% CHK: med gy - gybrn, sl sft, occ mod firm, sb blkly, sl wxy - rthy tex, occy sl lam	25% CHK: med gy - gybrn, sl sft, occ mod firm, sb blkly, sl wxy - rthy tex, occy sl lam	15% CHK: med gy - gybrn, sl sft, occ mod firm, sb blkly, sl wxy - rthy tex, occy sl lam

MD: 7,140 ' TVD: 6,646.92 ' Inclination: 85.19 ° Azimuth: 357.86 ° VS: 559.37 '	TVD (ft)	MD: 7,236 ' TVD: 6,654.62 ' Inclination: 85.62 ° Azimuth: 357.25 ° VS: 655.01 '	MD: 7,331 ' TVD: 6,659.81 ' Inclination: 88.12 ° Azimuth: 357.07 ° VS: 749.83 '
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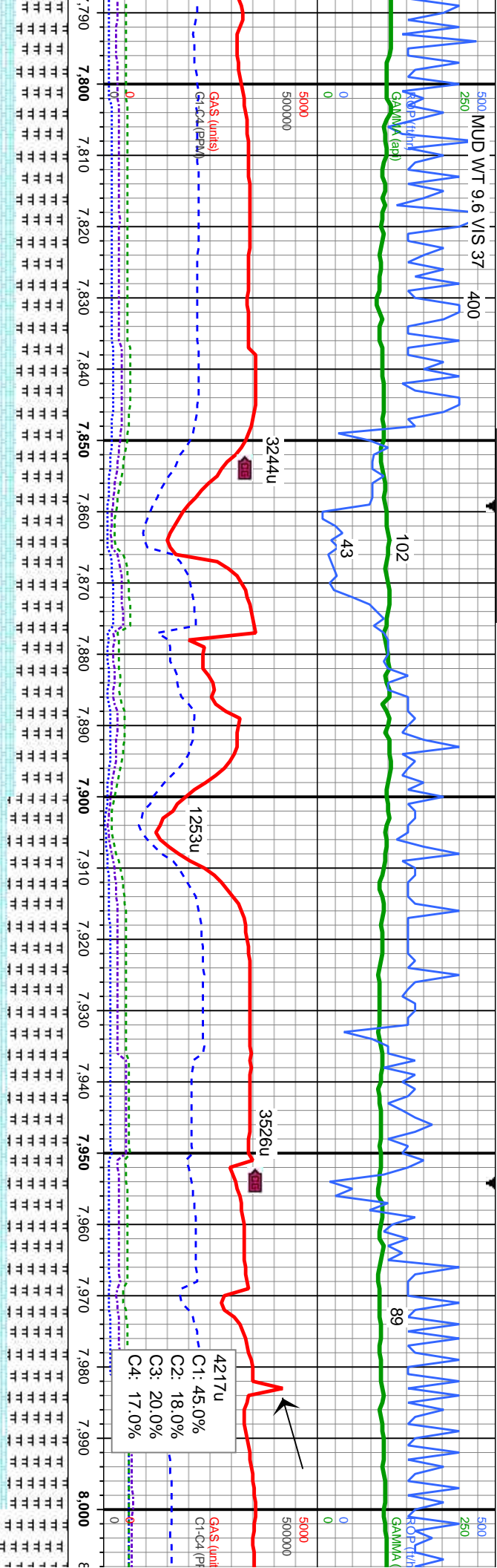
dkgy, mod sft-sl firm, rthy-silty tex, mostly mot, vit frags, scat pyr, v calc gy - gybmn, sl sft, occ mod wxy - rthy tex, occly sl lam	70% MRL: m - dkgy, mod sft-sl firm, sbbkly-sbbply, rthy-silty tex, mostly mot, vit lstr, occ lg calc frags, scat pyr, v calc 30% CHK: med gy - gybmn, sl sft, occ mod firm, sb blkly, sl wxy - rthy tex, occly sl lam	70% MRL: m - dkgy, mod sft-sl firm, sbbkly-sbbply, rthy-silty tex, mostly mot, vit lstr, occ lg calc frags, scat pyr, v calc 30% CHK: med gy - gybmn, sl sft, occ mod firm, sb blkly, sl wxy - rthy tex, occly sl lam	60% MRL: m - dkgy, mod sft-sl firm, sbbkly-sbbply, rthy-silty tex, mostly mot, vit lstr, occ lg calc frags, scat pyr, v calc 40% CHK: med gy - gybmn, sl sft, occ mod firm, sb blkly, sl wxy - rthy tex, occly sl lam	60% MRL: m - dkgy, mod sft-sl firm, sbbkly-sbbply, rthy-silty tex, mostly mot, vit lstr, occ lg calc frags, scat pyr, v calc 40% CHK: med gy - gybmn, sl sft, o firm, sb blkly, sl wxy - rthy tex, occly
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MD: 7,615 '
TVD: 6,657.66 '
Inclination: 90.68 °
Azimuth: 0.66 °
VS: 1,033.03 '

MD: 7,710 '
TVD: 6,656.38 '
Inclination: 90.86 °
Azimuth: 0.36 °
VS: 1,127.69 '

7000



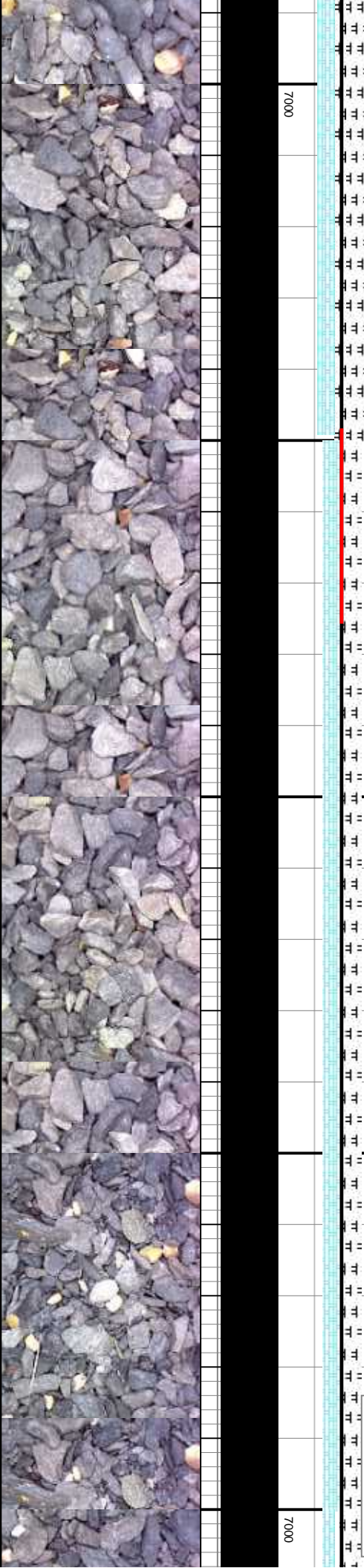


60% MRL: m - dkgy, mod sft-sl firm, sbblky-sbblpy, rthy-slty tex, mostly mot, vit lsir, occ lg calc frags, scat pyr, v calc 40% CHK: med gy - gybrn, sl sft, occ mod firm, sb blky, sl wxy - rthy tex, occly sl lam	60% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sbblpy, rthy-slty tex, mostly mot, vit lsir, occ lg calc frags, abnt pyr, v calc 40% CHK: med gy - gybrn, sl sft, occ mod firm, sb blky, sl wxy - rthy tex, occly sl lam	70% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sbblpy, rthy-slty tex, mostly mot, vit lsir, occ lg calc frags, abnt pyr, v calc 30% CHK: med gy - gybrn, sl sft, occ mod firm, sb blky, sl wxy - rthy tex, occly sl lam	70% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sbblpy, rthy-slty tex, mostly mot, vit lsir, occ lg calc frags, abnt pyr, v calc 30% CHK: med gy - gybrn, sl sft, occ mod firm, sb blky, sl wxy - rthy tex, occly sl lam	80% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sbblpy, rthy-slty tex, mostly mot, vit lsir, occ lg calc frags, abnt pyr, v calc 20% C firm, sb blky, sl wxy - rthy tex, occly sl lam
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MD: 7,805 '
TVD: 6,655.26 '
Inclination: 90.49 °
Azimuth: 359.25 °
VS: 1,222.44 '

