

# COLUMBINE LOGGING

Scale: 5" / 100'  
Measured Depth Log

Well Name    Loeffler K1-65HN

Location    SEC. 1, T4N, R66W

State    COLORADO

Country    USA

API Number    05-123-37739

Region    DJ BASIN

Spud Date    9/27/2013

Surface Coordinates    1650' FNL, 288' FWL

Bottom Hole Coordinates    2554' FNL, 535' FEL

County    WELD

Rig Number    PRECISION 829

Field    WATTENBERG

Drilling Completed    10/5/2013

Ground Elevation    4666'

K.B. Elevation    4682'

Logged Interval    6300'    To    11544'

Total Depth    11544'

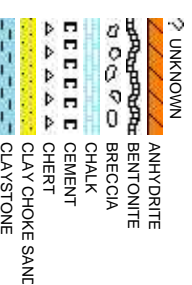
Formation    NIOBRARA C CHALK

Type of Drilling Fluid    LSND

Company    Noble Energy, Inc.  
Address    1626 BROADWAY  
DENVER, COLORADO

Name    Holly Duncan  
Company    Noble Energy  
Address    1626 BROADWAY  
DENVER, COLORADO  
303.389.3600

Wellsite Geologists



nc.































































ANHYDRITE STRINGER  
BENTONITE STRINGER  
COAL STRINGER  
DOLOMITE STRINGER

---


















Eli Smith  
Brad Glover

Symbol	Rock Name	Symbol	Rock Name
	CONGLOMERATE		METAMORPHIC
	DOLOMITE		NO SAMPLE
	DOLOMITIC LIMESTONE		SANDSTONE
	GRANITE		SALT-PEPPER SAND
	GYPSUM		SHALE
	IGNEOUS		SHALE COLORED
	LIMESTONE		SHALE GRAY
	SIDERITE or LIMONITE		WELDED TUFF

## Fossils

- |   |                |   |                    |   |                      |   |                    |   |                           |
|---|----------------|---|--------------------|---|----------------------|---|--------------------|---|---------------------------|
|   | <b>Fossils</b> |  | GASTROPOD          |  | ARGILLITE GRAN       |  | HEAVY MINERAL      |  | ANHYDRITE STRINGER        |
|  | INOCERAMUS     |  | B BENTONITE        |  | KAOLIN               |  | BENTONITE STRINGER |   |                           |
|   | ALGAE          |  | O OOLITE           |  | BITUMENOUS SUBSTANCE |  | MARLSTONE          |  | COAL STRINGER             |
|   | AMPHIPORA      |  | O STRACOD          |  | MICACEOUS            |  | MICACEOUS          |  | DOLOMITE STRINGER         |
|   | BELEMNITE      |  | P PELECYPOD        |  | MINERAL CRYSTALS     |  | GYPSUM STRINGER    |   |                           |
|   | BIOCLASTIC     |  | P PELLET           |  | CARBONACEOUS FLAKES  |  | NODULES            |  | LIMESTONE STRINGER        |
|   | BRACHIOPOD     |  | P PISOLITE         |  | CHERT                |  | PHOSPHATE PELLETS  |  | MARLSTONE (CAL.) STRINGER |
|   | BRYOZOA        |  | P PLANT REMAINS    |  | COAL - THIN BEDS     |  | PYRITE             |  | MARLSTONE (DOL.) STRINGER |
|   | CEPHALOPOD     |  | S SCAPHOPOD        |  | DOLOMITE             |  | SALT CAST          |  | SANDSTONE STRINGER        |
|   | CORAL          |  | III STROMATOPOROID |  | FELDSPAR             |  | SANDY              |  | SHALE STRINGER            |
|   | CRINOID        |   |                    |  | FERRUGINOUS PELLET   |  | SILTY              |  | SILTSTONE STRINGER        |
|   | ECHINOID       |   |                    |  | FERRUGINOUS          |  | TUFFACEOUS         |   |                           |
|   | FISH           |   |                    |   |                      |   |                    |   |                           |
|   | FORAMINIFERA   |  | ANHYDRITIC         |  | GLAUCONITE           |   |                    |   |                           |
|   | FOSSIL         |  | ARGILLACEOUS       |  | GYPSIFEROUS          |   |                    |   |                           |
- Stringer

# Oil Show

- |   |   |                  |   |    |                        |   |   |              |
|---|---|------------------|---|----|------------------------|---|---|--------------|
|  | P | PINPOINT         |  | W  | WIRELINE TESTED - LEFT |  | E | EARTHY       |
|  | V | VUGGY            |  | W  | WIRELINE TESTED - RT   |  | F | FINELYXLN    |
|  | D | DEAD             |  | DS | DRILL STEM TEST        |  | G | GRAINSTONE   |
|  | E | EVEN             |  | MD | MIN DEPTH              |  | L | LITHOGRAPHIC |
|  | Q | QUESTIONABLE     |  | M  | MUDSTONE               |  | M | MICROXLN     |
|  | S | SPOTTED STAINING |  | C  | CONNECTION (UP)        |   |   |              |

## Porosity

- |                 | MIN DEPTH (DOWN)      | ANGULAR | PACKSTONE  |
|-----------------|-----------------------|---------|------------|
| <b>Porosity</b> | CONNECTION (DOWN)     |         |            |
|                 | CONNECTION GAS        | ROUNDED | WACKESTONE |
| E EARTHY        | CONNECTION GAS (LEFT) | SUBANG  |            |
| F FENESTRAL     | TRIP GAS              | SUBRAND |            |
|                 | REVERSE FAULT         |         |            |
|                 | NORMAL FAULT          |         |            |
|                 | OVERTURNED STRATA     |         |            |
|                 | CASING                |         |            |
| F FRACTURE      | TRIP GAS (LEFT)       |         | M MODERATE |

✕ INTERCRYSTALLINE	▼ SIDEWALL CORE (LEFT)	⒫ POOR
⬇️ DOWN TIME GAS	▲ SIDEWALL CORE (RIGHT)	⒱ WELL
⬅️ DOWN TIME GAS (LEFT)	▨ SLIDE	
⬇️ CORE - LOST	🚧 SURVEY	
⬛ CORE - RECOVERED	🔍 CRYPTOXLN	
🔍 ORGANIC		
🔍 MOLDIC		
🔍 INTERROTLITIC		

Slide/Rotate

ROP  
ROF  
GAMMA

ROP Limits  
0 - 500 ft/hr  
Gamma Limits  
0 - 250 API

Gas Limits  
0 - 6000 units

Total Gas & Chromatograph  
GAS  
C1  
C2  
C3  
C4

COLUMBINE LOGGING INC. RIGGED  
UP ON 09/28/2013 MANNED  
2-PERSON LOGGING WITH  
BLOODHOUND GAS  
CHROMATOGRAPH UNIT # 0715

Begin Build  
9/30/13 @ 20:12 MST  
Begin 50' Samples

Depth Labels

% Lith

Bit Data  
Bit #: 2  
Type: SI666  
Size: 8.75  
Depth In: 645'  
Jets: 3x13, 3X14  
S/N: JH4689

Well Bore  
TVD

TVD (ft)

MD: 6,276  
Inclination: 7.48  
Azimuth: 193.65  
TVD: 6,230.62  
VS: -28.97

MD: 6,321  
Inclination: 8.97  
Azimuth: 185.25  
TVD: 6,275.16  
VS: -28.8

MD: 6,366  
Inclination: 11.95  
Azimuth: 183.22  
TVD: 6,319.41  
VS: -27.88

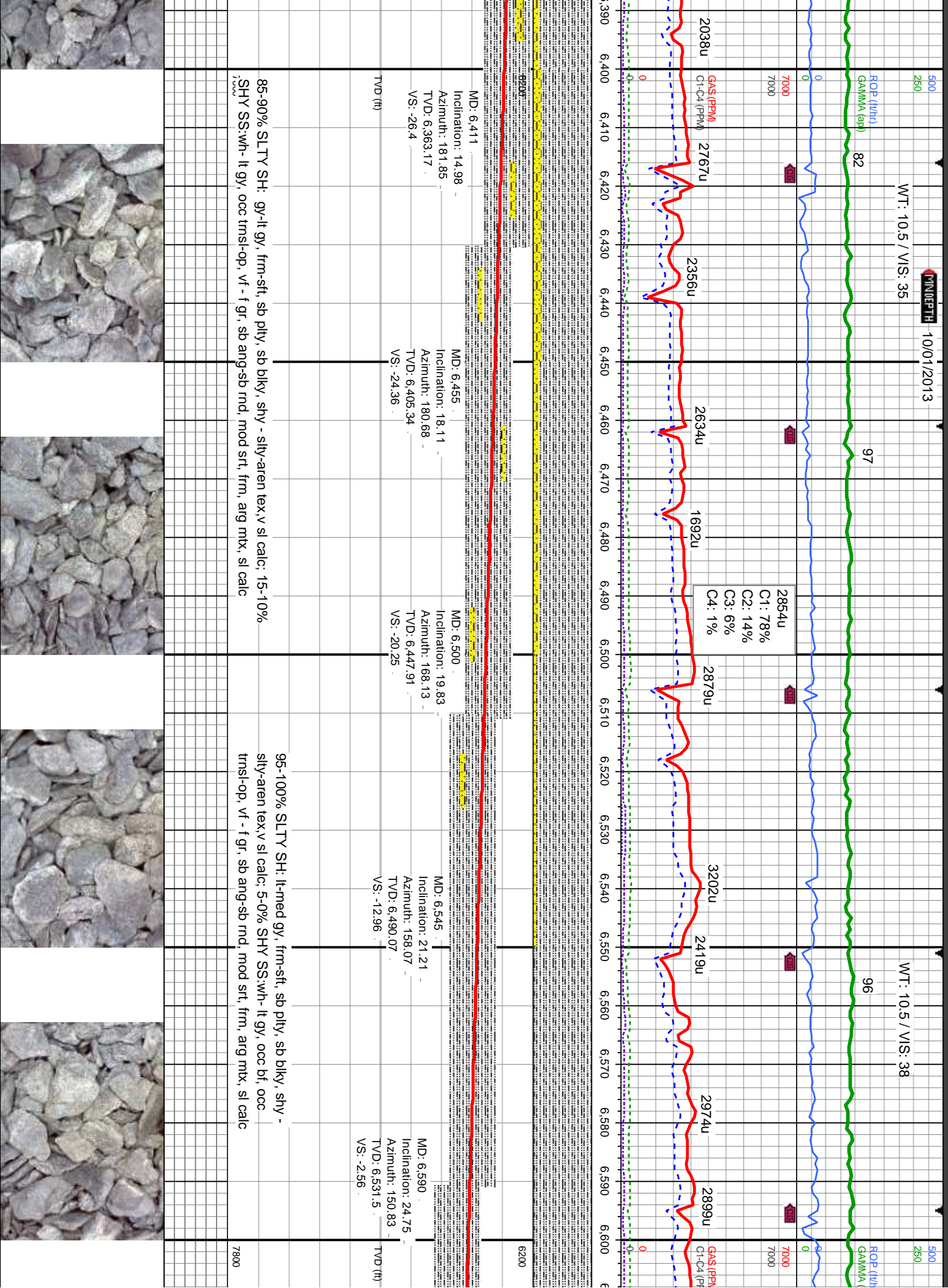
Oil Show

E  
G  
M  
F  
T  
S

100% SLTY SH: lt-med gy, bnshgy, pily-sb blk, fiss  
ip, sl frm-mod hd, silty-aren, rthy lsfr, tr pvr, tr slty ss

