

# COMBINE LOGGING

**Scale: 5" / 100'**  
**Measured Depth Log**

**Well Name** Wells Ranch AA26-63-1HN(HORZ)

**Location** SEC25 T6N R63W

State COLORADO

**County WELD**

Country USA

Rig Number H&amp;P 322

**API Number** 05-123-37566

Region DJ BASIN

Field WATTENBERG

Spud Date 10/15/2013

**Drilling Completed** 10/23/2013

**Surface Coordinates** 1749' FSL

1749' FSL  
153' FWL

LAT 40.45485°N

LONG 104.39410°W

### Bottom Hole Coordinates

150' FWL  
1320' FSL

LAT 40.45386°N

LONG 104.41314°W

**Ground Elevation** 4792'

**K.B. Elevation 4816'**

**Logged Interval** 5992' **To** 11570

**Total Depth** 11570

**Formation** NIOBRARA C CHALK

Type of Drilling Fluid FW LSND

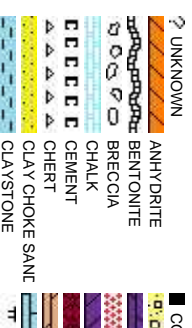
**Company** Noble Energy Inc

**Address** 1625 BROADWAY  
DENVER, CO 80202  
(303) 228-4000

**Name** JOEY LUCE, M

**Company** COLUMBINE L

**Address** 2385 S. LIPAN  
DENVER, COLO  
(303) 289-7764



# Operator

MAY  
2022

10

IKE GREENE  
LOGGING, INC.

CRADO 80223

# Geologist

## Rock Types

Symbol	Rock Type	Symbol	Rock Type
	SHALY SILTSTONE		METAMORPHIC
	SILTY SHALE		NO SAMPLE
	SILTSTONE		SALT
	TILL		SANDSTONE
	TUFF		SALT-PEPPER SAND
	WEDDED TUFF		SHALE
			SHALE COLORED
			SHALE GRAY
			SHALY SANDSTONE
			LIMESTONE
			SIDERITE or LIMONITE
			IGNEOUS
			GNEISS
			GYPSUM
			GRANITE
			DOLOMITE
			CONGLOMERATE
			DAL

## Accessories

## Fossils

<b>Fossils</b>	<b>F FOSSIL</b>	- ARGILLACEOUS	✓ TUFFACEOUS
🐚 AMPHIPODA	🐚 GASTROPOD	✓ ARGILLITE GRAIN	✓ GLAUCONITE
🐚 ALGAE	🐚 OOLITE	🐚 BENTONITE	🐚 HEAVY MINERAL
🐚 BELEMNITE	🐚 OSTRACOD	🐚 BITUMENOUS SUBSTANCE	🐚 INOCERAMUS
🐚 BIOCLASTIC	🐚 PELECYPOD	🐚 BRECCIA FRAGMENTS	🐚 KAOLIN
🐚 BRACHIOPOD	🐚 PELLET	🐚 CALCAREOUS	🐚 MINERAL CRYSTALS
🐚 BRYOZOA	🐚 PISOLITE	🐚 CARBONACEOUS FLAKES	🐚 CHLTDK
🐚 CEPHALOPOD	🐚 PLANT REMAINS	🐚 CHLTL	🐚 NODULES
🐚 CORAL	🐚 PLANT SPORES	🐚 COAL - THIN BEDS	🐚 PHOSPHATE PELLET!
🐚 CRINOID	🐚 SCAPHOPOD	🐚 DOLOMITIC	🐚 PYRITE
🐚 ECHINOID	🐚 STROMATOPOROID	🐚 FELDSPAR	🐚 SALT CAST
🐚 FISH		🐚 FERRUGINOUS PELLET	🐚 SILICEOUS
🐚 FORAMINIFERA	🐚 ANHYDRITIC	🐚 FERRUGINOUS	🐚 SILTY
			🐚 SILTSTONE STRINGER
			🐚 SANDSTONE STRINGER
			🐚 SHALE STRINGER
			🐚 MARLSTONE (CALC) STRINGER
			🐚 MARLSTONE (IDOL) STRINGER
			🐚 SANDSTONE STRINGER
			🐚 SILTSTONE STRINGER
			🐚 SANDSTONE STRINGER
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			🐚 MARLSTONE (IDOL) STRINGER
			🐚 SANDSTONE STRINGER
			🐚 SILTSTONE STRINGER

## Other Symbols

# Oil Show

Oil Show

☒ MOLDIC  
☐ ORGANIC  
☐ PINPOINT  
☒ VUGGY  
☒ DEAD  
☒ EVEN

☒ FAULT  
☒ FORMATION TOP  
☒ GAS SHOW  
☒ MN DEPTH  
☒ MN DEPTH

☒ WIRELINE TESTED - LEFT  
☒ WIRELINE TESTED - RT  
☒ E EARTHY  
☒ Fx FINELYXXLN  
☒ GS GRAINSTONE  
☒ L LITHOGRAPHIC

Rounding

# Engineering

- QUESTIONABLE
- SPOTTED STAINING
- NORMAL FAULT
- OIL SHOW
- ANGULAR
- ROUNDED
- SUBANG
- OVERTURNED STRATA
- REVERSE FAULT
- SUBURD
- MICROXLN
- MUDSTONE
- PACKSTONE
- WACKESTONE

## Porosity

E

EARTHY

F

FENESTRAL

F

FRACTURE

X

INTERCRYSTALLINE

Q

INTEROOLITIC

➡

CONNECTION (RIGHT)

➡

CONNECTION GAS

➡

CORE - LOST

➡

CORE - RECOVERED

➡

DST INTERVAL

⬅

SIDEWALL CORE (LEFT)

⬅

SIDEWALL CORE (RIGHT)

📄

SLIDE

📄

SURVEY

📄

TRIP GAS

Textures

Sorting

BS

BOUNDSTONE

P

POOR

W

WELL

C

CHALKY

CX

CRYPTOXLN

## Textures

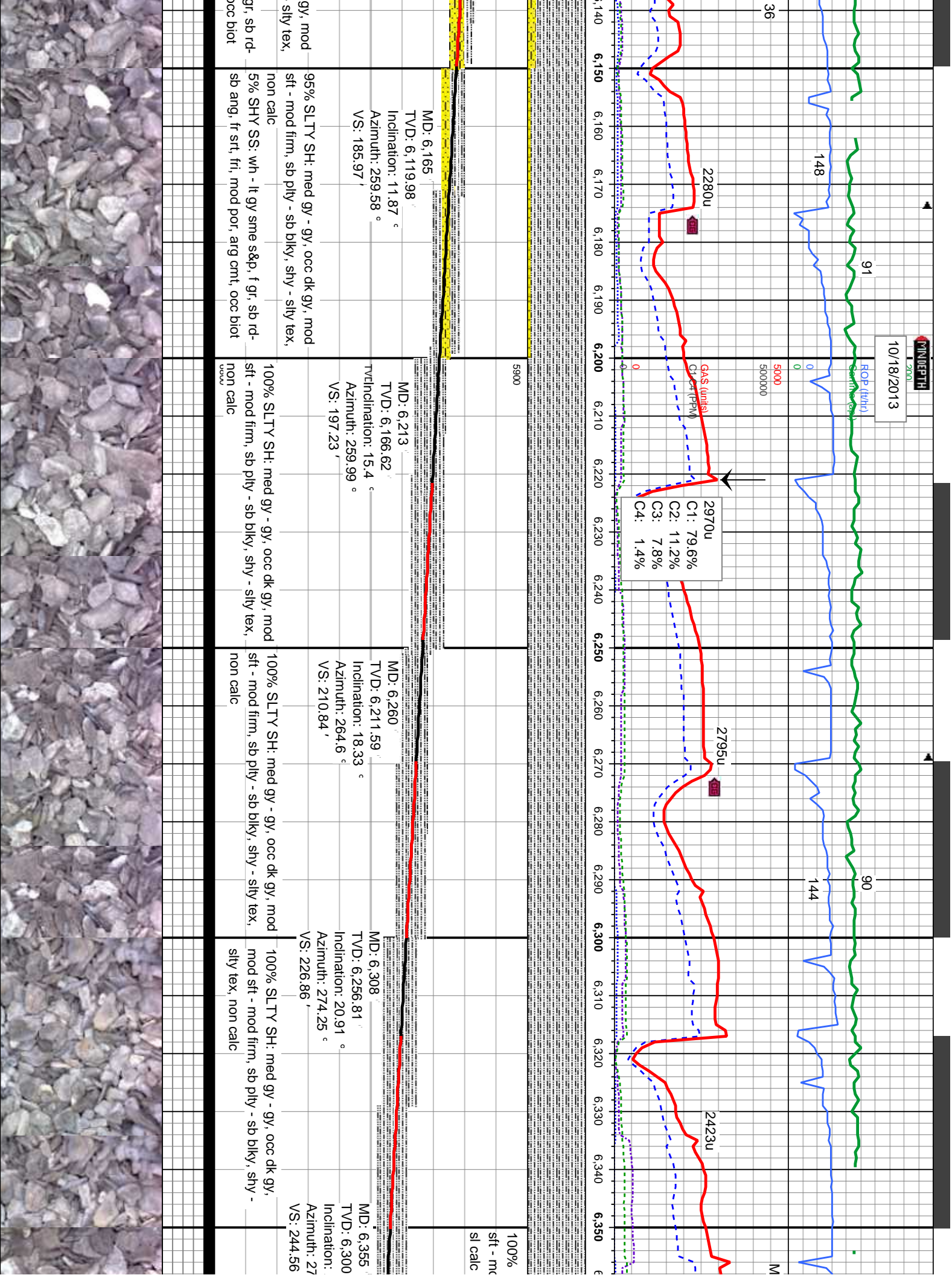
**BS** BOUNDSTONE      **M** MODERATE  
**C** CHALKY      **P** POOR  
**OX** CRYPTOXN      **W** WELL

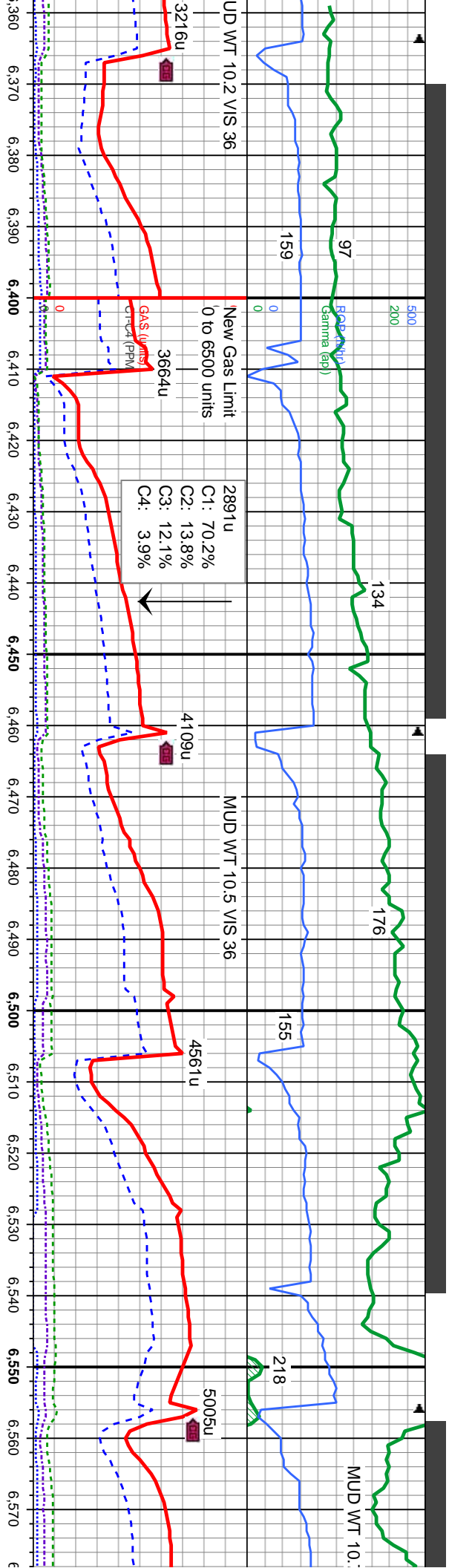
## Sorting

**M** MODERATE  
**P** POOR  
**W** WELL









SLTY SH: med gy - gy, occ dk gy, mod  
firm, sb ply - sb blk, shy - silty tex.

