



Scale: 5" / 100'
Measured Depth Log

Well Name Heartland State G25-73-1HN

Location Sec. 25 T4N R65W

State Colorado

Country USA

API Number 05-123-39551

Region DJ Basin

Spud Date 9/21/2014

Surface Coordinates 282 FEL ; 739 FEL
40.27673 ; -104.60499

Bottom Hole Coordinates 75 FNL ; 990 FEL
40.30492 ; -104.60568

Ground Elevation 4835'

Logged Interval 6221' **To** 16867'

Formation Niobrara C chalk

Type of Drilling Fluid FW LSND

K.B. Elevation 4851'

Total Depth 16867'

County Weld
Rig Number PD 829

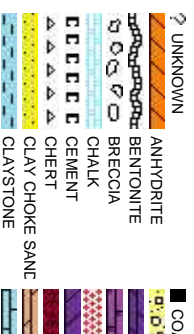
AFE # 200634

Field Wattenberg
Drilling Completed 10/1/2014

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 Geologists



Operator

AY
2022

Geologist

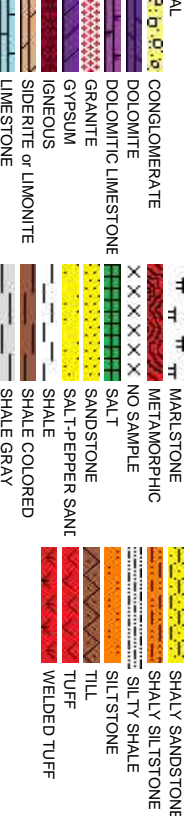
c.
AY
2022

Other

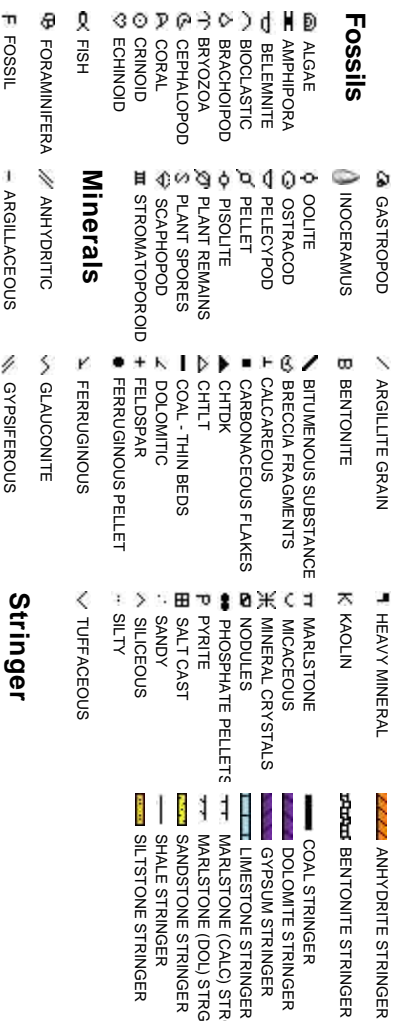
2385 S. Lipan St.
Denver, CO 80223

Ryan Shilling
Eric Bernardo

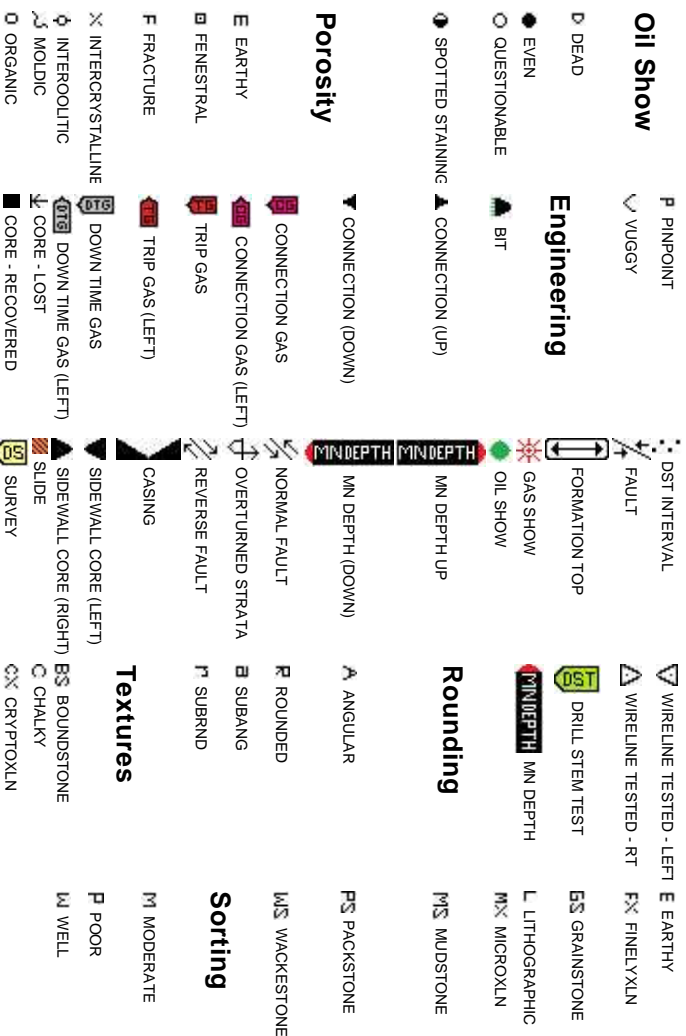
Rock Types



Accessories



Other Symbols



Slide/Rotate

ROP Scale
0-700 ft/hr

ROP
ROF
GAMMA

Gamma Scale
0 - 200 API

Total Gas & Chromatograph

Gas Scale
0 - 7000 units

GAS
C1
C2
C3
C4

COLUMBINE LOGGING, INC.
RIGGED UP ON 09/22/2014
MANNED 2-PERSON LOGGING
WITH BLOODHOUND GAS
CHROMATOGRAPH UNIT # 0312

Depth Labels

% Lith

TVD SCALE
6200'-7100'

BEGIN 50' SAMPLES

Well Bore
TVD

Bit Data
Bit #: 2
Type: SDI519
Size: 8.75
Depth In: 711 '
Depth Out: 7,382 '
Jets: 7x16
S/N: JJ4814

Oil Show

exc
gd
mod
tr
st

Images

Log Continued from Heartland
State G25-73-1HN

95-95% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb ply-blky, v' gr, silty tex, sl
calc; 5-5% SHY SS: wh-lt gy, s&g, blk, frm, v f-f gr, sb md-ang, mod-w srt, cl sup,
cly cmt, non calc

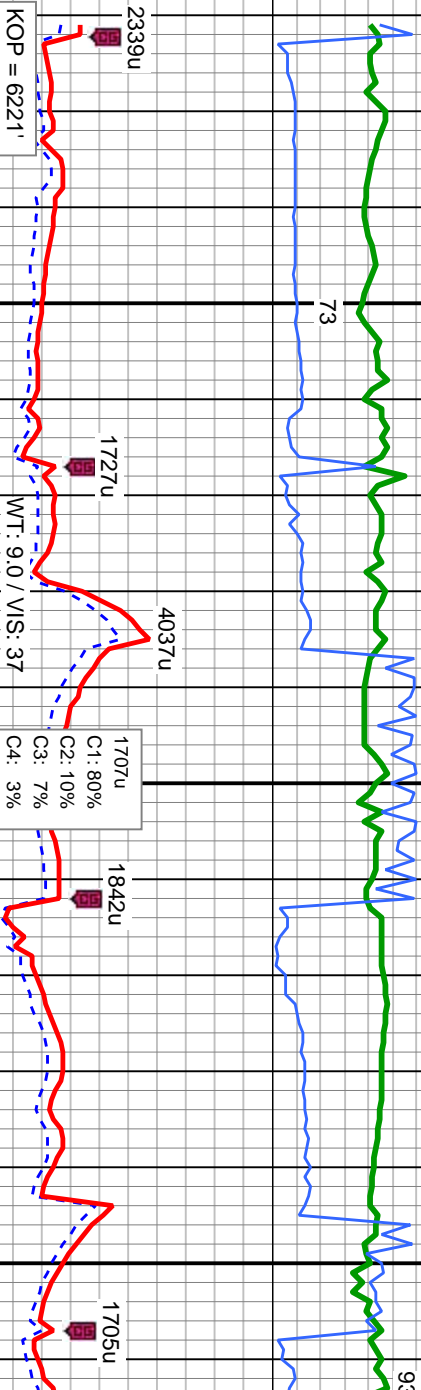
100% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb
ply-blky, v' gr, silty tex, sl calc, tr silty ss

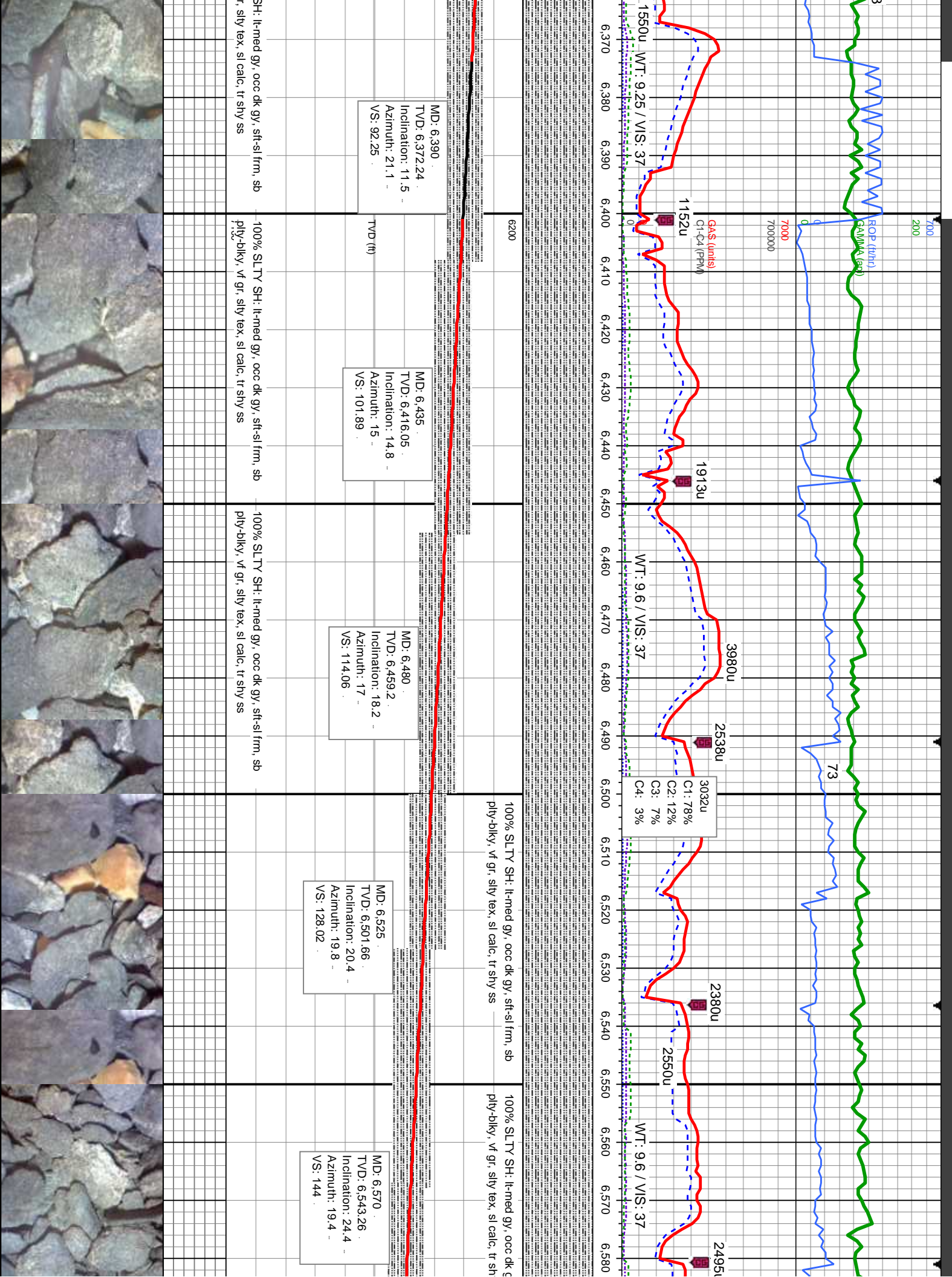
100% SLTY S
ply-blky, v' g

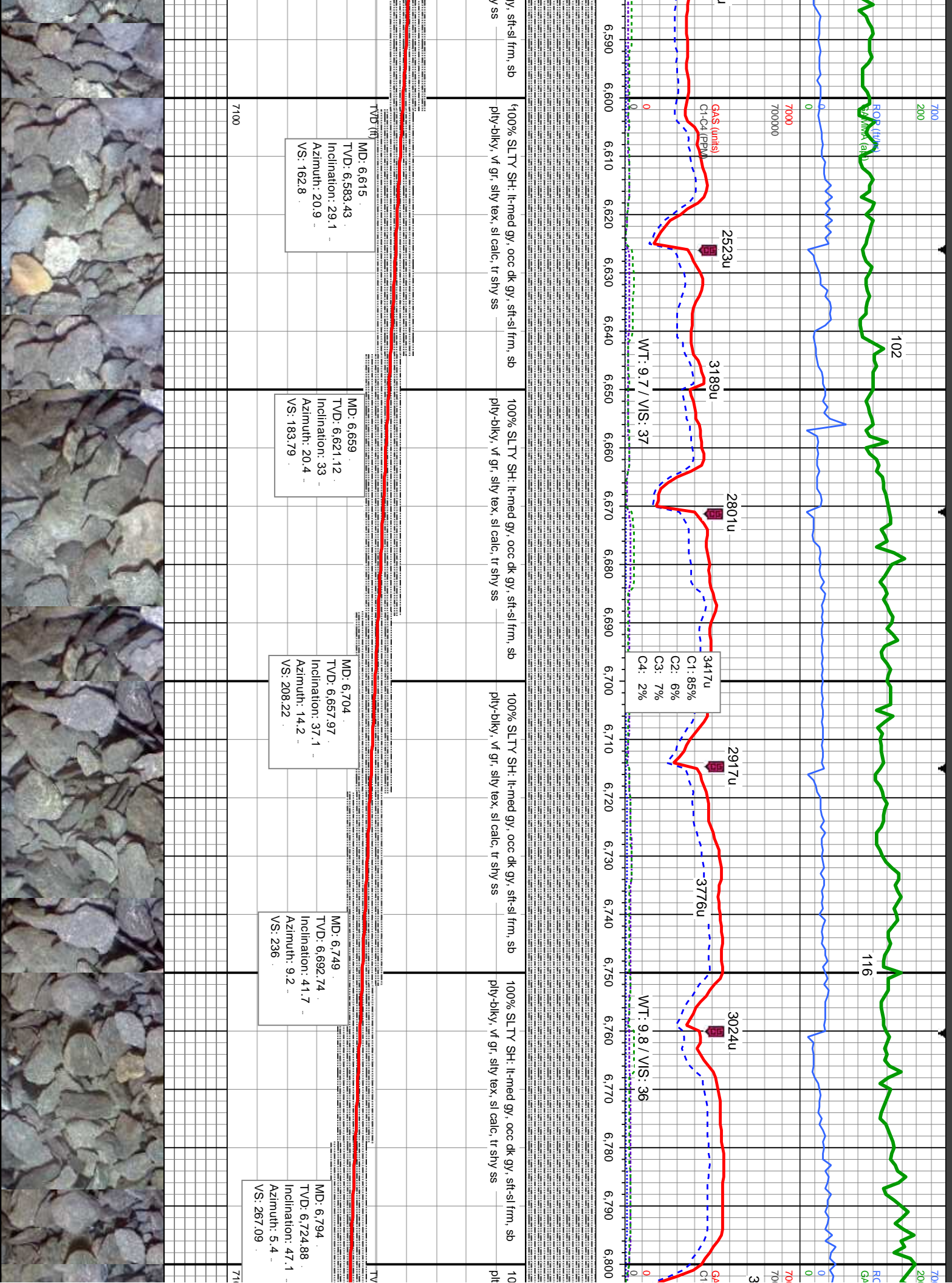
MD: 6,256
TVD: 6,239.85
Inclination: 5
Azimuth: 23.7
VS: 73.72

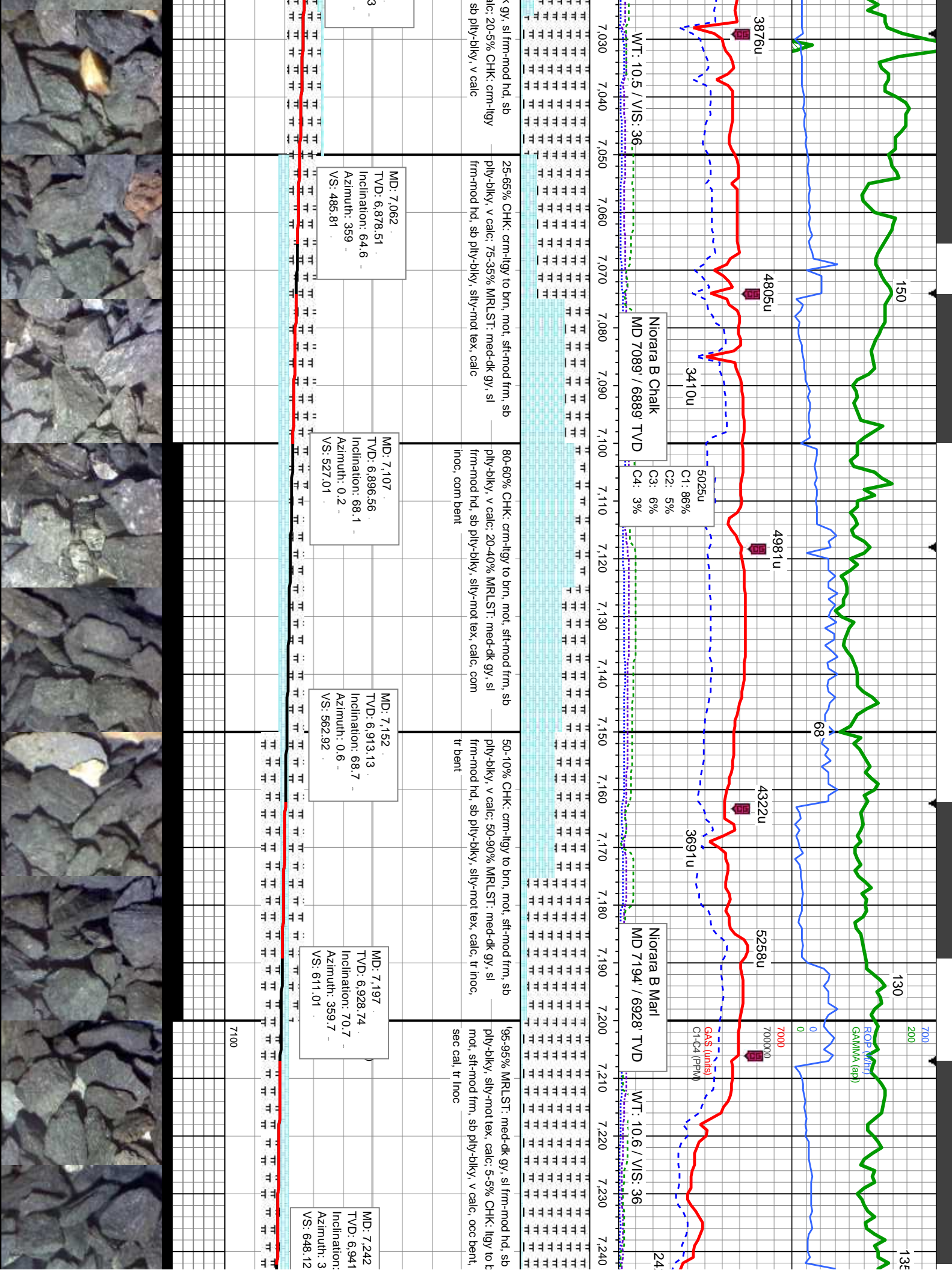
MD: 6,301
TVD: 6,284.56
Inclination: 7.9
Azimuth: 19.8
VS: 78.37

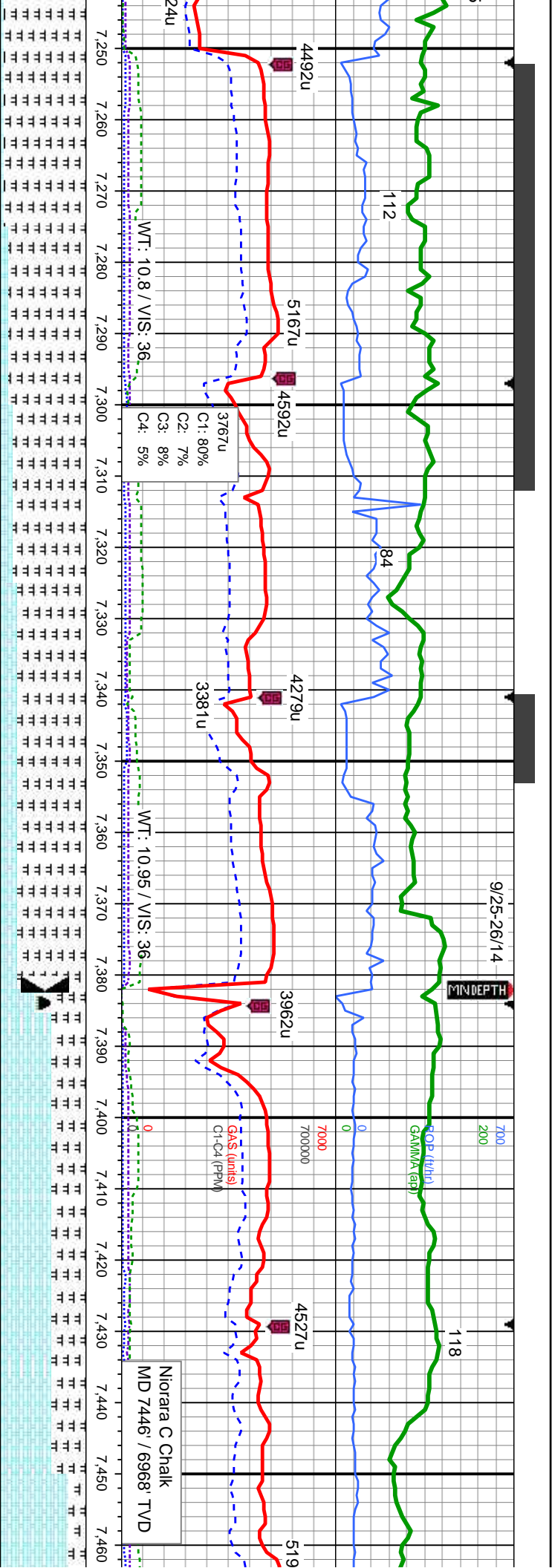
MD: 6,346
TVD: 6,329.01
Inclination: 10
Azimuth: 24.2
VS: 84.76