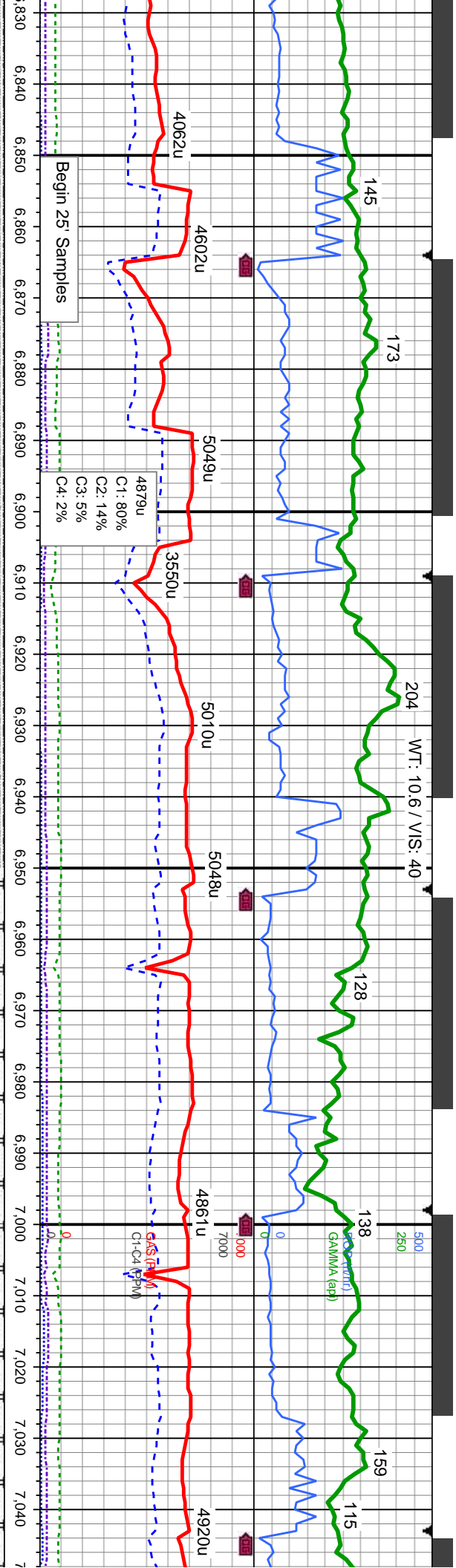
Images











Logger Top Sharon Springs  
MD 6876' / TVD 6767'

Logger Top Sharon  
Springs Marker  
MD 6924' / TVD 6800'

Logger Top Niobrara  
MD 6930' / TVD 6805'

Logger Top A Chalk  
MD 6964' / TVD 6827'

Logger Top A Marl  
MD 7000' / TVD 6851'

MD: 7,038  
Inclination: 52.27  
Azimuth: 99.26  
TVD: 6,875.09  
VS: 254.71

MD: 6,859  
Inclination: 43.63  
Azimuth: 119.06  
TVD: 6,754.9  
VS: 124.09

MD: 6,903  
Inclination: 45.31  
Azimuth: 113.1  
TVD: 6,786.31  
VS: 153.77

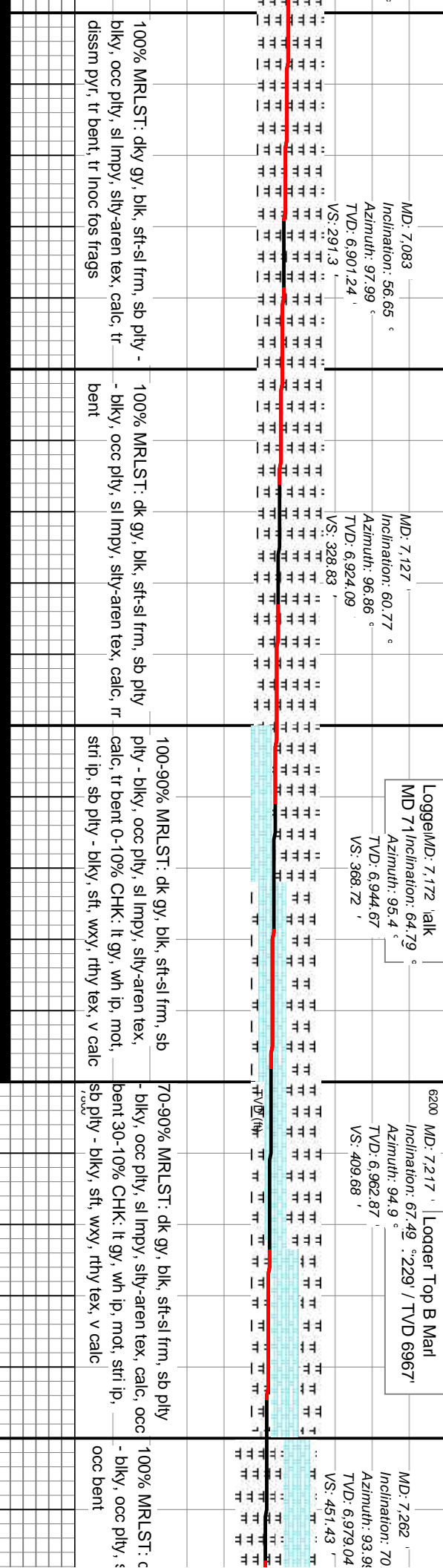
MD: 6,948  
Inclination: 48.12  
Azimuth: 107.99  
TVD: 6,817.17  
VS: 186.02

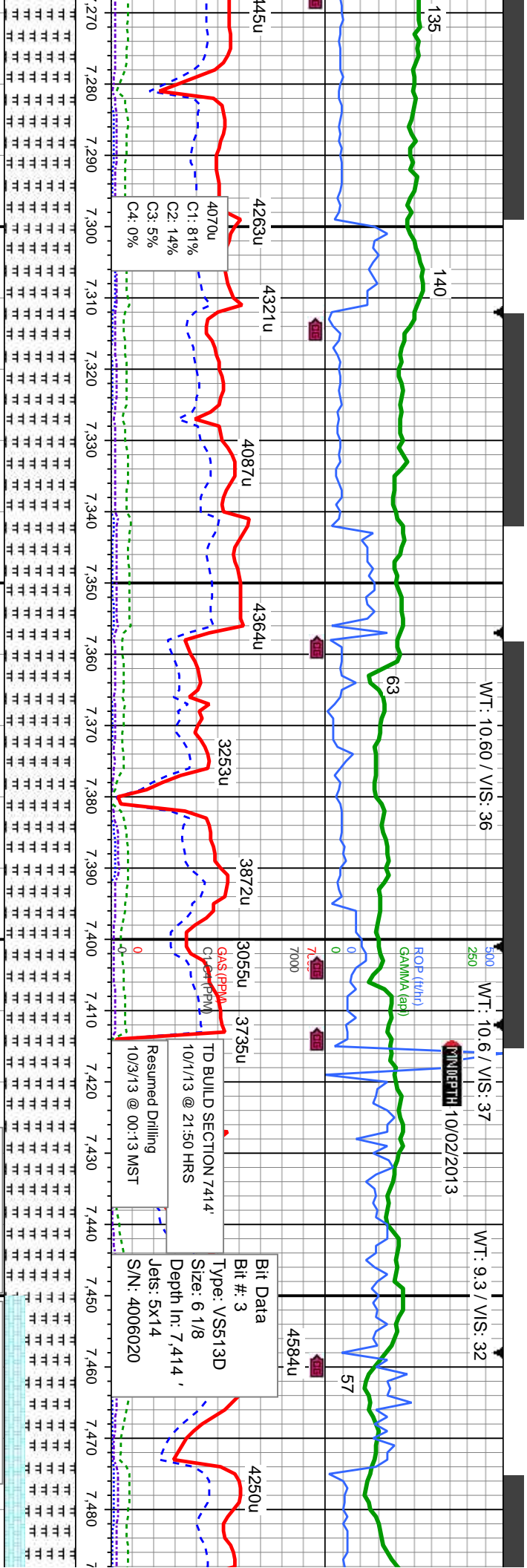
MD: 6,993  
Inclination: 49.7  
Azimuth: 103.83  
TVD: 6,846.76  
VS: 219.77

gy, occ lt  
biky, sb blk, sb  
100% SLTY SH: med-dk gy, sft-frn,  
pity-sb blk, sb blk, sb wxy, silty-aren tex,  
abt bent  
100-95% SLTY SH: med-dk gy, sft-frn,  
pity-sb blk, sb blk, sb wxy, silty-aren tex  
0-5% MRLST: dk gy, blk, sft-sl frm, pity - sb  
biky, sl lmpy, silty-aren tex, calc, tr bent  
70-15% CHK: lt gy, wh ip, mot, str ip, sb pity -  
biky, sft, wxy, rthy tex, v calc 30-85% MRLST: dk  
gy, blk, sft-sl frm, pity - sb blk, sl lmpy,  
silty-aren tex, calc, rr pyr, rr inoc fos frags  
100% MRLST: dk gy, blk, sft-sl frm, pity -  
sb blk, sl lmpy, silty-aren tex, calc, rr  
pyr, rr inoc fos frags