100% SLTY SH: med gy - gy, occ dk gy, mod  
sft - mod firm, sb ply - sb blk, shy - silty tex,  
sl calc

100% SLTY SH: lt-med gy, occ dk gy,  
mod sft - frm, sb ply - sb blk, shy - silty  
tex, rthy lst, non-si calc

100% SLTY SH: lt-med gy, occ dk gy,  
mod sft - frm, sb ply - sb blk, shy - silty  
tex, rthy lst, non calc, rr bent

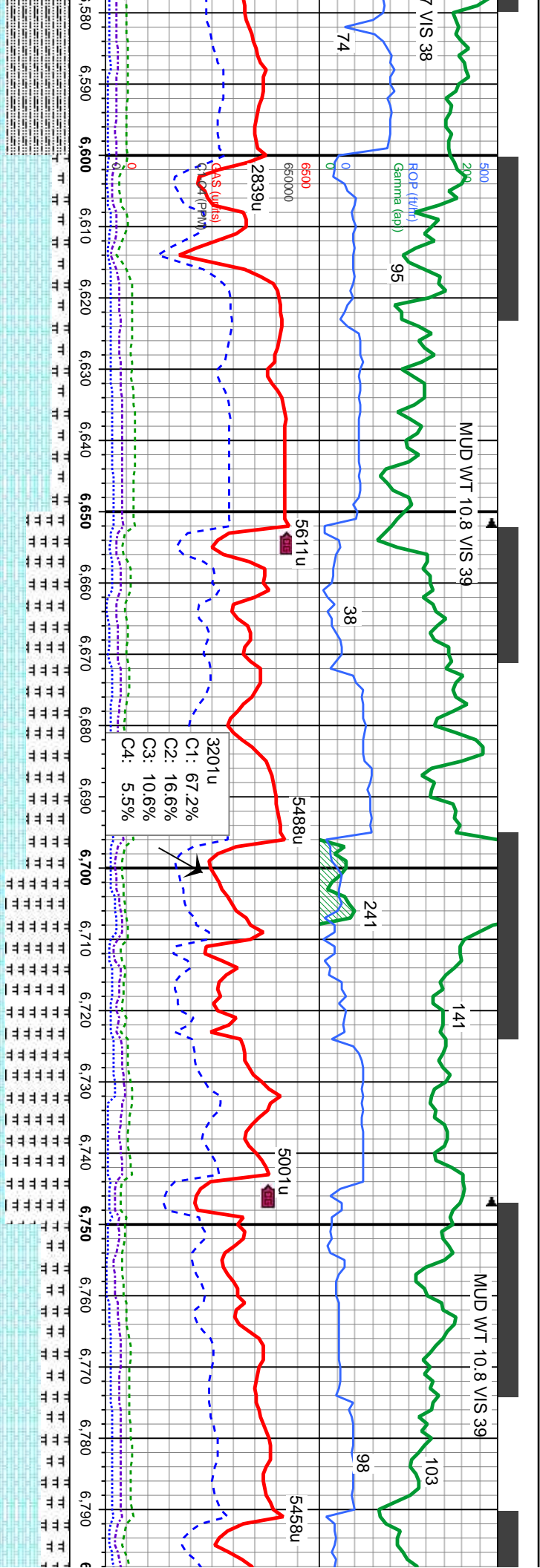
90% SLTY SH: lt-med gy  
- frm, sb ply - sb blk, shy  
mod calc, rr bent  
10% CHK: lt gy, gy bm, st  
blk-sb ply, rthy-sb wxy, \

Logger Top Sharon Springs  
MD 6487 / TVD 6412'

MD: 6,403'	MD: 6,450'	MD: 6,498'	MD: 6,545'
TV: 6,343.18'	TV: 6,383.09'	TV: 6,420.66'	TV: 6,453.86'
Inclination: 28.99 °	Inclination: 34.7 °	Inclination: 42.21 °	Inclination: 47.85 °
Azimuth: 273.1 °	Azimuth: 270.73 °	Azimuth: 269.26 °	Azimuth: 270.02 °
VS: 265.7'	VS: 290.33'	VS: 320.07'	VS: 353.22'







occ dk gy, mod sft  
- stly tex, rthy lstr,  
t, occ mod frm, sb  
v calc

75% CHK: wh-lt gy, gy brn, sft, occ mod frm,  
sb blk-y-sb pily, rthy-sb wxy, v calc  
25% MRL: med-dk gy, mod sft-sl frm, sb  
blk-y-sb pily, rthy-sly tex, sl mot, occ sl vit lstr,  
v calc, dissim pyr

MD: 6,593  
TVD: 6,486.34  
Inclination: 52.38 °  
Azimuth: 270.89 °  
VS: 388.01 '

60% MRL: med-dk gy, mod sft-sl frm, sb  
blk-y-sb pily, rthy-sly tex, sl mot, occ sl vit  
lstr, v calc, tr bent  
40% CHK: wh-lt gy, gy brn, sft, occ mod  
frm, sb blk-y-sb pily, rthy-sb wxy, v calc,  
dissim pyr

MD: 6,640  
TVD: 6,512.46  
Inclination: 55.01 °  
Azimuth: 271.4 °  
VS: 427.57 '

90% MRL: med-dk gy, blk, mod sft-sl frm,  
sb blk-y-sb pily, mot, rthy-sly tex, sl mot,  
occ sl vit lstr, v calc, tr bent  
10% CHK: lt-med gy, gy brn, sft, occ mod  
frm, sb blk-y-sb pily, mot ip, rthy, v calc,  
dissim pyr

MD: 6,688  
TVD: 6,538.93  
Inclination: 58.05 °  
Azimuth: 270.97 °  
VS: 467.4 '

60% CHK: wh-lt gy, gy brn-bl, sft, frm ip,  
sb blk-y-sb pily, mot, wxy-rthy ip, v calc  
40% MRL: med-dk gy, blk, mod sft-sl frm,  
sb blk-y-sb pily, mot, rthy-sly tex, sl mot,  
occ sl vit lstr, v calc, tr bent, rr dissim pyr, rr  
Inoc frags

MD: 6,735  
TVD: 6,562.64  
Inclination: 61.34 °  
Azimuth: 270.2 °  
VS: 507.81 '

MD: 6,783  
TVD: 6,584.17  
Inclination: 65.36 °  
Azimuth: 268.74 °  
VS: 550.59 '

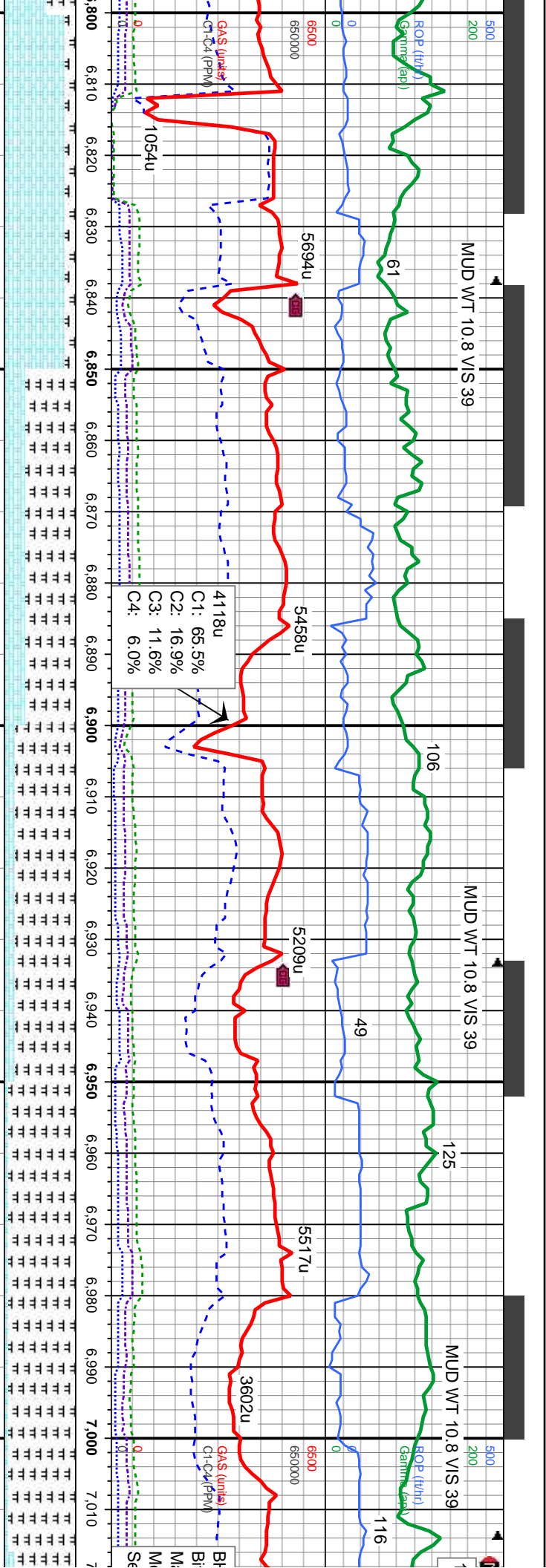
Logger Top Niobrara  
MD 6607/TVD 6494'

Logger Top Nio A Chalk  
MD 6612/TVD 6497'

Logger Top Nio A Marl  
MD 6657/TVD 6522'

Logger Top Nio B Chalk  
MD 6788/TVD 6586'

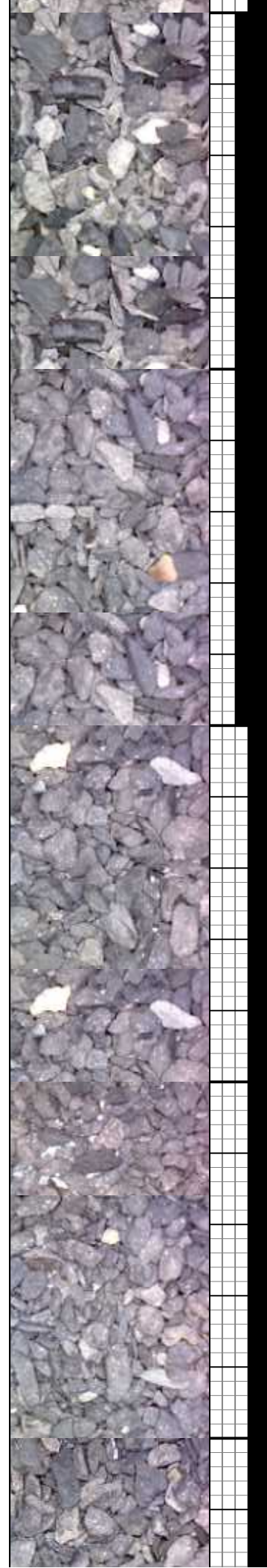




85% CHK: wh-ll-gy, gy brn-bf, sft, frm ip, sb blk-y-sb pty, mot, wxy-rthy ip, v calc	70% MRL: med-dk gy, blk, mod sft-sl frm, sb blk-y-sb pty, mot, rthy-sily tex, sl mot, occ sl vit lst, v calc, rr bent, rr dissim pyr, tr inoc frags	85% MRL: med-dk gy, blk, mod sft-sl frm, sb blk-y-sb pty, mot, rthy-sily tex, sl mot, occ sl vit lst, v calc, rr dissim pyr, tr inoc frags	95% MRL: med-dk gy, blk, mod sft-sl frm, sb blk-y-sb pty, mot, rthy-sily tex, sl mot, occ sl vit lst, v calc, rr dissim pyr, tr inoc frags	85% MRL: med-dk gy, blk, mod sft-sl frm, sb blk-y-sb pty, mot, rthy-sily tex, sl mot, vit lst, v calc, rr
15% MRL: med-dk gy, blk, mod sft-sl frm, sb blk-y-sb pty, mot, rthy-sily tex, sl mot, occ sl vit lst, v calc, tr bent, rr dissim pyr, rr	30% CHK: wh-ll-gy, gy brn, sft, frm ip, sb blk-y-sb pty, mot, rthy-wxy ip, v calc	15% CHK: lt-med gy, gy brn, sft, frm ip, sb blk-y-sb pty, mot, rthy, v calc	5% CHK: lt-med gy, gy brn, sft, frm ip, sb blk-y-sb pty, mot, rthy, v calc	15% CHK: lt-me blk-y-sb pty, mot

MD: 6,830' TVD: 6,601.64' Inclination: 71° Azimuth: 268.12° VS: 593.2'	MD: 6,878' TVD: 6,615.29' Inclination: 75.93° Azimuth: 267.95° VS: 639.16'	MD: 6,925' TVD: 6,625.37' Inclination: 79.31° Azimuth: 268.03° VS: 685.01'	MD: 6,961' TVD: 6,631.45' Inclination: 81.24° Azimuth: 268.48° VS: 720.45'
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Logger Top Nio B Marl  
MD 6904'/TVD 6621'





MUD WT 9.6 V/S 36

MUD WT 9.5 V/S 35

TOOH for 7' Casing @ 7016'  
14:11 hrs 10/18/13. Resumed  
Drilling 16:16hrs 10/20/13

HA # 3  
Size: 6.125  
Manufacturer: Baker/Hughes Christensen  
Model: DP405  
Serial Number: 7037654

Motor Number: 3  
Manufacturer: Sperry Drilling  
Model: Sperry Drill  
Serial Number: 475-241  
Bend: 1.5

C1: 62.7%  
C2: 19.8%  
C3: 16.3%  
C4: 1.2%

GAS (units)  
G1-C4 (PPM)

dk gy, blk, mod sft-sl frm, sb  
rthy-sily tex, sl mot, occ sl  
dissm pyr, tr inoc frags  
dk gy, gy brn, sft, frm ip, sb  
rthy, v calc

95% MRL: med-dk gy, blk, mod sft-sl frm,  
sb blk-y-sb pily, mot, rthy-sily tex, sl mot, occ  
sl vit lst, v calc, tr dissim pyr, tr inoc frags  
5% CHK: lt-med gy, gy brn, sft, frm ip, sb  
blk-y-sb pily, mot, rthy, v calc

100% MRL: med-dk gy, blk, mod sft-sl frm,  
sb blk-y-sb pily, mot, rthy-sily tex, sl mot, occ  
sl vit lst, v calc, tr dissim pyr, tr inoc frags

100% MRL: med-dk gy, blk, mod sft-sl frm,  
sb blk-y-sb pily, mot, rthy-sily tex, sl mot, occ  
sl vit lst, v calc, tr dissim pyr, tr inoc frags

100% MRL: med-dk gy, blk, mod sft  
sb blk-y-sb pily, mot, rthy-sily tex, sl  
sl vit lst, v calc, tr dissim pyr, tr inoc

MD: 7,047'  
TVD: 6,641.39'  
Inclination: 85.49 °  
Azimuth: 271.77 °  
VS: 805.57'

MD: 7,142'  
TVD: 6,646.09'  
Inclination: 88.83 °  
Azimuth: 271.08 °  
VS: 899.92'

TVD (ft)

