



Scale: 5" / 100'
Measured Depth Log

Well Name ROHN STATE LD10-64HN_HORZ

Location Sec. 9 T9N R58W

State Colorado

Country USA

API Number 05-123-37625

Region DJ Basin

Spud Date 10/19/2014

Surface Coordinates 2050 FSL ; 330 FEL
40.76421 ; -103.8611

Bottom Hole Coordinates 1650 FSL ; 660 FEL
40.76321 ; -103.84326

Ground Elevation 4716'

Logged Interval 4946'

Formation Niobrara B chalk

Type of Drilling Fluid FW LSND

County Weld

Rig Number PD 829

AFE # 200229

Field Wattenberg

Drilling Completed 10/24/2014

K.B. Elevation 4732'

Total Depth 10130'

Company Noble Energy Inc
Address 1625 BROADWAY
DENVER, CO 80202

Name Holly Duncan
Company Noble Energy, Inc
Address 1625 BROADWAY
DENVER, CO 80202

Columbine Logging, Inc
Well Site Geologits

Operator

c
AY
2022

Geologist

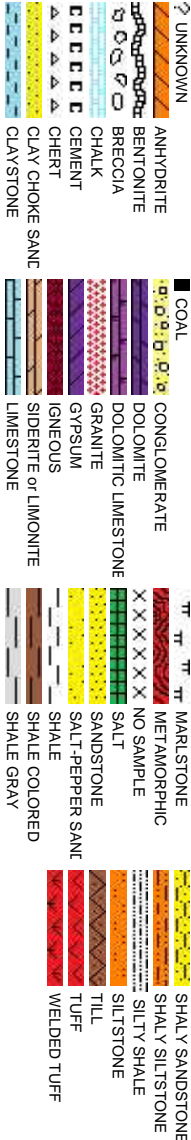
c.
AY
2022

Other

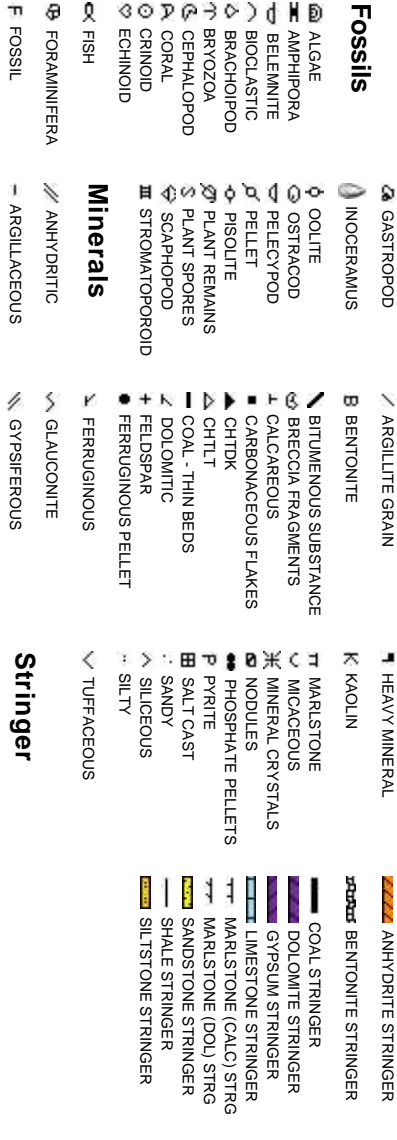
2385 S. Lipan St.
Denver, CO 80223

Ryan Shilling
Eric Bernardo

Rock Types



Accessories



Other Symbols

Oil Show P PINPOINT V VUGGY

D DEAD **Engineering**

● EVEN ○ QUESTIONABLE BIT

● SPOTTED STAINING ▲ CONNECTION (UP)

⋮ DST INTERVAL ⚡ FAULT

⇄ FORMATION TOP

● GAS SHOW ● OIL SHOW

▽ WIRELINE TESTED - LEFT E EARTHY
△ WIRELINE TESTED - RT FX FINELYXLN

LSB DRILL STEM TEST
MNDEPTH MN DEPTH

MNDEPTH MN DEPTH UP

Rounding

▼ CONNECTION (DOWN)

Porosity

E EARTHY

F FRACTURE

X INTERCRYSTALLINE

◊ INTEROOLITIC

◊ MOLDIC

◊ ORGANIC

MNDEPTH MNDEPTH

↕ NORMAL FAULT

↕ OVERTURNED STRATA

↕ REVERSE FAULT

▲ CASING

▲ SIDEWALL CORE (LEFT)

▲ SLIDE

▲ SURVEY

▲ ANGULAR

R ROUNDED

B SUBANG

I SUBRND

Textures

BS BOUNDSTONE

○ CHALKY

○ CRYPTOXLN

PS PACKSTONE

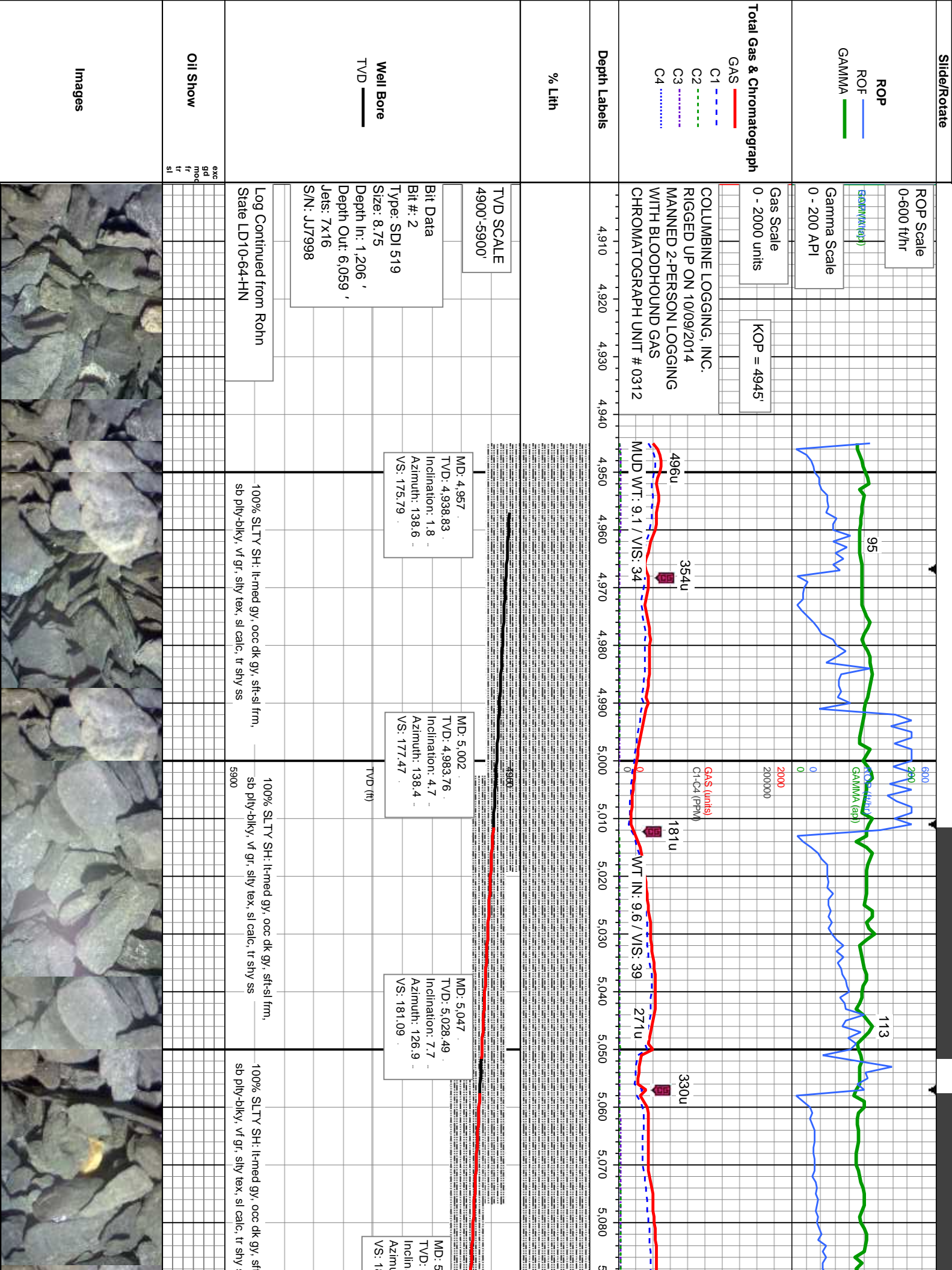
WJ WACKSTONE

Sorting

M MODERATE

P POOR

W WELL



10/21/14
116

113

84

84

404u
C1: 83%
C2: 7%
C3: 7%
C4: 2%

599u
C1: 79%
C2: 9%
C3: 8%
C4: 3%

GAS (units)
C1-C4 (PPM)

WT IN: 9.8, OUT: 9.7 / VIS: 40

WT IN: 10.1, OUT: 10.0 / VIS: 40

358u

317u

355u

447u

410u

599u

MD: 5,136
TVD: 5,115.61
Inclination: 15.2
Azimuth: 123
VS: 196.1

MD: 5,181
TVD: 5,158.53
Inclination: 19.8
Azimuth: 113.2
VS: 208.04

MD: 5,226
TVD: 5,200.36
Inclination: 23.5
Azimuth: 103.9
VS: 223.74

MD: 5,271
TVD: 5,241.02
Inclination: 27.3
Azimuth: 92.9
VS: 242.76

100% SLTY SH: lt-med gy, occ dk gy, sft-sl frm,
sb ply-bkly, vfr gr, silty tex, sl calc, tr shly ss