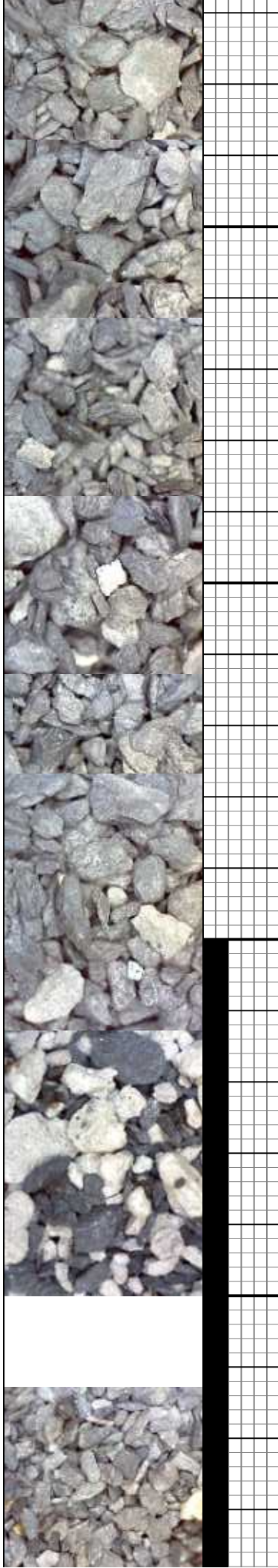




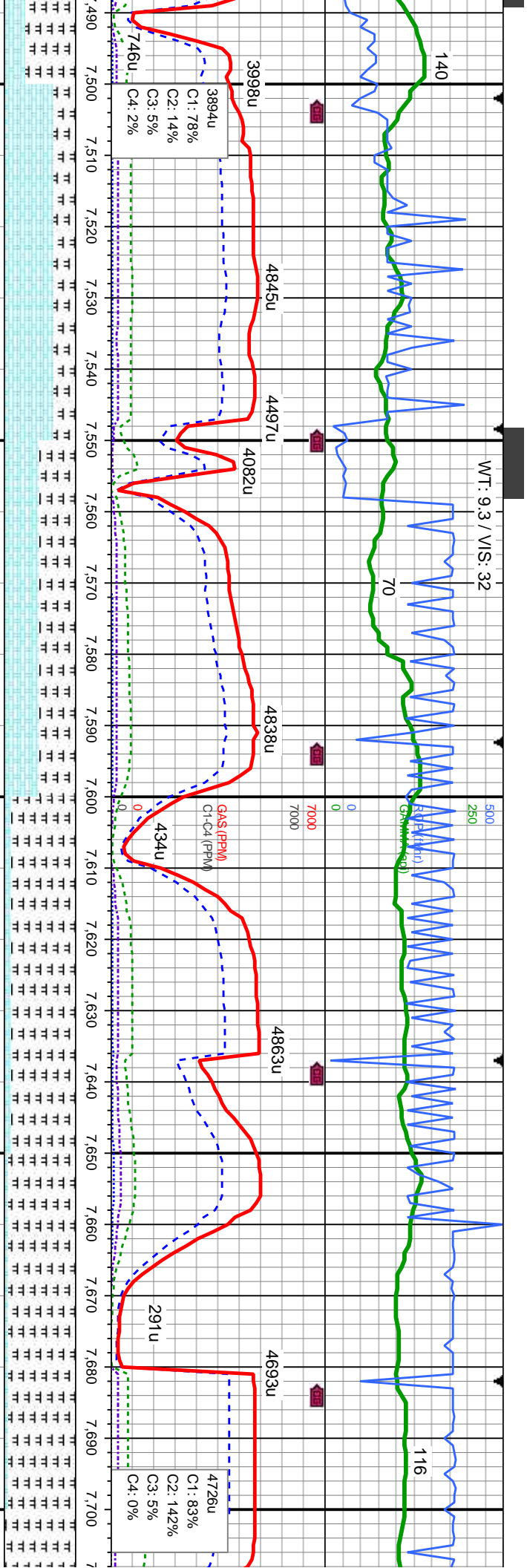


39	MD: 7.307	Inclination: 74.93	Azimuth: 92.41	TVD: 6.992.45	VS: 494.02
40	MD: 7.364	Inclination: 80.68	Azimuth: 91.74	TVD: 7.004.49	VS: 549.1
41	MD: 7.414	Inclination: 85.19	Azimuth: 90.94	TVD: 7.009.8	VS: 598.1
42	MD: 7.484	Inclination: 8	Azimuth: 91	TVD: 7.019.8	VS: 666.58

100% MRLST: dk gy, blk, sft-sl frm, sb pty	100% MRLST: dk gy, blk, sft-sl frm, sb pty	100% MRLST: dk gy, blk, sft-sl frm, sb pty	70% MRLST: dk gy, blk, sft-sl frm, blk, occ pty, sl lmpy, sily-aren tex, calc, pty 30% CHK: lgy-gy brn, mot-str pty-sb blk, rthy-sb wxy lstr, sily t
- blk, occ pty, sl lmpy, sily-aren tex, calc, bent	- blk, occ pty, sl lmpy, sily-aren tex, calc, bent	- blk, occ pty, sl lmpy, sily-aren tex, calc, bent	



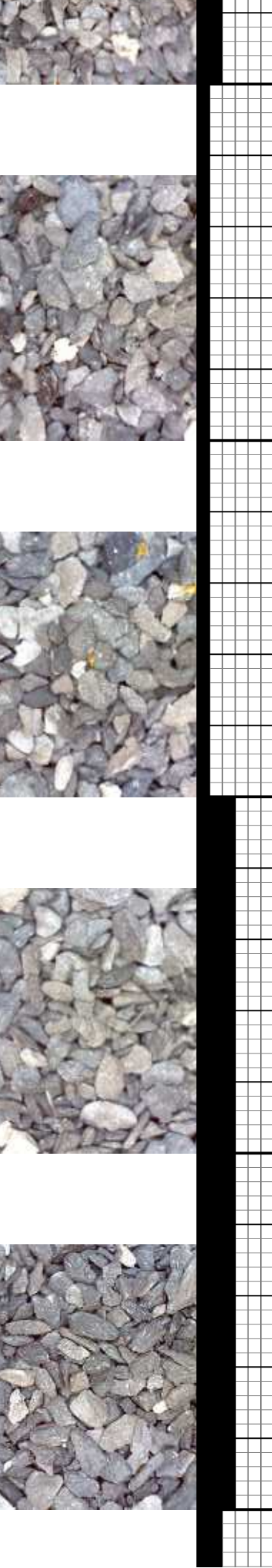




MD: 7.574  
Inclination: 86.86  
Azimuth: 91.47  
TVD: 7.026.5  
VS: 755.15

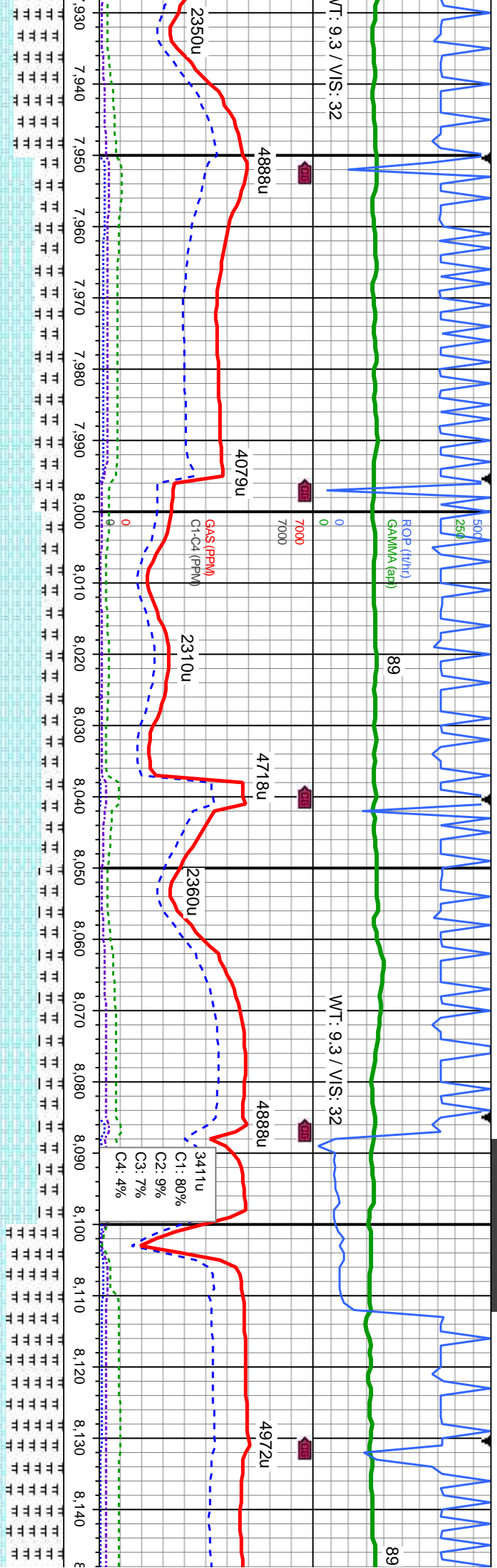
MD: 7.663  
Inclination: 87.53  
Azimuth: 91.09  
TVD: 7.030.86  
VS: 842.88

sb pty - ply-sb blk, rthy-sb wxy lstr, silty tex, v calc 30% MRLST: dk gy, blk, sft-sl frm, sb pty - blk, occ pty, sl lmpy, silty-aren tex, calc, abt bent, tr pyr	70% CHK: ltgy-gy brn, mot-stri, sft, sb ply-sb blk, rthy-sb wxy lstr, silty tex, v calc 50% MRLST: dk gy, blk, sft-sl frm, sb pty - blk, occ pty, sl lmpy, silty-aren tex, calc, abt bent, tr pyr	90% MRLST: dk gy, blk, sft-sl frm, sb pty - blk, occ pty, sl lmpy, silty-aren tex, calc, tr pyr 10% CHK: ltgy-gy brn, mot-stri, sft, sb pty-sb blk, rthy-sb wxy lstr, silty tex, v calc	95% MRLST: dk gy, blk, sft-sl frm, sb pty - blk, occ pty, sl lmpy, silty-aren tex, calc, tr pyr 5% CHK: ltgy-gy brn, mot-stri, sft, sb pty-sb blk, rthy-sb wxy lstr, silty tex, v calc	100% - blk,
--	---	--	---	----------------









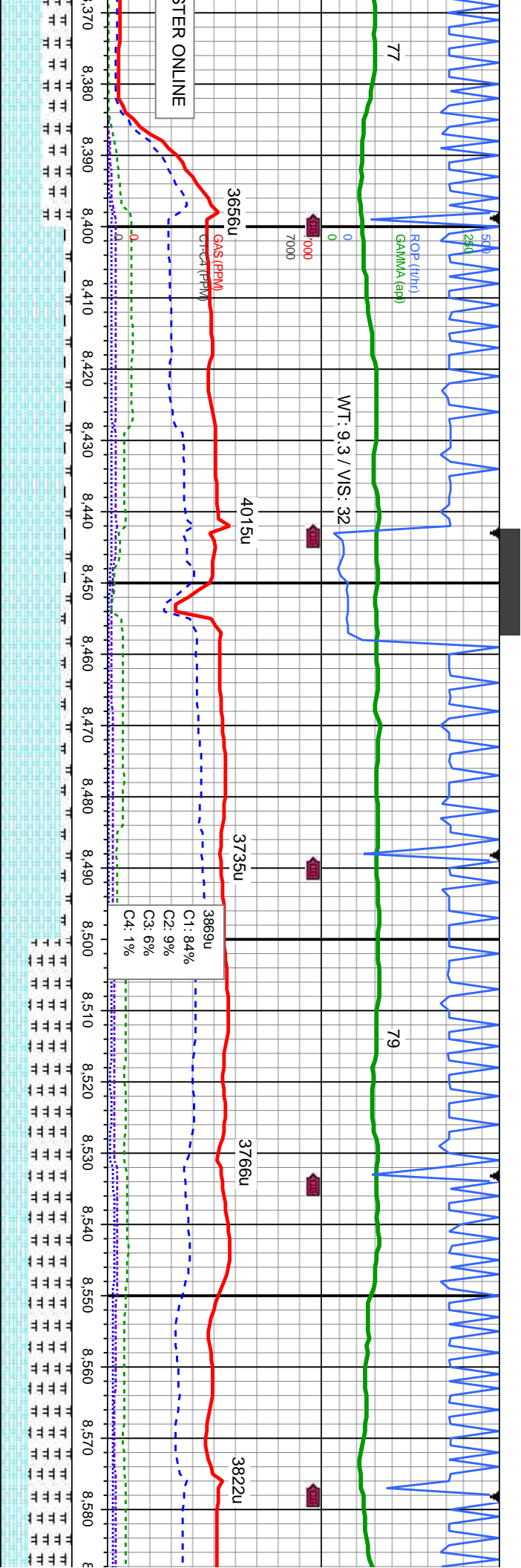
7.932	MD: 8.022
Inclination: 90.4	Inclination: 90.06
Azimuth: 88.77	Azimuth: 86.1
TVD: 7,038.26	TVD: 7,036.89
VS: 1,107.33	VS: 1,280.51

ft-sl frm, sb ply -	60% CHK: lly-gy brn, frm-sl hd, sb ply-sb	70% CHK: gy brn, brn, frm-sl hd, sb ply-sb	65% CHK: gy brn, brn, frm-sl hd, sb ply-sb	80% MRLST: dk gy, blk, sft-sl hd, sb ply -
-aren tex, calc, tr	blky, rthy lstr, v calc 40% MRLST: dk gy, blk,	blky, rthy lstr, v calc 30% MRLST: dk gy, blk,	blky, rthy lstr, v calc 35% MRLST: dk gy, blk,	blky, sly-aren tex, calc 20% CHK: gy brn, b
frm-sl hd, sb	sft-sl hd, sb ply - blk, sly-aren tex, calc	sft-sl hd, sb ply - blk, sly-aren tex, calc	sft-sl hd, sb ply - blk, sly-aren tex, calc	frm-sl hd, sb ply-sb blk, rthy lstr, v calc
calc				