95-90% MRLST: med-dk gy, sl frm-mod hd, sb
ply-blky, silty-mot tex, calc: 5-10% CHK:
crn-lgy-brn, mot, sft-mod frm, sb ply-blky, v calc,
abnt bent, tr sec cal, tr inoc

85-80% MRLST: med-dk gy, sl frm-mod hd, sb
ply-blky, silty-mot tex, calc: 15-20% CHK:
crn-lgy-brn, mot, sft-mod frm, sb ply-blky, v calc,
abnt bent, tr sec cal, tr inoc

80% MRLST: med-dk gy, sl frm-mod hd, sb
ply-blky, silty-mot tex, calc: 20% CHK:
crn-lgy-brn, mot, sft-mod frm, sb ply-blky, v calc,
abnt bent, tr sec cal, tr inoc

60% CHK: crn-lgy-brn, mot, sft-mod frm, sb
ply-blky, v calc: 40% MRLST: med-dk gy, sl
frm-mod hd, sb ply-blky, silty-mot tex, calc, tr sec
cal, tr inoc

80% CHK: crn-lgy-brn, mot, sft-mod frm, sb
ply-blky, v calc: 40% MRLST: med-dk gy, sl
frm-mod hd, sb ply-blky, silty-mot tex, calc, tr sec
cal, tr inoc

MD: 7.286
TVD: 6.951.3
Inclination: 80.4
Azimuth: 357.9
VS: 696.99

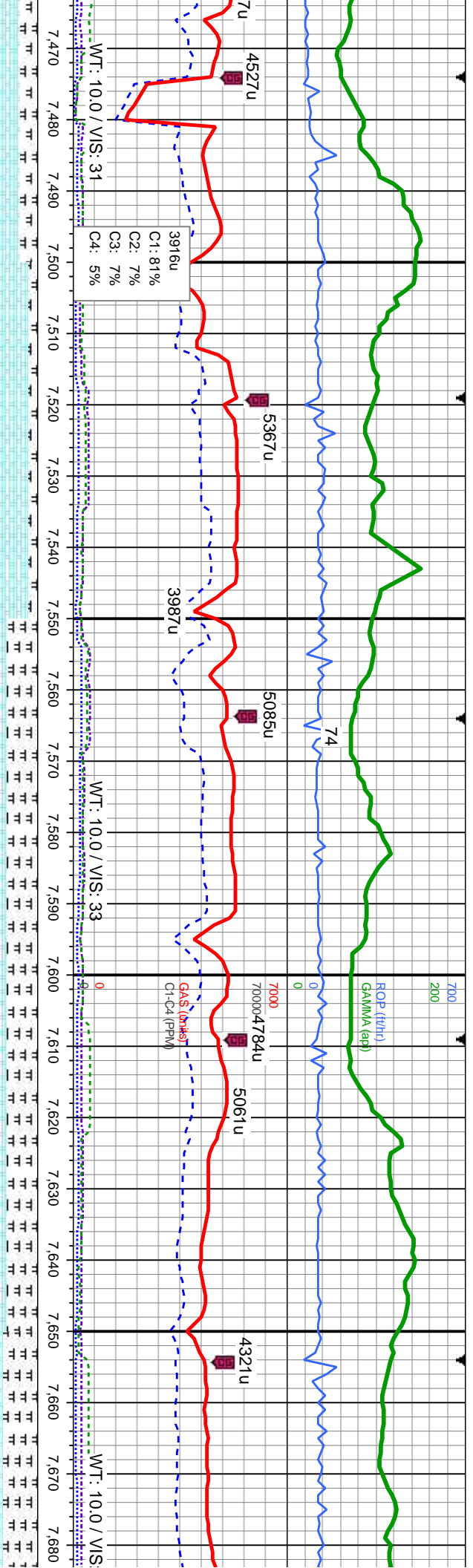
MD: 7.327
TVD: 6.957.11
Inclination: 83.3
Azimuth: 358
VS: 731.63

Bit Data
Bit #: 3
Type: DP406S
Size: 6.12
Depth In: 7,382 '
Depth Out: 16,867 '
Jets: 5x12
S/N: 7042732

MD: 7.430
TVD: 6.966.95
Inclination: 85.74
Azimuth: 357.99
VS: 840.09

7100

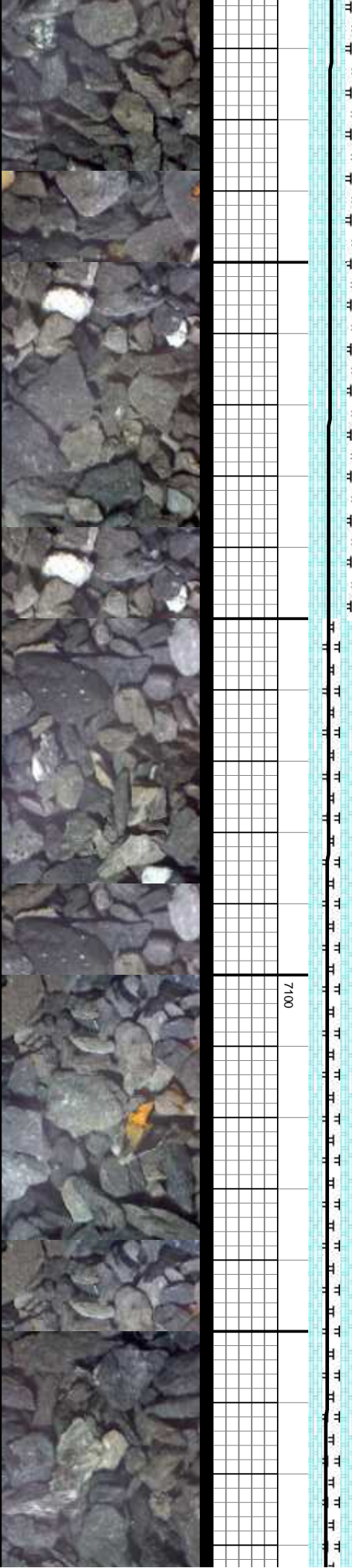




cm-ilty-brn, mot, sft-mod frm, sb ic: 20% MRLST: med-dk gy, sl b ply-blky, silty-mot tex, calc, tr sec	90% CHK: crm-ilty-brn, mot, sft-mod frm, sb ply-blky, v calc: 10% MRLST: med-dk gy, sl frm-mod hd, sb ply-blky, silty-mot tex, calc, tr sec cal, tr inoc	65% CHK: crm-ilty-brn, mot, sft-mod frm, sb ply-blky, v calc: 35% MRLST: med-dk gy, sl frm-mod hd, sb ply-blky, silty-mot tex, calc, v tr inoc cal, v tr inoc	65% CHK: crm-ilty-brn, mot, sft-mod frm, sb ply-blky, v calc: 35% MRLST: med-dk gy, sl frm-mod hd, sb ply-blky, silty-mot tex, calc, v tr inoc cal, v tr inoc	60% CHK: crm-ilty-brn, mot, sft-mod frm, sb ply-blky, v calc: 40% MRLST: med-dk gy, sl frm-mod hd, sb ply-blky, silty-mot tex, calc, v tr inoc
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MD: 7,520
TVD: 6,973.31
Inclination: 86.15
Azimuth: 356.72
VS: 929.85

MD: 7,609
TVD: 6,978.41
Inclination: 87.28
Azimuth: 354.73
VS: 1,018.61



9/27/14

MIN DEPTH

132

700
200

ROP (ft/hr)
GAMMA (api)

109

4961u

4841u

C1: 86%
C2: 7%
C3: 5%
C4: 2%

1812u

WT: 10.0 / VIS: 33

5004u

7000
700000

5268u

GAS (units)
Cl-C4 (PPM)

4856u

WT: 10.5 / VIS: 34

4757u

4953u

C1: 84%
C2: 7%
C3: 6%
C4: 3%

7,690 7,700 7,710 7,720 7,730 7,740 7,750 7,760 7,770 7,780 7,790 7,800 7,810 7,820 7,830 7,840 7,850 7,860 7,870 7,880 7,890 7,900

65% CHK: crm-ilty-brn, mot, sft-mod frm, sb
ply-blky, v calc: 35% MRLST: med-dk gy, sl
frm-mod hd, sb ply-blky, silty-mot tex, calc, tr sec
cal, tr inoc, tr bent

60% CHK: crm-ilty-brn, mot, sft-mod frm, sb
ply-blky, v calc: 40% MRLST: med-dk gy, sl
frm-mod hd, sb ply-blky, silty-mot tex, calc, tr sec
cal, tr inoc, tr bent

60% MRLST: med-dk gy, sl frm-mod hd, sb
ply-blky, silty-mot tex, calc: 40% CHK:
crm-ilty-brn, mot, sft-mod frm, sb ply-blky, v calc,
v tr sec cal, v tr lse foss

70% MRLST: med-dk gy, sl frm-mod hd, sb
ply-blky, silty-mot tex, calc: 30% CHK: crm-ilty-brn,
mot, sft-mod frm, sb ply-blky, v calc, v tr sec cal, v
tr lse foss

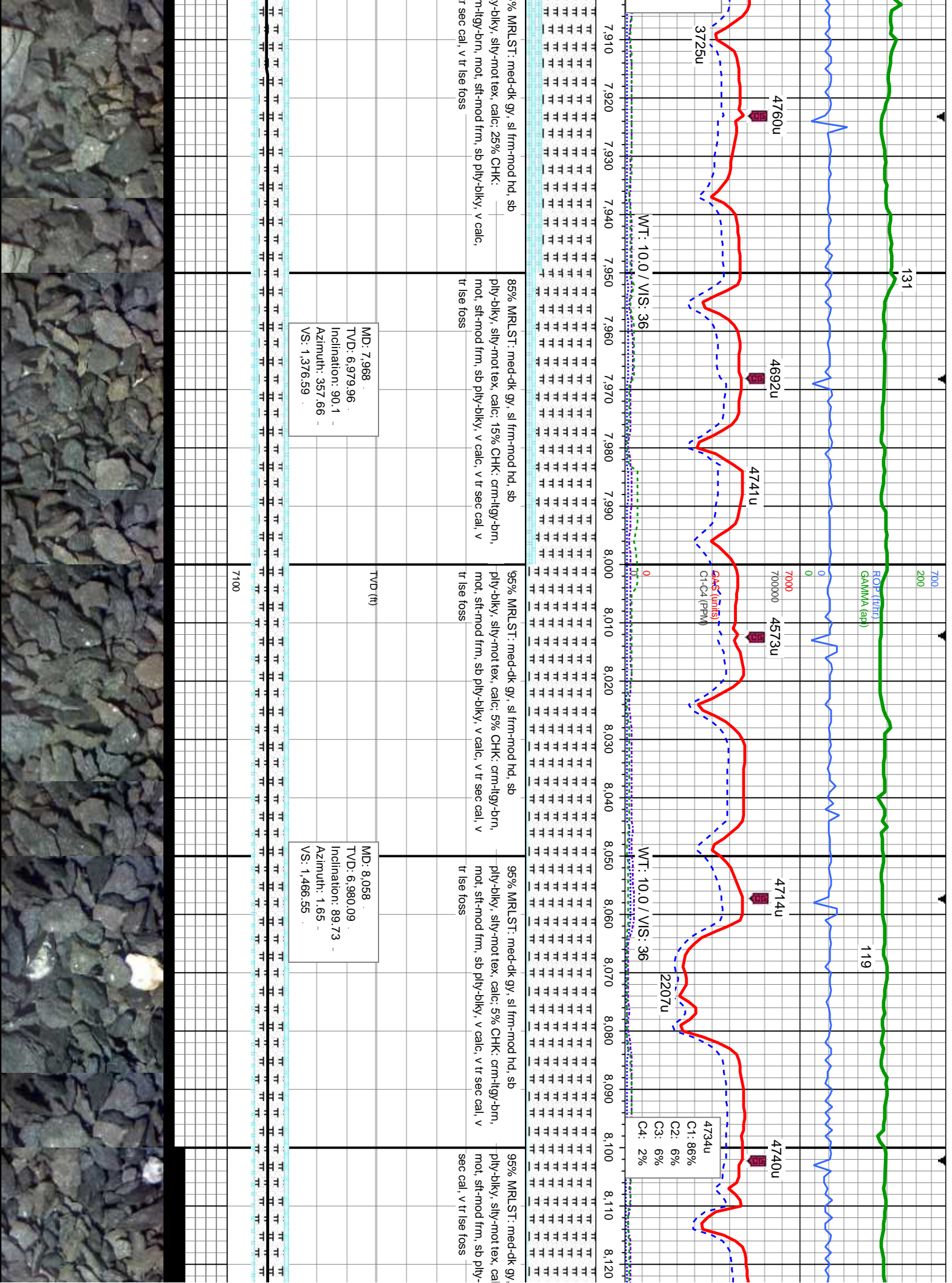
MD: 7.699
TVD: 6,981.96
Inclination: 88.21
Azimuth: 352.66
VS: 1,108.24

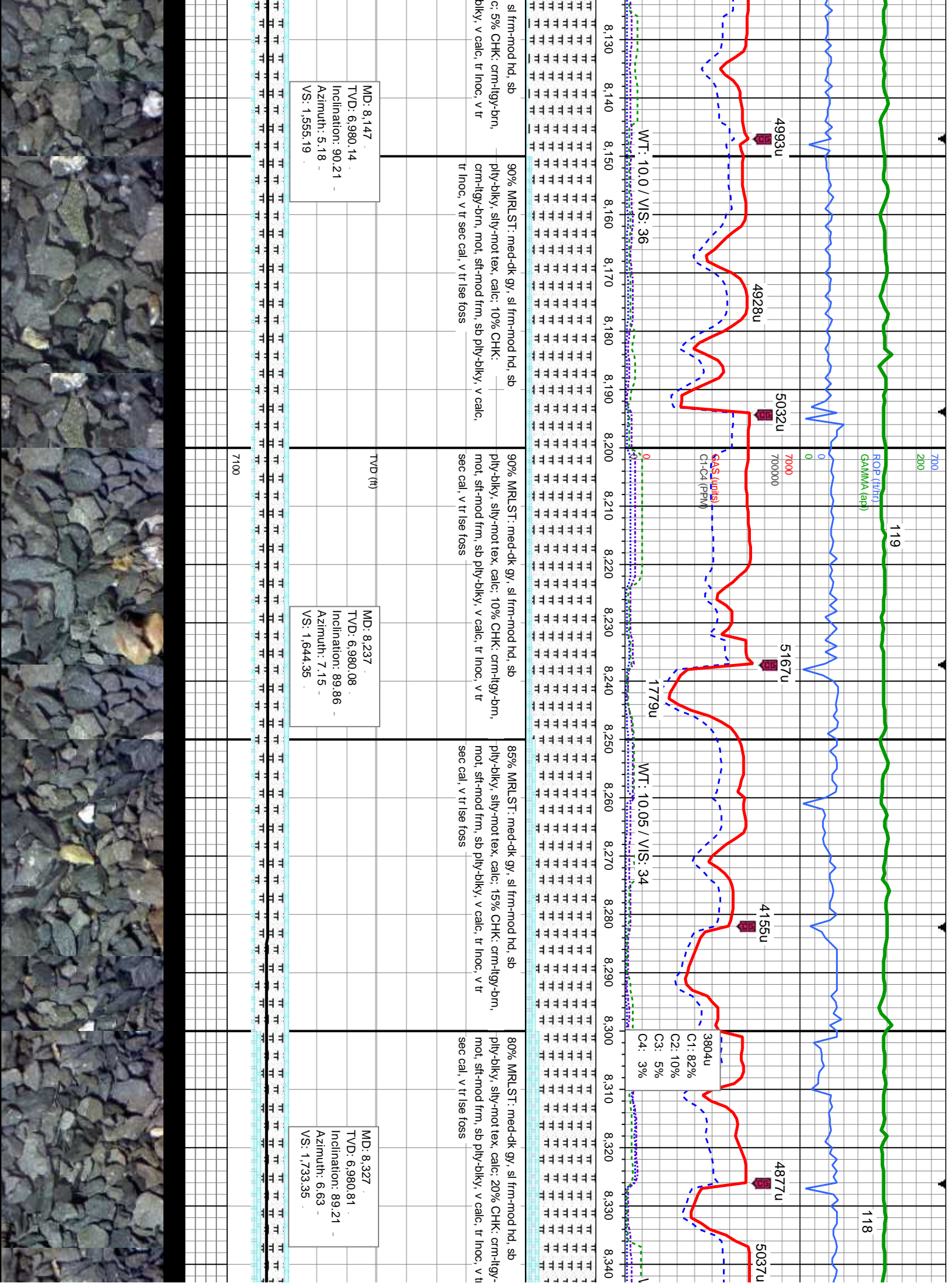
MD: 7.789
TVD: 6,982.5
Inclination: 91.1
Azimuth: 354.01
VS: 1,197.88

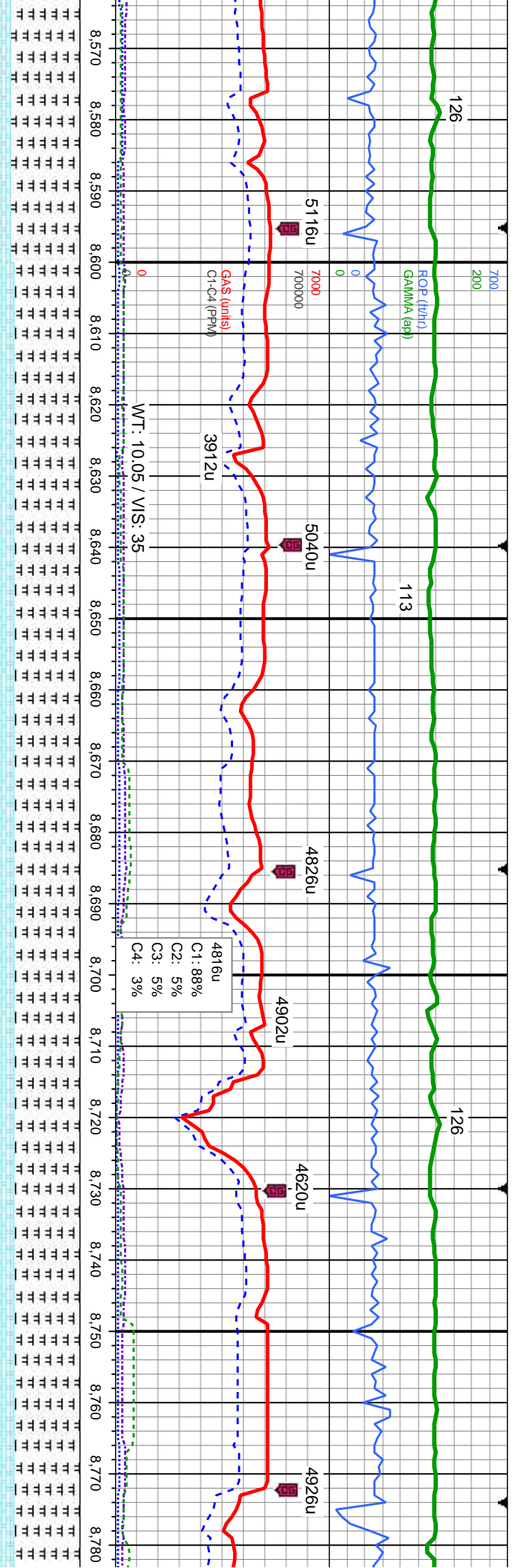
MD: 7.878
TVD: 6,980.84
Inclination: 91.03
Azimuth: 355
VS: 1,286.66