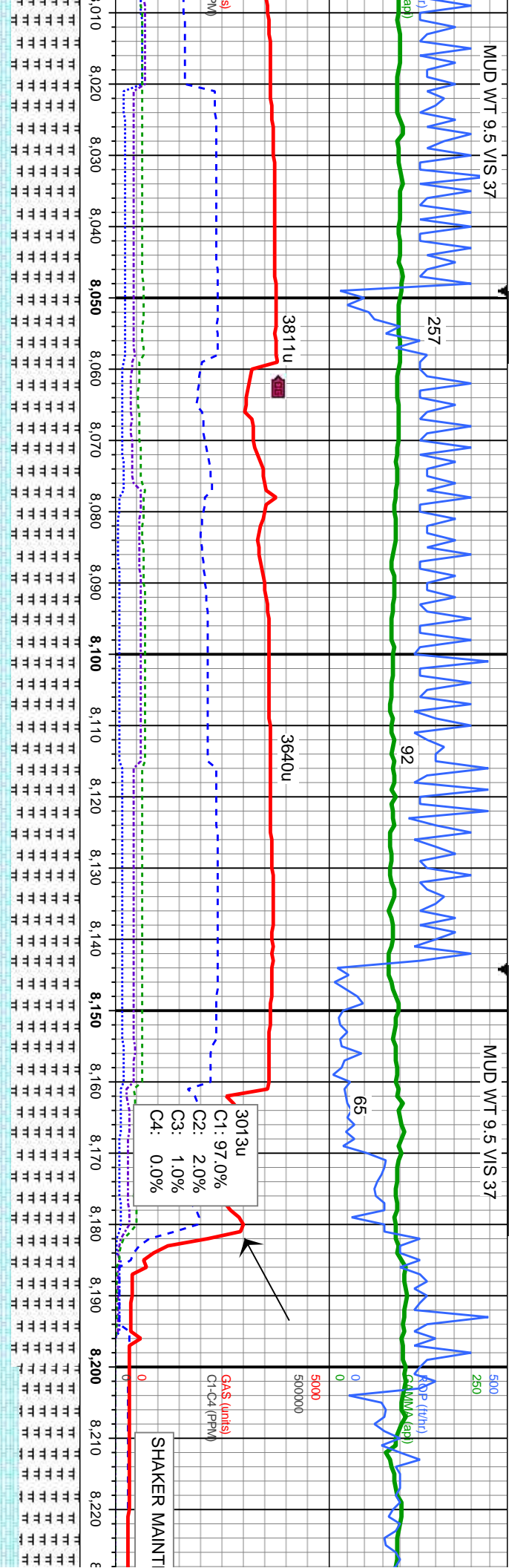
MD: 7,900 '
TVD: 6,655.29 '
Inclination: 89.48 °
Azimuth: 359.42 °
VS: 1,317.26 '

MD: 7,995 '
TVD: 6,655.57 '
Inclination: 90.18 °
Azimuth: 359.49 °
VS: 1,412.06 '



MUD WT 9.5 VIS 37

MUD WT 9.5 VIS 37



RL: m gy - dkgy, mod sft-sl firm, sbblky-sbblpy, rthy-slty tex, mostly mot, vit c lg calc frags, abnt pyr, v calc
HK: med gy - gybrn, sl sft, occ mod blkly, sl wxy - rthy tex, occly sl lam

80% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sbblpy, rthy-slty tex, mostly mot, vit lstr, occ lg calc frags, abnt pyr, v calc 20% CHK: med gy - gybrn, sl sft, occ mod firm, sb blkly, sl wxy - rthy tex, occly sl lam

80% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sbblpy, rthy-slty tex, mostly mot, vit lstr, occ lg calc frags, abnt pyr, v calc 20% CHK: med gy - gybrn, sl sft, occ mod firm, sb blkly, sl wxy - rthy tex, occly sl lam

80% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sbblpy, rthy-slty tex, mostly mot, vit lstr, occ lg calc frags, abnt pyr, v calc 20% CHK: med gy - gybrn, sl sft, occ mod firm, sb blkly, sl wxy - rthy tex, occly sl lam

570% MRL: m gy - dkgy, r sbblky-sbblpy, rthy-slty t lstr, v calc 30% CHK: med gy - gyb firm, sb blkly, sl wxy - rthy

MD: 8,090 '
TVD: 6,656.08 '
Inclination: 89.2 °
Azimuth: 355.14 °
VS: 1,506.99 '

MD: 8,184 '
TVD: 6,655.9 '
Inclination: 91.02 °
Azimuth: 358.49 °
VS: 1,600.96 '

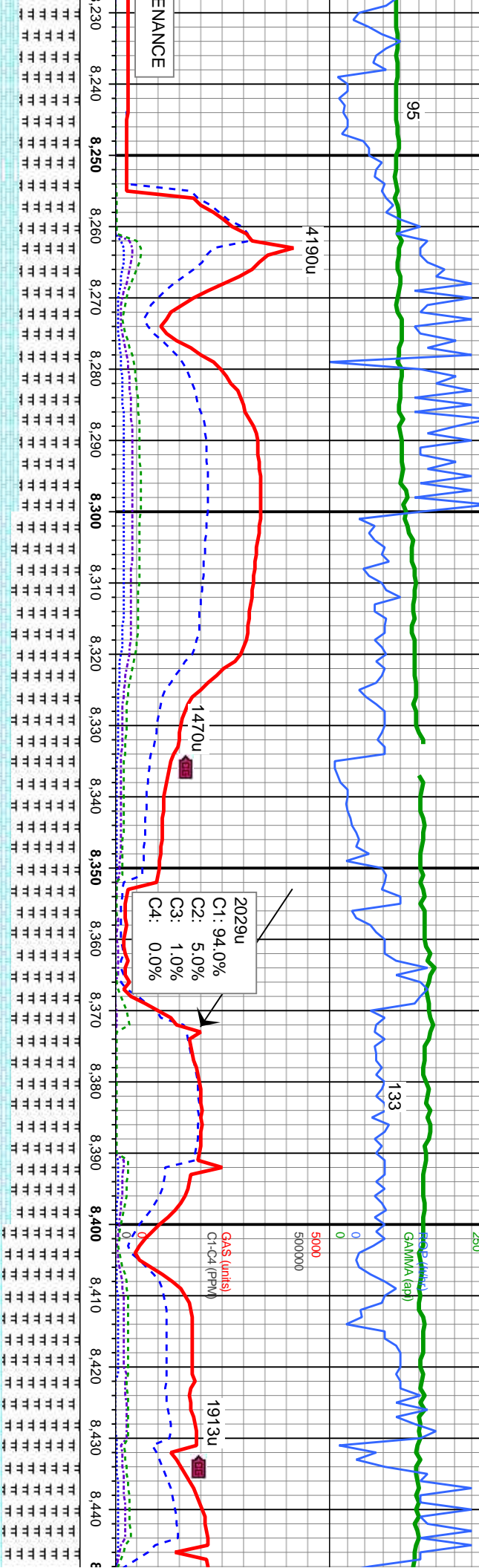
TVD (ft)