MD: 8,380  
Inclination: 91.79  
Azimuth: 91.42  
TVD: 7,034.39  
VS: 1,543.7

6200

TVD (ft)

MD: 8,470  
Inclination: 90.55  
Azimuth: 90.9  
TVD: 7,032.55  
VS: 1,632.47

MD: 8,560  
Inclination: 91.23  
Azimuth: 89.55  
TVD: 7,031.15  
VS: 1,720.99

frm-sl hd, sb pily-sb blk, rthy  
MRLST: dk gy, blk, sft-sl hd,  
y-aren tex, calc

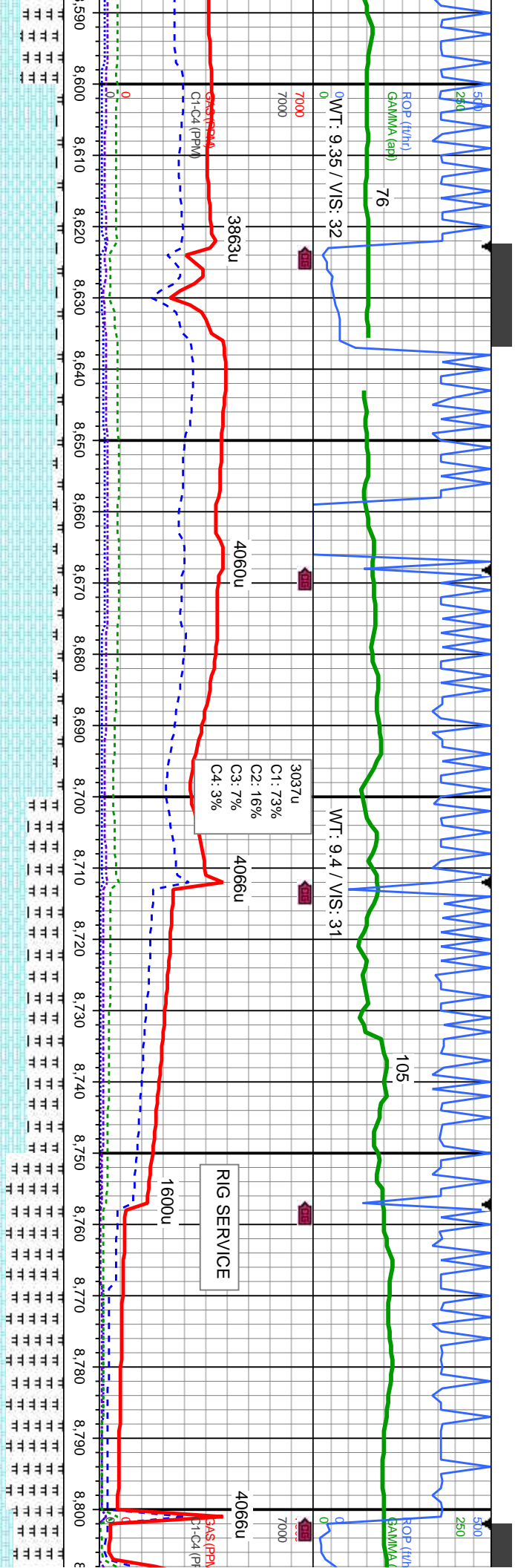
90% CHK: brn, frm-sl hd, sb pily-sb blk,  
rthy lstr, v calc 10% MRLST: dk gy, blk,  
sft-sl hd, sb pily - blk, silty-aren tex, calc

85% CHK: brn, frm-sl hd, sb pily-sb blk,  
rthy lstr, v calc 15% MRLST: dk gy, blk,  
sft-sl hd, sb pily - blk, silty-aren tex, calc

60% MRLST: dk gy, blk, sft-sl hd, sb pily -  
blk, silty-aren tex, calc 40% CHK: brn,  
frm-sl hd, sb pily-sb blk, rthy lstr, v calc

60% MRLST: dk gy, blk, sft-sl hd  
blk, silty-aren tex, calc 40% CHK  
frm-sl hd, sb pily-sb blk, rthy lstr





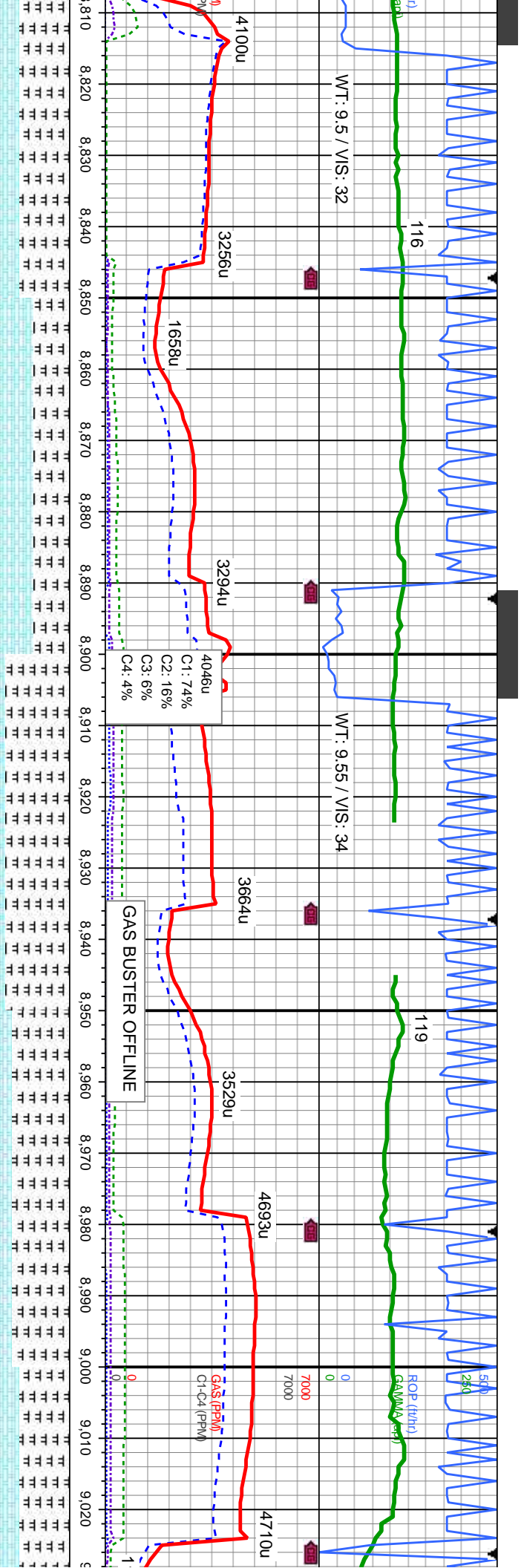
MD: 8.649  
Inclination: 90.25  
Azimuth: 90.44  
TVD: 7.030  
VS: 1.808.47

MD: 8.739  
Inclination: 92.1  
Azimuth: 91.58  
TVD: 7.028.16  
VS: 1.897.2

SB	PLY	90% CHK: brn, frm-sl hd, sb ply-sb blk, rthy lstr, v calc 10% MRLST: dk gy, blk, sft-sl hd, sb ply - blk, silty-aren tex, calc	85% CHK: brn, frm-sl hd, sb ply-sb blk, rthy lstr, v calc 15% MRLST: dk gy, blk, sft-sl hd, sb ply - blk, silty-aren tex, calc	50% CHK: brn, frm-sl hd, sb ply-sb blk, rthy lstr, v calc 50% MRLST: dk gy, blk, sft-sl hd, sb ply - blk, silty-aren tex, calc	80% MRLST: dk gy, blk, sft-sl hd, sb ply - blk, silty-aren tex, calc 20% CHK: brn, frm-sl hd, sb ply-sb blk, rthy lstr, v calc	70% N
brn,	ply					blk, s
v calc	ply					frm-sl







MD: 8,829  
Inclination: 91.14  
Azimuth: 90.78  
TVD: 7,025.61  
VS: 1,985.96

MD: 8,918  
Inclination: 89.38  
Azimuth: 90.92  
TVD: 7,025.21  
VS: 2,073.67

MD: 9,008  
Inclination: 89.85  
Azimuth: 91.03  
TVD: 7,025.81  
VS: 2,162.41

MRLST: dk gy, blk, sft-sl hd, sb pty -  
lty-aren tex, calc 30% CHK: brn,  
hd, sb pty-sb blk, rthy lstr, v calc

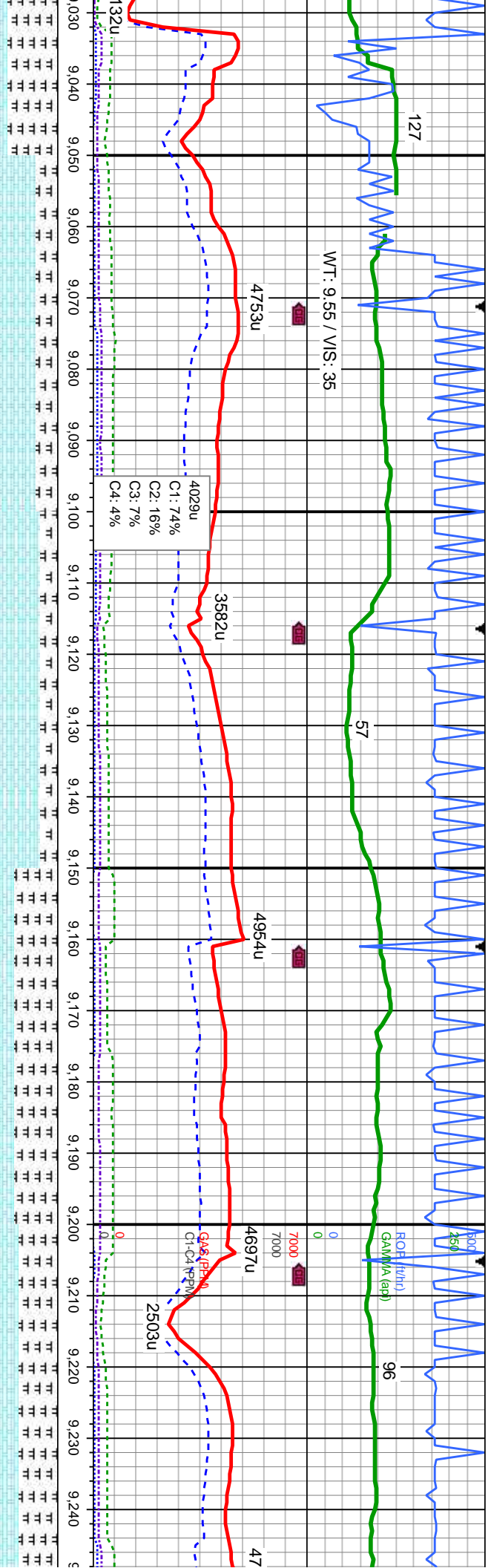
50% MRLST: dk gy, blk, sft-sl hd, sb pty -  
blk, sly-aren tex, calc 50% CHK: brn,  
frm-sl hd, sb pty-sb blk, rthy lstr, v calc