TVD (ft)
7100







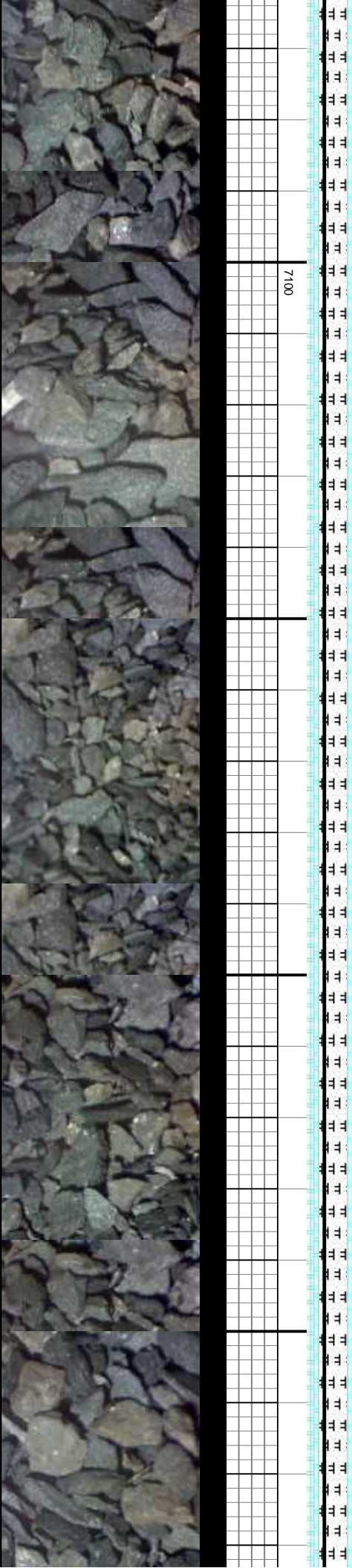


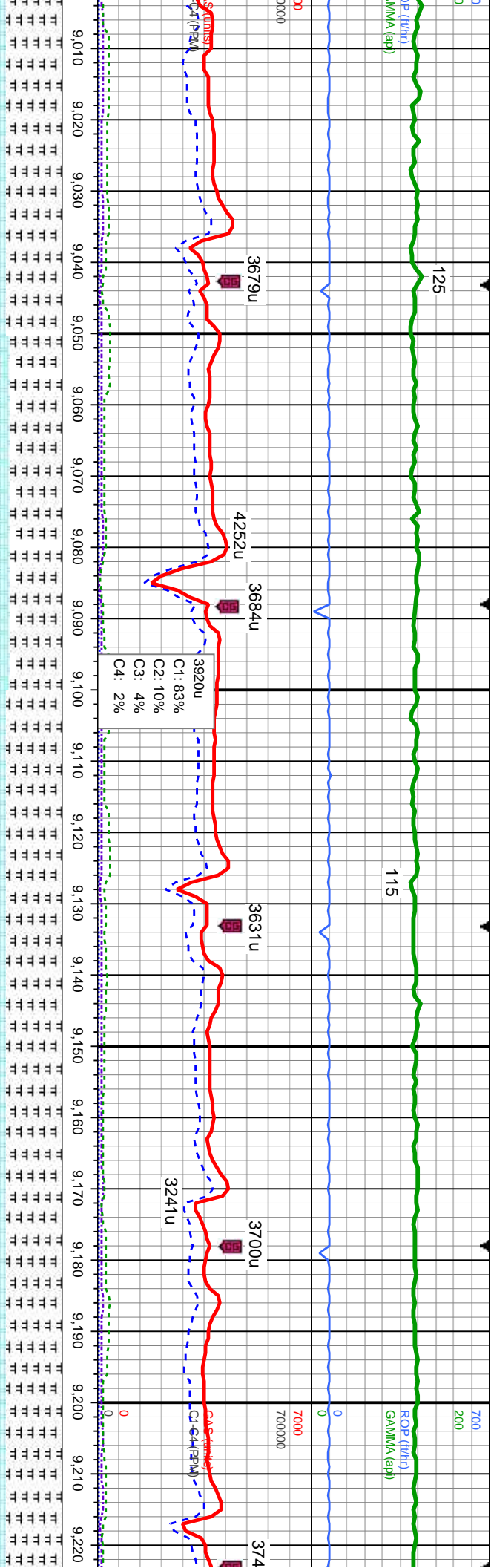
med-dk gy, sl frm-mod hd, sb	75% MRLST: med-dk gy, sl frm-mod hd, sb	75% MRLST: med-dk gy, sl frm-mod hd, sb	75% MRLST: med-dk gy, sl frm-mod hd, sb	75% MRLST: med-dk gy, sl frm-mod hd, sb
mot tex, calc: 20% CHK: crm-figy-bm,	ply-biky, silty-mot tex, calc: 15% CHK: brn-med gy,	ply-biky, silty-mot tex, calc: 15% CHK: brn-med gy,	ply-biky, silty-mot tex, calc: 15% CHK: brn-med gy,	ply-biky, silty-mot tex, calc: 15% CHK: brn-med gy,
mot, sb ply-biky, v calc, tr inoc, v tr	mot, sft-mod frm, sb ply-biky, v calc, tr inoc, v tr	mot, sft-mod frm, sb ply-biky, v calc, tr inoc, v tr	mot, sft-mod frm, sb ply-biky, v calc, tr inoc, v tr	mot, sft-mod frm, sb ply-biky, v calc, tr inoc, v tr
e foss	sec cal, v tr ise foss	sec cal, v tr ise foss	sec cal, v tr ise foss	sec cal, v tr ise foss

MD: 8.596
TVD: 6,984.84
Inclination: 89.28
Azimuth: 3.67
VS: 2,000.48

MD: 8.685
TVD: 6,985.77
Inclination: 89.52
Azimuth: 2.93
VS: 2,089.14

MD: 8.775
TVD: 6,985.83
Inclination: 90.41
Azimuth: 4.14
VS: 2,178.77





60% MRLST: med-dk gy, sl frm-mod hd, sb
ply-biky, silty-mot tex, calc: 35% CHK: med
gy-brn-lt gy-crm, mot, stf-mod frm, sb ply-biky, v
calc, tr inoc, v tr sec cal, v tr lse foss

65% MRLST: med-dk gy, sl frm-mod hd, sb
ply-biky, silty-mot tex, calc: 40% CHK: med
gy-brn-lt gy-crm, mot, stf-mod frm, sb ply-biky, v
calc, tr inoc, v tr sec cal, v tr lse foss

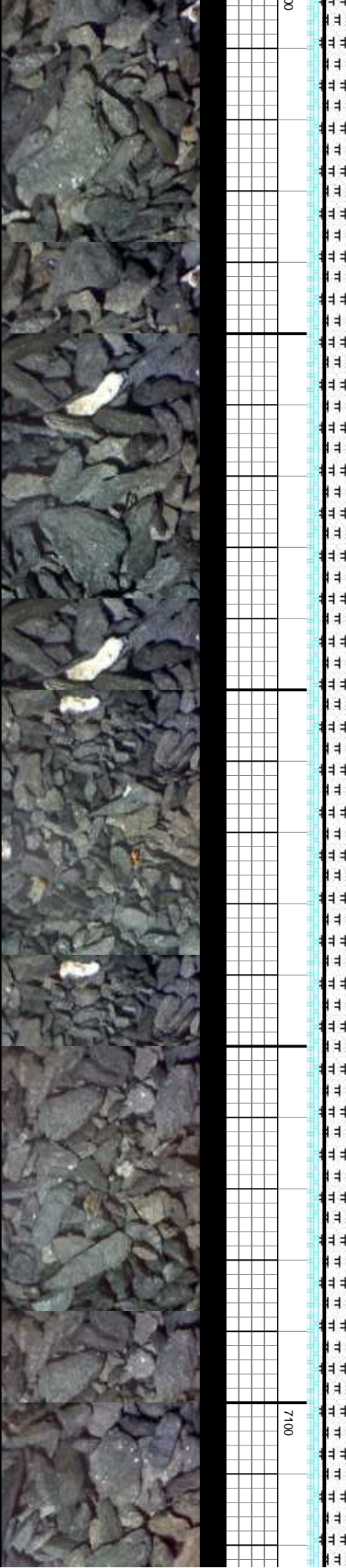
65% MRLST: med-dk gy, sl frm-mod hd, sb
ply-biky, silty-mot tex, calc: 35% CHK: med
gy-brn-lt gy-crm, mot, stf-mod frm, sb ply-biky, v
calc, tr inoc, v tr sec cal, tr lse foss

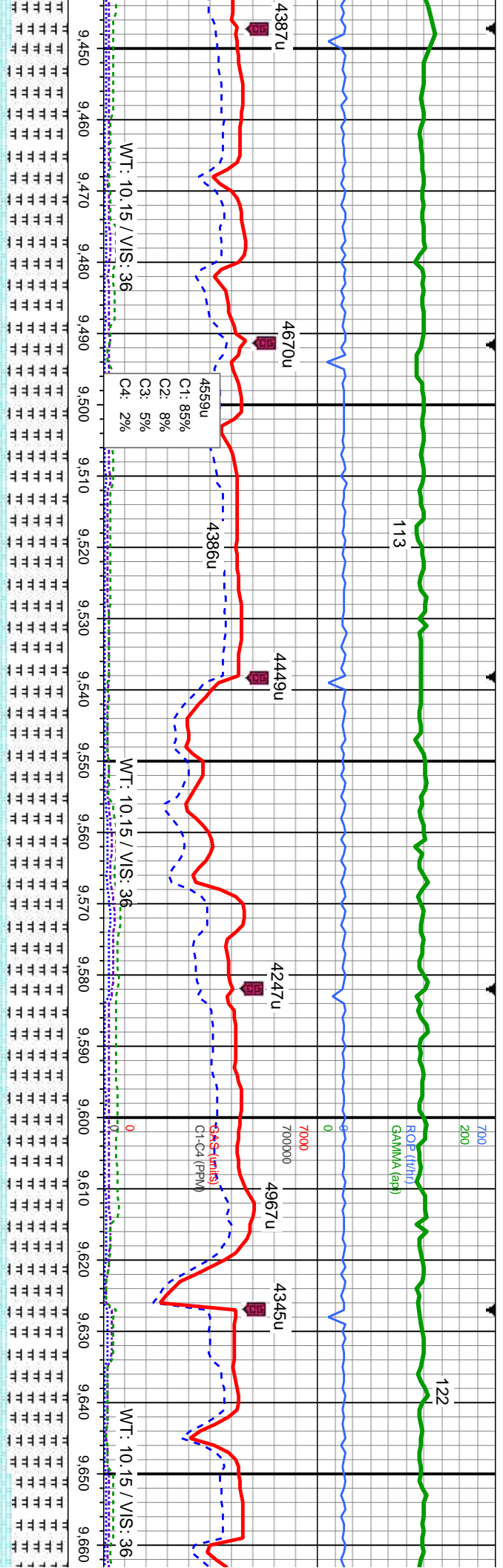
65% MRLST: med-dk gy
ply-biky, silty-mot tex, ca
gy-brn-lt gy-crm, mot, stf
calc, tr inoc, v tr sec cal,

MD: 9.044
TVD: 6,985.63
Inclination: 89.76
Azimuth: 1.47
VS: 2,446.53

MD: 9.134
TVD: 6,986.01
Inclination: 89.76
Azimuth: 359.35
VS: 2,536.46

MD: 9.223
TVD: 6,988
Inclination
Azimuth: 3
VS: 2,625





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

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

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

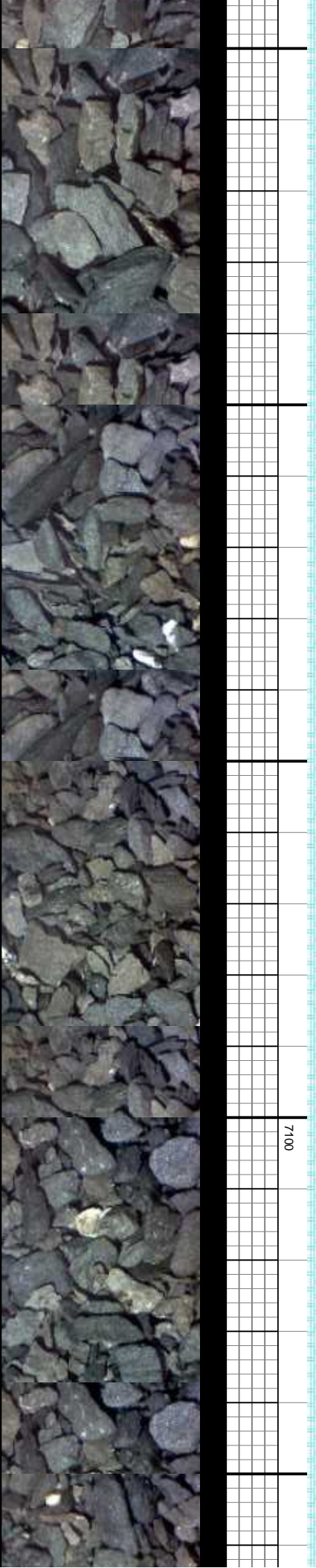
70% MRLST: med-dk gy, sl frm-mod hd, sb
ply-blky, silty-mot tex, calc: 30% CHK; brn-med
gy-lt-gy-crm, mot, sft-mod frm, sb ply-blky, v calc,
tr inoc, v tr sec cal

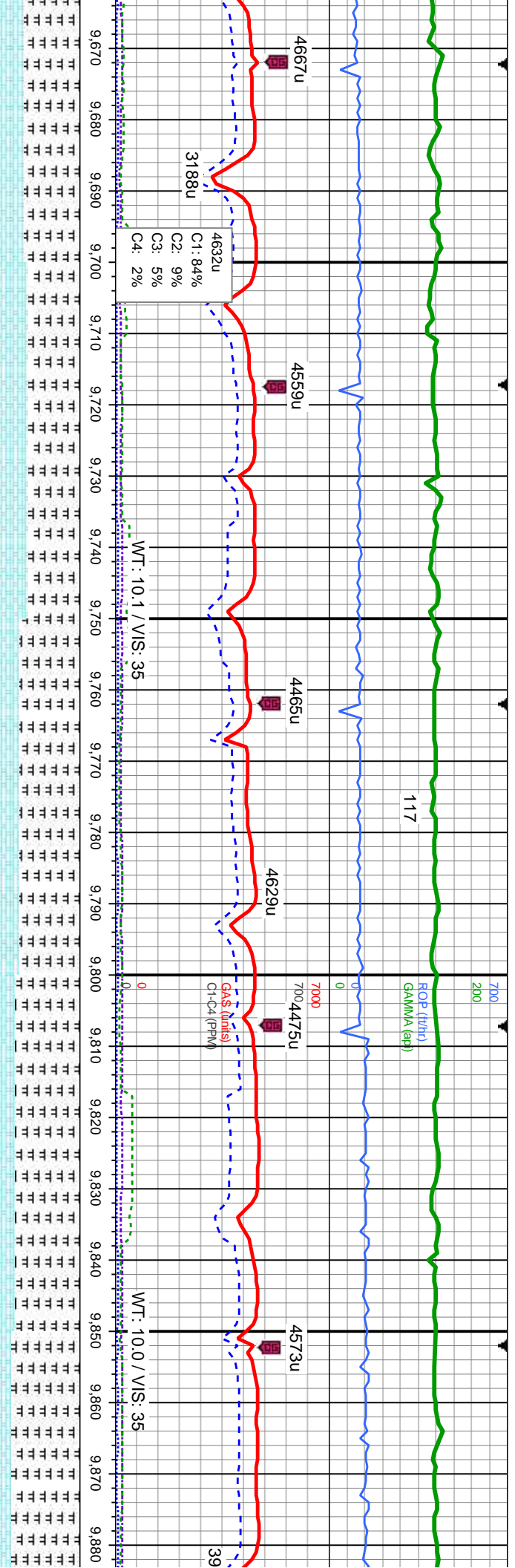
65% MRLST:
ply-blky, silty-
gy-lt-gy-crm, r
tr inoc, v tr se

MD: 9.493
TVD: 6.987.86
Inclination: 89.86
Azimuth: 358.04
VS: 2.895.29

MD: 9.582
TVD: 6.988.04
Inclination: 89.9
Azimuth: 359.58
VS: 2.994.28

TVD (ft)





med-dk gy, sl frm-mod hd, sb
mot tex, calc: 35% CHK: brn-med
gy-lt gy-crm, mot, stf-mod frm, sb ply-blky, v calc,
t tr inoc, v tr sec cal

60% MRLST: med-dk gy, sl frm-mod hd, sb
ply-blky, silty-mot tex, calc: 40% CHK: brn-med
gy-lt gy-crm, mot, stf-mod frm, sb ply-blky, v calc,
t tr inoc, v tr sec cal

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

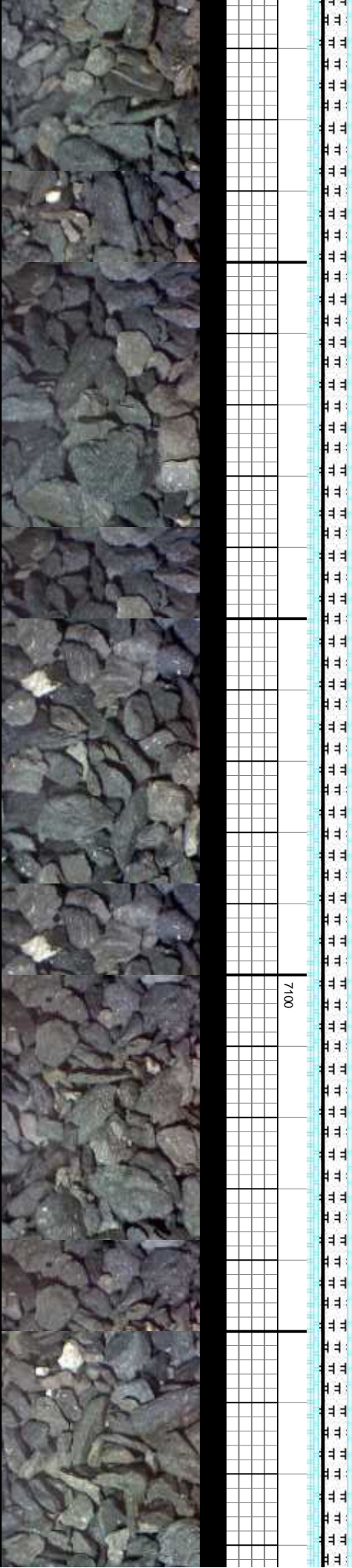
75% MRLST: med-dk gy, sl frm-mod hd, sb
ply-blky, silty-mot tex, calc: 25% CHK: brn-med
gy-lt gy-crm, mot, stf-mod frm, sb ply-blky, v calc,
v tr inoc, v tr sec cal, v tr lse foss

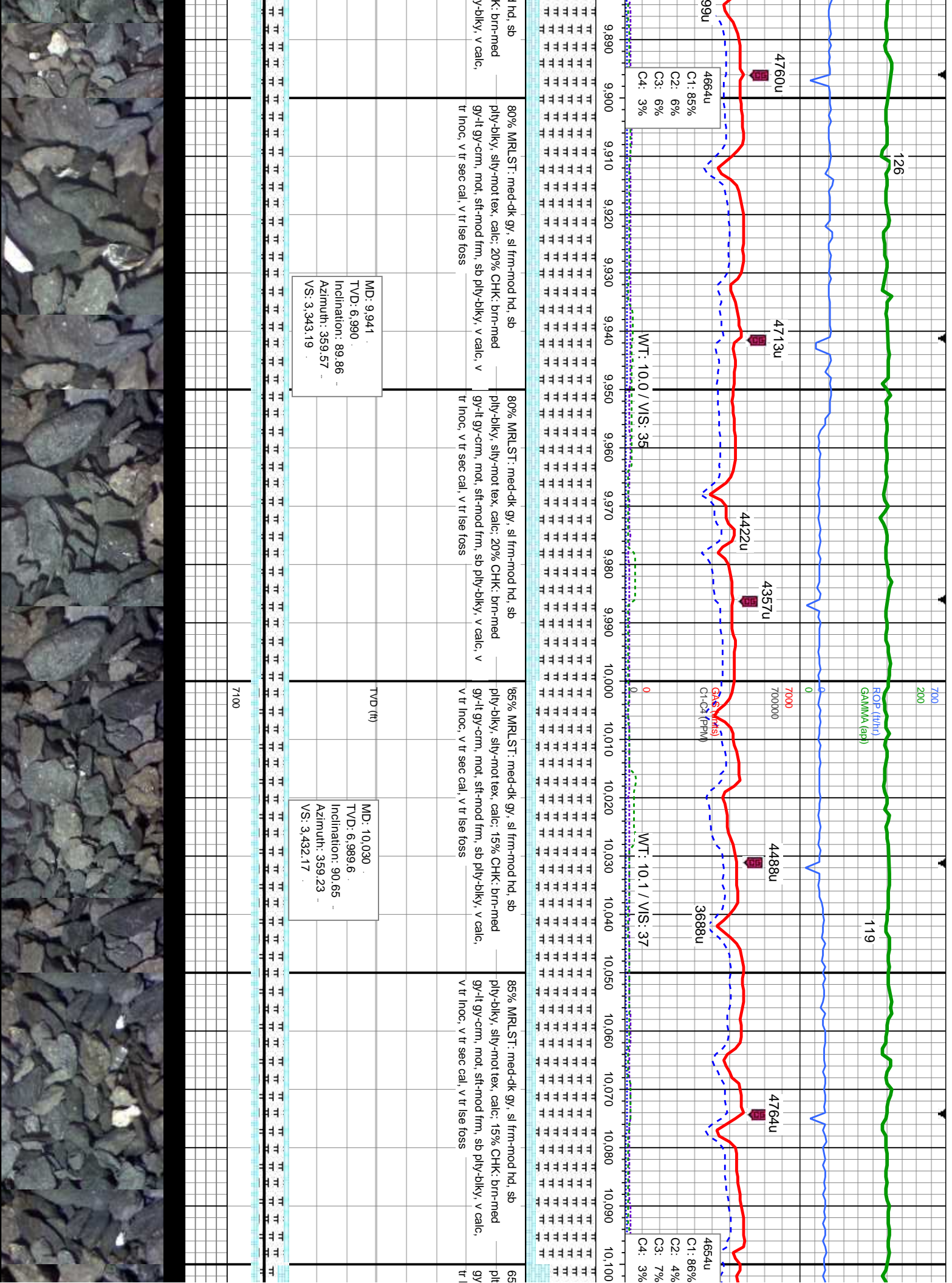
80% MRLST: med-dk gy, sl frm-mod
ply-blky, silty-mot tex, calc: 20% CH
gy-lt gy-crm, mot, stf-mod frm, sb ply
v tr inoc, v tr sec cal, v tr lse foss