7000



MUD WT 9.6 VIS 37

MUD WT 9.6 V



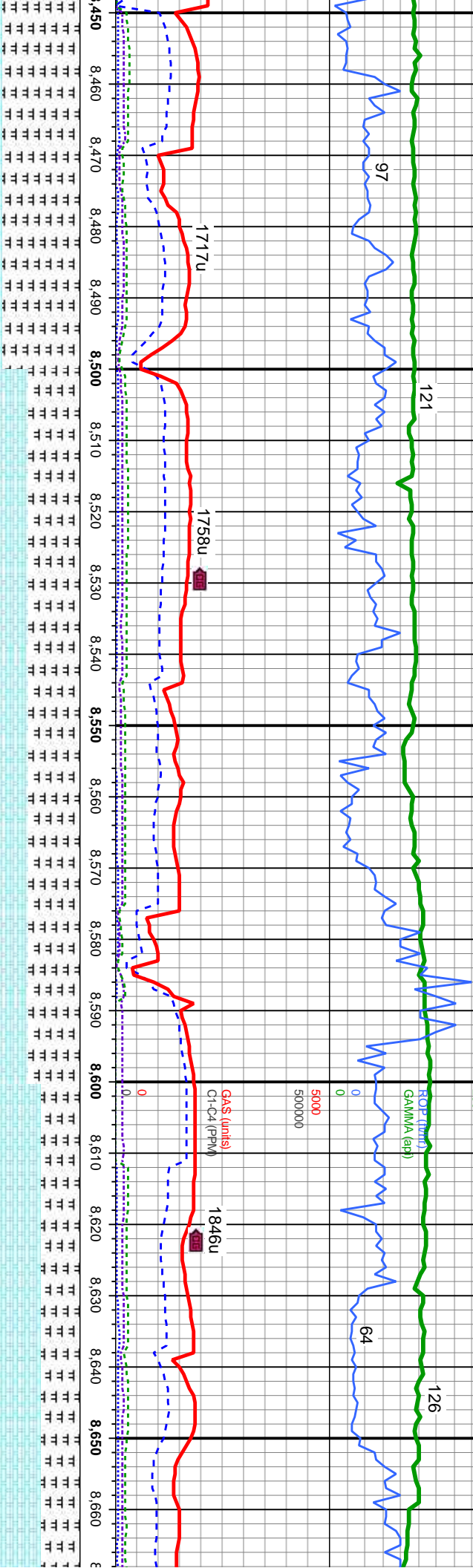
mod sft-sl firm, ex, mostly mot, vit	70% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sboply, rthy-slty tex, mostly mot, vit lstf, occ lg calc frags, abnt pyr, v calc 30% CHK: med gy - gybrn, sl sft, occ mod firm, sb blk, sl wxy - rthy tex, occly sl lam	80% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sboply, rthy-slty tex, mostly mot, vit lstf, v calc 20% CHK: med gy - gybrn, sl sft, occ mod firm, sb blk, sl wxy - rthy tex, occly sl lam	80% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sboply, rthy-slty tex, mostly mot, vit lstf, v calc 20% CHK: med gy - gybrn, sl sft, occ mod firm, sb blk, sl wxy - rthy tex, occly sl lam	90% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sboply, rthy-slty tex, mostly mot, occ vit lstf, v calc 10% CHK: med gy - gybrn, sl sft, occ mod firm, sb blk, sl wxy - rthy tex, occ sl lam
MD: 8,279 ' TVD: 6,653.85 ' Inclination: 91.45 ° Azimuth: 359.7 ° VS: 1,695.77 '				
MD: 8,374 ' TVD: 6,652.27 ' Inclination: 90.46 ° Azimuth: 0.51 ° VS: 1,790.48 '				
TVD (ft)				
7000				



IS 37

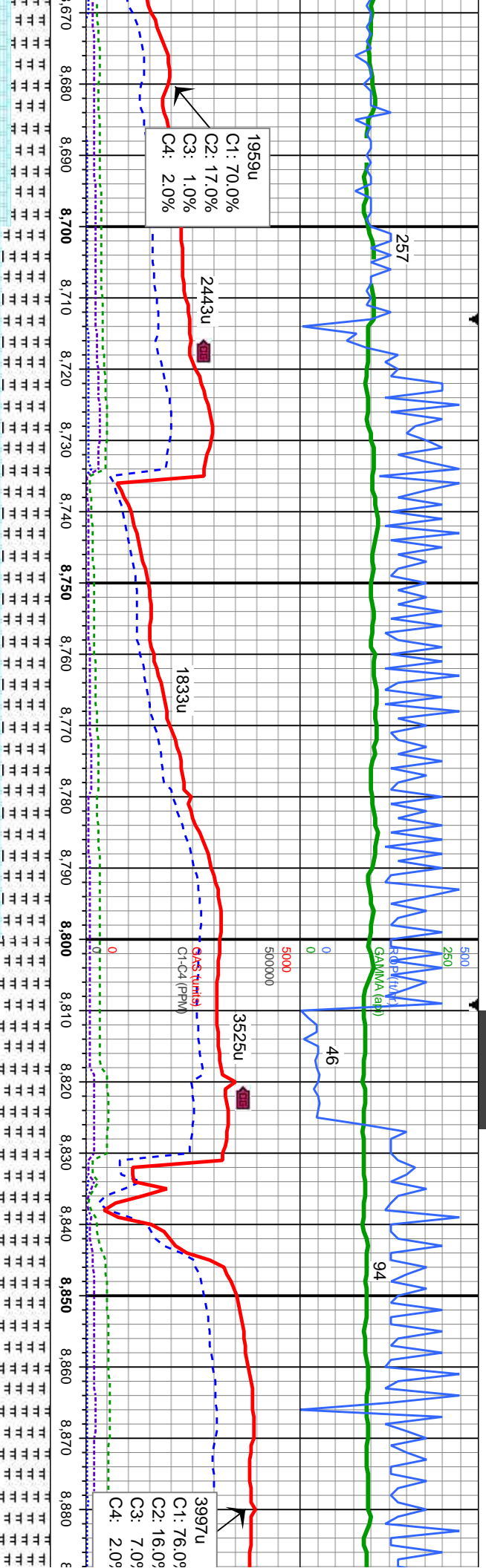
MUD WT 9.6 VIS 37

MUD WT 9.6 VIS 38



90% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sbblpy, rthy-sily tex, mostly mot, occ vit lsir, v calc	60% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sbblpy, rthy-sily tex, mostly mot, occ vit lsir, v calc	60% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sbblpy, rthy-sily tex, mostly mot, occ vit lsir, v calc	55% CHK: med gy - gybrn, sl sft, occ mod firm, sb blk, sl wxy - rthy tex, occ sl lam	55% CHK: med gy - gybrn, sl sft, occ mod firm, sb blk, sl wxy - rthy tex, occ sl lam
10% CHK: med gy - gybrn, sl sft, occ mod firm, sb blk, sl wxy - rthy tex, occ sl lam	40% CHK: med gy - gybrn, sl sft, occ mod firm, sb blk, sl wxy - rthy tex, occ sl lam, occ calc frags	40% CHK: med gy - gybrn, sl sft, occ mod firm, sb blk, sl wxy - rthy tex, occ sl lam, occ calc frags	45% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sbblpy, rthy-sily tex, mostly mot, occ vit lsir, v calc	45% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sbblpy, rthy-sily tex, mostly mot, occ vit lsir, v calc
<div>MD: 8,469 '<div>TVD: 6,652.14 'Inclination: 89.69 °Azimuth: 0.73 °VS: 1,885.14 '</div></div>				
<div>MD: 8,564 '<div>TVD: 6,653.62 'Inclination: 88.52 °Azimuth: 0.49 °VS: 1,979.78 '</div></div>				
<div>MD: 8,659 '<div>TVD: 6,656.38 'Inclination: 88.15 °Azimuth: 0.03 °VS: 2,074.44 '</div></div>				