90% MRLST: dk gy, blk, sft-sl hd, sb pty -  
blk, sly-aren tex, calc 10% CHK: brn,  
frm-sl hd, sb pty-sb blk, rthy lstr, v calc




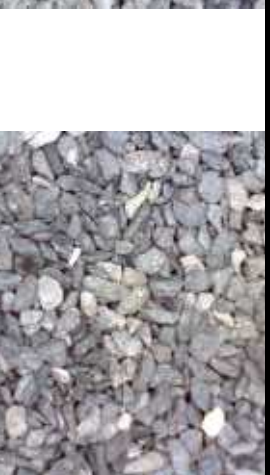

80% MRLST: dk gy, blk, sft-sl hd, sb pty -  
blk, sly-aren tex, calc 20% CHK: brn,  
frm-sl hd, sb pty-sb blk, rthy lstr, v calc

70% MRLST: dk gy, blk,  
blk, sly-aren tex, calc 3  
frm-sl hd, sb pty-sb blk

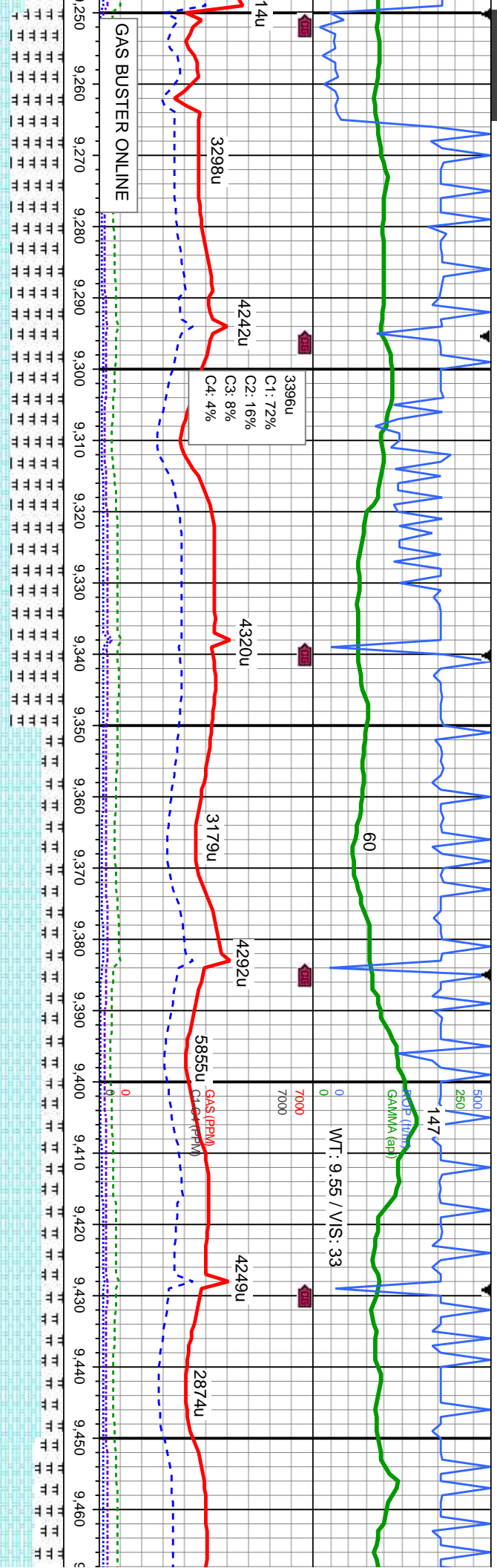




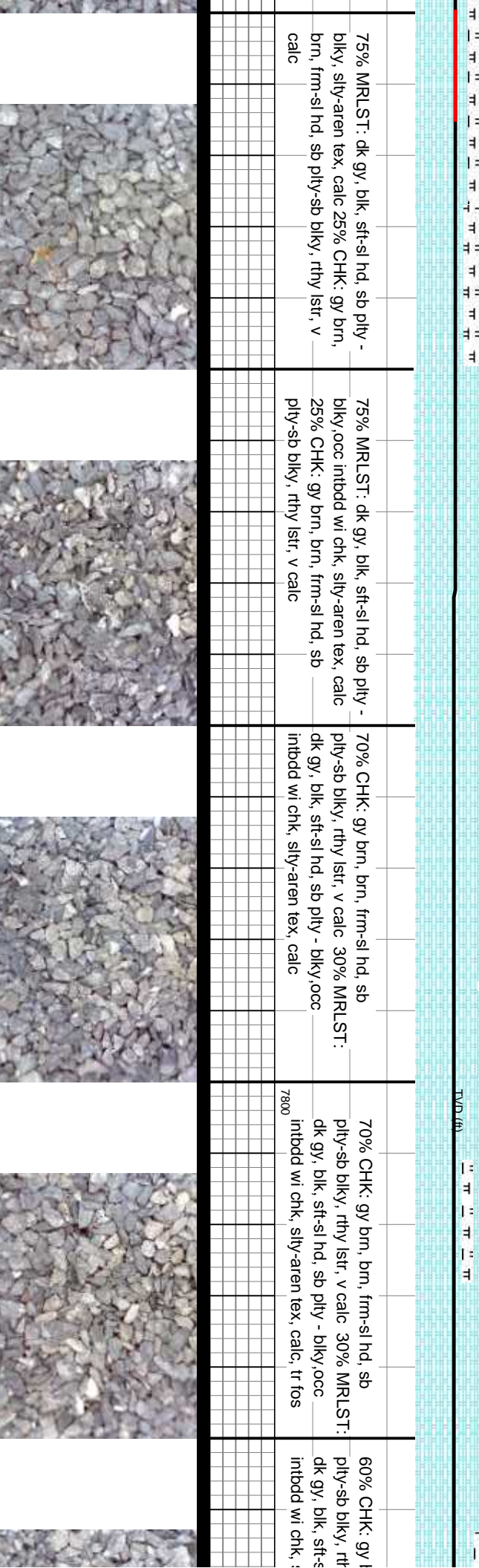
U Fault @ -9037' from Lower C Chalk to pper C Chalk		U/D Fault @ -9113' from Upper C Chalk to Mid C Chalk	
MD: 9.098 Inclination: 89.88 Azimuth: 90.46 TVD: 7.026.02 VS: 2.251.09		MD: 9.187 Inclination: 90.52 Azimuth: 90.72 TVD: 7.025.71 VS: 2.338.75	
		6200	

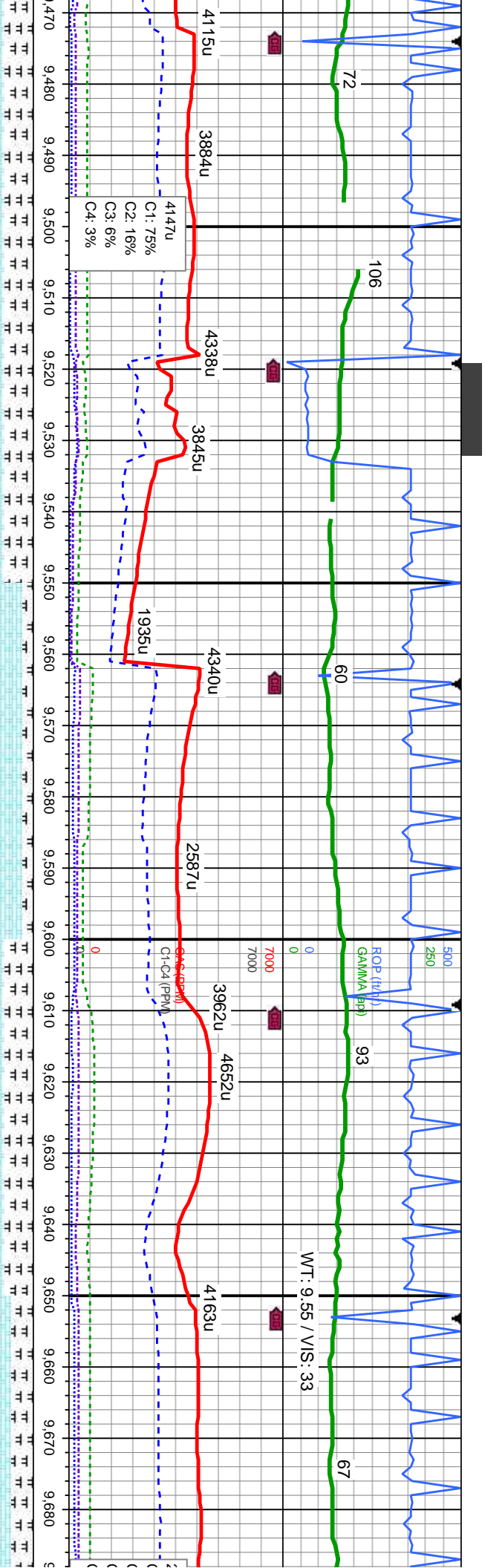
stf-sl hd, sb pty - 0% CHK: brn, rthy lstr, v calc	70% CHK: gy brn,brn, frm-sl hd, sb pty-sb blkyy, rthy lstr, v calc 30% MRLST: dk gy, blk, stf-sl hd, sb pty - blkyy, sily-aren tex, calc	75% CHK: gy brn,brn, frm-sl hd, sb pty-sb blkyy, rthy lstr, v calc 25% MRLST: dk gy, blk, stf-sl hd, sb pty - blkyy, sily-aren tex, calc, tr inoc fos frags	60% MRLST: dk gy, blk, stf-sl hd, sb pty - blkyy, sily-aren tex, calc 40% CHK: gy brn,brn, frm-sl hd, sb pty-sb blkyy, rthy lstr, v calc, rr inoc fos frags	55% MRLST: dk gy, blk, stf-sl hd, sb pty - blkyy, sily-aren tex, calc 45% CHK: gy brn, brn, frm-sl hd, sb pty-sb blkyy, rthy lstr, v calc
				





MD: 9.277 Inclination: 88.77 Azimuth: 89.86 TVD: 7.026.27 VS: 2.427.29		MD: 9.366 Inclination: 88.46 Azimuth: 88.9 TVD: 7.028.42 VS: 2.514.58		MD: 9.455 Inclination: 87.97 Azimuth: 88.36 TVD: 7.031.19 VS: 2.601.61	
75% MRLST: dk gy, blk, sft-sl hd, sb pily - blk, sily-aren tex, calc 25% CHK: gy brn, brn, frm-sl hd, sb pily-sb blk, rthy lstr, v calc		75% MRLST: dk gy, blk, sft-sl hd, sb pily - blk, occ intbdd wi chk, sily-aren tex, calc 25% CHK: gy brn, brn, frm-sl hd, sb pily-sb blk, rthy lstr, v calc		70% CHK: gy brn, brn, frm-sl hd, sb pily-sb blk, rthy lstr, v calc 30% MRLST: dk gy, blk, sft-sl hd, sb pily - blk, occ intbdd wi chk, sily-aren tex, calc	
70% CHK: gy brn, brn, frm-sl hd, sb pily-sb blk, rthy lstr, v calc 30% MRLST: dk gy, blk, sft-sl hd, sb pily - blk, occ intbdd wi chk, sily-aren tex, calc		70% CHK: gy brn, brn, frm-sl hd, sb pily-sb blk, rthy lstr, v calc 30% MRLST: dk gy, blk, sft-sl hd, sb pily - blk, occ intbdd wi chk, sily-aren tex, calc		60% CHK: gy brn, brn, frm-sl hd, sb pily-sb blk, rthy lstr, v calc 30% MRLST: dk gy, blk, sft-sl hd, sb pily - blk, occ intbdd wi chk, sily-aren tex, calc	