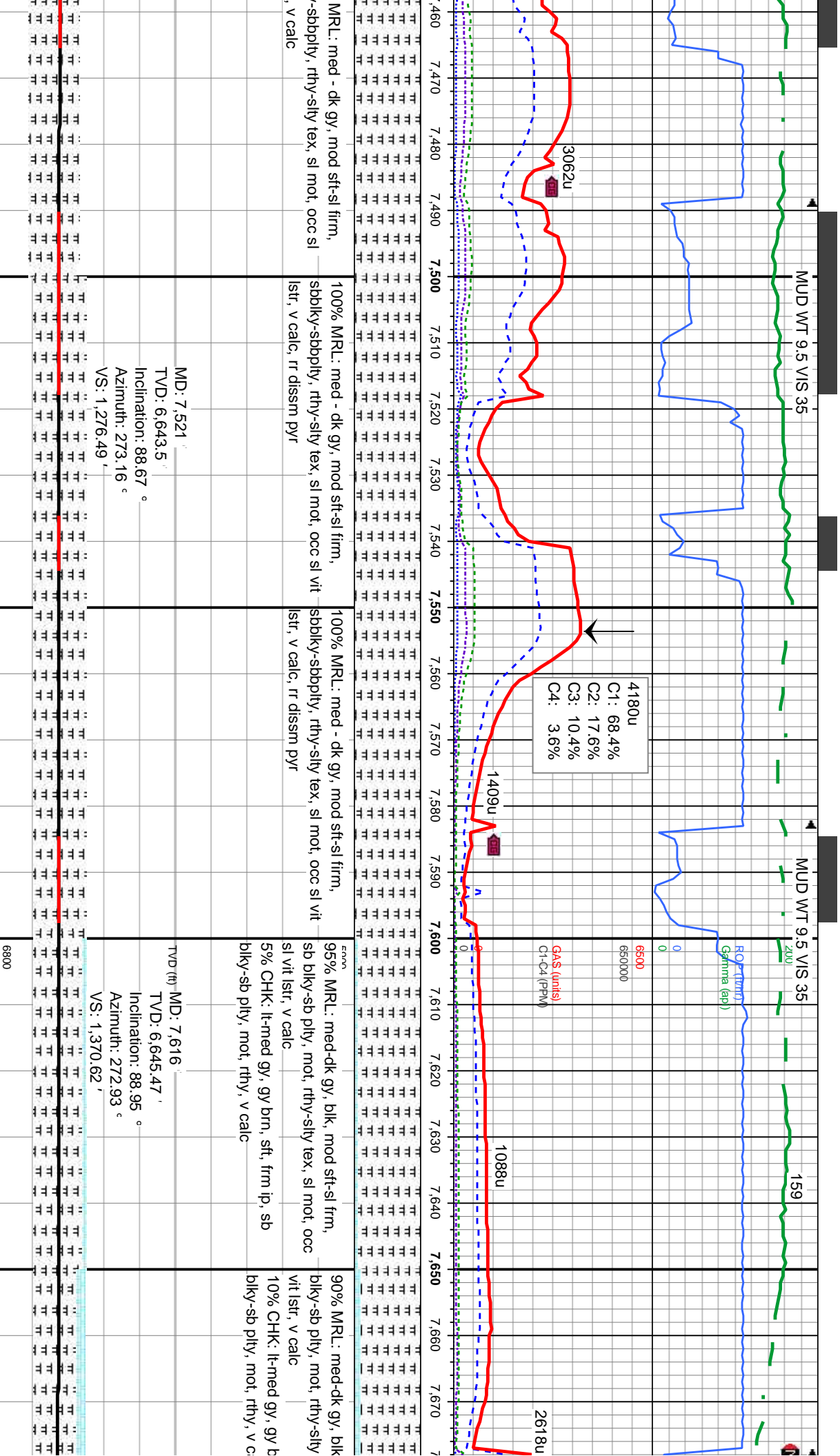
MD: 7,142'  
TVD: 6,646.09'  
Inclin: 88.83 °  
Azim: 271.08 °  
VS: 899.92'

6800

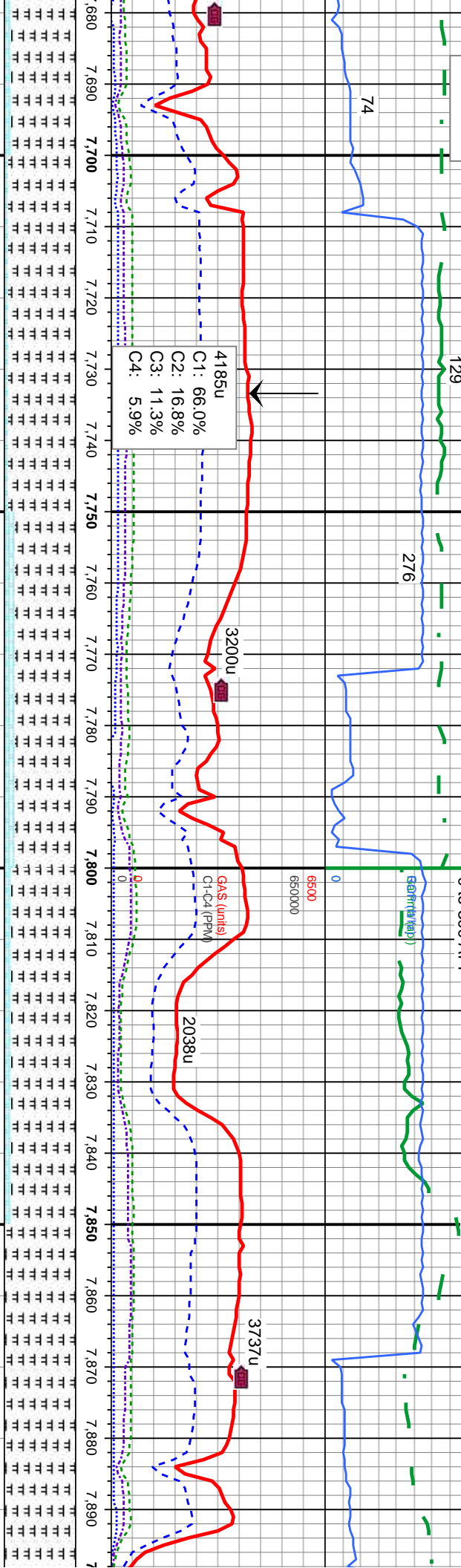












mod sft-sl frm, sb  
tex, sl mot, occ sl  
95% MRL: med-dk gy, blk, mod sft-sl frm, sb  
biky-sb pty, mot, rthy-sily tex, sl mot, occ sl  
vit lstr, v calc  
5% CHK: lt-med gy, gy brn, sft, frm ip, sb  
biky-sb pty, mot, rthy, v calc

85% MRL: med-dk gy, blk, mod sft-sl frm,  
sb biky-sb pty, mot, rthy-sily tex, sl mot, occ  
sl vit lstr, v calc  
15% CHK: lt-med gy, gy brn, sft, frm ip, sb  
biky-sb pty, mot, rthy, v calc

90% MRL: med-dk gy, blk, mod sft-sl frm,  
sb biky-sb pty, mot, rthy-sily tex, sl mot, occ  
sl vit lstr, v calc  
10% CHK: lt-med gy, gy brn, sft, frm ip, sb  
biky-sb pty, mot, rthy, v calc

100% MRL: med-dk gy, blk, mod sft-sl frm,  
sb biky-sb pty, mot, rthy-sily tex, sl mot, occ  
sl vit lstr, v calc

MD: 7,711'  
TVD: 6,647.62'  
Inclination: 88.46°  
Azimuth: 272.74°  
VS: 1,464.8'

MD: 7,806'  
TVD: 6,649.89'  
Inclination: 88.8°  
Azimuth: 272.13°  
VS: 1,559.06'

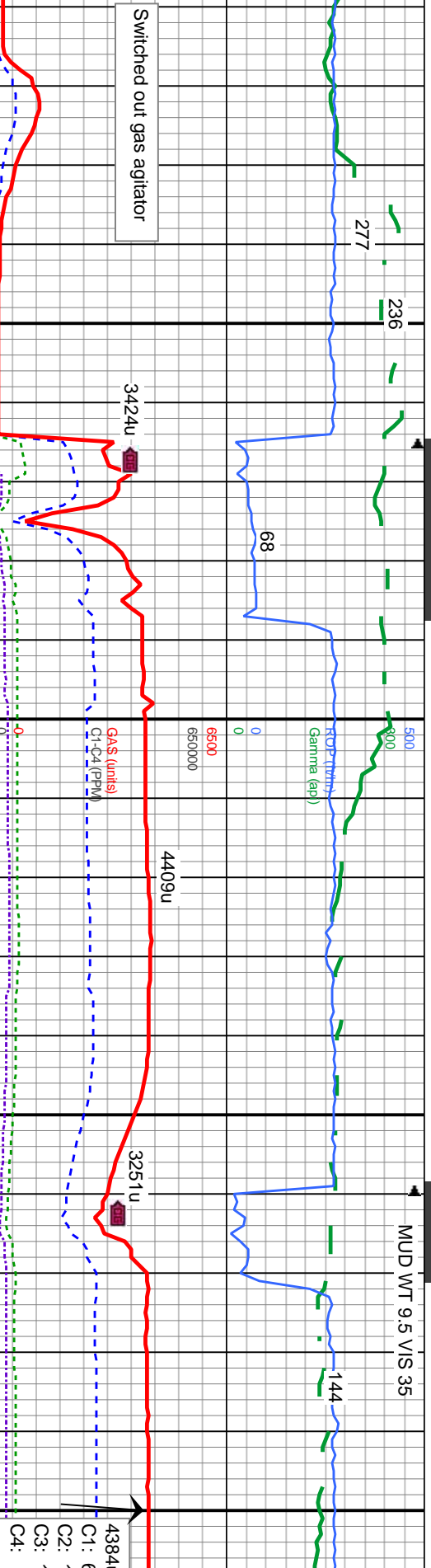
D/U fault  
B marl to A marl

MD: 7,806'  
TVD: 6,649.89'  
Inclination: 88.8°  
Azimuth: 272.13°  
VS: 1,559.06'