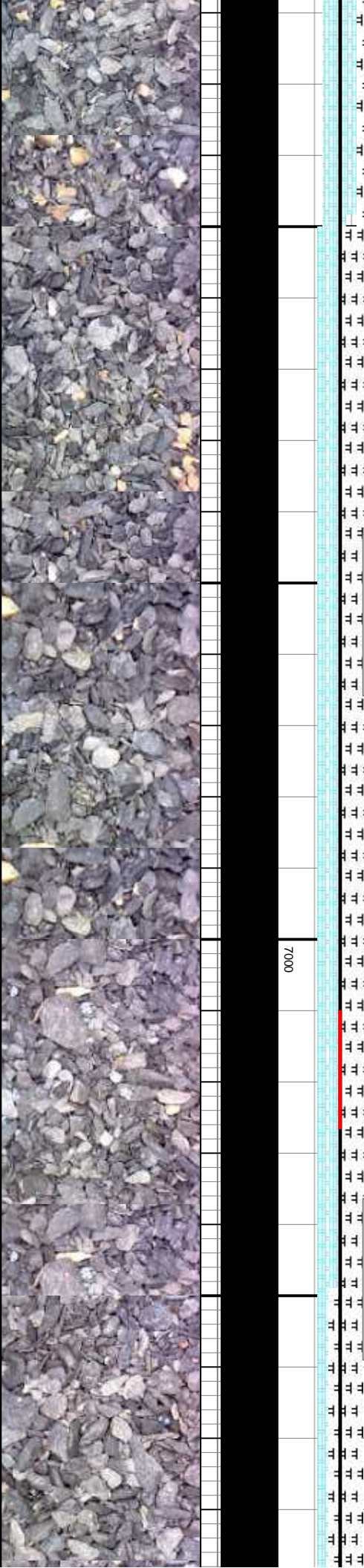




gy - gybrn, sl sft, occ mod wxy - rthy tex, occ sl lam - dkgy, mod sft-sl firm, rthy-sily tex, mostly mot, occ	55% MRL: m gy - dkgy, mod sft-sl firm, sbbiky-sbbply, rthy-sily tex, mostly mot, occ vit lstr, v calc 45% CHK: med gy - gybrn, sl sft, occ mod firm, sb blkly, sl wxy - rthy tex, occ sl lam	60% MRL: m gy - dkgy, mod sft-sl firm, sbbiky-sbbply, rthy-sily tex, mostly mot, occ vit lstr, v calc 40% CHK: med gy - gybrn, sl sft, occ mod firm, sb blkly, sl wxy - rthy tex, occ sl lam	60% MRL: m gy - dkgy, mod sft-sl firm, sbbiky-sbbply, rthy-sily tex, mostly mot, occ vit lstr, v calc 40% CHK: med gy - gybrn, sl sft, occ mod firm, sb blkly, sl wxy - rthy tex, occ sl lam, calc frags	60% MRL: m gy - dkgy, mod sft-sl firm, sbbiky-sbbply, rthy-sily tex, mostly mot, occ vit lstr, v calc 40% CHK: med gy - gybrn, sl sft, occ mod firm, sb blkly, sl wxy - rthy tex, occ
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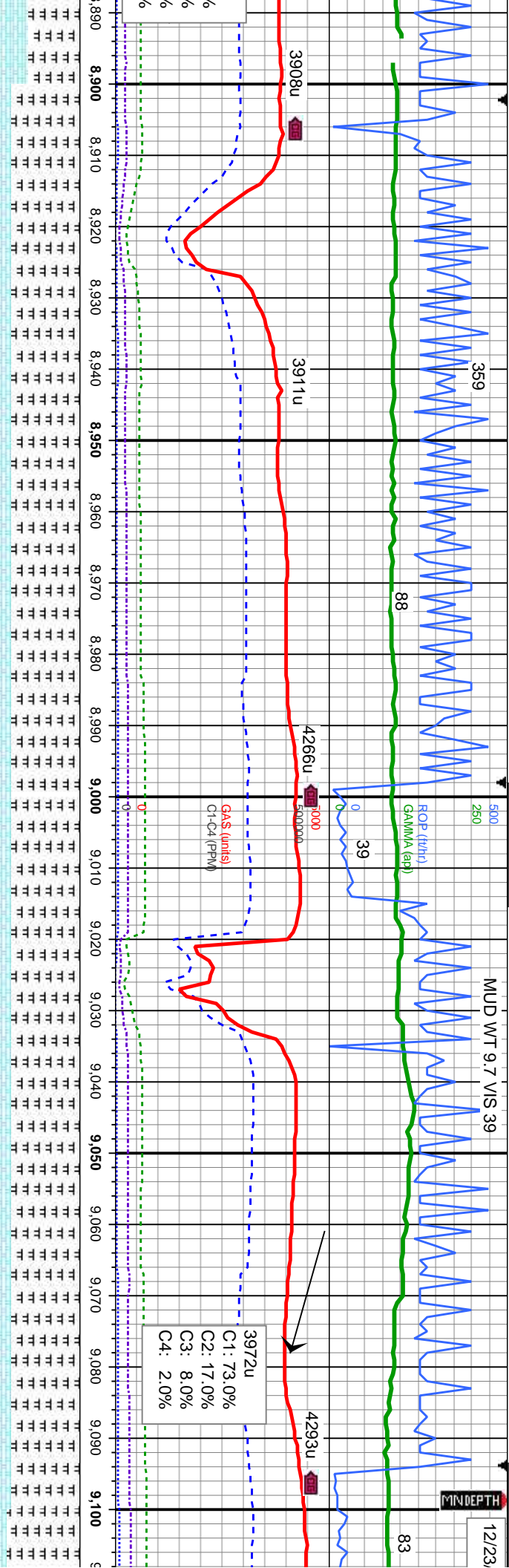
MD: 8,753 '
TVD: 6,659.39 '
Inclination: 88.18 °
Azimuth: 359.67 °
VS: 2,168.16 '

MD: 8,848 '
TVD: 6,661.03 '
Inclination: 89.85 °
Azimuth: 1.7 °
VS: 2,262.78 '



MUD WT 9.7 VIS 39

MINDEPTH



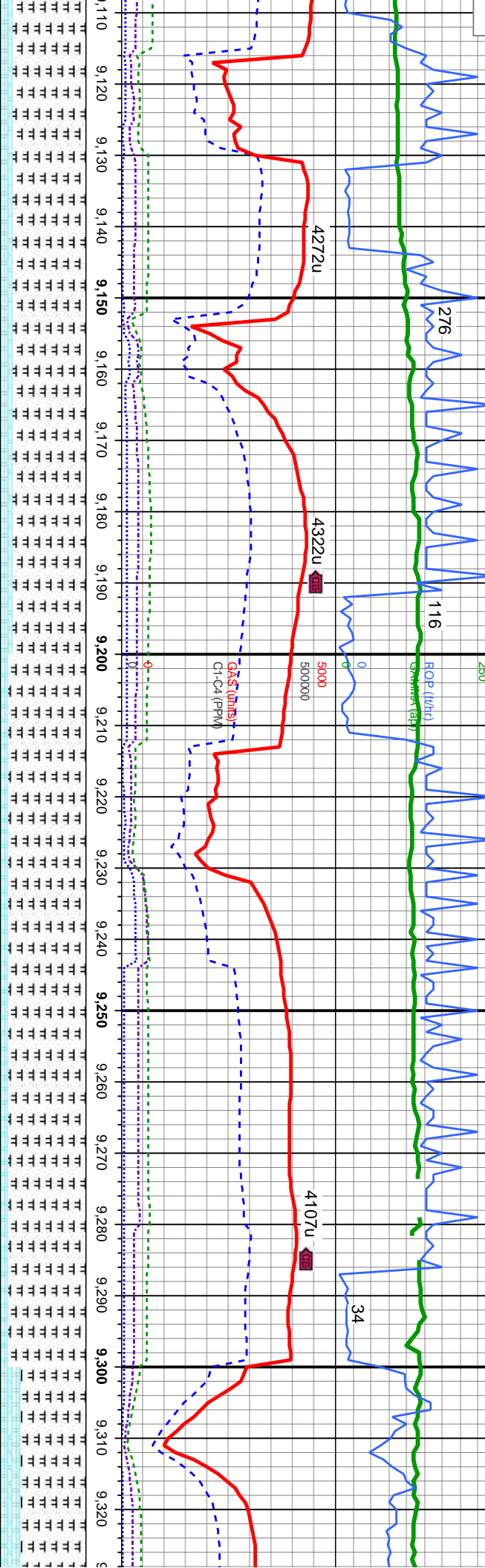
firm, occ	80% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sbtply, rthy-sily tex, mostly mot, vit lsir, v calc	80% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sbtply, rthy-sily tex, mostly mot, vit lsir, v calc	80% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sbtply, rthy-sily tex, mostly mot, occ vit lsir, v calc	80% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sbtply, rthy-sily tex, mostly mot, occ vit lsir, v calc	80% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sbtply, rthy-sily tex, mostly mot, occ vit lsir, v calc
occ mod	20% CHK: med gy - gybrn, sl sft, occ mod firm, sb blkly, sl wxy - rthy tex, occ sl lam	20% CHK: med gy - gybrn, sl sft, occ mod firm, sb blkly, sl wxy - rthy tex, occ sl lam	20% CHK: med gy - gybrn, sl sft, occ mod firm, sb blkly, sl wxy - rthy tex, occ sl lam	20% CHK: med gy - gybrn, sl sft, occ mod firm, sb blkly, sl wxy - rthy tex, occ sl lam	20% CHK: med gy - gybrn, sl sft, occ mod firm, sb blkly, sl wxy - rthy tex, occ sl lam
sl lam					

MD: 8,943 '
TVD: 6,661.36 '
Inclination: 89.75 °
Azimuth: 4.18 °
VS: 2,357.02 '

MD: 9,037 '
TVD: 6,662.65 '
Inclination: 88.67 °
Azimuth: 4.18 °
VS: 2,449.99 '

7000





RL: m gy - dkgy, mod sft-sl firm, sbblky-sbply, rthy-sily tex, mostly mot, str, v calc	85% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sbply, rthy-sily tex, mostly mot, occ vit lstf, v calc	90% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sbply, rthy-sily tex, mostly mot, occ vit lstf, v calc	90% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sbply, rthy-sily tex, mostly mot, occ vit lstf, v calc	75% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sbply, rthy-sily tex, mostly mot, occ vit lstf, v calc
CHK: med gy - gybrn, sl sft, occ mod blkly, sl wxy - rthy tex, occ sl lam	15% CHK: med gy - gybrn, sl sft, occ mod firm, sb blkly, sl wxy - rthy tex, occ sl lam, tr calc frags	10% CHK: med gy - gybrn, sl sft, occ mod firm, sb blkly, sl wxy - rthy tex, occ sl lam	10% CHK: med gy - gybrn, sl sft, occ mod firm, sb blkly, sl wxy - rthy tex, occ sl lam	25% CHK: med gy - gybr firm, sb blkly, sl wxy - rthy