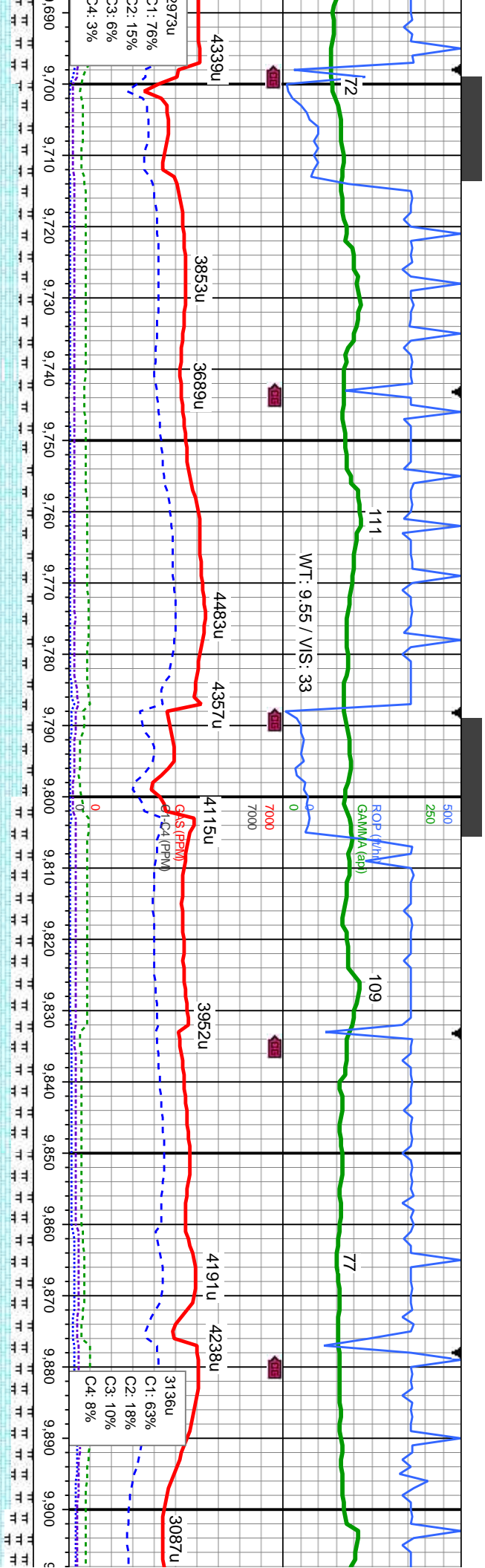
MD: 9.546  
Inclination: 89.97  
Azimuth: 89.76  
TVD: 7.032.84  
VS: 2.690.75

MD: 9.635  
Inclination: 91.29  
Azimuth: 90.21  
TVD: 7.031.86  
VS: 2.778.23

brn, brn, frm-sl hd, sb sly-aren tex, calc, tr fos	60% CHK: gy brn, brn, frm-sl hd, sb pily-sb biky, rthy lstr, v calc, tr pyr 40% MRLST: dk gy, blk, sft-sl hd, sb pily - biky,occ intbdd wi chk, sily-aren tex, calc, tr fos	80% CHK: gy brn, bf brn, frm-sl hd, sb pily-sb biky, rthy lstr, v calc 20% MRLST: dk gy, blk, sft-sl hd, sb pily - biky,occ intbdd wi chk, sily-aren tex, calc, tr fos	60% CHK: gy brn, brn, frm-sl hd, sb pily-sb biky, rthy lstr, v calc 40% MRLST: dk gy, blk, sft-sl hd, sb pily - biky,occ intbdd wi chk, sily-aren tex, calc, tr fos	70% CHK: gy brn, brn, frm-sl hd, s biky, rthy lstr, v calc 30% MRLST: sft-sl hd, sb pily - biky,occ intbdd w sily-aren tex, calc, tr fos
---	--	---	--	---





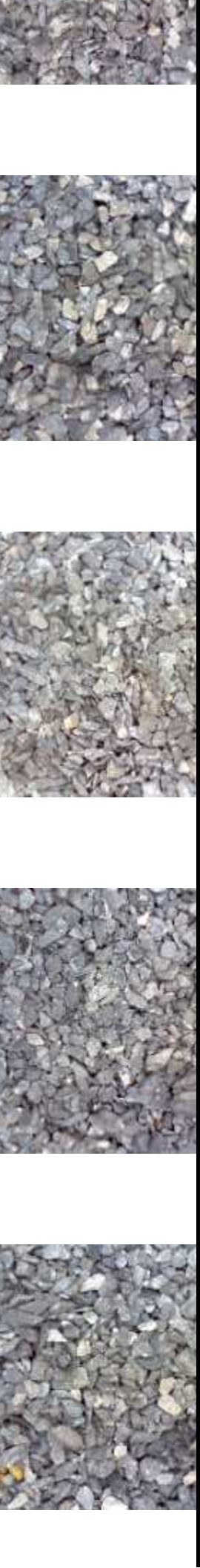


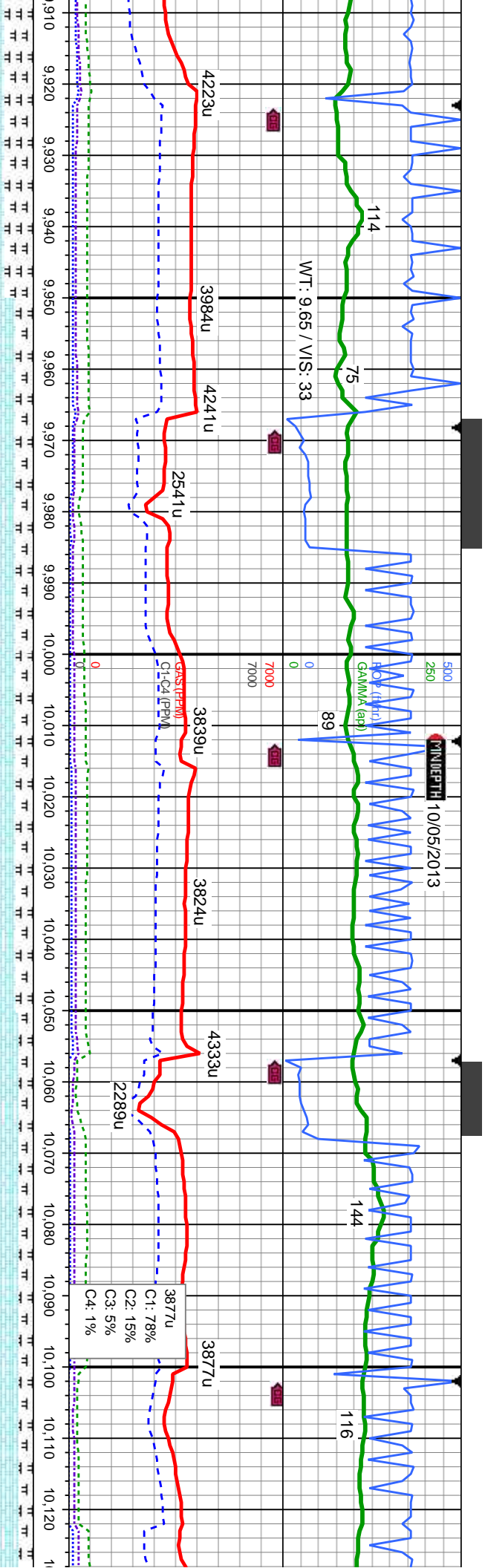
MD: 9.725  
Inclination: 91.64  
Azimuth: 89.67  
TVD: 7.029.56  
VS: 2.866.66

MD: 9.814  
Inclination: 89.94  
Azimuth: 87.85  
TVD: 7.028.34  
VS: 2.953.76

MD: 9.904  
Inclination: 87.07  
Azimuth: 87.07  
TVD: 7.027.07  
VS: 3.041.4

80% CHK: gy brn, gy, frm-sl hd, sb pily-sb blky, rthy lstr, v calc 20% MRLST: dk gy, blk, sft-sl hd, sb pily - blk,occ intbdd wi chk, sily-aren tex, calc, tr fos	85% CHK: gy brn, gy, frm-sl hd, sb pily-sb blky, rthy lstr, v calc, tr pyr 15% MRLST: dk gy, blk, sft-sl hd, sb pily - blk,occ intbdd wi chk, sily-aren tex, calc, tr fos	70% CHK: lt gry, brn-gry, frm-sl hd, sb pily-sb blky, rthy lstr, v calc, tr pyr 30% MRLST: dk gy blk, sft-sl hd, sb pily - blk,occ intbdd wi chk, sily-aren tex, calc, tr fos	70% CHK: lt gry, brn-gry, frm-sl hd, sb pily-sb blky, rthy lstr, v calc 30% MRLST: dk gy, blk, sft-sl hd, sb pily - blk,occ intbdd wi chk, sily-aren tex, calc, tr fos	60% C pily-sb MRLS intbdd
--	--	--	---	------------------------------------



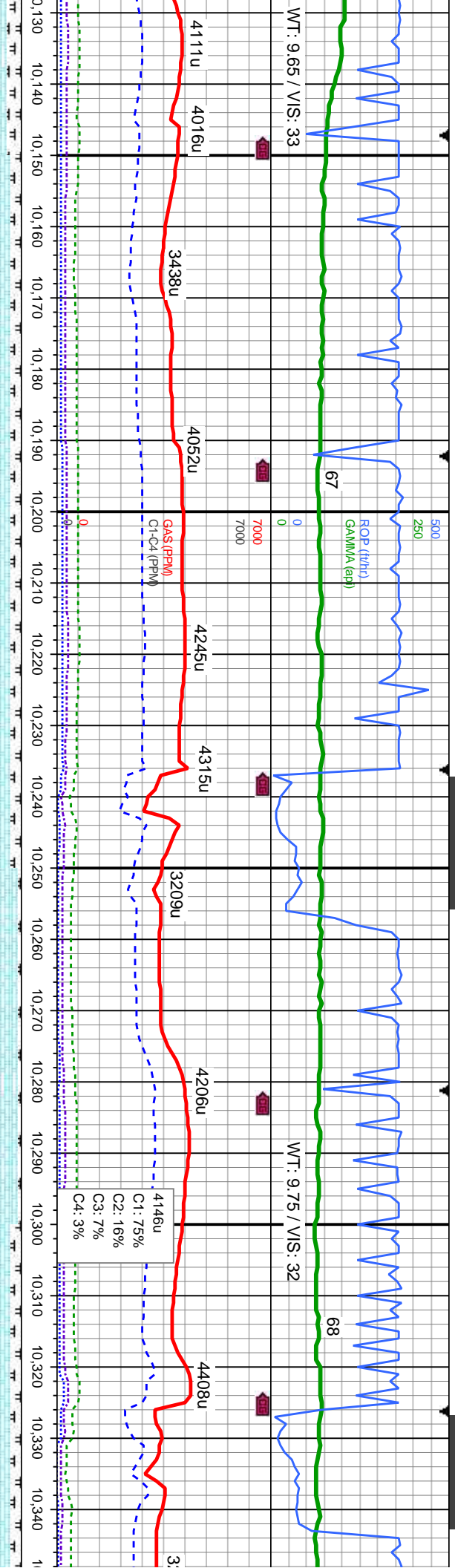


91.33	MD: 9.994	MD: 10.083
.46	Inclination: 89.97	Inclination: 88.83
.34	Azimuth: 87.88	Azimuth: 87.55
8	TVD: 7.026.32	TVD: 7.027.25
	VS: 3.129.2	VS: 3.215.96