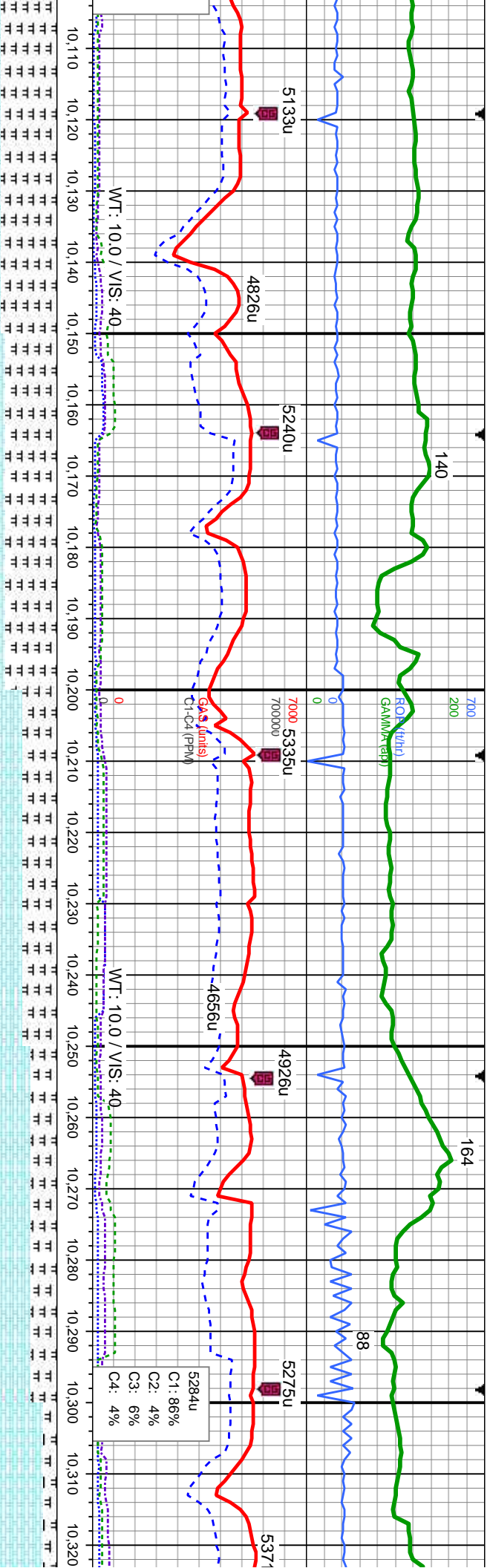
MD: 9.672
TVD: 6,988.2
Inclination: 89.9
Azimuth: 359.77
VS: 3.074.26

MD: 9.761
TVD: 6,988.76
Inclination: 89.38
Azimuth: 359.5
VS: 3.163.23

MD: 9.851
TVD: 6,989.57
Inclination: 89.59
Azimuth: 359.53
VS: 3.253.21







% MRLST: med-dk gy, sl frm-mod hd, sb
y-bkly, silty-mot tex, calc: 35% CHK: brn-med
-lt-gy-crm, mot, sft-mod frm, sb ply-bkly, v calc, v
noc, v tr sec cal, v tr tse foss

60% MRLST: med-dk gy, sl frm-mod hd, sb
ply-bkly, silty-mot tex, calc: 40% CHK: brn-med
gy-lt-gy-crm, mot, sft-mod frm, sb ply-bkly, v calc,
v tr inoc, v tr sec cal, v tr tse foss

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

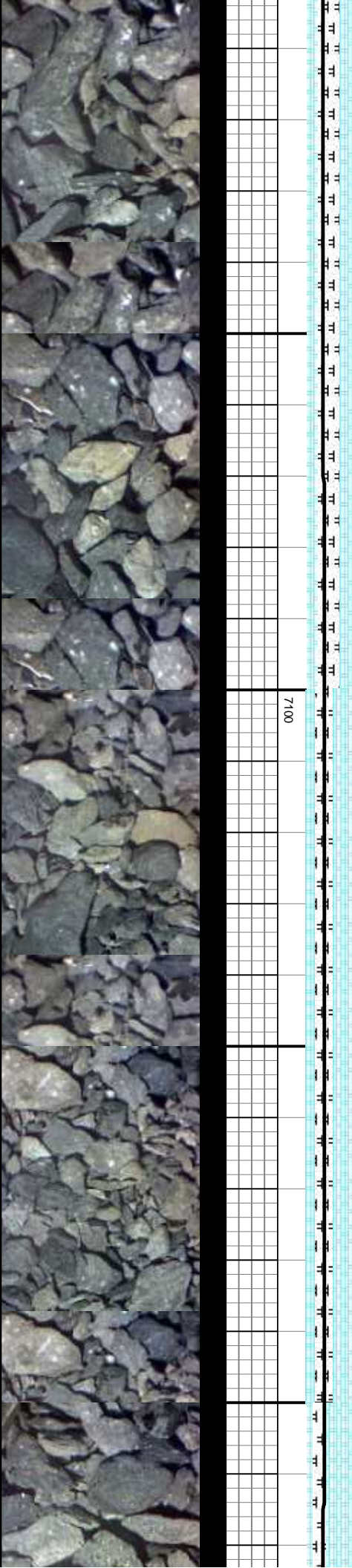
70% CHK: brn-med gy-lt-gy-crm, mot, sft-mod frm,
sb ply-bkly, v calc: 30% MRLST: med-dk gy, sl
frm-mod hd, sb ply-bkly, silty-mot tex, calc, v tr
Inoc

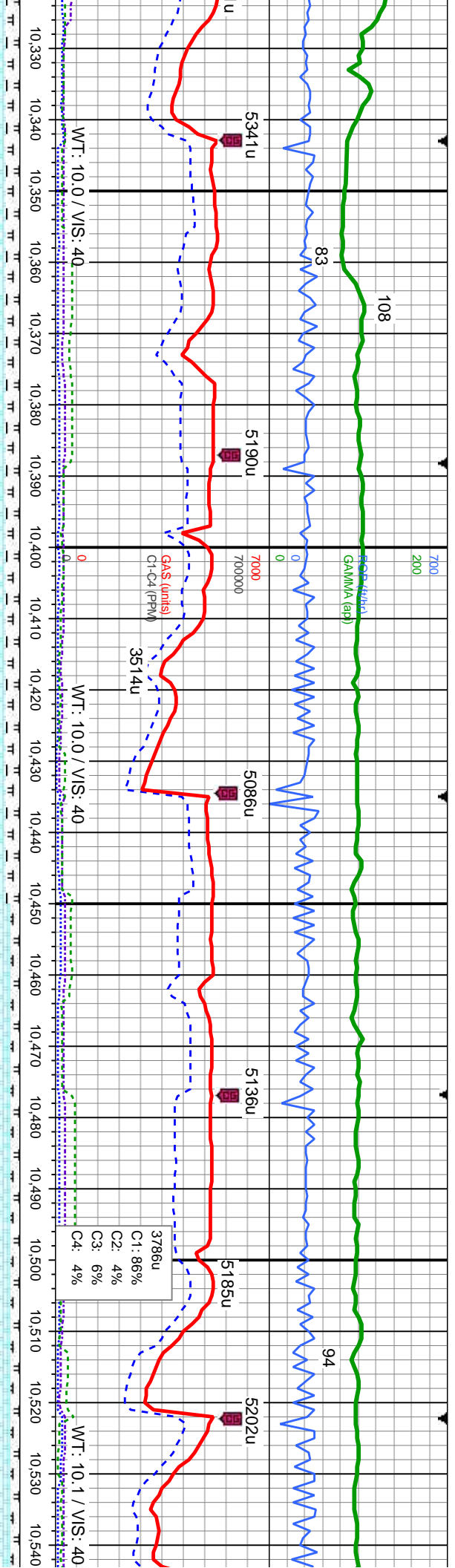
85% CHK: brn-med gy-lt
sb ply-bkly, v calc: 15%
frm-mod hd, sb ply-bkly,
Inoc, v tr sec cal

MD: 10.120
TVD: 6.988.34
Inclination: 90.96
Azimuth: 358.27
VS: 3.522.16

MD: 10.210
TVD: 6.986.85
Inclination: 90.93
Azimuth: 357.14
VS: 3.612.14

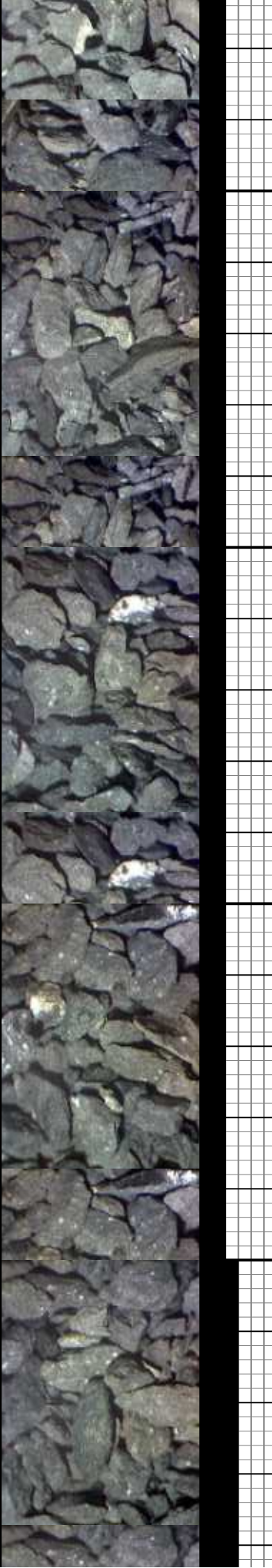
MD: 10.299
TVD: 6.987.25
Inclination: 88.56
Azimuth: 354.09
VS: 3.701.02

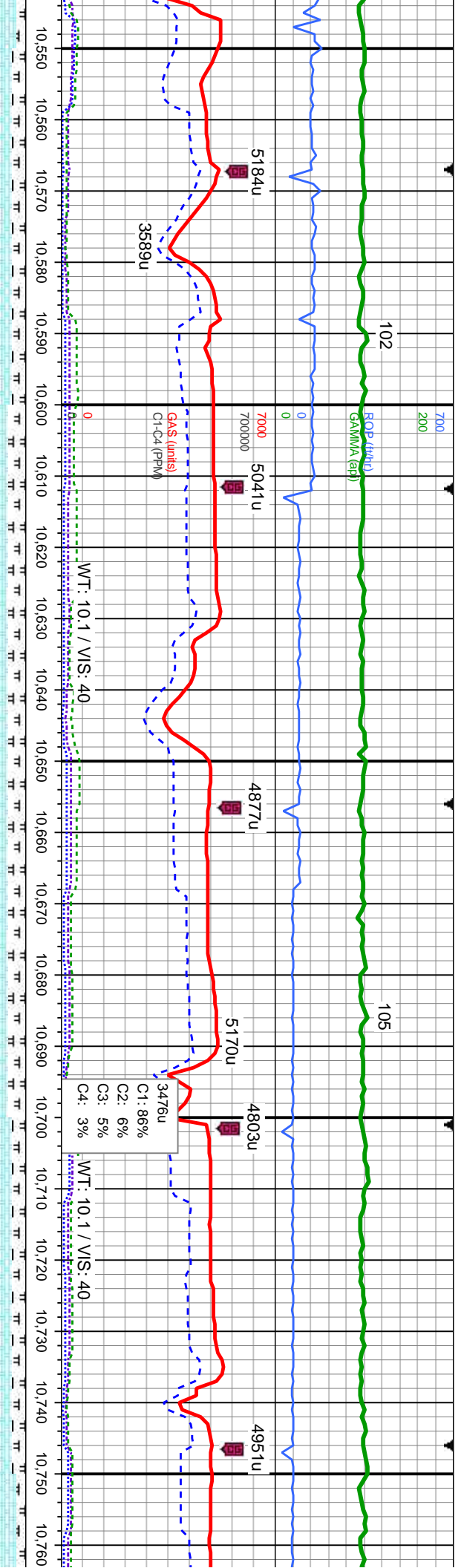




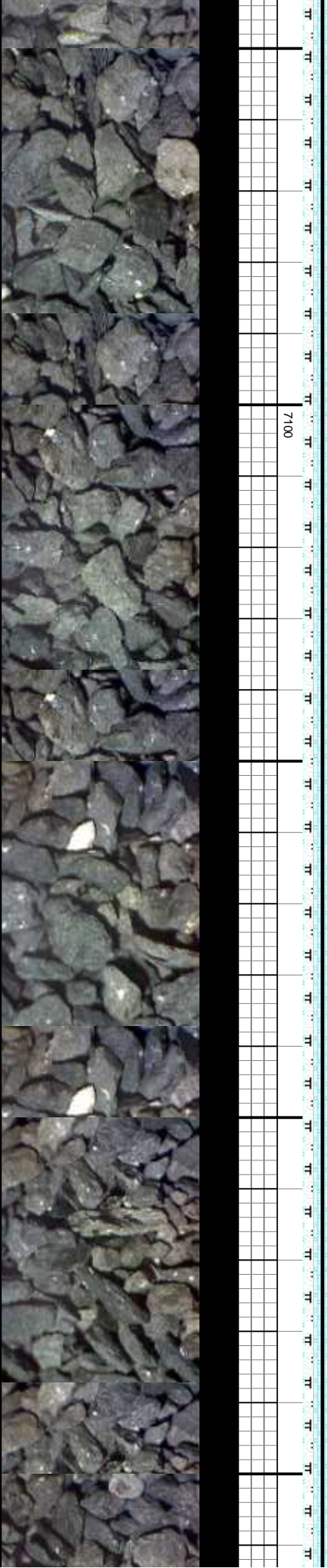
gy-crm, mot, sft-mod frm, — MRLST: med-dk gy, sl sily-mot tex, calc, v tr	85% CHK: brn-med gy-lt gy-crm, mot, sft-mod frm, sb pily-blky, v calc: 15% MRLST: med-dk gy, sl frm-mod hd, sb pily-blky, sily-mot tex, calc, v tr Inoc, v tr sec cal	85% CHK: brn-med gy-lt gy-crm, mot, sft-mod frm, sb pily-blky, v calc: 15% MRLST: med-dk gy, sl frm-mod hd, sb pily-blky, sily-mot tex, calc, tr Inoc, tr sec cal	90% CHK: brn-med gy-lt gy-crm, mot, sft-mod frm, sb pily-blky, v calc: 10% MRLST: med-dk gy, sl frm-mod hd, sb pily-blky, sily-mot tex, calc, tr Inoc, tr sec cal	90% CHK: brn-med gy-lt gy-crm, mot, sft-mod frm, sb pily-blky, v calc: 10% MRLST: med-dk gy, sl frm-mod hd, sb pily-blky, sily-mot tex, calc, tr Inoc, tr sec cal
	MD: 10,389 TVD: 6,988.7 Inclination: 89.59 Azimuth: 352.5 VS: 3,790.65		MD: 10,479 TVD: 6,989.05 Inclination: 89.97 Azimuth: 351.19 VS: 3,880.07	

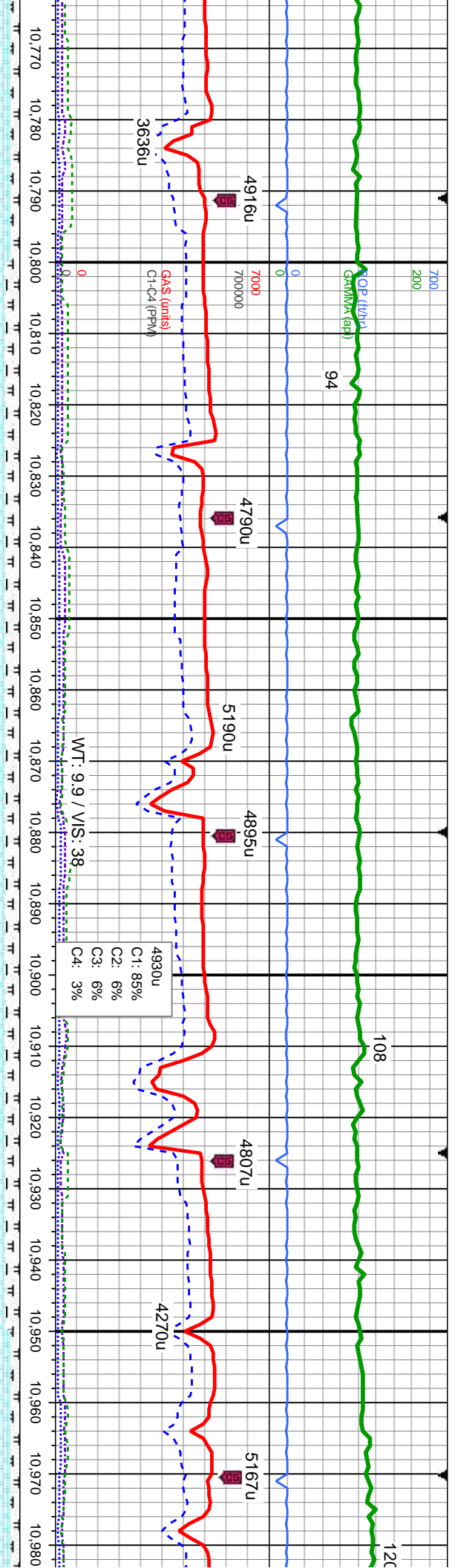
7100



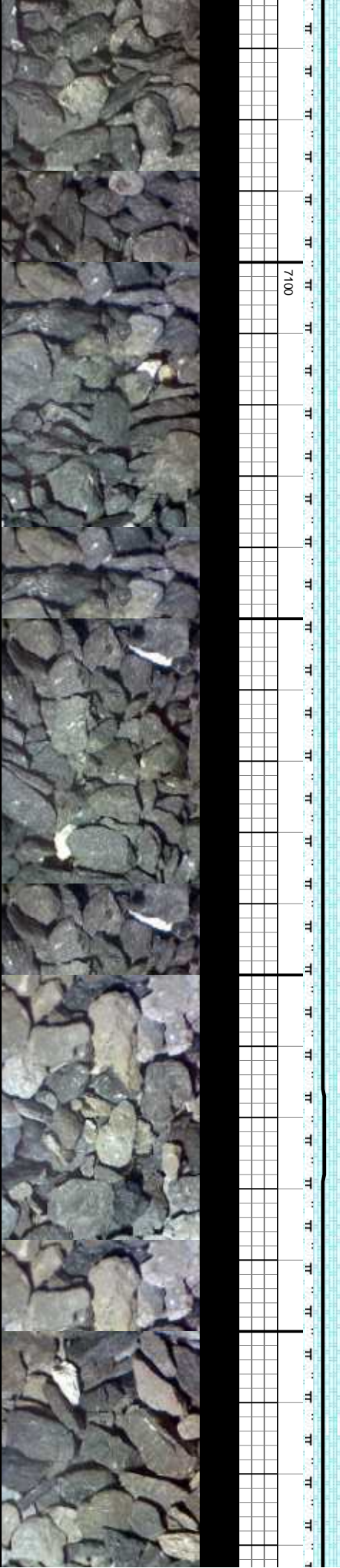


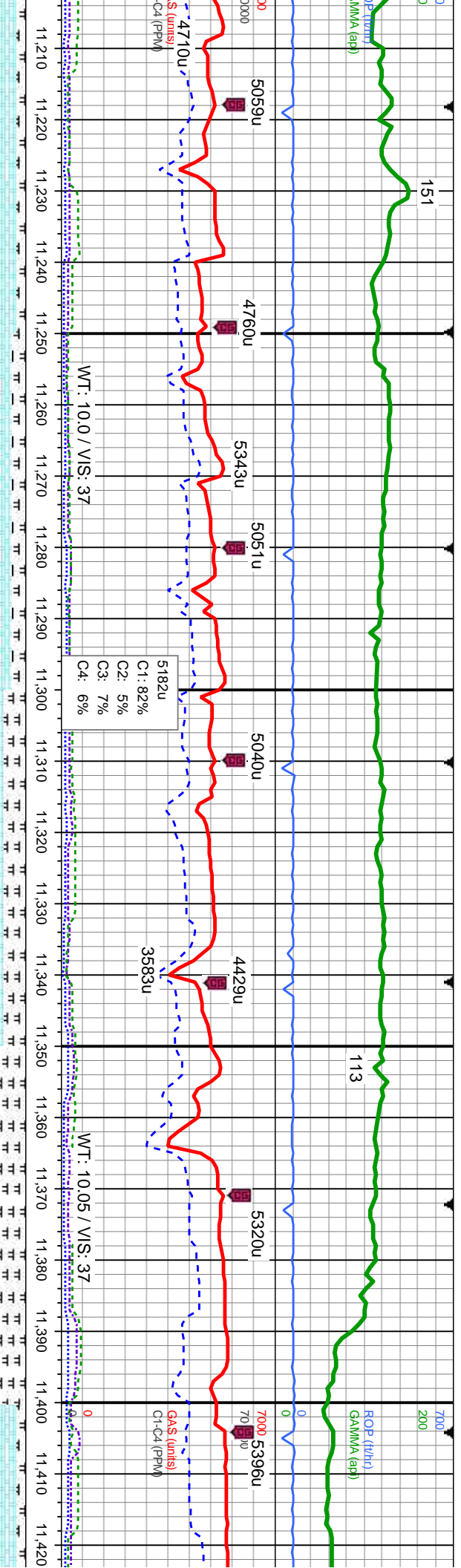
85% CHK: brn-med gy-lt gy-crm, mot, sft-mod frm, sb pily-blky, v calc: 15% MRLST: med-dk gy, sl frm-mod hd, sb pily-blky, silty-mot tex, calc, tr inoc, tr sec cal	80% CHK: med gy-brn-lt gy-crm, mot, sft-mod frm, sb pily-blky, v calc: 20% MRLST: med-dk gy, sl frm-mod hd, sb pily-blky, silty-mot tex, calc, com inoc, com sec cal	85% CHK: med gy-brn, lt gy-crm, mot, sft-mod frm, sb pily-blky, v calc: 15% MRLST: med-dk gy, sl frm-mod hd, sb pily-blky, silty-mot tex, calc, com inoc, com sec cal	90% CHK: m sb pily-blky, v calc: 15% MRLST: med-dk gy, sl frm-mod hd, sb pily-blky, silty-mot tex, calc, com inoc, com sec cal
MD: 10,568 TVD: 6,989.02 Inclination: 90.07 Azimuth: 350.22 VS: 3,968.28	MD: 10,658 TVD: 6,988.72 Inclination: 90.31 Azimuth: 351.07 VS: 4,057.47	MD: 10,748 TVD: 6,988.45 Inclination: 90.03 Azimuth: 352.3 VS: 4,146.86	





bed gy-brn, lt gy-crm, mot, sft-mod frm, calc: 10% MRLST: med-dk gy, sl sb pty-biky, silty-mot tex, calc, com c cal	85% CHK: med gy-brn, lt gy-crm, mot, sft-mod frm, sb pty-biky, v calc: 15% MRLST: med-dk gy, sl frm-mod hd, sb pty-biky, silty-mot tex, calc, tr inoc, tr sec cal	85% CHK: med gy-brn, lt gy-crm, mot, sft-mod frm, sb pty-biky, v calc: 15% MRLST: med-dk gy, sl frm-mod hd, sb pty-biky, silty-mot tex, calc, tr inoc, tr sec cal	90% CHK: crm-tan, brn-med gy, mo sb pty-biky, v calc: 10% MRLST: med-dk gy, sl frm-mod hd, sb pty-biky, silty-mot tex, calc, tr sec cal
	MD: 10,838 TVD: 6,987.73 Inclination: 90.89 Azimuth: 353.96 VS: 4,236.48		MD: 10,927 TVD: 6,987.47 Inclination: 89.45 Azimuth: 355.05 VS: 4,325.27