MD: 9,132 '
TVD: 6,664.98 '
Inclination: 88.52 °
Azimuth: 0.96 °
VS: 2,544.28 '

MD: 9,227 '
TVD: 6,666.59 '
Inclination: 89.54 °
Azimuth: 359.8 °
VS: 2,638.95 '

MD: 9,322 '
TVD: 6,667.56 '
Inclination: 89. °
Azimuth: 356.6 °
VS: 2,733.84 '

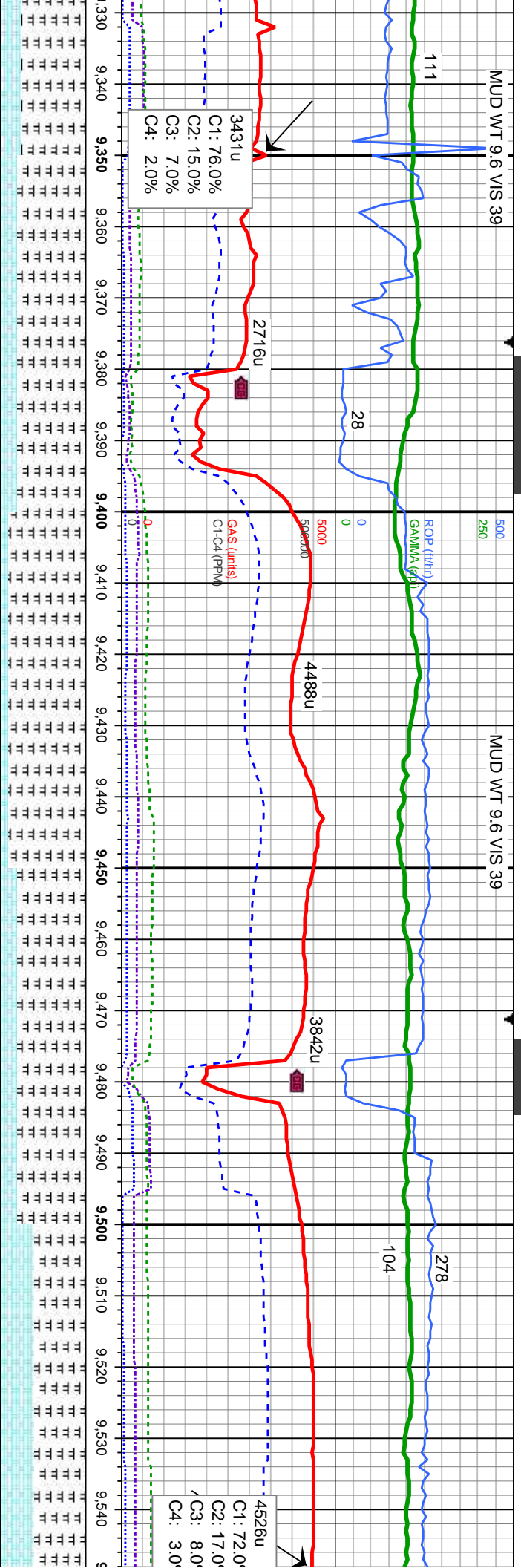
TVD (ft)

7000



MUD WT 9.6 VIS 39

MUD WT 9.6 VIS 39

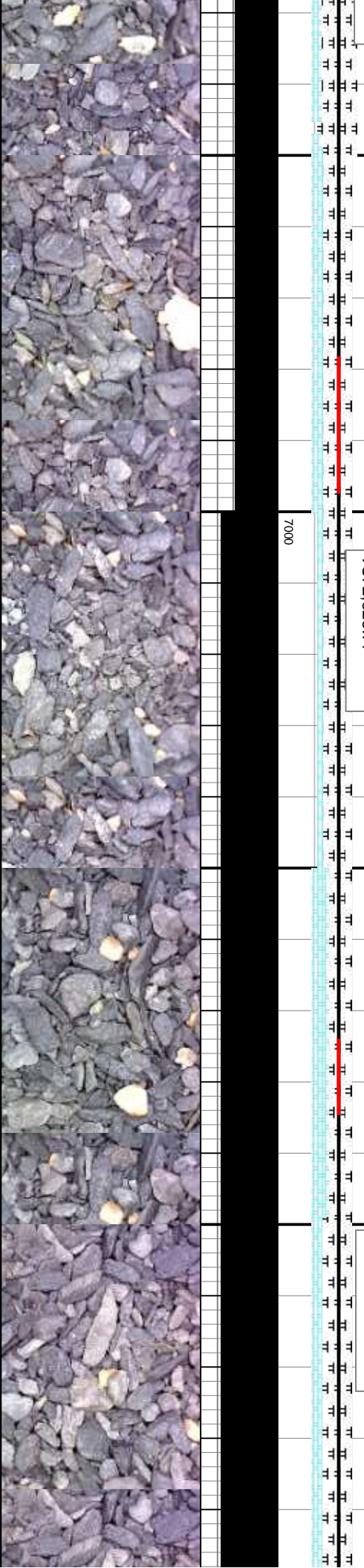


3431u
C1: 76.0%
C2: 15.0%
C3: 7.0%
C4: 2.0%

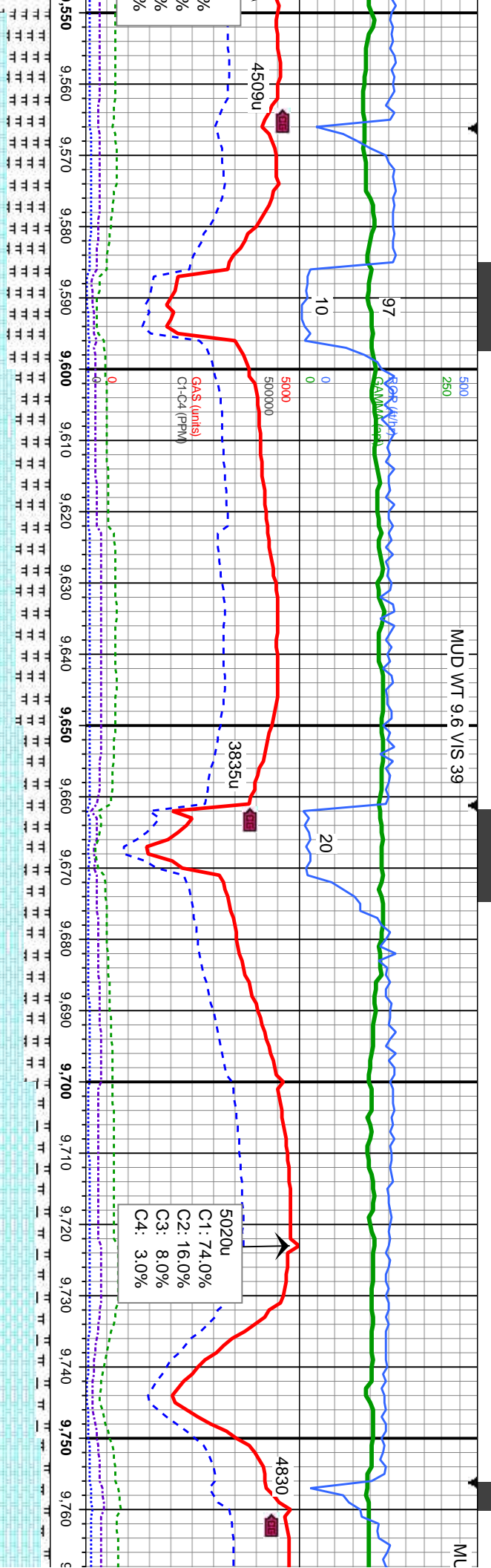
4526u
C1: 72.0%
C2: 17.0%
C3: 8.0%
C4: 3.0%

mod sft-sl firm, n, sl sft, occ mod tex, occ sl lam	80% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sboply, rthy-slty tex, mostly mot, occ vit lsrt, v calc 20% CHK: med gy - gybrn, sl sft, occ mod firm, sb blkly, sl wxy - rthy tex, occ sl lam	90% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sboply, rthy-slty tex, mostly mot, occ vit lsrt, v calc 10% CHK: med gy - gybrn, sl sft, occ mod firm, sb blkly, sl wxy - rthy tex, occ sl lam	80% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sboply, rthy-slty tex, mostly mot, occ vit lsrt, v calc 20% CHK: med gy - gybrn, sl sft, occ mod firm, sb blkly, sl wxy - rthy tex, occ sl lam	60% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sboply, rthy-slty tex, mostly mot, occ vit lsrt, v calc 40% CHK: med gy - gybrn, sl sft, occ mod firm, sb blkly, sl wxy - rthy tex, occ sl lam
29 ° 5 °	MD: 9,417 ' TVD: 6,666.2 ' Inclination: 92.34 ° Azimuth: 358.44 ° VS: 2,828.77 '	MD: 9,512 ' TVD: 6,665.16 ' Inclination: 88.92 ° Azimuth: 357.78 ° VS: 2,923.67 '		