CHK: med gry, brn-gry, frm-sl hd, sb blky, rthy lstr, v calc, tr pyr 40% F: dk gy, blk, sft-sl hd, sb pily - blky, wi chk, silty-aren tex, calc, tr fos	75% CHK: med gry, brn-gry, frm-sl hd, sb pily-sb blky, rthy lstr, v calc 25% MRLST: dk gy, blk, sft-sl hd, sb pily - blky, intbnd wi chk, silty-aren tex, calc, tr fos	75% CHK: med gry, brn-gry, frm-sl hd, sb pily-sb blky, rthy lstr, v calc 25% MRLST: dk gy, blk, sft-sl hd, sb pily - blky, intbnd wi chk, silty-aren tex, calc, tr fos	80% CHK: med-dk gry, frm-sl hd, sb pily-sb blky, rthy lstr, v calc 20% MRLST: dk gy, blk, sft-sl hd, sb pily - blky, intbnd wi chk, silty-aren tex, calc, tr fos	80% CHK: med-dk gry, fr blky, rthy wxy lstr, v calc: blk, sft-sl hd, sb pily, silty fos
--	---	---	---	--







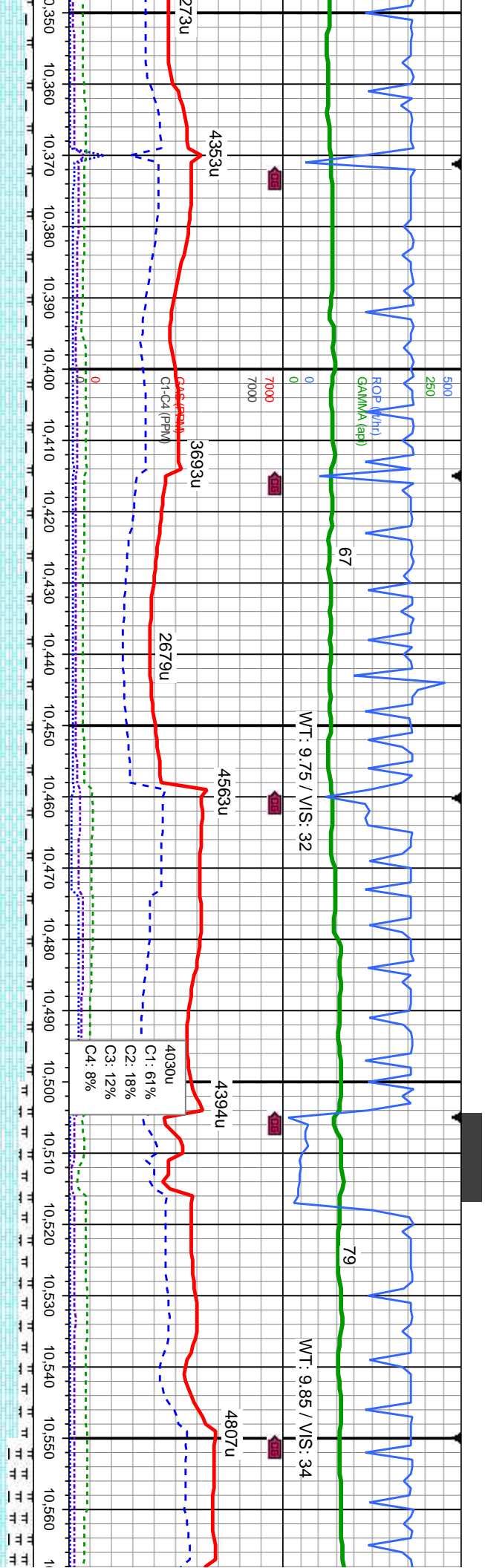
MD: 10,173  
Inclination: 88.83  
Azimuth: 85.93  
TVD: 7,029.09  
VS: 3,303.33

MD: 10,263  
Inclination: 87.72  
Azimuth: 88.47  
TVD: 7,031.8  
VS: 3,390.84

ME  
Inc  
Az  
TV  
VS

m-sl hd, sb pily-sb 20% MRLST: dk gy, aren tex, calc, tr	85% CHK: med-dk gry, frm-sl hd, sb pily-sb blky, rthy wxy lstr, v calc, tr pyr 15% MRLST: dk gy, blk, sft-sl hd, sb pily, silty-aren tex, calc, tr fos	85% CHK: med-dk gry, frm-sl hd, sb pily-sb blky, rthy wxy lstr, v calc, tr pyr 15% MRLST: dk gy, blk, sft-sl hd, sb pily, silty-aren tex, calc, tr fos	95% CHK: med-dk gry, frm-sl hd, sb pily-sb blky, rthy wxy lstr, v calc, tr pyr 5% MRLST: dk gy, blk, sft-sl hd, sb pily, silty-aren tex, calc, tr fos	85% CHK: med gy, lt -med brn, frm-sl hd, sb pily-sb blky, rthy lstr, v calc 15% MRLST: dk gy, blk, sft-sl hd, sb pily, silty-aren tex, calc, tr fos
--	---	---	--	--



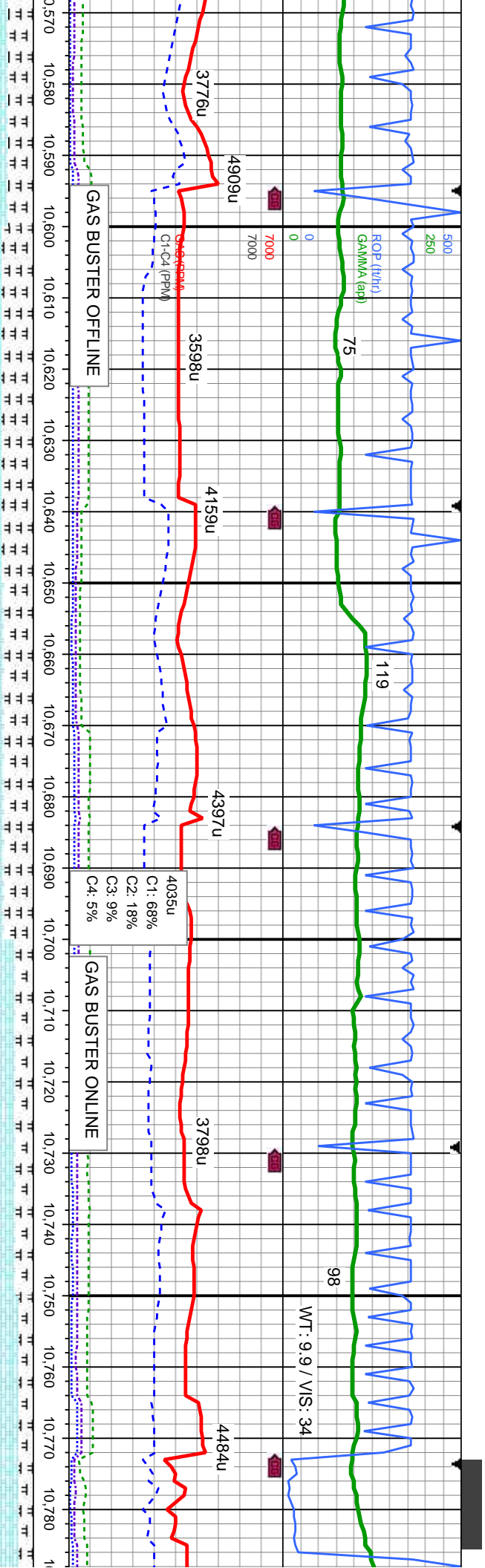


MD: 10,352 Inclination: 88.83 Azimuth: 90.97 D: 7,034.48 VS: 3,478.2	MD: 10,442 Inclination: 88.8 Azimuth: 92.15 TVD: 7,036.34 VS: 3,567.07	MD: 10,531 Inclination: 90.34 Azimuth: 91.99 TVD: 7,037.01 VS: 3,665.09
--	--	---

90% CHK: lt-dk brn, occ gy, occ mot, frm-sl hd, sb pty-blky, rthy istr, v calc 10% MRLST: dk gy, blk, sft-sl hd, sb pty-blky, silty-aren tex, calc, tr fos, tr bent	90% CHK: lt-dk brn, occ gy, occ mot, frm-sl hd, sb pty-blky, rthy istr, v calc 10% MRLST: dk gy, blk, sft-sl hd, sb pty-blky, silty-aren tex, calc, tr fos, tr bent	90% CHK: lt-dk brn, occ tan, occ sl mot, sl frm-frm, sb pty-blky, rthy istr, v calc 10% MRLST: dk gy, blk, sft-sl hd, sb pty-blky, silty-aren tex, calc, rr fos, rr bent	80% CHK: lt-dk brn, occ tan, occ sl mot, sl frm-frm, sb pty-blky, rthy istr, v calc 20% MRLST: dk gy, blk, sft-sl hd, sb pty-blky, silty-aren tex, calc, rr fos	65% CHK: lt-dk frm-frm, sb pty- MRLST: dk gy, l silty-aren tex, ca
--	--	---	--	---