85% CHK: brn-med gy-lt gy-crm-tan, mot, sft-mod
frn, sb pily-blky, v calc: 15% MRLST: med-dk gy, sl
frn-mod hd, sb pily-blky, silty-mot tex, calc, v tr
cal, v tr sec cal

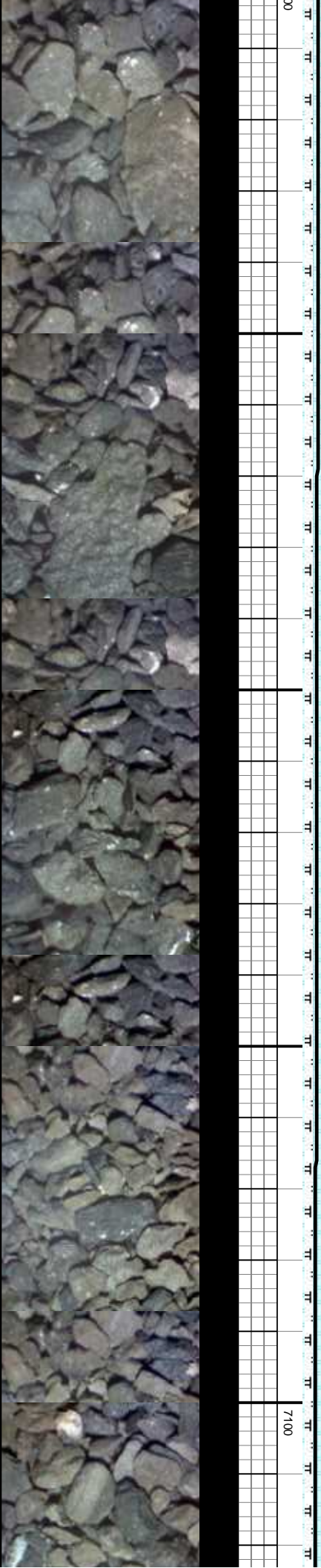
75% CHK: brn-med gy-lt gy-crm-tan, mot, sft-mod
frn, sb pily-blky, v calc: 25% MRLST: med-dk gy, sl
frn-mod hd, sb pily-blky, silty-mot tex, calc, tr
Inoc, tr sec cal

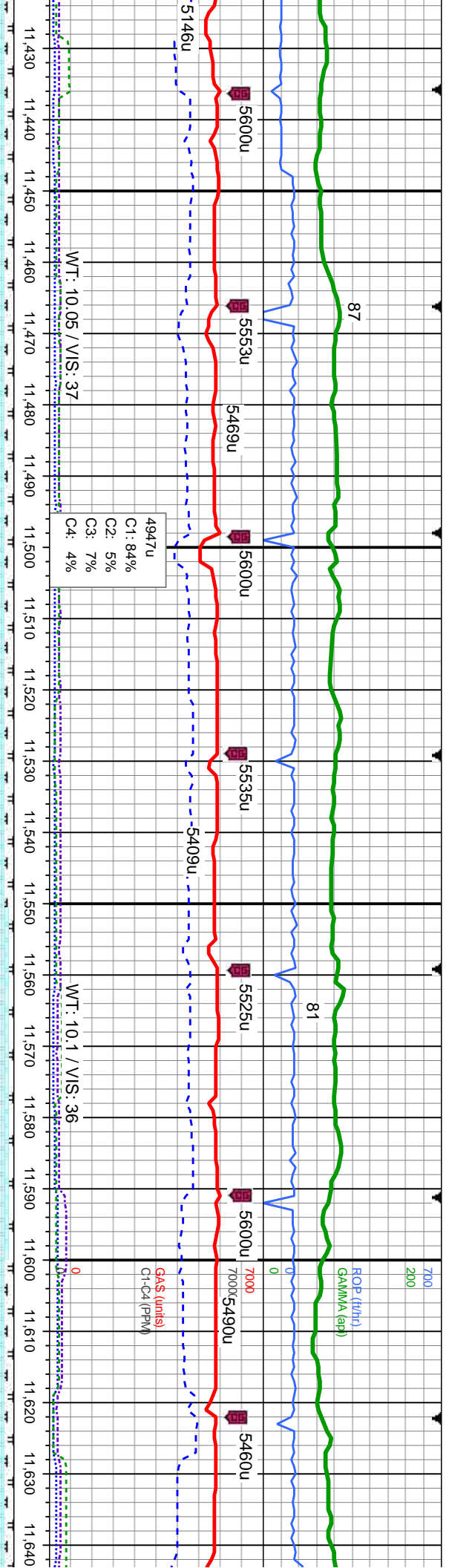
70% CHK: brn-med gy-lt gy-crm-tan, mot, sft-mod
frn, sb pily-blky, v calc: 30% MRLST: med-dk gy, sl
frn-mod hd, sb pily-blky, silty-mot tex, calc, tr
Inoc, tr sec cal

90% CHK: brn-med gy-lt
frn, sb pily-blky, v calc: %
sl frn-mod hd, sb pily-blk
Inoc, tr sec cal

206	MD: 11,298	TVD: 7,002.67	Inclination: 88.08	Azimuth: 2.31	VS: 4,696.62
899.09					
on: 87.46					
1: 0.8					
13.84					

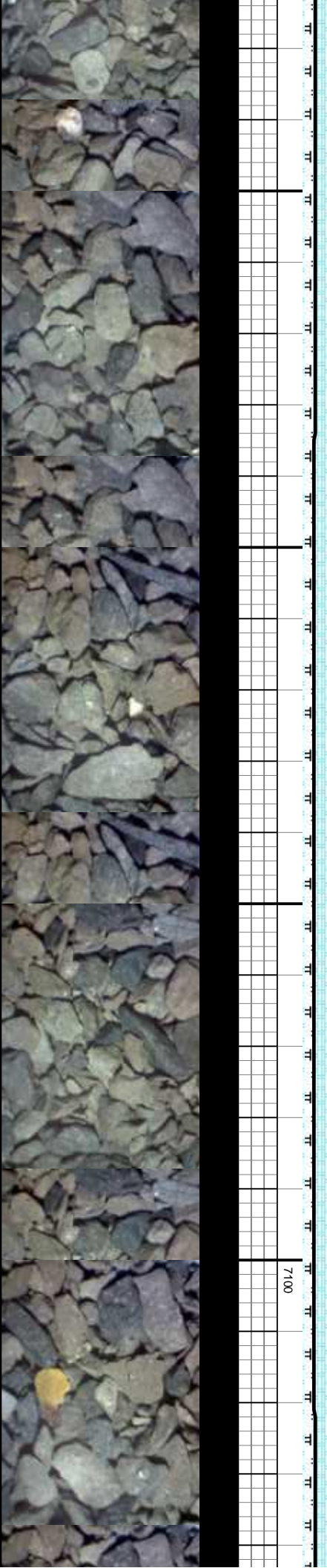
MD: 11,391	TVD: 7,005.95	Inclination: 87.87	Azimuth: 3.97	VS: 4,788.23

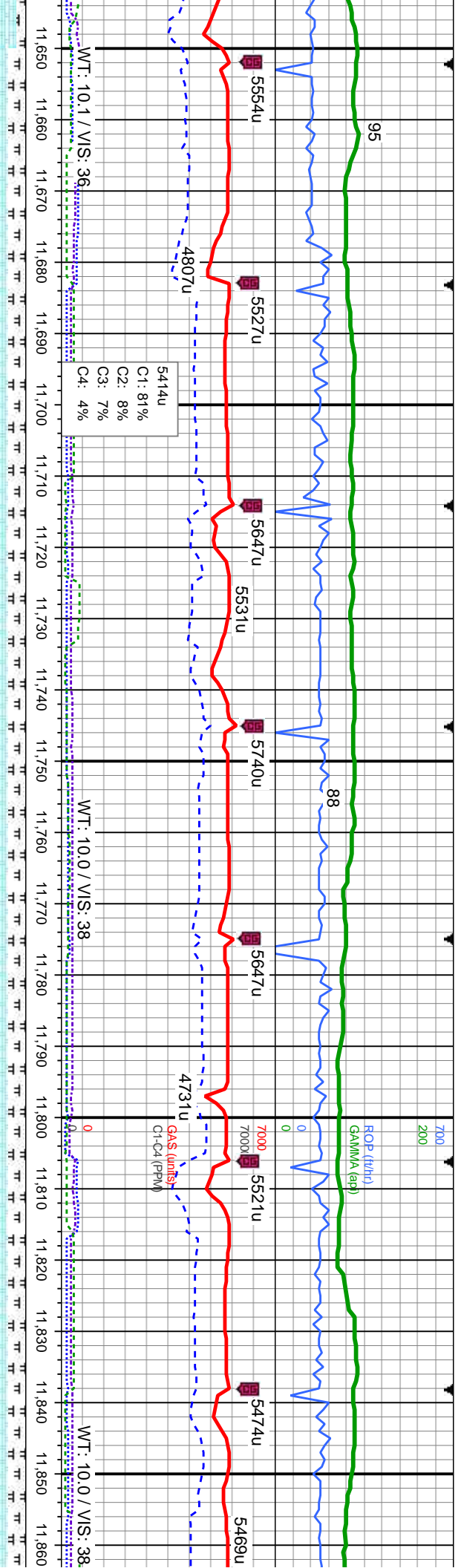




gy-cr-m-tan, mot, sft-mod 10% MRLST: med-dk gy, y; silty-mot tex, calc, tr	90% CHK: brn-med gy-lt gy-cr-m-tan, mot, sft-mod frm, sb pily-blky, v calc: 10% MRLST: med-dk gy, sl frm-mod hd, sb pily-blky, silty-mot tex, calc, tr Inoc, tr sec cal	90% CHK: brn-med gy-lt gy-cr-m-tan, mot, sft-mod frm, sb pily-blky, v calc: 10% MRLST: med-dk gy, sl frm-mod hd, sb pily-blky, silty-mot tex, calc, tr Inoc, tr sec cal	95% CHK: brn-med gy-lt gy-cr-m-tan, mot, sft-mod frm, sb pily-blky, v calc: 5% MRLST: med-dk gy, sl frm-mod hd, sb pily-blky, silty-mot tex, calc, tr Inoc, tr sec cal	90% CHK: brn-med gy-lt gy-cr-m-tan, mot, sft-mod frm, sb pily-blky, v calc: 10% MRLST: med-dk g frm-mod hd, sb pily-blky, silty-mot tex, calc, tr In
<div>MD: 11,485 TVD: 7,008.6 Inclination: 88.9 Azimuth: 4.27 VS: 4,881.72</div>				

MD: 11,577
TVD: 7,009.1
Inclination: 90.48
Azimuth: 3.2
VS: 4,973.31

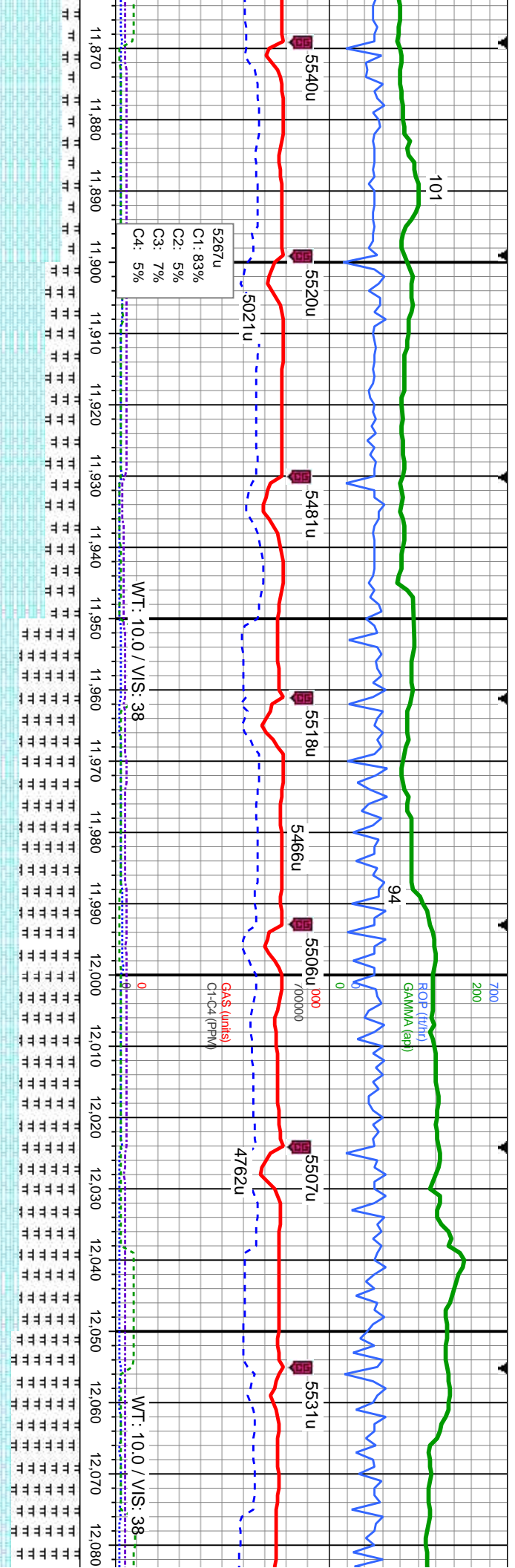




80% CHK: brn-med gy-lt-gy-crm-tan, mot, sft-mod frm, sb pty-blky, v calc: 20% MRLST: med-dk gy, sl frm-mod hd, sb pty-blky, silty-mot tex, calc, tr inoc, tr sec cal	80% CHK: brn-med gy-lt-gy-crm-tan, mot, sft-mod frm, sb pty-blky, v calc: 20% MRLST: med-dk gy, sl frm-mod hd, sb pty-blky, silty-mot tex, calc, tr inoc, tr sec cal	80% CHK: brn-med gy-lt-gy-crm-tan, mot, sft-mod frm, sb pty-blky, v calc: 20% MRLST: med-dk gy, sl frm-mod hd, sb pty-blky, silty-mot tex, calc, tr inoc, tr sec cal	680% CHK: brn-med gy-lt-gy-crm-tan, mot, sft-mod frm, sb pty-blky, v calc: 20% MRLST: med-dk gy, sl frm-mod hd, sb pty-blky, silty-mot tex, calc, v tr inoc, v tr sec cal	80% CHK: brn-med gy-lt-gy-crm-tan, mot, sft-mod frm, sb pty-blky, v calc: 20% MRLST: med-dk gy, sl frm-mod hd, sb pty-blky, silty-mot tex, calc, v tr inoc, v tr sec cal
<div>MD: 11,670 TVD: 7,008.05 Inclination: 90.82 Azimuth: 2 VS: 5,066.04</div>				
<div>MD: 11,762 TVD: 7,007.17 Inclination: 90.27 Azimuth: 2.27 VS: 5,157.84</div>				
<div>MD: 11,855 TVD: 7,006.62 Inclination: 90.41 Azimuth: 1.91 VS: 5,250.64</div>				

TVD (ft)





5267u
C1: 83%
C2: 5%
C3: 7%
C4: 5%

WT: 10.0 / VIS: 38

GAs (units)
C1-C4 (PPM)

WT: 10.0 / VIS: 38

60% CHK: brn-med gy-rlt gy-crm-tan, mot, sft-mod
frm, sb ply-bkly, v calc: 40% MRLST: med-dk gy, sl
frm-mod hd, sb ply-bkly, silty-mot tex, calc, v tr
Inoc, v tr sec cal

70% MRLST: med-dk gy, sl frm-mod hd, sb
ply-bkly, silty-mot tex, calc: 30% CHK: brn-med
gy-rlt gy-crm-tan, mot, sft-mod frm, sb ply-bkly, v
calc, v tr inoc, v tr sec cal

670% MRLST: med-dk gy, sl frm-mod hd, sb
ply-bkly, silty-mot tex, calc: 30% CHK: brn-med
gy-rlt gy-crm-tan, mot, sft-mod frm, sb ply-bkly, v
calc, v tr inoc, v tr sec cal

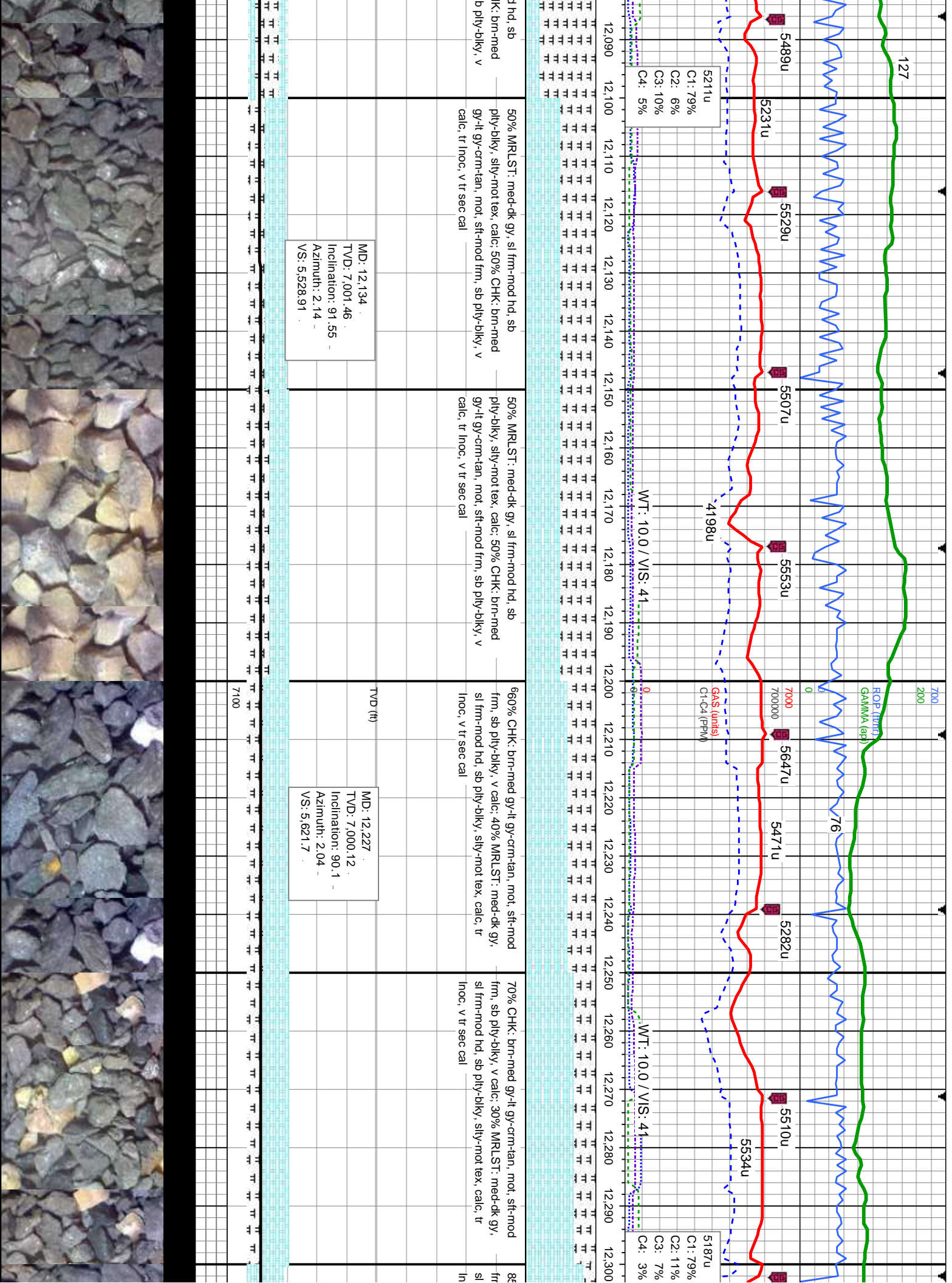
80% MRLST: med-dk gy, sl frm-mod
ply-bkly, silty-mot tex, calc: 20% CH
gy-rlt gy-crm-tan, mot, sft-mod frm, s
calc, v tr inoc, v tr sec cal