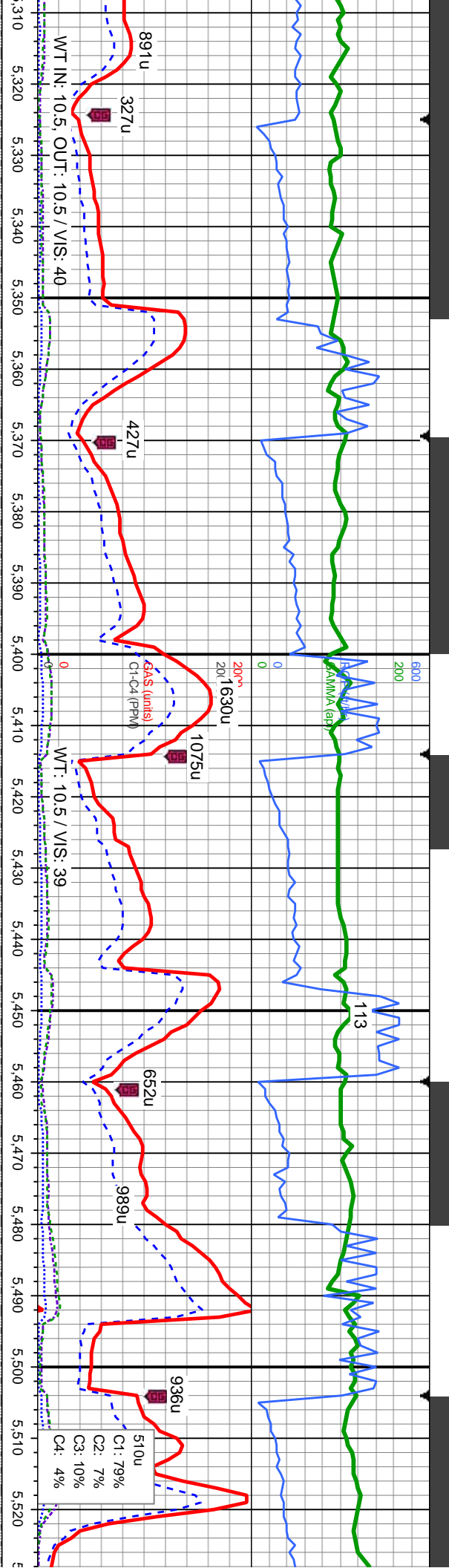
100% SLTY SH: lt-med gy, occ dk gy, sft-sl frm,
sb ply-bkly, vfr gr, silty tex, sl calc, tr shly ss

100% SLTY SH: lt-med gy, occ dk gy, sft-sl frm,
sb ply-bkly, vfr gr, silty tex, sl calc, tr shly ss

100% SLTY SH: lt-med gy, occ dk gy, sft-sl frm,
sb ply-bkly, vfr gr, silty tex, sl calc, tr shly ss

100% SLTY SH: lt-med gy, occ dk gy, sft-sl frm,
sb ply-bkly, vfr gr, silty tex, sl calc, tr shly ss





WT IN: 10.5, OUT: 10.5 / VIS: 40

WT: 10.5 / VIS: 39

C1: 79%
C2: 7%
C3: 10%
C4: 4%

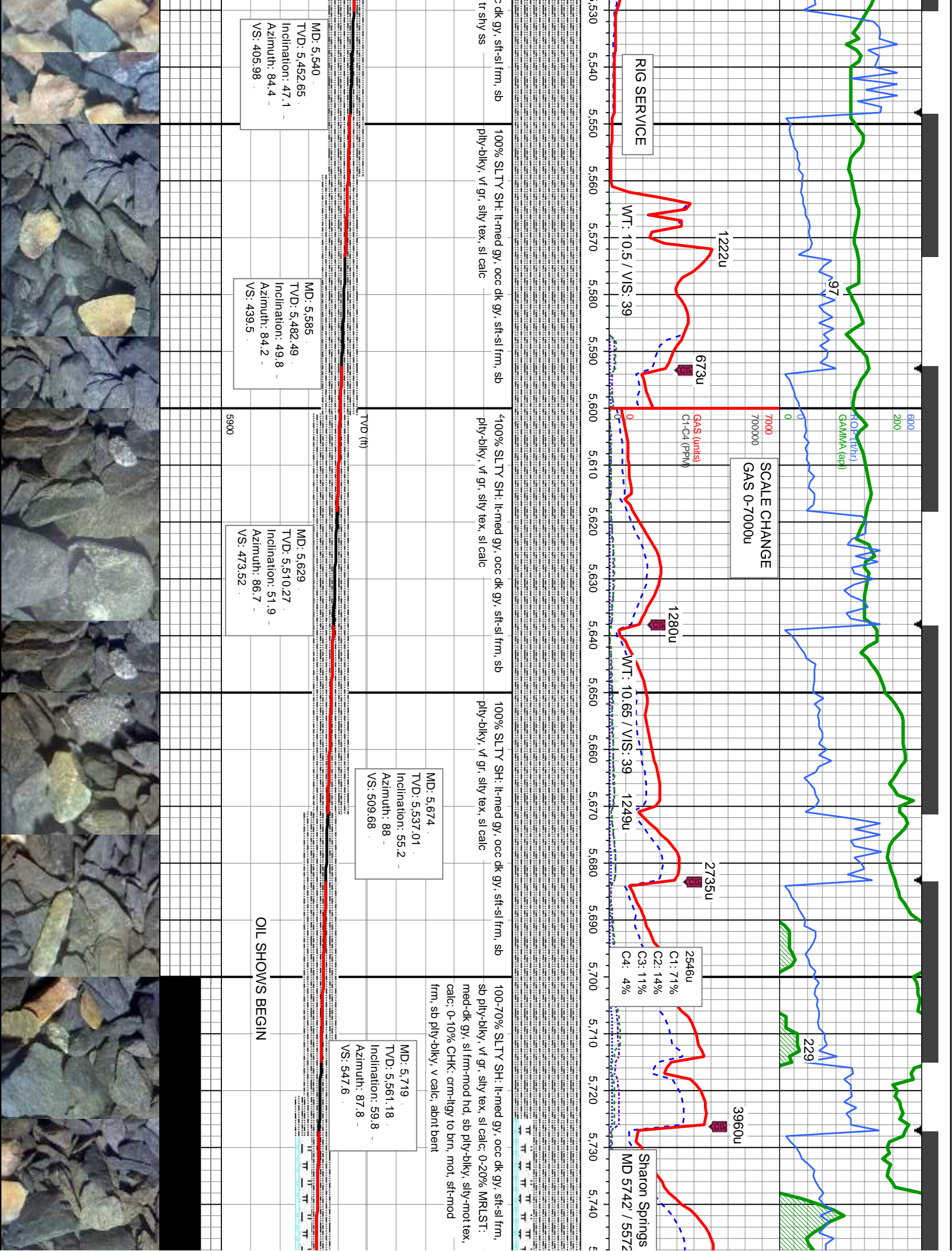
100% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb
ply-blky, vf gr, silty tex, sl calc, tr shy ss

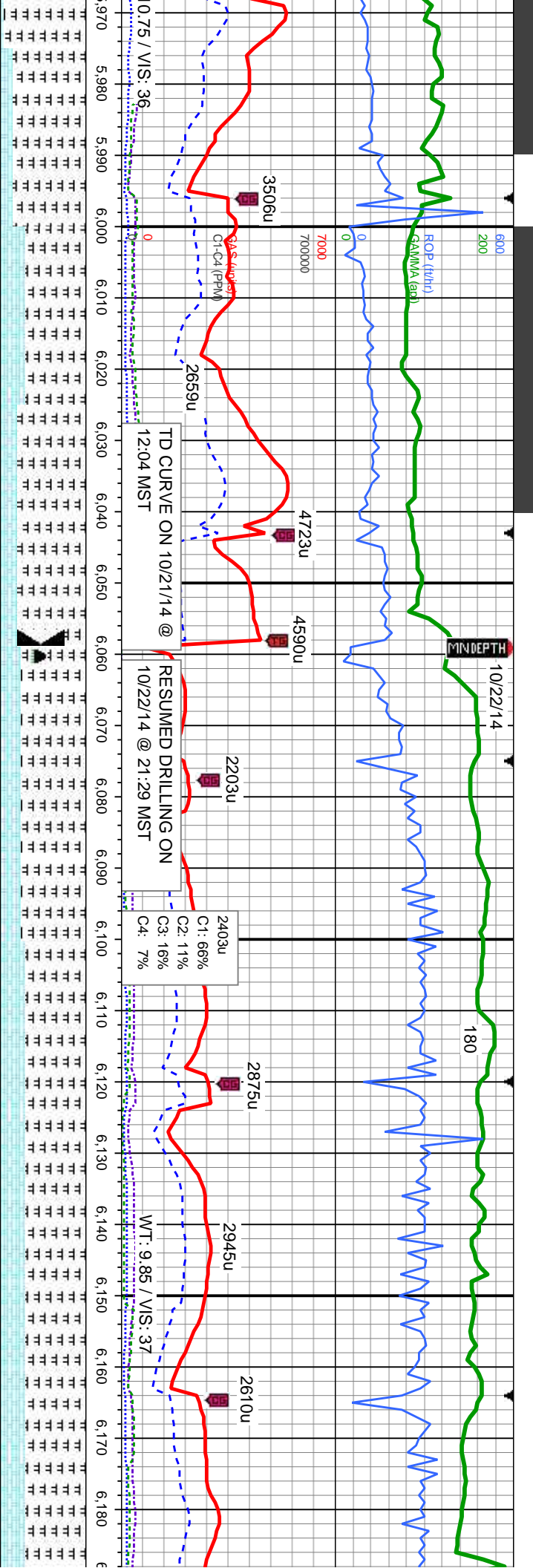
MD: 5,316 TVD: 5,280.33 Inclination: 31 Azimuth: 85.4 VS: 264.63	MD: 5,360 TVD: 5,317.37 Inclination: 34.3 Azimuth: 83.3 VS: 288.26	MD: 5,405 TVD: 5,353.66 Inclination: 38.2 Azimuth: 83.4 VS: 314.7	MD: 5,450 TVD: 5,388.15 Inclination: 41.7 Azimuth: 85.7 VS: 343.47	MD: 5,495 TVD: 5,421.14 Inclination: 44 Azimuth: 85.1 VS: 373.98
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SLTY SH: lt-med gy, occ dk gy, sft-sl frm,
-blky, vf gr, silty tex, sl calc, tr shy ss