6200

MD: 10,621  
Inclination: 90.31  
Azimuth: 91.42  
TVD: 7,036.5  
VS: 3,744.01

D/U Fault @ 10655  
from Mid C Chalk to  
Upper C Chalk

MD: 10,710  
Inclination: 91.11  
Azimuth: 90.81  
TVD: 7,035.39  
VS: 3,831.79

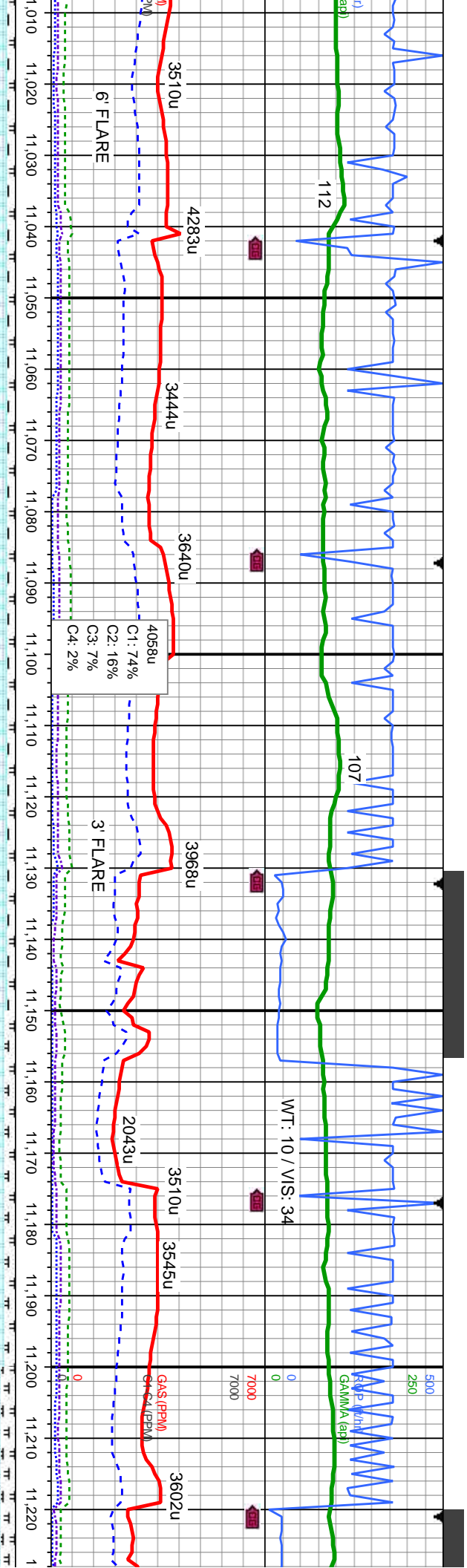
U/D Fault

brn, occ tan, occ sl mot, sl	55% CHK: lt-dk brn, occ tan, occ lt gy, sl mot	60% CHK: lt-dk brn, occ tan, occ lt gy, sl mot	75% CHK: lt-dk brn, occ tan, occ lt gy, sl mot	80% CHK: lt-dk brn, occ tan, occ lt
blky, rthy lstr, v calc 35%	ip, sl frm-frm, sb pty-blky, rthy lstr, v calc	ip, sl frm-frm, sb pty-blky, rthy lstr, v calc	ip, sl frm-frm, sb pty-blky, rthy lstr, v calc	ip, sl frm-frm, sb pty-blky, rthy lstr,
olk, sft-sl hd, sb pty-blky,	45% MRLST: dk gy, blk, sft-sl hd, sb	40% MRLST: dk gy, blk, sft-sl hd, sb	25% MRLST: dk gy, blk, sft-sl hd, sb	20% MRLST: dk gy, blk, sft-sl hd, s
c, rr fos, rr bent	pty-blky, silty-aren tex, calc, tr fos, rr pyr	pty-blky, silty-aren tex, calc, tr fos	pty-blky, silty-aren tex, calc, tr fos	pty-blky, silty-aren tex, calc, tr fos









MD: 11,069  
Inclination: 92.03  
Azimuth: 88.03  
TVD: 7,033.35  
VS: 4,183.23

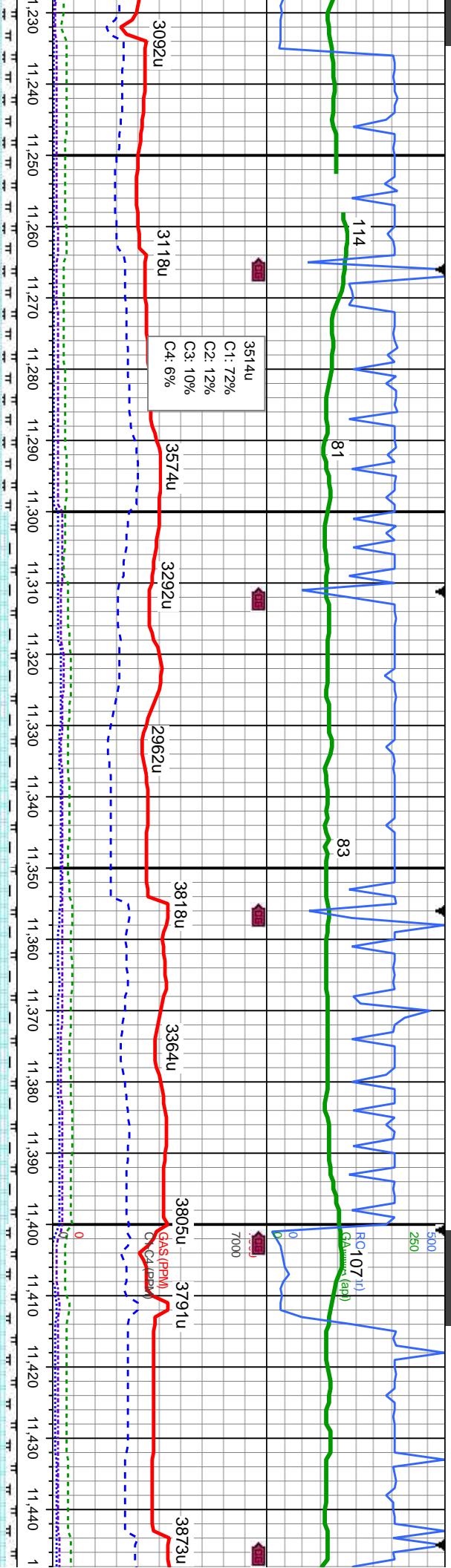
MD: 11,158  
Inclination: 90.68  
Azimuth: 87.5  
TVD: 7,031.25  
VS: 4,269.99

6200

TVD (ft)

CHK: lt-med brn, occ lt gy, occ tan, sl frm-frm, sb pty-blky, rthy lstr, v calc MLST: dk gy, blk, sft-frm, sb pty-blky, an tex, calc, tr fos	90% CHK: lt-med brn, occ lt gy, occ tan, sl mot, sl frm-frm, sb pty-blky, rthy lstr, v calc 10% MRLST: dk gy, blk, sft-frm, sb pty-blky, sily-aren tex, calc, tr fos	90% CHK: lt-med brn, occ lt gy, occ tan, sl mot, sl frm-frm, sb pty-blky, rthy lstr, v calc 10% MRLST: dk gy, blk, sft-frm, sb pty-blky, sily-aren tex, calc, tr fos	85% CHK: lt-med brn, occ lt gy-wh, sl mot ip, sft-frm, sb pty-blky, rthy lstr, v calc 15% MRLST: dk gy, blk, sft-frm, sb pty-blky, sily-aren tex, calc, tr fos	80% CHK: lt-med brn, occ ip, sft-frm, sb pty-blky, rth MRLST: dk gy, blk, sft-frm sily-aren tex, calc, tr fos
---	---	---	---	--





MD: 11,248  
Inclination: 89.11  
Azimuth: 89.59  
TVD: 7,031.41  
VS: 4,358.01

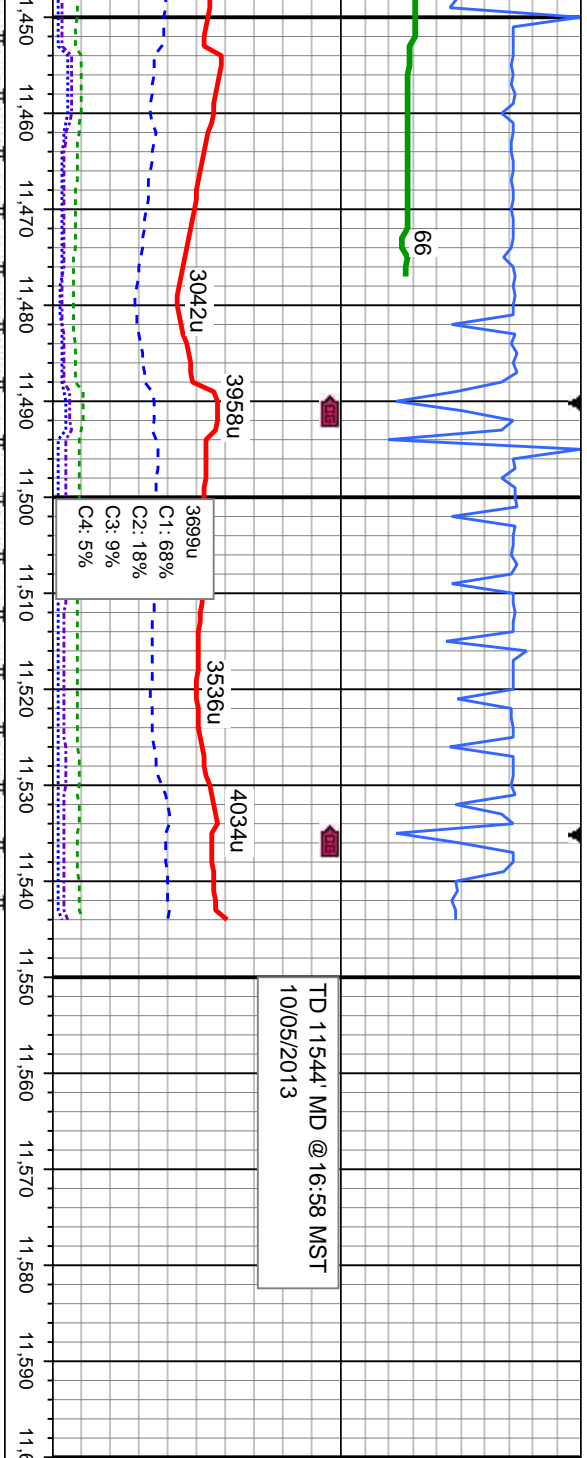
MD: 11,337  
Inclination: 90.52  
Azimuth: 89.64  
TVD: 7,031.7  
VS: 4,445.38

MD: 11,427  
Inclination: 90.09  
Azimuth: 88.21  
TVD: 7,031.22  
VS: 4,533.53

It gy-wh, sl mot	80% CHK: It-med brn, occ It gy-wh, sl mot	90% CHK: It-med brn, occ bf, occ It gy-wh, sl	90% CHK: It-med brn, occ bf, occ It gy-wh, sl	85% CHK: It-med brn, occ bf, occ It gy-wh, s
ly istr, v calc 20%	ip, stf-firm, sb pty-biky, rthy istr, v calc 20%	mot ip, stf-firm, sb pty-biky, rthy istr, v calc	mot ip, stf-firm, sb pty-biky, rthy istr, v calc	mot ip, stf-firm, sb pty-biky, rthy istr, v calc
ly sb pty-biky,	MRLST: dk gy, blk, stf-firm, sb pty-biky,	10% MRLST: dk gy, blk, stf-firm, sb pty-biky,	10% MRLST: dk gy, blk, stf-firm, sb pty-biky,	15% MRLST: dk gy, blk, stf-firm, sb pty-biky,
	stly-aren tex, calc, tr fos	stly-aren tex, calc, tr fos	stly-aren tex, calc, tr fos	stly-aren tex, calc, tr fos







MD: 11,481  
Inclination: 91.51  
Azimuth: 87.46  
TVD: 7,030.47  
VS: 4,586.19

MD: 11,544  
Inclination: 91.51  
Azimuth: 87.46  
TVD: 7,028.81  
VS: 4,647.53

THANK YOU FOR CHOOSING  
COLUMBINE LOGGING INC.

70% CHK: lt-med brn, bf, lt gy-wh, sl mot ip,  
sft-frn, sb pty-blky, rthy lst, v calc 30%  
MRLST: dk gy, blk, sft-frn, sb pty-blky,  
sily-aren tex, calc, tr fos

70% CHK: lt-med brn, bf, lt gy-wh, sl mot ip,  
sft-frn, sb pty-blky, rthy lst, v calc 30%  
MRLST: dk gy, blk, sft-frn, sb pty-blky,  
sily-aren tex, calc, tr fos