7000



MUD WT 9.6 VIS 39

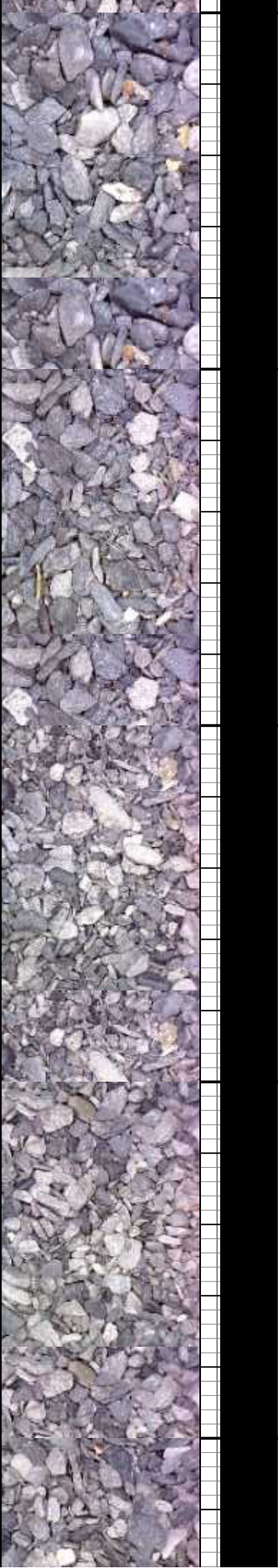


50% MRL: m - dk gy,sl firm, sbblky-sbply, rthy-sl silty tex, occ sl vit lstr, v calc	60% CHK: med gy occ lgy - lgy brn, mostly sft-sl firm, sb blk- occ sb ply, wxy mot tex, v calc	70% CHK: med gy occ lgy - lgy brn, mostly sft-sl firm, sb blk- occ sb ply, wxy mot tex, v calc	85% CHK: med gy occ lgy - lgy brn, mostly sft-sl firm, sb blk- occ sb ply, wxy mot tex, v calc	90% CHK: med i sft-sl firm, sb blk rthy-sl silty tex, o
50% CHK: med gy occ lgy - lgy brn, mostly sft-sl firm, sb blk- occ sb ply, wxy mot tex, v calc	40% MRL: m - dk gy,sl firm, sbblky-sbply, rthy-sl silty tex, occ sl vit lstr, v calc	30% MRL: m - dk gy,sl firm, sbblky-sbply, rthy-sl silty tex, occ sl vit lstr, v calc	15% MRL: m - dk gy,sl firm, sbblky-sbply, rthy-sl silty tex, occ sl vit lstr, v calc	10% MRL: m - d rthy-sl silty tex, o

MD: 9,607 '
TVD: 6,666.36 '
Inclination: 89.63 °
Azimuth: 356.11 °
VS: 3,018.64 '

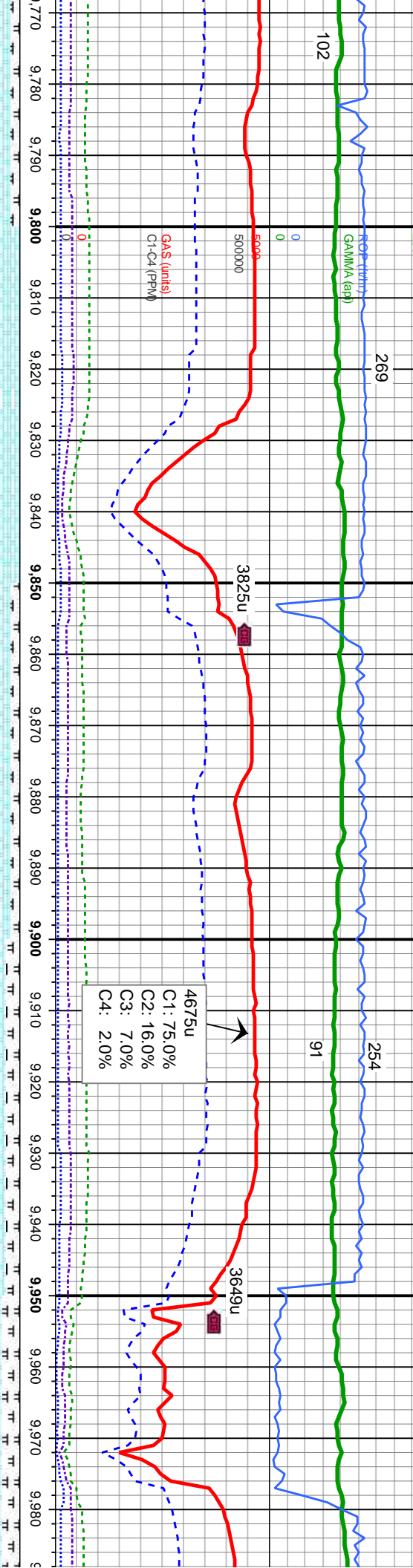
MD: 9,702 '
TVD: 6,665.8 '
Inclination: 91.05 °
Azimuth: 356.55 °
VS: 3,113.63 '

7000



ID WT 9.6 VIS 38

MUD WT 9.6 VI



k gy,sl firm, sbblky-sbply,	100% CHK: med gy occ lty - lty brn, mostly sft-si firm, sb blky- occ sb ply, wxy mot tex, v calc	90% CHK: med gy occ lty - lty brn, mostly sft-si firm, sb blky- occ sb ply, wxy mot tex, v calc	85% CHK: med gy occ lty - lty brn, mostly sft-si firm, sb blky- occ sb ply, wxy mot tex, v calc	80% CHK: med gy occ lty - lty brn, mostly sft-si firm, sb blky- occ sb ply, wxy mot tex, v calc
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MD: 9,797 '
TVD: 6,663.83 '
Inclination: 91.33 °
Azimuth: 356.57 °
VS: 3,208.6 '

MD: 9,891 '
TVD: 6,663.32 '
Inclination: 89.29 °
Azimuth: 351.93 °
VS: 3,302.53 '

MD: 9,986 '
TVD: 6,662.4 '
Inclination: 9
Azimuth: 356
VS: 3,397.47

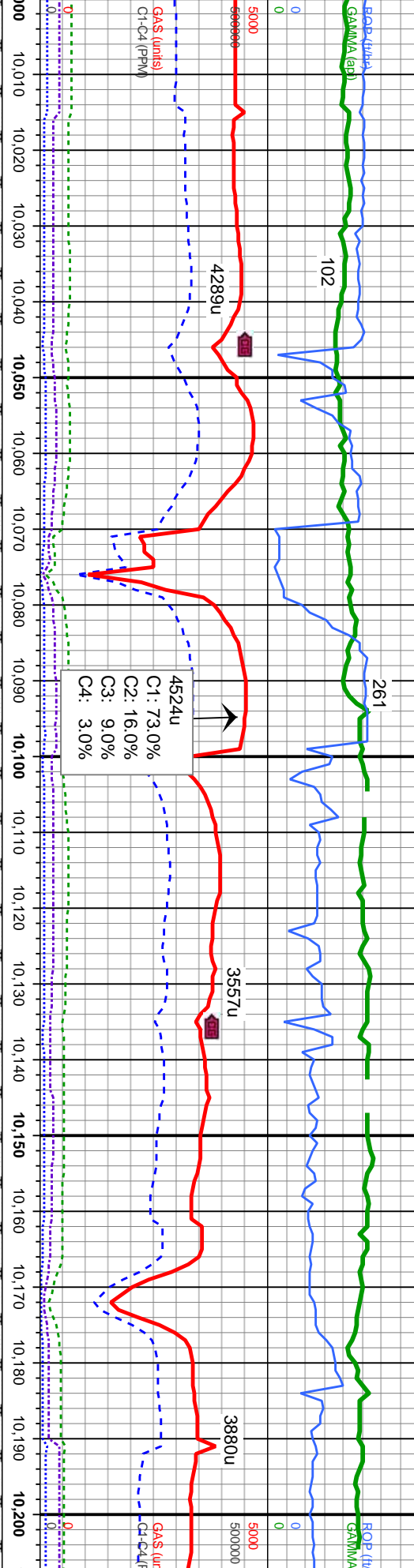
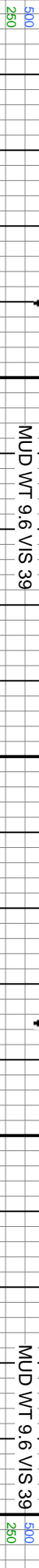
7000