6800

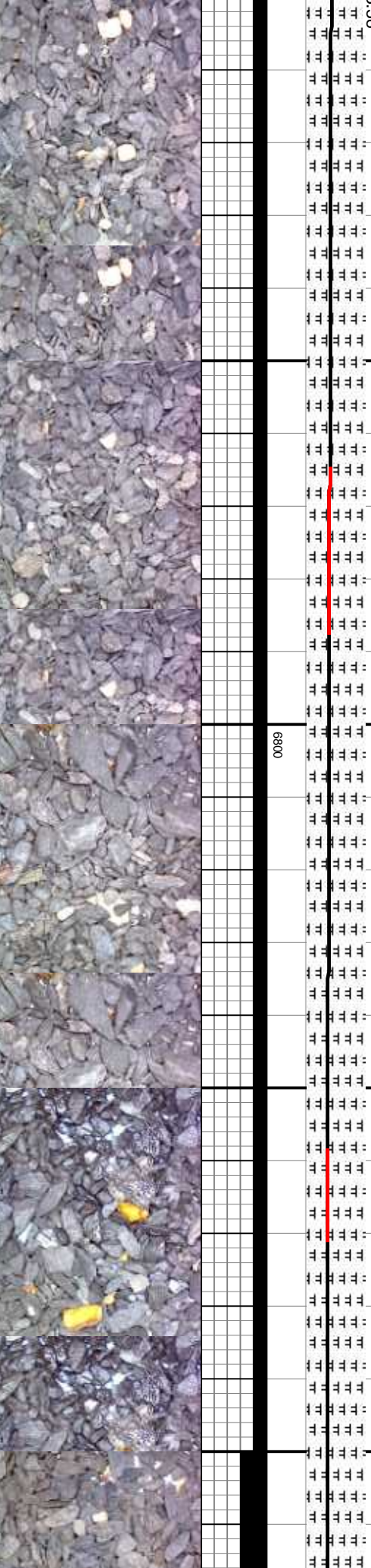


MUD WT 9.5 VIS 35

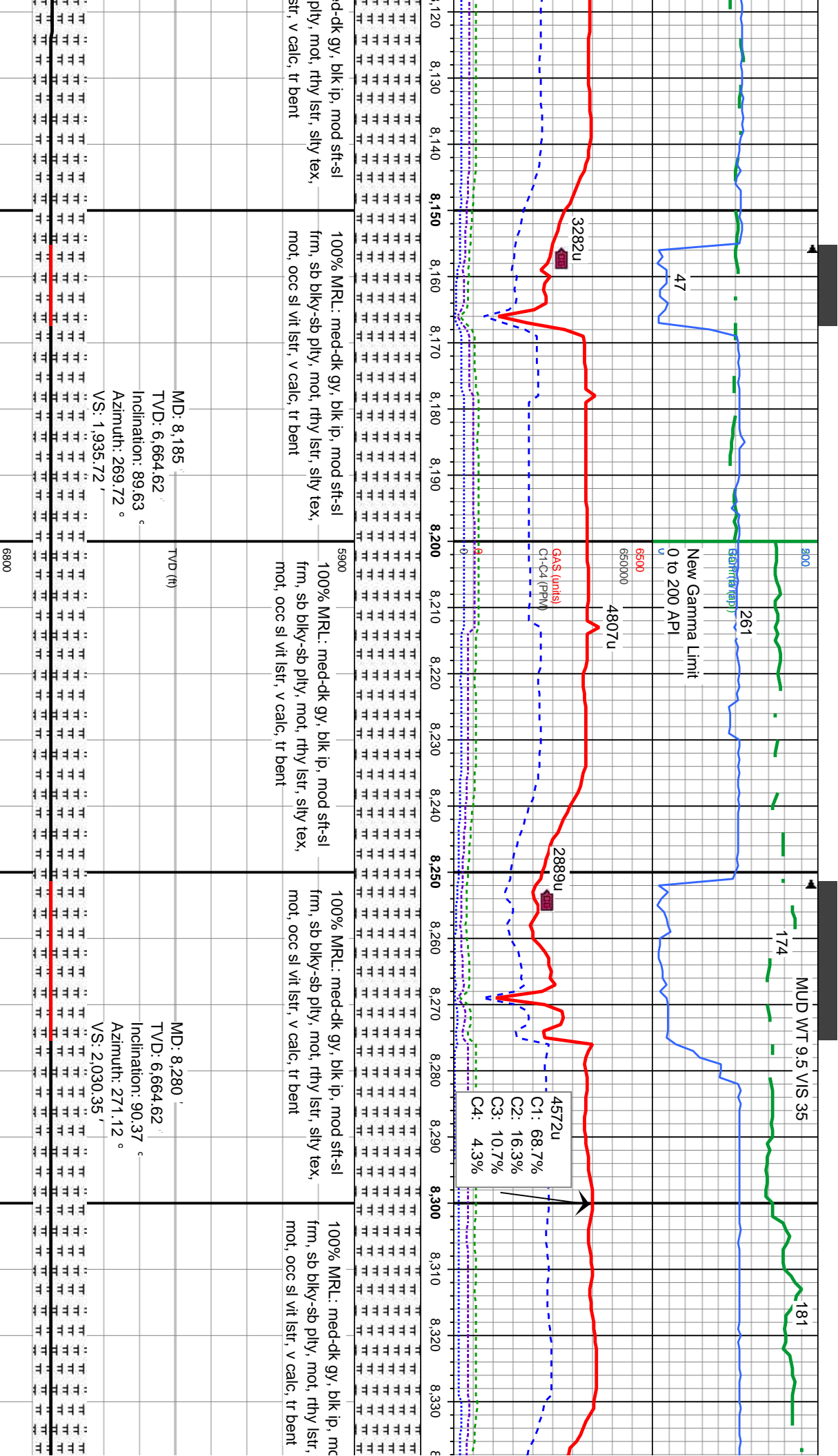


100% MRL: med-dk gy, blk, mod sft-sl frm, sb blk-y-sb pily, mot, rthy-sily tex, sl mot, occ sl vit lstr, v calc, tr bent	100% MRL: med-dk gy, blk ip, mod sft-sl frm, sb blk-y-sb pily, mot, rthy-sily tex, mot, occ sl vit lstr, v calc, tr bent	59 100% MRL: med-dk gy, blk ip, mod sft-sl frm, sb blk-y-sb pily, mot, rthy-sily tex, mot, occ sl vit lstr, v calc, tr bent	100% MRL: med-dk gy, blk ip, mod sft-sl frm, sb blk-y-sb pily, mot, rthy-sily tex, mot, occ sl vit lstr, v calc, tr bent	100% MRL: med-dk gy, blk ip, mod sft-sl frm, sb blk-y-sb pily, mot, rthy-sily tex, mot, occ sl vit lstr, v calc, tr bent
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MD: 7.996	MD: 8.091
TVD: 6,658.19	TVD: 6,662.64
Inclination: 86.67 °	Inclination: 87.96 °
Azimuth: 271.92 °	Azimuth: 270.44 °
VS: 1,747.65	VS: 1,842.06



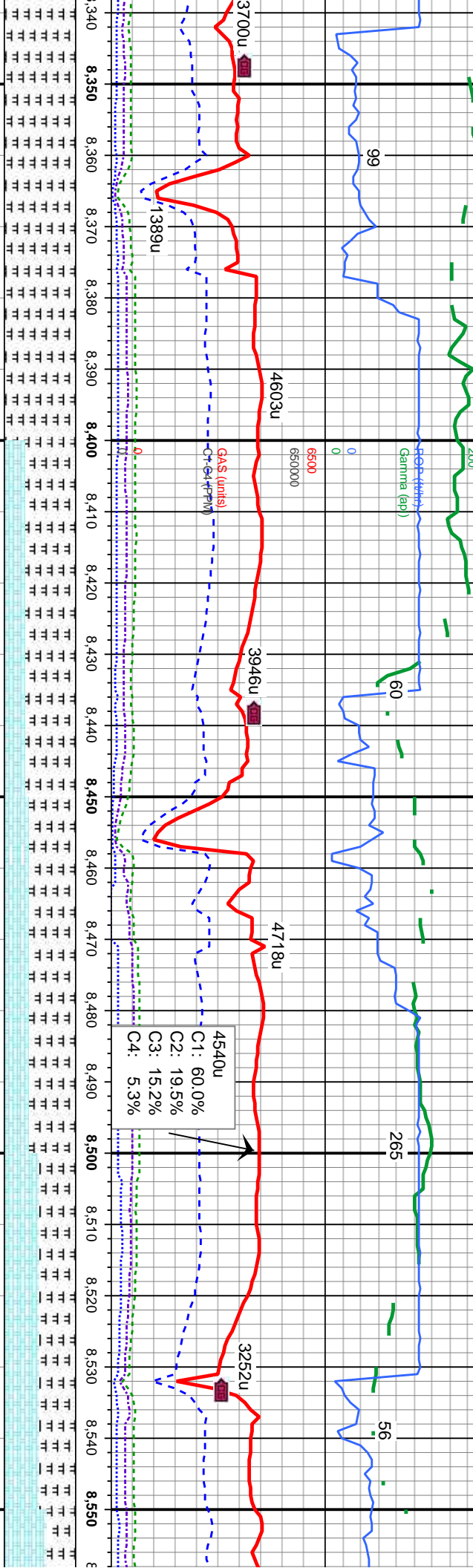




MUD WT 9.5 VIS 36

163

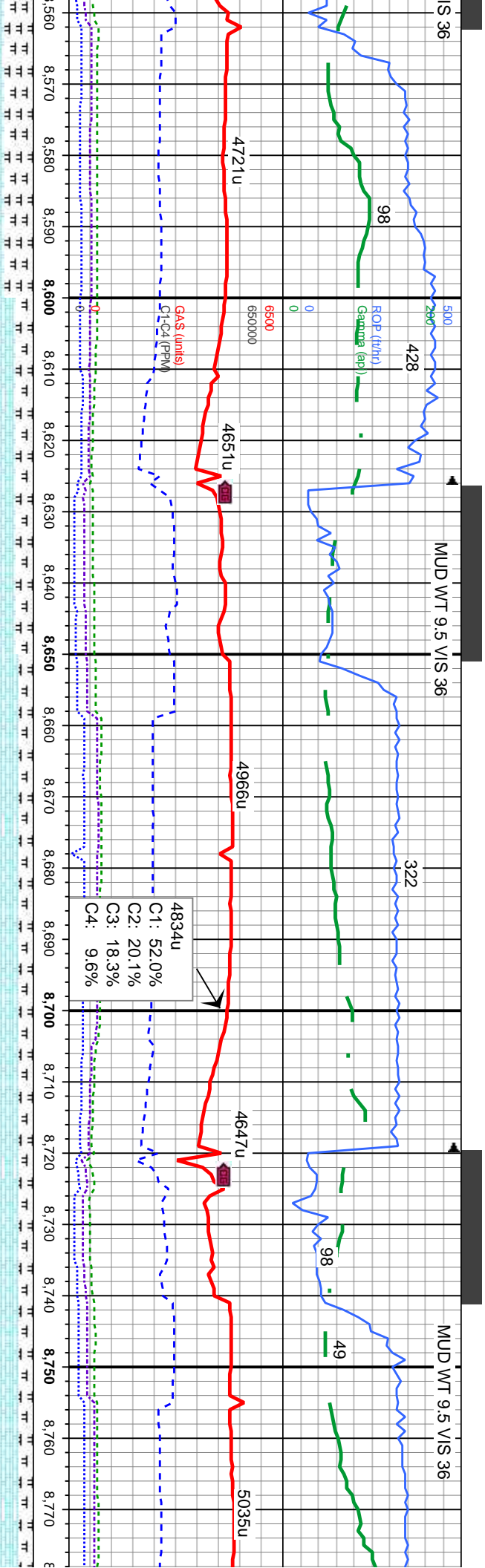
MUD WT 9.5 V



100% MARL: med-dk gy, blk ip, mod sft-si silty tex. frm, sb blk-y-sb pty, mot, rthy lstr, silty tex. mot, occ sl vit lstr, v calc, tr bent	5970% MARL: med-dk gy, blk ip, mod sft-si silty tex, mot, occ sl vit lstr, v calc, tr bent 30% CHK: lt-med gy, gy brn, sft, frm ip, sb blk-y-sb pty, mot, rthy, v calc, intbd ip wi marl	65% MARL: med-dk gy, blk ip, mod sft-si silty tex, mot, occ sl vit lstr, v calc, tr bent 35% CHK: lt-med gy, gy brn, sft, frm ip, sb blk-y-sb pty, mot, rthy, v calc, intbd ip wi marl	50% MARL: med-dk gy, blk ip, mod sft-si frm, sb blk-y-sb pty, mot, rthy lstr, silty tex. mot, occ sl vit lstr, v calc, tr bent 50% CHK: lt-med gy, gy brn, sft, frm ip, sb blk-y-sb pty, mot, rthy, v calc, intbd ip wi marl	60% MARL: med-dk gy, blk ip, mod sft-si frm ip, silty tex. 40% frm, s mot,
MD: 8,375 TVD: 6,664.69 Inclination: 89.54 ° Azimuth: 269.47 ° VS: 2.125 '	MD: 8,470 TVD: 6,665.35 Inclination: 89.66 ° Azimuth: 269.66 ° VS: 2.219.75 '	MD: 8,470 TVD: 6,665.35 Inclination: 89.66 ° Azimuth: 269.66 ° VS: 2.219.75 '	MD: 8,470 TVD: 6,665.35 Inclination: 89.66 ° Azimuth: 269.66 ° VS: 2.219.75 '	MD: 8,470 TVD: 6,665.35 Inclination: 89.66 ° Azimuth: 269.66 ° VS: 2.219.75 '



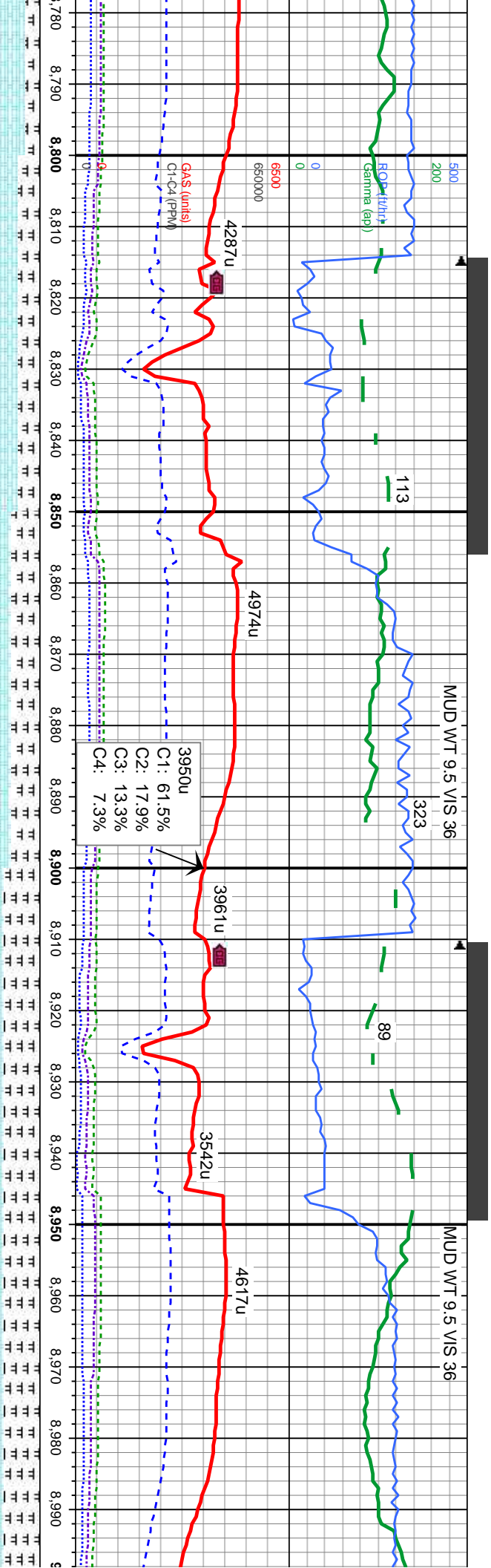




CHK: wh-lt gy, med gy-gy brn, sft, sb blk-y-sb pily, mot, rthy, v calc	590% CHK: wh-lt gy, med gy-gy brn, sft, frm ip, sb blk-y-sb pily, mot, rthy, v calc	80% CHK: wh-lt gy, med gy-gy brn, sft, frm ip, sb blk-y-sb pily, mot, rthy, v calc	80% CHK: wh-lt gy, med gy-gy brn, sft, frm ip, sb blk-y-sb pily, mot, rthy, v calc	80% CHK: wh-lt gy, med gy-gy brn, sft, frm ip, sb blk-y-sb pily, mot, rthy, v calc
MARL: med-dk gy, blk ip, mod sft-sl	25% MARL: med-dk gy, blk ip, mod sft-sl	20% MARL: med-dk gy, blk ip, mod sft-sl	20% MARL: med-dk gy, blk ip, mod sft-sl	20% MARL: med-dk gy, blk ip, mod sft-sl
frm, sb blk-y-sb pily, mot, rthy lstr, silty tex, mot, occ sl vit lstr, v calc, tr bent	frm, sb blk-y-sb pily, mot, rthy lstr, silty tex, mot, occ sl vit lstr, v calc, tr bent	frm, sb blk-y-sb pily, mot, rthy lstr, silty tex, mot, occ sl vit lstr, v calc, tr bent	frm, sb blk-y-sb pily, mot, rthy lstr, silty tex, mot, occ sl vit lstr, v calc	frm, sb blk-y-sb pily, mot, rthy lstr, silty tex, mot, occ sl vit lstr, v calc
D: 8.564 D: 6,666.4 Inclination: 89.07 ° Azimuth: 268.57 ° VS: 2,313.55	TVD (ft) MD: 8.659 TVD: 6,668.21 Inclination: 88.74 ° Azimuth: 266.99 ° VS: 2,408.44	TVD: 6,668.21 Inclination: 88.74 ° Azimuth: 266.99 ° VS: 2,408.44	MD: 8.754 TVD: 6,668.64 Inclination: 90.74 ° Azimuth: 268.31 ° VS: 2,503.36	MD: 8.754 TVD: 6,668.64 Inclination: 90.74 ° Azimuth: 268.31 ° VS: 2,503.36