5900







med-dk gy, sl frm-mod hd, sb
tex, calc: 5-15% CHK: v
dct, sft-mod frm, sb ply-biky, v

49-70-80% MRLST: med-dk gy, sl frm-mod hd, sb
sily-mot tex, calc: 30-20% CHK: crm-lyg to brn, mot,
sft-mod frm, sb ply-biky, v calc

75% MRLST: med-dk gy, sl frm-mod hd, sb
ply-biky, sily-mot tex, calc: 25% CHK: med
gy-brn, mot, sft-mod frm, sb ply-biky, v calc

70% MRLST: med-dk gy, sl frm-mod hd, sb
ply-biky, sily-mot tex, calc: 30% CHK: med gy-brn,
mot, sft-mod frm, sb ply-biky, v calc

70% MRLST: med-dk gy, sl frm-mod hd, s
ply-biky, sily-mot tex, calc: 30% CHK: m
mot, sft-mod frm, sb ply-biky, v calc

MD: 5.988
TVD: 5.653.67
Inclination: 80.5
Azimuth: 89.5
VS: 798.95

MD: 6.004
TVD: 5.656.05
Inclination: 82.4
Azimuth: 89.2
VS: 814.78

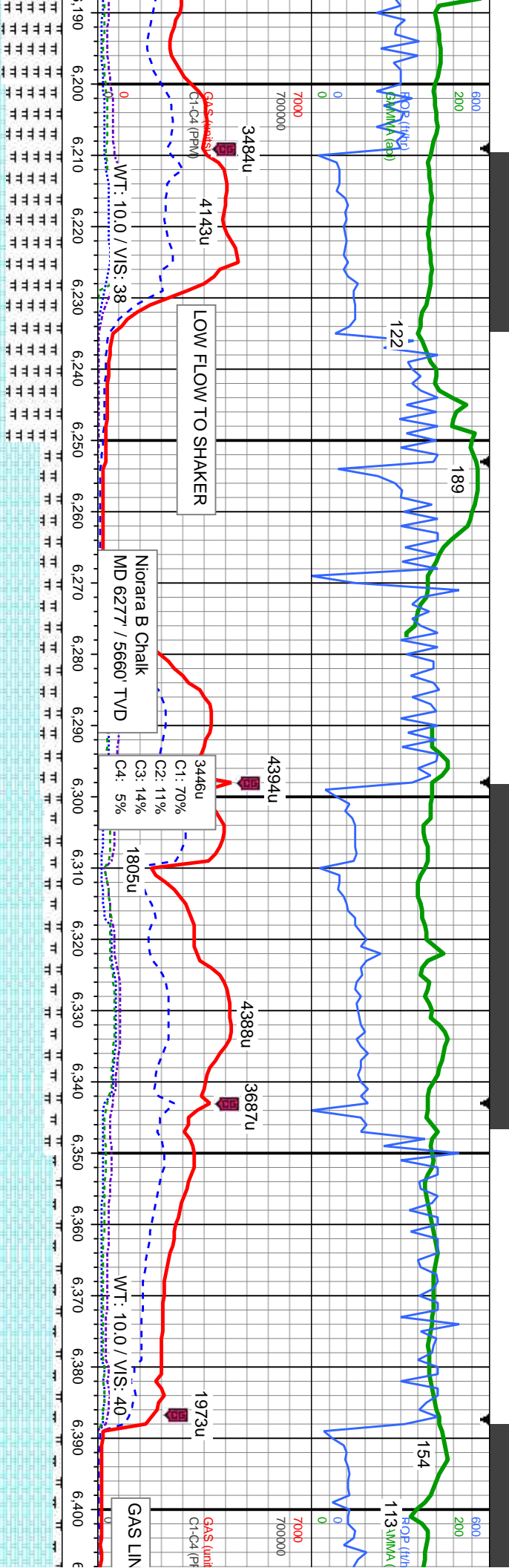
Bit Data
Bit #: 3
Type: SD1513
Size: 6.12
Depth In: 6.059 '
Depth Out: 10.130 '
Jets: 5x15
S/N: JJ6253

MD: 6.102
TVD: 5.662.97
Inclination: 89.5
Azimuth: 90.5
VS: 912.47

MD: 6.147
TVD: 5.662.81
Inclination: 90.9
Azimuth: 90.4
VS: 957.46

5900





65% MRLST: med-dk gy, sl frm-mod hd, sb ply-biky, sily-mot tex, calc: 35% CHK: med gy-brn, mot, sft-mod frm, sb ply-biky, v calc	75% CHK: lt gy-dk gy-brn, mot, sft-mod frm, sb ply-biky, v calc: 25% MRLST: med-dk gy, sl frm-mod hd, sb ply-biky, mot-sily tex, calc	80% CHK: lt gy-dk gy-brn, mot, sft-mod frm, sb ply-biky, v calc: 20% MRLST: med-dk gy, sl frm-mod hd, sb ply-biky, mot-sily tex, calc	90% CHK: lt gy-dk gy-brn, mot, sft-mod frm, sb ply-biky, v calc: 10% MRLST: med-dk gy, sl frm-mod hd, sb ply-biky, mot-sily tex, calc	90% CH ply-biky frm-mod
MD: 6,237 TVD: 5,661.08 Inclination: 91.3 Azimuth: 88.8 VS: 1,047.44	MD: 6,326 TVD: 5,658.83 Inclination: 91.6 Azimuth: 88 VS: 1,136.39	MD: 6,402 TVD: 5,658.3 Inclination: 89.2 Azimuth: 88.2 VS: 1,212.35		
TVD (ft)				
5900				5900



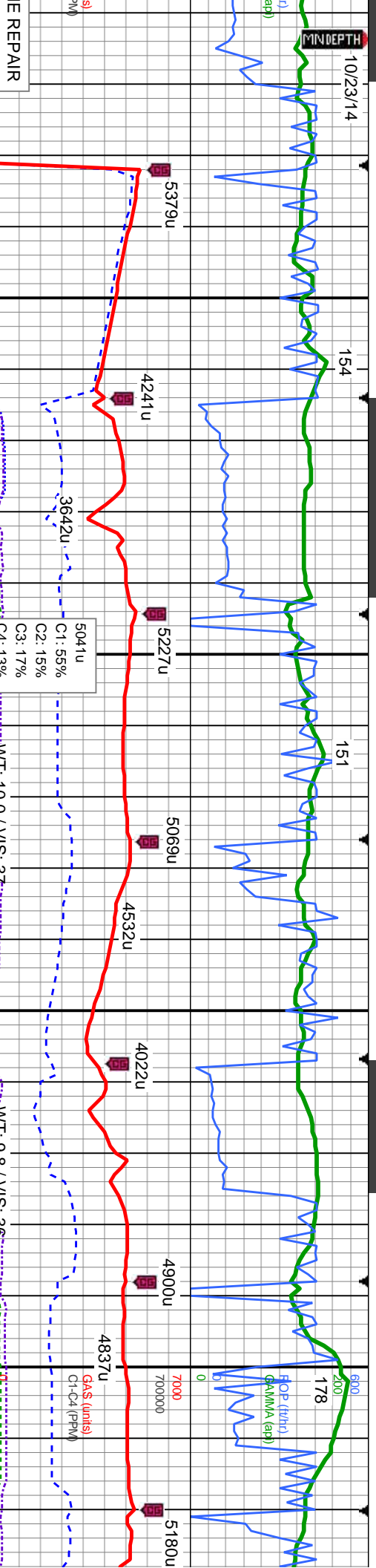
10/23/14

154

151

178

MINDEPTH



5379u

4241u

5227u

5069u

4532u

4022u

4900u

4837u

5180u

5041u
C1: 55%
C2: 15%
C3: 17%
C4: 13%

WT: 10.0 / VIS: 37

WT: 9.8 / VIS: 36

GAS (units)
C1-C4 (PPM)

It gy-dk gy-brn, mot, sft-mod frm, sb	85% CHK: It gy-dk gy-brn, mot, sft-mod frm, sb	85% CHK: It gy-dk gy-brn, mot, sft-mod frm, sb	85% CHK: It gy-dk gy-brn, mot, sft-mod frm, sb	90% CHK: It gy-med gy-brn, n
v calc: 10% MRLST: med-dk gy, sl	ply-bkly, v calc: 15% MRLST: med-dk gy, sl	ply-bkly, v calc: 15% MRLST: med-dk gy, sl	ply-bkly, v calc: 15% MRLST: med-dk gy, sl	ply-bkly, v calc: 10% MRLST:
hd, sb pily-bkly, mot-sily tex, calc	frm-mod hd, sb pily-bkly, mot-sily tex, calc	frm-mod hd, sb pily-bkly, mot-sily tex, calc	frm-mod hd, sb pily-bkly, mot-sily tex, calc	frm-mod hd, sb pily-bkly, sily t