S 39

MUD WT 9.6 VIS 39

MUD WT 9.6 VIS 39



n, mostly mot tex, sbblpy,	55% MRL: m gy - dkgy, mod sft-sl firm, sbblpy-sbblpy, rthy-slty tex, mostly mot, occ vit lstr, v calc 45% CHK: med gy - gybrn, sl sft, occ mod firm, sb blk, sl wxy - rthy tex, occ sl lam	75% MRL: m gy - dkgy, mod sft-sl firm, sbblpy-sbblpy, rthy-slty tex, mostly mot, occ vit lstr, v calc 25% CHK: med gy - gybrn, sl sft, occ mod firm, sb blk, sl wxy - rthy tex, occ sl lam	80% MRL: m gy - dkgy, mod sft-sl firm, sbblpy-sbblpy, rthy-slty tex, mostly mot, occ vit lstr, v calc 20% CHK: med gy - gybrn, sl sft, occ mod firm, sb blk, sl wxy - rthy tex, occ sl lam	75% MRL: m gy - dkgy, mod sft-sl firm, sbblpy-sbblpy, rthy-slty tex, mostly mot, occ vit lstr, v calc 25% CHK: med gy - gybrn, sl sft, occ mod firm, sb blk, sl wxy - rthy tex, occ sl lam	85% MRL: m gy - dkgy, mod sft-sl firm, sbblpy-sbblpy, rthy-slty tex, mostly mot, occ vit lstr, v calc 15% CHK: med gy - gybrn, sl sft, occ mod firm, sb blk, sl wxy - rthy tex, occ sl lam
66' 1.51° 3.32°	TVD (ft)	MD: 10,081' TVD: 6,661.28' Inclination: 90.15° Azimuth: 359.05° VS: 3,492.33'		MD: 10,176' TVD: 6,661.38' Inclination: 89.72° Azimuth: 358.65° VS: 3,587.19'	TVD (ft)



327

143

MUD WT 9.6 VIS 38

500

250

ROP (ft/hr)
GAMMA (cp)

0

32

5000

500000

GAS (mls)
Cl-C4 (ppm)

4202u
C1: 75.0%
C2: 15.0%
C3: 7.0%
C4: 3.0%

2718u

3282u

3032u

10,430 10,440 10,450 10,460 10,470 10,480 10,490 10,500 10,510 10,520 10,530 10,540 10,550 10,560 10,570 10,580 10,590 10,600 10,610 10,620 10,630 10,640

mod sft-sl firm, ex. mostly mot, n, sl sft, occ mod / tex, occ sl lam, tr
85% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sboply, rthy-sily tex, mostly mot, occ vit lst, v calc
15% CHK: med gy - gybrn, sl sft, occ mod firm, sb blky, sl wxy - rthy tex, occ sl lam, tr calc frags
90% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sboply, rthy-sily tex, mostly mot, occ vit lst, v calc
10% CHK: med gy - gybrn, sl sft, occ mod firm, sb blky, sl wxy - rthy tex, occ sl lam, tr calc frags
90% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sboply, rthy-sily tex, mostly mot, occ vit lst, v calc
10% CHK: med gy - gybrn, sl sft, occ mod firm, sb blky, sl wxy - rthy tex, occ sl lam, tr calc frags
90% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sboply, rthy-sily tex, mostly mot, occ vit lst, v calc
10% CHK: med gy - gybrn, sl sft, occ mod firm, sb blky, sl wxy - rthy tex, occ sl lam, tr calc frags

MD: 10,461 '
TVD: 6,666.09 '
Inclination: 88.12 °
Azimuth: 358.14 °
VS: 3,871.78 '

MD: 10,555 '
TVD: 6,668.37 '
Inclination: 89.11 °
Azimuth: 358.94 °
VS: 3,965.64 '

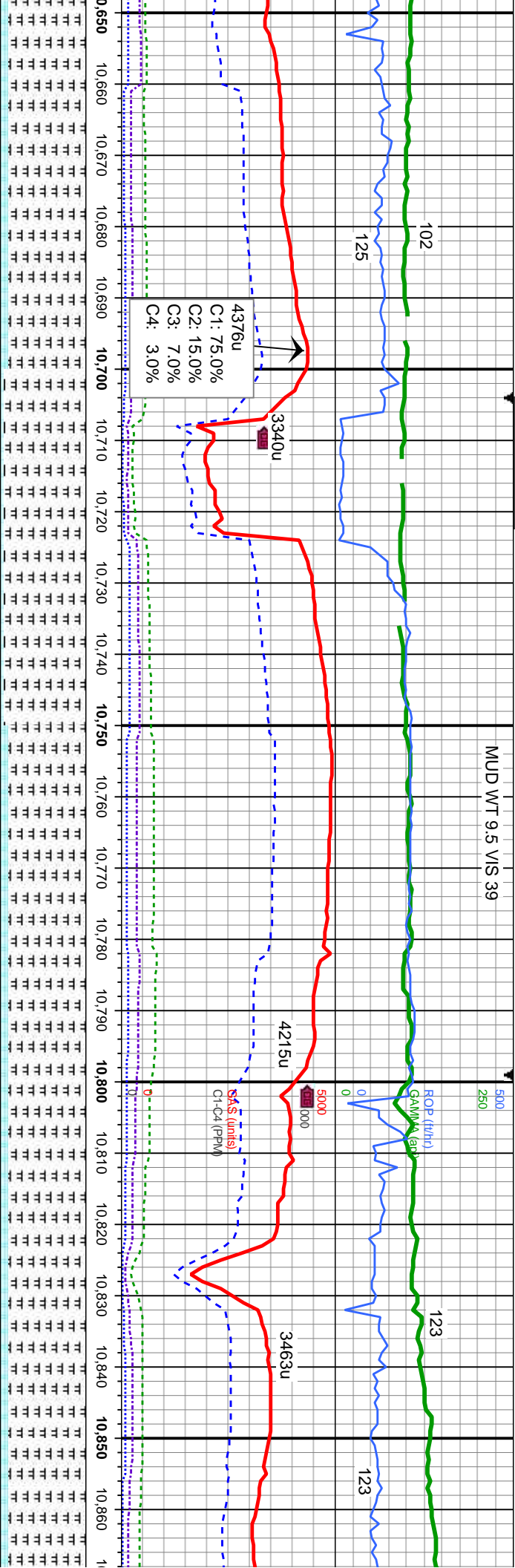
MD: 10,640 '
TVD: 6,670.00 '
Inclination: 89.11 °
Azimuth: 358.94 °
VS: 4,060.00 '

TVD (ft)

7000



MUD WT 9.5 VIS 39

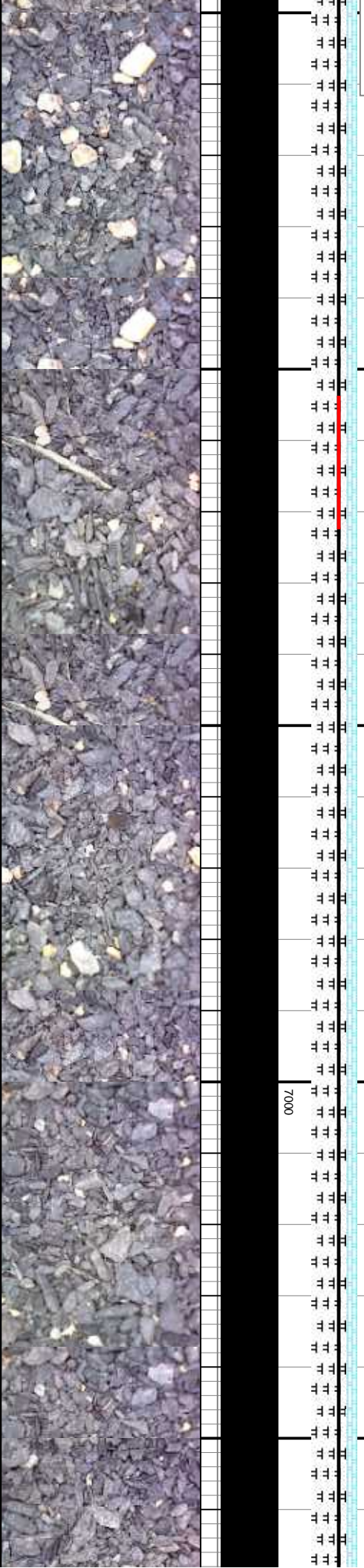


90% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sboply, rthy-sily tex, mostly mot, occ vit lstr, v calc	95% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sboply, rthy-sily tex, mostly mot, occ vit lstr, v calc	90% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sboply, rthy-sily tex, mostly mot, occ vit lstr, v calc	90% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sboply, rthy-sily tex, mostly mot, occ vit lstr, v calc
10% CHK: med gy - gybrn, sl sft, occ mod firm, sb blky, sl wxy - rthy tex, occ sl lam, tr calc frags	5% CHK: med gy - gybrn, sl sft, occ mod firm, sb blky, sl wxy - rthy tex, occ sl lam, tr calc frags	10% CHK: med gy - gybrn, sl sft, occ mod firm, sb blky, sl wxy - rthy tex, occ sl lam, tr calc frags	10% CHK: med gy - gybrn, sl sft, occ mod firm, sb blky, sl wxy - rthy tex, occ sl lam, tr calc frags