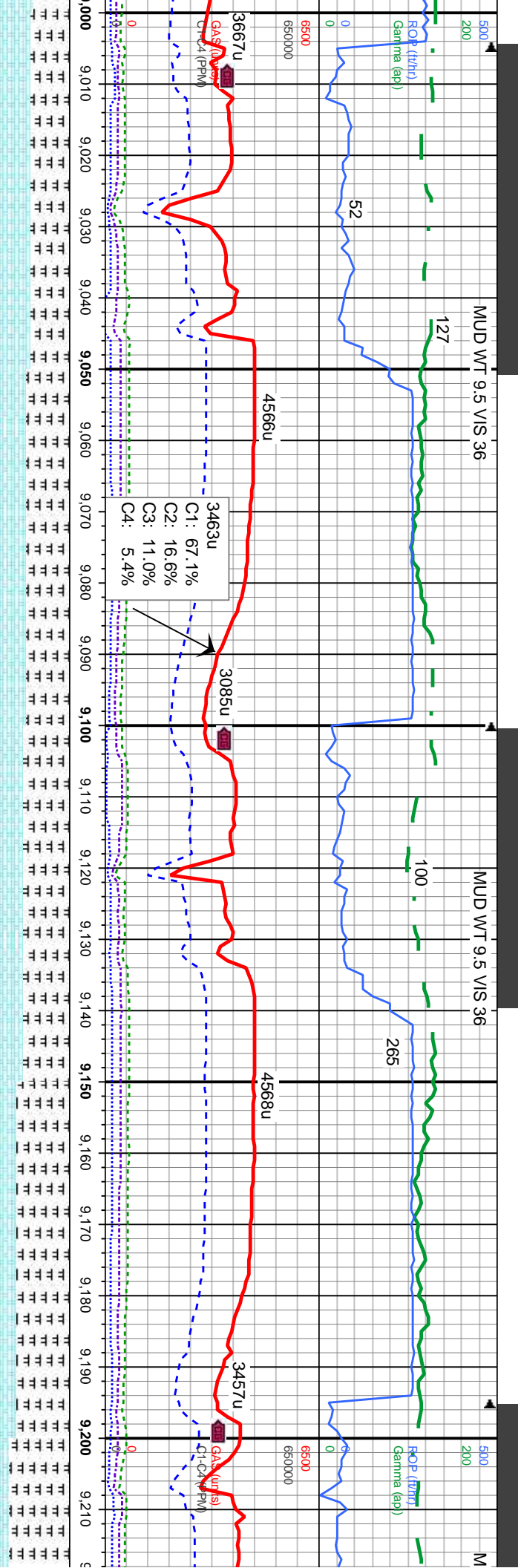


gy-gy brn, sft, ip, sb blk-y-sb pty, mot, rthy, v calc	570% CHK: wh-lt gy, med gy-gy brn, sft, frm ip, sb blk-y-sb pty, mot, rthy, v calc 30% MARL: med-dk gy, blk ip, mod sft-sl frm, sb blk-y-sb pty, mot, rthy lstr, silty tex, mot, occ sl vit lstr, v calc, dissim pyr	60% CHK: wh-lt gy, med gy-gy brn, sft, frm ip, sb blk-y-sb pty, mot, rthy, v calc 40% MARL: med-dk gy, blk ip, mod sft-sl frm, sb blk-y-sb pty, mot, rthy lstr, silty tex, mot, occ sl vit lstr, v calc, dissim pyr	50% CHK: wh-lt gy, med gy-gy brn, sft, frm ip, sb blk-y-sb pty, mot, rthy, v calc 50% MARL: med-dk gy, blk ip, mod sft-sl frm, sb blk-y-sb pty, mot, rthy lstr, silty tex, mot, occ sl vit lstr, v calc, dissim pyr	50% CHK: wh-lt gy, med gy-gy brn, sft, frm ip, sb blk-y-sb pty, mot, rthy, v calc 50% MARL: med-dk gy, blk ip, mod sft-sl frm, sb blk-y-sb pty, mot, rthy lstr, silty tex, mot, occ sl vit lstr, v calc, dissim pyr
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TVD (ft)	MD: 8,849 TVD: 6,666.26 Inclination: 92.13 ° Azimuth: 268.36 ° VS: 2.598.21	MD: 8,944 TVD: 6,663.43 Inclination: 91.29 ° Azimuth: 268.06 ° VS: 2.693.05
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55% MARL: med-dk gy, blk ip, mod sft-sl  
frm, sb blk-y-sb pily, mot, rthy lstr, silty tex,  
mot, occ sl vit lstr, v calc, dissim pyr  
45% CHK: wh-lt gy, med gy-gy brn, sft, frm  
ip, sb blk-y-sb pily, mot, rthy, v calc

60% MARL: med-dk gy, blk ip, mod sft-sl  
frm, sb blk-y-sb pily, mot, rthy lstr, silty tex,  
mot, occ sl vit lstr, v calc, dissim pyr  
40% CHK: wh-lt gy, med gy-gy brn, sft, frm  
ip, sb blk-y-sb pily, mot, rthy, v calc

65% MARL: med-dk gy, blk ip, mod sft-sl  
frm, sb blk-y-sb pily, mot, rthy lstr, silty tex,  
mot, occ sl vit lstr, v calc, dissim pyr  
35% CHK: wh-lt gy, med gy-gy brn, sft, frm  
ip, sb blk-y-sb pily, mot, rthy, v calc

75% MARL: med-dk gy, blk ip, mod sft-sl  
frm, sb blk-y-sb pily, mot, rthy lstr, silty tex,  
mot, occ sl vit lstr, v calc, dissim pyr  
25% CHK: wh-lt gy, med gy-gy brn, sft, frm  
ip,

85% MARL: me  
frm, sb blk-y-sb p  
mot, occ sl vit lstr  
15% CHK: wh-lt  
ip,

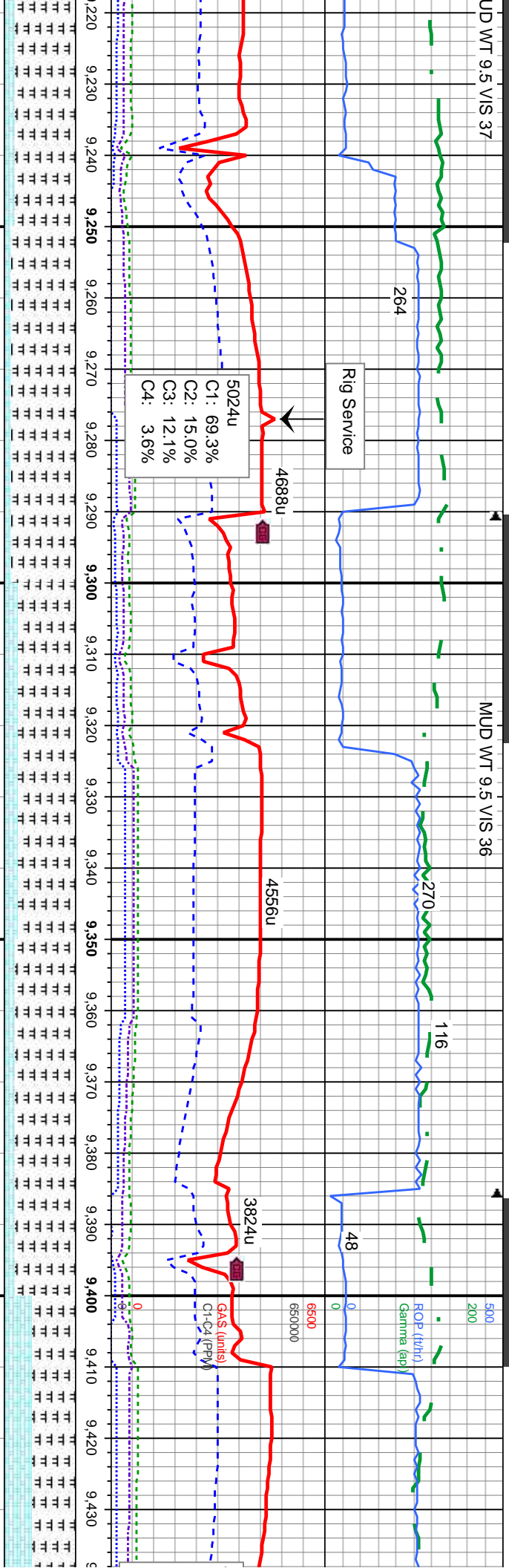
TVD (ft)  
MD: 9,039'  
TVD: 6,661.72'  
Inclination: 90.77°  
Azimuth: 268.44°  
VS: 2,787.91'

TVD (ft)  
MD: 9,134'  
TVD: 6,660.59'  
Inclination: 90.59°  
Azimuth: 270.61°  
VS: 2,882.66'



UD WT 9.5 VIS 37

MUD WT 9.5 VIS 36



d-dk gy, blk ip, mod sft-sl  
pty, mot, rthy lstr, silty tex,  
tr, v calc, dissim pyr  
gy, med gy-gy brn, sft, frm

90% MARL: med-dk gy, blk ip, mod sft-sl  
frm, sb blk-y-sb pty, mot, rthy lstr, silty tex,  
mot, occ sl vit lstr, v calc, dissim pyr  
10% CHK: lt gy - gy, occ lt brn, sft, occ mod  
frm, sb blk-y - sb pty, v calc

80% MARL: med-dk gy, blk ip, mod sft-sl  
frm, sb blk-y-sb pty, mot, rthy lstr, silty tex,  
mot, occ sl vit lstr, v calc, dissim pyr  
20% CHK: lt gy - gy, occ lt brn, sft, occ mod  
frm, sb blk-y - sb pty, v calc

85% MARL: med-dk gy, blk ip, mod sft-sl frm,  
sb blk-y-sb pty, mot, rthy lstr, silty tex, mot, occ  
sl vit lstr, v calc, dissim pyr  
15% CHK: wh-lt gy, med gy-gy brn, sft, frm ip,  
firm, sb blk-y - sb pty, v calc

60% MARL: med-dk gy, blk ip, mo  
frm, sb blk-y-sb pty, mot, rthy lstr, ;  
mot, occ sl vit lstr, v calc, dissim py  
40% CHK: lt gy - gy, occ lt brn, sft,  
firm, sb blk-y - sb pty, v calc

MD: 9,229  
TVD: 6,660.51  
Inclination: 89.51 °  
Azimuth: 270.68 °  
VS: 2,977.26'

MD: 9,324  
TVD: 6,663.2  
Inclination: 87.25 °  
Azimuth: 271.19 °  
VS: 3,071.77'

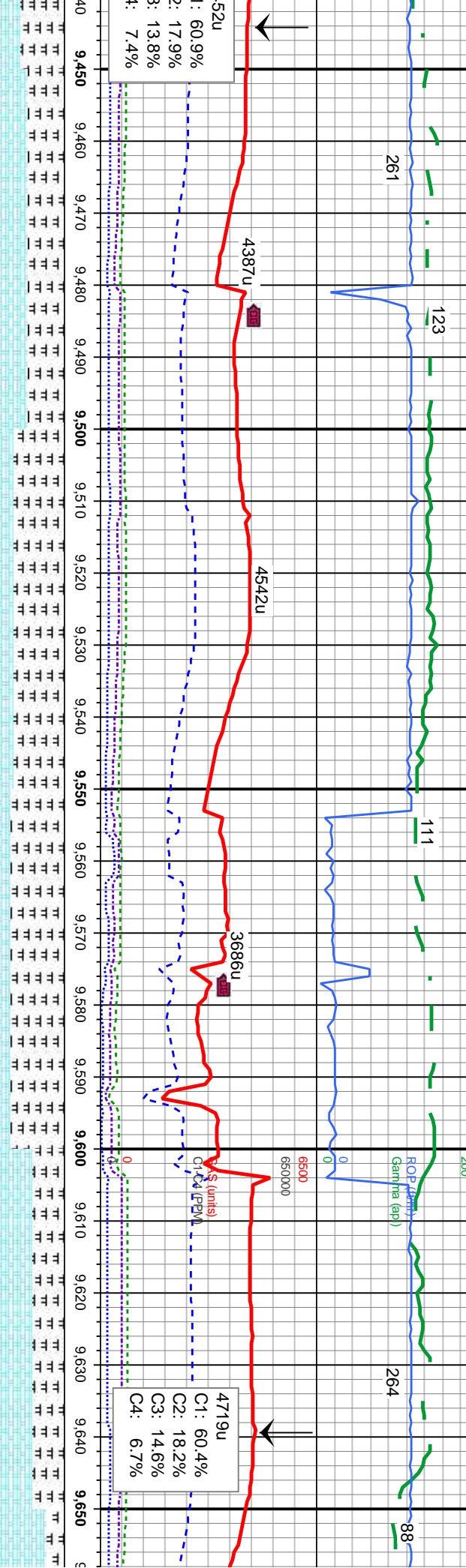
MD: 9,419  
TVD: 6,667.9  
Inclination: 87.07 °  
Azimuth: 269.37 °  
VS: 3,166.3'





MUD WT 9.5 VIS 35

MUD WT 9.5 VIS 35



C1: 60.9%  
C2: 17.9%  
C3: 13.8%  
C4: 7.4%

C1: 60.4%  
C2: 18.2%  
C3: 14.6%  
C4: 6.7%

50% MARL: med-dk gy, blk ip, mod sft-sl	70% MARL: med-dk gy, blk ip, mod sft-sl	75% MARL: med-dk gy, blk ip, mod sft-sl	55% CHK: med-dk gy, med gy-gy brn, sft,	75% C
frm, sb blk-y-sb pty, mot, rthy lstr, silty tex,	frm, sb blk-y-sb pty, mot, rthy lstr, silty tex,	frm, sb blk-y-sb pty, mot, rthy lstr, silty tex,	frm ip, sb blk-y-sb pty, mot, rthy, v calc	frm ip,
mot, occ sl vit lstr, v calc, dissim pyr	mot, occ sl vit lstr, v calc, dissim pyr	mot, occ sl vit lstr, v calc, dissim pyr	45% MARL: med-dk gy, blk ip, mod sft-sl	25% N
50% CHK: lt gy - gy, occ lt brn, sft, occ mod	30% CHK: lt gy - gy, occ lt brn, sft, occ mod	25% CHK: lt gy - gy, occ lt brn, sft, occ mod	frm, sb blk-y-sb pty, mot, rthy lstr, silty tex,	frm, st
frm, sb blk-y - sb pty, v calc	frm, sb blk-y - sb pty, v calc	frm, sb blk-y - sb pty, v calc	mot, occ sl vit lstr, v calc, dissim pyr	mot, o