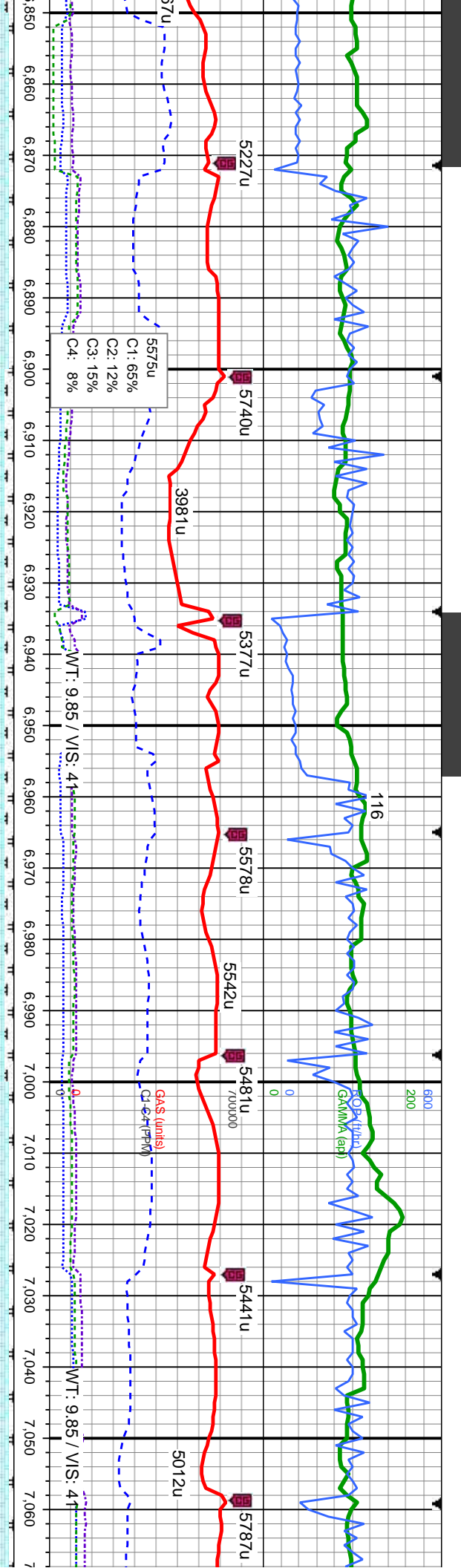
MD: 6.497
TVD: 5,661.61
Inclination: 86.8
Azimuth: 88.9
VS: 1,307.26

MD: 6.590
TVD: 5,663.48
Inclination: 90.9
Azimuth: 89.1
VS: 1,400.22

TVD (ft)

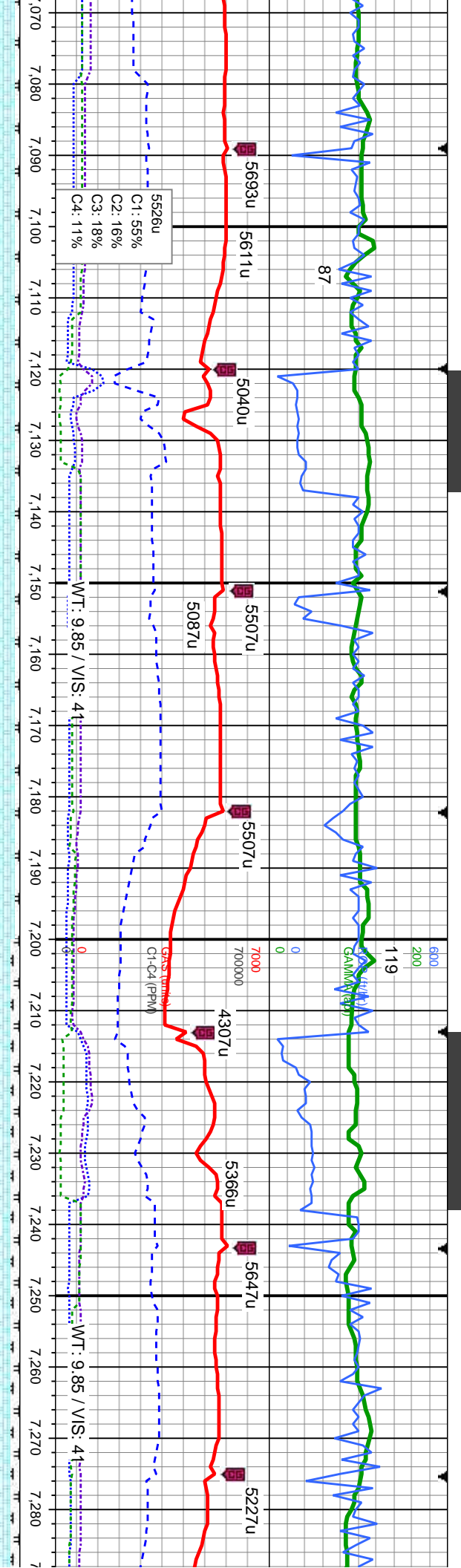
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95% CHK: lt gy-med gy-brn, mot, sft-mod frm, sb ply-bkly, v calc: 5% MRLST: med-dk gy, sl frm-mod hd, sb ply-bkly, silty tex, calc	90% CHK: lt gy-med gy-brn, mot, sft-mod frm, sb ply-bkly, v calc: 10% MRLST: med-dk gy, sl frm-mod hd, sb ply-bkly, silty tex, calc	90% CHK: lt gy-med gy-brn, mot, sft-mod frm, sb ply-bkly, v calc: 10% MRLST: med-dk gy, sl frm-mod hd, sb ply-bkly, silty tex, calc	95% CHK: lt gy-med gy-brn, mot, sft-mod frm, sb ply-bkly, v calc: 5% MRLST: med-dk gy, sl frm-mod hd, sb ply-bkly, silty tex, calc	95% CHK: lt gy-med gy-brn, mot, sft-mod frm, sb ply-bkly, v calc: 5% MRLST: med-dk gy, sl frm-mod hd, sb ply-bkly, silty tex, calc
MD: 6,870 TVD: 5,658.1 Inclination: 89.9 Azimuth: 87.1 VS: 1,680		MD: 6,963 TVD: 5,659.31 Inclination: 88.6 Azimuth: 86.1 VS: 1,772.85	TVD (ft)	MD: 7,056 TVD: 5,660.53 Inclination: 89.9 Azimuth: 86.4 VS: 1,865.67





med gy-brn, mot, sft-mod frm, sb
% MRLST: med-dk gy, sl
-v-bkly, silty tex, calc

95% CHK: lt gy-med gy-brn, mot, sft-mod frm, sb
ply-bkly, v calc: 5% MRLST: med-dk gy, sl
frm-mod hd, sb ply-bkly, silty tex, calc

95% CHK: lt gy-med gy-brn, mot, sft-mod frm, sb
ply-bkly, v calc: 5% MRLST: med-dk gy, sl
frm-mod hd, sb ply-bkly, silty tex, calc

90% CHK: lt gy-med gy-brn, mot, sft-mod frm, sb
ply-bkly, v calc: 10% MRLST: med-dk gy, sl
frm-mod hd, sb ply-bkly, silty tex, calc

90% CHK: lt gy-med gy-brn, mot, sft-mod frm, sb
ply-bkly, v calc: 10% MRLST: med-dk gy, sl
frm-mod hd, sb ply-bkly, silty tex, calc

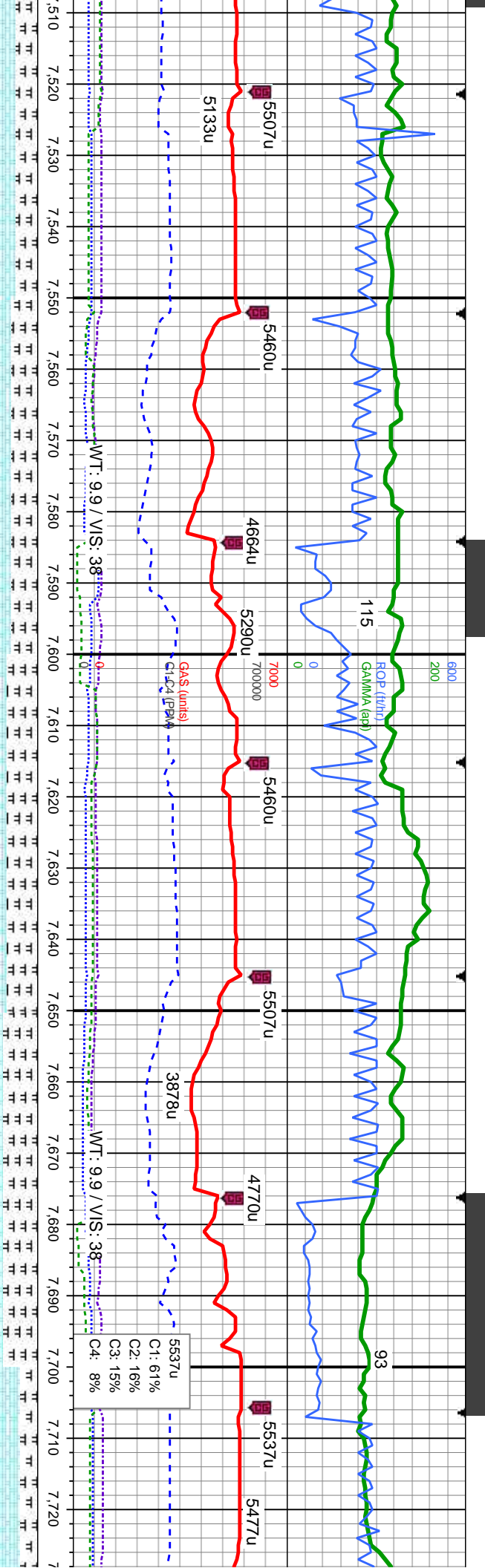
MD: 7.149
TVD: 5,659.47
Inclination: 91.4
Azimuth: 88
VS: 1,958.56