650 '669.57 'on: 89.45 °: 357.31 °0.55 '

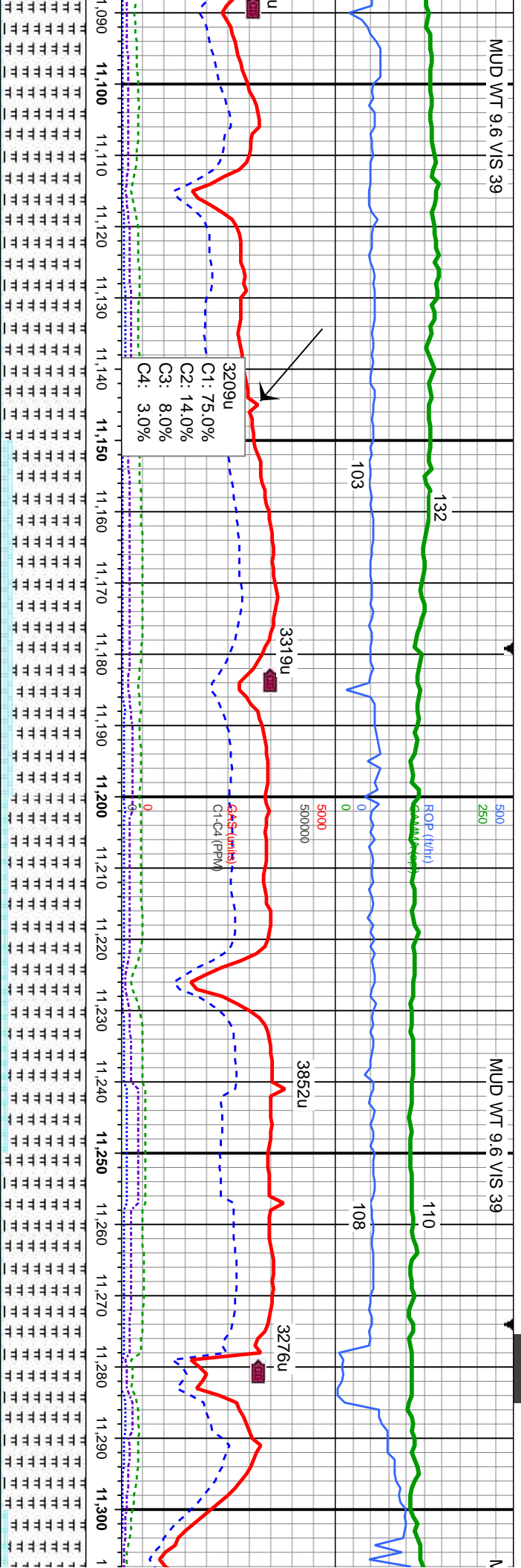
MD: 10,745 'TVD: 6,669.03 'Inclination: 91.2 °Azimuth: 358.06 °VS: 4,155.49 '

MD: 10,840 'TVD: 6,667.9 'Inclination: 90.15 °Azimuth: 356.28 °VS: 4,250.45 '



MUD WT 9.6 VIS 39

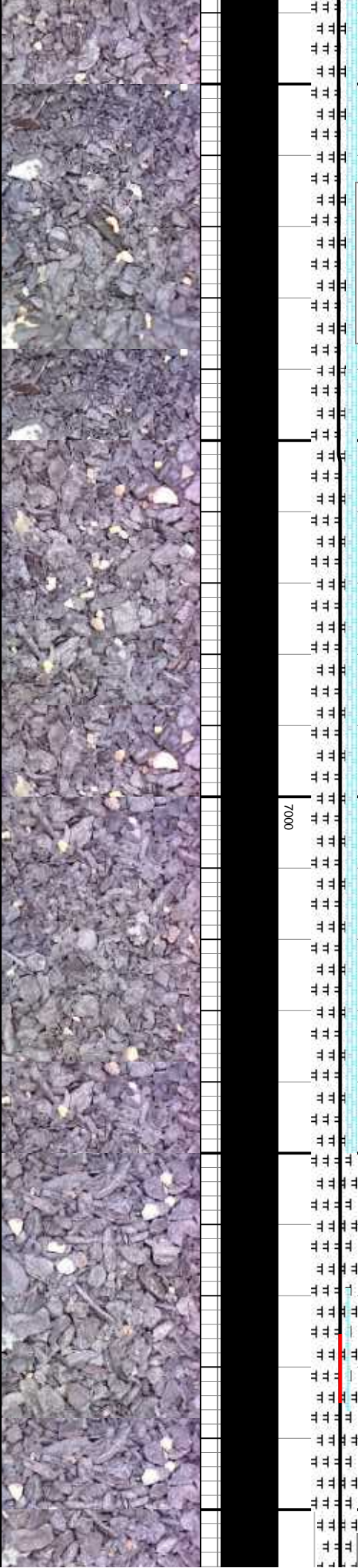
MUD WT 9.6 VIS 39

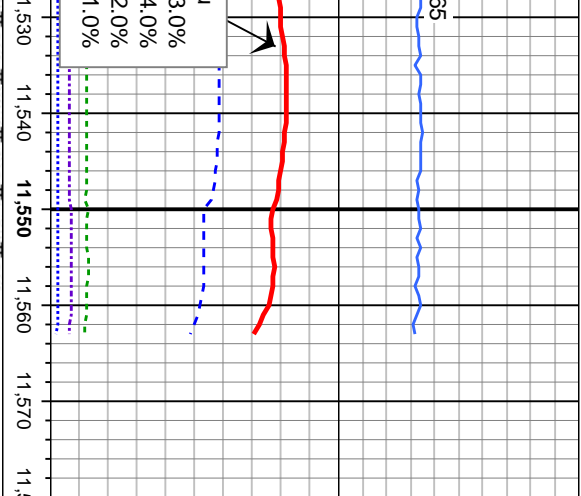


firm, /mot, mod sl lam, tr	95% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sboplt, rthy-slty tex, mostly mot, occ vit lst, v calc 5% CHK: med gy - gybrn, sl sft, occ mod firm, sb blky, sl wxy - rthy tex, occ sl lam, tr calc frags	85% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sboplt, rthy-slty tex, mostly mot, occ vit lst, v calc 15% CHK: med gy - gybrn, sl sft, occ mod firm, sb blky, sl wxy - rthy tex, occ sl lam, tr calc frags	90% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sboplt, rthy-slty tex, mostly mot, occ vit lst, v calc 10% CHK: med gy - gybrn, sl sft, occ mod firm, sb blky, sl wxy - rthy tex, occ sl lam, tr calc frags	95% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sboplt, rthy-slty tex, mostly mot, occ vit lst, v calc 5% CHK: med gy - gybrn, sl sft, occ mod firm, sb blky, sl wxy - rthy tex, occ sl lam, tr calc frags	90% MRL: m gy - dkgy, mod sft-sl firm, sbblky-sboplt, rthy-slty tex, mostly mot, occ vit lst, v calc 10% CHK: med gy - gybrn, sl sft, occ mod firm, sb blky, sl wxy - rthy tex, occ sl lam, tr calc frags
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MD: 11,125 '
TVD: 6,664.5 '
Inclination: 90.92 °
Azimuth: 359.09 °
VS: 4,535.17 '

MD: 11,220 '
TVD: 6,663 '
Inclination: 90.89 °
Azimuth: 359.05 °
VS: 4,630 '





od sft-sf firm,
x, mostly mot, occ

TD Well 11,559 MD
@0733 12/24/13

Thank You for Using
Columbine Logging Inc.

Projection to Bit:

MD: 11,559 '
TVD: 6,664.61 '
Inclination: 89.97 °
Azimuth: 358.26 °
VS: 4,968.5 '

sl sft, occ mod
ex, occ sl lam, tr