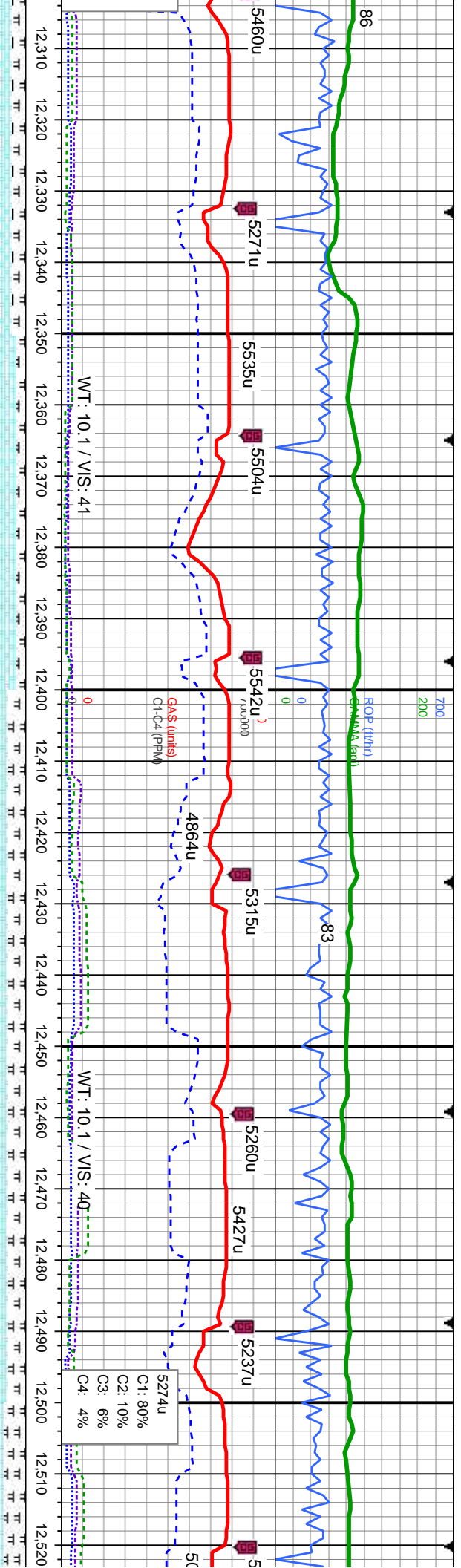
MD: 11,949
TVD: 7,005.1
Inclination: 91.44
Azimuth: 2.89
VS: 5,344.39

MD: 12,042
TVD: 7,003.32
Inclination: 90.76
Azimuth: 2.06
VS: 5,437.13

TVD (ft)







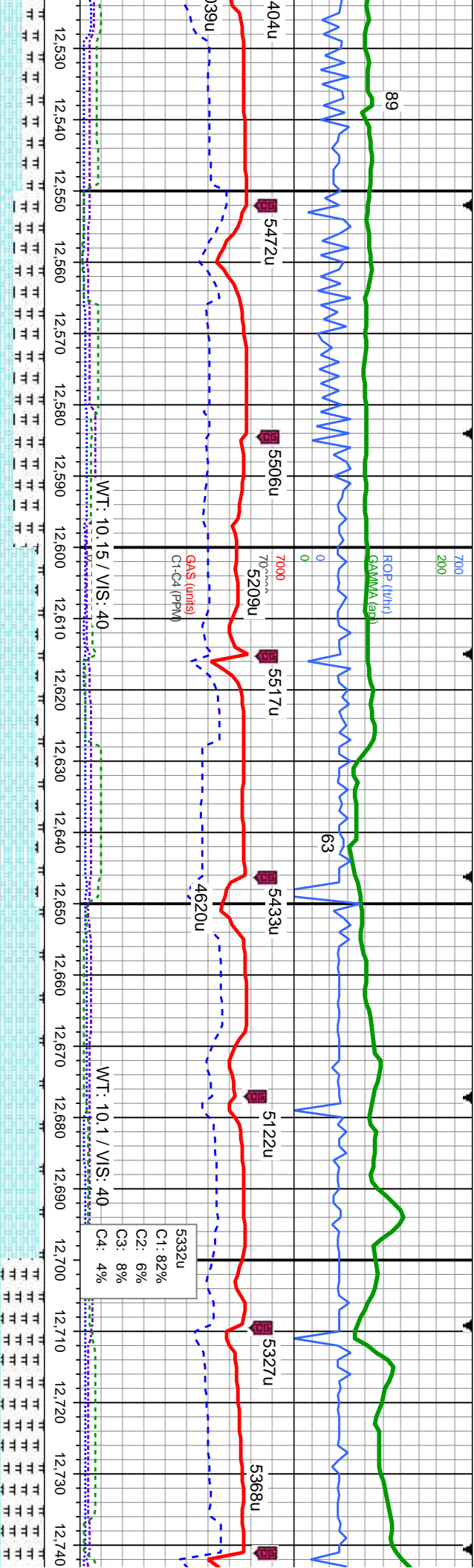
CHK: brn-med gy-lt gy-crm-tan, mot, sft-mod
frm, sb pty-blky, v calc: 15% MRLST: med-dk gy,
frm-mod hd, sb pty-blky, silty-mot tex, calc, tr
90% CHK: brn-med gy-lt gy-crm-tan, mot, sft-mod
frm, sb pty-blky, v calc: 10% MRLST: med-dk gy,
sl frm-mod hd, sb pty-blky, silty-mot tex, calc, tr
Inoc, v tr sec cal
100% CHK: brn-tan-med gy-lt gy, mot, sft-mod frm,
sb pty-blky, v calc: 20% MRLST: med-dk gy, sl
frm-mod hd, sb pty-blky, silty-mot tex, calc, tr Inoc,
v tr sec cal
80% CHK: brn-tan-med gy-lt gy, mot, sft-mod frm,
sb pty-blky, v calc: 20% MRLST: med-dk gy, sl
frm-mod hd, sb pty-blky, silty-mot tex, calc, tr Inoc,
v tr sec cal
75% CHK: brn-med gy-lt
pty-blky, v calc: 25% MRLST: med-dk gy, sl
frm-mod hd, sb pty-blky,
tr sec cal

MD: 12,321
TVD: 6,999.82
Inclination: 90.27
Azimuth: 0.14
VS: 5,715.59

MD: 12,415
TVD: 6,999.93
Inclination: 89.59
Azimuth: 358.97
VS: 5,809.56

MD: 12,510
TVD: 7,001.07
Inclination: 89.04
Azimuth: 359.31
VS: 5,904.55



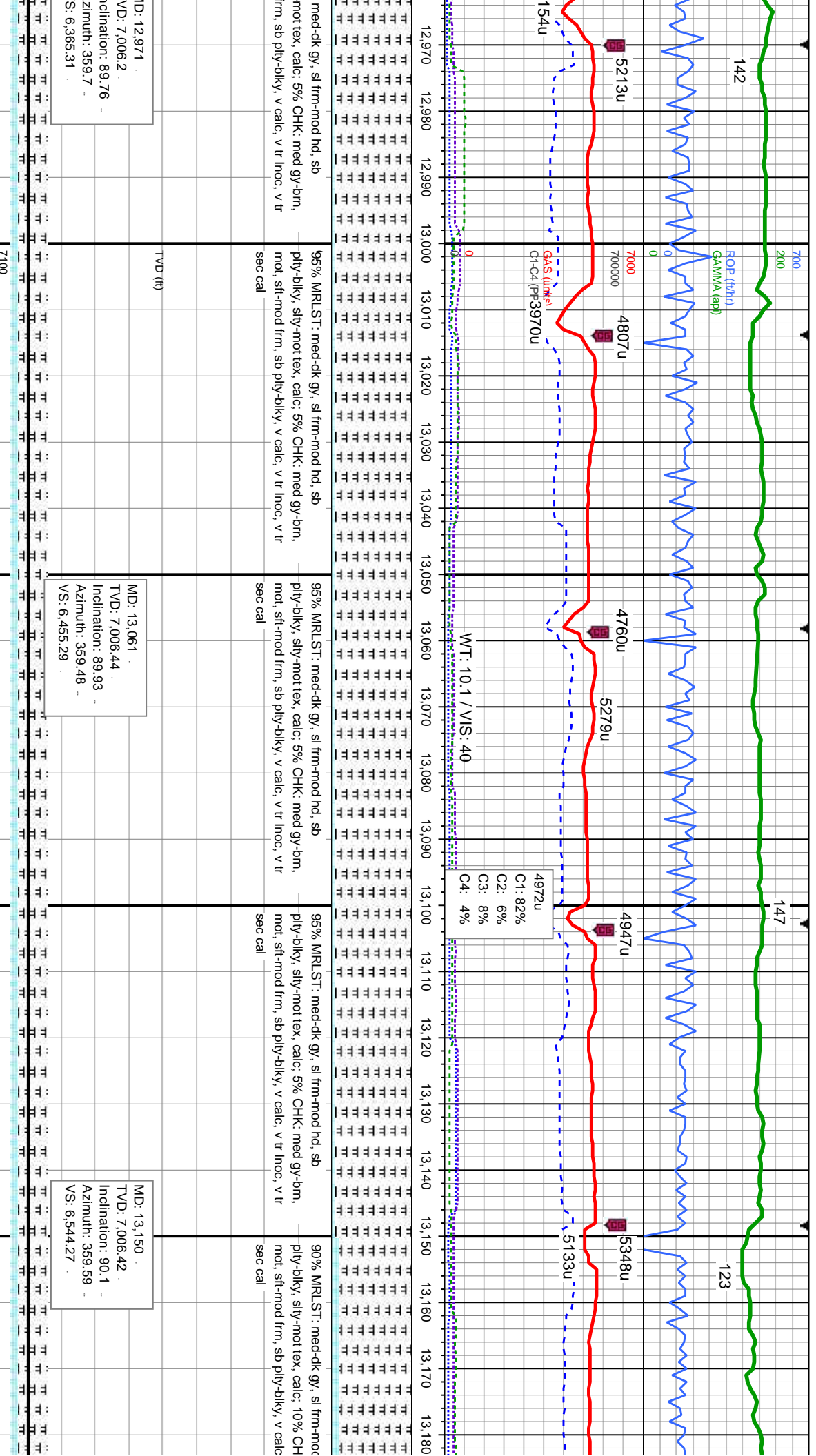


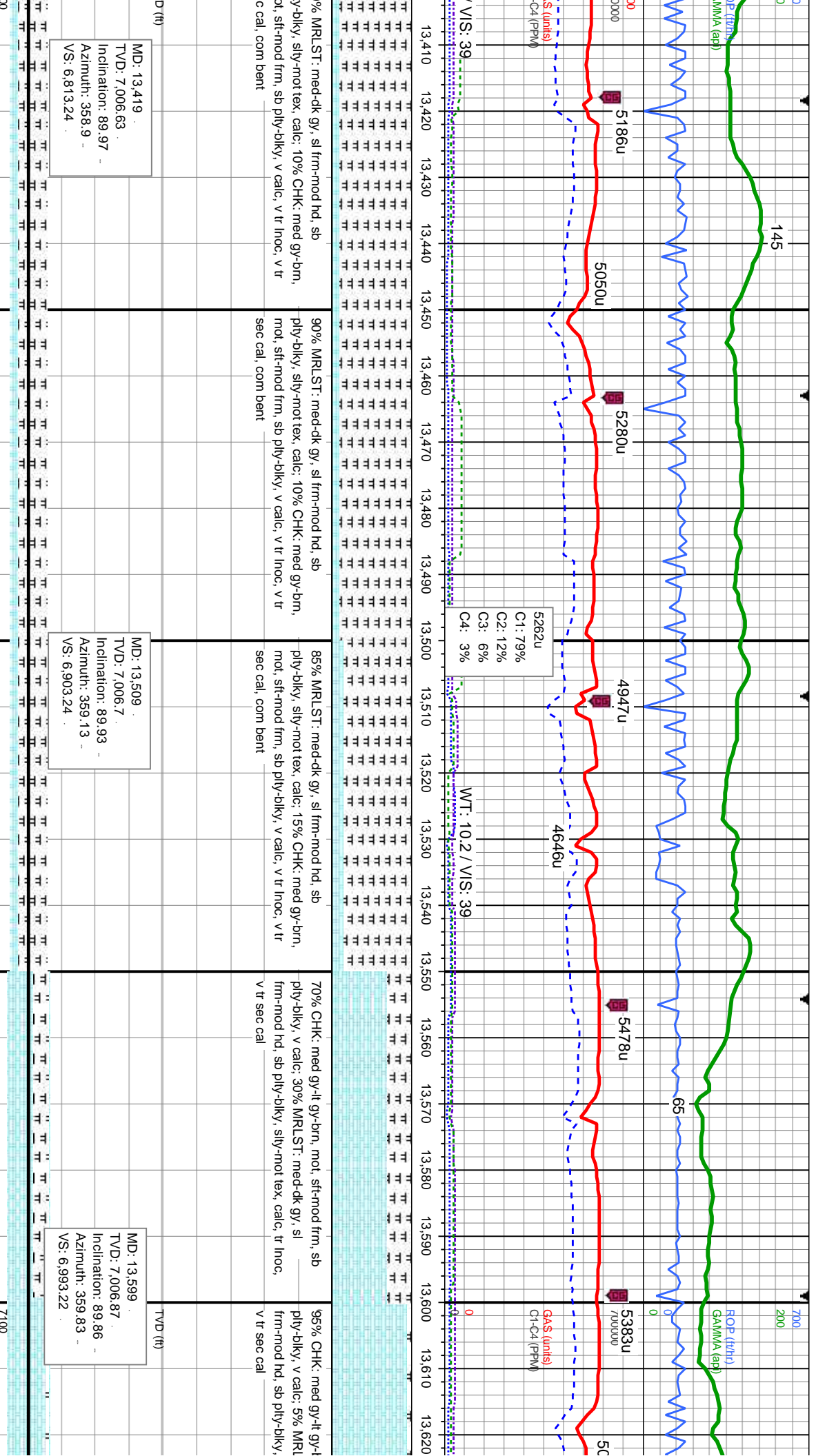
gy, mot, sft-mod frm, sb	65% CHK: brn-med gy-it gy, mot, sft-mod frm, sb	19% CHK: med gy-it gy, some brn, mot, sft-mod frm, sb	95% CHK: med gy-it gy, some brn, mot, sft-mod frm, sb	50% CHK: med gy-it gy, brn, mot, sft-mod frm, sb
ply-bkly, v calc: 35% MRLST: med-dk gy, sl	ply-bkly, v calc: 35% MRLST: med-dk gy, sl	ply-bkly, v calc: 10% MRLST: med-dk gy, sl	ply-bkly, v calc: 5% MRLST: med-dk gy, sl	ply-bkly, v calc: 50% MRLST: med-dk gy, sl
frn-mod hd, sb pily-bkly, silty-mot tex, calc, tr Inoc.	frn-mod hd, sb pily-bkly, silty-mot tex, calc, tr Inoc.	frn-mod hd, sb pily-bkly, silty-mot tex, calc, tr Inoc.	frn-mod hd, sb pily-bkly, silty-mot tex, calc, tr Inoc.	frn-mod hd, sb pily-bkly, silty-mot tex, calc, abn Inoc, com sec cal, com bent
tr sec cal				

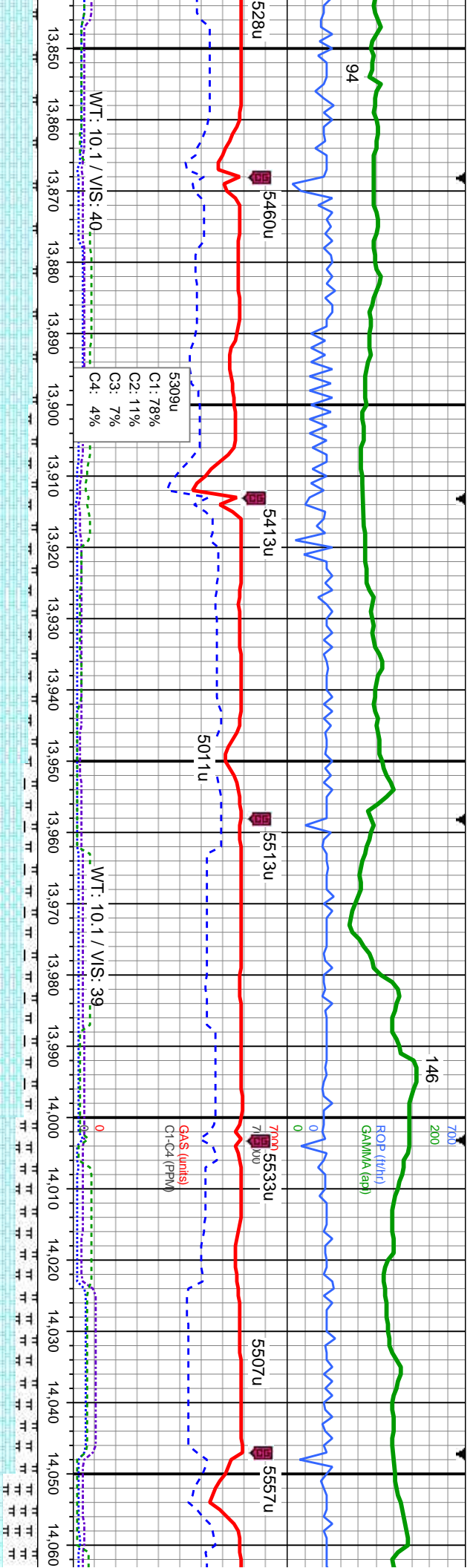
MD: 12,604
TVD: 7,002.25
Inclination: 89.52
Azimuth: 0.94
VS: 5,998.49