MD: 9.513  
TVD: 6,670.03  
Inclination: 90.34 °  
Azimuth: 269.81 °  
VS: 3,260.02'

MD: 9.609  
TVD: 6,672.66  
Inclination: 86.52 °  
Azimuth: 269.37 °  
VS: 3,355.71'

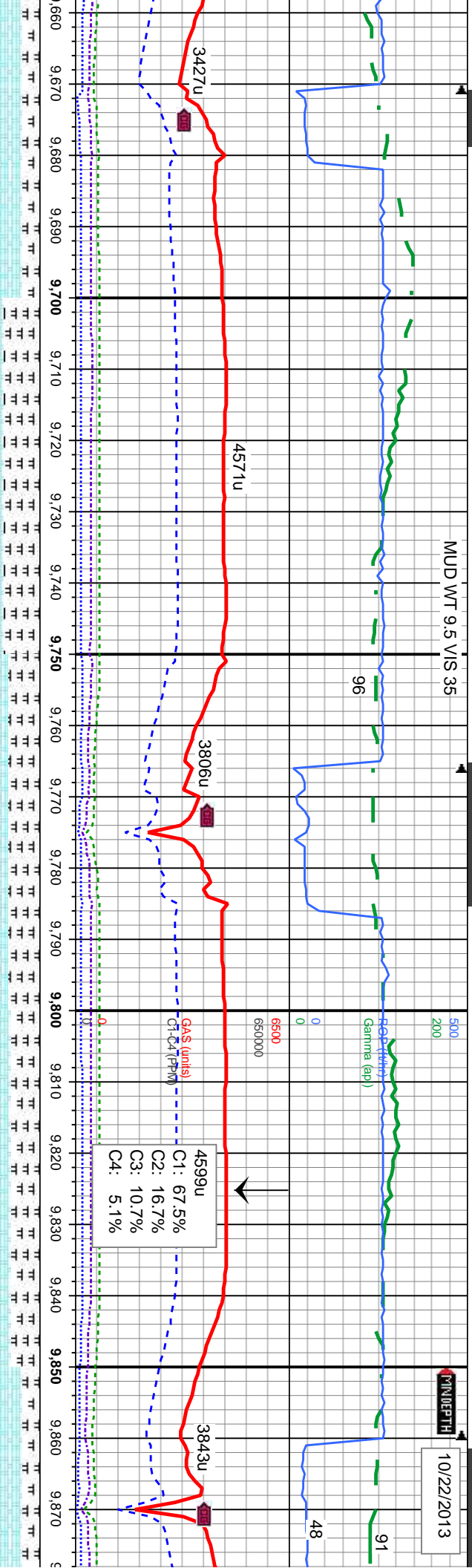
6800



MUD WT 9.5 VIS 35

MINDEPTH

10/22/2013



HHK: med-dk gy, med gy-gy brn, sft, sb blyk-sb ply, mot, rthy, v calc  
MARL: med-dk gy, blk ip, mod sft-sl blyk-sb ply, mot, rthy lstr, silty tex, occ sl vit lstr, v calc, dissim pyr

50% CHK: med-dk gy, med gy-gy brn, sft, frm ip, sb blyk-sb ply, mot, rthy, v calc  
50% MARL: med-dk gy, blk ip, mod sft-sl frm, sb blyk-sb ply, mot, rthy lstr, silty tex, mot, occ sl vit lstr, v calc, dissim pyr

55% CHK: med-dk gy, med gy-gy brn, sft, frm ip, sb blyk-sb ply, mot, rthy, v calc  
45% MARL: med-dk gy, blk ip, mod sft-sl frm, sb blyk-sb ply, mot, rthy lstr, silty tex, mot, occ sl vit lstr, v calc, dissim pyr

56% CHK: med-dk gy, med gy-gy brn, occ lt brn, sft, occ mod frm, sb blyk - sb ply, wxy - rthy tex, v calc  
40% MRL: m - dkgy, mod sft-sl frm, sblyk-sbply, rthy-silty tex, sl mot, occ sl vit lstr, v calc

75% CHK: med-dk gy, m frm ip, sb blyk-sb ply, mot, 25% MARL: med-dk gy, l frm, sb blyk-sb ply, mot, mot, occ sl vit lstr, v calc

MD: 9,704  
TVD: 6,677.66  
Inclination: 87.44 °  
Azimuth: 269.81 °  
VS: 3,450.32

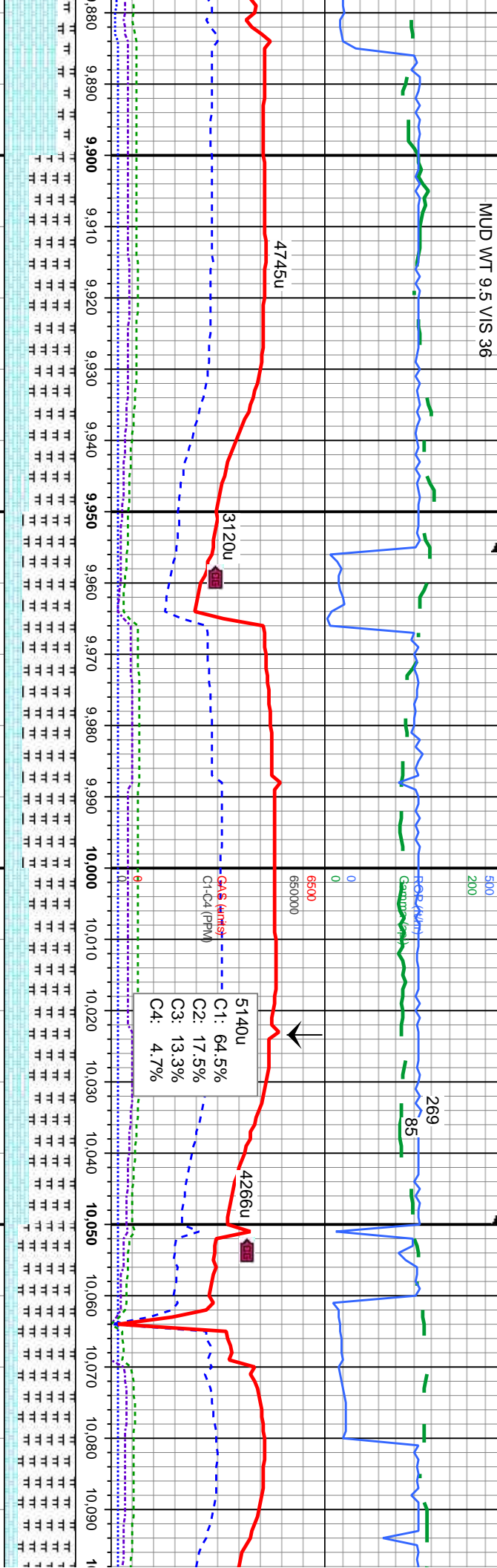
MD: 9,798  
TVD: 6,681.45  
Inclination: 87.94 °  
Azimuth: 270.56 °  
VS: 3,543.91

6800





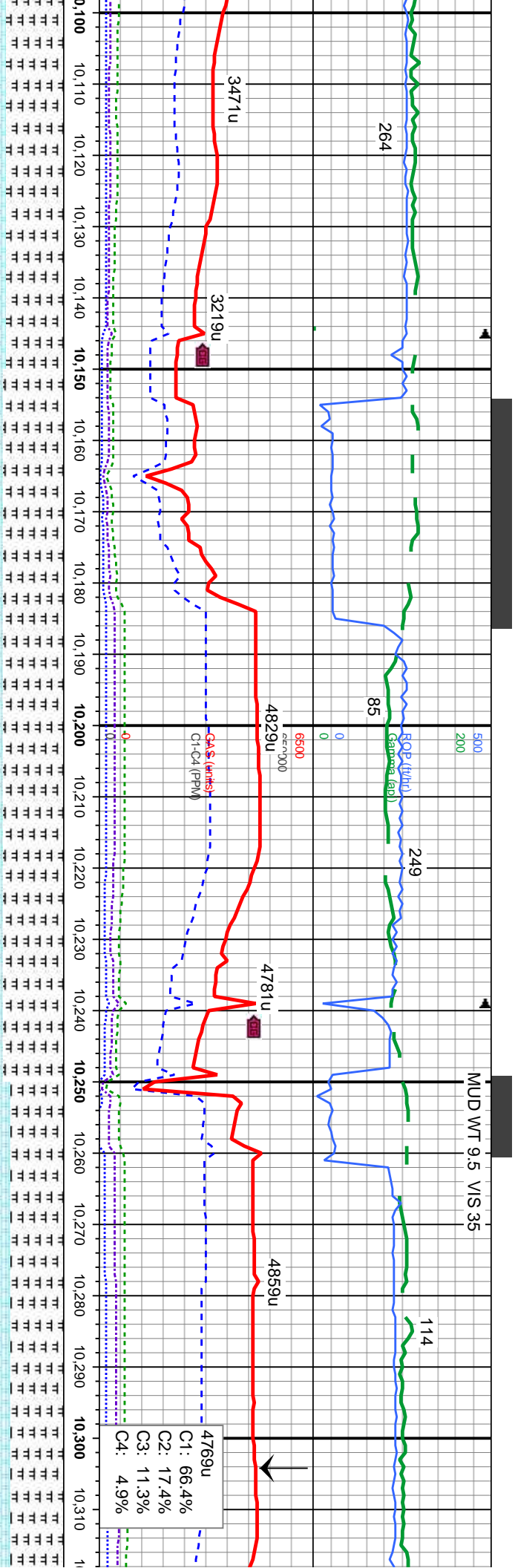
MUD WT 9.5 VIS 36



ed gy-gy brn, sft, rthy, v calc blk ip, mod sft-sl rthy slt, sly tex,	65% MARL: med-dk gy, blk ip, mod sft-sl frm, sb blk-y-sb pty, mot, rthy lstr, sly tex, mot, occ sl vit lstr, v calc, diss pyr 35% CHK: lt gy - gy, occ lt brn, sft, occ mod firm, sb blk-y - sb pty, v calc	75% MARL: med-dk gy, blk ip, mod sft-sl frm, sb blk-y-sb pty, mot, rthy lstr, sly tex, mot, occ sl vit lstr, v calc, diss pyr 25% CHK: lt gy - gy, occ lt brn, sft, occ mod firm, sb blk-y - sb pty, v calc	65% MARL: med-dk gy, blk ip, mod sft-sl frm, sb blk-y-sb pty, mot, rthy lstr, sly tex, mot, occ sl vit lstr, v calc, diss pyr 35% CHK: lt gy - gy, occ lt brn, sft, occ mod firm, sb blk-y - sb pty, v calc	80% MARL: med-dk gy, blk ip, mod sft-sl frm, sb blk-y-sb pty, mot, rthy lstr, sly tex, mot, occ sl vit lstr, v calc, diss pyr 20% CHK: lt gy - gy, occ lt brn, sft, occ mod firm, sb blk-y - sb pty, v calc
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MD: 9,893 TVD: 6,685.02 Inclination: 87.75 ° Azimuth: 270.59 ° VS: 3,638.46	MD: 9,988 TVD: 6,688.02 Inclination: 88.64 ° Azimuth: 269.88 ° VS: 3,733.07	MD: 10,083 TVD: 6,689.38 Inclination: 89.72 ° Azimuth: 270.43 ° VS: 3,827.74
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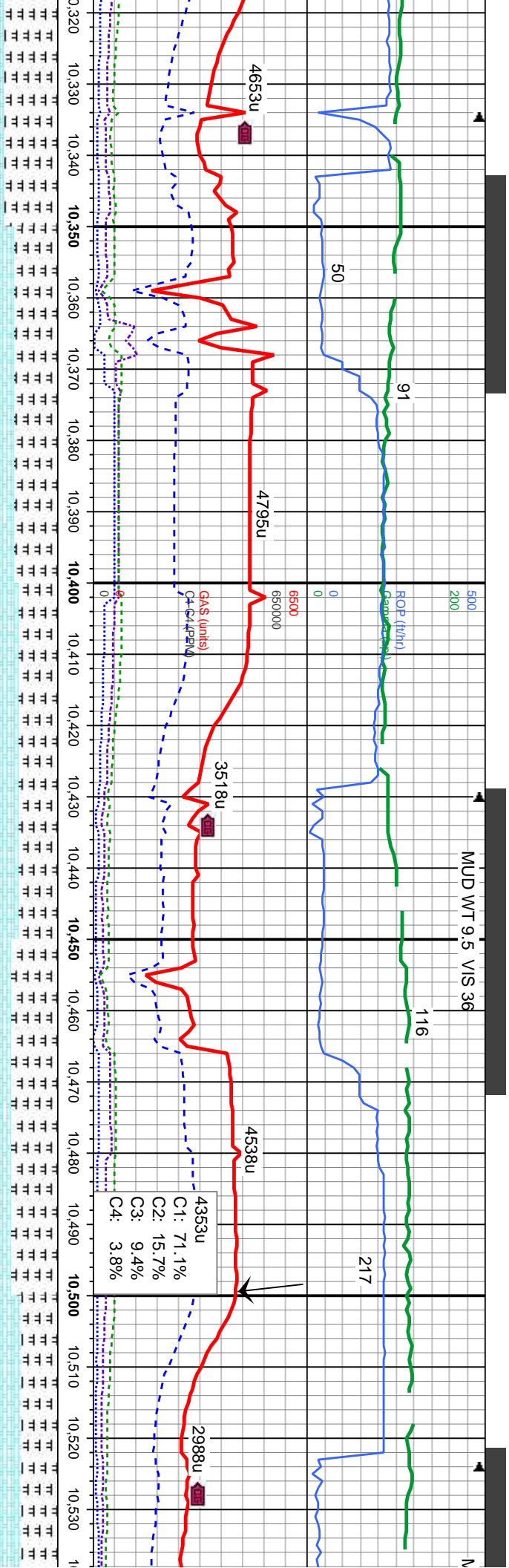
80% MARL: med-dk gy, blk ip, mod sft-sl frm, sb blk-y-sb pily, mot, rthy lstr, silty tex, mot, occ sl vit lstr, v calc, dissim pyr 20% CHK: lt gy - gy, occ lt brn, sft, frm ip, mot ip, rthy-sb wxy, sb blk-y - sb pily, v calc	85% MARL: med-dk gy, blk ip, mod sft-sl frm, sb blk-y-sb pily, mot, rthy lstr, silty tex, mot, occ sl vit lstr, v calc, dissim pyr 15% CHK: lt gy - gy, occ lt brn, sft, frm ip, mot ip, rthy lstr, sb blk-y - sb pily, v calc	55% MARL: med-dk gy, blk ip, mod sft-sl frm, sb blk-y-sb pily, mot, rthy lstr, silty tex, mot, occ sl vit lstr, v calc, dissim pyr 15% CHK: lt gy - gy, occ lt brn, sft, frm ip, mot ip, rthy lstr, sb blk-y - sb pily, v calc, tr bent	75% MARL: med-dk gy, blk ip, mod sft-sl frm, sb blk-y-sb pily, mot, rthy lstr, silty tex, mot, occ sl vit lstr, v calc, dissim pyr 25% CHK: lt gy - gy, occ lt brn, sft, frm ip, mot ip, rthy lstr, sb blk-y - sb pily, v calc, tr bent	75% MARL: med-dk gy, blk ip, mod sft-sl frm, sb blk-y-sb pily, mot, rthy lstr, silty tex, mot, occ sl vit lstr, v calc, dissim pyr 25% CHK: lt gy - gy, occ lt brn, sft, frm ip, mot ip, rthy lstr, sb blk-y - sb pily, v calc, tr bent
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MD: 10,177'  
TVD: 6,691.3'  
Inclination: 87.93 °  
Azimuth: 269.85 °  
VS: 3,921.39'