MD: 7.242
TVD: 5,657.69
Inclination: 90.8
Azimuth: 87.8
VS: 2,051.5

TVD (ft)

5900





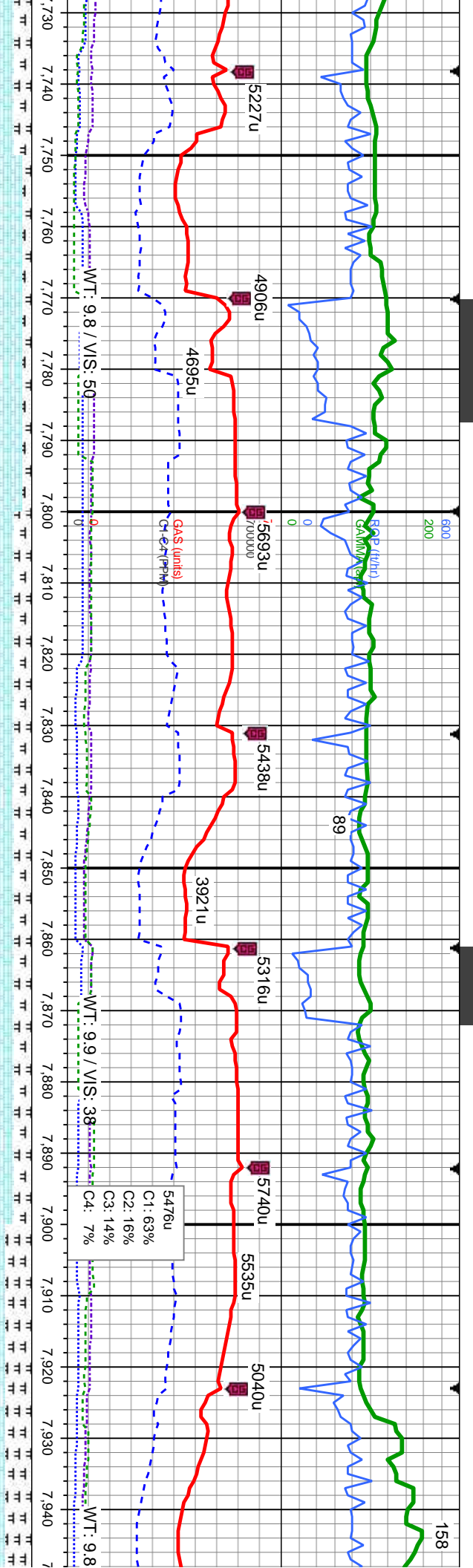
MD: 7.521
TVD: 5.655.9
Inclination: 90.6
Azimuth: 88.2
VS: 2.330.32

MD: 7.614
TVD: 5.654.36
Inclination: 91.3
Azimuth: 89.3
VS: 2.423.29

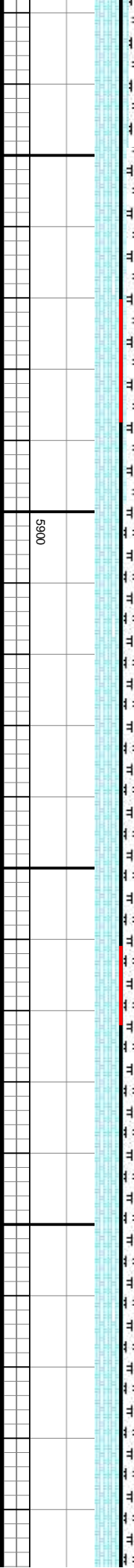
MD: 7.709
TVD: 5.653.28
Inclination: 90
Azimuth: 90.7
VS: 2.518.28

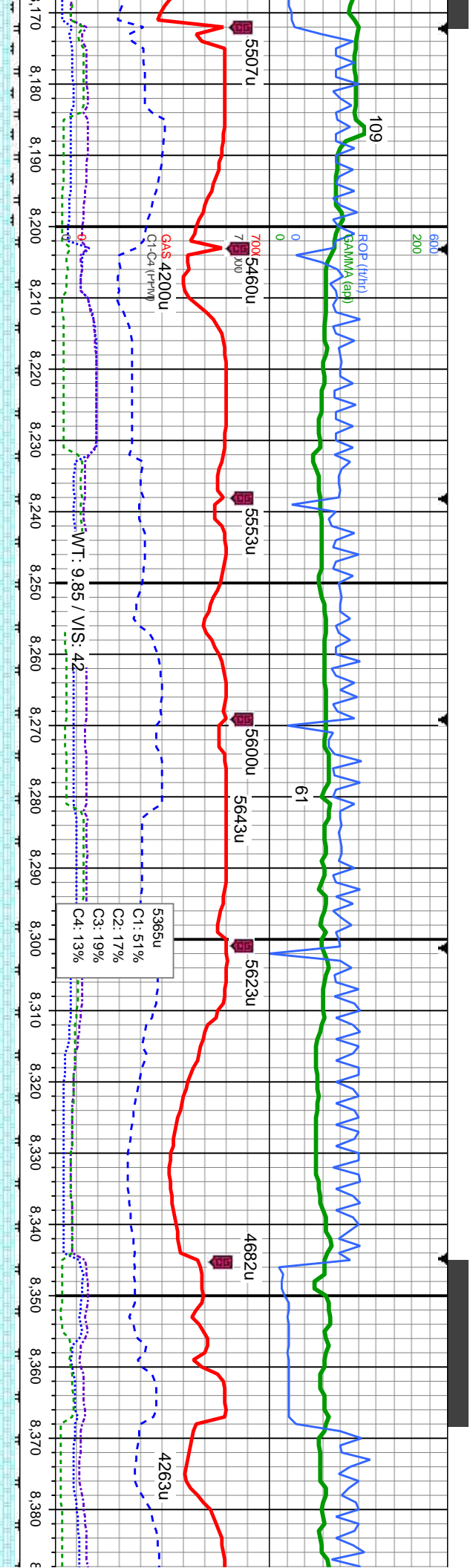
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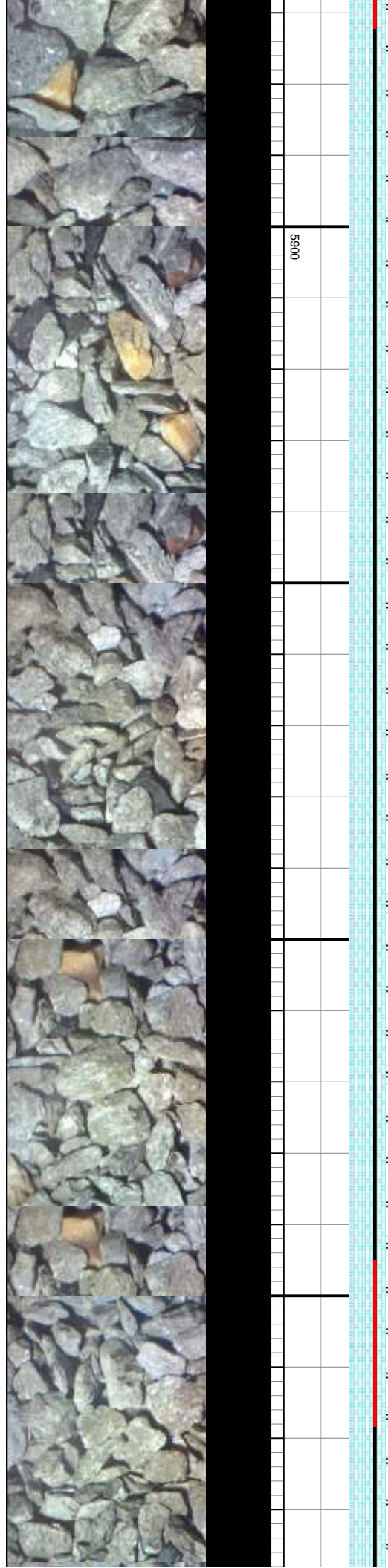