MD: 12,698
TVD: 7,003.43
Inclination: 89.04
Azimuth: 359.64
VS: 6,092.43







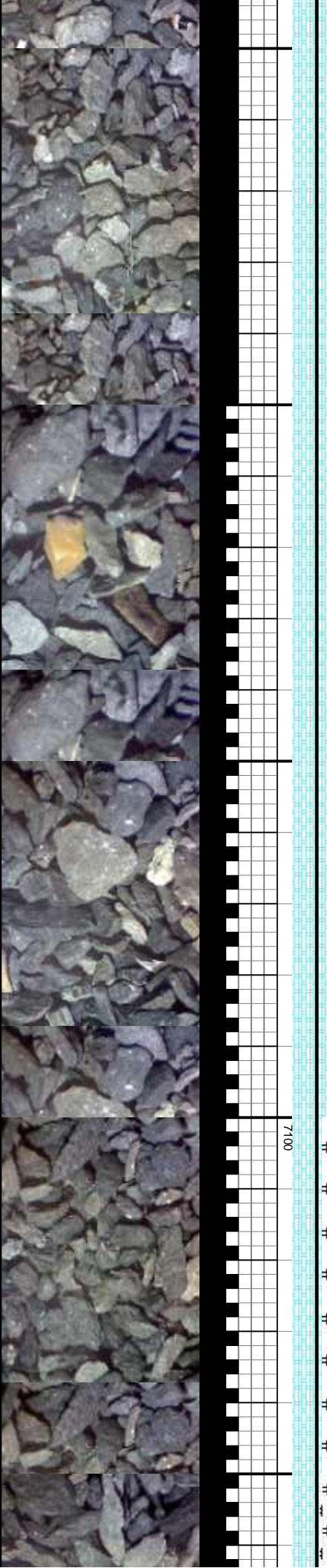


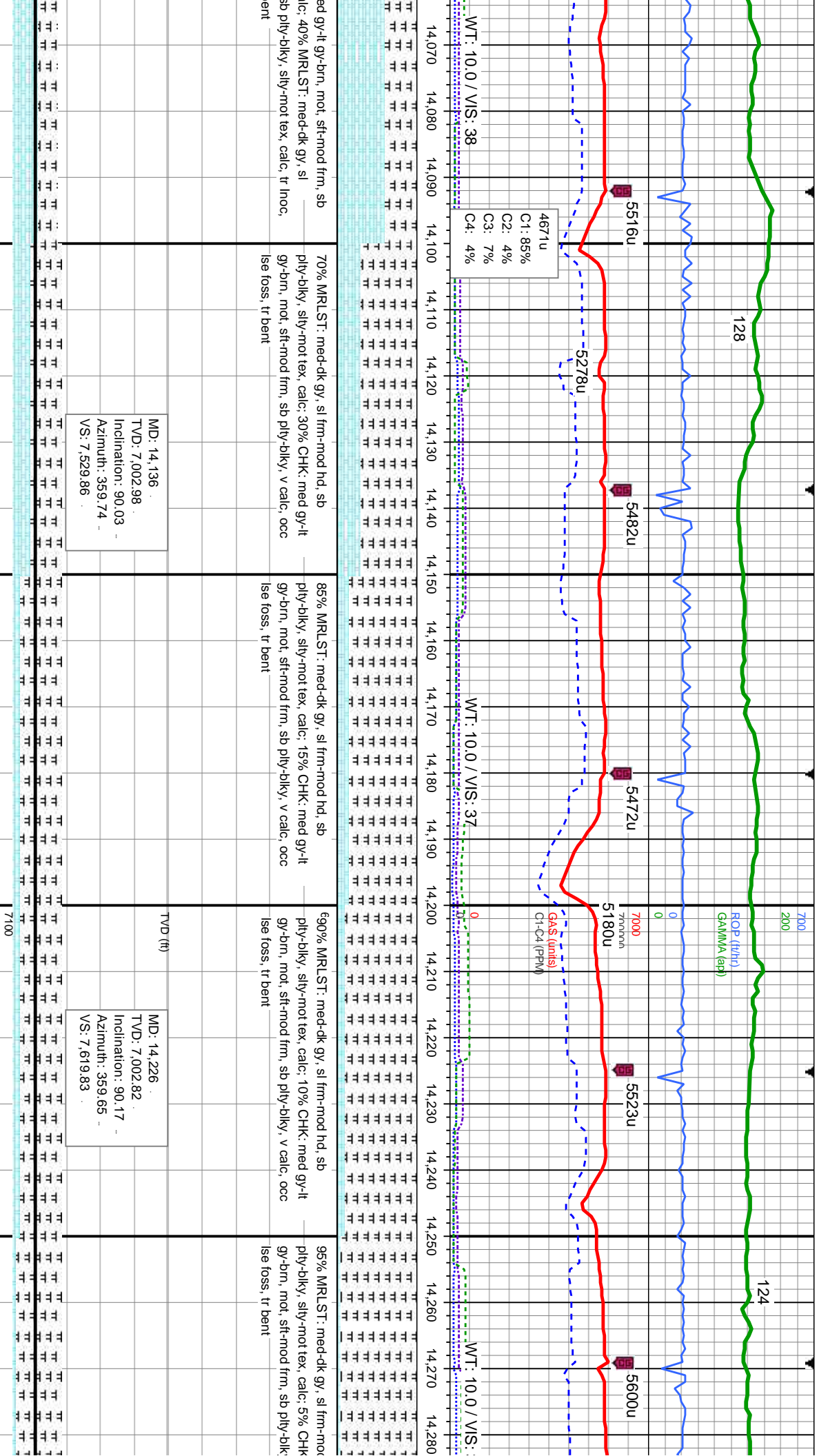
95% CHK: med gy-lt gy-brn, mot, sft-mod frm, sb ply-bkly, v calc: 5% MRLST: med-dk gy, sl frm-mod hd, sb ply-bkly, silty-mot tex, calc, tr inoc, v tr sec cal	90% CHK: med gy-lt gy-brn, mot, sft-mod frm, sb ply-bkly, v calc: 10% MRLST: med-dk gy, sl frm-mod hd, sb ply-bkly, silty-mot tex, calc, tr inoc, v tr sec cal	85% CHK: med gy-lt gy-brn, mot, sft-mod frm, sb ply-bkly, v calc: 15% MRLST: med-dk gy, sl frm-mod hd, sb ply-bkly, silty-mot tex, calc, tr inoc, tr sec cal	75% CHK: med gy-lt gy-brn, mot, sft-mod frm, sb ply-bkly, v calc: 25% MRLST: med-dk gy, sl frm-mod hd, sb ply-bkly, silty-mot tex, calc, tr inoc, tr sec cal, tr bent	60% CHK: m ply-bkly, v ce frm-mod hd, tr sec cal, tr b
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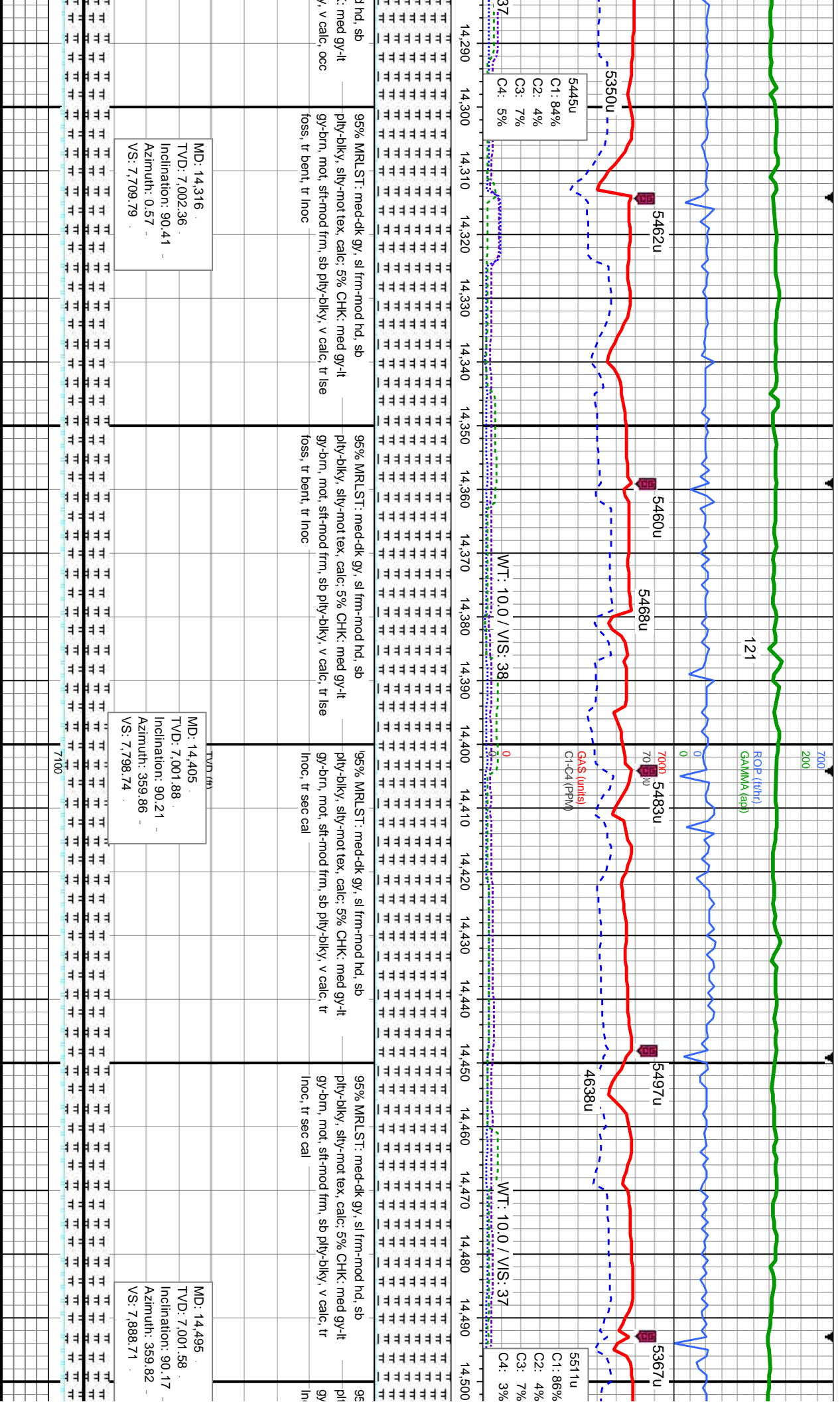
MD: 13,868
TVD: 7,003.93
Inclination: 91.34
Azimuth: 0.73
VS: 7,262.08

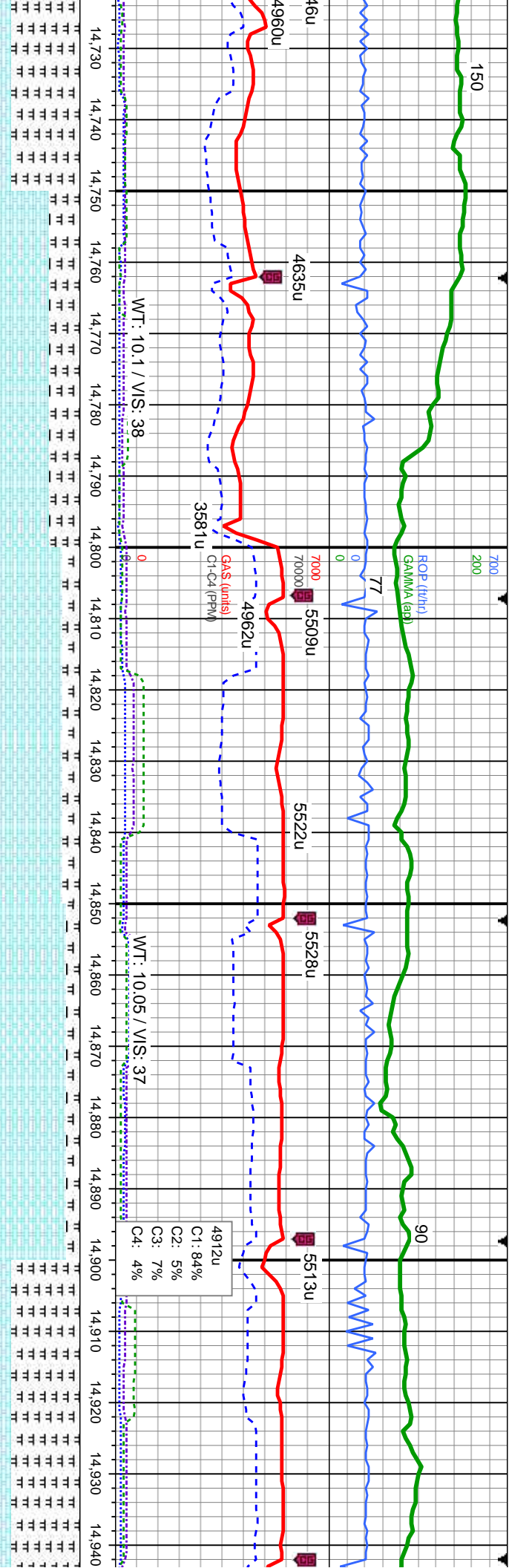
MD: 13,957
TVD: 7,002.76
Inclination: 90.17
Azimuth: 1.33
VS: 7,350.98

MD: 14,047
TVD: 7,002.81
Inclination: 89.76
Azimuth: 0.18
VS: 7,440.9









sl frm-mod hd, sb	65% CHK: med gy-lt gy-brn, mot, sft-mod frm, sb	60% CHK: med gy-lt gy-brn, mot, sft-mod frm, sb	85% CHK: med gy-lt gy-brn, mot, sft-mod frm, sb	80% MRLST: med-dk gy, sl frm-mod hd, sb
ply-bkly, v calc, tr	ply-bkly, v calc: 35% MRLST: med-dk gy, sl	ply-bkly, v calc: 20% MRLST: med-dk gy, sl	ply-bkly, v calc: 15% MRLST: med-dk gy, sl	ply-bkly, sily-mot tex, calc: 20% CHK: med gy-lt
tr lse foss, tr sec cal	tr lse foss, tr sec cal	tr lse foss, tr sec cal	tr lse foss, tr sec cal	cal, tr lse foss, v tr lnc

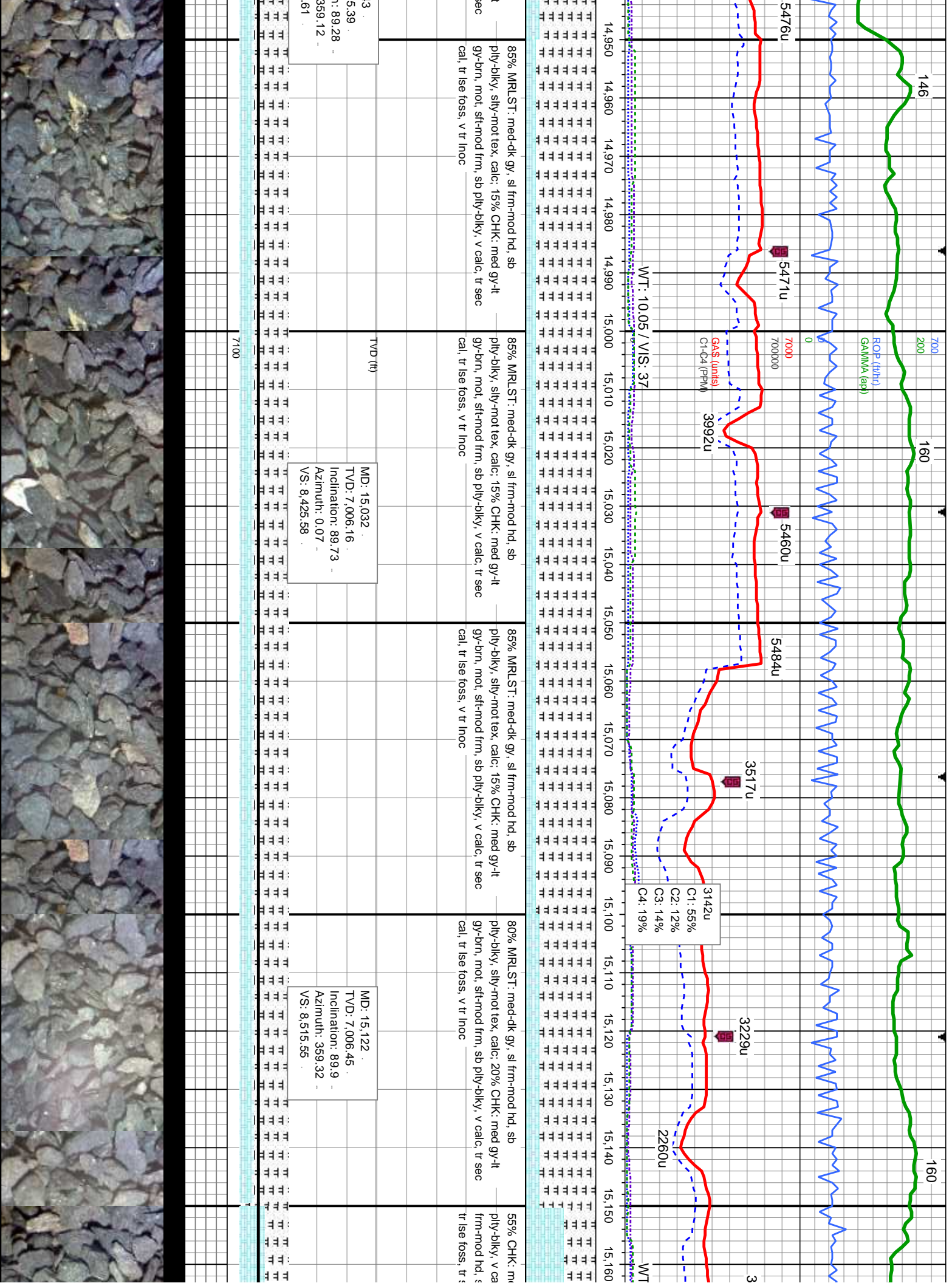
MD: 14,764
TVD: 7,003.31
Inclination: 89.35
Azimuth: 359.91
VS: 8,157.65

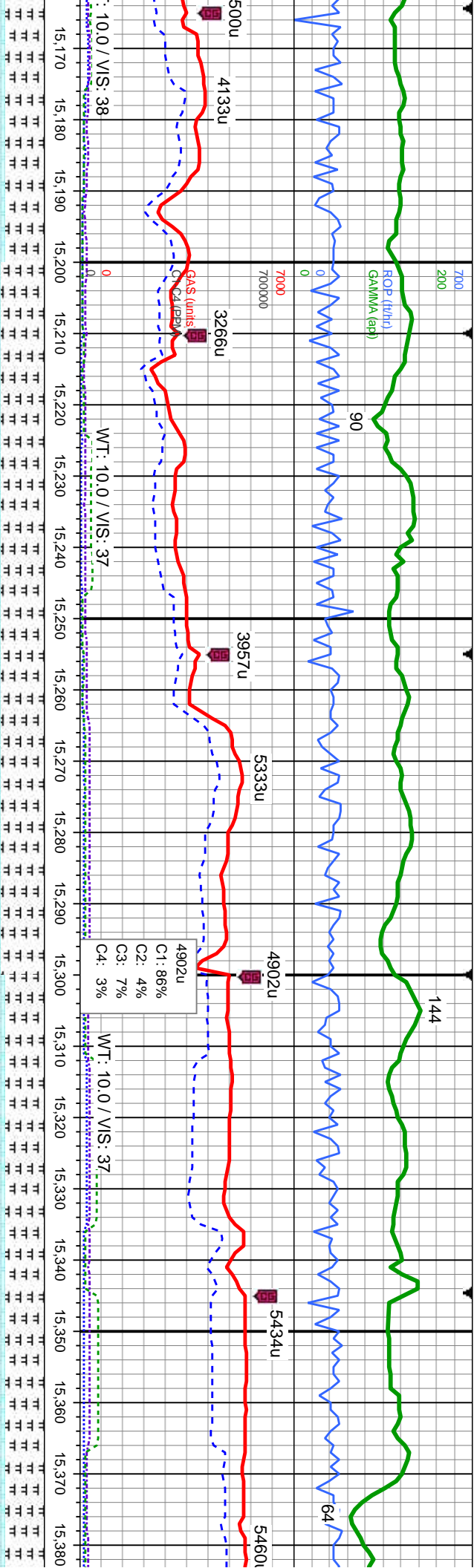
TVD (ft)