6800



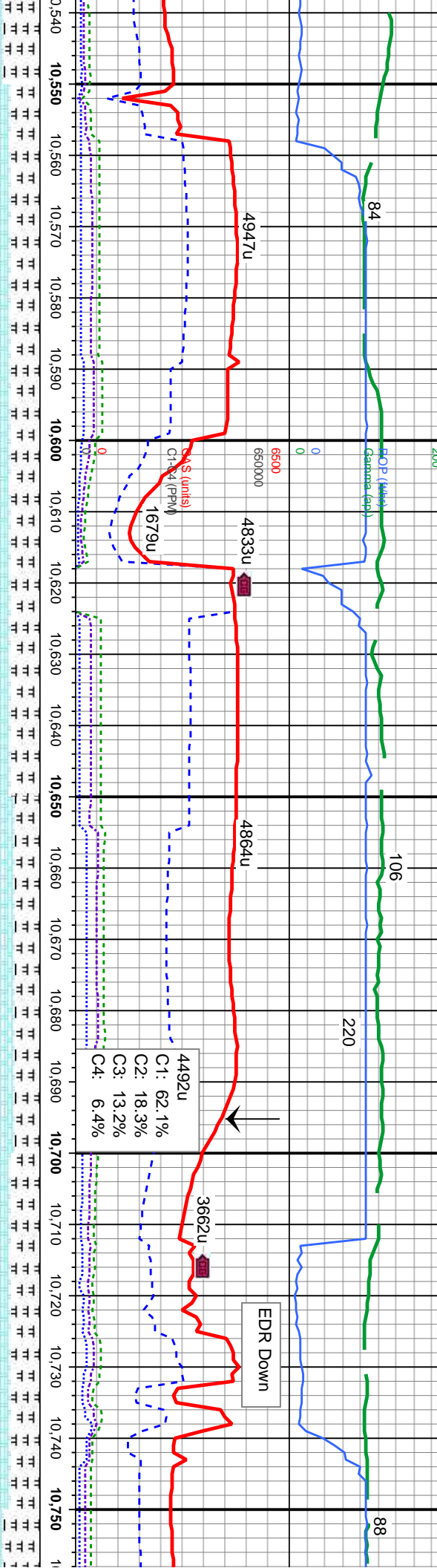




med-dk gy, blk ip, mod sft-sl frm, mot, rthy lstr, silty tex, lstr, v calc, dissim pyr - gy, occ lt brn, sft, frm ip, sb blkly - sb plty, v calc, tr	60% MARL: med-dk gy, blk ip, mod sft-sl frm, sb blkly-sb plty, mot, rthy lstr, silty tex, mot, occ sl vit lstr, v calc, dissim pyr, rr fos frags 40% CHK: lt gy - gy, occ lt brn, sft, frm ip, mot ip, rthy lstr, sb blkly - sb plty, v calc, tr bent	55% MARL: med-dk gy, blk ip, mod sft-sl frm, sb blkly-sb plty, mot, rthy lstr, silty tex, mot, occ sl vit lstr, v calc, dissim pyr, rr fos frags 45% CHK: lt gy - gy, occ lt brn, sft, frm ip, mot ip, rthy lstr, sb blkly - sb plty, v calc, tr bent	65% MARL: med-dk gy, blk ip, mod sft-sl frm, sb blkly-sb plty, mot, rthy lstr, silty tex, mot, occ sl vit lstr, v calc, dissim pyr, rr fos frags 35% CHK: lt gy - gy, occ lt brn, sft, frm ip, mot ip, rthy lstr, sb blkly - sb plty, v calc, tr bent	50% MARL: med-dk gy, blk ip, mod sft-sl frm, sb blkly-sb plty, mot, rthy lstr, silty tex, mot, occ sl vit lstr, v calc, tr pyr, rr 50% CHK: wh-lt gy, lt gy brn, sft, frm ip, mot, rthy-sb wxy, sb blkly-sb plty, v calc, tr bent
MD: 10,367' TVD: 6,694.54' Inclination: 90.09 ° Azimuth: 269.34 ° VS: 4,110.83'				
TVD (ft)				
6800				





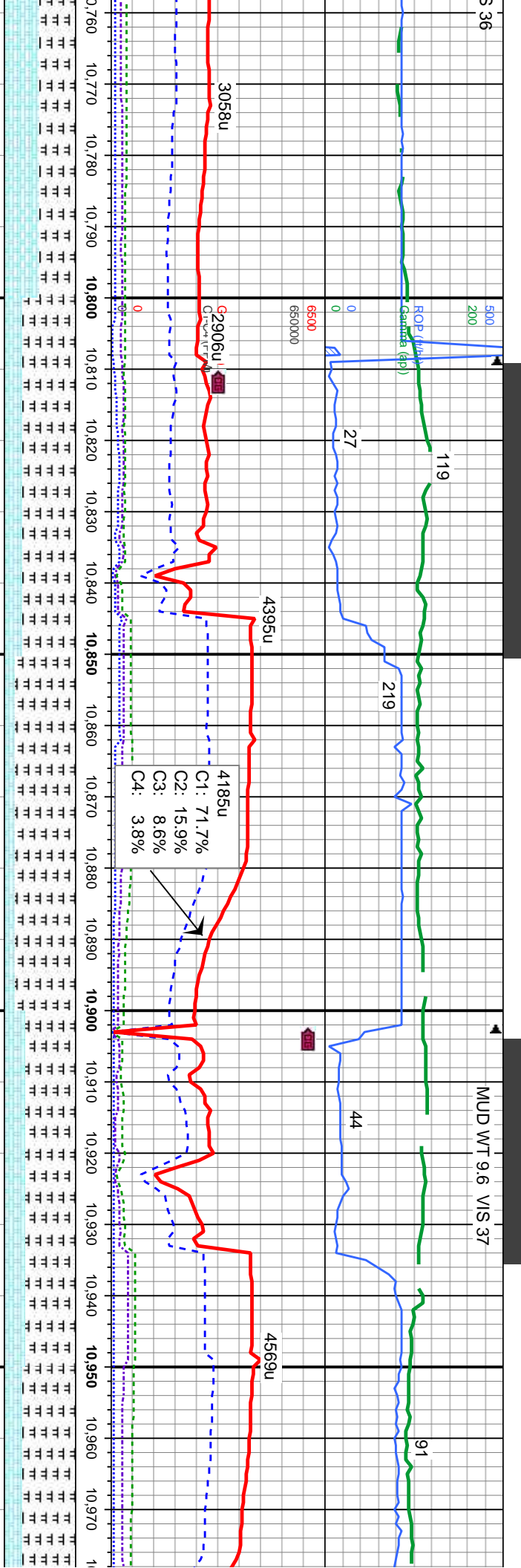


d sft-sl sily tex, fos frags	60% CHK: wh-lt gy, lt gy brn, sft, frm ip, mot, rthy-sb wxy, sb blk-y-sb pily, v calc, tr bent	560% CHK: wh-lt gy, lt gy brn, sft, frm ip, mot, rthy-sb wxy, sb blk-y-sb pily, v calc, tr bent	65% CHK: wh-lt gy, lt gy brn, sft, frm ip, mot, rthy-sb wxy, sb blk-y-sb pily, v calc, tr bent	60% CHK: wh-lt gy, lt gy brn, sft, frm ip, mot, rthy-sb wxy, sb blk-y-sb pily, v calc, tr bent	50% C mot, r bent
frm ip, calc, tr	40% MARL: med-dk gy, blk ip, mod sft-sl frm, sb blk-y-sb pily, mot, rthy lstr, sily tex, mot, occ sl vit lstr, v calc, tr pyr, rr fos frags	40% MARL: med-dk gy, blk ip, mod sft-sl frm, sb blk-y-sb pily, mot, rthy lstr, sily tex, mot, occ sl vit lstr, v calc, tr pyr, rr fos frags	35% MARL: med-dk gy, blk ip, mod sft-sl frm, sb blk-y-sb pily, mot, rthy lstr, sily tex, mot, occ sl vit lstr, v calc, tr pyr, rr fos frags	40% MARL: med-dk gy, blk ip, mod sft-sl frm, sb blk-y-sb pily, mot, rthy lstr, sily tex, mot, occ sl vit lstr, v calc, tr pyr, rr fos frags	50% N frm, st mot, o
	MD: 10,557 TVD: 6,696.38 Inclination: 87.5 Azimuth: 271.08 VS: 4,299.96	MD: 10,652 TVD: 6,698.58 Inclination: 89.85 Azimuth: 271.31 VS: 4,394.44	MD: 10,747 TVD: 6,698.71 Inclination: 90 Azimuth: 269.81 VS: 4,489.05		

6800







wh-lt gy, lt gy brn, sft, frm ip, hysb wxy, sb blkysb pily, v calc, rr

575% MARL: med-dk gy, blk ip, mod sft-sl frm, sb blkysb pily, mot, rthy lstr, silty tex, mot, occ sl vit lstr, v calc, rr pyr, rr fos frags 25% CHK: wh-lt gy, lt gy brn, sft, frm ip, mot, rthy-sb wxy, sb blkysb pily, v calc, rr bent

80% MARL: med-dk gy, blk ip, mod sft-sl frm, sb blkysb pily, mot, rthy lstr, silty tex, mot, occ sl vit lstr, v calc, rr pyr, rr fos frags 20% CHK: wh-lt gy, lt gy brn, sft, frm ip, mot, rthy-sb wxy, sb blkysb pily, v calc, intd ip wi marl

70% MARL: med-dk gy, blk ip, mod sft-sl frm, sb blkysb pily, mot, rthy lstr, silty tex, mot, occ sl vit lstr, v calc, diss pyr 30% CHK: lt gy - gy, occ lt brn, sft, frm ip, mot ip, rthy lstr, sb blkysb pily, v calc

75% MARL: med-dk gy, blk ip, mod sft-sl frm, sb blkysb pily, mot, mot, occ sl vit lstr, v calc, 25% CHK: wh-lt gy, lt gy rthy-sb wxy, sb blkysb pily

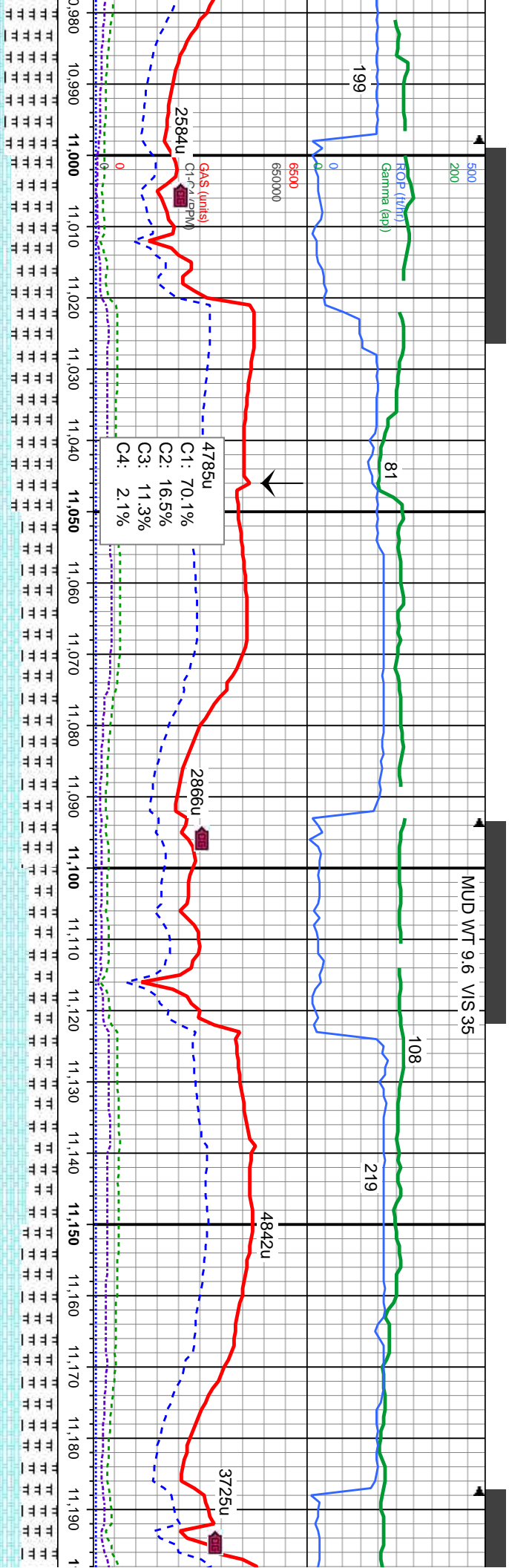
TVD (ft)