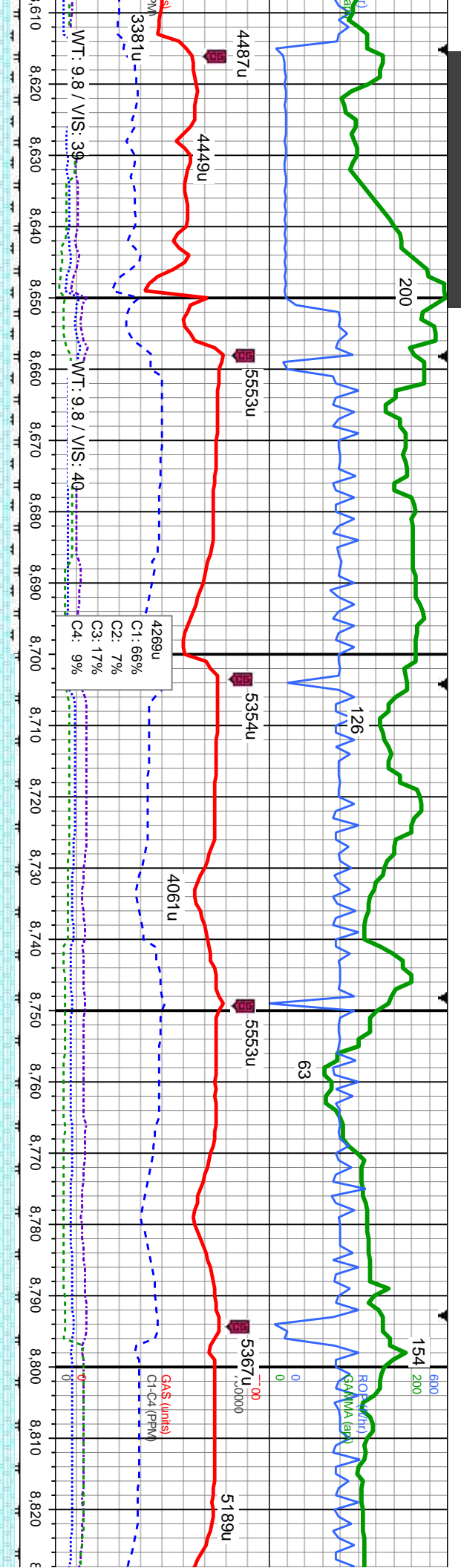
not, sft-mod frm, sb	90% CHK: lt gy-med gy-brn, mot, sft-mod frm, sb ply-biky, v calc: 10% MRLST: med-dk gy, sl frm-mod hd, sb ply-biky, silty tex, calc	480% CHK: lt gy-med gy-brn, mot, sft-mod frm, sb ply-biky, v calc: 20% MRLST: med-dk gy, sl frm-mod hd, sb ply-biky, silty tex, calc	80% CHK: lt gy-med gy-brn, mot, sft-mod frm, sb ply-biky, v calc: 20% MRLST: med-dk gy, sl frm-mod hd, sb ply-biky, silty tex, calc	70% CHK: lt gy-med gy-brn, mot, sft-mod frm, sb ply-biky, v calc: 30% MRLST: med-dk gy, sl frm-mod hd, sb ply-biky, silty tex, calc
med-dk gy, sl				
ex, calc				
<div>MD: 7,801 TVD: 5,653.36 Inclination: 89.9 Azimuth: 90.1 VS: 2,610.27</div>				
<div>MD: 7,895 TVD: 5,652.63 Inclination: 91 Azimuth: 88.8 VS: 2,704.27</div>				



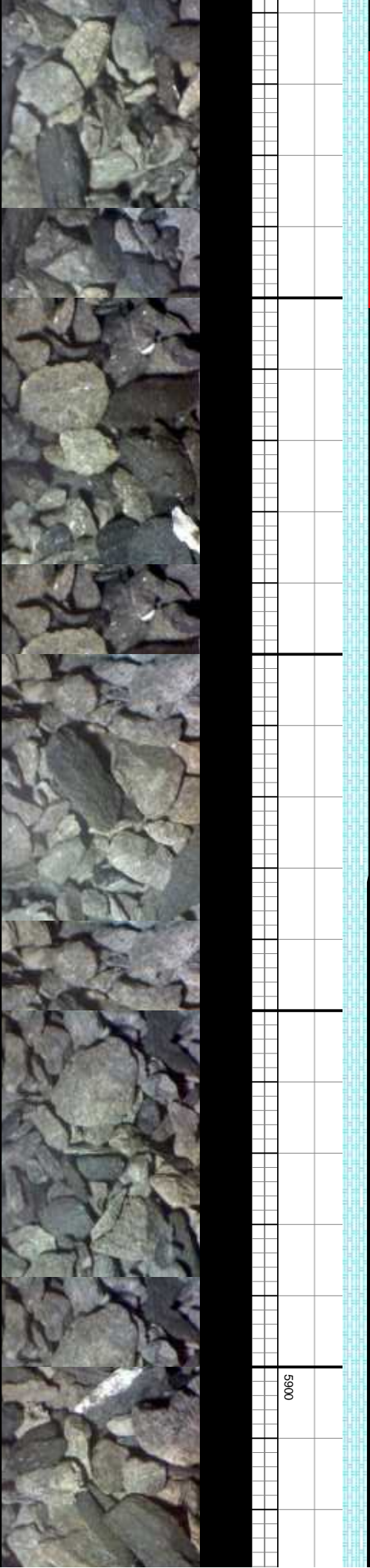


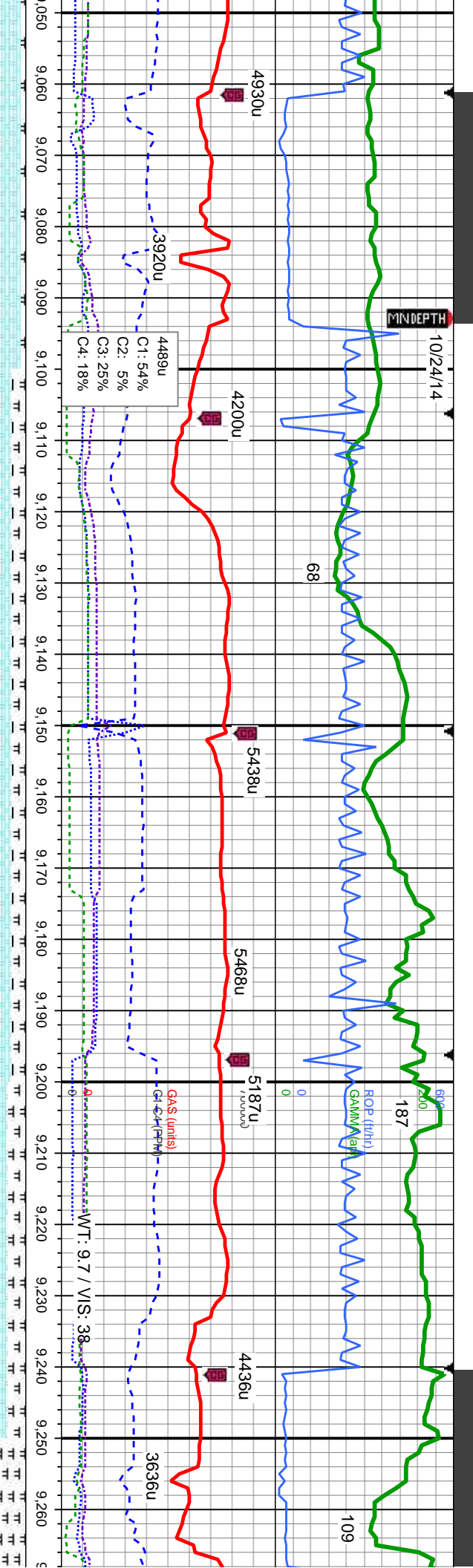
ed gy-brn, mot, sft-mod frm, sb % MRLST: med-dk gy, sl -biky, silty tex, calc, tr sec cal,	495% CHK: lt gy-med gy-brn, mot, sft-mod frm, sb ply-biky, v calc: 5% MRLST: med-dk gy, sl frm-mod hd, sb ply-biky, silty tex, calc, v tr sec cal, v tr inoc	95% CHK: lt gy-med gy-brn, mot, sft-mod frm, sb ply-biky, v calc: 5% MRLST: med-dk gy, sl frm-mod hd, sb ply-biky, silty tex, calc, v tr sec cal, v tr inoc	95% CHK: lt gy-med gy-brn, mot, sft-mod frm, sb ply-biky, v calc: 5% MRLST: med-dk gy, sl frm-mod hd, sb ply-biky, silty tex, calc, v tr sec cal, v tr inoc	95% CHK: lt gy-med gy-brn, mot, sft-mod frm, sb ply-biky, v calc: 5% MRLST: med-dk gy, sl frm-mod hd, sb ply-biky, silty tex, calc, v tr v tr inoc, tr bent
MD: 8,177 TVD: 5,651.97 Inclination: 89 Azimuth: 87.2 VS: 2,986.15	TVD (ft)	MD: 8,284 TVD: 5,652.34 Inclination: 90.6 Azimuth: 87.1 VS: 3,093.04	MD: 8,374 TVD: 5,651.64 Inclination: 90.3 Azimuth: 87.8 VS: 3,182.96	





It gy-med gy-brn, mot, sft-mod frm, sb ply-bkly, v calc: 10% MRLST: med-dk gy, sl frn-mod hd, sb ply-bkly, silty tex, calc	90% CHK: It gy-med gy-brn, mot, sft-mod frm, sb ply-bkly, v calc: 10% MRLST: med-dk gy, sl frn-mod hd, sb ply-bkly, silty tex, calc	95% CHK: It gy-med gy-brn, mot, sft-mod frm, sb ply-bkly, v calc: 5% MRLST: med-dk gy, sl frn-mod hd, sb ply-bkly, silty tex, calc	95% CHK: It gy-med gy-brn, mot, sft-mod frm, sb ply-bkly, v calc: 5% MRLST: med-dk gy, sl frn-mod hd, sb ply-bkly, silty tex, calc	95% CHK: It gy-med gy-brn, r ply-bkly, v calc: 5% MRLST: r frn-mod hd, sb ply-bkly, silty t
MD: 8,642 TVD: 5,647.8 Inclination: 88.4 Azimuth: 89.7 VS: 3,450.83				
MD: 8,732 TVD: 5,650 Inclination: 88.8 Azimuth: 89.8 VS: 3,540.81				
MD: 8,822 TVD: 5,650.63 Inclination: 90.4 Azimuth: 90 VS: 3,630.8				