MD: 14,853
TVD: 7,004.32
Inclination: 89.35
Azimuth: 359.37
VS: 8,246.62

MD: 14,94
TVD: 7,00
Inclination:
Azimuth:
VS: 8,336

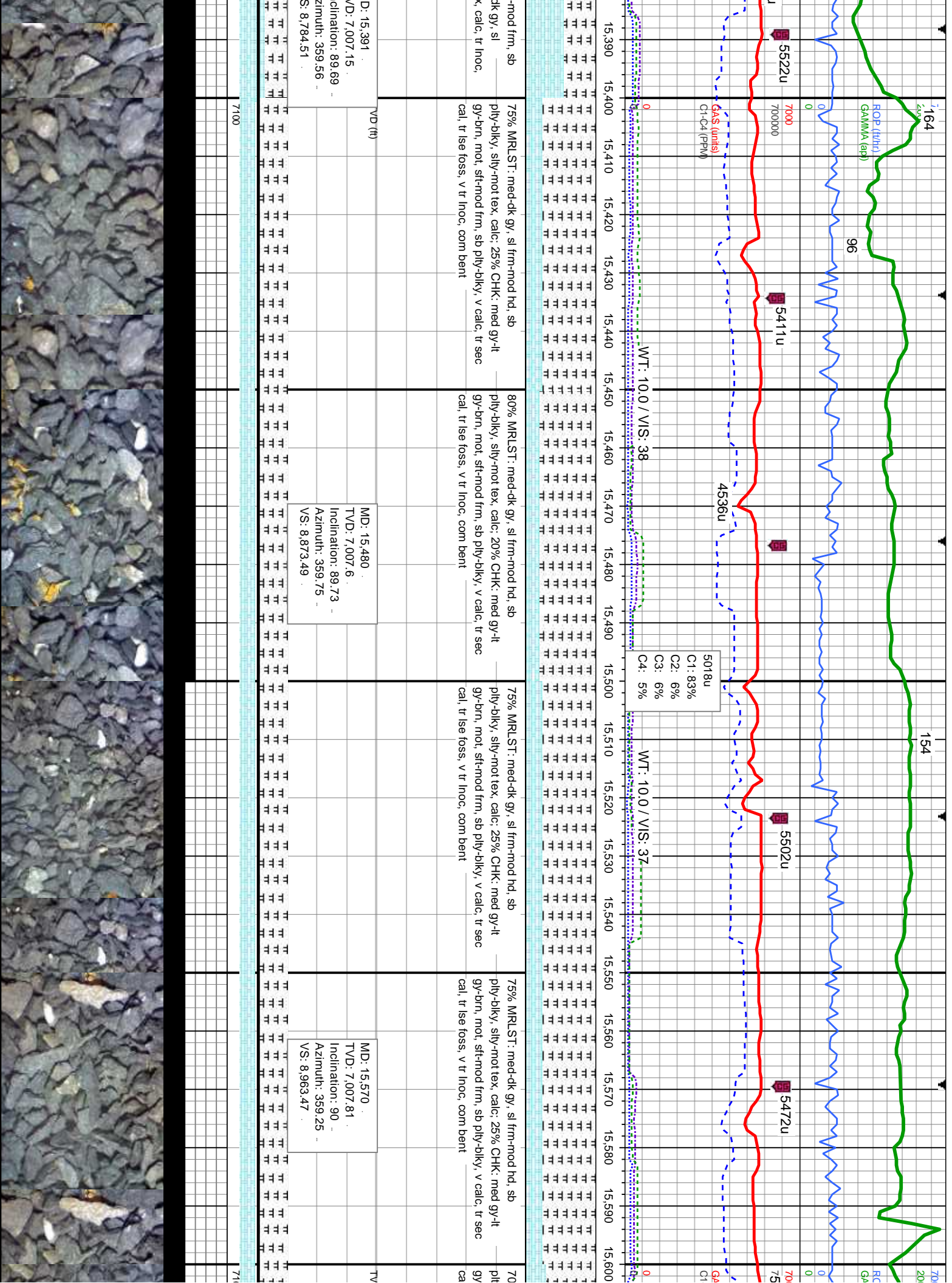


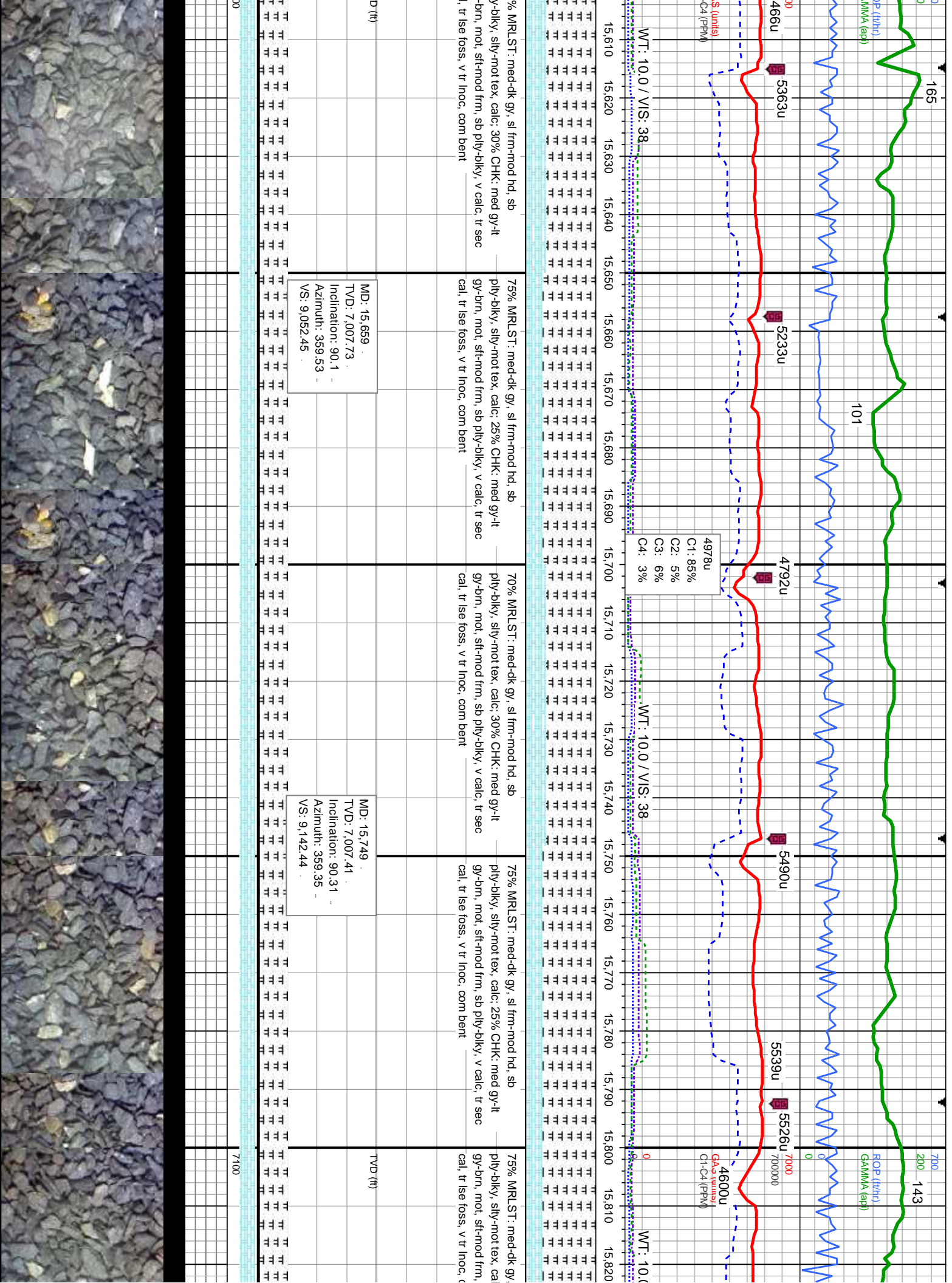


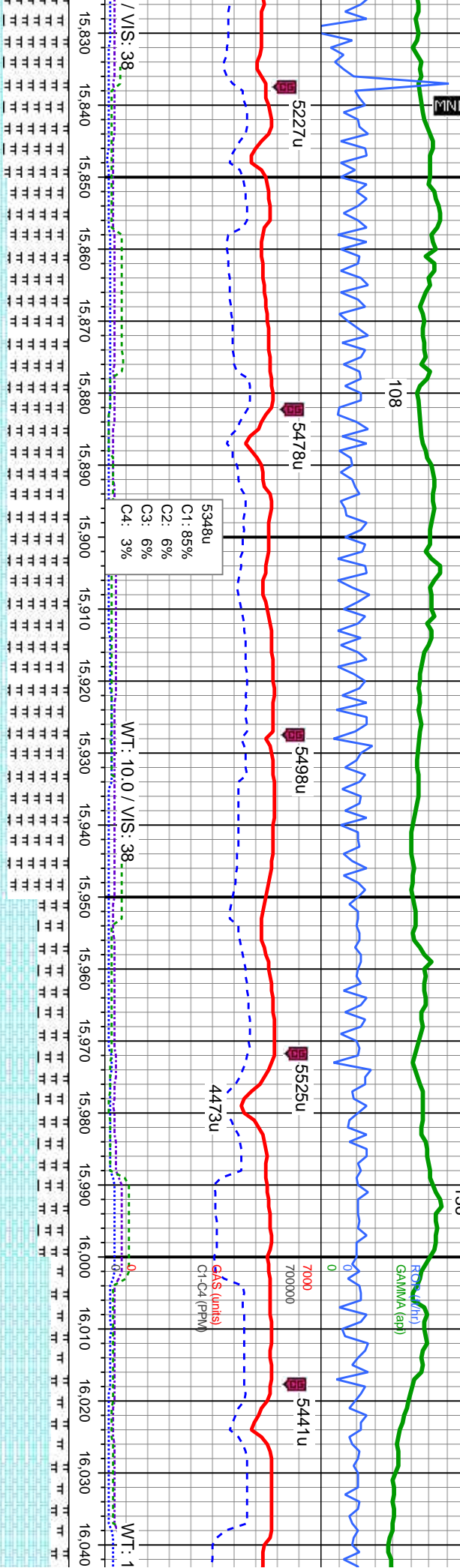


med gy-it gy-brn, mot, sft-mod frm, sb	50% CHK: med gy-it gy-brn, mot, sft-mod frm, sb	50% CHK: med gy-it gy-brn, mot, sft-mod frm, sb	55% CHK: med gy-it gy-brn, mot, sft-mod frm, sb	55% CHK: med gy-it gy-brn, mot, sft
ic: 45% MRLST: med-dk gy, sl	ply-blky, v calc: 50% MRLST: med-dk gy, sl	ply-blky, v calc: 50% MRLST: med-dk gy, sl	ply-blky, v calc: 45% MRLST: med-dk gy, sl	ply-blky, v calc: 45% MRLST: med-
sb ply-blky, silty-mot tex, calc, tr inoc,	frm-mod hd, sb ply-blky, silty-mot tex, calc, tr inoc,	frm-mod hd, sb ply-blky, silty-mot tex, calc, tr inoc,	frm-mod hd, sb ply-blky, silty-mot tex, calc, tr inoc,	frm-mod hd, sb ply-blky, silty-mot tex
tr lse foss, tr sec cal, abnt bent	tr lse foss, tr sec cal, abnt bent	tr lse foss, tr sec cal, abnt bent	tr lse foss, tr sec cal, abnt bent	tr lse foss, tr sec cal, abnt bent
MD: 15.212 TVD: 7,006.56 Inclination: 89.97 Azimuth: 359.02 VS: 8,605.54				
MD: 15.301 TVD: 7,006.74 Inclination: 89.79 Azimuth: 359.55 VS: 8,694.53				
7100				









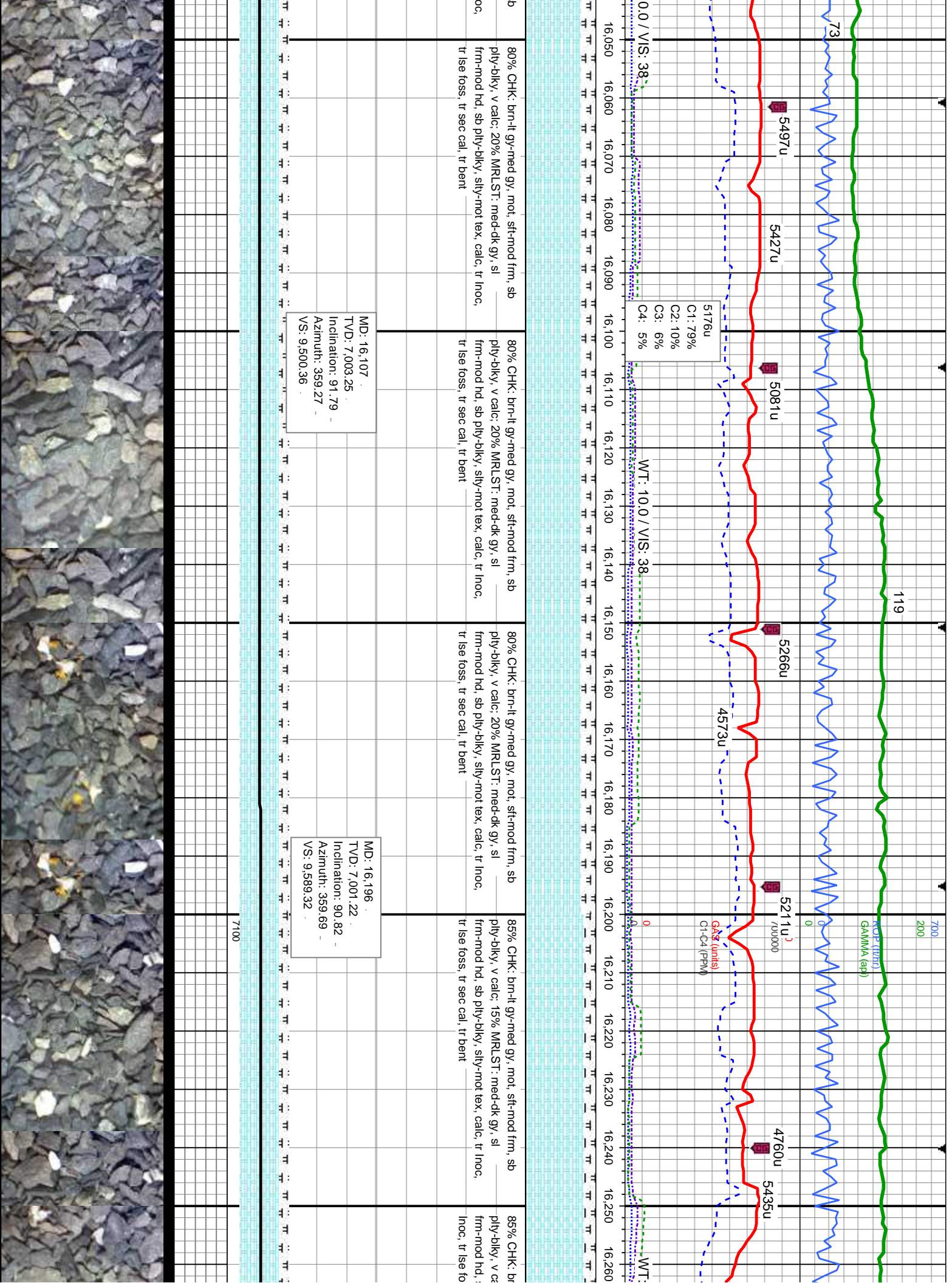
sl frm-mod hd, sb	70% MRLST: med-dk gy, sl frm-mod hd, sb	70% MRLST: med-dk gy, sl frm-mod hd, sb	65% CHK: brn-it gy-med gy, mot, sft-mod frm, sb	80% CHK: brn-it gy-med gy, mot, sft-mod frm, s
c: 25% CHK: med gy-it	ply-biky, sily-mot tex, calc: 30% CHK: med gy-it	ply-biky, sily-mot tex, calc: 30% CHK: med gy-it	ply-biky, v calc: 35% MRLST: med-dk gy, sl	ply-biky, v calc: 20% MRLST: med-dk gy, sl
sb ply-biky, v calc, tr sec	gy-brn, mot, sft-mod frm, sb ply-biky, v calc, tr sec	gy-brn, mot, sft-mod frm, sb ply-biky, v calc, tr sec	frm-mod hd, sb ply-biky, sily-mot tex, calc, tr inoc,	frm-mod hd, sb ply-biky, sily-mot tex, calc, tr In
room bent	cal, tr lse foss, v tr inoc, com bent	cal, tr lse foss, v tr inoc, com bent	tr lse foss, tr sec cal, tr bent	tr lse foss, tr sec cal, tr bent

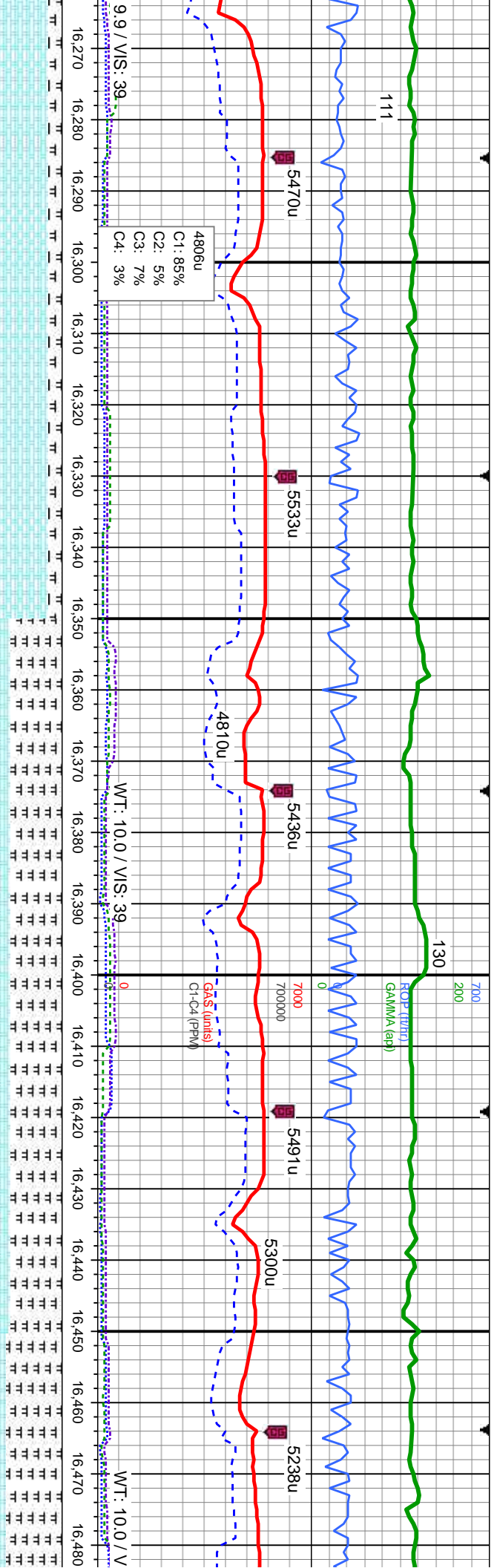
MD: 15,838
TVD: 7,006.91
Inclination: 90.34
Azimuth: 359.2
VS: 9,231.42

MD: 15,928
TVD: 7,006.02
Inclination: 90.79
Azimuth: 359.14
VS: 9,321.41

MD: 16,017
TVD: 7,005.03
Inclination: 90.48
Azimuth: 359.32
VS: 9,410.39





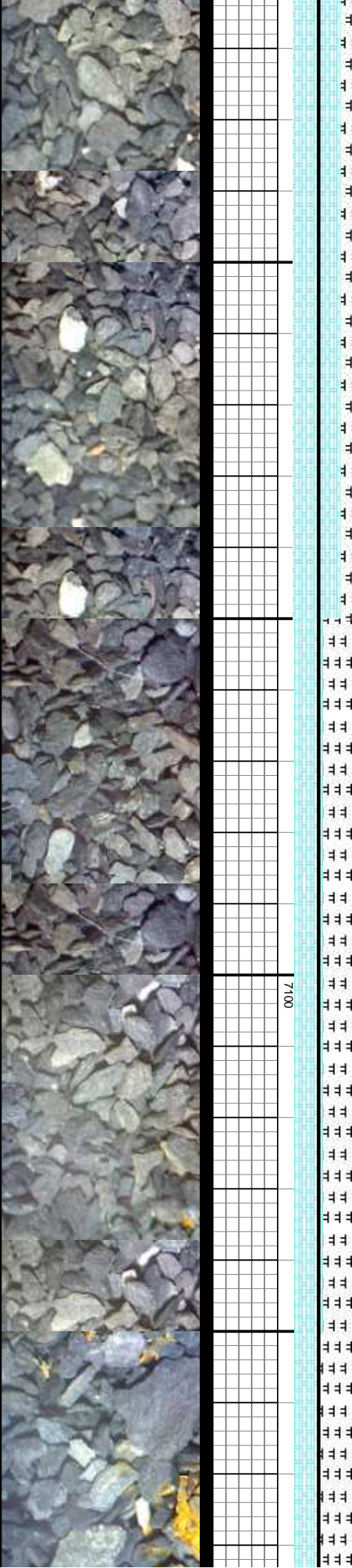


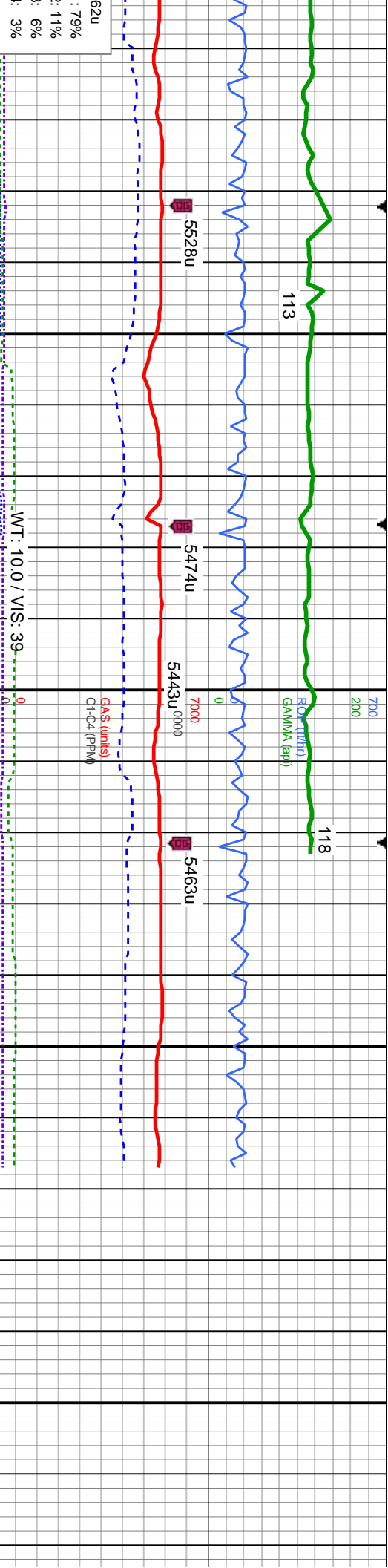
brn-lt gy-med gy, mot, sft-mod frm, sb	85% CHK: brn-lt gy-med gy, mot, sft-mod frm, sb ply-bkly, v calc: 15% MRLST: med-dk gy, sl frm-mod hd, sb ply-bkly, silty-mot tex, calc, tr inoc, tr lse foss, tr sec cal, tr bent	60% MRLST: med-dk gy, sl frm-mod hd, sb ply-bkly, silty-mot tex, calc: 40% CHK: brn-lt gy-med gy, mot, sft-mod frm, sb ply-bkly, v calc, tr inoc, tr lse foss, tr sec cal, tr bent	60% MRLST: med-dk gy, sl frm-mod hd, sb ply-bkly, silty-mot tex, calc: 40% CHK: brn-lt gy-med gy, mot, sft-mod frm, sb ply-bkly, v calc, tr inoc, tr lse foss, tr sec cal, tr bent	65% MRLST: med-dk gy, sl frm-mo ply-bkly, silty-mot tex, calc: 35% CH gy-med gy, mot, sft-mod frm, sb ply tr inoc, tr lse foss, tr sec cal, tr bent
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MD: 16,286
TVD: 7,000.15
Inclination: 90.55
Azimuth: 358.54
VS: 9.679.3

MD: 16,375
TVD: 6,999.4
Inclination: 90.41
Azimuth: 358.56
VS: 9.768.3

MD: 16,465
TVD: 6,998.87
Inclination: 90.27
Azimuth: 358.07
VS: 9.858.3





16.710 16.720 16.730 16.740 16.750 16.760 16.770 16.780 16.790 16.800 16.810 16.820 16.830 16.840 16.850 16.860 16.870 16.880 16.890 16.900 16.910 16.920

90% MRLST: med-dk gy, sl frm-mod hd, sb
ply-biky, silty-mot tex, calc: 10% CHK, brn-lt
gy-med gy, mot, sft-mod frm, sb ply-biky, v calc, tr
Inoc, tr lse foss, tr sec cal, tr bent

98% MRLST: med-dk gy, sl frm-mod hd, sb
ply-biky, silty-mot tex, calc: 15% CHK, brn-lt
gy-med gy, mot, sft-mod frm, sb ply-biky, v
calc, tr inoc, tr lse foss, tr sec cal, tr bent

MD: 16,734
TVD: 6,998
Inclination: 90.1
Azimuth: 357.81
VS: 10,127.26

MD: 16,823
TVD: 6,997.84
Inclination: 90.1
Azimuth: 357.79
VS: 10,216.26

MD: 16,867
TVD: 6,997.77
Inclination: 90.1
Azimuth: 357.79
VS: 10,260.25

PROJECTION TO BIT

Thank you for using
Columbine Logging, Inc.
TD @ 16,867 MD
10/1/14 @ 11:38 MST