MD: 10,841  
TVD: 6,699.52  
Inclination: 89.01 °  
Azimuth: 269.33 °  
VS: 4,582.8

MD: 10,936  
TVD: 6,701.69  
Inclination: 88.37 °  
Azimuth: 269.19 °  
VS: 4,677.56

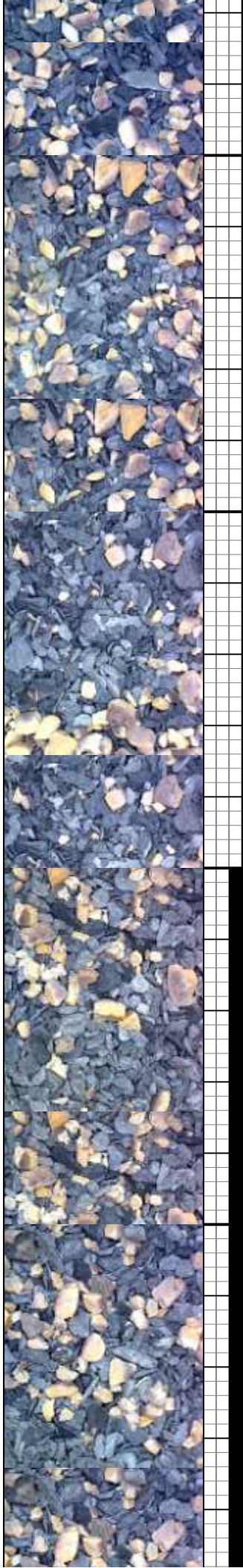




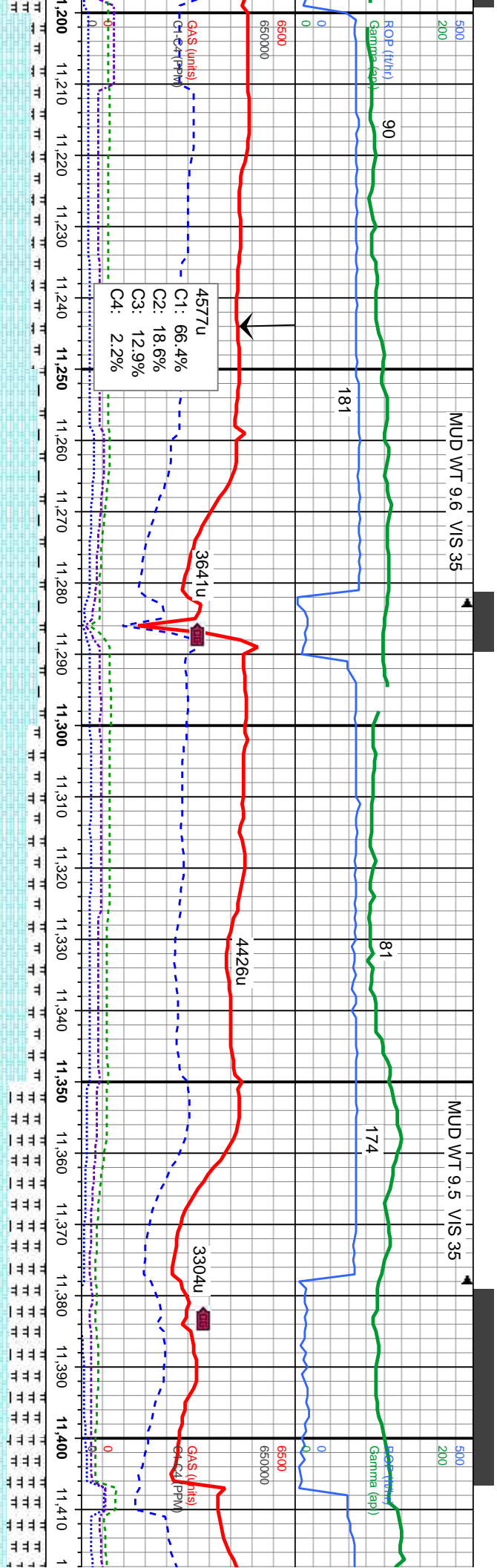


blk ip, mod sft-sl rthy lstr, silty tex, r pyr	65% MARL: med-dk gy, blk ip, mod sft-sl frm, sb blk-y-sb pty, mot, rthy lstr, silty tex, mot, occ sl vit lstr, v calc, r pyr 35% CHK: wh-lt gy, lt gy brn, sft, frm ip, mot, rthy-sb wxy, sb blk-y-sb pty, v calc, r bent	50% MARL: med-dk gy, blk ip, mod sft-sl frm, sb blk-y-sb pty, mot, rthy lstr, silty tex, mot, occ sl vit lstr, v calc, r fos frags 50% CHK: wh-lt gy, lt gy brn, sft, frm ip, mot, rthy-sb wxy, sb blk-y-sb pty, v calc, r bent	60% CHK: lt gy - gy, occ lt brn, sft, occ mod frm, sb blk-y - sb pty, wxy - rthy tex, v calc 40% MRL: m - dkgy, mod sft-sl frm, sbbkly-sbbpty, rthy-silty tex, sl mot, occ sl vit lstr, v calc	50% MARL: med-dk gy, blk ip, mod sft-sl frm, sb blk-y-sb pty, mot, rthy lstr, silty tex, mot, occ sl vit lstr, v calc 50% CHK: wh-lt gy, lt gy brn, sft, frm ip, mot, rthy-sb wxy, sb blk-y-sb pty, v calc, r bent
MD: 11,032 ° TVD: 6,703.44 ° Inclination: 89.54 ° Azimuth: 269.89 ° VS: 4,773.29 '	MD: 11,126 ° TVD: 6,705.54 ° Inclination: 87.9 ° Azimuth: 268.68 ° VS: 4,867.04 '			

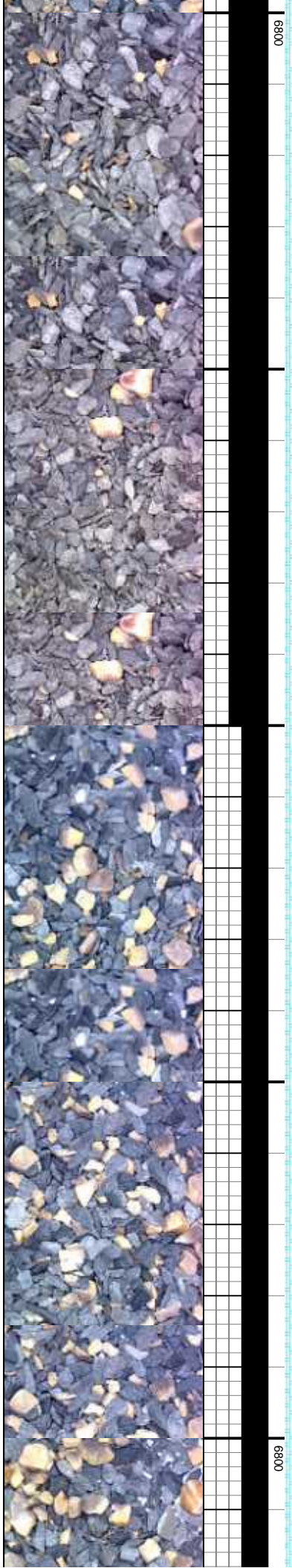
6800







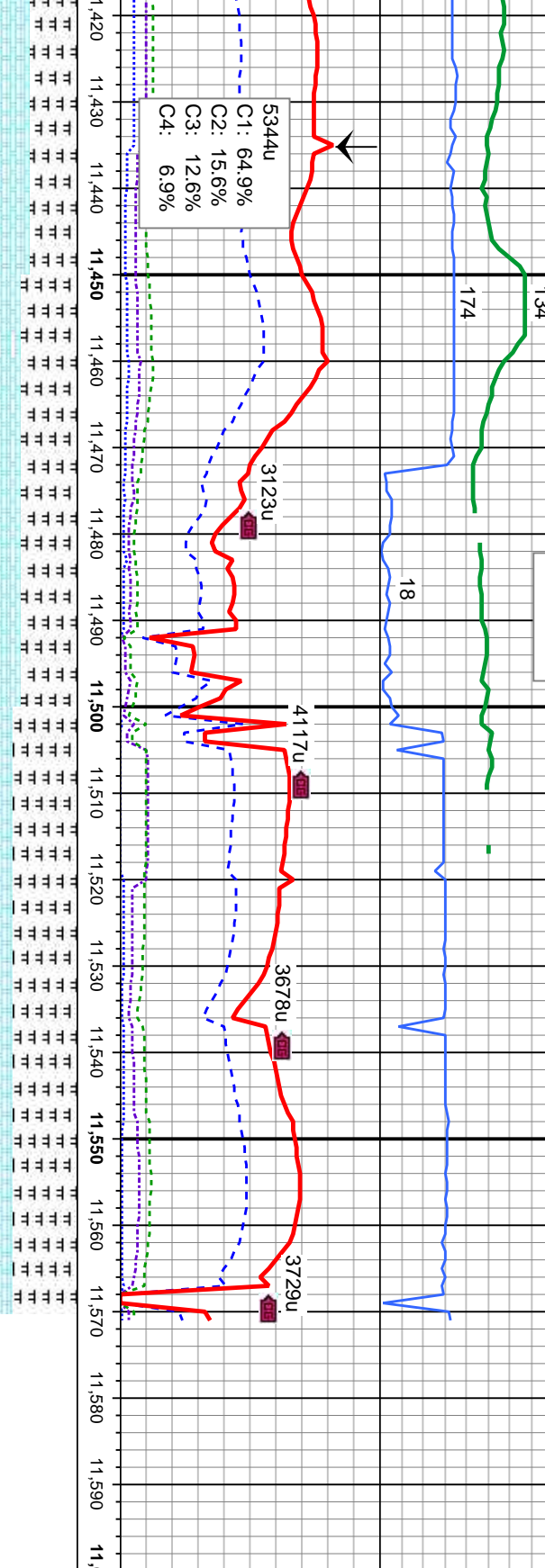
80% CHK: wh-lt gy, lt gy brn, sft, frm ip, mot, rthy-sb wxy, sb blk-y-sb pily, v calc 20% MARL: med-dk gy, blk ip, mod sft-sl frm, sb blk-y-sb pily, mot, rthy lstr, slty tex, mot, occ sl vit lstr, v calc, rr pyr, rr fos frags	90% CHK: wh-lt gy, lt gy brn, sft, frm ip, mot, rthy-sb wxy, sb blk-y-sb pily, v calc 10% MARL: med-dk gy, blk ip, mod sft-sl frm, sb blk-y-sb pily, mot, rthy lstr, slty tex, mot, occ sl vit lstr, v calc, rr pyr, rr fos frags	75% CHK: wh-lt gy, lt gy brn, sft, frm ip, mot, rthy-sb wxy, sb blk-y-sb pily, v calc 25% MARL: med-dk gy, blk ip, mod sft-sl frm, sb blk-y-sb pily, mot, rthy lstr, slty tex, mot, occ sl vit lstr, v calc, rr pyr, rr fos frags	50% MARL: med-dk gy, blk ip, mod sft-sl frm, sb blk-y-sb pily, mot, rthy lstr, slty tex, mot, occ sl vit lstr, v calc 50% CHK: wh-lt gy, lt gy brn, sft, frm ip, mot, rthy-sb wxy, sb blk-y-sb pily, v calc, rr bent	55% MARL: med-dk gy, blk ip, mod sft-sl frm, sb blk-y-sb pily, mot, rthy lstr, slty tex, mot, occ sl vit lstr, v calc 45% CHK: wh-lt gy, lt gy brn, sft, frm ip, mot, rthy-sb wxy, sb blk-y-sb pily, v calc, rr bent
TVD (ft)				
MD: 11,221 TVD: 6,709.07 Inclination: 87.84 Azimuth: 267.68 VS: 4,961.86				
TVD (ft)				
MD: 11,316 TVD: 6,710.2 Inclination: 90.8 Azimuth: 267.89 VS: 5,056.76				
TVD (ft)				
MD: 11,411 TVD: 6,708.71 Inclination: 90.5 Azimuth: 269.8 VS: 5,151.57				



MUD WT 9.5 VIS 36

DATE: 10/23/2013

MUD WT 9.5 VIS 36



dk gy, mod sft-sl frm, sb rthy lstr, silty tex, mot, occ sl	65% MARL: med-dk gy, mod sft-sl frm, sb bkly-sb pty, mot, rthy lstr, silty tex, mot, occ sl vit lstr, v calc	75% MARL: med-dk gy, mod sft-sl frm, sb bkly-sb pty, mot, rthy lstr, silty tex, mot, occ sl vit lstr, v calc
gy, lt gy brn, sft, frm ip, mot, bkly-sb pty, v calc	35% CHK: wh-lt gy, lt gy brn, sft, frm ip, mot, rthy-sb wxy, sb bkly-sb pty, v calc	25% CHK: wh-lt gy, lt gy brn, sft, frm ip, mot, rthy-sb wxy, sb bkly-sb pty, v calc

MD: 11,509 TVD: 6,707.29 Inclination: 90.68 ° Azimuth: 270.47 ° VS: 5,249.22'	PROJECTION MD: 11,570 TVD: 6,706.56 Inclination: 90.68 ° Azimuth: 270.47 ° VS: 5,309.98'
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TD'd WELL @ 11570' MD  
03:07 hrs 10/23/2013

Thank You For Choosing  
Columbine Logging Inc.