95% CHK: It gy-med gy-brn, mot, sft-mod frm, sb ply-biky, v calc, 5% MRLST: med-dk gy, sl frm-mod hd, sb ply-biky, silty tex, calc, tr cal, tr bent	85% CHK: It gy-med gy-brn, mot, sft-mod frm, sb ply-biky, v calc, 15% MRLST: med-dk gy, sl frm-mod hd, sb ply-biky, silty tex, calc, tr cal, tr bent	85% CHK: It gy-med gy-brn, mot, sft-mod frm, sb ply-biky, v calc, 15% MRLST: med-dk gy, sl frm-mod hd, sb ply-biky, silty tex, calc, tr cal, tr bent	'80% CHK: It gy-dk gy-brn, mot, sft-mod frm, sb ply-biky, v calc, 10% MRLST: med-dk gy, sl frm-mod hd, sb ply-biky, silty-mot tex, calc, tr cal, tr bent, tr inoc	70% CHK: It gy-dk ply-biky, v calc, 30 frm-mod hd, sb ply tr bent, tr inoc
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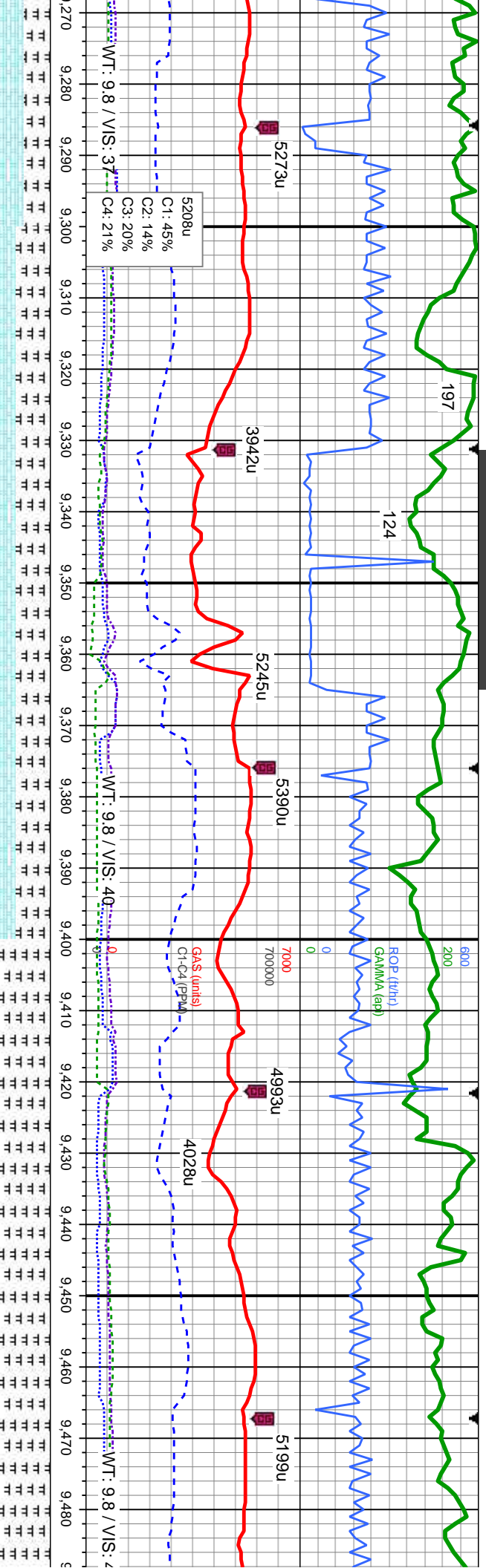
MD: 9,091
TVD: 5,645.24
Inclination: 89.7
Azimuth: 87
VS: 3,899.62

MD: 9,180
TVD: 5,644.54
Inclination: 91.2
Azimuth: 87.4
VS: 3,988.53

TVD (ft)

5900





gy-brn, mot, sft-mod frm, sb
% MRLST: med-dk gy, sl
biky, silty-mot tex, calc, tr cal,

60% CHK: lt gy-dk gy-brn, mot, sft-mod frm, sb
ply-biky, v calc: 40% MRLST: med-dk gy, sl
frm-mod hd, sb ply-biky, silty-mot tex, calc, tr cal,
tr bent

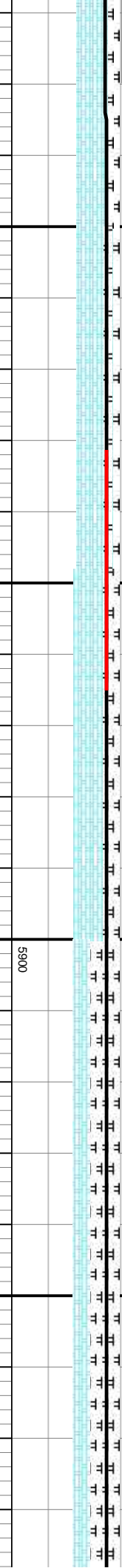
60% CHK: lt gy-dk gy-brn, mot, sft-mod frm, sb
ply-biky, v calc: 40% MRLST: med-dk gy, sl
frm-mod hd, sb ply-biky, silty-mot tex, calc, tr cal,
tr bent

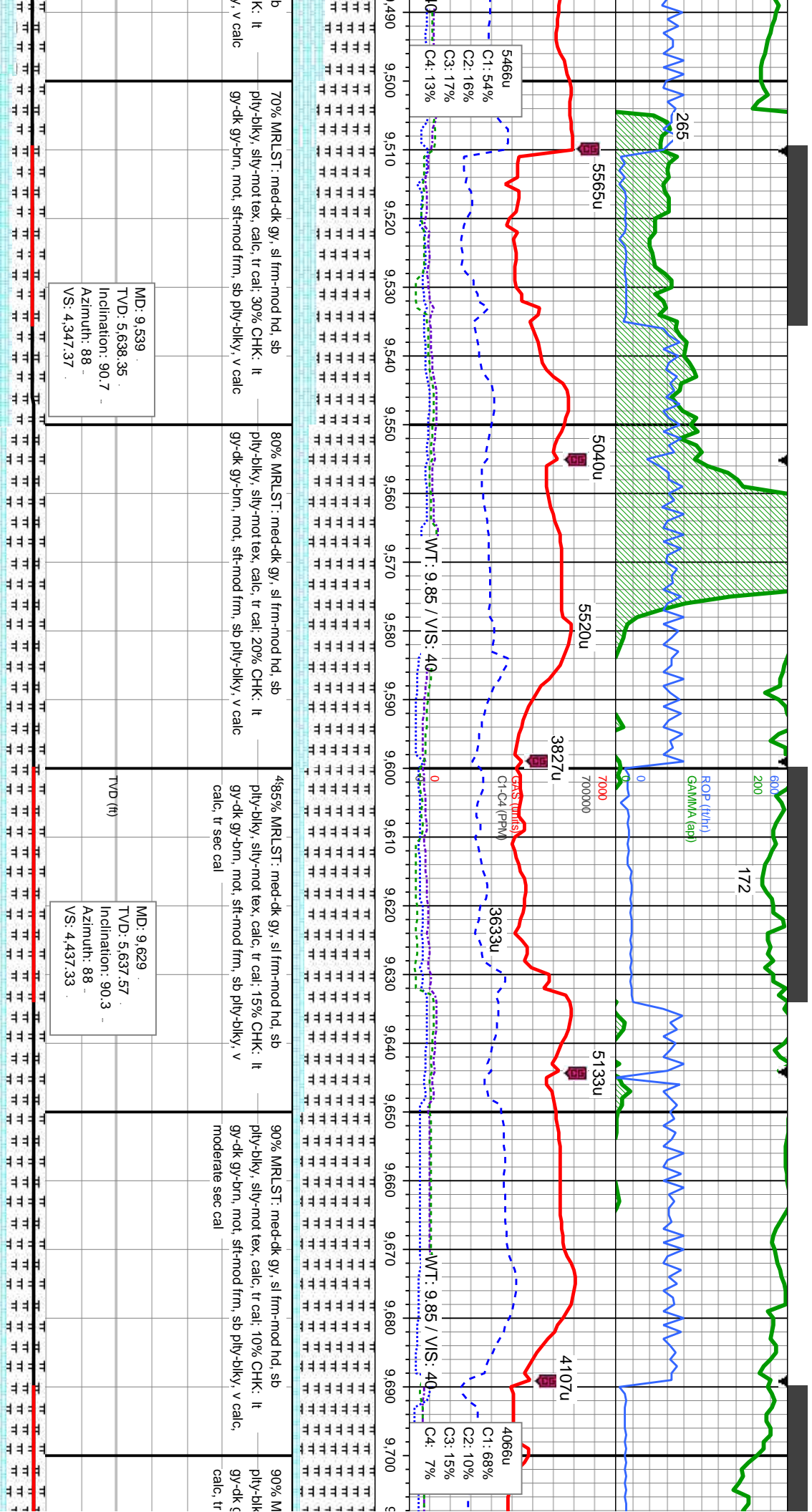
460% MRLST: med-dk gy, sl frm-mod hd, sb
ply-biky, silty-mot tex, calc, tr cal: 40% CHK: lt
gy-dk gy-brn, mot, sft-mod frm, sb ply-biky, v calc

60% MRLST: med-dk gy, sl frm-mod hd, s
ply-biky, silty-mot tex, calc, tr cal: 40% CH

MD: 9,360
TVD: 5,641.01
Inclination: 90.3
Azimuth: 88.6
VS: 4,168.43

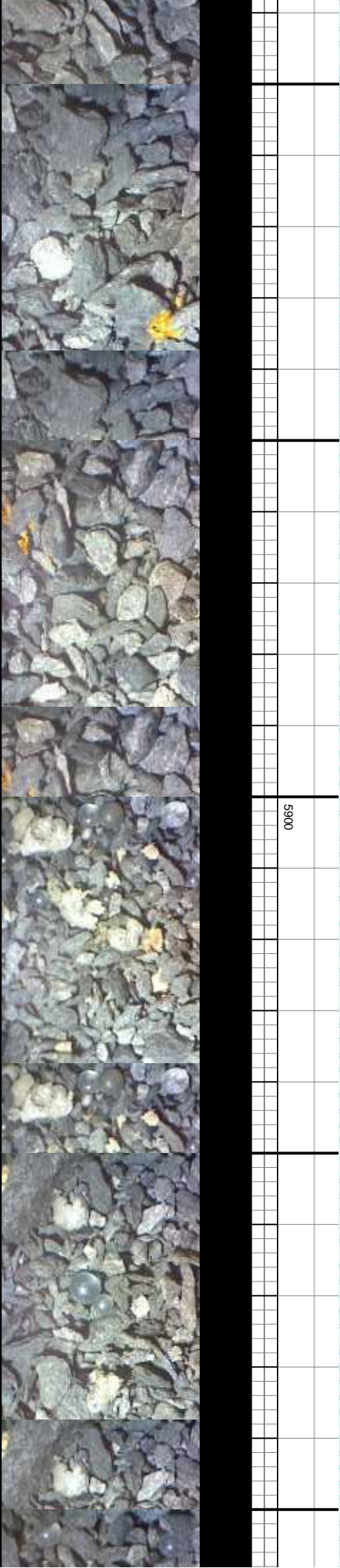
MD: 9,449
TVD: 5,639.84
Inclination: 91.2
Azimuth: 88.8
VS: 4,257.41

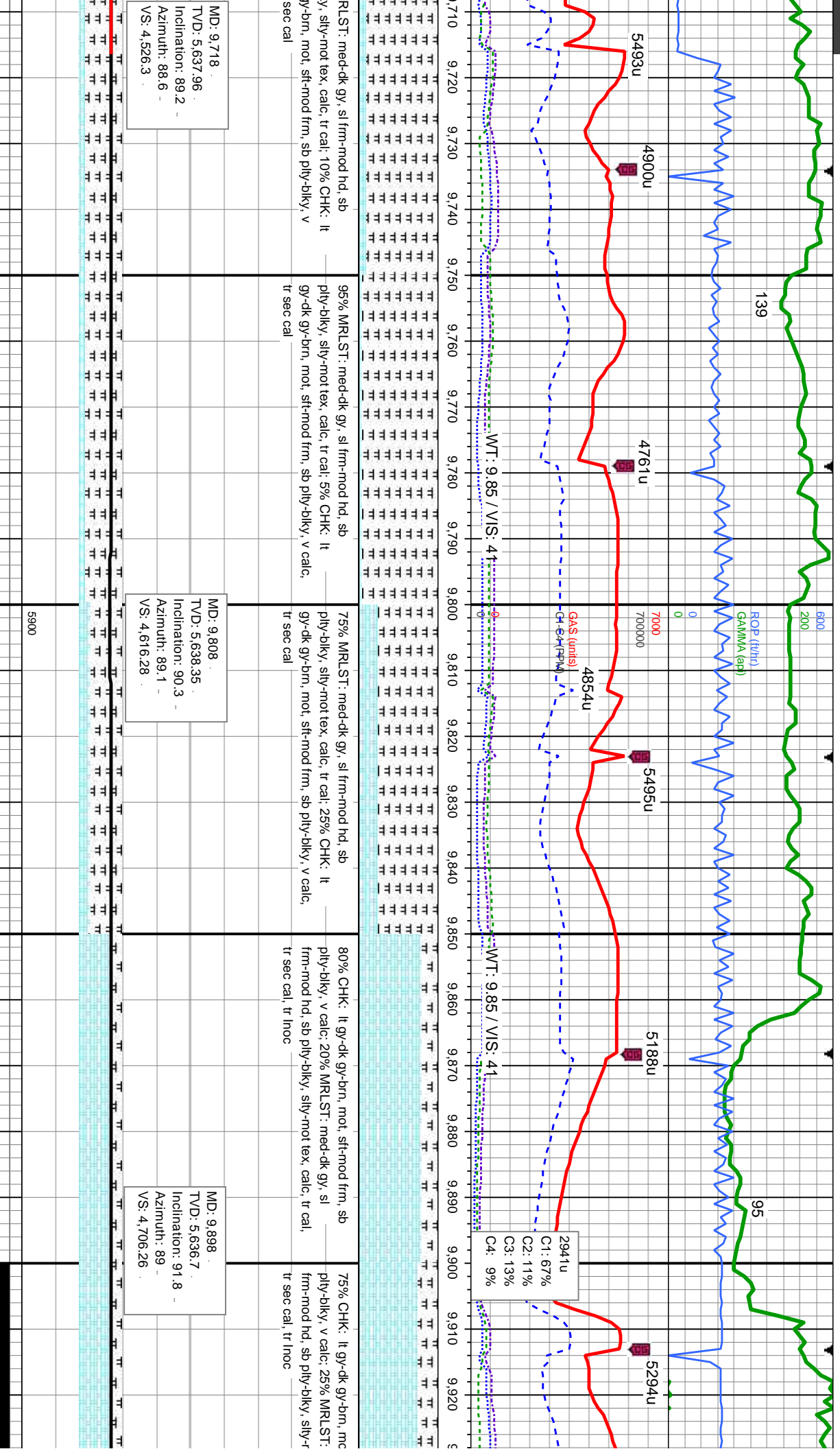


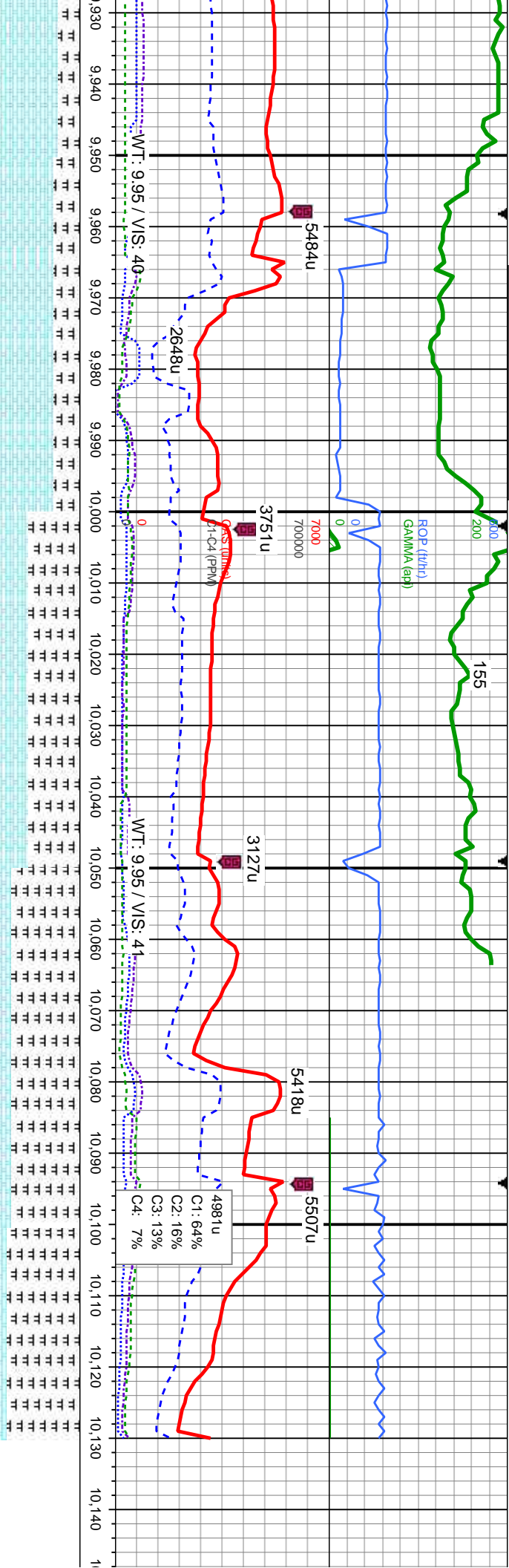


MD: 9,539
TVD: 5,638.35
Inclination: 90.7
Azimuth: 88
VS: 4,347.37

MD: 9,629
TVD: 5,637.57
Inclination: 90.3
Azimuth: 88
VS: 4,437.33







lt, sft-mod frm, sb
med-dk gy, sl
mot tex, calc, tr cal,
70% CHK: lt gy-dk gy-brn, mot, sft-mod frm, sb
ply-blky, v calc: 30% MRLST: med-dk gy, sl
frm-mod nd, sb ply-blky, silty-mot tex, calc, tr cal,
tr sec cal, tr inoc

MD: 9.987
TVD: 5,633.67
Inclination: 92.1
Azimuth: 89.8
VS: 4,795.2

460% MRLST: med-dk gy, sl frm-mod nd, sb
ply-blky, silty-mot tex, calc, tr cal, tr sec cal: 40%
CHK: lt gy-dk gy-brn, mot, sft-mod frm, sb
ply-blky, v calc

MD: 10.068
TVD: 5,630.21
Inclination: 92.8
Azimuth: 90.4
VS: 4,876.13

80% MRLST: med-dk gy, sl frm-mod nd, sb
ply-blky, silty-mot tex, calc, tr cal, tr sec cal: 20%
CHK: lt gy-dk gy-brn, mot, sft-mod frm, sb
ply-blky, v calc

85% MRLST: med-dk gy, sl
frm-mod nd, sb ply-blky,
silty-mot tex, calc, tr cal, tr sec
cal: 15% CHK: lt gy-dk gy-brn,
mot, sft-mod frm, sb ply-blky, v
calc

Thank you
Columbine
TD @ 10
10/24/14

